November 29, 2018

Ms. Jennifer Tufts
Remedial Project Manager
U.S. Environmental Protection Agency, Region 4
61 Forsyth Street, SW, 11th Floor
Atlanta, Georgia 30303

Subject: **Final Expanded Site Inspection Report, Revision 1**
National Fireworks OU00 ESI
Cordova, Shelby County, Tennessee
EPA Identification No. TNSFN0407047
EPA Contract No. EP-S4-14-03
TDD No. TT-10-006

Dear Ms. Tufts:

The Tetra Tech, Inc. (Tetra Tech) Superfund Technical Assessment and Response Team (START) submits the enclosed final expanded site inspection (ESI), revision 1, report regarding the National Fireworks OU00 site in Cordova, Shelby County, Tennessee. The ESI report includes figures (Appendix A); tables (Appendix B); field logbook notes, field sample collection sheets, and boring logs (Appendix C); a photographic log (Appendix D); the U.S. Environmental Protection Agency (EPA) Contract Laboratory Program (CLP) and Tetra Tech-procured laboratory analytical data packages (Appendix E); Tetra Tech's review of field quality control samples for Contract Laboratory Program (CLP) laboratory data packages (Appendix F); and Tetra Tech's Stage 4 data validation report regarding the procured analytical data package (Appendix G). Revision 1 of the ESI report incorporates updated drinking water population information obtained from the Memphis Light, Gas, and Water Division.

If you have any questions or comments regarding this submittal, please call me at (678) 775-3101.

Sincerely,

Quinn Kelley
Tetra Tech START IV Project Manager

Andrew F. Johnson
Tetra Tech START IV Program Manager

Enclosure

cc: Katrina Jones, EPA Project Officer
Angel Reed, Tetra Tech START IV Document Control Coordinator

1955 Evergreen Blvd., Suite 300, Duluth, GA 30096
Tel 678.775.3080 Fax 678.775.3138
www.tetratech.com

FINAL
EXPANDED SITE INSPECTION REPORT
REVISION 1

NATIONAL FIREWORKS OU00
CORDOVA, SHELBY COUNTY, TENNESSEE
U.S. EPA ID NO. TNSFN0407047

Prepared for

U.S. ENVIRONMENTAL PROTECTION AGENCY
Region 4
Atlanta, Georgia 30303

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Date Prepared	:	November 29, 2018
EPA Task Monitor	:	Jennifer Tufts
Telephone No.	:	(404) 562-8513
Prepared by	:	Tetra Tech, Inc.
START Project Manager	:	Quinn Kelley
Telephone No.	:	(678) 775-3101

Prepared by	Reviewed by	Approved by
Quinn Kelley	Shanna Davis	Andrew F. Johnson
START IV Project Manager	START IV Technical Reviewer	START IV Program Manager

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1.0 INTRODUCTION

The U.S. Environmental Protection Agency (EPA) tasked the Tetra Tech, Inc. (Tetra Tech) Superfund Technical Assessment and Response Team (START) to conduct an expanded site inspection (ESI) at National Fireworks (NF) in Cordova, Shelby County, Tennessee. The ESI was completed under Contract No. EP-S4-14-03, Technical Direction Document (TDD) No. TT-10-006.

The primary objective of an ESI is to evaluate eligibility of a site for placement on the National Priorities List (NPL). The NPL includes sites where a release or threatened release of hazardous substances poses a risk to public health or the environment serious enough to warrant further investigation and possible remediation under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) and the Superfund Amendments and Reauthorization Act of 1986.

Information gathered during the ESI is used to generate a preliminary Hazard Ranking System (HRS) score, the primary criterion EPA uses to decide whether a site should be placed on the NPL. ESIs generally occur at sites where additional environmental sampling is necessary to fulfill HRS documentation requirements. An additional function of an ESI may be to address site issues not adequately resolved in previous investigations.

Objectives of this ESI are as follows:

- Obtain and review relevant file material.
- Document current site conditions.
- Collect soil and groundwater samples to establish representative background levels.
- Collect samples to document observed releases to the groundwater migration pathway and to identify the source of a chlorinated solvent groundwater plume.
- Evaluate target populations along the groundwater migration pathway.
- Obtain any other missing HRS data.

The remainder of this ESI report is organized as follows:

- Section 2.0 discusses the site background, including the site description, environmental setting, operational history, and findings from previous investigations.
- Section 3.0 describes ESI field activities during the week of June 18, 2018, and deviations from the final quality assurance project plan (QAPP) dated May 16, 2018 (Reference [Ref.] 1].
- Section 4.0 discusses analytical support, methodology, validation, data quality, and data qualifiers.

- Section 5.0 indicates sampling locations and analytical results.
- Section 6.0 discusses the groundwater migration pathway, as well as the geologic setting, hydrogeologic setting, groundwater sampling locations and analytical results, and targets associated with this pathway.
- Section 7.0 summarizes the ESI report and presents conclusions.
- Section 8.0 lists sources referenced during development of the ESI report.
- Appendices include the following;
    - Appendix A: Figures
    - Appendix B: Tables
    - Appendix C: Field logbook notes, field sample collection sheets, and boring logs
    - Appendix D: Photographic log
    - Appendix E: EPA Contract Laboratory Program (CLP) and Tetra Tech-procured laboratory analytical data packages
    - Appendix F: Tetra Tech's review of field quality control (QC) samples for CLP laboratory data packages
    - Appendix G: Tetra Tech Stage 4 data validation report of the procured analytical data package.

2.0 SITE BACKGROUND

This section discusses the site background, including the site description, environmental setting, and findings from previous investigations.

2.1 SITE DESCRIPTION, ENVIRONMENTAL SETTING, AND OPERATIONAL HISTORY

The approximately 260-acre NF property is in Cordova, Shelby County, Tennessee (Ref. 2, p. 1) (see Figure 1 in Appendix A). The NF property is bounded to the north by Macon Road, with the Acme Brick Company and Eagle Heights Community Church beyond; to the east by Grays Creek; to the south by residential properties; and to the west by residential properties, with Buckeye Road beyond (see Figure 2 in Appendix A). The NF property is zoned for industrial use and is surrounded by land zoned for industrial, commercial, and residential uses (Ref. 3). Geographic coordinates at the approximate center of the NF property are latitude 35.160556° north and longitude 89.751068° west (see Figure 1 in Appendix A).

The NF property is divided into three operable units (OU): NF OU1 is a former burn pit owned by Cordova Investment Partners, Ltd., in the southwestern portion of the site; NF OU2 is the Security Signals, Inc. (SSI) property in the northern portion of the site, and NF OU00 encompasses the remainder

of the former NF property. NF OU2 is currently addressed under an Administrative Order of Consent between SSI and EPA. This ESI focuses on the source of a chlorinated solvent plume beneath NF OU00 identified during the remedial investigation (RI) at NF OU2 (Ref. 13, pp. 4-1, 4-2).

From 1941 to 1945, NF manufactured various munitions for the Departments of the Army and Navy. The buildings were spaced throughout the 260-acre site because of the explosiveness of the products used. The munitions NF manufactured included flares, grenades, smoke pots, 20-millimeter (mm) and 40-mm rounds, and incendiary bombs (Refs. 2, pp. 2, 3; 4, pp. 5, 6, 7). Chemicals possibly mixed and used in ordnance production at the site included trinitrotoluene (TNT); hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX); 2,4,6-trinitrophenylmethylnitramine (tetryl); ammonium nitrate; fulminated mercury; and white phosphorus. Former employees stated that at the southeastern corner of the site, pyrotechnical compounds were mixed for use in manufacture of various munitions (Refs. 2, p. 8; 4, pp. 6, 8). NF OU1 (former burn pit) was used to burn materials of unknown composition (Ref. 4, p. 6).

In 2008, the EPA Photographic Interpretation Center (EPIC) prepared an aerial photographic analysis of the NF property. The EPIC study reviewed and evaluated site features on aerial photographs dated 1937 to 2004. According to the EPIC study, improvements on the site had been constructed sometime between 1937 and 1957 (Ref. 5, pp. 1, 2). By 1957, a complex of buildings, a railroad spur, unpaved roads, a possible incinerator, possible pipeline, and horizontal tanks were present (Ref. 5, pp. 14, 15). By 1973, new building additions, open storage areas, and two impoundments, or pits, just west of the current SSI property were present (Ref. 5, pp. 25, 27).

SSI, the 22-acre NF OU2, was established in 1948 to manufacture fuses, ignition cartridges, and other pyrotechnic devices (Ref. 6, pp. 2, 3). In 1968, SSI expanded operations to include a screw machine, parts, and metal fabrication. Since 1996, SSI operations have included manufacture of machined metal products, including automotive valves and air conditioning compressor parts from raw material bar stock. The machined metal parts are produced in screw machines, with cutting oil used as coolant. No pyrotechnic products have been manufactured by SSI since 1997 (Ref. 6, p. 3).

2.2 PREVIOUS INVESTIGATIONS

Several investigations occurred at the site between 1999 and 2009 (Ref. 7, pp. 7 through 10). Analytical results from multi-media environmental samples collected during these investigations revealed concentrations of hazardous substances above background concentrations as follows: volatile organic compounds (VOC), including 1,1-dichloroethane (DCA), 1,1-dichloroethene (DCE), cis-1,2-DCE,

tetrachloroethene (PCE), and trichloroethene (TCE), among others; polynuclear aromatic hydrocarbons (PAH), including benzo(a)anthracene, benzo(a)pyrene, and phenanthrene, among others; pesticides, including aldrin, dieldrin, heptachlor, and alpha- and gamma-chlordane, among others; polychlorinated biphenyls (PCB); explosives, including octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX, an explosive); dioxins and furans; perchlorate; and metals, including antimony, beryllium, cadmium, chromium, copper, lead, mercury, nickel, and zinc, among others (Refs. 7, pp. 21 through 34, 42 through 46; 8, pp. 11, 12; 9, pp. 10 through 14, 16 through 21, 23 through 33, 38 through 42, 44 through 46; 10, pp. 4 through 7).

The RI at NF OU2 included Phase I completed in 2008, Phase II completed in 2009, Phase III completed in in 2011, and supplemental sampling in 2012 and 2013 (Ref. 13, pp. 1-13, 1-15, 1-16). The RI identified two TCE groundwater plumes (A and B) that appeared to originate off NF OU2 (Ref. 13, pp. 4-1, 4-2). Monitoring well MW-7 (Plume A), along the western boundary of the central portion of NF OU2, was installed in 2008 to 43 feet below ground surface (bgs), and was sampled in 2008, 2011, 2012, and 2013. TCE was detected in MW-7 at 1,700 micrograms per liter (µg/L) in 2008, at 1,300 µg/L in 2011, at 590J (estimated) µg/L in 2012, and at 645 µg/L in 2013 (Ref. 13, pp. 2-12, 2-33, 4-1, 4-108 to 4-111, 5-19, Figure 4-11). Monitoring well SS-GW-01 (Plume B, divided into Source B1 and Source B2), along the western boundary of the northern portion of NF OU2, was installed in 2005 to 33 feet bgs and was sampled in 2008, 2011, 2012, and 2013. TCE was detected in SS-GW-01 at 830 µg/L in 2008, at 690 µg/L in 2011, at 510 µg/L in 2012, and at 514 µg/L in 2013 (Ref. 13, pp. 2-12, 2-33, 4-116, 4-117, 5-19, Figure 4-11). The EPA Maximum Contaminant Level (MCL) for TCE is 5 µg/L (Ref. 14, p. 7).

In July 2016, Tetra Tech conducted an ESI at NF OU1, collecting surface and subsurface soil and groundwater samples. Additionally, Tetra Tech advanced four exploratory borings at and in the vicinity of NF OU1 to determine whether the Jackson-Upper Claiborne confining unit, which serves as the upper confining unit for the Memphis Sand aquifer in the area of NF OU1, was present, thin, or absent (Ref. 10, p. 4). Analytical results from soil samples indicated elevated concentrations of antimony, cadmium, cobalt, copper, lead, manganese, mercury, zinc, 2,6-dinitrotoluene, dioxins, and furans, among others (Ref. 10, p. 16). Analytical results from groundwater samples indicated elevated concentrations of PCE, TCE, cis-1,2-DCE, mercury, perchlorate, and dioxins and furans. Exploratory borings indicated discontinuity in the Jackson-Upper Claiborne confining unit within a 2-mile radius of NF OU1, and interconnection of the surficial aquifer and the Memphis Sand aquifer (Ref. 10, p. 19).

3.0 EXPANDED SITE INSPECTION ACTIVITIES

This section outlines field observations and sampling procedures at the site, as well as deviations from the final QAPP. ESI sampling accorded with the EPA-approved final QAPP dated May 16, 2018 (Ref. 1).

3.1 SAMPLE COLLECTION, METHODOLOGY, AND PROCEDURES

During the ESI (week of June 18, 2018), Tetra Tech collected surface and subsurface soil and groundwater samples. Numbers, types, and locations of collected samples are listed in Table 1 in Appendix B and as follows:

- 42 soil samples (including two duplicates and two background) from 20 locations (including one background location) (see Figure 3 in Appendix A)
- 21 groundwater samples (including one duplicate and one background) from 20 temporary well locations (including one background location) (see Figure 3 in Appendix A)
- Three groundwater samples (including one duplicate) from two permanent monitoring wells (see Figure 4 in Appendix A).

To allow comparisons of background concentrations to analyte concentrations detected in on-site and off-site samples, Tetra Tech collected background soil and groundwater samples at a location outside of the influence of the site, about 1,500 feet northwest of MW-7 (see Figure 3 in Appendix A).

Tetra Tech applied sample collection procedures outlined in the final QAPP (Ref. 1). All soil and groundwater samples were collected in accordance with the EPA Region 4 Science and Ecosystem Support Division (SESD) Field Branches Quality System Technical Procedures (FBQSTP) for *Soil Sampling* (SESDPROC-300-R3), August 2014; and *Groundwater Sampling*, SESDPROC-301-R4, April 2017 (Refs. 15; 16). Field logbook notes and field sample collection sheets pertaining to the ESI sampling event are in Appendix C.

3.2 DEVIATIONS FROM THE QUALITY ASSURANCE PROJECT PLAN

During the field event, conditions at the site led to some deviations from the sampling plan proposed in the final QAPP. Some sampling locations were moved slightly due to access issues. Significant changes in sampling locations are described below. Deviations in the field were documented in logbook notes and field sheets (see Appendix C), and are summarized as follows:

- Station IDs NF08 to NF16 already existed; therefore, Station IDs listed in the final QAPP (NF08 to NF27) were changed to NF17 to NF36.
- Background location NF35 was moved to about 150 feet northwest of SSI monitoring well MW-7 in an effort to determine from which direction contamination in MW-7 was coming. As a result, NF35 is no longer considered a background location.
- NF33 was moved to the Acme Brick Company property to avoid the busy Lenow Road.
- NF27 was moved to a former pit area, just west of SSI monitoring well SS-GW-01.
- The temporary well installed at the NF27 soil sampling location did not produce any water; therefore, a second temporary monitoring well was installed about 50 feet northeast of the original NF27 location, and the NF27 groundwater sample was collected at this new location.
- Due to slow recharge, groundwater quality parameters were not recorded at NF18, NF19, NF23, NF26, NF28, NF31, NF32, and NF36, and entire well volume was used for the groundwater sample at each of these locations.
- To ensure productive wells, temporary monitoring wells at Stations NF25 and NF31 were installed with 10-foot screens instead of 5-foot screens because the borings contained a very thin water-bearing zone or non-distinct water table.
- The clay lithology present above the water table prevented collection of soil gas samples. START installed soil gas implants in the proposed borings, but upon purging, these implants were found to hold a vacuum of -10 inches of mercury for 3 minutes, a condition indicative of non-viable implants, and the implants thus were abandoned.

4.0 ANALYTICAL SUPPORT AND DATA QUALITY

This section outlines analytical support, methodology, and validation, as well as analytical data quality and data qualifiers. The EPA CLP and Tetra Tech-procured analytical data packages are in Appendix E, the Tetra Tech field QC sample review of CLP data is in Appendix F, and the Tetra Tech Stage 4 data validation report is in Appendix G.

4.1 ANALYTICAL SUPPORT, METHODOLOGY, AND VALIDATION

The EPA CLP analyzed soil and groundwater samples for EPA Target Compound List (TCL) VOCs in accordance with the CLP Statement of Work (SOW) for Organic Superfund Methods, Multi-Media, Multi-Concentration, SOM02.4, October 2016 (Ref. 17). The EPA Region 4 SESD Laboratory analyzed soil and groundwater samples for mercury in accordance with EPA SW-846 Method 7473 (soil) and EPA Method 245.1 (water), as described in the EPA Analytical Services Branch (ASB) Laboratory Operations and Quality Assurance Manual (LOQAM) (Ref. 18). EPA Region 4 SESD reviewed all data in accordance with the CLP SOW SOM02.4, EPA ASB LOQAM, and EPA guidelines (Appendix E, pp. E-2, E-153). To determine whether additional qualifications were warranted, Tetra Tech reviewed all field duplicate and field QC blank samples (equipment and field) in accordance with the EPA CLP

National Functional Guidelines (NFG) for Superfund Organic Methods Data Review, USEPA-540-R-2017-002, January 2017; and the EPA CLP NFG for Inorganic Superfund Data Review, USEPA-540-R-2017-001, January 2017 (Refs. 19; 20). Based on results of Tetra Tech's review, additional qualifiers were added to the analytical data where appropriate (see Appendix F).

Tetra Tech procured TestAmerica Laboratories, Inc. (TestAmerica), in West Sacramento, California, to analyze the soil and groundwater samples for perfluoroalkyl substances (PFAS) in accordance with EPA Method 537 (modified) (Ref. 21). A Level IV data package meeting the standards of the EPA CLP was requested from TestAmerica, including a case narrative, chain-of-custody forms, sample results, QC summary forms, and the raw data. The TestAmerica analytical data package as received from the laboratory is in Appendix E. Once the data package for the soil and groundwater samples was received from the laboratory, Tetra Tech reviewed it for completeness and conducted a Stage 4 data validation. The data validation process included a review of the method and instrument information, as well as quality assurance (QA)/QC comparisons of data listed in the electronic data deliverables to data listed in the electronic portable document format copy of the analytical data package. Analytical results from the soil and groundwater samples were validated in accordance with the EPA Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use (January 2009); the EPA NFGs for Superfund Organic Data Review, USEPA-540-R-2017-002, January 2017; and the above-referenced method (Refs. 19; 21; 22). The Tetra Tech Stage 4 data validation report is in Appendix G.

4.2 ANALYTICAL DATA QUALITY AND DATA QUALIFIERS

Text and analytical data tables presented in this report list some concentrations of parameters as qualified with a "J," indicating that identification of the analyte is acceptable but the reported value is an estimate. "J" qualified parameters may also include a "+," indicating a high bias. Some sample results are reported with an "R" qualifier, meaning that presence or absence of the analyte cannot be determined from the data because of severe QC problems; the data are rejected and considered unusable. Some sample results are reported with a "U" qualifier. For CLP data, the "U" qualifier means that concentration of the analyte was not detected at or above the method reporting limit (MRL); the reported value is the sample-specific, laboratory-derived MRL for the constituent. The "UJ" notation indicates that concentration of the analyte was not detected above the laboratory-derived MRL, which is considered approximate as a result of deficiencies in one or more QC criteria. The Tetra Tech-procured laboratory report indicates some results as "ND," which means that the concentration of the analyte was not detected above the reporting limit (RL). These results are presented in the tables (Appendix B) as the RL with a "U" qualifier. An analyte concentration is considered elevated if it equals or exceeds three times detected background concentration

or equals or exceeds the sample-specific and analyte-specific MRL or RL for non-detect background sample results. Laboratory analytical data sheets are in Appendix E.

5.0 SOURCE SAMPLING

This section discusses the source area evaluated at the site and sampling locations and analytical results from samples collected within the source area. Tetra Tech screened the soil cores for VOCs with a photoionization detector (PID) prior to sampling. Tetra Tech collected two soil samples from each location. The depth intervals sampled at each location were determined in the field based on the highest PID readings or, if zero, at the discretion of the on-site geologist. Source samples were analyzed for TCL VOCs, PFASs, and mercury. Analytical results from all samples were compared to background concentrations. Additionally, results from source samples were compared to EPA Regional Screening Levels (RSL) for industrial soil, May 2018 (Ref. 23). The discussion below addresses only the hazardous constituents associated with former site operations and the hazardous constituents that may pose a threat to human health or the environment. Only the highest concentrations of each contaminant of concern are discussed.

Source and background soil sampling locations are depicted on Figure 3 in Appendix A, and are described in Table 1 in Appendix B. Analytical results are summarized in Tables 2, 3, and 4 in Appendix B. Source and background soil sampling activities accorded with the EPA Region 4 SESD FBQSTP for *Soil Sampling* (SESDPROC-300-R3), August 2014 (Ref. 15).

5.1 BACKGROUND SOIL SAMPLING LOCATIONS

Two soil samples were collected at background location NF36. Subsurface soil sample NF36-SS-01 was collected within 5 to 7 feet bgs, and subsurface soil sample NF36-SS-02 was collected within 16 to 20 feet bgs (see Figure 3 in Appendix A). Because former background location NF35 had been moved, soil sample NF33-SS-01, collected within 0 to 2 feet bgs at NF33, was designated as the background sample for comparison to surface soil samples.

5.2 SURFACE SOIL SAMPLING LOCATIONS AND RESULTS

Tetra Tech collected 12 surface soil samples (including two duplicates) within the site (see Figure 3 in Appendix A). Analytical results indicated elevated concentrations of VOCs, including cis-1,2-DCE (up to 60J micrograms per kilogram [µg/kg]) and TCE (up to 310J µg/kg); PFAS, including

perfluorooctanesulfonic acid (PFOS) (up to 0.014 milligrams per kilogram [mg/kg]); and mercury (up to 0.10 mg/kg; among others. No analyte concentration was detected above an EPA RSL for industrial soil (Ref. 23). Analytical results from surface soil samples are summarized in Table 2 in Appendix B.

5.3 SUBSURFACE SOIL SAMPLING LOCATIONS AND RESULTS

Tetra Tech collected 14 subsurface soil samples at intervals between 2 and 10 feet bgs (see Figure 3 in Appendix A). Analytical results indicated elevated concentrations of VOCs, including cis-1,2-DCE (up to 860 µg/kg), trans-1,2-DCE (up to 270 µg/kg), TCE (up to 730 µg/kg), and vinyl chloride (at 4.8 µg/kg), among others. No analyte concentration was detected above an EPA RSL for industrial soil (Ref. 23). Analytical results from those 14 subsurface soil samples are summarized in Table 3 in Appendix B.

Tetra Tech collected 13 subsurface soil samples at intervals between 12 and 27 feet bgs (see Figure 3 in Appendix A). Analytical results indicated elevated concentrations of VOCs, including cis-1,2-DCE (up to 63 µg/kg), TCE (up to 420 µg/kg), and vinyl chloride (at 4.9J µg/kg); PFAS, including perfluorobutanesulfonic acid (PFBS) (at 0.00025 mg/kg); and mercury (up to 0.074 mg/kg); among others. No analyte concentration was detected above an EPA RSL for industrial soil (Ref. 23). Analytical results from those 13 subsurface soil samples are summarized in Table 4 in Appendix B.

5.4 SOURCE CONCLUSIONS

Tetra Tech collected 12 surface soil and 27 subsurface soil samples within NF OU00 and surrounding area, and one background surface soil sample and two background subsurface soil samples northwest of the NF property (see Figure 3 in Appendix A). Analytical results indicated elevated concentrations of cis-1,2-DCE, trans-1,2-DCE, TCE, vinyl chloride, PFOS, PFBS, and mercury, among others. No analyte concentration was detected above an EPA RSL for industrial soil.

6.0 GROUNDWATER MIGRATION PATHWAY

This section discusses the groundwater migration pathway and targets associated with the groundwater migration pathway, and draws pathway-specific conclusions. Sampling locations and analytical results from samples collected along the groundwater migration pathway are also discussed.

Temporary monitoring wells were installed and developed in accordance with the EPA Region 4 SESD FBQSTP for the *Design and Installation of Monitoring Wells* (SESDGUID-101-R1), January 2013 (Ref.

24). Groundwater sampling activities involved application of low flow techniques in accordance with the EPA Region 4 SESD FBQSTP for *Groundwater Sampling* (SESDPROC-301-R4), April 2017 (Ref. 16). Groundwater sampling locations are depicted on Figure 3 in Appendix A. Analytical results from groundwater samples were compared to 2018 EPA MCLs (Ref. 14). The complete set of EPA CLP and procured laboratory analytical data sheets is in Appendix E.

6.1 GEOLOGIC SETTING

The site is in the western portion of Tennessee within the Gulf Coastal Plain physiographic province (Ref. 25, p. 5)—near the axis of the Mississippi embayment syncline, which plunges southward at a gradient of about 10 feet per mile and generally follows the course of the Mississippi River (Ref. 26, p. O13). The natural topography at the site consists of rolling hills; however, significant portions of the site have been leveled for redevelopment (Ref. 27, pp. 29, 30). Depths of soil, alluvium, and terrace deposits removed from the site vary from approximately 1 foot to more than 15 feet (Ref. 28, Appendix C, Photograph Nos. 20, 21, and 23). Currently, the site has two topographic highs, one in the south-central portion of the site where the MMD Tower is located, and one in the northwestern portion of the site, off of Rebel and Cordova Park Roads. These two locations are assumed not to have been leveled, and thus the natural topography has been retained at these locations (Ref. 27, p. 72). The site is underlain in descending order by some or all of the following stratigraphic units: alluvium and terrace deposits, the Jackson Formation, the Claiborne Group, and the Wilcox Group (Ref. 26, pp. O9, O10).

Regionally, the alluvium is 0 to 200 feet thick and composed of sand, clay, silt, and gravel; is confined to narrow strips along the principal streams in the area; and is subject to flooding and reworking in most places (Ref. 26, p. O13). The coarsest material generally is near present stream channels, and the finest is near edges of the deposits (Ref. 26, p. O13). The alluvium is lithologically similar to underlying terrace deposits, and the contact cannot be identified from geophysical logs (Ref. 26, p. O13).

Terrace deposits underlie the alluvium and are composed primarily of coarse-grained quartz sand; fine-grained, iron-stained quartz; and chert gravel (Ref. 26, p. O12). Thin lenses of clay are common in the lower portion of the terrace deposits, and the bottom 3 inches to 4 feet of sand and gravel generally are cemented with limonite (Ref. 26, p. O12). Terrace deposits occur as an irregular belt parallel to the Mississippi River and along the larger streams in the area. The deposits thin toward the east and are absent in many places as a result of erosion or nondeposition. Regionally, the terrace deposits range from a few feet to about 160 feet thick (Ref. 26, p. O12). Thicknesses of alluvium and terrace deposits beneath the site range from a few feet to about 38 feet (Refs. 26, p. O12; 11).

The Jackson Formation underlies the terrace deposits and is about 60 feet thick in the vicinity of the site (Ref. 25, p. 8). The Jackson Formation is composed primarily of clay, silt, sand, and lignite (Ref. 29, p. 5). The clay layers of the Jackson Formation are dark gray to greenish-gray, dark blue, or dark brown (Ref. 26, p. O12). Two facies have been identified within the formation: an upper, nonmarine facies, and an underlying marine facies. The nonmarine facies contains abundant fossil plants and leaves and seams of lignite commonly 10 feet thick (Ref. 26, p. O12). The marine facies follows the course of the Mississippi River and extends northward about 25 miles into Lauderdale County. The marine facies contains glauconite, foraminifera, shark teeth, and bones of sea animals (Ref. 26, p. O12). During the 2016 ESI, the top of the Jackson Formation was encountered within approximately 31 to 47 feet bgs at NFEXP01 (Ref. 11, Appendix C, Boring Logs). The formation is approximately 59 feet thick 2 miles east of the site (Ref. 25, p. 15). Regionally, the Jackson Formation overlies and confines the Claiborne Group, which contains the Memphis Sand, also known as the "500-foot" sand (Ref. 26, p. O12).

The Claiborne Group, represented in the Memphis area by the 500-foot sand, is present in two lithologically different portions separated by clay beds about 150 feet thick in some areas (Ref. 26, p. O11). Both electrical logs and drillers logs of area wells show that the lower portion varies greatly in thickness and contains a larger number of clay beds that are thicker and more extensive than those in the upper portion (Ref. 26, p. O11). However, even the thickest clay beds in the Claiborne Group are not continuous, and no particular bed can be considered a hydrologic boundary between the upper and lower portions; therefore, the Claiborne Group is considered a single hydrologic unit (Ref. 26, p. O11). Generally, the Claiborne Group is characterized by medium- to coarse-grained sand in the upper portion, with a gradation to fine- to medium-grained sand in the lower portion (Ref. 26, p. O11). The Claiborne Group is about 800 feet thick and is encountered at about 180 feet bgs in the area of the site (Ref. 26, p. O12).

The Wilcox Group underlies the Claiborne Group, and three lithologically distinct units are present within the group based on drillers' logs and geophysical logs of wells in the Memphis area. The three units of the Wilcox Group are the upper clay unit, the middle sand unit, and the lower clay unit (Ref. 26, p. O9). The upper clay unit of the Wilcox Group is known as the Flour Island Formation and consists of dark gray or brown lignitic clay that contains local lenses of silty and sandy clay from 1 to 50 feet thick. Thin beds of fine-grained sand cemented with iron oxide form consolidated layers a few inches thick in some areas of the upper clay unit (Refs. 26, p. O9; 30, p. 6). The Flour Island Formation varies greatly in regional thickness and ranges from 200 to 395 feet thick in the south-central part of Shelby County (Refs. 26, p. O11; 30, p. 6). The middle sand unit, known as the Fort Pillow Sand or the "1,400-foot" sand, consists predominantly of unconsolidated, well-sorted, fine- to medium-grained sand and is about

300 feet thick in the vicinity of NF OU00 (Refs. 26, p. O11; 30, p. 6). The lower unit of the Wilcox Group, known as the Old Breastworks Formation, consists of clay, silt, sand, and lignite. The Old Breastworks Formation is about 300 feet thick in the area of NF OU00 (Ref. 30, p. 6).

6.2 HYDROGEOLOGIC SETTING

The alluvium and terrace deposits comprise the surficial aquifer, which is approximately 27 to 46 feet thick at the site (Refs. 25, p. 7; 26, p. O13). Recharge to the surficial aquifer occurs primarily through infiltration of precipitation (Ref. 25, p. 24). Water levels in monitoring wells at and near the site screened in the surficial aquifer were measured during the ESI and ranged from 2.81 feet bgs in monitoring well NFMW1 (SS-GW-01), on the northwestern portion of the SSI property, to 22.4 feet bgs in monitoring well NF28, just north of the site (see Figure 3 in Appendix A and Table 5 in Appendix B). Groundwater in the surficial aquifer at and in the immediate vicinity of the site flows to the southeast (Ref. 13, Figure 3-8).

The Jackson Formation and the upper portion of the Claiborne Group comprise the Jackson-Upper Claiborne confining unit, which serves as the upper confining unit for the Memphis Sand aquifer in the area of the site (Ref. 25, p. 7). The confining unit is considered to be that interval of sediment between the base of the surficial aquifer and the top of the first prominent sand of the Memphis Sand aquifer (Ref. 25, p. 18). A discontinuity or "window" occurs when the confining unit (the Jackson-Upper Claiborne, in this case) is thin or absent, thereby allowing downward migration of contaminants from one aquifer system to another (Ref. 25, pp. 27, 28, Plate 1). The Jackson-Upper Claiborne confining unit is thin, but present, at the site, and is about 17 feet thick. Exploratory borings were advanced during the 2016 ESI near Grays Creek (which forms the eastern boundary of the site) in an effort to determine whether the confining unit is present, thin, or absent in the vicinity of the site. Thickness of the confining unit was 16 feet at EXP-01, 10 feet at EXP-02, absent at EXP-03, and 8 feet at EXP-04 (Ref. 10, C-35 to C-47). Notably, thickness of the Jackson-Upper Claiborne unit at these locations is estimated because the exploratory borings were not advanced deeper than approximately 50 feet bgs. The Jackson-Upper Claiborne confining unit is absent about 1,000 feet southeast of the site, along the eastern edge of Grays Creek, as shown in exploratory boring EXP-03 (Ref. 10, pp. A-4, C-39 to C-42). As a result, the surficial aquifer and the Memphis Sand aquifer are interconnected within a 2-mile radius of the site.

The Memphis Sand aquifer is between the Jackson-Upper Claiborne confining unit and the Flour Island confining unit (Ref. 25, pp. 6, 9), ranges in thickness from about 500 to 800 feet in the site vicinity, and dips toward the northwest at a rate of about 13 feet per mile (Ref. 26, p. O18). It supplies approximately

95 percent of the water used in the Memphis area for municipal and industrial water supplies (Ref. 30, p. 39). The aquifer is encountered at about 120 feet bgs in Cordova, Tennessee (Ref. 25, Plate 2). Groundwater flow in the Memphis Sand aquifer in the vicinity of the site is greatly influenced by cones of depression created by surrounding wellfields, and horizontal flow is toward the center of the nearest depression (Ref. 25, p. 28). Recharge to the aquifer generally occurs from precipitation along the outcrop belt, where it is at or near the surface or where the Jackson-Upper Claiborne confining unit is thin or absent, thereby allowing downward infiltration (Ref. 25, p. 27 and Plate 1). A recharge component locally enters the Memphis Sand aquifer by downward leakage from the surficial aquifer or the Jackson-Upper Claiborne confining unit where the aquifer is confined and head differences are favorable (Ref. 25, p. 28).

The Flour Island confining unit underlies the Memphis Sand aquifer and serves as the lower confining unit for the Memphis Sand aquifer and the upper confining unit for the Fort Pillow Sand aquifer (Ref. 30, p. 7). The Fort Pillow Sand aquifer is about 300 feet thick in the vicinity of the site, thins toward the north and northeast of the Memphis area, and is the principal aquifer providing water for municipal and industrial supplies west of the Mississippi River. However, it supplies only about 5 percent of the municipal and industrial supplies in the Memphis area. The Old Breastworks Formation underlies and confines the Fort Pillow Sand aquifer in the site vicinity. The Old Breastworks confining unit is about 180 to 350 feet thick in the site vicinity (Ref. 30, p. 6).

6.3 GROUNDWATER SAMPLING LOCATIONS AND RESULTS

During the 2018 ESI, Tetra Tech collected 21 groundwater samples (including one duplicate and one background) from 20 temporary monitoring wells installed throughout the site and off site. Tetra Tech also collected three groundwater samples (including one duplicate) from two permanent monitoring wells within NF OU2—SS-GW-01 and MW-7.

Analytical results from temporary monitoring well groundwater samples (NF17 to NF35) indicated elevated concentrations of VOCs, including 1,1,2-trichloroethane (TCA) (up to 44 µg/L), 1,1-DCA (up to 1,100 µg/L), 1,2-DCA (17J µg/L), 1,1-DCE (up to 1,500 µg/L), cis-1,2-DCE (up to 3,800 µg/L), trans-1,2,-DCE (up to 780 µg/L), PCE (up to 150 µg/L), TCE (up to 28,000 µg/L), and vinyl chloride (up to 150 µg/L); PFAS, including PFBS (up to 0.78 µg/L), PFOS (up to 0.052 µg/L), and perfluorooctanoic acid (PFOA) (up to 0.11 µg/L); and mercury (up to 1.4 µg/L); among others. Additionally, 1,1,2-TCA, 1,1-DCA, 1,2-DCA, 1,1-DCE, cis-1,2-DCE, trans-1,2-DCE, PCE, TCE, and vinyl chloride, among others, were detected in temporary monitoring wells at concentrations above their respective EPA MCLs (Ref.

14). Analytical results from temporary well groundwater samples are summarized in Table 6 in Appendix B.

Analytical results from NF OU2 permanent monitoring well groundwater samples (NFMW1 and NFMW7) indicated elevated concentrations of VOCs, including 1,1,2-TCA (up to 1.1 µg/L), 1,1-DCA (up to 2.5 µg/L), 1,1-DCE (up to 4.3 µg/L), cis-1,2-DCE (up to 780J µg/L), trans-1,2,-DCE (up to 11 µg/L), TCE (up to 430J µg/L), and vinyl chloride (up to 39 µg/L). Additionally, cis-1,2-DCE, TCE, and vinyl chloride were detected in permanent monitoring wells at concentrations above their respective EPA MCLs (Ref. 14). Analytical results from permanent monitoring well groundwater samples are summarized in Table 6 in Appendix B.

Figure 4 in Appendix A presents the temporary and permanent monitoring well groundwater samples with contaminants detected above the EPA MCLs.

6.4 GROUNDWATER MIGRATION PATHWAY TARGETS

Memphis Light, Gas, and Water Division (MLGW) operates 130 wells in multiple wellfields. MLGW supplies water to about 229,285 residential connections (Ref. 31, p. 2). Based on the U.S. Census Bureau, Shelby County has 2.63 persons per household (2012 through 2016) (Ref. 32). Therefore, 603,019.55 persons are provided water by MLGW (229,285 residential connections x 2.63 persons per household). The MLGW Shaw Wellfield is southeast of the site and is the only MLGW wellfield within 4 miles of the site. Seventeen municipal wells comprise the Shaw Wellfield: one is within a 0.5- to 1-mile radius, 11 are within a 1- to 2-mile radius, and five are within a 2- to 3-mile radius of the site (Refs. 31, p. 4; 33). Fourteen of the 17 wells are completed in the Memphis Sand aquifer at depths ranging from 355 to 899 feet bgs. Three wells (751, 755, 761) are completed in the Fort Pillow Sand aquifer at depths ranging from 1,161 to 1,225 feet bgs. The Fort Pillow Sand aquifer wells are within a 1- to 2-mile radius of the site, and are not evaluated (Refs. 31, p. 4; 33). Water from the Shaw Wellfield is blended with water from the other wellfields before it is distributed, and none of the Shaw Wellfield wells produces more than 40 percent of the total water supply (Ref. 31, p. 2). Therefore, each well was assumed to serve about 4,638.61 persons (603,019.55 persons ÷ 130 wells).

The estimated population within a 4-mile radius of the NF OU00 site that uses groundwater as a drinking water source is distributed as follows: 0 to 0.25 mile, 0 people; 0.25 to 0.50 mile, 0 people; 0.50 to 1 mile, 4,638.61 people; 1 to 2 miles, 37,108.88 people; 2 to 3 miles, 23,193.05 people; and 3 to 4 miles,

0 people (Refs. 31, pp. 2, 4, 5; 32; 33). Private drinking water wells reportedly are present within a 4-mile radius of the site, but their exact locations and depths are unknown (Ref. 2, p. 10).

6.5 GROUNDWATER CONCLUSIONS

The groundwater pathway is of concern at the site because (1) a discontinuity in the Jackson-Upper Claiborne confining unit has been identified within a 2-mile radius, and (2) site-related contamination has been documented in groundwater wells completed in the surficial aquifer system.

A discontinuity or "window" occurs when the confining unit (the Jackson-Upper Claiborne, in this case) is thin or absent, thereby allowing downward migration of contaminants from one aquifer system to another. The Jackson-Upper Claiborne confining unit is thin at the site, about 17 feet thick. Exploratory borings were advanced during the 2016 ESI near Grays Creek, which forms the eastern boundary of the site, in an effort to determine whether the confining unit is present, thin, or absent in the vicinity of the site. The Jackson-Upper Claiborne confining unit is absent about 1,000 feet southeast of the site, along the eastern edge of Grays Creek, as shown in exploratory boring EXP-03. Therefore, the Jackson-Upper Claiborne confining unit is not continuous within a 2-mile radius of the site, and the surficial aquifer and the Memphis Sand aquifer are interconnected.

Within 4 miles of the site, MLGW withdraws groundwater from the Memphis Sand and Fort Pillow aquifers to supply drinking water to about 64,940.54 people. Notably, this population includes only the 14 MLGW Shaw Wellfield wells that withdraw water from the Memphis Sand aquifer. Analytical results from groundwater samples indicate elevated concentrations of 1,1,2-TCA, 1,1-DCA, 1,2-DCA, 1,1-DCE, cis-1,2-DCE, trans-1,2-DCE, PCE, TCE, vinyl chloride, PFBS, PFOS, PFOA, and mercury, among others.

7.0 SUMMARY AND CONCLUSIONS

From 1941 to 1945, NF manufactured various munitions for the Departments of the Army and Navy. The munitions NF manufactured included flares, grenades, smoke pots, 20-mm and 40-mm rounds, and incendiary bombs. Chemicals possibly mixed and used in ordnance production at the site were TNT, RDX, tetryl, ammonium nitrate, fulminated mercury, and white phosphorus.

Soil samples collected at the site contained elevated concentrations of cis-1,2-DCE, trans-1,2-DCE, TCE, vinyl chloride, PFOS, PFBS, and mercury, among others. Groundwater samples collected from the

surficial aquifer underlying and adjacent to the site contained elevated concentrations of 1,2-TCA, 1,1-DCA, 1,2-DCA, 1,1-DCE, cis-1,2-DCE, trans-1,2-DCE, PCE, TCE, vinyl chloride, PFBS, PFOS, PFOA, and mercury, among others.

This ESI was conducted to determine the source of a chlorinated solvent groundwater plume within and upgradient of the NF property; therefore, the groundwater migration pathway was the only pathway evaluated. The groundwater migration pathway is the pathway of greatest concern based on the hazardous substances associated with the site and the location of the MLGW Shaw Wellfield. Exploratory borings advanced within a 2-mile radius of the site indicated that the Jackson-Upper Claiborne confining unit is not continuous within a 2-mile radius of the site, and the surficial aquifer and the Memphis Sand aquifer are interconnected.

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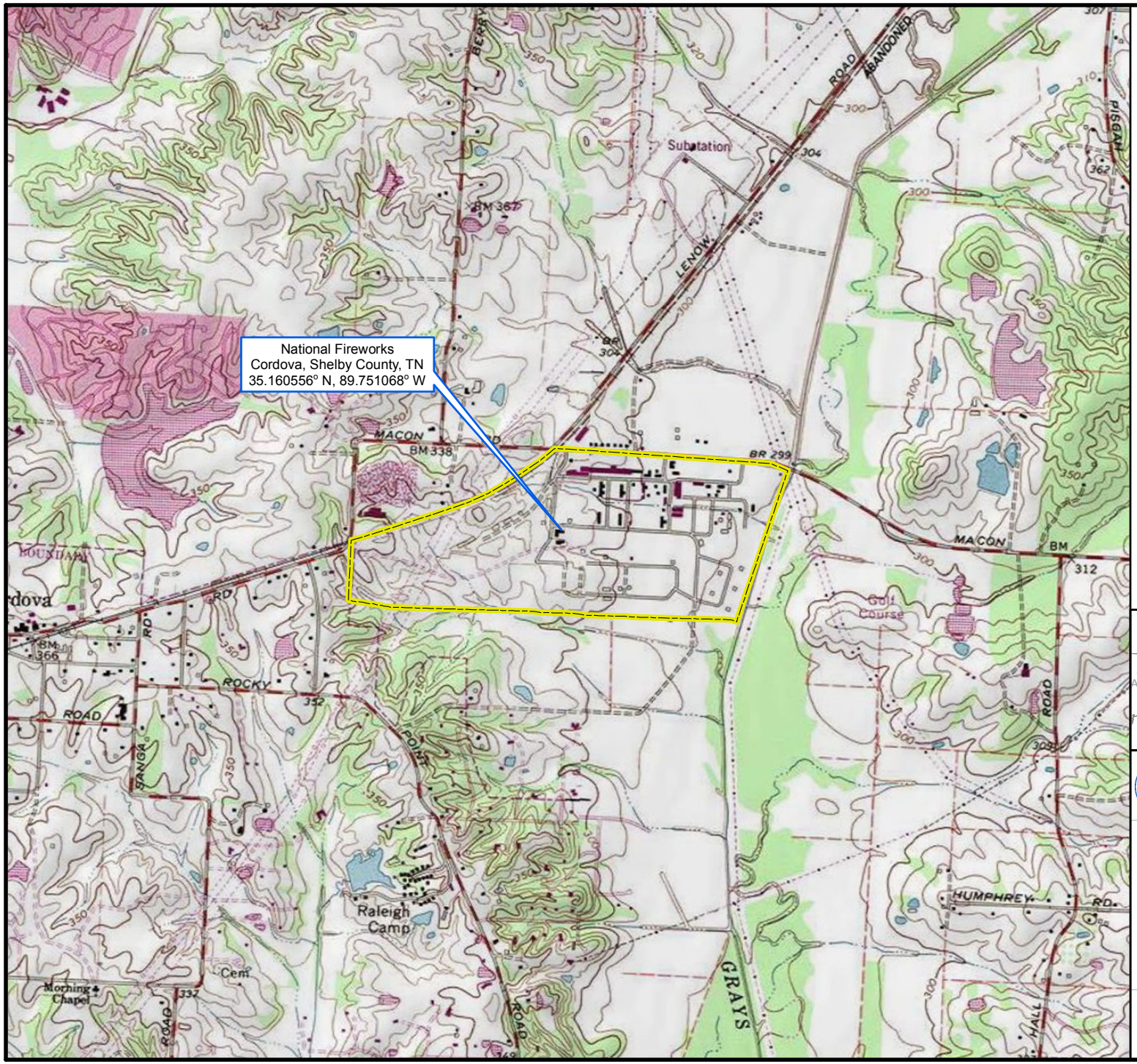
APPENDIX A

FIGURES

(Four Pages)

FIGURE

1 SITE LOCATION
2 SITE LAYOUT
3 SOIL AND GROUNDWATER SAMPLING LOCATIONS
4 GROUNDWATER SAMPLE RESULTS ABOVE THE MCL



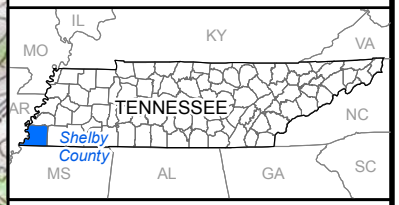
Legend

Former National Fireworks

N
W E
S

0 1,000 2,000
Feet

Map Sources:
USGS Topographic Quadrangles,
Ellendale, TN 1993 & Eads, TN 1983.



United States Environmental Protection Agency Region 4

FIGURE 1

Site Location

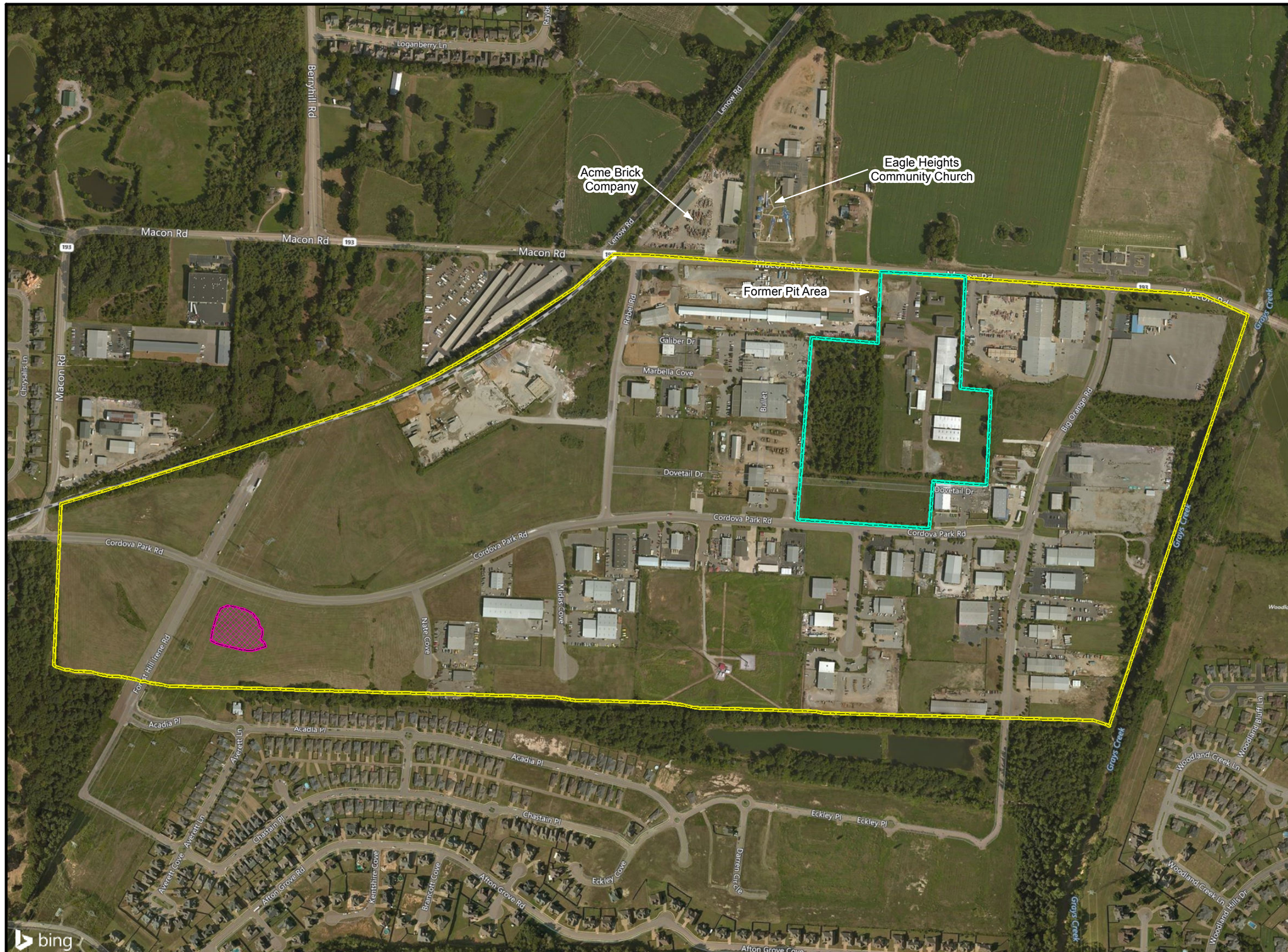
TDD Name: National Fireworks
TDD No.: TT-10-006

City:	County:	State:
Cordova	Shelby	Tennessee

TETRA TECH

Date: 5/4/2018
Analyst: dale.vonbusch

File: C:\TT-10-006_National_Fireworks\mxd\site_location.mxd



Legend

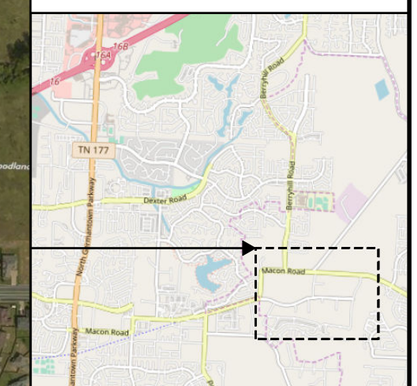
- Approximate Location of Former Burn Pit OU1
- Security Signals Property OU2
- Former National Fireworks OU00

N
W E
S

0 250 500
Feet

Note:
NF - National Fireworks
OU - Operable Unit

Map Sources:
Shelby County, TN GIS, 2018; Bing Maps Aerial Imagery, 2014.



United States Environmental Protection Agency Region 4

FIGURE 2

Site Layout

TDD Name: National Fireworks

TDD No.: TT-10-006

City:	County:	State:
Cordova	Shelby	Tennessee

TETRA TECH

Date: 9/17/2018

Analyst: dale.vonbusch

File: C:\TT-10-006_National_Fireworks\mxd\NF_Site_Layout_11x17.mxd

Legend

- Soil and Groundwater Sample
- Soil Sample
- Groundwater Sample
- Soil and Groundwater Background Sample
- Groundwater Sample, SSI Monitoring Well
- Direction of Groundwater Flow
- Distance Intervals from SSI Monitoring Wells
- Estimated Location of Plume
- Security Signals, Inc. *(partially shown)*
- Former National Fireworks *(partially shown)*

N W E S

0 100 200
Feet

Note:
NF - National Fireworks
SSI - Security Signals, Inc.

Map Sources:
Source of plume location is Ensafe Remedial Investigation Report, January, 2014;
Bing Maps Aerial Imagery, 2014.

United States Environmental Protection Agency Region 4

FIGURE 3

Soil and Groundwater Sampling Locations

TDD Name: National Fireworks

TDD No.: TT-10-006

City: Cordova **County:** Shelby **State:** Tennessee

TETRA TECH

Date: 9/17/2018

Analyst: dale.vonbusch

File: C:\TT-10-006_National_Fireworks\mxd\NF_Sampling_JUN2018_11x17.mxd

Legend

- Groundwater Sample
- Groundwater Sample Contains VOCs Above the MCL
- Direction of Groundwater Flow
- Distance Intervals from SSI Monitoring Wells
- Estimated Location of Plume
- Security Signals, Inc. *(partially shown)*
- Former National Fireworks *(partially shown)*

N W E S

0 100 200
Feet

Note:
DCE - Dichlorethene
EPA - U.S. Environmental Protection Agency
GW - Groundwater
MCL - 2018 EPA Maximum Contaminant Level
MW - Monitoring well
NF - National Fireworks
PCE - Tetrachloroethene
SS - Security Signals
SSI - Security Signals, Inc.
TCE - Trichloroethene
VC - Vinyl chloride
VOC - Volatile organic compound

All results are presented in micrograms per liter.

Map Sources:
Source of plume location is Ensafe Remedial Investigation Report, January, 2014;
Bing Maps Aerial Imagery, 2014.

United States Environmental Protection Agency Region 4

FIGURE 4

Groundwater Sample Results Above the MCL

TDD Name: National Fireworks

TDD No.: TT-10-006

City: Cordova **County:** Shelby **State:** Tennessee

TETRA TECH

Date: 10/24/2018

Analyst: KATIE.WISE

File: G:\TT-10-006_National_Fireworks\mxd\NF_Sampling_JUN2018_11x17_v104.mxd

APPENDIX B

TABLES

(Nine Pages)

TABLE

1 SOIL AND GROUNDWATER SAMPLING LOCATIONS
2 ANALYTICAL RESULTS FOR SURFACE SOIL SAMPLES (0 TO 2 FEET BGS)
3 ANALYTICAL RESULTS FOR SUBSURFACE SOIL SAMPLES (2 TO 10 FEET BGS)
4 ANALYTICAL RESULTS FOR SUBSURFACE SOIL SAMPLES (12 TO 27 FEET BGS)
5 GROUNDWATER QUALITY PARAMETERS FOR MONITORING WELLS
6 ANALYTICAL RESULTS FOR GROUNDWATER SAMPLES

TABLE 1
NATIONAL FIREWORKS OU00 ESI
SOIL AND GROUNDWATER SAMPLING LOCATIONS

Station ID	Sample ID	Depth (feet bgs)	Sample Type	Sample Location[1]	Rationale
Soil and Groundwater Samples					
NFMW7	NFMW7-GW-01 NFMW7-GW-01-DUP	43	Grab	MW-7, along the west-central boundary of NF OU2	Determine presence or absence of contamination
NFMW1	NFMW1-GW-01	33	Grab	SS-GW-01, along the northwestern boundary of NF OU2	Determine presence or absence of contamination
NF17	NF17-SS-01	0 to 2	Grab	About 200 feet northwest of SS-GW-01	Determine presence or absence of contamination
	NF17-SS-01-DUP				
	NF17-SS-02	4 to 6			
	NF17-GW-01	19 to 24			
	NF17-GW-01-DUP				
NF18	NF18-SS-01	8 to 10	Grab	About 500 feet northwest of MW-7	Determine presence or absence of contamination
	NF18-SS-02	14 to 16			
	NF18-GW-01	11 to 16			
NF19	NF19-SS-01	0 to 2	Grab	About 100 feet west of MW-7	Determine presence or absence of contamination
	NF19-SS-01-DUP				
	NF19-SS-02	6 to 8			
	NF19-GW-01	17.92 to 22.92			
NF20	NF20-SS-01	0 to 2	Grab	About 450 feet northwest of MW-7	Determine presence or absence of contamination
	NF20-SS-02	8 to 10			
	NF20-GW-01	15 to 20			
NF21	NF21-SS-01	0 to 2	Grab	About 550 feet west of SS-GW-01	Determine presence or absence of contamination
	NF21-SS-02	13 to 15			
	NF21-GW-01	18.1 to 23.1			
NF22	NF22-SS-01	16 to 18	Grab	About 350 feet northwest of SS-GW-01	Determine presence or absence of contamination
	NF22-SS-02	24 to 26			
	NF22-GW-01	23 to 28			
NF23	NF23-SS-01	0 to 2	Grab	About 650 feet northwest of SS-GW-01	Determine presence or absence of contamination
	NF23-SS-02	14 to 16			
	NF23-GW-01	15 to 20			
NF24	NF24-SS-01	4 to 6	Grab	About 800 feet west of SS-GW-01	Determine presence or absence of contamination
	NF24-SS-02	21 to 23			
	NF24-GW-01	20 to 25			
NF25	NF25-SS-01	2 to 4	Grab	About 500 feet northwest of MW-7	Determine presence or absence of contamination
	NF25-SS-02	12 to 14			
	NF25-GW-01	10 to 20			
NF26	NF26-SS-01	0 to 2	Grab	About 750 feet northwest of MW-7	Determine presence or absence of contamination
	NF26-SS-02	8 to 10			
	NF26-GW-01	15.05 to 20.05			
NF27	NF27-SS-01	2 to 4	Grab	About 100 feet west of SS-GW-01, near former pit area	Determine presence or absence of contamination
	NF27-SS-02	4 to 6			
	NF27-GW-01	22.5 to 27.5			

TABLE 1
NATIONAL FIREWORKS OU00 ESI
SOIL AND GROUNDWATER SAMPLING LOCATIONS

Station ID	Sample ID	Depth (feet bgs)	Sample Type	Sample Location[1]	Rationale
NF28	NF28-SS-01	8 to 10	Grab	About 700 feet northwest of SS-GW-01	Determine presence or absence of contamination
	NF28-SS-02	25 to 27			
	NF28-GW-01	28 to 32			
NF29	NF29-SS-01	0 to 2	Grab	About 1,050 feet northwest of SS-GW-01	Determine presence or absence of contamination
	NF29-SS-02	12 to 14			
	NF29-GW-01	20 to 25			
NF30	NF30-SS-01	5 to 7	Grab	About 1,200 feet northwest of SS-GW-01	Determine presence or absence of contamination
	NF30-SS-02	12 to 14			
	NF30-GW-01	16 to 21			
NF31	NF31-SS-01	4 to 6	Grab	About 900 feet northwest of MW-7	Determine presence or absence of contamination
	NF31-SS-02	12 to 14			
	NF31-GW-01	10 to 20			
NF32	NF32-SS-01	0 to 2	Grab	About 1,100 feet northwest of MW-7	Determine presence or absence of contamination
	NF32-SS-02	2 to 4			
	NF32-GW-01	5 to 10			
NF33	NF33-SS-01	0 to 2	Grab	About 1,200 feet northwest of SS-GW-01	Determine presence or absence of contamination
	NF33-SS-02	12 to 14			
	NF33-GW-01	18.5 to 23.5			
NF34	NF34-SS-01	0 to 2	Grab	About 1,100 feet northwest of SS-GW-01	Determine presence or absence of contamination
	NF34-SS-02	20 to 22			
	NF34-GW-01	15 to 20			
NF35	NF35-SS-01	0 to 2	Grab	About 150 feet northwest of MW-7	Determine presence or absence of contamination
	NF35-SS-02	4 to 5			
	NF35-GW-01	7.1 to 12.1			
NF36	NF36-SS-01	5 to 7	Grab	About 1,400 feet northwest of MW-7	Background location for comparison to other samples
	NF36-SS-02	16 to 20			
	NF36-GW-01	20 to 25			

Notes:

[1] Plume A is associated with monitoring well MW-7, and Plume B is associated with monitoring well SS-GW-01.

bgs Below ground surface
DUP Duplicate
GW Groundwater sample
ID Identification
NF National Fireworks
OU Operable unit
SS Soil sample

TABLE 2
NATIONAL FIREWORKS OU00 ESI
ANALYTICAL RESULTS FOR SURFACE SOIL SAMPLES (0 TO 2 FEET BGS)

		Background	NF17		NF19		NF20	NF21	NF23	NF26	NF29	NF32	NF34	NF35
	EPA RSL	NF33		NF17-SS-01-DUP		NF19-SS-01-DUP								
Analyte	**Ind. Soil**	**NF33-SS-01**	**NF17-SS-01**		**NF19-SS-01**		**NF20-SS-01**	**NF21-SS-01**	**NF23-SS-01**	**NF26-SS-01**	**NF29-SS-01**	**NF32-SS-01**	**NF34-SS-01**	**NF35-SS-01**
		0 to 2 ft bgs	**0 to 2 ft bgs**		**0 to 2 ft bgs**		**0 to 2 ft bgs**	**0 to 2 ft bgs**	**0 to 2 ft bgs**	**0 to 2 ft bgs**	**0 to 2 ft bgs**	**0 to 2 ft bgs**	**0 to 2 ft bgs**	**0 to 2 ft bgs**
Volatile Organic Compounds (µg/kg)														
Acetone	670,000,000	8.0 U	7.3 U	7.9 U	8.5 U	8.0 U	**14 J**	8.2 U	9.2 U	**21**	8.5 U	8.7 U	**29**	**77**
cis-1,2-Dichloroethene	2,300,000	4.0 U	**5.3 J**	**60 J**	4.2 U	4.0 U	4.0 U	4.1 U	4.6 U	**16**	4.2 U	4.4 U	3.7 U	6.9 U
Methyl Ethyl Ketone	190,000,000	8.0 U	7.3 U	**13**	8.5 U	8.0 U	8.1 U	8.2 U	9.2 U	8.1 U	8.5 U	8.7 U	7.5 U	14 U
Methylene Chloride	1,000,000	4.0 U	3.7 U	3.9 U	4.2 U	6.3 U	**5.4**	4.1 U	4.6 U	4.1 U	4.2 U	4.4 U	3.7 U	6.9 U
Trichloroethene	6,000	4.0 U	**28 J**	**310 J**	4.2 U	4.0 U	4.0 U	4.1 U	4.6 U	4.1 U	4.2 U	4.4 U	3.7 U	6.9 UJ
Perfluoroalkyl Substances (mg/kg)														
Perfluorobutanoic acid (PFBA)	NE	0.00020 J	0.000080 J	0.00012 J	NA	NA	NA	0.000036 J	0.000049 J	NA	0.00024 U	NA	0.000039 J	0.00023 U
Perfluorodecanoic acid (PFDA)	NE	0.00022 U	0.00023 U	0.000033 J	NA	NA	NA	0.00023 U	0.00024 U	NA	0.00024 U	NA	0.00024 U	0.00023 U
Perfluorohexanesulfonic acid (PFHxS)	NE	0.00022 U	0.00023 U	0.00023 U	NA	NA	NA	0.000086 J	0.00024 U	NA	0.00024 U	NA	0.00024 U	0.00023 U
Perfluorononanoic acid (PFNA)	NE	0.00022 U	0.00023 U	0.00023 U	NA	NA	NA	0.00023 U	0.00024 U	NA	0.00024 U	NA	0.00024 U	0.000050 J
Perfluorooctanesulfonic acid (PFOS)	NE	0.00056 U	0.00058 U	0.00057 U	NA	NA	NA	0.00058 U	0.0006 U	NA	0.00061 U	NA	**0.00089**	**0.0014**
Perfluorooctanoic acid (PFOA)	NE	0.00022 U	0.00023 U	0.00023 U	NA	NA	NA	0.00023 U	0.00024 U	NA	0.00024 U	NA	0.00024 U	0.00019 J
Mercury (mg/kg)														
Mercury	4.6	0.045 U	0.024 U	0.041 U	**0.053**	**0.046**	0.048 U	0.046 UJ	0.047 U	0.048 U	0.049 U	0.037 U	**0.10**	0.049 U

Notes:

bgs	Below ground surface
DUP	Duplicate
EPA	U.S. Environmental Protection Agency
ft	Feet
Ind.	Industrial
J	The identification of the analyte is acceptable; the reported value is an estimate.
µg/kg	Micrograms per liter
mg/kg	Milligrams per kilogram
NA	Not analyzed for
NE	Not established
NF	National Fireworks
RSL	May 2018 Regional Screening Level (HQ=1) for industrial soil
SS	Soil sample
U	The analyte was not detected at or above the reporting limit.
UJ	The analyte was not detected at or above the reporting limit, which is considered approximate due to deficiencies in one or more quality control criteria.
BOLD	Bolded values are elevated, meaning that the values are three times the concentration of detected constituents in the background sample or greater than or equal to the non-detect concentration in the background sample.

TABLE 3
NATIONAL FIREWORKS OU00 ESI
ANALYTICAL RESULTS FOR SUBSURFACE SOIL SAMPLES (2 TO 10 FT BGS)

	EPA	Background														
		NF36	NF17	NF18	NF19	NF20	NF24	NF25	NF26	NF27		NF28	NF30	NF31	NF32	NF35
	RSL	NF36-SS-01	NF17-SS-02	NF18-SS-01	NF19-SS-02	NF20-SS-02	NF24-SS-01	NF25-SS-01	NF26-SS-02	NF27-SS-01	NF27-SS-02	NF28-SS-01	NF30-SS-01	NF31-SS-01	NF32-SS-02	NF35-SS-02
Analyte	**Ind. Soil**	**5 to 7 ft bgs**	**4 to 6 ft bgs**	**8 to 10 ft bgs**	**6 to 8 ft bgs**	**8 to 10 ft bgs**	**4 to 6 ft bgs**	**2 to 4 ft bgs**	**8 to 10 ft bgs**	**2 to 4 ft bgs**	**4 to 6 ft bgs**	**8 to 10 ft bgs**	**5 to 7 ft bgs**	**4 to 6 ft bgs**	**2 to 4 ft bgs**	**4 to 5 ft bgs**
Volatile Organic Compounds (µg/kg)																
1,1-Dichloroethane	16,000	4.7 U	4.3 U	4.8 U	4.5 U	4.2 U	4.6 U	4.7 U	**5.9**	4.1 U	3.9 U	4.6 U	4.1 U	4.2 U	4.0 U	4.2 U
1,1-Dichloroethene	1,000,000	4.7 U	4.3 U	4.8 U	4.5 U	4.2 U	4.6 U	4.7 U	4.2	4.1 U	3.9 U	4.6 U	4.1 U	4.2 U	4.0 U	4.2 U
Acetone	670,000,000	9.4 U	8.5 U	9.7 U	9.0 U	8.4 U	9.3 U	9.4 U	8.2 U	**33**	**49**	9.1 U	**18**	**51**	**57**	**82**
cis-1,2-Dichloroethene	2,300,000	4.7 U	**65 J**	3.9 J	4.5 U	4.2 U	4.6 U	**5.0**	**300 J**	**100**	**860**	4.6 U	4.1 U	4.2 U	4.0 U	4.2 U
Methyl Ethyl Ketone	190,000,000	9.4 U	8.5 U	9.7 U	9.0 U	8.4 U	9.3 U	9.4 U	8.2 U	8.1 U	7.8 U	9.1 U	8.1 U	8.5 U	**14**	**12**
trans-1,2-Dichloroethene	23,000,000	4.7 U	4.3 U	4.8 U	4.5 U	4.2 U	4.6 U	4.7 U	**8.7**	**35**	**270**	4.6 U	4.1 U	4.2 U	4.0 U	4.2 U
Trichloroethene	6,000	4.7 **U**	**730**	**230 J**	4.5 U	4.2 U	4.6 U	4.7 U	4.1 U	**31**	**43**	4.6 U	4.1 U	4.2 U	4.0 U	4.2 U
Vinyl chloride	1,700	4.7 U	**4.8**	4.8 U	4.5 U	4.2 U	4.6 U	4.7 U	4.1 U	4.1 U	3.9 U	4.6 U	4.1 U	4.2 U	4.0 U	4.2 U
Perfluoroalkyl Substances (mg/kg)																
Perfluorobutanesulfonic acid (PFBS)	16,000	NA	NA	NA	0.00025 U	0.00024 U	NA	NA	0.00015 J	0.00024 U	NA	0.00024 U	NA	NA	0.00022 U	NA
Perfluorobutanoic acid (PFBA)	NE	NA	NA	NA	0.00025 U	0.00024 U	NA	NA	0.000072 J	0.000061 J	NA	0.00024 U	NA	NA	0.00022 U	NA
Perfluorohexanoic acid (PFHxA)	NE	NA	NA	NA	0.00025 U	0.00024 U	NA	NA	0.000064 J	0.00024 U	NA	0.00024 U	NA	NA	0.00022 U	NA
Mercury (mg/kg)																
Mercury	4.6	0.039 U	0.047 U	0.04 U	0.05 U	0.044 U	0.041 U	0.043 U	0.043 U	0.045 U	0.047 U	0.04 U	0.045 U	0.046 U	0.044 U	0.045 U

Notes:

bgs	Below ground surface
DUP	Duplicate
EPA	U.S. Environmental Protection Agency
ft	Feet
Ind.	Industrial
J	The identification of the analyte is acceptable; the reported value is an estimate.
µg/kg	Micrograms per liter
mg/kg	Milligrams per kilogram
NA	Not analyzed for
ND	Not detected
NE	Not established
NF	National Fireworks
RSL	May 2018 Regional Screening Level (HQ=1) for industrial soil
SS	Soil sample
U	The analyte was not detected at or above the reporting limit.
BOLD	Bolded values are elevated, meaning that the values are three times the concentration of detected constituents in the background sample or greater than or equal to the non-detect concentration in the background sample.

TABLE 4
NATIONAL FIREWORKS OU00 ESI
ANALYTICAL RESULTS FOR SUBSURFACE SOIL SAMPLES (12 TO 27 FEET BGS)

	EPA	Background	NF18	NF21	NF22		NF23	NF24	NF25	NF28	NF29	NF30	NF31	NF33	NF34
		NF36													
	RSL	NF36-SS-02	NF18-SS-02	NF21-SS-02	NF22-SS-01	NF22-SS-02	NF23-SS-02	NF24-SS-02	NF25-SS-02	NF28-SS-02	NF29-SS-02	NF30-SS-02	NF31-SS-02	NF33-SS-02	NF34-SS-02
Analyte	**Ind. Soil**	**16 to 20 ft bgs**	**14 to 16 ft bgs**	**13 to 15 ft bgs**	**16 to 18 ft bgs**	**24 to 26 ft bgs**	**14 to 16 ft bgs**	**21 to 23 ft bgs**	**12 to 14 ft bgs**	**25 to 27 ft bgs**	**12 to 14 ft bgs**	**12 to 14 ft bgs**	**12 to 14 ft bgs**	**12 to 14 ft bgs**	**20 to 22 ft bgs**
Volatile Organic Compounds (µg/kg)															
Acetone	670,000,000	7.9 U	**20 J**	8.2 U	8.4 U	8.0 U	7.5 U	7.4 U	8.0 U	8.2 U	7.6 U	7.6 U	12 U	8.1 U	**14**
cis-1,2-Dichloroethene	2,300,000	3.9 U	4.1 U	4.1 U	**7.1**	**60**	3.8 U	3.7 U	**8.8**	4.1 U	3.8 U	3.8 U	**63**	4.0 U	3.8 U
Methylene Chloride	1,000,000	3.9 U	4.1 U	4.1 U	4.2 U	4.0 U	3.8 U	3.7 U	4.0 U	4.1 U	3.8 U	3.8 U	6.1 U	**4.0**	3.8 U
Trichloroethene	6,000	3.9 U	**89**	**4.3**	**180 J**	**420**	3.8 U	3.7 U	**20**	4.1 U	3.8 U	3.8 U	**160**	4.0 U	3.8 U
Vinyl chloride	1,700	3.9 U	4.1 U	4.1 U	4.2 U	4.0 U	3.8 U	3.7 U	4.0 U	4.1 U	3.8 U	3.8 U	**4.9 J**	4.0 U	3.8 U
Perfluoroalkyl Substances (mg/kg)															
Perfluorobutanesulfonic acid (PFBS)	16,000	0.00024 U	0.00024 U	NA	0.00024 U	NA	NA	0.00024 U	0.00025 U	NA	NA	0.00023 U	**0.00025**	NA	NA
Perfluorobutanoic acid (PFBA)	NE	0.00024 U	0.000040 J	NA	0.00024 U	NA	NA	0.000039 J	0.000034 J	NA	NA	0.00023 U	0.000047 J	NA	NA
Perfluorohexanoic acid (PFHxA)	NE	0.00024 U	0.00024 U	NA	0.00024 U	NA	NA	0.00024 U	0.00025 U	NA	NA	0.00023 U	0.000060 J	NA	NA
Mercury (mg/kg)															
Mercury	4.6	0.040 U	0.044 U	0.045 U	0.045 U	**0.045**	0.032 U	0.039 U	0.045 U	0.042 U	0.036 U	**0.074**	0.045 U	**0.055**	0.045 UJ

Notes:

bgs	Below ground surface
DUP	Duplicate
EPA	U.S. Environmental Protection Agency
ft	Feet
Ind.	Industrial
J	The identification of the analyte is acceptable; the reported value is an estimate.
µg/kg	Micrograms per liter
mg/kg	Milligrams per kilogram
NA	Not analyzed for
NE	Not established
NF	National Fireworks
RSL	May 2018 Regional Screening Level (HQ=1) for industrial soil
SS	Soil sample
U	The analyte was not detected at or above the reporting limit.
UJ	The analyte was not detected at or above the reporting limit, which is considered approximate due to deficiencies in one or more quality control criteria.
BOLD	Bolded values are elevated, meaning that the values are three times the concentration of detected constituents in the background sample or greater than or equal to the non-detect concentration in the background sample.

TABLE 5
NATIONAL FIREWORKS OU00 ESI
GROUNDWATER QUALITY PARAMETERS FOR MONITORING WELLS

Station ID	Total Depth (ft bgs)	Screen Interval (ft bgs)	Depth to Water (ft bgs)	pH (Std. Units)	Specific Conductivity (µS/cm)	Temperature (°C)	Turbidity (NTU)
NF17	24	19 to 24	7.05	6.05	300.0	19.5	381
NF18	16.2	11 to 16	9.65	NC	NC	NC	NC
NF19	22.92	17.92 to 22.92	14.92	NC	NC	NC	NC
NF20	20	15 to 20	12	7.18	612.0	23.7	7,500
NF21	23.1	18.1 to 23.1	19.3	6.72	414.3	23.6	8,800
NF22	28	23 to 28	6.75	5.89	370.0	18.6	246
NF23	20	15 to 20	12.3	NC	NC	NC	NC
NF24	25	20 to 25	12	6.62	539.0	19.5	1,854
NF25	20	10 to 20[c]	6.5	5.13	243.4	22.2	1,317.30
NF26	20.05	15.05 to 20.05	16.41	NC	NC	NC	NC
NF27	27.5	22.5 to 27.5	8.3	6.51	826.0	23.1	52.2
NF28	32	28 to 32	22.4	NC	NC	NC	NC
NF29	25	20 to 25	15.91	6.65	375.4	22.9	815
NF30	20.8	16 to 21	13.62	7.7	795.0	25.1	10,000
NF31	20.05	10 to 20[c]	6.3	NC	NC	NC	NC
NF32	10.05	5 to 10	3.95	NC	NC	NC	NC
NF33	23.5	18.5 to 23.5	16.83	6.79	424.3	22.9	8,000
NF34	20	15 to 20	15.5	6.56	913.0	19.6	294
NF35	12.1	7.1 to 12.1	5.15	6.64	983.0	23.1	338
NF36	25.09	20 to 25	22.31	NC	NC	NC	NC
NFMW1[a]	29.83	10 to 30	2.81	5.53	575	19.7	7.3
NFMW7[b]	28.59	18 to 28	6.85	5.9	314.4	16.9	34.8

Notes:

[a] Security Signals, Inc. permanent monitoring well SS-GW-01.
[b] Security Signals, Inc. permanent monitoring well MW-7.
[c] In borings with a very thin water-bearing zone or non-distinct water table, 10-foot screens were installed to ensure productive wells.

°C	Degrees Celsius	MW	Monitoring well
bgs	Below ground surface	NC	Not collected due to limited well volume
ft	Feet	NF	National Fireworks
ID	Identification	NTU	Nephelometric Turbidity Unit
µS/cm	MicroSiemens per centimeter	Std.	Standard

TABLE 6
NATIONAL FIREWORKS OU00 ESI
ANALYTICAL RESULTS FOR GROUNDWATER SAMPLES

Analyte	EPA MCL	Background NF36	NF17		NF18	NF19	NF20	NF21	NF22	NF23	NF24	NF25	NF26	NF27
		NF36-GW-01	NF17-GW-01	NF17-GW-01-DUP	NF18-GW-01	NF19-GW-01	NF20-GW-01	NF21-GW-01	NF22-GW-01	NF23-GW-01	NF24-GW-01	NF25-GW-01	NF26-GW-01	NF27-GW-01
Volatile Organic Compounds (µg/L)														
1,1,1-Trichloroethane	200	0.50 U	0.22 J	0.22 J	13 U	13 U	0.50 U	20 U	20 U	0.50 U	0.50 U	0.50 U	20 U	0.50 U
1,1,2-Trichloroethane	5	0.50 U	0.27 J	0.26 J	13 U	13 U	0.50 U	20 U	20 U	0.50 U	0.50 U	0.50 U	**44**	**5.0**
1,1-Dichloroethane	2.8[a]	0.50 U	**1.8**	**1.9**	13 U	13 U	0.50 U	20 U	20 U	0.50 U	0.50 U	0.50 U	**1,100**	**1.5**
1,1-Dichloroethene	7	0.50 UJ	**14 J**	**14 J**	13 U	13 U	0.50 U	20 U	**56**	0.50 U	0.39 J	0.50 U	**1,500**	**24 J**
1,2-Dichloroethane	5	0.50 U	0.50 U	0.50 U	13 U	13 U	0.50 U	20 U	20 U	0.50 U	0.50 U	0.50 U	**17 J**	**1.7**
Acetone	14,000[a]	55 J	R	R	R	R	13 J	R	R	R	R	R	R	16 J
Benzene	5	0.50 U	0.21 J	0.22 J	13 U	13 U	0.50 U	20 U	20 U	0.50 U	0.50 U	0.31 J	**9.4 J**	**0.91**
Chloroform	80	0.50 U	0.50 U	0.50 U	13 U	13 U	0.50 U	20 U	20 U	0.50 U	0.50 U	0.50 U	20 U	**0.96**
cis-1,2-Dichloroethene	70	0.50 UJ	**36 J**	**34 J**	**9.3 J**	**37**	0.50 U	**68**	**880 J**	0.50 U	**11**	**48**	**2,800**	**3,800**
Methyl T-Butyl Ether (MTBE)	14[a]	0.50 U	0.50 U	0.50 U	**8.0 J**	13 U	0.50 U	20 U	20 U	0.50 U	0.50 U	0.50 U	20 U	0.50 U
o-Xylene	10,000	0.50 U	0.50 U	0.50 U	13 U	13 U	0.50 U	20 U	20 U	0.50 U	0.50 U	0.50 U	20 U	0.21 J
Tetrachloroethene	5	0.50 U	**2.6**	**2.7**	13 U	13 U	0.50 U	20 U	**47**	0.50 U	**0.66**	0.50 U	**150**	**18**
Toluene	1,000	0.50 U	0.50 U	0.50 U	13 U	13 U	0.50 U	20 U	20 U	0.50 U	0.50 U	0.50 U	20 U	0.41 J
trans-1,2-Dichloroethene	100	0.50 UJ	**0.91 J**	**0.93 J**	13 U	13 U	0.50 U	20 U	20 U	0.50 U	0.50 U	**0.54**	**90 J**	**780**
Trichloroethene	5	0.50 U	**1,200**	**1,200**	**420**	**470**	0.50 U	**2,900**	**18,000**	0.50 U	**110**	**12**	**28,000**	**27,000**
Vinyl chloride	2	0.50 UJ	**2.7**	**2.8**	13 U	13 U	0.50 U	20 U	**38**	0.50 U	**1.0**	**3.1**	**150**	**100 J**
Perfluoroalkyl Substances (µg/L)														
6:2 FTS	NE	0.0034 J	0.0038 J	0.0019 J	0.018 U	0.0034 J	**0.025 J**	0.0028 J	0.018 U	0.0035 J	0.0028 J	0.018 U	0.0090 J+	0.0034 J
Perfluorobutanesulfonic acid (PFBS)	400[a]	0.0076	0.0017 J	0.0016 J	0.010	0.0010 J	0.0032 U	0.00099 J	0.0026	0.0017 J	0.0040	0.0074	**0.40**	0.0012 J
Perfluorobutanoic acid (PFBA)	NE	0.17	0.0035 J+	0.0041 J+	0.016	0.014	**0.89**	0.0079	0.0028 J+	0.0030 J+	0.0036 J+	0.017	0.44	0.017
Perfluorodecanoic acid (PFDA)	NE	0.0085	0.0018 U	0.0019 U	0.00049 J	0.0019 U	0.012	0.0018 U	0.0018 U	0.0018 U	0.0019 U	0.0018 U	0.0075	0.00051 J
Perfluorododecanoic acid (PFDoA)	NE	0.0039	0.0018 U	0.0019 U	0.0018 U	0.0019 U	0.0040	0.0018 U	0.0018 U	0.0018 U	0.0019 U	0.0018 U	0.0021 J	0.002 U
Perfluoroheptanesulfonic Acid (PFHpS)	NE	0.0029 U	0.0018 U	0.0019 U	0.00088 J	0.0019 U	0.0032 U	0.0018 U	0.0018 U	0.0018 U	0.0019 U	0.0018 U	0.00078 J	0.002 U
Perfluoroheptanoic acid (PFHpA)	NE	0.047	0.00074 J	0.00065 J	0.0039	0.0020	0.12	0.0013 J	0.00050 J	0.0018 U	0.0019 U	0.0038	0.068	0.0031
Perfluorohexanesulfonic acid (PFHxS)	NE	0.0032 J+	0.0018 U	0.0019 U	0.0070	0.0019 U	0.0032 U	0.0018 U	0.0018 U	0.0018 U	0.0019 U	0.0026 J+	**0.039**	0.0020 U
Perfluorohexanoic acid (PFHxA)	NE	0.046	0.00089 J	0.00068 J	0.0046	0.0030	**0.16**	0.0028	0.0018 U	0.0018 U	0.0019 U	0.006	**0.16**	0.0049
Perfluorononanoic acid (PFNA)	NE	0.020	0.00062 J	0.0019 U	0.0027	0.00077 J	0.032	0.0018 U	0.0018 U	0.0018 U	0.00074 J	0.00089 J	0.0032	0.0015 J
Perfluorooctane Sulfonamide (FOSA)	NE	0.0029 U	0.0018 U	0.0019 U	0.0018 U	0.0019 U	0.0032 U	0.0018 U	0.0018 U	0.0018 U	0.0019 U	0.0018 U	0.0006 J	0.002 U
Perfluorooctanesulfonic acid (PFOS)	NE	0.0029 U	**0.0069**	**0.0075**	**0.022**	0.00088 J	0.0021 J	0.0016 J	0.0015 J	0.0016 J	**0.011**	0.0026	**0.023**	0.0017 J
Perfluorooctanoic acid (PFOA)	NE	0.020	0.0031	0.0032	0.018	0.0025	0.039	0.0014 J	0.0018	0.0018 U	0.0012 J	0.011	**0.061**	0.0037
Perfluoropentanesulfonic acid (PFPeS)	NE	0.00065 J	0.00029 J	0.00039 J	0.0018	0.0019 U	0.0032 U	0.0018 U	0.00073 J	0.00041 J	0.0019 U	0.0018 U	**0.0028**	0.002 U
Perfluoropentanoic acid (PFPeA)	NE	0.18	0.0013 J	0.00094 J	0.0060	0.0083	**0.72**	0.0065	0.00077 J	0.0014 J	0.0019 U	0.0086	0.28	0.012
Perfluorotetradecanoic acid (PFTeA)	NE	0.0032	0.0018 U	0.0019 U	0.0018 U	0.0019 U	0.0021 J	0.0018 U	0.0018 U	0.0018 U	0.0019 U	0.0018 U	0.0024 U	0.002 U
Perfluorotridecanoic Acid (PFTriA)	NE	0.0043	0.0018 U	0.0019 U	0.0018 U	0.0019 U	0.0029 J	0.0018 U	0.0018 U	0.0018 U	0.0019 U	0.0018 U	0.0024 U	0.002 U
Perfluoroundecanoic acid (PFUnA)	NE	0.0096	0.0018 U	0.0019 U	0.0018 U	0.0019 U	0.013	0.0018 U	0.0018 U	0.0018 U	0.0019 U	0.0018 U	0.0019 J	0.002 U
Mercury (µg/L)														
Mercury	2	0.10 U	**0.14 J**	**0.10 J**	0.10 U	**0.12 J**	0.10 UJ	**0.81 J**	**1.4**	0.10 U	**0.17 J**	**0.52**	0.10 UJ	0.10 U

TABLE 6
NATIONAL FIREWORKS OU00 ESI
ANALYTICAL RESULTS FOR GROUNDWATER SAMPLES

Analyte	EPA MCL	Background NF36	NF28	NF29	NF30	NF31	NF32	NF33	NF34	NF35	NFMW1	NFMW7	
		NF36-GW-01	NF28-GW-01	NF29-GW-01	NF30-GW-01	NF31-GW-01	NF32-GW-01	NF33-GW-01	NF34-GW-01	NF35-GW-01	NFMW1-GW-01	NFMW7-GW-01	NFMW7-GW-01-DUP
Volatile Organic Compounds (µg/L)													
1,1,1-Trichloroethane	200	0.50 U	0.50 U	0.50 U	0.50 U	20 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
1,1,2-Trichloroethane	5	0.50 U	0.50 U	0.50 U	0.50 U	20 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	**1.1**	**0.99**
1,1-Dichloroethane	2.8[a]	0.50 U	0.50 U	0.50 U	0.50 U	20 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	**2.5**	**2.2**
1,1-Dichloroethene	7	0.50 UJ	0.50 U	0.50 UJ	0.50 U	20 U	0.50 U	0.50 U	0.50 UJ	0.50 UJ	**4.3**	**1.2**	**1.2**
1,2-Dichloroethane	5	0.50 U	0.50 U	0.50 U	0.50 U	20 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Acetone	14,000[a]	55 J	R	R	8.8 J	R	28 J	6.9 J	6.1 J	R	R	R	R
Benzene	5	0.50 U	0.50 U	0.50 U	0.50 U	20 U	0.50 U	0.50 U	0.50 U	0.50 U	**1.5**	0.50 U	0.50 U
Chloroform	80	0.50 U	0.50 U	0.50 U	0.50 U	20 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
cis-1,2-Dichloroethene	70	0.50 UJ	0.50 U	0.50 UJ	0.50 U	**510**	0.50 U	0.50 U	0.50 UJ	0.50 UJ	**780 J**	**34 J**	**30 J**
Methyl T-Butyl Ether (MTBE)	14[a]	0.50 U	**0.70**	0.50 U	0.50 U	20 U	0.50 U	0.50 U	0.50 U	0.50 U	**0.86**	0.50 U	0.50 U
o-Xylene	10,000	0.50 U	0.50 U	0.50 U	0.50 U	20 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Tetrachloroethene	5	0.50 U	0.50 U	0.50 U	0.50 U	20 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.22 J	0.21 J
Toluene	1,000	0.50 U	0.50 U	0.50 U	0.50 U	20 U	0.50 U	0.24 J	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
trans-1,2-Dichloroethene	100	0.50 UJ	0.50 U	0.50 UJ	0.50 U	20 U	0.50 U	0.50 U	0.50 UJ	0.50 UJ	**11**	0.35 J	0.28 J
Trichloroethene	5	0.50 U	0.50 U	0.50 U	0.28 J	**1,800**	0.50 U	0.50 U	**1.0**	0.50 U	**250 J**	**430 J**	**310**
Vinyl chloride	2	0.50 UJ	0.50 U	0.50 U	0.50 U	**80**	0.50 U	0.50 UJ	0.50 UJ	0.50 UJ	**39**	**1.1 J**	**1.0**
Perfluoroalkyl Substances (µg/L)													
6:2 FTS	NE	0.0034 J	0.010 J	0.0032 J	0.0049 J	0.0030 J	0.018 U	0.0022 J	**0.026**	0.0021 J+	0.019 U	0.019 U	0.018 U
Perfluorobutanesulfonic acid (PFBS)	400[a]	0.0076	0.0019 U	0.00058 J	0.0052	**0.78**	0.020	0.0017 J	0.00095 J	0.0055	0.011	0.0054	0.0052
Perfluorobutanoic acid (PFBA)	NE	0.17	0.011	0.0034 J+	0.018	0.051 B	0.026	0.014 J	0.022	0.011	0.017	0.022	0.019
Perfluorodecanoic acid (PFDA)	NE	0.0085	0.0019 U	0.0018 U	0.00056 J	0.0017 U	0.0018 U	0.002 U	0.0017 U	0.0019 U	0.0019 U	0.0019 U	0.0018 U
Perfluorododecanoic acid (PFDoA)	NE	0.0039	0.0019 U	0.0018 U	0.0019 U	0.0017 U	0.0018 U	0.002 U	0.0017 U	0.0019 U	0.0019 U	0.0019 U	0.0018 U
Perfluoroheptanesulfonic Acid (PFHpS)	NE	0.0029 U	0.0019 U	0.0018 U	0.0019 U	0.0017 U	0.0018 U	0.002 U	0.0017 U	0.0019 U	0.0019 U	0.0019 U	0.0018 U
Perfluoroheptanoic acid (PFHpA)	NE	0.047	0.00067 J	0.00046 J	0.0015 J	0.070	0.0018	0.0015 J	0.0025	0.0026	0.0053	0.0050	0.0051
Perfluorohexanesulfonic acid (PFHxS)	NE	0.0032 J+	0.0019 U	0.0018 U	0.0030	**0.053**	0.0023 J+	0.0020 U	0.0017 U	0.0019 U	0.0053	0.0034	0.0031 J+
Perfluorohexanoic acid (PFHxA)	NE	0.046	0.0012 J	0.0018 U	0.0026	0.13	0.0027	0.0021	0.0028	0.0035	0.011	0.0059	0.0055
Perfluorononanoic acid (PFNA)	NE	0.020	0.0019 U	0.0005 J	0.0016 J	0.00042 J	0.00077 J	0.00077 J	0.00071 J	0.0016 J	0.00037 J	0.00097 J	0.00082 J
Perfluorooctane Sulfonamide (FOSA)	NE	0.0029 U	0.0019 U	0.0018 U	0.0019 U	0.0017 U	0.0018 U	0.002 U	0.00046 J	0.0019 U	0.0019 U	0.0019 U	0.0018 U
Perfluorooctanesulfonic acid (PFOS)	NE	0.0029 U	**0.0042**	0.0025	**0.0054**	0.0011 J	0.0016 J	0.00096 J	**0.052**	**0.012**	0.0011 J	0.0025	0.0025
Perfluorooctanoic acid (PFOA)	NE	0.020	0.0019 U	0.0011 J	0.0063	**0.11**	0.0032	0.002 U	0.0031	0.0082	0.0087	0.0065	0.0063
Perfluoropentanesulfonic acid (PFPeS)	NE	0.00065 J	0.0019 U	0.0018 U	0.00087 J	**0.018**	0.00039 J	0.002 U	0.0017 U	0.00067 J	0.0019	0.00084 J	0.00080 J
Perfluoropentanoic acid (PFPeA)	NE	0.18	0.0063	0.0022	0.0096	0.11	0.015	0.0096 J	0.011	0.0017 J	0.014	0.022	0.018
Perfluorotetradecanoic acid (PFTeA)	NE	0.0032	0.0019 UJ	0.0018 U	0.0019 U	0.0017 U	0.0018 U	0.002 U	0.0017 U	0.0019 U	0.0019 U	0.0019 U	0.0018 U
Perfluorotridecanoic Acid (PFTriA)	NE	0.0043	0.0019 UJ	0.0018 U	0.0019 U	0.0017 U	0.0018 U	0.002 U	0.0017 U	0.0019 U	0.0019 U	0.0019 U	0.0018 U
Perfluoroundecanoic acid (PFUnA)	NE	0.0096	0.0019 U	0.0018 U	0.0019 U	0.0017 U	0.0018 U	0.002 U	0.0017 U	0.0019 U	0.0019 U	0.0019 U	0.0018 U
Mercury (µg/L)													
Mercury	2	0.10 U	**0.60 J**	0.10 U	**0.47 J**	0.10 U	0.10 U	0.10 U	0.10 U	0.10 UJ	0.10 UJ	0.10 U	0.10 U

TABLE 6
NATIONAL FIREWORKS OU00 ESI
ANALYTICAL RESULTS FOR GROUNDWATER SAMPLES

Notes:

[a]	May 2018 EPA Regional Screening Level (HQ=1) Tapwater
DUP	Duplicate
EPA	U.S. Environmental Protection Agency
FTS	Fluoro telomer sulfonic acid
GW	Groundwater
J	The identification of the analyte is acceptable; the reported value is an estimate.
J+	The analyte was positively identified, but the reported value is an estimate with a high bias.
MCL	2018 Maximum Contaminant Level
µg/L	Micrograms per liter
MW	Monitoring well
NE	Not established
NF	National Fireworks
R	Presence or absence of the analyte can not be determined from the data due to severe quality control problems. The data are rejected and considered unusable.
U	The analyte was not detected at or above the reporting limit.
UJ	The analyte was not detected at or above the reporting limit, which is considered approximate due to deficiencies in one or more quality control criteria.
BOLD	Bolded values are elevated, meaning that the values are three times the concentration of detected constituents in the background sample or greater than or equal to the non-detect concentration in the background sample.
BOLD	Bolded and shaded values are elevated and equal or exceed the EPA MCL.

APPENDIX C

FIELD LOGBOOK NOTES, FIELD SAMPLE COLLECTION SHEETS, AND BORING LOGS

(130 Sheets)

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LOGBOOK 1

6/18/18 - 6/21/18

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	Geoie Kruul, START	
	Jennifer Tufts, EPA RPM	
	Griffin Heard, Ensafe	
	Susan Lee, Security Signals, Inc. (SSI)	
	Nate Gallowitz, GPRS	
	McCray Drilling, LLC.	

June 18, 2018

13:50 - Tetra Tech, Quinn Kelley, Chris Jones, Carter Owens, Geoie Krull, and Adam Acker arrived at 9509 Macon Rd. EPA RPM, Jennifer Tufts onsite. Owner of Security Signals, Susan Lee, is onsite. Organize supplies and discuss plan.

14:15 - Set up at location, SS-GW-01.

NOTE: See field forms for sampling information.

1430 GPRS is onsite to conduct the geophysical survey. START Jones accompanies GPRS to sampling locations. EPA RPM Tufts continues to get access to sampling locations. START Krull leaves to pick up START Snyder at the airport. START Kelley, Owens, & Acker collect groundwater sample from Security Signals, Inc. (SSI) MW-1.

1530 START Kelley, Owens, & Acker attempt to locate SSI MW-7.

1630 START can't locate MW-7. SSI Owner Susan Lee shows START an easier way to access the area. START may need a metal detector.

1745 START done for the day.

Scale: 1 square = Quinn Kelley 6/18/18

6/19/18

0800 START on site. Conduct H&S briefing. Prepare for day's activities. Meet drillers on site. GPRS will be back on site later to finish the GPR survey. Team 1 consists of START Kelley, Jones, & Owens. Team 2 consists of START Snyder, Acker, & Krull.

0900 Team ~~2~~ 1 sets up at NF20. See field forms for additional sample information.

1015 Team ~~2~~ 1 sets up at NF26.

1115 Team ~~2~~ 1 sets up at NF34.

1200 Team ~~2~~ 1 breaks for lunch.

1300 Team ~~2~~ 1 begins groundwater sampling at NF34, while driller sets up at NF29.

1430 Team ~~2~~ 1 begins groundwater sampling at NF29. Employees of the brickyard move materials so that the drill rig can access NF33, which has been moved to the brickyard property to avoid the busy Lenow Rd.

1550 Team ~~2~~ 1 sets up at NF33.

Scale: 1 square = Quinn Kelley 6/19/18

4 6/19/18

1630 Team 1 ~~2~~ QK begins groundwater sampling at NF33. The well is purged dry & allowed to recharge before sampling. While Team 2 waits for NF33 to recharge, START Jones accompanies GPRS to finish the GPR survey of the remaining sampling locations.

1800 START done for the day. The wells at NF20 & NF26 are slow to fill, so they will be plugged & sampled tomorrow. START returns to the hotel to process samples & pack them into coolers for shipment.

Quin Keely 6/19/18

Scale: 1 square =

6/20/18 5

0730 START onsite. Conduct H2S briefing. Meet with drillers.

0815 Team 1 ~~2~~ QK sets up at NF17. See field forms for additional sample information.

1000 Team 1 ~~2~~ QK sets up at NF27, which has been moved to the former pit area at EPA RPM Tufts' request. The new location of NF27 is about 75 feet west of SS1 monitoring well SS-GW-01.

1100 Team 1 ~~2~~ QK sets up at NF21.

1200 Team 1 ~~2~~ QK breaks for lunch.

1300 Team 1 ~~2~~ QK sets up at NF20 to collect the groundwater sample. Meet with Ensafe Griffin Heard, SS1's subcontractor. She will be collecting split samples.

1400 Team 1 ~~2~~ QK sets up at NF19, which has been moved slightly to just west of SS1 monitoring well MW-7.

1445 Team 1 ~~2~~ QK sets up at NF35, which has been moved to just NW of SS1 monitoring well MW-7 at EPA RPM Tufts' request.

Quin Keely 6/20/18

Scale: 1 square =

Rite in the Rain

 6/20/18

1545 Team 1 collects groundwater from NF19, which is slow to recharge.

1620 Team 1 collects groundwater from NF26.

1730 START done for the day. Return to hotel to process samples & pack them into coolers for shipment.

Quin Kelly 6/20/18

Scale: 1 square =

6/21/18

0730 START on site. Conduct H&S briefing. Meet drillers.

0800 Team 1 at NF27. The temp well installed at the NF27 soil sampling location has not produced any water; therefore, at the request of EPA RPM Tufts, Team 1 installs another well about 50 feet NE of the original NF27.

0830 This well produces water, so Team 1 samples it. In summary, the soil samples for NF27 were collected from a different location than the groundwater sample for NF27.

1030 Using a metal detector provided by Ensafe Heard, Team 1 attempts to locate SSI monitoring well MW-7.

1130 Team 1 has located MW-7 & collects a groundwater sample plus a duplicate.

1230 Team 1 breaks for lunch.

1300 Team 1 drives to all locations to ensure wells have been abandoned properly. Team 1 collects GPS coordinates for all locations.

Quin Kelly 6/21/18

Scale: 1 square

8 6/21/18

1400 START done for the day. Return to hotel to process samples & pack them into coolers for shipment.

Quinn Kelly 6/21/18

Scale: 1 square = _____

9

Scale: 1 square = _____

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LOGBOOK 2

6/18/18 - 6/21/18

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	Susan Lee, Security Signals, Inc. (SSI)	
	Griffin Heard, Ensafe	
	Nate Gallowitz, GPRS	
	McCray Drilling, LLC.	

6/19/18

0900 - Team 2 to NE25
see field sheet
0930 - Collect NF25-SS-01 from 2-4' bgs
0935 - Collect NF25-SS-02 from 12-14' bgs
Set well @ 20', 10' screen
1000 - Move to NF31, see field sheet
1020 - Collect NF31-SS-01 from 4-6' bgs
1025 - Collect NF31-SS-02 from 12-14' bgs
Set well @ 20', 10' screen
1045 - Back to NF25 to collect GW
Calibrate YSI Pro DSS
cond ✓, pH ✓ ORP ✓, turb ✓
1137 - Collect NF31-GW-01
1215 - Setup on NF32
1240 - Collect NF32-SS-01 from 0-2' bgs
1245 - Collect NF32-SS-02 from 2-4 bgs
~~1315~~ - Well set @ 10' bgs
1315 - Set up on NF23
1340 - Collect NF23-SS-01 from 02-04' bgs
1345 - Collect NF23-SS-02 from 14-16' bgs
Set well @ 20' bgs, 5' screen

Scale: 1 square = _____

6/19/18 cont'd

1425 - Setup on NF28
1450 - Collect NF28-SS-01 from 8-10' bgs
1455 - Collect NF28-SS-02 from 25-27' bgs
Set well @ 29' w/ 5' screen
*1440 - Collect NF23-GW-01
1600 - Collect NF28-GW-01
1630 - Setup on NF22
1705 - Collect NF22-SS-01 from 16-18' bgs
1710 - Collect NF22-SS-02 from 24-26' bgs
Set well @ 28' bgs w/ 5' screen
1810 - Collect NF22-GW-01
1830 - Team 2 offsite

Scale: 1 square = _____

Rite in the Rain

6/20/18

0730 - START / Drillers on-site
830 - Team 2 to NF24
910 - Collect NF24-SS-01 from 4-6' bgs
915 - Collect NF24-SS-02 from 21-23' bgs
Well set @ 24' w/ 5' screen
1010 - Collect NF24-GW-01
1020 - Install soil gas implants @ 24
1050 - Move to NF30
1225 - Collect NF30-SS-01 from 5-7' bgs
1230 - Collect NF30-SS-02 from 12-14
1305 - Collect NF30-GW-01
1530 - Setup on NF18
1440 - Collect NF18-SS-01 from 8-10' bgs
1495 - Collect NF18-SS-02 from 14-16' bgs
Set well @ 16', 5' screen
1645 - Collect NF36-SS-01 from 5-7' bgs
1650 - Collect NF36-SS-02 from 16-20' bgs (MS/MSD)
Set well (prepack) @ 24' w/ 5' screen

6/20/18

Scale: 1 square = _____

6/21/18

0830 - Team 2 onsite
Krull + Acker to NF18 to start sampling groundwater
0845 - Snyder to NF24 to test viability of soil gas implants
- Both vapor implants hold a vacuum of -10" Hg for 3 min.
- Not viable to sample. = NF24
0905 - Neither implant @ NF30 is viable to sample
0910 - Implant @ NF18 not viable
* 845 - Collect NF18-GW-01
* 915 - Collect NF31-GW-01
0925 - NF36 soil gas implant viable but not sampled (background by itself not useful)
945 - Team to NF32 to collect water
1000 - Collect NF32-GW-01
1010 - Move to NF36 to collect GW
1035 - Collect NF36-GW-01
NOTE: See field forms for additional sampling information.

6/20/18

Scale: 1 square = _____

Rite in the Rain

NATIONAL FIREWORKS OU00 ESI
CORDOVA, SHELBY COUNTY, TENNESSEE
SAMPLE COLLECTION FORM

Station ID: NF17 **Sample Date:** 6/20/18
Latitude: 35.163272 **Longitude:** -89.747811
Photo No.: 1941, 1942, 1943, 1944

Soil Sample A Information

Sample ID: NF17-SS-01 **Sample Time:** 0845
Depth Interval: 0-2ft **Sampler Name:** CJ

Quality Control:
☐ MS/MSD ☒ Duplicate Sample ID: NF17-SS-01-DUP Time: 0855

	Analysis	No.	Container
☑	TCL VOCs	2	Terracore Kits
☑	PFAS	2	8-ounce HDPE jars
☑	Mercury	2	4-ounce jars

Soil Sample B Information

Sample ID: NF17-SS-02 **Sample Time:** 0850
Depth Interval: ~~16-18 ft~~ OR 4-6 ft **Sampler Name:** CJ

Quality Control:
☐ MS/MSD ☐ Duplicate Sample ID: _____ Time: _____

	Analysis	No.	Container
☑	TCL VOCs	1	Terracore Kit
☑	Mercury	1	4-ounce jar

Physical Description and Observations: See back

Start -

Time	Depth	%	PID	Description
0811	0-4	40	0.0	Brown silty clay, mod silt, minor small rock fragments, damp & slightly hard
0814	4-8	30	0.0	SAA but very moist to wet
0816	8-12	90	0.0	SAA
0818	12-16	80	0.0	SAA color grades to orange brown by 13.5 ft bgs. Sand and silt content increase w/ depth. minor fine grain sand
0821	16-20	60	0.0	Orange brown/grey silty sand, mod silt, fine grain sand, very moist & slightly hard. Becomes light grey sand, fine grain, saturated & soft @ 18 ft bgs
0832	20-24	50	0.0	SAA to 20.75 ft bgs then grades to orange brown in color, silt and clay content increase w/ depth. Becomes orange brown and grey sandy clay by 21.25 ft bgs fine grain sand & wet

NATIONAL FIREWORKS OU00 ESI
CORDOVA, SHELBY COUNTY, TENNESSEE
SAMPLE COLLECTION FORM

Station ID: NF17 **Sample Date:** 6/20/18

Groundwater Sample Information

Sample ID: NF17-GW-01 **Well No.:** NF-17

Sample Time: 0930 **Collected by:** Carter Owens

Quality Control:

☐ MS/MSD ☒ Duplicate Sample ID: NF17-GW-01-DUP Time: 0935

	Analysis	No.	Container
☑	TCL VOCs	6	40-mL vials with HCl
☑	PFAS	4	250-mL HDPE bottles
☑	Mercury	2	500-mL polys with HNO3

Type of Well: Temp (PVC)
Total Depth of Well: 24 bgs
Screen Interval: 19-24 ft
Depth to Water: 7.05 ft
Water Column: 16.95 ft
Well Diameter: 1 in

1-inch well = water column (ft) x 0.041 gal/ft
2-inch well = water column (ft) x 0.163 gal/ft
3-inch well = water column (ft) x 0.367 gal/ft
4-inch well = water column (ft) x 0.653 gal/ft

Water Quality Parameter Measurements			
Parameter	1	2	3
Time (24 hr)	0920	0922	0924
Water Level (ft)	9.31	9.43	9.51
pH (std. Units)	6.05	6.05	6.05
Sp. Conductivity (uS/cm)	301.2	300.2	300.0
Temperature (°~~F~~C)	19.6	19.5	19.5
Turbidity (NTU)	447	480	381

Comments:

NATIONAL FIREWORKS OU00 ESI
CORDOVA, SHELBY COUNTY, TENNESSEE
SAMPLE COLLECTION FORM

Station ID: NF18 **Sample Date:** 6/20/18
Latitude: 35.162543 **Longitude:** -89.748539
Photo No.:

Soil Sample A Information

Sample ID: NF18-SS-01 **Sample Time:** ~~8-10~~ 1440
Depth Interval: 8-10 **Sampler Name:** Snyder

Quality Control:
☐ MS/MSD ☐ Duplicate Sample ID: Time: ~~1840~~

	Analysis	No.	Container
☑	TCL VOCs	1	Terracore Kit
☑	Mercury	1	4-ounce jar

Soil Sample B Information

Sample ID: NF18-SS-02 **Sample Time:** 1445
Depth Interval: 14-16 **Sampler Name:** Snyder

Quality Control:
☐ MS/MSD ☐ Duplicate Sample ID: Time: ~~1845~~

	Analysis	No.	Container
☑	TCL VOCs	1	Terracore Kit
☑	PFAS	1	8-ounce HDPE jar
☑	Mercury	1	4-ounce jar

Physical Description and Observations:

see back

0-1 asphalt pavement

1-4 poor recovery, moist sandy clay

4-8 zero recovery

8-~~16~~12- swollen soft saturated brown clay

12-16 moist brown/gray mottled clay

PID = zero

NATIONAL FIREWORKS OU00 ESI
CORDOVA, SHELBY COUNTY, TENNESSEE
SAMPLE COLLECTION FORM

Station ID: NF18 **Sample Date:** 6/20/18

Groundwater Sample Information

Sample ID: NF18-GW-01 **Well No.:** NF-18

Sample Time: 0845 **Collected by:** John Snyder

Quality Control:

☐ MS/MSD ☐ Duplicate Sample ID: ~~NF18-GW-01~~ QK Time: ~~0845~~ QK

	Analysis	No.	Container
☑	TCL VOCs	3	40-mL vials with HCl
☑	PFAS	2	250-mL HDPE bottles
☑	Mercury	1	500-mL poly with HNO3

Type of Well: Temp (PVC)
Total Depth of Well: 16.2 bgs
Screen Interval: 11-16 ft
Depth to Water: 9.65 ft
Water Column: ~~16.2~~ 6.55 ft
Well Diameter: 1 in

1-inch well = water column (ft) x 0.041 gal/ft
2-inch well = water column (ft) x 0.163 gal/ft
3-inch well = water column (ft) x 0.367 gal/ft
4-inch well = water column (ft) x 0.653 gal/ft

Water Quality Parameter Measurements			
Parameter	1	2	3
Time (24 hr)			
Water Level (ft)			
pH (std. Units)			
Sp. Conductivity (uS/cm)			
Temperature (~~°F~~ °C)			
Turbidity (NTU)			

Comments:

Very slow recharge - all well volume needed for sample

NATIONAL FIREWORKS OU00 ESI
CORDOVA, SHELBY COUNTY, TENNESSEE
SAMPLE COLLECTION FORM

Station ID: NF18 **Sample Date:** 6/21/18

Soil Gas Sample A Information

Sample ID: NF18-SG-01 **Boring No.:** NF-18 **Total Depth:** 6
Sample Time: _____ **Collected by:** _____ **Tubing Type:** 1/4" tef
Container: _____ **Size:** _____ **Screened Depth:** 6-5.5
Container ID: _____ **Sand/Glass Beads:** 6-5
Regulator ID: _____ **Bentonite:** 5-0

Soil gas implant not vrable

Leak Test? Yes No **Pass/Fail?** Pass Fail
Test Time: _____ **Tracer Gas:** _____
Gas Detector: _____ **Pump Type:** _____
Shroud Conc.: _____ **Implant Conc.:** _____

START		END	
Time:		**Time:**	
Pressure:		**Pressure:**	

Soil Gas Sample B Information

Sample ID: NF18-SG-02 **Boring No.:** NF-18 **Total Depth:** _____
Sample Time: _____ **Collected by:** _____ **Tubing Type:** _____
Container: _____ **Size:** _____ **Screened Depth:** _____
Container ID: _____ **Sand/Glass Beads:** _____
Regulator ID: _____ **Bentonite:** _____

Leak Test? Yes No **Pass/Fail?** Pass Fail
Test Time: _____ **Tracer Gas:** _____
Gas Detector: _____ **Pump Type:** _____
Shroud Conc.: _____ **Implant Conc.:** _____

START		END	
Time:		**Time:**	
Pressure:		**Pressure:**	

NATIONAL FIREWORKS OU00 ESI
CORDOVA, SHELBY COUNTY, TENNESSEE
SAMPLE COLLECTION FORM

Station ID: NF19 **Sample Date:** 6/20/18
Latitude: 35.161396 **Longitude:** -89.748564
Photo No.:

Soil Sample A Information

Sample ID: NF19-SS-01 **Sample Time:** 1430
Depth Interval: 0-2 ft **Sampler Name:** CJ

Quality Control:
☐ MS/MSD ☒ Duplicate Sample ID: NF19-SS-01-DUP Time: 1420

	Analysis	No.	Container
☑	TCL VOCs	1	Terracore Kit
☑	Mercury	1	4-ounce jar

Soil Sample B Information

Sample ID: NF19-SS-02 **Sample Time:** 1415
Depth Interval: 6-8 ft **Sampler Name:** CJ

Quality Control:
☐ MS/MSD ☐ Duplicate Sample ID: Time:

	Analysis	No.	Container
☑	TCL VOCs	1	Terracore Kit
☑	PFAS	1	8-ounce HDPE jar
☑	Mercury	1	4-ounce jar

Physical Description and Observations: See back

Start - 1335

Time	Depth	%	PID	Description
1340	0-4	50	0.0	Brown silty clay, abundant silt, slightly soft, damp
1345	4-8	100	0.0	SAA but moist, wet from 7.25-7.5 ft bgs ~~SAA but~~
1348	8-12	100	0.0	SAA but very moist
1351	12-16	100	0.0	SAA
1355	16-~~20~~ 20	75	0.0	SAA to 17.25 ft bgs. Then brown/orange brown sandy clay abundant small to med sand, hard & moist. minor rock frags.
1403	20-24	90	0.0	Brown/orange brown ~~sandy clay~~ sand clay, abundant sand, small grain, hard, & moist, minor rock frags (20-22.25). From 22.25 to 24 SAA but minor clay & wet

NATIONAL FIREWORKS OU00 ESI
CORDOVA, SHELBY COUNTY, TENNESSEE
SAMPLE COLLECTION FORM

Station ID: NF19 **Sample Date:** 6/20/18

Groundwater Sample Information

Sample ID: NF19-GW-01 **Well No.:** NF-19

Sample Time: 1550 **Collected by:** Carlos Owens

Quality Control:

☐ MS/MSD ☐ Duplicate Sample ID: _____ Time: _____

	Analysis	No.	Container
☐	TCL VOCs	3	40-mL vials with HCl
☐	PFAS	2	250-mL HDPE bottles
☐	Mercury	1	500-mL poly with HNO3

Type of Well: Temp (PVC)
Total Depth of Well: 22.92 bgs
Screen Interval: 17.92 - 22.92 ft
Depth to Water: 14.92 ft
Water Column: 8 ft
Well Diameter: 1 in

1-inch well = water column (ft) x 0.041 gal/ft
2-inch well = water column (ft) x 0.163 gal/ft
3-inch well = water column (ft) x 0.367 gal/ft
4-inch well = water column (ft) x 0.653 gal/ft

Water Quality Parameter Measurements			
Parameter	1	2	3
Time (24 hr)			
Water Level (ft)			
pH (std. Units)			
Sp. Conductivity (uS/cm)			
Temperature (°~~F~~C)			
Turbidity (NTU)			

Comments: Well not recharging with pump on lowest setting. Sample collected before well went dry.

NATIONAL FIREWORKS OU00 ESI
CORDOVA, SHELBY COUNTY, TENNESSEE
SAMPLE COLLECTION FORM

Station ID: NF20 **Sample Date:** 6/19/18
Latitude: 35.162118 **Longitude:** -89.749346
Photo No.:

Soil Sample A Information

Sample ID: NF20-SS-01 **Sample Time:** 0930
Depth Interval: 0-2 ft **Sampler Name:** CJ/CO

Quality Control:
☐ MS/MSD ☐ Duplicate Sample ID: _____ Time: _____

	Analysis	No.	Container
☑	TCL VOCs	1	Terracore Kit
☑	Mercury	1	4-ounce jar

Soil Sample B Information

Sample ID: NF20-SS-02 **Sample Time:** 0935
Depth Interval: 8-10 ft **Sampler Name:** CJ/CO

Quality Control:
☐ MS/MSD ☐ Duplicate Sample ID: _____ Time: _____

	Analysis	No.	Container
☑	TCL VOCs	1	Terracore Kit
☑	PFAS	1	8-ounce HDPE jar
☑	Mercury	1	4-ounce jar

Physical Description and Observations: See back

~~0~~ Start 0850
End

Time	Depth	%	PID	Description
0900	0-4	50	0.5 (.5-2)	light ~~[illegible]~~ orange brown sand moist, fine grain sand, minor pebbles
0905	4-8	50	0.0	SAA to about 5 ft bgs then grey clay, minor fine grain sand, moist slightly soft
0910	8-12	100	0.0	Grey clay, minor fine grain sand, moist, slightly soft (8-9.75). Brown clay soft, wet minor sand, fine grain (9.75-12)
0915	12-16	~~100~~ 90	0.0	Brown and grey clay, minor fine grain sand, soft and wet. Grades to slightly soft & damp by 15.25 ft bgs
0920	16-20	90	0.0	SAA, grades to moist by 19.25 ft bgs

NATIONAL FIREWORKS OU00 ESI
CORDOVA, SHELBY COUNTY, TENNESSEE
SAMPLE COLLECTION FORM

Station ID: NF20 **Sample Date:** 6/~~19~~ 20/18

Groundwater Sample Information

Sample ID: NF20-GW-01 **Well No.:** NF-20

Sample Time: 1335 **Collected by:** Carter Owens

Quality Control:

☐ MS/MSD ☐ Duplicate Sample ID: _____ Time: _____

	Analysis	No.	Container
☑	TCL VOCs	3	40-mL vials with HCl
☑	PFAS	2	250-mL HDPE bottles
☑	Mercury	1	500-mL poly with HNO3

Type of Well: Temp (PVC)
Total Depth of Well: 20 bgs
Screen Interval: 15-20 ft
Depth to Water: 12 ft
Water Column: 8 ft
Well Diameter: 1 in

1-inch well = water column (ft) x 0.041 gal/ft
2-inch well = water column (ft) x 0.163 gal/ft
3-inch well = water column (ft) x 0.367 gal/ft
4-inch well = water column (ft) x 0.653 gal/ft

Water Quality Parameter Measurements			
Parameter	1	2	3
Time (24 hr)	1330		
Water Level (ft)	15.4		
pH (std. Units)	7.18		
Sp. Conductivity (uS/cm)	612		
Temperature (°C)	23.7		
Turbidity (NTU)	7,500		

Comments:
Well not recharging

NATIONAL FIREWORKS OU00 ESI
CORDOVA, SHELBY COUNTY, TENNESSEE
SAMPLE COLLECTION FORM

Station ID: NF21 **Sample Date:** 6/20/18
Latitude: 35.163296 **Longitude:** -89.748812
Photo No.:

Soil Sample A Information

Sample ID: NF21-SS-01 **Sample Time:** 1135
Depth Interval: 0-2 ft **Sampler Name:** CJ

Quality Control:
☐ MS/MSD ☐ Duplicate Sample ID: _____ Time: _____

	Analysis	No.	Container
☑	TCL VOCs	1	Terracore Kit
☑	PFAS	1	8-ounce HDPE jar
☑	Mercury	1	4-ounce jar

Soil Sample B Information

Sample ID: NF21-SS-02 **Sample Time:** 1130
Depth Interval: 13-15 ft **Sampler Name:** CJ

Quality Control:
☐ MS/MSD ☐ Duplicate Sample ID: _____ Time: _____

	Analysis	No.	Container
☑	TCL VOCs	1	Terracore Kit
☑	Mercury	1	4-ounce jar

Physical Description and Observations: see back

Start - 1050

Time	Depth	%	PID	Description
1052	0.4	70	0.0	Brown silty clay, abundant silt, damp, slightly soft
1054	4-8	100	0.0	SAA but wet and slightly hard
1057	8-12	100	0.0	SAA but moist and slightly soft
1101	12-16	100	0.0	(12-14) Brown / reddish brown sandy clay, abundant fine grain sand, slightly soft + moist. (14-14.75) SAA w/ rock fragments and coarse sand, (14.75-16) sand w/ mod clay, small grain size, mod soft, very moist
1105	16-20	100	0.0	Reddish brown sand, mod clay, mod soft, small sand grain + wet
1115	20-24	100	0.0	SAA

NATIONAL FIREWORKS OU00 ESI
CORDOVA, SHELBY COUNTY, TENNESSEE
SAMPLE COLLECTION FORM

Station ID: NF21 **Sample Date:** 6/20/18

Groundwater Sample Information

Sample ID: NF21-GW-01 **Well No.:** NF-21

Sample Time: 1150 **Collected by:** Carter Owens

Quality Control:

☐ MS/MSD ☐ Duplicate Sample ID: _____ Time: _____

	Analysis	No.	Container
☑	TCL VOCs	3	40-mL vials with HCl
☑	PFAS	2	250-mL HDPE bottles
☑	Mercury	1	500-mL poly with HNO3

Type of Well: Temp (PVC)
Total Depth of Well: 23.1 bgs
Screen Interval: 18.1 - 23.1 ft
Depth to Water: 19.3 ft
Water Column: 3.8 ft
Well Diameter: 1 in

1-inch well = water column (ft) x 0.041 gal/ft
2-inch well = water column (ft) x 0.163 gal/ft
3-inch well = water column (ft) x 0.367 gal/ft
4-inch well = water column (ft) x 0.653 gal/ft

Water Quality Parameter Measurements			
Parameter	1	2	3
Time (24 hr)	1145	1147	1149
Water Level (ft)	19.0	19.2	19.1
pH (std. Units)	6.73	6.73	6.72
Sp. Conductivity (uS/cm)	415.0	414.2	414.3
Temperature (°~~F~~C)	23.2	23.4	23.6
Turbidity (NTU)	10k	9,300	8,800

Comments:

NATIONAL FIREWORKS OU00 ESI
CORDOVA, SHELBY COUNTY, TENNESSEE
SAMPLE COLLECTION FORM

Station ID: NF22 **Sample Date:** 6/19/18
Latitude: 35.163915 **Longitude:** -89.747684
Photo No.:

Soil Sample A Information

Sample ID: NF22-SS-01 **Sample Time:** 1705
Depth Interval: ~~[illegible]~~ 16-18 **Sampler Name:** Snyder

Quality Control:
☐ MS/MSD ☐ Duplicate Sample ID: _____ Time: _____

	Analysis	No.	Container
☑	TCL VOCs	1	Terracore Kit
☑	PFAS	1	8-ounce HDPE jar
☑	Mercury	1	4-ounce jar

Soil Sample B Information

Sample ID: NF22-SS-02 **Sample Time:** 1710
Depth Interval: 24-26 **Sampler Name:** Snyder

Quality Control:
☐ MS/MSD ☐ Duplicate Sample ID: _____ Time: _____

	Analysis	No.	Container
☑	TCL VOCs	1	Terracore Kit
☑	Mercury	1	4-ounce jar

Physical Description and Observations:
see back

0-1 - loamy sand w/ organics
1-4 - dry mottled light/dark brown clay
4-16 - uniform moist brown clay
16-18 - uniform dry brown clay
18-20 - gray/brown mottled moist clay
20-26 - uniform moist brown clay
26-28 - saturated brown ~~sand~~ clayey sand

PID - 0.0 everywhere

well set @ 28' w/ 5' screen

NATIONAL FIREWORKS OU00 ESI
CORDOVA, SHELBY COUNTY, TENNESSEE
SAMPLE COLLECTION FORM

Station ID: NF22 **Sample Date:** 6/19/18

Groundwater Sample Information

Sample ID: NF22-GW-01 **Well No.:** NF-22

Sample Time: 1810 **Collected by:** Snyder

Quality Control:

☐ MS/MSD ☐ Duplicate Sample ID: _____ Time: _____

	Analysis	No.	Container
☑	TCL VOCs	3	40-mL vials with HCl
☑	PFAS	2	250-mL HDPE bottles
☑	Mercury	1	500-mL poly with HNO3

Type of Well: Temp (PVC)
Total Depth of Well: 28 bgs
Screen Interval: 28-23 ft
Depth to Water: 6.75 ft
Water Column: 21.25 ft
Well Diameter: 1 in

1-inch well = water column (ft) x 0.041 gal/ft
2-inch well = water column (ft) x 0.163 gal/ft
3-inch well = water column (ft) x 0.367 gal/ft
4-inch well = water column (ft) x 0.653 gal/ft

Water Quality Parameter Measurements			
Parameter	1	2	3
Time (24 hr)	1755	1800	1805
Water Level (ft)	8.65	8.35	8.41
pH (std. Units)	5.90	5.89	5.89
Sp. Conductivity (uS/cm)	374	372	370
Temperature (°~~F~~C)	18.8	18.5	18.6
Turbidity (NTU)	285	210	246

Comments:

NATIONAL FIREWORKS OU00 ESI
CORDOVA, SHELBY COUNTY, TENNESSEE
SAMPLE COLLECTION FORM

Station ID: NF23 **Sample Date:** 6/19
Latitude: 35.163849 **Longitude:** -89.749019
Photo No.:

Soil Sample A Information

Sample ID: NF23-SS-01 **Sample Time:** 1340
Depth Interval: 0-2' **Sampler Name:** Snyder

Quality Control:
☐ MS/MSD ☐ Duplicate Sample ID: _____ Time: _____

	Analysis	No.	Container
☑	TCL VOCs	1	Terracore Kit
☑	PFAS	1	8-ounce HDPE jar
☑	Mercury	1	4-ounce jar

Soil Sample B Information

Sample ID: NF23-SS-02 **Sample Time:** 1345
Depth Interval: 14-16' **Sampler Name:** Snyder

Quality Control:
☐ MS/MSD ☐ Duplicate Sample ID: _____ Time: _____

	Analysis	No.	Container
☑	TCL VOCs	1	Terracore Kit
☑	Mercury	1	4-ounce jar

Physical Description and Observations:
see back

0-1 - loamy brown dry sand
1-8 - Brown moist clay
8-16 - Brown/gray mottled dry clay
16-20 - Saturated light brown sandy clay

PID not working

5' screen set @ 20'

NATIONAL FIREWORKS OU00 ESI
CORDOVA, SHELBY COUNTY, TENNESSEE
SAMPLE COLLECTION FORM

Station ID: NF23 **Sample Date:** 6/19

Groundwater Sample Information

Sample ID: NF23-GW-01 **Well No.:** NF-23

Sample Time: 1440 **Collected by:** Snyder

Quality Control:

☐ MS/MSD ☐ Duplicate Sample ID: ~~NF23-GW-01~~ QC Time: ~~1440~~ QC

	Analysis	No.	Container
☑	TCL VOCs	3	40-mL vials with HCl
☑	PFAS	2	250-mL HDPE bottles
☑	Mercury	1	500-mL poly with HNO3

Type of Well: Temp (PVC)
Total Depth of Well: 20 bgs
Screen Interval: 15-20 ft
Depth to Water: 12.3 ft
Water Column: 7.7 ft
Well Diameter: 1 in

1-inch well = water column (ft) x 0.041 gal/ft
2-inch well = water column (ft) x 0.163 gal/ft
3-inch well = water column (ft) x 0.367 gal/ft
4-inch well = water column (ft) x 0.653 gal/ft

Water Quality Parameter Measurements			
Parameter	1	2	3
Time (24 hr)			
Water Level (ft)	well		
pH (std. Units)	purged		
Sp. Conductivity (uS/cm)	dry		
Temperature (°F)			
Turbidity (NTU)			

Comments:

NATIONAL FIREWORKS OU00 ESI
CORDOVA, SHELBY COUNTY, TENNESSEE
SAMPLE COLLECTION FORM

Station ID: NF24 **Sample Date:** 6/20/18
Latitude: 35.163142 **Longitude:** -89.749739
Photo No.:

Soil Sample A Information

Sample ID: NF24-SS-01 **Sample Time:** 910
Depth Interval: 4-6 **Sampler Name:** Snyder

Quality Control:
☐ MS/MSD ☐ Duplicate Sample ID: _____ Time: _____

	Analysis	No.	Container
☑	TCL VOCs	1	Terracore Kit
☑	Mercury	1	4-ounce jar

Soil Sample B Information

Sample ID: NF24-SS-02 **Sample Time:** 915
Depth Interval: 21-23 **Sampler Name:** Snyder

Quality Control:
☐ MS/MSD ☐ Duplicate Sample ID: _____ Time: _____

	Analysis	No.	Container
☑	TCL VOCs	1	Terracore Kit
☑	PFAS	1	8-ounce HDPE jar
☑	Mercury	1	4-ounce jar

Physical Description and Observations:

see back

0-3 - Hard dry gravel/sand
3-20 - Uniform moist brown clay
20-23 - Red/brown/gray mottled moist clay
23-24 - Light gray saturated sand

PID - 0.0 all

well set @ 24' w/ 5' screen

NATIONAL FIREWORKS OU00 ESI
CORDOVA, SHELBY COUNTY, TENNESSEE
SAMPLE COLLECTION FORM

Station ID: NF24 **Sample Date:** 6/20/18

Groundwater Sample Information

Sample ID: NF24-GW-01 **Well No.:** NF-24

Sample Time: 1010 **Collected by:** Snyder

Quality Control:

☐ MS/MSD ☐ Duplicate Sample ID: _____ Time: ~~1010~~ 15

	Analysis	No.	Container
☑	TCL VOCs	3	40-mL vials with HCl
☑	PFAS	2	250-mL HDPE bottles
☑	Mercury	1	500-mL poly with HNO3

Type of Well: Temp (PVC)
Total Depth of Well: ~~24~~ 25 bgs
Screen Interval: ~~19-24~~ 20-25 ft
Depth to Water: 12 ft
Water Column: 13 ft
Well Diameter: 1 in

1-inch well = water column (ft) x 0.041 gal/ft
2-inch well = water column (ft) x 0.163 gal/ft
3-inch well = water column (ft) x 0.367 gal/ft
4-inch well = water column (ft) x 0.653 gal/ft

Water Quality Parameter Measurements			
Parameter	1	2	3
Time (24 hr)	0956	1001	1006
Water Level (ft)	16.0	16.04	15.98
pH (std. Units)	6.59	6.62	6.62
Sp. Conductivity (uS/cm)	545 ~~19~~ JK	542	539
Temperature (°~~F~~C)	19.6	19.5	19.5
Turbidity (NTU)	2692.0	2178.0	1854.0

Comments:

NATIONAL FIREWORKS OU00 ESI
CORDOVA, SHELBY COUNTY, TENNESSEE
SAMPLE COLLECTION FORM

Station ID: NF24 **Sample Date:** 6/21/18

Neither implant viable.

Soil Gas Sample A Information

Both held 10" Hg vacuum for 3 minutes

Sample ID:	NF24-SG-01	**Boring No.:**	NF-24	**Total Depth:**	6
Sample Time:		**Collected by:**		**Tubing Type:**	tef 1/4
Container:		**Size:**		**Screened Depth:**	5.5-6
Container ID:				**Sand/Glass Beads:**	5-6
Regulator ID:				**Bentonite:**	0-5

Leak Test?	Yes	No	**Pass/Fail?**	Pass Fail
Test Time:			**Tracer Gas:**	
Gas Detector:			**Pump Type:**	
Shroud Conc.:			**Implant Conc.:**	

START		END	
Time:		**Time:**	
Pressure:		**Pressure:**	

Soil Gas Sample B Information

Sample ID:	NF24-SG-02	**Boring No.:**	NF-24	**Total Depth:**	10'
Sample Time:		**Collected by:**		**Tubing Type:**	tef 1/4
Container:		**Size:**		**Screened Depth:**	~~9-10~~ 9.5-10
Container ID:				**Sand/Glass Beads:**	9.5-10
Regulator ID:				**Bentonite:**	9.5-6

Leak Test?	Yes	No	**Pass/Fail?**	Pass Fail
Test Time:			**Tracer Gas:**	
Gas Detector:			**Pump Type:**	
Shroud Conc.:			**Implant Conc.:**	

START		END	
Time:		**Time:**	
Pressure:		**Pressure:**	

NATIONAL FIREWORKS OU00 ESI
CORDOVA, SHELBY COUNTY, TENNESSEE
SAMPLE COLLECTION FORM

Station ID: NF25 **Sample Date:** 6/19/18
Latitude: 35.161740 **Longitude:** -89.749799
Photo No.:

Soil Sample A Information

Sample ID: NF25-SS-01 **Sample Time:** 930
Depth Interval: 2-4' **Sampler Name:** Snyder

Quality Control:
☐ MS/MSD ☐ Duplicate Sample ID: _____ Time: _____

	Analysis	No.	Container
☑	TCL VOCs	1	Terracore Kit
☑	Mercury	1	4-ounce jar

Soil Sample B Information

Sample ID: NF25-SS-02 **Sample Time:** 935
Depth Interval: 12-14 **Sampler Name:** Snyder

Quality Control:
☐ MS/MSD ☐ Duplicate Sample ID: _____ Time: _____

	Analysis	No.	Container
☑	TCL VOCs	1	Terracore Kit
☑	PFAS	1	8-ounce HDPE jar
☑	Mercury	1	4-ounce jar

Physical Description and Observations: see back

0-2 - dry brown sandy clay w/ organics
2-4 - brown saturated clay
4-5.5 - SAA - moist
5.5-8 - SAA
8-10 - SAA
10-12 - SAA dry
12-14 - SAA
14' - 6" seam, saturated gray clay
14.5-16 - mottled gray/brown moist clay
16-20 - SAA

PID - Voc's - 0.0

10-20 - screen
0-20 - sand

NATIONAL FIREWORKS OU00 ESI
CORDOVA, SHELBY COUNTY, TENNESSEE
SAMPLE COLLECTION FORM

Station ID: NF25 **Sample Date:** 6/19/18

Groundwater Sample Information

Sample ID: NF25-GW-01 **Well No.:** NF-16

Sample Time: 1137 **Collected by:** Snyder

Quality Control:

☐ MS/MSD ☐ Duplicate Sample ID: _____ Time: ~~1139~~

	Analysis	No.	Container
☑	TCL VOCs	3	40-mL vials with HCl
☑	PFAS	2	250-mL HDPE bottles
☑	Mercury	1	500-mL poly with HNO3

Type of Well: Temp (PVC)
Total Depth of Well: 20 bgs
Screen Interval: 10-20 ft
Depth to Water: 6.5 ft
Water Column: 13.5 ft
Well Diameter: 1 in

1-inch well = water column (ft) x 0.041 gal/ft
2-inch well = water column (ft) x 0.163 gal/ft
3-inch well = water column (ft) x 0.367 gal/ft
4-inch well = water column (ft) x 0.653 gal/ft

Water Quality Parameter Measurements			
Parameter	1	2	3
Time (24 hr)	1127	1132	1137
Water Level (ft)	12.10	15.22	15.13
pH (std. Units)	4.94	4.96	5.13
Sp. Conductivity (uS/cm)	240.6 ~~118.6~~ uS	240.9	243.4
Temperature (~~°F~~ °C)	21.4	21.7	22.2
Turbidity (NTU)	1147	1253	1317.3

Comments:

-Thin water-bearing zone - 10-foot screen installed

NATIONAL FIREWORKS OU00 ESI
CORDOVA, SHELBY COUNTY, TENNESSEE
SAMPLE COLLECTION FORM

Station ID: NF26 **Sample Date:** 6/19/18
Latitude: 35.162619 **Longitude:** -89.750414
Photo No.:

Soil Sample A Information

Sample ID: NF26-SS-01 **Sample Time:** 1045
Depth Interval: 0-2 ft **Sampler Name:** CJ/CO

Quality Control:
☐ MS/MSD ☐ Duplicate Sample ID: _____ Time: _____

	Analysis	No.	Container
☑	TCL VOCs	1	Terracore Kit
☑	Mercury	1	4-ounce jar

Soil Sample B Information

Sample ID: NF26-SS-02 **Sample Time:** 1050
Depth Interval: 8-10 ft **Sampler Name:** CJ/CO

Quality Control:
☐ MS/MSD ☐ Duplicate Sample ID: _____ Time: _____

	Analysis	No.	Container
☑	TCL VOCs	1	Terracore Kit
☑	PFAS	1	8-ounce HDPE jar
☑	Mercury	1	4-ounce jar

Physical Description and Observations: See back

Start 1020
End

Time	Depth	%	PID	Description
1022	0-4	50	0.0	Brown ~~clay~~ silty clay
	damp, mod soft			
1027	4-8	100	0.0	SAA but very moist to wet
1032	8-12	100	0.0	SAA
1037	12-16	100	0.0	SAA but moist
1040	16-20	100	0.0	SAA to 17 ft bgs

then grey clay, minor fine grain sand, minor small pebbles soft and very moist/wet. Becomes orange brown clay @ 18.75 ft bgs minor to mod fine grain sand, minor small pebbles, soft & very moist/wet

NATIONAL FIREWORKS OU00 ESI
CORDOVA, SHELBY COUNTY, TENNESSEE
SAMPLE COLLECTION FORM

Station ID: NF26 **Sample Date:** 6/20/18

Groundwater Sample Information

Sample ID: NF26-GW-01 **Well No.:** NF-26

Sample Time: 1630 **Collected by:** Carter Owens

Quality Control:

☐ MS/MSD ☐ Duplicate Sample ID: _____ Time: _____

	Analysis	No.	Container
☑	TCL VOCs	3	40-mL vials with HCl
☑	PFAS	2	250-mL HDPE bottles
☑	Mercury	1	500-mL poly with HNO3

Type of Well: Temp (PVC)
Total Depth of Well: 20.05 bgs
Screen Interval: 15.05-20.05 ft
Depth to Water: 16.41 ft
Water Column: 3.64 ft
Well Diameter: 1 in

1-inch well = water column (ft) x 0.041 gal/ft
2-inch well = water column (ft) x 0.163 gal/ft
3-inch well = water column (ft) x 0.367 gal/ft
4-inch well = water column (ft) x 0.653 gal/ft

Water Quality Parameter Measurements			
Parameter	1	2	3
Time (24 hr)			
Water Level (ft)			
pH (std. Units)			
Sp. Conductivity (uS/cm)			
Temperature (°F)C			
Turbidity (NTU)			

Comments: Well not recharging. Sample collected with water in the well.

NATIONAL FIREWORKS OU00 ESI
CORDOVA, SHELBY COUNTY, TENNESSEE
SAMPLE COLLECTION FORM

Station ID: NF27 **Sample Date:** 6/20/18
Latitude: 35.163292 **Longitude:** -89.747289
Photo No.:

Soil Sample A Information

Sample ID: NF27-SS-01 **Sample Time:** 1025
Depth Interval: 2-4 ft **Sampler Name:** CJ

Quality Control:
☐ MS/MSD ☐ Duplicate Sample ID: _____ Time: _____

	Analysis	No.	Container
☑	TCL VOCs	1	Terracore Kit
☑	PFAS	1	8-ounce HDPE jar
☑	Mercury	1	4-ounce jar

Soil Sample B Information

Sample ID: NF27-SS-02 **Sample Time:** 1030
Depth Interval: 4-6 ft **Sampler Name:** CJ

Quality Control:
☐ MS/MSD ☐ Duplicate Sample ID: _____ Time: _____

	Analysis	No.	Container
☑	TCL VOCs	1	Terracore Kit
☑	Mercury	1	4-ounce jar

Physical Description and Observations: See back

- Soil samples collected from a different location than the groundwater sample because the initial boring did not produce any water.
- Location moved to former pit area.

Start 0930

Time	Depth	%	PID	Description
0945	0-4	25	0.0	(0-2) hand augered due to utility in the vicinity @ 18-in bgs; (2-4) Brown silty clay, abundant silt, damp, slightly hard
0950	4-8	50	0.1	Brown/grey brown silty clay, abundant silt, soft to mod soft moist throughout and wet 5-5.75 ft bgs
0955	8-12	95	0.1	SAA, very moist to wet
1000	12-16	100	0.0	SAA, sand content increases w/ depth, fine grain sand
1005	16-20	100	0.0	Brown sandy silt, mod to abundant fine grain sand, minor rock fragments, very moist
1010	20-24	100	0.0	SAA
1015	24-28	100	0.0	light brown/grey brown sandy clay, minor fine grain sand, wet, + soft
1018	28-32	100	0.0	SAA but mostly light grey
1022	32-36	100	0.0	grey clay, moist, slightly hard

NATIONAL FIREWORKS OU00 ESI
CORDOVA, SHELBY COUNTY, TENNESSEE
SAMPLE COLLECTION FORM

Station ID: NF27 **Sample Date:** 6/21/18

Groundwater Sample Information

Sample ID: NF27-GW-01 **Well No.:** NF-27

Sample Time: 0925 **Collected by:** Carter Owens

Quality Control:

☒ MS/MSD ☐ Duplicate Sample ID: _____ Time: _____

	Analysis	No.	Container
☑	TCL VOCs	3	40-mL vials with HCl
☑	PFAS	2	250-mL HDPE bottles
☑	Mercury	1	500-mL poly with HNO3

Type of Well: Temp (PVC)
Total Depth of Well: 27.5 bgs
Screen Interval: 22.5 - 27.5 ft
Depth to Water: 8.3 ft
Water Column: 19.2 ft
Well Diameter: 1 in

1-inch well = water column (ft) x 0.041 gal/ft
2-inch well = water column (ft) x 0.163 gal/ft
3-inch well = water column (ft) x 0.367 gal/ft
4-inch well = water column (ft) x 0.653 gal/ft

Water Quality Parameter Measurements			
Parameter	1	2	3
Time (24 hr)	0918	0920	0922
Water Level (ft)	21.76	22.15	22.34
pH (std. Units)	6.53	6.52	6.51
Sp. Conductivity (uS/cm)	823	825	826
Temperature (°C)	22.9	23.0	23.1
Turbidity (NTU)	129.7	71.4	52.2

Comments: Well only recharges when pump is shut off

- Location moved to former pit area.

NATIONAL FIREWORKS OU00 ESI
CORDOVA, SHELBY COUNTY, TENNESSEE
SAMPLE COLLECTION FORM

Station ID: NF28 **Sample Date:** 6/19
Latitude: 35.164480 **Longitude:** -89.748718
Photo No.:

Soil Sample A Information

Sample ID: NF28-SS-01 **Sample Time:** 1450
Depth Interval: 8-10 **Sampler Name:** Snyder

Quality Control:
☐ MS/MSD ☐ Duplicate Sample ID: _____ Time: _____

	Analysis	No.	Container
☑	TCL VOCs	1	Terracore Kit
☑	PFAS	1	8-ounce HDPE jar
☑	Mercury	1	4-ounce jar

Soil Sample B Information

Sample ID: NF28-SS-02 **Sample Time:** 1455
Depth Interval: 25-27 **Sampler Name:** Snyder

Quality Control:
☐ MS/MSD ☐ Duplicate Sample ID: _____ Time: _____

	Analysis	No.	Container
☑	TCL VOCs	1	Terracore Kit
☑	Mercury	1	4-ounce jar

Physical Description and Observations:
see back

0-4 - Poor recovery, sandy loam
4-9 - Dry clayey loam
9-12 - Mottled gray/brown dry clay
12-22 - SAA
22-27 - Mottled gray/brown moist clay
27-28 - Brown/grey saturated sand
28-32 - ~~Screen~~ SAA

No PID, ~~meter~~ ~~PID~~ meter broken

NATIONAL FIREWORKS OU00 ESI
CORDOVA, SHELBY COUNTY, TENNESSEE
SAMPLE COLLECTION FORM

Station ID: NF28 **Sample Date:** 6/19/18

Groundwater Sample Information

Sample ID: NF28-GW-01 **Well No.:** NF-28

Sample Time: 1600 **Collected by:** Snyder

Quality Control:

☐ MS/MSD ☐ Duplicate Sample ID: _____ Time: 1650

	Analysis	No.	Container
☑	TCL VOCs	3	40-mL vials with HCl
☑	PFAS	2	250-mL HDPE bottles
☑	Mercury	1	500-mL poly with HNO3

Type of Well: Temp (PVC)
Total Depth of Well: 32 bgs
Screen Interval: 28-32 ft
Depth to Water: 22.4 ft
Water Column: 9.6 ft
Well Diameter: 1 in

1-inch well = water column (ft) x 0.041 gal/ft
2-inch well = water column (ft) x 0.163 gal/ft
3-inch well = water column (ft) x 0.367 gal/ft
4-inch well = water column (ft) x 0.653 gal/ft

Water Quality Parameter Measurements			
Parameter	1	2	3
Time (24 hr)			
Water Level (ft)	well @ 1m ft		
pH (std. Units)	of suction,		
Sp. Conductivity (uS/cm)	unable to		
Temperature (~~°F~~ °C)	get YSI		
Turbidity (NTU)	readings		

Comments: Sampled using check valve

NATIONAL FIREWORKS OU00 ESI
CORDOVA, SHELBY COUNTY, TENNESSEE
SAMPLE COLLECTION FORM

Station ID: NF29 **Sample Date:** 6/19/18
Latitude: 35.164447 **Longitude:** -89.750077
Photo No.:

Soil Sample A Information

Sample ID: NF29-SS-01 **Sample Time:** 1355
Depth Interval: 0-2 ft **Sampler Name:** CJ

Quality Control:
☐ MS/MSD ☐ Duplicate Sample ID: _____ Time: _____

	Analysis	No.	Container
☑	TCL VOCs	1	Terracore Kit
☑	PFAS	1	8-ounce HDPE jar
☑	Mercury	1	4-ounce jar

Soil Sample B Information

Sample ID: NF29-SS-02 **Sample Time:** 1400
Depth Interval: 12-14 ft **Sampler Name:** CJ

Quality Control:
☐ MS/MSD ☐ Duplicate Sample ID: _____ Time: _____

	Analysis	No.	Container
☑	TCL VOCs	1	Terracore Kit
☑	Mercury	1	4-ounce jar

Physical Description and Observations: See back

start - 1310

Time	Depth	D/2	PID	Description
1310	0-4	70	0.0	Brown silty clay, mod silt, soft, very moist
1314	4-8	100	0.0	SAA but moist
1318	8-12	100	0.0	Brown / orange brown silty clay minor to mod silt, slightly soft and moist (8-8.75 ft bgs). SAA but clay (8.75 - 10 ft bgs). Same as 8-8.75 from 10-12 ft bgs
1322	12-16	100	0.0	Brown sandy clay mod fine grain sand, moist and hard. Sand content increases w/ depth grading to sand/clay by 15.25 ft bgs. Color grades to reddish brown by 14.5 ft bgs
1327	16-20	100	0.0	Brown / reddish brown fine grain sand, slightly hard + wet. Saturated tan sand @ 19.75 ft bgs.

NATIONAL FIREWORKS OU00 ESI
CORDOVA, SHELBY COUNTY, TENNESSEE
SAMPLE COLLECTION FORM

Station ID: NF29 **Sample Date:** 6/19/18

Groundwater Sample Information

Sample ID: NF29-GW-01 **Well No.:** NF-29

Sample Time: 1450 **Collected by:** Carter Owens

Quality Control:

☐ MS/MSD ☐ Duplicate Sample ID: _____ Time: 3

	Analysis	No.	Container
☑	TCL VOCs	3	40-mL vials with HCl
☑	PFAS	2	250-mL HDPE bottles
☑	Mercury	1	500-mL poly with HNO3

Type of Well: Temp (PVC)
Total Depth of Well: 25 bgs
Screen Interval: 20-25 ft
Depth to Water: 15.91 ft
Water Column: 9.09 ft
Well Diameter: 1 in

1-inch well = water column (ft) x 0.041 gal/ft
2-inch well = water column (ft) x 0.163 gal/ft
3-inch well = water column (ft) x 0.367 gal/ft
4-inch well = water column (ft) x 0.653 gal/ft

Water Quality Parameter Measurements			
Parameter	1	2	3
Time (24 hr)	1440	1442	1444
Water Level (ft)	17.30	17.29	17.30
pH (std. Units)	6.65	6.65	6.65
Sp. Conductivity (uS/cm)	371.8	376.1	375.4
Temperature (~~°F~~ °C)	22.9	23.1	22.9
Turbidity (NTU)	864	712	815

Comments: Purged 3 well volumes (1.5 gallons) before taking readings

NATIONAL FIREWORKS OU00 ESI
CORDOVA, SHELBY COUNTY, TENNESSEE
SAMPLE COLLECTION FORM

Station ID: NF30 **Sample Date:** 6/20/18
Latitude: 35.163569 **Longitude:** -89.750913
Photo No.:

Soil Sample A Information

Sample ID: NF30-SS-01 **Sample Time:** 1225
Depth Interval: 5-7 **Sampler Name:** Snyder

Quality Control:
☐ MS/MSD ☐ Duplicate Sample ID: _____ Time: _____

	Analysis	No.	Container
☑	TCL VOCs	1	Terracore Kit
☑	Mercury	1	4-ounce jar

Soil Sample B Information

Sample ID: NF30-SS-02 **Sample Time:** 1230
Depth Interval: 12-14 **Sampler Name:** Snyder

Quality Control:
☐ MS/MSD ☐ Duplicate Sample ID: _____ Time: _____

	Analysis	No.	Container
☑	TCL VOCs	1	Terracore Kit
☑	PFAS	1	8-ounce HDPE jar
☑	Mercury	1	4-ounce jar

Physical Description and Observations:

see back

~~0-1~~ 0 - 1 - sandy gravel
1 - 12 - uniform brown moist clay
12 - 20 - mottled gray, wet clay
20 - 24 - expansive uniform smooth gray clay

PID - 0.0 ppm everywhere

NATIONAL FIREWORKS OU00 ESI
CORDOVA, SHELBY COUNTY, TENNESSEE
SAMPLE COLLECTION FORM

Station ID: NF30 **Sample Date:** 6/20/18

Groundwater Sample Information

Sample ID: NF30-GW-01 **Well No.:** NF-30

Sample Time: 1305 **Collected by:** Snyder

Quality Control:

☐ MS/MSD ☐ Duplicate Sample ID: _____ Time: _____

	Analysis	No.	Container
☑	TCL VOCs	3	40-mL vials with HCl
☑	PFAS	2	250-mL HDPE bottles
☑	Mercury	1	500-mL poly with HNO3

Type of Well: Temp (PVC)
Total Depth of Well: 20.80 bgs
Screen Interval: 21-16 ft
Depth to Water: 13.62 ft
Water Column: 7 ft
Well Diameter: 1 in

1-inch well = water column (ft) x 0.041 gal/ft
2-inch well = water column (ft) x 0.163 gal/ft
3-inch well = water column (ft) x 0.367 gal/ft
4-inch well = water column (ft) x 0.653 gal/ft

Water Quality Parameter Measurements			
Parameter	1	2	3
Time (24 hr)	1258		
Water Level (ft)	20.5	well	
pH (std. Units)	7.70	purged	
Sp. Conductivity (uS/cm)	795	dry	
Temperature (~~°F~~ °C)	25.1		
Turbidity (NTU)	10,000		

Comments:

NATIONAL FIREWORKS OU00 ESI
CORDOVA, SHELBY COUNTY, TENNESSEE
SAMPLE COLLECTION FORM

Station ID: NF30 **Sample Date:** 6/21/18

Soil Gas Sample A Information

Sample ID: NF30-SG-01 **Boring No.:** NF-30 **Total Depth:** 6
Sample Time: **Collected by:** **Tubing Type:** 1/4" tef
Container: **Size:** **Screened Depth:** 5.5-6
Container ID: **Sand/Glass Beads:** 6-5
Regulator ID: **Bentonite:** 5-0

Both implants have been tampered w/ overnight + pulled up. Neither usable

Leak Test? Yes No **Pass/Fail?** Pass Fail
Test Time: **Tracer Gas:**
Gas Detector: **Pump Type:**
Shroud Conc.: **Implant Conc.:**

START		END	
Time:		**Time:**	
Pressure:		**Pressure:**	

Soil Gas Sample B Information

Sample ID: NF30-SG-02 **Boring No.:** NF-30 **Total Depth:** 10
Sample Time: **Collected by:** **Tubing Type:** 1/4" tef
Container: **Size:** **Screened Depth:** 10-9.5
Container ID: **Sand/Glass Beads:** 10-9
Regulator ID: **Bentonite:** 9-6

Leak Test? Yes No **Pass/Fail?** Pass Fail
Test Time: **Tracer Gas:**
Gas Detector: **Pump Type:**
Shroud Conc.: **Implant Conc.:**

START		END	
Time:		**Time:**	
Pressure:		**Pressure:**	

NATIONAL FIREWORKS OU00 ESI
CORDOVA, SHELBY COUNTY, TENNESSEE
SAMPLE COLLECTION FORM

Station ID: NF31 **Sample Date:** 6/19/19
Latitude: 35.162123 **Longitude:** -89.751045
Photo No.:

Soil Sample A Information

Sample ID: NF31-SS-01 **Sample Time:** 1020
Depth Interval: 4-6 **Sampler Name:** Snyder

Quality Control:
☐ MS/MSD ☐ Duplicate Sample ID: _____ Time: _____

	Analysis	No.	Container
☑	TCL VOCs	1	Terracore Kit
☑	Mercury	1	4-ounce jar

Soil Sample B Information

Sample ID: NF31-SS-02 **Sample Time:** 1025
Depth Interval: 12-14 **Sampler Name:** Snyder

Quality Control:
☐ MS/MSD ☐ Duplicate Sample ID: _____ Time: _____

	Analysis	No.	Container
☑	TCL VOCs	1	Terracore Kit
☑	PFAS	1	8-ounce HDPE jar
☑	Mercury	1	4-ounce jar

Physical Description and Observations:

on back

0-4 - poor recovery - dry sandy clay
4-5 - moist brown clay
5-6.5 - dark gray, moist clay
6.5-8 - moist brown clay
8-9.5 - SAA
9.5-12 - Mottled light brown/gray clay
12-14 - SAA
14-16 - SAA, wet
16-20 - SAA, dry

PID - 0.0 ppm everywhere

NATIONAL FIREWORKS OU00 ESI
CORDOVA, SHELBY COUNTY, TENNESSEE
SAMPLE COLLECTION FORM

Station ID: NF31 **Sample Date:** 6/20/18

Groundwater Sample Information

Sample ID: NF31-GW-01 **Well No.:** NF-31

Sample Time: 0915 **Collected by:** John Snyder

Quality Control:

☐ MS/MSD ☐ Duplicate Sample ID: ~~NF31-GW-01~~ QC Time: ~~0915~~ QC

	Analysis	No.	Container
☑	TCL VOCs	3	40-mL vials with HCl
☑	PFAS	2	250-mL HDPE bottles
☑	Mercury	1	500-mL poly with HNO3

Type of Well: Temp (PVC)
Total Depth of Well: 20.05 bgs
Screen Interval: 10-20 ft
Depth to Water: 6.3 ft
Water Column: 13.75 ft
Well Diameter: 1 in

1-inch well = water column (ft) x 0.041 gal/ft
2-inch well = water column (ft) x 0.163 gal/ft
3-inch well = water column (ft) x 0.367 gal/ft
4-inch well = water column (ft) x 0.653 gal/ft

Water Quality Parameter Measurements			
Parameter	1	2	3
Time (24 hr)			
Water Level (ft)			
pH (std. Units)			
Sp. Conductivity (uS/cm)			
Temperature (~~°F~~) C			
Turbidity (NTU)			

Comments:

- Thin water-bearing zone - 10-foot screen installed
- Slow recharge - well volume needed for sample

NATIONAL FIREWORKS OU00 ESI
CORDOVA, SHELBY COUNTY, TENNESSEE
SAMPLE COLLECTION FORM

Station ID: NF32 **Sample Date:** 6/19/18
Latitude: 35.162994 **Longitude:** -89.751566
Photo No.:

Soil Sample A Information

Sample ID: NF32-SS-01 **Sample Time:** Snyder 1240
Depth Interval: 0-2 ft **Sampler Name:** Snyder

Quality Control:
☐ MS/MSD ☐ Duplicate Sample ID: _____ Time: _____

	Analysis	No.	Container
☑	TCL VOCs	1	Terracore Kit
☑	Mercury	1	4-ounce jar

Soil Sample B Information

Sample ID: NF32-SS-02 **Sample Time:** Snyder 1245
Depth Interval: 2-4 ft **Sampler Name:** Snyder

Quality Control:
☐ MS/MSD ☐ Duplicate Sample ID: _____ Time: _____

	Analysis	No.	Container
☑	TCL VOCs	1	Terracore Kit
☑	PFAS	1	8-ounce HDPE jar
☑	Mercury	1	4-ounce jar

Physical Description and Observations:

see back

0-3- sandy dry fill
3-4 - dry dark brown clay
4-6 - saturated dark brown/gray clay
6-8- moist ~~brown~~ sandy clay
8-10 - dry mottled light brown/dark brown clay
10-12- dry brown clay
12-16- damp brown clay
16-20- SAA

PID - 0.0 ppm everywhere

well set @ 10'
screen 5-10'

NATIONAL FIREWORKS OU00 ESI
CORDOVA, SHELBY COUNTY, TENNESSEE
SAMPLE COLLECTION FORM

Station ID: NF32 **Sample Date:** 6/21/18

Groundwater Sample Information

Sample ID: NF32-GW-01 **Well No.:** NF-32

Sample Time: 1060 **Collected by:** Snyder

Quality Control:

☐ MS/MSD ☐ Duplicate Sample ID: _____ Time: _____

	Analysis	No.	Container
☑	TCL VOCs	3	40-mL vials with HCl
☑	PFAS	2	250-mL HDPE bottles
☑	Mercury	1	500-mL poly with HNO3

Type of Well: Temp (PVC)
Total Depth of Well: 10.05 bgs
Screen Interval: 5-10 ft
Depth to Water: 3.95 ft
Water Column: 6.1 ft
Well Diameter: 1 in

1-inch well = water column (ft) x 0.041 gal/ft
2-inch well = water column (ft) x 0.163 gal/ft
3-inch well = water column (ft) x 0.367 gal/ft
4-inch well = water column (ft) x 0.653 gal/ft

Water Quality Parameter Measurements			
Parameter	1	2	3
Time (24 hr)	well purged dry no readings		
Water Level (ft)			
pH (std. Units)			
Sp. Conductivity (uS/cm)			
Temperature (°F)			
Turbidity (NTU)			

Comments:

NATIONAL FIREWORKS OU00 ESI
CORDOVA, SHELBY COUNTY, TENNESSEE
SAMPLE COLLECTION FORM

Station ID: NF33 **Sample Date:** 6/19/18
Latitude: 35.164670 **Longitude:** -89.750675
Photo No.:

Soil Sample A Information

Sample ID: NF33-SS-01 **Sample Time:** 1610
Depth Interval: 0-2 ft **Sampler Name:** CJ

Quality Control:
☒ MS/MSD ☐ Duplicate Sample ID: _____ Time: _____

	Analysis	No.	Container
☑	TCL VOCs	3 ~~1~~ QW	Terracore Kit
☑	PFAS	1	8-ounce HDPE jar
☑	Mercury	1	4-ounce jar

Soil Sample B Information

Sample ID: NF33-SS-02 **Sample Time:** 1620
Depth Interval: 12-14 ft **Sampler Name:** QK

Quality Control:
☐ MS/MSD ☐ Duplicate Sample ID: _____ Time: _____

	Analysis	No.	Container
☑	TCL VOCs	1	Terracore Kit
☑	Mercury	1	4-ounce jar

Physical Description and Observations: See back

Start 1520

Time	Depth	%	PID	Description
1525	0-4	50	0.0	Brown / dark brown sand, mod silt, abundant rock fragments, hard and damp. (0 - 1.25 ft bgs). Brown / dark brown silty clay, mod silt, damp, slightly mod hard
1530	4-8	100	0.0	dark brown silty clay, damp, slightly soft. Becomes moist by 10.75 ft bgs.
1535	8-12	100	0.0	SAA but moist
1540	12-16	75	0.0	SAA to 13.25 ft bgs, then brown clay, hard, & damp
1544	16-20	100	0.0	Brown clay grades to tan clay by 17 ft bgs, hard, damp
1550	20-24	100	0.0	Grey clay, damp, & hard (20-22 ft bgs). Orange brown / tan sand, mod silt, saturated, fine grain sand

NATIONAL FIREWORKS OU00 ESI
CORDOVA, SHELBY COUNTY, TENNESSEE
SAMPLE COLLECTION FORM

Station ID: NF33 **Sample Date:** 6/19/18

Groundwater Sample Information

Sample ID: NF33-GW-01 **Well No.:** NF-33

Sample Time: 1700 **Collected by:** Carter Owens

Quality Control:

☒ MS/MSD ☐ Duplicate Sample ID: _____ Time: _____

	Analysis	No.	Container
☑	TCL VOCs	9 ~~3~~	40-mL vials with HCl
☑	PFAS	4 ~~2~~	250-mL HDPE bottles
☑	Mercury	3 ~~1~~	500-mL poly with HNO3

Type of Well: Temp (PVC)
Total Depth of Well: 23.5 bgs
Screen Interval: 18.5-23.5 ft
Depth to Water: 16.83 ft
Water Column: 6.67 ft
Well Diameter: 1 in

1-inch well = water column (ft) x 0.041 gal/ft
2-inch well = water column (ft) x 0.163 gal/ft
3-inch well = water column (ft) x 0.367 gal/ft
4-inch well = water column (ft) x 0.653 gal/ft

Water Quality Parameter Measurements			
Parameter	1	2	3
Time (24 hr)	1650		
Water Level (ft)	22.60		
pH (std. Units)	6.79		
Sp. Conductivity (uS/cm)	424.3		
Temperature (~~°F~~) °C	22.9		
Turbidity (NTU)	8,000		

Comments: Well purged dry. Allowed to recharge & sampled

NATIONAL FIREWORKS OU00 ESI
CORDOVA, SHELBY COUNTY, TENNESSEE
SAMPLE COLLECTION FORM

Station ID: NF34 **Sample Date:** 6/19/18
Latitude: 35.165021 **Longitude:** -89.749994
Photo No.:

Soil Sample A Information

Sample ID: NF34-SS-01 **Sample Time:** 1155
Depth Interval: 0-2 ft **Sampler Name:** CJ/CO

Quality Control:
☐ MS/MSD ☐ Duplicate Sample ID: _____ Time: _____

	Analysis	No.	Container
☑	TCL VOCs	1	Terracore Kit
☑	PFAS	1	8-ounce HDPE jar
☑	Mercury	1	4-ounce jar

Soil Sample B Information

Sample ID: NF34-SS-02 **Sample Time:** 1150
Depth Interval: 20-22 ft **Sampler Name:** CJ/CO

Quality Control:
☐ MS/MSD ☐ Duplicate Sample ID: _____ Time: _____

	Analysis	No.	Container
☑	TCL VOCs	1	Terracore Kit
☑	Mercury	1	4-ounce jar

Physical Description and Observations: See back

Start 1120

End

Time	Depth	%	PID	Description
1129	0-4	50	0.0	Orange brown sandy clay fine to coarse grain ~~clay~~ sand, mod small pebbles, dry and hard (0-1 ft bgs). Dark grey clay, damp, hard
1132	4-8	75	0.0	Dark brown silty clay, minor silt, grades to clay by 6.5 ft bgs, hard + damp
1138	8-12	75	0.0	Brownish grey silty clay, mod silt, ~~slightly~~ mod soft and moist
1142	12-16	100	0.0	SAA but brown
1147	16-20	100	0.0	SAA, but moist and minor small pebbles
1151	20-24	100	0.0	Orange brown sand mod cly that grades to minor clay by 20.5 ft bgs. fine to small grain sand, minor pebbles, soft and saturated @ 22 ft bgs

NATIONAL FIREWORKS OU00 ESI
CORDOVA, SHELBY COUNTY, TENNESSEE
SAMPLE COLLECTION FORM

Station ID: NF34 **Sample Date:** 6/19/18

Groundwater Sample Information

Sample ID: NF34-GW-01 **Well No.:** NF-34

Sample Time: 1330 **Collected by:** Carter Owens

Quality Control:

☐ MS/MSD ☐ Duplicate Sample ID: _____ Time: _____

	Analysis	No.	Container
☑	TCL VOCs	3	40-mL vials with HCl
☑	PFAS	2	250-mL HDPE bottles
☑	Mercury	1	500-mL poly with HNO3

Type of Well: Temp (PVC)
Total Depth of Well: 20 bgs
Screen Interval: 15-20 ft
Depth to Water: 15.5 ft
Water Column: 4.5 ft
Well Diameter: 1 in

1-inch well = water column (ft) x 0.041 gal/ft
2-inch well = water column (ft) x 0.163 gal/ft
3-inch well = water column (ft) x 0.367 gal/ft
4-inch well = water column (ft) x 0.653 gal/ft

Water Quality Parameter Measurements			
Parameter	1	2	3
Time (24 hr)	1320	1323	1326
Water Level (ft)	16.00	16.30	16.65
pH (std. Units)	6.52	6.54	6.56
Sp. Conductivity (uS/cm)	891	904	913
Temperature (°~~F~~C)	19.7	19.7	19.6
Turbidity (NTU)	240	313	294

Comments:

NATIONAL FIREWORKS OU00 ESI
CORDOVA, SHELBY COUNTY, TENNESSEE
SAMPLE COLLECTION FORM

Station ID: NF35 **Sample Date:** 6/20/18
Latitude: 35.161779 **Longitude:** -89.748430
Photo No.:

Soil Sample A Information

Sample ID: NF35-SS-01 **Sample Time:** 1500
Depth Interval: 0-2 ft **Sampler Name:** CJ

Quality Control:
☒ MS/MSD ☐ Duplicate Sample ID: Time:
No MS/MSD

	Analysis	No.	Container
☑	TCL VOCs	1	Terracore Kits
☑	PFAS	1	8-ounce HDPE jars
☐	Mercury	1	4-ounce jar

Soil Sample B Information

Sample ID: NF35-SS-02 **Sample Time:** 1510
Depth Interval: 4-5 ft **Sampler Name:** CJ

Quality Control:
☐ MS/MSD ☐ Duplicate Sample ID: Time:

	Analysis	No.	Container
☑	TCL VOCs	1	Terracore Kit
☑	Mercury	1	4-ounce jar

Physical Description and Observations: see back

- Moved to about 150 feet NW of SS1 MW-7 (no longer a background location)

Start 1435

Time	Depth	%	PID	Description
1438	0-4	65	0.0	Brown silty clay

mod to abundant silt, minor rock frag, damp & hard. @ ≈ 2 ft bgs black silty clay, very moist, a fibrous material is present, approx 0.25 ft thick. Then grey / dark grey silty clay

slight pine odor

1441	4-8	40	0.0	Grey silty clay

abundant silt, moist & slightly soft. wet @ 5 ft bgs

1445	8-12	60	0.0	SAA to 9 ft bgs

then grades to grey brown in color and very moist to wet (moisture decreasing w/ depth)

NATIONAL FIREWORKS OU00 ESI
CORDOVA, SHELBY COUNTY, TENNESSEE
SAMPLE COLLECTION FORM

Station ID: NF35 **Sample Date:** 6/20/18

Groundwater Sample Information

Sample ID: NF35-GW-01 **Well No.:** NF-35

Sample Time: 1520 **Collected by:** Carter Owens

Quality Control:

☒ MS/MSD ☐ Duplicate Sample ID: _____ Time: _____

No MS/MSD

	Analysis	No.	Container
☑	TCL VOCs	3 ~~8~~	40-mL vials with HCl
☑	PFAS	2 ~~6~~	250-mL HDPE bottles
☑	Mercury	1 ~~3~~	500-mL polys with HNO3

Type of Well: Temp (PVC)
Total Depth of Well: 12.10 bgs
Screen Interval: 7.10 - 12.10 ft
Depth to Water: 5.15 ft
Water Column: 6.95 ft
Well Diameter: 1 in

1-inch well = water column (ft) x 0.041 gal/ft
2-inch well = water column (ft) x 0.163 gal/ft
3-inch well = water column (ft) x 0.367 gal/ft
4-inch well = water column (ft) x 0.653 gal/ft

Water Quality Parameter Measurements			
Parameter	1	2	3
Time (24 hr)	1513	1515	1517
Water Level (ft)	5.20	5.20	5.20
pH (std. Units)	6.65	6.65	6.64
Sp. Conductivity (uS/cm)	990	988	983
Temperature (°~~F~~C)	23.1	23.1	23.1
Turbidity (NTU)	309	320	338

Comments: Purged 4 gallons

NATIONAL FIREWORKS OU00 ESI
CORDOVA, SHELBY COUNTY, TENNESSEE
SAMPLE COLLECTION FORM

Station ID: NF36 **Sample Date:** 6/20/18
Latitude: 35.163889 **Longitude:** -89.752079
Photo No.:

Soil Sample A Information

Sample ID: NF36-SS-01 **Sample Time:** 1645
Depth Interval: 5-7 **Sampler Name:** Snyder

Quality Control:
☐ MS/MSD ☐ Duplicate Sample ID: _____ Time: _____

	Analysis	No.	Container
☑	TCL VOCs	1	Terracore Kit
☑	Mercury	1	4-ounce jar

Soil Sample B Information

Sample ID: NF36-SS-02 **Sample Time:** ~~Snyder~~ 1650
Depth Interval: 16-20 **Sampler Name:** Snyder

Quality Control:
☒ MS/MSD ☐ Duplicate Sample ID: NF36-SS-02 Time: 1650

	Analysis	No.	Container
☑	TCL VOCs	3	Terracore Kits
☑	PFAS	2	8-ounce HDPE jars
☑	Mercury	1	4-ounce jar

Physical Description and Observations:

see back

0-4 - unconsolidated brown silty loam
4-5 - dry mottled light brown/dark brown clay
5-16 - moist brown clay
16-21.5 - saturated light gray clay
21.5-24 - moist light gray/light brown mottled clay

PID - zeros

NATIONAL FIREWORKS OU00 ESI
CORDOVA, SHELBY COUNTY, TENNESSEE
SAMPLE COLLECTION FORM

Station ID: NF36 **Sample Date:** 6/21/18

Groundwater Sample Information

Sample ID: NF36-GW-01 **Well No.:** NF-36

Sample Time: 1035 **Collected by:** JS

Quality Control:

☒ MS/MSD ☐ Duplicate Sample ID: _____ Time: _____

OWS
no MS/MSD

	Analysis	No.	Container
☑	TCL VOCs	3 ~~9~~	40-mL vials with HCl
☑	PFAS	2 ~~6~~	250-mL HDPE bottles
☑	Mercury	1 ~~3~~	500-mL polys with HNO3

Type of Well: Temp (PVC)
Total Depth of Well: 25.09 bgs
Screen Interval: 25-20 ft
Depth to Water: 22.31 ft
Water Column: 2.78 ft
Well Diameter: ~~2~~ 3/4 in

1-inch well = water column (ft) x 0.041 gal/ft
2-inch well = water column (ft) x 0.163 gal/ft
3-inch well = water column (ft) x 0.367 gal/ft
4-inch well = water column (ft) x 0.653 gal/ft

Water Quality Parameter Measurements			
Parameter	1	2	3
Time (24 hr)			
Water Level (ft)			
pH (std. Units)	well purged dry	No readings	
Sp. Conductivity (uS/cm)			
Temperature (°~~F~~C)			
Turbidity (NTU)			

Comments:

NATIONAL FIREWORKS OU00 ESI
CORDOVA, SHELBY COUNTY, TENNESSEE
SAMPLE COLLECTION FORM

Station ID: NF36 **Sample Date:** 6/21

Soil Gas Sample A Information

Sample ID: NF36-SG-01 **Boring No.:** NF-36 **Total Depth:** 6'

Sample Time: _____ **Collected by:** _____ **Tubing Type:** 1/4" tef

Container: _____ **Size:** _____ **Screened Depth:** 5.5-6'

Container ID: _____ **Sand/Glass Beads:** 6-5

Regulator ID: _____ **Bentonite:** 5-0

Implant not sampled. Viable, but not useful as background

Leak Test? Yes No **Pass/Fail?** Pass Fail

Test Time: _____ **Tracer Gas:** _____

Gas Detector: _____ **Pump Type:** _____

Shroud Conc.: _____ **Implant Conc.:** _____

START		END	
Time:		**Time:**	
Pressure:		**Pressure:**	

Soil Gas Sample B Information

Sample ID: NF36-SG-02 **Boring No.:** NF-36 **Total Depth:** _____

Sample Time: _____ **Collected by:** _____ **Tubing Type:** _____

Container: _____ **Size:** _____ **Screened Depth:** _____

Container ID: _____ **Sand/Glass Beads:** _____

Regulator ID: _____ **Bentonite:** _____

Leak Test? Yes No **Pass/Fail?** Pass Fail

Test Time: _____ **Tracer Gas:** _____

Gas Detector: _____ **Pump Type:** _____

Shroud Conc.: _____ **Implant Conc.:** _____

START		END	
Time:		**Time:**	
Pressure:		**Pressure:**	

NATIONAL FIREWORKS OU00 ESI
CORDOVA, SHELBY COUNTY, TENNESSEE
SAMPLE COLLECTION FORM

Station ID: NFMW1 **Well No.:** SS-GW-01

Sample ID: NFMW1-GW-01 **Sample Date:** 6/18/18

Collected by: CO/AA **Sample Time:** 1515

Quality Control:

QC ☒ MS/MSD ☐ Duplicate Sample ID: ~~NFMW1-GW-01~~ QC Time: ~~1515~~ QC

	Analysis	No.	Container
☑	TCL VOCs	3	40-mL vials with HCl
☑	PFAS	2	250-mL HDPE bottles
☑	Mercury	1	500-mL poly with HNO3

Total Depth of Well: 29.83 ft

Depth to Water: 2.81 ft

Water Column 27.02 ft

Well Diameter 2 in

Well Volume: 4.4 gal

Well Volume:
1-inch well = water column (ft) x 0.041 gal/ft
2-inch well = water column (ft) x 0.163 gal/ft
3-inch well = water column (ft) x 0.367 gal/ft
4-inch well = water column (ft) x 0.653 gal/ft

Groundwater Quality Parameter Measurements for Stabilization

Parameter	1	2	3	4	5	6	7	8	Stabilization Criteria
Time (24 hr)	1450	1455	1500	1505	1510				
Vol. Purged (gal)	0.5	1	1.5	2	2.5				
Water Level (ft)	5.20	5.25	5.25	5.30	5.30				
pH (std. Units)	5.52	5.52	5.52	5.56	5.53				+/- 0.1
Sp. Conductivity (uS/cm)	573	576	575	590	575				+/- 3%
Temperature (°C)	19.6	19.7	19.7	19.9	19.7				None
Turbidity (NTU)	10.4	11.9	10.8	13.4	7.3				+/- 10%

Purge Start Time: 1435

Purge End Time: 1510

Total Vol. Purged: 2.5

Purged Dry? (Y/N) NO

Method of Purging:

☒ Pump Type: Peristaltic

☐ Bailer Type:

Comments:

NATIONAL FIREWORKS OU00 ESI
CORDOVA, SHELBY COUNTY, TENNESSEE
SAMPLE COLLECTION FORM

Station ID: NFMW7 **Well No.:** MW-7

Sample ID: NFMW7-GW-01 **Sample Date:** 6/21/18

Collected by: C. Owens / C. Jones **Sample Time:** 1155

Quality Control:

☐ MS/MSD ☒ Duplicate Sample ID: NFMW7-GW-01-DUP Time: 1200

	Analysis	No.	Container
☑	TCL VOCs	6	40-mL vials with HCl
☑	PFAS	4	250-mL HDPE bottles
☑	Mercury	2	500-mL poly with HNO3

Total Depth of Well: 28.59 ft

Depth to Water: 6.85 ft

Water Column 21.74 ft

Well Diameter 2 in

Well Volume: 3.54 gal

Well Volume:
1-inch well = water column (ft) x 0.041 gal/ft
2-inch well = water column (ft) x 0.163 gal/ft
3-inch well = water column (ft) x 0.367 gal/ft
4-inch well = water column (ft) x 0.653 gal/ft

Groundwater Quality Parameter Measurements for Stabilization

Parameter	1	2	3	4	5	6	7	8	Stabilization Criteria
Time (24 hr)	1140	1145	1150						
Vol. Purged (gal)	0.25	0.5	0.75						
Water Level (ft)	7.20	7.25	7.25						
pH (std. Units)	5.92	5.90	5.90						+/- 0.1
Sp. Conductivity (uS/cm)	316.6	314.4	314.4						+/- 3%
Temperature (°C)	17.1	16.9	16.9						None
Turbidity (NTU)	47	34.1	34.8						+/- 10%

Purge Start Time: 1135

Purge End Time:

Total Vol. Purged:

Purged Dry? (Y/N) N

Method of Purging:

☑ Pump Type: Peristaltic

☐ Bailer Type:

Comments:

NATIONAL FIREWORKS OU00 ESI
CORDOVA, SHELBY COUNTY, TENNESSEE
SAMPLE COLLECTION FORM

Equipment Rinsate Blank Sample Information

Sample ID: NF-EB-02 **Station ID:** #R4DART#

Sample Date: 6/21/18 **Sample Time:** 0920

Sample Depth: NA **Sampler Name:** QK

	Analysis	No.	Container
☑	TCL VOCs	3	40-mL vials with HCl
☑	PFAS	2	250-mL HDPE bottles
☑	Mercury	1	500-mL poly with HNO3

Field Blank Sample Information

Sample ID: NF-FB-02 **Station ID:** #R4DART#

Sample Date: 6/21/18 **Sample Time:** 0930

Sample Depth: NA **Sampler Name:** QK

	Analysis	No.	Container
☑	TCL VOCs	3	40-mL vials with HCl
☑	PFAS	2	250-mL HDPE bottles
☑	Mercury	1	500-mL poly with HNO3

Preservative Blank Sample Information

Sample ID: NF-PB-02 **Station ID:** #R4DART#

Sample Date: 6/21/18 **Sample Time:** 1125

Sample Depth: NA **Sampler Name:** QK

	Analysis	No.	Container
☑	Mercury	1	500-mL poly with HNO3

NATIONAL FIREWORKS OU00 ESI
CORDOVA, SHELBY COUNTY, TENNESSEE
SAMPLE COLLECTION FORM

Trip Blank (Soil) Sample Information

Sample ID: NF-TB-04 **Station ID:** #R4DART#

Sample Date: 6/19/18 **Sample Time:** 1850

Sample Depth: NA **Sampler Name:** CO

	Analysis	No.	Container
☑	TCL VOCs	1	Terracore Kit

Trip Blank (Soil) Sample Information

Sample ID: NF-TB-05 **Station ID:** #R4DART#

Sample Date: 6/20/18 **Sample Time:** 1840

Sample Depth: NA **Sampler Name:** CJ

	Analysis	No.	Container
☑	TCL VOCs	1	Terracore Kit

Trip Blank (Water) Sample Information

Sample ID: NF-TB-06 **Station ID:** #R4DART#

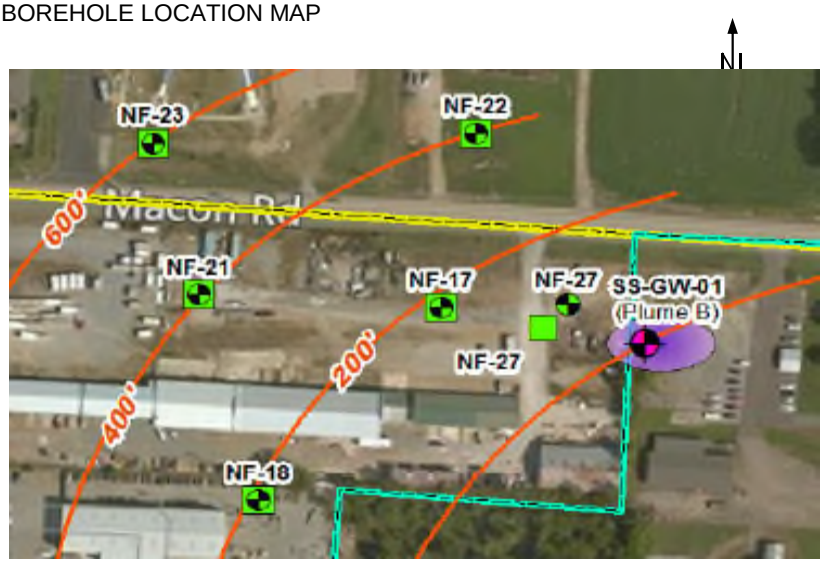
Sample Date: 6/21/18 **Sample Time:** 0935

Sample Depth: NA **Sampler Name:** QK

	Analysis	No.	Container
☑	TCL VOCs	3	40-mL vials with HCl

Boring ID:	NF17		
Monitoring Well ID:	-		
Project Number:	103X902710006	***Project Name:***	National Fireworks OU00 ESI
Client:	U.S. EPA		
Site:	National Fireworks		
Borehole Location:	Eastern Portion of study area, west of Plume B		
Logged By:	Chris Jones, Tetra Tech, Inc.		
Reviewed By:		***Review Date:***	
Drilling Contractor:	McCray Drilling		
Drill Rig Type/Method:	Geoprobe		
Sampler Type:	Duel Tube (DPT) Sampling System		
Borehole Diameter (inches):	1.75		
Drill Start Date:	6/20/2018		
Drill Finish Date:	6/20/2018		
Total Borehole Depth (feet bgs):	24		

BOREHOLE LOCATION MAP



NOTES/REMARKS

Soil sample collected from 0-2 feet and 4-6 feet below ground surface interval.

Groundwater measured at approximately 7.05 feet below ground surface.

PROJECT: National Fireworks OU00 ESI **DATE:** 6/20/2018

SITE: National Fireworks **LOGGED BY:** Chris Jones, Tetra Tech, Inc.

BORING ID: NF17 **MW ID:** -

Time	Recovered/Driven (Percent)	Max PID Reading (ppm)	Sample Interval	Depth (feet bgs)	Soil Description
0811	40	0.0		1, 2, 3, 4	Brown silty clay, moderate silt, minor small rock fragments, damp and slightly hard.
0814	30	0.0		5, 6, 7, 8	Brown silty clay, moderate silt, minor small rock fragments, moist to wet and slightly hard.
0816	90	0.0		9, 10, 11, 12	Brown silty clay, moderate silt, minor small rock fragments, moist to wet and slightly hard.
0818	80	0.0		13, 14, 15, 16	Brown silty clay, moderate silt, minor small rock fragments, moist to wet and slightly hard. Color grades to orange brown by 13.5 feet bgs. Minor fine grain sand. Sand and silt content increases with depth
0821	60	0.0		17, 18, 19, 20	Orange brown/grey silty sand, moderate silt, fine grain sand, very moist and slightly hard. Becomes light grey fine grain sand, saturated and soft by 18 ft bgs.

PROJECT:	National Fireworks OU00 ESI	**DATE:**	6/20/2018
SITE:	National Fireworks	**LOGGED BY:**	Chris Jones, Tetra Tech, Inc.
BORING ID:	NF17 **MW ID:** -		

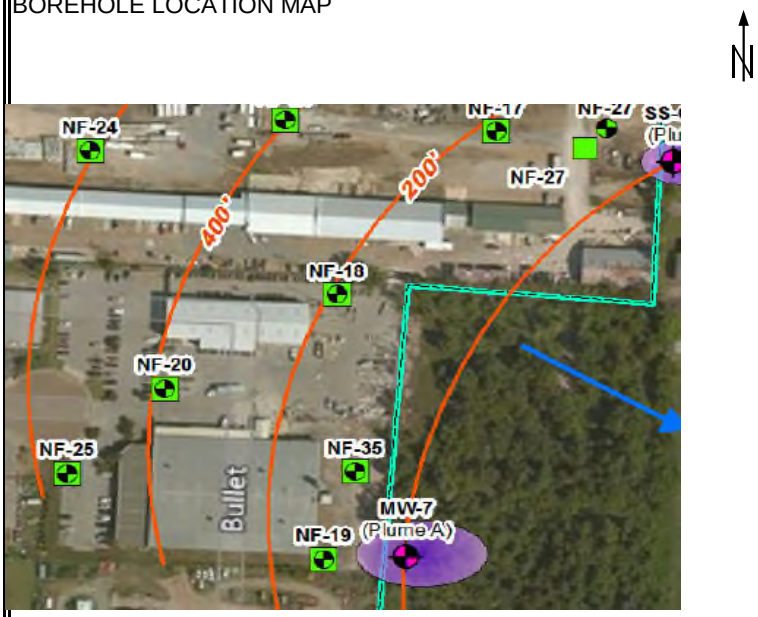
Time	Recovered/Driven (Percent)	Max PID Reading (ppm)	Sample Interval	Depth (feet bgs)	Soil Description
				20	Light grey fine grain sand, saturated, and soft.
				21	Grades to orange brown silt and clay by 20.75 ft bgs
0832	50	0.0		22	Becomes orange brown and grey sandy clay by 21.25 ft bgs, fine grain sand and wet.
				23	
				24	

Notes: No staining or odors noted during drilling activities.

bgs	Below ground surface
ft	Feet
ppm	Parts per million
▽	Groundwater level

Boring ID:	NF18		
Monitoring Well ID:	-		
Project Number:	103X902710006	***Project Name:***	National Fireworks OU00 ESI
Client:	U.S. EPA		
Site:	National Fireworks		
Borehole Location:	Eastern Portion of study area, north of Plume A		
Logged By:	John Snyder Tetra Tech, Inc.		
Reviewed By:		***Review Date:***	
Drilling Contractor:	McCray Drilling		
Drill Rig Type/Method:	Geoprobe		
Sampler Type:	Duel Tube (DPT) Sampling System		
Borehole Diameter (inches):	1.75		
Drill Start Date:	6/20/2018		
Drill Finish Date:	6/20/2018		
Total Borehole Depth (feet bgs):	16		

BOREHOLE LOCATION MAP



NOTES/REMARKS

Soil sample collected from 8-10 feet and 14-16 feet below ground surface interval.

Groundwater measured at approximately 9.65 feet below ground surface.

PROJECT: National Fireworks OU00 ESI **DATE:** 6/20/2018

SITE: National Fireworks **LOGGED BY:** John Snyder Tetra Tech, Inc.

BORING ID: NF18 **MW ID:** -

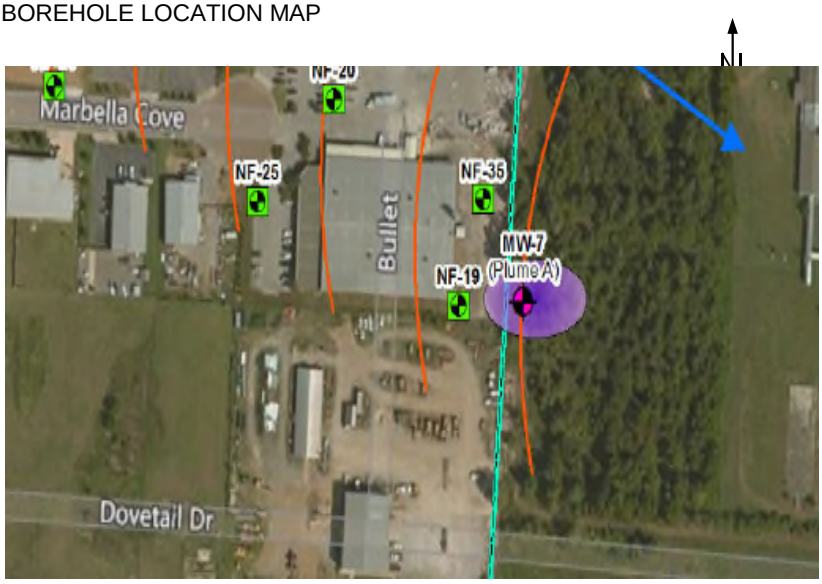
Time	Recovered/Driven (Percent)	Max PID Reading (ppm)	Sample Interval	Depth (feet bgs)	Soil Description
				1	Asphalt pavement
		0.0		2	Poor recovery, moist sandy clay
				3	
				4	
		0.0		5	Zero recovery
				6	
				7	
				8	
1440		0.0		9	Swollen soft saturated brown clay
			▽	10	
				11	
				12	
1445		0.0		13	Moist brown/gray mottled clay
				14	
				15	
				16	

Notes: No staining or odors noted during drilling activities.

bgs Below ground surface
ft Feet
ppm Parts per million
▽ Groundwater level

Boring ID:	NF19		
Monitoring Well ID:	-		
Project Number:	103X902710006	***Project Name:***	National Fireworks OU00 ESI
Client:	U.S. EPA		
Site:	National Fireworks		
Borehole Location:	Southeastern portion of study area, west of Plume A		
Logged By:	Chris Jones, Tetra Tech, Inc.		
Reviewed By:		***Review Date:***	
Drilling Contractor:	McCray Drilling		
Drill Rig Type/Method:	Geoprobe		
Sampler Type:	Duel Tube (DPT) Sampling System		
Borehole Diameter (inches):	1.75		
Drill Start Date:	6/20/2018		
Drill Finish Date:	6/20/2018		
Total Borehole Depth (feet bgs):	24		

BOREHOLE LOCATION MAP



NOTES/REMARKS

Soil samples collected from 0-2 feet and 6-8 feet below ground surface interval.

Groundwater measured at approximately 14.92 feet below ground surface.

PROJECT: National Fireworks OU00 ESI **DATE:** 6/20/2018

SITE: National Fireworks **LOGGED BY:** Chris Jones, Tetra Tech, Inc.

BORING ID: NF19 **MW ID:** -

Time	Recovered/Driven (Percent)	Max PID Reading (ppm)	Sample Interval	Depth (feet bgs)	Soil Description
1340	50	0.0		1, 2, 3, 4	Brown silty clay, abundant silt, slightly soft, damp.
1345	100	0.0		5, 6, 7, 8	Brown silty clay, abundant silt, slightly soft, moist, wet from 7.25-7.5 ft bgs.
1348	100	0.0		9, 10, 11, 12	Brown silty clay, abundant silt, slightly soft, very moist, wet
1351	100	0.0		13, 14, 15, 16	Brown silty clay, abundant silt, slightly soft, very moist, wet
1355	75	0.0		17, 18, 19, 20	Brown silty clay, abundant silt, slightly soft, very moist, and wet to 17.25 ft bgs. Brown/orange brown sandy clay, abundant small to medium grain sand, hard and moist, minor rock fragments.

PROJECT:	National Fireworks OU00 ESI	**DATE:**	6/20/2018
SITE:	National Fireworks	**LOGGED BY:**	Chris Jones, Tetra Tech, Inc.
BORING ID:	NF19 **MW ID:** -		

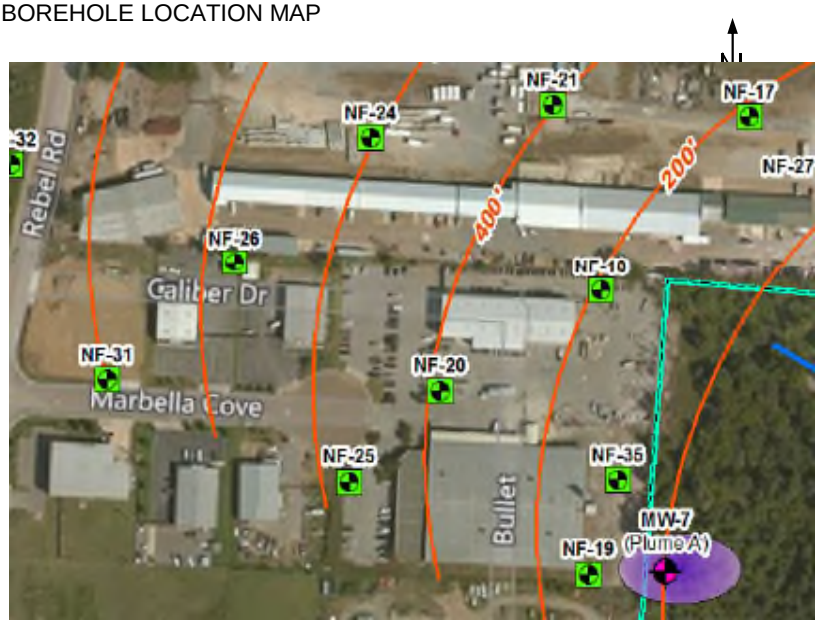
Time	Recovered/Driven (Percent)	Max PID Reading (ppm)	Sample Interval	Depth (feet bgs)	Soil Description
1403	90	0.0		20	Brown/orange brown sandy clay, abundant small grain sand, hard, moist, minor rock fragments.
				21	
				22	
				23	From 22.25 to 24 ft bgs, brown/orange brown sandy clay, minor clay, small grain sand, and wet.
				24	

Notes: No staining or odors noted during drilling activities.

bgs	Below ground surface
ft	Feet
ppm	Parts per million
▽	Groundwater level

Boring ID:	NF20		
Monitoring Well ID:	-		
Project Number:	103X902710006	***Project Name:***	National Fireworks OU00 ESI
Client:	U.S. EPA		
Site:	National Fireworks		
Borehole Location:	Southern central portion of study area, northwest of Plume A		
Logged By:	Chris Jones, Tetra Tech, Inc.		
Reviewed By:		***Review Date:***	
Drilling Contractor:	McCray Drilling		
Drill Rig Type/Method:	Geoprobe		
Sampler Type:	Duel Tube (DPT) Sampling System		
Borehole Diameter (inches):	1.75		
Drill Start Date:	6/19/2018		
Drill Finish Date:	6/20/2018		
Total Borehole Depth (feet bgs):	20		

BOREHOLE LOCATION MAP



NOTES/REMARKS

Soil samples collected from 0-2 feet and 8-10 feet below ground surface interval.

Groundwater measured at approximately 12 feet below ground surface.

PROJECT:	National Fireworks OU00 ESI	**DATE:**	6/20/2018
SITE:	National Fireworks	**LOGGED BY:**	Chris Jones, Tetra Tech, Inc.
BORING ID:	NF20 **MW ID:** -		

Time	Recovered/Driven (Percent)	Max PID Reading (ppm)	Sample Interval	Depth (feet bgs)	Soil Description
0900	50	0.5		1, 2, 3, 4	Light orange brown sand, moist, fine grain sand, minor pebbles.
0905	50	0.0		5, 6, 7, 8	Light orange brown sand, moist, fine grain sand, minor pebbles. Grey clay, minor fine grain sand, moist, slightly soft.
0910	100	0.0		9, 10, 11, 12	Grey clay, minor fine grain sand, moist, slightly soft. Brown clay, soft, wet, minor sand, fine grain.
0915	90	0.0		13, 14, 15, 16	Brown and gray clay, minor fine grain sand, soft and wet. Grades to slightly soft and damp by 15.25 ft bgs.
0920	90	0.0		17, 18, 19, 20	Brown and gray clay, minor fine grain sand, soft and wet. Grades to moist by 19.25 ft bgs.

Notes: No staining or odors noted during drilling activities.

bgs	Below ground surface	ppm	Parts per million
ft	Feet	▽	Groundwater level

APPENDIX C
SOIL BORING LOGS

Boring ID:	NF21		
Monitoring Well ID:	-		
Project Number:	103X902710006	***Project Name:***	National Fireworks OU00 ESI
Client:	U.S. EPA		
Site:	National Fireworks		
Borehole Location:	Central portion of study area, west of Plume B		
Logged By:	Chris Jones, Tetra Tech, Inc.		
Reviewed By:		***Review Date:***	
Drilling Contractor:	McCray Drilling		
Drill Rig Type/Method:	Geoprobe		
Sampler Type:	Duel Tube (DPT) Sampling System		
Borehole Diameter (inches):	1.75		
Drill Start Date:	6/20/2018		
Drill Finish Date:	6/20/2018		
Total Borehole Depth (feet bgs):	24		

BOREHOLE LOCATION MAP

NOTES/REMARKS

Soil samples collected from 0-2 feet and 13-15 feet below ground surface interval.

Groundwater measured at approximately 19.3 feet below ground surface.

PROJECT: National Fireworks OU00 ESI **DATE:** 6/20/2018

SITE: National Fireworks **LOGGED BY:** Chris Jones, Tetra Tech, Inc.

BORING ID: NF21 **MW ID:** -

Time	Recovered/Driven (Percent)	Max PID Reading (ppm)	Sample Interval	Depth (feet bgs)	Soil Description
1052	70	0.0		1, 2, 3, 4	Brown silty clay, abundant silt, damp, and slightly soft.
1054	100	0.0		5, 6, 7, 8	Brown silty clay, abundant silt, wet, and slightly hard.
1057	100	0.0		9, 10, 11, 12	Brown silty clay, abundant silt, moist, and slightly soft.
1101	100	0.0		13, 14, 15, 16	Brown/reddish brown sandy clay, abundant fine grain sand, slightly soft, and moist. From 14-14.75 ft bgs brown/reddish brown sandy clay, abundant fine grain sand, slightly soft, moist, with rock fragments and coarse sand. Sand with moderate clay, small grain sand, moderately soft, and very moist.
1105	100	0.0		17, 18, 19, 20	Reddish/brown sand, moderate clay, moderately soft, small grain sand, and wet.

PROJECT:	National Fireworks OU00 ESI	**DATE:**	6/20/2018
SITE:	National Fireworks	**LOGGED BY:**	Chris Jones, Tetra Tech, Inc.
BORING ID:	NF21 **MW ID:** -		

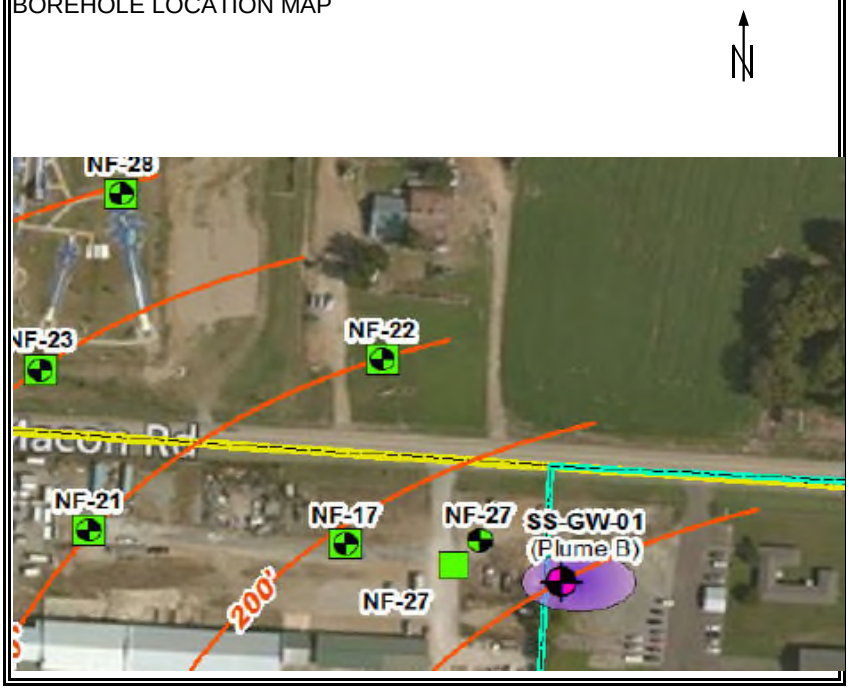
Time	Recovered/Driven (Percent)	Max PID Reading (ppm)	Sample Interval	Depth (feet bgs)	Soil Description
1115	100	0.0		20	Reddish/brown sand, moderate clay, moderately soft, small grain sand, and wet.
				21	
				22	
				23	
				24	

Notes: No staining or odors noted during drilling activities.

bgs	Below ground surface
ft	Feet
ppm	Parts per million
▽	Groundwater level

Boring ID:	NF22		
Monitoring Well ID:	-		
Project Number:	103X902710006	***Project Name:***	National Fireworks OU00 ESI
Client:	U.S. EPA		
Site:	National Fireworks		
Borehole Location:	Eastern Portion of study area, northwest of Plume B		
Logged By:	Chris Jones, Tetra Tech, Inc.		
Reviewed By:		***Review Date:***	
Drilling Contractor:	McCray Drilling		
Drill Rig Type/Method:	Geoprobe		
Sampler Type:	Duel Tube (DPT) Sampling System		
Borehole Diameter (inches):	1.75		
Drill Start Date:	6/19/2018		
Drill Finish Date:	6/19/2018		
Total Borehole Depth (feet bgs):	28		

BOREHOLE LOCATION MAP



NOTES/REMARKS

Soil sample collected from 16-18 feet and 24-26 feet below ground surface interval.

Groundwater measured at approximately 6.75 feet below ground surface.

PROJECT: National Fireworks OU00 ESI **DATE:** 6/19/2018

SITE: National Fireworks **LOGGED BY:** John Snyder Tetra Tech, Inc.

BORING ID: NF22 **MW ID:** -

Time	Recovered/Driven (Percent)	Max PID Reading (ppm)	Sample Interval	Depth (feet bgs)	Soil Description
		0.0		1	Loamy sand with organics
				2	Dry, mottled light/dark brown clay
				3	
				4	
		0.0		5	Uniform moist brown clay
				6	
			▽	7	
				8	
		0.0		9	
				10	
				11	
				12	
		0.0		13	
				14	
				15	
				16	
		0.0		17	Uniform dry brown clay
				18	Gray/brown mottled moist clay
				19	
				20	

PROJECT:	National Fireworks OU00 ESI	**DATE:**	6/19/2018
SITE:	National Fireworks	**LOGGED BY:**	John Snyder Tetra Tech, Inc.
BORING ID:	NF22 **MW ID:** -		

Time	Recovered/Driven (Percent)	Max PID Reading (ppm)	Sample Interval	Depth (feet bgs)	Soil Description
				20	Uniform moist brown clay
				21	
		0.0		22	
				23	
				24	
				25	
		0.0		26	
				27	Saturated brown clayey sand
				28	

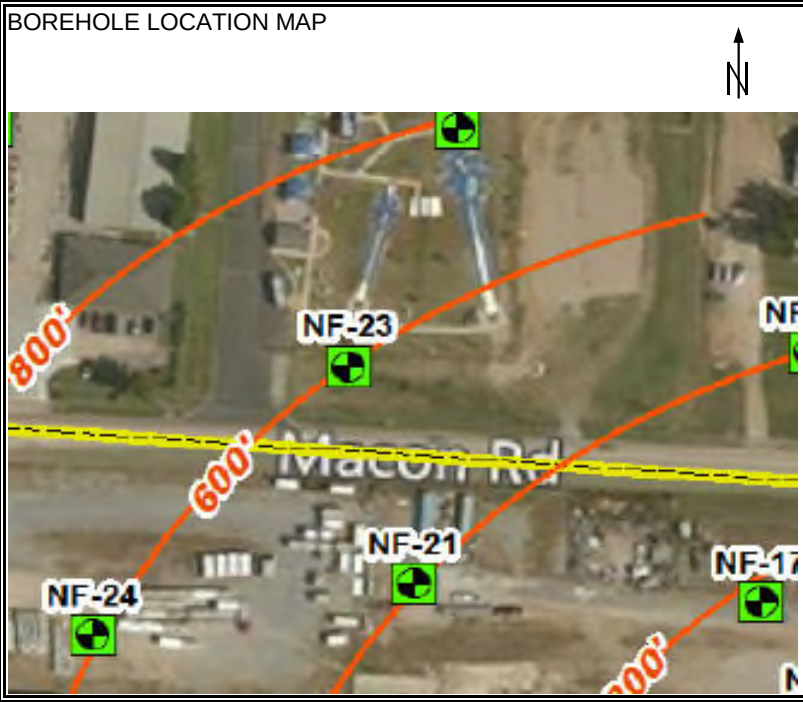
Notes: No staining or odors noted during drilling activities.

bgs	Below ground surface
ft	Feet
ppm	Parts per million
▽	Groundwater level

APPENDIX C
SOIL BORING LOGS

Boring ID:	NF23		
Monitoring Well ID:	-		
Project Number:	103X902710006	***Project Name:***	National Fireworks OU00 ESI
Client:	U.S. EPA		
Site:	National Fireworks		
Borehole Location:	Church property, by road		
Logged By:	John Snyder, Tetra Tech, Inc.		
Reviewed By:		***Review Date:***	
Drilling Contractor:	McCray Drilling		
Drill Rig Type/Method:	Geoprobe		
Sampler Type:	Duel Tube (DPT) Sampling System		
Borehole Diameter (inches):	1.75		
Drill Start Date:	6/19/2018		
Drill Finish Date:	6/19/2018		
Total Borehole Depth (feet bgs):	20		

BOREHOLE LOCATION MAP



NOTES/REMARKS

Soil sample collected from 0-2 feet and 14-16 feet below ground surface interval.

Groundwater measured at approximately 12.3 feet below ground surface.

PROJECT:	National Fireworks OU00 ESI	**DATE:**	6/19/2018
SITE:	National Fireworks	**LOGGED BY:**	John Snyder Tetra Tech, Inc.
BORING ID:	NF23 **MW ID:** -		

Time	Recovered/Driven (Percent)	Max PID Reading (ppm)	Sample Interval	Depth (feet bgs)	Soil Description
1340		0.0		1	Loamy brown dry sand
				2	Brown moist clay
				3	
				4	
		0.0		5	
				6	
				7	
				8	
		0.0		9	Brown/gray mottled dry clay
				10	
				11	
				12	
1345		0.0		13	
				14	
				15	
				16	
		0.0		17	Saturated light brown sandy clay
				18	
				19	
				20	

PROJECT:	National Fireworks OU00 ESI	**DATE:**	6/19/2018
SITE:	National Fireworks	**LOGGED BY:**	John Snyder Tetra Tech, Inc.
BORING ID:	NF23 **MW ID:** -		

Time	Recovered/Driven (Percent)	Max PID Reading (ppm)	Sample Interval	Depth (feet bgs)	Soil Description

Notes: No staining or odors noted during drilling activities.

bgs	Below ground surface
ft	Feet
ppm	Parts per million
▽	Groundwater level

Boring ID:	NF24		
Monitoring Well ID:	-		
Project Number:	103X902710006	***Project Name:***	National Fireworks OU00 ESI
Client:	U.S. EPA		
Site:	National Fireworks		
Borehole Location:	Central portion of study area, south of Macon Road		
Logged By:	John Snyder, Tetra Tech, Inc.		
Reviewed By:		***Review Date:***	
Drilling Contractor:	McCray Drilling		
Drill Rig Type/Method:	Geoprobe		
Sampler Type:	Duel Tube (DPT) Sampling System		
Borehole Diameter (inches):	1.75		
Drill Start Date:	6/20/2018		
Drill Finish Date:	6/20/2018		
Total Borehole Depth (feet bgs):	20		

BOREHOLE LOCATION MAP

NOTES/REMARKS

Soil sample collected from 4-6 feet and 21-23 feet below ground surface interval.

Groundwater measured at approximately 12 feet below ground surface.

PROJECT: National Fireworks OU00 ESI **DATE:** 6/20/2018

SITE: National Fireworks **LOGGED BY:** John Snyder Tetra Tech, Inc.

BORING ID: NF24 **MW ID:** -

Time	Recovered/Driven (Percent)	Max PID Reading (ppm)	Sample Interval	Depth (feet bgs)	Soil Description
		0.0		1, 2, 3	Hard dry gravel/sand
0910		0.0		4, 5, 6, 7, 8	Uniform moist brown clay
		0.0		9, 10, 11, 12	
		0.0		13, 14, 15, 16	
		0.0		17, 18, 19, 20	

PROJECT:	National Fireworks OU00 ESI	**DATE:**	6/20/2018
SITE:	National Fireworks	**LOGGED BY:**	John Snyder Tetra Tech, Inc.
BORING ID:	NF24 **MW ID:** -		

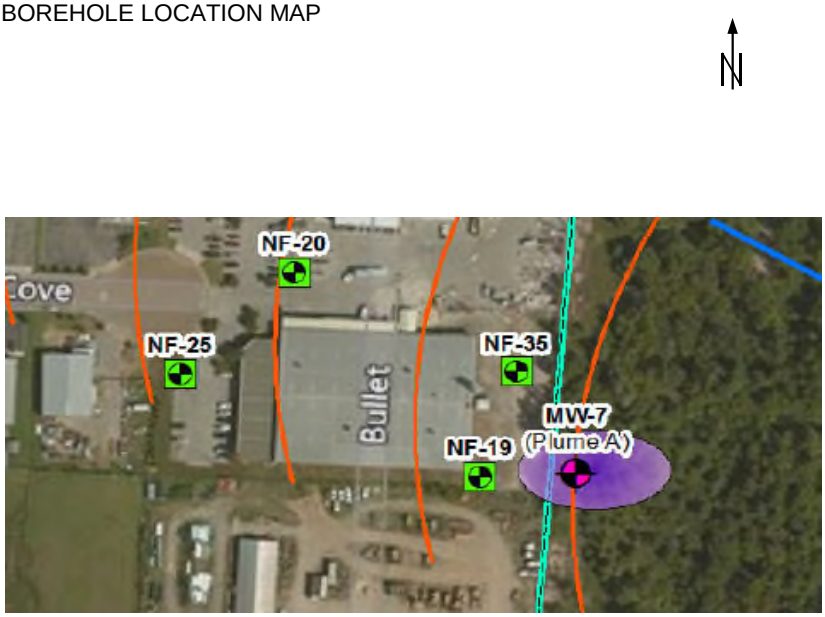
Time	Recovered/Driven (Percent)	Max PID Reading (ppm)	Sample Interval	Depth (feet bgs)	Soil Description
				20	
				21	Red/brown/gray mottled moist clay
0915		0.0		22	
				23	
				24	Light gray saturated sand

Notes: No staining or odors noted during drilling activities.

bgs	Below ground surface
ft	Feet
ppm	Parts per million
▽	Groundwater level

Boring ID:	NF25		
Monitoring Well ID:	-		
Project Number:	103X902710006	***Project Name:***	National Fireworks OU00 ESI
Client:	U.S. EPA		
Site:	National Fireworks		
Borehole Location:	Southern portion of site, west of Plume A		
Logged By:	John Snyder, Tetra Tech, Inc.		
Reviewed By:		***Review Date:***	
Drilling Contractor:	McCray Drilling		
Drill Rig Type/Method:	Geoprobe		
Sampler Type:	Duel Tube (DPT) Sampling System		
Borehole Diameter (inches):	1.75		
Drill Start Date:	6/19/2018		
Drill Finish Date:	6/19/2018		
Total Borehole Depth (feet bgs):	20		

BOREHOLE LOCATION MAP



NOTES/REMARKS

Soil sample collected from 2-4 feet and 12-14 feet below ground surface interval.

Groundwater measured at approximately 6.5 feet below ground surface.

PROJECT:	National Fireworks OU00 ESI	**DATE:**	6/19/2018
SITE:	National Fireworks	**LOGGED BY:**	John Snyder Tetra Tech, Inc.
BORING ID:	NF25 **MW ID:** -		

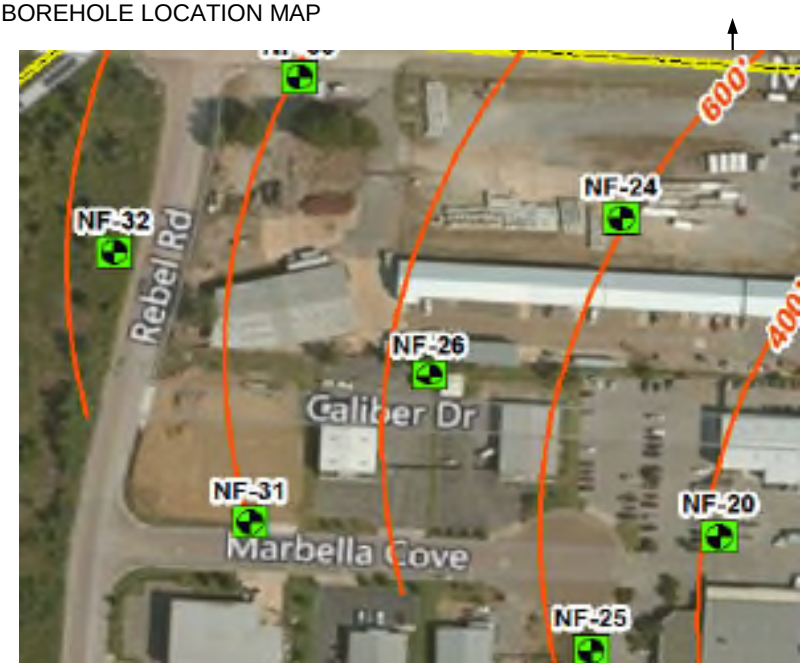
Time	Recovered/Driven (Percent)	Max PID Reading (ppm)	Sample Interval	Depth (feet bgs)	Soil Description
0930		0.0		1	Dry brown sandy clay with organics
				2	
				3	Brown saturated clay
				4	
		0.0		5	Brown moist clay
				6	Brown moist clay
			▽	7	
				8	
		0.0		9	
				10	
				11	Brown dry clay
				12	
0935		0.0		13	
				14	
					Saturated gray clay
				15	Mottled gray/brown moist clay
				16	
		0.0		17	
				18	
				19	
				20	

Notes: No staining or odors noted during drilling activities.

bgs	Below ground surface
ft	Feet
ppm	Parts per million
▽	Groundwater level

Boring ID:	NF26		
Monitoring Well ID:	-		
Project Number:	103X902710006	***Project Name:***	National Fireworks OU00 ESI
Client:	U.S. EPA		
Site:	National Fireworks		
Borehole Location:	West central portion of study area, west of Plume B		
Logged By:	Chris Jones, Tetra Tech, Inc.		
Reviewed By:		***Review Date:***	
Drilling Contractor:	McCray Drilling		
Drill Rig Type/Method:	Geoprobe		
Sampler Type:	Duel Tube (DPT) Sampling System		
Borehole Diameter (inches):	1.75		
Drill Start Date:	6/19/2018		
Drill Finish Date:	6/20/2018		
Total Borehole Depth (feet bgs):	20		

BOREHOLE LOCATION MAP



NOTES/REMARKS

Soil sample collected from 0-2 feet and 8-10 feet below ground surface interval.

Groundwater measured at approximately 16.41 feet below ground surface.

PROJECT:	National Fireworks OU00 ESI	**DATE:**	6/20/2018
SITE:	National Fireworks	**LOGGED BY:**	Chris Jones, Tetra Tech, Inc.
BORING ID:	NF26 **MW ID:** -		

Time	Recovered/Driven (Percent)	Max PID Reading (ppm)	Sample Interval	Depth (feet bgs)	Soil Description
1022	50	0.0		1, 2, 3, 4	Brown, silty clay, damp, and moderately soft.
1027	100	0.0		5, 6, 7, 8	Brown, silty clay, very moist to wet, and moderately soft.
1032	100	0.0		9, 10, 11, 12	Brown, silty clay, very moist to wet, and moderately soft.
1037	100	0.0		13, 14, 15, 16	Brown, silty clay, moist to wet, and moderately soft.
1040	100	0.0	▽	17, 18, 19, 20	Brown, silty clay, moist to wet, and moderately soft to 17 ft bgs. Grey clay, minor fine grain sand, minor small pebbles, soft, and very moist to wet. Orange/brown clay at 18.75 ft bgs, minor to moderately fine grain sand, minor small pebbles, soft, very moist, and wet.

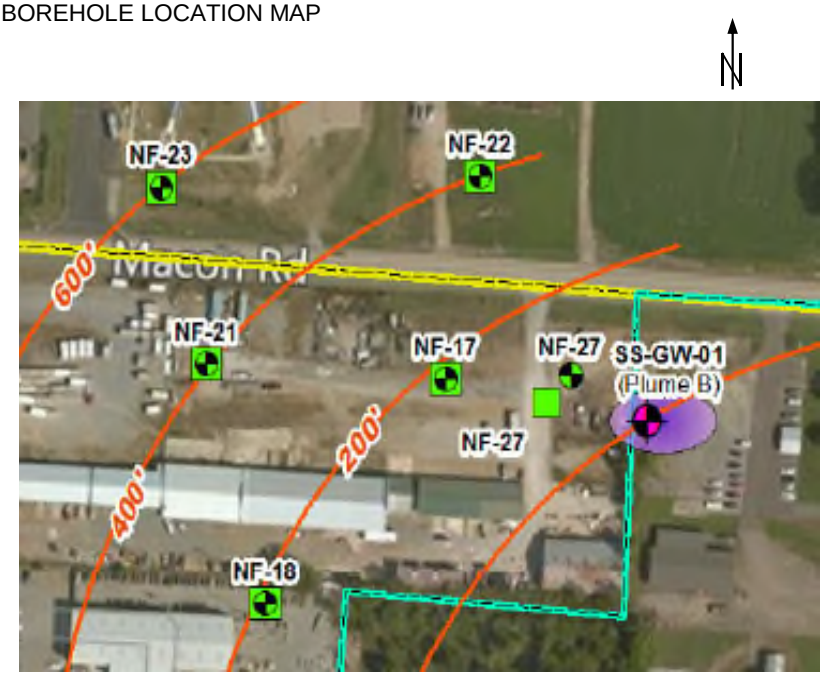
Notes: No staining or odors noted during drilling activities.

bgs	Below ground surface	ppm	Parts per million
ft	Feet	▽	Groundwater level

APPENDIX C
SOIL BORING LOGS

Boring ID:	NF27		
Monitoring Well ID:	-		
Project Number:	103X902710006	***Project Name:***	National Fireworks OU00 ESI
Client:	U.S. EPA		
Site:	National Fireworks		
Borehole Location:	Eastern Portion of study area, west northwest of Plume B		
Logged By:	Chris Jones, Tetra Tech, Inc.		
Reviewed By:		***Review Date:***	
Drilling Contractor:	McCray Drilling		
Drill Rig Type/Method:	Geoprobe		
Sampler Type:	Duel Tube (DPT) Sampling System		
Borehole Diameter (inches):	1.75		
Drill Start Date:	6/20/2018		
Drill Finish Date:	6/20/2018		
Total Borehole Depth (feet bgs):	36		

BOREHOLE LOCATION MAP



NOTES/REMARKS

Soil sample collected from 2-4 feet and 4-6 feet below ground surface interval.

Tetra Tech installed a temporary well at this location to approximately 36 feet bgs. The well did not readily produce water; after 24 hours no water had accumulated in the temporary well. Therefore, this location was abandoned and moved approximately 20 feet Northeast of the original location. Tetra Tech collected soil samples from the original location and groundwater samples from the offset location.

Groundwater measured at approximately 8.3 feet below ground surface at the offset location.

PROJECT: National Fireworks OU00 ESI **DATE:** 6/20/2018

SITE: National Fireworks **LOGGED BY:** Chris Jones, Tetra Tech, Inc.

BORING ID: NF27 **MW ID:** -

Time	Recovered/Driven (Percent)	Max PID Reading (ppm)	Sample Interval	Depth (feet bgs)	Soil Description
0945	25	0.0		1 2 3 4	Utilitized hand auger at 18 in. bgs to clear boring due to no GPR survey at this location. Brown silty clay, abundant silt, damp, and slightly hard.
0950	50	0.1		5 6 7 8	Brown/grey brown silty clay, abundant silt, soft to moderately soft, moist throughout, and wet 5-5.75 ft bgs.
0955	95	0.1	▽	9 10 11 12	Brown/grey brown silty clay, abundant silt, soft to moderately soft, and very moist to wet.
1000	100	0.0		13 14 15 16	Brown/grey brown silty clay, abundant silt, soft to moderately soft, and very moist to wet. Sand content increases with depth with fine grain sand.
1005	100	0.0		17 18 19 20	Brown sandy silt, moderate to abundant fine grain sand, minor rock fragments, and very moist.

PROJECT:	National Fireworks OU00 ESI	**DATE:**	6/20/2018
SITE:	National Fireworks	**LOGGED BY:**	Chris Jones, Tetra Tech, Inc.
BORING ID:	NF27 **MW ID:** -		

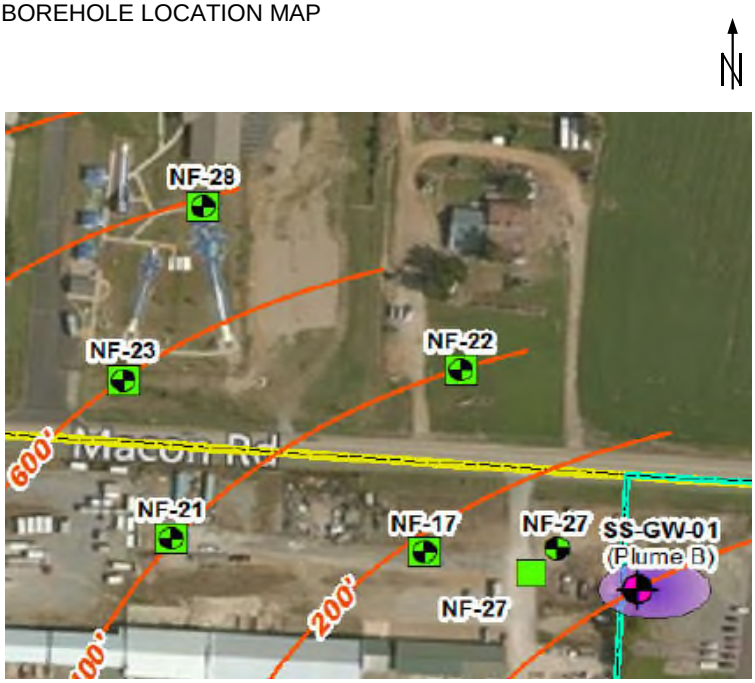
Time	Recovered/Driven (Percent)	Max PID Reading (ppm)	Sample Interval	Depth (feet bgs)	Soil Description
1010	100	0.0		20 21 22 23 24	Brown sandy silt, moderate to abundant fine grain sand, minor rock fragments, and very moist.
1015	100	0.0		25 26 27 28	Light brown/grey brown sandy clay, minor fine grain sand, wet, and soft.
1018	100	0.0		29 30 31 32	Light grey with some grey brown sandy clay, minor fine grain sand, wet, and soft.
1022	100	0.0		33 34 35 36	Grey clay, moist, and slightly hard.

Notes: No staining or odors noted during drilling activities.

bgs	Below ground surface
ft	Feet
ppm	Parts per million
▽	Groundwater level

Boring ID:	NF28		
Monitoring Well ID:	-		
Project Number:	103X902710006	***Project Name:***	National Fireworks OU00 ESI
Client:	U.S. EPA		
Site:	National Fireworks		
Borehole Location:	Playground area of church		
Logged By:	John Snyder, Tetra Tech, Inc.		
Reviewed By:		***Review Date:***	
Drilling Contractor:	McCray Drilling		
Drill Rig Type/Method:	Geoprobe		
Sampler Type:	Duel Tube (DPT) Sampling System		
Borehole Diameter (inches):	1.75		
Drill Start Date:	6/19/2018		
Drill Finish Date:	6/19/2018		
Total Borehole Depth (feet bgs):	32		

BOREHOLE LOCATION MAP



NOTES/REMARKS

Soil sample collected from 8-10 feet and 25-27 feet below ground surface interval.

Groundwater measured at approximately 22.4 feet below ground surface.

PROJECT: National Fireworks OU00 ESI **DATE:** 6/19/2018

SITE: National Fireworks **LOGGED BY:** John Snyder Tetra Tech, Inc.

BORING ID: NF28 **MW ID:** -

Time	Recovered/Driven (Percent)	Max PID Reading (ppm)	Sample Interval	Depth (feet bgs)	Soil Description
		-		1, 2, 3, 4	Poor recovery, sandy loam
		-		5, 6, 7, 8	Dry clayey loam
1450		-		9, 10, 11, 12	Mottled gray/brown dry clay
		;-		13, 14, 15, 16	
		-		17, 18, 19, 20	

PROJECT:	National Fireworks OU00 ESI	**DATE:**	6/19/2018
SITE:	National Fireworks	**LOGGED BY:**	John Snyder Tetra Tech, Inc.
BORING ID:	NF28 **MW ID:** -		

Time	Recovered/Driven (Percent)	Max PID Reading (ppm)	Sample Interval	Depth (feet bgs)	Soil Description
				20	Mottled gray/brown dry clay
				21	
		-		22	
			▽		Brown/gray saturated sand
				23	
				24	
				25	
1455		-		26	
				27	
				28	
				29	
		-		30	
				31	
				32	

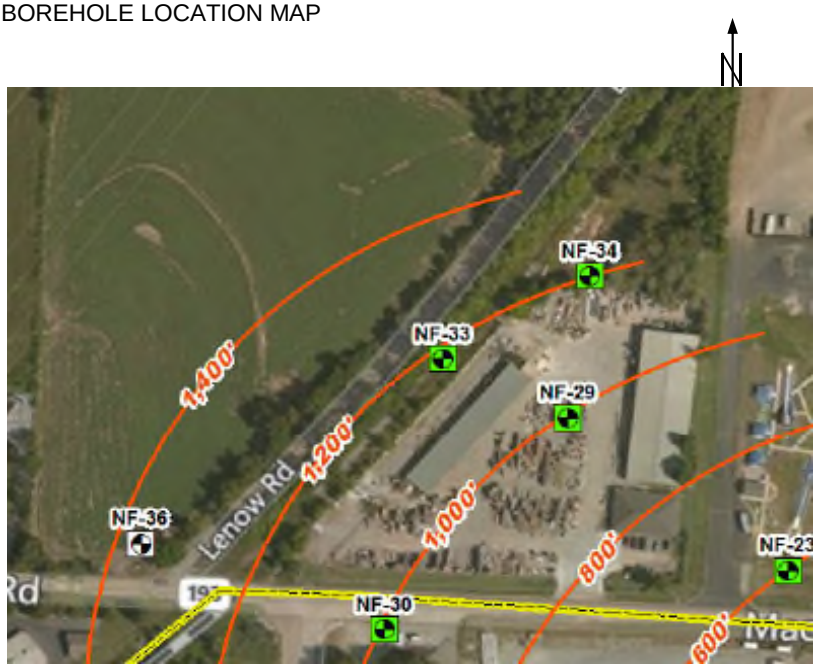
Notes: No staining or odors noted during drilling activities.

bgs	Below ground surface
ft	Feet
ppm	Parts per million
▽	Groundwater level

APPENDIX C
SOIL BORING LOGS

Boring ID:	NF29		
Monitoring Well ID:	-		
Project Number:	103X902710006	***Project Name:***	National Fireworks OU00 ESI
Client:	U.S. EPA		
Site:	National Fireworks		
Borehole Location:	Northwest portion of study area		
Logged By:	Chris Jones, Tetra Tech, Inc.		
Reviewed By:		***Review Date:***	
Drilling Contractor:	McCray Drilling		
Drill Rig Type/Method:	Geoprobe		
Sampler Type:	Duel Tube (DPT) Sampling System		
Borehole Diameter (inches):	1.75		
Drill Start Date:	6/19/2018		
Drill Finish Date:	6/19/2018		
Total Borehole Depth (feet bgs):	20		

BOREHOLE LOCATION MAP



NOTES/REMARKS

Soil sample collected from 0-2 feet and 12-14 feet below ground surface interval.

Groundwater measured at approximately 15.91 feet below ground surface.

PROJECT:	National Fireworks OU00 ESI	**DATE:**	6/20/2018
SITE:	National Fireworks	**LOGGED BY:**	Chris Jones, Tetra Tech, Inc.
BORING ID:	NF29 **MW ID:** -		

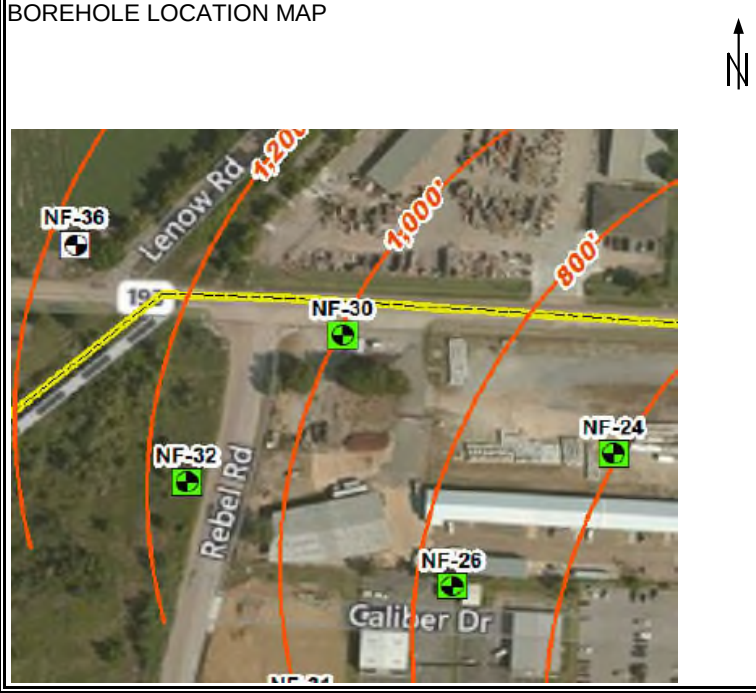
Time	Recovered/Driven (Percent)	Max PID Reading (ppm)	Sample Interval	Depth (feet bgs)	Soil Description
1310	70	0.0		1, 2, 3, 4	Brown silty clay, moderate silt, soft, and very moist
1314	100	0.0		5, 6, 7, 8	Brown silty clay, moderate silt, soft, and moist
1318	100	0.0		9, 10, 11, 12	Brown/orange brown silty clay, minor to moderate silt, slightly soft, and moist from 8-8.75 ft bgs. Brown/orange brown silty clay, minor to moderate clay, slightly soft, and moist from 8.75-10 ft bgs. Brown/orange brown silty clay, minor to moderate silt, slightly soft, and moist from 10-12 ft bgs.
1322	100	0.0		13, 14, 15, 16	Brown sandy clay, moderate fine grain sand, moist and hard. Sand content increases with depth grading to sand/clay by 15.25 ft bgs, and color grades to reddish brown by 14.5 ft bgs.
1327	100	0.0		17, 18, 19, 20	Brown/reddish brown, fine grain sand, slightly hard, and wet. Saturated sand at 19.75 ft bgs.

Notes: No staining or odors noted during drilling activities.

bgs	Below ground surface	ppm	Parts per million
ft	Feet	▽	Groundwater level

Boring ID:	NF30		
Monitoring Well ID:	-		
Project Number:	103X902710006	***Project Name:***	National Fireworks OU00 ESI
Client:	U.S. EPA		
Site:	National Fireworks		
Borehole Location:	Corner of Rebel Road and Macon Road		
Logged By:	John Snyder, Tetra Tech, Inc.		
Reviewed By:		***Review Date:***	
Drilling Contractor:	McCray Drilling		
Drill Rig Type/Method:	Geoprobe		
Sampler Type:	Duel Tube (DPT) Sampling System		
Borehole Diameter (inches):	1.75		
Drill Start Date:	6/20/2018		
Drill Finish Date:	6/20/2018		
Total Borehole Depth (feet bgs):	24		

BOREHOLE LOCATION MAP



NOTES/REMARKS

Soil sample collected from 5-7 feet and 12-14 feet below ground surface interval.

Groundwater measured at approximately 13.62 feet below ground surface.

PROJECT: National Fireworks OU00 ESI **DATE:** 6/20/2018

SITE: National Fireworks **LOGGED BY:** John Snyder Tetra Tech, Inc.

BORING ID: NF30 **MW ID:** -

Time	Recovered/Driven (Percent)	Max PID Reading (ppm)	Sample Interval	Depth (feet bgs)	Soil Description
				1	Sandy gravel
		0.0		2	Uniform brown moist clay
				3	
				4	
1225		0.0		5	
				6	
				7	
				8	
		0.0		9	
				10	
				11	
				12	
1230		0.0		13	Mottled gray wet clay
				14	
				15	
				16	
		0.0		17	
				18	
				19	
				20	

PROJECT:	National Fireworks OU00 ESI	**DATE:**	6/20/2018
SITE:	National Fireworks	**LOGGED BY:**	John Snyder Tetra Tech, Inc.
BORING ID:	NF30 **MW ID:** -		

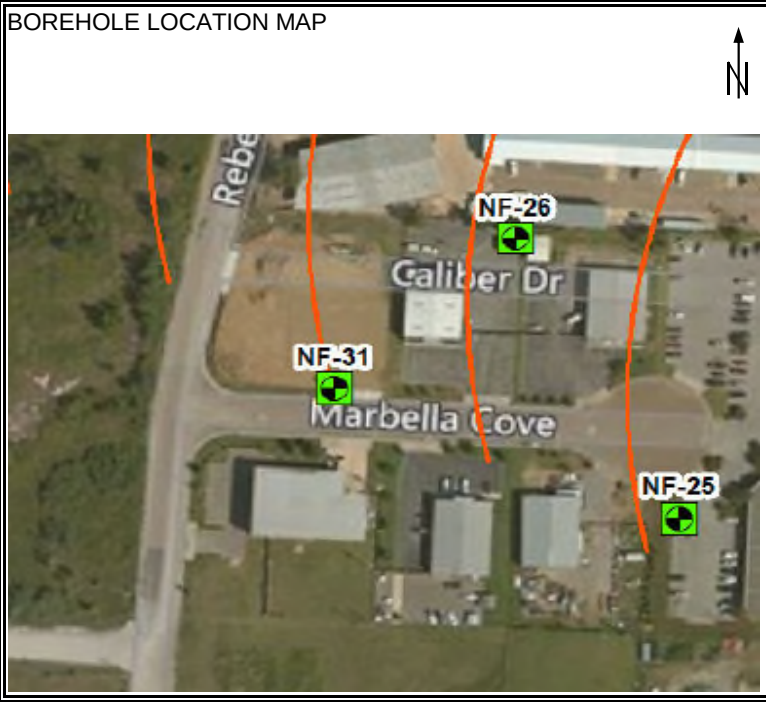
Time	Recovered/Driven (Percent)	Max PID Reading (ppm)	Sample Interval	Depth (feet bgs)	Soil Description
				20	
				21	
		0.0		22	Expansive uniform smooth gray clay
				23	
				24	

Notes: No staining or odors noted during drilling activities.

bgs	Below ground surface
ft	Feet
ppm	Parts per million
▽	Groundwater level

Boring ID:	NF31		
Monitoring Well ID:	-		
Project Number:	103X902710006	***Project Name:***	National Fireworks OU00 ESI
Client:	U.S. EPA		
Site:	National Fireworks		
Borehole Location:	Southwest corner of study area		
Logged By:	John Snyder, Tetra Tech, Inc.		
Reviewed By:		***Review Date:***	
Drilling Contractor:	McCray Drilling		
Drill Rig Type/Method:	Geoprobe		
Sampler Type:	Duel Tube (DPT) Sampling System		
Borehole Diameter (inches):	1.75		
Drill Start Date:	6/19/2018		
Drill Finish Date:	6/19/2018		
Total Borehole Depth (feet bgs):	20		

BOREHOLE LOCATION MAP



NOTES/REMARKS

Soil sample collected from 4-6 feet and 12-14 feet below ground surface interval.

Groundwater measured at approximately 6.3 feet below ground surface.

PROJECT:	National Fireworks OU00 ESI	**DATE:**	6/19/2018
SITE:	National Fireworks	**LOGGED BY:**	John Snyder Tetra Tech, Inc.
BORING ID:	NF31 **MW ID:** -		

Time	Recovered/Driven (Percent)	Max PID Reading (ppm)	Sample Interval	Depth (feet bgs)	Soil Description
1020		0.0		1, 2, 3, 4	Poor recovery - dry sandy clay
		0.0		5	Moist brown clay
			▽	6	Dark gray, moist clay
				7, 8	Moist brown clay
		0.0		9, 10, 11, 12	Mottled light brown/gray clay
1025		0.0		13, 14	
				15	Mottled wet light brown/gray clay
		0.0		16, 17, 18, 19, 20	Mottled dry light brown/gray clay

Notes: No staining or odors noted during drilling activities.

bgs	Below ground surface
ft	Feet
ppm	Parts per million
▽	Groundwater level

Boring ID:	NF32		
Monitoring Well ID:	-		
Project Number:	103X902710006	***Project Name:***	National Fireworks OU00 ESI
Client:	U.S. EPA		
Site:	National Fireworks		
Borehole Location:	Western extent of study area		
Logged By:	John Snyder, Tetra Tech, Inc.		
Reviewed By:		***Review Date:***	
Drilling Contractor:	McCray Drilling		
Drill Rig Type/Method:	Geoprobe		
Sampler Type:	Duel Tube (DPT) Sampling System		
Borehole Diameter (inches):	1.75		
Drill Start Date:	6/19/2018		
Drill Finish Date:	6/19/2018		
Total Borehole Depth (feet bgs):	20		

BOREHOLE LOCATION MAP

NOTES/REMARKS

Soil sample collected from 0-2 feet and 2-4 feet below ground surface interval.

Groundwater measured at approximately 3.95 feet below ground surface.

PROJECT:	National Fireworks OU00 ESI	**DATE:**	6/20/2018
SITE:	National Fireworks	**LOGGED BY:**	John Snyder Tetra Tech, Inc.
BORING ID:	NF18 **MW ID:** -		

Time	Recovered/Driven (Percent)	Max PID Reading (ppm)	Sample Interval	Depth (feet bgs)	Soil Description
1240		0.0		1, 2, 3	Sandy dry fill
				3	Dry dark brown clay
		0.0	▽	4, 5, 6	Saturated dark brown/gray clay
				7, 8	Moist brown sandy clay
		0.0		9, 10	Dry mottled light brown/dark brown clay
				11, 12	Dry brown clay
		0.0		13, 14, 15, 16	Damp brown clay
		0.0		17, 18, 19, 20	

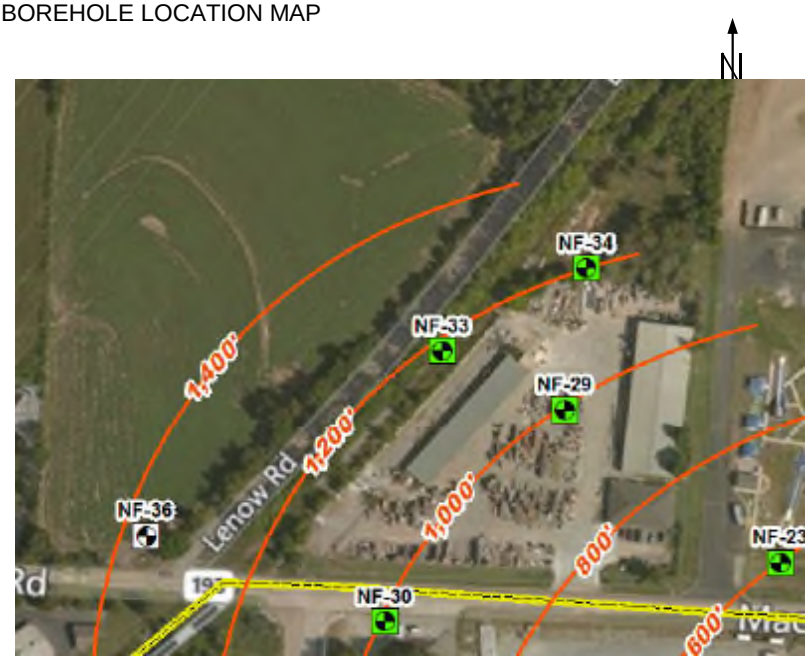
Notes: No staining or odors noted during drilling activities.

bgs	Below ground surface
ft	Feet
ppm	Parts per million
▽	Groundwater level

APPENDIX C
SOIL BORING LOGS

Boring ID:	NF33		
Monitoring Well ID:	-		
Project Number:	103X902710006	***Project Name:***	National Fireworks OU00 ESI
Client:	U.S. EPA		
Site:	National Fireworks		
Borehole Location:	Northwest portion of study area		
Logged By:	Chris Jones, Tetra Tech, Inc.		
Reviewed By:		***Review Date:***	
Drilling Contractor:	McCray Drilling		
Drill Rig Type/Method:	Geoprobe		
Sampler Type:	Duel Tube (DPT) Sampling System		
Borehole Diameter (inches):	1.75		
Drill Start Date:	6/19/2018		
Drill Finish Date:	6/19/2018		
Total Borehole Depth (feet bgs):	24		

BOREHOLE LOCATION MAP



NOTES/REMARKS

Soil sample collected from 0-2 feet and 12-14 feet below ground surface interval.

Groundwater measured at approximately 16.83 feet below ground surface.

PROJECT: National Fireworks OU00 ESI **DATE:** 6/20/2018

SITE: National Fireworks **LOGGED BY:** Chris Jones, Tetra Tech, Inc.

BORING ID: NF33 **MW ID:** -

Time	Recovered/Driven (Percent)	Max PID Reading (ppm)	Sample Interval	Depth (feet bgs)	Soil Description
1525	50	0.0		1 2 3 4	Brown/dark brown sand, moderate silt, abundant rock fragments, hard, and damp from 0-1.25 ft bgs. Brown/dark brown silty clay, moderate silt, damp, and slightly to moderately hard.
1530	100	0.0		5 6 7 8	Dark brown silty clay, damp, and slightly soft. Becomes moist by 10.75 ft bgs.
1535	100	0.0		9 10 11 12	Dark brown silty clay, damp, slightly soft, and moist.
1540	75	0.0		13 14 15 16	Dark brown silty clay, damp, slightly soft, and moist. Brown clay, hard, and damp.
1544	100	0.0	▽	17 18 19 20	Brown clay grades to tan clay by 17 ft bgs, hard, and damp.

PROJECT:	National Fireworks OU00 ESI	**DATE:**	6/20/2018
SITE:	National Fireworks	**LOGGED BY:**	Chris Jones, Tetra Tech, Inc.
BORING ID:	NF33 **MW ID:** -		

Time	Recovered/Driven (Percent)	Max PID Reading (ppm)	Sample Interval	Depth (feet bgs)	Soil Description
				20	Grey clay, damp, and hard.
				21	
1550	100	0.0		22	Orange brown/ tan sand, moderate silt, saturated, and fine grain sand.
				23	
				24	

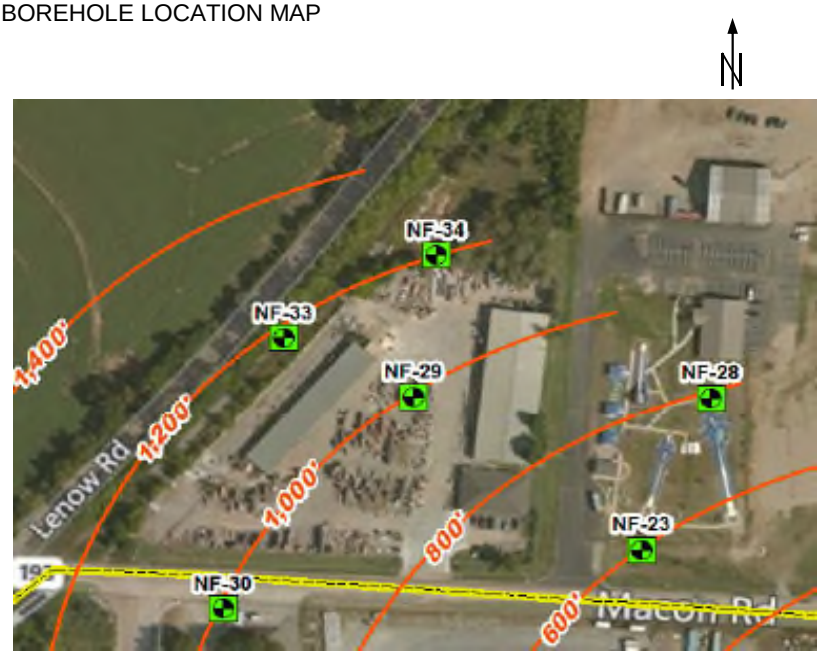
Notes: No staining or odors noted during drilling activities.

bgs	Below ground surface
ft	Feet
ppm	Parts per million
▽	Groundwater level

APPENDIX C
SOIL BORING LOGS

Boring ID:	NF34		
Monitoring Well ID:	-		
Project Number:	103X902710006	***Project Name:***	National Fireworks OU00 ESI
Client:	U.S. EPA		
Site:	National Fireworks		
Borehole Location:	Northwest portion of study area		
Logged By:	Chris Jones, Tetra Tech, Inc.		
Reviewed By:		***Review Date:***	
Drilling Contractor:	McCray Drilling		
Drill Rig Type/Method:	Geoprobe		
Sampler Type:	Duel Tube (DPT) Sampling System		
Borehole Diameter (inches):	1.75		
Drill Start Date:	6/19/2018		
Drill Finish Date:	6/19/2018		
Total Borehole Depth (feet bgs):	24		

BOREHOLE LOCATION MAP



NOTES/REMARKS

Soil sample collected from 0-2 feet and 20-22 feet below ground surface interval.

Groundwater measured at approximately 15.5 feet below ground surface.

PROJECT: National Fireworks OU00 ESI **DATE:** 6/20/2018

SITE: National Fireworks **LOGGED BY:** Chris Jones, Tetra Tech, Inc.

BORING ID: NF34 **MW ID:** -

Time	Recovered/Driven (Percent)	Max PID Reading (ppm)	Sample Interval	Depth (feet bgs)	Soil Description
1128	50	0.0		1 2 3 4	Orange brown sandy clay, fine to coarse grain sand, moderate small pebbles, dry, and hard. Dark grey clay, damp, and hard.
1132	75	0.0		5 6 7 8	Dark brown silty clay, minor silt, grades to clay by 6.5 ft bgs, hard, and damp.
1138	75	0.0		9 10 11 12	Brownish grey silty clay, moderate silt, moderately soft, and moist.
1142	100	0.0		13 14 15 16	Brown silty clay, moderate silt, moderately soft, and moist.
1147	100	0.0		17 18 19 20	Brown silty clay, moderate silt, moderately soft, moist, and minor small pebbles.

PROJECT:	National Fireworks OU00 ESI	**DATE:**	6/20/2018
SITE:	National Fireworks	**LOGGED BY:**	Chris Jones, Tetra Tech, Inc.
BORING ID:	NF34 **MW ID:** -		

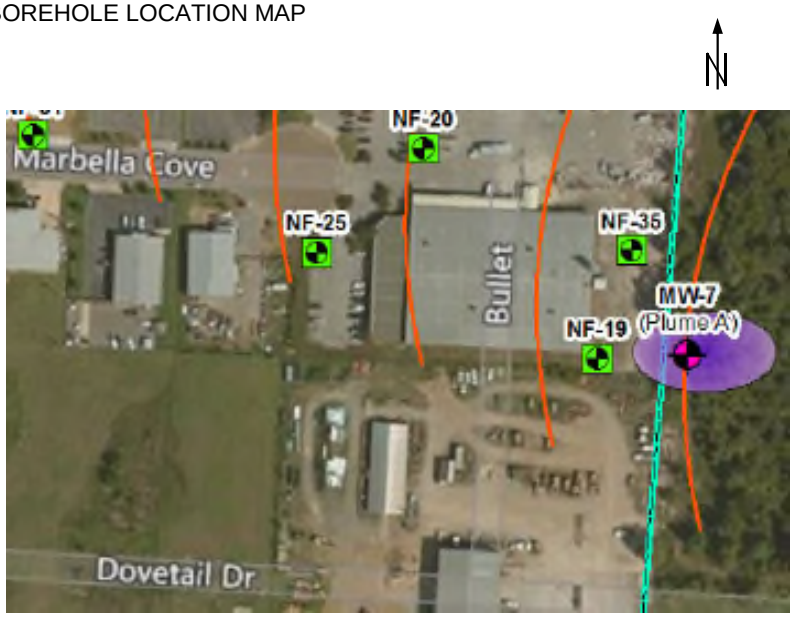
Time	Recovered/Driven (Percent)	Max PID Reading (ppm)	Sample Interval	Depth (feet bgs)	Soil Description
1151	100	0.0		20	Orange brown sand, moderate clay that grades to minor clay by 20.5 ft bgs. Fine to small grain sand, minor pebbles, and soft.
				21	
				22	Orange brown sand, minor clay. Fine to small grain sand, minor pebbles, soft, and saturated at 22 ft bgs.
				23	
				24	

Notes: No staining or odors noted during drilling activities.

bgs	Below ground surface
ft	Feet
ppm	Parts per million
▽	Groundwater level

Boring ID:	NF35		
Monitoring Well ID:	-		
Project Number:	103X902710006	***Project Name:***	National Fireworks OU00 ESI
Client:	U.S. EPA		
Site:	National Fireworks		
Borehole Location:	Southeastern portion of study area, northwest of Plume A		
Logged By:	Chris Jones, Tetra Tech, Inc.		
Reviewed By:		***Review Date:***	
Drilling Contractor:	McCray Drilling		
Drill Rig Type/Method:	Geoprobe		
Sampler Type:	Duel Tube (DPT) Sampling System		
Borehole Diameter (inches):	1.75		
Drill Start Date:	6/20/2018		
Drill Finish Date:	6/20/2018		
Total Borehole Depth (feet bgs):	12		

BOREHOLE LOCATION MAP



NOTES/REMARKS

Soil sample collected from 0-2 feet and 4-5 feet below ground surface interval.

Groundwater measured at approximately 5.15 feet below ground surface.

PROJECT:	National Fireworks OU00 ESI	**DATE:**	6/20/2018
SITE:	National Fireworks	**LOGGED BY:**	Chris Jones, Tetra Tech, Inc.
BORING ID:	NF35 **MW ID:** -		

Time	Recovered/Driven (Percent)	Max PID Reading (ppm)	Sample Interval	Depth (feet bgs)	Soil Description
1438	65	0.0		1 2 3 4	Brown silty clay. Moderate to abundant silt, minor rock fragments, damp, and hard At approximately 2 ft bgs, black silty clay, very moist, a fibrous material is present approximately 0.25 ft thick, slight pine odor. Then grey/ dark grey, silty clay.
1441	40	0.0	▽	5 6 7 8	Grey silty clay, abundant silt, moist, slightly soft, and wet at 5 ft bgs.
1445	60	0.0		9 10 11 12	Grey silty clay, abundant silt, moist, slightly soft, and wet to 9 ft bgs Grey brown silty clay, abundant silt, very moist to wet, moisture decreasing with depth.

Notes: No staining or odors noted during drilling activities.

bgs	Below ground surface
ft	Feet
ppm	Parts per million
▽	Groundwater level

APPENDIX C
SOIL BORING LOGS

Boring ID:	NF 36		
Monitoring Well ID:	-		
Project Number:	103X902710006	***Project Name:***	National Fireworks OU00 ESI
Client:	U.S. EPA		
Site:	National Fireworks		
Borehole Location:	Northwest or intersection of Mason Road and Lenow Road		
Logged By:	John Snyder, Tetra Tech, Inc.		
Reviewed By:		***Review Date:***	
Drilling Contractor:	McCray Drilling		
Drill Rig Type/Method:	Geoprobe		
Sampler Type:	Duel Tube (DPT) Sampling System		
Borehole Diameter (inches):	1.75		
Drill Start Date:	6/20/2018		
Drill Finish Date:	6/20/2018		
Total Borehole Depth (feet bgs):	24		

BOREHOLE LOCATION MAP

NOTES/REMARKS

Soil sample collected from 5-7 feet and 16-20 feet below ground surface interval.

Groundwater measured at approximately 22.31 feet below ground surface.

PROJECT: National Fireworks OU00 ESI **DATE:** 6/20/2018

SITE: National Fireworks **LOGGED BY:** John Snyder Tetra Tech, Inc.

BORING ID: NF36 **MW ID:** -

Time	Recovered/Driven (Percent)	Max PID Reading (ppm)	Sample Interval	Depth (feet bgs)	Soil Description
		0.0		1, 2, 3, 4	Unconsolidated brown silty loam
1645		0.0		5	Dry mottled light brown/dark brown clay
		0.0		6, 7, 8, 9, 10, 11, 12	Moist brown clay
		0.0		13, 14, 15, 16	
1650		0.0		17, 18, 19, 20	Saturated light gray clay

PROJECT:	National Fireworks OU00 ESI	**DATE:**	6/20/2018
SITE:	National Fireworks	**LOGGED BY:**	John Snyder Tetra Tech, Inc.
BORING ID:	NF36 **MW ID:** -		

Time	Recovered/Driven (Percent)	Max PID Reading (ppm)	Sample Interval	Depth (feet bgs)	Soil Description
				20	Saturated light gray clay
				21	
		0.0	▽	22	Moist tight gray/light brown clay
				23	
				24	

Notes: No staining or odors noted during drilling activities.

bgs	Below ground surface
ft	Feet
ppm	Parts per million
▽	Groundwater level

APPENDIX D

PHOTOGRAPHIC LOG

(10 Pages)

OFFICIAL PHOTOGRAPH NO. 1
U.S. ENVIRONMENTAL PROTECTION AGENCY

TDD Number:	TT-10-006	**Location:**	National Fireworks OU00
Orientation:	East	**Date:**	June 19, 2018
Photographer:	Jennifer Tufts, U.S. Environmental Protection Agency (EPA)	**Witness:**	Chris Jones, Tetra Tech, Inc. (Tetra Tech)

Subject: GPRS conducts a geophysical survey of Station NF35, while Tetra Tech logs the coordinates using a Trimble GeoXT global positioning system (GPS) device. The fence in the background forms the western boundary of National Fireworks (NF) Operable Unit (OU) 2, the Security Signals, Inc. (SSI) property.

OFFICIAL PHOTOGRAPH NO. 2
U.S. ENVIRONMENTAL PROTECTION AGENCY

TDD Number:	TT-10-006	**Location:**	National Fireworks OU00
Orientation:	South	**Date:**	June 19, 2018
Photographer:	Jennifer Tufts, EPA	**Witness:**	Chris Jones, Tetra Tech

Subject: Sample locations NF19 and NF35, near the western boundary of NF OU2.

OFFICIAL PHOTOGRAPH NO. 3
U.S. ENVIRONMENTAL PROTECTION AGENCY

TDD Number:	TT-10-006	**Location:**	National Fireworks OU00
Orientation:	Not Applicable	**Date:**	June 19, 2018
Photographer:	Jennifer Tufts, EPA	**Witness:**	John Snyder, Tetra Tech

Subject: Tetra Tech purges the temporary well at sample location NF25, about 500 feet northwest of NF OU2.

OFFICIAL PHOTOGRAPH NO. 4
U.S. ENVIRONMENTAL PROTECTION AGENCY

TDD Number:	TT-10-006	**Location:**	National Fireworks OU00
Orientation:	Not Applicable	**Date:**	June 19, 2018
Photographer:	Jennifer Tufts, EPA	**Witness:**	Geoie Krull, Tetra Tech

Subject: Tetra Tech uses a low-flow peristaltic pump to collect groundwater from NF25.

OFFICIAL PHOTOGRAPH NO. 5
U.S. ENVIRONMENTAL PROTECTION AGENCY

TDD Number:	TT-10-006	**Location:**	National Fireworks OU00
Orientation:	East	**Date:**	June 19, 2018
Photographer:	Jennifer Tufts, EPA	**Witness:**	John Snyder, Tetra Tech

Subject: McCray Drilling, LLC installs a temporary monitoring well at NF22, while Tetra Tech logs the soil cores.

OFFICIAL PHOTOGRAPH NO. 6
U.S. ENVIRONMENTAL PROTECTION AGENCY

TDD Number:	TT-10-006	**Location:**	National Fireworks OU00
Orientation:	Northeast	**Date:**	June 20, 2018
Photographer:	Quinn Kelley, Tetra Tech	**Witness:**	Carter Owens, Tetra Tech

Subject: Tetra Tech checks the water level of the temporary monitoring well at NF17, located about 200 feet northwest of NF OU2.

OFFICIAL PHOTOGRAPH NO. 7
U.S. ENVIRONMENTAL PROTECTION AGENCY

TDD Number:	TT-10-006	**Location:**	National Fireworks OU00
Orientation:	South	**Date:**	June 20, 2018
Photographer:	Quinn Kelley, Tetra Tech	**Witness:**	Chris Jones, Tetra Tech

Subject: Tetra Tech homogenizes soil for sample at NF17.

OFFICIAL PHOTOGRAPH NO. 8
U.S. ENVIRONMENTAL PROTECTION AGENCY

TDD Number:	TT-10-006	**Location:**	National Fireworks OU00
Orientation:	East	**Date:**	June 20, 2018
Photographer:	Quinn Kelley, Tetra Tech	**Witness:**	Chris Jones, Tetra Tech

Subject: Tetra Tech uses a photoionization detector (PID) to screen the soil core from NF27 for volatile organic compounds (VOC). VOCs were detected up to 0.1 parts per million between 4 and 12 feet below ground surface.

OFFICIAL PHOTOGRAPH NO. 9
U.S. ENVIRONMENTAL PROTECTION AGENCY

TDD Number:	TT-10-006	**Location:**	National Fireworks OU00
Orientation:	South	**Date:**	June 20, 2018
Photographer:	Quinn Kelley, Tetra Tech	**Witness:**	Chris Jones, Tetra Tech

Subject: Tetra Tech collects a soil sample from NF27.

OFFICIAL PHOTOGRAPH NO. 10
U.S. ENVIRONMENTAL PROTECTION AGENCY

TDD Number:	TT-10-006	**Location:**	National Fireworks OU00
Orientation:	Not Applicable	**Date:**	June 20, 2018
Photographer:	Jennifer Tufts, EPA	**Witness:**	Carter Owens, Tetra Tech

Subject: Tetra Tech checks water quality parameters at NF35.

APPENDIX E

EPA CONTRACT LABORATORY PROGRAM (CLP) AND TETRA TECH-PROCURED LABORATORY ANALYTICAL DATA PACKAGES

(2,607 Sheets)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

August 15, 2018

4SESD-QATSB

MEMORANDUM

SUBJECT: FINAL Analytical Report
Project: 18-0455, National Fireworks
Superfund Remedial

FROM: Jeff Wilmoth
Quality Assurance Section, Chemist

THRU: Sandra Aker, Chief
Quality Assurance Section

TO: Jennifer Tufts

Attached are the final results for the analytical groups listed below. These analyses were performed in accordance with the associated contract Statement Of Work (SOW). In general, project data quality objectives have not been used to evaluate these data prior to release by the Quality Assurance Section. For a listing of specific data qualifiers and explanations, please refer to the Data Qualifier Definitions included in this report.

Analyses Included in this report:	Method Used:
Volatile Organics (VOA)	
Volatile organic compounds	CLP VOA (Soil)
Volatile organic compounds	CLP VOA (Water)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Report Narrative for Work Order: C183012 Analysis: VOA

Site Name: National Fireworks, Cordova, TN
CLP Case No. 47684, ELEMENT Sample Nos. C183012-01 through -71.
C182905-01, -02 (PES only)

Organic Analysis: Chemtech Consulting Group, Mountainside, NJ

The ESAT Work Team reviewed data for 27 water and 44 soil samples analyzed for Trace Volatiles or Low/Medium Volatiles per CLP Statement of Work SOM02.4.

The samples were collected between 6/19/18 and 6/21/18, and received by the laboratory between 6/20/18 and 6/22/18. The final data package was received on 7/13/18 by the USEPA Quality Assurance Section, Region 4 SESD. The analytical results were reported in five sample delivery groups (SDGs) by the laboratory. In addition to the field samples, the laboratory analyzed two performance evaluation samples (PESs) for evaluating the laboratory's performance with using the methods.

A Stage 4 validation consisting of an electronic/manual review (S4VEM) was performed on the organic samples submitted for this case. The data package presents acceptable technical performance with qualifications.

The laboratory satisfied all contractual and technical holding time limits. All results associated with either erratic initial calibration (ICAL) or continuing calibration (CCAL) performance were flagged "J" with the appropriate Element qualifier (CLP16 and/or QC-1/QC-2). Additionally, the %D between the ICAL and a required second source verification standard exceeded 20% for Dichlorodifluoromethane, Methyl Acetate, 2-Butanone (Methyl Ethyl Ketone), and 1,2-Dibromo-3-chloropropane. The associated Dichlorodifluoromethane, Methyl Acetate, 2-Butanone, and 1,2-Dibromo-3-chloropropane results were qualified "J" (QC-3). Deuterated Monitoring Compounds (DMCs) were used as surrogates in each sample for GC/MS analysis to monitor extraction efficiency.

Some samples contained high concentrations of target analytes that exceeded the established calibration ranges. Accordingly, carryover potential between samples was evaluated as part of this review. No sample carryover was observed based on information contained in the data packages. However, only analytical runs reported by the laboratory were available for review.

Data quality factors requiring qualification of results are discussed below:

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Trace Volatiles (Waters)

1. Poor responses were observed for Acetone, Methyl Acetate, 2-Butanone and/or 1,2-Dibromo-3-chloropropane in ICALs and/or CCALs performed. All associated Acetone, Methyl Acetate, 2-Butanone, and/or 1,2-Dibromo-3-chloropropane results for samples C183012-01, 02, 05, 06, 07, 11, 14, 18, 21, 24, 27, 30, 33, 36, 39, 42, 45, 48, 51, 54, 57, 60, 63, 66, 69, 70, and 71 that were not detected were qualified "UR" and all positive results were qualified "J" (CLP17 and/or CLP32). A poor response was observed for the lowest ICAL standard only for 2-Butanone associated with samples C183012-07 and 71 resulting in higher reporting limits to avoid "UR" qualification.

2. The Vinyl Chloride and 1,1-Dichloroethene results exceeded the established calibration range for the original analysis of sample C183012-39 and were qualified "J" (CLP02). The concentration present in this sample was diluted out in the subsequent diluted analysis performed.

3. A high recovery was observed for the DMC 1,1-Dichloroethene-d2 in samples C183012-06, 07, 36, and 39. The associated positive results were qualified "J" (QS-5).

4. A low recovery was observed for the DMC 1,1-Dichloroethene-d2 in samples C183012-01, 02, 05, 45, 60, 63, 66, 69, and 70. All associated results were qualified "J" (QS-3).

5. A recovery of less than 10% was observed for the DMC 2-Butanone-d5 in sample C183012-39. The associated positive Acetone result was qualified "J" and the associated not-detected 2-Butanone result was qualified "UR" (QS-4).

Low/Medium Volatiles (Soils)

1. Low area counts were observed for the internal standard 1,4-Dichlorobenzene-d4 in samples C183012-09, 13, 41, and 64. The associated results were all not detected and qualified "UJ" (QI-1).

2. The reporting limits were elevated for Methylene Chloride in samples C183012-16 and 41 since the laboratory reported results did not exceed 10X that found in the associated storage blank (U, CLP11).

3. Soil trip blank sample C183012-03 contained Acetone (57 µg/kg) and 2-Butanone (14 µg/kg). Field QC samples were not used to qualify data pursuant to Region 4 policy. Accordingly, data users are responsible for evaluating any potential impact to data usability.

4. A high recovery was observed for the DMC 2-Butanone-d5 in samples C183012-13 and 19. The associated positive Acetone results were qualified "J" (QS-5).

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5. The Trichloroethene results for samples C183012-12 and 25 and the cis-1,2-Dichloroethene result for sample C183012-38 exceeded the established calibration range for the original undiluted analyses performed and were qualified "J" (CLP02). These results were either below the established calibration ranges or were not detected due to concentrations present for the diluted analyses (Methanol extract) performed.

Data qualification factors are explained by the Region 4 - specific qualifier definitions which are included elsewhere in this report. Further details are provided in the complete data review report, which is on file in the Region 4 SESD Records Center.

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cc: Nardina Turner

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SAMPLES INCLUDED IN THIS REPORT

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID	Laboratory ID	MD#	D#	Matrix	Date Collected
NF-EB-02	C183012-01		AZC2	Equipment Rinse Blank	6/21/18 09:20
NF-FB-02	C183012-02		AZC3	Field Blank	6/21/18 09:30
NF-TB-04	C183012-03		AZB9	Trip Blank - Soil	6/19/18 18:50
NF-TB-05	C183012-04		AZC0	Trip Blank - Soil	6/20/18 18:40
NF-TB-06	C183012-05		AZC1	Trip Blank - Water	6/21/18 09:35
NF17-GW-01	C183012-06		AZ97	Groundwater	6/20/18 09:30
NF17-GW-01-DUP	C183012-07		AZC6	Groundwater	6/20/18 09:35
NF17-SS-01	C183012-08		AZ57	Surface Soil	6/20/18 08:45
NF17-SS-01-DUP	C183012-09		AZC4	Surface Soil	6/20/18 08:55
NF17-SS-02	C183012-10		AZ58	Subsurface Soil	6/20/18 08:50
NF18-GW-01	C183012-11		AZ98	Groundwater	6/21/18 08:45
NF18-SS-01	C183012-12		AZ59	Subsurface Soil	6/20/18 14:40
NF18-SS-02	C183012-13		AZ60	Subsurface Soil	6/20/18 14:45
NF19-GW-01	C183012-14		AZ99	Groundwater	6/20/18 15:50
NF19-SS-01	C183012-15		AZ61	Surface Soil	6/20/18 14:30
NF19-SS-01-DUP	C183012-16		AZC5	Surface Soil	6/20/18 14:20
NF19-SS-02	C183012-17		AZ62	Subsurface Soil	6/20/18 14:15
NF20-GW-01	C183012-18		AZA0	Groundwater	6/20/18 13:35
NF20-SS-01	C183012-19		AZ63	Surface Soil	6/19/18 09:30
NF20-SS-02	C183012-20		AZ64	Subsurface Soil	6/19/18 09:35
NF21-GW-01	C183012-21		AZA1	Groundwater	6/20/18 11:50
NF21-SS-01	C183012-22		AZ65	Surface Soil	6/20/18 11:35
NF21-SS-02	C183012-23		AZ66	Subsurface Soil	6/20/18 11:30
NF22-GW-01	C183012-24		AZA2	Groundwater	6/19/18 18:10
NF22-SS-01	C183012-25		AZ67	Subsurface Soil	6/19/18 17:05
NF22-SS-02	C183012-26		AZ68	Subsurface Soil	6/19/18 17:10
NF23-GW-01	C183012-27		AZA3	Groundwater	6/19/18 14:40
NF23-SS-01	C183012-28		AZ69	Surface Soil	6/19/18 13:40
NF23-SS-02	C183012-29		AZ70	Subsurface Soil	6/19/18 13:45
NF24-GW-01	C183012-30		AZA4	Groundwater	6/20/18 10:10
NF24-SS-01	C183012-31		AZ71	Subsurface Soil	6/20/18 09:10
NF24-SS-02	C183012-32		AZ72	Subsurface Soil	6/20/18 09:15
NF25-GW-01	C183012-33		AZA5	Groundwater	6/19/18 11:37
NF25-SS-01	C183012-34		AZ73	Subsurface Soil	6/19/18 09:30

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NF25-SS-02	C183012-35	AZ74	Subsurface Soil	6/19/18 09:35
NF26-GW-01	C183012-36	AZA6	Groundwater	6/20/18 16:30
NF26-SS-01	C183012-37	AZ75	Surface Soil	6/19/18 10:45
NF26-SS-02	C183012-38	AZ76	Subsurface Soil	6/19/18 10:50
NF27-GW-01	C183012-39	AZA7	Groundwater	6/21/18 09:25
NF27-SS-01	C183012-40	AZ77	Subsurface Soil	6/20/18 10:25
NF27-SS-02	C183012-41	AZ78	Subsurface Soil	6/20/18 10:30
NF28-GW-01	C183012-42	AZA8	Groundwater	6/20/18 16:00
NF28-SS-01	C183012-43	AZ79	Subsurface Soil	6/19/18 14:50
NF28-SS-02	C183012-44	AZ80	Subsurface Soil	6/19/18 14:55
NF29-GW-01	C183012-45	AZA9	Groundwater	6/19/18 14:50
NF29-SS-01	C183012-46	AZ81	Surface Soil	6/19/18 13:55
NF29-SS-02	C183012-47	AZ82	Subsurface Soil	6/19/18 14:00
NF30-GW-01	C183012-48	AZB0	Groundwater	6/20/18 13:05
NF30-SS-01	C183012-49	AZ83	Subsurface Soil	6/20/18 12:25
NF30-SS-02	C183012-50	AZ84	Subsurface Soil	6/20/18 12:30
NF31-GW-01	C183012-51	AZB1	Groundwater	6/21/18 09:15
NF31-SS-01	C183012-52	AZ85	Subsurface Soil	6/19/18 10:20
NF31-SS-02	C183012-53	AZ86	Subsurface Soil	6/19/18 10:25
NF32-GW-01	C183012-54	AZB2	Groundwater	6/21/18 10:00
NF32-SS-01	C183012-55	AZ87	Surface Soil	6/19/18 12:40
NF32-SS-02	C183012-56	AZ88	Subsurface Soil	6/19/18 12:45
NF33-GW-01	C183012-57	AZB3	Groundwater	6/19/18 17:00
NF33-SS-01	C183012-58	AZ89	Surface Soil	6/19/18 16:10
NF33-SS-02	C183012-59	AZ90	Subsurface Soil	6/19/18 16:20
NF34-GW-01	C183012-60	AZB4	Groundwater	6/19/18 13:30
NF34-SS-01	C183012-61	AZ91	Surface Soil	6/19/18 11:55
NF34-SS-02	C183012-62	AZ92	Subsurface Soil	6/19/18 11:50
NF35-GW-01	C183012-63	AZB5	Groundwater	6/20/18 15:20
NF35-SS-01	C183012-64	AZ93	Surface Soil	6/20/18 15:00
NF35-SS-02	C183012-65	AZ94	Subsurface Soil	6/20/18 15:10
NF36-GW-01	C183012-66	AZB6	Groundwater	6/21/18 10:35
NF36-SS-01	C183012-67	AZ95	Subsurface Soil	6/20/18 16:45
NF36-SS-02	C183012-68	AZ96	Subsurface Soil	6/20/18 16:50
NFMW1-GW-01	C183012-69	AZB8	Groundwater	6/18/18 15:15
NFMW7-GW-01	C183012-70	AZB7	Groundwater	6/21/18 11:55
NFMW7-GW-01-DUP	C183012-71	AZC7	Groundwater	6/21/18 12:00

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DATA QUALIFIER DEFINITIONS

U	The analyte was not detected at or above the reporting limit.
CLP01	Concentration reported is less than the lowest standard on calibration curve
CLP02	Concentration reported is greater than the highest standard on calibration curve
CLP11	Storage blank contaminant
CLP15	TIC Results Reported as Identified by Lab - IDs Not Verified
CLP16	Initial Calibration Response Erratic
CLP17	Initial Calibration Relative Response Outside Method Control Limits
CLP32	Continuing Calibration Relative Response Outside Method Control Limits
J	The identification of the analyte is acceptable; the reported value is an estimate.
N	There is presumptive evidence that the analyte is present; the analyte is reported as a tentative identification.
NJ	Presumptive evidence that analyte is present; reported as a tentative identification with an estimated value.
QC-1	Analyte concentration low in continuing calibration verification standard
QC-2	Analyte concentration high in continuing calibration verification standard
QC-3	Analyte calibration criteria not met
QI-1	Internal standard was outside of method control limits.
QS-3	Surrogate recovery is lower than established control limits.
QS-4	Surrogate recovery less than 10%
QS-5	Surrogate recovery is higher than established control limits
R	The presence or absence of the analyte can not be determined from the data due to severe quality control problems. The data are rejected and considered unusable.

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ACRONYMS AND ABBREVIATIONS

CAS Chemical Abstracts Service

Note: Analytes with no known CAS identifiers have been assigned codes beginning with "E", the EPA ID as assigned by the EPA Substance Registry System (www.epa.gov/srs), or beginning with "R4-", a unique identifier assigned by the EPA Region 4 laboratory.

MDL Method Detection Limit - The minimum concentration of a substance (an analyte) that can be measured and reported with a 99% confidence that the analyte concentration is greater than zero.

MRL Minimum Reporting Limit - Analyte concentration that corresponds to the lowest demonstrated level of acceptable quantitation. The MRL is sample-specific and accounts for preparation weights and volumes, dilutions, and moisture content of soil/sediments.

TIC Tentatively Identified Compound - An analyte identified based on a match with the instrument software's mass spectral library. A calibration standard has not been analyzed to confirm the compound's identification or the estimated concentration reported.

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Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF-EB-02 **Lab ID:** C183012-01 **MD No:**

Station ID: **Matrix:** Equipment Rinse Blank **D No:** AZC2 CHM

Date Collected: 6/21/18 9:20

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
R4-7156	(m- and/or p-)Xylene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
71-55-6	1,1,1-Trichloroethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
76-13-1	1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113)	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
79-00-5	1,1,2-Trichloroethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-34-3	1,1-Dichloroethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-35-4	1,1-Dichloroethene (1,1-Dichloroethylene)	0.50	U, J, QS-3	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
87-61-6	1,2,3-Trichlorobenzene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
120-82-1	1,2,4-Trichlorobenzene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
96-12-8	1,2-Dibromo-3-Chloropropane (DBCP)	0.50	U, R, CLP32, CLP17	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
106-93-4	1,2-Dibromoethane (EDB)	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
95-50-1	1,2-Dichlorobenzene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
107-06-2	1,2-Dichloroethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
78-87-5	1,2-Dichloropropane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
541-73-1	1,3-Dichlorobenzene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
106-46-7	1,4-Dichlorobenzene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
67-64-1	Acetone	5.0	U, R, CLP32, CLP17	ug/L	5.0	6/22/18	6/22/18	CLP SOM02.4
71-43-2	Benzene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
74-97-5	Bromochloromethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-27-4	Bromodichloromethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-25-2	Bromoform	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
74-83-9	Bromomethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-15-0	Carbon disulfide	0.50	U, J, QC-1	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
56-23-5	Carbon Tetrachloride	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
108-90-7	Chlorobenzene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-00-3	Chloroethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4

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Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF-EB-02 **Lab ID:** C183012-01 **MD No:**
Station ID: **Matrix:** Equipment Rinse Blank **D No:** AZC2 CHM

Date Collected: 6/21/18 9:20

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
67-66-3	Chloroform	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
74-87-3	Chloromethane	0.50	U, J, QC-1	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
156-59-2	cis-1,2-Dichloroethene	0.50	U, J, QS-3	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
10061-01-5	cis-1,3-Dichloropropene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
110-82-7	Cyclohexane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
124-48-1	Dibromochloromethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-71-8	Dichlorodifluoromethane (Freon 12)	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
100-41-4	Ethyl Benzene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
98-82-8	Isopropylbenzene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
79-20-9	Methyl Acetate	0.50	U, R, CLP32, CLP17	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
591-78-6	Methyl Butyl Ketone	5.0	U	ug/L	5.0	6/22/18	6/22/18	CLP SOM02.4
78-93-3	Methyl Ethyl Ketone	5.0	U, R, CLP32, CLP17	ug/L	5.0	6/22/18	6/22/18	CLP SOM02.4
108-10-1	Methyl Isobutyl Ketone	5.0	U	ug/L	5.0	6/22/18	6/22/18	CLP SOM02.4
1634-04-4	Methyl T-Butyl Ether (MTBE)	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
108-87-2	Methylcyclohexane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-09-2	Methylene Chloride	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
95-47-6	o-Xylene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
100-42-5	Styrene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
127-18-4	Tetrachloroethene (Tetrachloroethylene)	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
108-88-3	Toluene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
156-60-5	trans-1,2-Dichloroethene	0.50	U, J, QS-3	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
10061-02-6	trans-1,3-Dichloropropene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
79-01-6	Trichloroethene (Trichloroethylene)	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-69-4	Trichlorofluoromethane (Freon 11)	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-01-4	Vinyl chloride	0.50	U, J, QC-1	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
Tentatively Identified Compounds:								
R4-0000	Tentatively Identified Compounds	0.5	U	ug/L	0.5	6/22/18	6/22/18	CLP SOM02.4

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Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF-FB-02 **Lab ID: C183012-02** **MD No:**

Station ID: **Matrix: Field Blank** **D No: AZC3 CHM**

Date Collected: 6/21/18 9:30

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
R4-7156	(m- and/or p-)Xylene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
71-55-6	1,1,1-Trichloroethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
76-13-1	1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113)	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
79-00-5	1,1,2-Trichloroethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-34-3	1,1-Dichloroethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-35-4	1,1-Dichloroethene (1,1-Dichloroethylene)	0.50	U, J, QS-3	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
87-61-6	1,2,3-Trichlorobenzene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
120-82-1	1,2,4-Trichlorobenzene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
96-12-8	1,2-Dibromo-3-Chloropropane (DBCP)	0.50	U, R, CLP32, CLP17	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
106-93-4	1,2-Dibromoethane (EDB)	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
95-50-1	1,2-Dichlorobenzene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
107-06-2	1,2-Dichloroethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
78-87-5	1,2-Dichloropropane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
541-73-1	1,3-Dichlorobenzene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
106-46-7	1,4-Dichlorobenzene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
67-64-1	Acetone	5.0	U, R, CLP32, CLP17	ug/L	5.0	6/22/18	6/22/18	CLP SOM02.4
71-43-2	Benzene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
74-97-5	Bromochloromethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-27-4	Bromodichloromethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-25-2	Bromoform	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
74-83-9	Bromomethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-15-0	Carbon disulfide	0.50	U, J, QC-1	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
56-23-5	Carbon Tetrachloride	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
108-90-7	Chlorobenzene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-00-3	Chloroethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF-FB-02 **Lab ID:** C183012-02 **MD No:**
Station ID: **Matrix:** Field Blank **D No:** AZC3 CHM

Date Collected: 6/21/18 9:30

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
67-66-3	Chloroform	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
74-87-3	Chloromethane	0.50	U, J, QC-1	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
156-59-2	cis-1,2-Dichloroethene	0.50	U, J, QS-3	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
10061-01-5	cis-1,3-Dichloropropene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
110-82-7	Cyclohexane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
124-48-1	Dibromochloromethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-71-8	Dichlorodifluoromethane (Freon 12)	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
100-41-4	Ethyl Benzene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
98-82-8	Isopropylbenzene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
79-20-9	Methyl Acetate	0.50	U, R, CLP32, CLP17	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
591-78-6	Methyl Butyl Ketone	5.0	U	ug/L	5.0	6/22/18	6/22/18	CLP SOM02.4
78-93-3	Methyl Ethyl Ketone	5.0	U, R, CLP32, CLP17	ug/L	5.0	6/22/18	6/22/18	CLP SOM02.4
108-10-1	Methyl Isobutyl Ketone	5.0	U	ug/L	5.0	6/22/18	6/22/18	CLP SOM02.4
1634-04-4	Methyl T-Butyl Ether (MTBE)	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
108-87-2	Methylcyclohexane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-09-2	Methylene Chloride	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
95-47-6	o-Xylene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
100-42-5	Styrene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
127-18-4	Tetrachloroethene (Tetrachloroethylene)	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
108-88-3	Toluene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
156-60-5	trans-1,2-Dichloroethene	0.50	U, J, QS-3	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
10061-02-6	trans-1,3-Dichloropropene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
79-01-6	Trichloroethene (Trichloroethylene)	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-69-4	Trichlorofluoromethane (Freon 11)	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-01-4	Vinyl chloride	0.50	U, J, QC-1	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
Tentatively Identified Compounds:								
R4-0000	Tentatively Identified Compounds	0.5	U	ug/L	0.5	6/22/18	6/22/18	CLP SOM02.4

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF-TB-04 **Lab ID:** C183012-03 **MD No:**

Station ID: **Matrix:** Trip Blank - Soil **D No:** AZB9 CHM

Date Collected: 6/19/18 18:50

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1644012	% Moisture	0.10		%		6/21/18	6/21/18	CLP VOA
R4-7156	(m- and/or p-)Xylene	4.8	U	ug/kg dry	4.8	6/21/18	6/21/18	CLP SOM02.4 V
71-55-6	1,1,1-Trichloroethane	4.8	U	ug/kg dry	4.8	6/21/18	6/21/18	CLP SOM02.4 V
79-34-5	1,1,2,2-Tetrachloroethane	4.8	U	ug/kg dry	4.8	6/21/18	6/21/18	CLP SOM02.4 V
76-13-1	1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113)	4.8	U	ug/kg dry	4.8	6/21/18	6/21/18	CLP SOM02.4 V
79-00-5	1,1,2-Trichloroethane	4.8	U	ug/kg dry	4.8	6/21/18	6/21/18	CLP SOM02.4 V
75-34-3	1,1-Dichloroethane	4.8	U	ug/kg dry	4.8	6/21/18	6/21/18	CLP SOM02.4 V
75-35-4	1,1-Dichloroethene (1,1-Dichloroethylene)	4.8	U	ug/kg dry	4.8	6/21/18	6/21/18	CLP SOM02.4 V
87-61-6	1,2,3-Trichlorobenzene	4.8	U	ug/kg dry	4.8	6/21/18	6/21/18	CLP SOM02.4 V
120-82-1	1,2,4-Trichlorobenzene	4.8	U	ug/kg dry	4.8	6/21/18	6/21/18	CLP SOM02.4 V
96-12-8	1,2-Dibromo-3-Chloropropane (DBCP)	4.8	U	ug/kg dry	4.8	6/21/18	6/21/18	CLP SOM02.4 V
106-93-4	1,2-Dibromoethane (EDB)	4.8	U	ug/kg dry	4.8	6/21/18	6/21/18	CLP SOM02.4 V
95-50-1	1,2-Dichlorobenzene	4.8	U	ug/kg dry	4.8	6/21/18	6/21/18	CLP SOM02.4 V
107-06-2	1,2-Dichloroethane	4.8	U	ug/kg dry	4.8	6/21/18	6/21/18	CLP SOM02.4 V
78-87-5	1,2-Dichloropropane	4.8	U	ug/kg dry	4.8	6/21/18	6/21/18	CLP SOM02.4 V
541-73-1	1,3-Dichlorobenzene	4.8	U	ug/kg dry	4.8	6/21/18	6/21/18	CLP SOM02.4 V
106-46-7	1,4-Dichlorobenzene	4.8	U	ug/kg dry	4.8	6/21/18	6/21/18	CLP SOM02.4 V
67-64-1	Acetone	57		ug/kg dry	9.5	6/21/18	6/21/18	CLP SOM02.4 V
71-43-2	Benzene	4.8	U	ug/kg dry	4.8	6/21/18	6/21/18	CLP SOM02.4 V
74-97-5	Bromochloromethane	4.8	U	ug/kg dry	4.8	6/21/18	6/21/18	CLP SOM02.4 V
75-27-4	Bromodichloromethane	4.8	U	ug/kg dry	4.8	6/21/18	6/21/18	CLP SOM02.4 V
75-25-2	Bromoform	4.8	U	ug/kg dry	4.8	6/21/18	6/21/18	CLP SOM02.4 V
74-83-9	Bromomethane	4.8	U	ug/kg dry	4.8	6/21/18	6/21/18	CLP SOM02.4 V
75-15-0	Carbon disulfide	4.8	U	ug/kg dry	4.8	6/21/18	6/21/18	CLP SOM02.4 V
56-23-5	Carbon Tetrachloride	4.8	U	ug/kg dry	4.8	6/21/18	6/21/18	CLP SOM02.4 V
108-90-7	Chlorobenzene	4.8	U	ug/kg dry	4.8	6/21/18	6/21/18	CLP SOM02.4 V
75-00-3	Chloroethane	4.8	U	ug/kg dry	4.8	6/21/18	6/21/18	CLP SOM02.4 V

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF-TB-04 **Lab ID:** C183012-03 **MD No:**

Station ID: **Matrix:** Trip Blank - Soil **D No:** AZB9 CHM

Date Collected: 6/19/18 18:50

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
67-66-3	Chloroform	4.8	U	ug/kg dry	4.8	6/21/18	6/21/18	CLP SOM02.4 V
74-87-3	Chloromethane	4.8	U	ug/kg dry	4.8	6/21/18	6/21/18	CLP SOM02.4 V
156-59-2	cis-1,2-Dichloroethene	4.8	U	ug/kg dry	4.8	6/21/18	6/21/18	CLP SOM02.4 V
10061-01-5	cis-1,3-Dichloropropene	4.8	U	ug/kg dry	4.8	6/21/18	6/21/18	CLP SOM02.4 V
110-82-7	Cyclohexane	4.8	U	ug/kg dry	4.8	6/21/18	6/21/18	CLP SOM02.4 V
124-48-1	Dibromochloromethane	4.8	U	ug/kg dry	4.8	6/21/18	6/21/18	CLP SOM02.4 V
75-71-8	Dichlorodifluoromethane (Freon 12)	4.8	U, J, QC-3	ug/kg dry	4.8	6/21/18	6/21/18	CLP SOM02.4 V
100-41-4	Ethyl Benzene	4.8	U	ug/kg dry	4.8	6/21/18	6/21/18	CLP SOM02.4 V
98-82-8	Isopropylbenzene	4.8	U	ug/kg dry	4.8	6/21/18	6/21/18	CLP SOM02.4 V
79-20-9	Methyl Acetate	4.8	U	ug/kg dry	4.8	6/21/18	6/21/18	CLP SOM02.4 V
591-78-6	Methyl Butyl Ketone	9.5	U	ug/kg dry	9.5	6/21/18	6/21/18	CLP SOM02.4 V
78-93-3	Methyl Ethyl Ketone	14		ug/kg dry	9.5	6/21/18	6/21/18	CLP SOM02.4 V
108-10-1	Methyl Isobutyl Ketone	9.5	U	ug/kg dry	9.5	6/21/18	6/21/18	CLP SOM02.4 V
1634-04-4	Methyl T-Butyl Ether (MTBE)	4.8	U	ug/kg dry	4.8	6/21/18	6/21/18	CLP SOM02.4 V
108-87-2	Methylcyclohexane	4.8	U	ug/kg dry	4.8	6/21/18	6/21/18	CLP SOM02.4 V
75-09-2	Methylene Chloride	4.8	U	ug/kg dry	4.8	6/21/18	6/21/18	CLP SOM02.4 V
95-47-6	o-Xylene	4.8	U	ug/kg dry	4.8	6/21/18	6/21/18	CLP SOM02.4 V
100-42-5	Styrene	4.8	U	ug/kg dry	4.8	6/21/18	6/21/18	CLP SOM02.4 V
127-18-4	Tetrachloroethene (Tetrachloroethylene)	4.8	U	ug/kg dry	4.8	6/21/18	6/21/18	CLP SOM02.4 V
108-88-3	Toluene	4.8	U	ug/kg dry	4.8	6/21/18	6/21/18	CLP SOM02.4 V
156-60-5	trans-1,2-Dichloroethene	4.8	U	ug/kg dry	4.8	6/21/18	6/21/18	CLP SOM02.4 V
10061-02-6	trans-1,3-Dichloropropene	4.8	U	ug/kg dry	4.8	6/21/18	6/21/18	CLP SOM02.4 V
79-01-6	Trichloroethene (Trichloroethylene)	4.8	U	ug/kg dry	4.8	6/21/18	6/21/18	CLP SOM02.4 V
75-69-4	Trichlorofluoromethane (Freon 11)	4.8	U	ug/kg dry	4.8	6/21/18	6/21/18	CLP SOM02.4 V
75-01-4	Vinyl chloride	4.8	U	ug/kg dry	4.8	6/21/18	6/21/18	CLP SOM02.4 V
Tentatively Identified Compounds:								
R4-0000	Tentatively Identified Compounds	5	U	ug/kg dry	5	6/21/18	6/21/18	CLP SOM02.4 V

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF-TB-05 **Lab ID:** C183012-04 **MD No:**

Station ID: **Matrix:** Trip Blank - Soil **D No:** AZC0 CHM

Date Collected: 6/20/18 18:40

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1644012	% Moisture	0.50		%		6/26/18	6/26/18	CLP VOA
R4-7156	(m- and/or p-)Xylene	5.4	U	ug/kg dry	5.4	6/26/18	6/26/18	CLP SOM02.4 V
71-55-6	1,1,1-Trichloroethane	5.4	U	ug/kg dry	5.4	6/26/18	6/26/18	CLP SOM02.4 V
79-34-5	1,1,2,2-Tetrachloroethane	5.4	U	ug/kg dry	5.4	6/26/18	6/26/18	CLP SOM02.4 V
76-13-1	1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113)	5.4	U	ug/kg dry	5.4	6/26/18	6/26/18	CLP SOM02.4 V
79-00-5	1,1,2-Trichloroethane	5.4	U	ug/kg dry	5.4	6/26/18	6/26/18	CLP SOM02.4 V
75-34-3	1,1-Dichloroethane	5.4	U	ug/kg dry	5.4	6/26/18	6/26/18	CLP SOM02.4 V
75-35-4	1,1-Dichloroethene (1,1-Dichloroethylene)	5.4	U	ug/kg dry	5.4	6/26/18	6/26/18	CLP SOM02.4 V
87-61-6	1,2,3-Trichlorobenzene	5.4	U	ug/kg dry	5.4	6/26/18	6/26/18	CLP SOM02.4 V
120-82-1	1,2,4-Trichlorobenzene	5.4	U	ug/kg dry	5.4	6/26/18	6/26/18	CLP SOM02.4 V
96-12-8	1,2-Dibromo-3-Chloropropane (DBCP)	5.4	U	ug/kg dry	5.4	6/26/18	6/26/18	CLP SOM02.4 V
106-93-4	1,2-Dibromoethane (EDB)	5.4	U	ug/kg dry	5.4	6/26/18	6/26/18	CLP SOM02.4 V
95-50-1	1,2-Dichlorobenzene	5.4	U	ug/kg dry	5.4	6/26/18	6/26/18	CLP SOM02.4 V
107-06-2	1,2-Dichloroethane	5.4	U	ug/kg dry	5.4	6/26/18	6/26/18	CLP SOM02.4 V
78-87-5	1,2-Dichloropropane	5.4	U	ug/kg dry	5.4	6/26/18	6/26/18	CLP SOM02.4 V
541-73-1	1,3-Dichlorobenzene	5.4	U	ug/kg dry	5.4	6/26/18	6/26/18	CLP SOM02.4 V
106-46-7	1,4-Dichlorobenzene	5.4	U	ug/kg dry	5.4	6/26/18	6/26/18	CLP SOM02.4 V
67-64-1	Acetone	11	U	ug/kg dry	11	6/26/18	6/26/18	CLP SOM02.4 V
71-43-2	Benzene	5.4	U	ug/kg dry	5.4	6/26/18	6/26/18	CLP SOM02.4 V
74-97-5	Bromochloromethane	5.4	U	ug/kg dry	5.4	6/26/18	6/26/18	CLP SOM02.4 V
75-27-4	Bromodichloromethane	5.4	U	ug/kg dry	5.4	6/26/18	6/26/18	CLP SOM02.4 V
75-25-2	Bromoform	5.4	U	ug/kg dry	5.4	6/26/18	6/26/18	CLP SOM02.4 V
74-83-9	Bromomethane	5.4	U	ug/kg dry	5.4	6/26/18	6/26/18	CLP SOM02.4 V
75-15-0	Carbon disulfide	5.4	U	ug/kg dry	5.4	6/26/18	6/26/18	CLP SOM02.4 V
56-23-5	Carbon Tetrachloride	5.4	U	ug/kg dry	5.4	6/26/18	6/26/18	CLP SOM02.4 V
108-90-7	Chlorobenzene	5.4	U	ug/kg dry	5.4	6/26/18	6/26/18	CLP SOM02.4 V
75-00-3	Chloroethane	5.4	U	ug/kg dry	5.4	6/26/18	6/26/18	CLP SOM02.4 V

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF-TB-05 **Lab ID:** C183012-04 **MD No:**

Station ID: **Matrix:** Trip Blank - Soil **D No:** AZC0 CHM

Date Collected: 6/20/18 18:40

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
67-66-3	Chloroform	5.4	U	ug/kg dry	5.4	6/26/18	6/26/18	CLP SOM02.4 V
74-87-3	Chloromethane	5.4	U	ug/kg dry	5.4	6/26/18	6/26/18	CLP SOM02.4 V
156-59-2	cis-1,2-Dichloroethene	5.4	U	ug/kg dry	5.4	6/26/18	6/26/18	CLP SOM02.4 V
10061-01-5	cis-1,3-Dichloropropene	5.4	U	ug/kg dry	5.4	6/26/18	6/26/18	CLP SOM02.4 V
110-82-7	Cyclohexane	5.4	U	ug/kg dry	5.4	6/26/18	6/26/18	CLP SOM02.4 V
124-48-1	Dibromochloromethane	5.4	U	ug/kg dry	5.4	6/26/18	6/26/18	CLP SOM02.4 V
75-71-8	Dichlorodifluoromethane (Freon 12)	5.4	U, J, QC-3	ug/kg dry	5.4	6/26/18	6/26/18	CLP SOM02.4 V
100-41-4	Ethyl Benzene	5.4	U	ug/kg dry	5.4	6/26/18	6/26/18	CLP SOM02.4 V
98-82-8	Isopropylbenzene	5.4	U	ug/kg dry	5.4	6/26/18	6/26/18	CLP SOM02.4 V
79-20-9	Methyl Acetate	5.4	U	ug/kg dry	5.4	6/26/18	6/26/18	CLP SOM02.4 V
591-78-6	Methyl Butyl Ketone	11	U	ug/kg dry	11	6/26/18	6/26/18	CLP SOM02.4 V
78-93-3	Methyl Ethyl Ketone	11	U	ug/kg dry	11	6/26/18	6/26/18	CLP SOM02.4 V
108-10-1	Methyl Isobutyl Ketone	11	U	ug/kg dry	11	6/26/18	6/26/18	CLP SOM02.4 V
1634-04-4	Methyl T-Butyl Ether (MTBE)	5.4	U	ug/kg dry	5.4	6/26/18	6/26/18	CLP SOM02.4 V
108-87-2	Methylcyclohexane	5.4	U	ug/kg dry	5.4	6/26/18	6/26/18	CLP SOM02.4 V
75-09-2	Methylene Chloride	5.4	U	ug/kg dry	5.4	6/26/18	6/26/18	CLP SOM02.4 V
95-47-6	o-Xylene	5.4	U	ug/kg dry	5.4	6/26/18	6/26/18	CLP SOM02.4 V
100-42-5	Styrene	5.4	U	ug/kg dry	5.4	6/26/18	6/26/18	CLP SOM02.4 V
127-18-4	Tetrachloroethene (Tetrachloroethylene)	5.4	U	ug/kg dry	5.4	6/26/18	6/26/18	CLP SOM02.4 V
108-88-3	Toluene	5.4	U	ug/kg dry	5.4	6/26/18	6/26/18	CLP SOM02.4 V
156-60-5	trans-1,2-Dichloroethene	5.4	U	ug/kg dry	5.4	6/26/18	6/26/18	CLP SOM02.4 V
10061-02-6	trans-1,3-Dichloropropene	5.4	U	ug/kg dry	5.4	6/26/18	6/26/18	CLP SOM02.4 V
79-01-6	Trichloroethene (Trichloroethylene)	5.4	U	ug/kg dry	5.4	6/26/18	6/26/18	CLP SOM02.4 V
75-69-4	Trichlorofluoromethane (Freon 11)	5.4	U	ug/kg dry	5.4	6/26/18	6/26/18	CLP SOM02.4 V
75-01-4	Vinyl chloride	5.4	U	ug/kg dry	5.4	6/26/18	6/26/18	CLP SOM02.4 V
Tentatively Identified Compounds:								
R4-0000	Tentatively Identified Compounds	5	U	ug/kg dry	5	6/26/18	6/26/18	CLP SOM02.4 V

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF-TB-06 **Lab ID: C183012-05** **MD No:**

Station ID: **Matrix: Trip Blank - Water** **D No: AZC1 CHM**

Date Collected: 6/21/18 9:35

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
R4-7156	(m- and/or p-)Xylene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
71-55-6	1,1,1-Trichloroethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
76-13-1	1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113)	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
79-00-5	1,1,2-Trichloroethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-34-3	1,1-Dichloroethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-35-4	1,1-Dichloroethene (1,1-Dichloroethylene)	0.50	U, J, QS-3	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
87-61-6	1,2,3-Trichlorobenzene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
120-82-1	1,2,4-Trichlorobenzene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
96-12-8	1,2-Dibromo-3-Chloropropane (DBCP)	0.50	U, R, CLP32, CLP17	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
106-93-4	1,2-Dibromoethane (EDB)	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
95-50-1	1,2-Dichlorobenzene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
107-06-2	1,2-Dichloroethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
78-87-5	1,2-Dichloropropane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
541-73-1	1,3-Dichlorobenzene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
106-46-7	1,4-Dichlorobenzene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
67-64-1	Acetone	5.0	U, R, CLP32, CLP17	ug/L	5.0	6/22/18	6/22/18	CLP SOM02.4
71-43-2	Benzene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
74-97-5	Bromochloromethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-27-4	Bromodichloromethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-25-2	Bromoform	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
74-83-9	Bromomethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-15-0	Carbon disulfide	0.50	U, J, QC-1	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
56-23-5	Carbon Tetrachloride	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
108-90-7	Chlorobenzene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-00-3	Chloroethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF-TB-06 **Lab ID:** C183012-05 **MD No:**
Station ID: **Matrix:** Trip Blank - Water **D No:** AZC1 CHM

Date Collected: 6/21/18 9:35

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
67-66-3	Chloroform	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
74-87-3	Chloromethane	0.50	U, J, QC-1	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
156-59-2	cis-1,2-Dichloroethene	0.50	U, J, QS-3	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
10061-01-5	cis-1,3-Dichloropropene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
110-82-7	Cyclohexane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
124-48-1	Dibromochloromethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-71-8	Dichlorodifluoromethane (Freon 12)	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
100-41-4	Ethyl Benzene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
98-82-8	Isopropylbenzene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
79-20-9	Methyl Acetate	0.50	U, R, CLP32, CLP17	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
591-78-6	Methyl Butyl Ketone	5.0	U	ug/L	5.0	6/22/18	6/22/18	CLP SOM02.4
78-93-3	Methyl Ethyl Ketone	5.0	U, R, CLP32, CLP17	ug/L	5.0	6/22/18	6/22/18	CLP SOM02.4
108-10-1	Methyl Isobutyl Ketone	5.0	U	ug/L	5.0	6/22/18	6/22/18	CLP SOM02.4
1634-04-4	Methyl T-Butyl Ether (MTBE)	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
108-87-2	Methylcyclohexane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-09-2	Methylene Chloride	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
95-47-6	o-Xylene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
100-42-5	Styrene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
127-18-4	Tetrachloroethene (Tetrachloroethylene)	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
108-88-3	Toluene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
156-60-5	trans-1,2-Dichloroethene	0.50	U, J, QS-3	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
10061-02-6	trans-1,3-Dichloropropene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
79-01-6	Trichloroethene (Trichloroethylene)	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-69-4	Trichlorofluoromethane (Freon 11)	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-01-4	Vinyl chloride	0.50	U, J, QC-1	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
Tentatively Identified Compounds:								
13389-42-9	2-Octene, (E)-	0.5	NJ, CLP15	ug/L		6/22/18	6/22/18	CLP SOM02.4

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D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF17-GW-01 **Lab ID:** C183012-06 **MD No:**
Station ID: NF17 **Matrix:** Groundwater **D No:** AZ97 CHM

Date Collected: 6/20/18 9:30

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
R4-7156	(m- and/or p-)Xylene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
71-55-6	1,1,1-Trichloroethane	0.22	J, CLP01	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
76-13-1	1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113)	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
79-00-5	1,1,2-Trichloroethane	0.27	J, CLP01	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-34-3	1,1-Dichloroethane	1.8		ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-35-4	1,1-Dichloroethene (1,1-Dichloroethylene)	14	J, QS-5	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
87-61-6	1,2,3-Trichlorobenzene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
120-82-1	1,2,4-Trichlorobenzene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
96-12-8	1,2-Dibromo-3-Chloropropane (DBCP)	0.50	U, J, QC-1	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
106-93-4	1,2-Dibromoethane (EDB)	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
95-50-1	1,2-Dichlorobenzene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
107-06-2	1,2-Dichloroethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
78-87-5	1,2-Dichloropropane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
541-73-1	1,3-Dichlorobenzene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
106-46-7	1,4-Dichlorobenzene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
67-64-1	Acetone	5.0	U, R, CLP32, CLP17	ug/L	5.0	6/22/18	6/22/18	CLP SOM02.4
71-43-2	Benzene	0.21	J, CLP01	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
74-97-5	Bromochloromethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-27-4	Bromodichloromethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-25-2	Bromoform	0.50	U, J, QC-1	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
74-83-9	Bromomethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-15-0	Carbon disulfide	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
56-23-5	Carbon Tetrachloride	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
108-90-7	Chlorobenzene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-00-3	Chloroethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
67-66-3	Chloroform	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4

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980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF17-GW-01 **Lab ID:** C183012-06 **MD No:**
Station ID: NF17 **Matrix:** Groundwater **D No:** AZ97 CHM

Date Collected: 6/20/18 9:30

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
74-87-3	Chloromethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
156-59-2	cis-1,2-Dichloroethene	36	J, CLP01	ug/L	50	6/22/18	6/26/18	CLP SOM02.4
10061-01-5	cis-1,3-Dichloropropene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
110-82-7	Cyclohexane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
124-48-1	Dibromochloromethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-71-8	Dichlorodifluoromethane (Freon 12)	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
100-41-4	Ethyl Benzene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
98-82-8	Isopropylbenzene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
79-20-9	Methyl Acetate	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
591-78-6	Methyl Butyl Ketone	5.0	U	ug/L	5.0	6/22/18	6/22/18	CLP SOM02.4
78-93-3	Methyl Ethyl Ketone	5.0	U, R, CLP17	ug/L	5.0	6/22/18	6/22/18	CLP SOM02.4
108-10-1	Methyl Isobutyl Ketone	5.0	U	ug/L	5.0	6/22/18	6/22/18	CLP SOM02.4
1634-04-4	Methyl T-Butyl Ether (MTBE)	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
108-87-2	Methylcyclohexane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-09-2	Methylene Chloride	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
95-47-6	o-Xylene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
100-42-5	Styrene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
127-18-4	Tetrachloroethene (Tetrachloroethylene)	2.6		ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
108-88-3	Toluene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
156-60-5	trans-1,2-Dichloroethene	0.91	J, QS-5	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
10061-02-6	trans-1,3-Dichloropropene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
79-01-6	Trichloroethene (Trichloroethylene)	1200		ug/L	50	6/22/18	6/26/18	CLP SOM02.4
75-69-4	Trichlorofluoromethane (Freon 11)	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-01-4	Vinyl chloride	2.7		ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
Tentatively Identified Compounds:								
R4-0000	Tentatively Identified Compounds	0.5	U	ug/L	0.5	6/22/18	6/22/18	CLP SOM02.4

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D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF17-GW-01-DUP **Lab ID:** C183012-07 **MD No:**
Station ID: NF17 **Matrix:** Groundwater **D No:** AZC6 CHM

Date Collected: 6/20/18 9:35

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
R4-7156	(m- and/or p-)Xylene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
71-55-6	1,1,1-Trichloroethane	0.22	J, CLP01	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
76-13-1	1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113)	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
79-00-5	1,1,2-Trichloroethane	0.26	J, CLP01	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-34-3	1,1-Dichloroethane	1.9		ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-35-4	1,1-Dichloroethene (1,1-Dichloroethylene)	14	J, QS-5	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
87-61-6	1,2,3-Trichlorobenzene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
120-82-1	1,2,4-Trichlorobenzene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
96-12-8	1,2-Dibromo-3-Chloropropane (DBCP)	0.50	U, J, QC-1	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
106-93-4	1,2-Dibromoethane (EDB)	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
95-50-1	1,2-Dichlorobenzene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
107-06-2	1,2-Dichloroethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
78-87-5	1,2-Dichloropropane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
541-73-1	1,3-Dichlorobenzene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
106-46-7	1,4-Dichlorobenzene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
67-64-1	Acetone	5.0	U, R, CLP32, CLP17	ug/L	5.0	6/22/18	6/22/18	CLP SOM02.4
71-43-2	Benzene	0.22	J, CLP01	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
74-97-5	Bromochloromethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-27-4	Bromodichloromethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-25-2	Bromoform	0.50	U, J, QC-1	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
74-83-9	Bromomethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-15-0	Carbon disulfide	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
56-23-5	Carbon Tetrachloride	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
108-90-7	Chlorobenzene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-00-3	Chloroethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
67-66-3	Chloroform	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4

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Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF17-GW-01-DUP **Lab ID:** C183012-07 **MD No:**
Station ID: NF17 **Matrix:** Groundwater **D No:** AZC6 CHM

Date Collected: 6/20/18 9:35

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
74-87-3	Chloromethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
156-59-2	cis-1,2-Dichloroethene	34	J, CLP01	ug/L	50	6/22/18	6/26/18	CLP SOM02.4
10061-01-5	cis-1,3-Dichloropropene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
110-82-7	Cyclohexane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
124-48-1	Dibromochloromethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-71-8	Dichlorodifluoromethane (Freon 12)	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
100-41-4	Ethyl Benzene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
98-82-8	Isopropylbenzene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
79-20-9	Methyl Acetate	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
591-78-6	Methyl Butyl Ketone	5.0	U	ug/L	5.0	6/22/18	6/22/18	CLP SOM02.4
78-93-3	Methyl Ethyl Ketone	10	U	ug/L	10	6/22/18	6/22/18	CLP SOM02.4
108-10-1	Methyl Isobutyl Ketone	5.0	U	ug/L	5.0	6/22/18	6/22/18	CLP SOM02.4
1634-04-4	Methyl T-Butyl Ether (MTBE)	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
108-87-2	Methylcyclohexane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-09-2	Methylene Chloride	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
95-47-6	o-Xylene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
100-42-5	Styrene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
127-18-4	Tetrachloroethene (Tetrachloroethylene)	2.7		ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
108-88-3	Toluene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
156-60-5	trans-1,2-Dichloroethene	0.93	J, QS-5	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
10061-02-6	trans-1,3-Dichloropropene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
79-01-6	Trichloroethene (Trichloroethylene)	1200		ug/L	50	6/22/18	6/26/18	CLP SOM02.4
75-69-4	Trichlorofluoromethane (Freon 11)	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-01-4	Vinyl chloride	2.8		ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
Tentatively Identified Compounds:								
R4-0000	Tentatively Identified Compounds	0.5	U	ug/L	0.5	6/22/18	6/22/18	CLP SOM02.4

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF17-SS-01 **Lab ID:** C183012-08 **MD No:**

Station ID: NF17 **Matrix:** Surface Soil **D No:** AZ57 CHM

Date Collected: 6/20/18 8:45

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1644012	% Moisture	13		%		6/22/18	6/22/18	CLP VOA
R4-7156	(m- and/or p-)Xylene	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
71-55-6	1,1,1-Trichloroethane	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
79-34-5	1,1,2,2-Tetrachloroethane	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
76-13-1	1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113)	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
79-00-5	1,1,2-Trichloroethane	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
75-34-3	1,1-Dichloroethane	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
75-35-4	1,1-Dichloroethene (1,1-Dichloroethylene)	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
87-61-6	1,2,3-Trichlorobenzene	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
120-82-1	1,2,4-Trichlorobenzene	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
96-12-8	1,2-Dibromo-3-Chloropropane (DBCP)	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
106-93-4	1,2-Dibromoethane (EDB)	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
95-50-1	1,2-Dichlorobenzene	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
107-06-2	1,2-Dichloroethane	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
78-87-5	1,2-Dichloropropane	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
541-73-1	1,3-Dichlorobenzene	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
106-46-7	1,4-Dichlorobenzene	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
67-64-1	Acetone	7.3	U	ug/kg dry	7.3	6/22/18	6/22/18	CLP SOM02.4 V
71-43-2	Benzene	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
74-97-5	Bromochloromethane	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
75-27-4	Bromodichloromethane	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
75-25-2	Bromoform	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
74-83-9	Bromomethane	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
75-15-0	Carbon disulfide	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
56-23-5	Carbon Tetrachloride	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
108-90-7	Chlorobenzene	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
75-00-3	Chloroethane	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF17-SS-01 **Lab ID:** C183012-08 **MD No:**
Station ID: NF17 **Matrix:** Surface Soil **D No:** AZ57 CHM

Date Collected: 6/20/18 8:45

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
67-66-3	Chloroform	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
74-87-3	Chloromethane	3.7	U, J, QC-1	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
156-59-2	cis-1,2-Dichloroethene	5.3		ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
10061-01-5	cis-1,3-Dichloropropene	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
110-82-7	Cyclohexane	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
124-48-1	Dibromochloromethane	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
75-71-8	Dichlorodifluoromethane (Freon 12)	3.7	U, J, QC-1, QC-3	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
100-41-4	Ethyl Benzene	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
98-82-8	Isopropylbenzene	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
79-20-9	Methyl Acetate	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
591-78-6	Methyl Butyl Ketone	7.3	U	ug/kg dry	7.3	6/22/18	6/22/18	CLP SOM02.4 V
78-93-3	Methyl Ethyl Ketone	7.3	U	ug/kg dry	7.3	6/22/18	6/22/18	CLP SOM02.4 V
108-10-1	Methyl Isobutyl Ketone	7.3	U	ug/kg dry	7.3	6/22/18	6/22/18	CLP SOM02.4 V
1634-04-4	Methyl T-Butyl Ether (MTBE)	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
108-87-2	Methylcyclohexane	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
75-09-2	Methylene Chloride	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
95-47-6	o-Xylene	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
100-42-5	Styrene	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
127-18-4	Tetrachloroethene (Tetrachloroethylene)	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
108-88-3	Toluene	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
156-60-5	trans-1,2-Dichloroethene	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
10061-02-6	trans-1,3-Dichloropropene	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
79-01-6	Trichloroethene (Trichloroethylene)	28		ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
75-69-4	Trichlorofluoromethane (Freon 11)	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
75-01-4	Vinyl chloride	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
Tentatively Identified Compounds:								
115-10-6	Dimethyl Ether	20	NJ, CLP15	ug/kg dry		6/22/18	6/22/18	CLP SOM02.4 V

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D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF17-SS-01-DUP **Lab ID:** C183012-09 **MD No:**

Station ID: NF17 **Matrix:** Surface Soil **D No:** AZC4 CHM

Date Collected: 6/20/18 8:55

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1644012	% Moisture	14		%		6/25/18	6/25/18	CLP VOA
R4-7156	(m- and/or p-)Xylene	3.9	U	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
71-55-6	1,1,1-Trichloroethane	3.9	U	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
79-34-5	1,1,2,2-Tetrachloroethane	3.9	U	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
76-13-1	1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113)	3.9	U	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
79-00-5	1,1,2-Trichloroethane	3.9	U	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
75-34-3	1,1-Dichloroethane	3.9	U	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
75-35-4	1,1-Dichloroethene (1,1-Dichloroethylene)	3.9	U	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
87-61-6	1,2,3-Trichlorobenzene	3.9	U, J, QI-1	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
120-82-1	1,2,4-Trichlorobenzene	3.9	U, J, QI-1	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
96-12-8	1,2-Dibromo-3-Chloropropane (DBCP)	3.9	U, J, QI-1	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
106-93-4	1,2-Dibromoethane (EDB)	3.9	U	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
95-50-1	1,2-Dichlorobenzene	3.9	U, J, QI-1	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
107-06-2	1,2-Dichloroethane	3.9	U	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
78-87-5	1,2-Dichloropropane	3.9	U	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
541-73-1	1,3-Dichlorobenzene	3.9	U, J, QI-1	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
106-46-7	1,4-Dichlorobenzene	3.9	U, J, QI-1	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
67-64-1	Acetone	7.9	U	ug/kg dry	7.9	6/25/18	6/25/18	CLP SOM02.4 V
71-43-2	Benzene	3.9	U	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
74-97-5	Bromochloromethane	3.9	U	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
75-27-4	Bromodichloromethane	3.9	U	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
75-25-2	Bromoform	3.9	U, J, QI-1	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
74-83-9	Bromomethane	3.9	U	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
75-15-0	Carbon disulfide	3.9	U	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
56-23-5	Carbon Tetrachloride	3.9	U	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
108-90-7	Chlorobenzene	3.9	U	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
75-00-3	Chloroethane	3.9	U	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF17-SS-01-DUP **Lab ID:** C183012-09 **MD No:**
Station ID: NF17 **Matrix:** Surface Soil **D No:** AZC4 CHM

Date Collected: 6/20/18 8:55

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
67-66-3	Chloroform	3.9	U	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
74-87-3	Chloromethane	3.9	U	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
156-59-2	cis-1,2-Dichloroethene	60		ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
10061-01-5	cis-1,3-Dichloropropene	3.9	U	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
110-82-7	Cyclohexane	3.9	U	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
124-48-1	Dibromochloromethane	3.9	U	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
75-71-8	Dichlorodifluoromethane (Freon 12)	3.9	U, J, QC-3	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
100-41-4	Ethyl Benzene	3.9	U	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
98-82-8	Isopropylbenzene	3.9	U	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
79-20-9	Methyl Acetate	3.9	U	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
591-78-6	Methyl Butyl Ketone	7.9	U	ug/kg dry	7.9	6/25/18	6/25/18	CLP SOM02.4 V
78-93-3	Methyl Ethyl Ketone	13		ug/kg dry	7.9	6/25/18	6/25/18	CLP SOM02.4 V
108-10-1	Methyl Isobutyl Ketone	7.9	U	ug/kg dry	7.9	6/25/18	6/25/18	CLP SOM02.4 V
1634-04-4	Methyl T-Butyl Ether (MTBE)	3.9	U	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
108-87-2	Methylcyclohexane	3.9	U	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
75-09-2	Methylene Chloride	3.9	U	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
95-47-6	o-Xylene	3.9	U	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
100-42-5	Styrene	3.9	U	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
127-18-4	Tetrachloroethene (Tetrachloroethylene)	3.9	U	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
108-88-3	Toluene	3.9	U	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
156-60-5	trans-1,2-Dichloroethene	3.9	U	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
10061-02-6	trans-1,3-Dichloropropene	3.9	U	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
79-01-6	Trichloroethene (Trichloroethylene)	310		ug/kg dry	230	6/25/18	6/26/18	CLP SOM02.4 V
75-69-4	Trichlorofluoromethane (Freon 11)	3.9	U	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
75-01-4	Vinyl chloride	3.9	U	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
Tentatively Identified Compounds:								
R4-0000	Tentatively Identified Compounds	4	U	ug/kg dry	4	6/25/18	6/25/18	CLP SOM02.4 V

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF17-SS-02 **Lab ID:** C183012-10 **MD No:**
Station ID: NF17 **Matrix:** Subsurface Soil **D No:** AZ58 CHM

Date Collected: 6/20/18 8:50

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1644012	% Moisture	20		%		6/22/18	6/22/18	CLP VOA
R4-7156	(m- and/or p-)Xylene	4.3	U	ug/kg dry	4.3	6/22/18	6/22/18	CLP SOM02.4 V
71-55-6	1,1,1-Trichloroethane	4.3	U	ug/kg dry	4.3	6/22/18	6/22/18	CLP SOM02.4 V
79-34-5	1,1,2,2-Tetrachloroethane	4.3	U	ug/kg dry	4.3	6/22/18	6/22/18	CLP SOM02.4 V
76-13-1	1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113)	4.3	U	ug/kg dry	4.3	6/22/18	6/22/18	CLP SOM02.4 V
79-00-5	1,1,2-Trichloroethane	4.3	U	ug/kg dry	4.3	6/22/18	6/22/18	CLP SOM02.4 V
75-34-3	1,1-Dichloroethane	4.3	U	ug/kg dry	4.3	6/22/18	6/22/18	CLP SOM02.4 V
75-35-4	1,1-Dichloroethene (1,1-Dichloroethylene)	4.3	U	ug/kg dry	4.3	6/22/18	6/22/18	CLP SOM02.4 V
87-61-6	1,2,3-Trichlorobenzene	4.3	U	ug/kg dry	4.3	6/22/18	6/22/18	CLP SOM02.4 V
120-82-1	1,2,4-Trichlorobenzene	4.3	U	ug/kg dry	4.3	6/22/18	6/22/18	CLP SOM02.4 V
96-12-8	1,2-Dibromo-3-Chloropropane (DBCP)	4.3	U	ug/kg dry	4.3	6/22/18	6/22/18	CLP SOM02.4 V
106-93-4	1,2-Dibromoethane (EDB)	4.3	U	ug/kg dry	4.3	6/22/18	6/22/18	CLP SOM02.4 V
95-50-1	1,2-Dichlorobenzene	4.3	U	ug/kg dry	4.3	6/22/18	6/22/18	CLP SOM02.4 V
107-06-2	1,2-Dichloroethane	4.3	U	ug/kg dry	4.3	6/22/18	6/22/18	CLP SOM02.4 V
78-87-5	1,2-Dichloropropane	4.3	U	ug/kg dry	4.3	6/22/18	6/22/18	CLP SOM02.4 V
541-73-1	1,3-Dichlorobenzene	4.3	U	ug/kg dry	4.3	6/22/18	6/22/18	CLP SOM02.4 V
106-46-7	1,4-Dichlorobenzene	4.3	U	ug/kg dry	4.3	6/22/18	6/22/18	CLP SOM02.4 V
67-64-1	Acetone	8.5	U	ug/kg dry	8.5	6/22/18	6/22/18	CLP SOM02.4 V
71-43-2	Benzene	4.3	U	ug/kg dry	4.3	6/22/18	6/22/18	CLP SOM02.4 V
74-97-5	Bromochloromethane	4.3	U	ug/kg dry	4.3	6/22/18	6/22/18	CLP SOM02.4 V
75-27-4	Bromodichloromethane	4.3	U	ug/kg dry	4.3	6/22/18	6/22/18	CLP SOM02.4 V
75-25-2	Bromoform	4.3	U	ug/kg dry	4.3	6/22/18	6/22/18	CLP SOM02.4 V
74-83-9	Bromomethane	4.3	U	ug/kg dry	4.3	6/22/18	6/22/18	CLP SOM02.4 V
75-15-0	Carbon disulfide	4.3	U	ug/kg dry	4.3	6/22/18	6/22/18	CLP SOM02.4 V
56-23-5	Carbon Tetrachloride	4.3	U	ug/kg dry	4.3	6/22/18	6/22/18	CLP SOM02.4 V
108-90-7	Chlorobenzene	4.3	U	ug/kg dry	4.3	6/22/18	6/22/18	CLP SOM02.4 V
75-00-3	Chloroethane	4.3	U	ug/kg dry	4.3	6/22/18	6/22/18	CLP SOM02.4 V

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF17-SS-02 **Lab ID:** C183012-10 **MD No:**
Station ID: NF17 **Matrix:** Subsurface Soil **D No:** AZ58 CHM

Date Collected: 6/20/18 8:50

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
67-66-3	Chloroform	4.3	U	ug/kg dry	4.3	6/22/18	6/22/18	CLP SOM02.4 V
74-87-3	Chloromethane	4.3	U, J, QC-1	ug/kg dry	4.3	6/22/18	6/22/18	CLP SOM02.4 V
156-59-2	cis-1,2-Dichloroethene	65	J, CLP01	ug/kg dry	270	6/22/18	6/26/18	CLP SOM02.4 V
10061-01-5	cis-1,3-Dichloropropene	4.3	U	ug/kg dry	4.3	6/22/18	6/22/18	CLP SOM02.4 V
110-82-7	Cyclohexane	4.3	U	ug/kg dry	4.3	6/22/18	6/22/18	CLP SOM02.4 V
124-48-1	Dibromochloromethane	4.3	U	ug/kg dry	4.3	6/22/18	6/22/18	CLP SOM02.4 V
75-71-8	Dichlorodifluoromethane (Freon 12)	4.3	U, J, QC-1, QC-3	ug/kg dry	4.3	6/22/18	6/22/18	CLP SOM02.4 V
100-41-4	Ethyl Benzene	4.3	U	ug/kg dry	4.3	6/22/18	6/22/18	CLP SOM02.4 V
98-82-8	Isopropylbenzene	4.3	U	ug/kg dry	4.3	6/22/18	6/22/18	CLP SOM02.4 V
79-20-9	Methyl Acetate	4.3	U	ug/kg dry	4.3	6/22/18	6/22/18	CLP SOM02.4 V
591-78-6	Methyl Butyl Ketone	8.5	U	ug/kg dry	8.5	6/22/18	6/22/18	CLP SOM02.4 V
78-93-3	Methyl Ethyl Ketone	8.5	U	ug/kg dry	8.5	6/22/18	6/22/18	CLP SOM02.4 V
108-10-1	Methyl Isobutyl Ketone	8.5	U	ug/kg dry	8.5	6/22/18	6/22/18	CLP SOM02.4 V
1634-04-4	Methyl T-Butyl Ether (MTBE)	4.3	U	ug/kg dry	4.3	6/22/18	6/22/18	CLP SOM02.4 V
108-87-2	Methylcyclohexane	4.3	U	ug/kg dry	4.3	6/22/18	6/22/18	CLP SOM02.4 V
75-09-2	Methylene Chloride	4.3	U	ug/kg dry	4.3	6/22/18	6/22/18	CLP SOM02.4 V
95-47-6	o-Xylene	4.3	U	ug/kg dry	4.3	6/22/18	6/22/18	CLP SOM02.4 V
100-42-5	Styrene	4.3	U	ug/kg dry	4.3	6/22/18	6/22/18	CLP SOM02.4 V
127-18-4	Tetrachloroethene (Tetrachloroethylene)	4.3	U	ug/kg dry	4.3	6/22/18	6/22/18	CLP SOM02.4 V
108-88-3	Toluene	4.3	U	ug/kg dry	4.3	6/22/18	6/22/18	CLP SOM02.4 V
156-60-5	trans-1,2-Dichloroethene	4.3	U	ug/kg dry	4.3	6/22/18	6/22/18	CLP SOM02.4 V
10061-02-6	trans-1,3-Dichloropropene	4.3	U	ug/kg dry	4.3	6/22/18	6/22/18	CLP SOM02.4 V
79-01-6	Trichloroethene (Trichloroethylene)	730		ug/kg dry	270	6/22/18	6/26/18	CLP SOM02.4 V
75-69-4	Trichlorofluoromethane (Freon 11)	4.3	U	ug/kg dry	4.3	6/22/18	6/22/18	CLP SOM02.4 V
75-01-4	Vinyl chloride	4.8		ug/kg dry	4.3	6/22/18	6/22/18	CLP SOM02.4 V
Tentatively Identified Compounds:								
115-10-6	Dimethyl Ether	20	NJ, CLP15	ug/kg dry		6/22/18	6/22/18	CLP SOM02.4 V

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980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF18-GW-01 **Lab ID:** C183012-11 **MD No:**
Station ID: NF18 **Matrix:** Groundwater **D No:** AZ98 CHM

Date Collected: 6/21/18 8:45

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
R4-7156	(m- and/or p-)Xylene	13	U	ug/L	13	6/28/18	6/28/18	CLP SOM02.4
71-55-6	1,1,1-Trichloroethane	13	U	ug/L	13	6/28/18	6/28/18	CLP SOM02.4
79-34-5	1,1,2,2-Tetrachloroethane	13	U	ug/L	13	6/28/18	6/28/18	CLP SOM02.4
76-13-1	1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113)	13	U	ug/L	13	6/28/18	6/28/18	CLP SOM02.4
79-00-5	1,1,2-Trichloroethane	13	U	ug/L	13	6/28/18	6/28/18	CLP SOM02.4
75-34-3	1,1-Dichloroethane	13	U	ug/L	13	6/28/18	6/28/18	CLP SOM02.4
75-35-4	1,1-Dichloroethene (1,1-Dichloroethylene)	13	U	ug/L	13	6/28/18	6/28/18	CLP SOM02.4
87-61-6	1,2,3-Trichlorobenzene	13	U	ug/L	13	6/28/18	6/28/18	CLP SOM02.4
120-82-1	1,2,4-Trichlorobenzene	13	U	ug/L	13	6/28/18	6/28/18	CLP SOM02.4
96-12-8	1,2-Dibromo-3-Chloropropane (DBCP)	13	U	ug/L	13	6/28/18	6/28/18	CLP SOM02.4
106-93-4	1,2-Dibromoethane (EDB)	13	U	ug/L	13	6/28/18	6/28/18	CLP SOM02.4
95-50-1	1,2-Dichlorobenzene	13	U	ug/L	13	6/28/18	6/28/18	CLP SOM02.4
107-06-2	1,2-Dichloroethane	13	U	ug/L	13	6/28/18	6/28/18	CLP SOM02.4
78-87-5	1,2-Dichloropropane	13	U	ug/L	13	6/28/18	6/28/18	CLP SOM02.4
541-73-1	1,3-Dichlorobenzene	13	U	ug/L	13	6/28/18	6/28/18	CLP SOM02.4
106-46-7	1,4-Dichlorobenzene	13	U	ug/L	13	6/28/18	6/28/18	CLP SOM02.4
67-64-1	Acetone	130	U, R, CLP32, CLP17	ug/L	130	6/28/18	6/28/18	CLP SOM02.4
71-43-2	Benzene	13	U	ug/L	13	6/28/18	6/28/18	CLP SOM02.4
74-97-5	Bromochloromethane	13	U	ug/L	13	6/28/18	6/28/18	CLP SOM02.4
75-27-4	Bromodichloromethane	13	U	ug/L	13	6/28/18	6/28/18	CLP SOM02.4
75-25-2	Bromoform	13	U	ug/L	13	6/28/18	6/28/18	CLP SOM02.4
74-83-9	Bromomethane	13	U	ug/L	13	6/28/18	6/28/18	CLP SOM02.4
75-15-0	Carbon disulfide	13	U	ug/L	13	6/28/18	6/28/18	CLP SOM02.4
56-23-5	Carbon Tetrachloride	13	U	ug/L	13	6/28/18	6/28/18	CLP SOM02.4
108-90-7	Chlorobenzene	13	U	ug/L	13	6/28/18	6/28/18	CLP SOM02.4
75-00-3	Chloroethane	13	U	ug/L	13	6/28/18	6/28/18	CLP SOM02.4
67-66-3	Chloroform	13	U	ug/L	13	6/28/18	6/28/18	CLP SOM02.4

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF18-GW-01 **Lab ID:** C183012-11 **MD No:**
Station ID: NF18 **Matrix:** Groundwater **D No:** AZ98 CHM

Date Collected: 6/21/18 8:45

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
74-87-3	Chloromethane	13	U	ug/L	13	6/28/18	6/28/18	CLP SOM02.4
156-59-2	cis-1,2-Dichloroethene	9.3	J, CLP01	ug/L	13	6/28/18	6/28/18	CLP SOM02.4
10061-01-5	cis-1,3-Dichloropropene	13	U	ug/L	13	6/28/18	6/28/18	CLP SOM02.4
110-82-7	Cyclohexane	13	U	ug/L	13	6/28/18	6/28/18	CLP SOM02.4
124-48-1	Dibromochloromethane	13	U	ug/L	13	6/28/18	6/28/18	CLP SOM02.4
75-71-8	Dichlorodifluoromethane (Freon 12)	13	U	ug/L	13	6/28/18	6/28/18	CLP SOM02.4
100-41-4	Ethyl Benzene	13	U	ug/L	13	6/28/18	6/28/18	CLP SOM02.4
98-82-8	Isopropylbenzene	13	U	ug/L	13	6/28/18	6/28/18	CLP SOM02.4
79-20-9	Methyl Acetate	13	U, J, QC-3	ug/L	13	6/28/18	6/28/18	CLP SOM02.4
591-78-6	Methyl Butyl Ketone	130	U	ug/L	130	6/28/18	6/28/18	CLP SOM02.4
78-93-3	Methyl Ethyl Ketone	130	U, J, QC-3	ug/L	130	6/28/18	6/28/18	CLP SOM02.4
108-10-1	Methyl Isobutyl Ketone	130	U	ug/L	130	6/28/18	6/28/18	CLP SOM02.4
1634-04-4	Methyl T-Butyl Ether (MTBE)	8.0	J, CLP01	ug/L	13	6/28/18	6/28/18	CLP SOM02.4
108-87-2	Methylcyclohexane	13	U	ug/L	13	6/28/18	6/28/18	CLP SOM02.4
75-09-2	Methylene Chloride	13	U, J, CLP16	ug/L	13	6/28/18	6/28/18	CLP SOM02.4
95-47-6	o-Xylene	13	U	ug/L	13	6/28/18	6/28/18	CLP SOM02.4
100-42-5	Styrene	13	U	ug/L	13	6/28/18	6/28/18	CLP SOM02.4
127-18-4	Tetrachloroethene (Tetrachloroethylene)	13	U	ug/L	13	6/28/18	6/28/18	CLP SOM02.4
108-88-3	Toluene	13	U	ug/L	13	6/28/18	6/28/18	CLP SOM02.4
156-60-5	trans-1,2-Dichloroethene	13	U	ug/L	13	6/28/18	6/28/18	CLP SOM02.4
10061-02-6	trans-1,3-Dichloropropene	13	U	ug/L	13	6/28/18	6/28/18	CLP SOM02.4
79-01-6	Trichloroethene (Trichloroethylene)	420		ug/L	13	6/28/18	6/28/18	CLP SOM02.4
75-69-4	Trichlorofluoromethane (Freon 11)	13	U	ug/L	13	6/28/18	6/28/18	CLP SOM02.4
75-01-4	Vinyl chloride	13	U	ug/L	13	6/28/18	6/28/18	CLP SOM02.4
Tentatively Identified Compounds:								
R4-0000	Tentatively Identified Compounds	10	U	ug/L	10	6/28/18	6/28/18	CLP SOM02.4

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF18-SS-01 **Lab ID:** C183012-12 **MD No:**

Station ID: NF18 **Matrix:** Subsurface Soil **D No:** AZ59 CHM

Date Collected: 6/20/18 14:40

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1644012	% Moisture	22		%		6/22/18	6/22/18	CLP VOA
R4-7156	(m- and/or p-)Xylene	4.8	U	ug/kg dry	4.8	6/22/18	6/22/18	CLP SOM02.4 V
71-55-6	1,1,1-Trichloroethane	4.8	U	ug/kg dry	4.8	6/22/18	6/22/18	CLP SOM02.4 V
79-34-5	1,1,2,2-Tetrachloroethane	4.8	U	ug/kg dry	4.8	6/22/18	6/22/18	CLP SOM02.4 V
76-13-1	1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113)	4.8	U	ug/kg dry	4.8	6/22/18	6/22/18	CLP SOM02.4 V
79-00-5	1,1,2-Trichloroethane	4.8	U	ug/kg dry	4.8	6/22/18	6/22/18	CLP SOM02.4 V
75-34-3	1,1-Dichloroethane	4.8	U	ug/kg dry	4.8	6/22/18	6/22/18	CLP SOM02.4 V
75-35-4	1,1-Dichloroethene (1,1-Dichloroethylene)	4.8	U	ug/kg dry	4.8	6/22/18	6/22/18	CLP SOM02.4 V
87-61-6	1,2,3-Trichlorobenzene	4.8	U	ug/kg dry	4.8	6/22/18	6/22/18	CLP SOM02.4 V
120-82-1	1,2,4-Trichlorobenzene	4.8	U	ug/kg dry	4.8	6/22/18	6/22/18	CLP SOM02.4 V
96-12-8	1,2-Dibromo-3-Chloropropane (DBCP)	4.8	U	ug/kg dry	4.8	6/22/18	6/22/18	CLP SOM02.4 V
106-93-4	1,2-Dibromoethane (EDB)	4.8	U	ug/kg dry	4.8	6/22/18	6/22/18	CLP SOM02.4 V
95-50-1	1,2-Dichlorobenzene	4.8	U	ug/kg dry	4.8	6/22/18	6/22/18	CLP SOM02.4 V
107-06-2	1,2-Dichloroethane	4.8	U	ug/kg dry	4.8	6/22/18	6/22/18	CLP SOM02.4 V
78-87-5	1,2-Dichloropropane	4.8	U	ug/kg dry	4.8	6/22/18	6/22/18	CLP SOM02.4 V
541-73-1	1,3-Dichlorobenzene	4.8	U	ug/kg dry	4.8	6/22/18	6/22/18	CLP SOM02.4 V
106-46-7	1,4-Dichlorobenzene	4.8	U	ug/kg dry	4.8	6/22/18	6/22/18	CLP SOM02.4 V
67-64-1	Acetone	9.7	U	ug/kg dry	9.7	6/22/18	6/22/18	CLP SOM02.4 V
71-43-2	Benzene	4.8	U	ug/kg dry	4.8	6/22/18	6/22/18	CLP SOM02.4 V
74-97-5	Bromochloromethane	4.8	U	ug/kg dry	4.8	6/22/18	6/22/18	CLP SOM02.4 V
75-27-4	Bromodichloromethane	4.8	U	ug/kg dry	4.8	6/22/18	6/22/18	CLP SOM02.4 V
75-25-2	Bromoform	4.8	U	ug/kg dry	4.8	6/22/18	6/22/18	CLP SOM02.4 V
74-83-9	Bromomethane	4.8	U	ug/kg dry	4.8	6/22/18	6/22/18	CLP SOM02.4 V
75-15-0	Carbon disulfide	4.8	U	ug/kg dry	4.8	6/22/18	6/22/18	CLP SOM02.4 V
56-23-5	Carbon Tetrachloride	4.8	U	ug/kg dry	4.8	6/22/18	6/22/18	CLP SOM02.4 V
108-90-7	Chlorobenzene	4.8	U	ug/kg dry	4.8	6/22/18	6/22/18	CLP SOM02.4 V
75-00-3	Chloroethane	4.8	U	ug/kg dry	4.8	6/22/18	6/22/18	CLP SOM02.4 V

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980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF18-SS-01 **Lab ID:** C183012-12 **MD No:**
Station ID: NF18 **Matrix:** Subsurface Soil **D No:** AZ59 CHM

Date Collected: 6/20/18 14:40

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
67-66-3	Chloroform	4.8	U	ug/kg dry	4.8	6/22/18	6/22/18	CLP SOM02.4 V
74-87-3	Chloromethane	4.8	U, J, QC-1	ug/kg dry	4.8	6/22/18	6/22/18	CLP SOM02.4 V
156-59-2	cis-1,2-Dichloroethene	3.9	J, CLP01	ug/kg dry	4.8	6/22/18	6/22/18	CLP SOM02.4 V
10061-01-5	cis-1,3-Dichloropropene	4.8	U	ug/kg dry	4.8	6/22/18	6/22/18	CLP SOM02.4 V
110-82-7	Cyclohexane	4.8	U	ug/kg dry	4.8	6/22/18	6/22/18	CLP SOM02.4 V
124-48-1	Dibromochloromethane	4.8	U	ug/kg dry	4.8	6/22/18	6/22/18	CLP SOM02.4 V
75-71-8	Dichlorodifluoromethane (Freon 12)	4.8	U, J, QC-1, QC-3	ug/kg dry	4.8	6/22/18	6/22/18	CLP SOM02.4 V
100-41-4	Ethyl Benzene	4.8	U	ug/kg dry	4.8	6/22/18	6/22/18	CLP SOM02.4 V
98-82-8	Isopropylbenzene	4.8	U	ug/kg dry	4.8	6/22/18	6/22/18	CLP SOM02.4 V
79-20-9	Methyl Acetate	4.8	U	ug/kg dry	4.8	6/22/18	6/22/18	CLP SOM02.4 V
591-78-6	Methyl Butyl Ketone	9.7	U	ug/kg dry	9.7	6/22/18	6/22/18	CLP SOM02.4 V
78-93-3	Methyl Ethyl Ketone	9.7	U	ug/kg dry	9.7	6/22/18	6/22/18	CLP SOM02.4 V
108-10-1	Methyl Isobutyl Ketone	9.7	U	ug/kg dry	9.7	6/22/18	6/22/18	CLP SOM02.4 V
1634-04-4	Methyl T-Butyl Ether (MTBE)	4.8	U	ug/kg dry	4.8	6/22/18	6/22/18	CLP SOM02.4 V
108-87-2	Methylcyclohexane	4.8	U	ug/kg dry	4.8	6/22/18	6/22/18	CLP SOM02.4 V
75-09-2	Methylene Chloride	4.8	U	ug/kg dry	4.8	6/22/18	6/22/18	CLP SOM02.4 V
95-47-6	o-Xylene	4.8	U	ug/kg dry	4.8	6/22/18	6/22/18	CLP SOM02.4 V
100-42-5	Styrene	4.8	U	ug/kg dry	4.8	6/22/18	6/22/18	CLP SOM02.4 V
127-18-4	Tetrachloroethene (Tetrachloroethylene)	4.8	U	ug/kg dry	4.8	6/22/18	6/22/18	CLP SOM02.4 V
108-88-3	Toluene	4.8	U	ug/kg dry	4.8	6/22/18	6/22/18	CLP SOM02.4 V
156-60-5	trans-1,2-Dichloroethene	4.8	U	ug/kg dry	4.8	6/22/18	6/22/18	CLP SOM02.4 V
10061-02-6	trans-1,3-Dichloropropene	4.8	U	ug/kg dry	4.8	6/22/18	6/22/18	CLP SOM02.4 V
79-01-6	Trichloroethene (Trichloroethylene)	230	J, CLP02	ug/kg dry	4.8	6/22/18	6/22/18	CLP SOM02.4 V
75-69-4	Trichlorofluoromethane (Freon 11)	4.8	U	ug/kg dry	4.8	6/22/18	6/22/18	CLP SOM02.4 V
75-01-4	Vinyl chloride	4.8	U	ug/kg dry	4.8	6/22/18	6/22/18	CLP SOM02.4 V
Tentatively Identified Compounds:								
115-10-6	Dimethyl Ether	20	NJ, CLP15	ug/kg dry		6/22/18	6/22/18	CLP SOM02.4 V

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF18-SS-02 **Lab ID:** C183012-13 **MD No:**

Station ID: NF18 **Matrix:** Subsurface Soil **D No:** AZ60 CHM

Date Collected: 6/20/18 14:45

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1644012	% Moisture	18		%		6/25/18	6/25/18	CLP VOA
R4-7156	(m- and/or p-)Xylene	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
71-55-6	1,1,1-Trichloroethane	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
79-34-5	1,1,2,2-Tetrachloroethane	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
76-13-1	1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113)	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
79-00-5	1,1,2-Trichloroethane	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
75-34-3	1,1-Dichloroethane	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
75-35-4	1,1-Dichloroethene (1,1-Dichloroethylene)	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
87-61-6	1,2,3-Trichlorobenzene	4.1	U, J, QI-1	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
120-82-1	1,2,4-Trichlorobenzene	4.1	U, J, QI-1	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
96-12-8	1,2-Dibromo-3-Chloropropane (DBCP)	4.1	U, J, QI-1	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
106-93-4	1,2-Dibromoethane (EDB)	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
95-50-1	1,2-Dichlorobenzene	4.1	U, J, QI-1	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
107-06-2	1,2-Dichloroethane	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
78-87-5	1,2-Dichloropropane	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
541-73-1	1,3-Dichlorobenzene	4.1	U, J, QI-1	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
106-46-7	1,4-Dichlorobenzene	4.1	U, J, QI-1	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
67-64-1	Acetone	20	J, QS-5	ug/kg dry	8.2	6/25/18	6/25/18	CLP SOM02.4 V
71-43-2	Benzene	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
74-97-5	Bromochloromethane	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
75-27-4	Bromodichloromethane	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
75-25-2	Bromoform	4.1	U, J, QI-1	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
74-83-9	Bromomethane	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
75-15-0	Carbon disulfide	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
56-23-5	Carbon Tetrachloride	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
108-90-7	Chlorobenzene	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
75-00-3	Chloroethane	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V

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D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF18-SS-02 **Lab ID:** C183012-13 **MD No:**
Station ID: NF18 **Matrix:** Subsurface Soil **D No:** AZ60 CHM

Date Collected: 6/20/18 14:45

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
67-66-3	Chloroform	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
74-87-3	Chloromethane	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
156-59-2	cis-1,2-Dichloroethene	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
10061-01-5	cis-1,3-Dichloropropene	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
110-82-7	Cyclohexane	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
124-48-1	Dibromochloromethane	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
75-71-8	Dichlorodifluoromethane (Freon 12)	4.1	U, J, QC-3	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
100-41-4	Ethyl Benzene	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
98-82-8	Isopropylbenzene	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
79-20-9	Methyl Acetate	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
591-78-6	Methyl Butyl Ketone	8.2	U	ug/kg dry	8.2	6/25/18	6/25/18	CLP SOM02.4 V
78-93-3	Methyl Ethyl Ketone	8.2	U	ug/kg dry	8.2	6/25/18	6/25/18	CLP SOM02.4 V
108-10-1	Methyl Isobutyl Ketone	8.2	U	ug/kg dry	8.2	6/25/18	6/25/18	CLP SOM02.4 V
1634-04-4	Methyl T-Butyl Ether (MTBE)	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
108-87-2	Methylcyclohexane	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
75-09-2	Methylene Chloride	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
95-47-6	o-Xylene	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
100-42-5	Styrene	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
127-18-4	Tetrachloroethene (Tetrachloroethylene)	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
108-88-3	Toluene	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
156-60-5	trans-1,2-Dichloroethene	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
10061-02-6	trans-1,3-Dichloropropene	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
79-01-6	Trichloroethene (Trichloroethylene)	89		ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
75-69-4	Trichlorofluoromethane (Freon 11)	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
75-01-4	Vinyl chloride	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
Tentatively Identified Compounds:								
R4-0000	Tentatively Identified Compounds	4	U	ug/kg dry	4	6/25/18	6/25/18	CLP SOM02.4 V

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
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D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF19-GW-01 **Lab ID:** C183012-14 **MD No:**
Station ID: NF19 **Matrix:** Groundwater **D No:** AZ99 CHM

Date Collected: 6/20/18 15:50

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
R4-7156	(m- and/or p-)Xylene	13	U	ug/L	13	6/25/18	6/28/18	CLP SOM02.4
71-55-6	1,1,1-Trichloroethane	13	U	ug/L	13	6/25/18	6/28/18	CLP SOM02.4
79-34-5	1,1,2,2-Tetrachloroethane	13	U	ug/L	13	6/25/18	6/28/18	CLP SOM02.4
76-13-1	1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113)	13	U	ug/L	13	6/25/18	6/28/18	CLP SOM02.4
79-00-5	1,1,2-Trichloroethane	13	U	ug/L	13	6/25/18	6/28/18	CLP SOM02.4
75-34-3	1,1-Dichloroethane	13	U	ug/L	13	6/25/18	6/28/18	CLP SOM02.4
75-35-4	1,1-Dichloroethene (1,1-Dichloroethylene)	13	U	ug/L	13	6/25/18	6/28/18	CLP SOM02.4
87-61-6	1,2,3-Trichlorobenzene	13	U	ug/L	13	6/25/18	6/28/18	CLP SOM02.4
120-82-1	1,2,4-Trichlorobenzene	13	U	ug/L	13	6/25/18	6/28/18	CLP SOM02.4
96-12-8	1,2-Dibromo-3-Chloropropane (DBCP)	13	U	ug/L	13	6/25/18	6/28/18	CLP SOM02.4
106-93-4	1,2-Dibromoethane (EDB)	13	U	ug/L	13	6/25/18	6/28/18	CLP SOM02.4
95-50-1	1,2-Dichlorobenzene	13	U	ug/L	13	6/25/18	6/28/18	CLP SOM02.4
107-06-2	1,2-Dichloroethane	13	U	ug/L	13	6/25/18	6/28/18	CLP SOM02.4
78-87-5	1,2-Dichloropropane	13	U	ug/L	13	6/25/18	6/28/18	CLP SOM02.4
541-73-1	1,3-Dichlorobenzene	13	U	ug/L	13	6/25/18	6/28/18	CLP SOM02.4
106-46-7	1,4-Dichlorobenzene	13	U	ug/L	13	6/25/18	6/28/18	CLP SOM02.4
67-64-1	Acetone	130	U, R, CLP32, CLP17	ug/L	130	6/25/18	6/28/18	CLP SOM02.4
71-43-2	Benzene	13	U	ug/L	13	6/25/18	6/28/18	CLP SOM02.4
74-97-5	Bromochloromethane	13	U	ug/L	13	6/25/18	6/28/18	CLP SOM02.4
75-27-4	Bromodichloromethane	13	U	ug/L	13	6/25/18	6/28/18	CLP SOM02.4
75-25-2	Bromoform	13	U	ug/L	13	6/25/18	6/28/18	CLP SOM02.4
74-83-9	Bromomethane	13	U	ug/L	13	6/25/18	6/28/18	CLP SOM02.4
75-15-0	Carbon disulfide	13	U	ug/L	13	6/25/18	6/28/18	CLP SOM02.4
56-23-5	Carbon Tetrachloride	13	U	ug/L	13	6/25/18	6/28/18	CLP SOM02.4
108-90-7	Chlorobenzene	13	U	ug/L	13	6/25/18	6/28/18	CLP SOM02.4
75-00-3	Chloroethane	13	U	ug/L	13	6/25/18	6/28/18	CLP SOM02.4
67-66-3	Chloroform	13	U	ug/L	13	6/25/18	6/28/18	CLP SOM02.4

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D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF19-GW-01 **Lab ID:** C183012-14 **MD No:**
Station ID: NF19 **Matrix:** Groundwater **D No:** AZ99 CHM

Date Collected: 6/20/18 15:50

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
74-87-3	Chloromethane	13	U	ug/L	13	6/25/18	6/28/18	CLP SOM02.4
156-59-2	cis-1,2-Dichloroethene	37		ug/L	13	6/25/18	6/28/18	CLP SOM02.4
10061-01-5	cis-1,3-Dichloropropene	13	U	ug/L	13	6/25/18	6/28/18	CLP SOM02.4
110-82-7	Cyclohexane	13	U	ug/L	13	6/25/18	6/28/18	CLP SOM02.4
124-48-1	Dibromochloromethane	13	U	ug/L	13	6/25/18	6/28/18	CLP SOM02.4
75-71-8	Dichlorodifluoromethane (Freon 12)	13	U	ug/L	13	6/25/18	6/28/18	CLP SOM02.4
100-41-4	Ethyl Benzene	13	U	ug/L	13	6/25/18	6/28/18	CLP SOM02.4
98-82-8	Isopropylbenzene	13	U	ug/L	13	6/25/18	6/28/18	CLP SOM02.4
79-20-9	Methyl Acetate	13	U, J, QC-3	ug/L	13	6/25/18	6/28/18	CLP SOM02.4
591-78-6	Methyl Butyl Ketone	130	U	ug/L	130	6/25/18	6/28/18	CLP SOM02.4
78-93-3	Methyl Ethyl Ketone	130	U, J, QC-3	ug/L	130	6/25/18	6/28/18	CLP SOM02.4
108-10-1	Methyl Isobutyl Ketone	130	U	ug/L	130	6/25/18	6/28/18	CLP SOM02.4
1634-04-4	Methyl T-Butyl Ether (MTBE)	13	U	ug/L	13	6/25/18	6/28/18	CLP SOM02.4
108-87-2	Methylcyclohexane	13	U	ug/L	13	6/25/18	6/28/18	CLP SOM02.4
75-09-2	Methylene Chloride	13	U, J, CLP16	ug/L	13	6/25/18	6/28/18	CLP SOM02.4
95-47-6	o-Xylene	13	U	ug/L	13	6/25/18	6/28/18	CLP SOM02.4
100-42-5	Styrene	13	U	ug/L	13	6/25/18	6/28/18	CLP SOM02.4
127-18-4	Tetrachloroethene (Tetrachloroethylene)	13	U	ug/L	13	6/25/18	6/28/18	CLP SOM02.4
108-88-3	Toluene	13	U	ug/L	13	6/25/18	6/28/18	CLP SOM02.4
156-60-5	trans-1,2-Dichloroethene	13	U	ug/L	13	6/25/18	6/28/18	CLP SOM02.4
10061-02-6	trans-1,3-Dichloropropene	13	U	ug/L	13	6/25/18	6/28/18	CLP SOM02.4
79-01-6	Trichloroethene (Trichloroethylene)	470		ug/L	20	6/25/18	6/25/18	CLP SOM02.4
75-69-4	Trichlorofluoromethane (Freon 11)	13	U	ug/L	13	6/25/18	6/28/18	CLP SOM02.4
75-01-4	Vinyl chloride	13	U	ug/L	13	6/25/18	6/28/18	CLP SOM02.4
Tentatively Identified Compounds:								
R4-0000	Tentatively Identified Compounds	10	U	ug/L	10	6/28/18	6/28/18	CLP SOM02.4

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D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF19-SS-01 **Lab ID:** C183012-15 **MD No:**

Station ID: NF19 **Matrix:** Surface Soil **D No:** AZ61 CHM

Date Collected: 6/20/18 14:30

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1644012	% Moisture	16		%		6/22/18	6/22/18	CLP VOA
R4-7156	(m- and/or p-)Xylene	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
71-55-6	1,1,1-Trichloroethane	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
79-34-5	1,1,2,2-Tetrachloroethane	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
76-13-1	1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113)	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
79-00-5	1,1,2-Trichloroethane	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
75-34-3	1,1-Dichloroethane	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
75-35-4	1,1-Dichloroethene (1,1-Dichloroethylene)	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
87-61-6	1,2,3-Trichlorobenzene	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
120-82-1	1,2,4-Trichlorobenzene	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
96-12-8	1,2-Dibromo-3-Chloropropane (DBCP)	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
106-93-4	1,2-Dibromoethane (EDB)	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
95-50-1	1,2-Dichlorobenzene	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
107-06-2	1,2-Dichloroethane	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
78-87-5	1,2-Dichloropropane	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
541-73-1	1,3-Dichlorobenzene	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
106-46-7	1,4-Dichlorobenzene	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
67-64-1	Acetone	8.5	U	ug/kg dry	8.5	6/22/18	6/22/18	CLP SOM02.4 V
71-43-2	Benzene	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
74-97-5	Bromochloromethane	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
75-27-4	Bromodichloromethane	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
75-25-2	Bromoform	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
74-83-9	Bromomethane	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
75-15-0	Carbon disulfide	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
56-23-5	Carbon Tetrachloride	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
108-90-7	Chlorobenzene	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
75-00-3	Chloroethane	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF19-SS-01 **Lab ID:** C183012-15 **MD No:**
Station ID: NF19 **Matrix:** Surface Soil **D No:** AZ61 CHM

Date Collected: 6/20/18 14:30

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
67-66-3	Chloroform	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
74-87-3	Chloromethane	4.2	U, J, QC-1	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
156-59-2	cis-1,2-Dichloroethene	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
10061-01-5	cis-1,3-Dichloropropene	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
110-82-7	Cyclohexane	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
124-48-1	Dibromochloromethane	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
75-71-8	Dichlorodifluoromethane (Freon 12)	4.2	U, J, QC-1, QC-3	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
100-41-4	Ethyl Benzene	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
98-82-8	Isopropylbenzene	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
79-20-9	Methyl Acetate	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
591-78-6	Methyl Butyl Ketone	8.5	U	ug/kg dry	8.5	6/22/18	6/22/18	CLP SOM02.4 V
78-93-3	Methyl Ethyl Ketone	8.5	U	ug/kg dry	8.5	6/22/18	6/22/18	CLP SOM02.4 V
108-10-1	Methyl Isobutyl Ketone	8.5	U	ug/kg dry	8.5	6/22/18	6/22/18	CLP SOM02.4 V
1634-04-4	Methyl T-Butyl Ether (MTBE)	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
108-87-2	Methylcyclohexane	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
75-09-2	Methylene Chloride	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
95-47-6	o-Xylene	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
100-42-5	Styrene	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
127-18-4	Tetrachloroethene (Tetrachloroethylene)	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
108-88-3	Toluene	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
156-60-5	trans-1,2-Dichloroethene	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
10061-02-6	trans-1,3-Dichloropropene	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
79-01-6	Trichloroethene (Trichloroethylene)	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
75-69-4	Trichlorofluoromethane (Freon 11)	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
75-01-4	Vinyl chloride	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
Tentatively Identified Compounds:								
115-10-6	Dimethyl Ether	10	NJ, CLP15	ug/kg dry		6/22/18	6/22/18	CLP SOM02.4 V

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF19-SS-01-DUP **Lab ID:** C183012-16 **MD No:**

Station ID: NF19 **Matrix:** Surface Soil **D No:** AZC5 CHM

Date Collected: 6/20/18 14:20

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1644012	% Moisture	15		%		6/26/18	6/26/18	CLP VOA
R4-7156	(m- and/or p-)Xylene	4.0	U	ug/kg dry	4.0	6/26/18	6/26/18	CLP SOM02.4 V
71-55-6	1,1,1-Trichloroethane	4.0	U	ug/kg dry	4.0	6/26/18	6/26/18	CLP SOM02.4 V
79-34-5	1,1,2,2-Tetrachloroethane	4.0	U	ug/kg dry	4.0	6/26/18	6/26/18	CLP SOM02.4 V
76-13-1	1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113)	4.0	U	ug/kg dry	4.0	6/26/18	6/26/18	CLP SOM02.4 V
79-00-5	1,1,2-Trichloroethane	4.0	U	ug/kg dry	4.0	6/26/18	6/26/18	CLP SOM02.4 V
75-34-3	1,1-Dichloroethane	4.0	U	ug/kg dry	4.0	6/26/18	6/26/18	CLP SOM02.4 V
75-35-4	1,1-Dichloroethene (1,1-Dichloroethylene)	4.0	U	ug/kg dry	4.0	6/26/18	6/26/18	CLP SOM02.4 V
87-61-6	1,2,3-Trichlorobenzene	4.0	U	ug/kg dry	4.0	6/26/18	6/26/18	CLP SOM02.4 V
120-82-1	1,2,4-Trichlorobenzene	4.0	U	ug/kg dry	4.0	6/26/18	6/26/18	CLP SOM02.4 V
96-12-8	1,2-Dibromo-3-Chloropropane (DBCP)	4.0	U	ug/kg dry	4.0	6/26/18	6/26/18	CLP SOM02.4 V
106-93-4	1,2-Dibromoethane (EDB)	4.0	U	ug/kg dry	4.0	6/26/18	6/26/18	CLP SOM02.4 V
95-50-1	1,2-Dichlorobenzene	4.0	U	ug/kg dry	4.0	6/26/18	6/26/18	CLP SOM02.4 V
107-06-2	1,2-Dichloroethane	4.0	U	ug/kg dry	4.0	6/26/18	6/26/18	CLP SOM02.4 V
78-87-5	1,2-Dichloropropane	4.0	U	ug/kg dry	4.0	6/26/18	6/26/18	CLP SOM02.4 V
541-73-1	1,3-Dichlorobenzene	4.0	U	ug/kg dry	4.0	6/26/18	6/26/18	CLP SOM02.4 V
106-46-7	1,4-Dichlorobenzene	4.0	U	ug/kg dry	4.0	6/26/18	6/26/18	CLP SOM02.4 V
67-64-1	Acetone	8.0	U	ug/kg dry	8.0	6/26/18	6/26/18	CLP SOM02.4 V
71-43-2	Benzene	4.0	U	ug/kg dry	4.0	6/26/18	6/26/18	CLP SOM02.4 V
74-97-5	Bromochloromethane	4.0	U	ug/kg dry	4.0	6/26/18	6/26/18	CLP SOM02.4 V
75-27-4	Bromodichloromethane	4.0	U	ug/kg dry	4.0	6/26/18	6/26/18	CLP SOM02.4 V
75-25-2	Bromoform	4.0	U	ug/kg dry	4.0	6/26/18	6/26/18	CLP SOM02.4 V
74-83-9	Bromomethane	4.0	U	ug/kg dry	4.0	6/26/18	6/26/18	CLP SOM02.4 V
75-15-0	Carbon disulfide	4.0	U	ug/kg dry	4.0	6/26/18	6/26/18	CLP SOM02.4 V
56-23-5	Carbon Tetrachloride	4.0	U	ug/kg dry	4.0	6/26/18	6/26/18	CLP SOM02.4 V
108-90-7	Chlorobenzene	4.0	U	ug/kg dry	4.0	6/26/18	6/26/18	CLP SOM02.4 V
75-00-3	Chloroethane	4.0	U	ug/kg dry	4.0	6/26/18	6/26/18	CLP SOM02.4 V

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D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF19-SS-01-DUP **Lab ID:** C183012-16 **MD No:**
Station ID: NF19 **Matrix:** Surface Soil **D No:** AZC5 CHM

Date Collected: 6/20/18 14:20

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
67-66-3	Chloroform	4.0	U	ug/kg dry	4.0	6/26/18	6/26/18	CLP SOM02.4 V
74-87-3	Chloromethane	4.0	U	ug/kg dry	4.0	6/26/18	6/26/18	CLP SOM02.4 V
156-59-2	cis-1,2-Dichloroethene	4.0	U	ug/kg dry	4.0	6/26/18	6/26/18	CLP SOM02.4 V
10061-01-5	cis-1,3-Dichloropropene	4.0	U	ug/kg dry	4.0	6/26/18	6/26/18	CLP SOM02.4 V
110-82-7	Cyclohexane	4.0	U	ug/kg dry	4.0	6/26/18	6/26/18	CLP SOM02.4 V
124-48-1	Dibromochloromethane	4.0	U	ug/kg dry	4.0	6/26/18	6/26/18	CLP SOM02.4 V
75-71-8	Dichlorodifluoromethane (Freon 12)	4.0	U, J, QC-3	ug/kg dry	4.0	6/26/18	6/26/18	CLP SOM02.4 V
100-41-4	Ethyl Benzene	4.0	U	ug/kg dry	4.0	6/26/18	6/26/18	CLP SOM02.4 V
98-82-8	Isopropylbenzene	4.0	U	ug/kg dry	4.0	6/26/18	6/26/18	CLP SOM02.4 V
79-20-9	Methyl Acetate	4.0	U	ug/kg dry	4.0	6/26/18	6/26/18	CLP SOM02.4 V
591-78-6	Methyl Butyl Ketone	8.0	U	ug/kg dry	8.0	6/26/18	6/26/18	CLP SOM02.4 V
78-93-3	Methyl Ethyl Ketone	8.0	U	ug/kg dry	8.0	6/26/18	6/26/18	CLP SOM02.4 V
108-10-1	Methyl Isobutyl Ketone	8.0	U	ug/kg dry	8.0	6/26/18	6/26/18	CLP SOM02.4 V
1634-04-4	Methyl T-Butyl Ether (MTBE)	4.0	U	ug/kg dry	4.0	6/26/18	6/26/18	CLP SOM02.4 V
108-87-2	Methylcyclohexane	4.0	U	ug/kg dry	4.0	6/26/18	6/26/18	CLP SOM02.4 V
75-09-2	Methylene Chloride	6.3	U, CLP11	ug/kg dry	4.0	6/26/18	6/26/18	CLP SOM02.4 V
95-47-6	o-Xylene	4.0	U	ug/kg dry	4.0	6/26/18	6/26/18	CLP SOM02.4 V
100-42-5	Styrene	4.0	U	ug/kg dry	4.0	6/26/18	6/26/18	CLP SOM02.4 V
127-18-4	Tetrachloroethene (Tetrachloroethylene)	4.0	U	ug/kg dry	4.0	6/26/18	6/26/18	CLP SOM02.4 V
108-88-3	Toluene	4.0	U	ug/kg dry	4.0	6/26/18	6/26/18	CLP SOM02.4 V
156-60-5	trans-1,2-Dichloroethene	4.0	U	ug/kg dry	4.0	6/26/18	6/26/18	CLP SOM02.4 V
10061-02-6	trans-1,3-Dichloropropene	4.0	U	ug/kg dry	4.0	6/26/18	6/26/18	CLP SOM02.4 V
79-01-6	Trichloroethene (Trichloroethylene)	4.0	U	ug/kg dry	4.0	6/26/18	6/26/18	CLP SOM02.4 V
75-69-4	Trichlorofluoromethane (Freon 11)	4.0	U	ug/kg dry	4.0	6/26/18	6/26/18	CLP SOM02.4 V
75-01-4	Vinyl chloride	4.0	U	ug/kg dry	4.0	6/26/18	6/26/18	CLP SOM02.4 V
Tentatively Identified Compounds:								
R4-0000	Tentatively Identified Compounds	4	U	ug/kg dry	4	6/26/18	6/26/18	CLP SOM02.4 V

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF19-SS-02 **Lab ID:** C183012-17 **MD No:**

Station ID: NF19 **Matrix:** Subsurface Soil **D No:** AZ62 CHM

Date Collected: 6/20/18 14:15

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1644012	% Moisture	18		%		6/22/18	6/22/18	CLP VOA
R4-7156	(m- and/or p-)Xylene	4.5	U	ug/kg dry	4.5	6/22/18	6/22/18	CLP SOM02.4 V
71-55-6	1,1,1-Trichloroethane	4.5	U	ug/kg dry	4.5	6/22/18	6/22/18	CLP SOM02.4 V
79-34-5	1,1,2,2-Tetrachloroethane	4.5	U	ug/kg dry	4.5	6/22/18	6/22/18	CLP SOM02.4 V
76-13-1	1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113)	4.5	U	ug/kg dry	4.5	6/22/18	6/22/18	CLP SOM02.4 V
79-00-5	1,1,2-Trichloroethane	4.5	U	ug/kg dry	4.5	6/22/18	6/22/18	CLP SOM02.4 V
75-34-3	1,1-Dichloroethane	4.5	U	ug/kg dry	4.5	6/22/18	6/22/18	CLP SOM02.4 V
75-35-4	1,1-Dichloroethene (1,1-Dichloroethylene)	4.5	U	ug/kg dry	4.5	6/22/18	6/22/18	CLP SOM02.4 V
87-61-6	1,2,3-Trichlorobenzene	4.5	U	ug/kg dry	4.5	6/22/18	6/22/18	CLP SOM02.4 V
120-82-1	1,2,4-Trichlorobenzene	4.5	U	ug/kg dry	4.5	6/22/18	6/22/18	CLP SOM02.4 V
96-12-8	1,2-Dibromo-3-Chloropropane (DBCP)	4.5	U	ug/kg dry	4.5	6/22/18	6/22/18	CLP SOM02.4 V
106-93-4	1,2-Dibromoethane (EDB)	4.5	U	ug/kg dry	4.5	6/22/18	6/22/18	CLP SOM02.4 V
95-50-1	1,2-Dichlorobenzene	4.5	U	ug/kg dry	4.5	6/22/18	6/22/18	CLP SOM02.4 V
107-06-2	1,2-Dichloroethane	4.5	U	ug/kg dry	4.5	6/22/18	6/22/18	CLP SOM02.4 V
78-87-5	1,2-Dichloropropane	4.5	U	ug/kg dry	4.5	6/22/18	6/22/18	CLP SOM02.4 V
541-73-1	1,3-Dichlorobenzene	4.5	U	ug/kg dry	4.5	6/22/18	6/22/18	CLP SOM02.4 V
106-46-7	1,4-Dichlorobenzene	4.5	U	ug/kg dry	4.5	6/22/18	6/22/18	CLP SOM02.4 V
67-64-1	Acetone	9.0	U	ug/kg dry	9.0	6/22/18	6/22/18	CLP SOM02.4 V
71-43-2	Benzene	4.5	U	ug/kg dry	4.5	6/22/18	6/22/18	CLP SOM02.4 V
74-97-5	Bromochloromethane	4.5	U	ug/kg dry	4.5	6/22/18	6/22/18	CLP SOM02.4 V
75-27-4	Bromodichloromethane	4.5	U	ug/kg dry	4.5	6/22/18	6/22/18	CLP SOM02.4 V
75-25-2	Bromoform	4.5	U	ug/kg dry	4.5	6/22/18	6/22/18	CLP SOM02.4 V
74-83-9	Bromomethane	4.5	U	ug/kg dry	4.5	6/22/18	6/22/18	CLP SOM02.4 V
75-15-0	Carbon disulfide	4.5	U	ug/kg dry	4.5	6/22/18	6/22/18	CLP SOM02.4 V
56-23-5	Carbon Tetrachloride	4.5	U	ug/kg dry	4.5	6/22/18	6/22/18	CLP SOM02.4 V
108-90-7	Chlorobenzene	4.5	U	ug/kg dry	4.5	6/22/18	6/22/18	CLP SOM02.4 V
75-00-3	Chloroethane	4.5	U	ug/kg dry	4.5	6/22/18	6/22/18	CLP SOM02.4 V

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980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF19-SS-02 **Lab ID:** C183012-17 **MD No:**

Station ID: NF19 **Matrix:** Subsurface Soil **D No:** AZ62 CHM

Date Collected: 6/20/18 14:15

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
67-66-3	Chloroform	4.5	U	ug/kg dry	4.5	6/22/18	6/22/18	CLP SOM02.4 V
74-87-3	Chloromethane	4.5	U, J, QC-1	ug/kg dry	4.5	6/22/18	6/22/18	CLP SOM02.4 V
156-59-2	cis-1,2-Dichloroethene	4.5	U	ug/kg dry	4.5	6/22/18	6/22/18	CLP SOM02.4 V
10061-01-5	cis-1,3-Dichloropropene	4.5	U	ug/kg dry	4.5	6/22/18	6/22/18	CLP SOM02.4 V
110-82-7	Cyclohexane	4.5	U	ug/kg dry	4.5	6/22/18	6/22/18	CLP SOM02.4 V
124-48-1	Dibromochloromethane	4.5	U	ug/kg dry	4.5	6/22/18	6/22/18	CLP SOM02.4 V
75-71-8	Dichlorodifluoromethane (Freon 12)	4.5	U, J, QC-1, QC-3	ug/kg dry	4.5	6/22/18	6/22/18	CLP SOM02.4 V
100-41-4	Ethyl Benzene	4.5	U	ug/kg dry	4.5	6/22/18	6/22/18	CLP SOM02.4 V
98-82-8	Isopropylbenzene	4.5	U	ug/kg dry	4.5	6/22/18	6/22/18	CLP SOM02.4 V
79-20-9	Methyl Acetate	4.5	U	ug/kg dry	4.5	6/22/18	6/22/18	CLP SOM02.4 V
591-78-6	Methyl Butyl Ketone	9.0	U	ug/kg dry	9.0	6/22/18	6/22/18	CLP SOM02.4 V
78-93-3	Methyl Ethyl Ketone	9.0	U	ug/kg dry	9.0	6/22/18	6/22/18	CLP SOM02.4 V
108-10-1	Methyl Isobutyl Ketone	9.0	U	ug/kg dry	9.0	6/22/18	6/22/18	CLP SOM02.4 V
1634-04-4	Methyl T-Butyl Ether (MTBE)	4.5	U	ug/kg dry	4.5	6/22/18	6/22/18	CLP SOM02.4 V
108-87-2	Methylcyclohexane	4.5	U	ug/kg dry	4.5	6/22/18	6/22/18	CLP SOM02.4 V
75-09-2	Methylene Chloride	4.5	U	ug/kg dry	4.5	6/22/18	6/22/18	CLP SOM02.4 V
95-47-6	o-Xylene	4.5	U	ug/kg dry	4.5	6/22/18	6/22/18	CLP SOM02.4 V
100-42-5	Styrene	4.5	U	ug/kg dry	4.5	6/22/18	6/22/18	CLP SOM02.4 V
127-18-4	Tetrachloroethene (Tetrachloroethylene)	4.5	U	ug/kg dry	4.5	6/22/18	6/22/18	CLP SOM02.4 V
108-88-3	Toluene	4.5	U	ug/kg dry	4.5	6/22/18	6/22/18	CLP SOM02.4 V
156-60-5	trans-1,2-Dichloroethene	4.5	U	ug/kg dry	4.5	6/22/18	6/22/18	CLP SOM02.4 V
10061-02-6	trans-1,3-Dichloropropene	4.5	U	ug/kg dry	4.5	6/22/18	6/22/18	CLP SOM02.4 V
79-01-6	Trichloroethene (Trichloroethylene)	4.5	U	ug/kg dry	4.5	6/22/18	6/22/18	CLP SOM02.4 V
75-69-4	Trichlorofluoromethane (Freon 11)	4.5	U	ug/kg dry	4.5	6/22/18	6/22/18	CLP SOM02.4 V
75-01-4	Vinyl chloride	4.5	U	ug/kg dry	4.5	6/22/18	6/22/18	CLP SOM02.4 V
Tentatively Identified Compounds:								
115-10-6	Dimethyl Ether	10	NJ, CLP15	ug/kg dry		6/22/18	6/22/18	CLP SOM02.4 V

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980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF20-GW-01 **Lab ID:** C183012-18 **MD No:**

Station ID: NF20 **Matrix:** Groundwater **D No:** AZA0 CHM

Date Collected: 6/20/18 13:35

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
R4-7156	(m- and/or p-)Xylene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
71-55-6	1,1,1-Trichloroethane	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
76-13-1	1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113)	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
79-00-5	1,1,2-Trichloroethane	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
75-34-3	1,1-Dichloroethane	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
75-35-4	1,1-Dichloroethene (1,1-Dichloroethylene)	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
87-61-6	1,2,3-Trichlorobenzene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
120-82-1	1,2,4-Trichlorobenzene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
96-12-8	1,2-Dibromo-3-Chloropropane (DBCP)	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
106-93-4	1,2-Dibromoethane (EDB)	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
95-50-1	1,2-Dichlorobenzene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
107-06-2	1,2-Dichloroethane	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
78-87-5	1,2-Dichloropropane	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
541-73-1	1,3-Dichlorobenzene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
106-46-7	1,4-Dichlorobenzene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
67-64-1	Acetone	13	J, CLP32, CLP17	ug/L	5.0	6/26/18	6/26/18	CLP SOM02.4
71-43-2	Benzene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
74-97-5	Bromochloromethane	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
75-27-4	Bromodichloromethane	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
75-25-2	Bromoform	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
74-83-9	Bromomethane	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
75-15-0	Carbon disulfide	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
56-23-5	Carbon Tetrachloride	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
108-90-7	Chlorobenzene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
75-00-3	Chloroethane	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
67-66-3	Chloroform	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF20-GW-01 **Lab ID:** C183012-18 **MD No:**
Station ID: NF20 **Matrix:** Groundwater **D No:** AZA0 CHM

Date Collected: 6/20/18 13:35

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
74-87-3	Chloromethane	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
156-59-2	cis-1,2-Dichloroethene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
10061-01-5	cis-1,3-Dichloropropene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
110-82-7	Cyclohexane	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
124-48-1	Dibromochloromethane	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
75-71-8	Dichlorodifluoromethane (Freon 12)	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
100-41-4	Ethyl Benzene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
98-82-8	Isopropylbenzene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
79-20-9	Methyl Acetate	0.50	U, J, QC-3	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
591-78-6	Methyl Butyl Ketone	5.0	U	ug/L	5.0	6/26/18	6/26/18	CLP SOM02.4
78-93-3	Methyl Ethyl Ketone	5.0	U, J, QC-1, QC-3	ug/L	5.0	6/26/18	6/26/18	CLP SOM02.4
108-10-1	Methyl Isobutyl Ketone	5.0	U	ug/L	5.0	6/26/18	6/26/18	CLP SOM02.4
1634-04-4	Methyl T-Butyl Ether (MTBE)	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
108-87-2	Methylcyclohexane	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
75-09-2	Methylene Chloride	0.50	U, J, CLP16	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
95-47-6	o-Xylene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
100-42-5	Styrene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
127-18-4	Tetrachloroethene (Tetrachloroethylene)	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
108-88-3	Toluene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
156-60-5	trans-1,2-Dichloroethene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
10061-02-6	trans-1,3-Dichloropropene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
79-01-6	Trichloroethene (Trichloroethylene)	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
75-69-4	Trichlorofluoromethane (Freon 11)	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
75-01-4	Vinyl chloride	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
Tentatively Identified Compounds:								
67-63-0	Isopropyl alcohol	1	NJ, CLP15	ug/L		6/26/18	6/26/18	CLP SOM02.4
124-19-6	Nonanal	2	NJ, CLP15	ug/L		6/26/18	6/26/18	CLP SOM02.4

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Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF20-SS-01 **Lab ID:** C183012-19 **MD No:**

Station ID: NF20 **Matrix:** Surface Soil **D No:** AZ63 CHM

Date Collected: 6/19/18 9:30

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1644012	% Moisture	13		%		6/22/18	6/22/18	CLP VOA
R4-7156	(m- and/or p-)Xylene	4.0	U	ug/kg dry	4.0	6/22/18	6/22/18	CLP SOM02.4 V
71-55-6	1,1,1-Trichloroethane	4.0	U	ug/kg dry	4.0	6/22/18	6/22/18	CLP SOM02.4 V
79-34-5	1,1,2,2-Tetrachloroethane	4.0	U	ug/kg dry	4.0	6/22/18	6/22/18	CLP SOM02.4 V
76-13-1	1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113)	4.0	U	ug/kg dry	4.0	6/22/18	6/22/18	CLP SOM02.4 V
79-00-5	1,1,2-Trichloroethane	4.0	U	ug/kg dry	4.0	6/22/18	6/22/18	CLP SOM02.4 V
75-34-3	1,1-Dichloroethane	4.0	U	ug/kg dry	4.0	6/22/18	6/22/18	CLP SOM02.4 V
75-35-4	1,1-Dichloroethene (1,1-Dichloroethylene)	4.0	U	ug/kg dry	4.0	6/22/18	6/22/18	CLP SOM02.4 V
87-61-6	1,2,3-Trichlorobenzene	4.0	U	ug/kg dry	4.0	6/22/18	6/22/18	CLP SOM02.4 V
120-82-1	1,2,4-Trichlorobenzene	4.0	U	ug/kg dry	4.0	6/22/18	6/22/18	CLP SOM02.4 V
96-12-8	1,2-Dibromo-3-Chloropropane (DBCP)	4.0	U	ug/kg dry	4.0	6/22/18	6/22/18	CLP SOM02.4 V
106-93-4	1,2-Dibromoethane (EDB)	4.0	U	ug/kg dry	4.0	6/22/18	6/22/18	CLP SOM02.4 V
95-50-1	1,2-Dichlorobenzene	4.0	U	ug/kg dry	4.0	6/22/18	6/22/18	CLP SOM02.4 V
107-06-2	1,2-Dichloroethane	4.0	U	ug/kg dry	4.0	6/22/18	6/22/18	CLP SOM02.4 V
78-87-5	1,2-Dichloropropane	4.0	U	ug/kg dry	4.0	6/22/18	6/22/18	CLP SOM02.4 V
541-73-1	1,3-Dichlorobenzene	4.0	U	ug/kg dry	4.0	6/22/18	6/22/18	CLP SOM02.4 V
106-46-7	1,4-Dichlorobenzene	4.0	U	ug/kg dry	4.0	6/22/18	6/22/18	CLP SOM02.4 V
67-64-1	Acetone	14	J, QS-5	ug/kg dry	8.1	6/22/18	6/22/18	CLP SOM02.4 V
71-43-2	Benzene	4.0	U	ug/kg dry	4.0	6/22/18	6/22/18	CLP SOM02.4 V
74-97-5	Bromochloromethane	4.0	U	ug/kg dry	4.0	6/22/18	6/22/18	CLP SOM02.4 V
75-27-4	Bromodichloromethane	4.0	U	ug/kg dry	4.0	6/22/18	6/22/18	CLP SOM02.4 V
75-25-2	Bromoform	4.0	U	ug/kg dry	4.0	6/22/18	6/22/18	CLP SOM02.4 V
74-83-9	Bromomethane	4.0	U	ug/kg dry	4.0	6/22/18	6/22/18	CLP SOM02.4 V
75-15-0	Carbon disulfide	4.0	U	ug/kg dry	4.0	6/22/18	6/22/18	CLP SOM02.4 V
56-23-5	Carbon Tetrachloride	4.0	U	ug/kg dry	4.0	6/22/18	6/22/18	CLP SOM02.4 V
108-90-7	Chlorobenzene	4.0	U	ug/kg dry	4.0	6/22/18	6/22/18	CLP SOM02.4 V
75-00-3	Chloroethane	4.0	U	ug/kg dry	4.0	6/22/18	6/22/18	CLP SOM02.4 V

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D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF20-SS-01 **Lab ID:** C183012-19 **MD No:**
Station ID: NF20 **Matrix:** Surface Soil **D No:** AZ63 CHM

Date Collected: 6/19/18 9:30

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
67-66-3	Chloroform	4.0	U	ug/kg dry	4.0	6/22/18	6/22/18	CLP SOM02.4 V
74-87-3	Chloromethane	4.0	U, J, QC-1	ug/kg dry	4.0	6/22/18	6/22/18	CLP SOM02.4 V
156-59-2	cis-1,2-Dichloroethene	4.0	U	ug/kg dry	4.0	6/22/18	6/22/18	CLP SOM02.4 V
10061-01-5	cis-1,3-Dichloropropene	4.0	U	ug/kg dry	4.0	6/22/18	6/22/18	CLP SOM02.4 V
110-82-7	Cyclohexane	4.0	U	ug/kg dry	4.0	6/22/18	6/22/18	CLP SOM02.4 V
124-48-1	Dibromochloromethane	4.0	U	ug/kg dry	4.0	6/22/18	6/22/18	CLP SOM02.4 V
75-71-8	Dichlorodifluoromethane (Freon 12)	4.0	U, J, QC-1, QC-3	ug/kg dry	4.0	6/22/18	6/22/18	CLP SOM02.4 V
100-41-4	Ethyl Benzene	4.0	U	ug/kg dry	4.0	6/22/18	6/22/18	CLP SOM02.4 V
98-82-8	Isopropylbenzene	4.0	U	ug/kg dry	4.0	6/22/18	6/22/18	CLP SOM02.4 V
79-20-9	Methyl Acetate	4.0	U	ug/kg dry	4.0	6/22/18	6/22/18	CLP SOM02.4 V
591-78-6	Methyl Butyl Ketone	8.1	U	ug/kg dry	8.1	6/22/18	6/22/18	CLP SOM02.4 V
78-93-3	Methyl Ethyl Ketone	8.1	U	ug/kg dry	8.1	6/22/18	6/22/18	CLP SOM02.4 V
108-10-1	Methyl Isobutyl Ketone	8.1	U	ug/kg dry	8.1	6/22/18	6/22/18	CLP SOM02.4 V
1634-04-4	Methyl T-Butyl Ether (MTBE)	4.0	U	ug/kg dry	4.0	6/22/18	6/22/18	CLP SOM02.4 V
108-87-2	Methylcyclohexane	4.0	U	ug/kg dry	4.0	6/22/18	6/22/18	CLP SOM02.4 V
75-09-2	Methylene Chloride	5.4		ug/kg dry	4.0	6/22/18	6/22/18	CLP SOM02.4 V
95-47-6	o-Xylene	4.0	U	ug/kg dry	4.0	6/22/18	6/22/18	CLP SOM02.4 V
100-42-5	Styrene	4.0	U	ug/kg dry	4.0	6/22/18	6/22/18	CLP SOM02.4 V
127-18-4	Tetrachloroethene (Tetrachloroethylene)	4.0	U	ug/kg dry	4.0	6/22/18	6/22/18	CLP SOM02.4 V
108-88-3	Toluene	4.0	U	ug/kg dry	4.0	6/22/18	6/22/18	CLP SOM02.4 V
156-60-5	trans-1,2-Dichloroethene	4.0	U	ug/kg dry	4.0	6/22/18	6/22/18	CLP SOM02.4 V
10061-02-6	trans-1,3-Dichloropropene	4.0	U	ug/kg dry	4.0	6/22/18	6/22/18	CLP SOM02.4 V
79-01-6	Trichloroethene (Trichloroethylene)	4.0	U	ug/kg dry	4.0	6/22/18	6/22/18	CLP SOM02.4 V
75-69-4	Trichlorofluoromethane (Freon 11)	4.0	U	ug/kg dry	4.0	6/22/18	6/22/18	CLP SOM02.4 V
75-01-4	Vinyl chloride	4.0	U	ug/kg dry	4.0	6/22/18	6/22/18	CLP SOM02.4 V
Tentatively Identified Compounds:								
115-10-6	Dimethyl Ether	40	NJ, CLP15	ug/kg dry		6/22/18	6/22/18	CLP SOM02.4 V
R4-6500	Petroleum Product:		N, CLP15			6/22/18	6/22/18	CLP SOM02.4 V

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D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF20-SS-02 **Lab ID:** C183012-20 **MD No:**

Station ID: NF20 **Matrix:** Subsurface Soil **D No:** AZ64 CHM

Date Collected: 6/19/18 9:35

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1644012	% Moisture	19		%		6/21/18	6/21/18	CLP VOA
R4-7156	(m- and/or p-)Xylene	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
71-55-6	1,1,1-Trichloroethane	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
79-34-5	1,1,2,2-Tetrachloroethane	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
76-13-1	1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113)	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
79-00-5	1,1,2-Trichloroethane	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
75-34-3	1,1-Dichloroethane	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
75-35-4	1,1-Dichloroethene (1,1-Dichloroethylene)	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
87-61-6	1,2,3-Trichlorobenzene	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
120-82-1	1,2,4-Trichlorobenzene	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
96-12-8	1,2-Dibromo-3-Chloropropane (DBCP)	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
106-93-4	1,2-Dibromoethane (EDB)	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
95-50-1	1,2-Dichlorobenzene	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
107-06-2	1,2-Dichloroethane	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
78-87-5	1,2-Dichloropropane	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
541-73-1	1,3-Dichlorobenzene	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
106-46-7	1,4-Dichlorobenzene	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
67-64-1	Acetone	8.4	U	ug/kg dry	8.4	6/21/18	6/21/18	CLP SOM02.4 V
71-43-2	Benzene	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
74-97-5	Bromochloromethane	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
75-27-4	Bromodichloromethane	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
75-25-2	Bromoform	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
74-83-9	Bromomethane	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
75-15-0	Carbon disulfide	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
56-23-5	Carbon Tetrachloride	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
108-90-7	Chlorobenzene	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
75-00-3	Chloroethane	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V

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D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF20-SS-02 **Lab ID:** C183012-20 **MD No:**
Station ID: NF20 **Matrix:** Subsurface Soil **D No:** AZ64 CHM

Date Collected: 6/19/18 9:35

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
67-66-3	Chloroform	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
74-87-3	Chloromethane	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
156-59-2	cis-1,2-Dichloroethene	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
10061-01-5	cis-1,3-Dichloropropene	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
110-82-7	Cyclohexane	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
124-48-1	Dibromochloromethane	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
75-71-8	Dichlorodifluoromethane (Freon 12)	4.2	U, J, QC-3	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
100-41-4	Ethyl Benzene	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
98-82-8	Isopropylbenzene	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
79-20-9	Methyl Acetate	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
591-78-6	Methyl Butyl Ketone	8.4	U	ug/kg dry	8.4	6/21/18	6/21/18	CLP SOM02.4 V
78-93-3	Methyl Ethyl Ketone	8.4	U	ug/kg dry	8.4	6/21/18	6/21/18	CLP SOM02.4 V
108-10-1	Methyl Isobutyl Ketone	8.4	U	ug/kg dry	8.4	6/21/18	6/21/18	CLP SOM02.4 V
1634-04-4	Methyl T-Butyl Ether (MTBE)	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
108-87-2	Methylcyclohexane	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
75-09-2	Methylene Chloride	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
95-47-6	o-Xylene	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
100-42-5	Styrene	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
127-18-4	Tetrachloroethene (Tetrachloroethylene)	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
108-88-3	Toluene	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
156-60-5	trans-1,2-Dichloroethene	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
10061-02-6	trans-1,3-Dichloropropene	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
79-01-6	Trichloroethene (Trichloroethylene)	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
75-69-4	Trichlorofluoromethane (Freon 11)	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
75-01-4	Vinyl chloride	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
Tentatively Identified Compounds:								
R4-0000	Tentatively Identified Compounds	4	U	ug/kg dry	4	6/21/18	6/21/18	CLP SOM02.4 V

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF21-GW-01 **Lab ID:** C183012-21 **MD No:**
Station ID: NF21 **Matrix:** Groundwater **D No:** AZA1 CHM

Date Collected: 6/20/18 11:50

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
R4-7156	(m- and/or p-)Xylene	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
71-55-6	1,1,1-Trichloroethane	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
79-34-5	1,1,2,2-Tetrachloroethane	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
76-13-1	1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113)	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
79-00-5	1,1,2-Trichloroethane	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
75-34-3	1,1-Dichloroethane	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
75-35-4	1,1-Dichloroethene (1,1-Dichloroethylene)	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
87-61-6	1,2,3-Trichlorobenzene	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
120-82-1	1,2,4-Trichlorobenzene	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
96-12-8	1,2-Dibromo-3-Chloropropane (DBCP)	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
106-93-4	1,2-Dibromoethane (EDB)	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
95-50-1	1,2-Dichlorobenzene	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
107-06-2	1,2-Dichloroethane	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
78-87-5	1,2-Dichloropropane	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
541-73-1	1,3-Dichlorobenzene	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
106-46-7	1,4-Dichlorobenzene	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
67-64-1	Acetone	200	U, R, CLP32, CLP17	ug/L	200	6/25/18	6/25/18	CLP SOM02.4
71-43-2	Benzene	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
74-97-5	Bromochloromethane	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
75-27-4	Bromodichloromethane	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
75-25-2	Bromoform	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
74-83-9	Bromomethane	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
75-15-0	Carbon disulfide	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
56-23-5	Carbon Tetrachloride	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
108-90-7	Chlorobenzene	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
75-00-3	Chloroethane	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
67-66-3	Chloroform	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF21-GW-01 **Lab ID:** C183012-21 **MD No:**
Station ID: NF21 **Matrix:** Groundwater **D No:** AZA1 CHM

Date Collected: 6/20/18 11:50

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
74-87-3	Chloromethane	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
156-59-2	cis-1,2-Dichloroethene	68		ug/L	20	6/25/18	6/25/18	CLP SOM02.4
10061-01-5	cis-1,3-Dichloropropene	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
110-82-7	Cyclohexane	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
124-48-1	Dibromochloromethane	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
75-71-8	Dichlorodifluoromethane (Freon 12)	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
100-41-4	Ethyl Benzene	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
98-82-8	Isopropylbenzene	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
79-20-9	Methyl Acetate	20	U, J, QC-3	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
591-78-6	Methyl Butyl Ketone	200	U	ug/L	200	6/25/18	6/25/18	CLP SOM02.4
78-93-3	Methyl Ethyl Ketone	200	U, J, QC-3	ug/L	200	6/25/18	6/25/18	CLP SOM02.4
108-10-1	Methyl Isobutyl Ketone	200	U	ug/L	200	6/25/18	6/25/18	CLP SOM02.4
1634-04-4	Methyl T-Butyl Ether (MTBE)	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
108-87-2	Methylcyclohexane	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
75-09-2	Methylene Chloride	20	U, J, CLP16	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
95-47-6	o-Xylene	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
100-42-5	Styrene	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
127-18-4	Tetrachloroethene (Tetrachloroethylene)	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
108-88-3	Toluene	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
156-60-5	trans-1,2-Dichloroethene	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
10061-02-6	trans-1,3-Dichloropropene	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
79-01-6	Trichloroethene (Trichloroethylene)	2900		ug/L	200	6/25/18	6/27/18	CLP SOM02.4
75-69-4	Trichlorofluoromethane (Freon 11)	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
75-01-4	Vinyl chloride	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
Tentatively Identified Compounds:								
R4-0000	Tentatively Identified Compounds	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF21-SS-01 **Lab ID:** C183012-22 **MD No:**

Station ID: NF21 **Matrix:** Surface Soil **D No:** AZ65 CHM

Date Collected: 6/20/18 11:35

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1644012	% Moisture	15		%		6/22/18	6/22/18	CLP VOA
R4-7156	(m- and/or p-)Xylene	4.1	U	ug/kg dry	4.1	6/22/18	6/22/18	CLP SOM02.4 V
71-55-6	1,1,1-Trichloroethane	4.1	U	ug/kg dry	4.1	6/22/18	6/22/18	CLP SOM02.4 V
79-34-5	1,1,2,2-Tetrachloroethane	4.1	U	ug/kg dry	4.1	6/22/18	6/22/18	CLP SOM02.4 V
76-13-1	1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113)	4.1	U	ug/kg dry	4.1	6/22/18	6/22/18	CLP SOM02.4 V
79-00-5	1,1,2-Trichloroethane	4.1	U	ug/kg dry	4.1	6/22/18	6/22/18	CLP SOM02.4 V
75-34-3	1,1-Dichloroethane	4.1	U	ug/kg dry	4.1	6/22/18	6/22/18	CLP SOM02.4 V
75-35-4	1,1-Dichloroethene (1,1-Dichloroethylene)	4.1	U	ug/kg dry	4.1	6/22/18	6/22/18	CLP SOM02.4 V
87-61-6	1,2,3-Trichlorobenzene	4.1	U	ug/kg dry	4.1	6/22/18	6/22/18	CLP SOM02.4 V
120-82-1	1,2,4-Trichlorobenzene	4.1	U	ug/kg dry	4.1	6/22/18	6/22/18	CLP SOM02.4 V
96-12-8	1,2-Dibromo-3-Chloropropane (DBCP)	4.1	U	ug/kg dry	4.1	6/22/18	6/22/18	CLP SOM02.4 V
106-93-4	1,2-Dibromoethane (EDB)	4.1	U	ug/kg dry	4.1	6/22/18	6/22/18	CLP SOM02.4 V
95-50-1	1,2-Dichlorobenzene	4.1	U	ug/kg dry	4.1	6/22/18	6/22/18	CLP SOM02.4 V
107-06-2	1,2-Dichloroethane	4.1	U	ug/kg dry	4.1	6/22/18	6/22/18	CLP SOM02.4 V
78-87-5	1,2-Dichloropropane	4.1	U	ug/kg dry	4.1	6/22/18	6/22/18	CLP SOM02.4 V
541-73-1	1,3-Dichlorobenzene	4.1	U	ug/kg dry	4.1	6/22/18	6/22/18	CLP SOM02.4 V
106-46-7	1,4-Dichlorobenzene	4.1	U	ug/kg dry	4.1	6/22/18	6/22/18	CLP SOM02.4 V
67-64-1	Acetone	8.2	U	ug/kg dry	8.2	6/22/18	6/22/18	CLP SOM02.4 V
71-43-2	Benzene	4.1	U	ug/kg dry	4.1	6/22/18	6/22/18	CLP SOM02.4 V
74-97-5	Bromochloromethane	4.1	U	ug/kg dry	4.1	6/22/18	6/22/18	CLP SOM02.4 V
75-27-4	Bromodichloromethane	4.1	U	ug/kg dry	4.1	6/22/18	6/22/18	CLP SOM02.4 V
75-25-2	Bromoform	4.1	U	ug/kg dry	4.1	6/22/18	6/22/18	CLP SOM02.4 V
74-83-9	Bromomethane	4.1	U	ug/kg dry	4.1	6/22/18	6/22/18	CLP SOM02.4 V
75-15-0	Carbon disulfide	4.1	U	ug/kg dry	4.1	6/22/18	6/22/18	CLP SOM02.4 V
56-23-5	Carbon Tetrachloride	4.1	U	ug/kg dry	4.1	6/22/18	6/22/18	CLP SOM02.4 V
108-90-7	Chlorobenzene	4.1	U	ug/kg dry	4.1	6/22/18	6/22/18	CLP SOM02.4 V
75-00-3	Chloroethane	4.1	U	ug/kg dry	4.1	6/22/18	6/22/18	CLP SOM02.4 V

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF21-SS-01 **Lab ID:** C183012-22 **MD No:**

Station ID: NF21 **Matrix:** Surface Soil **D No:** AZ65 CHM

Date Collected: 6/20/18 11:35

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
67-66-3	Chloroform	4.1	U	ug/kg dry	4.1	6/22/18	6/22/18	CLP SOM02.4 V
74-87-3	Chloromethane	4.1	U, J, QC-1	ug/kg dry	4.1	6/22/18	6/22/18	CLP SOM02.4 V
156-59-2	cis-1,2-Dichloroethene	4.1	U	ug/kg dry	4.1	6/22/18	6/22/18	CLP SOM02.4 V
10061-01-5	cis-1,3-Dichloropropene	4.1	U	ug/kg dry	4.1	6/22/18	6/22/18	CLP SOM02.4 V
110-82-7	Cyclohexane	4.1	U	ug/kg dry	4.1	6/22/18	6/22/18	CLP SOM02.4 V
124-48-1	Dibromochloromethane	4.1	U	ug/kg dry	4.1	6/22/18	6/22/18	CLP SOM02.4 V
75-71-8	Dichlorodifluoromethane (Freon 12)	4.1	U, J, QC-1, QC-3	ug/kg dry	4.1	6/22/18	6/22/18	CLP SOM02.4 V
100-41-4	Ethyl Benzene	4.1	U	ug/kg dry	4.1	6/22/18	6/22/18	CLP SOM02.4 V
98-82-8	Isopropylbenzene	4.1	U	ug/kg dry	4.1	6/22/18	6/22/18	CLP SOM02.4 V
79-20-9	Methyl Acetate	4.1	U	ug/kg dry	4.1	6/22/18	6/22/18	CLP SOM02.4 V
591-78-6	Methyl Butyl Ketone	8.2	U	ug/kg dry	8.2	6/22/18	6/22/18	CLP SOM02.4 V
78-93-3	Methyl Ethyl Ketone	8.2	U	ug/kg dry	8.2	6/22/18	6/22/18	CLP SOM02.4 V
108-10-1	Methyl Isobutyl Ketone	8.2	U	ug/kg dry	8.2	6/22/18	6/22/18	CLP SOM02.4 V
1634-04-4	Methyl T-Butyl Ether (MTBE)	4.1	U	ug/kg dry	4.1	6/22/18	6/22/18	CLP SOM02.4 V
108-87-2	Methylcyclohexane	4.1	U	ug/kg dry	4.1	6/22/18	6/22/18	CLP SOM02.4 V
75-09-2	Methylene Chloride	4.1	U	ug/kg dry	4.1	6/22/18	6/22/18	CLP SOM02.4 V
95-47-6	o-Xylene	4.1	U	ug/kg dry	4.1	6/22/18	6/22/18	CLP SOM02.4 V
100-42-5	Styrene	4.1	U	ug/kg dry	4.1	6/22/18	6/22/18	CLP SOM02.4 V
127-18-4	Tetrachloroethene (Tetrachloroethylene)	4.1	U	ug/kg dry	4.1	6/22/18	6/22/18	CLP SOM02.4 V
108-88-3	Toluene	4.1	U	ug/kg dry	4.1	6/22/18	6/22/18	CLP SOM02.4 V
156-60-5	trans-1,2-Dichloroethene	4.1	U	ug/kg dry	4.1	6/22/18	6/22/18	CLP SOM02.4 V
10061-02-6	trans-1,3-Dichloropropene	4.1	U	ug/kg dry	4.1	6/22/18	6/22/18	CLP SOM02.4 V
79-01-6	Trichloroethene (Trichloroethylene)	4.1	U	ug/kg dry	4.1	6/22/18	6/22/18	CLP SOM02.4 V
75-69-4	Trichlorofluoromethane (Freon 11)	4.1	U	ug/kg dry	4.1	6/22/18	6/22/18	CLP SOM02.4 V
75-01-4	Vinyl chloride	4.1	U	ug/kg dry	4.1	6/22/18	6/22/18	CLP SOM02.4 V
Tentatively Identified Compounds:								
115-10-6	Dimethyl Ether	10	NJ, CLP15	ug/kg dry		6/22/18	6/22/18	CLP SOM02.4 V

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF21-SS-02 **Lab ID:** C183012-23 **MD No:**

Station ID: NF21 **Matrix:** Subsurface Soil **D No:** AZ66 CHM

Date Collected: 6/20/18 11:30

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1644012	% Moisture	10		%		6/25/18	6/25/18	CLP VOA
R4-7156	(m- and/or p-)Xylene	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
71-55-6	1,1,1-Trichloroethane	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
79-34-5	1,1,2,2-Tetrachloroethane	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
76-13-1	1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113)	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
79-00-5	1,1,2-Trichloroethane	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
75-34-3	1,1-Dichloroethane	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
75-35-4	1,1-Dichloroethene (1,1-Dichloroethylene)	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
87-61-6	1,2,3-Trichlorobenzene	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
120-82-1	1,2,4-Trichlorobenzene	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
96-12-8	1,2-Dibromo-3-Chloropropane (DBCP)	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
106-93-4	1,2-Dibromoethane (EDB)	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
95-50-1	1,2-Dichlorobenzene	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
107-06-2	1,2-Dichloroethane	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
78-87-5	1,2-Dichloropropane	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
541-73-1	1,3-Dichlorobenzene	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
106-46-7	1,4-Dichlorobenzene	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
67-64-1	Acetone	8.2	U	ug/kg dry	8.2	6/25/18	6/25/18	CLP SOM02.4 V
71-43-2	Benzene	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
74-97-5	Bromochloromethane	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
75-27-4	Bromodichloromethane	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
75-25-2	Bromoform	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
74-83-9	Bromomethane	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
75-15-0	Carbon disulfide	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
56-23-5	Carbon Tetrachloride	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
108-90-7	Chlorobenzene	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
75-00-3	Chloroethane	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF21-SS-02 **Lab ID:** C183012-23 **MD No:**
Station ID: NF21 **Matrix:** Subsurface Soil **D No:** AZ66 CHM

Date Collected: 6/20/18 11:30

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
67-66-3	Chloroform	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
74-87-3	Chloromethane	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
156-59-2	cis-1,2-Dichloroethene	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
10061-01-5	cis-1,3-Dichloropropene	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
110-82-7	Cyclohexane	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
124-48-1	Dibromochloromethane	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
75-71-8	Dichlorodifluoromethane (Freon 12)	4.1	U, J, QC-3	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
100-41-4	Ethyl Benzene	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
98-82-8	Isopropylbenzene	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
79-20-9	Methyl Acetate	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
591-78-6	Methyl Butyl Ketone	8.2	U	ug/kg dry	8.2	6/25/18	6/25/18	CLP SOM02.4 V
78-93-3	Methyl Ethyl Ketone	8.2	U	ug/kg dry	8.2	6/25/18	6/25/18	CLP SOM02.4 V
108-10-1	Methyl Isobutyl Ketone	8.2	U	ug/kg dry	8.2	6/25/18	6/25/18	CLP SOM02.4 V
1634-04-4	Methyl T-Butyl Ether (MTBE)	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
108-87-2	Methylcyclohexane	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
75-09-2	Methylene Chloride	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
95-47-6	o-Xylene	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
100-42-5	Styrene	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
127-18-4	Tetrachloroethene (Tetrachloroethylene)	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
108-88-3	Toluene	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
156-60-5	trans-1,2-Dichloroethene	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
10061-02-6	trans-1,3-Dichloropropene	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
79-01-6	Trichloroethene (Trichloroethylene)	4.3		ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
75-69-4	Trichlorofluoromethane (Freon 11)	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
75-01-4	Vinyl chloride	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
Tentatively Identified Compounds:								
R4-0000	Tentatively Identified Compounds	4	U	ug/kg dry	4	6/25/18	6/25/18	CLP SOM02.4 V

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF22-GW-01 **Lab ID:** C183012-24 **MD No:**

Station ID: NF22 **Matrix:** Groundwater **D No:** AZA2 CHM

Date Collected: 6/19/18 18:10

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
R4-7156	(m- and/or p-)Xylene	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
71-55-6	1,1,1-Trichloroethane	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
79-34-5	1,1,2,2-Tetrachloroethane	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
76-13-1	1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113)	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
79-00-5	1,1,2-Trichloroethane	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
75-34-3	1,1-Dichloroethane	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
75-35-4	1,1-Dichloroethene (1,1-Dichloroethylene)	56		ug/L	20	6/25/18	6/25/18	CLP SOM02.4
87-61-6	1,2,3-Trichlorobenzene	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
120-82-1	1,2,4-Trichlorobenzene	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
96-12-8	1,2-Dibromo-3-Chloropropane (DBCP)	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
106-93-4	1,2-Dibromoethane (EDB)	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
95-50-1	1,2-Dichlorobenzene	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
107-06-2	1,2-Dichloroethane	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
78-87-5	1,2-Dichloropropane	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
541-73-1	1,3-Dichlorobenzene	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
106-46-7	1,4-Dichlorobenzene	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
67-64-1	Acetone	200	U, R, CLP32, CLP17	ug/L	200	6/25/18	6/25/18	CLP SOM02.4
71-43-2	Benzene	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
74-97-5	Bromochloromethane	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
75-27-4	Bromodichloromethane	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
75-25-2	Bromoform	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
74-83-9	Bromomethane	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
75-15-0	Carbon disulfide	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
56-23-5	Carbon Tetrachloride	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
108-90-7	Chlorobenzene	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
75-00-3	Chloroethane	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
67-66-3	Chloroform	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF22-GW-01 **Lab ID:** C183012-24 **MD No:**
Station ID: NF22 **Matrix:** Groundwater **D No:** AZA2 CHM

Date Collected: 6/19/18 18:10

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
74-87-3	Chloromethane	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
156-59-2	cis-1,2-Dichloroethene	880	J, CLP01	ug/L	1000	6/25/18	6/26/18	CLP SOM02.4
10061-01-5	cis-1,3-Dichloropropene	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
110-82-7	Cyclohexane	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
124-48-1	Dibromochloromethane	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
75-71-8	Dichlorodifluoromethane (Freon 12)	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
100-41-4	Ethyl Benzene	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
98-82-8	Isopropylbenzene	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
79-20-9	Methyl Acetate	20	U, J, QC-3	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
591-78-6	Methyl Butyl Ketone	200	U	ug/L	200	6/25/18	6/25/18	CLP SOM02.4
78-93-3	Methyl Ethyl Ketone	200	U, J, QC-3	ug/L	200	6/25/18	6/25/18	CLP SOM02.4
108-10-1	Methyl Isobutyl Ketone	200	U	ug/L	200	6/25/18	6/25/18	CLP SOM02.4
1634-04-4	Methyl T-Butyl Ether (MTBE)	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
108-87-2	Methylcyclohexane	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
75-09-2	Methylene Chloride	20	U, J, CLP16	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
95-47-6	o-Xylene	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
100-42-5	Styrene	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
127-18-4	Tetrachloroethene (Tetrachloroethylene)	47		ug/L	20	6/25/18	6/25/18	CLP SOM02.4
108-88-3	Toluene	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
156-60-5	trans-1,2-Dichloroethene	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
10061-02-6	trans-1,3-Dichloropropene	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
79-01-6	Trichloroethene (Trichloroethylene)	18000		ug/L	1000	6/25/18	6/26/18	CLP SOM02.4
75-69-4	Trichlorofluoromethane (Freon 11)	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
75-01-4	Vinyl chloride	38		ug/L	20	6/25/18	6/25/18	CLP SOM02.4
Tentatively Identified Compounds:								
R4-0000	Tentatively Identified Compounds	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF22-SS-01 **Lab ID:** C183012-25 **MD No:**

Station ID: NF22 **Matrix:** Subsurface Soil **D No:** AZ67 CHM

Date Collected: 6/19/18 17:05

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1644012	% Moisture	17		%		6/21/18	6/21/18	CLP VOA
R4-7156	(m- and/or p-)Xylene	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
71-55-6	1,1,1-Trichloroethane	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
79-34-5	1,1,2,2-Tetrachloroethane	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
76-13-1	1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113)	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
79-00-5	1,1,2-Trichloroethane	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
75-34-3	1,1-Dichloroethane	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
75-35-4	1,1-Dichloroethene (1,1-Dichloroethylene)	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
87-61-6	1,2,3-Trichlorobenzene	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
120-82-1	1,2,4-Trichlorobenzene	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
96-12-8	1,2-Dibromo-3-Chloropropane (DBCP)	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
106-93-4	1,2-Dibromoethane (EDB)	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
95-50-1	1,2-Dichlorobenzene	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
107-06-2	1,2-Dichloroethane	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
78-87-5	1,2-Dichloropropane	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
541-73-1	1,3-Dichlorobenzene	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
106-46-7	1,4-Dichlorobenzene	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
67-64-1	Acetone	8.4	U	ug/kg dry	8.4	6/21/18	6/21/18	CLP SOM02.4 V
71-43-2	Benzene	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
74-97-5	Bromochloromethane	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
75-27-4	Bromodichloromethane	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
75-25-2	Bromoform	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
74-83-9	Bromomethane	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
75-15-0	Carbon disulfide	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
56-23-5	Carbon Tetrachloride	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
108-90-7	Chlorobenzene	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
75-00-3	Chloroethane	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V

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980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF22-SS-01 **Lab ID:** C183012-25 **MD No:**

Station ID: NF22 **Matrix:** Subsurface Soil **D No:** AZ67 CHM

Date Collected: 6/19/18 17:05

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
67-66-3	Chloroform	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
74-87-3	Chloromethane	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
156-59-2	cis-1,2-Dichloroethene	7.1		ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
10061-01-5	cis-1,3-Dichloropropene	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
110-82-7	Cyclohexane	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
124-48-1	Dibromochloromethane	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
75-71-8	Dichlorodifluoromethane (Freon 12)	4.2	U, J, QC-3	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
100-41-4	Ethyl Benzene	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
98-82-8	Isopropylbenzene	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
79-20-9	Methyl Acetate	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
591-78-6	Methyl Butyl Ketone	8.4	U	ug/kg dry	8.4	6/21/18	6/21/18	CLP SOM02.4 V
78-93-3	Methyl Ethyl Ketone	8.4	U	ug/kg dry	8.4	6/21/18	6/21/18	CLP SOM02.4 V
108-10-1	Methyl Isobutyl Ketone	8.4	U	ug/kg dry	8.4	6/21/18	6/21/18	CLP SOM02.4 V
1634-04-4	Methyl T-Butyl Ether (MTBE)	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
108-87-2	Methylcyclohexane	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
75-09-2	Methylene Chloride	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
95-47-6	o-Xylene	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
100-42-5	Styrene	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
127-18-4	Tetrachloroethene (Tetrachloroethylene)	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
108-88-3	Toluene	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
156-60-5	trans-1,2-Dichloroethene	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
10061-02-6	trans-1,3-Dichloropropene	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
79-01-6	Trichloroethene (Trichloroethylene)	180	J, CLP02	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
75-69-4	Trichlorofluoromethane (Freon 11)	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
75-01-4	Vinyl chloride	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
Tentatively Identified Compounds:								
R4-0000	Tentatively Identified Compounds	4	U	ug/kg dry	4	6/21/18	6/21/18	CLP SOM02.4 V

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF22-SS-02 **Lab ID:** C183012-26 **MD No:**

Station ID: NF22 **Matrix:** Subsurface Soil **D No:** AZ68 CHM

Date Collected: 6/19/18 17:10

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1644012	% Moisture	14		%		6/21/18	6/21/18	CLP VOA
R4-7156	(m- and/or p-)Xylene	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
71-55-6	1,1,1-Trichloroethane	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
79-34-5	1,1,2,2-Tetrachloroethane	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
76-13-1	1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113)	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
79-00-5	1,1,2-Trichloroethane	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
75-34-3	1,1-Dichloroethane	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
75-35-4	1,1-Dichloroethene (1,1-Dichloroethylene)	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
87-61-6	1,2,3-Trichlorobenzene	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
120-82-1	1,2,4-Trichlorobenzene	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
96-12-8	1,2-Dibromo-3-Chloropropane (DBCP)	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
106-93-4	1,2-Dibromoethane (EDB)	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
95-50-1	1,2-Dichlorobenzene	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
107-06-2	1,2-Dichloroethane	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
78-87-5	1,2-Dichloropropane	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
541-73-1	1,3-Dichlorobenzene	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
106-46-7	1,4-Dichlorobenzene	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
67-64-1	Acetone	8.0	U	ug/kg dry	8.0	6/21/18	6/21/18	CLP SOM02.4 V
71-43-2	Benzene	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
74-97-5	Bromochloromethane	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
75-27-4	Bromodichloromethane	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
75-25-2	Bromoform	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
74-83-9	Bromomethane	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
75-15-0	Carbon disulfide	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
56-23-5	Carbon Tetrachloride	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
108-90-7	Chlorobenzene	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
75-00-3	Chloroethane	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF22-SS-02 **Lab ID:** C183012-26 **MD No:**

Station ID: NF22 **Matrix:** Subsurface Soil **D No:** AZ68 CHM

Date Collected: 6/19/18 17:10

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
67-66-3	Chloroform	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
74-87-3	Chloromethane	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
156-59-2	cis-1,2-Dichloroethene	60		ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
10061-01-5	cis-1,3-Dichloropropene	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
110-82-7	Cyclohexane	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
124-48-1	Dibromochloromethane	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
75-71-8	Dichlorodifluoromethane (Freon 12)	4.0	U, J, QC-3	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
100-41-4	Ethyl Benzene	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
98-82-8	Isopropylbenzene	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
79-20-9	Methyl Acetate	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
591-78-6	Methyl Butyl Ketone	8.0	U	ug/kg dry	8.0	6/21/18	6/21/18	CLP SOM02.4 V
78-93-3	Methyl Ethyl Ketone	8.0	U	ug/kg dry	8.0	6/21/18	6/21/18	CLP SOM02.4 V
108-10-1	Methyl Isobutyl Ketone	8.0	U	ug/kg dry	8.0	6/21/18	6/21/18	CLP SOM02.4 V
1634-04-4	Methyl T-Butyl Ether (MTBE)	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
108-87-2	Methylcyclohexane	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
75-09-2	Methylene Chloride	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
95-47-6	o-Xylene	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
100-42-5	Styrene	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
127-18-4	Tetrachloroethene (Tetrachloroethylene)	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
108-88-3	Toluene	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
156-60-5	trans-1,2-Dichloroethene	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
10061-02-6	trans-1,3-Dichloropropene	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
79-01-6	Trichloroethene (Trichloroethylene)	420		ug/kg dry	230	6/21/18	6/22/18	CLP SOM02.4 V
75-69-4	Trichlorofluoromethane (Freon 11)	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
75-01-4	Vinyl chloride	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
Tentatively Identified Compounds:								
R4-0000	Tentatively Identified Compounds	4	U	ug/kg dry	4	6/21/18	6/21/18	CLP SOM02.4 V

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF23-GW-01 **Lab ID:** C183012-27 **MD No:**
Station ID: NF23 **Matrix:** Groundwater **D No:** AZA3 CHM

Date Collected: 6/19/18 14:40

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
R4-7156	(m- and/or p-)Xylene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
71-55-6	1,1,1-Trichloroethane	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
76-13-1	1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113)	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
79-00-5	1,1,2-Trichloroethane	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
75-34-3	1,1-Dichloroethane	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
75-35-4	1,1-Dichloroethene (1,1-Dichloroethylene)	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
87-61-6	1,2,3-Trichlorobenzene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
120-82-1	1,2,4-Trichlorobenzene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
96-12-8	1,2-Dibromo-3-Chloropropane (DBCP)	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
106-93-4	1,2-Dibromoethane (EDB)	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
95-50-1	1,2-Dichlorobenzene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
107-06-2	1,2-Dichloroethane	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
78-87-5	1,2-Dichloropropane	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
541-73-1	1,3-Dichlorobenzene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
106-46-7	1,4-Dichlorobenzene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
67-64-1	Acetone	5.0	U, R, CLP32, CLP17	ug/L	5.0	6/26/18	6/26/18	CLP SOM02.4
71-43-2	Benzene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
74-97-5	Bromochloromethane	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
75-27-4	Bromodichloromethane	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
75-25-2	Bromoform	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
74-83-9	Bromomethane	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
75-15-0	Carbon disulfide	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
56-23-5	Carbon Tetrachloride	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
108-90-7	Chlorobenzene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
75-00-3	Chloroethane	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
67-66-3	Chloroform	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF23-GW-01 **Lab ID:** C183012-27 **MD No:**
Station ID: NF23 **Matrix:** Groundwater **D No:** AZA3 CHM

Date Collected: 6/19/18 14:40

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
74-87-3	Chloromethane	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
156-59-2	cis-1,2-Dichloroethene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
10061-01-5	cis-1,3-Dichloropropene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
110-82-7	Cyclohexane	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
124-48-1	Dibromochloromethane	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
75-71-8	Dichlorodifluoromethane (Freon 12)	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
100-41-4	Ethyl Benzene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
98-82-8	Isopropylbenzene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
79-20-9	Methyl Acetate	0.50	U, J, QC-3	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
591-78-6	Methyl Butyl Ketone	5.0	U	ug/L	5.0	6/26/18	6/26/18	CLP SOM02.4
78-93-3	Methyl Ethyl Ketone	5.0	U, J, QC-1, QC-3	ug/L	5.0	6/26/18	6/26/18	CLP SOM02.4
108-10-1	Methyl Isobutyl Ketone	5.0	U	ug/L	5.0	6/26/18	6/26/18	CLP SOM02.4
1634-04-4	Methyl T-Butyl Ether (MTBE)	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
108-87-2	Methylcyclohexane	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
75-09-2	Methylene Chloride	0.50	U, J, CLP16	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
95-47-6	o-Xylene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
100-42-5	Styrene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
127-18-4	Tetrachloroethene (Tetrachloroethylene)	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
108-88-3	Toluene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
156-60-5	trans-1,2-Dichloroethene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
10061-02-6	trans-1,3-Dichloropropene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
79-01-6	Trichloroethene (Trichloroethylene)	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
75-69-4	Trichlorofluoromethane (Freon 11)	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
75-01-4	Vinyl chloride	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
Tentatively Identified Compounds:								
R4-0000	Tentatively Identified Compounds	0.5	U	ug/L	0.5	6/26/18	6/26/18	CLP SOM02.4

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF23-SS-01 **Lab ID:** C183012-28 **MD No:**

Station ID: NF23 **Matrix:** Surface Soil **D No:** AZ69 CHM

Date Collected: 6/19/18 13:40

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1644012	% Moisture	16		%		6/21/18	6/21/18	CLP VOA
R4-7156	(m- and/or p-)Xylene	4.6	U	ug/kg dry	4.6	6/21/18	6/21/18	CLP SOM02.4 V
71-55-6	1,1,1-Trichloroethane	4.6	U	ug/kg dry	4.6	6/21/18	6/21/18	CLP SOM02.4 V
79-34-5	1,1,2,2-Tetrachloroethane	4.6	U	ug/kg dry	4.6	6/21/18	6/21/18	CLP SOM02.4 V
76-13-1	1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113)	4.6	U	ug/kg dry	4.6	6/21/18	6/21/18	CLP SOM02.4 V
79-00-5	1,1,2-Trichloroethane	4.6	U	ug/kg dry	4.6	6/21/18	6/21/18	CLP SOM02.4 V
75-34-3	1,1-Dichloroethane	4.6	U	ug/kg dry	4.6	6/21/18	6/21/18	CLP SOM02.4 V
75-35-4	1,1-Dichloroethene (1,1-Dichloroethylene)	4.6	U	ug/kg dry	4.6	6/21/18	6/21/18	CLP SOM02.4 V
87-61-6	1,2,3-Trichlorobenzene	4.6	U	ug/kg dry	4.6	6/21/18	6/21/18	CLP SOM02.4 V
120-82-1	1,2,4-Trichlorobenzene	4.6	U	ug/kg dry	4.6	6/21/18	6/21/18	CLP SOM02.4 V
96-12-8	1,2-Dibromo-3-Chloropropane (DBCP)	4.6	U	ug/kg dry	4.6	6/21/18	6/21/18	CLP SOM02.4 V
106-93-4	1,2-Dibromoethane (EDB)	4.6	U	ug/kg dry	4.6	6/21/18	6/21/18	CLP SOM02.4 V
95-50-1	1,2-Dichlorobenzene	4.6	U	ug/kg dry	4.6	6/21/18	6/21/18	CLP SOM02.4 V
107-06-2	1,2-Dichloroethane	4.6	U	ug/kg dry	4.6	6/21/18	6/21/18	CLP SOM02.4 V
78-87-5	1,2-Dichloropropane	4.6	U	ug/kg dry	4.6	6/21/18	6/21/18	CLP SOM02.4 V
541-73-1	1,3-Dichlorobenzene	4.6	U	ug/kg dry	4.6	6/21/18	6/21/18	CLP SOM02.4 V
106-46-7	1,4-Dichlorobenzene	4.6	U	ug/kg dry	4.6	6/21/18	6/21/18	CLP SOM02.4 V
67-64-1	Acetone	9.2	U	ug/kg dry	9.2	6/21/18	6/21/18	CLP SOM02.4 V
71-43-2	Benzene	4.6	U	ug/kg dry	4.6	6/21/18	6/21/18	CLP SOM02.4 V
74-97-5	Bromochloromethane	4.6	U	ug/kg dry	4.6	6/21/18	6/21/18	CLP SOM02.4 V
75-27-4	Bromodichloromethane	4.6	U	ug/kg dry	4.6	6/21/18	6/21/18	CLP SOM02.4 V
75-25-2	Bromoform	4.6	U	ug/kg dry	4.6	6/21/18	6/21/18	CLP SOM02.4 V
74-83-9	Bromomethane	4.6	U	ug/kg dry	4.6	6/21/18	6/21/18	CLP SOM02.4 V
75-15-0	Carbon disulfide	4.6	U	ug/kg dry	4.6	6/21/18	6/21/18	CLP SOM02.4 V
56-23-5	Carbon Tetrachloride	4.6	U	ug/kg dry	4.6	6/21/18	6/21/18	CLP SOM02.4 V
108-90-7	Chlorobenzene	4.6	U	ug/kg dry	4.6	6/21/18	6/21/18	CLP SOM02.4 V
75-00-3	Chloroethane	4.6	U	ug/kg dry	4.6	6/21/18	6/21/18	CLP SOM02.4 V

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF23-SS-01 **Lab ID:** C183012-28 **MD No:**

Station ID: NF23 **Matrix:** Surface Soil **D No:** AZ69 CHM

Date Collected: 6/19/18 13:40

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
67-66-3	Chloroform	4.6	U	ug/kg dry	4.6	6/21/18	6/21/18	CLP SOM02.4 V
74-87-3	Chloromethane	4.6	U	ug/kg dry	4.6	6/21/18	6/21/18	CLP SOM02.4 V
156-59-2	cis-1,2-Dichloroethene	4.6	U	ug/kg dry	4.6	6/21/18	6/21/18	CLP SOM02.4 V
10061-01-5	cis-1,3-Dichloropropene	4.6	U	ug/kg dry	4.6	6/21/18	6/21/18	CLP SOM02.4 V
110-82-7	Cyclohexane	4.6	U	ug/kg dry	4.6	6/21/18	6/21/18	CLP SOM02.4 V
124-48-1	Dibromochloromethane	4.6	U	ug/kg dry	4.6	6/21/18	6/21/18	CLP SOM02.4 V
75-71-8	Dichlorodifluoromethane (Freon 12)	4.6	U, J, QC-3	ug/kg dry	4.6	6/21/18	6/21/18	CLP SOM02.4 V
100-41-4	Ethyl Benzene	4.6	U	ug/kg dry	4.6	6/21/18	6/21/18	CLP SOM02.4 V
98-82-8	Isopropylbenzene	4.6	U	ug/kg dry	4.6	6/21/18	6/21/18	CLP SOM02.4 V
79-20-9	Methyl Acetate	4.6	U	ug/kg dry	4.6	6/21/18	6/21/18	CLP SOM02.4 V
591-78-6	Methyl Butyl Ketone	9.2	U	ug/kg dry	9.2	6/21/18	6/21/18	CLP SOM02.4 V
78-93-3	Methyl Ethyl Ketone	9.2	U	ug/kg dry	9.2	6/21/18	6/21/18	CLP SOM02.4 V
108-10-1	Methyl Isobutyl Ketone	9.2	U	ug/kg dry	9.2	6/21/18	6/21/18	CLP SOM02.4 V
1634-04-4	Methyl T-Butyl Ether (MTBE)	4.6	U	ug/kg dry	4.6	6/21/18	6/21/18	CLP SOM02.4 V
108-87-2	Methylcyclohexane	4.6	U	ug/kg dry	4.6	6/21/18	6/21/18	CLP SOM02.4 V
75-09-2	Methylene Chloride	4.6	U	ug/kg dry	4.6	6/21/18	6/21/18	CLP SOM02.4 V
95-47-6	o-Xylene	4.6	U	ug/kg dry	4.6	6/21/18	6/21/18	CLP SOM02.4 V
100-42-5	Styrene	4.6	U	ug/kg dry	4.6	6/21/18	6/21/18	CLP SOM02.4 V
127-18-4	Tetrachloroethene (Tetrachloroethylene)	4.6	U	ug/kg dry	4.6	6/21/18	6/21/18	CLP SOM02.4 V
108-88-3	Toluene	4.6	U	ug/kg dry	4.6	6/21/18	6/21/18	CLP SOM02.4 V
156-60-5	trans-1,2-Dichloroethene	4.6	U	ug/kg dry	4.6	6/21/18	6/21/18	CLP SOM02.4 V
10061-02-6	trans-1,3-Dichloropropene	4.6	U	ug/kg dry	4.6	6/21/18	6/21/18	CLP SOM02.4 V
79-01-6	Trichloroethene (Trichloroethylene)	4.6	U	ug/kg dry	4.6	6/21/18	6/21/18	CLP SOM02.4 V
75-69-4	Trichlorofluoromethane (Freon 11)	4.6	U	ug/kg dry	4.6	6/21/18	6/21/18	CLP SOM02.4 V
75-01-4	Vinyl chloride	4.6	U	ug/kg dry	4.6	6/21/18	6/21/18	CLP SOM02.4 V
Tentatively Identified Compounds:								
R4-0000	Tentatively Identified Compounds	5	U	ug/kg dry	5	6/21/18	6/21/18	CLP SOM02.4 V

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF23-SS-02 **Lab ID:** C183012-29 **MD No:**

Station ID: NF23 **Matrix:** Subsurface Soil **D No:** AZ70 CHM

Date Collected: 6/19/18 13:45

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1644012	% Moisture	14		%		6/21/18	6/21/18	CLP VOA
R4-7156	(m- and/or p-)Xylene	3.8	U	ug/kg dry	3.8	6/21/18	6/21/18	CLP SOM02.4 V
71-55-6	1,1,1-Trichloroethane	3.8	U	ug/kg dry	3.8	6/21/18	6/21/18	CLP SOM02.4 V
79-34-5	1,1,2,2-Tetrachloroethane	3.8	U	ug/kg dry	3.8	6/21/18	6/21/18	CLP SOM02.4 V
76-13-1	1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113)	3.8	U	ug/kg dry	3.8	6/21/18	6/21/18	CLP SOM02.4 V
79-00-5	1,1,2-Trichloroethane	3.8	U	ug/kg dry	3.8	6/21/18	6/21/18	CLP SOM02.4 V
75-34-3	1,1-Dichloroethane	3.8	U	ug/kg dry	3.8	6/21/18	6/21/18	CLP SOM02.4 V
75-35-4	1,1-Dichloroethene (1,1-Dichloroethylene)	3.8	U	ug/kg dry	3.8	6/21/18	6/21/18	CLP SOM02.4 V
87-61-6	1,2,3-Trichlorobenzene	3.8	U	ug/kg dry	3.8	6/21/18	6/21/18	CLP SOM02.4 V
120-82-1	1,2,4-Trichlorobenzene	3.8	U	ug/kg dry	3.8	6/21/18	6/21/18	CLP SOM02.4 V
96-12-8	1,2-Dibromo-3-Chloropropane (DBCP)	3.8	U	ug/kg dry	3.8	6/21/18	6/21/18	CLP SOM02.4 V
106-93-4	1,2-Dibromoethane (EDB)	3.8	U	ug/kg dry	3.8	6/21/18	6/21/18	CLP SOM02.4 V
95-50-1	1,2-Dichlorobenzene	3.8	U	ug/kg dry	3.8	6/21/18	6/21/18	CLP SOM02.4 V
107-06-2	1,2-Dichloroethane	3.8	U	ug/kg dry	3.8	6/21/18	6/21/18	CLP SOM02.4 V
78-87-5	1,2-Dichloropropane	3.8	U	ug/kg dry	3.8	6/21/18	6/21/18	CLP SOM02.4 V
541-73-1	1,3-Dichlorobenzene	3.8	U	ug/kg dry	3.8	6/21/18	6/21/18	CLP SOM02.4 V
106-46-7	1,4-Dichlorobenzene	3.8	U	ug/kg dry	3.8	6/21/18	6/21/18	CLP SOM02.4 V
67-64-1	Acetone	7.5	U	ug/kg dry	7.5	6/21/18	6/21/18	CLP SOM02.4 V
71-43-2	Benzene	3.8	U	ug/kg dry	3.8	6/21/18	6/21/18	CLP SOM02.4 V
74-97-5	Bromochloromethane	3.8	U	ug/kg dry	3.8	6/21/18	6/21/18	CLP SOM02.4 V
75-27-4	Bromodichloromethane	3.8	U	ug/kg dry	3.8	6/21/18	6/21/18	CLP SOM02.4 V
75-25-2	Bromoform	3.8	U	ug/kg dry	3.8	6/21/18	6/21/18	CLP SOM02.4 V
74-83-9	Bromomethane	3.8	U	ug/kg dry	3.8	6/21/18	6/21/18	CLP SOM02.4 V
75-15-0	Carbon disulfide	3.8	U	ug/kg dry	3.8	6/21/18	6/21/18	CLP SOM02.4 V
56-23-5	Carbon Tetrachloride	3.8	U	ug/kg dry	3.8	6/21/18	6/21/18	CLP SOM02.4 V
108-90-7	Chlorobenzene	3.8	U	ug/kg dry	3.8	6/21/18	6/21/18	CLP SOM02.4 V
75-00-3	Chloroethane	3.8	U	ug/kg dry	3.8	6/21/18	6/21/18	CLP SOM02.4 V

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF23-SS-02 **Lab ID:** C183012-29 **MD No:**

Station ID: NF23 **Matrix:** Subsurface Soil **D No:** AZ70 CHM

Date Collected: 6/19/18 13:45

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
67-66-3	Chloroform	3.8	U	ug/kg dry	3.8	6/21/18	6/21/18	CLP SOM02.4 V
74-87-3	Chloromethane	3.8	U	ug/kg dry	3.8	6/21/18	6/21/18	CLP SOM02.4 V
156-59-2	cis-1,2-Dichloroethene	3.8	U	ug/kg dry	3.8	6/21/18	6/21/18	CLP SOM02.4 V
10061-01-5	cis-1,3-Dichloropropene	3.8	U	ug/kg dry	3.8	6/21/18	6/21/18	CLP SOM02.4 V
110-82-7	Cyclohexane	3.8	U	ug/kg dry	3.8	6/21/18	6/21/18	CLP SOM02.4 V
124-48-1	Dibromochloromethane	3.8	U	ug/kg dry	3.8	6/21/18	6/21/18	CLP SOM02.4 V
75-71-8	Dichlorodifluoromethane (Freon 12)	3.8	U, J, QC-3	ug/kg dry	3.8	6/21/18	6/21/18	CLP SOM02.4 V
100-41-4	Ethyl Benzene	3.8	U	ug/kg dry	3.8	6/21/18	6/21/18	CLP SOM02.4 V
98-82-8	Isopropylbenzene	3.8	U	ug/kg dry	3.8	6/21/18	6/21/18	CLP SOM02.4 V
79-20-9	Methyl Acetate	3.8	U	ug/kg dry	3.8	6/21/18	6/21/18	CLP SOM02.4 V
591-78-6	Methyl Butyl Ketone	7.5	U	ug/kg dry	7.5	6/21/18	6/21/18	CLP SOM02.4 V
78-93-3	Methyl Ethyl Ketone	7.5	U	ug/kg dry	7.5	6/21/18	6/21/18	CLP SOM02.4 V
108-10-1	Methyl Isobutyl Ketone	7.5	U	ug/kg dry	7.5	6/21/18	6/21/18	CLP SOM02.4 V
1634-04-4	Methyl T-Butyl Ether (MTBE)	3.8	U	ug/kg dry	3.8	6/21/18	6/21/18	CLP SOM02.4 V
108-87-2	Methylcyclohexane	3.8	U	ug/kg dry	3.8	6/21/18	6/21/18	CLP SOM02.4 V
75-09-2	Methylene Chloride	3.8	U	ug/kg dry	3.8	6/21/18	6/21/18	CLP SOM02.4 V
95-47-6	o-Xylene	3.8	U	ug/kg dry	3.8	6/21/18	6/21/18	CLP SOM02.4 V
100-42-5	Styrene	3.8	U	ug/kg dry	3.8	6/21/18	6/21/18	CLP SOM02.4 V
127-18-4	Tetrachloroethene (Tetrachloroethylene)	3.8	U	ug/kg dry	3.8	6/21/18	6/21/18	CLP SOM02.4 V
108-88-3	Toluene	3.8	U	ug/kg dry	3.8	6/21/18	6/21/18	CLP SOM02.4 V
156-60-5	trans-1,2-Dichloroethene	3.8	U	ug/kg dry	3.8	6/21/18	6/21/18	CLP SOM02.4 V
10061-02-6	trans-1,3-Dichloropropene	3.8	U	ug/kg dry	3.8	6/21/18	6/21/18	CLP SOM02.4 V
79-01-6	Trichloroethene (Trichloroethylene)	3.8	U	ug/kg dry	3.8	6/21/18	6/21/18	CLP SOM02.4 V
75-69-4	Trichlorofluoromethane (Freon 11)	3.8	U	ug/kg dry	3.8	6/21/18	6/21/18	CLP SOM02.4 V
75-01-4	Vinyl chloride	3.8	U	ug/kg dry	3.8	6/21/18	6/21/18	CLP SOM02.4 V
Tentatively Identified Compounds:								
R4-0000	Tentatively Identified Compounds	4	U	ug/kg dry	4	6/21/18	6/21/18	CLP SOM02.4 V

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF24-GW-01 **Lab ID:** C183012-30 **MD No:**

Station ID: NF24 **Matrix:** Groundwater **D No:** AZA4 CHM

Date Collected: 6/20/18 10:10

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
R4-7156	(m- and/or p-)Xylene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
71-55-6	1,1,1-Trichloroethane	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
76-13-1	1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113)	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
79-00-5	1,1,2-Trichloroethane	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
75-34-3	1,1-Dichloroethane	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
75-35-4	1,1-Dichloroethene (1,1-Dichloroethylene)	0.39	J, CLP01	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
87-61-6	1,2,3-Trichlorobenzene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
120-82-1	1,2,4-Trichlorobenzene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
96-12-8	1,2-Dibromo-3-Chloropropane (DBCP)	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
106-93-4	1,2-Dibromoethane (EDB)	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
95-50-1	1,2-Dichlorobenzene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
107-06-2	1,2-Dichloroethane	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
78-87-5	1,2-Dichloropropane	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
541-73-1	1,3-Dichlorobenzene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
106-46-7	1,4-Dichlorobenzene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
67-64-1	Acetone	5.0	U, R, CLP32, CLP17	ug/L	5.0	6/26/18	6/26/18	CLP SOM02.4
71-43-2	Benzene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
74-97-5	Bromochloromethane	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
75-27-4	Bromodichloromethane	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
75-25-2	Bromoform	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
74-83-9	Bromomethane	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
75-15-0	Carbon disulfide	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
56-23-5	Carbon Tetrachloride	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
108-90-7	Chlorobenzene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
75-00-3	Chloroethane	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
67-66-3	Chloroform	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF24-GW-01 **Lab ID:** C183012-30 **MD No:**
Station ID: NF24 **Matrix:** Groundwater **D No:** AZA4 CHM

Date Collected: 6/20/18 10:10

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
74-87-3	Chloromethane	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
156-59-2	cis-1,2-Dichloroethene	11		ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
10061-01-5	cis-1,3-Dichloropropene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
110-82-7	Cyclohexane	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
124-48-1	Dibromochloromethane	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
75-71-8	Dichlorodifluoromethane (Freon 12)	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
100-41-4	Ethyl Benzene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
98-82-8	Isopropylbenzene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
79-20-9	Methyl Acetate	0.50	U, J, QC-3	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
591-78-6	Methyl Butyl Ketone	5.0	U	ug/L	5.0	6/26/18	6/26/18	CLP SOM02.4
78-93-3	Methyl Ethyl Ketone	5.0	U, J, QC-1, QC-3	ug/L	5.0	6/26/18	6/26/18	CLP SOM02.4
108-10-1	Methyl Isobutyl Ketone	5.0	U	ug/L	5.0	6/26/18	6/26/18	CLP SOM02.4
1634-04-4	Methyl T-Butyl Ether (MTBE)	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
108-87-2	Methylcyclohexane	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
75-09-2	Methylene Chloride	0.50	U, J, CLP16	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
95-47-6	o-Xylene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
100-42-5	Styrene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
127-18-4	Tetrachloroethene (Tetrachloroethylene)	0.66		ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
108-88-3	Toluene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
156-60-5	trans-1,2-Dichloroethene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
10061-02-6	trans-1,3-Dichloropropene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
79-01-6	Trichloroethene (Trichloroethylene)	110		ug/L	5.0	6/26/18	6/26/18	CLP SOM02.4
75-69-4	Trichlorofluoromethane (Freon 11)	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
75-01-4	Vinyl chloride	1.0		ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
Tentatively Identified Compounds:								
R4-0000	Tentatively Identified Compounds	0.5	U	ug/L	0.5	6/26/18	6/26/18	CLP SOM02.4

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF24-SS-01 **Lab ID:** C183012-31 **MD No:**
Station ID: NF24 **Matrix:** Subsurface Soil **D No:** AZ71 CHM

Date Collected: 6/20/18 9:10

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1644012	% Moisture	21		%		6/25/18	6/25/18	CLP VOA
R4-7156	(m- and/or p-)Xylene	4.6	U	ug/kg dry	4.6	6/25/18	6/25/18	CLP SOM02.4 V
71-55-6	1,1,1-Trichloroethane	4.6	U	ug/kg dry	4.6	6/25/18	6/25/18	CLP SOM02.4 V
79-34-5	1,1,2,2-Tetrachloroethane	4.6	U	ug/kg dry	4.6	6/25/18	6/25/18	CLP SOM02.4 V
76-13-1	1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113)	4.6	U	ug/kg dry	4.6	6/25/18	6/25/18	CLP SOM02.4 V
79-00-5	1,1,2-Trichloroethane	4.6	U	ug/kg dry	4.6	6/25/18	6/25/18	CLP SOM02.4 V
75-34-3	1,1-Dichloroethane	4.6	U	ug/kg dry	4.6	6/25/18	6/25/18	CLP SOM02.4 V
75-35-4	1,1-Dichloroethene (1,1-Dichloroethylene)	4.6	U	ug/kg dry	4.6	6/25/18	6/25/18	CLP SOM02.4 V
87-61-6	1,2,3-Trichlorobenzene	4.6	U	ug/kg dry	4.6	6/25/18	6/25/18	CLP SOM02.4 V
120-82-1	1,2,4-Trichlorobenzene	4.6	U	ug/kg dry	4.6	6/25/18	6/25/18	CLP SOM02.4 V
96-12-8	1,2-Dibromo-3-Chloropropane (DBCP)	4.6	U	ug/kg dry	4.6	6/25/18	6/25/18	CLP SOM02.4 V
106-93-4	1,2-Dibromoethane (EDB)	4.6	U	ug/kg dry	4.6	6/25/18	6/25/18	CLP SOM02.4 V
95-50-1	1,2-Dichlorobenzene	4.6	U	ug/kg dry	4.6	6/25/18	6/25/18	CLP SOM02.4 V
107-06-2	1,2-Dichloroethane	4.6	U	ug/kg dry	4.6	6/25/18	6/25/18	CLP SOM02.4 V
78-87-5	1,2-Dichloropropane	4.6	U	ug/kg dry	4.6	6/25/18	6/25/18	CLP SOM02.4 V
541-73-1	1,3-Dichlorobenzene	4.6	U	ug/kg dry	4.6	6/25/18	6/25/18	CLP SOM02.4 V
106-46-7	1,4-Dichlorobenzene	4.6	U	ug/kg dry	4.6	6/25/18	6/25/18	CLP SOM02.4 V
67-64-1	Acetone	9.3	U	ug/kg dry	9.3	6/25/18	6/25/18	CLP SOM02.4 V
71-43-2	Benzene	4.6	U	ug/kg dry	4.6	6/25/18	6/25/18	CLP SOM02.4 V
74-97-5	Bromochloromethane	4.6	U	ug/kg dry	4.6	6/25/18	6/25/18	CLP SOM02.4 V
75-27-4	Bromodichloromethane	4.6	U	ug/kg dry	4.6	6/25/18	6/25/18	CLP SOM02.4 V
75-25-2	Bromoform	4.6	U	ug/kg dry	4.6	6/25/18	6/25/18	CLP SOM02.4 V
74-83-9	Bromomethane	4.6	U	ug/kg dry	4.6	6/25/18	6/25/18	CLP SOM02.4 V
75-15-0	Carbon disulfide	4.6	U	ug/kg dry	4.6	6/25/18	6/25/18	CLP SOM02.4 V
56-23-5	Carbon Tetrachloride	4.6	U	ug/kg dry	4.6	6/25/18	6/25/18	CLP SOM02.4 V
108-90-7	Chlorobenzene	4.6	U	ug/kg dry	4.6	6/25/18	6/25/18	CLP SOM02.4 V
75-00-3	Chloroethane	4.6	U	ug/kg dry	4.6	6/25/18	6/25/18	CLP SOM02.4 V

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF24-SS-01 **Lab ID:** C183012-31 **MD No:**
Station ID: NF24 **Matrix:** Subsurface Soil **D No:** AZ71 CHM

Date Collected: 6/20/18 9:10

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
67-66-3	Chloroform	4.6	U	ug/kg dry	4.6	6/25/18	6/25/18	CLP SOM02.4 V
74-87-3	Chloromethane	4.6	U	ug/kg dry	4.6	6/25/18	6/25/18	CLP SOM02.4 V
156-59-2	cis-1,2-Dichloroethene	4.6	U	ug/kg dry	4.6	6/25/18	6/25/18	CLP SOM02.4 V
10061-01-5	cis-1,3-Dichloropropene	4.6	U	ug/kg dry	4.6	6/25/18	6/25/18	CLP SOM02.4 V
110-82-7	Cyclohexane	4.6	U	ug/kg dry	4.6	6/25/18	6/25/18	CLP SOM02.4 V
124-48-1	Dibromochloromethane	4.6	U	ug/kg dry	4.6	6/25/18	6/25/18	CLP SOM02.4 V
75-71-8	Dichlorodifluoromethane (Freon 12)	4.6	U, J, QC-3	ug/kg dry	4.6	6/25/18	6/25/18	CLP SOM02.4 V
100-41-4	Ethyl Benzene	4.6	U	ug/kg dry	4.6	6/25/18	6/25/18	CLP SOM02.4 V
98-82-8	Isopropylbenzene	4.6	U	ug/kg dry	4.6	6/25/18	6/25/18	CLP SOM02.4 V
79-20-9	Methyl Acetate	4.6	U	ug/kg dry	4.6	6/25/18	6/25/18	CLP SOM02.4 V
591-78-6	Methyl Butyl Ketone	9.3	U	ug/kg dry	9.3	6/25/18	6/25/18	CLP SOM02.4 V
78-93-3	Methyl Ethyl Ketone	9.3	U	ug/kg dry	9.3	6/25/18	6/25/18	CLP SOM02.4 V
108-10-1	Methyl Isobutyl Ketone	9.3	U	ug/kg dry	9.3	6/25/18	6/25/18	CLP SOM02.4 V
1634-04-4	Methyl T-Butyl Ether (MTBE)	4.6	U	ug/kg dry	4.6	6/25/18	6/25/18	CLP SOM02.4 V
108-87-2	Methylcyclohexane	4.6	U	ug/kg dry	4.6	6/25/18	6/25/18	CLP SOM02.4 V
75-09-2	Methylene Chloride	4.6	U	ug/kg dry	4.6	6/25/18	6/25/18	CLP SOM02.4 V
95-47-6	o-Xylene	4.6	U	ug/kg dry	4.6	6/25/18	6/25/18	CLP SOM02.4 V
100-42-5	Styrene	4.6	U	ug/kg dry	4.6	6/25/18	6/25/18	CLP SOM02.4 V
127-18-4	Tetrachloroethene (Tetrachloroethylene)	4.6	U	ug/kg dry	4.6	6/25/18	6/25/18	CLP SOM02.4 V
108-88-3	Toluene	4.6	U	ug/kg dry	4.6	6/25/18	6/25/18	CLP SOM02.4 V
156-60-5	trans-1,2-Dichloroethene	4.6	U	ug/kg dry	4.6	6/25/18	6/25/18	CLP SOM02.4 V
10061-02-6	trans-1,3-Dichloropropene	4.6	U	ug/kg dry	4.6	6/25/18	6/25/18	CLP SOM02.4 V
79-01-6	Trichloroethene (Trichloroethylene)	4.6	U	ug/kg dry	4.6	6/25/18	6/25/18	CLP SOM02.4 V
75-69-4	Trichlorofluoromethane (Freon 11)	4.6	U	ug/kg dry	4.6	6/25/18	6/25/18	CLP SOM02.4 V
75-01-4	Vinyl chloride	4.6	U	ug/kg dry	4.6	6/25/18	6/25/18	CLP SOM02.4 V
Tentatively Identified Compounds:								
R4-0000	Tentatively Identified Compounds	5	U	ug/kg dry	5	6/25/18	6/25/18	CLP SOM02.4 V

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
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D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF24-SS-02 **Lab ID:** C183012-32 **MD No:**
Station ID: NF24 **Matrix:** Subsurface Soil **D No:** AZ72 CHM

Date Collected: 6/20/18 9:15

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1644012	% Moisture	16		%		6/25/18	6/25/18	CLP VOA
R4-7156	(m- and/or p-)Xylene	3.7	U	ug/kg dry	3.7	6/25/18	6/25/18	CLP SOM02.4 V
71-55-6	1,1,1-Trichloroethane	3.7	U	ug/kg dry	3.7	6/25/18	6/25/18	CLP SOM02.4 V
79-34-5	1,1,2,2-Tetrachloroethane	3.7	U	ug/kg dry	3.7	6/25/18	6/25/18	CLP SOM02.4 V
76-13-1	1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113)	3.7	U	ug/kg dry	3.7	6/25/18	6/25/18	CLP SOM02.4 V
79-00-5	1,1,2-Trichloroethane	3.7	U	ug/kg dry	3.7	6/25/18	6/25/18	CLP SOM02.4 V
75-34-3	1,1-Dichloroethane	3.7	U	ug/kg dry	3.7	6/25/18	6/25/18	CLP SOM02.4 V
75-35-4	1,1-Dichloroethene (1,1-Dichloroethylene)	3.7	U	ug/kg dry	3.7	6/25/18	6/25/18	CLP SOM02.4 V
87-61-6	1,2,3-Trichlorobenzene	3.7	U	ug/kg dry	3.7	6/25/18	6/25/18	CLP SOM02.4 V
120-82-1	1,2,4-Trichlorobenzene	3.7	U	ug/kg dry	3.7	6/25/18	6/25/18	CLP SOM02.4 V
96-12-8	1,2-Dibromo-3-Chloropropane (DBCP)	3.7	U	ug/kg dry	3.7	6/25/18	6/25/18	CLP SOM02.4 V
106-93-4	1,2-Dibromoethane (EDB)	3.7	U	ug/kg dry	3.7	6/25/18	6/25/18	CLP SOM02.4 V
95-50-1	1,2-Dichlorobenzene	3.7	U	ug/kg dry	3.7	6/25/18	6/25/18	CLP SOM02.4 V
107-06-2	1,2-Dichloroethane	3.7	U	ug/kg dry	3.7	6/25/18	6/25/18	CLP SOM02.4 V
78-87-5	1,2-Dichloropropane	3.7	U	ug/kg dry	3.7	6/25/18	6/25/18	CLP SOM02.4 V
541-73-1	1,3-Dichlorobenzene	3.7	U	ug/kg dry	3.7	6/25/18	6/25/18	CLP SOM02.4 V
106-46-7	1,4-Dichlorobenzene	3.7	U	ug/kg dry	3.7	6/25/18	6/25/18	CLP SOM02.4 V
67-64-1	Acetone	7.4	U	ug/kg dry	7.4	6/25/18	6/25/18	CLP SOM02.4 V
71-43-2	Benzene	3.7	U	ug/kg dry	3.7	6/25/18	6/25/18	CLP SOM02.4 V
74-97-5	Bromochloromethane	3.7	U	ug/kg dry	3.7	6/25/18	6/25/18	CLP SOM02.4 V
75-27-4	Bromodichloromethane	3.7	U	ug/kg dry	3.7	6/25/18	6/25/18	CLP SOM02.4 V
75-25-2	Bromoform	3.7	U	ug/kg dry	3.7	6/25/18	6/25/18	CLP SOM02.4 V
74-83-9	Bromomethane	3.7	U	ug/kg dry	3.7	6/25/18	6/25/18	CLP SOM02.4 V
75-15-0	Carbon disulfide	3.7	U	ug/kg dry	3.7	6/25/18	6/25/18	CLP SOM02.4 V
56-23-5	Carbon Tetrachloride	3.7	U	ug/kg dry	3.7	6/25/18	6/25/18	CLP SOM02.4 V
108-90-7	Chlorobenzene	3.7	U	ug/kg dry	3.7	6/25/18	6/25/18	CLP SOM02.4 V
75-00-3	Chloroethane	3.7	U	ug/kg dry	3.7	6/25/18	6/25/18	CLP SOM02.4 V

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF24-SS-02 **Lab ID:** C183012-32 **MD No:**
Station ID: NF24 **Matrix:** Subsurface Soil **D No:** AZ72 CHM

Date Collected: 6/20/18 9:15

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
67-66-3	Chloroform	3.7	U	ug/kg dry	3.7	6/25/18	6/25/18	CLP SOM02.4 V
74-87-3	Chloromethane	3.7	U	ug/kg dry	3.7	6/25/18	6/25/18	CLP SOM02.4 V
156-59-2	cis-1,2-Dichloroethene	3.7	U	ug/kg dry	3.7	6/25/18	6/25/18	CLP SOM02.4 V
10061-01-5	cis-1,3-Dichloropropene	3.7	U	ug/kg dry	3.7	6/25/18	6/25/18	CLP SOM02.4 V
110-82-7	Cyclohexane	3.7	U	ug/kg dry	3.7	6/25/18	6/25/18	CLP SOM02.4 V
124-48-1	Dibromochloromethane	3.7	U	ug/kg dry	3.7	6/25/18	6/25/18	CLP SOM02.4 V
75-71-8	Dichlorodifluoromethane (Freon 12)	3.7	U, J, QC-3	ug/kg dry	3.7	6/25/18	6/25/18	CLP SOM02.4 V
100-41-4	Ethyl Benzene	3.7	U	ug/kg dry	3.7	6/25/18	6/25/18	CLP SOM02.4 V
98-82-8	Isopropylbenzene	3.7	U	ug/kg dry	3.7	6/25/18	6/25/18	CLP SOM02.4 V
79-20-9	Methyl Acetate	3.7	U	ug/kg dry	3.7	6/25/18	6/25/18	CLP SOM02.4 V
591-78-6	Methyl Butyl Ketone	7.4	U	ug/kg dry	7.4	6/25/18	6/25/18	CLP SOM02.4 V
78-93-3	Methyl Ethyl Ketone	7.4	U	ug/kg dry	7.4	6/25/18	6/25/18	CLP SOM02.4 V
108-10-1	Methyl Isobutyl Ketone	7.4	U	ug/kg dry	7.4	6/25/18	6/25/18	CLP SOM02.4 V
1634-04-4	Methyl T-Butyl Ether (MTBE)	3.7	U	ug/kg dry	3.7	6/25/18	6/25/18	CLP SOM02.4 V
108-87-2	Methylcyclohexane	3.7	U	ug/kg dry	3.7	6/25/18	6/25/18	CLP SOM02.4 V
75-09-2	Methylene Chloride	3.7	U	ug/kg dry	3.7	6/25/18	6/25/18	CLP SOM02.4 V
95-47-6	o-Xylene	3.7	U	ug/kg dry	3.7	6/25/18	6/25/18	CLP SOM02.4 V
100-42-5	Styrene	3.7	U	ug/kg dry	3.7	6/25/18	6/25/18	CLP SOM02.4 V
127-18-4	Tetrachloroethene (Tetrachloroethylene)	3.7	U	ug/kg dry	3.7	6/25/18	6/25/18	CLP SOM02.4 V
108-88-3	Toluene	3.7	U	ug/kg dry	3.7	6/25/18	6/25/18	CLP SOM02.4 V
156-60-5	trans-1,2-Dichloroethene	3.7	U	ug/kg dry	3.7	6/25/18	6/25/18	CLP SOM02.4 V
10061-02-6	trans-1,3-Dichloropropene	3.7	U	ug/kg dry	3.7	6/25/18	6/25/18	CLP SOM02.4 V
79-01-6	Trichloroethene (Trichloroethylene)	3.7	U	ug/kg dry	3.7	6/25/18	6/25/18	CLP SOM02.4 V
75-69-4	Trichlorofluoromethane (Freon 11)	3.7	U	ug/kg dry	3.7	6/25/18	6/25/18	CLP SOM02.4 V
75-01-4	Vinyl chloride	3.7	U	ug/kg dry	3.7	6/25/18	6/25/18	CLP SOM02.4 V
Tentatively Identified Compounds:								
R4-0000	Tentatively Identified Compounds	4	U	ug/kg dry	4	6/25/18	6/25/18	CLP SOM02.4 V

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF25-GW-01 **Lab ID:** C183012-33 **MD No:**

Station ID: NF25 **Matrix:** Groundwater **D No:** AZA5 CHM

Date Collected: 6/19/18 11:37

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
R4-7156	(m- and/or p-)Xylene	0.50	U	ug/L	0.50	6/27/18	6/27/18	CLP SOM02.4
71-55-6	1,1,1-Trichloroethane	0.50	U	ug/L	0.50	6/27/18	6/27/18	CLP SOM02.4
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	ug/L	0.50	6/27/18	6/27/18	CLP SOM02.4
76-13-1	1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113)	0.50	U	ug/L	0.50	6/27/18	6/27/18	CLP SOM02.4
79-00-5	1,1,2-Trichloroethane	0.50	U	ug/L	0.50	6/27/18	6/27/18	CLP SOM02.4
75-34-3	1,1-Dichloroethane	0.50	U	ug/L	0.50	6/27/18	6/27/18	CLP SOM02.4
75-35-4	1,1-Dichloroethene (1,1-Dichloroethylene)	0.50	U	ug/L	0.50	6/27/18	6/27/18	CLP SOM02.4
87-61-6	1,2,3-Trichlorobenzene	0.50	U	ug/L	0.50	6/27/18	6/27/18	CLP SOM02.4
120-82-1	1,2,4-Trichlorobenzene	0.50	U	ug/L	0.50	6/27/18	6/27/18	CLP SOM02.4
96-12-8	1,2-Dibromo-3-Chloropropane (DBCP)	0.50	U	ug/L	0.50	6/27/18	6/27/18	CLP SOM02.4
106-93-4	1,2-Dibromoethane (EDB)	0.50	U	ug/L	0.50	6/27/18	6/27/18	CLP SOM02.4
95-50-1	1,2-Dichlorobenzene	0.50	U	ug/L	0.50	6/27/18	6/27/18	CLP SOM02.4
107-06-2	1,2-Dichloroethane	0.50	U	ug/L	0.50	6/27/18	6/27/18	CLP SOM02.4
78-87-5	1,2-Dichloropropane	0.50	U	ug/L	0.50	6/27/18	6/27/18	CLP SOM02.4
541-73-1	1,3-Dichlorobenzene	0.50	U	ug/L	0.50	6/27/18	6/27/18	CLP SOM02.4
106-46-7	1,4-Dichlorobenzene	0.50	U	ug/L	0.50	6/27/18	6/27/18	CLP SOM02.4
67-64-1	Acetone	5.0	U, R, CLP32, CLP17	ug/L	5.0	6/27/18	6/27/18	CLP SOM02.4
71-43-2	Benzene	0.31	J, CLP01	ug/L	0.50	6/27/18	6/27/18	CLP SOM02.4
74-97-5	Bromochloromethane	0.50	U	ug/L	0.50	6/27/18	6/27/18	CLP SOM02.4
75-27-4	Bromodichloromethane	0.50	U	ug/L	0.50	6/27/18	6/27/18	CLP SOM02.4
75-25-2	Bromoform	0.50	U	ug/L	0.50	6/27/18	6/27/18	CLP SOM02.4
74-83-9	Bromomethane	0.50	U	ug/L	0.50	6/27/18	6/27/18	CLP SOM02.4
75-15-0	Carbon disulfide	0.50	U	ug/L	0.50	6/27/18	6/27/18	CLP SOM02.4
56-23-5	Carbon Tetrachloride	0.50	U	ug/L	0.50	6/27/18	6/27/18	CLP SOM02.4
108-90-7	Chlorobenzene	0.50	U	ug/L	0.50	6/27/18	6/27/18	CLP SOM02.4
75-00-3	Chloroethane	0.50	U	ug/L	0.50	6/27/18	6/27/18	CLP SOM02.4
67-66-3	Chloroform	0.50	U	ug/L	0.50	6/27/18	6/27/18	CLP SOM02.4

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D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF25-GW-01 **Lab ID:** C183012-33 **MD No:**
Station ID: NF25 **Matrix:** Groundwater **D No:** AZA5 CHM

Date Collected: 6/19/18 11:37

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
74-87-3	Chloromethane	0.50	U	ug/L	0.50	6/27/18	6/27/18	CLP SOM02.4
156-59-2	cis-1,2-Dichloroethene	48		ug/L	4.0	6/27/18	6/27/18	CLP SOM02.4
10061-01-5	cis-1,3-Dichloropropene	0.50	U	ug/L	0.50	6/27/18	6/27/18	CLP SOM02.4
110-82-7	Cyclohexane	0.50	U	ug/L	0.50	6/27/18	6/27/18	CLP SOM02.4
124-48-1	Dibromochloromethane	0.50	U	ug/L	0.50	6/27/18	6/27/18	CLP SOM02.4
75-71-8	Dichlorodifluoromethane (Freon 12)	0.50	U	ug/L	0.50	6/27/18	6/27/18	CLP SOM02.4
100-41-4	Ethyl Benzene	0.50	U	ug/L	0.50	6/27/18	6/27/18	CLP SOM02.4
98-82-8	Isopropylbenzene	0.50	U	ug/L	0.50	6/27/18	6/27/18	CLP SOM02.4
79-20-9	Methyl Acetate	0.50	U, J, QC-3	ug/L	0.50	6/27/18	6/27/18	CLP SOM02.4
591-78-6	Methyl Butyl Ketone	5.0	U	ug/L	5.0	6/27/18	6/27/18	CLP SOM02.4
78-93-3	Methyl Ethyl Ketone	5.0	U, J, QC-3	ug/L	5.0	6/27/18	6/27/18	CLP SOM02.4
108-10-1	Methyl Isobutyl Ketone	5.0	U	ug/L	5.0	6/27/18	6/27/18	CLP SOM02.4
1634-04-4	Methyl T-Butyl Ether (MTBE)	0.50	U	ug/L	0.50	6/27/18	6/27/18	CLP SOM02.4
108-87-2	Methylcyclohexane	0.50	U	ug/L	0.50	6/27/18	6/27/18	CLP SOM02.4
75-09-2	Methylene Chloride	0.50	U, J, CLP16	ug/L	0.50	6/27/18	6/27/18	CLP SOM02.4
95-47-6	o-Xylene	0.50	U	ug/L	0.50	6/27/18	6/27/18	CLP SOM02.4
100-42-5	Styrene	0.50	U	ug/L	0.50	6/27/18	6/27/18	CLP SOM02.4
127-18-4	Tetrachloroethene (Tetrachloroethylene)	0.50	U	ug/L	0.50	6/27/18	6/27/18	CLP SOM02.4
108-88-3	Toluene	0.50	U	ug/L	0.50	6/27/18	6/27/18	CLP SOM02.4
156-60-5	trans-1,2-Dichloroethene	0.54		ug/L	0.50	6/27/18	6/27/18	CLP SOM02.4
10061-02-6	trans-1,3-Dichloropropene	0.50	U	ug/L	0.50	6/27/18	6/27/18	CLP SOM02.4
79-01-6	Trichloroethene (Trichloroethylene)	12		ug/L	0.50	6/27/18	6/27/18	CLP SOM02.4
75-69-4	Trichlorofluoromethane (Freon 11)	0.50	U	ug/L	0.50	6/27/18	6/27/18	CLP SOM02.4
75-01-4	Vinyl chloride	3.1		ug/L	0.50	6/27/18	6/27/18	CLP SOM02.4
Tentatively Identified Compounds:								
R4-0000	Tentatively Identified Compounds	0.5	U	ug/L	0.5	6/27/18	6/27/18	CLP SOM02.4

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF25-SS-01 **Lab ID:** C183012-34 **MD No:**

Station ID: NF25 **Matrix:** Subsurface Soil **D No:** AZ73 CHM

Date Collected: 6/19/18 9:30

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1644012	% Moisture	21		%		6/21/18	6/21/18	CLP VOA
R4-7156	(m- and/or p-)Xylene	4.7	U	ug/kg dry	4.7	6/21/18	6/21/18	CLP SOM02.4 V
71-55-6	1,1,1-Trichloroethane	4.7	U	ug/kg dry	4.7	6/21/18	6/21/18	CLP SOM02.4 V
79-34-5	1,1,2,2-Tetrachloroethane	4.7	U	ug/kg dry	4.7	6/21/18	6/21/18	CLP SOM02.4 V
76-13-1	1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113)	4.7	U	ug/kg dry	4.7	6/21/18	6/21/18	CLP SOM02.4 V
79-00-5	1,1,2-Trichloroethane	4.7	U	ug/kg dry	4.7	6/21/18	6/21/18	CLP SOM02.4 V
75-34-3	1,1-Dichloroethane	4.7	U	ug/kg dry	4.7	6/21/18	6/21/18	CLP SOM02.4 V
75-35-4	1,1-Dichloroethene (1,1-Dichloroethylene)	4.7	U	ug/kg dry	4.7	6/21/18	6/21/18	CLP SOM02.4 V
87-61-6	1,2,3-Trichlorobenzene	4.7	U	ug/kg dry	4.7	6/21/18	6/21/18	CLP SOM02.4 V
120-82-1	1,2,4-Trichlorobenzene	4.7	U	ug/kg dry	4.7	6/21/18	6/21/18	CLP SOM02.4 V
96-12-8	1,2-Dibromo-3-Chloropropane (DBCP)	4.7	U	ug/kg dry	4.7	6/21/18	6/21/18	CLP SOM02.4 V
106-93-4	1,2-Dibromoethane (EDB)	4.7	U	ug/kg dry	4.7	6/21/18	6/21/18	CLP SOM02.4 V
95-50-1	1,2-Dichlorobenzene	4.7	U	ug/kg dry	4.7	6/21/18	6/21/18	CLP SOM02.4 V
107-06-2	1,2-Dichloroethane	4.7	U	ug/kg dry	4.7	6/21/18	6/21/18	CLP SOM02.4 V
78-87-5	1,2-Dichloropropane	4.7	U	ug/kg dry	4.7	6/21/18	6/21/18	CLP SOM02.4 V
541-73-1	1,3-Dichlorobenzene	4.7	U	ug/kg dry	4.7	6/21/18	6/21/18	CLP SOM02.4 V
106-46-7	1,4-Dichlorobenzene	4.7	U	ug/kg dry	4.7	6/21/18	6/21/18	CLP SOM02.4 V
67-64-1	Acetone	9.4	U	ug/kg dry	9.4	6/21/18	6/21/18	CLP SOM02.4 V
71-43-2	Benzene	4.7	U	ug/kg dry	4.7	6/21/18	6/21/18	CLP SOM02.4 V
74-97-5	Bromochloromethane	4.7	U	ug/kg dry	4.7	6/21/18	6/21/18	CLP SOM02.4 V
75-27-4	Bromodichloromethane	4.7	U	ug/kg dry	4.7	6/21/18	6/21/18	CLP SOM02.4 V
75-25-2	Bromoform	4.7	U	ug/kg dry	4.7	6/21/18	6/21/18	CLP SOM02.4 V
74-83-9	Bromomethane	4.7	U	ug/kg dry	4.7	6/21/18	6/21/18	CLP SOM02.4 V
75-15-0	Carbon disulfide	4.7	U	ug/kg dry	4.7	6/21/18	6/21/18	CLP SOM02.4 V
56-23-5	Carbon Tetrachloride	4.7	U	ug/kg dry	4.7	6/21/18	6/21/18	CLP SOM02.4 V
108-90-7	Chlorobenzene	4.7	U	ug/kg dry	4.7	6/21/18	6/21/18	CLP SOM02.4 V
75-00-3	Chloroethane	4.7	U	ug/kg dry	4.7	6/21/18	6/21/18	CLP SOM02.4 V

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF25-SS-01 **Lab ID:** C183012-34 **MD No:**

Station ID: NF25 **Matrix:** Subsurface Soil **D No:** AZ73 CHM

Date Collected: 6/19/18 9:30

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
67-66-3	Chloroform	4.7	U	ug/kg dry	4.7	6/21/18	6/21/18	CLP SOM02.4 V
74-87-3	Chloromethane	4.7	U	ug/kg dry	4.7	6/21/18	6/21/18	CLP SOM02.4 V
156-59-2	cis-1,2-Dichloroethene	5.0		ug/kg dry	4.7	6/21/18	6/21/18	CLP SOM02.4 V
10061-01-5	cis-1,3-Dichloropropene	4.7	U	ug/kg dry	4.7	6/21/18	6/21/18	CLP SOM02.4 V
110-82-7	Cyclohexane	4.7	U	ug/kg dry	4.7	6/21/18	6/21/18	CLP SOM02.4 V
124-48-1	Dibromochloromethane	4.7	U	ug/kg dry	4.7	6/21/18	6/21/18	CLP SOM02.4 V
75-71-8	Dichlorodifluoromethane (Freon 12)	4.7	U, J, QC-3	ug/kg dry	4.7	6/21/18	6/21/18	CLP SOM02.4 V
100-41-4	Ethyl Benzene	4.7	U	ug/kg dry	4.7	6/21/18	6/21/18	CLP SOM02.4 V
98-82-8	Isopropylbenzene	4.7	U	ug/kg dry	4.7	6/21/18	6/21/18	CLP SOM02.4 V
79-20-9	Methyl Acetate	4.7	U	ug/kg dry	4.7	6/21/18	6/21/18	CLP SOM02.4 V
591-78-6	Methyl Butyl Ketone	9.4	U	ug/kg dry	9.4	6/21/18	6/21/18	CLP SOM02.4 V
78-93-3	Methyl Ethyl Ketone	9.4	U	ug/kg dry	9.4	6/21/18	6/21/18	CLP SOM02.4 V
108-10-1	Methyl Isobutyl Ketone	9.4	U	ug/kg dry	9.4	6/21/18	6/21/18	CLP SOM02.4 V
1634-04-4	Methyl T-Butyl Ether (MTBE)	4.7	U	ug/kg dry	4.7	6/21/18	6/21/18	CLP SOM02.4 V
108-87-2	Methylcyclohexane	4.7	U	ug/kg dry	4.7	6/21/18	6/21/18	CLP SOM02.4 V
75-09-2	Methylene Chloride	4.7	U	ug/kg dry	4.7	6/21/18	6/21/18	CLP SOM02.4 V
95-47-6	o-Xylene	4.7	U	ug/kg dry	4.7	6/21/18	6/21/18	CLP SOM02.4 V
100-42-5	Styrene	4.7	U	ug/kg dry	4.7	6/21/18	6/21/18	CLP SOM02.4 V
127-18-4	Tetrachloroethene (Tetrachloroethylene)	4.7	U	ug/kg dry	4.7	6/21/18	6/21/18	CLP SOM02.4 V
108-88-3	Toluene	4.7	U	ug/kg dry	4.7	6/21/18	6/21/18	CLP SOM02.4 V
156-60-5	trans-1,2-Dichloroethene	4.7	U	ug/kg dry	4.7	6/21/18	6/21/18	CLP SOM02.4 V
10061-02-6	trans-1,3-Dichloropropene	4.7	U	ug/kg dry	4.7	6/21/18	6/21/18	CLP SOM02.4 V
79-01-6	Trichloroethene (Trichloroethylene)	4.7	U	ug/kg dry	4.7	6/21/18	6/21/18	CLP SOM02.4 V
75-69-4	Trichlorofluoromethane (Freon 11)	4.7	U	ug/kg dry	4.7	6/21/18	6/21/18	CLP SOM02.4 V
75-01-4	Vinyl chloride	4.7	U	ug/kg dry	4.7	6/21/18	6/21/18	CLP SOM02.4 V
Tentatively Identified Compounds:								
R4-0000	Tentatively Identified Compounds	5	U	ug/kg dry	5	6/21/18	6/21/18	CLP SOM02.4 V

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF25-SS-02 **Lab ID:** C183012-35 **MD No:**
Station ID: NF25 **Matrix:** Subsurface Soil **D No:** AZ74 CHM

Date Collected: 6/19/18 9:35

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1644012	% Moisture	17		%		6/21/18	6/21/18	CLP VOA
R4-7156	(m- and/or p-)Xylene	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
71-55-6	1,1,1-Trichloroethane	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
79-34-5	1,1,2,2-Tetrachloroethane	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
76-13-1	1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113)	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
79-00-5	1,1,2-Trichloroethane	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
75-34-3	1,1-Dichloroethane	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
75-35-4	1,1-Dichloroethene (1,1-Dichloroethylene)	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
87-61-6	1,2,3-Trichlorobenzene	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
120-82-1	1,2,4-Trichlorobenzene	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
96-12-8	1,2-Dibromo-3-Chloropropane (DBCP)	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
106-93-4	1,2-Dibromoethane (EDB)	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
95-50-1	1,2-Dichlorobenzene	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
107-06-2	1,2-Dichloroethane	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
78-87-5	1,2-Dichloropropane	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
541-73-1	1,3-Dichlorobenzene	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
106-46-7	1,4-Dichlorobenzene	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
67-64-1	Acetone	8.0	U	ug/kg dry	8.0	6/21/18	6/21/18	CLP SOM02.4 V
71-43-2	Benzene	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
74-97-5	Bromochloromethane	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
75-27-4	Bromodichloromethane	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
75-25-2	Bromoform	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
74-83-9	Bromomethane	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
75-15-0	Carbon disulfide	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
56-23-5	Carbon Tetrachloride	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
108-90-7	Chlorobenzene	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
75-00-3	Chloroethane	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF25-SS-02 **Lab ID:** C183012-35 **MD No:**
Station ID: NF25 **Matrix:** Subsurface Soil **D No:** AZ74 CHM

Date Collected: 6/19/18 9:35

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
67-66-3	Chloroform	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
74-87-3	Chloromethane	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
156-59-2	cis-1,2-Dichloroethene	8.8		ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
10061-01-5	cis-1,3-Dichloropropene	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
110-82-7	Cyclohexane	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
124-48-1	Dibromochloromethane	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
75-71-8	Dichlorodifluoromethane (Freon 12)	4.0	U, J, QC-3	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
100-41-4	Ethyl Benzene	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
98-82-8	Isopropylbenzene	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
79-20-9	Methyl Acetate	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
591-78-6	Methyl Butyl Ketone	8.0	U	ug/kg dry	8.0	6/21/18	6/21/18	CLP SOM02.4 V
78-93-3	Methyl Ethyl Ketone	8.0	U	ug/kg dry	8.0	6/21/18	6/21/18	CLP SOM02.4 V
108-10-1	Methyl Isobutyl Ketone	8.0	U	ug/kg dry	8.0	6/21/18	6/21/18	CLP SOM02.4 V
1634-04-4	Methyl T-Butyl Ether (MTBE)	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
108-87-2	Methylcyclohexane	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
75-09-2	Methylene Chloride	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
95-47-6	o-Xylene	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
100-42-5	Styrene	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
127-18-4	Tetrachloroethene (Tetrachloroethylene)	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
108-88-3	Toluene	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
156-60-5	trans-1,2-Dichloroethene	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
10061-02-6	trans-1,3-Dichloropropene	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
79-01-6	Trichloroethene (Trichloroethylene)	20		ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
75-69-4	Trichlorofluoromethane (Freon 11)	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
75-01-4	Vinyl chloride	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
Tentatively Identified Compounds:								
R4-0000	Tentatively Identified Compounds	4	U	ug/kg dry	4	6/21/18	6/21/18	CLP SOM02.4 V

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF26-GW-01 **Lab ID:** C183012-36 **MD No:**
Station ID: NF26 **Matrix:** Groundwater **D No:** AZA6 CHM

Date Collected: 6/20/18 16:30

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
R4-7156	(m- and/or p-)Xylene	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
71-55-6	1,1,1-Trichloroethane	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
79-34-5	1,1,2,2-Tetrachloroethane	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
76-13-1	1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113)	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
79-00-5	1,1,2-Trichloroethane	44		ug/L	20	6/25/18	6/25/18	CLP SOM02.4
75-34-3	1,1-Dichloroethane	1100		ug/L	1000	6/25/18	6/26/18	CLP SOM02.4
75-35-4	1,1-Dichloroethene (1,1-Dichloroethylene)	1500		ug/L	1000	6/25/18	6/26/18	CLP SOM02.4
87-61-6	1,2,3-Trichlorobenzene	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
120-82-1	1,2,4-Trichlorobenzene	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
96-12-8	1,2-Dibromo-3-Chloropropane (DBCP)	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
106-93-4	1,2-Dibromoethane (EDB)	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
95-50-1	1,2-Dichlorobenzene	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
107-06-2	1,2-Dichloroethane	17	J, CLP01	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
78-87-5	1,2-Dichloropropane	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
541-73-1	1,3-Dichlorobenzene	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
106-46-7	1,4-Dichlorobenzene	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
67-64-1	Acetone	200	U, R, CLP32, CLP17	ug/L	200	6/25/18	6/25/18	CLP SOM02.4
71-43-2	Benzene	9.4	J, CLP01	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
74-97-5	Bromochloromethane	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
75-27-4	Bromodichloromethane	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
75-25-2	Bromoform	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
74-83-9	Bromomethane	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
75-15-0	Carbon disulfide	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
56-23-5	Carbon Tetrachloride	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
108-90-7	Chlorobenzene	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
75-00-3	Chloroethane	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
67-66-3	Chloroform	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF26-GW-01 **Lab ID:** C183012-36 **MD No:**
Station ID: NF26 **Matrix:** Groundwater **D No:** AZA6 CHM

Date Collected: 6/20/18 16:30

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
74-87-3	Chloromethane	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
156-59-2	cis-1,2-Dichloroethene	2800		ug/L	1000	6/25/18	6/26/18	CLP SOM02.4
10061-01-5	cis-1,3-Dichloropropene	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
110-82-7	Cyclohexane	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
124-48-1	Dibromochloromethane	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
75-71-8	Dichlorodifluoromethane (Freon 12)	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
100-41-4	Ethyl Benzene	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
98-82-8	Isopropylbenzene	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
79-20-9	Methyl Acetate	20	U, J, QC-3	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
591-78-6	Methyl Butyl Ketone	200	U	ug/L	200	6/25/18	6/25/18	CLP SOM02.4
78-93-3	Methyl Ethyl Ketone	200	U, J, QC-3	ug/L	200	6/25/18	6/25/18	CLP SOM02.4
108-10-1	Methyl Isobutyl Ketone	200	U	ug/L	200	6/25/18	6/25/18	CLP SOM02.4
1634-04-4	Methyl T-Butyl Ether (MTBE)	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
108-87-2	Methylcyclohexane	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
75-09-2	Methylene Chloride	20	U, J, CLP16	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
95-47-6	o-Xylene	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
100-42-5	Styrene	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
127-18-4	Tetrachloroethene (Tetrachloroethylene)	150		ug/L	20	6/25/18	6/25/18	CLP SOM02.4
108-88-3	Toluene	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
156-60-5	trans-1,2-Dichloroethene	90	J, QS-5	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
10061-02-6	trans-1,3-Dichloropropene	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
79-01-6	Trichloroethene (Trichloroethylene)	28000		ug/L	1000	6/25/18	6/26/18	CLP SOM02.4
75-69-4	Trichlorofluoromethane (Freon 11)	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4
75-01-4	Vinyl chloride	150		ug/L	20	6/25/18	6/25/18	CLP SOM02.4
Tentatively Identified Compounds:								
R4-0000	Tentatively Identified Compounds	20	U	ug/L	20	6/25/18	6/25/18	CLP SOM02.4

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF26-SS-01 **Lab ID:** C183012-37 **MD No:**

Station ID: NF26 **Matrix:** Surface Soil **D No:** AZ75 CHM

Date Collected: 6/19/18 10:45

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1644012	% Moisture	16		%		6/21/18	6/21/18	CLP VOA
R4-7156	(m- and/or p-)Xylene	4.1	U	ug/kg dry	4.1	6/21/18	6/21/18	CLP SOM02.4 V
71-55-6	1,1,1-Trichloroethane	4.1	U	ug/kg dry	4.1	6/21/18	6/21/18	CLP SOM02.4 V
79-34-5	1,1,2,2-Tetrachloroethane	4.1	U	ug/kg dry	4.1	6/21/18	6/21/18	CLP SOM02.4 V
76-13-1	1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113)	4.1	U	ug/kg dry	4.1	6/21/18	6/21/18	CLP SOM02.4 V
79-00-5	1,1,2-Trichloroethane	4.1	U	ug/kg dry	4.1	6/21/18	6/21/18	CLP SOM02.4 V
75-34-3	1,1-Dichloroethane	4.1	U	ug/kg dry	4.1	6/21/18	6/21/18	CLP SOM02.4 V
75-35-4	1,1-Dichloroethene (1,1-Dichloroethylene)	4.1	U	ug/kg dry	4.1	6/21/18	6/21/18	CLP SOM02.4 V
87-61-6	1,2,3-Trichlorobenzene	4.1	U	ug/kg dry	4.1	6/21/18	6/21/18	CLP SOM02.4 V
120-82-1	1,2,4-Trichlorobenzene	4.1	U	ug/kg dry	4.1	6/21/18	6/21/18	CLP SOM02.4 V
96-12-8	1,2-Dibromo-3-Chloropropane (DBCP)	4.1	U	ug/kg dry	4.1	6/21/18	6/21/18	CLP SOM02.4 V
106-93-4	1,2-Dibromoethane (EDB)	4.1	U	ug/kg dry	4.1	6/21/18	6/21/18	CLP SOM02.4 V
95-50-1	1,2-Dichlorobenzene	4.1	U	ug/kg dry	4.1	6/21/18	6/21/18	CLP SOM02.4 V
107-06-2	1,2-Dichloroethane	4.1	U	ug/kg dry	4.1	6/21/18	6/21/18	CLP SOM02.4 V
78-87-5	1,2-Dichloropropane	4.1	U	ug/kg dry	4.1	6/21/18	6/21/18	CLP SOM02.4 V
541-73-1	1,3-Dichlorobenzene	4.1	U	ug/kg dry	4.1	6/21/18	6/21/18	CLP SOM02.4 V
106-46-7	1,4-Dichlorobenzene	4.1	U	ug/kg dry	4.1	6/21/18	6/21/18	CLP SOM02.4 V
67-64-1	Acetone	21		ug/kg dry	8.1	6/21/18	6/21/18	CLP SOM02.4 V
71-43-2	Benzene	4.1	U	ug/kg dry	4.1	6/21/18	6/21/18	CLP SOM02.4 V
74-97-5	Bromochloromethane	4.1	U	ug/kg dry	4.1	6/21/18	6/21/18	CLP SOM02.4 V
75-27-4	Bromodichloromethane	4.1	U	ug/kg dry	4.1	6/21/18	6/21/18	CLP SOM02.4 V
75-25-2	Bromoform	4.1	U	ug/kg dry	4.1	6/21/18	6/21/18	CLP SOM02.4 V
74-83-9	Bromomethane	4.1	U	ug/kg dry	4.1	6/21/18	6/21/18	CLP SOM02.4 V
75-15-0	Carbon disulfide	4.1	U	ug/kg dry	4.1	6/21/18	6/21/18	CLP SOM02.4 V
56-23-5	Carbon Tetrachloride	4.1	U	ug/kg dry	4.1	6/21/18	6/21/18	CLP SOM02.4 V
108-90-7	Chlorobenzene	4.1	U	ug/kg dry	4.1	6/21/18	6/21/18	CLP SOM02.4 V
75-00-3	Chloroethane	4.1	U	ug/kg dry	4.1	6/21/18	6/21/18	CLP SOM02.4 V

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF26-SS-01 **Lab ID:** C183012-37 **MD No:**
Station ID: NF26 **Matrix:** Surface Soil **D No:** AZ75 CHM

Date Collected: 6/19/18 10:45

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
67-66-3	Chloroform	4.1	U	ug/kg dry	4.1	6/21/18	6/21/18	CLP SOM02.4 V
74-87-3	Chloromethane	4.1	U	ug/kg dry	4.1	6/21/18	6/21/18	CLP SOM02.4 V
156-59-2	cis-1,2-Dichloroethene	16		ug/kg dry	4.1	6/21/18	6/21/18	CLP SOM02.4 V
10061-01-5	cis-1,3-Dichloropropene	4.1	U	ug/kg dry	4.1	6/21/18	6/21/18	CLP SOM02.4 V
110-82-7	Cyclohexane	4.1	U	ug/kg dry	4.1	6/21/18	6/21/18	CLP SOM02.4 V
124-48-1	Dibromochloromethane	4.1	U	ug/kg dry	4.1	6/21/18	6/21/18	CLP SOM02.4 V
75-71-8	Dichlorodifluoromethane (Freon 12)	4.1	U, J, QC-3	ug/kg dry	4.1	6/21/18	6/21/18	CLP SOM02.4 V
100-41-4	Ethyl Benzene	4.1	U	ug/kg dry	4.1	6/21/18	6/21/18	CLP SOM02.4 V
98-82-8	Isopropylbenzene	4.1	U	ug/kg dry	4.1	6/21/18	6/21/18	CLP SOM02.4 V
79-20-9	Methyl Acetate	4.1	U	ug/kg dry	4.1	6/21/18	6/21/18	CLP SOM02.4 V
591-78-6	Methyl Butyl Ketone	8.1	U	ug/kg dry	8.1	6/21/18	6/21/18	CLP SOM02.4 V
78-93-3	Methyl Ethyl Ketone	8.1	U	ug/kg dry	8.1	6/21/18	6/21/18	CLP SOM02.4 V
108-10-1	Methyl Isobutyl Ketone	8.1	U	ug/kg dry	8.1	6/21/18	6/21/18	CLP SOM02.4 V
1634-04-4	Methyl T-Butyl Ether (MTBE)	4.1	U	ug/kg dry	4.1	6/21/18	6/21/18	CLP SOM02.4 V
108-87-2	Methylcyclohexane	4.1	U	ug/kg dry	4.1	6/21/18	6/21/18	CLP SOM02.4 V
75-09-2	Methylene Chloride	4.1	U	ug/kg dry	4.1	6/21/18	6/21/18	CLP SOM02.4 V
95-47-6	o-Xylene	4.1	U	ug/kg dry	4.1	6/21/18	6/21/18	CLP SOM02.4 V
100-42-5	Styrene	4.1	U	ug/kg dry	4.1	6/21/18	6/21/18	CLP SOM02.4 V
127-18-4	Tetrachloroethene (Tetrachloroethylene)	4.1	U	ug/kg dry	4.1	6/21/18	6/21/18	CLP SOM02.4 V
108-88-3	Toluene	4.1	U	ug/kg dry	4.1	6/21/18	6/21/18	CLP SOM02.4 V
156-60-5	trans-1,2-Dichloroethene	4.1	U	ug/kg dry	4.1	6/21/18	6/21/18	CLP SOM02.4 V
10061-02-6	trans-1,3-Dichloropropene	4.1	U	ug/kg dry	4.1	6/21/18	6/21/18	CLP SOM02.4 V
79-01-6	Trichloroethene (Trichloroethylene)	4.1	U	ug/kg dry	4.1	6/21/18	6/21/18	CLP SOM02.4 V
75-69-4	Trichlorofluoromethane (Freon 11)	4.1	U	ug/kg dry	4.1	6/21/18	6/21/18	CLP SOM02.4 V
75-01-4	Vinyl chloride	4.1	U	ug/kg dry	4.1	6/21/18	6/21/18	CLP SOM02.4 V
Tentatively Identified Compounds:								
R4-0000	Tentatively Identified Compounds	4	U	ug/kg dry	4	6/21/18	6/21/18	CLP SOM02.4 V

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF26-SS-02 **Lab ID:** C183012-38 **MD No:**
Station ID: NF26 **Matrix:** Subsurface Soil **D No:** AZ76 CHM

Date Collected: 6/19/18 10:50

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1644012	% Moisture	20		%		6/21/18	6/21/18	CLP VOA
R4-7156	(m- and/or p-)Xylene	4.1	U	ug/kg dry	4.1	6/21/18	6/21/18	CLP SOM02.4 V
71-55-6	1,1,1-Trichloroethane	4.1	U	ug/kg dry	4.1	6/21/18	6/21/18	CLP SOM02.4 V
79-34-5	1,1,2,2-Tetrachloroethane	4.1	U	ug/kg dry	4.1	6/21/18	6/21/18	CLP SOM02.4 V
76-13-1	1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113)	4.1	U	ug/kg dry	4.1	6/21/18	6/21/18	CLP SOM02.4 V
79-00-5	1,1,2-Trichloroethane	4.1	U	ug/kg dry	4.1	6/21/18	6/21/18	CLP SOM02.4 V
75-34-3	1,1-Dichloroethane	5.9		ug/kg dry	4.1	6/21/18	6/21/18	CLP SOM02.4 V
75-35-4	1,1-Dichloroethene (1,1-Dichloroethylene)	4.2		ug/kg dry	4.1	6/21/18	6/21/18	CLP SOM02.4 V
87-61-6	1,2,3-Trichlorobenzene	4.1	U	ug/kg dry	4.1	6/21/18	6/21/18	CLP SOM02.4 V
120-82-1	1,2,4-Trichlorobenzene	4.1	U	ug/kg dry	4.1	6/21/18	6/21/18	CLP SOM02.4 V
96-12-8	1,2-Dibromo-3-Chloropropane (DBCP)	4.1	U	ug/kg dry	4.1	6/21/18	6/21/18	CLP SOM02.4 V
106-93-4	1,2-Dibromoethane (EDB)	4.1	U	ug/kg dry	4.1	6/21/18	6/21/18	CLP SOM02.4 V
95-50-1	1,2-Dichlorobenzene	4.1	U	ug/kg dry	4.1	6/21/18	6/21/18	CLP SOM02.4 V
107-06-2	1,2-Dichloroethane	4.1	U	ug/kg dry	4.1	6/21/18	6/21/18	CLP SOM02.4 V
78-87-5	1,2-Dichloropropane	4.1	U	ug/kg dry	4.1	6/21/18	6/21/18	CLP SOM02.4 V
541-73-1	1,3-Dichlorobenzene	4.1	U	ug/kg dry	4.1	6/21/18	6/21/18	CLP SOM02.4 V
106-46-7	1,4-Dichlorobenzene	4.1	U	ug/kg dry	4.1	6/21/18	6/21/18	CLP SOM02.4 V
67-64-1	Acetone	8.2	U	ug/kg dry	8.2	6/21/18	6/21/18	CLP SOM02.4 V
71-43-2	Benzene	4.1	U	ug/kg dry	4.1	6/21/18	6/21/18	CLP SOM02.4 V
74-97-5	Bromochloromethane	4.1	U	ug/kg dry	4.1	6/21/18	6/21/18	CLP SOM02.4 V
75-27-4	Bromodichloromethane	4.1	U	ug/kg dry	4.1	6/21/18	6/21/18	CLP SOM02.4 V
75-25-2	Bromoform	4.1	U	ug/kg dry	4.1	6/21/18	6/21/18	CLP SOM02.4 V
74-83-9	Bromomethane	4.1	U	ug/kg dry	4.1	6/21/18	6/21/18	CLP SOM02.4 V
75-15-0	Carbon disulfide	4.1	U	ug/kg dry	4.1	6/21/18	6/21/18	CLP SOM02.4 V
56-23-5	Carbon Tetrachloride	4.1	U	ug/kg dry	4.1	6/21/18	6/21/18	CLP SOM02.4 V
108-90-7	Chlorobenzene	4.1	U	ug/kg dry	4.1	6/21/18	6/21/18	CLP SOM02.4 V
75-00-3	Chloroethane	4.1	U	ug/kg dry	4.1	6/21/18	6/21/18	CLP SOM02.4 V

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF26-SS-02 **Lab ID:** C183012-38 **MD No:**

Station ID: NF26 **Matrix:** Subsurface Soil **D No:** AZ76 CHM

Date Collected: 6/19/18 10:50

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
67-66-3	Chloroform	4.1	U	ug/kg dry	4.1	6/21/18	6/21/18	CLP SOM02.4 V
74-87-3	Chloromethane	4.1	U	ug/kg dry	4.1	6/21/18	6/21/18	CLP SOM02.4 V
156-59-2	cis-1,2-Dichloroethene	300	J, CLP02	ug/kg dry	4.1	6/21/18	6/21/18	CLP SOM02.4 V
10061-01-5	cis-1,3-Dichloropropene	4.1	U	ug/kg dry	4.1	6/21/18	6/21/18	CLP SOM02.4 V
110-82-7	Cyclohexane	4.1	U	ug/kg dry	4.1	6/21/18	6/21/18	CLP SOM02.4 V
124-48-1	Dibromochloromethane	4.1	U	ug/kg dry	4.1	6/21/18	6/21/18	CLP SOM02.4 V
75-71-8	Dichlorodifluoromethane (Freon 12)	4.1	U, J, QC-3	ug/kg dry	4.1	6/21/18	6/21/18	CLP SOM02.4 V
100-41-4	Ethyl Benzene	4.1	U	ug/kg dry	4.1	6/21/18	6/21/18	CLP SOM02.4 V
98-82-8	Isopropylbenzene	4.1	U	ug/kg dry	4.1	6/21/18	6/21/18	CLP SOM02.4 V
79-20-9	Methyl Acetate	4.1	U	ug/kg dry	4.1	6/21/18	6/21/18	CLP SOM02.4 V
591-78-6	Methyl Butyl Ketone	8.2	U	ug/kg dry	8.2	6/21/18	6/21/18	CLP SOM02.4 V
78-93-3	Methyl Ethyl Ketone	8.2	U	ug/kg dry	8.2	6/21/18	6/21/18	CLP SOM02.4 V
108-10-1	Methyl Isobutyl Ketone	8.2	U	ug/kg dry	8.2	6/21/18	6/21/18	CLP SOM02.4 V
1634-04-4	Methyl T-Butyl Ether (MTBE)	4.1	U	ug/kg dry	4.1	6/21/18	6/21/18	CLP SOM02.4 V
108-87-2	Methylcyclohexane	4.1	U	ug/kg dry	4.1	6/21/18	6/21/18	CLP SOM02.4 V
75-09-2	Methylene Chloride	4.1	U	ug/kg dry	4.1	6/21/18	6/21/18	CLP SOM02.4 V
95-47-6	o-Xylene	4.1	U	ug/kg dry	4.1	6/21/18	6/21/18	CLP SOM02.4 V
100-42-5	Styrene	4.1	U	ug/kg dry	4.1	6/21/18	6/21/18	CLP SOM02.4 V
127-18-4	Tetrachloroethene (Tetrachloroethylene)	4.1	U	ug/kg dry	4.1	6/21/18	6/21/18	CLP SOM02.4 V
108-88-3	Toluene	4.1	U	ug/kg dry	4.1	6/21/18	6/21/18	CLP SOM02.4 V
156-60-5	trans-1,2-Dichloroethene	8.7		ug/kg dry	4.1	6/21/18	6/21/18	CLP SOM02.4 V
10061-02-6	trans-1,3-Dichloropropene	4.1	U	ug/kg dry	4.1	6/21/18	6/21/18	CLP SOM02.4 V
79-01-6	Trichloroethene (Trichloroethylene)	4.1	U	ug/kg dry	4.1	6/21/18	6/21/18	CLP SOM02.4 V
75-69-4	Trichlorofluoromethane (Freon 11)	4.1	U	ug/kg dry	4.1	6/21/18	6/21/18	CLP SOM02.4 V
75-01-4	Vinyl chloride	4.1	U	ug/kg dry	4.1	6/21/18	6/21/18	CLP SOM02.4 V
Tentatively Identified Compounds:								
R4-0000	Tentatively Identified Compounds	4	U	ug/kg dry	4	6/21/18	6/21/18	CLP SOM02.4 V

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF27-GW-01 **Lab ID:** C183012-39 **MD No:**
Station ID: NF27 **Matrix:** Groundwater **D No:** AZA7 CHM

Date Collected: 6/21/18 9:25

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
R4-7156	(m- and/or p-)Xylene	0.50	U	ug/L	0.50	6/25/18	6/25/18	CLP SOM02.4
71-55-6	1,1,1-Trichloroethane	0.50	U	ug/L	0.50	6/25/18	6/25/18	CLP SOM02.4
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	ug/L	0.50	6/25/18	6/25/18	CLP SOM02.4
76-13-1	1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113)	0.50	U	ug/L	0.50	6/25/18	6/25/18	CLP SOM02.4
79-00-5	1,1,2-Trichloroethane	5.0		ug/L	0.50	6/25/18	6/25/18	CLP SOM02.4
75-34-3	1,1-Dichloroethane	1.5		ug/L	0.50	6/25/18	6/25/18	CLP SOM02.4
75-35-4	1,1-Dichloroethene (1,1-Dichloroethylene)	24	J, CLP02, QS-5	ug/L	0.50	6/25/18	6/25/18	CLP SOM02.4
87-61-6	1,2,3-Trichlorobenzene	0.50	U	ug/L	0.50	6/25/18	6/25/18	CLP SOM02.4
120-82-1	1,2,4-Trichlorobenzene	0.50	U	ug/L	0.50	6/25/18	6/25/18	CLP SOM02.4
96-12-8	1,2-Dibromo-3-Chloropropane (DBCP)	0.50	U, R, CLP32, CLP17	ug/L	0.50	6/25/18	6/25/18	CLP SOM02.4
106-93-4	1,2-Dibromoethane (EDB)	0.50	U	ug/L	0.50	6/25/18	6/25/18	CLP SOM02.4
95-50-1	1,2-Dichlorobenzene	0.50	U	ug/L	0.50	6/25/18	6/25/18	CLP SOM02.4
107-06-2	1,2-Dichloroethane	1.7		ug/L	0.50	6/25/18	6/25/18	CLP SOM02.4
78-87-5	1,2-Dichloropropane	0.50	U	ug/L	0.50	6/25/18	6/25/18	CLP SOM02.4
541-73-1	1,3-Dichlorobenzene	0.50	U	ug/L	0.50	6/25/18	6/25/18	CLP SOM02.4
106-46-7	1,4-Dichlorobenzene	0.50	U	ug/L	0.50	6/25/18	6/25/18	CLP SOM02.4
67-64-1	Acetone	16	J, CLP32, QS-4, CLP17	ug/L	5.0	6/25/18	6/25/18	CLP SOM02.4
71-43-2	Benzene	0.91		ug/L	0.50	6/25/18	6/25/18	CLP SOM02.4
74-97-5	Bromochloromethane	0.50	U	ug/L	0.50	6/25/18	6/25/18	CLP SOM02.4
75-27-4	Bromodichloromethane	0.50	U	ug/L	0.50	6/25/18	6/25/18	CLP SOM02.4
75-25-2	Bromoform	0.50	U	ug/L	0.50	6/25/18	6/25/18	CLP SOM02.4
74-83-9	Bromomethane	0.50	U, J, QC-1	ug/L	0.50	6/25/18	6/25/18	CLP SOM02.4
75-15-0	Carbon disulfide	0.50	U	ug/L	0.50	6/25/18	6/25/18	CLP SOM02.4
56-23-5	Carbon Tetrachloride	0.50	U	ug/L	0.50	6/25/18	6/25/18	CLP SOM02.4
108-90-7	Chlorobenzene	0.50	U	ug/L	0.50	6/25/18	6/25/18	CLP SOM02.4
75-00-3	Chloroethane	0.50	U	ug/L	0.50	6/25/18	6/25/18	CLP SOM02.4

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF27-GW-01 **Lab ID:** C183012-39 **MD No:**

Station ID: NF27 **Matrix:** Groundwater **D No:** AZA7 CHM

Date Collected: 6/21/18 9:25

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
67-66-3	Chloroform	0.96		ug/L	0.50	6/25/18	6/25/18	CLP SOM02.4
74-87-3	Chloromethane	0.50	U, J, QC-1	ug/L	0.50	6/25/18	6/25/18	CLP SOM02.4
156-59-2	cis-1,2-Dichloroethene	3800		ug/L	500	6/25/18	6/26/18	CLP SOM02.4
10061-01-5	cis-1,3-Dichloropropene	0.50	U	ug/L	0.50	6/25/18	6/25/18	CLP SOM02.4
110-82-7	Cyclohexane	0.50	U	ug/L	0.50	6/25/18	6/25/18	CLP SOM02.4
124-48-1	Dibromochloromethane	0.50	U	ug/L	0.50	6/25/18	6/25/18	CLP SOM02.4
75-71-8	Dichlorodifluoromethane (Freon 12)	0.50	U	ug/L	0.50	6/25/18	6/25/18	CLP SOM02.4
100-41-4	Ethyl Benzene	0.50	U	ug/L	0.50	6/25/18	6/25/18	CLP SOM02.4
98-82-8	Isopropylbenzene	0.50	U	ug/L	0.50	6/25/18	6/25/18	CLP SOM02.4
79-20-9	Methyl Acetate	0.50	U, R, CLP32, CLP17	ug/L	0.50	6/25/18	6/25/18	CLP SOM02.4
591-78-6	Methyl Butyl Ketone	5.0	U	ug/L	5.0	6/25/18	6/25/18	CLP SOM02.4
78-93-3	Methyl Ethyl Ketone	5.0	U, R, CLP32, QS-4, CLP17	ug/L	5.0	6/25/18	6/25/18	CLP SOM02.4
108-10-1	Methyl Isobutyl Ketone	5.0	U	ug/L	5.0	6/25/18	6/25/18	CLP SOM02.4
1634-04-4	Methyl T-Butyl Ether (MTBE)	0.50	U	ug/L	0.50	6/25/18	6/25/18	CLP SOM02.4
108-87-2	Methylcyclohexane	0.50	U	ug/L	0.50	6/25/18	6/25/18	CLP SOM02.4
75-09-2	Methylene Chloride	0.50	U	ug/L	0.50	6/25/18	6/25/18	CLP SOM02.4
95-47-6	o-Xylene	0.21	J, CLP01	ug/L	0.50	6/25/18	6/25/18	CLP SOM02.4
100-42-5	Styrene	0.50	U	ug/L	0.50	6/25/18	6/25/18	CLP SOM02.4
127-18-4	Tetrachloroethene (Tetrachloroethylene)	18		ug/L	0.50	6/25/18	6/25/18	CLP SOM02.4
108-88-3	Toluene	0.41	J, CLP01	ug/L	0.50	6/25/18	6/25/18	CLP SOM02.4
156-60-5	trans-1,2-Dichloroethene	780		ug/L	500	6/25/18	6/26/18	CLP SOM02.4
10061-02-6	trans-1,3-Dichloropropene	0.50	U	ug/L	0.50	6/25/18	6/25/18	CLP SOM02.4
79-01-6	Trichloroethene (Trichloroethylene)	27000		ug/L	2500	6/25/18	6/26/18	CLP SOM02.4
75-69-4	Trichlorofluoromethane (Freon 11)	0.50	U	ug/L	0.50	6/25/18	6/25/18	CLP SOM02.4
75-01-4	Vinyl chloride	100	J, CLP02	ug/L	0.50	6/25/18	6/25/18	CLP SOM02.4
Tentatively Identified Compounds:								
R4-0000	Tentatively Identified Compounds	0.5	U	ug/L	0.5	6/25/18	6/25/18	CLP SOM02.4

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF27-SS-01 **Lab ID:** C183012-40 **MD No:**

Station ID: NF27 **Matrix:** Subsurface Soil **D No:** AZ77 CHM

Date Collected: 6/20/18 10:25

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1644012	% Moisture	13		%		6/25/18	6/25/18	CLP VOA
R4-7156	(m- and/or p-)Xylene	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
71-55-6	1,1,1-Trichloroethane	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
79-34-5	1,1,2,2-Tetrachloroethane	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
76-13-1	1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113)	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
79-00-5	1,1,2-Trichloroethane	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
75-34-3	1,1-Dichloroethane	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
75-35-4	1,1-Dichloroethene (1,1-Dichloroethylene)	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
87-61-6	1,2,3-Trichlorobenzene	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
120-82-1	1,2,4-Trichlorobenzene	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
96-12-8	1,2-Dibromo-3-Chloropropane (DBCP)	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
106-93-4	1,2-Dibromoethane (EDB)	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
95-50-1	1,2-Dichlorobenzene	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
107-06-2	1,2-Dichloroethane	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
78-87-5	1,2-Dichloropropane	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
541-73-1	1,3-Dichlorobenzene	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
106-46-7	1,4-Dichlorobenzene	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
67-64-1	Acetone	33		ug/kg dry	8.1	6/25/18	6/25/18	CLP SOM02.4 V
71-43-2	Benzene	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
74-97-5	Bromochloromethane	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
75-27-4	Bromodichloromethane	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
75-25-2	Bromoform	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
74-83-9	Bromomethane	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
75-15-0	Carbon disulfide	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
56-23-5	Carbon Tetrachloride	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
108-90-7	Chlorobenzene	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
75-00-3	Chloroethane	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V

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D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF27-SS-01 **Lab ID:** C183012-40 **MD No:**
Station ID: NF27 **Matrix:** Subsurface Soil **D No:** AZ77 CHM

Date Collected: 6/20/18 10:25

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
67-66-3	Chloroform	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
74-87-3	Chloromethane	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
156-59-2	cis-1,2-Dichloroethene	100		ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
10061-01-5	cis-1,3-Dichloropropene	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
110-82-7	Cyclohexane	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
124-48-1	Dibromochloromethane	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
75-71-8	Dichlorodifluoromethane (Freon 12)	4.1	U, J, QC-3	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
100-41-4	Ethyl Benzene	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
98-82-8	Isopropylbenzene	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
79-20-9	Methyl Acetate	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
591-78-6	Methyl Butyl Ketone	8.1	U	ug/kg dry	8.1	6/25/18	6/25/18	CLP SOM02.4 V
78-93-3	Methyl Ethyl Ketone	8.1	U	ug/kg dry	8.1	6/25/18	6/25/18	CLP SOM02.4 V
108-10-1	Methyl Isobutyl Ketone	8.1	U	ug/kg dry	8.1	6/25/18	6/25/18	CLP SOM02.4 V
1634-04-4	Methyl T-Butyl Ether (MTBE)	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
108-87-2	Methylcyclohexane	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
75-09-2	Methylene Chloride	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
95-47-6	o-Xylene	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
100-42-5	Styrene	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
127-18-4	Tetrachloroethene (Tetrachloroethylene)	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
108-88-3	Toluene	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
156-60-5	trans-1,2-Dichloroethene	35		ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
10061-02-6	trans-1,3-Dichloropropene	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
79-01-6	Trichloroethene (Trichloroethylene)	31		ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
75-69-4	Trichlorofluoromethane (Freon 11)	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
75-01-4	Vinyl chloride	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
Tentatively Identified Compounds:								
R4-0000	Tentatively Identified Compounds	4	U	ug/kg dry	4	6/25/18	6/25/18	CLP SOM02.4 V

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF27-SS-02 **Lab ID:** C183012-41 **MD No:**
Station ID: NF27 **Matrix:** Subsurface Soil **D No:** AZ78 CHM

Date Collected: 6/20/18 10:30

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1644012	% Moisture	18		%		6/25/18	6/25/18	CLP VOA
R4-7156	(m- and/or p-)Xylene	3.9	U	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
71-55-6	1,1,1-Trichloroethane	3.9	U	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
79-34-5	1,1,2,2-Tetrachloroethane	3.9	U	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
76-13-1	1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113)	3.9	U	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
79-00-5	1,1,2-Trichloroethane	3.9	U	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
75-34-3	1,1-Dichloroethane	3.9	U	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
75-35-4	1,1-Dichloroethene (1,1-Dichloroethylene)	3.9	U	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
87-61-6	1,2,3-Trichlorobenzene	3.9	U, J, QI-1	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
120-82-1	1,2,4-Trichlorobenzene	3.9	U, J, QI-1	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
96-12-8	1,2-Dibromo-3-Chloropropane (DBCP)	3.9	U, J, QI-1	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
106-93-4	1,2-Dibromoethane (EDB)	3.9	U	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
95-50-1	1,2-Dichlorobenzene	3.9	U, J, QI-1	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
107-06-2	1,2-Dichloroethane	3.9	U	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
78-87-5	1,2-Dichloropropane	3.9	U	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
541-73-1	1,3-Dichlorobenzene	3.9	U, J, QI-1	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
106-46-7	1,4-Dichlorobenzene	3.9	U, J, QI-1	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
67-64-1	Acetone	49		ug/kg dry	7.8	6/25/18	6/25/18	CLP SOM02.4 V
71-43-2	Benzene	3.9	U	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
74-97-5	Bromochloromethane	3.9	U	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
75-27-4	Bromodichloromethane	3.9	U	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
75-25-2	Bromoform	3.9	U, J, QI-1	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
74-83-9	Bromomethane	3.9	U	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
75-15-0	Carbon disulfide	3.9	U	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
56-23-5	Carbon Tetrachloride	3.9	U	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
108-90-7	Chlorobenzene	3.9	U	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
75-00-3	Chloroethane	3.9	U	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF27-SS-02 **Lab ID:** C183012-41 **MD No:**
Station ID: NF27 **Matrix:** Subsurface Soil **D No:** AZ78 CHM

Date Collected: 6/20/18 10:30

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
67-66-3	Chloroform	3.9	U	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
74-87-3	Chloromethane	3.9	U	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
156-59-2	cis-1,2-Dichloroethene	860		ug/kg dry	270	6/25/18	6/26/18	CLP SOM02.4 V
10061-01-5	cis-1,3-Dichloropropene	3.9	U	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
110-82-7	Cyclohexane	3.9	U	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
124-48-1	Dibromochloromethane	3.9	U	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
75-71-8	Dichlorodifluoromethane (Freon 12)	3.9	U, J, QC-3	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
100-41-4	Ethyl Benzene	3.9	U	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
98-82-8	Isopropylbenzene	3.9	U	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
79-20-9	Methyl Acetate	3.9	U	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
591-78-6	Methyl Butyl Ketone	7.8	U	ug/kg dry	7.8	6/25/18	6/25/18	CLP SOM02.4 V
78-93-3	Methyl Ethyl Ketone	7.8	U	ug/kg dry	7.8	6/25/18	6/25/18	CLP SOM02.4 V
108-10-1	Methyl Isobutyl Ketone	7.8	U	ug/kg dry	7.8	6/25/18	6/25/18	CLP SOM02.4 V
1634-04-4	Methyl T-Butyl Ether (MTBE)	3.9	U	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
108-87-2	Methylcyclohexane	3.9	U	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
75-09-2	Methylene Chloride	4.1	U, CLP11	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
95-47-6	o-Xylene	3.9	U	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
100-42-5	Styrene	3.9	U	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
127-18-4	Tetrachloroethene (Tetrachloroethylene)	3.9	U	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
108-88-3	Toluene	3.9	U	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
156-60-5	trans-1,2-Dichloroethene	270		ug/kg dry	270	6/25/18	6/26/18	CLP SOM02.4 V
10061-02-6	trans-1,3-Dichloropropene	3.9	U	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
79-01-6	Trichloroethene (Trichloroethylene)	43		ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
75-69-4	Trichlorofluoromethane (Freon 11)	3.9	U	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
75-01-4	Vinyl chloride	3.9	U	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
Tentatively Identified Compounds:								
R4-0000	Tentatively Identified Compounds	4	U	ug/kg dry	4	6/25/18	6/25/18	CLP SOM02.4 V

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF28-GW-01 **Lab ID:** C183012-42 **MD No:**

Station ID: NF28 **Matrix:** Groundwater **D No:** AZA8 CHM

Date Collected: 6/20/18 16:00

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
R4-7156	(m- and/or p-)Xylene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
71-55-6	1,1,1-Trichloroethane	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
76-13-1	1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113)	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
79-00-5	1,1,2-Trichloroethane	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
75-34-3	1,1-Dichloroethane	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
75-35-4	1,1-Dichloroethene (1,1-Dichloroethylene)	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
87-61-6	1,2,3-Trichlorobenzene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
120-82-1	1,2,4-Trichlorobenzene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
96-12-8	1,2-Dibromo-3-Chloropropane (DBCP)	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
106-93-4	1,2-Dibromoethane (EDB)	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
95-50-1	1,2-Dichlorobenzene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
107-06-2	1,2-Dichloroethane	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
78-87-5	1,2-Dichloropropane	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
541-73-1	1,3-Dichlorobenzene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
106-46-7	1,4-Dichlorobenzene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
67-64-1	Acetone	5.0	U, R, CLP32, CLP17	ug/L	5.0	6/26/18	6/26/18	CLP SOM02.4
71-43-2	Benzene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
74-97-5	Bromochloromethane	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
75-27-4	Bromodichloromethane	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
75-25-2	Bromoform	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
74-83-9	Bromomethane	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
75-15-0	Carbon disulfide	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
56-23-5	Carbon Tetrachloride	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
108-90-7	Chlorobenzene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
75-00-3	Chloroethane	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
67-66-3	Chloroform	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF28-GW-01 **Lab ID:** C183012-42 **MD No:**

Station ID: NF28 **Matrix:** Groundwater **D No:** AZA8 CHM

Date Collected: 6/20/18 16:00

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
74-87-3	Chloromethane	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
156-59-2	cis-1,2-Dichloroethene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
10061-01-5	cis-1,3-Dichloropropene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
110-82-7	Cyclohexane	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
124-48-1	Dibromochloromethane	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
75-71-8	Dichlorodifluoromethane (Freon 12)	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
100-41-4	Ethyl Benzene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
98-82-8	Isopropylbenzene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
79-20-9	Methyl Acetate	0.50	U, J, QC-3	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
591-78-6	Methyl Butyl Ketone	5.0	U	ug/L	5.0	6/26/18	6/26/18	CLP SOM02.4
78-93-3	Methyl Ethyl Ketone	5.0	U, J, QC-1, QC-3	ug/L	5.0	6/26/18	6/26/18	CLP SOM02.4
108-10-1	Methyl Isobutyl Ketone	5.0	U	ug/L	5.0	6/26/18	6/26/18	CLP SOM02.4
1634-04-4	Methyl T-Butyl Ether (MTBE)	0.70		ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
108-87-2	Methylcyclohexane	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
75-09-2	Methylene Chloride	0.50	U, J, CLP16	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
95-47-6	o-Xylene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
100-42-5	Styrene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
127-18-4	Tetrachloroethene (Tetrachloroethylene)	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
108-88-3	Toluene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
156-60-5	trans-1,2-Dichloroethene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
10061-02-6	trans-1,3-Dichloropropene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
79-01-6	Trichloroethene (Trichloroethylene)	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
75-69-4	Trichlorofluoromethane (Freon 11)	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
75-01-4	Vinyl chloride	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
Tentatively Identified Compounds:								
124-19-6	Nonanal	0.6	NJ, CLP15	ug/L		6/26/18	6/26/18	CLP SOM02.4
R4-6500	Petroleum Product:		N, CLP15			6/26/18	6/26/18	CLP SOM02.4

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF28-SS-01 **Lab ID:** C183012-43 **MD No:**

Station ID: NF28 **Matrix:** Subsurface Soil **D No:** AZ79 CHM

Date Collected: 6/19/18 14:50

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1644012	% Moisture	16		%		6/22/18	6/22/18	CLP VOA
R4-7156	(m- and/or p-)Xylene	4.6	U	ug/kg dry	4.6	6/22/18	6/22/18	CLP SOM02.4 V
71-55-6	1,1,1-Trichloroethane	4.6	U	ug/kg dry	4.6	6/22/18	6/22/18	CLP SOM02.4 V
79-34-5	1,1,2,2-Tetrachloroethane	4.6	U	ug/kg dry	4.6	6/22/18	6/22/18	CLP SOM02.4 V
76-13-1	1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113)	4.6	U	ug/kg dry	4.6	6/22/18	6/22/18	CLP SOM02.4 V
79-00-5	1,1,2-Trichloroethane	4.6	U	ug/kg dry	4.6	6/22/18	6/22/18	CLP SOM02.4 V
75-34-3	1,1-Dichloroethane	4.6	U	ug/kg dry	4.6	6/22/18	6/22/18	CLP SOM02.4 V
75-35-4	1,1-Dichloroethene (1,1-Dichloroethylene)	4.6	U	ug/kg dry	4.6	6/22/18	6/22/18	CLP SOM02.4 V
87-61-6	1,2,3-Trichlorobenzene	4.6	U	ug/kg dry	4.6	6/22/18	6/22/18	CLP SOM02.4 V
120-82-1	1,2,4-Trichlorobenzene	4.6	U	ug/kg dry	4.6	6/22/18	6/22/18	CLP SOM02.4 V
96-12-8	1,2-Dibromo-3-Chloropropane (DBCP)	4.6	U	ug/kg dry	4.6	6/22/18	6/22/18	CLP SOM02.4 V
106-93-4	1,2-Dibromoethane (EDB)	4.6	U	ug/kg dry	4.6	6/22/18	6/22/18	CLP SOM02.4 V
95-50-1	1,2-Dichlorobenzene	4.6	U	ug/kg dry	4.6	6/22/18	6/22/18	CLP SOM02.4 V
107-06-2	1,2-Dichloroethane	4.6	U	ug/kg dry	4.6	6/22/18	6/22/18	CLP SOM02.4 V
78-87-5	1,2-Dichloropropane	4.6	U	ug/kg dry	4.6	6/22/18	6/22/18	CLP SOM02.4 V
541-73-1	1,3-Dichlorobenzene	4.6	U	ug/kg dry	4.6	6/22/18	6/22/18	CLP SOM02.4 V
106-46-7	1,4-Dichlorobenzene	4.6	U	ug/kg dry	4.6	6/22/18	6/22/18	CLP SOM02.4 V
67-64-1	Acetone	9.1	U	ug/kg dry	9.1	6/22/18	6/22/18	CLP SOM02.4 V
71-43-2	Benzene	4.6	U	ug/kg dry	4.6	6/22/18	6/22/18	CLP SOM02.4 V
74-97-5	Bromochloromethane	4.6	U	ug/kg dry	4.6	6/22/18	6/22/18	CLP SOM02.4 V
75-27-4	Bromodichloromethane	4.6	U	ug/kg dry	4.6	6/22/18	6/22/18	CLP SOM02.4 V
75-25-2	Bromoform	4.6	U	ug/kg dry	4.6	6/22/18	6/22/18	CLP SOM02.4 V
74-83-9	Bromomethane	4.6	U	ug/kg dry	4.6	6/22/18	6/22/18	CLP SOM02.4 V
75-15-0	Carbon disulfide	4.6	U	ug/kg dry	4.6	6/22/18	6/22/18	CLP SOM02.4 V
56-23-5	Carbon Tetrachloride	4.6	U	ug/kg dry	4.6	6/22/18	6/22/18	CLP SOM02.4 V
108-90-7	Chlorobenzene	4.6	U	ug/kg dry	4.6	6/22/18	6/22/18	CLP SOM02.4 V
75-00-3	Chloroethane	4.6	U	ug/kg dry	4.6	6/22/18	6/22/18	CLP SOM02.4 V

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF28-SS-01 **Lab ID:** C183012-43 **MD No:**

Station ID: NF28 **Matrix:** Subsurface Soil **D No:** AZ79 CHM

Date Collected: 6/19/18 14:50

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
67-66-3	Chloroform	4.6	U	ug/kg dry	4.6	6/22/18	6/22/18	CLP SOM02.4 V
74-87-3	Chloromethane	4.6	U	ug/kg dry	4.6	6/22/18	6/22/18	CLP SOM02.4 V
156-59-2	cis-1,2-Dichloroethene	4.6	U	ug/kg dry	4.6	6/22/18	6/22/18	CLP SOM02.4 V
10061-01-5	cis-1,3-Dichloropropene	4.6	U	ug/kg dry	4.6	6/22/18	6/22/18	CLP SOM02.4 V
110-82-7	Cyclohexane	4.6	U	ug/kg dry	4.6	6/22/18	6/22/18	CLP SOM02.4 V
124-48-1	Dibromochloromethane	4.6	U	ug/kg dry	4.6	6/22/18	6/22/18	CLP SOM02.4 V
75-71-8	Dichlorodifluoromethane (Freon 12)	4.6	U, J, QC-3	ug/kg dry	4.6	6/22/18	6/22/18	CLP SOM02.4 V
100-41-4	Ethyl Benzene	4.6	U	ug/kg dry	4.6	6/22/18	6/22/18	CLP SOM02.4 V
98-82-8	Isopropylbenzene	4.6	U	ug/kg dry	4.6	6/22/18	6/22/18	CLP SOM02.4 V
79-20-9	Methyl Acetate	4.6	U	ug/kg dry	4.6	6/22/18	6/22/18	CLP SOM02.4 V
591-78-6	Methyl Butyl Ketone	9.1	U	ug/kg dry	9.1	6/22/18	6/22/18	CLP SOM02.4 V
78-93-3	Methyl Ethyl Ketone	9.1	U	ug/kg dry	9.1	6/22/18	6/22/18	CLP SOM02.4 V
108-10-1	Methyl Isobutyl Ketone	9.1	U	ug/kg dry	9.1	6/22/18	6/22/18	CLP SOM02.4 V
1634-04-4	Methyl T-Butyl Ether (MTBE)	4.6	U	ug/kg dry	4.6	6/22/18	6/22/18	CLP SOM02.4 V
108-87-2	Methylcyclohexane	4.6	U	ug/kg dry	4.6	6/22/18	6/22/18	CLP SOM02.4 V
75-09-2	Methylene Chloride	4.6	U	ug/kg dry	4.6	6/22/18	6/22/18	CLP SOM02.4 V
95-47-6	o-Xylene	4.6	U	ug/kg dry	4.6	6/22/18	6/22/18	CLP SOM02.4 V
100-42-5	Styrene	4.6	U	ug/kg dry	4.6	6/22/18	6/22/18	CLP SOM02.4 V
127-18-4	Tetrachloroethene (Tetrachloroethylene)	4.6	U	ug/kg dry	4.6	6/22/18	6/22/18	CLP SOM02.4 V
108-88-3	Toluene	4.6	U	ug/kg dry	4.6	6/22/18	6/22/18	CLP SOM02.4 V
156-60-5	trans-1,2-Dichloroethene	4.6	U	ug/kg dry	4.6	6/22/18	6/22/18	CLP SOM02.4 V
10061-02-6	trans-1,3-Dichloropropene	4.6	U	ug/kg dry	4.6	6/22/18	6/22/18	CLP SOM02.4 V
79-01-6	Trichloroethene (Trichloroethylene)	4.6	U	ug/kg dry	4.6	6/22/18	6/22/18	CLP SOM02.4 V
75-69-4	Trichlorofluoromethane (Freon 11)	4.6	U	ug/kg dry	4.6	6/22/18	6/22/18	CLP SOM02.4 V
75-01-4	Vinyl chloride	4.6	U	ug/kg dry	4.6	6/22/18	6/22/18	CLP SOM02.4 V
Tentatively Identified Compounds:								
R4-0000	Tentatively Identified Compounds	5	U	ug/kg dry	5	6/22/18	6/22/18	CLP SOM02.4 V

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF28-SS-02 **Lab ID:** C183012-44 **MD No:**

Station ID: NF28 **Matrix:** Subsurface Soil **D No:** AZ80 CHM

Date Collected: 6/19/18 14:55

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1644012	% Moisture	16		%		6/22/18	6/22/18	CLP VOA
R4-7156	(m- and/or p-)Xylene	4.1	U	ug/kg dry	4.1	6/22/18	6/22/18	CLP SOM02.4 V
71-55-6	1,1,1-Trichloroethane	4.1	U	ug/kg dry	4.1	6/22/18	6/22/18	CLP SOM02.4 V
79-34-5	1,1,2,2-Tetrachloroethane	4.1	U	ug/kg dry	4.1	6/22/18	6/22/18	CLP SOM02.4 V
76-13-1	1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113)	4.1	U	ug/kg dry	4.1	6/22/18	6/22/18	CLP SOM02.4 V
79-00-5	1,1,2-Trichloroethane	4.1	U	ug/kg dry	4.1	6/22/18	6/22/18	CLP SOM02.4 V
75-34-3	1,1-Dichloroethane	4.1	U	ug/kg dry	4.1	6/22/18	6/22/18	CLP SOM02.4 V
75-35-4	1,1-Dichloroethene (1,1-Dichloroethylene)	4.1	U	ug/kg dry	4.1	6/22/18	6/22/18	CLP SOM02.4 V
87-61-6	1,2,3-Trichlorobenzene	4.1	U	ug/kg dry	4.1	6/22/18	6/22/18	CLP SOM02.4 V
120-82-1	1,2,4-Trichlorobenzene	4.1	U	ug/kg dry	4.1	6/22/18	6/22/18	CLP SOM02.4 V
96-12-8	1,2-Dibromo-3-Chloropropane (DBCP)	4.1	U	ug/kg dry	4.1	6/22/18	6/22/18	CLP SOM02.4 V
106-93-4	1,2-Dibromoethane (EDB)	4.1	U	ug/kg dry	4.1	6/22/18	6/22/18	CLP SOM02.4 V
95-50-1	1,2-Dichlorobenzene	4.1	U	ug/kg dry	4.1	6/22/18	6/22/18	CLP SOM02.4 V
107-06-2	1,2-Dichloroethane	4.1	U	ug/kg dry	4.1	6/22/18	6/22/18	CLP SOM02.4 V
78-87-5	1,2-Dichloropropane	4.1	U	ug/kg dry	4.1	6/22/18	6/22/18	CLP SOM02.4 V
541-73-1	1,3-Dichlorobenzene	4.1	U	ug/kg dry	4.1	6/22/18	6/22/18	CLP SOM02.4 V
106-46-7	1,4-Dichlorobenzene	4.1	U	ug/kg dry	4.1	6/22/18	6/22/18	CLP SOM02.4 V
67-64-1	Acetone	8.2	U	ug/kg dry	8.2	6/22/18	6/22/18	CLP SOM02.4 V
71-43-2	Benzene	4.1	U	ug/kg dry	4.1	6/22/18	6/22/18	CLP SOM02.4 V
74-97-5	Bromochloromethane	4.1	U	ug/kg dry	4.1	6/22/18	6/22/18	CLP SOM02.4 V
75-27-4	Bromodichloromethane	4.1	U	ug/kg dry	4.1	6/22/18	6/22/18	CLP SOM02.4 V
75-25-2	Bromoform	4.1	U	ug/kg dry	4.1	6/22/18	6/22/18	CLP SOM02.4 V
74-83-9	Bromomethane	4.1	U	ug/kg dry	4.1	6/22/18	6/22/18	CLP SOM02.4 V
75-15-0	Carbon disulfide	4.1	U	ug/kg dry	4.1	6/22/18	6/22/18	CLP SOM02.4 V
56-23-5	Carbon Tetrachloride	4.1	U	ug/kg dry	4.1	6/22/18	6/22/18	CLP SOM02.4 V
108-90-7	Chlorobenzene	4.1	U	ug/kg dry	4.1	6/22/18	6/22/18	CLP SOM02.4 V
75-00-3	Chloroethane	4.1	U	ug/kg dry	4.1	6/22/18	6/22/18	CLP SOM02.4 V

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF28-SS-02 **Lab ID:** C183012-44 **MD No:**
Station ID: NF28 **Matrix:** Subsurface Soil **D No:** AZ80 CHM

Date Collected: 6/19/18 14:55

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
67-66-3	Chloroform	4.1	U	ug/kg dry	4.1	6/22/18	6/22/18	CLP SOM02.4 V
74-87-3	Chloromethane	4.1	U	ug/kg dry	4.1	6/22/18	6/22/18	CLP SOM02.4 V
156-59-2	cis-1,2-Dichloroethene	4.1	U	ug/kg dry	4.1	6/22/18	6/22/18	CLP SOM02.4 V
10061-01-5	cis-1,3-Dichloropropene	4.1	U	ug/kg dry	4.1	6/22/18	6/22/18	CLP SOM02.4 V
110-82-7	Cyclohexane	4.1	U	ug/kg dry	4.1	6/22/18	6/22/18	CLP SOM02.4 V
124-48-1	Dibromochloromethane	4.1	U	ug/kg dry	4.1	6/22/18	6/22/18	CLP SOM02.4 V
75-71-8	Dichlorodifluoromethane (Freon 12)	4.1	U, J, QC-3	ug/kg dry	4.1	6/22/18	6/22/18	CLP SOM02.4 V
100-41-4	Ethyl Benzene	4.1	U	ug/kg dry	4.1	6/22/18	6/22/18	CLP SOM02.4 V
98-82-8	Isopropylbenzene	4.1	U	ug/kg dry	4.1	6/22/18	6/22/18	CLP SOM02.4 V
79-20-9	Methyl Acetate	4.1	U	ug/kg dry	4.1	6/22/18	6/22/18	CLP SOM02.4 V
591-78-6	Methyl Butyl Ketone	8.2	U	ug/kg dry	8.2	6/22/18	6/22/18	CLP SOM02.4 V
78-93-3	Methyl Ethyl Ketone	8.2	U	ug/kg dry	8.2	6/22/18	6/22/18	CLP SOM02.4 V
108-10-1	Methyl Isobutyl Ketone	8.2	U	ug/kg dry	8.2	6/22/18	6/22/18	CLP SOM02.4 V
1634-04-4	Methyl T-Butyl Ether (MTBE)	4.1	U	ug/kg dry	4.1	6/22/18	6/22/18	CLP SOM02.4 V
108-87-2	Methylcyclohexane	4.1	U	ug/kg dry	4.1	6/22/18	6/22/18	CLP SOM02.4 V
75-09-2	Methylene Chloride	4.1	U	ug/kg dry	4.1	6/22/18	6/22/18	CLP SOM02.4 V
95-47-6	o-Xylene	4.1	U	ug/kg dry	4.1	6/22/18	6/22/18	CLP SOM02.4 V
100-42-5	Styrene	4.1	U	ug/kg dry	4.1	6/22/18	6/22/18	CLP SOM02.4 V
127-18-4	Tetrachloroethene (Tetrachloroethylene)	4.1	U	ug/kg dry	4.1	6/22/18	6/22/18	CLP SOM02.4 V
108-88-3	Toluene	4.1	U	ug/kg dry	4.1	6/22/18	6/22/18	CLP SOM02.4 V
156-60-5	trans-1,2-Dichloroethene	4.1	U	ug/kg dry	4.1	6/22/18	6/22/18	CLP SOM02.4 V
10061-02-6	trans-1,3-Dichloropropene	4.1	U	ug/kg dry	4.1	6/22/18	6/22/18	CLP SOM02.4 V
79-01-6	Trichloroethene (Trichloroethylene)	4.1	U	ug/kg dry	4.1	6/22/18	6/22/18	CLP SOM02.4 V
75-69-4	Trichlorofluoromethane (Freon 11)	4.1	U	ug/kg dry	4.1	6/22/18	6/22/18	CLP SOM02.4 V
75-01-4	Vinyl chloride	4.1	U	ug/kg dry	4.1	6/22/18	6/22/18	CLP SOM02.4 V
Tentatively Identified Compounds:								
R4-0000	Tentatively Identified Compounds	4	U	ug/kg dry	4	6/22/18	6/22/18	CLP SOM02.4 V

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF29-GW-01 **Lab ID:** C183012-45 **MD No:**

Station ID: NF29 **Matrix:** Groundwater **D No:** AZA9 CHM

Date Collected: 6/19/18 14:50

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
R4-7156	(m- and/or p-)Xylene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
71-55-6	1,1,1-Trichloroethane	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
76-13-1	1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113)	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
79-00-5	1,1,2-Trichloroethane	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
75-34-3	1,1-Dichloroethane	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
75-35-4	1,1-Dichloroethene (1,1-Dichloroethylene)	0.50	U, J, QS-3	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
87-61-6	1,2,3-Trichlorobenzene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
120-82-1	1,2,4-Trichlorobenzene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
96-12-8	1,2-Dibromo-3-Chloropropane (DBCP)	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
106-93-4	1,2-Dibromoethane (EDB)	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
95-50-1	1,2-Dichlorobenzene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
107-06-2	1,2-Dichloroethane	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
78-87-5	1,2-Dichloropropane	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
541-73-1	1,3-Dichlorobenzene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
106-46-7	1,4-Dichlorobenzene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
67-64-1	Acetone	5.0	U, R, CLP32, CLP17	ug/L	5.0	6/26/18	6/26/18	CLP SOM02.4
71-43-2	Benzene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
74-97-5	Bromochloromethane	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
75-27-4	Bromodichloromethane	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
75-25-2	Bromoform	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
74-83-9	Bromomethane	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
75-15-0	Carbon disulfide	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
56-23-5	Carbon Tetrachloride	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
108-90-7	Chlorobenzene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
75-00-3	Chloroethane	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
67-66-3	Chloroform	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF29-GW-01 **Lab ID:** C183012-45 **MD No:**

Station ID: NF29 **Matrix:** Groundwater **D No:** AZA9 CHM

Date Collected: 6/19/18 14:50

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
74-87-3	Chloromethane	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
156-59-2	cis-1,2-Dichloroethene	0.50	U, J, QS-3	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
10061-01-5	cis-1,3-Dichloropropene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
110-82-7	Cyclohexane	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
124-48-1	Dibromochloromethane	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
75-71-8	Dichlorodifluoromethane (Freon 12)	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
100-41-4	Ethyl Benzene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
98-82-8	Isopropylbenzene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
79-20-9	Methyl Acetate	0.50	U, J, QC-3	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
591-78-6	Methyl Butyl Ketone	5.0	U	ug/L	5.0	6/26/18	6/26/18	CLP SOM02.4
78-93-3	Methyl Ethyl Ketone	5.0	U, J, QC-1, QC-3	ug/L	5.0	6/26/18	6/26/18	CLP SOM02.4
108-10-1	Methyl Isobutyl Ketone	5.0	U	ug/L	5.0	6/26/18	6/26/18	CLP SOM02.4
1634-04-4	Methyl T-Butyl Ether (MTBE)	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
108-87-2	Methylcyclohexane	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
75-09-2	Methylene Chloride	0.50	U, J, CLP16	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
95-47-6	o-Xylene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
100-42-5	Styrene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
127-18-4	Tetrachloroethene (Tetrachloroethylene)	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
108-88-3	Toluene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
156-60-5	trans-1,2-Dichloroethene	0.50	U, J, QS-3	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
10061-02-6	trans-1,3-Dichloropropene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
79-01-6	Trichloroethene (Trichloroethylene)	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
75-69-4	Trichlorofluoromethane (Freon 11)	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
75-01-4	Vinyl chloride	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
Tentatively Identified Compounds:								
R4-0000	Tentatively Identified Compounds	0.5	U	ug/L	0.5	6/26/18	6/26/18	CLP SOM02.4

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Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF29-SS-01 **Lab ID:** C183012-46 **MD No:**

Station ID: NF29 **Matrix:** Surface Soil **D No:** AZ81 CHM

Date Collected: 6/19/18 13:55

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1644012	% Moisture	20		%		6/21/18	6/21/18	CLP VOA
R4-7156	(m- and/or p-)Xylene	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
71-55-6	1,1,1-Trichloroethane	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
79-34-5	1,1,2,2-Tetrachloroethane	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
76-13-1	1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113)	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
79-00-5	1,1,2-Trichloroethane	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
75-34-3	1,1-Dichloroethane	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
75-35-4	1,1-Dichloroethene (1,1-Dichloroethylene)	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
87-61-6	1,2,3-Trichlorobenzene	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
120-82-1	1,2,4-Trichlorobenzene	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
96-12-8	1,2-Dibromo-3-Chloropropane (DBCP)	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
106-93-4	1,2-Dibromoethane (EDB)	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
95-50-1	1,2-Dichlorobenzene	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
107-06-2	1,2-Dichloroethane	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
78-87-5	1,2-Dichloropropane	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
541-73-1	1,3-Dichlorobenzene	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
106-46-7	1,4-Dichlorobenzene	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
67-64-1	Acetone	8.5	U	ug/kg dry	8.5	6/21/18	6/21/18	CLP SOM02.4 V
71-43-2	Benzene	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
74-97-5	Bromochloromethane	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
75-27-4	Bromodichloromethane	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
75-25-2	Bromoform	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
74-83-9	Bromomethane	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
75-15-0	Carbon disulfide	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
56-23-5	Carbon Tetrachloride	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
108-90-7	Chlorobenzene	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
75-00-3	Chloroethane	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V

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D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF29-SS-01 **Lab ID:** C183012-46 **MD No:**

Station ID: NF29 **Matrix:** Surface Soil **D No:** AZ81 CHM

Date Collected: 6/19/18 13:55

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
67-66-3	Chloroform	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
74-87-3	Chloromethane	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
156-59-2	cis-1,2-Dichloroethene	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
10061-01-5	cis-1,3-Dichloropropene	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
110-82-7	Cyclohexane	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
124-48-1	Dibromochloromethane	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
75-71-8	Dichlorodifluoromethane (Freon 12)	4.2	U, J, QC-3	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
100-41-4	Ethyl Benzene	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
98-82-8	Isopropylbenzene	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
79-20-9	Methyl Acetate	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
591-78-6	Methyl Butyl Ketone	8.5	U	ug/kg dry	8.5	6/21/18	6/21/18	CLP SOM02.4 V
78-93-3	Methyl Ethyl Ketone	8.5	U	ug/kg dry	8.5	6/21/18	6/21/18	CLP SOM02.4 V
108-10-1	Methyl Isobutyl Ketone	8.5	U	ug/kg dry	8.5	6/21/18	6/21/18	CLP SOM02.4 V
1634-04-4	Methyl T-Butyl Ether (MTBE)	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
108-87-2	Methylcyclohexane	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
75-09-2	Methylene Chloride	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
95-47-6	o-Xylene	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
100-42-5	Styrene	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
127-18-4	Tetrachloroethene (Tetrachloroethylene)	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
108-88-3	Toluene	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
156-60-5	trans-1,2-Dichloroethene	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
10061-02-6	trans-1,3-Dichloropropene	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
79-01-6	Trichloroethene (Trichloroethylene)	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
75-69-4	Trichlorofluoromethane (Freon 11)	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
75-01-4	Vinyl chloride	4.2	U	ug/kg dry	4.2	6/21/18	6/21/18	CLP SOM02.4 V
Tentatively Identified Compounds:								
R4-0000	Tentatively Identified Compounds	4	U	ug/kg dry	4	6/21/18	6/21/18	CLP SOM02.4 V

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF29-SS-02 **Lab ID:** C183012-47 **MD No:**

Station ID: NF29 **Matrix:** Subsurface Soil **D No:** AZ82 CHM

Date Collected: 6/19/18 14:00

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1644012	% Moisture	13		%		6/22/18	6/22/18	CLP VOA
R4-7156	(m- and/or p-)Xylene	3.8	U	ug/kg dry	3.8	6/22/18	6/22/18	CLP SOM02.4 V
71-55-6	1,1,1-Trichloroethane	3.8	U	ug/kg dry	3.8	6/22/18	6/22/18	CLP SOM02.4 V
79-34-5	1,1,2,2-Tetrachloroethane	3.8	U	ug/kg dry	3.8	6/22/18	6/22/18	CLP SOM02.4 V
76-13-1	1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113)	3.8	U	ug/kg dry	3.8	6/22/18	6/22/18	CLP SOM02.4 V
79-00-5	1,1,2-Trichloroethane	3.8	U	ug/kg dry	3.8	6/22/18	6/22/18	CLP SOM02.4 V
75-34-3	1,1-Dichloroethane	3.8	U	ug/kg dry	3.8	6/22/18	6/22/18	CLP SOM02.4 V
75-35-4	1,1-Dichloroethene (1,1-Dichloroethylene)	3.8	U	ug/kg dry	3.8	6/22/18	6/22/18	CLP SOM02.4 V
87-61-6	1,2,3-Trichlorobenzene	3.8	U	ug/kg dry	3.8	6/22/18	6/22/18	CLP SOM02.4 V
120-82-1	1,2,4-Trichlorobenzene	3.8	U	ug/kg dry	3.8	6/22/18	6/22/18	CLP SOM02.4 V
96-12-8	1,2-Dibromo-3-Chloropropane (DBCP)	3.8	U	ug/kg dry	3.8	6/22/18	6/22/18	CLP SOM02.4 V
106-93-4	1,2-Dibromoethane (EDB)	3.8	U	ug/kg dry	3.8	6/22/18	6/22/18	CLP SOM02.4 V
95-50-1	1,2-Dichlorobenzene	3.8	U	ug/kg dry	3.8	6/22/18	6/22/18	CLP SOM02.4 V
107-06-2	1,2-Dichloroethane	3.8	U	ug/kg dry	3.8	6/22/18	6/22/18	CLP SOM02.4 V
78-87-5	1,2-Dichloropropane	3.8	U	ug/kg dry	3.8	6/22/18	6/22/18	CLP SOM02.4 V
541-73-1	1,3-Dichlorobenzene	3.8	U	ug/kg dry	3.8	6/22/18	6/22/18	CLP SOM02.4 V
106-46-7	1,4-Dichlorobenzene	3.8	U	ug/kg dry	3.8	6/22/18	6/22/18	CLP SOM02.4 V
67-64-1	Acetone	7.6	U	ug/kg dry	7.6	6/22/18	6/22/18	CLP SOM02.4 V
71-43-2	Benzene	3.8	U	ug/kg dry	3.8	6/22/18	6/22/18	CLP SOM02.4 V
74-97-5	Bromochloromethane	3.8	U	ug/kg dry	3.8	6/22/18	6/22/18	CLP SOM02.4 V
75-27-4	Bromodichloromethane	3.8	U	ug/kg dry	3.8	6/22/18	6/22/18	CLP SOM02.4 V
75-25-2	Bromoform	3.8	U	ug/kg dry	3.8	6/22/18	6/22/18	CLP SOM02.4 V
74-83-9	Bromomethane	3.8	U	ug/kg dry	3.8	6/22/18	6/22/18	CLP SOM02.4 V
75-15-0	Carbon disulfide	3.8	U	ug/kg dry	3.8	6/22/18	6/22/18	CLP SOM02.4 V
56-23-5	Carbon Tetrachloride	3.8	U	ug/kg dry	3.8	6/22/18	6/22/18	CLP SOM02.4 V
108-90-7	Chlorobenzene	3.8	U	ug/kg dry	3.8	6/22/18	6/22/18	CLP SOM02.4 V
75-00-3	Chloroethane	3.8	U	ug/kg dry	3.8	6/22/18	6/22/18	CLP SOM02.4 V

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF29-SS-02 **Lab ID:** C183012-47 **MD No:**

Station ID: NF29 **Matrix:** Subsurface Soil **D No:** AZ82 CHM

Date Collected: 6/19/18 14:00

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
67-66-3	Chloroform	3.8	U	ug/kg dry	3.8	6/22/18	6/22/18	CLP SOM02.4 V
74-87-3	Chloromethane	3.8	U	ug/kg dry	3.8	6/22/18	6/22/18	CLP SOM02.4 V
156-59-2	cis-1,2-Dichloroethene	3.8	U	ug/kg dry	3.8	6/22/18	6/22/18	CLP SOM02.4 V
10061-01-5	cis-1,3-Dichloropropene	3.8	U	ug/kg dry	3.8	6/22/18	6/22/18	CLP SOM02.4 V
110-82-7	Cyclohexane	3.8	U	ug/kg dry	3.8	6/22/18	6/22/18	CLP SOM02.4 V
124-48-1	Dibromochloromethane	3.8	U	ug/kg dry	3.8	6/22/18	6/22/18	CLP SOM02.4 V
75-71-8	Dichlorodifluoromethane (Freon 12)	3.8	U, J, QC-3	ug/kg dry	3.8	6/22/18	6/22/18	CLP SOM02.4 V
100-41-4	Ethyl Benzene	3.8	U	ug/kg dry	3.8	6/22/18	6/22/18	CLP SOM02.4 V
98-82-8	Isopropylbenzene	3.8	U	ug/kg dry	3.8	6/22/18	6/22/18	CLP SOM02.4 V
79-20-9	Methyl Acetate	3.8	U	ug/kg dry	3.8	6/22/18	6/22/18	CLP SOM02.4 V
591-78-6	Methyl Butyl Ketone	7.6	U	ug/kg dry	7.6	6/22/18	6/22/18	CLP SOM02.4 V
78-93-3	Methyl Ethyl Ketone	7.6	U	ug/kg dry	7.6	6/22/18	6/22/18	CLP SOM02.4 V
108-10-1	Methyl Isobutyl Ketone	7.6	U	ug/kg dry	7.6	6/22/18	6/22/18	CLP SOM02.4 V
1634-04-4	Methyl T-Butyl Ether (MTBE)	3.8	U	ug/kg dry	3.8	6/22/18	6/22/18	CLP SOM02.4 V
108-87-2	Methylcyclohexane	3.8	U	ug/kg dry	3.8	6/22/18	6/22/18	CLP SOM02.4 V
75-09-2	Methylene Chloride	3.8	U	ug/kg dry	3.8	6/22/18	6/22/18	CLP SOM02.4 V
95-47-6	o-Xylene	3.8	U	ug/kg dry	3.8	6/22/18	6/22/18	CLP SOM02.4 V
100-42-5	Styrene	3.8	U	ug/kg dry	3.8	6/22/18	6/22/18	CLP SOM02.4 V
127-18-4	Tetrachloroethene (Tetrachloroethylene)	3.8	U	ug/kg dry	3.8	6/22/18	6/22/18	CLP SOM02.4 V
108-88-3	Toluene	3.8	U	ug/kg dry	3.8	6/22/18	6/22/18	CLP SOM02.4 V
156-60-5	trans-1,2-Dichloroethene	3.8	U	ug/kg dry	3.8	6/22/18	6/22/18	CLP SOM02.4 V
10061-02-6	trans-1,3-Dichloropropene	3.8	U	ug/kg dry	3.8	6/22/18	6/22/18	CLP SOM02.4 V
79-01-6	Trichloroethene (Trichloroethylene)	3.8	U	ug/kg dry	3.8	6/22/18	6/22/18	CLP SOM02.4 V
75-69-4	Trichlorofluoromethane (Freon 11)	3.8	U	ug/kg dry	3.8	6/22/18	6/22/18	CLP SOM02.4 V
75-01-4	Vinyl chloride	3.8	U	ug/kg dry	3.8	6/22/18	6/22/18	CLP SOM02.4 V
Tentatively Identified Compounds:								
R4-0000	Tentatively Identified Compounds	4	U	ug/kg dry	4	6/22/18	6/22/18	CLP SOM02.4 V

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF30-GW-01 **Lab ID:** C183012-48 **MD No:**

Station ID: NF30 **Matrix:** Groundwater **D No:** AZB0 CHM

Date Collected: 6/20/18 13:05

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
R4-7156	(m- and/or p-)Xylene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
71-55-6	1,1,1-Trichloroethane	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
76-13-1	1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113)	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
79-00-5	1,1,2-Trichloroethane	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
75-34-3	1,1-Dichloroethane	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
75-35-4	1,1-Dichloroethene (1,1-Dichloroethylene)	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
87-61-6	1,2,3-Trichlorobenzene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
120-82-1	1,2,4-Trichlorobenzene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
96-12-8	1,2-Dibromo-3-Chloropropane (DBCP)	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
106-93-4	1,2-Dibromoethane (EDB)	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
95-50-1	1,2-Dichlorobenzene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
107-06-2	1,2-Dichloroethane	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
78-87-5	1,2-Dichloropropane	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
541-73-1	1,3-Dichlorobenzene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
106-46-7	1,4-Dichlorobenzene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
67-64-1	Acetone	8.8	J, CLP32, CLP17	ug/L	5.0	6/26/18	6/26/18	CLP SOM02.4
71-43-2	Benzene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
74-97-5	Bromochloromethane	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
75-27-4	Bromodichloromethane	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
75-25-2	Bromoform	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
74-83-9	Bromomethane	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
75-15-0	Carbon disulfide	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
56-23-5	Carbon Tetrachloride	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
108-90-7	Chlorobenzene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
75-00-3	Chloroethane	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
67-66-3	Chloroform	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF30-GW-01 **Lab ID:** C183012-48 **MD No:**
Station ID: NF30 **Matrix:** Groundwater **D No:** AZB0 CHM

Date Collected: 6/20/18 13:05

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
74-87-3	Chloromethane	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
156-59-2	cis-1,2-Dichloroethene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
10061-01-5	cis-1,3-Dichloropropene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
110-82-7	Cyclohexane	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
124-48-1	Dibromochloromethane	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
75-71-8	Dichlorodifluoromethane (Freon 12)	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
100-41-4	Ethyl Benzene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
98-82-8	Isopropylbenzene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
79-20-9	Methyl Acetate	0.50	U, J, QC-3	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
591-78-6	Methyl Butyl Ketone	5.0	U	ug/L	5.0	6/26/18	6/26/18	CLP SOM02.4
78-93-3	Methyl Ethyl Ketone	5.0	U, J, QC-1, QC-3	ug/L	5.0	6/26/18	6/26/18	CLP SOM02.4
108-10-1	Methyl Isobutyl Ketone	5.0	U	ug/L	5.0	6/26/18	6/26/18	CLP SOM02.4
1634-04-4	Methyl T-Butyl Ether (MTBE)	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
108-87-2	Methylcyclohexane	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
75-09-2	Methylene Chloride	0.50	U, J, CLP16	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
95-47-6	o-Xylene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
100-42-5	Styrene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
127-18-4	Tetrachloroethene (Tetrachloroethylene)	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
108-88-3	Toluene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
156-60-5	trans-1,2-Dichloroethene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
10061-02-6	trans-1,3-Dichloropropene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
79-01-6	Trichloroethene (Trichloroethylene)	0.28	J, CLP01	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
75-69-4	Trichlorofluoromethane (Freon 11)	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
75-01-4	Vinyl chloride	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
Tentatively Identified Compounds:								
R4-0000	Tentatively Identified Compounds	0.5	U	ug/L	0.5	6/26/18	6/26/18	CLP SOM02.4

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D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF30-SS-01 **Lab ID:** C183012-49 **MD No:**

Station ID: NF30 **Matrix:** Subsurface Soil **D No:** AZ83 CHM

Date Collected: 6/20/18 12:25

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1644012	% Moisture	20		%		6/25/18	6/25/18	CLP VOA
R4-7156	(m- and/or p-)Xylene	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
71-55-6	1,1,1-Trichloroethane	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
79-34-5	1,1,2,2-Tetrachloroethane	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
76-13-1	1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113)	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
79-00-5	1,1,2-Trichloroethane	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
75-34-3	1,1-Dichloroethane	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
75-35-4	1,1-Dichloroethene (1,1-Dichloroethylene)	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
87-61-6	1,2,3-Trichlorobenzene	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
120-82-1	1,2,4-Trichlorobenzene	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
96-12-8	1,2-Dibromo-3-Chloropropane (DBCP)	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
106-93-4	1,2-Dibromoethane (EDB)	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
95-50-1	1,2-Dichlorobenzene	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
107-06-2	1,2-Dichloroethane	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
78-87-5	1,2-Dichloropropane	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
541-73-1	1,3-Dichlorobenzene	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
106-46-7	1,4-Dichlorobenzene	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
67-64-1	Acetone	18		ug/kg dry	8.1	6/25/18	6/25/18	CLP SOM02.4 V
71-43-2	Benzene	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
74-97-5	Bromochloromethane	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
75-27-4	Bromodichloromethane	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
75-25-2	Bromoform	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
74-83-9	Bromomethane	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
75-15-0	Carbon disulfide	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
56-23-5	Carbon Tetrachloride	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
108-90-7	Chlorobenzene	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
75-00-3	Chloroethane	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF30-SS-01 **Lab ID:** C183012-49 **MD No:**
Station ID: NF30 **Matrix:** Subsurface Soil **D No:** AZ83 CHM

Date Collected: 6/20/18 12:25

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
67-66-3	Chloroform	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
74-87-3	Chloromethane	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
156-59-2	cis-1,2-Dichloroethene	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
10061-01-5	cis-1,3-Dichloropropene	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
110-82-7	Cyclohexane	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
124-48-1	Dibromochloromethane	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
75-71-8	Dichlorodifluoromethane (Freon 12)	4.1	U, J, QC-3	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
100-41-4	Ethyl Benzene	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
98-82-8	Isopropylbenzene	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
79-20-9	Methyl Acetate	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
591-78-6	Methyl Butyl Ketone	8.1	U	ug/kg dry	8.1	6/25/18	6/25/18	CLP SOM02.4 V
78-93-3	Methyl Ethyl Ketone	8.1	U	ug/kg dry	8.1	6/25/18	6/25/18	CLP SOM02.4 V
108-10-1	Methyl Isobutyl Ketone	8.1	U	ug/kg dry	8.1	6/25/18	6/25/18	CLP SOM02.4 V
1634-04-4	Methyl T-Butyl Ether (MTBE)	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
108-87-2	Methylcyclohexane	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
75-09-2	Methylene Chloride	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
95-47-6	o-Xylene	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
100-42-5	Styrene	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
127-18-4	Tetrachloroethene (Tetrachloroethylene)	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
108-88-3	Toluene	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
156-60-5	trans-1,2-Dichloroethene	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
10061-02-6	trans-1,3-Dichloropropene	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
79-01-6	Trichloroethene (Trichloroethylene)	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
75-69-4	Trichlorofluoromethane (Freon 11)	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
75-01-4	Vinyl chloride	4.1	U	ug/kg dry	4.1	6/25/18	6/25/18	CLP SOM02.4 V
Tentatively Identified Compounds:								
R4-6500	Petroleum Product:		N, CLP15			6/25/18	6/25/18	CLP SOM02.4 V
R4-6501	Unidentified Compound(s)	5	J, CLP15	ug/kg dry		6/25/18	6/25/18	CLP SOM02.4 V

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF30-SS-02 **Lab ID:** C183012-50 **MD No:**

Station ID: NF30 **Matrix:** Subsurface Soil **D No:** AZ84 CHM

Date Collected: 6/20/18 12:30

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1644012	% Moisture	18		%		6/25/18	6/25/18	CLP VOA
R4-7156	(m- and/or p-)Xylene	3.8	U	ug/kg dry	3.8	6/25/18	6/25/18	CLP SOM02.4 V
71-55-6	1,1,1-Trichloroethane	3.8	U	ug/kg dry	3.8	6/25/18	6/25/18	CLP SOM02.4 V
79-34-5	1,1,2,2-Tetrachloroethane	3.8	U	ug/kg dry	3.8	6/25/18	6/25/18	CLP SOM02.4 V
76-13-1	1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113)	3.8	U	ug/kg dry	3.8	6/25/18	6/25/18	CLP SOM02.4 V
79-00-5	1,1,2-Trichloroethane	3.8	U	ug/kg dry	3.8	6/25/18	6/25/18	CLP SOM02.4 V
75-34-3	1,1-Dichloroethane	3.8	U	ug/kg dry	3.8	6/25/18	6/25/18	CLP SOM02.4 V
75-35-4	1,1-Dichloroethene (1,1-Dichloroethylene)	3.8	U	ug/kg dry	3.8	6/25/18	6/25/18	CLP SOM02.4 V
87-61-6	1,2,3-Trichlorobenzene	3.8	U	ug/kg dry	3.8	6/25/18	6/25/18	CLP SOM02.4 V
120-82-1	1,2,4-Trichlorobenzene	3.8	U	ug/kg dry	3.8	6/25/18	6/25/18	CLP SOM02.4 V
96-12-8	1,2-Dibromo-3-Chloropropane (DBCP)	3.8	U	ug/kg dry	3.8	6/25/18	6/25/18	CLP SOM02.4 V
106-93-4	1,2-Dibromoethane (EDB)	3.8	U	ug/kg dry	3.8	6/25/18	6/25/18	CLP SOM02.4 V
95-50-1	1,2-Dichlorobenzene	3.8	U	ug/kg dry	3.8	6/25/18	6/25/18	CLP SOM02.4 V
107-06-2	1,2-Dichloroethane	3.8	U	ug/kg dry	3.8	6/25/18	6/25/18	CLP SOM02.4 V
78-87-5	1,2-Dichloropropane	3.8	U	ug/kg dry	3.8	6/25/18	6/25/18	CLP SOM02.4 V
541-73-1	1,3-Dichlorobenzene	3.8	U	ug/kg dry	3.8	6/25/18	6/25/18	CLP SOM02.4 V
106-46-7	1,4-Dichlorobenzene	3.8	U	ug/kg dry	3.8	6/25/18	6/25/18	CLP SOM02.4 V
67-64-1	Acetone	7.6	U	ug/kg dry	7.6	6/25/18	6/25/18	CLP SOM02.4 V
71-43-2	Benzene	3.8	U	ug/kg dry	3.8	6/25/18	6/25/18	CLP SOM02.4 V
74-97-5	Bromochloromethane	3.8	U	ug/kg dry	3.8	6/25/18	6/25/18	CLP SOM02.4 V
75-27-4	Bromodichloromethane	3.8	U	ug/kg dry	3.8	6/25/18	6/25/18	CLP SOM02.4 V
75-25-2	Bromoform	3.8	U	ug/kg dry	3.8	6/25/18	6/25/18	CLP SOM02.4 V
74-83-9	Bromomethane	3.8	U	ug/kg dry	3.8	6/25/18	6/25/18	CLP SOM02.4 V
75-15-0	Carbon disulfide	3.8	U	ug/kg dry	3.8	6/25/18	6/25/18	CLP SOM02.4 V
56-23-5	Carbon Tetrachloride	3.8	U	ug/kg dry	3.8	6/25/18	6/25/18	CLP SOM02.4 V
108-90-7	Chlorobenzene	3.8	U	ug/kg dry	3.8	6/25/18	6/25/18	CLP SOM02.4 V
75-00-3	Chloroethane	3.8	U	ug/kg dry	3.8	6/25/18	6/25/18	CLP SOM02.4 V

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF30-SS-02 **Lab ID:** C183012-50 **MD No:**

Station ID: NF30 **Matrix:** Subsurface Soil **D No:** AZ84 CHM

Date Collected: 6/20/18 12:30

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
67-66-3	Chloroform	3.8	U	ug/kg dry	3.8	6/25/18	6/25/18	CLP SOM02.4 V
74-87-3	Chloromethane	3.8	U	ug/kg dry	3.8	6/25/18	6/25/18	CLP SOM02.4 V
156-59-2	cis-1,2-Dichloroethene	3.8	U	ug/kg dry	3.8	6/25/18	6/25/18	CLP SOM02.4 V
10061-01-5	cis-1,3-Dichloropropene	3.8	U	ug/kg dry	3.8	6/25/18	6/25/18	CLP SOM02.4 V
110-82-7	Cyclohexane	3.8	U	ug/kg dry	3.8	6/25/18	6/25/18	CLP SOM02.4 V
124-48-1	Dibromochloromethane	3.8	U	ug/kg dry	3.8	6/25/18	6/25/18	CLP SOM02.4 V
75-71-8	Dichlorodifluoromethane (Freon 12)	3.8	U, J, QC-3	ug/kg dry	3.8	6/25/18	6/25/18	CLP SOM02.4 V
100-41-4	Ethyl Benzene	3.8	U	ug/kg dry	3.8	6/25/18	6/25/18	CLP SOM02.4 V
98-82-8	Isopropylbenzene	3.8	U	ug/kg dry	3.8	6/25/18	6/25/18	CLP SOM02.4 V
79-20-9	Methyl Acetate	3.8	U	ug/kg dry	3.8	6/25/18	6/25/18	CLP SOM02.4 V
591-78-6	Methyl Butyl Ketone	7.6	U	ug/kg dry	7.6	6/25/18	6/25/18	CLP SOM02.4 V
78-93-3	Methyl Ethyl Ketone	7.6	U	ug/kg dry	7.6	6/25/18	6/25/18	CLP SOM02.4 V
108-10-1	Methyl Isobutyl Ketone	7.6	U	ug/kg dry	7.6	6/25/18	6/25/18	CLP SOM02.4 V
1634-04-4	Methyl T-Butyl Ether (MTBE)	3.8	U	ug/kg dry	3.8	6/25/18	6/25/18	CLP SOM02.4 V
108-87-2	Methylcyclohexane	3.8	U	ug/kg dry	3.8	6/25/18	6/25/18	CLP SOM02.4 V
75-09-2	Methylene Chloride	3.8	U	ug/kg dry	3.8	6/25/18	6/25/18	CLP SOM02.4 V
95-47-6	o-Xylene	3.8	U	ug/kg dry	3.8	6/25/18	6/25/18	CLP SOM02.4 V
100-42-5	Styrene	3.8	U	ug/kg dry	3.8	6/25/18	6/25/18	CLP SOM02.4 V
127-18-4	Tetrachloroethene (Tetrachloroethylene)	3.8	U	ug/kg dry	3.8	6/25/18	6/25/18	CLP SOM02.4 V
108-88-3	Toluene	3.8	U	ug/kg dry	3.8	6/25/18	6/25/18	CLP SOM02.4 V
156-60-5	trans-1,2-Dichloroethene	3.8	U	ug/kg dry	3.8	6/25/18	6/25/18	CLP SOM02.4 V
10061-02-6	trans-1,3-Dichloropropene	3.8	U	ug/kg dry	3.8	6/25/18	6/25/18	CLP SOM02.4 V
79-01-6	Trichloroethene (Trichloroethylene)	3.8	U	ug/kg dry	3.8	6/25/18	6/25/18	CLP SOM02.4 V
75-69-4	Trichlorofluoromethane (Freon 11)	3.8	U	ug/kg dry	3.8	6/25/18	6/25/18	CLP SOM02.4 V
75-01-4	Vinyl chloride	3.8	U	ug/kg dry	3.8	6/25/18	6/25/18	CLP SOM02.4 V
Tentatively Identified Compounds:								
R4-0000	Tentatively Identified Compounds	4	U	ug/kg dry	4	6/25/18	6/25/18	CLP SOM02.4 V

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF31-GW-01 **Lab ID:** C183012-51 **MD No:**
Station ID: NF31 **Matrix:** Groundwater **D No:** AZB1 CHM

Date Collected: 6/21/18 9:15

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
R4-7156	(m- and/or p-)Xylene	20	U	ug/L	20	6/26/18	6/26/18	CLP SOM02.4
71-55-6	1,1,1-Trichloroethane	20	U	ug/L	20	6/26/18	6/26/18	CLP SOM02.4
79-34-5	1,1,2,2-Tetrachloroethane	20	U	ug/L	20	6/26/18	6/26/18	CLP SOM02.4
76-13-1	1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113)	20	U	ug/L	20	6/26/18	6/26/18	CLP SOM02.4
79-00-5	1,1,2-Trichloroethane	20	U	ug/L	20	6/26/18	6/26/18	CLP SOM02.4
75-34-3	1,1-Dichloroethane	20	U	ug/L	20	6/26/18	6/26/18	CLP SOM02.4
75-35-4	1,1-Dichloroethene (1,1-Dichloroethylene)	20	U	ug/L	20	6/26/18	6/26/18	CLP SOM02.4
87-61-6	1,2,3-Trichlorobenzene	20	U	ug/L	20	6/26/18	6/26/18	CLP SOM02.4
120-82-1	1,2,4-Trichlorobenzene	20	U	ug/L	20	6/26/18	6/26/18	CLP SOM02.4
96-12-8	1,2-Dibromo-3-Chloropropane (DBCP)	20	U	ug/L	20	6/26/18	6/26/18	CLP SOM02.4
106-93-4	1,2-Dibromoethane (EDB)	20	U	ug/L	20	6/26/18	6/26/18	CLP SOM02.4
95-50-1	1,2-Dichlorobenzene	20	U	ug/L	20	6/26/18	6/26/18	CLP SOM02.4
107-06-2	1,2-Dichloroethane	20	U	ug/L	20	6/26/18	6/26/18	CLP SOM02.4
78-87-5	1,2-Dichloropropane	20	U	ug/L	20	6/26/18	6/26/18	CLP SOM02.4
541-73-1	1,3-Dichlorobenzene	20	U	ug/L	20	6/26/18	6/26/18	CLP SOM02.4
106-46-7	1,4-Dichlorobenzene	20	U	ug/L	20	6/26/18	6/26/18	CLP SOM02.4
67-64-1	Acetone	200	U, R, CLP32, CLP17	ug/L	200	6/26/18	6/26/18	CLP SOM02.4
71-43-2	Benzene	20	U	ug/L	20	6/26/18	6/26/18	CLP SOM02.4
74-97-5	Bromochloromethane	20	U	ug/L	20	6/26/18	6/26/18	CLP SOM02.4
75-27-4	Bromodichloromethane	20	U	ug/L	20	6/26/18	6/26/18	CLP SOM02.4
75-25-2	Bromoform	20	U	ug/L	20	6/26/18	6/26/18	CLP SOM02.4
74-83-9	Bromomethane	20	U	ug/L	20	6/26/18	6/26/18	CLP SOM02.4
75-15-0	Carbon disulfide	20	U	ug/L	20	6/26/18	6/26/18	CLP SOM02.4
56-23-5	Carbon Tetrachloride	20	U	ug/L	20	6/26/18	6/26/18	CLP SOM02.4
108-90-7	Chlorobenzene	20	U	ug/L	20	6/26/18	6/26/18	CLP SOM02.4
75-00-3	Chloroethane	20	U	ug/L	20	6/26/18	6/26/18	CLP SOM02.4
67-66-3	Chloroform	20	U	ug/L	20	6/26/18	6/26/18	CLP SOM02.4

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF31-GW-01 **Lab ID:** C183012-51 **MD No:**
Station ID: NF31 **Matrix:** Groundwater **D No:** AZB1 CHM

Date Collected: 6/21/18 9:15

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
74-87-3	Chloromethane	20	U	ug/L	20	6/26/18	6/26/18	CLP SOM02.4
156-59-2	cis-1,2-Dichloroethene	510		ug/L	20	6/26/18	6/26/18	CLP SOM02.4
10061-01-5	cis-1,3-Dichloropropene	20	U	ug/L	20	6/26/18	6/26/18	CLP SOM02.4
110-82-7	Cyclohexane	20	U	ug/L	20	6/26/18	6/26/18	CLP SOM02.4
124-48-1	Dibromochloromethane	20	U	ug/L	20	6/26/18	6/26/18	CLP SOM02.4
75-71-8	Dichlorodifluoromethane (Freon 12)	20	U	ug/L	20	6/26/18	6/26/18	CLP SOM02.4
100-41-4	Ethyl Benzene	20	U	ug/L	20	6/26/18	6/26/18	CLP SOM02.4
98-82-8	Isopropylbenzene	20	U	ug/L	20	6/26/18	6/26/18	CLP SOM02.4
79-20-9	Methyl Acetate	20	U, J, QC-3	ug/L	20	6/26/18	6/26/18	CLP SOM02.4
591-78-6	Methyl Butyl Ketone	200	U	ug/L	200	6/26/18	6/26/18	CLP SOM02.4
78-93-3	Methyl Ethyl Ketone	200	U, J, QC-3	ug/L	200	6/26/18	6/26/18	CLP SOM02.4
108-10-1	Methyl Isobutyl Ketone	200	U	ug/L	200	6/26/18	6/26/18	CLP SOM02.4
1634-04-4	Methyl T-Butyl Ether (MTBE)	20	U	ug/L	20	6/26/18	6/26/18	CLP SOM02.4
108-87-2	Methylcyclohexane	20	U	ug/L	20	6/26/18	6/26/18	CLP SOM02.4
75-09-2	Methylene Chloride	20	U, J, CLP16	ug/L	20	6/26/18	6/26/18	CLP SOM02.4
95-47-6	o-Xylene	20	U	ug/L	20	6/26/18	6/26/18	CLP SOM02.4
100-42-5	Styrene	20	U	ug/L	20	6/26/18	6/26/18	CLP SOM02.4
127-18-4	Tetrachloroethene (Tetrachloroethylene)	20	U	ug/L	20	6/26/18	6/26/18	CLP SOM02.4
108-88-3	Toluene	20	U	ug/L	20	6/26/18	6/26/18	CLP SOM02.4
156-60-5	trans-1,2-Dichloroethene	20	U	ug/L	20	6/26/18	6/26/18	CLP SOM02.4
10061-02-6	trans-1,3-Dichloropropene	20	U	ug/L	20	6/26/18	6/26/18	CLP SOM02.4
79-01-6	Trichloroethene (Trichloroethylene)	1800		ug/L	100	6/26/18	6/26/18	CLP SOM02.4
75-69-4	Trichlorofluoromethane (Freon 11)	20	U	ug/L	20	6/26/18	6/26/18	CLP SOM02.4
75-01-4	Vinyl chloride	80		ug/L	20	6/26/18	6/26/18	CLP SOM02.4
Tentatively Identified Compounds:								
R4-0000	Tentatively Identified Compounds	20	U	ug/L	20	6/26/18	6/26/18	CLP SOM02.4

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF31-SS-01 **Lab ID:** C183012-52 **MD No:**

Station ID: NF31 **Matrix:** Subsurface Soil **D No:** AZ85 CHM

Date Collected: 6/19/18 10:20

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1644012	% Moisture	18		%		6/22/18	6/22/18	CLP VOA
R4-7156	(m- and/or p-)Xylene	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
71-55-6	1,1,1-Trichloroethane	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
79-34-5	1,1,2,2-Tetrachloroethane	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
76-13-1	1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113)	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
79-00-5	1,1,2-Trichloroethane	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
75-34-3	1,1-Dichloroethane	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
75-35-4	1,1-Dichloroethene (1,1-Dichloroethylene)	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
87-61-6	1,2,3-Trichlorobenzene	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
120-82-1	1,2,4-Trichlorobenzene	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
96-12-8	1,2-Dibromo-3-Chloropropane (DBCP)	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
106-93-4	1,2-Dibromoethane (EDB)	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
95-50-1	1,2-Dichlorobenzene	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
107-06-2	1,2-Dichloroethane	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
78-87-5	1,2-Dichloropropane	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
541-73-1	1,3-Dichlorobenzene	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
106-46-7	1,4-Dichlorobenzene	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
67-64-1	Acetone	51		ug/kg dry	8.5	6/22/18	6/22/18	CLP SOM02.4 V
71-43-2	Benzene	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
74-97-5	Bromochloromethane	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
75-27-4	Bromodichloromethane	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
75-25-2	Bromoform	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
74-83-9	Bromomethane	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
75-15-0	Carbon disulfide	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
56-23-5	Carbon Tetrachloride	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
108-90-7	Chlorobenzene	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
75-00-3	Chloroethane	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF31-SS-01 **Lab ID:** C183012-52 **MD No:**

Station ID: NF31 **Matrix:** Subsurface Soil **D No:** AZ85 CHM

Date Collected: 6/19/18 10:20

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
67-66-3	Chloroform	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
74-87-3	Chloromethane	4.2	U, J, QC-1	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
156-59-2	cis-1,2-Dichloroethene	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
10061-01-5	cis-1,3-Dichloropropene	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
110-82-7	Cyclohexane	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
124-48-1	Dibromochloromethane	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
75-71-8	Dichlorodifluoromethane (Freon 12)	4.2	U, J, QC-1, QC-3	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
100-41-4	Ethyl Benzene	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
98-82-8	Isopropylbenzene	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
79-20-9	Methyl Acetate	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
591-78-6	Methyl Butyl Ketone	8.5	U	ug/kg dry	8.5	6/22/18	6/22/18	CLP SOM02.4 V
78-93-3	Methyl Ethyl Ketone	8.5	U	ug/kg dry	8.5	6/22/18	6/22/18	CLP SOM02.4 V
108-10-1	Methyl Isobutyl Ketone	8.5	U	ug/kg dry	8.5	6/22/18	6/22/18	CLP SOM02.4 V
1634-04-4	Methyl T-Butyl Ether (MTBE)	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
108-87-2	Methylcyclohexane	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
75-09-2	Methylene Chloride	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
95-47-6	o-Xylene	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
100-42-5	Styrene	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
127-18-4	Tetrachloroethene (Tetrachloroethylene)	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
108-88-3	Toluene	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
156-60-5	trans-1,2-Dichloroethene	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
10061-02-6	trans-1,3-Dichloropropene	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
79-01-6	Trichloroethene (Trichloroethylene)	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
75-69-4	Trichlorofluoromethane (Freon 11)	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
75-01-4	Vinyl chloride	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
Tentatively Identified Compounds:								
115-10-6	Dimethyl Ether	20	NJ, CLP15	ug/kg dry		6/22/18	6/22/18	CLP SOM02.4 V

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF31-SS-02 **Lab ID:** C183012-53 **MD No:**

Station ID: NF31 **Matrix:** Subsurface Soil **D No:** AZ86 CHM

Date Collected: 6/19/18 10:25

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1644012	% Moisture	17		%		6/22/18	6/22/18	CLP VOA
R4-7156	(m- and/or p-)Xylene	6.1	U	ug/kg dry	6.1	6/22/18	6/22/18	CLP SOM02.4 V
71-55-6	1,1,1-Trichloroethane	6.1	U	ug/kg dry	6.1	6/22/18	6/22/18	CLP SOM02.4 V
79-34-5	1,1,2,2-Tetrachloroethane	6.1	U	ug/kg dry	6.1	6/22/18	6/22/18	CLP SOM02.4 V
76-13-1	1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113)	6.1	U	ug/kg dry	6.1	6/22/18	6/22/18	CLP SOM02.4 V
79-00-5	1,1,2-Trichloroethane	6.1	U	ug/kg dry	6.1	6/22/18	6/22/18	CLP SOM02.4 V
75-34-3	1,1-Dichloroethane	6.1	U	ug/kg dry	6.1	6/22/18	6/22/18	CLP SOM02.4 V
75-35-4	1,1-Dichloroethene (1,1-Dichloroethylene)	6.1	U	ug/kg dry	6.1	6/22/18	6/22/18	CLP SOM02.4 V
87-61-6	1,2,3-Trichlorobenzene	6.1	U	ug/kg dry	6.1	6/22/18	6/22/18	CLP SOM02.4 V
120-82-1	1,2,4-Trichlorobenzene	6.1	U	ug/kg dry	6.1	6/22/18	6/22/18	CLP SOM02.4 V
96-12-8	1,2-Dibromo-3-Chloropropane (DBCP)	6.1	U	ug/kg dry	6.1	6/22/18	6/22/18	CLP SOM02.4 V
106-93-4	1,2-Dibromoethane (EDB)	6.1	U	ug/kg dry	6.1	6/22/18	6/22/18	CLP SOM02.4 V
95-50-1	1,2-Dichlorobenzene	6.1	U	ug/kg dry	6.1	6/22/18	6/22/18	CLP SOM02.4 V
107-06-2	1,2-Dichloroethane	6.1	U	ug/kg dry	6.1	6/22/18	6/22/18	CLP SOM02.4 V
78-87-5	1,2-Dichloropropane	6.1	U	ug/kg dry	6.1	6/22/18	6/22/18	CLP SOM02.4 V
541-73-1	1,3-Dichlorobenzene	6.1	U	ug/kg dry	6.1	6/22/18	6/22/18	CLP SOM02.4 V
106-46-7	1,4-Dichlorobenzene	6.1	U	ug/kg dry	6.1	6/22/18	6/22/18	CLP SOM02.4 V
67-64-1	Acetone	12	U	ug/kg dry	12	6/22/18	6/22/18	CLP SOM02.4 V
71-43-2	Benzene	6.1	U	ug/kg dry	6.1	6/22/18	6/22/18	CLP SOM02.4 V
74-97-5	Bromochloromethane	6.1	U	ug/kg dry	6.1	6/22/18	6/22/18	CLP SOM02.4 V
75-27-4	Bromodichloromethane	6.1	U	ug/kg dry	6.1	6/22/18	6/22/18	CLP SOM02.4 V
75-25-2	Bromoform	6.1	U	ug/kg dry	6.1	6/22/18	6/22/18	CLP SOM02.4 V
74-83-9	Bromomethane	6.1	U	ug/kg dry	6.1	6/22/18	6/22/18	CLP SOM02.4 V
75-15-0	Carbon disulfide	6.1	U	ug/kg dry	6.1	6/22/18	6/22/18	CLP SOM02.4 V
56-23-5	Carbon Tetrachloride	6.1	U	ug/kg dry	6.1	6/22/18	6/22/18	CLP SOM02.4 V
108-90-7	Chlorobenzene	6.1	U	ug/kg dry	6.1	6/22/18	6/22/18	CLP SOM02.4 V
75-00-3	Chloroethane	6.1	U	ug/kg dry	6.1	6/22/18	6/22/18	CLP SOM02.4 V

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF31-SS-02 **Lab ID:** C183012-53 **MD No:**

Station ID: NF31 **Matrix:** Subsurface Soil **D No:** AZ86 CHM

Date Collected: 6/19/18 10:25

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
67-66-3	Chloroform	6.1	U	ug/kg dry	6.1	6/22/18	6/22/18	CLP SOM02.4 V
74-87-3	Chloromethane	6.1	U	ug/kg dry	6.1	6/22/18	6/22/18	CLP SOM02.4 V
156-59-2	cis-1,2-Dichloroethene	63		ug/kg dry	6.1	6/22/18	6/22/18	CLP SOM02.4 V
10061-01-5	cis-1,3-Dichloropropene	6.1	U	ug/kg dry	6.1	6/22/18	6/22/18	CLP SOM02.4 V
110-82-7	Cyclohexane	6.1	U	ug/kg dry	6.1	6/22/18	6/22/18	CLP SOM02.4 V
124-48-1	Dibromochloromethane	6.1	U	ug/kg dry	6.1	6/22/18	6/22/18	CLP SOM02.4 V
75-71-8	Dichlorodifluoromethane (Freon 12)	6.1	U, J, QC-3	ug/kg dry	6.1	6/22/18	6/22/18	CLP SOM02.4 V
100-41-4	Ethyl Benzene	6.1	U	ug/kg dry	6.1	6/22/18	6/22/18	CLP SOM02.4 V
98-82-8	Isopropylbenzene	6.1	U	ug/kg dry	6.1	6/22/18	6/22/18	CLP SOM02.4 V
79-20-9	Methyl Acetate	6.1	U	ug/kg dry	6.1	6/22/18	6/22/18	CLP SOM02.4 V
591-78-6	Methyl Butyl Ketone	12	U	ug/kg dry	12	6/22/18	6/22/18	CLP SOM02.4 V
78-93-3	Methyl Ethyl Ketone	12	U	ug/kg dry	12	6/22/18	6/22/18	CLP SOM02.4 V
108-10-1	Methyl Isobutyl Ketone	12	U	ug/kg dry	12	6/22/18	6/22/18	CLP SOM02.4 V
1634-04-4	Methyl T-Butyl Ether (MTBE)	6.1	U	ug/kg dry	6.1	6/22/18	6/22/18	CLP SOM02.4 V
108-87-2	Methylcyclohexane	6.1	U	ug/kg dry	6.1	6/22/18	6/22/18	CLP SOM02.4 V
75-09-2	Methylene Chloride	6.1	U	ug/kg dry	6.1	6/22/18	6/22/18	CLP SOM02.4 V
95-47-6	o-Xylene	6.1	U	ug/kg dry	6.1	6/22/18	6/22/18	CLP SOM02.4 V
100-42-5	Styrene	6.1	U	ug/kg dry	6.1	6/22/18	6/22/18	CLP SOM02.4 V
127-18-4	Tetrachloroethene (Tetrachloroethylene)	6.1	U	ug/kg dry	6.1	6/22/18	6/22/18	CLP SOM02.4 V
108-88-3	Toluene	6.1	U	ug/kg dry	6.1	6/22/18	6/22/18	CLP SOM02.4 V
156-60-5	trans-1,2-Dichloroethene	6.1	U	ug/kg dry	6.1	6/22/18	6/22/18	CLP SOM02.4 V
10061-02-6	trans-1,3-Dichloropropene	6.1	U	ug/kg dry	6.1	6/22/18	6/22/18	CLP SOM02.4 V
79-01-6	Trichloroethene (Trichloroethylene)	160		ug/kg dry	6.1	6/22/18	6/22/18	CLP SOM02.4 V
75-69-4	Trichlorofluoromethane (Freon 11)	6.1	U	ug/kg dry	6.1	6/22/18	6/22/18	CLP SOM02.4 V
75-01-4	Vinyl chloride	4.9	J, CLP01	ug/kg dry	6.1	6/22/18	6/22/18	CLP SOM02.4 V
Tentatively Identified Compounds:								
R4-0000	Tentatively Identified Compounds	6	U	ug/kg dry	6	6/22/18	6/22/18	CLP SOM02.4 V

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D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF32-GW-01 **Lab ID:** C183012-54 **MD No:**

Station ID: NF32 **Matrix:** Groundwater **D No:** AZB2 CHM

Date Collected: 6/21/18 10:00

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
R4-7156	(m- and/or p-)Xylene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
71-55-6	1,1,1-Trichloroethane	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
76-13-1	1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113)	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
79-00-5	1,1,2-Trichloroethane	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
75-34-3	1,1-Dichloroethane	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
75-35-4	1,1-Dichloroethene (1,1-Dichloroethylene)	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
87-61-6	1,2,3-Trichlorobenzene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
120-82-1	1,2,4-Trichlorobenzene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
96-12-8	1,2-Dibromo-3-Chloropropane (DBCP)	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
106-93-4	1,2-Dibromoethane (EDB)	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
95-50-1	1,2-Dichlorobenzene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
107-06-2	1,2-Dichloroethane	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
78-87-5	1,2-Dichloropropane	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
541-73-1	1,3-Dichlorobenzene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
106-46-7	1,4-Dichlorobenzene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
67-64-1	Acetone	28	J, CLP32, CLP17	ug/L	5.0	6/26/18	6/26/18	CLP SOM02.4
71-43-2	Benzene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
74-97-5	Bromochloromethane	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
75-27-4	Bromodichloromethane	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
75-25-2	Bromoform	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
74-83-9	Bromomethane	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
75-15-0	Carbon disulfide	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
56-23-5	Carbon Tetrachloride	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
108-90-7	Chlorobenzene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
75-00-3	Chloroethane	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
67-66-3	Chloroform	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF32-GW-01 **Lab ID:** C183012-54 **MD No:**
Station ID: NF32 **Matrix:** Groundwater **D No:** AZB2 CHM

Date Collected: 6/21/18 10:00

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
74-87-3	Chloromethane	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
156-59-2	cis-1,2-Dichloroethene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
10061-01-5	cis-1,3-Dichloropropene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
110-82-7	Cyclohexane	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
124-48-1	Dibromochloromethane	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
75-71-8	Dichlorodifluoromethane (Freon 12)	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
100-41-4	Ethyl Benzene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
98-82-8	Isopropylbenzene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
79-20-9	Methyl Acetate	0.50	U, J, QC-3	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
591-78-6	Methyl Butyl Ketone	5.0	U	ug/L	5.0	6/26/18	6/26/18	CLP SOM02.4
78-93-3	Methyl Ethyl Ketone	5.0	U, J, QC-1, QC-3	ug/L	5.0	6/26/18	6/26/18	CLP SOM02.4
108-10-1	Methyl Isobutyl Ketone	5.0	U	ug/L	5.0	6/26/18	6/26/18	CLP SOM02.4
1634-04-4	Methyl T-Butyl Ether (MTBE)	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
108-87-2	Methylcyclohexane	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
75-09-2	Methylene Chloride	0.50	U, J, CLP16	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
95-47-6	o-Xylene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
100-42-5	Styrene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
127-18-4	Tetrachloroethene (Tetrachloroethylene)	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
108-88-3	Toluene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
156-60-5	trans-1,2-Dichloroethene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
10061-02-6	trans-1,3-Dichloropropene	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
79-01-6	Trichloroethene (Trichloroethylene)	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
75-69-4	Trichlorofluoromethane (Freon 11)	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
75-01-4	Vinyl chloride	0.50	U	ug/L	0.50	6/26/18	6/26/18	CLP SOM02.4
Tentatively Identified Compounds:								
R4-0000	Tentatively Identified Compounds	0.5	U	ug/L	0.5	6/26/18	6/26/18	CLP SOM02.4

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF32-SS-01 **Lab ID:** C183012-55 **MD No:**

Station ID: NF32 **Matrix:** Surface Soil **D No:** AZ87 CHM

Date Collected: 6/19/18 12:40

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1644012	% Moisture	7.2		%		6/22/18	6/22/18	CLP VOA
R4-7156	(m- and/or p-)Xylene	4.4	U	ug/kg dry	4.4	6/22/18	6/22/18	CLP SOM02.4 V
71-55-6	1,1,1-Trichloroethane	4.4	U	ug/kg dry	4.4	6/22/18	6/22/18	CLP SOM02.4 V
79-34-5	1,1,2,2-Tetrachloroethane	4.4	U	ug/kg dry	4.4	6/22/18	6/22/18	CLP SOM02.4 V
76-13-1	1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113)	4.4	U	ug/kg dry	4.4	6/22/18	6/22/18	CLP SOM02.4 V
79-00-5	1,1,2-Trichloroethane	4.4	U	ug/kg dry	4.4	6/22/18	6/22/18	CLP SOM02.4 V
75-34-3	1,1-Dichloroethane	4.4	U	ug/kg dry	4.4	6/22/18	6/22/18	CLP SOM02.4 V
75-35-4	1,1-Dichloroethene (1,1-Dichloroethylene)	4.4	U	ug/kg dry	4.4	6/22/18	6/22/18	CLP SOM02.4 V
87-61-6	1,2,3-Trichlorobenzene	4.4	U	ug/kg dry	4.4	6/22/18	6/22/18	CLP SOM02.4 V
120-82-1	1,2,4-Trichlorobenzene	4.4	U	ug/kg dry	4.4	6/22/18	6/22/18	CLP SOM02.4 V
96-12-8	1,2-Dibromo-3-Chloropropane (DBCP)	4.4	U	ug/kg dry	4.4	6/22/18	6/22/18	CLP SOM02.4 V
106-93-4	1,2-Dibromoethane (EDB)	4.4	U	ug/kg dry	4.4	6/22/18	6/22/18	CLP SOM02.4 V
95-50-1	1,2-Dichlorobenzene	4.4	U	ug/kg dry	4.4	6/22/18	6/22/18	CLP SOM02.4 V
107-06-2	1,2-Dichloroethane	4.4	U	ug/kg dry	4.4	6/22/18	6/22/18	CLP SOM02.4 V
78-87-5	1,2-Dichloropropane	4.4	U	ug/kg dry	4.4	6/22/18	6/22/18	CLP SOM02.4 V
541-73-1	1,3-Dichlorobenzene	4.4	U	ug/kg dry	4.4	6/22/18	6/22/18	CLP SOM02.4 V
106-46-7	1,4-Dichlorobenzene	4.4	U	ug/kg dry	4.4	6/22/18	6/22/18	CLP SOM02.4 V
67-64-1	Acetone	8.7	U	ug/kg dry	8.7	6/22/18	6/22/18	CLP SOM02.4 V
71-43-2	Benzene	4.4	U	ug/kg dry	4.4	6/22/18	6/22/18	CLP SOM02.4 V
74-97-5	Bromochloromethane	4.4	U	ug/kg dry	4.4	6/22/18	6/22/18	CLP SOM02.4 V
75-27-4	Bromodichloromethane	4.4	U	ug/kg dry	4.4	6/22/18	6/22/18	CLP SOM02.4 V
75-25-2	Bromoform	4.4	U	ug/kg dry	4.4	6/22/18	6/22/18	CLP SOM02.4 V
74-83-9	Bromomethane	4.4	U	ug/kg dry	4.4	6/22/18	6/22/18	CLP SOM02.4 V
75-15-0	Carbon disulfide	4.4	U	ug/kg dry	4.4	6/22/18	6/22/18	CLP SOM02.4 V
56-23-5	Carbon Tetrachloride	4.4	U	ug/kg dry	4.4	6/22/18	6/22/18	CLP SOM02.4 V
108-90-7	Chlorobenzene	4.4	U	ug/kg dry	4.4	6/22/18	6/22/18	CLP SOM02.4 V
75-00-3	Chloroethane	4.4	U	ug/kg dry	4.4	6/22/18	6/22/18	CLP SOM02.4 V

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF32-SS-01 **Lab ID:** C183012-55 **MD No:**

Station ID: NF32 **Matrix:** Surface Soil **D No:** AZ87 CHM

Date Collected: 6/19/18 12:40

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
67-66-3	Chloroform	4.4	U	ug/kg dry	4.4	6/22/18	6/22/18	CLP SOM02.4 V
74-87-3	Chloromethane	4.4	U	ug/kg dry	4.4	6/22/18	6/22/18	CLP SOM02.4 V
156-59-2	cis-1,2-Dichloroethene	4.4	U	ug/kg dry	4.4	6/22/18	6/22/18	CLP SOM02.4 V
10061-01-5	cis-1,3-Dichloropropene	4.4	U	ug/kg dry	4.4	6/22/18	6/22/18	CLP SOM02.4 V
110-82-7	Cyclohexane	4.4	U	ug/kg dry	4.4	6/22/18	6/22/18	CLP SOM02.4 V
124-48-1	Dibromochloromethane	4.4	U	ug/kg dry	4.4	6/22/18	6/22/18	CLP SOM02.4 V
75-71-8	Dichlorodifluoromethane (Freon 12)	4.4	U, J, QC-3	ug/kg dry	4.4	6/22/18	6/22/18	CLP SOM02.4 V
100-41-4	Ethyl Benzene	4.4	U	ug/kg dry	4.4	6/22/18	6/22/18	CLP SOM02.4 V
98-82-8	Isopropylbenzene	4.4	U	ug/kg dry	4.4	6/22/18	6/22/18	CLP SOM02.4 V
79-20-9	Methyl Acetate	4.4	U	ug/kg dry	4.4	6/22/18	6/22/18	CLP SOM02.4 V
591-78-6	Methyl Butyl Ketone	8.7	U	ug/kg dry	8.7	6/22/18	6/22/18	CLP SOM02.4 V
78-93-3	Methyl Ethyl Ketone	8.7	U	ug/kg dry	8.7	6/22/18	6/22/18	CLP SOM02.4 V
108-10-1	Methyl Isobutyl Ketone	8.7	U	ug/kg dry	8.7	6/22/18	6/22/18	CLP SOM02.4 V
1634-04-4	Methyl T-Butyl Ether (MTBE)	4.4	U	ug/kg dry	4.4	6/22/18	6/22/18	CLP SOM02.4 V
108-87-2	Methylcyclohexane	4.4	U	ug/kg dry	4.4	6/22/18	6/22/18	CLP SOM02.4 V
75-09-2	Methylene Chloride	4.4	U	ug/kg dry	4.4	6/22/18	6/22/18	CLP SOM02.4 V
95-47-6	o-Xylene	4.4	U	ug/kg dry	4.4	6/22/18	6/22/18	CLP SOM02.4 V
100-42-5	Styrene	4.4	U	ug/kg dry	4.4	6/22/18	6/22/18	CLP SOM02.4 V
127-18-4	Tetrachloroethene (Tetrachloroethylene)	4.4	U	ug/kg dry	4.4	6/22/18	6/22/18	CLP SOM02.4 V
108-88-3	Toluene	4.4	U	ug/kg dry	4.4	6/22/18	6/22/18	CLP SOM02.4 V
156-60-5	trans-1,2-Dichloroethene	4.4	U	ug/kg dry	4.4	6/22/18	6/22/18	CLP SOM02.4 V
10061-02-6	trans-1,3-Dichloropropene	4.4	U	ug/kg dry	4.4	6/22/18	6/22/18	CLP SOM02.4 V
79-01-6	Trichloroethene (Trichloroethylene)	4.4	U	ug/kg dry	4.4	6/22/18	6/22/18	CLP SOM02.4 V
75-69-4	Trichlorofluoromethane (Freon 11)	4.4	U	ug/kg dry	4.4	6/22/18	6/22/18	CLP SOM02.4 V
75-01-4	Vinyl chloride	4.4	U	ug/kg dry	4.4	6/22/18	6/22/18	CLP SOM02.4 V
Tentatively Identified Compounds:								
R4-0000	Tentatively Identified Compounds	4	U	ug/kg dry	4	6/22/18	6/22/18	CLP SOM02.4 V

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF32-SS-02 **Lab ID:** C183012-56 **MD No:**

Station ID: NF32 **Matrix:** Subsurface Soil **D No:** AZ88 CHM

Date Collected: 6/19/18 12:45

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1644012	% Moisture	10		%		6/22/18	6/22/18	CLP VOA
R4-7156	(m- and/or p-)Xylene	4.0	U	ug/kg dry	4.0	6/22/18	6/22/18	CLP SOM02.4 V
71-55-6	1,1,1-Trichloroethane	4.0	U	ug/kg dry	4.0	6/22/18	6/22/18	CLP SOM02.4 V
79-34-5	1,1,2,2-Tetrachloroethane	4.0	U	ug/kg dry	4.0	6/22/18	6/22/18	CLP SOM02.4 V
76-13-1	1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113)	4.0	U	ug/kg dry	4.0	6/22/18	6/22/18	CLP SOM02.4 V
79-00-5	1,1,2-Trichloroethane	4.0	U	ug/kg dry	4.0	6/22/18	6/22/18	CLP SOM02.4 V
75-34-3	1,1-Dichloroethane	4.0	U	ug/kg dry	4.0	6/22/18	6/22/18	CLP SOM02.4 V
75-35-4	1,1-Dichloroethene (1,1-Dichloroethylene)	4.0	U	ug/kg dry	4.0	6/22/18	6/22/18	CLP SOM02.4 V
87-61-6	1,2,3-Trichlorobenzene	4.0	U	ug/kg dry	4.0	6/22/18	6/22/18	CLP SOM02.4 V
120-82-1	1,2,4-Trichlorobenzene	4.0	U	ug/kg dry	4.0	6/22/18	6/22/18	CLP SOM02.4 V
96-12-8	1,2-Dibromo-3-Chloropropane (DBCP)	4.0	U	ug/kg dry	4.0	6/22/18	6/22/18	CLP SOM02.4 V
106-93-4	1,2-Dibromoethane (EDB)	4.0	U	ug/kg dry	4.0	6/22/18	6/22/18	CLP SOM02.4 V
95-50-1	1,2-Dichlorobenzene	4.0	U	ug/kg dry	4.0	6/22/18	6/22/18	CLP SOM02.4 V
107-06-2	1,2-Dichloroethane	4.0	U	ug/kg dry	4.0	6/22/18	6/22/18	CLP SOM02.4 V
78-87-5	1,2-Dichloropropane	4.0	U	ug/kg dry	4.0	6/22/18	6/22/18	CLP SOM02.4 V
541-73-1	1,3-Dichlorobenzene	4.0	U	ug/kg dry	4.0	6/22/18	6/22/18	CLP SOM02.4 V
106-46-7	1,4-Dichlorobenzene	4.0	U	ug/kg dry	4.0	6/22/18	6/22/18	CLP SOM02.4 V
67-64-1	Acetone	57		ug/kg dry	7.9	6/22/18	6/22/18	CLP SOM02.4 V
71-43-2	Benzene	4.0	U	ug/kg dry	4.0	6/22/18	6/22/18	CLP SOM02.4 V
74-97-5	Bromochloromethane	4.0	U	ug/kg dry	4.0	6/22/18	6/22/18	CLP SOM02.4 V
75-27-4	Bromodichloromethane	4.0	U	ug/kg dry	4.0	6/22/18	6/22/18	CLP SOM02.4 V
75-25-2	Bromoform	4.0	U	ug/kg dry	4.0	6/22/18	6/22/18	CLP SOM02.4 V
74-83-9	Bromomethane	4.0	U	ug/kg dry	4.0	6/22/18	6/22/18	CLP SOM02.4 V
75-15-0	Carbon disulfide	4.0	U	ug/kg dry	4.0	6/22/18	6/22/18	CLP SOM02.4 V
56-23-5	Carbon Tetrachloride	4.0	U	ug/kg dry	4.0	6/22/18	6/22/18	CLP SOM02.4 V
108-90-7	Chlorobenzene	4.0	U	ug/kg dry	4.0	6/22/18	6/22/18	CLP SOM02.4 V
75-00-3	Chloroethane	4.0	U	ug/kg dry	4.0	6/22/18	6/22/18	CLP SOM02.4 V

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF32-SS-02 **Lab ID:** C183012-56 **MD No:**

Station ID: NF32 **Matrix:** Subsurface Soil **D No:** AZ88 CHM

Date Collected: 6/19/18 12:45

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
67-66-3	Chloroform	4.0	U	ug/kg dry	4.0	6/22/18	6/22/18	CLP SOM02.4 V
74-87-3	Chloromethane	4.0	U, J, QC-1	ug/kg dry	4.0	6/22/18	6/22/18	CLP SOM02.4 V
156-59-2	cis-1,2-Dichloroethene	4.0	U	ug/kg dry	4.0	6/22/18	6/22/18	CLP SOM02.4 V
10061-01-5	cis-1,3-Dichloropropene	4.0	U	ug/kg dry	4.0	6/22/18	6/22/18	CLP SOM02.4 V
110-82-7	Cyclohexane	4.0	U	ug/kg dry	4.0	6/22/18	6/22/18	CLP SOM02.4 V
124-48-1	Dibromochloromethane	4.0	U	ug/kg dry	4.0	6/22/18	6/22/18	CLP SOM02.4 V
75-71-8	Dichlorodifluoromethane (Freon 12)	4.0	U, J, QC-1, QC-3	ug/kg dry	4.0	6/22/18	6/22/18	CLP SOM02.4 V
100-41-4	Ethyl Benzene	4.0	U	ug/kg dry	4.0	6/22/18	6/22/18	CLP SOM02.4 V
98-82-8	Isopropylbenzene	4.0	U	ug/kg dry	4.0	6/22/18	6/22/18	CLP SOM02.4 V
79-20-9	Methyl Acetate	4.0	U	ug/kg dry	4.0	6/22/18	6/22/18	CLP SOM02.4 V
591-78-6	Methyl Butyl Ketone	7.9	U	ug/kg dry	7.9	6/22/18	6/22/18	CLP SOM02.4 V
78-93-3	Methyl Ethyl Ketone	14		ug/kg dry	7.9	6/22/18	6/22/18	CLP SOM02.4 V
108-10-1	Methyl Isobutyl Ketone	7.9	U	ug/kg dry	7.9	6/22/18	6/22/18	CLP SOM02.4 V
1634-04-4	Methyl T-Butyl Ether (MTBE)	4.0	U	ug/kg dry	4.0	6/22/18	6/22/18	CLP SOM02.4 V
108-87-2	Methylcyclohexane	4.0	U	ug/kg dry	4.0	6/22/18	6/22/18	CLP SOM02.4 V
75-09-2	Methylene Chloride	4.0	U	ug/kg dry	4.0	6/22/18	6/22/18	CLP SOM02.4 V
95-47-6	o-Xylene	4.0	U	ug/kg dry	4.0	6/22/18	6/22/18	CLP SOM02.4 V
100-42-5	Styrene	4.0	U	ug/kg dry	4.0	6/22/18	6/22/18	CLP SOM02.4 V
127-18-4	Tetrachloroethene (Tetrachloroethylene)	4.0	U	ug/kg dry	4.0	6/22/18	6/22/18	CLP SOM02.4 V
108-88-3	Toluene	4.0	U	ug/kg dry	4.0	6/22/18	6/22/18	CLP SOM02.4 V
156-60-5	trans-1,2-Dichloroethene	4.0	U	ug/kg dry	4.0	6/22/18	6/22/18	CLP SOM02.4 V
10061-02-6	trans-1,3-Dichloropropene	4.0	U	ug/kg dry	4.0	6/22/18	6/22/18	CLP SOM02.4 V
79-01-6	Trichloroethene (Trichloroethylene)	4.0	U	ug/kg dry	4.0	6/22/18	6/22/18	CLP SOM02.4 V
75-69-4	Trichlorofluoromethane (Freon 11)	4.0	U	ug/kg dry	4.0	6/22/18	6/22/18	CLP SOM02.4 V
75-01-4	Vinyl chloride	4.0	U	ug/kg dry	4.0	6/22/18	6/22/18	CLP SOM02.4 V
Tentatively Identified Compounds:								
115-10-6	Dimethyl Ether	20	NJ, CLP15	ug/kg dry		6/22/18	6/22/18	CLP SOM02.4 V

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980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF33-GW-01 **Lab ID:** C183012-57 **MD No:**

Station ID: NF33 **Matrix:** Groundwater **D No:** AZB3 CHM

Date Collected: 6/19/18 17:00

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
R4-7156	(m- and/or p-)Xylene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
71-55-6	1,1,1-Trichloroethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
76-13-1	1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113)	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
79-00-5	1,1,2-Trichloroethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-34-3	1,1-Dichloroethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-35-4	1,1-Dichloroethene (1,1-Dichloroethylene)	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
87-61-6	1,2,3-Trichlorobenzene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
120-82-1	1,2,4-Trichlorobenzene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
96-12-8	1,2-Dibromo-3-Chloropropane (DBCP)	0.50	U, R, CLP32, CLP17	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
106-93-4	1,2-Dibromoethane (EDB)	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
95-50-1	1,2-Dichlorobenzene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
107-06-2	1,2-Dichloroethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
78-87-5	1,2-Dichloropropane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
541-73-1	1,3-Dichlorobenzene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
106-46-7	1,4-Dichlorobenzene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
67-64-1	Acetone	6.9	J, CLP32, CLP17	ug/L	5.0	6/22/18	6/22/18	CLP SOM02.4
71-43-2	Benzene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
74-97-5	Bromochloromethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-27-4	Bromodichloromethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-25-2	Bromoform	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
74-83-9	Bromomethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-15-0	Carbon disulfide	0.50	U, J, QC-1	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
56-23-5	Carbon Tetrachloride	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
108-90-7	Chlorobenzene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-00-3	Chloroethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF33-GW-01 **Lab ID:** C183012-57 **MD No:**

Station ID: NF33 **Matrix:** Groundwater **D No:** AZB3 CHM

Date Collected: 6/19/18 17:00

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
67-66-3	Chloroform	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
74-87-3	Chloromethane	0.50	U, J, QC-1	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
156-59-2	cis-1,2-Dichloroethene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
10061-01-5	cis-1,3-Dichloropropene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
110-82-7	Cyclohexane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
124-48-1	Dibromochloromethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-71-8	Dichlorodifluoromethane (Freon 12)	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
100-41-4	Ethyl Benzene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
98-82-8	Isopropylbenzene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
79-20-9	Methyl Acetate	0.50	U, R, CLP32, CLP17	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
591-78-6	Methyl Butyl Ketone	5.0	U	ug/L	5.0	6/22/18	6/22/18	CLP SOM02.4
78-93-3	Methyl Ethyl Ketone	5.0	U, R, CLP32, CLP17	ug/L	5.0	6/22/18	6/22/18	CLP SOM02.4
108-10-1	Methyl Isobutyl Ketone	5.0	U	ug/L	5.0	6/22/18	6/22/18	CLP SOM02.4
1634-04-4	Methyl T-Butyl Ether (MTBE)	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
108-87-2	Methylcyclohexane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-09-2	Methylene Chloride	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
95-47-6	o-Xylene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
100-42-5	Styrene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
127-18-4	Tetrachloroethene (Tetrachloroethylene)	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
108-88-3	Toluene	0.24	J, CLP01	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
156-60-5	trans-1,2-Dichloroethene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
10061-02-6	trans-1,3-Dichloropropene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
79-01-6	Trichloroethene (Trichloroethylene)	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-69-4	Trichlorofluoromethane (Freon 11)	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-01-4	Vinyl chloride	0.50	U, J, QC-1	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
Tentatively Identified Compounds:								
124-19-6	Nonanal	2	NJ, CLP15	ug/L		6/22/18	6/22/18	CLP SOM02.4

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF33-SS-01 **Lab ID:** C183012-58 **MD No:**

Station ID: NF33 **Matrix:** Surface Soil **D No:** AZ89 CHM

Date Collected: 6/19/18 16:10

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1644012	% Moisture	12		%		6/21/18	6/21/18	CLP VOA
R4-7156	(m- and/or p-)Xylene	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
71-55-6	1,1,1-Trichloroethane	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
79-34-5	1,1,2,2-Tetrachloroethane	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
76-13-1	1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113)	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
79-00-5	1,1,2-Trichloroethane	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
75-34-3	1,1-Dichloroethane	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
75-35-4	1,1-Dichloroethene (1,1-Dichloroethylene)	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
87-61-6	1,2,3-Trichlorobenzene	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
120-82-1	1,2,4-Trichlorobenzene	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
96-12-8	1,2-Dibromo-3-Chloropropane (DBCP)	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
106-93-4	1,2-Dibromoethane (EDB)	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
95-50-1	1,2-Dichlorobenzene	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
107-06-2	1,2-Dichloroethane	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
78-87-5	1,2-Dichloropropane	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
541-73-1	1,3-Dichlorobenzene	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
106-46-7	1,4-Dichlorobenzene	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
67-64-1	Acetone	8.0	U	ug/kg dry	8.0	6/21/18	6/21/18	CLP SOM02.4 V
71-43-2	Benzene	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
74-97-5	Bromochloromethane	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
75-27-4	Bromodichloromethane	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
75-25-2	Bromoform	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
74-83-9	Bromomethane	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
75-15-0	Carbon disulfide	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
56-23-5	Carbon Tetrachloride	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
108-90-7	Chlorobenzene	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
75-00-3	Chloroethane	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF33-SS-01 **Lab ID:** C183012-58 **MD No:**
Station ID: NF33 **Matrix:** Surface Soil **D No:** AZ89 CHM

Date Collected: 6/19/18 16:10

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
67-66-3	Chloroform	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
74-87-3	Chloromethane	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
156-59-2	cis-1,2-Dichloroethene	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
10061-01-5	cis-1,3-Dichloropropene	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
110-82-7	Cyclohexane	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
124-48-1	Dibromochloromethane	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
75-71-8	Dichlorodifluoromethane (Freon 12)	4.0	U, J, QC-3	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
100-41-4	Ethyl Benzene	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
98-82-8	Isopropylbenzene	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
79-20-9	Methyl Acetate	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
591-78-6	Methyl Butyl Ketone	8.0	U	ug/kg dry	8.0	6/21/18	6/21/18	CLP SOM02.4 V
78-93-3	Methyl Ethyl Ketone	8.0	U	ug/kg dry	8.0	6/21/18	6/21/18	CLP SOM02.4 V
108-10-1	Methyl Isobutyl Ketone	8.0	U	ug/kg dry	8.0	6/21/18	6/21/18	CLP SOM02.4 V
1634-04-4	Methyl T-Butyl Ether (MTBE)	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
108-87-2	Methylcyclohexane	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
75-09-2	Methylene Chloride	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
95-47-6	o-Xylene	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
100-42-5	Styrene	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
127-18-4	Tetrachloroethene (Tetrachloroethylene)	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
108-88-3	Toluene	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
156-60-5	trans-1,2-Dichloroethene	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
10061-02-6	trans-1,3-Dichloropropene	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
79-01-6	Trichloroethene (Trichloroethylene)	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
75-69-4	Trichlorofluoromethane (Freon 11)	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
75-01-4	Vinyl chloride	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
Tentatively Identified Compounds:								
R4-0000	Tentatively Identified Compounds	4	U	ug/kg dry	4	6/21/18	6/21/18	CLP SOM02.4 V

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF33-SS-02 **Lab ID:** C183012-59 **MD No:**

Station ID: NF33 **Matrix:** Subsurface Soil **D No:** AZ90 CHM

Date Collected: 6/19/18 16:20

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1644012	% Moisture	14		%		6/21/18	6/21/18	CLP VOA
R4-7156	(m- and/or p-)Xylene	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
71-55-6	1,1,1-Trichloroethane	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
79-34-5	1,1,2,2-Tetrachloroethane	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
76-13-1	1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113)	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
79-00-5	1,1,2-Trichloroethane	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
75-34-3	1,1-Dichloroethane	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
75-35-4	1,1-Dichloroethene (1,1-Dichloroethylene)	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
87-61-6	1,2,3-Trichlorobenzene	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
120-82-1	1,2,4-Trichlorobenzene	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
96-12-8	1,2-Dibromo-3-Chloropropane (DBCP)	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
106-93-4	1,2-Dibromoethane (EDB)	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
95-50-1	1,2-Dichlorobenzene	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
107-06-2	1,2-Dichloroethane	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
78-87-5	1,2-Dichloropropane	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
541-73-1	1,3-Dichlorobenzene	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
106-46-7	1,4-Dichlorobenzene	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
67-64-1	Acetone	8.1	U	ug/kg dry	8.1	6/21/18	6/21/18	CLP SOM02.4 V
71-43-2	Benzene	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
74-97-5	Bromochloromethane	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
75-27-4	Bromodichloromethane	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
75-25-2	Bromoform	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
74-83-9	Bromomethane	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
75-15-0	Carbon disulfide	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
56-23-5	Carbon Tetrachloride	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
108-90-7	Chlorobenzene	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
75-00-3	Chloroethane	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V

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D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF33-SS-02 **Lab ID:** C183012-59 **MD No:**

Station ID: NF33 **Matrix:** Subsurface Soil **D No:** AZ90 CHM

Date Collected: 6/19/18 16:20

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
67-66-3	Chloroform	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
74-87-3	Chloromethane	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
156-59-2	cis-1,2-Dichloroethene	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
10061-01-5	cis-1,3-Dichloropropene	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
110-82-7	Cyclohexane	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
124-48-1	Dibromochloromethane	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
75-71-8	Dichlorodifluoromethane (Freon 12)	4.0	U, J, QC-3	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
100-41-4	Ethyl Benzene	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
98-82-8	Isopropylbenzene	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
79-20-9	Methyl Acetate	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
591-78-6	Methyl Butyl Ketone	8.1	U	ug/kg dry	8.1	6/21/18	6/21/18	CLP SOM02.4 V
78-93-3	Methyl Ethyl Ketone	8.1	U	ug/kg dry	8.1	6/21/18	6/21/18	CLP SOM02.4 V
108-10-1	Methyl Isobutyl Ketone	8.1	U	ug/kg dry	8.1	6/21/18	6/21/18	CLP SOM02.4 V
1634-04-4	Methyl T-Butyl Ether (MTBE)	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
108-87-2	Methylcyclohexane	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
75-09-2	Methylene Chloride	4.0		ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
95-47-6	o-Xylene	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
100-42-5	Styrene	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
127-18-4	Tetrachloroethene (Tetrachloroethylene)	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
108-88-3	Toluene	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
156-60-5	trans-1,2-Dichloroethene	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
10061-02-6	trans-1,3-Dichloropropene	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
79-01-6	Trichloroethene (Trichloroethylene)	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
75-69-4	Trichlorofluoromethane (Freon 11)	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
75-01-4	Vinyl chloride	4.0	U	ug/kg dry	4.0	6/21/18	6/21/18	CLP SOM02.4 V
Tentatively Identified Compounds:								
R4-0000	Tentatively Identified Compounds	4	U	ug/kg dry	4	6/21/18	6/21/18	CLP SOM02.4 V

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF34-GW-01 **Lab ID:** C183012-60 **MD No:**

Station ID: NF34 **Matrix:** Groundwater **D No:** AZB4 CHM

Date Collected: 6/19/18 13:30

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
R4-7156	(m- and/or p-)Xylene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
71-55-6	1,1,1-Trichloroethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
76-13-1	1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113)	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
79-00-5	1,1,2-Trichloroethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-34-3	1,1-Dichloroethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-35-4	1,1-Dichloroethene (1,1-Dichloroethylene)	0.50	U, J, QS-3	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
87-61-6	1,2,3-Trichlorobenzene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
120-82-1	1,2,4-Trichlorobenzene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
96-12-8	1,2-Dibromo-3-Chloropropane (DBCP)	0.50	U, R, CLP32, CLP17	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
106-93-4	1,2-Dibromoethane (EDB)	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
95-50-1	1,2-Dichlorobenzene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
107-06-2	1,2-Dichloroethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
78-87-5	1,2-Dichloropropane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
541-73-1	1,3-Dichlorobenzene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
106-46-7	1,4-Dichlorobenzene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
67-64-1	Acetone	6.1	J, CLP32, CLP17	ug/L	5.0	6/22/18	6/22/18	CLP SOM02.4
71-43-2	Benzene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
74-97-5	Bromochloromethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-27-4	Bromodichloromethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-25-2	Bromoform	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
74-83-9	Bromomethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-15-0	Carbon disulfide	0.50	U, J, QC-1	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
56-23-5	Carbon Tetrachloride	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
108-90-7	Chlorobenzene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-00-3	Chloroethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF34-GW-01 **Lab ID:** C183012-60 **MD No:**

Station ID: NF34 **Matrix:** Groundwater **D No:** AZB4 CHM

Date Collected: 6/19/18 13:30

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
67-66-3	Chloroform	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
74-87-3	Chloromethane	0.50	U, J, QC-1	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
156-59-2	cis-1,2-Dichloroethene	0.50	U, J, QS-3	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
10061-01-5	cis-1,3-Dichloropropene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
110-82-7	Cyclohexane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
124-48-1	Dibromochloromethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-71-8	Dichlorodifluoromethane (Freon 12)	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
100-41-4	Ethyl Benzene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
98-82-8	Isopropylbenzene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
79-20-9	Methyl Acetate	0.50	U, R, CLP32, CLP17	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
591-78-6	Methyl Butyl Ketone	5.0	U	ug/L	5.0	6/22/18	6/22/18	CLP SOM02.4
78-93-3	Methyl Ethyl Ketone	5.0	U, R, CLP32, CLP17	ug/L	5.0	6/22/18	6/22/18	CLP SOM02.4
108-10-1	Methyl Isobutyl Ketone	5.0	U	ug/L	5.0	6/22/18	6/22/18	CLP SOM02.4
1634-04-4	Methyl T-Butyl Ether (MTBE)	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
108-87-2	Methylcyclohexane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-09-2	Methylene Chloride	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
95-47-6	o-Xylene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
100-42-5	Styrene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
127-18-4	Tetrachloroethene (Tetrachloroethylene)	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
108-88-3	Toluene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
156-60-5	trans-1,2-Dichloroethene	0.50	U, J, QS-3	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
10061-02-6	trans-1,3-Dichloropropene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
79-01-6	Trichloroethene (Trichloroethylene)	1.0		ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-69-4	Trichlorofluoromethane (Freon 11)	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-01-4	Vinyl chloride	0.50	U, J, QC-1	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
Tentatively Identified Compounds:								
124-19-6	Nonanal	6	NJ, CLP15	ug/L		6/22/18	6/22/18	CLP SOM02.4

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D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF34-GW-01 **Lab ID:** C183012-60 **MD No:**
Station ID: NF34 **Matrix:** Groundwater **D No:** AZB4 CHM

Date Collected: 6/19/18 13:30

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
Tentatively Identified Compounds:								
124-13-0	Octanal	2	NJ, CLP15	ug/L		6/22/18	6/22/18	CLP SOM02.4

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Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF34-SS-01 **Lab ID:** C183012-61 **MD No:**

Station ID: NF34 **Matrix:** Surface Soil **D No:** AZ91 CHM

Date Collected: 6/19/18 11:55

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1644012	% Moisture	15		%		6/22/18	6/22/18	CLP VOA
R4-7156	(m- and/or p-)Xylene	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
71-55-6	1,1,1-Trichloroethane	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
79-34-5	1,1,2,2-Tetrachloroethane	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
76-13-1	1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113)	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
79-00-5	1,1,2-Trichloroethane	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
75-34-3	1,1-Dichloroethane	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
75-35-4	1,1-Dichloroethene (1,1-Dichloroethylene)	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
87-61-6	1,2,3-Trichlorobenzene	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
120-82-1	1,2,4-Trichlorobenzene	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
96-12-8	1,2-Dibromo-3-Chloropropane (DBCP)	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
106-93-4	1,2-Dibromoethane (EDB)	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
95-50-1	1,2-Dichlorobenzene	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
107-06-2	1,2-Dichloroethane	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
78-87-5	1,2-Dichloropropane	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
541-73-1	1,3-Dichlorobenzene	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
106-46-7	1,4-Dichlorobenzene	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
67-64-1	Acetone	29		ug/kg dry	7.5	6/22/18	6/22/18	CLP SOM02.4 V
71-43-2	Benzene	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
74-97-5	Bromochloromethane	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
75-27-4	Bromodichloromethane	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
75-25-2	Bromoform	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
74-83-9	Bromomethane	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
75-15-0	Carbon disulfide	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
56-23-5	Carbon Tetrachloride	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
108-90-7	Chlorobenzene	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
75-00-3	Chloroethane	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF34-SS-01 **Lab ID:** C183012-61 **MD No:**
Station ID: NF34 **Matrix:** Surface Soil **D No:** AZ91 CHM

Date Collected: 6/19/18 11:55

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
67-66-3	Chloroform	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
74-87-3	Chloromethane	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
156-59-2	cis-1,2-Dichloroethene	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
10061-01-5	cis-1,3-Dichloropropene	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
110-82-7	Cyclohexane	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
124-48-1	Dibromochloromethane	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
75-71-8	Dichlorodifluoromethane (Freon 12)	3.7	U, J, QC-3	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
100-41-4	Ethyl Benzene	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
98-82-8	Isopropylbenzene	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
79-20-9	Methyl Acetate	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
591-78-6	Methyl Butyl Ketone	7.5	U	ug/kg dry	7.5	6/22/18	6/22/18	CLP SOM02.4 V
78-93-3	Methyl Ethyl Ketone	7.5	U	ug/kg dry	7.5	6/22/18	6/22/18	CLP SOM02.4 V
108-10-1	Methyl Isobutyl Ketone	7.5	U	ug/kg dry	7.5	6/22/18	6/22/18	CLP SOM02.4 V
1634-04-4	Methyl T-Butyl Ether (MTBE)	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
108-87-2	Methylcyclohexane	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
75-09-2	Methylene Chloride	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
95-47-6	o-Xylene	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
100-42-5	Styrene	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
127-18-4	Tetrachloroethene (Tetrachloroethylene)	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
108-88-3	Toluene	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
156-60-5	trans-1,2-Dichloroethene	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
10061-02-6	trans-1,3-Dichloropropene	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
79-01-6	Trichloroethene (Trichloroethylene)	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
75-69-4	Trichlorofluoromethane (Freon 11)	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
75-01-4	Vinyl chloride	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
Tentatively Identified Compounds:								
R4-0000	Tentatively Identified Compounds	4	U	ug/kg dry	4	6/22/18	6/22/18	CLP SOM02.4 V

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Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF34-SS-02 **Lab ID:** C183012-62 **MD No:**

Station ID: NF34 **Matrix:** Subsurface Soil **D No:** AZ92 CHM

Date Collected: 6/19/18 11:50

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1644012	% Moisture	16		%		6/22/18	6/22/18	CLP VOA
R4-7156	(m- and/or p-)Xylene	3.8	U	ug/kg dry	3.8	6/22/18	6/22/18	CLP SOM02.4 V
71-55-6	1,1,1-Trichloroethane	3.8	U	ug/kg dry	3.8	6/22/18	6/22/18	CLP SOM02.4 V
79-34-5	1,1,2,2-Tetrachloroethane	3.8	U	ug/kg dry	3.8	6/22/18	6/22/18	CLP SOM02.4 V
76-13-1	1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113)	3.8	U	ug/kg dry	3.8	6/22/18	6/22/18	CLP SOM02.4 V
79-00-5	1,1,2-Trichloroethane	3.8	U	ug/kg dry	3.8	6/22/18	6/22/18	CLP SOM02.4 V
75-34-3	1,1-Dichloroethane	3.8	U	ug/kg dry	3.8	6/22/18	6/22/18	CLP SOM02.4 V
75-35-4	1,1-Dichloroethene (1,1-Dichloroethylene)	3.8	U	ug/kg dry	3.8	6/22/18	6/22/18	CLP SOM02.4 V
87-61-6	1,2,3-Trichlorobenzene	3.8	U	ug/kg dry	3.8	6/22/18	6/22/18	CLP SOM02.4 V
120-82-1	1,2,4-Trichlorobenzene	3.8	U	ug/kg dry	3.8	6/22/18	6/22/18	CLP SOM02.4 V
96-12-8	1,2-Dibromo-3-Chloropropane (DBCP)	3.8	U	ug/kg dry	3.8	6/22/18	6/22/18	CLP SOM02.4 V
106-93-4	1,2-Dibromoethane (EDB)	3.8	U	ug/kg dry	3.8	6/22/18	6/22/18	CLP SOM02.4 V
95-50-1	1,2-Dichlorobenzene	3.8	U	ug/kg dry	3.8	6/22/18	6/22/18	CLP SOM02.4 V
107-06-2	1,2-Dichloroethane	3.8	U	ug/kg dry	3.8	6/22/18	6/22/18	CLP SOM02.4 V
78-87-5	1,2-Dichloropropane	3.8	U	ug/kg dry	3.8	6/22/18	6/22/18	CLP SOM02.4 V
541-73-1	1,3-Dichlorobenzene	3.8	U	ug/kg dry	3.8	6/22/18	6/22/18	CLP SOM02.4 V
106-46-7	1,4-Dichlorobenzene	3.8	U	ug/kg dry	3.8	6/22/18	6/22/18	CLP SOM02.4 V
67-64-1	Acetone	14		ug/kg dry	7.6	6/22/18	6/22/18	CLP SOM02.4 V
71-43-2	Benzene	3.8	U	ug/kg dry	3.8	6/22/18	6/22/18	CLP SOM02.4 V
74-97-5	Bromochloromethane	3.8	U	ug/kg dry	3.8	6/22/18	6/22/18	CLP SOM02.4 V
75-27-4	Bromodichloromethane	3.8	U	ug/kg dry	3.8	6/22/18	6/22/18	CLP SOM02.4 V
75-25-2	Bromoform	3.8	U	ug/kg dry	3.8	6/22/18	6/22/18	CLP SOM02.4 V
74-83-9	Bromomethane	3.8	U	ug/kg dry	3.8	6/22/18	6/22/18	CLP SOM02.4 V
75-15-0	Carbon disulfide	3.8	U	ug/kg dry	3.8	6/22/18	6/22/18	CLP SOM02.4 V
56-23-5	Carbon Tetrachloride	3.8	U	ug/kg dry	3.8	6/22/18	6/22/18	CLP SOM02.4 V
108-90-7	Chlorobenzene	3.8	U	ug/kg dry	3.8	6/22/18	6/22/18	CLP SOM02.4 V
75-00-3	Chloroethane	3.8	U	ug/kg dry	3.8	6/22/18	6/22/18	CLP SOM02.4 V

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF34-SS-02 **Lab ID:** C183012-62 **MD No:**

Station ID: NF34 **Matrix:** Subsurface Soil **D No:** AZ92 CHM

Date Collected: 6/19/18 11:50

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
67-66-3	Chloroform	3.8	U	ug/kg dry	3.8	6/22/18	6/22/18	CLP SOM02.4 V
74-87-3	Chloromethane	3.8	U	ug/kg dry	3.8	6/22/18	6/22/18	CLP SOM02.4 V
156-59-2	cis-1,2-Dichloroethene	3.8	U	ug/kg dry	3.8	6/22/18	6/22/18	CLP SOM02.4 V
10061-01-5	cis-1,3-Dichloropropene	3.8	U	ug/kg dry	3.8	6/22/18	6/22/18	CLP SOM02.4 V
110-82-7	Cyclohexane	3.8	U	ug/kg dry	3.8	6/22/18	6/22/18	CLP SOM02.4 V
124-48-1	Dibromochloromethane	3.8	U	ug/kg dry	3.8	6/22/18	6/22/18	CLP SOM02.4 V
75-71-8	Dichlorodifluoromethane (Freon 12)	3.8	U, J, QC-3	ug/kg dry	3.8	6/22/18	6/22/18	CLP SOM02.4 V
100-41-4	Ethyl Benzene	3.8	U	ug/kg dry	3.8	6/22/18	6/22/18	CLP SOM02.4 V
98-82-8	Isopropylbenzene	3.8	U	ug/kg dry	3.8	6/22/18	6/22/18	CLP SOM02.4 V
79-20-9	Methyl Acetate	3.8	U	ug/kg dry	3.8	6/22/18	6/22/18	CLP SOM02.4 V
591-78-6	Methyl Butyl Ketone	7.6	U	ug/kg dry	7.6	6/22/18	6/22/18	CLP SOM02.4 V
78-93-3	Methyl Ethyl Ketone	7.6	U	ug/kg dry	7.6	6/22/18	6/22/18	CLP SOM02.4 V
108-10-1	Methyl Isobutyl Ketone	7.6	U	ug/kg dry	7.6	6/22/18	6/22/18	CLP SOM02.4 V
1634-04-4	Methyl T-Butyl Ether (MTBE)	3.8	U	ug/kg dry	3.8	6/22/18	6/22/18	CLP SOM02.4 V
108-87-2	Methylcyclohexane	3.8	U	ug/kg dry	3.8	6/22/18	6/22/18	CLP SOM02.4 V
75-09-2	Methylene Chloride	3.8	U	ug/kg dry	3.8	6/22/18	6/22/18	CLP SOM02.4 V
95-47-6	o-Xylene	3.8	U	ug/kg dry	3.8	6/22/18	6/22/18	CLP SOM02.4 V
100-42-5	Styrene	3.8	U	ug/kg dry	3.8	6/22/18	6/22/18	CLP SOM02.4 V
127-18-4	Tetrachloroethene (Tetrachloroethylene)	3.8	U	ug/kg dry	3.8	6/22/18	6/22/18	CLP SOM02.4 V
108-88-3	Toluene	3.8	U	ug/kg dry	3.8	6/22/18	6/22/18	CLP SOM02.4 V
156-60-5	trans-1,2-Dichloroethene	3.8	U	ug/kg dry	3.8	6/22/18	6/22/18	CLP SOM02.4 V
10061-02-6	trans-1,3-Dichloropropene	3.8	U	ug/kg dry	3.8	6/22/18	6/22/18	CLP SOM02.4 V
79-01-6	Trichloroethene (Trichloroethylene)	3.8	U	ug/kg dry	3.8	6/22/18	6/22/18	CLP SOM02.4 V
75-69-4	Trichlorofluoromethane (Freon 11)	3.8	U	ug/kg dry	3.8	6/22/18	6/22/18	CLP SOM02.4 V
75-01-4	Vinyl chloride	3.8	U	ug/kg dry	3.8	6/22/18	6/22/18	CLP SOM02.4 V
Tentatively Identified Compounds:								
R4-0000	Tentatively Identified Compounds	4	U	ug/kg dry	4	6/22/18	6/22/18	CLP SOM02.4 V

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF35-GW-01 **Lab ID:** C183012-63 **MD No:**

Station ID: NF35 **Matrix:** Groundwater **D No:** AZB5 CHM

Date Collected: 6/20/18 15:20

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
R4-7156	(m- and/or p-)Xylene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
71-55-6	1,1,1-Trichloroethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
76-13-1	1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113)	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
79-00-5	1,1,2-Trichloroethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-34-3	1,1-Dichloroethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-35-4	1,1-Dichloroethene (1,1-Dichloroethylene)	0.50	U, J, QS-3	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
87-61-6	1,2,3-Trichlorobenzene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
120-82-1	1,2,4-Trichlorobenzene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
96-12-8	1,2-Dibromo-3-Chloropropane (DBCP)	0.50	U, R, CLP32, CLP17	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
106-93-4	1,2-Dibromoethane (EDB)	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
95-50-1	1,2-Dichlorobenzene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
107-06-2	1,2-Dichloroethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
78-87-5	1,2-Dichloropropane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
541-73-1	1,3-Dichlorobenzene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
106-46-7	1,4-Dichlorobenzene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
67-64-1	Acetone	5.0	U, R, CLP32, CLP17	ug/L	5.0	6/22/18	6/22/18	CLP SOM02.4
71-43-2	Benzene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
74-97-5	Bromochloromethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-27-4	Bromodichloromethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-25-2	Bromoform	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
74-83-9	Bromomethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-15-0	Carbon disulfide	0.50	U, J, QC-1	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
56-23-5	Carbon Tetrachloride	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
108-90-7	Chlorobenzene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-00-3	Chloroethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF35-GW-01 **Lab ID:** C183012-63 **MD No:**
Station ID: NF35 **Matrix:** Groundwater **D No:** AZB5 CHM

Date Collected: 6/20/18 15:20

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
67-66-3	Chloroform	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
74-87-3	Chloromethane	0.50	U, J, QC-1	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
156-59-2	cis-1,2-Dichloroethene	0.50	U, J, QS-3	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
10061-01-5	cis-1,3-Dichloropropene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
110-82-7	Cyclohexane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
124-48-1	Dibromochloromethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-71-8	Dichlorodifluoromethane (Freon 12)	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
100-41-4	Ethyl Benzene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
98-82-8	Isopropylbenzene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
79-20-9	Methyl Acetate	0.50	U, R, CLP32, CLP17	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
591-78-6	Methyl Butyl Ketone	5.0	U	ug/L	5.0	6/22/18	6/22/18	CLP SOM02.4
78-93-3	Methyl Ethyl Ketone	5.0	U, R, CLP32, CLP17	ug/L	5.0	6/22/18	6/22/18	CLP SOM02.4
108-10-1	Methyl Isobutyl Ketone	5.0	U	ug/L	5.0	6/22/18	6/22/18	CLP SOM02.4
1634-04-4	Methyl T-Butyl Ether (MTBE)	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
108-87-2	Methylcyclohexane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-09-2	Methylene Chloride	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
95-47-6	o-Xylene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
100-42-5	Styrene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
127-18-4	Tetrachloroethene (Tetrachloroethylene)	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
108-88-3	Toluene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
156-60-5	trans-1,2-Dichloroethene	0.50	U, J, QS-3	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
10061-02-6	trans-1,3-Dichloropropene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
79-01-6	Trichloroethene (Trichloroethylene)	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-69-4	Trichlorofluoromethane (Freon 11)	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-01-4	Vinyl chloride	0.50	U, J, QC-1	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
Tentatively Identified Compounds:								
R4-0000	Tentatively Identified Compounds	0.5	U	ug/L	0.5	6/22/18	6/22/18	CLP SOM02.4

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF35-SS-01 **Lab ID:** C183012-64 **MD No:**

Station ID: NF35 **Matrix:** Surface Soil **D No:** AZ93 CHM

Date Collected: 6/20/18 15:00

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1644012	% Moisture	15		%		6/22/18	6/22/18	CLP VOA
R4-7156	(m- and/or p-)Xylene	6.9	U, J, QI-1	ug/kg dry	6.9	6/22/18	6/22/18	CLP SOM02.4 V
71-55-6	1,1,1-Trichloroethane	6.9	U, J, QI-1	ug/kg dry	6.9	6/22/18	6/22/18	CLP SOM02.4 V
79-34-5	1,1,2,2-Tetrachloroethane	6.9	U, J, QI-1	ug/kg dry	6.9	6/22/18	6/22/18	CLP SOM02.4 V
76-13-1	1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113)	6.9	U	ug/kg dry	6.9	6/22/18	6/22/18	CLP SOM02.4 V
79-00-5	1,1,2-Trichloroethane	6.9	U, J, QI-1	ug/kg dry	6.9	6/22/18	6/22/18	CLP SOM02.4 V
75-34-3	1,1-Dichloroethane	6.9	U	ug/kg dry	6.9	6/22/18	6/22/18	CLP SOM02.4 V
75-35-4	1,1-Dichloroethene (1,1-Dichloroethylene)	6.9	U	ug/kg dry	6.9	6/22/18	6/22/18	CLP SOM02.4 V
87-61-6	1,2,3-Trichlorobenzene	6.9	U, J, QI-1	ug/kg dry	6.9	6/22/18	6/22/18	CLP SOM02.4 V
120-82-1	1,2,4-Trichlorobenzene	6.9	U, J, QI-1	ug/kg dry	6.9	6/22/18	6/22/18	CLP SOM02.4 V
96-12-8	1,2-Dibromo-3-Chloropropane (DBCP)	6.9	U, J, QI-1	ug/kg dry	6.9	6/22/18	6/22/18	CLP SOM02.4 V
106-93-4	1,2-Dibromoethane (EDB)	6.9	U, J, QI-1	ug/kg dry	6.9	6/22/18	6/22/18	CLP SOM02.4 V
95-50-1	1,2-Dichlorobenzene	6.9	U, J, QI-1	ug/kg dry	6.9	6/22/18	6/22/18	CLP SOM02.4 V
107-06-2	1,2-Dichloroethane	6.9	U	ug/kg dry	6.9	6/22/18	6/22/18	CLP SOM02.4 V
78-87-5	1,2-Dichloropropane	6.9	U, J, QI-1	ug/kg dry	6.9	6/22/18	6/22/18	CLP SOM02.4 V
541-73-1	1,3-Dichlorobenzene	6.9	U, J, QI-1	ug/kg dry	6.9	6/22/18	6/22/18	CLP SOM02.4 V
106-46-7	1,4-Dichlorobenzene	6.9	U, J, QI-1	ug/kg dry	6.9	6/22/18	6/22/18	CLP SOM02.4 V
67-64-1	Acetone	77		ug/kg dry	14	6/22/18	6/22/18	CLP SOM02.4 V
71-43-2	Benzene	6.9	U, J, QI-1	ug/kg dry	6.9	6/22/18	6/22/18	CLP SOM02.4 V
74-97-5	Bromochloromethane	6.9	U	ug/kg dry	6.9	6/22/18	6/22/18	CLP SOM02.4 V
75-27-4	Bromodichloromethane	6.9	U, J, QI-1	ug/kg dry	6.9	6/22/18	6/22/18	CLP SOM02.4 V
75-25-2	Bromoform	6.9	U, J, QI-1	ug/kg dry	6.9	6/22/18	6/22/18	CLP SOM02.4 V
74-83-9	Bromomethane	6.9	U	ug/kg dry	6.9	6/22/18	6/22/18	CLP SOM02.4 V
75-15-0	Carbon disulfide	6.9	U	ug/kg dry	6.9	6/22/18	6/22/18	CLP SOM02.4 V
56-23-5	Carbon Tetrachloride	6.9	U, J, QI-1	ug/kg dry	6.9	6/22/18	6/22/18	CLP SOM02.4 V
108-90-7	Chlorobenzene	6.9	U, J, QI-1	ug/kg dry	6.9	6/22/18	6/22/18	CLP SOM02.4 V
75-00-3	Chloroethane	6.9	U	ug/kg dry	6.9	6/22/18	6/22/18	CLP SOM02.4 V

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF35-SS-01 **Lab ID:** C183012-64 **MD No:**
Station ID: NF35 **Matrix:** Surface Soil **D No:** AZ93 CHM

Date Collected: 6/20/18 15:00

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
67-66-3	Chloroform	6.9	U	ug/kg dry	6.9	6/22/18	6/22/18	CLP SOM02.4 V
74-87-3	Chloromethane	6.9	U, J, QC-1	ug/kg dry	6.9	6/22/18	6/22/18	CLP SOM02.4 V
156-59-2	cis-1,2-Dichloroethene	6.9	U	ug/kg dry	6.9	6/22/18	6/22/18	CLP SOM02.4 V
10061-01-5	cis-1,3-Dichloropropene	6.9	U, J, QI-1	ug/kg dry	6.9	6/22/18	6/22/18	CLP SOM02.4 V
110-82-7	Cyclohexane	6.9	U, J, QI-1	ug/kg dry	6.9	6/22/18	6/22/18	CLP SOM02.4 V
124-48-1	Dibromochloromethane	6.9	U, J, QI-1	ug/kg dry	6.9	6/22/18	6/22/18	CLP SOM02.4 V
75-71-8	Dichlorodifluoromethane (Freon 12)	6.9	U, J, QC-1, QC-3	ug/kg dry	6.9	6/22/18	6/22/18	CLP SOM02.4 V
100-41-4	Ethyl Benzene	6.9	U, J, QI-1	ug/kg dry	6.9	6/22/18	6/22/18	CLP SOM02.4 V
98-82-8	Isopropylbenzene	6.9	U, J, QI-1	ug/kg dry	6.9	6/22/18	6/22/18	CLP SOM02.4 V
79-20-9	Methyl Acetate	6.9	U	ug/kg dry	6.9	6/22/18	6/22/18	CLP SOM02.4 V
591-78-6	Methyl Butyl Ketone	14	U, J, QI-1	ug/kg dry	14	6/22/18	6/22/18	CLP SOM02.4 V
78-93-3	Methyl Ethyl Ketone	14	U	ug/kg dry	14	6/22/18	6/22/18	CLP SOM02.4 V
108-10-1	Methyl Isobutyl Ketone	14	U, J, QI-1	ug/kg dry	14	6/22/18	6/22/18	CLP SOM02.4 V
1634-04-4	Methyl T-Butyl Ether (MTBE)	6.9	U	ug/kg dry	6.9	6/22/18	6/22/18	CLP SOM02.4 V
108-87-2	Methylcyclohexane	6.9	U, J, QI-1	ug/kg dry	6.9	6/22/18	6/22/18	CLP SOM02.4 V
75-09-2	Methylene Chloride	6.9	U	ug/kg dry	6.9	6/22/18	6/22/18	CLP SOM02.4 V
95-47-6	o-Xylene	6.9	U, J, QI-1	ug/kg dry	6.9	6/22/18	6/22/18	CLP SOM02.4 V
100-42-5	Styrene	6.9	U, J, QI-1	ug/kg dry	6.9	6/22/18	6/22/18	CLP SOM02.4 V
127-18-4	Tetrachloroethene (Tetrachloroethylene)	6.9	U, J, QI-1	ug/kg dry	6.9	6/22/18	6/22/18	CLP SOM02.4 V
108-88-3	Toluene	6.9	U, J, QI-1	ug/kg dry	6.9	6/22/18	6/22/18	CLP SOM02.4 V
156-60-5	trans-1,2-Dichloroethene	6.9	U	ug/kg dry	6.9	6/22/18	6/22/18	CLP SOM02.4 V
10061-02-6	trans-1,3-Dichloropropene	6.9	U, J, QI-1	ug/kg dry	6.9	6/22/18	6/22/18	CLP SOM02.4 V
79-01-6	Trichloroethene (Trichloroethylene)	6.9	U, J, QI-1	ug/kg dry	6.9	6/22/18	6/22/18	CLP SOM02.4 V
75-69-4	Trichlorofluoromethane (Freon 11)	6.9	U	ug/kg dry	6.9	6/22/18	6/22/18	CLP SOM02.4 V
75-01-4	Vinyl chloride	6.9	U	ug/kg dry	6.9	6/22/18	6/22/18	CLP SOM02.4 V
Tentatively Identified Compounds:								
80-56-8	.alpha.-Pinene	8000	NJ, CLP15	ug/kg dry		6/22/18	6/22/18	CLP SOM02.4 V
127-91-3	.beta.-Pinene	4000	NJ, CLP15	ug/kg dry		6/22/18	6/22/18	CLP SOM02.4 V

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF35-SS-01 **Lab ID:** C183012-64 **MD No:**

Station ID: NF35 **Matrix:** Surface Soil **D No:** AZ93 CHM

Date Collected: 6/20/18 15:00

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
Tentatively Identified Compounds:								
115-10-6	Dimethyl Ether	30	NJ, CLP15	ug/kg dry		6/22/18	6/22/18	CLP SOM02.4 V
5989-27-5	d-Limonene	200	NJ, CLP15	ug/kg dry		6/22/18	6/22/18	CLP SOM02.4 V
99-87-6	p-Cymene	500	NJ, CLP15	ug/kg dry		6/22/18	6/22/18	CLP SOM02.4 V
R4-6501	Unidentified Compound(s)	200	J, CLP15	ug/kg dry		6/22/18	6/22/18	CLP SOM02.4 V

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Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF35-SS-02 **Lab ID:** C183012-65 **MD No:**

Station ID: NF35 **Matrix:** Subsurface Soil **D No:** AZ94 CHM

Date Collected: 6/20/18 15:10

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1644012	% Moisture	19		%		6/22/18	6/22/18	CLP VOA
R4-7156	(m- and/or p-)Xylene	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
71-55-6	1,1,1-Trichloroethane	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
79-34-5	1,1,2,2-Tetrachloroethane	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
76-13-1	1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113)	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
79-00-5	1,1,2-Trichloroethane	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
75-34-3	1,1-Dichloroethane	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
75-35-4	1,1-Dichloroethene (1,1-Dichloroethylene)	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
87-61-6	1,2,3-Trichlorobenzene	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
120-82-1	1,2,4-Trichlorobenzene	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
96-12-8	1,2-Dibromo-3-Chloropropane (DBCP)	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
106-93-4	1,2-Dibromoethane (EDB)	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
95-50-1	1,2-Dichlorobenzene	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
107-06-2	1,2-Dichloroethane	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
78-87-5	1,2-Dichloropropane	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
541-73-1	1,3-Dichlorobenzene	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
106-46-7	1,4-Dichlorobenzene	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
67-64-1	Acetone	82		ug/kg dry	8.4	6/22/18	6/22/18	CLP SOM02.4 V
71-43-2	Benzene	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
74-97-5	Bromochloromethane	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
75-27-4	Bromodichloromethane	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
75-25-2	Bromoform	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
74-83-9	Bromomethane	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
75-15-0	Carbon disulfide	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
56-23-5	Carbon Tetrachloride	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
108-90-7	Chlorobenzene	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
75-00-3	Chloroethane	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF35-SS-02 **Lab ID:** C183012-65 **MD No:**
Station ID: NF35 **Matrix:** Subsurface Soil **D No:** AZ94 CHM

Date Collected: 6/20/18 15:10

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
67-66-3	Chloroform	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
74-87-3	Chloromethane	4.2	U, J, QC-1	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
156-59-2	cis-1,2-Dichloroethene	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
10061-01-5	cis-1,3-Dichloropropene	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
110-82-7	Cyclohexane	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
124-48-1	Dibromochloromethane	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
75-71-8	Dichlorodifluoromethane (Freon 12)	4.2	U, J, QC-1, QC-3	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
100-41-4	Ethyl Benzene	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
98-82-8	Isopropylbenzene	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
79-20-9	Methyl Acetate	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
591-78-6	Methyl Butyl Ketone	8.4	U	ug/kg dry	8.4	6/22/18	6/22/18	CLP SOM02.4 V
78-93-3	Methyl Ethyl Ketone	12		ug/kg dry	8.4	6/22/18	6/22/18	CLP SOM02.4 V
108-10-1	Methyl Isobutyl Ketone	8.4	U	ug/kg dry	8.4	6/22/18	6/22/18	CLP SOM02.4 V
1634-04-4	Methyl T-Butyl Ether (MTBE)	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
108-87-2	Methylcyclohexane	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
75-09-2	Methylene Chloride	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
95-47-6	o-Xylene	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
100-42-5	Styrene	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
127-18-4	Tetrachloroethene (Tetrachloroethylene)	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
108-88-3	Toluene	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
156-60-5	trans-1,2-Dichloroethene	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
10061-02-6	trans-1,3-Dichloropropene	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
79-01-6	Trichloroethene (Trichloroethylene)	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
75-69-4	Trichlorofluoromethane (Freon 11)	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
75-01-4	Vinyl chloride	4.2	U	ug/kg dry	4.2	6/22/18	6/22/18	CLP SOM02.4 V
Tentatively Identified Compounds:								
115-10-6	Dimethyl Ether	10	NJ, CLP15	ug/kg dry		6/22/18	6/22/18	CLP SOM02.4 V

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF36-GW-01 **Lab ID:** C183012-66 **MD No:**

Station ID: NF36 **Matrix:** Groundwater **D No:** AZB6 CHM

Date Collected: 6/21/18 10:35

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
R4-7156	(m- and/or p-)Xylene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
71-55-6	1,1,1-Trichloroethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
76-13-1	1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113)	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
79-00-5	1,1,2-Trichloroethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-34-3	1,1-Dichloroethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-35-4	1,1-Dichloroethene (1,1-Dichloroethylene)	0.50	U, J, QS-3	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
87-61-6	1,2,3-Trichlorobenzene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
120-82-1	1,2,4-Trichlorobenzene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
96-12-8	1,2-Dibromo-3-Chloropropane (DBCP)	0.50	U, R, CLP32, CLP17	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
106-93-4	1,2-Dibromoethane (EDB)	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
95-50-1	1,2-Dichlorobenzene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
107-06-2	1,2-Dichloroethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
78-87-5	1,2-Dichloropropane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
541-73-1	1,3-Dichlorobenzene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
106-46-7	1,4-Dichlorobenzene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
67-64-1	Acetone	55	J, CLP32, CLP17	ug/L	5.0	6/22/18	6/22/18	CLP SOM02.4
71-43-2	Benzene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
74-97-5	Bromochloromethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-27-4	Bromodichloromethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-25-2	Bromoform	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
74-83-9	Bromomethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-15-0	Carbon disulfide	0.50	U, J, QC-1	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
56-23-5	Carbon Tetrachloride	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
108-90-7	Chlorobenzene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-00-3	Chloroethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4

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D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF36-GW-01 **Lab ID:** C183012-66 **MD No:**
Station ID: NF36 **Matrix:** Groundwater **D No:** AZB6 CHM

Date Collected: 6/21/18 10:35

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
67-66-3	Chloroform	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
74-87-3	Chloromethane	0.50	U, J, QC-1	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
156-59-2	cis-1,2-Dichloroethene	0.50	U, J, QS-3	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
10061-01-5	cis-1,3-Dichloropropene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
110-82-7	Cyclohexane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
124-48-1	Dibromochloromethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-71-8	Dichlorodifluoromethane (Freon 12)	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
100-41-4	Ethyl Benzene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
98-82-8	Isopropylbenzene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
79-20-9	Methyl Acetate	0.50	U, R, CLP32, CLP17	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
591-78-6	Methyl Butyl Ketone	5.0	U	ug/L	5.0	6/22/18	6/22/18	CLP SOM02.4
78-93-3	Methyl Ethyl Ketone	5.0	U, R, CLP32, CLP17	ug/L	5.0	6/22/18	6/22/18	CLP SOM02.4
108-10-1	Methyl Isobutyl Ketone	5.0	U	ug/L	5.0	6/22/18	6/22/18	CLP SOM02.4
1634-04-4	Methyl T-Butyl Ether (MTBE)	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
108-87-2	Methylcyclohexane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-09-2	Methylene Chloride	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
95-47-6	o-Xylene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
100-42-5	Styrene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
127-18-4	Tetrachloroethene (Tetrachloroethylene)	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
108-88-3	Toluene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
156-60-5	trans-1,2-Dichloroethene	0.50	U, J, QS-3	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
10061-02-6	trans-1,3-Dichloropropene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
79-01-6	Trichloroethene (Trichloroethylene)	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-69-4	Trichlorofluoromethane (Freon 11)	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-01-4	Vinyl chloride	0.50	U, J, QC-1	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
Tentatively Identified Compounds:								
104-76-7	1-Hexanol, 2-ethyl-	2	NJ, CLP15	ug/L		6/22/18	6/22/18	CLP SOM02.4

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D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF36-SS-01 **Lab ID:** C183012-67 **MD No:**

Station ID: NF36 **Matrix:** Subsurface Soil **D No:** AZ95 CHM

Date Collected: 6/20/18 16:45

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1644012	% Moisture	22		%		6/26/18	6/26/18	CLP VOA
R4-7156	(m- and/or p-)Xylene	4.7	U	ug/kg dry	4.7	6/26/18	6/26/18	CLP SOM02.4 V
71-55-6	1,1,1-Trichloroethane	4.7	U	ug/kg dry	4.7	6/26/18	6/26/18	CLP SOM02.4 V
79-34-5	1,1,2,2-Tetrachloroethane	4.7	U	ug/kg dry	4.7	6/26/18	6/26/18	CLP SOM02.4 V
76-13-1	1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113)	4.7	U	ug/kg dry	4.7	6/26/18	6/26/18	CLP SOM02.4 V
79-00-5	1,1,2-Trichloroethane	4.7	U	ug/kg dry	4.7	6/26/18	6/26/18	CLP SOM02.4 V
75-34-3	1,1-Dichloroethane	4.7	U	ug/kg dry	4.7	6/26/18	6/26/18	CLP SOM02.4 V
75-35-4	1,1-Dichloroethene (1,1-Dichloroethylene)	4.7	U	ug/kg dry	4.7	6/26/18	6/26/18	CLP SOM02.4 V
87-61-6	1,2,3-Trichlorobenzene	4.7	U	ug/kg dry	4.7	6/26/18	6/26/18	CLP SOM02.4 V
120-82-1	1,2,4-Trichlorobenzene	4.7	U	ug/kg dry	4.7	6/26/18	6/26/18	CLP SOM02.4 V
96-12-8	1,2-Dibromo-3-Chloropropane (DBCP)	4.7	U	ug/kg dry	4.7	6/26/18	6/26/18	CLP SOM02.4 V
106-93-4	1,2-Dibromoethane (EDB)	4.7	U	ug/kg dry	4.7	6/26/18	6/26/18	CLP SOM02.4 V
95-50-1	1,2-Dichlorobenzene	4.7	U	ug/kg dry	4.7	6/26/18	6/26/18	CLP SOM02.4 V
107-06-2	1,2-Dichloroethane	4.7	U	ug/kg dry	4.7	6/26/18	6/26/18	CLP SOM02.4 V
78-87-5	1,2-Dichloropropane	4.7	U	ug/kg dry	4.7	6/26/18	6/26/18	CLP SOM02.4 V
541-73-1	1,3-Dichlorobenzene	4.7	U	ug/kg dry	4.7	6/26/18	6/26/18	CLP SOM02.4 V
106-46-7	1,4-Dichlorobenzene	4.7	U	ug/kg dry	4.7	6/26/18	6/26/18	CLP SOM02.4 V
67-64-1	Acetone	9.4	U	ug/kg dry	9.4	6/26/18	6/26/18	CLP SOM02.4 V
71-43-2	Benzene	4.7	U	ug/kg dry	4.7	6/26/18	6/26/18	CLP SOM02.4 V
74-97-5	Bromochloromethane	4.7	U	ug/kg dry	4.7	6/26/18	6/26/18	CLP SOM02.4 V
75-27-4	Bromodichloromethane	4.7	U	ug/kg dry	4.7	6/26/18	6/26/18	CLP SOM02.4 V
75-25-2	Bromoform	4.7	U	ug/kg dry	4.7	6/26/18	6/26/18	CLP SOM02.4 V
74-83-9	Bromomethane	4.7	U	ug/kg dry	4.7	6/26/18	6/26/18	CLP SOM02.4 V
75-15-0	Carbon disulfide	4.7	U	ug/kg dry	4.7	6/26/18	6/26/18	CLP SOM02.4 V
56-23-5	Carbon Tetrachloride	4.7	U	ug/kg dry	4.7	6/26/18	6/26/18	CLP SOM02.4 V
108-90-7	Chlorobenzene	4.7	U	ug/kg dry	4.7	6/26/18	6/26/18	CLP SOM02.4 V
75-00-3	Chloroethane	4.7	U	ug/kg dry	4.7	6/26/18	6/26/18	CLP SOM02.4 V

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF36-SS-01 **Lab ID:** C183012-67 **MD No:**
Station ID: NF36 **Matrix:** Subsurface Soil **D No:** AZ95 CHM

Date Collected: 6/20/18 16:45

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
67-66-3	Chloroform	4.7	U	ug/kg dry	4.7	6/26/18	6/26/18	CLP SOM02.4 V
74-87-3	Chloromethane	4.7	U	ug/kg dry	4.7	6/26/18	6/26/18	CLP SOM02.4 V
156-59-2	cis-1,2-Dichloroethene	4.7	U	ug/kg dry	4.7	6/26/18	6/26/18	CLP SOM02.4 V
10061-01-5	cis-1,3-Dichloropropene	4.7	U	ug/kg dry	4.7	6/26/18	6/26/18	CLP SOM02.4 V
110-82-7	Cyclohexane	4.7	U	ug/kg dry	4.7	6/26/18	6/26/18	CLP SOM02.4 V
124-48-1	Dibromochloromethane	4.7	U	ug/kg dry	4.7	6/26/18	6/26/18	CLP SOM02.4 V
75-71-8	Dichlorodifluoromethane (Freon 12)	4.7	U, J, QC-3	ug/kg dry	4.7	6/26/18	6/26/18	CLP SOM02.4 V
100-41-4	Ethyl Benzene	4.7	U	ug/kg dry	4.7	6/26/18	6/26/18	CLP SOM02.4 V
98-82-8	Isopropylbenzene	4.7	U	ug/kg dry	4.7	6/26/18	6/26/18	CLP SOM02.4 V
79-20-9	Methyl Acetate	4.7	U	ug/kg dry	4.7	6/26/18	6/26/18	CLP SOM02.4 V
591-78-6	Methyl Butyl Ketone	9.4	U	ug/kg dry	9.4	6/26/18	6/26/18	CLP SOM02.4 V
78-93-3	Methyl Ethyl Ketone	9.4	U	ug/kg dry	9.4	6/26/18	6/26/18	CLP SOM02.4 V
108-10-1	Methyl Isobutyl Ketone	9.4	U	ug/kg dry	9.4	6/26/18	6/26/18	CLP SOM02.4 V
1634-04-4	Methyl T-Butyl Ether (MTBE)	4.7	U	ug/kg dry	4.7	6/26/18	6/26/18	CLP SOM02.4 V
108-87-2	Methylcyclohexane	4.7	U	ug/kg dry	4.7	6/26/18	6/26/18	CLP SOM02.4 V
75-09-2	Methylene Chloride	4.7	U	ug/kg dry	4.7	6/26/18	6/26/18	CLP SOM02.4 V
95-47-6	o-Xylene	4.7	U	ug/kg dry	4.7	6/26/18	6/26/18	CLP SOM02.4 V
100-42-5	Styrene	4.7	U	ug/kg dry	4.7	6/26/18	6/26/18	CLP SOM02.4 V
127-18-4	Tetrachloroethene (Tetrachloroethylene)	4.7	U	ug/kg dry	4.7	6/26/18	6/26/18	CLP SOM02.4 V
108-88-3	Toluene	4.7	U	ug/kg dry	4.7	6/26/18	6/26/18	CLP SOM02.4 V
156-60-5	trans-1,2-Dichloroethene	4.7	U	ug/kg dry	4.7	6/26/18	6/26/18	CLP SOM02.4 V
10061-02-6	trans-1,3-Dichloropropene	4.7	U	ug/kg dry	4.7	6/26/18	6/26/18	CLP SOM02.4 V
79-01-6	Trichloroethene (Trichloroethylene)	4.7	U	ug/kg dry	4.7	6/26/18	6/26/18	CLP SOM02.4 V
75-69-4	Trichlorofluoromethane (Freon 11)	4.7	U	ug/kg dry	4.7	6/26/18	6/26/18	CLP SOM02.4 V
75-01-4	Vinyl chloride	4.7	U	ug/kg dry	4.7	6/26/18	6/26/18	CLP SOM02.4 V
Tentatively Identified Compounds:								
R4-0000	Tentatively Identified Compounds	5	U	ug/kg dry	5	6/26/18	6/26/18	CLP SOM02.4 V

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF36-SS-02 **Lab ID:** C183012-68 **MD No:**

Station ID: NF36 **Matrix:** Subsurface Soil **D No:** AZ96 CHM

Date Collected: 6/20/18 16:50

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1644012	% Moisture	16		%		6/22/18	6/22/18	CLP VOA
R4-7156	(m- and/or p-)Xylene	3.9	U	ug/kg dry	3.9	6/22/18	6/22/18	CLP SOM02.4 V
71-55-6	1,1,1-Trichloroethane	3.9	U	ug/kg dry	3.9	6/22/18	6/22/18	CLP SOM02.4 V
79-34-5	1,1,2,2-Tetrachloroethane	3.9	U	ug/kg dry	3.9	6/22/18	6/22/18	CLP SOM02.4 V
76-13-1	1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113)	3.9	U	ug/kg dry	3.9	6/22/18	6/22/18	CLP SOM02.4 V
79-00-5	1,1,2-Trichloroethane	3.9	U	ug/kg dry	3.9	6/22/18	6/22/18	CLP SOM02.4 V
75-34-3	1,1-Dichloroethane	3.9	U	ug/kg dry	3.9	6/22/18	6/22/18	CLP SOM02.4 V
75-35-4	1,1-Dichloroethene (1,1-Dichloroethylene)	3.9	U	ug/kg dry	3.9	6/22/18	6/22/18	CLP SOM02.4 V
87-61-6	1,2,3-Trichlorobenzene	3.9	U	ug/kg dry	3.9	6/22/18	6/22/18	CLP SOM02.4 V
120-82-1	1,2,4-Trichlorobenzene	3.9	U	ug/kg dry	3.9	6/22/18	6/22/18	CLP SOM02.4 V
96-12-8	1,2-Dibromo-3-Chloropropane (DBCP)	3.9	U	ug/kg dry	3.9	6/22/18	6/22/18	CLP SOM02.4 V
106-93-4	1,2-Dibromoethane (EDB)	3.9	U	ug/kg dry	3.9	6/22/18	6/22/18	CLP SOM02.4 V
95-50-1	1,2-Dichlorobenzene	3.9	U	ug/kg dry	3.9	6/22/18	6/22/18	CLP SOM02.4 V
107-06-2	1,2-Dichloroethane	3.9	U	ug/kg dry	3.9	6/22/18	6/22/18	CLP SOM02.4 V
78-87-5	1,2-Dichloropropane	3.9	U	ug/kg dry	3.9	6/22/18	6/22/18	CLP SOM02.4 V
541-73-1	1,3-Dichlorobenzene	3.9	U	ug/kg dry	3.9	6/22/18	6/22/18	CLP SOM02.4 V
106-46-7	1,4-Dichlorobenzene	3.9	U	ug/kg dry	3.9	6/22/18	6/22/18	CLP SOM02.4 V
67-64-1	Acetone	7.9	U	ug/kg dry	7.9	6/22/18	6/22/18	CLP SOM02.4 V
71-43-2	Benzene	3.9	U	ug/kg dry	3.9	6/22/18	6/22/18	CLP SOM02.4 V
74-97-5	Bromochloromethane	3.9	U	ug/kg dry	3.9	6/22/18	6/22/18	CLP SOM02.4 V
75-27-4	Bromodichloromethane	3.9	U	ug/kg dry	3.9	6/22/18	6/22/18	CLP SOM02.4 V
75-25-2	Bromoform	3.9	U	ug/kg dry	3.9	6/22/18	6/22/18	CLP SOM02.4 V
74-83-9	Bromomethane	3.9	U	ug/kg dry	3.9	6/22/18	6/22/18	CLP SOM02.4 V
75-15-0	Carbon disulfide	3.9	U	ug/kg dry	3.9	6/22/18	6/22/18	CLP SOM02.4 V
56-23-5	Carbon Tetrachloride	3.9	U	ug/kg dry	3.9	6/22/18	6/22/18	CLP SOM02.4 V
108-90-7	Chlorobenzene	3.9	U	ug/kg dry	3.9	6/22/18	6/22/18	CLP SOM02.4 V
75-00-3	Chloroethane	3.9	U	ug/kg dry	3.9	6/22/18	6/22/18	CLP SOM02.4 V

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF36-SS-02 **Lab ID:** C183012-68 **MD No:**
Station ID: NF36 **Matrix:** Subsurface Soil **D No:** AZ96 CHM

Date Collected: 6/20/18 16:50

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
67-66-3	Chloroform	3.9	U	ug/kg dry	3.9	6/22/18	6/22/18	CLP SOM02.4 V
74-87-3	Chloromethane	3.9	U, J, QC-1	ug/kg dry	3.9	6/22/18	6/22/18	CLP SOM02.4 V
156-59-2	cis-1,2-Dichloroethene	3.9	U	ug/kg dry	3.9	6/22/18	6/22/18	CLP SOM02.4 V
10061-01-5	cis-1,3-Dichloropropene	3.9	U	ug/kg dry	3.9	6/22/18	6/22/18	CLP SOM02.4 V
110-82-7	Cyclohexane	3.9	U	ug/kg dry	3.9	6/22/18	6/22/18	CLP SOM02.4 V
124-48-1	Dibromochloromethane	3.9	U	ug/kg dry	3.9	6/22/18	6/22/18	CLP SOM02.4 V
75-71-8	Dichlorodifluoromethane (Freon 12)	3.9	U, J, QC-1, QC-3	ug/kg dry	3.9	6/22/18	6/22/18	CLP SOM02.4 V
100-41-4	Ethyl Benzene	3.9	U	ug/kg dry	3.9	6/22/18	6/22/18	CLP SOM02.4 V
98-82-8	Isopropylbenzene	3.9	U	ug/kg dry	3.9	6/22/18	6/22/18	CLP SOM02.4 V
79-20-9	Methyl Acetate	3.9	U	ug/kg dry	3.9	6/22/18	6/22/18	CLP SOM02.4 V
591-78-6	Methyl Butyl Ketone	7.9	U	ug/kg dry	7.9	6/22/18	6/22/18	CLP SOM02.4 V
78-93-3	Methyl Ethyl Ketone	7.9	U	ug/kg dry	7.9	6/22/18	6/22/18	CLP SOM02.4 V
108-10-1	Methyl Isobutyl Ketone	7.9	U	ug/kg dry	7.9	6/22/18	6/22/18	CLP SOM02.4 V
1634-04-4	Methyl T-Butyl Ether (MTBE)	3.9	U	ug/kg dry	3.9	6/22/18	6/22/18	CLP SOM02.4 V
108-87-2	Methylcyclohexane	3.9	U	ug/kg dry	3.9	6/22/18	6/22/18	CLP SOM02.4 V
75-09-2	Methylene Chloride	3.9	U	ug/kg dry	3.9	6/22/18	6/22/18	CLP SOM02.4 V
95-47-6	o-Xylene	3.9	U	ug/kg dry	3.9	6/22/18	6/22/18	CLP SOM02.4 V
100-42-5	Styrene	3.9	U	ug/kg dry	3.9	6/22/18	6/22/18	CLP SOM02.4 V
127-18-4	Tetrachloroethene (Tetrachloroethylene)	3.9	U	ug/kg dry	3.9	6/22/18	6/22/18	CLP SOM02.4 V
108-88-3	Toluene	3.9	U	ug/kg dry	3.9	6/22/18	6/22/18	CLP SOM02.4 V
156-60-5	trans-1,2-Dichloroethene	3.9	U	ug/kg dry	3.9	6/22/18	6/22/18	CLP SOM02.4 V
10061-02-6	trans-1,3-Dichloropropene	3.9	U	ug/kg dry	3.9	6/22/18	6/22/18	CLP SOM02.4 V
79-01-6	Trichloroethene (Trichloroethylene)	3.9	U	ug/kg dry	3.9	6/22/18	6/22/18	CLP SOM02.4 V
75-69-4	Trichlorofluoromethane (Freon 11)	3.9	U	ug/kg dry	3.9	6/22/18	6/22/18	CLP SOM02.4 V
75-01-4	Vinyl chloride	3.9	U	ug/kg dry	3.9	6/22/18	6/22/18	CLP SOM02.4 V
Tentatively Identified Compounds:								
115-10-6	Dimethyl Ether	20	NJ, CLP15	ug/kg dry		6/22/18	6/22/18	CLP SOM02.4 V

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NFMW1-GW-01 **Lab ID:** C183012-69 **MD No:**
Station ID: NFMW1 **Matrix:** Groundwater **D No:** AZB8 CHM

Date Collected: 6/18/18 15:15

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
R4-7156	(m- and/or p-)Xylene	0.50	U	ug/L	0.50	6/25/18	6/25/18	CLP SOM02.4
71-55-6	1,1,1-Trichloroethane	0.50	U	ug/L	0.50	6/25/18	6/25/18	CLP SOM02.4
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	ug/L	0.50	6/25/18	6/25/18	CLP SOM02.4
76-13-1	1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113)	0.50	U	ug/L	0.50	6/25/18	6/25/18	CLP SOM02.4
79-00-5	1,1,2-Trichloroethane	0.50	U	ug/L	0.50	6/25/18	6/25/18	CLP SOM02.4
75-34-3	1,1-Dichloroethane	0.50	U	ug/L	0.50	6/25/18	6/25/18	CLP SOM02.4
75-35-4	1,1-Dichloroethene (1,1-Dichloroethylene)	4.3		ug/L	0.50	6/25/18	6/25/18	CLP SOM02.4
87-61-6	1,2,3-Trichlorobenzene	0.50	U	ug/L	0.50	6/25/18	6/25/18	CLP SOM02.4
120-82-1	1,2,4-Trichlorobenzene	0.50	U	ug/L	0.50	6/25/18	6/25/18	CLP SOM02.4
96-12-8	1,2-Dibromo-3-Chloropropane (DBCP)	0.50	U, R, CLP32, CLP17	ug/L	0.50	6/25/18	6/25/18	CLP SOM02.4
106-93-4	1,2-Dibromoethane (EDB)	0.50	U	ug/L	0.50	6/25/18	6/25/18	CLP SOM02.4
95-50-1	1,2-Dichlorobenzene	0.50	U	ug/L	0.50	6/25/18	6/25/18	CLP SOM02.4
107-06-2	1,2-Dichloroethane	0.50	U	ug/L	0.50	6/25/18	6/25/18	CLP SOM02.4
78-87-5	1,2-Dichloropropane	0.50	U	ug/L	0.50	6/25/18	6/25/18	CLP SOM02.4
541-73-1	1,3-Dichlorobenzene	0.50	U	ug/L	0.50	6/25/18	6/25/18	CLP SOM02.4
106-46-7	1,4-Dichlorobenzene	0.50	U	ug/L	0.50	6/25/18	6/25/18	CLP SOM02.4
67-64-1	Acetone	5.0	U, R, CLP32, CLP17	ug/L	5.0	6/25/18	6/25/18	CLP SOM02.4
71-43-2	Benzene	1.5		ug/L	0.50	6/25/18	6/25/18	CLP SOM02.4
74-97-5	Bromochloromethane	0.50	U	ug/L	0.50	6/25/18	6/25/18	CLP SOM02.4
75-27-4	Bromodichloromethane	0.50	U	ug/L	0.50	6/25/18	6/25/18	CLP SOM02.4
75-25-2	Bromoform	0.50	U	ug/L	0.50	6/25/18	6/25/18	CLP SOM02.4
74-83-9	Bromomethane	0.50	U, J, QC-1	ug/L	0.50	6/25/18	6/25/18	CLP SOM02.4
75-15-0	Carbon disulfide	0.50	U	ug/L	0.50	6/25/18	6/25/18	CLP SOM02.4
56-23-5	Carbon Tetrachloride	0.50	U	ug/L	0.50	6/25/18	6/25/18	CLP SOM02.4
108-90-7	Chlorobenzene	0.50	U	ug/L	0.50	6/25/18	6/25/18	CLP SOM02.4
75-00-3	Chloroethane	0.50	U	ug/L	0.50	6/25/18	6/25/18	CLP SOM02.4

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D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NFMW1-GW-01 **Lab ID: C183012-69** **MD No:**

Station ID: NFMW1 **Matrix: Groundwater** **D No: AZB8 CHM**

Date Collected: 6/18/18 15:15

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
67-66-3	Chloroform	0.50	U	ug/L	0.50	6/25/18	6/25/18	CLP SOM02.4
74-87-3	Chloromethane	0.50	U, J, QC-1	ug/L	0.50	6/25/18	6/25/18	CLP SOM02.4
156-59-2	cis-1,2-Dichloroethene	780	J, QS-3	ug/L	25	6/25/18	6/25/18	CLP SOM02.4
10061-01-5	cis-1,3-Dichloropropene	0.50	U	ug/L	0.50	6/25/18	6/25/18	CLP SOM02.4
110-82-7	Cyclohexane	0.50	U	ug/L	0.50	6/25/18	6/25/18	CLP SOM02.4
124-48-1	Dibromochloromethane	0.50	U	ug/L	0.50	6/25/18	6/25/18	CLP SOM02.4
75-71-8	Dichlorodifluoromethane (Freon 12)	0.50	U	ug/L	0.50	6/25/18	6/25/18	CLP SOM02.4
100-41-4	Ethyl Benzene	0.50	U	ug/L	0.50	6/25/18	6/25/18	CLP SOM02.4
98-82-8	Isopropylbenzene	0.50	U	ug/L	0.50	6/25/18	6/25/18	CLP SOM02.4
79-20-9	Methyl Acetate	0.50	U, R, CLP32, CLP17	ug/L	0.50	6/25/18	6/25/18	CLP SOM02.4
591-78-6	Methyl Butyl Ketone	5.0	U	ug/L	5.0	6/25/18	6/25/18	CLP SOM02.4
78-93-3	Methyl Ethyl Ketone	5.0	U, R, CLP32, CLP17	ug/L	5.0	6/25/18	6/25/18	CLP SOM02.4
108-10-1	Methyl Isobutyl Ketone	5.0	U	ug/L	5.0	6/25/18	6/25/18	CLP SOM02.4
1634-04-4	Methyl T-Butyl Ether (MTBE)	0.86		ug/L	0.50	6/25/18	6/25/18	CLP SOM02.4
108-87-2	Methylcyclohexane	0.50	U	ug/L	0.50	6/25/18	6/25/18	CLP SOM02.4
75-09-2	Methylene Chloride	0.50	U	ug/L	0.50	6/25/18	6/25/18	CLP SOM02.4
95-47-6	o-Xylene	0.50	U	ug/L	0.50	6/25/18	6/25/18	CLP SOM02.4
100-42-5	Styrene	0.50	U	ug/L	0.50	6/25/18	6/25/18	CLP SOM02.4
127-18-4	Tetrachloroethene (Tetrachloroethylene)	0.50	U	ug/L	0.50	6/25/18	6/25/18	CLP SOM02.4
108-88-3	Toluene	0.50	U	ug/L	0.50	6/25/18	6/25/18	CLP SOM02.4
156-60-5	trans-1,2-Dichloroethene	11		ug/L	0.50	6/25/18	6/25/18	CLP SOM02.4
10061-02-6	trans-1,3-Dichloropropene	0.50	U	ug/L	0.50	6/25/18	6/25/18	CLP SOM02.4
79-01-6	Trichloroethene (Trichloroethylene)	250	J, QC-2	ug/L	25	6/25/18	6/25/18	CLP SOM02.4
75-69-4	Trichlorofluoromethane (Freon 11)	0.50	U	ug/L	0.50	6/25/18	6/25/18	CLP SOM02.4
75-01-4	Vinyl chloride	39		ug/L	25	6/25/18	6/25/18	CLP SOM02.4
Tentatively Identified Compounds:								
R4-0000	Tentatively Identified Compounds	0.5	U	ug/L	0.5	6/25/18	6/25/18	CLP SOM02.4

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NFMW7-GW-01 **Lab ID: C183012-70** **MD No:**

Station ID: NFMW7 **Matrix: Groundwater** **D No: AZB7 CHM**

Date Collected: 6/21/18 11:55

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
R4-7156	(m- and/or p-)Xylene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
71-55-6	1,1,1-Trichloroethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
76-13-1	1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113)	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
79-00-5	1,1,2-Trichloroethane	1.1		ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-34-3	1,1-Dichloroethane	2.5		ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-35-4	1,1-Dichloroethene (1,1-Dichloroethylene)	1.2		ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
87-61-6	1,2,3-Trichlorobenzene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
120-82-1	1,2,4-Trichlorobenzene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
96-12-8	1,2-Dibromo-3-Chloropropane (DBCP)	0.50	U, R, CLP32, CLP17	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
106-93-4	1,2-Dibromoethane (EDB)	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
95-50-1	1,2-Dichlorobenzene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
107-06-2	1,2-Dichloroethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
78-87-5	1,2-Dichloropropane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
541-73-1	1,3-Dichlorobenzene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
106-46-7	1,4-Dichlorobenzene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
67-64-1	Acetone	5.0	U, R, CLP32, CLP17	ug/L	5.0	6/22/18	6/22/18	CLP SOM02.4
71-43-2	Benzene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
74-97-5	Bromochloromethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-27-4	Bromodichloromethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-25-2	Bromoform	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
74-83-9	Bromomethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-15-0	Carbon disulfide	0.50	U, J, QC-1	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
56-23-5	Carbon Tetrachloride	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
108-90-7	Chlorobenzene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-00-3	Chloroethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4

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D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NFMW7-GW-01 **Lab ID: C183012-70** **MD No:**
Station ID: NFMW7 **Matrix: Groundwater** **D No: AZB7 CHM**

Date Collected: 6/21/18 11:55

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
67-66-3	Chloroform	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
74-87-3	Chloromethane	0.50	U, J, QC-1	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
156-59-2	cis-1,2-Dichloroethene	34	J, QS-3	ug/L	20	6/22/18	6/25/18	CLP SOM02.4
10061-01-5	cis-1,3-Dichloropropene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
110-82-7	Cyclohexane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
124-48-1	Dibromochloromethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-71-8	Dichlorodifluoromethane (Freon 12)	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
100-41-4	Ethyl Benzene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
98-82-8	Isopropylbenzene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
79-20-9	Methyl Acetate	0.50	U, R, CLP32, CLP17	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
591-78-6	Methyl Butyl Ketone	5.0	U	ug/L	5.0	6/22/18	6/22/18	CLP SOM02.4
78-93-3	Methyl Ethyl Ketone	5.0	U, R, CLP32, CLP17	ug/L	5.0	6/22/18	6/22/18	CLP SOM02.4
108-10-1	Methyl Isobutyl Ketone	5.0	U	ug/L	5.0	6/22/18	6/22/18	CLP SOM02.4
1634-04-4	Methyl T-Butyl Ether (MTBE)	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
108-87-2	Methylcyclohexane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-09-2	Methylene Chloride	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
95-47-6	o-Xylene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
100-42-5	Styrene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
127-18-4	Tetrachloroethene (Tetrachloroethylene)	0.22	J, CLP01	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
108-88-3	Toluene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
156-60-5	trans-1,2-Dichloroethene	0.35	J, CLP01	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
10061-02-6	trans-1,3-Dichloropropene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
79-01-6	Trichloroethene (Trichloroethylene)	430	J, QC-2	ug/L	20	6/22/18	6/25/18	CLP SOM02.4
75-69-4	Trichlorofluoromethane (Freon 11)	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-01-4	Vinyl chloride	1.1	J, QC-1	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
Tentatively Identified Compounds:								
R4-0000	Tentatively Identified Compounds	0.5	U	ug/L	0.5	6/22/18	6/22/18	CLP SOM02.4

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NFMW7-GW-01-DUP **Lab ID:** C183012-71 **MD No:**
Station ID: NFMW7 **Matrix:** Groundwater **D No:** AZC7 CHM

Date Collected: 6/21/18 12:00

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
R4-7156	(m- and/or p-)Xylene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
71-55-6	1,1,1-Trichloroethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
79-34-5	1,1,2,2-Tetrachloroethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
76-13-1	1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113)	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
79-00-5	1,1,2-Trichloroethane	0.99		ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-34-3	1,1-Dichloroethane	2.2		ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-35-4	1,1-Dichloroethene (1,1-Dichloroethylene)	1.2		ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
87-61-6	1,2,3-Trichlorobenzene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
120-82-1	1,2,4-Trichlorobenzene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
96-12-8	1,2-Dibromo-3-Chloropropane (DBCP)	0.50	U, J, QC-1	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
106-93-4	1,2-Dibromoethane (EDB)	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
95-50-1	1,2-Dichlorobenzene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
107-06-2	1,2-Dichloroethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
78-87-5	1,2-Dichloropropane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
541-73-1	1,3-Dichlorobenzene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
106-46-7	1,4-Dichlorobenzene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
67-64-1	Acetone	5.0	U, R, CLP32, CLP17	ug/L	5.0	6/22/18	6/22/18	CLP SOM02.4
71-43-2	Benzene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
74-97-5	Bromochloromethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-27-4	Bromodichloromethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-25-2	Bromoform	0.50	U, J, QC-1	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
74-83-9	Bromomethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-15-0	Carbon disulfide	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
56-23-5	Carbon Tetrachloride	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
108-90-7	Chlorobenzene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-00-3	Chloroethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
67-66-3	Chloroform	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4

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D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NFMW7-GW-01-DUP **Lab ID:** C183012-71 **MD No:**
Station ID: NFMW7 **Matrix:** Groundwater **D No:** AZC7 CHM

Date Collected: 6/21/18 12:00

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
74-87-3	Chloromethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
156-59-2	cis-1,2-Dichloroethene	30	J, CLP01	ug/L	50	6/22/18	6/26/18	CLP SOM02.4
10061-01-5	cis-1,3-Dichloropropene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
110-82-7	Cyclohexane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
124-48-1	Dibromochloromethane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-71-8	Dichlorodifluoromethane (Freon 12)	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
100-41-4	Ethyl Benzene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
98-82-8	Isopropylbenzene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
79-20-9	Methyl Acetate	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
591-78-6	Methyl Butyl Ketone	5.0	U	ug/L	5.0	6/22/18	6/22/18	CLP SOM02.4
78-93-3	Methyl Ethyl Ketone	10	U	ug/L	10	6/22/18	6/22/18	CLP SOM02.4
108-10-1	Methyl Isobutyl Ketone	5.0	U	ug/L	5.0	6/22/18	6/22/18	CLP SOM02.4
1634-04-4	Methyl T-Butyl Ether (MTBE)	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
108-87-2	Methylcyclohexane	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-09-2	Methylene Chloride	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
95-47-6	o-Xylene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
100-42-5	Styrene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
127-18-4	Tetrachloroethene (Tetrachloroethylene)	0.21	J, CLP01	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
108-88-3	Toluene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
156-60-5	trans-1,2-Dichloroethene	0.28	J, CLP01	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
10061-02-6	trans-1,3-Dichloropropene	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
79-01-6	Trichloroethene (Trichloroethylene)	310		ug/L	50	6/22/18	6/26/18	CLP SOM02.4
75-69-4	Trichlorofluoromethane (Freon 11)	0.50	U	ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
75-01-4	Vinyl chloride	1.0		ug/L	0.50	6/22/18	6/22/18	CLP SOM02.4
Tentatively Identified Compounds:								
R4-0000	Tentatively Identified Compounds	0.5	U	ug/L	0.5	6/22/18	6/22/18	CLP SOM02.4

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D.A.R.T. Id: 18-0444
Project: 18-0444, National Fireworks - Reported by Jeffrey Hendel

July 27, 2018

4SESD-ASB

MEMORANDUM

SUBJECT: FINAL Analytical Report
Project: 18-0444, National Fireworks
Superfund Remedial

FROM: Jeffrey Hendel
ASB Inorganic Chemistry Section Chief

THRU: Danny France, Chief
Analytical Support Branch

TO: Jennifer Tufts

Attached are the final results for the analytical groups listed below. These analyses were performed in accordance with the Analytical Support Branch's (ASB) Laboratory Operations and Quality Assurance Manual (ASB LOQAM) found at www.epa.gov/region4/sesd/asbsop. Any unique project data quality objectives specified in writing by the data requestor have also been incorporated into the data unless otherwise noted in the Report Narrative. Chemistry data have been verified based on the ASB LOQAM specifications and have been qualified by this laboratory if the applicable quality control criteria were not met. Verification is defined in Section 5.2 of the ASB LOQAM. For a listing of specific data qualifiers and explanations, please refer to the Data Qualifier Definitions included in this report. The reported results are accurate within the limits of the method(s) and are representative only of the samples as received by the laboratory.

Analyses Included in this report:	Method Used:	Accreditations:
Physical Properties (PHYSP)		
Physical Properties	EPA 200.2 (Soil)	ISO
Total Metals (TMTL)		
Total Mercury	EPA 245.1 (Water)	ISO
Total Mercury	EPA 7473 (Soil)	ISO

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Sample Disposal Policy

Due to limited space for long term sample storage, ASB's policy is to dispose of samples on a periodic schedule. Air samples collected in summa canisters will be disposed of 30 days following the issuance of this report. All other sample media including original samples, sample extracts and or digestates will be disposed of, in accordance with applicable regulations, 60 days from the date of this report.

This sample disposal policy does not apply to criminal samples which are held until the laboratory is notified by the criminal investigators that case development and litigation are complete.

These samples may be held in the laboratory's custody for a longer period of time. If samples require storage beyond the 60-day period, please contact the Sample Control Coordinator by e-mail at R4SampleCustody@epa.gov.

cc: Nardina Turner

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0444, National Fireworks - Reported by Jeffrey Hendel

SAMPLES INCLUDED IN THIS REPORT

Project: 18-0444, National Fireworks

Sample ID	Laboratory ID	Matrix	Date Collected	Date Received
NF-EB-02	E182510-01	Equipment Rinse Blank	6/21/18 09:20	6/22/18 10:55
NF-FB-02	E182510-02	Field Blank	6/21/18 09:30	6/22/18 10:55
NF-PB-02	E182510-03	Preservative Blank	6/21/18 11:25	6/22/18 10:55
NF17-GW-01	E182510-04	Groundwater	6/20/18 09:30	6/22/18 10:55
NF17-GW-01-DUP	E182510-05	Groundwater	6/20/18 09:35	6/22/18 10:55
NF17-SS-01	E182510-06	Surface Soil	6/20/18 08:45	6/22/18 10:55
NF17-SS-01-DUP	E182510-07	Surface Soil	6/20/18 08:55	6/22/18 10:55
NF17-SS-02	E182510-08	Subsurface Soil	6/20/18 08:50	6/22/18 10:55
NF18-GW-01	E182510-09	Groundwater	6/21/18 08:45	6/22/18 10:55
NF18-SS-01	E182510-10	Subsurface Soil	6/20/18 14:40	6/22/18 10:55
NF18-SS-02	E182510-11	Subsurface Soil	6/20/18 14:45	6/22/18 10:55
NF19-GW-01	E182510-12	Groundwater	6/20/18 15:50	6/22/18 10:55
NF19-SS-01	E182510-13	Surface Soil	6/20/18 14:30	6/22/18 10:55
NF19-SS-01-DUP	E182510-14	Surface Soil	6/20/18 14:20	6/22/18 10:55
NF19-SS-02	E182510-15	Subsurface Soil	6/20/18 14:15	6/22/18 10:55
NF20-GW-01	E182510-16	Groundwater	6/20/18 13:35	6/22/18 10:55
NF20-SS-01	E182510-17	Surface Soil	6/19/18 09:30	6/22/18 10:55
NF20-SS-02	E182510-18	Subsurface Soil	6/19/18 09:35	6/22/18 10:55
NF21-GW-01	E182510-19	Groundwater	6/20/18 11:50	6/22/18 10:55
NF21-SS-01	E182510-20	Surface Soil	6/20/18 11:35	6/22/18 10:55
NF21-SS-02	E182510-21	Subsurface Soil	6/20/18 11:30	6/22/18 10:55
NF22-GW-01	E182510-22	Groundwater	6/19/18 18:10	6/22/18 10:55
NF22-SS-01	E182510-23	Subsurface Soil	6/19/18 17:05	6/22/18 10:55
NF22-SS-02	E182510-24	Subsurface Soil	6/19/18 17:10	6/22/18 10:55
NF23-GW-01	E182510-25	Groundwater	6/19/18 14:40	6/22/18 10:55
NF23-SS-01	E182510-26	Surface Soil	6/19/18 13:40	6/22/18 10:55
NF23-SS-02	E182510-27	Subsurface Soil	6/19/18 13:45	6/22/18 10:55
NF24-GW-01	E182510-28	Groundwater	6/20/18 10:10	6/22/18 10:55
NF24-SS-01	E182510-29	Subsurface Soil	6/20/18 09:10	6/22/18 10:55
NF24-SS-02	E182510-30	Subsurface Soil	6/20/18 09:15	6/22/18 10:55
NF25-GW-01	E182510-31	Groundwater	6/19/18 11:37	6/22/18 10:55
NF25-SS-01	E182510-32	Subsurface Soil	6/19/18 09:30	6/22/18 10:55
NF25-SS-02	E182510-33	Subsurface Soil	6/19/18 09:35	6/22/18 10:55
NF26-GW-01	E182510-34	Groundwater	6/20/18 16:30	6/22/18 10:55

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NF26-SS-01	E182510-35	Surface Soil	6/19/18 10:45	6/22/18 10:55
NF26-SS-02	E182510-36	Subsurface Soil	6/19/18 10:50	6/22/18 10:55
NF27-GW-01	E182510-37	Groundwater	6/21/18 09:25	6/22/18 10:55
NF27-SS-01	E182510-38	Subsurface Soil	6/20/18 10:25	6/22/18 10:55
NF27-SS-02	E182510-39	Subsurface Soil	6/20/18 10:30	6/22/18 10:55
NF28-GW-01	E182510-40	Groundwater	6/20/18 16:00	6/22/18 10:55
NF28-SS-01	E182510-41	Subsurface Soil	6/19/18 14:50	6/22/18 10:55
NF28-SS-02	E182510-42	Subsurface Soil	6/19/18 14:55	6/22/18 10:55
NF29-GW-01	E182510-43	Groundwater	6/19/18 14:50	6/22/18 10:55
NF29-SS-01	E182510-44	Surface Soil	6/19/18 13:55	6/22/18 10:55
NF29-SS-02	E182510-45	Subsurface Soil	6/19/18 14:00	6/22/18 10:55
NF30-GW-01	E182510-46	Groundwater	6/20/18 13:05	6/22/18 10:55
NF30-SS-01	E182510-47	Subsurface Soil	6/20/18 12:25	6/22/18 10:55
NF30-SS-02	E182510-48	Subsurface Soil	6/20/18 12:30	6/22/18 10:55
NF31-GW-01	E182510-49	Groundwater	6/21/18 09:15	6/22/18 10:55
NF31-SS-01	E182510-50	Subsurface Soil	6/19/18 10:20	6/22/18 10:55
NF31-SS-02	E182510-51	Subsurface Soil	6/19/18 10:25	6/22/18 10:55
NF32-GW-01	E182510-52	Groundwater	6/21/18 10:00	6/22/18 10:55
NF32-SS-01	E182510-53	Surface Soil	6/19/18 12:40	6/22/18 10:55
NF32-SS-02	E182510-54	Subsurface Soil	6/19/18 12:45	6/22/18 10:55
NF33-GW-01	E182510-55	Groundwater	6/19/18 17:00	6/22/18 10:55
NF33-SS-01	E182510-56	Surface Soil	6/19/18 16:10	6/22/18 10:55
NF33-SS-02	E182510-57	Subsurface Soil	6/19/18 16:20	6/22/18 10:55
NF34-GW-01	E182510-58	Groundwater	6/19/18 13:30	6/22/18 10:55
NF34-SS-01	E182510-59	Surface Soil	6/19/18 11:55	6/22/18 10:55
NF34-SS-02	E182510-60	Subsurface Soil	6/19/18 11:50	6/22/18 10:55
NF35-GW-01	E182510-61	Groundwater	6/20/18 15:20	6/22/18 10:55
NF35-SS-01	E182510-62	Surface Soil	6/20/18 15:00	6/22/18 10:55
NF35-SS-02	E182510-63	Subsurface Soil	6/20/18 15:10	6/22/18 10:55
NF36-GW-01	E182510-64	Groundwater	6/21/18 10:35	6/22/18 10:55
NF36-SS-01	E182510-65	Subsurface Soil	6/20/18 16:45	6/22/18 10:55
NF36-SS-02	E182510-66	Subsurface Soil	6/20/18 16:50	6/22/18 10:55
NFMW1-GW-01	E182510-67	Groundwater	6/18/18 15:15	6/22/18 10:55
NFMW7-GW-01	E182510-68	Groundwater	6/21/18 11:55	6/22/18 10:55
NFMW7-GW-01-DUP	E182510-69	Groundwater	6/21/18 12:00	6/22/18 10:55

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DATA QUALIFIER DEFINITIONS

U	The analyte was not detected at or above the reporting limit.
H-2	PT or QC sample. Holding time met when calculated from preparation or analysis.
J	The identification of the analyte is acceptable; the reported value is an estimate.
Q-1	The original extraction of this sample yielded QC recoveries outside control limits. It was re-extracted after the recommended maximum holding time.
QC-5	Calibration check standard less than method control limits.
QM-1	Matrix Spike Recovery less than method control limits
QM-3	Matrix Spike Precision outside method control limits

ACRONYMS AND ABBREVIATIONS

CAS Chemical Abstracts Service

Note: Analytes with no known CAS identifiers have been assigned codes beginning with "E", the EPA ID as assigned by the EPA Substance Registry System (www.epa.gov/srs), or beginning with "R4-", a unique identifier assigned by the EPA Region 4 laboratory.

MDL Method Detection Limit - The minimum concentration of a substance (an analyte) that can be measured and reported with a 99% confidence that the analyte concentration is greater than zero.

MRL Minimum Reporting Limit - Analyte concentration that corresponds to the lowest demonstrated level of acceptable quantitation. The MRL is sample-specific and accounts for preparation weights and volumes, dilutions, and moisture content of soil/sediments.

TIC Tentatively Identified Compound - An analyte identified based on a match with the instrument software's mass spectral library. A calibration standard has not been analyzed to confirm the compound's identification or the estimated concentration reported.

ACCREDITATIONS:

ISO ASB is accredited by ISO/IEC 17025, including an amplification for forensic accreditation through ANSI-ASQ National Accreditation Board.

Refer to the certificate and scope of accreditation AT-1644 at:
http://www.epa.gov/aboutepa/about-region-4s-science-and-ecosystem-support-division-sesd

NR The EPA Region 4 Laboratory has not requested accreditation for this test.

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Total Metals

Project: 18-0444, National Fireworks

Sample ID: NF-EB-02 **Lab ID:** E182510-01

Station ID: **Matrix:** Equipment Rinse Blank

Date Collected: 6/21/18 9:20

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7439-97-6	Mercury	0.10	U	ug/L	0.10	7/18/18 11:56	7/19/18 18:14	EPA 245.1

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Total Metals

Project: 18-0444, National Fireworks

Sample ID: NF-FB-02 **Lab ID:** E182510-02

Station ID: **Matrix:** Field Blank

Date Collected: 6/21/18 9:30

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7439-97-6	Mercury	0.10	U	ug/L	0.10	7/18/18 11:56	7/19/18 18:17	EPA 245.1

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Total Metals

Project: 18-0444, National Fireworks

Sample ID: NF-PB-02 **Lab ID:** E182510-03

Station ID: **Matrix:** Preservative Blank

Date Collected: 6/21/18 11:25

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7439-97-6	Mercury	0.10	U	ug/L	0.10	7/18/18 11:56	7/19/18 18:21	EPA 245.1

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Total Metals

Project: 18-0444, National Fireworks

Sample ID: NF17-GW-01 **Lab ID:** E182510-04
Station ID: NF17 **Matrix:** Groundwater

Date Collected: 6/20/18 9:30

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7439-97-6	Mercury	0.14	J, QC-5	ug/L	0.10	7/17/18 16:59	7/18/18 17:13	EPA 245.1

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Total Metals

Project: 18-0444, National Fireworks

Sample ID: NF17-GW-01-DUP
Station ID: NF17
Lab ID: E182510-05
Matrix: Groundwater

Date Collected: 6/20/18 9:35

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7439-97-6	Mercury	0.10	J, QC-5	ug/L	0.10	7/17/18 16:59	7/18/18 17:17	EPA 245.1

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Total Metals

Project: 18-0444, National Fireworks

Sample ID: NF17-SS-01 **Lab ID:** E182510-06
Station ID: NF17 **Matrix:** Surface Soil

Date Collected: 6/20/18 8:45

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7439-97-6	Mercury	0.024	U	mg/kg dry	0.024	7/16/18 14:36	7/16/18 15:46	EPA 7473

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Physical Properties

Project: 18-0444, National Fireworks

Sample ID: NF17-SS-01 **Lab ID:** E182510-06
Station ID: NF17 **Matrix:** Surface Soil

Date Collected: 6/20/18 8:45

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1642941	% Solids	76		%	0.0	7/10/18 13:00	7/13/18 12:30	EPA 200.2

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Total Metals

Project: 18-0444, National Fireworks

Sample ID: NF17-SS-01-DUP
Station ID: NF17
Lab ID: E182510-07
Matrix: Surface Soil

Date Collected: 6/20/18 8:55

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7439-97-6	Mercury	0.041	U	mg/kg dry	0.041	7/16/18 14:36	7/16/18 16:07	EPA 7473

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Project: 18-0444, National Fireworks - Reported by Jeffrey Hendel

Physical Properties

Project: 18-0444, National Fireworks

Sample ID: NF17-SS-01-DUP
Station ID: NF17
Lab ID: E182510-07
Matrix: Surface Soil

Date Collected: 6/20/18 8:55

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1642941	% Solids	87		%	0.0	7/10/18 13:00	7/13/18 12:30	EPA 200.2

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Total Metals

Project: 18-0444, National Fireworks

Sample ID: NF17-SS-02 **Lab ID:** E182510-08
Station ID: NF17 **Matrix:** Subsurface Soil

Date Collected: 6/20/18 8:50

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7439-97-6	Mercury	0.047	U	mg/kg dry	0.047	7/16/18 14:36	7/16/18 16:20	EPA 7473

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Physical Properties

Project: 18-0444, National Fireworks

Sample ID: NF17-SS-02 **Lab ID:** E182510-08
Station ID: NF17 **Matrix:** Subsurface Soil

Date Collected: 6/20/18 8:50

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1642941	% Solids	79		%	0.0	7/10/18 13:00	7/13/18 12:30	EPA 200.2

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Total Metals

Project: 18-0444, National Fireworks

Sample ID: NF18-GW-01 **Lab ID:** E182510-09
Station ID: NF18 **Matrix:** Groundwater

Date Collected: 6/21/18 8:45

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7439-97-6	Mercury	0.10	U	ug/L	0.10	7/18/18 11:56	7/19/18 18:25	EPA 245.1

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Total Metals

Project: 18-0444, National Fireworks

Sample ID: NF18-SS-01 **Lab ID:** E182510-10
Station ID: NF18 **Matrix:** Subsurface Soil

Date Collected: 6/20/18 14:40

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7439-97-6	Mercury	0.040	U	mg/kg dry	0.040	7/16/18 14:36	7/16/18 16:27	EPA 7473

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Physical Properties

Project: 18-0444, National Fireworks

Sample ID: **NF18-SS-01** **Lab ID:** **E182510-10**

Station ID: **NF18** **Matrix:** **Subsurface Soil**

Date Collected: 6/20/18 14:40

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1642941	% Solids	80		%	0.0	7/10/18 13:00	7/13/18 12:30	EPA 200.2

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Total Metals

Project: 18-0444, National Fireworks

Sample ID: NF18-SS-02 **Lab ID:** E182510-11
Station ID: NF18 **Matrix:** Subsurface Soil

Date Collected: 6/20/18 14:45

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7439-97-6	Mercury	0.044	U	mg/kg dry	0.044	7/16/18 14:36	7/16/18 16:34	EPA 7473

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Physical Properties

Project: 18-0444, National Fireworks

Sample ID: NF18-SS-02 **Lab ID:** E182510-11
Station ID: NF18 **Matrix:** Subsurface Soil

Date Collected: 6/20/18 14:45

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1642941	% Solids	83		%	0.0	7/10/18 13:00	7/13/18 12:30	EPA 200.2

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Total Metals

Project: 18-0444, National Fireworks

Sample ID: NF19-GW-01 **Lab ID:** E182510-12
Station ID: NF19 **Matrix:** Groundwater

Date Collected: 6/20/18 15:50

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7439-97-6	Mercury	0.12	J, QC-5	ug/L	0.10	7/17/18 16:59	7/18/18 17:21	EPA 245.1

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Total Metals

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Sample ID: NF19-SS-01 **Lab ID:** E182510-13
Station ID: NF19 **Matrix:** Surface Soil

Date Collected: 6/20/18 14:30

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7439-97-6	Mercury	0.053		mg/kg dry	0.044	7/16/18 14:36	7/16/18 16:41	EPA 7473

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Physical Properties

Project: 18-0444, National Fireworks

Sample ID: NF19-SS-01 **Lab ID:** E182510-13
Station ID: NF19 **Matrix:** Surface Soil

Date Collected: 6/20/18 14:30

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1642941	% Solids	86		%	0.0	7/10/18 13:00	7/13/18 12:30	EPA 200.2

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Total Metals

Project: 18-0444, National Fireworks

Sample ID: NF19-SS-01-DUP
Station ID: NF19
Lab ID: E182510-14
Matrix: Surface Soil

Date Collected: 6/20/18 14:20

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7439-97-6	Mercury	0.046		mg/kg dry	0.042	7/16/18 14:36	7/16/18 16:48	EPA 7473

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Physical Properties

Project: 18-0444, National Fireworks

Sample ID: NF19-SS-01-DUP
Station ID: NF19
Lab ID: E182510-14
Matrix: Surface Soil

Date Collected: 6/20/18 14:20

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1642941	% Solids	87		%	0.0	7/10/18 13:00	7/13/18 12:30	EPA 200.2

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Total Metals

Project: 18-0444, National Fireworks

Sample ID: NF19-SS-02 **Lab ID:** E182510-15
Station ID: NF19 **Matrix:** Subsurface Soil

Date Collected: 6/20/18 14:15

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7439-97-6	Mercury	0.050	U	mg/kg dry	0.050	7/16/18 14:36	7/16/18 16:56	EPA 7473

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Physical Properties

Project: 18-0444, National Fireworks

Sample ID: NF19-SS-02 **Lab ID:** E182510-15
Station ID: NF19 **Matrix:** Subsurface Soil

Date Collected: 6/20/18 14:15

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1642941	% Solids	80		%	0.0	7/10/18 13:00	7/13/18 12:30	EPA 200.2

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Total Metals

Project: 18-0444, National Fireworks

Sample ID: NF20-GW-01 **Lab ID:** E182510-16
Station ID: NF20 **Matrix:** Groundwater

Date Collected: 6/20/18 13:35

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7439-97-6	Mercury	0.10	U, J, QC-5	ug/L	0.10	7/17/18 16:59	7/18/18 17:25	EPA 245.1

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Total Metals

Project: 18-0444, National Fireworks

Sample ID: NF20-SS-01 **Lab ID:** E182510-17
Station ID: NF20 **Matrix:** Surface Soil

Date Collected: 6/19/18 9:30

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7439-97-6	Mercury	0.048	U	mg/kg dry	0.048	7/16/18 14:36	7/16/18 17:03	EPA 7473

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Physical Properties

Project: 18-0444, National Fireworks

Sample ID: NF20-SS-01 **Lab ID:** E182510-17
Station ID: NF20 **Matrix:** Surface Soil

Date Collected: 6/19/18 9:30

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1642941	% Solids	88		%	0.0	7/10/18 13:00	7/13/18 12:30	EPA 200.2

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Total Metals

Project: 18-0444, National Fireworks

Sample ID: NF20-SS-02 **Lab ID:** E182510-18
Station ID: NF20 **Matrix:** Subsurface Soil

Date Collected: 6/19/18 9:35

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7439-97-6	Mercury	0.044	U	mg/kg dry	0.044	7/16/18 14:36	7/16/18 17:10	EPA 7473

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D.A.R.T. Id: 18-0444
Project: 18-0444, National Fireworks - Reported by Jeffrey Hendel

Physical Properties

Project: 18-0444, National Fireworks

Sample ID: NF20-SS-02 **Lab ID:** E182510-18
Station ID: NF20 **Matrix:** Subsurface Soil

Date Collected: 6/19/18 9:35

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1642941	% Solids	83		%	0.0	7/10/18 13:00	7/13/18 12:30	EPA 200.2

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0444, National Fireworks - Reported by Jeffrey Hendel

Total Metals

Project: 18-0444, National Fireworks

Sample ID: NF21-GW-01 **Lab ID:** E182510-19
Station ID: NF21 **Matrix:** Groundwater

Date Collected: 6/20/18 11:50

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7439-97-6	Mercury	0.81	J, QC-5	ug/L	0.10	7/17/18 16:59	7/18/18 17:29	EPA 245.1

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0444, National Fireworks - Reported by Jeffrey Hendel

Total Metals

Project: 18-0444, National Fireworks

Sample ID: NF21-SS-01 **Lab ID:** E182510-20
Station ID: NF21 **Matrix:** Surface Soil

Date Collected: 6/20/18 11:35

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7439-97-6	Mercury	0.046	U, J, QM-1, QM-3	mg/kg dry	0.046	7/16/18 14:36	7/16/18 17:33	EPA 7473

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Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0444, National Fireworks - Reported by Jeffrey Hendel

Physical Properties

Project: 18-0444, National Fireworks

Sample ID: NF21-SS-01 **Lab ID:** E182510-20
Station ID: NF21 **Matrix:** Surface Soil

Date Collected: 6/20/18 11:35

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1642941	% Solids	87		%	0.0	7/10/18 13:00	7/13/18 12:30	EPA 200.2

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0444, National Fireworks - Reported by Jeffrey Hendel

Total Metals

Project: 18-0444, National Fireworks

Sample ID: NF21-SS-02 **Lab ID:** E182510-21
Station ID: NF21 **Matrix:** Subsurface Soil

Date Collected: 6/20/18 11:30

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7439-97-6	Mercury	0.045	U	mg/kg dry	0.045	7/16/18 14:36	7/16/18 17:54	EPA 7473

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Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0444, National Fireworks - Reported by Jeffrey Hendel

Physical Properties

Project: 18-0444, National Fireworks

Sample ID: NF21-SS-02 **Lab ID:** E182510-21
Station ID: NF21 **Matrix:** Subsurface Soil

Date Collected: 6/20/18 11:30

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1642941	% Solids	90		%	0.0	7/10/18 13:00	7/13/18 12:30	EPA 200.2

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0444, National Fireworks - Reported by Jeffrey Hendel

Total Metals

Project: 18-0444, National Fireworks

Sample ID: NF22-GW-01 **Lab ID:** E182510-22
Station ID: NF22 **Matrix:** Groundwater

Date Collected: 6/19/18 18:10

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7439-97-6	Mercury	1.4	H-2	ug/L	0.10	7/17/18 9:27	7/17/18 15:06	EPA 245.1

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Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0444, National Fireworks - Reported by Jeffrey Hendel

Total Metals

Project: 18-0444, National Fireworks

Sample ID: NF22-SS-01 **Lab ID:** E182510-23
Station ID: NF22 **Matrix:** Subsurface Soil

Date Collected: 6/19/18 17:05

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7439-97-6	Mercury	0.045	U	mg/kg dry	0.045	7/16/18 14:36	7/16/18 18:01	EPA 7473

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Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0444, National Fireworks - Reported by Jeffrey Hendel

Physical Properties

Project: 18-0444, National Fireworks

Sample ID: NF22-SS-01 **Lab ID:** E182510-23
Station ID: NF22 **Matrix:** Subsurface Soil

Date Collected: 6/19/18 17:05

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1642941	% Solids	84		%	0.0	7/10/18 13:00	7/13/18 12:30	EPA 200.2

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Region 4 Science and Ecosystem Support Division
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D.A.R.T. Id: 18-0444
Project: 18-0444, National Fireworks - Reported by Jeffrey Hendel

Total Metals

Project: 18-0444, National Fireworks

Sample ID: NF22-SS-02 **Lab ID:** E182510-24
Station ID: NF22 **Matrix:** Subsurface Soil

Date Collected: 6/19/18 17:10

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7439-97-6	Mercury	0.045		mg/kg dry	0.044	7/16/18 14:36	7/16/18 18:09	EPA 7473

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0444, National Fireworks - Reported by Jeffrey Hendel

Physical Properties

Project: 18-0444, National Fireworks

Sample ID: NF22-SS-02 **Lab ID:** E182510-24
Station ID: NF22 **Matrix:** Subsurface Soil

Date Collected: 6/19/18 17:10

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1642941	% Solids	88		%	0.0	7/10/18 13:00	7/13/18 12:30	EPA 200.2

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0444, National Fireworks - Reported by Jeffrey Hendel

Total Metals

Project: 18-0444, National Fireworks

Sample ID: NF23-GW-01 **Lab ID:** E182510-25
Station ID: NF23 **Matrix:** Groundwater

Date Collected: 6/19/18 14:40

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7439-97-6	Mercury	0.10	U	ug/L	0.10	7/17/18 9:27	7/17/18 15:10	EPA 245.1

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0444, National Fireworks - Reported by Jeffrey Hendel

Total Metals

Project: 18-0444, National Fireworks

Sample ID: NF23-SS-01 **Lab ID:** E182510-26
Station ID: NF23 **Matrix:** Surface Soil

Date Collected: 6/19/18 13:40

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7439-97-6	Mercury	0.047	U	mg/kg dry	0.047	7/16/18 14:36	7/16/18 18:16	EPA 7473

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0444, National Fireworks - Reported by Jeffrey Hendel

Physical Properties

Project: 18-0444, National Fireworks

Sample ID: NF23-SS-01 **Lab ID:** E182510-26
Station ID: NF23 **Matrix:** Surface Soil

Date Collected: 6/19/18 13:40

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1642941	% Solids	83		%	0.0	7/10/18 13:00	7/13/18 12:30	EPA 200.2

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0444, National Fireworks - Reported by Jeffrey Hendel

Total Metals

Project: 18-0444, National Fireworks

Sample ID: NF23-SS-02 **Lab ID:** E182510-27
Station ID: NF23 **Matrix:** Subsurface Soil

Date Collected: 6/19/18 13:45

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7439-97-6	Mercury	0.032	U	mg/kg dry	0.032	7/16/18 14:36	7/16/18 18:23	EPA 7473

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Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0444, National Fireworks - Reported by Jeffrey Hendel

Physical Properties

Project: 18-0444, National Fireworks

Sample ID: NF23-SS-02 **Lab ID:** E182510-27
Station ID: NF23 **Matrix:** Subsurface Soil

Date Collected: 6/19/18 13:45

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1642941	% Solids	85		%	0.0	7/10/18 13:00	7/13/18 12:30	EPA 200.2

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0444, National Fireworks - Reported by Jeffrey Hendel

Total Metals

Project: 18-0444, National Fireworks

Sample ID: NF24-GW-01 **Lab ID:** E182510-28
Station ID: NF24 **Matrix:** Groundwater

Date Collected: 6/20/18 10:10

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7439-97-6	Mercury	0.17	J, QC-5	ug/L	0.10	7/17/18 16:59	7/18/18 17:45	EPA 245.1

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0444, National Fireworks - Reported by Jeffrey Hendel

Total Metals

Project: 18-0444, National Fireworks

Sample ID: NF24-SS-01 **Lab ID:** E182510-29
Station ID: NF24 **Matrix:** Subsurface Soil

Date Collected: 6/20/18 9:10

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7439-97-6	Mercury	0.041	U	mg/kg dry	0.041	7/16/18 14:36	7/16/18 18:30	EPA 7473

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Region 4 Science and Ecosystem Support Division
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D.A.R.T. Id: 18-0444
Project: 18-0444, National Fireworks - Reported by Jeffrey Hendel

Physical Properties

Project: 18-0444, National Fireworks

Sample ID: NF24-SS-01 **Lab ID:** E182510-29
Station ID: NF24 **Matrix:** Subsurface Soil

Date Collected: 6/20/18 9:10

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1642941	% Solids	80		%	0.0	7/10/18 13:00	7/13/18 12:30	EPA 200.2

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0444, National Fireworks - Reported by Jeffrey Hendel

Total Metals

Project: 18-0444, National Fireworks

Sample ID: NF24-SS-02 **Lab ID:** E182510-30
Station ID: NF24 **Matrix:** Subsurface Soil

Date Collected: 6/20/18 9:15

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7439-97-6	Mercury	0.039	U	mg/kg dry	0.039	7/16/18 14:36	7/16/18 18:38	EPA 7473

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0444, National Fireworks - Reported by Jeffrey Hendel

Physical Properties

Project: 18-0444, National Fireworks

Sample ID: NF24-SS-02 **Lab ID:** E182510-30
Station ID: NF24 **Matrix:** Subsurface Soil

Date Collected: 6/20/18 9:15

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1642941	% Solids	84		%	0.0	7/10/18 13:00	7/13/18 12:30	EPA 200.2

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0444, National Fireworks - Reported by Jeffrey Hendel

Total Metals

Project: 18-0444, National Fireworks

Sample ID: NF25-GW-01 **Lab ID:** E182510-31
Station ID: NF25 **Matrix:** Groundwater

Date Collected: 6/19/18 11:37

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7439-97-6	Mercury	0.52		ug/L	0.10	7/17/18 9:27	7/17/18 15:14	EPA 245.1

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0444, National Fireworks - Reported by Jeffrey Hendel

Total Metals

Project: 18-0444, National Fireworks

Sample ID: NF25-SS-01 **Lab ID:** E182510-32
Station ID: NF25 **Matrix:** Subsurface Soil

Date Collected: 6/19/18 9:30

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7439-97-6	Mercury	0.043	U	mg/kg dry	0.043	7/16/18 14:36	7/16/18 18:46	EPA 7473

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0444, National Fireworks - Reported by Jeffrey Hendel

Physical Properties

Project: 18-0444, National Fireworks

Sample ID: NF25-SS-01 **Lab ID:** E182510-32
Station ID: NF25 **Matrix:** Subsurface Soil

Date Collected: 6/19/18 9:30

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1642941	% Solids	83		%	0.0	7/10/18 13:00	7/13/18 12:30	EPA 200.2

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0444, National Fireworks - Reported by Jeffrey Hendel

Total Metals

Project: 18-0444, National Fireworks

Sample ID: NF25-SS-02 **Lab ID:** E182510-33
Station ID: NF25 **Matrix:** Subsurface Soil

Date Collected: 6/19/18 9:35

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7439-97-6	Mercury	0.045	U	mg/kg dry	0.045	7/16/18 14:36	7/16/18 18:53	EPA 7473

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0444, National Fireworks - Reported by Jeffrey Hendel

Physical Properties

Project: 18-0444, National Fireworks

Sample ID: NF25-SS-02 **Lab ID:** E182510-33
Station ID: NF25 **Matrix:** Subsurface Soil

Date Collected: 6/19/18 9:35

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1642941	% Solids	82		%	0.0	7/10/18 13:00	7/13/18 12:30	EPA 200.2

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0444, National Fireworks - Reported by Jeffrey Hendel

Total Metals

Project: 18-0444, National Fireworks

Sample ID: NF26-GW-01 **Lab ID:** E182510-34
Station ID: NF26 **Matrix:** Groundwater

Date Collected: 6/20/18 16:30

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7439-97-6	Mercury	0.10	U, J, QC-5	ug/L	0.10	7/17/18 16:59	7/18/18 17:49	EPA 245.1

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0444, National Fireworks - Reported by Jeffrey Hendel

Total Metals

Project: 18-0444, National Fireworks

Sample ID: NF26-SS-01 **Lab ID:** E182510-35
Station ID: NF26 **Matrix:** Surface Soil

Date Collected: 6/19/18 10:45

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7439-97-6	Mercury	0.048	U	mg/kg dry	0.048	7/16/18 19:40	7/16/18 19:40	EPA 7473

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0444, National Fireworks - Reported by Jeffrey Hendel

Physical Properties

Project: 18-0444, National Fireworks

Sample ID: NF26-SS-01 **Lab ID:** E182510-35
Station ID: NF26 **Matrix:** Surface Soil

Date Collected: 6/19/18 10:45

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1642941	% Solids	83		%	0.0	7/10/18 14:00	7/16/18 10:55	EPA 200.2

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
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Project: 18-0444, National Fireworks - Reported by Jeffrey Hendel

Total Metals

Project: 18-0444, National Fireworks

Sample ID: NF26-SS-02 **Lab ID:** E182510-36
Station ID: NF26 **Matrix:** Subsurface Soil

Date Collected: 6/19/18 10:50

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7439-97-6	Mercury	0.043	U	mg/kg dry	0.043	7/16/18 19:40	7/16/18 19:48	EPA 7473

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0444, National Fireworks - Reported by Jeffrey Hendel

Physical Properties

Project: 18-0444, National Fireworks

Sample ID: NF26-SS-02 **Lab ID:** E182510-36
Station ID: NF26 **Matrix:** Subsurface Soil

Date Collected: 6/19/18 10:50

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1642941	% Solids	81		%	0.0	7/10/18 14:00	7/16/18 10:55	EPA 200.2

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0444, National Fireworks - Reported by Jeffrey Hendel

Total Metals

Project: 18-0444, National Fireworks

Sample ID: NF27-GW-01 **Lab ID:** E182510-37
Station ID: NF27 **Matrix:** Groundwater

Date Collected: 6/21/18 9:25

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7439-97-6	Mercury	0.10	U	ug/L	0.10	7/18/18 11:56	7/19/18 18:45	EPA 245.1

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0444, National Fireworks - Reported by Jeffrey Hendel

Total Metals

Project: 18-0444, National Fireworks

Sample ID: NF27-SS-01 **Lab ID:** E182510-38
Station ID: NF27 **Matrix:** Subsurface Soil

Date Collected: 6/20/18 10:25

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7439-97-6	Mercury	0.045	U	mg/kg dry	0.045	7/16/18 19:40	7/16/18 19:55	EPA 7473

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0444, National Fireworks - Reported by Jeffrey Hendel

Physical Properties

Project: 18-0444, National Fireworks

Sample ID: NF27-SS-01 **Lab ID:** E182510-38
Station ID: NF27 **Matrix:** Subsurface Soil

Date Collected: 6/20/18 10:25

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1642941	% Solids	85		%	0.0	7/10/18 14:00	7/16/18 10:55	EPA 200.2

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0444, National Fireworks - Reported by Jeffrey Hendel

Total Metals

Project: 18-0444, National Fireworks

Sample ID: NF27-SS-02 **Lab ID:** E182510-39
Station ID: NF27 **Matrix:** Subsurface Soil

Date Collected: 6/20/18 10:30

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7439-97-6	Mercury	0.047	U	mg/kg dry	0.047	7/16/18 19:40	7/16/18 20:02	EPA 7473

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0444, National Fireworks - Reported by Jeffrey Hendel

Physical Properties

Project: 18-0444, National Fireworks

Sample ID: NF27-SS-02 **Lab ID:** E182510-39
Station ID: NF27 **Matrix:** Subsurface Soil

Date Collected: 6/20/18 10:30

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1642941	% Solids	82		%	0.0	7/10/18 14:00	7/16/18 10:55	EPA 200.2

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
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Project: 18-0444, National Fireworks - Reported by Jeffrey Hendel

Total Metals

Project: 18-0444, National Fireworks

Sample ID: NF28-GW-01 **Lab ID:** E182510-40
Station ID: NF28 **Matrix:** Groundwater

Date Collected: 6/20/18 16:00

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7439-97-6	Mercury	0.60	J, QC-5	ug/L	0.10	7/17/18 16:59	7/18/18 17:07	EPA 245.1

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0444, National Fireworks - Reported by Jeffrey Hendel

Total Metals

Project: 18-0444, National Fireworks

Sample ID: NF28-SS-01 **Lab ID:** E182510-41
Station ID: NF28 **Matrix:** Subsurface Soil

Date Collected: 6/19/18 14:50

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7439-97-6	Mercury	0.040	U	mg/kg dry	0.040	7/16/18 19:40	7/16/18 20:09	EPA 7473

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Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0444, National Fireworks - Reported by Jeffrey Hendel

Physical Properties

Project: 18-0444, National Fireworks

Sample ID: NF28-SS-01 **Lab ID:** E182510-41
Station ID: NF28 **Matrix:** Subsurface Soil

Date Collected: 6/19/18 14:50

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1642941	% Solids	83		%	0.0	7/10/18 14:00	7/16/18 10:55	EPA 200.2

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0444, National Fireworks - Reported by Jeffrey Hendel

Total Metals

Project: 18-0444, National Fireworks

Sample ID: NF28-SS-02 **Lab ID:** E182510-42
Station ID: NF28 **Matrix:** Subsurface Soil

Date Collected: 6/19/18 14:55

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7439-97-6	Mercury	0.042	U	mg/kg dry	0.042	7/16/18 19:40	7/16/18 20:17	EPA 7473

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0444, National Fireworks - Reported by Jeffrey Hendel

Physical Properties

Project: 18-0444, National Fireworks

Sample ID: NF28-SS-02 **Lab ID:** E182510-42
Station ID: NF28 **Matrix:** Subsurface Soil

Date Collected: 6/19/18 14:55

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1642941	% Solids	86		%	0.0	7/10/18 14:00	7/16/18 10:55	EPA 200.2

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0444, National Fireworks - Reported by Jeffrey Hendel

Total Metals

Project: 18-0444, National Fireworks

Sample ID: NF29-GW-01 **Lab ID:** E182510-43
Station ID: NF29 **Matrix:** Groundwater

Date Collected: 6/19/18 14:50

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7439-97-6	Mercury	0.10	U	ug/L	0.10	7/17/18 9:27	7/17/18 15:30	EPA 245.1

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0444, National Fireworks - Reported by Jeffrey Hendel

Total Metals

Project: 18-0444, National Fireworks

Sample ID: NF29-SS-01 **Lab ID:** E182510-44
Station ID: NF29 **Matrix:** Surface Soil

Date Collected: 6/19/18 13:55

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7439-97-6	Mercury	0.049	U	mg/kg dry	0.049	7/16/18 19:40	7/16/18 20:25	EPA 7473

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0444, National Fireworks - Reported by Jeffrey Hendel

Physical Properties

Project: 18-0444, National Fireworks

Sample ID: NF29-SS-01 **Lab ID:** E182510-44
Station ID: NF29 **Matrix:** Surface Soil

Date Collected: 6/19/18 13:55

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1642941	% Solids	81		%	0.0	7/10/18 14:00	7/16/18 10:55	EPA 200.2

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Region 4 Science and Ecosystem Support Division
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D.A.R.T. Id: 18-0444
Project: 18-0444, National Fireworks - Reported by Jeffrey Hendel

Total Metals

Project: 18-0444, National Fireworks

Sample ID: NF29-SS-02 **Lab ID:** E182510-45
Station ID: NF29 **Matrix:** Subsurface Soil

Date Collected: 6/19/18 14:00

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7439-97-6	Mercury	0.036	U	mg/kg dry	0.036	7/16/18 19:40	7/16/18 20:32	EPA 7473

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0444, National Fireworks - Reported by Jeffrey Hendel

Physical Properties

Project: 18-0444, National Fireworks

Sample ID: NF29-SS-02 **Lab ID:** E182510-45
Station ID: NF29 **Matrix:** Subsurface Soil

Date Collected: 6/19/18 14:00

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1642941	% Solids	89		%	0.0	7/10/18 14:00	7/16/18 10:55	EPA 200.2

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Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0444, National Fireworks - Reported by Jeffrey Hendel

Total Metals

Project: 18-0444, National Fireworks

Sample ID: NF30-GW-01 **Lab ID:** E182510-46
Station ID: NF30 **Matrix:** Groundwater

Date Collected: 6/20/18 13:05

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7439-97-6	Mercury	0.47	J, QC-5	ug/L	0.10	7/17/18 16:59	7/18/18 16:57	EPA 245.1

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0444, National Fireworks - Reported by Jeffrey Hendel

Total Metals

Project: 18-0444, National Fireworks

Sample ID: NF30-SS-01 **Lab ID:** E182510-47
Station ID: NF30 **Matrix:** Subsurface Soil

Date Collected: 6/20/18 12:25

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7439-97-6	Mercury	0.045	U	mg/kg dry	0.045	7/16/18 20:36	7/16/18 20:39	EPA 7473

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0444, National Fireworks - Reported by Jeffrey Hendel

Physical Properties

Project: 18-0444, National Fireworks

Sample ID: NF30-SS-01 **Lab ID:** E182510-47
Station ID: NF30 **Matrix:** Subsurface Soil

Date Collected: 6/20/18 12:25

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1642941	% Solids	81		%	0.0	7/10/18 14:00	7/16/18 10:55	EPA 200.2

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0444, National Fireworks - Reported by Jeffrey Hendel

Total Metals

Project: 18-0444, National Fireworks

Sample ID: NF30-SS-02 **Lab ID:** E182510-48
Station ID: NF30 **Matrix:** Subsurface Soil

Date Collected: 6/20/18 12:30

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7439-97-6	Mercury	0.074		mg/kg dry	0.042	7/16/18 20:36	7/16/18 20:47	EPA 7473

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0444, National Fireworks - Reported by Jeffrey Hendel

Physical Properties

Project: 18-0444, National Fireworks

Sample ID: NF30-SS-02 **Lab ID:** E182510-48
Station ID: NF30 **Matrix:** Subsurface Soil

Date Collected: 6/20/18 12:30

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1642941	% Solids	85		%	0.0	7/10/18 14:00	7/16/18 10:55	EPA 200.2

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0444, National Fireworks - Reported by Jeffrey Hendel

Total Metals

Project: 18-0444, National Fireworks

Sample ID: NF31-GW-01 **Lab ID:** E182510-49
Station ID: NF31 **Matrix:** Groundwater

Date Collected: 6/21/18 9:15

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7439-97-6	Mercury	0.10	U	ug/L	0.10	7/18/18 11:56	7/19/18 18:29	EPA 245.1

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0444, National Fireworks - Reported by Jeffrey Hendel

Total Metals

Project: 18-0444, National Fireworks

Sample ID: NF31-SS-01 **Lab ID:** E182510-50
Station ID: NF31 **Matrix:** Subsurface Soil

Date Collected: 6/19/18 10:20

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7439-97-6	Mercury	0.046	U	mg/kg dry	0.046	7/16/18 20:36	7/16/18 21:47	EPA 7473

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0444, National Fireworks - Reported by Jeffrey Hendel

Physical Properties

Project: 18-0444, National Fireworks

Sample ID: NF31-SS-01 **Lab ID:** E182510-50
Station ID: NF31 **Matrix:** Subsurface Soil

Date Collected: 6/19/18 10:20

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1642941	% Solids	82		%	0.0	7/10/18 14:00	7/16/18 10:55	EPA 200.2

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0444, National Fireworks - Reported by Jeffrey Hendel

Total Metals

Project: 18-0444, National Fireworks

Sample ID: NF31-SS-02 **Lab ID:** E182510-51
Station ID: NF31 **Matrix:** Subsurface Soil

Date Collected: 6/19/18 10:25

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7439-97-6	Mercury	0.045	U	mg/kg dry	0.045	7/16/18 20:36	7/16/18 22:09	EPA 7473

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0444, National Fireworks - Reported by Jeffrey Hendel

Physical Properties

Project: 18-0444, National Fireworks

Sample ID: NF31-SS-02 **Lab ID:** E182510-51
Station ID: NF31 **Matrix:** Subsurface Soil

Date Collected: 6/19/18 10:25

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1642941	% Solids	83		%	0.0	7/10/18 14:00	7/16/18 10:55	EPA 200.2

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0444, National Fireworks - Reported by Jeffrey Hendel

Total Metals

Project: 18-0444, National Fireworks

Sample ID: NF32-GW-01 **Lab ID:** E182510-52
Station ID: NF32 **Matrix:** Groundwater

Date Collected: 6/21/18 10:00

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7439-97-6	Mercury	0.10	U	ug/L	0.10	7/18/18 11:56	7/19/18 18:49	EPA 245.1

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0444, National Fireworks - Reported by Jeffrey Hendel

Total Metals

Project: 18-0444, National Fireworks

Sample ID: NF32-SS-01 **Lab ID:** E182510-53
Station ID: NF32 **Matrix:** Surface Soil

Date Collected: 6/19/18 12:40

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7439-97-6	Mercury	0.037	U	mg/kg dry	0.037	7/16/18 20:36	7/16/18 22:16	EPA 7473

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0444, National Fireworks - Reported by Jeffrey Hendel

Physical Properties

Project: 18-0444, National Fireworks

Sample ID: NF32-SS-01 **Lab ID:** E182510-53
Station ID: NF32 **Matrix:** Surface Soil

Date Collected: 6/19/18 12:40

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1642941	% Solids	95		%	0.0	7/10/18 14:00	7/16/18 10:55	EPA 200.2

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0444, National Fireworks - Reported by Jeffrey Hendel

Total Metals

Project: 18-0444, National Fireworks

Sample ID: NF32-SS-02 **Lab ID:** E182510-54
Station ID: NF32 **Matrix:** Subsurface Soil

Date Collected: 6/19/18 12:45

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7439-97-6	Mercury	0.044	U	mg/kg dry	0.044	7/16/18 20:36	7/16/18 22:23	EPA 7473

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0444, National Fireworks - Reported by Jeffrey Hendel

Physical Properties

Project: 18-0444, National Fireworks

Sample ID: NF32-SS-02 **Lab ID:** E182510-54
Station ID: NF32 **Matrix:** Subsurface Soil

Date Collected: 6/19/18 12:45

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1642941	% Solids	91		%	0.0	7/10/18 14:00	7/16/18 10:55	EPA 200.2

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
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Total Metals

Project: 18-0444, National Fireworks

Sample ID: NF33-GW-01 **Lab ID:** E182510-55
Station ID: NF33 **Matrix:** Groundwater

Date Collected: 6/19/18 17:00

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7439-97-6	Mercury	0.10	U	ug/L	0.10	7/17/18 9:27	7/17/18 15:34	EPA 245.1

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0444, National Fireworks - Reported by Jeffrey Hendel

Total Metals

Project: 18-0444, National Fireworks

Sample ID: NF33-SS-01 **Lab ID:** E182510-56

Station ID: NF33 **Matrix:** Surface Soil

Date Collected: 6/19/18 16:10

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7439-97-6	Mercury	0.045	U	mg/kg dry	0.045	7/16/18 20:36	7/16/18 22:30	EPA 7473

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0444, National Fireworks - Reported by Jeffrey Hendel

Physical Properties

Project: 18-0444, National Fireworks

Sample ID: NF33-SS-01 **Lab ID:** E182510-56
Station ID: NF33 **Matrix:** Surface Soil

Date Collected: 6/19/18 16:10

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1642941	% Solids	89		%	0.0	7/10/18 14:00	7/16/18 10:55	EPA 200.2

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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Total Metals

Project: 18-0444, National Fireworks

Sample ID: NF33-SS-02 **Lab ID:** E182510-57
Station ID: NF33 **Matrix:** Subsurface Soil

Date Collected: 6/19/18 16:20

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7439-97-6	Mercury	0.055		mg/kg dry	0.044	7/16/18 20:36	7/16/18 22:38	EPA 7473

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0444, National Fireworks - Reported by Jeffrey Hendel

Physical Properties

Project: 18-0444, National Fireworks

Sample ID: NF33-SS-02 **Lab ID:** E182510-57
Station ID: NF33 **Matrix:** Subsurface Soil

Date Collected: 6/19/18 16:20

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1642941	% Solids	86		%	0.0	7/10/18 14:00	7/16/18 10:55	EPA 200.2

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D.A.R.T. Id: 18-0444
Project: 18-0444, National Fireworks - Reported by Jeffrey Hendel

Total Metals

Project: 18-0444, National Fireworks

Sample ID: NF34-GW-01 **Lab ID:** E182510-58
Station ID: NF34 **Matrix:** Groundwater

Date Collected: 6/19/18 13:30

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7439-97-6	Mercury	0.10	U	ug/L	0.10	7/17/18 9:27	7/17/18 15:38	EPA 245.1

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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D.A.R.T. Id: 18-0444
Project: 18-0444, National Fireworks - Reported by Jeffrey Hendel

Total Metals

Project: 18-0444, National Fireworks

Sample ID: NF34-SS-01 **Lab ID:** E182510-59
Station ID: NF34 **Matrix:** Surface Soil

Date Collected: 6/19/18 11:55

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7439-97-6	Mercury	0.10		mg/kg dry	0.044	7/16/18 20:36	7/16/18 22:45	EPA 7473

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0444, National Fireworks - Reported by Jeffrey Hendel

Physical Properties

Project: 18-0444, National Fireworks

Sample ID: NF34-SS-01 **Lab ID:** E182510-59
Station ID: NF34 **Matrix:** Surface Soil

Date Collected: 6/19/18 11:55

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1642941	% Solids	84		%	0.0	7/10/18 14:00	7/16/18 10:55	EPA 200.2

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0444, National Fireworks - Reported by Jeffrey Hendel

Total Metals

Project: 18-0444, National Fireworks

Sample ID: NF34-SS-02 **Lab ID:** E182510-60
Station ID: NF34 **Matrix:** Subsurface Soil

Date Collected: 6/19/18 11:50

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7439-97-6	Mercury	0.045	U, J, Q-1, QM-1	mg/kg dry	0.045	7/17/18 17:07	7/18/18 20:45	EPA 7473

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0444, National Fireworks - Reported by Jeffrey Hendel

Physical Properties

Project: 18-0444, National Fireworks

Sample ID: NF34-SS-02 **Lab ID:** E182510-60
Station ID: NF34 **Matrix:** Subsurface Soil

Date Collected: 6/19/18 11:50

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1642941	% Solids	80		%	0.0	7/10/18 14:00	7/16/18 10:55	EPA 200.2

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
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Total Metals

Project: 18-0444, National Fireworks

Sample ID: NF35-GW-01 **Lab ID:** E182510-61
Station ID: NF35 **Matrix:** Groundwater

Date Collected: 6/20/18 15:20

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7439-97-6	Mercury	0.10	U, J, QC-5	ug/L	0.10	7/17/18 16:59	7/18/18 18:00	EPA 245.1

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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D.A.R.T. Id: 18-0444
Project: 18-0444, National Fireworks - Reported by Jeffrey Hendel

Total Metals

Project: 18-0444, National Fireworks

Sample ID: NF35-SS-01 **Lab ID:** E182510-62
Station ID: NF35 **Matrix:** Surface Soil

Date Collected: 6/20/18 15:00

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7439-97-6	Mercury	0.049	U	mg/kg dry	0.049	7/17/18 17:07	7/18/18 21:17	EPA 7473

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0444, National Fireworks - Reported by Jeffrey Hendel

Physical Properties

Project: 18-0444, National Fireworks

Sample ID: NF35-SS-01 **Lab ID:** E182510-62
Station ID: NF35 **Matrix:** Surface Soil

Date Collected: 6/20/18 15:00

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1642941	% Solids	77		%	0.0	7/10/18 14:00	7/16/18 10:55	EPA 200.2

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0444, National Fireworks - Reported by Jeffrey Hendel

Total Metals

Project: 18-0444, National Fireworks

Sample ID: NF35-SS-02 **Lab ID:** E182510-63
Station ID: NF35 **Matrix:** Subsurface Soil

Date Collected: 6/20/18 15:10

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7439-97-6	Mercury	0.045	U	mg/kg dry	0.045	7/17/18 17:07	7/18/18 21:26	EPA 7473

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Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0444, National Fireworks - Reported by Jeffrey Hendel

Physical Properties

Project: 18-0444, National Fireworks

Sample ID: NF35-SS-02 **Lab ID:** E182510-63
Station ID: NF35 **Matrix:** Subsurface Soil

Date Collected: 6/20/18 15:10

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1642941	% Solids	83		%	0.0	7/10/18 14:00	7/16/18 10:55	EPA 200.2

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Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0444, National Fireworks - Reported by Jeffrey Hendel

Total Metals

Project: 18-0444, National Fireworks

Sample ID: NF36-GW-01 **Lab ID:** E182510-64
Station ID: NF36 **Matrix:** Groundwater

Date Collected: 6/21/18 10:35

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7439-97-6	Mercury	0.10	U	ug/L	0.10	7/18/18 11:56	7/19/18 18:53	EPA 245.1

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Total Metals

Project: 18-0444, National Fireworks

Sample ID: NF36-SS-01 **Lab ID:** E182510-65
Station ID: NF36 **Matrix:** Subsurface Soil

Date Collected: 6/20/18 16:45

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7439-97-6	Mercury	0.039	U	mg/kg dry	0.039	7/17/18 17:07	7/18/18 21:34	EPA 7473

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Physical Properties

Project: 18-0444, National Fireworks

Sample ID: NF36-SS-01 **Lab ID:** E182510-65
Station ID: NF36 **Matrix:** Subsurface Soil

Date Collected: 6/20/18 16:45

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1642941	% Solids	80		%	0.0	7/10/18 14:00	7/16/18 10:55	EPA 200.2

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Total Metals

Project: 18-0444, National Fireworks

Sample ID: NF36-SS-02 **Lab ID:** E182510-66
Station ID: NF36 **Matrix:** Subsurface Soil

Date Collected: 6/20/18 16:50

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7439-97-6	Mercury	0.040	U	mg/kg dry	0.040	7/17/18 17:07	7/18/18 21:42	EPA 7473

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Physical Properties

Project: 18-0444, National Fireworks

Sample ID: NF36-SS-02 **Lab ID:** E182510-66
Station ID: NF36 **Matrix:** Subsurface Soil

Date Collected: 6/20/18 16:50

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
E1642941	% Solids	85		%	0.0	7/10/18 14:00	7/16/18 10:55	EPA 200.2

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Total Metals

Project: 18-0444, National Fireworks

Sample ID: NFMW1-GW-01 **Lab ID:** E182510-67
Station ID: NFMW1 **Matrix:** Groundwater

Date Collected: 6/18/18 15:15

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7439-97-6	Mercury	0.10	U, J, QC-5	ug/L	0.10	6/26/18 10:44	7/16/18 22:27	EPA 245.1

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Total Metals

Project: 18-0444, National Fireworks

Sample ID: NFMW7-GW-01 **Lab ID:** E182510-68
Station ID: NFMW7 **Matrix:** Groundwater

Date Collected: 6/21/18 11:55

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7439-97-6	Mercury	0.10	U	ug/L	0.10	7/18/18 11:56	7/19/18 18:57	EPA 245.1

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Total Metals

Project: 18-0444, National Fireworks

Sample ID: NFMW7-GW-01-DUP
Station ID: NFMW7
Lab ID: E182510-69
Matrix: Groundwater

Date Collected: 6/21/18 12:00

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
7439-97-6	Mercury	0.10	U	ug/L	0.10	7/18/18 11:56	7/19/18 19:01	EPA 245.1

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D.A.R.T. Id: 18-0444
Project: 18-0444, National Fireworks - Reported by Jeffrey Hendel

Total Metals (TMTL) - Quality Control
US-EPA, Region 4, SESD

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1806078 - M 245.1 Hg Wtr										
Blank (1806078-BLK1)				Prepared: 06/26/18 Analyzed: 07/16/18						
EPA 245.1										
Mercury	U	0.10	ug/L							U
LCS (1806078-BS1)				Prepared: 06/26/18 Analyzed: 07/16/18						
EPA 245.1										
Mercury	1.8700	0.10	ug/L	2.0000		93.5	85-115			
LCS Dup (1806078-BSD1)				Prepared: 06/26/18 Analyzed: 07/16/18						
EPA 245.1										
Mercury	1.8120	0.10	ug/L	2.0000		90.6	85-115	3.15	20	
Duplicate (1806078-DUP1)		**Source: E182510-67**		Prepared: 06/26/18 Analyzed: 07/16/18						
EPA 245.1										
Mercury	0.059000	0.10	ug/L		0.059000			0.00	20	U
Matrix Spike (1806078-MS1)		**Source: E182510-67**		Prepared: 06/26/18 Analyzed: 07/16/18						
EPA 245.1										
Mercury	2.2120	0.10	ug/L	2.0000	0.059000	108	70-130			
Matrix Spike Dup (1806078-MSD1)		**Source: E182510-67**		Prepared: 06/26/18 Analyzed: 07/16/18						
EPA 245.1										
Mercury	2.1840	0.10	ug/L	2.0000	0.059000	106	70-130	1.27	20	
MRL Verification (1806078-PS1)				Prepared: 06/26/18 Analyzed: 07/16/18						
EPA 245.1										
Mercury	0.10200		ug/L	0.10000		102	70-130			MRL-2
Batch 1807071 - M 7473 Hg-Direct										
Blank (1807071-BLK1)				Prepared & Analyzed: 07/16/18						
EPA 7473										
Mercury	U	0.020	mg/kg dry							U
LCS (1807071-BS1)				Prepared & Analyzed: 07/16/18						
EPA 7473										
Mercury	8.7547	0.43	mg/kg dry	9.0000		97.3	80-120			

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Total Metals (TMTL) - Quality Control
US-EPA, Region 4, SESD

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1807071 - M 7473 Hg-Direct										
LCS Dup (1807071-BSD1)				Prepared & Analyzed: 07/16/18						
EPA 7473										
Mercury	8.8596	0.42	mg/kg dry	9.0000		98.4	80-120	1.19	20	
Matrix Spike (1807071-MS1)		**Source: E182510-06**		Prepared & Analyzed: 07/16/18						
EPA 7473										
Mercury	0.57041	0.025	mg/kg dry	0.49875	0.021288	110	80-120			
Matrix Spike (1807071-MS2)		**Source: E182510-20**		Prepared & Analyzed: 07/16/18						
EPA 7473										
Mercury	0.59657	0.042	mg/kg dry	0.84388	0.043717	65.5	80-120			QM-1
Matrix Spike Dup (1807071-MSD1)		**Source: E182510-06**		Prepared & Analyzed: 07/16/18						
EPA 7473										
Mercury	0.54738	0.024	mg/kg dry	0.48709	0.021288	108	80-120	4.12	20	
Matrix Spike Dup (1807071-MSD2)		**Source: E182510-20**		Prepared & Analyzed: 07/16/18						
EPA 7473										
Mercury	0.45662	0.046	mg/kg dry	0.92421	0.043717	44.7	80-120	26.6	20	QM-1
MRL Verification (1807071-PS1)				Prepared & Analyzed: 07/16/18						
EPA 7473										
Mercury	4.8130		ng Hg	5.0000		96.3	70-130			MRL-3
Batch 1807073 - M 7473 Hg-Direct										
Blank (1807073-BLK1)				Prepared & Analyzed: 07/16/18						
EPA 7473										
Mercury	U	0.039	mg/kg dry							U
LCS (1807073-BS1)				Prepared & Analyzed: 07/16/18						
EPA 7473										
Mercury	8.8067	0.45	mg/kg dry	9.0000		97.9	80-120			
LCS Dup (1807073-BSD1)				Prepared & Analyzed: 07/16/18						
EPA 7473										
Mercury	9.2319	0.42	mg/kg dry	9.0000		103	80-120	4.71	20	

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Total Metals (TMTL) - Quality Control
US-EPA, Region 4, SESD

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1807073 - M 7473 Hg-Direct										
Matrix Spike (1807073-MS1)		**Source: E182510-50**		Prepared & Analyzed: 07/16/18						
EPA 7473										
Mercury	0.80300	0.044	mg/kg dry	0.88889	0.042853	85.5	80-120			
Matrix Spike Dup (1807073-MSD1)		**Source: E182510-50**		Prepared & Analyzed: 07/16/18						
EPA 7473										
Mercury	0.79539	0.043	mg/kg dry	0.85034	0.042853	88.5	80-120	0.951	20	
MRL Verification (1807073-PS1)				Prepared & Analyzed: 07/16/18						
EPA 7473										
Mercury	4.3220		ng Hg	5.0000		86.4	70-130			MRL-3
Batch 1807077 - M 245.1 Hg Wtr										
Blank (1807077-BLK1)				Prepared & Analyzed: 07/17/18						
EPA 245.1										
Mercury	U	0.10	ug/L							U
LCS (1807077-BS1)				Prepared & Analyzed: 07/17/18						
EPA 245.1										
Mercury	2.0640	0.10	ug/L	2.0000		103	85-115			
LCS Dup (1807077-BSD1)				Prepared & Analyzed: 07/17/18						
EPA 245.1										
Mercury	1.9810	0.10	ug/L	2.0000		99.0	85-115	4.10	20	
Duplicate (1807077-DUP1)		**Source: E182510-31**		Prepared & Analyzed: 07/17/18						
EPA 245.1										
Mercury	0.52100	0.10	ug/L		0.52400			0.574	20	
Matrix Spike (1807077-MS1)		**Source: E182510-31**		Prepared & Analyzed: 07/17/18						
EPA 245.1										
Mercury	2.5990	0.10	ug/L	2.0000	0.52400	104	70-130			
Matrix Spike Dup (1807077-MSD1)		**Source: E182510-31**		Prepared & Analyzed: 07/17/18						
EPA 245.1										
Mercury	2.5540	0.10	ug/L	2.0000	0.52400	102	70-130	1.75	20	

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Total Metals (TMTL) - Quality Control
US-EPA, Region 4, SESD

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1807077 - M 245.1 Hg Wtr										
MRL Verification (1807077-PS1)				Prepared & Analyzed: 07/17/18						
EPA 245.1										
Mercury	0.078000		ug/L	0.10000		78.0	70-130			MRL-2
Batch 1807090 - M 245.1 Hg Wtr										
Blank (1807090-BLK1)				Prepared: 07/17/18 Analyzed: 07/18/18						
EPA 245.1										
Mercury	U	0.10	ug/L							U
LCS (1807090-BS1)				Prepared: 07/17/18 Analyzed: 07/18/18						
EPA 245.1										
Mercury	1.9810	0.10	ug/L	2.0000		99.0	85-115			
LCS Dup (1807090-BSD1)				Prepared: 07/17/18 Analyzed: 07/18/18						
EPA 245.1										
Mercury	1.9100	0.10	ug/L	2.0000		95.5	85-115	3.65	20	
Duplicate (1807090-DUP1)		**Source: E182510-19**		Prepared: 07/17/18 Analyzed: 07/18/18						
EPA 245.1										
Mercury	0.80400	0.10	ug/L		0.81000			0.743	20	J, QC-5
Matrix Spike (1807090-MS1)		**Source: E182510-19**		Prepared: 07/17/18 Analyzed: 07/18/18						
EPA 245.1										
Mercury	2.4860	0.10	ug/L	2.0000	0.81000	83.8	70-130			
Matrix Spike Dup (1807090-MSD1)		**Source: E182510-19**		Prepared: 07/17/18 Analyzed: 07/18/18						
EPA 245.1										
Mercury	2.4930	0.10	ug/L	2.0000	0.81000	84.2	70-130	0.281	20	
MRL Verification (1807090-PS1)				Prepared: 07/17/18 Analyzed: 07/18/18						
EPA 245.1										
Mercury	0.10700		ug/L	0.10000		107	70-130			MRL-2
Batch 1807091 - M 7473 Hg-Direct										
Blank (1807091-BLK1)				Prepared: 07/17/18 Analyzed: 07/18/18						
EPA 7473										
Mercury	U	0.020	mg/kg dry							U

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Total Metals (TMTL) - Quality Control
US-EPA, Region 4, SESD

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1807091 - M 7473 Hg-Direct										
Blank (1807091-BLK1)				Prepared: 07/17/18 Analyzed: 07/18/18						
LCS (1807091-BS1)				Prepared: 07/17/18 Analyzed: 07/18/18						
EPA 7473										
Mercury	7.9382	0.40	mg/kg dry	9.0000		88.2	80-120			
LCS Dup (1807091-BSD1)				Prepared: 07/17/18 Analyzed: 07/18/18						
EPA 7473										
Mercury	8.4992	0.38	mg/kg dry	9.0000		94.4	80-120	6.83	20	
Matrix Spike (1807091-MS1)		**Source: E182510-60**		Prepared: 07/17/18 Analyzed: 07/18/18						
EPA 7473										
Mercury	0.38850	0.046	mg/kg dry	0.92937	0.022815	39.3	80-120			QM-1
Matrix Spike Dup (1807091-MSD1)		**Source: E182510-60**		Prepared: 07/17/18 Analyzed: 07/18/18						
EPA 7473										
Mercury	0.33088	0.045	mg/kg dry	0.90580	0.022815	34.0	80-120	16.0	20	QM-1
MRL Verification (1807091-PS1)				Prepared: 07/17/18 Analyzed: 07/18/18						
EPA 7473										
Mercury	5.3800		ng Hg	5.0000		108	70-130			MRL-3
Batch 1807096 - M 245.1 Hg Wtr										
Blank (1807096-BLK1)				Prepared: 07/18/18 Analyzed: 07/19/18						
EPA 245.1										
Mercury	U	0.10	ug/L							U
LCS (1807096-BS1)				Prepared: 07/18/18 Analyzed: 07/19/18						
EPA 245.1										
Mercury	1.9360	0.10	ug/L	2.0000		96.8	85-115			
LCS Dup (1807096-BSD1)				Prepared: 07/18/18 Analyzed: 07/19/18						
EPA 245.1										
Mercury	1.8920	0.10	ug/L	2.0000		94.6	85-115	2.30	20	

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Total Metals (TMTL) - Quality Control
US-EPA, Region 4, SESD

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1807096 - M 245.1 Hg Wtr										
Duplicate (1807096-DUP1)		**Source: E182510-49**		Prepared: 07/18/18 Analyzed: 07/19/18						
EPA 245.1										
Mercury	U	0.10	ug/L		U				20	U
Matrix Spike (1807096-MS1)		**Source: E182510-49**		Prepared: 07/18/18 Analyzed: 07/19/18						
EPA 245.1										
Mercury	1.8350	0.10	ug/L	2.0000	U	91.8	70-130			
Matrix Spike Dup (1807096-MSD1)		**Source: E182510-49**		Prepared: 07/18/18 Analyzed: 07/19/18						
EPA 245.1										
Mercury	1.8360	0.10	ug/L	2.0000	U	91.8	70-130	0.0545	20	
MRL Verification (1807096-PS1)				Prepared: 07/18/18 Analyzed: 07/19/18						
EPA 245.1										
Mercury	0.096000		ug/L	0.10000		96.0	70-130			MRL-2

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Physical Properties (PHYSP) - Quality Control

US-EPA, Region 4, SESD

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1807044 - M % Solids										
Duplicate (1807044-DUP1)		**Source: E182510-33**		Prepared: 07/10/18 Analyzed: 07/13/18						
EPA 200.2										
% Solids	82.595	0.0	%		82.032			0.684	10	
Batch 1807045 - M % Solids										
Duplicate (1807045-DUP1)		**Source: E182510-63**		Prepared: 07/10/18 Analyzed: 07/16/18						
EPA 200.2										
% Solids	82.795	0.0	%		82.831			0.0435	10	
Batch 1807046 - M % Solids										
Duplicate (1807046-DUP1)		**Source: E182510-66**		Prepared: 07/10/18 Analyzed: 07/16/18						
EPA 200.2										
% Solids	85.134	0.0	%		84.919			0.253	10	

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Notes and Definitions for QC Samples

U	The analyte was not detected at or above the reporting limit.
J	The identification of the analyte is acceptable; the reported value is an estimate.
MRL-2	MRL verification for Non-Potable Water matrix
MRL-3	MRL verification for Soil matrix
QC-5	Calibration check standard less than method control limits.
QM-1	Matrix Spike Recovery less than method control limits

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

Job Number: 320-40571-1

Job Description: National Fireworks

For:
Tetra Tech EM Inc.
950 S. 4th St
Baldwyn, MS 38824

Attention: Jessica Vickers

Approved for release.
Laura Turpen
Project Manager I
7/18/2018 2:20 PM

Designee for
Linda C. Laver, Project Manager II
880 Riverside Parkway, West Sacramento, CA, 95605
(916)374-4362
linda.laver@testamericainc.com
07/18/2018

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Definitions/Glossary

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Qualifiers

LCMS

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
B	Compound was found in the blank and sample.
I	Value is EMPC (estimated maximum possible concentration).
*	Isotope Dilution analyte is outside acceptance limits.
F1	MS and/or MSD Recovery is outside acceptance limits.
E	Result exceeded calibration range.
F2	MS/MSD RPD exceeds control limits

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job Narrative
320-40571-1

Comments
No additional comments.

Receipt
The samples were received on 6/22/2018 9:05 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 0.4º C and 0.5º C.

Receipt Exceptions
For sample NF36-GW-01 (320-40571-41), the chain of custody (COC), 2 containers are listed but only 1 container was received.

LCMS
Method(s) 537 (modified): The concentration of Perfluorobutanesulfonic acid (PFBS) associated with the following sample exceeded the instrument calibration range: NF31-GW-01 (320-40571-31). These analytes have been qualified; however, the peaks did not saturate the instrument detector. The samples were diluted to bring all results within the calibration range and both sets of data were reported.

Method(s) 537 (modified): The concentration of Perfluoropentanoic acid (PFPeA) and Perfluorobutanoic acid (PFBA) associated with the following sample exceeded the instrument calibration range: NF20-GW-01 (320-40571-9). These analytes have been qualified; however, the peaks did not saturate the instrument detector. The samples were diluted to bring all results within the calibration range and both sets of data were reported.

Method(s) 537 (modified): Results for samples NF20-GW-01 (320-40571-9) and NF31-GW-01 (320-40571-31) were reported from the analysis of a diluted extract due to high concentration of the target analyte in the analysis of the undiluted extract. The dilution factor was applied to the labeled internal standard area counts and these area counts were within acceptance limits.

Method(s) 537 (modified): The following samples were diluted to bring the concentration of target analytes within the calibration range: NF20-GW-01 (320-40571-9) and NF31-GW-01 (320-40571-31). Elevated reporting limits (RLs) are provided.

Method(s) 537 (modified): The matrix spike / matrix spike duplicate (MS/MSD) recoveries for 4:2 FTS for preparation batch 320-232121 and analytical batch 320-232800 were outside control limits. Sample matrix interference is suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

Method(s) 537 (modified): The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 320-232121 and analytical batch 320-233989 were outside control limits for 4:2 FTS. Sample matrix interference is suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.Method(s) 537 (modified): Isotope Dilution Analyte (IDA) recovery is above the method recommended limit for M2-6:2FTS in the following sample: NF26-GW-01 (320-40571-21). Re-analysis was performed with concurring results. Quantitation by isotope dilution generally precludes any adverse effect on data quality due to elevated IDA recoveries.

Method(s) 537 (modified): The matrix spike / matrix spike duplicate (MS/MSD) recoveries for 4:2 FTS for preparation batch 320-232150 and analytical batch 320-232788 were outside control limits. Sample matrix interference is suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

Method(s) 537 (modified): The matrix spike / matrix spike duplicate (MS/MSD) precision for Perfluoropentanoic acid (PFPeA) and Perfluorobutanoic acid (PFBA) forpreparation batch 320-232150 and analytical batch 320-232788 was outside control limits. The associated laboratory control sample / laboratory sample control duplicate (LCS/LCSD) precision was within acceptance limits.

Method(s) 537 (modified): Isotope Dilution Analyte (IDA) recovery for M2-6:2FTS is above the method recommended limit for the following samples: NF18-GW-01 (320-40571-5) and NF32-GW-01 (320-40571-33). Re-analysis was performed with concurring results. Quantitation by isotope dilution generally precludes any adverse effect on data quality due to elevated IDA recoveries.

Method(s) 537 (modified): Isotope Dilution Analyte (IDA) recovery for M2-6:2FTS is above the method recommended limit for the following samples: NF35-GW-01 (320-40571-39) and NF35-SS-01 (320-40571-40). Quantitation by isotope dilution generally precludes any adverse effect on data quality due to elevated IDA recoveries.

Method(s) 537 (modified): The Isotope Dilution Analyte (IDA) recovery associated with the following sample is below the method recommended limit for 13C2-PFTeDA: NF28-GW-01 (320-40571-25). Re-analysis was performed with concurring results. Generally, data quality is not considered affected if the IDA signal-to-noise ratio is greater than 10:1, which is achieved for all IDA in the sample.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

General Chemistry
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Organic Prep
Method(s) 3535: The listed samples required centrifugation after the addition of surrogate due to excessive turbidity which was causing the solid phase extraction columns to become clogged.
NF17-GW-01 (320-40571-1), NF17-GW-01-DUP (320-40571-2), NF19-GW-01 (320-40571-7), NF20-GW-01 (320-40571-9),

NF21-GW-01 (320-40571-11), NF22-GW-01 (320-40571-13), NF23-GW-01 (320-40571-15), NF24-GW-01 (320-40571-17), NF25-GW-01 (320-40571-19), NF27-GW-01 (320-40571-23[MS]), NF28-GW-01 (320-40571-25), NF29-GW-01 (320-40571-27), NF30-GW-01 (320-40571-29), NF32-GW-01 (320-40571-33), NF33-GW-01 (320-40571-35[MS]), NF33-GW-01 (320-40571-35[MSD]) and NF35-GW-01 (320-40571-39)

Batches: 320-232121, 320-232150

Method(s) 3535: The sample extracts contained orange residue on the bottom of extraction tube for samples NF17-GW-01 (320-40571-1), NF20-GW-01 (320-40571-9), NF21-GW-01 (320-40571-11) and NF25-GW-01 (320-40571-19).
Batch:320-232121

Method(s) 3535: During the eluting process approximately 2 mL of extraction solvent from the Laboratory Control Sample Duplicate and NF22-GW-01 (320-40571-13) leaked from the sample column into the chamber due to an under-tightened fitting under the lid of the manifold.

Method(s) 3535: The extracts for samples NF33-GW-01 (320-40571-35), NF33-GW-01 (320-40571-35[MS]), NF33-GW-01 (320-40571-35[MSD]) and NF34-GW-01 (320-40571-37) were cloudy at final volume.
Batch:320- 232150

Method(s) 3535: The extract was yellow at final volume for sample NF35-GW-01 (320-40571-39).
Batch:320- 232150

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Detection Summary

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Client Sample ID: NF17-GW-01 — Lab Sample ID: 320-40571-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	0.0035	B	0.0018	0.00032	ug/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	0.0013	J	0.0018	0.00044	ug/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	0.00089	J	0.0018	0.00052	ug/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.00074	J	0.0018	0.00023	ug/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	0.0031		0.0018	0.00077	ug/L	1		537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	0.00062	J	0.0018	0.00024	ug/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.0017	J	0.0018	0.00018	ug/L	1		537 (modified)	Total/NA
Perfluoropentanesulfonic acid (PFPeS)	0.00029	J I	0.0018	0.00027	ug/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.0012	J B	0.0018	0.00015	ug/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.0069		0.0018	0.00049	ug/L	1		537 (modified)	Total/NA
6:2 FTS	0.0038	J	0.018	0.0018	ug/L	1		537 (modified)	Total/NA

Client Sample ID: NF17-GW-01-DUP — Lab Sample ID: 320-40571-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	0.0041	B	0.0019	0.00034	ug/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	0.00094	J	0.0019	0.00047	ug/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	0.00068	J	0.0019	0.00056	ug/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.00065	J	0.0019	0.00024	ug/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	0.0032		0.0019	0.00082	ug/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.0016	J	0.0019	0.00019	ug/L	1		537 (modified)	Total/NA
Perfluoropentanesulfonic acid (PFPeS)	0.00039	J	0.0019	0.00029	ug/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.0013	J B	0.0019	0.00016	ug/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.0075		0.0019	0.00052	ug/L	1		537 (modified)	Total/NA
6:2 FTS	0.0019	J	0.019	0.0019	ug/L	1		537 (modified)	Total/NA

Client Sample ID: NF17-SS-01 — Lab Sample ID: 320-40571-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	0.000080	J	0.00023	0.000032	mg/Kg	1	☼	537 (modified)	Total/NA

Client Sample ID: NF17-SS-01-DUP — Lab Sample ID: 320-40571-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	0.00012	J	0.00023	0.000032	mg/Kg	1	☼	537 (modified)	Total/NA
Perfluorodecanoic acid (PFDA)	0.000033	J	0.00023	0.000025	mg/Kg	1	☼	537 (modified)	Total/NA

Client Sample ID: NF18-GW-01 — Lab Sample ID: 320-40571-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	0.016	B	0.0018	0.00032	ug/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	0.0060		0.0018	0.00045	ug/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	0.0046		0.0018	0.00053	ug/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.0039		0.0018	0.00023	ug/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	0.018		0.0018	0.00078	ug/L	1		537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	0.0027		0.0018	0.00025	ug/L	1		537 (modified)	Total/NA
Perfluorodecanoic acid (PFDA)	0.00049	J	0.0018	0.00028	ug/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.010		0.0018	0.00018	ug/L	1		537 (modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Client Sample ID: NF18-GW-01 (Continued) — Lab Sample ID: 320-40571-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluoropentanesulfonic acid (PFPeS)	0.0018		0.0018	0.00028	ug/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.0070	B	0.0018	0.00016	ug/L	1		537 (modified)	Total/NA
Perfluoroheptanesulfonic Acid (PFHpS)	0.00088	J	0.0018	0.00017	ug/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.022		0.0018	0.00050	ug/L	1		537 (modified)	Total/NA

Client Sample ID: NF18-SS-02 — Lab Sample ID: 320-40571-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	0.000040	J	0.00024	0.000034	mg/Kg	1	☼	537 (modified)	Total/NA

Client Sample ID: NF19-GW-01 — Lab Sample ID: 320-40571-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	0.014	B	0.0019	0.00033	ug/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	0.0083		0.0019	0.00046	ug/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	0.0030		0.0019	0.00054	ug/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.0020		0.0019	0.00023	ug/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	0.0025		0.0019	0.00079	ug/L	1		537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	0.00077	J	0.0019	0.00025	ug/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.0010	J	0.0019	0.00019	ug/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.0011	J B	0.0019	0.00016	ug/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.00088	J	0.0019	0.00050	ug/L	1		537 (modified)	Total/NA
6:2 FTS	0.0034	J	0.019	0.0019	ug/L	1		537 (modified)	Total/NA

Client Sample ID: NF19-SS-02 — Lab Sample ID: 320-40571-8

No Detections.

Client Sample ID: NF20-GW-01 — Lab Sample ID: 320-40571-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	0.82	E B	0.0032	0.00055	ug/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	0.65	E	0.0032	0.00078	ug/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	0.16		0.0032	0.00092	ug/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.12		0.0032	0.00040	ug/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	0.039		0.0032	0.0013	ug/L	1		537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	0.032		0.0032	0.00043	ug/L	1		537 (modified)	Total/NA
Perfluorodecanoic acid (PFDA)	0.012		0.0032	0.00049	ug/L	1		537 (modified)	Total/NA
Perfluoroundecanoic acid (PFUnA)	0.013		0.0032	0.0017	ug/L	1		537 (modified)	Total/NA
Perfluorododecanoic acid (PFDoA)	0.0040		0.0032	0.00087	ug/L	1		537 (modified)	Total/NA
Perfluorotridecanoic Acid (PFTriA)	0.0029	J	0.0032	0.0021	ug/L	1		537 (modified)	Total/NA
Perfluorotetradecanoic acid (PFTeA)	0.0021	J	0.0032	0.00046	ug/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.00064	J B	0.0032	0.00027	ug/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.0021	J	0.0032	0.00085	ug/L	1		537 (modified)	Total/NA
6:2 FTS	0.025	J	0.032	0.0032	ug/L	1		537 (modified)	Total/NA
Perfluorobutanoic acid (PFBA) - DL	0.89	B	0.016	0.0028	ug/L	5		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA) - DL	0.72		0.016	0.0039	ug/L	5		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA) - DL	0.16		0.016	0.0046	ug/L	5		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA) - DL	0.12		0.016	0.0020	ug/L	5		537 (modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Client Sample ID: NF20-GW-01 (Continued) — Lab Sample ID: 320-40571-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA) - DL	0.038		0.016	0.0067	ug/L	5		537 (modified)	Total/NA
Perfluorononanoic acid (PFNA) - DL	0.031		0.016	0.0021	ug/L	5		537 (modified)	Total/NA
Perfluorodecanoic acid (PFDA) - DL	0.013	J	0.016	0.0025	ug/L	5		537 (modified)	Total/NA
Perfluoroundecanoic acid (PFUnA) - DL	0.012	J	0.016	0.0087	ug/L	5		537 (modified)	Total/NA
Perfluorododecanoic acid (PFDoA) - DL	0.0046	J	0.016	0.0044	ug/L	5		537 (modified)	Total/NA
6:2 FTS - DL	0.036	J	0.16	0.016	ug/L	5		537 (modified)	Total/NA

Client Sample ID: NF20-SS-02 — Lab Sample ID: 320-40571-10

No Detections.

Client Sample ID: NF21-GW-01 — Lab Sample ID: 320-40571-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	0.0079	B	0.0018	0.00032	ug/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	0.0065		0.0018	0.00045	ug/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	0.0028		0.0018	0.00053	ug/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.0013	J	0.0018	0.00023	ug/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	0.0014	J	0.0018	0.00078	ug/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.00099	J	0.0018	0.00018	ug/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.0016	J B	0.0018	0.00016	ug/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.0016	J	0.0018	0.00050	ug/L	1		537 (modified)	Total/NA
6:2 FTS	0.0028	J	0.018	0.0018	ug/L	1		537 (modified)	Total/NA

Client Sample ID: NF21-SS-01 — Lab Sample ID: 320-40571-12

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	0.000036	J	0.00023	0.000032	mg/Kg	1	☼	537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.000086	J	0.00023	0.000036	mg/Kg	1	☼	537 (modified)	Total/NA

Client Sample ID: NF22-GW-01 — Lab Sample ID: 320-40571-13

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	0.0028	B	0.0018	0.00032	ug/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	0.00077	J	0.0018	0.00045	ug/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.00050	J	0.0018	0.00023	ug/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	0.0018		0.0018	0.00079	ug/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.0026		0.0018	0.00018	ug/L	1		537 (modified)	Total/NA
Perfluoropentanesulfonic acid (PFPeS)	0.00073	J	0.0018	0.00028	ug/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.0012	J B	0.0018	0.00016	ug/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.0015	J	0.0018	0.00050	ug/L	1		537 (modified)	Total/NA

Client Sample ID: NF22-SS-01 — Lab Sample ID: 320-40571-14

No Detections.

Client Sample ID: NF23-GW-01 — Lab Sample ID: 320-40571-15

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Client Sample ID: NF23-GW-01 (Continued) — Lab Sample ID: 320-40571-15

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	0.0030	B	0.0018	0.00031	ug/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	0.0014	J	0.0018	0.00043	ug/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.0017	J	0.0018	0.00018	ug/L	1		537 (modified)	Total/NA
Perfluoropentanesulfonic acid (PFPeS)	0.00041	J	0.0018	0.00027	ug/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.0013	J B	0.0018	0.00015	ug/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.0016	J	0.0018	0.00048	ug/L	1		537 (modified)	Total/NA
6:2 FTS	0.0035	J	0.018	0.0018	ug/L	1		537 (modified)	Total/NA

Client Sample ID: NF23-SS-01 — Lab Sample ID: 320-40571-16

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	0.000049	J	0.00024	0.000034	mg/Kg	1	☼	537 (modified)	Total/NA

Client Sample ID: NF24-GW-01 — Lab Sample ID: 320-40571-17

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	0.0036	B	0.0019	0.00033	ug/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	0.0012	J	0.0019	0.00079	ug/L	1		537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	0.00074	J	0.0019	0.00025	ug/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.0040		0.0019	0.00019	ug/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.00081	J B	0.0019	0.00016	ug/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.011		0.0019	0.00050	ug/L	1		537 (modified)	Total/NA
6:2 FTS	0.0028	J	0.019	0.0019	ug/L	1		537 (modified)	Total/NA

Client Sample ID: NF24-SS-02 — Lab Sample ID: 320-40571-18

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	0.000039	J	0.00024	0.000033	mg/Kg	1	☼	537 (modified)	Total/NA

Client Sample ID: NF25-GW-01 — Lab Sample ID: 320-40571-19

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	0.017	B	0.0018	0.00031	ug/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	0.0086		0.0018	0.00043	ug/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	0.0060		0.0018	0.00051	ug/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.0038		0.0018	0.00022	ug/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	0.011		0.0018	0.00075	ug/L	1		537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	0.00089	J	0.0018	0.00024	ug/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.0074		0.0018	0.00018	ug/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.0026	B	0.0018	0.00015	ug/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.0026		0.0018	0.00048	ug/L	1		537 (modified)	Total/NA

Client Sample ID: NF25-SS-02 — Lab Sample ID: 320-40571-20

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	0.000034	J	0.00025	0.000034	mg/Kg	1	☼	537 (modified)	Total/NA

Client Sample ID: NF26-GW-01 — Lab Sample ID: 320-40571-21

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Client Sample ID: NF26-GW-01 (Continued) — Lab Sample ID: 320-40571-21

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	0.44	B	0.0024	0.00041	ug/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	0.28		0.0024	0.00058	ug/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	0.16		0.0024	0.00069	ug/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.068		0.0024	0.00030	ug/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	0.061		0.0024	0.0010	ug/L	1		537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	0.0032		0.0024	0.00032	ug/L	1		537 (modified)	Total/NA
Perfluorodecanoic acid (PFDA)	0.0075		0.0024	0.00037	ug/L	1		537 (modified)	Total/NA
Perfluoroundecanoic acid (PFUnA)	0.0019	J	0.0024	0.0013	ug/L	1		537 (modified)	Total/NA
Perfluorododecanoic acid (PFDoA)	0.0021	J	0.0024	0.00065	ug/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.40		0.0024	0.00024	ug/L	1		537 (modified)	Total/NA
Perfluoropentanesulfonic acid (PFPeS)	0.0028		0.0024	0.00035	ug/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.039	B	0.0024	0.00020	ug/L	1		537 (modified)	Total/NA
Perfluoroheptanesulfonic Acid (PFHpS)	0.00078	J	0.0024	0.00022	ug/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.023		0.0024	0.00064	ug/L	1		537 (modified)	Total/NA
Perfluorooctane Sulfonamide (FOSA)	0.00060	J	0.0024	0.00041	ug/L	1		537 (modified)	Total/NA
6:2 FTS	0.0090	J	0.024	0.0024	ug/L	1		537 (modified)	Total/NA

Client Sample ID: NF26-SS-02 — Lab Sample ID: 320-40571-22

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	0.000072	J	0.00025	0.000035	mg/Kg	1	☼	537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	0.000064	J	0.00025	0.000052	mg/Kg	1	☼	537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.00015	J	0.00025	0.000031	mg/Kg	1	☼	537 (modified)	Total/NA

Client Sample ID: NF27-GW-01 — Lab Sample ID: 320-40571-23

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	0.017	B	0.0020	0.00034	ug/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	0.012		0.0020	0.00048	ug/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	0.0049		0.0020	0.00057	ug/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.0031		0.0020	0.00025	ug/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	0.0037		0.0020	0.00083	ug/L	1		537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	0.0015	J	0.0020	0.00027	ug/L	1		537 (modified)	Total/NA
Perfluorodecanoic acid (PFDA)	0.00051	J	0.0020	0.00030	ug/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.0012	J	0.0020	0.00020	ug/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.0012	J B	0.0020	0.00017	ug/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.0017	J	0.0020	0.00053	ug/L	1		537 (modified)	Total/NA
6:2 FTS	0.0034	J	0.020	0.0020	ug/L	1		537 (modified)	Total/NA

Client Sample ID: NF27-SS-01 — Lab Sample ID: 320-40571-24

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	0.000061	J	0.00024	0.000033	mg/Kg	1	☼	537 (modified)	Total/NA

Client Sample ID: NF28-GW-01 — Lab Sample ID: 320-40571-25

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	0.011	B	0.0019	0.00034	ug/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	0.0063		0.0019	0.00048	ug/L	1		537 (modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Client Sample ID: NF28-GW-01 (Continued) — Lab Sample ID: 320-40571-25

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanoic acid (PFHxA)	0.0012	J	0.0019	0.00056	ug/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.00067	J	0.0019	0.00024	ug/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.00050	J B	0.0019	0.00017	ug/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.0042		0.0019	0.00053	ug/L	1		537 (modified)	Total/NA
6:2 FTS	0.010	J	0.019	0.0019	ug/L	1		537 (modified)	Total/NA

Client Sample ID: NF28-SS-01 — Lab Sample ID: 320-40571-26

No Detections.

Client Sample ID: NF29-GW-01 — Lab Sample ID: 320-40571-27

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	0.0034	B	0.0018	0.00031	ug/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	0.0022		0.0018	0.00043	ug/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.00046	J	0.0018	0.00022	ug/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	0.0011	J	0.0018	0.00075	ug/L	1		537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	0.00050	J	0.0018	0.00024	ug/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.00058	J	0.0018	0.00018	ug/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.00053	J B	0.0018	0.00015	ug/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.0025		0.0018	0.00047	ug/L	1		537 (modified)	Total/NA
6:2 FTS	0.0032	J	0.018	0.0018	ug/L	1		537 (modified)	Total/NA

Client Sample ID: NF29-SS-01 — Lab Sample ID: 320-40571-28

No Detections.

Client Sample ID: NF30-GW-01 — Lab Sample ID: 320-40571-29

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	0.018	B	0.0019	0.00033	ug/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	0.0096		0.0019	0.00046	ug/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	0.0026		0.0019	0.00054	ug/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.0015	J	0.0019	0.00023	ug/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	0.0063		0.0019	0.00079	ug/L	1		537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	0.0016	J	0.0019	0.00025	ug/L	1		537 (modified)	Total/NA
Perfluorodecanoic acid (PFDA)	0.00056	J	0.0019	0.00029	ug/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.0052		0.0019	0.00019	ug/L	1		537 (modified)	Total/NA
Perfluoropentanesulfonic acid (PFPeS)	0.00087	J	0.0019	0.00028	ug/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.0030	B	0.0019	0.00016	ug/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.0054		0.0019	0.00050	ug/L	1		537 (modified)	Total/NA
6:2 FTS	0.0049	J	0.019	0.0019	ug/L	1		537 (modified)	Total/NA

Client Sample ID: NF30-SS-02 — Lab Sample ID: 320-40571-30

No Detections.

Client Sample ID: NF31-GW-01 — Lab Sample ID: 320-40571-31

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Client Sample ID: NF31-GW-01 (Continued) — Lab Sample ID: 320-40571-31

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	0.051	B	0.0017	0.00030	ug/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	0.11		0.0017	0.00043	ug/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	0.13		0.0017	0.00050	ug/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.070		0.0017	0.00022	ug/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	0.11		0.0017	0.00074	ug/L	1		537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	0.00042	J	0.0017	0.00023	ug/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.54	E	0.0017	0.00017	ug/L	1		537 (modified)	Total/NA
Perfluoropentanesulfonic acid (PFPeS)	0.018		0.0017	0.00026	ug/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.053	B	0.0017	0.00015	ug/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.0011	J	0.0017	0.00047	ug/L	1		537 (modified)	Total/NA
6:2 FTS	0.0030	J	0.017	0.0017	ug/L	1		537 (modified)	Total/NA
Perfluorobutanoic acid (PFBA) - DL	0.051	B	0.0087	0.0015	ug/L	5		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA) - DL	0.11		0.0087	0.0021	ug/L	5		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA) - DL	0.13		0.0087	0.0025	ug/L	5		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA) - DL	0.070		0.0087	0.0011	ug/L	5		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA) - DL	0.11		0.0087	0.0037	ug/L	5		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS) - DL	0.78		0.0087	0.00087	ug/L	5		537 (modified)	Total/NA
Perfluoropentanesulfonic acid (PFPeS) - DL	0.015		0.0087	0.0013	ug/L	5		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS) - DL	0.053	B	0.0087	0.00074	ug/L	5		537 (modified)	Total/NA

Client Sample ID: NF31-SS-02 — Lab Sample ID: 320-40571-32

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	0.000047	J	0.00024	0.000034	mg/Kg	1	☼	537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	0.000060	J	0.00024	0.000051	mg/Kg	1	☼	537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.00025		0.00024	0.000030	mg/Kg	1	☼	537 (modified)	Total/NA

Client Sample ID: NF32-GW-01 — Lab Sample ID: 320-40571-33

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	0.026	B	0.0018	0.00031	ug/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	0.015		0.0018	0.00043	ug/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	0.0027		0.0018	0.00051	ug/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.0018		0.0018	0.00022	ug/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	0.0032		0.0018	0.00075	ug/L	1		537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	0.00077	J	0.0018	0.00024	ug/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.020		0.0018	0.00018	ug/L	1		537 (modified)	Total/NA
Perfluoropentanesulfonic acid (PFPeS)	0.00039	J	0.0018	0.00026	ug/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.0023	B	0.0018	0.00015	ug/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.0016	J	0.0018	0.00048	ug/L	1		537 (modified)	Total/NA

Client Sample ID: NF32-SS-02 — Lab Sample ID: 320-40571-34

No Detections.

Client Sample ID: NF33-GW-01 — Lab Sample ID: 320-40571-35

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Client Sample ID: NF33-GW-01 (Continued) — Lab Sample ID: 320-40571-35

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	0.014	B F2	0.0020	0.00034	ug/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	0.0096	F2	0.0020	0.00048	ug/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	0.0021		0.0020	0.00057	ug/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.0015	J	0.0020	0.00024	ug/L	1		537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	0.00077	J	0.0020	0.00026	ug/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.0017	J	0.0020	0.00020	ug/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.00047	J B	0.0020	0.00017	ug/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.00096	J	0.0020	0.00053	ug/L	1		537 (modified)	Total/NA
6:2 FTS	0.0022	J	0.020	0.0020	ug/L	1		537 (modified)	Total/NA

Client Sample ID: NF33-SS-01 — Lab Sample ID: 320-40571-36

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	0.00020	J	0.00022	0.000031	mg/Kg	1	☼	537 (modified)	Total/NA

Client Sample ID: NF34-GW-01 — Lab Sample ID: 320-40571-37

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	0.022	B	0.0017	0.00030	ug/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	0.011		0.0017	0.00042	ug/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	0.0028		0.0017	0.00050	ug/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.0025	I	0.0017	0.00021	ug/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	0.0031		0.0017	0.00073	ug/L	1		537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	0.00071	J	0.0017	0.00023	ug/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.00095	J	0.0017	0.00017	ug/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.00097	J B	0.0017	0.00015	ug/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.052		0.0017	0.00046	ug/L	1		537 (modified)	Total/NA
Perfluorooctane Sulfonamide (FOSA)	0.00046	J	0.0017	0.00030	ug/L	1		537 (modified)	Total/NA
6:2 FTS	0.026		0.017	0.0017	ug/L	1		537 (modified)	Total/NA

Client Sample ID: NF34-SS-01 — Lab Sample ID: 320-40571-38

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	0.000039	J	0.00024	0.000033	mg/Kg	1	☼	537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.00089		0.00059	0.00024	mg/Kg	1	☼	537 (modified)	Total/NA

Client Sample ID: NF35-GW-01 — Lab Sample ID: 320-40571-39

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	0.011	B	0.0019	0.00033	ug/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	0.0017	J	0.0019	0.00047	ug/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	0.0035		0.0019	0.00055	ug/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.0026		0.0019	0.00024	ug/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	0.0082		0.0019	0.00081	ug/L	1		537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	0.0016	J	0.0019	0.00026	ug/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.0055		0.0019	0.00019	ug/L	1		537 (modified)	Total/NA
Perfluoropentanesulfonic acid (PFPeS)	0.00067	J	0.0019	0.00029	ug/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.0017	J B	0.0019	0.00016	ug/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.012		0.0019	0.00051	ug/L	1		537 (modified)	Total/NA
6:2 FTS	0.0021	J	0.019	0.0019	ug/L	1		537 (modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Client Sample ID: NF35-SS-01 — Lab Sample ID: 320-40571-40

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.00019	J	0.00023	0.000099	mg/Kg	1	☼	537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	0.000050	J	0.00023	0.000041	mg/Kg	1	☼	537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.0014		0.00058	0.00023	mg/Kg	1	☼	537 (modified)	Total/NA

Client Sample ID: NF36-GW-01 — Lab Sample ID: 320-40571-41

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	0.17	B	0.0029	0.00051	ug/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	0.18		0.0029	0.00072	ug/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	0.046		0.0029	0.00085	ug/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.047		0.0029	0.00037	ug/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	0.020		0.0029	0.0012	ug/L	1		537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	0.020		0.0029	0.00040	ug/L	1		537 (modified)	Total/NA
Perfluorodecanoic acid (PFDA)	0.0085		0.0029	0.00046	ug/L	1		537 (modified)	Total/NA
Perfluoroundecanoic acid (PFUnA)	0.0096		0.0029	0.0016	ug/L	1		537 (modified)	Total/NA
Perfluorododecanoic acid (PFDoA)	0.0039		0.0029	0.00081	ug/L	1		537 (modified)	Total/NA
Perfluorotridecanoic Acid (PFTriA)	0.0043		0.0029	0.0019	ug/L	1		537 (modified)	Total/NA
Perfluorotetradecanoic acid (PFTeA)	0.0032		0.0029	0.00043	ug/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.0076		0.0029	0.00029	ug/L	1		537 (modified)	Total/NA
Perfluoropentanesulfonic acid (PFPeS)	0.00065	J	0.0029	0.00044	ug/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.0032	B	0.0029	0.00025	ug/L	1		537 (modified)	Total/NA
6:2 FTS	0.0034	J	0.029	0.0029	ug/L	1		537 (modified)	Total/NA

Client Sample ID: NF36-SS-02 — Lab Sample ID: 320-40571-42

No Detections.

Client Sample ID: NF-EB-02 — Lab Sample ID: 320-40571-43

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	0.00097	J B	0.0018	0.00031	ug/L	1		537 (modified)	Total/NA

Client Sample ID: NF-FB-02 — Lab Sample ID: 320-40571-44

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	0.00093	J B	0.0018	0.00032	ug/L	1		537 (modified)	Total/NA

Client Sample ID: NFMW1-GW-01 — Lab Sample ID: 320-40571-45

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	0.017	B	0.0019	0.00033	ug/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	0.014		0.0019	0.00047	ug/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	0.011		0.0019	0.00055	ug/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.0053		0.0019	0.00024	ug/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	0.0087		0.0019	0.00081	ug/L	1		537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	0.00037	J	0.0019	0.00026	ug/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.011		0.0019	0.00019	ug/L	1		537 (modified)	Total/NA
Perfluoropentanesulfonic acid (PFPeS)	0.0019		0.0019	0.00029	ug/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.0053	B	0.0019	0.00016	ug/L	1		537 (modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Client Sample ID: NFMW1-GW-01 (Continued) — Lab Sample ID: 320-40571-45

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	0.0011	J	0.0019	0.00052	ug/L	1		537 (modified)	Total/NA

Client Sample ID: NFMW7-GW-01 — Lab Sample ID: 320-40571-46

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	0.022	B	0.0019	0.00032	ug/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	0.022		0.0019	0.00045	ug/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	0.0059		0.0019	0.00054	ug/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.0050		0.0019	0.00023	ug/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	0.0065		0.0019	0.00079	ug/L	1		537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	0.00097	J	0.0019	0.00025	ug/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.0054		0.0019	0.00019	ug/L	1		537 (modified)	Total/NA
Perfluoropentanesulfonic acid (PFPeS)	0.00084	J	0.0019	0.00028	ug/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.0034	B	0.0019	0.00016	ug/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.0025		0.0019	0.00050	ug/L	1		537 (modified)	Total/NA

Client Sample ID: NFMW7-GW-01-DUP — Lab Sample ID: 320-40571-47

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	0.019	B	0.0018	0.00031	ug/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	0.018		0.0018	0.00044	ug/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	0.0055		0.0018	0.00052	ug/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.0051		0.0018	0.00022	ug/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	0.0063		0.0018	0.00076	ug/L	1		537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	0.00082	J	0.0018	0.00024	ug/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.0052		0.0018	0.00018	ug/L	1		537 (modified)	Total/NA
Perfluoropentanesulfonic acid (PFPeS)	0.00080	J	0.0018	0.00027	ug/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.0031	B	0.0018	0.00015	ug/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.0025		0.0018	0.00049	ug/L	1		537 (modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Client Sample ID: NF17-GW-01

Date Collected: 06/20/18 09:30
Date Received: 06/22/18 09:05

Lab Sample ID: 320-40571-1

Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**0.0035**	**B**	0.0018	0.00032	ug/L		07/02/18 14:58	07/13/18 20:54	1
Perfluoropentanoic acid (PFPeA)	**0.0013**	**J**	0.0018	0.00044	ug/L		07/02/18 14:58	07/13/18 20:54	1
Perfluorohexanoic acid (PFHxA)	**0.00089**	**J**	0.0018	0.00052	ug/L		07/02/18 14:58	07/13/18 20:54	1
Perfluoroheptanoic acid (PFHpA)	**0.00074**	**J**	0.0018	0.00023	ug/L		07/02/18 14:58	07/13/18 20:54	1
Perfluorooctanoic acid (PFOA)	**0.0031**		0.0018	0.00077	ug/L		07/02/18 14:58	07/13/18 20:54	1
Perfluorononanoic acid (PFNA)	**0.00062**	**J**	0.0018	0.00024	ug/L		07/02/18 14:58	07/13/18 20:54	1
Perfluorodecanoic acid (PFDA)	ND		0.0018	0.00028	ug/L		07/02/18 14:58	07/13/18 20:54	1
Perfluoroundecanoic acid (PFUnA)	ND		0.0018	0.00099	ug/L		07/02/18 14:58	07/13/18 20:54	1
Perfluorododecanoic acid (PFDoA)	ND		0.0018	0.00050	ug/L		07/02/18 14:58	07/13/18 20:54	1
Perfluorotridecanoic Acid (PFTriA)	ND		0.0018	0.0012	ug/L		07/02/18 14:58	07/13/18 20:54	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.0018	0.00026	ug/L		07/02/18 14:58	07/13/18 20:54	1
Perfluorobutanesulfonic acid (PFBS)	**0.0017**	**J**	0.0018	0.00018	ug/L		07/02/18 14:58	07/13/18 20:54	1
Perfluoropentanesulfonic acid (PFPeS)	**0.00029**	**J I**	0.0018	0.00027	ug/L		07/02/18 14:58	07/13/18 20:54	1
Perfluorohexanesulfonic acid (PFHxS)	**0.0012**	**J B**	0.0018	0.00015	ug/L		07/02/18 14:58	07/13/18 20:54	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.0018	0.00017	ug/L		07/02/18 14:58	07/13/18 20:54	1
Perfluorooctanesulfonic acid (PFOS)	**0.0069**		0.0018	0.00049	ug/L		07/02/18 14:58	07/13/18 20:54	1
Perfluorononanesulfonic acid (PFNS)	ND		0.0018	0.00014	ug/L		07/02/18 14:58	07/13/18 20:54	1
Perfluorodecanesulfonic acid (PFDS)	ND		0.0018	0.00029	ug/L		07/02/18 14:58	07/13/18 20:54	1
Perfluorooctane Sulfonamide (FOSA)	ND		0.0018	0.00032	ug/L		07/02/18 14:58	07/13/18 20:54	1
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.018	0.0028	ug/L		07/02/18 14:58	07/13/18 20:54	1
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.018	0.0017	ug/L		07/02/18 14:58	07/13/18 20:54	1
4:2 FTS	ND		0.018	0.0047	ug/L		07/02/18 14:58	07/13/18 20:54	1
6:2 FTS	**0.0038**	**J**	0.018	0.0018	ug/L		07/02/18 14:58	07/13/18 20:54	1
8:2 FTS	ND		0.018	0.0018	ug/L		07/02/18 14:58	07/13/18 20:54	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*68*		*25 - 150*	*07/02/18 14:58*	*07/13/18 20:54*	*1*
13C5 PFPeA	*82*		*25 - 150*	*07/02/18 14:58*	*07/13/18 20:54*	*1*
13C2 PFHxA	*93*		*25 - 150*	*07/02/18 14:58*	*07/13/18 20:54*	*1*
13C4-PFHpA	*102*		*25 - 150*	*07/02/18 14:58*	*07/13/18 20:54*	*1*
13C4 PFOA	*102*		*25 - 150*	*07/02/18 14:58*	*07/13/18 20:54*	*1*
13C5 PFNA	*91*		*25 - 150*	*07/02/18 14:58*	*07/13/18 20:54*	*1*
13C2 PFDA	*92*		*25 - 150*	*07/02/18 14:58*	*07/13/18 20:54*	*1*
13C2 PFUnA	*83*		*25 - 150*	*07/02/18 14:58*	*07/13/18 20:54*	*1*
13C2 PFDoA	*74*		*25 - 150*	*07/02/18 14:58*	*07/13/18 20:54*	*1*
13C2-PFTeDA	*47*		*25 - 150*	*07/02/18 14:58*	*07/13/18 20:54*	*1*
13C3-PFBS	*87*		*25 - 150*	*07/02/18 14:58*	*07/13/18 20:54*	*1*
18O2 PFHxS	*92*		*25 - 150*	*07/02/18 14:58*	*07/13/18 20:54*	*1*
13C4 PFOS	*91*		*25 - 150*	*07/02/18 14:58*	*07/13/18 20:54*	*1*
13C8 FOSA	*75*		*25 - 150*	*07/02/18 14:58*	*07/13/18 20:54*	*1*
d3-NMeFOSAA	*84*		*25 - 150*	*07/02/18 14:58*	*07/13/18 20:54*	*1*
d5-NEtFOSAA	*90*		*25 - 150*	*07/02/18 14:58*	*07/13/18 20:54*	*1*
M2-6:2FTS	*115*		*25 - 150*	*07/02/18 14:58*	*07/13/18 20:54*	*1*
M2-8:2FTS	*81*		*25 - 150*	*07/02/18 14:58*	*07/13/18 20:54*	*1*

Client Sample Results

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Client Sample ID: NF17-GW-01-DUP

Date Collected: 06/20/18 09:35
Date Received: 06/22/18 09:05

Lab Sample ID: 320-40571-2

Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**0.0041**	**B**	0.0019	0.00034	ug/L		07/02/18 14:58	07/13/18 21:01	1
Perfluoropentanoic acid (PFPeA)	**0.00094**	**J**	0.0019	0.00047	ug/L		07/02/18 14:58	07/13/18 21:01	1
Perfluorohexanoic acid (PFHxA)	**0.00068**	**J**	0.0019	0.00056	ug/L		07/02/18 14:58	07/13/18 21:01	1
Perfluoroheptanoic acid (PFHpA)	**0.00065**	**J**	0.0019	0.00024	ug/L		07/02/18 14:58	07/13/18 21:01	1
Perfluorooctanoic acid (PFOA)	**0.0032**		0.0019	0.00082	ug/L		07/02/18 14:58	07/13/18 21:01	1
Perfluorononanoic acid (PFNA)	ND		0.0019	0.00026	ug/L		07/02/18 14:58	07/13/18 21:01	1
Perfluorodecanoic acid (PFDA)	ND		0.0019	0.00030	ug/L		07/02/18 14:58	07/13/18 21:01	1
Perfluoroundecanoic acid (PFUnA)	ND		0.0019	0.0011	ug/L		07/02/18 14:58	07/13/18 21:01	1
Perfluorododecanoic acid (PFDoA)	ND		0.0019	0.00053	ug/L		07/02/18 14:58	07/13/18 21:01	1
Perfluorotridecanoic Acid (PFTriA)	ND		0.0019	0.0012	ug/L		07/02/18 14:58	07/13/18 21:01	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.0019	0.00028	ug/L		07/02/18 14:58	07/13/18 21:01	1
Perfluorobutanesulfonic acid (PFBS)	**0.0016**	**J**	0.0019	0.00019	ug/L		07/02/18 14:58	07/13/18 21:01	1
Perfluoropentanesulfonic acid (PFPeS)	**0.00039**	**J**	0.0019	0.00029	ug/L		07/02/18 14:58	07/13/18 21:01	1
Perfluorohexanesulfonic acid (PFHxS)	**0.0013**	**J B**	0.0019	0.00016	ug/L		07/02/18 14:58	07/13/18 21:01	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.0019	0.00018	ug/L		07/02/18 14:58	07/13/18 21:01	1
Perfluorooctanesulfonic acid (PFOS)	**0.0075**		0.0019	0.00052	ug/L		07/02/18 14:58	07/13/18 21:01	1
Perfluorononanesulfonic acid (PFNS)	ND		0.0019	0.00015	ug/L		07/02/18 14:58	07/13/18 21:01	1
Perfluorodecanesulfonic acid (PFDS)	ND		0.0019	0.00031	ug/L		07/02/18 14:58	07/13/18 21:01	1
Perfluorooctane Sulfonamide (FOSA)	ND		0.0019	0.00034	ug/L		07/02/18 14:58	07/13/18 21:01	1
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.019	0.0030	ug/L		07/02/18 14:58	07/13/18 21:01	1
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.019	0.0018	ug/L		07/02/18 14:58	07/13/18 21:01	1
4:2 FTS	ND		0.019	0.0050	ug/L		07/02/18 14:58	07/13/18 21:01	1
6:2 FTS	**0.0019**	**J**	0.019	0.0019	ug/L		07/02/18 14:58	07/13/18 21:01	1
8:2 FTS	ND		0.019	0.0019	ug/L		07/02/18 14:58	07/13/18 21:01	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*74*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:01*	*1*
13C5 PFPeA	*87*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:01*	*1*
13C2 PFHxA	*96*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:01*	*1*
13C4-PFHpA	*103*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:01*	*1*
13C4 PFOA	*105*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:01*	*1*
13C5 PFNA	*98*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:01*	*1*
13C2 PFDA	*100*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:01*	*1*
13C2 PFUnA	*88*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:01*	*1*
13C2 PFDoA	*89*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:01*	*1*
13C2-PFTeDA	*69*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:01*	*1*
13C3-PFBS	*91*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:01*	*1*
18O2 PFHxS	*97*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:01*	*1*
13C4 PFOS	*95*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:01*	*1*
13C8 FOSA	*84*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:01*	*1*
d3-NMeFOSAA	*100*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:01*	*1*
d5-NEtFOSAA	*102*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:01*	*1*
M2-6:2FTS	*116*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:01*	*1*
M2-8:2FTS	*87*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:01*	*1*

Client Sample Results

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Client Sample ID: NF17-SS-01

Date Collected: 06/20/18 08:45
Date Received: 06/22/18 09:05

Lab Sample ID: 320-40571-3

Matrix: Solid
Percent Solids: 86.0

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**0.000080**	**J**	0.00023	0.000032	mg/Kg	☼	06/28/18 05:15	07/14/18 04:04	1
Perfluoropentanoic acid (PFPeA)	ND		0.00023	0.000089	mg/Kg	☼	06/28/18 05:15	07/14/18 04:04	1
Perfluorohexanoic acid (PFHxA)	ND		0.00023	0.000048	mg/Kg	☼	06/28/18 05:15	07/14/18 04:04	1
Perfluoroheptanoic acid (PFHpA)	ND		0.00023	0.000033	mg/Kg	☼	06/28/18 05:15	07/14/18 04:04	1
Perfluorooctanoic acid (PFOA)	ND		0.00023	0.000099	mg/Kg	☼	06/28/18 05:15	07/14/18 04:04	1
Perfluorononanoic acid (PFNA)	ND		0.00023	0.000042	mg/Kg	☼	06/28/18 05:15	07/14/18 04:04	1
Perfluorodecanoic acid (PFDA)	ND		0.00023	0.000025	mg/Kg	☼	06/28/18 05:15	07/14/18 04:04	1
Perfluoroundecanoic acid (PFUnA)	ND		0.00023	0.000042	mg/Kg	☼	06/28/18 05:15	07/14/18 04:04	1
Perfluorododecanoic acid (PFDoA)	ND		0.00023	0.000077	mg/Kg	☼	06/28/18 05:15	07/14/18 04:04	1
Perfluorotridecanoic Acid (PFTriA)	ND		0.00023	0.000059	mg/Kg	☼	06/28/18 05:15	07/14/18 04:04	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.00023	0.000062	mg/Kg	☼	06/28/18 05:15	07/14/18 04:04	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.00023	0.000029	mg/Kg	☼	06/28/18 05:15	07/14/18 04:04	1
Perfluorohexanesulfonic acid (PFHxS)	ND		0.00023	0.000036	mg/Kg	☼	06/28/18 05:15	07/14/18 04:04	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.00023	0.000040	mg/Kg	☼	06/28/18 05:15	07/14/18 04:04	1
Perfluorooctanesulfonic acid (PFOS)	ND		0.00058	0.00023	mg/Kg	☼	06/28/18 05:15	07/14/18 04:04	1
Perfluorodecanesulfonic acid (PFDS)	ND		0.00023	0.000045	mg/Kg	☼	06/28/18 05:15	07/14/18 04:04	1
Perfluorooctane Sulfonamide (FOSA)	ND		0.00023	0.000095	mg/Kg	☼	06/28/18 05:15	07/14/18 04:04	1
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.0023	0.00045	mg/Kg	☼	06/28/18 05:15	07/14/18 04:04	1
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.0023	0.00043	mg/Kg	☼	06/28/18 05:15	07/14/18 04:04	1
6:2 FTS	ND		0.0023	0.00017	mg/Kg	☼	06/28/18 05:15	07/14/18 04:04	1
8:2 FTS	ND		0.0023	0.00029	mg/Kg	☼	06/28/18 05:15	07/14/18 04:04	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*76*		*25 - 150*	*06/28/18 05:15*	*07/14/18 04:04*	*1*
13C5 PFPeA	*83*		*25 - 150*	*06/28/18 05:15*	*07/14/18 04:04*	*1*
13C2 PFHxA	*86*		*25 - 150*	*06/28/18 05:15*	*07/14/18 04:04*	*1*
13C4-PFHpA	*86*		*25 - 150*	*06/28/18 05:15*	*07/14/18 04:04*	*1*
13C4 PFOA	*86*		*25 - 150*	*06/28/18 05:15*	*07/14/18 04:04*	*1*
13C5 PFNA	*85*		*25 - 150*	*06/28/18 05:15*	*07/14/18 04:04*	*1*
13C2 PFDA	*93*		*25 - 150*	*06/28/18 05:15*	*07/14/18 04:04*	*1*
13C2 PFUnA	*79*		*25 - 150*	*06/28/18 05:15*	*07/14/18 04:04*	*1*
13C2 PFDoA	*79*		*25 - 150*	*06/28/18 05:15*	*07/14/18 04:04*	*1*
13C2-PFTeDA	*85*		*25 - 150*	*06/28/18 05:15*	*07/14/18 04:04*	*1*
13C3-PFBS	*70*		*25 - 150*	*06/28/18 05:15*	*07/14/18 04:04*	*1*
18O2 PFHxS	*74*		*25 - 150*	*06/28/18 05:15*	*07/14/18 04:04*	*1*
13C4 PFOS	*68*		*25 - 150*	*06/28/18 05:15*	*07/14/18 04:04*	*1*
13C8 FOSA	*66*		*25 - 150*	*06/28/18 05:15*	*07/14/18 04:04*	*1*
d3-NMeFOSAA	*73*		*25 - 150*	*06/28/18 05:15*	*07/14/18 04:04*	*1*
d5-NEtFOSAA	*81*		*25 - 150*	*06/28/18 05:15*	*07/14/18 04:04*	*1*
M2-6:2FTS	*62*		*25 - 150*	*06/28/18 05:15*	*07/14/18 04:04*	*1*
M2-8:2FTS	*76*		*25 - 150*	*06/28/18 05:15*	*07/14/18 04:04*	*1*

Client Sample Results

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Client Sample ID: NF17-SS-01-DUP

Date Collected: 06/20/18 08:55
Date Received: 06/22/18 09:05

Lab Sample ID: 320-40571-4

Matrix: Solid
Percent Solids: 86.6

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**0.00012**	**J**	0.00023	0.000032	mg/Kg	☼	06/28/18 05:15	07/14/18 04:12	1
Perfluoropentanoic acid (PFPeA)	ND		0.00023	0.000088	mg/Kg	☼	06/28/18 05:15	07/14/18 04:12	1
Perfluorohexanoic acid (PFHxA)	ND		0.00023	0.000048	mg/Kg	☼	06/28/18 05:15	07/14/18 04:12	1
Perfluoroheptanoic acid (PFHpA)	ND		0.00023	0.000033	mg/Kg	☼	06/28/18 05:15	07/14/18 04:12	1
Perfluorooctanoic acid (PFOA)	ND		0.00023	0.000098	mg/Kg	☼	06/28/18 05:15	07/14/18 04:12	1
Perfluorononanoic acid (PFNA)	ND		0.00023	0.000041	mg/Kg	☼	06/28/18 05:15	07/14/18 04:12	1
Perfluorodecanoic acid (PFDA)	**0.000033**	**J**	0.00023	0.000025	mg/Kg	☼	06/28/18 05:15	07/14/18 04:12	1
Perfluoroundecanoic acid (PFUnA)	ND		0.00023	0.000041	mg/Kg	☼	06/28/18 05:15	07/14/18 04:12	1
Perfluorododecanoic acid (PFDoA)	ND		0.00023	0.000076	mg/Kg	☼	06/28/18 05:15	07/14/18 04:12	1
Perfluorotridecanoic Acid (PFTriA)	ND		0.00023	0.000058	mg/Kg	☼	06/28/18 05:15	07/14/18 04:12	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.00023	0.000062	mg/Kg	☼	06/28/18 05:15	07/14/18 04:12	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.00023	0.000028	mg/Kg	☼	06/28/18 05:15	07/14/18 04:12	1
Perfluorohexanesulfonic acid (PFHxS)	ND		0.00023	0.000035	mg/Kg	☼	06/28/18 05:15	07/14/18 04:12	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.00023	0.000040	mg/Kg	☼	06/28/18 05:15	07/14/18 04:12	1
Perfluorooctanesulfonic acid (PFOS)	ND		0.00057	0.00023	mg/Kg	☼	06/28/18 05:15	07/14/18 04:12	1
Perfluorodecanesulfonic acid (PFDS)	ND		0.00023	0.000044	mg/Kg	☼	06/28/18 05:15	07/14/18 04:12	1
Perfluorooctane Sulfonamide (FOSA)	ND		0.00023	0.000093	mg/Kg	☼	06/28/18 05:15	07/14/18 04:12	1
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.0023	0.00044	mg/Kg	☼	06/28/18 05:15	07/14/18 04:12	1
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.0023	0.00042	mg/Kg	☼	06/28/18 05:15	07/14/18 04:12	1
6:2 FTS	ND		0.0023	0.00017	mg/Kg	☼	06/28/18 05:15	07/14/18 04:12	1
8:2 FTS	ND		0.0023	0.00028	mg/Kg	☼	06/28/18 05:15	07/14/18 04:12	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*74*		*25 - 150*	*06/28/18 05:15*	*07/14/18 04:12*	*1*
13C5 PFPeA	*79*		*25 - 150*	*06/28/18 05:15*	*07/14/18 04:12*	*1*
13C2 PFHxA	*80*		*25 - 150*	*06/28/18 05:15*	*07/14/18 04:12*	*1*
13C4-PFHpA	*86*		*25 - 150*	*06/28/18 05:15*	*07/14/18 04:12*	*1*
13C4 PFOA	*83*		*25 - 150*	*06/28/18 05:15*	*07/14/18 04:12*	*1*
13C5 PFNA	*80*		*25 - 150*	*06/28/18 05:15*	*07/14/18 04:12*	*1*
13C2 PFDA	*87*		*25 - 150*	*06/28/18 05:15*	*07/14/18 04:12*	*1*
13C2 PFUnA	*79*		*25 - 150*	*06/28/18 05:15*	*07/14/18 04:12*	*1*
13C2 PFDoA	*82*		*25 - 150*	*06/28/18 05:15*	*07/14/18 04:12*	*1*
13C2-PFTeDA	*81*		*25 - 150*	*06/28/18 05:15*	*07/14/18 04:12*	*1*
13C3-PFBS	*70*		*25 - 150*	*06/28/18 05:15*	*07/14/18 04:12*	*1*
18O2 PFHxS	*76*		*25 - 150*	*06/28/18 05:15*	*07/14/18 04:12*	*1*
13C4 PFOS	*67*		*25 - 150*	*06/28/18 05:15*	*07/14/18 04:12*	*1*
13C8 FOSA	*62*		*25 - 150*	*06/28/18 05:15*	*07/14/18 04:12*	*1*
d3-NMeFOSAA	*77*		*25 - 150*	*06/28/18 05:15*	*07/14/18 04:12*	*1*
d5-NEtFOSAA	*80*		*25 - 150*	*06/28/18 05:15*	*07/14/18 04:12*	*1*
M2-6:2FTS	*68*		*25 - 150*	*06/28/18 05:15*	*07/14/18 04:12*	*1*
M2-8:2FTS	*85*		*25 - 150*	*06/28/18 05:15*	*07/14/18 04:12*	*1*

Client Sample Results

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Client Sample ID: NF18-GW-01

Date Collected: 06/21/18 08:45
Date Received: 06/22/18 09:05

Lab Sample ID: 320-40571-5

Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**0.016**	**B**	0.0018	0.00032	ug/L		07/02/18 14:58	07/16/18 13:10	1
Perfluoropentanoic acid (PFPeA)	**0.0060**		0.0018	0.00045	ug/L		07/02/18 14:58	07/16/18 13:10	1
Perfluorohexanoic acid (PFHxA)	**0.0046**		0.0018	0.00053	ug/L		07/02/18 14:58	07/16/18 13:10	1
Perfluoroheptanoic acid (PFHpA)	**0.0039**		0.0018	0.00023	ug/L		07/02/18 14:58	07/16/18 13:10	1
Perfluorooctanoic acid (PFOA)	**0.018**		0.0018	0.00078	ug/L		07/02/18 14:58	07/16/18 13:10	1
Perfluorononanoic acid (PFNA)	**0.0027**		0.0018	0.00025	ug/L		07/02/18 14:58	07/16/18 13:10	1
Perfluorodecanoic acid (PFDA)	**0.00049**	**J**	0.0018	0.00028	ug/L		07/02/18 14:58	07/16/18 13:10	1
Perfluoroundecanoic acid (PFUnA)	ND		0.0018	0.0010	ug/L		07/02/18 14:58	07/16/18 13:10	1
Perfluorododecanoic acid (PFDoA)	ND		0.0018	0.00051	ug/L		07/02/18 14:58	07/16/18 13:10	1
Perfluorotridecanoic Acid (PFTriA)	ND		0.0018	0.0012	ug/L		07/02/18 14:58	07/16/18 13:10	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.0018	0.00027	ug/L		07/02/18 14:58	07/16/18 13:10	1
Perfluorobutanesulfonic acid (PFBS)	**0.010**		0.0018	0.00018	ug/L		07/02/18 14:58	07/16/18 13:10	1
Perfluoropentanesulfonic acid (PFPeS)	**0.0018**		0.0018	0.00028	ug/L		07/02/18 14:58	07/16/18 13:10	1
Perfluorohexanesulfonic acid (PFHxS)	**0.0070**	**B**	0.0018	0.00016	ug/L		07/02/18 14:58	07/16/18 13:10	1
Perfluoroheptanesulfonic Acid (PFHpS)	**0.00088**	**J**	0.0018	0.00017	ug/L		07/02/18 14:58	07/16/18 13:10	1
Perfluorooctanesulfonic acid (PFOS)	**0.022**		0.0018	0.00050	ug/L		07/02/18 14:58	07/16/18 13:10	1
Perfluorononanesulfonic acid (PFNS)	ND		0.0018	0.00015	ug/L		07/02/18 14:58	07/16/18 13:10	1
Perfluorodecanesulfonic acid (PFDS)	ND		0.0018	0.00029	ug/L		07/02/18 14:58	07/16/18 13:10	1
Perfluorooctane Sulfonamide (FOSA)	ND		0.0018	0.00032	ug/L		07/02/18 14:58	07/16/18 13:10	1
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.018	0.0028	ug/L		07/02/18 14:58	07/16/18 13:10	1
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.018	0.0017	ug/L		07/02/18 14:58	07/16/18 13:10	1
4:2 FTS	ND		0.018	0.0048	ug/L		07/02/18 14:58	07/16/18 13:10	1
6:2 FTS	ND		0.018	0.0018	ug/L		07/02/18 14:58	07/16/18 13:10	1
8:2 FTS	ND		0.018	0.0018	ug/L		07/02/18 14:58	07/16/18 13:10	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*57*		*25 - 150*	*07/02/18 14:58*	*07/16/18 13:10*	*1*
13C5 PFPeA	*74*		*25 - 150*	*07/02/18 14:58*	*07/16/18 13:10*	*1*
13C2 PFHxA	*83*		*25 - 150*	*07/02/18 14:58*	*07/16/18 13:10*	*1*
13C4-PFHpA	*94*		*25 - 150*	*07/02/18 14:58*	*07/16/18 13:10*	*1*
13C4 PFOA	*100*		*25 - 150*	*07/02/18 14:58*	*07/16/18 13:10*	*1*
13C5 PFNA	*97*		*25 - 150*	*07/02/18 14:58*	*07/16/18 13:10*	*1*
13C2 PFDA	*93*		*25 - 150*	*07/02/18 14:58*	*07/16/18 13:10*	*1*
13C2 PFUnA	*92*		*25 - 150*	*07/02/18 14:58*	*07/16/18 13:10*	*1*
13C2 PFDoA	*85*		*25 - 150*	*07/02/18 14:58*	*07/16/18 13:10*	*1*
13C2-PFTeDA	*84*		*25 - 150*	*07/02/18 14:58*	*07/16/18 13:10*	*1*
13C3-PFBS	*81*		*25 - 150*	*07/02/18 14:58*	*07/16/18 13:10*	*1*
18O2 PFHxS	*93*		*25 - 150*	*07/02/18 14:58*	*07/16/18 13:10*	*1*
13C4 PFOS	*87*		*25 - 150*	*07/02/18 14:58*	*07/16/18 13:10*	*1*
13C8 FOSA	*80*		*25 - 150*	*07/02/18 14:58*	*07/16/18 13:10*	*1*
d3-NMeFOSAA	*96*		*25 - 150*	*07/02/18 14:58*	*07/16/18 13:10*	*1*
d5-NEtFOSAA	*98*		*25 - 150*	*07/02/18 14:58*	*07/16/18 13:10*	*1*
M2-6:2FTS	*175*	*	*25 - 150*	*07/02/18 14:58*	*07/16/18 13:10*	*1*
M2-8:2FTS	*99*		*25 - 150*	*07/02/18 14:58*	*07/16/18 13:10*	*1*

Client Sample Results

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Client Sample ID: NF18-SS-02

Date Collected: 06/20/18 14:45
Date Received: 06/22/18 09:05

Lab Sample ID: 320-40571-6

Matrix: Solid
Percent Solids: 82.0

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**0.000040**	**J**	0.00024	0.000034	mg/Kg	☼	06/28/18 05:15	07/14/18 04:20	1
Perfluoropentanoic acid (PFPeA)	ND		0.00024	0.000093	mg/Kg	☼	06/28/18 05:15	07/14/18 04:20	1
Perfluorohexanoic acid (PFHxA)	ND		0.00024	0.000051	mg/Kg	☼	06/28/18 05:15	07/14/18 04:20	1
Perfluoroheptanoic acid (PFHpA)	ND		0.00024	0.000035	mg/Kg	☼	06/28/18 05:15	07/14/18 04:20	1
Perfluorooctanoic acid (PFOA)	ND		0.00024	0.00010	mg/Kg	☼	06/28/18 05:15	07/14/18 04:20	1
Perfluorononanoic acid (PFNA)	ND		0.00024	0.000043	mg/Kg	☼	06/28/18 05:15	07/14/18 04:20	1
Perfluorodecanoic acid (PFDA)	ND		0.00024	0.000026	mg/Kg	☼	06/28/18 05:15	07/14/18 04:20	1
Perfluoroundecanoic acid (PFUnA)	ND		0.00024	0.000043	mg/Kg	☼	06/28/18 05:15	07/14/18 04:20	1
Perfluorododecanoic acid (PFDoA)	ND		0.00024	0.000081	mg/Kg	☼	06/28/18 05:15	07/14/18 04:20	1
Perfluorotridecanoic Acid (PFTriA)	ND		0.00024	0.000061	mg/Kg	☼	06/28/18 05:15	07/14/18 04:20	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.00024	0.000065	mg/Kg	☼	06/28/18 05:15	07/14/18 04:20	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.00024	0.000030	mg/Kg	☼	06/28/18 05:15	07/14/18 04:20	1
Perfluorohexanesulfonic acid (PFHxS)	ND		0.00024	0.000037	mg/Kg	☼	06/28/18 05:15	07/14/18 04:20	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.00024	0.000042	mg/Kg	☼	06/28/18 05:15	07/14/18 04:20	1
Perfluorooctanesulfonic acid (PFOS)	ND		0.00060	0.00024	mg/Kg	☼	06/28/18 05:15	07/14/18 04:20	1
Perfluorodecanesulfonic acid (PFDS)	ND		0.00024	0.000047	mg/Kg	☼	06/28/18 05:15	07/14/18 04:20	1
Perfluorooctane Sulfonamide (FOSA)	ND		0.00024	0.000099	mg/Kg	☼	06/28/18 05:15	07/14/18 04:20	1
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.0024	0.00047	mg/Kg	☼	06/28/18 05:15	07/14/18 04:20	1
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.0024	0.00044	mg/Kg	☼	06/28/18 05:15	07/14/18 04:20	1
6:2 FTS	ND		0.0024	0.00018	mg/Kg	☼	06/28/18 05:15	07/14/18 04:20	1
8:2 FTS	ND		0.0024	0.00030	mg/Kg	☼	06/28/18 05:15	07/14/18 04:20	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*74*		*25 - 150*	*06/28/18 05:15*	*07/14/18 04:20*	*1*
13C5 PFPeA	*79*		*25 - 150*	*06/28/18 05:15*	*07/14/18 04:20*	*1*
13C2 PFHxA	*76*		*25 - 150*	*06/28/18 05:15*	*07/14/18 04:20*	*1*
13C4-PFHpA	*85*		*25 - 150*	*06/28/18 05:15*	*07/14/18 04:20*	*1*
13C4 PFOA	*85*		*25 - 150*	*06/28/18 05:15*	*07/14/18 04:20*	*1*
13C5 PFNA	*88*		*25 - 150*	*06/28/18 05:15*	*07/14/18 04:20*	*1*
13C2 PFDA	*90*		*25 - 150*	*06/28/18 05:15*	*07/14/18 04:20*	*1*
13C2 PFUnA	*84*		*25 - 150*	*06/28/18 05:15*	*07/14/18 04:20*	*1*
13C2 PFDoA	*81*		*25 - 150*	*06/28/18 05:15*	*07/14/18 04:20*	*1*
13C2-PFTeDA	*83*		*25 - 150*	*06/28/18 05:15*	*07/14/18 04:20*	*1*
13C3-PFBS	*73*		*25 - 150*	*06/28/18 05:15*	*07/14/18 04:20*	*1*
18O2 PFHxS	*75*		*25 - 150*	*06/28/18 05:15*	*07/14/18 04:20*	*1*
13C4 PFOS	*73*		*25 - 150*	*06/28/18 05:15*	*07/14/18 04:20*	*1*
13C8 FOSA	*63*		*25 - 150*	*06/28/18 05:15*	*07/14/18 04:20*	*1*
d3-NMeFOSAA	*102*		*25 - 150*	*06/28/18 05:15*	*07/14/18 04:20*	*1*
d5-NEtFOSAA	*86*		*25 - 150*	*06/28/18 05:15*	*07/14/18 04:20*	*1*
M2-6:2FTS	*81*		*25 - 150*	*06/28/18 05:15*	*07/14/18 04:20*	*1*
M2-8:2FTS	*82*		*25 - 150*	*06/28/18 05:15*	*07/14/18 04:20*	*1*

Client Sample Results

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Client Sample ID: NF19-GW-01

Date Collected: 06/20/18 15:50
Date Received: 06/22/18 09:05

Lab Sample ID: 320-40571-7

Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**0.014**	**B**	0.0019	0.00033	ug/L		07/02/18 14:58	07/07/18 01:59	1
Perfluoropentanoic acid (PFPeA)	**0.0083**		0.0019	0.00046	ug/L		07/02/18 14:58	07/07/18 01:59	1
Perfluorohexanoic acid (PFHxA)	**0.0030**		0.0019	0.00054	ug/L		07/02/18 14:58	07/07/18 01:59	1
Perfluoroheptanoic acid (PFHpA)	**0.0020**		0.0019	0.00023	ug/L		07/02/18 14:58	07/07/18 01:59	1
Perfluorooctanoic acid (PFOA)	**0.0025**		0.0019	0.00079	ug/L		07/02/18 14:58	07/07/18 01:59	1
Perfluorononanoic acid (PFNA)	**0.00077**	**J**	0.0019	0.00025	ug/L		07/02/18 14:58	07/07/18 01:59	1
Perfluorodecanoic acid (PFDA)	ND		0.0019	0.00029	ug/L		07/02/18 14:58	07/07/18 01:59	1
Perfluoroundecanoic acid (PFUnA)	ND		0.0019	0.0010	ug/L		07/02/18 14:58	07/07/18 01:59	1
Perfluorododecanoic acid (PFDoA)	ND		0.0019	0.00051	ug/L		07/02/18 14:58	07/07/18 01:59	1
Perfluorotridecanoic Acid (PFTriA)	ND		0.0019	0.0012	ug/L		07/02/18 14:58	07/07/18 01:59	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.0019	0.00027	ug/L		07/02/18 14:58	07/07/18 01:59	1
Perfluorobutanesulfonic acid (PFBS)	**0.0010**	**J**	0.0019	0.00019	ug/L		07/02/18 14:58	07/07/18 01:59	1
Perfluoropentanesulfonic acid (PFPeS)	ND		0.0019	0.00028	ug/L		07/02/18 14:58	07/07/18 01:59	1
Perfluorohexanesulfonic acid (PFHxS)	**0.0011**	**J B**	0.0019	0.00016	ug/L		07/02/18 14:58	07/07/18 01:59	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.0019	0.00018	ug/L		07/02/18 14:58	07/07/18 01:59	1
Perfluorooctanesulfonic acid (PFOS)	**0.00088**	**J**	0.0019	0.00050	ug/L		07/02/18 14:58	07/07/18 01:59	1
Perfluorononanesulfonic acid (PFNS)	ND		0.0019	0.00015	ug/L		07/02/18 14:58	07/07/18 01:59	1
Perfluorodecanesulfonic acid (PFDS)	ND		0.0019	0.00030	ug/L		07/02/18 14:58	07/07/18 01:59	1
Perfluorooctane Sulfonamide (FOSA)	ND		0.0019	0.00033	ug/L		07/02/18 14:58	07/07/18 01:59	1
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.019	0.0029	ug/L		07/02/18 14:58	07/07/18 01:59	1
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.019	0.0018	ug/L		07/02/18 14:58	07/07/18 01:59	1
4:2 FTS	ND		0.019	0.0048	ug/L		07/02/18 14:58	07/07/18 01:59	1
6:2 FTS	**0.0034**	**J**	0.019	0.0019	ug/L		07/02/18 14:58	07/07/18 01:59	1
8:2 FTS	ND		0.019	0.0019	ug/L		07/02/18 14:58	07/07/18 01:59	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*63*		*25 - 150*	*07/02/18 14:58*	*07/07/18 01:59*	*1*
13C5 PFPeA	*81*		*25 - 150*	*07/02/18 14:58*	*07/07/18 01:59*	*1*
13C2 PFHxA	*96*		*25 - 150*	*07/02/18 14:58*	*07/07/18 01:59*	*1*
13C4-PFHpA	*101*		*25 - 150*	*07/02/18 14:58*	*07/07/18 01:59*	*1*
13C4 PFOA	*103*		*25 - 150*	*07/02/18 14:58*	*07/07/18 01:59*	*1*
13C5 PFNA	*101*		*25 - 150*	*07/02/18 14:58*	*07/07/18 01:59*	*1*
13C2 PFDA	*111*		*25 - 150*	*07/02/18 14:58*	*07/07/18 01:59*	*1*
13C2 PFUnA	*98*		*25 - 150*	*07/02/18 14:58*	*07/07/18 01:59*	*1*
13C2 PFDoA	*90*		*25 - 150*	*07/02/18 14:58*	*07/07/18 01:59*	*1*
13C2-PFTeDA	*69*		*25 - 150*	*07/02/18 14:58*	*07/07/18 01:59*	*1*
13C3-PFBS	*90*		*25 - 150*	*07/02/18 14:58*	*07/07/18 01:59*	*1*
18O2 PFHxS	*104*		*25 - 150*	*07/02/18 14:58*	*07/07/18 01:59*	*1*
13C4 PFOS	*101*		*25 - 150*	*07/02/18 14:58*	*07/07/18 01:59*	*1*
13C8 FOSA	*81*		*25 - 150*	*07/02/18 14:58*	*07/07/18 01:59*	*1*
d3-NMeFOSAA	*100*		*25 - 150*	*07/02/18 14:58*	*07/07/18 01:59*	*1*
d5-NEtFOSAA	*96*		*25 - 150*	*07/02/18 14:58*	*07/07/18 01:59*	*1*
M2-6:2FTS	*139*		*25 - 150*	*07/02/18 14:58*	*07/07/18 01:59*	*1*
M2-8:2FTS	*113*		*25 - 150*	*07/02/18 14:58*	*07/07/18 01:59*	*1*

Client Sample Results

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Client Sample ID: NF19-SS-02

Date Collected: 06/20/18 14:15
Date Received: 06/22/18 09:05

Lab Sample ID: 320-40571-8

Matrix: Solid
Percent Solids: 78.4

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND		0.00025	0.000035	mg/Kg	☼	06/28/18 05:15	07/14/18 04:28	1
Perfluoropentanoic acid (PFPeA)	ND		0.00025	0.000096	mg/Kg	☼	06/28/18 05:15	07/14/18 04:28	1
Perfluorohexanoic acid (PFHxA)	ND		0.00025	0.000053	mg/Kg	☼	06/28/18 05:15	07/14/18 04:28	1
Perfluoroheptanoic acid (PFHpA)	ND		0.00025	0.000036	mg/Kg	☼	06/28/18 05:15	07/14/18 04:28	1
Perfluorooctanoic acid (PFOA)	ND		0.00025	0.00011	mg/Kg	☼	06/28/18 05:15	07/14/18 04:28	1
Perfluorononanoic acid (PFNA)	ND		0.00025	0.000045	mg/Kg	☼	06/28/18 05:15	07/14/18 04:28	1
Perfluorodecanoic acid (PFDA)	ND		0.00025	0.000028	mg/Kg	☼	06/28/18 05:15	07/14/18 04:28	1
Perfluoroundecanoic acid (PFUnA)	ND		0.00025	0.000045	mg/Kg	☼	06/28/18 05:15	07/14/18 04:28	1
Perfluorododecanoic acid (PFDoA)	ND		0.00025	0.000084	mg/Kg	☼	06/28/18 05:15	07/14/18 04:28	1
Perfluorotridecanoic Acid (PFTriA)	ND		0.00025	0.000064	mg/Kg	☼	06/28/18 05:15	07/14/18 04:28	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.00025	0.000068	mg/Kg	☼	06/28/18 05:15	07/14/18 04:28	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.00025	0.000031	mg/Kg	☼	06/28/18 05:15	07/14/18 04:28	1
Perfluorohexanesulfonic acid (PFHxS)	ND		0.00025	0.000039	mg/Kg	☼	06/28/18 05:15	07/14/18 04:28	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.00025	0.000044	mg/Kg	☼	06/28/18 05:15	07/14/18 04:28	1
Perfluorooctanesulfonic acid (PFOS)	ND		0.00063	0.00025	mg/Kg	☼	06/28/18 05:15	07/14/18 04:28	1
Perfluorodecanesulfonic acid (PFDS)	ND		0.00025	0.000049	mg/Kg	☼	06/28/18 05:15	07/14/18 04:28	1
Perfluorooctane Sulfonamide (FOSA)	ND		0.00025	0.00010	mg/Kg	☼	06/28/18 05:15	07/14/18 04:28	1
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.0025	0.00049	mg/Kg	☼	06/28/18 05:15	07/14/18 04:28	1
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.0025	0.00046	mg/Kg	☼	06/28/18 05:15	07/14/18 04:28	1
6:2 FTS	ND		0.0025	0.00019	mg/Kg	☼	06/28/18 05:15	07/14/18 04:28	1
8:2 FTS	ND		0.0025	0.00031	mg/Kg	☼	06/28/18 05:15	07/14/18 04:28	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*77*		*25 - 150*	*06/28/18 05:15*	*07/14/18 04:28*	*1*
13C5 PFPeA	*85*		*25 - 150*	*06/28/18 05:15*	*07/14/18 04:28*	*1*
13C2 PFHxA	*87*		*25 - 150*	*06/28/18 05:15*	*07/14/18 04:28*	*1*
13C4-PFHpA	*87*		*25 - 150*	*06/28/18 05:15*	*07/14/18 04:28*	*1*
13C4 PFOA	*85*		*25 - 150*	*06/28/18 05:15*	*07/14/18 04:28*	*1*
13C5 PFNA	*80*		*25 - 150*	*06/28/18 05:15*	*07/14/18 04:28*	*1*
13C2 PFDA	*87*		*25 - 150*	*06/28/18 05:15*	*07/14/18 04:28*	*1*
13C2 PFUnA	*81*		*25 - 150*	*06/28/18 05:15*	*07/14/18 04:28*	*1*
13C2 PFDoA	*86*		*25 - 150*	*06/28/18 05:15*	*07/14/18 04:28*	*1*
13C2-PFTeDA	*88*		*25 - 150*	*06/28/18 05:15*	*07/14/18 04:28*	*1*
13C3-PFBS	*74*		*25 - 150*	*06/28/18 05:15*	*07/14/18 04:28*	*1*
18O2 PFHxS	*79*		*25 - 150*	*06/28/18 05:15*	*07/14/18 04:28*	*1*
13C4 PFOS	*73*		*25 - 150*	*06/28/18 05:15*	*07/14/18 04:28*	*1*
13C8 FOSA	*68*		*25 - 150*	*06/28/18 05:15*	*07/14/18 04:28*	*1*
d3-NMeFOSAA	*80*		*25 - 150*	*06/28/18 05:15*	*07/14/18 04:28*	*1*
d5-NEtFOSAA	*87*		*25 - 150*	*06/28/18 05:15*	*07/14/18 04:28*	*1*
M2-6:2FTS	*67*		*25 - 150*	*06/28/18 05:15*	*07/14/18 04:28*	*1*
M2-8:2FTS	*79*		*25 - 150*	*06/28/18 05:15*	*07/14/18 04:28*	*1*

Client Sample Results

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Client Sample ID: NF20-GW-01

Date Collected: 06/20/18 13:35
Date Received: 06/22/18 09:05

Lab Sample ID: 320-40571-9

Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**0.82**	**E B**	0.0032	0.00055	ug/L		07/02/18 14:58	07/07/18 02:06	1
Perfluoropentanoic acid (PFPeA)	**0.65**	**E**	0.0032	0.00078	ug/L		07/02/18 14:58	07/07/18 02:06	1
Perfluorohexanoic acid (PFHxA)	**0.16**		0.0032	0.00092	ug/L		07/02/18 14:58	07/07/18 02:06	1
Perfluoroheptanoic acid (PFHpA)	**0.12**		0.0032	0.00040	ug/L		07/02/18 14:58	07/07/18 02:06	1
Perfluorooctanoic acid (PFOA)	**0.039**		0.0032	0.0013	ug/L		07/02/18 14:58	07/07/18 02:06	1
Perfluorononanoic acid (PFNA)	**0.032**		0.0032	0.00043	ug/L		07/02/18 14:58	07/07/18 02:06	1
Perfluorodecanoic acid (PFDA)	**0.012**		0.0032	0.00049	ug/L		07/02/18 14:58	07/07/18 02:06	1
Perfluoroundecanoic acid (PFUnA)	**0.013**		0.0032	0.0017	ug/L		07/02/18 14:58	07/07/18 02:06	1
Perfluorododecanoic acid (PFDoA)	**0.0040**		0.0032	0.00087	ug/L		07/02/18 14:58	07/07/18 02:06	1
Perfluorotridecanoic Acid (PFTriA)	**0.0029**	**J**	0.0032	0.0021	ug/L		07/02/18 14:58	07/07/18 02:06	1
Perfluorotetradecanoic acid (PFTeA)	**0.0021**	**J**	0.0032	0.00046	ug/L		07/02/18 14:58	07/07/18 02:06	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.0032	0.00032	ug/L		07/02/18 14:58	07/07/18 02:06	1
Perfluoropentanesulfonic acid (PFPeS)	ND		0.0032	0.00047	ug/L		07/02/18 14:58	07/07/18 02:06	1
Perfluorohexanesulfonic acid (PFHxS)	**0.00064**	**J B**	0.0032	0.00027	ug/L		07/02/18 14:58	07/07/18 02:06	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.0032	0.00030	ug/L		07/02/18 14:58	07/07/18 02:06	1
Perfluorooctanesulfonic acid (PFOS)	**0.0021**	**J**	0.0032	0.00085	ug/L		07/02/18 14:58	07/07/18 02:06	1
Perfluorononanesulfonic acid (PFNS)	ND		0.0032	0.00025	ug/L		07/02/18 14:58	07/07/18 02:06	1
Perfluorodecanesulfonic acid (PFDS)	ND		0.0032	0.00051	ug/L		07/02/18 14:58	07/07/18 02:06	1
Perfluorooctane Sulfonamide (FOSA)	ND		0.0032	0.00055	ug/L		07/02/18 14:58	07/07/18 02:06	1
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.032	0.0049	ug/L		07/02/18 14:58	07/07/18 02:06	1
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.032	0.0030	ug/L		07/02/18 14:58	07/07/18 02:06	1
4:2 FTS	ND		0.032	0.0082	ug/L		07/02/18 14:58	07/07/18 02:06	1
6:2 FTS	**0.025**	**J**	0.032	0.0032	ug/L		07/02/18 14:58	07/07/18 02:06	1
8:2 FTS	ND		0.032	0.0032	ug/L		07/02/18 14:58	07/07/18 02:06	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*66*		*25 - 150*	*07/02/18 14:58*	*07/07/18 02:06*	*1*
13C5 PFPeA	*81*		*25 - 150*	*07/02/18 14:58*	*07/07/18 02:06*	*1*
13C2 PFHxA	*89*		*25 - 150*	*07/02/18 14:58*	*07/07/18 02:06*	*1*
13C4-PFHpA	*103*		*25 - 150*	*07/02/18 14:58*	*07/07/18 02:06*	*1*
13C4 PFOA	*101*		*25 - 150*	*07/02/18 14:58*	*07/07/18 02:06*	*1*
13C5 PFNA	*104*		*25 - 150*	*07/02/18 14:58*	*07/07/18 02:06*	*1*
13C2 PFDA	*102*		*25 - 150*	*07/02/18 14:58*	*07/07/18 02:06*	*1*
13C2 PFUnA	*95*		*25 - 150*	*07/02/18 14:58*	*07/07/18 02:06*	*1*
13C2 PFDoA	*87*		*25 - 150*	*07/02/18 14:58*	*07/07/18 02:06*	*1*
13C2-PFTeDA	*52*		*25 - 150*	*07/02/18 14:58*	*07/07/18 02:06*	*1*
13C3-PFBS	*86*		*25 - 150*	*07/02/18 14:58*	*07/07/18 02:06*	*1*
18O2 PFHxS	*105*		*25 - 150*	*07/02/18 14:58*	*07/07/18 02:06*	*1*
13C4 PFOS	*96*		*25 - 150*	*07/02/18 14:58*	*07/07/18 02:06*	*1*
13C8 FOSA	*78*		*25 - 150*	*07/02/18 14:58*	*07/07/18 02:06*	*1*
d3-NMeFOSAA	*99*		*25 - 150*	*07/02/18 14:58*	*07/07/18 02:06*	*1*
d5-NEtFOSAA	*95*		*25 - 150*	*07/02/18 14:58*	*07/07/18 02:06*	*1*
M2-6:2FTS	*123*		*25 - 150*	*07/02/18 14:58*	*07/07/18 02:06*	*1*

Client Sample Results

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Client Sample ID: NF20-GW-01

Date Collected: 06/20/18 13:35
Date Received: 06/22/18 09:05

Lab Sample ID: 320-40571-9

Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
M2-8:2FTS	118		25 - 150	07/02/18 14:58	07/07/18 02:06	1

Method: 537 (modified) - Fluorinated Alkyl Substances - DL

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**0.89**	**B**	0.016	0.0028	ug/L		07/02/18 14:58	07/11/18 22:01	5
Perfluoropentanoic acid (PFPeA)	**0.72**		0.016	0.0039	ug/L		07/02/18 14:58	07/11/18 22:01	5
Perfluorohexanoic acid (PFHxA)	**0.16**		0.016	0.0046	ug/L		07/02/18 14:58	07/11/18 22:01	5
Perfluoroheptanoic acid (PFHpA)	**0.12**		0.016	0.0020	ug/L		07/02/18 14:58	07/11/18 22:01	5
Perfluorooctanoic acid (PFOA)	**0.038**		0.016	0.0067	ug/L		07/02/18 14:58	07/11/18 22:01	5
Perfluorononanoic acid (PFNA)	**0.031**		0.016	0.0021	ug/L		07/02/18 14:58	07/11/18 22:01	5
Perfluorodecanoic acid (PFDA)	**0.013**	**J**	0.016	0.0025	ug/L		07/02/18 14:58	07/11/18 22:01	5
Perfluoroundecanoic acid (PFUnA)	**0.012**	**J**	0.016	0.0087	ug/L		07/02/18 14:58	07/11/18 22:01	5
Perfluorododecanoic acid (PFDoA)	**0.0046**	**J**	0.016	0.0044	ug/L		07/02/18 14:58	07/11/18 22:01	5
Perfluorotridecanoic Acid (PFTriA)	ND		0.016	0.010	ug/L		07/02/18 14:58	07/11/18 22:01	5
Perfluorotetradecanoic acid (PFTeA)	ND		0.016	0.0023	ug/L		07/02/18 14:58	07/11/18 22:01	5
Perfluorobutanesulfonic acid (PFBS)	ND		0.016	0.0016	ug/L		07/02/18 14:58	07/11/18 22:01	5
Perfluoropentanesulfonic acid (PFPeS)	ND		0.016	0.0024	ug/L		07/02/18 14:58	07/11/18 22:01	5
Perfluorohexanesulfonic acid (PFHxS)	ND		0.016	0.0013	ug/L		07/02/18 14:58	07/11/18 22:01	5
Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.016	0.0015	ug/L		07/02/18 14:58	07/11/18 22:01	5
Perfluorooctanesulfonic acid (PFOS)	ND		0.016	0.0043	ug/L		07/02/18 14:58	07/11/18 22:01	5
Perfluorononanesulfonic acid (PFNS)	ND		0.016	0.0013	ug/L		07/02/18 14:58	07/11/18 22:01	5
Perfluorodecanesulfonic acid (PFDS)	ND		0.016	0.0025	ug/L		07/02/18 14:58	07/11/18 22:01	5
Perfluorooctane Sulfonamide (FOSA)	ND		0.016	0.0028	ug/L		07/02/18 14:58	07/11/18 22:01	5
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.16	0.025	ug/L		07/02/18 14:58	07/11/18 22:01	5
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.16	0.015	ug/L		07/02/18 14:58	07/11/18 22:01	5
4:2 FTS	ND		0.16	0.041	ug/L		07/02/18 14:58	07/11/18 22:01	5
6:2 FTS	**0.036**	**J**	0.16	0.016	ug/L		07/02/18 14:58	07/11/18 22:01	5
8:2 FTS	ND		0.16	0.016	ug/L		07/02/18 14:58	07/11/18 22:01	5

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	95		25 - 150	07/02/18 14:58	07/11/18 22:01	5
13C5 PFPeA	102		25 - 150	07/02/18 14:58	07/11/18 22:01	5
13C2 PFHxA	102		25 - 150	07/02/18 14:58	07/11/18 22:01	5
13C4-PFHpA	107		25 - 150	07/02/18 14:58	07/11/18 22:01	5
13C4 PFOA	99		25 - 150	07/02/18 14:58	07/11/18 22:01	5
13C5 PFNA	101		25 - 150	07/02/18 14:58	07/11/18 22:01	5
13C2 PFDA	101		25 - 150	07/02/18 14:58	07/11/18 22:01	5
13C2 PFUnA	97		25 - 150	07/02/18 14:58	07/11/18 22:01	5
13C2 PFDoA	81		25 - 150	07/02/18 14:58	07/11/18 22:01	5
13C2-PFTeDA	52		25 - 150	07/02/18 14:58	07/11/18 22:01	5
13C3-PFBS	97		25 - 150	07/02/18 14:58	07/11/18 22:01	5
18O2 PFHxS	103		25 - 150	07/02/18 14:58	07/11/18 22:01	5
13C4 PFOS	96		25 - 150	07/02/18 14:58	07/11/18 22:01	5
13C8 FOSA	82		25 - 150	07/02/18 14:58	07/11/18 22:01	5
d3-NMeFOSAA	101		25 - 150	07/02/18 14:58	07/11/18 22:01	5
d5-NEtFOSAA	102		25 - 150	07/02/18 14:58	07/11/18 22:01	5

Client Sample Results

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Client Sample ID: NF20-GW-01

Lab Sample ID: 320-40571-9

Date Collected: 06/20/18 13:35
Matrix: Water
Date Received: 06/22/18 09:05

Method: 537 (modified) - Fluorinated Alkyl Substances - DL (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
M2-6:2FTS	93		25 - 150	07/02/18 14:58	07/11/18 22:01	5
M2-8:2FTS	102		25 - 150	07/02/18 14:58	07/11/18 22:01	5

Client Sample ID: NF20-SS-02

Lab Sample ID: 320-40571-10

Date Collected: 06/19/18 09:35
Matrix: Solid
Date Received: 06/22/18 09:05
Percent Solids: 81.7

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND		0.00024	0.000034	mg/Kg	☼	06/28/18 05:15	07/14/18 04:36	1
Perfluoropentanoic acid (PFPeA)	ND		0.00024	0.000094	mg/Kg	☼	06/28/18 05:15	07/14/18 04:36	1
Perfluorohexanoic acid (PFHxA)	ND		0.00024	0.000051	mg/Kg	☼	06/28/18 05:15	07/14/18 04:36	1
Perfluoroheptanoic acid (PFHpA)	ND		0.00024	0.000035	mg/Kg	☼	06/28/18 05:15	07/14/18 04:36	1
Perfluorooctanoic acid (PFOA)	ND		0.00024	0.00010	mg/Kg	☼	06/28/18 05:15	07/14/18 04:36	1
Perfluorononanoic acid (PFNA)	ND		0.00024	0.000044	mg/Kg	☼	06/28/18 05:15	07/14/18 04:36	1
Perfluorodecanoic acid (PFDA)	ND		0.00024	0.000027	mg/Kg	☼	06/28/18 05:15	07/14/18 04:36	1
Perfluoroundecanoic acid (PFUnA)	ND		0.00024	0.000044	mg/Kg	☼	06/28/18 05:15	07/14/18 04:36	1
Perfluorododecanoic acid (PFDoA)	ND		0.00024	0.000082	mg/Kg	☼	06/28/18 05:15	07/14/18 04:36	1
Perfluorotridecanoic Acid (PFTriA)	ND		0.00024	0.000062	mg/Kg	☼	06/28/18 05:15	07/14/18 04:36	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.00024	0.000066	mg/Kg	☼	06/28/18 05:15	07/14/18 04:36	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.00024	0.000030	mg/Kg	☼	06/28/18 05:15	07/14/18 04:36	1
Perfluorohexanesulfonic acid (PFHxS)	ND		0.00024	0.000038	mg/Kg	☼	06/28/18 05:15	07/14/18 04:36	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.00024	0.000043	mg/Kg	☼	06/28/18 05:15	07/14/18 04:36	1
Perfluorooctanesulfonic acid (PFOS)	ND		0.00061	0.00024	mg/Kg	☼	06/28/18 05:15	07/14/18 04:36	1
Perfluorodecanesulfonic acid (PFDS)	ND		0.00024	0.000047	mg/Kg	☼	06/28/18 05:15	07/14/18 04:36	1
Perfluorooctane Sulfonamide (FOSA)	ND		0.00024	0.00010	mg/Kg	☼	06/28/18 05:15	07/14/18 04:36	1
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.0024	0.00047	mg/Kg	☼	06/28/18 05:15	07/14/18 04:36	1
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.0024	0.00045	mg/Kg	☼	06/28/18 05:15	07/14/18 04:36	1
6:2 FTS	ND		0.0024	0.00018	mg/Kg	☼	06/28/18 05:15	07/14/18 04:36	1
8:2 FTS	ND		0.0024	0.00030	mg/Kg	☼	06/28/18 05:15	07/14/18 04:36	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	73		25 - 150	06/28/18 05:15	07/14/18 04:36	1
13C5 PFPeA	77		25 - 150	06/28/18 05:15	07/14/18 04:36	1
13C2 PFHxA	81		25 - 150	06/28/18 05:15	07/14/18 04:36	1
13C4-PFHpA	82		25 - 150	06/28/18 05:15	07/14/18 04:36	1
13C4 PFOA	81		25 - 150	06/28/18 05:15	07/14/18 04:36	1
13C5 PFNA	74		25 - 150	06/28/18 05:15	07/14/18 04:36	1
13C2 PFDA	86		25 - 150	06/28/18 05:15	07/14/18 04:36	1
13C2 PFUnA	81		25 - 150	06/28/18 05:15	07/14/18 04:36	1
13C2 PFDoA	80		25 - 150	06/28/18 05:15	07/14/18 04:36	1
13C2-PFTeDA	84		25 - 150	06/28/18 05:15	07/14/18 04:36	1
13C3-PFBS	68		25 - 150	06/28/18 05:15	07/14/18 04:36	1
18O2 PFHxS	72		25 - 150	06/28/18 05:15	07/14/18 04:36	1
13C4 PFOS	67		25 - 150	06/28/18 05:15	07/14/18 04:36	1
13C8 FOSA	62		25 - 150	06/28/18 05:15	07/14/18 04:36	1
d3-NMeFOSAA	80		25 - 150	06/28/18 05:15	07/14/18 04:36	1
d5-NEtFOSAA	85		25 - 150	06/28/18 05:15	07/14/18 04:36	1

Client Sample Results

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Client Sample ID: NF20-SS-02

Lab Sample ID: 320-40571-10
Date Collected: 06/19/18 09:35
Matrix: Solid
Date Received: 06/22/18 09:05
Percent Solids: 81.7

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
M2-6:2FTS	64		25 - 150	06/28/18 05:15	07/14/18 04:36	1
M2-8:2FTS	66		25 - 150	06/28/18 05:15	07/14/18 04:36	1

Client Sample ID: NF21-GW-01

Lab Sample ID: 320-40571-11
Date Collected: 06/20/18 11:50
Matrix: Water
Date Received: 06/22/18 09:05

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**0.0079**	**B**	0.0018	0.00032	ug/L		07/02/18 14:58	07/07/18 02:30	1
Perfluoropentanoic acid (PFPeA)	**0.0065**		0.0018	0.00045	ug/L		07/02/18 14:58	07/07/18 02:30	1
Perfluorohexanoic acid (PFHxA)	**0.0028**		0.0018	0.00053	ug/L		07/02/18 14:58	07/07/18 02:30	1
Perfluoroheptanoic acid (PFHpA)	**0.0013**	**J**	0.0018	0.00023	ug/L		07/02/18 14:58	07/07/18 02:30	1
Perfluorooctanoic acid (PFOA)	**0.0014**	**J**	0.0018	0.00078	ug/L		07/02/18 14:58	07/07/18 02:30	1
Perfluorononanoic acid (PFNA)	ND		0.0018	0.00025	ug/L		07/02/18 14:58	07/07/18 02:30	1
Perfluorodecanoic acid (PFDA)	ND		0.0018	0.00029	ug/L		07/02/18 14:58	07/07/18 02:30	1
Perfluoroundecanoic acid (PFUnA)	ND		0.0018	0.0010	ug/L		07/02/18 14:58	07/07/18 02:30	1
Perfluorododecanoic acid (PFDoA)	ND		0.0018	0.00051	ug/L		07/02/18 14:58	07/07/18 02:30	1
Perfluorotridecanoic Acid (PFTriA)	ND		0.0018	0.0012	ug/L		07/02/18 14:58	07/07/18 02:30	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.0018	0.00027	ug/L		07/02/18 14:58	07/07/18 02:30	1
Perfluorobutanesulfonic acid (PFBS)	**0.00099**	**J**	0.0018	0.00018	ug/L		07/02/18 14:58	07/07/18 02:30	1
Perfluoropentanesulfonic acid (PFPeS)	ND		0.0018	0.00028	ug/L		07/02/18 14:58	07/07/18 02:30	1
Perfluorohexanesulfonic acid (PFHxS)	**0.0016**	**J B**	0.0018	0.00016	ug/L		07/02/18 14:58	07/07/18 02:30	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.0018	0.00018	ug/L		07/02/18 14:58	07/07/18 02:30	1
Perfluorooctanesulfonic acid (PFOS)	**0.0016**	**J**	0.0018	0.00050	ug/L		07/02/18 14:58	07/07/18 02:30	1
Perfluorononanesulfonic acid (PFNS)	ND		0.0018	0.00015	ug/L		07/02/18 14:58	07/07/18 02:30	1
Perfluorodecanesulfonic acid (PFDS)	ND		0.0018	0.00029	ug/L		07/02/18 14:58	07/07/18 02:30	1
Perfluorooctane Sulfonamide (FOSA)	ND		0.0018	0.00032	ug/L		07/02/18 14:58	07/07/18 02:30	1
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.018	0.0029	ug/L		07/02/18 14:58	07/07/18 02:30	1
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.018	0.0018	ug/L		07/02/18 14:58	07/07/18 02:30	1
4:2 FTS	ND		0.018	0.0048	ug/L		07/02/18 14:58	07/07/18 02:30	1
6:2 FTS	**0.0028**	**J**	0.018	0.0018	ug/L		07/02/18 14:58	07/07/18 02:30	1
8:2 FTS	ND		0.018	0.0018	ug/L		07/02/18 14:58	07/07/18 02:30	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	81		25 - 150	07/02/18 14:58	07/07/18 02:30	1
13C5 PFPeA	87		25 - 150	07/02/18 14:58	07/07/18 02:30	1
13C2 PFHxA	92		25 - 150	07/02/18 14:58	07/07/18 02:30	1
13C4-PFHpA	98		25 - 150	07/02/18 14:58	07/07/18 02:30	1
13C4 PFOA	101		25 - 150	07/02/18 14:58	07/07/18 02:30	1
13C5 PFNA	104		25 - 150	07/02/18 14:58	07/07/18 02:30	1
13C2 PFDA	108		25 - 150	07/02/18 14:58	07/07/18 02:30	1
13C2 PFUnA	90		25 - 150	07/02/18 14:58	07/07/18 02:30	1
13C2 PFDoA	78		25 - 150	07/02/18 14:58	07/07/18 02:30	1
13C2-PFTeDA	60		25 - 150	07/02/18 14:58	07/07/18 02:30	1

Client Sample Results

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Client Sample ID: NF21-GW-01

Lab Sample ID: 320-40571-11
Date Collected: 06/20/18 11:50
Matrix: Water
Date Received: 06/22/18 09:05

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C3-PFBS	88		25 - 150	07/02/18 14:58	07/07/18 02:30	1
18O2 PFHxS	105		25 - 150	07/02/18 14:58	07/07/18 02:30	1
13C4 PFOS	96		25 - 150	07/02/18 14:58	07/07/18 02:30	1
13C8 FOSA	88		25 - 150	07/02/18 14:58	07/07/18 02:30	1
d3-NMeFOSAA	95		25 - 150	07/02/18 14:58	07/07/18 02:30	1
d5-NEtFOSAA	82		25 - 150	07/02/18 14:58	07/07/18 02:30	1
M2-6:2FTS	107		25 - 150	07/02/18 14:58	07/07/18 02:30	1
M2-8:2FTS	98		25 - 150	07/02/18 14:58	07/07/18 02:30	1

Client Sample ID: NF21-SS-01

Lab Sample ID: 320-40571-12
Date Collected: 06/20/18 11:35
Matrix: Solid
Date Received: 06/22/18 09:05
Percent Solids: 85.7

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**0.000036**	**J**	0.00023	0.000032	mg/Kg	☼	06/28/18 05:15	07/14/18 04:43	1
Perfluoropentanoic acid (PFPeA)	ND		0.00023	0.000089	mg/Kg	☼	06/28/18 05:15	07/14/18 04:43	1
Perfluorohexanoic acid (PFHxA)	ND		0.00023	0.000048	mg/Kg	☼	06/28/18 05:15	07/14/18 04:43	1
Perfluoroheptanoic acid (PFHpA)	ND		0.00023	0.000033	mg/Kg	☼	06/28/18 05:15	07/14/18 04:43	1
Perfluorooctanoic acid (PFOA)	ND		0.00023	0.000099	mg/Kg	☼	06/28/18 05:15	07/14/18 04:43	1
Perfluorononanoic acid (PFNA)	ND		0.00023	0.000041	mg/Kg	☼	06/28/18 05:15	07/14/18 04:43	1
Perfluorodecanoic acid (PFDA)	ND		0.00023	0.000025	mg/Kg	☼	06/28/18 05:15	07/14/18 04:43	1
Perfluoroundecanoic acid (PFUnA)	ND		0.00023	0.000041	mg/Kg	☼	06/28/18 05:15	07/14/18 04:43	1
Perfluorododecanoic acid (PFDoA)	ND		0.00023	0.000077	mg/Kg	☼	06/28/18 05:15	07/14/18 04:43	1
Perfluorotridecanoic Acid (PFTriA)	ND		0.00023	0.000059	mg/Kg	☼	06/28/18 05:15	07/14/18 04:43	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.00023	0.000062	mg/Kg	☼	06/28/18 05:15	07/14/18 04:43	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.00023	0.000029	mg/Kg	☼	06/28/18 05:15	07/14/18 04:43	1
Perfluorohexanesulfonic acid (PFHxS)	**0.000086**	**J**	0.00023	0.000036	mg/Kg	☼	06/28/18 05:15	07/14/18 04:43	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.00023	0.000040	mg/Kg	☼	06/28/18 05:15	07/14/18 04:43	1
Perfluorooctanesulfonic acid (PFOS)	ND		0.00058	0.00023	mg/Kg	☼	06/28/18 05:15	07/14/18 04:43	1
Perfluorodecanesulfonic acid (PFDS)	ND		0.00023	0.000045	mg/Kg	☼	06/28/18 05:15	07/14/18 04:43	1
Perfluorooctane Sulfonamide (FOSA)	ND		0.00023	0.000094	mg/Kg	☼	06/28/18 05:15	07/14/18 04:43	1
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.0023	0.00045	mg/Kg	☼	06/28/18 05:15	07/14/18 04:43	1
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.0023	0.00043	mg/Kg	☼	06/28/18 05:15	07/14/18 04:43	1
6:2 FTS	ND		0.0023	0.00017	mg/Kg	☼	06/28/18 05:15	07/14/18 04:43	1
8:2 FTS	ND		0.0023	0.00029	mg/Kg	☼	06/28/18 05:15	07/14/18 04:43	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	82		25 - 150	06/28/18 05:15	07/14/18 04:43	1
13C5 PFPeA	86		25 - 150	06/28/18 05:15	07/14/18 04:43	1
13C2 PFHxA	88		25 - 150	06/28/18 05:15	07/14/18 04:43	1
13C4-PFHpA	93		25 - 150	06/28/18 05:15	07/14/18 04:43	1
13C4 PFOA	91		25 - 150	06/28/18 05:15	07/14/18 04:43	1
13C5 PFNA	87		25 - 150	06/28/18 05:15	07/14/18 04:43	1
13C2 PFDA	95		25 - 150	06/28/18 05:15	07/14/18 04:43	1
13C2 PFUnA	88		25 - 150	06/28/18 05:15	07/14/18 04:43	1
13C2 PFDoA	84		25 - 150	06/28/18 05:15	07/14/18 04:43	1

Client Sample Results

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Client Sample ID: NF21-SS-01

Lab Sample ID: 320-40571-12
Date Collected: 06/20/18 11:35
Matrix: Solid
Date Received: 06/22/18 09:05
Percent Solids: 85.7

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2-PFTeDA	94		25 - 150	06/28/18 05:15	07/14/18 04:43	1
13C3-PFBS	74		25 - 150	06/28/18 05:15	07/14/18 04:43	1
18O2 PFHxS	78		25 - 150	06/28/18 05:15	07/14/18 04:43	1
13C4 PFOS	79		25 - 150	06/28/18 05:15	07/14/18 04:43	1
13C8 FOSA	69		25 - 150	06/28/18 05:15	07/14/18 04:43	1
d3-NMeFOSAA	89		25 - 150	06/28/18 05:15	07/14/18 04:43	1
d5-NEtFOSAA	95		25 - 150	06/28/18 05:15	07/14/18 04:43	1
M2-6:2FTS	69		25 - 150	06/28/18 05:15	07/14/18 04:43	1
M2-8:2FTS	93		25 - 150	06/28/18 05:15	07/14/18 04:43	1

Client Sample ID: NF22-GW-01

Lab Sample ID: 320-40571-13
Date Collected: 06/19/18 18:10
Matrix: Water
Date Received: 06/22/18 09:05

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**0.0028**	**B**	0.0018	0.00032	ug/L		07/02/18 14:58	07/07/18 02:46	1
Perfluoropentanoic acid (PFPeA)	**0.00077**	**J**	0.0018	0.00045	ug/L		07/02/18 14:58	07/07/18 02:46	1
Perfluorohexanoic acid (PFHxA)	ND		0.0018	0.00054	ug/L		07/02/18 14:58	07/07/18 02:46	1
Perfluoroheptanoic acid (PFHpA)	**0.00050**	**J**	0.0018	0.00023	ug/L		07/02/18 14:58	07/07/18 02:46	1
Perfluorooctanoic acid (PFOA)	**0.0018**		0.0018	0.00079	ug/L		07/02/18 14:58	07/07/18 02:46	1
Perfluorononanoic acid (PFNA)	ND		0.0018	0.00025	ug/L		07/02/18 14:58	07/07/18 02:46	1
Perfluorodecanoic acid (PFDA)	ND		0.0018	0.00029	ug/L		07/02/18 14:58	07/07/18 02:46	1
Perfluoroundecanoic acid (PFUnA)	ND		0.0018	0.0010	ug/L		07/02/18 14:58	07/07/18 02:46	1
Perfluorododecanoic acid (PFDoA)	ND		0.0018	0.00051	ug/L		07/02/18 14:58	07/07/18 02:46	1
Perfluorotridecanoic Acid (PFTriA)	ND		0.0018	0.0012	ug/L		07/02/18 14:58	07/07/18 02:46	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.0018	0.00027	ug/L		07/02/18 14:58	07/07/18 02:46	1
Perfluorobutanesulfonic acid (PFBS)	**0.0026**		0.0018	0.00018	ug/L		07/02/18 14:58	07/07/18 02:46	1
Perfluoropentanesulfonic acid (PFPeS)	**0.00073**	**J**	0.0018	0.00028	ug/L		07/02/18 14:58	07/07/18 02:46	1
Perfluorohexanesulfonic acid (PFHxS)	**0.0012**	**J B**	0.0018	0.00016	ug/L		07/02/18 14:58	07/07/18 02:46	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.0018	0.00018	ug/L		07/02/18 14:58	07/07/18 02:46	1
Perfluorooctanesulfonic acid (PFOS)	**0.0015**	**J**	0.0018	0.00050	ug/L		07/02/18 14:58	07/07/18 02:46	1
Perfluorononanesulfonic acid (PFNS)	ND		0.0018	0.00015	ug/L		07/02/18 14:58	07/07/18 02:46	1
Perfluorodecanesulfonic acid (PFDS)	ND		0.0018	0.00030	ug/L		07/02/18 14:58	07/07/18 02:46	1
Perfluorooctane Sulfonamide (FOSA)	ND		0.0018	0.00032	ug/L		07/02/18 14:58	07/07/18 02:46	1
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.018	0.0029	ug/L		07/02/18 14:58	07/07/18 02:46	1
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.018	0.0018	ug/L		07/02/18 14:58	07/07/18 02:46	1
4:2 FTS	ND		0.018	0.0048	ug/L		07/02/18 14:58	07/07/18 02:46	1
6:2 FTS	ND		0.018	0.0018	ug/L		07/02/18 14:58	07/07/18 02:46	1
8:2 FTS	ND		0.018	0.0018	ug/L		07/02/18 14:58	07/07/18 02:46	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	68		25 - 150	07/02/18 14:58	07/07/18 02:46	1
13C5 PFPeA	82		25 - 150	07/02/18 14:58	07/07/18 02:46	1
13C2 PFHxA	89		25 - 150	07/02/18 14:58	07/07/18 02:46	1

Client Sample Results

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Client Sample ID: NF22-GW-01

Lab Sample ID: 320-40571-13
Date Collected: 06/19/18 18:10
Matrix: Water
Date Received: 06/22/18 09:05

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4-PFHpA	100		25 - 150	07/02/18 14:58	07/07/18 02:46	1
13C4 PFOA	102		25 - 150	07/02/18 14:58	07/07/18 02:46	1
13C5 PFNA	106		25 - 150	07/02/18 14:58	07/07/18 02:46	1
13C2 PFDA	105		25 - 150	07/02/18 14:58	07/07/18 02:46	1
13C2 PFUnA	95		25 - 150	07/02/18 14:58	07/07/18 02:46	1
13C2 PFDoA	99		25 - 150	07/02/18 14:58	07/07/18 02:46	1
13C2-PFTeDA	78		25 - 150	07/02/18 14:58	07/07/18 02:46	1
13C3-PFBS	87		25 - 150	07/02/18 14:58	07/07/18 02:46	1
18O2 PFHxS	110		25 - 150	07/02/18 14:58	07/07/18 02:46	1
13C4 PFOS	104		25 - 150	07/02/18 14:58	07/07/18 02:46	1
13C8 FOSA	88		25 - 150	07/02/18 14:58	07/07/18 02:46	1
d3-NMeFOSAA	110		25 - 150	07/02/18 14:58	07/07/18 02:46	1
d5-NEtFOSAA	102		25 - 150	07/02/18 14:58	07/07/18 02:46	1
M2-6:2FTS	140		25 - 150	07/02/18 14:58	07/07/18 02:46	1
M2-8:2FTS	119		25 - 150	07/02/18 14:58	07/07/18 02:46	1

Client Sample ID: NF22-SS-01

Lab Sample ID: 320-40571-14
Date Collected: 06/19/18 17:05
Matrix: Solid
Date Received: 06/22/18 09:05
Percent Solids: 82.6

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND		0.00024	0.000034	mg/Kg	☼	06/28/18 05:15	07/14/18 04:59	1
Perfluoropentanoic acid (PFPeA)	ND		0.00024	0.000093	mg/Kg	☼	06/28/18 05:15	07/14/18 04:59	1
Perfluorohexanoic acid (PFHxA)	ND		0.00024	0.000050	mg/Kg	☼	06/28/18 05:15	07/14/18 04:59	1
Perfluoroheptanoic acid (PFHpA)	ND		0.00024	0.000035	mg/Kg	☼	06/28/18 05:15	07/14/18 04:59	1
Perfluorooctanoic acid (PFOA)	ND		0.00024	0.00010	mg/Kg	☼	06/28/18 05:15	07/14/18 04:59	1
Perfluorononanoic acid (PFNA)	ND		0.00024	0.000043	mg/Kg	☼	06/28/18 05:15	07/14/18 04:59	1
Perfluorodecanoic acid (PFDA)	ND		0.00024	0.000026	mg/Kg	☼	06/28/18 05:15	07/14/18 04:59	1
Perfluoroundecanoic acid (PFUnA)	ND		0.00024	0.000043	mg/Kg	☼	06/28/18 05:15	07/14/18 04:59	1
Perfluorododecanoic acid (PFDoA)	ND		0.00024	0.000081	mg/Kg	☼	06/28/18 05:15	07/14/18 04:59	1
Perfluorotridecanoic Acid (PFTriA)	ND		0.00024	0.000061	mg/Kg	☼	06/28/18 05:15	07/14/18 04:59	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.00024	0.000065	mg/Kg	☼	06/28/18 05:15	07/14/18 04:59	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.00024	0.000030	mg/Kg	☼	06/28/18 05:15	07/14/18 04:59	1
Perfluorohexanesulfonic acid (PFHxS)	ND		0.00024	0.000037	mg/Kg	☼	06/28/18 05:15	07/14/18 04:59	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.00024	0.000042	mg/Kg	☼	06/28/18 05:15	07/14/18 04:59	1
Perfluorooctanesulfonic acid (PFOS)	ND		0.00060	0.00024	mg/Kg	☼	06/28/18 05:15	07/14/18 04:59	1
Perfluorodecanesulfonic acid (PFDS)	ND		0.00024	0.000047	mg/Kg	☼	06/28/18 05:15	07/14/18 04:59	1
Perfluorooctane Sulfonamide (FOSA)	ND		0.00024	0.000099	mg/Kg	☼	06/28/18 05:15	07/14/18 04:59	1
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.0024	0.00047	mg/Kg	☼	06/28/18 05:15	07/14/18 04:59	1
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.0024	0.00044	mg/Kg	☼	06/28/18 05:15	07/14/18 04:59	1
6:2 FTS	ND		0.0024	0.00018	mg/Kg	☼	06/28/18 05:15	07/14/18 04:59	1
8:2 FTS	ND		0.0024	0.00030	mg/Kg	☼	06/28/18 05:15	07/14/18 04:59	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	82		25 - 150	06/28/18 05:15	07/14/18 04:59	1
13C5 PFPeA	87		25 - 150	06/28/18 05:15	07/14/18 04:59	1
13C2 PFHxA	86		25 - 150	06/28/18 05:15	07/14/18 04:59	1

Client Sample Results

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Client Sample ID: NF22-SS-01

Lab Sample ID: 320-40571-14
Date Collected: 06/19/18 17:05
Matrix: Solid
Date Received: 06/22/18 09:05
Percent Solids: 82.6

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4-PFHpA	91		25 - 150	06/28/18 05:15	07/14/18 04:59	1
13C4 PFOA	90		25 - 150	06/28/18 05:15	07/14/18 04:59	1
13C5 PFNA	80		25 - 150	06/28/18 05:15	07/14/18 04:59	1
13C2 PFDA	91		25 - 150	06/28/18 05:15	07/14/18 04:59	1
13C2 PFUnA	89		25 - 150	06/28/18 05:15	07/14/18 04:59	1
13C2 PFDoA	89		25 - 150	06/28/18 05:15	07/14/18 04:59	1
13C2-PFTeDA	90		25 - 150	06/28/18 05:15	07/14/18 04:59	1
13C3-PFBS	81		25 - 150	06/28/18 05:15	07/14/18 04:59	1
18O2 PFHxS	85		25 - 150	06/28/18 05:15	07/14/18 04:59	1
13C4 PFOS	78		25 - 150	06/28/18 05:15	07/14/18 04:59	1
13C8 FOSA	75		25 - 150	06/28/18 05:15	07/14/18 04:59	1
d3-NMeFOSAA	86		25 - 150	06/28/18 05:15	07/14/18 04:59	1
d5-NEtFOSAA	93		25 - 150	06/28/18 05:15	07/14/18 04:59	1
M2-6:2FTS	71		25 - 150	06/28/18 05:15	07/14/18 04:59	1
M2-8:2FTS	71		25 - 150	06/28/18 05:15	07/14/18 04:59	1

Client Sample ID: NF23-GW-01

Lab Sample ID: 320-40571-15
Date Collected: 06/19/18 14:40
Matrix: Water
Date Received: 06/22/18 09:05

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**0.0030**	**B**	0.0018	0.00031	ug/L		07/02/18 14:58	07/07/18 02:53	1
Perfluoropentanoic acid (PFPeA)	**0.0014**	**J**	0.0018	0.00043	ug/L		07/02/18 14:58	07/07/18 02:53	1
Perfluorohexanoic acid (PFHxA)	ND		0.0018	0.00051	ug/L		07/02/18 14:58	07/07/18 02:53	1
Perfluoroheptanoic acid (PFHpA)	ND		0.0018	0.00022	ug/L		07/02/18 14:58	07/07/18 02:53	1
Perfluorooctanoic acid (PFOA)	ND		0.0018	0.00075	ug/L		07/02/18 14:58	07/07/18 02:53	1
Perfluorononanoic acid (PFNA)	ND		0.0018	0.00024	ug/L		07/02/18 14:58	07/07/18 02:53	1
Perfluorodecanoic acid (PFDA)	ND		0.0018	0.00028	ug/L		07/02/18 14:58	07/07/18 02:53	1
Perfluoroundecanoic acid (PFUnA)	ND		0.0018	0.00098	ug/L		07/02/18 14:58	07/07/18 02:53	1
Perfluorododecanoic acid (PFDoA)	ND		0.0018	0.00049	ug/L		07/02/18 14:58	07/07/18 02:53	1
Perfluorotridecanoic Acid (PFTriA)	ND		0.0018	0.0012	ug/L		07/02/18 14:58	07/07/18 02:53	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.0018	0.00026	ug/L		07/02/18 14:58	07/07/18 02:53	1
Perfluorobutanesulfonic acid (PFBS)	**0.0017**	**J**	0.0018	0.00018	ug/L		07/02/18 14:58	07/07/18 02:53	1
Perfluoropentanesulfonic acid (PFPeS)	**0.00041**	**J**	0.0018	0.00027	ug/L		07/02/18 14:58	07/07/18 02:53	1
Perfluorohexanesulfonic acid (PFHxS)	**0.0013**	**J B**	0.0018	0.00015	ug/L		07/02/18 14:58	07/07/18 02:53	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.0018	0.00017	ug/L		07/02/18 14:58	07/07/18 02:53	1
Perfluorooctanesulfonic acid (PFOS)	**0.0016**	**J**	0.0018	0.00048	ug/L		07/02/18 14:58	07/07/18 02:53	1
Perfluorononanesulfonic acid (PFNS)	ND		0.0018	0.00014	ug/L		07/02/18 14:58	07/07/18 02:53	1
Perfluorodecanesulfonic acid (PFDS)	ND		0.0018	0.00028	ug/L		07/02/18 14:58	07/07/18 02:53	1
Perfluorooctane Sulfonamide (FOSA)	ND		0.0018	0.00031	ug/L		07/02/18 14:58	07/07/18 02:53	1
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.018	0.0028	ug/L		07/02/18 14:58	07/07/18 02:53	1
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.018	0.0017	ug/L		07/02/18 14:58	07/07/18 02:53	1
4:2 FTS	ND		0.018	0.0046	ug/L		07/02/18 14:58	07/07/18 02:53	1

Client Sample Results

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Client Sample ID: NF23-GW-01

Lab Sample ID: 320-40571-15
Date Collected: 06/19/18 14:40
Matrix: Water
Date Received: 06/22/18 09:05

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
6:2 FTS	**0.0035**	**J**	0.018	0.0018	ug/L		07/02/18 14:58	07/07/18 02:53	1
8:2 FTS	ND		0.018	0.0018	ug/L		07/02/18 14:58	07/07/18 02:53	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*59*		*25 - 150*	*07/02/18 14:58*	*07/07/18 02:53*	*1*
13C5 PFPeA	*76*		*25 - 150*	*07/02/18 14:58*	*07/07/18 02:53*	*1*
13C2 PFHxA	*91*		*25 - 150*	*07/02/18 14:58*	*07/07/18 02:53*	*1*
13C4-PFHpA	*101*		*25 - 150*	*07/02/18 14:58*	*07/07/18 02:53*	*1*
13C4 PFOA	*104*		*25 - 150*	*07/02/18 14:58*	*07/07/18 02:53*	*1*
13C5 PFNA	*99*		*25 - 150*	*07/02/18 14:58*	*07/07/18 02:53*	*1*
13C2 PFDA	*110*		*25 - 150*	*07/02/18 14:58*	*07/07/18 02:53*	*1*
13C2 PFUnA	*104*		*25 - 150*	*07/02/18 14:58*	*07/07/18 02:53*	*1*
13C2 PFDoA	*92*		*25 - 150*	*07/02/18 14:58*	*07/07/18 02:53*	*1*
13C2-PFTeDA	*78*		*25 - 150*	*07/02/18 14:58*	*07/07/18 02:53*	*1*
13C3-PFBS	*86*		*25 - 150*	*07/02/18 14:58*	*07/07/18 02:53*	*1*
18O2 PFHxS	*112*		*25 - 150*	*07/02/18 14:58*	*07/07/18 02:53*	*1*
13C4 PFOS	*102*		*25 - 150*	*07/02/18 14:58*	*07/07/18 02:53*	*1*
13C8 FOSA	*90*		*25 - 150*	*07/02/18 14:58*	*07/07/18 02:53*	*1*
d3-NMeFOSAA	*112*		*25 - 150*	*07/02/18 14:58*	*07/07/18 02:53*	*1*
d5-NEtFOSAA	*105*		*25 - 150*	*07/02/18 14:58*	*07/07/18 02:53*	*1*
M2-6:2FTS	*138*		*25 - 150*	*07/02/18 14:58*	*07/07/18 02:53*	*1*
M2-8:2FTS	*134*		*25 - 150*	*07/02/18 14:58*	*07/07/18 02:53*	*1*

Client Sample ID: NF23-SS-01

Lab Sample ID: 320-40571-16
Date Collected: 06/19/18 13:40
Matrix: Solid
Date Received: 06/22/18 09:05
Percent Solids: 81.9

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**0.000049**	**J**	0.00024	0.000034	mg/Kg	☼	06/28/18 05:15	07/14/18 05:07	1
Perfluoropentanoic acid (PFPeA)	ND		0.00024	0.000092	mg/Kg	☼	06/28/18 05:15	07/14/18 05:07	1
Perfluorohexanoic acid (PFHxA)	ND		0.00024	0.000050	mg/Kg	☼	06/28/18 05:15	07/14/18 05:07	1
Perfluoroheptanoic acid (PFHpA)	ND		0.00024	0.000035	mg/Kg	☼	06/28/18 05:15	07/14/18 05:07	1
Perfluorooctanoic acid (PFOA)	ND		0.00024	0.00010	mg/Kg	☼	06/28/18 05:15	07/14/18 05:07	1
Perfluorononanoic acid (PFNA)	ND		0.00024	0.000043	mg/Kg	☼	06/28/18 05:15	07/14/18 05:07	1
Perfluorodecanoic acid (PFDA)	ND		0.00024	0.000026	mg/Kg	☼	06/28/18 05:15	07/14/18 05:07	1
Perfluoroundecanoic acid (PFUnA)	ND		0.00024	0.000043	mg/Kg	☼	06/28/18 05:15	07/14/18 05:07	1
Perfluorododecanoic acid (PFDoA)	ND		0.00024	0.000080	mg/Kg	☼	06/28/18 05:15	07/14/18 05:07	1
Perfluorotridecanoic Acid (PFTriA)	ND		0.00024	0.000061	mg/Kg	☼	06/28/18 05:15	07/14/18 05:07	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.00024	0.000065	mg/Kg	☼	06/28/18 05:15	07/14/18 05:07	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.00024	0.000030	mg/Kg	☼	06/28/18 05:15	07/14/18 05:07	1
Perfluorohexanesulfonic acid (PFHxS)	ND		0.00024	0.000037	mg/Kg	☼	06/28/18 05:15	07/14/18 05:07	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.00024	0.000042	mg/Kg	☼	06/28/18 05:15	07/14/18 05:07	1
Perfluorooctanesulfonic acid (PFOS)	ND		0.00060	0.00024	mg/Kg	☼	06/28/18 05:15	07/14/18 05:07	1
Perfluorodecanesulfonic acid (PFDS)	ND		0.00024	0.000047	mg/Kg	☼	06/28/18 05:15	07/14/18 05:07	1
Perfluorooctane Sulfonamide (FOSA)	ND		0.00024	0.000098	mg/Kg	☼	06/28/18 05:15	07/14/18 05:07	1
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.0024	0.00047	mg/Kg	☼	06/28/18 05:15	07/14/18 05:07	1
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.0024	0.00044	mg/Kg	☼	06/28/18 05:15	07/14/18 05:07	1

Client Sample Results

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Client Sample ID: NF23-SS-01

Lab Sample ID: 320-40571-16
Date Collected: 06/19/18 13:40
Matrix: Solid
Date Received: 06/22/18 09:05
Percent Solids: 81.9

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
6:2 FTS	ND		0.0024	0.00018	mg/Kg	☼	06/28/18 05:15	07/14/18 05:07	1
8:2 FTS	ND		0.0024	0.00030	mg/Kg	☼	06/28/18 05:15	07/14/18 05:07	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*78*		*25 - 150*	*06/28/18 05:15*	*07/14/18 05:07*	*1*
13C5 PFPeA	*83*		*25 - 150*	*06/28/18 05:15*	*07/14/18 05:07*	*1*
13C2 PFHxA	*87*		*25 - 150*	*06/28/18 05:15*	*07/14/18 05:07*	*1*
13C4-PFHpA	*89*		*25 - 150*	*06/28/18 05:15*	*07/14/18 05:07*	*1*
13C4 PFOA	*86*		*25 - 150*	*06/28/18 05:15*	*07/14/18 05:07*	*1*
13C5 PFNA	*86*		*25 - 150*	*06/28/18 05:15*	*07/14/18 05:07*	*1*
13C2 PFDA	*95*		*25 - 150*	*06/28/18 05:15*	*07/14/18 05:07*	*1*
13C2 PFUnA	*88*		*25 - 150*	*06/28/18 05:15*	*07/14/18 05:07*	*1*
13C2 PFDoA	*87*		*25 - 150*	*06/28/18 05:15*	*07/14/18 05:07*	*1*
13C2-PFTeDA	*79*		*25 - 150*	*06/28/18 05:15*	*07/14/18 05:07*	*1*
13C3-PFBS	*76*		*25 - 150*	*06/28/18 05:15*	*07/14/18 05:07*	*1*
18O2 PFHxS	*81*		*25 - 150*	*06/28/18 05:15*	*07/14/18 05:07*	*1*
13C4 PFOS	*75*		*25 - 150*	*06/28/18 05:15*	*07/14/18 05:07*	*1*
13C8 FOSA	*76*		*25 - 150*	*06/28/18 05:15*	*07/14/18 05:07*	*1*
d3-NMeFOSAA	*110*		*25 - 150*	*06/28/18 05:15*	*07/14/18 05:07*	*1*
d5-NEtFOSAA	*101*		*25 - 150*	*06/28/18 05:15*	*07/14/18 05:07*	*1*
M2-6:2FTS	*80*		*25 - 150*	*06/28/18 05:15*	*07/14/18 05:07*	*1*
M2-8:2FTS	*89*		*25 - 150*	*06/28/18 05:15*	*07/14/18 05:07*	*1*

Client Sample ID: NF24-GW-01

Lab Sample ID: 320-40571-17
Date Collected: 06/20/18 10:10
Matrix: Water
Date Received: 06/22/18 09:05

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**0.0036**	**B**	0.0019	0.00033	ug/L		07/02/18 14:58	07/13/18 21:09	1
Perfluoropentanoic acid (PFPeA)	ND		0.0019	0.00046	ug/L		07/02/18 14:58	07/13/18 21:09	1
Perfluorohexanoic acid (PFHxA)	ND		0.0019	0.00054	ug/L		07/02/18 14:58	07/13/18 21:09	1
Perfluoroheptanoic acid (PFHpA)	ND		0.0019	0.00023	ug/L		07/02/18 14:58	07/13/18 21:09	1
Perfluorooctanoic acid (PFOA)	**0.0012**	**J**	0.0019	0.00079	ug/L		07/02/18 14:58	07/13/18 21:09	1
Perfluorononanoic acid (PFNA)	**0.00074**	**J**	0.0019	0.00025	ug/L		07/02/18 14:58	07/13/18 21:09	1
Perfluorodecanoic acid (PFDA)	ND		0.0019	0.00029	ug/L		07/02/18 14:58	07/13/18 21:09	1
Perfluoroundecanoic acid (PFUnA)	ND		0.0019	0.0010	ug/L		07/02/18 14:58	07/13/18 21:09	1
Perfluorododecanoic acid (PFDoA)	ND		0.0019	0.00051	ug/L		07/02/18 14:58	07/13/18 21:09	1
Perfluorotridecanoic Acid (PFTriA)	ND		0.0019	0.0012	ug/L		07/02/18 14:58	07/13/18 21:09	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.0019	0.00027	ug/L		07/02/18 14:58	07/13/18 21:09	1
Perfluorobutanesulfonic acid (PFBS)	**0.0040**		0.0019	0.00019	ug/L		07/02/18 14:58	07/13/18 21:09	1
Perfluoropentanesulfonic acid (PFPeS)	ND		0.0019	0.00028	ug/L		07/02/18 14:58	07/13/18 21:09	1
Perfluorohexanesulfonic acid (PFHxS)	**0.00081**	**J B**	0.0019	0.00016	ug/L		07/02/18 14:58	07/13/18 21:09	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.0019	0.00018	ug/L		07/02/18 14:58	07/13/18 21:09	1
Perfluorooctanesulfonic acid (PFOS)	**0.011**		0.0019	0.00050	ug/L		07/02/18 14:58	07/13/18 21:09	1
Perfluorononanesulfonic acid (PFNS)	ND		0.0019	0.00015	ug/L		07/02/18 14:58	07/13/18 21:09	1
Perfluorodecanesulfonic acid (PFDS)	ND		0.0019	0.00030	ug/L		07/02/18 14:58	07/13/18 21:09	1

Client Sample Results

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Client Sample ID: NF24-GW-01

Lab Sample ID: 320-40571-17
Date Collected: 06/20/18 10:10
Matrix: Water
Date Received: 06/22/18 09:05

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctane Sulfonamide (FOSA)	ND		0.0019	0.00033	ug/L		07/02/18 14:58	07/13/18 21:09	1
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.019	0.0029	ug/L		07/02/18 14:58	07/13/18 21:09	1
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.019	0.0018	ug/L		07/02/18 14:58	07/13/18 21:09	1
4:2 FTS	ND		0.019	0.0048	ug/L		07/02/18 14:58	07/13/18 21:09	1
6:2 FTS	**0.0028**	**J**	0.019	0.0019	ug/L		07/02/18 14:58	07/13/18 21:09	1
8:2 FTS	ND		0.019	0.0019	ug/L		07/02/18 14:58	07/13/18 21:09	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*60*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:09*	*1*
13C5 PFPeA	*78*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:09*	*1*
13C2 PFHxA	*87*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:09*	*1*
13C4-PFHpA	*97*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:09*	*1*
13C4 PFOA	*99*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:09*	*1*
13C5 PFNA	*95*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:09*	*1*
13C2 PFDA	*94*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:09*	*1*
13C2 PFUnA	*89*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:09*	*1*
13C2 PFDoA	*81*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:09*	*1*
13C2-PFTeDA	*52*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:09*	*1*
13C3-PFBS	*84*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:09*	*1*
18O2 PFHxS	*91*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:09*	*1*
13C4 PFOS	*90*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:09*	*1*
13C8 FOSA	*79*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:09*	*1*
d3-NMeFOSAA	*89*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:09*	*1*
d5-NEtFOSAA	*87*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:09*	*1*
M2-6:2FTS	*134*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:09*	*1*
M2-8:2FTS	*89*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:09*	*1*

Client Sample ID: NF24-SS-02

Lab Sample ID: 320-40571-18
Date Collected: 06/20/18 09:15
Matrix: Solid
Date Received: 06/22/18 09:05
Percent Solids: 83.6

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**0.000039**	**J**	0.00024	0.000033	mg/Kg	☼	06/28/18 05:15	07/14/18 05:15	1
Perfluoropentanoic acid (PFPeA)	ND		0.00024	0.000092	mg/Kg	☼	06/28/18 05:15	07/14/18 05:15	1
Perfluorohexanoic acid (PFHxA)	ND		0.00024	0.000050	mg/Kg	☼	06/28/18 05:15	07/14/18 05:15	1
Perfluoroheptanoic acid (PFHpA)	ND		0.00024	0.000035	mg/Kg	☼	06/28/18 05:15	07/14/18 05:15	1
Perfluorooctanoic acid (PFOA)	ND		0.00024	0.00010	mg/Kg	☼	06/28/18 05:15	07/14/18 05:15	1
Perfluorononanoic acid (PFNA)	ND		0.00024	0.000043	mg/Kg	☼	06/28/18 05:15	07/14/18 05:15	1
Perfluorodecanoic acid (PFDA)	ND		0.00024	0.000026	mg/Kg	☼	06/28/18 05:15	07/14/18 05:15	1
Perfluoroundecanoic acid (PFUnA)	ND		0.00024	0.000043	mg/Kg	☼	06/28/18 05:15	07/14/18 05:15	1
Perfluorododecanoic acid (PFDoA)	ND		0.00024	0.000080	mg/Kg	☼	06/28/18 05:15	07/14/18 05:15	1
Perfluorotridecanoic Acid (PFTriA)	ND		0.00024	0.000061	mg/Kg	☼	06/28/18 05:15	07/14/18 05:15	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.00024	0.000064	mg/Kg	☼	06/28/18 05:15	07/14/18 05:15	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.00024	0.000030	mg/Kg	☼	06/28/18 05:15	07/14/18 05:15	1
Perfluorohexanesulfonic acid (PFHxS)	ND		0.00024	0.000037	mg/Kg	☼	06/28/18 05:15	07/14/18 05:15	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.00024	0.000042	mg/Kg	☼	06/28/18 05:15	07/14/18 05:15	1
Perfluorooctanesulfonic acid (PFOS)	ND		0.00060	0.00024	mg/Kg	☼	06/28/18 05:15	07/14/18 05:15	1

Client Sample Results

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Client Sample ID: NF24-SS-02

Lab Sample ID: 320-40571-18
Date Collected: 06/20/18 09:15
Matrix: Solid
Date Received: 06/22/18 09:05
Percent Solids: 83.6

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorodecanesulfonic acid (PFDS)	ND		0.00024	0.000046	mg/Kg	☼	06/28/18 05:15	07/14/18 05:15	1
Perfluorooctane Sulfonamide (FOSA)	ND		0.00024	0.000098	mg/Kg	☼	06/28/18 05:15	07/14/18 05:15	1
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.0024	0.00046	mg/Kg	☼	06/28/18 05:15	07/14/18 05:15	1
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.0024	0.00044	mg/Kg	☼	06/28/18 05:15	07/14/18 05:15	1
6:2 FTS	ND		0.0024	0.00018	mg/Kg	☼	06/28/18 05:15	07/14/18 05:15	1
8:2 FTS	ND		0.0024	0.00030	mg/Kg	☼	06/28/18 05:15	07/14/18 05:15	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*83*		*25 - 150*	*06/28/18 05:15*	*07/14/18 05:15*	*1*
13C5 PFPeA	*87*		*25 - 150*	*06/28/18 05:15*	*07/14/18 05:15*	*1*
13C2 PFHxA	*89*		*25 - 150*	*06/28/18 05:15*	*07/14/18 05:15*	*1*
13C4-PFHpA	*94*		*25 - 150*	*06/28/18 05:15*	*07/14/18 05:15*	*1*
13C4 PFOA	*91*		*25 - 150*	*06/28/18 05:15*	*07/14/18 05:15*	*1*
13C5 PFNA	*84*		*25 - 150*	*06/28/18 05:15*	*07/14/18 05:15*	*1*
13C2 PFDA	*95*		*25 - 150*	*06/28/18 05:15*	*07/14/18 05:15*	*1*
13C2 PFUnA	*87*		*25 - 150*	*06/28/18 05:15*	*07/14/18 05:15*	*1*
13C2 PFDoA	*89*		*25 - 150*	*06/28/18 05:15*	*07/14/18 05:15*	*1*
13C2-PFTeDA	*92*		*25 - 150*	*06/28/18 05:15*	*07/14/18 05:15*	*1*
13C3-PFBS	*84*		*25 - 150*	*06/28/18 05:15*	*07/14/18 05:15*	*1*
18O2 PFHxS	*86*		*25 - 150*	*06/28/18 05:15*	*07/14/18 05:15*	*1*
13C4 PFOS	*83*		*25 - 150*	*06/28/18 05:15*	*07/14/18 05:15*	*1*
13C8 FOSA	*77*		*25 - 150*	*06/28/18 05:15*	*07/14/18 05:15*	*1*
d3-NMeFOSAA	*83*		*25 - 150*	*06/28/18 05:15*	*07/14/18 05:15*	*1*
d5-NEtFOSAA	*94*		*25 - 150*	*06/28/18 05:15*	*07/14/18 05:15*	*1*
M2-6:2FTS	*74*		*25 - 150*	*06/28/18 05:15*	*07/14/18 05:15*	*1*
M2-8:2FTS	*85*		*25 - 150*	*06/28/18 05:15*	*07/14/18 05:15*	*1*

Client Sample ID: NF25-GW-01

Lab Sample ID: 320-40571-19
Date Collected: 06/19/18 11:37
Matrix: Water
Date Received: 06/22/18 09:05

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**0.017**	**B**	0.0018	0.00031	ug/L		07/02/18 14:58	07/13/18 21:17	1
Perfluoropentanoic acid (PFPeA)	**0.0086**		0.0018	0.00043	ug/L		07/02/18 14:58	07/13/18 21:17	1
Perfluorohexanoic acid (PFHxA)	**0.0060**		0.0018	0.00051	ug/L		07/02/18 14:58	07/13/18 21:17	1
Perfluoroheptanoic acid (PFHpA)	**0.0038**		0.0018	0.00022	ug/L		07/02/18 14:58	07/13/18 21:17	1
Perfluorooctanoic acid (PFOA)	**0.011**		0.0018	0.00075	ug/L		07/02/18 14:58	07/13/18 21:17	1
Perfluorononanoic acid (PFNA)	**0.00089**	**J**	0.0018	0.00024	ug/L		07/02/18 14:58	07/13/18 21:17	1
Perfluorodecanoic acid (PFDA)	ND		0.0018	0.00027	ug/L		07/02/18 14:58	07/13/18 21:17	1
Perfluoroundecanoic acid (PFUnA)	ND		0.0018	0.00097	ug/L		07/02/18 14:58	07/13/18 21:17	1
Perfluorododecanoic acid (PFDoA)	ND		0.0018	0.00049	ug/L		07/02/18 14:58	07/13/18 21:17	1
Perfluorotridecanoic Acid (PFTriA)	ND		0.0018	0.0011	ug/L		07/02/18 14:58	07/13/18 21:17	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.0018	0.00026	ug/L		07/02/18 14:58	07/13/18 21:17	1
Perfluorobutanesulfonic acid (PFBS)	**0.0074**		0.0018	0.00018	ug/L		07/02/18 14:58	07/13/18 21:17	1
Perfluoropentanesulfonic acid (PFPeS)	ND		0.0018	0.00026	ug/L		07/02/18 14:58	07/13/18 21:17	1
Perfluorohexanesulfonic acid (PFHxS)	**0.0026**	**B**	0.0018	0.00015	ug/L		07/02/18 14:58	07/13/18 21:17	1

Client Sample Results

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Client Sample ID: NF25-GW-01

Lab Sample ID: 320-40571-19

Date Collected: 06/19/18 11:37
Matrix: Water
Date Received: 06/22/18 09:05

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.0018	0.00017	ug/L		07/02/18 14:58	07/13/18 21:17	1
Perfluorooctanesulfonic acid (PFOS)	**0.0026**		0.0018	0.00048	ug/L		07/02/18 14:58	07/13/18 21:17	1
Perfluorononanesulfonic acid (PFNS)	ND		0.0018	0.00014	ug/L		07/02/18 14:58	07/13/18 21:17	1
Perfluorodecanesulfonic acid (PFDS)	ND		0.0018	0.00028	ug/L		07/02/18 14:58	07/13/18 21:17	1
Perfluorooctane Sulfonamide (FOSA)	ND		0.0018	0.00031	ug/L		07/02/18 14:58	07/13/18 21:17	1
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.018	0.0027	ug/L		07/02/18 14:58	07/13/18 21:17	1
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.018	0.0017	ug/L		07/02/18 14:58	07/13/18 21:17	1
4:2 FTS	ND		0.018	0.0046	ug/L		07/02/18 14:58	07/13/18 21:17	1
6:2 FTS	ND		0.018	0.0018	ug/L		07/02/18 14:58	07/13/18 21:17	1
8:2 FTS	ND		0.018	0.0018	ug/L		07/02/18 14:58	07/13/18 21:17	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*43*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:17*	*1*
13C5 PFPeA	*68*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:17*	*1*
13C2 PFHxA	*68*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:17*	*1*
13C4-PFHpA	*97*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:17*	*1*
13C4 PFOA	*102*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:17*	*1*
13C5 PFNA	*97*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:17*	*1*
13C2 PFDA	*96*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:17*	*1*
13C2 PFUnA	*95*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:17*	*1*
13C2 PFDoA	*86*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:17*	*1*
13C2-PFTeDA	*59*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:17*	*1*
13C3-PFBS	*81*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:17*	*1*
18O2 PFHxS	*97*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:17*	*1*
13C4 PFOS	*95*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:17*	*1*
13C8 FOSA	*79*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:17*	*1*
d3-NMeFOSAA	*92*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:17*	*1*
d5-NEtFOSAA	*92*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:17*	*1*
M2-6:2FTS	*137*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:17*	*1*
M2-8:2FTS	*87*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:17*	*1*

Client Sample ID: NF25-SS-02

Lab Sample ID: 320-40571-20

Date Collected: 06/19/18 09:35
Matrix: Solid
Date Received: 06/22/18 09:05
Percent Solids: 81.6

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**0.000034**	**J**	0.00025	0.000034	mg/Kg	☼	06/28/18 05:15	07/14/18 05:23	1
Perfluoropentanoic acid (PFPeA)	ND		0.00025	0.000094	mg/Kg	☼	06/28/18 05:15	07/14/18 05:23	1
Perfluorohexanoic acid (PFHxA)	ND		0.00025	0.000051	mg/Kg	☼	06/28/18 05:15	07/14/18 05:23	1
Perfluoroheptanoic acid (PFHpA)	ND		0.00025	0.000036	mg/Kg	☼	06/28/18 05:15	07/14/18 05:23	1
Perfluorooctanoic acid (PFOA)	ND		0.00025	0.00011	mg/Kg	☼	06/28/18 05:15	07/14/18 05:23	1
Perfluorononanoic acid (PFNA)	ND		0.00025	0.000044	mg/Kg	☼	06/28/18 05:15	07/14/18 05:23	1
Perfluorodecanoic acid (PFDA)	ND		0.00025	0.000027	mg/Kg	☼	06/28/18 05:15	07/14/18 05:23	1
Perfluoroundecanoic acid (PFUnA)	ND		0.00025	0.000044	mg/Kg	☼	06/28/18 05:15	07/14/18 05:23	1
Perfluorododecanoic acid (PFDoA)	ND		0.00025	0.000082	mg/Kg	☼	06/28/18 05:15	07/14/18 05:23	1
Perfluorotridecanoic Acid (PFTriA)	ND		0.00025	0.000063	mg/Kg	☼	06/28/18 05:15	07/14/18 05:23	1

Client Sample Results

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Client Sample ID: NF25-SS-02

Date Collected: 06/19/18 09:35
Date Received: 06/22/18 09:05

Lab Sample ID: 320-40571-20

Matrix: Solid
Percent Solids: 81.6

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorotetradecanoic acid (PFTeA)	ND		0.00025	0.000066	mg/Kg	☼	06/28/18 05:15	07/14/18 05:23	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.00025	0.000031	mg/Kg	☼	06/28/18 05:15	07/14/18 05:23	1
Perfluorohexanesulfonic acid (PFHxS)	ND		0.00025	0.000038	mg/Kg	☼	06/28/18 05:15	07/14/18 05:23	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.00025	0.000043	mg/Kg	☼	06/28/18 05:15	07/14/18 05:23	1
Perfluorooctanesulfonic acid (PFOS)	ND		0.00061	0.00025	mg/Kg	☼	06/28/18 05:15	07/14/18 05:23	1
Perfluorodecanesulfonic acid (PFDS)	ND		0.00025	0.000048	mg/Kg	☼	06/28/18 05:15	07/14/18 05:23	1
Perfluorooctane Sulfonamide (FOSA)	ND		0.00025	0.00010	mg/Kg	☼	06/28/18 05:15	07/14/18 05:23	1
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.0025	0.00048	mg/Kg	☼	06/28/18 05:15	07/14/18 05:23	1
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.0025	0.00045	mg/Kg	☼	06/28/18 05:15	07/14/18 05:23	1
6:2 FTS	ND		0.0025	0.00018	mg/Kg	☼	06/28/18 05:15	07/14/18 05:23	1
8:2 FTS	ND		0.0025	0.00031	mg/Kg	☼	06/28/18 05:15	07/14/18 05:23	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*54*		*25 - 150*	*06/28/18 05:15*	*07/14/18 05:23*	*1*
13C5 PFPeA	*56*		*25 - 150*	*06/28/18 05:15*	*07/14/18 05:23*	*1*
13C2 PFHxA	*56*		*25 - 150*	*06/28/18 05:15*	*07/14/18 05:23*	*1*
13C4-PFHpA	*60*		*25 - 150*	*06/28/18 05:15*	*07/14/18 05:23*	*1*
13C4 PFOA	*58*		*25 - 150*	*06/28/18 05:15*	*07/14/18 05:23*	*1*
13C5 PFNA	*54*		*25 - 150*	*06/28/18 05:15*	*07/14/18 05:23*	*1*
13C2 PFDA	*61*		*25 - 150*	*06/28/18 05:15*	*07/14/18 05:23*	*1*
13C2 PFUnA	*64*		*25 - 150*	*06/28/18 05:15*	*07/14/18 05:23*	*1*
13C2 PFDoA	*66*		*25 - 150*	*06/28/18 05:15*	*07/14/18 05:23*	*1*
13C2-PFTeDA	*69*		*25 - 150*	*06/28/18 05:15*	*07/14/18 05:23*	*1*
13C3-PFBS	*51*		*25 - 150*	*06/28/18 05:15*	*07/14/18 05:23*	*1*
18O2 PFHxS	*51*		*25 - 150*	*06/28/18 05:15*	*07/14/18 05:23*	*1*
13C4 PFOS	*49*		*25 - 150*	*06/28/18 05:15*	*07/14/18 05:23*	*1*
13C8 FOSA	*51*		*25 - 150*	*06/28/18 05:15*	*07/14/18 05:23*	*1*
d3-NMeFOSAA	*60*		*25 - 150*	*06/28/18 05:15*	*07/14/18 05:23*	*1*
d5-NEtFOSAA	*68*		*25 - 150*	*06/28/18 05:15*	*07/14/18 05:23*	*1*
M2-6:2FTS	*42*		*25 - 150*	*06/28/18 05:15*	*07/14/18 05:23*	*1*
M2-8:2FTS	*49*		*25 - 150*	*06/28/18 05:15*	*07/14/18 05:23*	*1*

Client Sample ID: NF26-GW-01

Date Collected: 06/20/18 16:30
Date Received: 06/22/18 09:05

Lab Sample ID: 320-40571-21

Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**0.44**	**B**	0.0024	0.00041	ug/L		07/02/18 14:58	07/13/18 21:25	1
Perfluoropentanoic acid (PFPeA)	**0.28**		0.0024	0.00058	ug/L		07/02/18 14:58	07/13/18 21:25	1
Perfluorohexanoic acid (PFHxA)	**0.16**		0.0024	0.00069	ug/L		07/02/18 14:58	07/13/18 21:25	1
Perfluoroheptanoic acid (PFHpA)	**0.068**		0.0024	0.00030	ug/L		07/02/18 14:58	07/13/18 21:25	1
Perfluorooctanoic acid (PFOA)	**0.061**		0.0024	0.0010	ug/L		07/02/18 14:58	07/13/18 21:25	1
Perfluorononanoic acid (PFNA)	**0.0032**		0.0024	0.00032	ug/L		07/02/18 14:58	07/13/18 21:25	1
Perfluorodecanoic acid (PFDA)	**0.0075**		0.0024	0.00037	ug/L		07/02/18 14:58	07/13/18 21:25	1
Perfluoroundecanoic acid (PFUnA)	**0.0019**	**J**	0.0024	0.0013	ug/L		07/02/18 14:58	07/13/18 21:25	1
Perfluorododecanoic acid (PFDoA)	**0.0021**	**J**	0.0024	0.00065	ug/L		07/02/18 14:58	07/13/18 21:25	1

Client Sample Results

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Client Sample ID: NF26-GW-01

Lab Sample ID: 320-40571-21

Date Collected: 06/20/18 16:30
Matrix: Water
Date Received: 06/22/18 09:05

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorotridecanoic Acid (PFTriA)	ND		0.0024	0.0015	ug/L		07/02/18 14:58	07/13/18 21:25	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.0024	0.00034	ug/L		07/02/18 14:58	07/13/18 21:25	1
Perfluorobutanesulfonic acid (PFBS)	**0.40**		0.0024	0.00024	ug/L		07/02/18 14:58	07/13/18 21:25	1
Perfluoropentanesulfonic acid (PFPeS)	**0.0028**		0.0024	0.00035	ug/L		07/02/18 14:58	07/13/18 21:25	1
Perfluorohexanesulfonic acid (PFHxS)	**0.039**	**B**	0.0024	0.00020	ug/L		07/02/18 14:58	07/13/18 21:25	1
Perfluoroheptanesulfonic Acid (PFHpS)	**0.00078**	**J**	0.0024	0.00022	ug/L		07/02/18 14:58	07/13/18 21:25	1
Perfluorooctanesulfonic acid (PFOS)	**0.023**		0.0024	0.00064	ug/L		07/02/18 14:58	07/13/18 21:25	1
Perfluorononanesulfonic acid (PFNS)	ND		0.0024	0.00019	ug/L		07/02/18 14:58	07/13/18 21:25	1
Perfluorodecanesulfonic acid (PFDS)	ND		0.0024	0.00038	ug/L		07/02/18 14:58	07/13/18 21:25	1
Perfluorooctane Sulfonamide (FOSA)	**0.00060**	**J**	0.0024	0.00041	ug/L		07/02/18 14:58	07/13/18 21:25	1
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.024	0.0037	ug/L		07/02/18 14:58	07/13/18 21:25	1
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.024	0.0022	ug/L		07/02/18 14:58	07/13/18 21:25	1
4:2 FTS	ND		0.024	0.0061	ug/L		07/02/18 14:58	07/13/18 21:25	1
6:2 FTS	**0.0090**	**J**	0.024	0.0024	ug/L		07/02/18 14:58	07/13/18 21:25	1
8:2 FTS	ND		0.024	0.0024	ug/L		07/02/18 14:58	07/13/18 21:25	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*54*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:25*	*1*
13C5 PFPeA	*78*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:25*	*1*
13C2 PFHxA	*86*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:25*	*1*
13C4-PFHpA	*110*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:25*	*1*
13C4 PFOA	*105*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:25*	*1*
13C5 PFNA	*108*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:25*	*1*
13C2 PFDA	*118*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:25*	*1*
13C2 PFUnA	*113*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:25*	*1*
13C2 PFDoA	*110*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:25*	*1*
13C2-PFTeDA	*108*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:25*	*1*
13C3-PFBS	*99*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:25*	*1*
18O2 PFHxS	*112*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:25*	*1*
13C4 PFOS	*108*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:25*	*1*
13C8 FOSA	*99*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:25*	*1*
d3-NMeFOSAA	*116*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:25*	*1*
d5-NEtFOSAA	*116*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:25*	*1*
M2-6:2FTS	*175*	*	*25 - 150*	*07/02/18 14:58*	*07/13/18 21:25*	*1*
M2-8:2FTS	*112*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:25*	*1*

Client Sample ID: NF26-SS-02

Lab Sample ID: 320-40571-22

Date Collected: 06/19/18 10:50
Matrix: Solid
Date Received: 06/22/18 09:05
Percent Solids: 80.0

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**0.000072**	**J**	0.00025	0.000035	mg/Kg	☼	06/28/18 05:15	07/14/18 05:31	1
Perfluoropentanoic acid (PFPeA)	ND		0.00025	0.000095	mg/Kg	☼	06/28/18 05:15	07/14/18 05:31	1

Client Sample Results

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Client Sample ID: NF26-SS-02

Date Collected: 06/19/18 10:50
Date Received: 06/22/18 09:05

Lab Sample ID: 320-40571-22

Matrix: Solid
Percent Solids: 80.0

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	**0.000064**	**J**	0.00025	0.000052	mg/Kg	☼	06/28/18 05:15	07/14/18 05:31	1
Perfluoroheptanoic acid (PFHpA)	ND		0.00025	0.000036	mg/Kg	☼	06/28/18 05:15	07/14/18 05:31	1
Perfluorooctanoic acid (PFOA)	ND		0.00025	0.00011	mg/Kg	☼	06/28/18 05:15	07/14/18 05:31	1
Perfluorononanoic acid (PFNA)	ND		0.00025	0.000045	mg/Kg	☼	06/28/18 05:15	07/14/18 05:31	1
Perfluorodecanoic acid (PFDA)	ND		0.00025	0.000027	mg/Kg	☼	06/28/18 05:15	07/14/18 05:31	1
Perfluoroundecanoic acid (PFUnA)	ND		0.00025	0.000045	mg/Kg	☼	06/28/18 05:15	07/14/18 05:31	1
Perfluorododecanoic acid (PFDoA)	ND		0.00025	0.000083	mg/Kg	☼	06/28/18 05:15	07/14/18 05:31	1
Perfluorotridecanoic Acid (PFTriA)	ND		0.00025	0.000063	mg/Kg	☼	06/28/18 05:15	07/14/18 05:31	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.00025	0.000067	mg/Kg	☼	06/28/18 05:15	07/14/18 05:31	1
Perfluorobutanesulfonic acid (PFBS)	**0.00015**	**J**	0.00025	0.000031	mg/Kg	☼	06/28/18 05:15	07/14/18 05:31	1
Perfluorohexanesulfonic acid (PFHxS)	ND		0.00025	0.000038	mg/Kg	☼	06/28/18 05:15	07/14/18 05:31	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.00025	0.000043	mg/Kg	☼	06/28/18 05:15	07/14/18 05:31	1
Perfluorooctanesulfonic acid (PFOS)	ND		0.00062	0.00025	mg/Kg	☼	06/28/18 05:15	07/14/18 05:31	1
Perfluorodecanesulfonic acid (PFDS)	ND		0.00025	0.000048	mg/Kg	☼	06/28/18 05:15	07/14/18 05:31	1
Perfluorooctane Sulfonamide (FOSA)	ND		0.00025	0.00010	mg/Kg	☼	06/28/18 05:15	07/14/18 05:31	1
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.0025	0.00048	mg/Kg	☼	06/28/18 05:15	07/14/18 05:31	1
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.0025	0.00046	mg/Kg	☼	06/28/18 05:15	07/14/18 05:31	1
6:2 FTS	ND		0.0025	0.00019	mg/Kg	☼	06/28/18 05:15	07/14/18 05:31	1
8:2 FTS	ND		0.0025	0.00031	mg/Kg	☼	06/28/18 05:15	07/14/18 05:31	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*99*		*25 - 150*	*06/28/18 05:15*	*07/14/18 05:31*	*1*
13C5 PFPeA	*105*		*25 - 150*	*06/28/18 05:15*	*07/14/18 05:31*	*1*
13C2 PFHxA	*109*		*25 - 150*	*06/28/18 05:15*	*07/14/18 05:31*	*1*
13C4-PFHpA	*109*		*25 - 150*	*06/28/18 05:15*	*07/14/18 05:31*	*1*
13C4 PFOA	*103*		*25 - 150*	*06/28/18 05:15*	*07/14/18 05:31*	*1*
13C5 PFNA	*102*		*25 - 150*	*06/28/18 05:15*	*07/14/18 05:31*	*1*
13C2 PFDA	*113*		*25 - 150*	*06/28/18 05:15*	*07/14/18 05:31*	*1*
13C2 PFUnA	*104*		*25 - 150*	*06/28/18 05:15*	*07/14/18 05:31*	*1*
13C2 PFDoA	*96*		*25 - 150*	*06/28/18 05:15*	*07/14/18 05:31*	*1*
13C2-PFTeDA	*102*		*25 - 150*	*06/28/18 05:15*	*07/14/18 05:31*	*1*
13C3-PFBS	*92*		*25 - 150*	*06/28/18 05:15*	*07/14/18 05:31*	*1*
18O2 PFHxS	*95*		*25 - 150*	*06/28/18 05:15*	*07/14/18 05:31*	*1*
13C4 PFOS	*88*		*25 - 150*	*06/28/18 05:15*	*07/14/18 05:31*	*1*
13C8 FOSA	*82*		*25 - 150*	*06/28/18 05:15*	*07/14/18 05:31*	*1*
d3-NMeFOSAA	*98*		*25 - 150*	*06/28/18 05:15*	*07/14/18 05:31*	*1*
d5-NEtFOSAA	*107*		*25 - 150*	*06/28/18 05:15*	*07/14/18 05:31*	*1*
M2-6:2FTS	*80*		*25 - 150*	*06/28/18 05:15*	*07/14/18 05:31*	*1*
M2-8:2FTS	*94*		*25 - 150*	*06/28/18 05:15*	*07/14/18 05:31*	*1*

Client Sample ID: NF27-GW-01

Date Collected: 06/21/18 09:25
Date Received: 06/22/18 09:05

Lab Sample ID: 320-40571-23

Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**0.017**	**B**	0.0020	0.00034	ug/L		07/02/18 14:58	07/13/18 21:33	1

Client Sample Results

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Client Sample ID: NF27-GW-01

Date Collected: 06/21/18 09:25
Date Received: 06/22/18 09:05

Lab Sample ID: 320-40571-23

Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoropentanoic acid (PFPeA)	**0.012**		0.0020	0.00048	ug/L		07/02/18 14:58	07/13/18 21:33	1
Perfluorohexanoic acid (PFHxA)	**0.0049**		0.0020	0.00057	ug/L		07/02/18 14:58	07/13/18 21:33	1
Perfluoroheptanoic acid (PFHpA)	**0.0031**		0.0020	0.00025	ug/L		07/02/18 14:58	07/13/18 21:33	1
Perfluorooctanoic acid (PFOA)	**0.0037**		0.0020	0.00083	ug/L		07/02/18 14:58	07/13/18 21:33	1
Perfluorononanoic acid (PFNA)	**0.0015**	**J**	0.0020	0.00027	ug/L		07/02/18 14:58	07/13/18 21:33	1
Perfluorodecanoic acid (PFDA)	**0.00051**	**J**	0.0020	0.00030	ug/L		07/02/18 14:58	07/13/18 21:33	1
Perfluoroundecanoic acid (PFUnA)	ND		0.0020	0.0011	ug/L		07/02/18 14:58	07/13/18 21:33	1
Perfluorododecanoic acid (PFDoA)	ND		0.0020	0.00054	ug/L		07/02/18 14:58	07/13/18 21:33	1
Perfluorotridecanoic Acid (PFTriA)	ND		0.0020	0.0013	ug/L		07/02/18 14:58	07/13/18 21:33	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.0020	0.00028	ug/L		07/02/18 14:58	07/13/18 21:33	1
Perfluorobutanesulfonic acid (PFBS)	**0.0012**	**J**	0.0020	0.00020	ug/L		07/02/18 14:58	07/13/18 21:33	1
Perfluoropentanesulfonic acid (PFPeS)	ND		0.0020	0.00029	ug/L		07/02/18 14:58	07/13/18 21:33	1
Perfluorohexanesulfonic acid (PFHxS)	**0.0012**	**J B**	0.0020	0.00017	ug/L		07/02/18 14:58	07/13/18 21:33	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.0020	0.00019	ug/L		07/02/18 14:58	07/13/18 21:33	1
Perfluorooctanesulfonic acid (PFOS)	**0.0017**	**J**	0.0020	0.00053	ug/L		07/02/18 14:58	07/13/18 21:33	1
Perfluorononanesulfonic acid (PFNS)	ND		0.0020	0.00016	ug/L		07/02/18 14:58	07/13/18 21:33	1
Perfluorodecanesulfonic acid (PFDS)	ND		0.0020	0.00031	ug/L		07/02/18 14:58	07/13/18 21:33	1
Perfluorooctane Sulfonamide (FOSA)	ND		0.0020	0.00034	ug/L		07/02/18 14:58	07/13/18 21:33	1
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.020	0.0030	ug/L		07/02/18 14:58	07/13/18 21:33	1
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.020	0.0019	ug/L		07/02/18 14:58	07/13/18 21:33	1
4:2 FTS	ND	F1	0.020	0.0051	ug/L		07/02/18 14:58	07/13/18 21:33	1
6:2 FTS	**0.0034**	**J**	0.020	0.0020	ug/L		07/02/18 14:58	07/13/18 21:33	1
8:2 FTS	ND		0.020	0.0020	ug/L		07/02/18 14:58	07/13/18 21:33	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*60*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:33*	*1*
13C5 PFPeA	*84*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:33*	*1*
13C2 PFHxA	*87*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:33*	*1*
13C4-PFHpA	*99*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:33*	*1*
13C4 PFOA	*105*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:33*	*1*
13C5 PFNA	*96*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:33*	*1*
13C2 PFDA	*96*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:33*	*1*
13C2 PFUnA	*96*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:33*	*1*
13C2 PFDoA	*91*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:33*	*1*
13C2-PFTeDA	*91*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:33*	*1*
13C3-PFBS	*89*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:33*	*1*
18O2 PFHxS	*102*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:33*	*1*
13C4 PFOS	*91*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:33*	*1*
13C8 FOSA	*88*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:33*	*1*
d3-NMeFOSAA	*97*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:33*	*1*
d5-NEtFOSAA	*102*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:33*	*1*
M2-6:2FTS	*122*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:33*	*1*
M2-8:2FTS	*94*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:33*	*1*

Client Sample Results

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Client Sample ID: NF27-SS-01

Date Collected: 06/20/18 10:25
Date Received: 06/22/18 09:05

Lab Sample ID: 320-40571-24

Matrix: Solid
Percent Solids: 83.7

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**0.000061**	**J**	0.00024	0.000033	mg/Kg	☼	06/28/18 06:06	07/14/18 13:29	1
Perfluoropentanoic acid (PFPeA)	ND		0.00024	0.000091	mg/Kg	☼	06/28/18 06:06	07/14/18 13:29	1
Perfluorohexanoic acid (PFHxA)	ND		0.00024	0.000049	mg/Kg	☼	06/28/18 06:06	07/14/18 13:29	1
Perfluoroheptanoic acid (PFHpA)	ND		0.00024	0.000034	mg/Kg	☼	06/28/18 06:06	07/14/18 13:29	1
Perfluorooctanoic acid (PFOA)	ND		0.00024	0.00010	mg/Kg	☼	06/28/18 06:06	07/14/18 13:29	1
Perfluorononanoic acid (PFNA)	ND		0.00024	0.000042	mg/Kg	☼	06/28/18 06:06	07/14/18 13:29	1
Perfluorodecanoic acid (PFDA)	ND		0.00024	0.000026	mg/Kg	☼	06/28/18 06:06	07/14/18 13:29	1
Perfluoroundecanoic acid (PFUnA)	ND		0.00024	0.000042	mg/Kg	☼	06/28/18 06:06	07/14/18 13:29	1
Perfluorododecanoic acid (PFDoA)	ND		0.00024	0.000079	mg/Kg	☼	06/28/18 06:06	07/14/18 13:29	1
Perfluorotridecanoic Acid (PFTriA)	ND		0.00024	0.000060	mg/Kg	☼	06/28/18 06:06	07/14/18 13:29	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.00024	0.000063	mg/Kg	☼	06/28/18 06:06	07/14/18 13:29	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.00024	0.000029	mg/Kg	☼	06/28/18 06:06	07/14/18 13:29	1
Perfluorohexanesulfonic acid (PFHxS)	ND		0.00024	0.000036	mg/Kg	☼	06/28/18 06:06	07/14/18 13:29	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.00024	0.000041	mg/Kg	☼	06/28/18 06:06	07/14/18 13:29	1
Perfluorooctanesulfonic acid (PFOS)	ND		0.00059	0.00024	mg/Kg	☼	06/28/18 06:06	07/14/18 13:29	1
Perfluorodecanesulfonic acid (PFDS)	ND		0.00024	0.000046	mg/Kg	☼	06/28/18 06:06	07/14/18 13:29	1
Perfluorooctane Sulfonamide (FOSA)	ND		0.00024	0.000096	mg/Kg	☼	06/28/18 06:06	07/14/18 13:29	1
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.0024	0.00046	mg/Kg	☼	06/28/18 06:06	07/14/18 13:29	1
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.0024	0.00044	mg/Kg	☼	06/28/18 06:06	07/14/18 13:29	1
6:2 FTS	ND		0.0024	0.00018	mg/Kg	☼	06/28/18 06:06	07/14/18 13:29	1
8:2 FTS	ND		0.0024	0.00029	mg/Kg	☼	06/28/18 06:06	07/14/18 13:29	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*79*		*25 - 150*	*06/28/18 06:06*	*07/14/18 13:29*	*1*
13C5 PFPeA	*81*		*25 - 150*	*06/28/18 06:06*	*07/14/18 13:29*	*1*
13C2 PFHxA	*87*		*25 - 150*	*06/28/18 06:06*	*07/14/18 13:29*	*1*
13C4-PFHpA	*89*		*25 - 150*	*06/28/18 06:06*	*07/14/18 13:29*	*1*
13C4 PFOA	*87*		*25 - 150*	*06/28/18 06:06*	*07/14/18 13:29*	*1*
13C5 PFNA	*84*		*25 - 150*	*06/28/18 06:06*	*07/14/18 13:29*	*1*
13C2 PFDA	*94*		*25 - 150*	*06/28/18 06:06*	*07/14/18 13:29*	*1*
13C2 PFUnA	*78*		*25 - 150*	*06/28/18 06:06*	*07/14/18 13:29*	*1*
13C2 PFDoA	*82*		*25 - 150*	*06/28/18 06:06*	*07/14/18 13:29*	*1*
13C2-PFTeDA	*87*		*25 - 150*	*06/28/18 06:06*	*07/14/18 13:29*	*1*
13C3-PFBS	*72*		*25 - 150*	*06/28/18 06:06*	*07/14/18 13:29*	*1*
18O2 PFHxS	*76*		*25 - 150*	*06/28/18 06:06*	*07/14/18 13:29*	*1*
13C4 PFOS	*71*		*25 - 150*	*06/28/18 06:06*	*07/14/18 13:29*	*1*
13C8 FOSA	*64*		*25 - 150*	*06/28/18 06:06*	*07/14/18 13:29*	*1*
d3-NMeFOSAA	*70*		*25 - 150*	*06/28/18 06:06*	*07/14/18 13:29*	*1*
d5-NEtFOSAA	*79*		*25 - 150*	*06/28/18 06:06*	*07/14/18 13:29*	*1*
M2-6:2FTS	*69*		*25 - 150*	*06/28/18 06:06*	*07/14/18 13:29*	*1*
M2-8:2FTS	*87*		*25 - 150*	*06/28/18 06:06*	*07/14/18 13:29*	*1*

Client Sample Results

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Client Sample ID: NF28-GW-01

Date Collected: 06/20/18 16:00
Date Received: 06/22/18 09:05

Lab Sample ID: 320-40571-25

Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**0.011**	**B**	0.0019	0.00034	ug/L		07/02/18 14:58	07/13/18 21:56	1
Perfluoropentanoic acid (PFPeA)	**0.0063**		0.0019	0.00048	ug/L		07/02/18 14:58	07/13/18 21:56	1
Perfluorohexanoic acid (PFHxA)	**0.0012**	**J**	0.0019	0.00056	ug/L		07/02/18 14:58	07/13/18 21:56	1
Perfluoroheptanoic acid (PFHpA)	**0.00067**	**J**	0.0019	0.00024	ug/L		07/02/18 14:58	07/13/18 21:56	1
Perfluorooctanoic acid (PFOA)	ND		0.0019	0.00083	ug/L		07/02/18 14:58	07/13/18 21:56	1
Perfluorononanoic acid (PFNA)	ND		0.0019	0.00026	ug/L		07/02/18 14:58	07/13/18 21:56	1
Perfluorodecanoic acid (PFDA)	ND		0.0019	0.00030	ug/L		07/02/18 14:58	07/13/18 21:56	1
Perfluoroundecanoic acid (PFUnA)	ND		0.0019	0.0011	ug/L		07/02/18 14:58	07/13/18 21:56	1
Perfluorododecanoic acid (PFDoA)	ND		0.0019	0.00054	ug/L		07/02/18 14:58	07/13/18 21:56	1
Perfluorotridecanoic Acid (PFTriA)	ND		0.0019	0.0013	ug/L		07/02/18 14:58	07/13/18 21:56	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.0019	0.00028	ug/L		07/02/18 14:58	07/13/18 21:56	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.0019	0.00019	ug/L		07/02/18 14:58	07/13/18 21:56	1
Perfluoropentanesulfonic acid (PFPeS)	ND		0.0019	0.00029	ug/L		07/02/18 14:58	07/13/18 21:56	1
Perfluorohexanesulfonic acid (PFHxS)	**0.00050**	**J B**	0.0019	0.00017	ug/L		07/02/18 14:58	07/13/18 21:56	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.0019	0.00018	ug/L		07/02/18 14:58	07/13/18 21:56	1
Perfluorooctanesulfonic acid (PFOS)	**0.0042**		0.0019	0.00053	ug/L		07/02/18 14:58	07/13/18 21:56	1
Perfluorononanesulfonic acid (PFNS)	ND		0.0019	0.00016	ug/L		07/02/18 14:58	07/13/18 21:56	1
Perfluorodecanesulfonic acid (PFDS)	ND		0.0019	0.00031	ug/L		07/02/18 14:58	07/13/18 21:56	1
Perfluorooctane Sulfonamide (FOSA)	ND		0.0019	0.00034	ug/L		07/02/18 14:58	07/13/18 21:56	1
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.019	0.0030	ug/L		07/02/18 14:58	07/13/18 21:56	1
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.019	0.0018	ug/L		07/02/18 14:58	07/13/18 21:56	1
4:2 FTS	ND		0.019	0.0051	ug/L		07/02/18 14:58	07/13/18 21:56	1
6:2 FTS	**0.010**	**J**	0.019	0.0019	ug/L		07/02/18 14:58	07/13/18 21:56	1
8:2 FTS	ND		0.019	0.0019	ug/L		07/02/18 14:58	07/13/18 21:56	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*79*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:56*	*1*
13C5 PFPeA	*87*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:56*	*1*
13C2 PFHxA	*97*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:56*	*1*
13C4-PFHpA	*104*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:56*	*1*
13C4 PFOA	*101*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:56*	*1*
13C5 PFNA	*96*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:56*	*1*
13C2 PFDA	*94*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:56*	*1*
13C2 PFUnA	*88*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:56*	*1*
13C2 PFDoA	*71*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:56*	*1*
13C2-PFTeDA	*12*	*	*25 - 150*	*07/02/18 14:58*	*07/13/18 21:56*	*1*
13C3-PFBS	*91*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:56*	*1*
18O2 PFHxS	*98*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:56*	*1*
13C4 PFOS	*91*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:56*	*1*
13C8 FOSA	*72*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:56*	*1*
d3-NMeFOSAA	*75*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:56*	*1*
d5-NEtFOSAA	*87*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:56*	*1*
M2-6:2FTS	*129*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:56*	*1*
M2-8:2FTS	*97*		*25 - 150*	*07/02/18 14:58*	*07/13/18 21:56*	*1*

Client Sample Results

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Client Sample ID: NF28-SS-01

Date Collected: 06/19/18 14:50
Date Received: 06/22/18 09:05

Lab Sample ID: 320-40571-26

Matrix: Solid
Percent Solids: 81.3

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND		0.00024	0.000034	mg/Kg	☼	06/28/18 06:06	07/14/18 13:37	1
Perfluoropentanoic acid (PFPeA)	ND		0.00024	0.000093	mg/Kg	☼	06/28/18 06:06	07/14/18 13:37	1
Perfluorohexanoic acid (PFHxA)	ND		0.00024	0.000051	mg/Kg	☼	06/28/18 06:06	07/14/18 13:37	1
Perfluoroheptanoic acid (PFHpA)	ND		0.00024	0.000035	mg/Kg	☼	06/28/18 06:06	07/14/18 13:37	1
Perfluorooctanoic acid (PFOA)	ND		0.00024	0.00010	mg/Kg	☼	06/28/18 06:06	07/14/18 13:37	1
Perfluorononanoic acid (PFNA)	ND		0.00024	0.000044	mg/Kg	☼	06/28/18 06:06	07/14/18 13:37	1
Perfluorodecanoic acid (PFDA)	ND		0.00024	0.000027	mg/Kg	☼	06/28/18 06:06	07/14/18 13:37	1
Perfluoroundecanoic acid (PFUnA)	ND		0.00024	0.000044	mg/Kg	☼	06/28/18 06:06	07/14/18 13:37	1
Perfluorododecanoic acid (PFDoA)	ND		0.00024	0.000081	mg/Kg	☼	06/28/18 06:06	07/14/18 13:37	1
Perfluorotridecanoic Acid (PFTriA)	ND		0.00024	0.000062	mg/Kg	☼	06/28/18 06:06	07/14/18 13:37	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.00024	0.000065	mg/Kg	☼	06/28/18 06:06	07/14/18 13:37	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.00024	0.000030	mg/Kg	☼	06/28/18 06:06	07/14/18 13:37	1
Perfluorohexanesulfonic acid (PFHxS)	ND		0.00024	0.000038	mg/Kg	☼	06/28/18 06:06	07/14/18 13:37	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.00024	0.000042	mg/Kg	☼	06/28/18 06:06	07/14/18 13:37	1
Perfluorooctanesulfonic acid (PFOS)	ND		0.00061	0.00024	mg/Kg	☼	06/28/18 06:06	07/14/18 13:37	1
Perfluorodecanesulfonic acid (PFDS)	ND		0.00024	0.000047	mg/Kg	☼	06/28/18 06:06	07/14/18 13:37	1
Perfluorooctane Sulfonamide (FOSA)	ND		0.00024	0.000099	mg/Kg	☼	06/28/18 06:06	07/14/18 13:37	1
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.0024	0.00047	mg/Kg	☼	06/28/18 06:06	07/14/18 13:37	1
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.0024	0.00045	mg/Kg	☼	06/28/18 06:06	07/14/18 13:37	1
6:2 FTS	ND		0.0024	0.00018	mg/Kg	☼	06/28/18 06:06	07/14/18 13:37	1
8:2 FTS	ND		0.0024	0.00030	mg/Kg	☼	06/28/18 06:06	07/14/18 13:37	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*79*		*25 - 150*	*06/28/18 06:06*	*07/14/18 13:37*	*1*
13C5 PFPeA	*81*		*25 - 150*	*06/28/18 06:06*	*07/14/18 13:37*	*1*
13C2 PFHxA	*85*		*25 - 150*	*06/28/18 06:06*	*07/14/18 13:37*	*1*
13C4-PFHpA	*88*		*25 - 150*	*06/28/18 06:06*	*07/14/18 13:37*	*1*
13C4 PFOA	*81*		*25 - 150*	*06/28/18 06:06*	*07/14/18 13:37*	*1*
13C5 PFNA	*80*		*25 - 150*	*06/28/18 06:06*	*07/14/18 13:37*	*1*
13C2 PFDA	*92*		*25 - 150*	*06/28/18 06:06*	*07/14/18 13:37*	*1*
13C2 PFUnA	*80*		*25 - 150*	*06/28/18 06:06*	*07/14/18 13:37*	*1*
13C2 PFDoA	*87*		*25 - 150*	*06/28/18 06:06*	*07/14/18 13:37*	*1*
13C2-PFTeDA	*89*		*25 - 150*	*06/28/18 06:06*	*07/14/18 13:37*	*1*
13C3-PFBS	*72*		*25 - 150*	*06/28/18 06:06*	*07/14/18 13:37*	*1*
18O2 PFHxS	*77*		*25 - 150*	*06/28/18 06:06*	*07/14/18 13:37*	*1*
13C4 PFOS	*70*		*25 - 150*	*06/28/18 06:06*	*07/14/18 13:37*	*1*
13C8 FOSA	*67*		*25 - 150*	*06/28/18 06:06*	*07/14/18 13:37*	*1*
d3-NMeFOSAA	*74*		*25 - 150*	*06/28/18 06:06*	*07/14/18 13:37*	*1*
d5-NEtFOSAA	*87*		*25 - 150*	*06/28/18 06:06*	*07/14/18 13:37*	*1*
M2-6:2FTS	*67*		*25 - 150*	*06/28/18 06:06*	*07/14/18 13:37*	*1*
M2-8:2FTS	*78*		*25 - 150*	*06/28/18 06:06*	*07/14/18 13:37*	*1*

Client Sample Results

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Client Sample ID: NF29-GW-01

Date Collected: 06/19/18 14:50
Date Received: 06/22/18 09:05

Lab Sample ID: 320-40571-27

Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**0.0034**	**B**	0.0018	0.00031	ug/L		07/02/18 14:58	07/07/18 04:19	1
Perfluoropentanoic acid (PFPeA)	**0.0022**		0.0018	0.00043	ug/L		07/02/18 14:58	07/07/18 04:19	1
Perfluorohexanoic acid (PFHxA)	ND		0.0018	0.00051	ug/L		07/02/18 14:58	07/07/18 04:19	1
Perfluoroheptanoic acid (PFHpA)	**0.00046**	**J**	0.0018	0.00022	ug/L		07/02/18 14:58	07/07/18 04:19	1
Perfluorooctanoic acid (PFOA)	**0.0011**	**J**	0.0018	0.00075	ug/L		07/02/18 14:58	07/07/18 04:19	1
Perfluorononanoic acid (PFNA)	**0.00050**	**J**	0.0018	0.00024	ug/L		07/02/18 14:58	07/07/18 04:19	1
Perfluorodecanoic acid (PFDA)	ND		0.0018	0.00027	ug/L		07/02/18 14:58	07/07/18 04:19	1
Perfluoroundecanoic acid (PFUnA)	ND		0.0018	0.00097	ug/L		07/02/18 14:58	07/07/18 04:19	1
Perfluorododecanoic acid (PFDoA)	ND		0.0018	0.00048	ug/L		07/02/18 14:58	07/07/18 04:19	1
Perfluorotridecanoic Acid (PFTriA)	ND		0.0018	0.0011	ug/L		07/02/18 14:58	07/07/18 04:19	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.0018	0.00026	ug/L		07/02/18 14:58	07/07/18 04:19	1
Perfluorobutanesulfonic acid (PFBS)	**0.00058**	**J**	0.0018	0.00018	ug/L		07/02/18 14:58	07/07/18 04:19	1
Perfluoropentanesulfonic acid (PFPeS)	ND		0.0018	0.00026	ug/L		07/02/18 14:58	07/07/18 04:19	1
Perfluorohexanesulfonic acid (PFHxS)	**0.00053**	**J B**	0.0018	0.00015	ug/L		07/02/18 14:58	07/07/18 04:19	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.0018	0.00017	ug/L		07/02/18 14:58	07/07/18 04:19	1
Perfluorooctanesulfonic acid (PFOS)	**0.0025**		0.0018	0.00047	ug/L		07/02/18 14:58	07/07/18 04:19	1
Perfluorononanesulfonic acid (PFNS)	ND		0.0018	0.00014	ug/L		07/02/18 14:58	07/07/18 04:19	1
Perfluorodecanesulfonic acid (PFDS)	ND		0.0018	0.00028	ug/L		07/02/18 14:58	07/07/18 04:19	1
Perfluorooctane Sulfonamide (FOSA)	ND		0.0018	0.00031	ug/L		07/02/18 14:58	07/07/18 04:19	1
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.018	0.0027	ug/L		07/02/18 14:58	07/07/18 04:19	1
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.018	0.0017	ug/L		07/02/18 14:58	07/07/18 04:19	1
4:2 FTS	ND		0.018	0.0046	ug/L		07/02/18 14:58	07/07/18 04:19	1
6:2 FTS	**0.0032**	**J**	0.018	0.0018	ug/L		07/02/18 14:58	07/07/18 04:19	1
8:2 FTS	ND		0.018	0.0018	ug/L		07/02/18 14:58	07/07/18 04:19	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*91*		*25 - 150*	*07/02/18 14:58*	*07/07/18 04:19*	*1*
13C5 PFPeA	*93*		*25 - 150*	*07/02/18 14:58*	*07/07/18 04:19*	*1*
13C2 PFHxA	*100*		*25 - 150*	*07/02/18 14:58*	*07/07/18 04:19*	*1*
13C4-PFHpA	*103*		*25 - 150*	*07/02/18 14:58*	*07/07/18 04:19*	*1*
13C4 PFOA	*103*		*25 - 150*	*07/02/18 14:58*	*07/07/18 04:19*	*1*
13C5 PFNA	*103*		*25 - 150*	*07/02/18 14:58*	*07/07/18 04:19*	*1*
13C2 PFDA	*110*		*25 - 150*	*07/02/18 14:58*	*07/07/18 04:19*	*1*
13C2 PFUnA	*107*		*25 - 150*	*07/02/18 14:58*	*07/07/18 04:19*	*1*
13C2 PFDoA	*105*		*25 - 150*	*07/02/18 14:58*	*07/07/18 04:19*	*1*
13C2-PFTeDA	*83*		*25 - 150*	*07/02/18 14:58*	*07/07/18 04:19*	*1*
13C3-PFBS	*94*		*25 - 150*	*07/02/18 14:58*	*07/07/18 04:19*	*1*
18O2 PFHxS	*107*		*25 - 150*	*07/02/18 14:58*	*07/07/18 04:19*	*1*
13C4 PFOS	*99*		*25 - 150*	*07/02/18 14:58*	*07/07/18 04:19*	*1*
13C8 FOSA	*89*		*25 - 150*	*07/02/18 14:58*	*07/07/18 04:19*	*1*
d3-NMeFOSAA	*111*		*25 - 150*	*07/02/18 14:58*	*07/07/18 04:19*	*1*
d5-NEtFOSAA	*111*		*25 - 150*	*07/02/18 14:58*	*07/07/18 04:19*	*1*
M2-6:2FTS	*126*		*25 - 150*	*07/02/18 14:58*	*07/07/18 04:19*	*1*
M2-8:2FTS	*125*		*25 - 150*	*07/02/18 14:58*	*07/07/18 04:19*	*1*

Client Sample Results

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Client Sample ID: NF29-SS-01

Date Collected: 06/19/18 13:55
Date Received: 06/22/18 09:05

Lab Sample ID: 320-40571-28

Matrix: Solid
Percent Solids: 80.5

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND		0.00024	0.000034	mg/Kg	☼	06/28/18 06:06	07/14/18 13:45	1
Perfluoropentanoic acid (PFPeA)	ND		0.00024	0.000094	mg/Kg	☼	06/28/18 06:06	07/14/18 13:45	1
Perfluorohexanoic acid (PFHxA)	ND		0.00024	0.000051	mg/Kg	☼	06/28/18 06:06	07/14/18 13:45	1
Perfluoroheptanoic acid (PFHpA)	ND		0.00024	0.000035	mg/Kg	☼	06/28/18 06:06	07/14/18 13:45	1
Perfluorooctanoic acid (PFOA)	ND		0.00024	0.00011	mg/Kg	☼	06/28/18 06:06	07/14/18 13:45	1
Perfluorononanoic acid (PFNA)	ND		0.00024	0.000044	mg/Kg	☼	06/28/18 06:06	07/14/18 13:45	1
Perfluorodecanoic acid (PFDA)	ND		0.00024	0.000027	mg/Kg	☼	06/28/18 06:06	07/14/18 13:45	1
Perfluoroundecanoic acid (PFUnA)	ND		0.00024	0.000044	mg/Kg	☼	06/28/18 06:06	07/14/18 13:45	1
Perfluorododecanoic acid (PFDoA)	ND		0.00024	0.000082	mg/Kg	☼	06/28/18 06:06	07/14/18 13:45	1
Perfluorotridecanoic Acid (PFTriA)	ND		0.00024	0.000062	mg/Kg	☼	06/28/18 06:06	07/14/18 13:45	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.00024	0.000066	mg/Kg	☼	06/28/18 06:06	07/14/18 13:45	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.00024	0.000031	mg/Kg	☼	06/28/18 06:06	07/14/18 13:45	1
Perfluorohexanesulfonic acid (PFHxS)	ND		0.00024	0.000038	mg/Kg	☼	06/28/18 06:06	07/14/18 13:45	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.00024	0.000043	mg/Kg	☼	06/28/18 06:06	07/14/18 13:45	1
Perfluorooctanesulfonic acid (PFOS)	ND		0.00061	0.00024	mg/Kg	☼	06/28/18 06:06	07/14/18 13:45	1
Perfluorodecanesulfonic acid (PFDS)	ND		0.00024	0.000048	mg/Kg	☼	06/28/18 06:06	07/14/18 13:45	1
Perfluorooctane Sulfonamide (FOSA)	ND		0.00024	0.00010	mg/Kg	☼	06/28/18 06:06	07/14/18 13:45	1
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.0024	0.00048	mg/Kg	☼	06/28/18 06:06	07/14/18 13:45	1
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.0024	0.00045	mg/Kg	☼	06/28/18 06:06	07/14/18 13:45	1
6:2 FTS	ND		0.0024	0.00018	mg/Kg	☼	06/28/18 06:06	07/14/18 13:45	1
8:2 FTS	ND		0.0024	0.00031	mg/Kg	☼	06/28/18 06:06	07/14/18 13:45	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*82*		*25 - 150*	*06/28/18 06:06*	*07/14/18 13:45*	*1*
13C5 PFPeA	*84*		*25 - 150*	*06/28/18 06:06*	*07/14/18 13:45*	*1*
13C2 PFHxA	*89*		*25 - 150*	*06/28/18 06:06*	*07/14/18 13:45*	*1*
13C4-PFHpA	*93*		*25 - 150*	*06/28/18 06:06*	*07/14/18 13:45*	*1*
13C4 PFOA	*89*		*25 - 150*	*06/28/18 06:06*	*07/14/18 13:45*	*1*
13C5 PFNA	*85*		*25 - 150*	*06/28/18 06:06*	*07/14/18 13:45*	*1*
13C2 PFDA	*97*		*25 - 150*	*06/28/18 06:06*	*07/14/18 13:45*	*1*
13C2 PFUnA	*88*		*25 - 150*	*06/28/18 06:06*	*07/14/18 13:45*	*1*
13C2 PFDoA	*87*		*25 - 150*	*06/28/18 06:06*	*07/14/18 13:45*	*1*
13C2-PFTeDA	*91*		*25 - 150*	*06/28/18 06:06*	*07/14/18 13:45*	*1*
13C3-PFBS	*78*		*25 - 150*	*06/28/18 06:06*	*07/14/18 13:45*	*1*
18O2 PFHxS	*76*		*25 - 150*	*06/28/18 06:06*	*07/14/18 13:45*	*1*
13C4 PFOS	*76*		*25 - 150*	*06/28/18 06:06*	*07/14/18 13:45*	*1*
13C8 FOSA	*74*		*25 - 150*	*06/28/18 06:06*	*07/14/18 13:45*	*1*
d3-NMeFOSAA	*83*		*25 - 150*	*06/28/18 06:06*	*07/14/18 13:45*	*1*
d5-NEtFOSAA	*86*		*25 - 150*	*06/28/18 06:06*	*07/14/18 13:45*	*1*
M2-6:2FTS	*73*		*25 - 150*	*06/28/18 06:06*	*07/14/18 13:45*	*1*
M2-8:2FTS	*87*		*25 - 150*	*06/28/18 06:06*	*07/14/18 13:45*	*1*

Client Sample Results

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Client Sample ID: NF30-GW-01

Date Collected: 06/20/18 13:05
Date Received: 06/22/18 09:05

Lab Sample ID: 320-40571-29

Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**0.018**	**B**	0.0019	0.00033	ug/L		07/02/18 14:58	07/13/18 22:04	1
Perfluoropentanoic acid (PFPeA)	**0.0096**		0.0019	0.00046	ug/L		07/02/18 14:58	07/13/18 22:04	1
Perfluorohexanoic acid (PFHxA)	**0.0026**		0.0019	0.00054	ug/L		07/02/18 14:58	07/13/18 22:04	1
Perfluoroheptanoic acid (PFHpA)	**0.0015**	**J**	0.0019	0.00023	ug/L		07/02/18 14:58	07/13/18 22:04	1
Perfluorooctanoic acid (PFOA)	**0.0063**		0.0019	0.00079	ug/L		07/02/18 14:58	07/13/18 22:04	1
Perfluorononanoic acid (PFNA)	**0.0016**	**J**	0.0019	0.00025	ug/L		07/02/18 14:58	07/13/18 22:04	1
Perfluorodecanoic acid (PFDA)	**0.00056**	**J**	0.0019	0.00029	ug/L		07/02/18 14:58	07/13/18 22:04	1
Perfluoroundecanoic acid (PFUnA)	ND		0.0019	0.0010	ug/L		07/02/18 14:58	07/13/18 22:04	1
Perfluorododecanoic acid (PFDoA)	ND		0.0019	0.00051	ug/L		07/02/18 14:58	07/13/18 22:04	1
Perfluorotridecanoic Acid (PFTriA)	ND		0.0019	0.0012	ug/L		07/02/18 14:58	07/13/18 22:04	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.0019	0.00027	ug/L		07/02/18 14:58	07/13/18 22:04	1
Perfluorobutanesulfonic acid (PFBS)	**0.0052**		0.0019	0.00019	ug/L		07/02/18 14:58	07/13/18 22:04	1
Perfluoropentanesulfonic acid (PFPeS)	**0.00087**	**J**	0.0019	0.00028	ug/L		07/02/18 14:58	07/13/18 22:04	1
Perfluorohexanesulfonic acid (PFHxS)	**0.0030**	**B**	0.0019	0.00016	ug/L		07/02/18 14:58	07/13/18 22:04	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.0019	0.00018	ug/L		07/02/18 14:58	07/13/18 22:04	1
Perfluorooctanesulfonic acid (PFOS)	**0.0054**		0.0019	0.00050	ug/L		07/02/18 14:58	07/13/18 22:04	1
Perfluorononanesulfonic acid (PFNS)	ND		0.0019	0.00015	ug/L		07/02/18 14:58	07/13/18 22:04	1
Perfluorodecanesulfonic acid (PFDS)	ND		0.0019	0.00030	ug/L		07/02/18 14:58	07/13/18 22:04	1
Perfluorooctane Sulfonamide (FOSA)	ND		0.0019	0.00033	ug/L		07/02/18 14:58	07/13/18 22:04	1
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.019	0.0029	ug/L		07/02/18 14:58	07/13/18 22:04	1
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.019	0.0018	ug/L		07/02/18 14:58	07/13/18 22:04	1
4:2 FTS	ND		0.019	0.0049	ug/L		07/02/18 14:58	07/13/18 22:04	1
6:2 FTS	**0.0049**	**J**	0.019	0.0019	ug/L		07/02/18 14:58	07/13/18 22:04	1
8:2 FTS	ND		0.019	0.0019	ug/L		07/02/18 14:58	07/13/18 22:04	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*52*		*25 - 150*	*07/02/18 14:58*	*07/13/18 22:04*	*1*
13C5 PFPeA	*74*		*25 - 150*	*07/02/18 14:58*	*07/13/18 22:04*	*1*
13C2 PFHxA	*87*		*25 - 150*	*07/02/18 14:58*	*07/13/18 22:04*	*1*
13C4-PFHpA	*103*		*25 - 150*	*07/02/18 14:58*	*07/13/18 22:04*	*1*
13C4 PFOA	*105*		*25 - 150*	*07/02/18 14:58*	*07/13/18 22:04*	*1*
13C5 PFNA	*103*		*25 - 150*	*07/02/18 14:58*	*07/13/18 22:04*	*1*
13C2 PFDA	*96*		*25 - 150*	*07/02/18 14:58*	*07/13/18 22:04*	*1*
13C2 PFUnA	*100*		*25 - 150*	*07/02/18 14:58*	*07/13/18 22:04*	*1*
13C2 PFDoA	*86*		*25 - 150*	*07/02/18 14:58*	*07/13/18 22:04*	*1*
13C2-PFTeDA	*70*		*25 - 150*	*07/02/18 14:58*	*07/13/18 22:04*	*1*
13C3-PFBS	*89*		*25 - 150*	*07/02/18 14:58*	*07/13/18 22:04*	*1*
18O2 PFHxS	*97*		*25 - 150*	*07/02/18 14:58*	*07/13/18 22:04*	*1*
13C4 PFOS	*94*		*25 - 150*	*07/02/18 14:58*	*07/13/18 22:04*	*1*
13C8 FOSA	*87*		*25 - 150*	*07/02/18 14:58*	*07/13/18 22:04*	*1*
d3-NMeFOSAA	*102*		*25 - 150*	*07/02/18 14:58*	*07/13/18 22:04*	*1*
d5-NEtFOSAA	*102*		*25 - 150*	*07/02/18 14:58*	*07/13/18 22:04*	*1*
M2-6:2FTS	*143*		*25 - 150*	*07/02/18 14:58*	*07/13/18 22:04*	*1*
M2-8:2FTS	*97*		*25 - 150*	*07/02/18 14:58*	*07/13/18 22:04*	*1*

Client Sample Results

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Client Sample ID: NF30-SS-02

Date Collected: 06/20/18 12:30
Date Received: 06/22/18 09:05

Lab Sample ID: 320-40571-30

Matrix: Solid
Percent Solids: 84.0

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND		0.00023	0.000033	mg/Kg	☼	06/28/18 06:06	07/14/18 14:09	1
Perfluoropentanoic acid (PFPeA)	ND		0.00023	0.000090	mg/Kg	☼	06/28/18 06:06	07/14/18 14:09	1
Perfluorohexanoic acid (PFHxA)	ND		0.00023	0.000049	mg/Kg	☼	06/28/18 06:06	07/14/18 14:09	1
Perfluoroheptanoic acid (PFHpA)	ND		0.00023	0.000034	mg/Kg	☼	06/28/18 06:06	07/14/18 14:09	1
Perfluorooctanoic acid (PFOA)	ND		0.00023	0.00010	mg/Kg	☼	06/28/18 06:06	07/14/18 14:09	1
Perfluorononanoic acid (PFNA)	ND		0.00023	0.000042	mg/Kg	☼	06/28/18 06:06	07/14/18 14:09	1
Perfluorodecanoic acid (PFDA)	ND		0.00023	0.000026	mg/Kg	☼	06/28/18 06:06	07/14/18 14:09	1
Perfluoroundecanoic acid (PFUnA)	ND		0.00023	0.000042	mg/Kg	☼	06/28/18 06:06	07/14/18 14:09	1
Perfluorododecanoic acid (PFDoA)	ND		0.00023	0.000078	mg/Kg	☼	06/28/18 06:06	07/14/18 14:09	1
Perfluorotridecanoic Acid (PFTriA)	ND		0.00023	0.000060	mg/Kg	☼	06/28/18 06:06	07/14/18 14:09	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.00023	0.000063	mg/Kg	☼	06/28/18 06:06	07/14/18 14:09	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.00023	0.000029	mg/Kg	☼	06/28/18 06:06	07/14/18 14:09	1
Perfluorohexanesulfonic acid (PFHxS)	ND		0.00023	0.000036	mg/Kg	☼	06/28/18 06:06	07/14/18 14:09	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.00023	0.000041	mg/Kg	☼	06/28/18 06:06	07/14/18 14:09	1
Perfluorooctanesulfonic acid (PFOS)	ND		0.00058	0.00023	mg/Kg	☼	06/28/18 06:06	07/14/18 14:09	1
Perfluorodecanesulfonic acid (PFDS)	ND		0.00023	0.000046	mg/Kg	☼	06/28/18 06:06	07/14/18 14:09	1
Perfluorooctane Sulfonamide (FOSA)	ND		0.00023	0.000096	mg/Kg	☼	06/28/18 06:06	07/14/18 14:09	1
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.0023	0.00046	mg/Kg	☼	06/28/18 06:06	07/14/18 14:09	1
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.0023	0.00043	mg/Kg	☼	06/28/18 06:06	07/14/18 14:09	1
6:2 FTS	ND		0.0023	0.00018	mg/Kg	☼	06/28/18 06:06	07/14/18 14:09	1
8:2 FTS	ND		0.0023	0.00029	mg/Kg	☼	06/28/18 06:06	07/14/18 14:09	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*72*		*25 - 150*	*06/28/18 06:06*	*07/14/18 14:09*	*1*
13C5 PFPeA	*76*		*25 - 150*	*06/28/18 06:06*	*07/14/18 14:09*	*1*
13C2 PFHxA	*80*		*25 - 150*	*06/28/18 06:06*	*07/14/18 14:09*	*1*
13C4-PFHpA	*80*		*25 - 150*	*06/28/18 06:06*	*07/14/18 14:09*	*1*
13C4 PFOA	*79*		*25 - 150*	*06/28/18 06:06*	*07/14/18 14:09*	*1*
13C5 PFNA	*74*		*25 - 150*	*06/28/18 06:06*	*07/14/18 14:09*	*1*
13C2 PFDA	*79*		*25 - 150*	*06/28/18 06:06*	*07/14/18 14:09*	*1*
13C2 PFUnA	*79*		*25 - 150*	*06/28/18 06:06*	*07/14/18 14:09*	*1*
13C2 PFDoA	*76*		*25 - 150*	*06/28/18 06:06*	*07/14/18 14:09*	*1*
13C2-PFTeDA	*81*		*25 - 150*	*06/28/18 06:06*	*07/14/18 14:09*	*1*
13C3-PFBS	*75*		*25 - 150*	*06/28/18 06:06*	*07/14/18 14:09*	*1*
18O2 PFHxS	*76*		*25 - 150*	*06/28/18 06:06*	*07/14/18 14:09*	*1*
13C4 PFOS	*71*		*25 - 150*	*06/28/18 06:06*	*07/14/18 14:09*	*1*
13C8 FOSA	*68*		*25 - 150*	*06/28/18 06:06*	*07/14/18 14:09*	*1*
d3-NMeFOSAA	*50*		*25 - 150*	*06/28/18 06:06*	*07/14/18 14:09*	*1*
d5-NEtFOSAA	*55*		*25 - 150*	*06/28/18 06:06*	*07/14/18 14:09*	*1*
M2-6:2FTS	*59*		*25 - 150*	*06/28/18 06:06*	*07/14/18 14:09*	*1*
M2-8:2FTS	*55*		*25 - 150*	*06/28/18 06:06*	*07/14/18 14:09*	*1*

Client Sample Results

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Client Sample ID: NF31-GW-01

Date Collected: 06/21/18 09:15
Date Received: 06/22/18 09:05

Lab Sample ID: 320-40571-31

Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**0.051**	**B**	0.0017	0.00030	ug/L		07/02/18 14:58	07/07/18 04:35	1
Perfluoropentanoic acid (PFPeA)	**0.11**		0.0017	0.00043	ug/L		07/02/18 14:58	07/07/18 04:35	1
Perfluorohexanoic acid (PFHxA)	**0.13**		0.0017	0.00050	ug/L		07/02/18 14:58	07/07/18 04:35	1
Perfluoroheptanoic acid (PFHpA)	**0.070**		0.0017	0.00022	ug/L		07/02/18 14:58	07/07/18 04:35	1
Perfluorooctanoic acid (PFOA)	**0.11**		0.0017	0.00074	ug/L		07/02/18 14:58	07/07/18 04:35	1
Perfluorononanoic acid (PFNA)	**0.00042**	**J**	0.0017	0.00023	ug/L		07/02/18 14:58	07/07/18 04:35	1
Perfluorodecanoic acid (PFDA)	ND		0.0017	0.00027	ug/L		07/02/18 14:58	07/07/18 04:35	1
Perfluoroundecanoic acid (PFUnA)	ND		0.0017	0.00096	ug/L		07/02/18 14:58	07/07/18 04:35	1
Perfluorododecanoic acid (PFDoA)	ND		0.0017	0.00048	ug/L		07/02/18 14:58	07/07/18 04:35	1
Perfluorotridecanoic Acid (PFTriA)	ND		0.0017	0.0011	ug/L		07/02/18 14:58	07/07/18 04:35	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.0017	0.00025	ug/L		07/02/18 14:58	07/07/18 04:35	1
Perfluorobutanesulfonic acid (PFBS)	**0.54**	**E**	0.0017	0.00017	ug/L		07/02/18 14:58	07/07/18 04:35	1
Perfluoropentanesulfonic acid (PFPeS)	**0.018**		0.0017	0.00026	ug/L		07/02/18 14:58	07/07/18 04:35	1
Perfluorohexanesulfonic acid (PFHxS)	**0.053**	**B**	0.0017	0.00015	ug/L		07/02/18 14:58	07/07/18 04:35	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.0017	0.00017	ug/L		07/02/18 14:58	07/07/18 04:35	1
Perfluorooctanesulfonic acid (PFOS)	**0.0011**	**J**	0.0017	0.00047	ug/L		07/02/18 14:58	07/07/18 04:35	1
Perfluorononanesulfonic acid (PFNS)	ND		0.0017	0.00014	ug/L		07/02/18 14:58	07/07/18 04:35	1
Perfluorodecanesulfonic acid (PFDS)	ND		0.0017	0.00028	ug/L		07/02/18 14:58	07/07/18 04:35	1
Perfluorooctane Sulfonamide (FOSA)	ND		0.0017	0.00030	ug/L		07/02/18 14:58	07/07/18 04:35	1
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.017	0.0027	ug/L		07/02/18 14:58	07/07/18 04:35	1
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.017	0.0017	ug/L		07/02/18 14:58	07/07/18 04:35	1
4:2 FTS	ND		0.017	0.0045	ug/L		07/02/18 14:58	07/07/18 04:35	1
6:2 FTS	**0.0030**	**J**	0.017	0.0017	ug/L		07/02/18 14:58	07/07/18 04:35	1
8:2 FTS	ND		0.017	0.0017	ug/L		07/02/18 14:58	07/07/18 04:35	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*55*		*25 - 150*	*07/02/18 14:58*	*07/07/18 04:35*	*1*
13C5 PFPeA	*75*		*25 - 150*	*07/02/18 14:58*	*07/07/18 04:35*	*1*
13C2 PFHxA	*89*		*25 - 150*	*07/02/18 14:58*	*07/07/18 04:35*	*1*
13C4-PFHpA	*103*		*25 - 150*	*07/02/18 14:58*	*07/07/18 04:35*	*1*
13C4 PFOA	*108*		*25 - 150*	*07/02/18 14:58*	*07/07/18 04:35*	*1*
13C5 PFNA	*109*		*25 - 150*	*07/02/18 14:58*	*07/07/18 04:35*	*1*
13C2 PFDA	*112*		*25 - 150*	*07/02/18 14:58*	*07/07/18 04:35*	*1*
13C2 PFUnA	*105*		*25 - 150*	*07/02/18 14:58*	*07/07/18 04:35*	*1*
13C2 PFDoA	*99*		*25 - 150*	*07/02/18 14:58*	*07/07/18 04:35*	*1*
13C2-PFTeDA	*95*		*25 - 150*	*07/02/18 14:58*	*07/07/18 04:35*	*1*
13C3-PFBS	*86*		*25 - 150*	*07/02/18 14:58*	*07/07/18 04:35*	*1*
18O2 PFHxS	*110*		*25 - 150*	*07/02/18 14:58*	*07/07/18 04:35*	*1*
13C4 PFOS	*106*		*25 - 150*	*07/02/18 14:58*	*07/07/18 04:35*	*1*
13C8 FOSA	*85*		*25 - 150*	*07/02/18 14:58*	*07/07/18 04:35*	*1*
d3-NMeFOSAA	*116*		*25 - 150*	*07/02/18 14:58*	*07/07/18 04:35*	*1*
d5-NEtFOSAA	*111*		*25 - 150*	*07/02/18 14:58*	*07/07/18 04:35*	*1*
M2-6:2FTS	*149*		*25 - 150*	*07/02/18 14:58*	*07/07/18 04:35*	*1*
M2-8:2FTS	*130*		*25 - 150*	*07/02/18 14:58*	*07/07/18 04:35*	*1*

Client Sample Results

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Client Sample ID: NF31-GW-01

Date Collected: 06/21/18 09:15
Date Received: 06/22/18 09:05

Lab Sample ID: 320-40571-31

Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances - DL

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**0.051**	**B**	0.0087	0.0015	ug/L		07/02/18 14:58	07/11/18 22:09	5
Perfluoropentanoic acid (PFPeA)	**0.11**		0.0087	0.0021	ug/L		07/02/18 14:58	07/11/18 22:09	5
Perfluorohexanoic acid (PFHxA)	**0.13**		0.0087	0.0025	ug/L		07/02/18 14:58	07/11/18 22:09	5
Perfluoroheptanoic acid (PFHpA)	**0.070**		0.0087	0.0011	ug/L		07/02/18 14:58	07/11/18 22:09	5
Perfluorooctanoic acid (PFOA)	**0.11**		0.0087	0.0037	ug/L		07/02/18 14:58	07/11/18 22:09	5
Perfluorononanoic acid (PFNA)	ND		0.0087	0.0012	ug/L		07/02/18 14:58	07/11/18 22:09	5
Perfluorodecanoic acid (PFDA)	ND		0.0087	0.0013	ug/L		07/02/18 14:58	07/11/18 22:09	5
Perfluoroundecanoic acid (PFUnA)	ND		0.0087	0.0048	ug/L		07/02/18 14:58	07/11/18 22:09	5
Perfluorododecanoic acid (PFDoA)	ND		0.0087	0.0024	ug/L		07/02/18 14:58	07/11/18 22:09	5
Perfluorotridecanoic Acid (PFTriA)	ND		0.0087	0.0057	ug/L		07/02/18 14:58	07/11/18 22:09	5
Perfluorotetradecanoic acid (PFTeA)	ND		0.0087	0.0013	ug/L		07/02/18 14:58	07/11/18 22:09	5
Perfluorobutanesulfonic acid (PFBS)	**0.78**		0.0087	0.00087	ug/L		07/02/18 14:58	07/11/18 22:09	5
Perfluoropentanesulfonic acid (PFPeS)	**0.015**		0.0087	0.0013	ug/L		07/02/18 14:58	07/11/18 22:09	5
Perfluorohexanesulfonic acid (PFHxS)	**0.053**	**B**	0.0087	0.00074	ug/L		07/02/18 14:58	07/11/18 22:09	5
Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.0087	0.00083	ug/L		07/02/18 14:58	07/11/18 22:09	5
Perfluorooctanesulfonic acid (PFOS)	ND		0.0087	0.0023	ug/L		07/02/18 14:58	07/11/18 22:09	5
Perfluorononanesulfonic acid (PFNS)	ND		0.0087	0.00070	ug/L		07/02/18 14:58	07/11/18 22:09	5
Perfluorodecanesulfonic acid (PFDS)	ND		0.0087	0.0014	ug/L		07/02/18 14:58	07/11/18 22:09	5
Perfluorooctane Sulfonamide (FOSA)	ND		0.0087	0.0015	ug/L		07/02/18 14:58	07/11/18 22:09	5
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.087	0.013	ug/L		07/02/18 14:58	07/11/18 22:09	5
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.087	0.0083	ug/L		07/02/18 14:58	07/11/18 22:09	5
4:2 FTS	ND		0.087	0.023	ug/L		07/02/18 14:58	07/11/18 22:09	5
6:2 FTS	ND		0.087	0.0087	ug/L		07/02/18 14:58	07/11/18 22:09	5
8:2 FTS	ND		0.087	0.0087	ug/L		07/02/18 14:58	07/11/18 22:09	5

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*88*		*25 - 150*	*07/02/18 14:58*	*07/11/18 22:09*	*5*
13C5 PFPeA	*98*		*25 - 150*	*07/02/18 14:58*	*07/11/18 22:09*	*5*
13C2 PFHxA	*109*		*25 - 150*	*07/02/18 14:58*	*07/11/18 22:09*	*5*
13C4-PFHpA	*107*		*25 - 150*	*07/02/18 14:58*	*07/11/18 22:09*	*5*
13C4 PFOA	*101*		*25 - 150*	*07/02/18 14:58*	*07/11/18 22:09*	*5*
13C5 PFNA	*100*		*25 - 150*	*07/02/18 14:58*	*07/11/18 22:09*	*5*
13C2 PFDA	*102*		*25 - 150*	*07/02/18 14:58*	*07/11/18 22:09*	*5*
13C2 PFUnA	*109*		*25 - 150*	*07/02/18 14:58*	*07/11/18 22:09*	*5*
13C2 PFDoA	*99*		*25 - 150*	*07/02/18 14:58*	*07/11/18 22:09*	*5*
13C2-PFTeDA	*89*		*25 - 150*	*07/02/18 14:58*	*07/11/18 22:09*	*5*
13C3-PFBS	*112*		*25 - 150*	*07/02/18 14:58*	*07/11/18 22:09*	*5*
18O2 PFHxS	*99*		*25 - 150*	*07/02/18 14:58*	*07/11/18 22:09*	*5*
13C4 PFOS	*97*		*25 - 150*	*07/02/18 14:58*	*07/11/18 22:09*	*5*
13C8 FOSA	*91*		*25 - 150*	*07/02/18 14:58*	*07/11/18 22:09*	*5*
d3-NMeFOSAA	*101*		*25 - 150*	*07/02/18 14:58*	*07/11/18 22:09*	*5*
d5-NEtFOSAA	*111*		*25 - 150*	*07/02/18 14:58*	*07/11/18 22:09*	*5*
M2-6:2FTS	*104*		*25 - 150*	*07/02/18 14:58*	*07/11/18 22:09*	*5*
M2-8:2FTS	*94*		*25 - 150*	*07/02/18 14:58*	*07/11/18 22:09*	*5*

Client Sample Results

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Client Sample ID: NF31-SS-02

Date Collected: 06/19/18 10:25
Date Received: 06/22/18 09:05

Lab Sample ID: 320-40571-32

Matrix: Solid
Percent Solids: 82.0

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**0.000047**	**J**	0.00024	0.000034	mg/Kg	☼	06/28/18 06:06	07/14/18 14:16	1
Perfluoropentanoic acid (PFPeA)	ND		0.00024	0.000093	mg/Kg	☼	06/28/18 06:06	07/14/18 14:16	1
Perfluorohexanoic acid (PFHxA)	**0.000060**	**J**	0.00024	0.000051	mg/Kg	☼	06/28/18 06:06	07/14/18 14:16	1
Perfluoroheptanoic acid (PFHpA)	ND		0.00024	0.000035	mg/Kg	☼	06/28/18 06:06	07/14/18 14:16	1
Perfluorooctanoic acid (PFOA)	ND		0.00024	0.00010	mg/Kg	☼	06/28/18 06:06	07/14/18 14:16	1
Perfluorononanoic acid (PFNA)	ND		0.00024	0.000044	mg/Kg	☼	06/28/18 06:06	07/14/18 14:16	1
Perfluorodecanoic acid (PFDA)	ND		0.00024	0.000027	mg/Kg	☼	06/28/18 06:06	07/14/18 14:16	1
Perfluoroundecanoic acid (PFUnA)	ND		0.00024	0.000044	mg/Kg	☼	06/28/18 06:06	07/14/18 14:16	1
Perfluorododecanoic acid (PFDoA)	ND		0.00024	0.000081	mg/Kg	☼	06/28/18 06:06	07/14/18 14:16	1
Perfluorotridecanoic Acid (PFTriA)	ND		0.00024	0.000062	mg/Kg	☼	06/28/18 06:06	07/14/18 14:16	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.00024	0.000065	mg/Kg	☼	06/28/18 06:06	07/14/18 14:16	1
Perfluorobutanesulfonic acid (PFBS)	**0.00025**		0.00024	0.000030	mg/Kg	☼	06/28/18 06:06	07/14/18 14:16	1
Perfluorohexanesulfonic acid (PFHxS)	ND		0.00024	0.000038	mg/Kg	☼	06/28/18 06:06	07/14/18 14:16	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.00024	0.000042	mg/Kg	☼	06/28/18 06:06	07/14/18 14:16	1
Perfluorooctanesulfonic acid (PFOS)	ND		0.00061	0.00024	mg/Kg	☼	06/28/18 06:06	07/14/18 14:16	1
Perfluorodecanesulfonic acid (PFDS)	ND		0.00024	0.000047	mg/Kg	☼	06/28/18 06:06	07/14/18 14:16	1
Perfluorooctane Sulfonamide (FOSA)	ND		0.00024	0.000099	mg/Kg	☼	06/28/18 06:06	07/14/18 14:16	1
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.0024	0.00047	mg/Kg	☼	06/28/18 06:06	07/14/18 14:16	1
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.0024	0.00045	mg/Kg	☼	06/28/18 06:06	07/14/18 14:16	1
6:2 FTS	ND		0.0024	0.00018	mg/Kg	☼	06/28/18 06:06	07/14/18 14:16	1
8:2 FTS	ND		0.0024	0.00030	mg/Kg	☼	06/28/18 06:06	07/14/18 14:16	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*79*		*25 - 150*	*06/28/18 06:06*	*07/14/18 14:16*	*1*
13C5 PFPeA	*83*		*25 - 150*	*06/28/18 06:06*	*07/14/18 14:16*	*1*
13C2 PFHxA	*84*		*25 - 150*	*06/28/18 06:06*	*07/14/18 14:16*	*1*
13C4-PFHpA	*91*		*25 - 150*	*06/28/18 06:06*	*07/14/18 14:16*	*1*
13C4 PFOA	*87*		*25 - 150*	*06/28/18 06:06*	*07/14/18 14:16*	*1*
13C5 PFNA	*87*		*25 - 150*	*06/28/18 06:06*	*07/14/18 14:16*	*1*
13C2 PFDA	*90*		*25 - 150*	*06/28/18 06:06*	*07/14/18 14:16*	*1*
13C2 PFUnA	*82*		*25 - 150*	*06/28/18 06:06*	*07/14/18 14:16*	*1*
13C2 PFDoA	*85*		*25 - 150*	*06/28/18 06:06*	*07/14/18 14:16*	*1*
13C2-PFTeDA	*86*		*25 - 150*	*06/28/18 06:06*	*07/14/18 14:16*	*1*
13C3-PFBS	*73*		*25 - 150*	*06/28/18 06:06*	*07/14/18 14:16*	*1*
18O2 PFHxS	*78*		*25 - 150*	*06/28/18 06:06*	*07/14/18 14:16*	*1*
13C4 PFOS	*73*		*25 - 150*	*06/28/18 06:06*	*07/14/18 14:16*	*1*
13C8 FOSA	*65*		*25 - 150*	*06/28/18 06:06*	*07/14/18 14:16*	*1*
d3-NMeFOSAA	*86*		*25 - 150*	*06/28/18 06:06*	*07/14/18 14:16*	*1*
d5-NEtFOSAA	*81*		*25 - 150*	*06/28/18 06:06*	*07/14/18 14:16*	*1*
M2-6:2FTS	*64*		*25 - 150*	*06/28/18 06:06*	*07/14/18 14:16*	*1*
M2-8:2FTS	*91*		*25 - 150*	*06/28/18 06:06*	*07/14/18 14:16*	*1*

Client Sample Results

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Client Sample ID: NF32-GW-01

Date Collected: 06/21/18 10:00
Date Received: 06/22/18 09:05

Lab Sample ID: 320-40571-33

Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**0.026**	**B**	0.0018	0.00031	ug/L		07/02/18 14:58	07/07/18 04:43	1
Perfluoropentanoic acid (PFPeA)	**0.015**		0.0018	0.00043	ug/L		07/02/18 14:58	07/07/18 04:43	1
Perfluorohexanoic acid (PFHxA)	**0.0027**		0.0018	0.00051	ug/L		07/02/18 14:58	07/07/18 04:43	1
Perfluoroheptanoic acid (PFHpA)	**0.0018**		0.0018	0.00022	ug/L		07/02/18 14:58	07/07/18 04:43	1
Perfluorooctanoic acid (PFOA)	**0.0032**		0.0018	0.00075	ug/L		07/02/18 14:58	07/07/18 04:43	1
Perfluorononanoic acid (PFNA)	**0.00077**	**J**	0.0018	0.00024	ug/L		07/02/18 14:58	07/07/18 04:43	1
Perfluorodecanoic acid (PFDA)	ND		0.0018	0.00027	ug/L		07/02/18 14:58	07/07/18 04:43	1
Perfluoroundecanoic acid (PFUnA)	ND		0.0018	0.00097	ug/L		07/02/18 14:58	07/07/18 04:43	1
Perfluorododecanoic acid (PFDoA)	ND		0.0018	0.00049	ug/L		07/02/18 14:58	07/07/18 04:43	1
Perfluorotridecanoic Acid (PFTriA)	ND		0.0018	0.0011	ug/L		07/02/18 14:58	07/07/18 04:43	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.0018	0.00026	ug/L		07/02/18 14:58	07/07/18 04:43	1
Perfluorobutanesulfonic acid (PFBS)	**0.020**		0.0018	0.00018	ug/L		07/02/18 14:58	07/07/18 04:43	1
Perfluoropentanesulfonic acid (PFPeS)	**0.00039**	**J**	0.0018	0.00026	ug/L		07/02/18 14:58	07/07/18 04:43	1
Perfluorohexanesulfonic acid (PFHxS)	**0.0023**	**B**	0.0018	0.00015	ug/L		07/02/18 14:58	07/07/18 04:43	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.0018	0.00017	ug/L		07/02/18 14:58	07/07/18 04:43	1
Perfluorooctanesulfonic acid (PFOS)	**0.0016**	**J**	0.0018	0.00048	ug/L		07/02/18 14:58	07/07/18 04:43	1
Perfluorononanesulfonic acid (PFNS)	ND		0.0018	0.00014	ug/L		07/02/18 14:58	07/07/18 04:43	1
Perfluorodecanesulfonic acid (PFDS)	ND		0.0018	0.00028	ug/L		07/02/18 14:58	07/07/18 04:43	1
Perfluorooctane Sulfonamide (FOSA)	ND		0.0018	0.00031	ug/L		07/02/18 14:58	07/07/18 04:43	1
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.018	0.0027	ug/L		07/02/18 14:58	07/07/18 04:43	1
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.018	0.0017	ug/L		07/02/18 14:58	07/07/18 04:43	1
4:2 FTS	ND		0.018	0.0046	ug/L		07/02/18 14:58	07/07/18 04:43	1
6:2 FTS	ND		0.018	0.0018	ug/L		07/02/18 14:58	07/07/18 04:43	1
8:2 FTS	ND		0.018	0.0018	ug/L		07/02/18 14:58	07/07/18 04:43	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*50*		*25 - 150*	*07/02/18 14:58*	*07/07/18 04:43*	*1*
13C5 PFPeA	*76*		*25 - 150*	*07/02/18 14:58*	*07/07/18 04:43*	*1*
13C2 PFHxA	*86*		*25 - 150*	*07/02/18 14:58*	*07/07/18 04:43*	*1*
13C4-PFHpA	*98*		*25 - 150*	*07/02/18 14:58*	*07/07/18 04:43*	*1*
13C4 PFOA	*104*		*25 - 150*	*07/02/18 14:58*	*07/07/18 04:43*	*1*
13C5 PFNA	*107*		*25 - 150*	*07/02/18 14:58*	*07/07/18 04:43*	*1*
13C2 PFDA	*112*		*25 - 150*	*07/02/18 14:58*	*07/07/18 04:43*	*1*
13C2 PFUnA	*107*		*25 - 150*	*07/02/18 14:58*	*07/07/18 04:43*	*1*
13C2 PFDoA	*92*		*25 - 150*	*07/02/18 14:58*	*07/07/18 04:43*	*1*
13C2-PFTeDA	*90*		*25 - 150*	*07/02/18 14:58*	*07/07/18 04:43*	*1*
13C3-PFBS	*86*		*25 - 150*	*07/02/18 14:58*	*07/07/18 04:43*	*1*
18O2 PFHxS	*105*		*25 - 150*	*07/02/18 14:58*	*07/07/18 04:43*	*1*
13C4 PFOS	*105*		*25 - 150*	*07/02/18 14:58*	*07/07/18 04:43*	*1*
13C8 FOSA	*91*		*25 - 150*	*07/02/18 14:58*	*07/07/18 04:43*	*1*
d3-NMeFOSAA	*110*		*25 - 150*	*07/02/18 14:58*	*07/07/18 04:43*	*1*
d5-NEtFOSAA	*107*		*25 - 150*	*07/02/18 14:58*	*07/07/18 04:43*	*1*
M2-6:2FTS	*193*	*	*25 - 150*	*07/02/18 14:58*	*07/07/18 04:43*	*1*
M2-8:2FTS	*132*		*25 - 150*	*07/02/18 14:58*	*07/07/18 04:43*	*1*

Client Sample Results

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Client Sample ID: NF32-SS-02

Date Collected: 06/19/18 12:45
Date Received: 06/22/18 09:05

Lab Sample ID: 320-40571-34

Matrix: Solid
Percent Solids: 90.3

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND		0.00022	0.000031	mg/Kg	☼	06/28/18 06:06	07/14/18 14:24	1
Perfluoropentanoic acid (PFPeA)	ND		0.00022	0.000084	mg/Kg	☼	06/28/18 06:06	07/14/18 14:24	1
Perfluorohexanoic acid (PFHxA)	ND		0.00022	0.000046	mg/Kg	☼	06/28/18 06:06	07/14/18 14:24	1
Perfluoroheptanoic acid (PFHpA)	ND		0.00022	0.000032	mg/Kg	☼	06/28/18 06:06	07/14/18 14:24	1
Perfluorooctanoic acid (PFOA)	ND		0.00022	0.000094	mg/Kg	☼	06/28/18 06:06	07/14/18 14:24	1
Perfluorononanoic acid (PFNA)	ND		0.00022	0.000039	mg/Kg	☼	06/28/18 06:06	07/14/18 14:24	1
Perfluorodecanoic acid (PFDA)	ND		0.00022	0.000024	mg/Kg	☼	06/28/18 06:06	07/14/18 14:24	1
Perfluoroundecanoic acid (PFUnA)	ND		0.00022	0.000039	mg/Kg	☼	06/28/18 06:06	07/14/18 14:24	1
Perfluorododecanoic acid (PFDoA)	ND		0.00022	0.000073	mg/Kg	☼	06/28/18 06:06	07/14/18 14:24	1
Perfluorotridecanoic Acid (PFTriA)	ND		0.00022	0.000056	mg/Kg	☼	06/28/18 06:06	07/14/18 14:24	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.00022	0.000059	mg/Kg	☼	06/28/18 06:06	07/14/18 14:24	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.00022	0.000027	mg/Kg	☼	06/28/18 06:06	07/14/18 14:24	1
Perfluorohexanesulfonic acid (PFHxS)	ND		0.00022	0.000034	mg/Kg	☼	06/28/18 06:06	07/14/18 14:24	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.00022	0.000038	mg/Kg	☼	06/28/18 06:06	07/14/18 14:24	1
Perfluorooctanesulfonic acid (PFOS)	ND		0.00055	0.00022	mg/Kg	☼	06/28/18 06:06	07/14/18 14:24	1
Perfluorodecanesulfonic acid (PFDS)	ND		0.00022	0.000043	mg/Kg	☼	06/28/18 06:06	07/14/18 14:24	1
Perfluorooctane Sulfonamide (FOSA)	ND		0.00022	0.000090	mg/Kg	☼	06/28/18 06:06	07/14/18 14:24	1
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.0022	0.00043	mg/Kg	☼	06/28/18 06:06	07/14/18 14:24	1
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.0022	0.00040	mg/Kg	☼	06/28/18 06:06	07/14/18 14:24	1
6:2 FTS	ND		0.0022	0.00016	mg/Kg	☼	06/28/18 06:06	07/14/18 14:24	1
8:2 FTS	ND		0.0022	0.00027	mg/Kg	☼	06/28/18 06:06	07/14/18 14:24	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*78*		*25 - 150*	*06/28/18 06:06*	*07/14/18 14:24*	*1*
13C5 PFPeA	*82*		*25 - 150*	*06/28/18 06:06*	*07/14/18 14:24*	*1*
13C2 PFHxA	*83*		*25 - 150*	*06/28/18 06:06*	*07/14/18 14:24*	*1*
13C4-PFHpA	*91*		*25 - 150*	*06/28/18 06:06*	*07/14/18 14:24*	*1*
13C4 PFOA	*90*		*25 - 150*	*06/28/18 06:06*	*07/14/18 14:24*	*1*
13C5 PFNA	*88*		*25 - 150*	*06/28/18 06:06*	*07/14/18 14:24*	*1*
13C2 PFDA	*90*		*25 - 150*	*06/28/18 06:06*	*07/14/18 14:24*	*1*
13C2 PFUnA	*80*		*25 - 150*	*06/28/18 06:06*	*07/14/18 14:24*	*1*
13C2 PFDoA	*81*		*25 - 150*	*06/28/18 06:06*	*07/14/18 14:24*	*1*
13C2-PFTeDA	*90*		*25 - 150*	*06/28/18 06:06*	*07/14/18 14:24*	*1*
13C3-PFBS	*72*		*25 - 150*	*06/28/18 06:06*	*07/14/18 14:24*	*1*
18O2 PFHxS	*77*		*25 - 150*	*06/28/18 06:06*	*07/14/18 14:24*	*1*
13C4 PFOS	*72*		*25 - 150*	*06/28/18 06:06*	*07/14/18 14:24*	*1*
13C8 FOSA	*62*		*25 - 150*	*06/28/18 06:06*	*07/14/18 14:24*	*1*
d3-NMeFOSAA	*87*		*25 - 150*	*06/28/18 06:06*	*07/14/18 14:24*	*1*
d5-NEtFOSAA	*85*		*25 - 150*	*06/28/18 06:06*	*07/14/18 14:24*	*1*
M2-6:2FTS	*77*		*25 - 150*	*06/28/18 06:06*	*07/14/18 14:24*	*1*
M2-8:2FTS	*94*		*25 - 150*	*06/28/18 06:06*	*07/14/18 14:24*	*1*

Client Sample Results

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Client Sample ID: NF33-GW-01

Date Collected: 06/19/18 17:00
Date Received: 06/22/18 09:05

Lab Sample ID: 320-40571-35

Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**0.014**	**B F2**	0.0020	0.00034	ug/L		07/02/18 16:10	07/06/18 18:09	1
Perfluoropentanoic acid (PFPeA)	**0.0096**	**F2**	0.0020	0.00048	ug/L		07/02/18 16:10	07/06/18 18:09	1
Perfluorohexanoic acid (PFHxA)	**0.0021**		0.0020	0.00057	ug/L		07/02/18 16:10	07/06/18 18:09	1
Perfluoroheptanoic acid (PFHpA)	**0.0015**	**J**	0.0020	0.00024	ug/L		07/02/18 16:10	07/06/18 18:09	1
Perfluorooctanoic acid (PFOA)	ND		0.0020	0.00083	ug/L		07/02/18 16:10	07/06/18 18:09	1
Perfluorononanoic acid (PFNA)	**0.00077**	**J**	0.0020	0.00026	ug/L		07/02/18 16:10	07/06/18 18:09	1
Perfluorodecanoic acid (PFDA)	ND		0.0020	0.00030	ug/L		07/02/18 16:10	07/06/18 18:09	1
Perfluoroundecanoic acid (PFUnA)	ND		0.0020	0.0011	ug/L		07/02/18 16:10	07/06/18 18:09	1
Perfluorododecanoic acid (PFDoA)	ND		0.0020	0.00054	ug/L		07/02/18 16:10	07/06/18 18:09	1
Perfluorotridecanoic Acid (PFTriA)	ND		0.0020	0.0013	ug/L		07/02/18 16:10	07/06/18 18:09	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.0020	0.00028	ug/L		07/02/18 16:10	07/06/18 18:09	1
Perfluorobutanesulfonic acid (PFBS)	**0.0017**	**J**	0.0020	0.00020	ug/L		07/02/18 16:10	07/06/18 18:09	1
Perfluoropentanesulfonic acid (PFPeS)	ND		0.0020	0.00029	ug/L		07/02/18 16:10	07/06/18 18:09	1
Perfluorohexanesulfonic acid (PFHxS)	**0.00047**	**J B**	0.0020	0.00017	ug/L		07/02/18 16:10	07/06/18 18:09	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.0020	0.00019	ug/L		07/02/18 16:10	07/06/18 18:09	1
Perfluorooctanesulfonic acid (PFOS)	**0.00096**	**J**	0.0020	0.00053	ug/L		07/02/18 16:10	07/06/18 18:09	1
Perfluorononanesulfonic acid (PFNS)	ND		0.0020	0.00016	ug/L		07/02/18 16:10	07/06/18 18:09	1
Perfluorodecanesulfonic acid (PFDS)	ND		0.0020	0.00031	ug/L		07/02/18 16:10	07/06/18 18:09	1
Perfluorooctane Sulfonamide (FOSA)	ND		0.0020	0.00034	ug/L		07/02/18 16:10	07/06/18 18:09	1
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.020	0.0030	ug/L		07/02/18 16:10	07/06/18 18:09	1
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.020	0.0019	ug/L		07/02/18 16:10	07/06/18 18:09	1
4:2 FTS	ND	F1	0.020	0.0051	ug/L		07/02/18 16:10	07/06/18 18:09	1
6:2 FTS	**0.0022**	**J**	0.020	0.0020	ug/L		07/02/18 16:10	07/06/18 18:09	1
8:2 FTS	ND		0.020	0.0020	ug/L		07/02/18 16:10	07/06/18 18:09	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*95*		*25 - 150*	*07/02/18 16:10*	*07/06/18 18:09*	*1*
13C5 PFPeA	*94*		*25 - 150*	*07/02/18 16:10*	*07/06/18 18:09*	*1*
13C2 PFHxA	*101*		*25 - 150*	*07/02/18 16:10*	*07/06/18 18:09*	*1*
13C4-PFHpA	*105*		*25 - 150*	*07/02/18 16:10*	*07/06/18 18:09*	*1*
13C4 PFOA	*103*		*25 - 150*	*07/02/18 16:10*	*07/06/18 18:09*	*1*
13C5 PFNA	*115*		*25 - 150*	*07/02/18 16:10*	*07/06/18 18:09*	*1*
13C2 PFDA	*115*		*25 - 150*	*07/02/18 16:10*	*07/06/18 18:09*	*1*
13C2 PFUnA	*109*		*25 - 150*	*07/02/18 16:10*	*07/06/18 18:09*	*1*
13C2 PFDoA	*109*		*25 - 150*	*07/02/18 16:10*	*07/06/18 18:09*	*1*
13C2-PFTeDA	*104*		*25 - 150*	*07/02/18 16:10*	*07/06/18 18:09*	*1*
13C3-PFBS	*100*		*25 - 150*	*07/02/18 16:10*	*07/06/18 18:09*	*1*
18O2 PFHxS	*111*		*25 - 150*	*07/02/18 16:10*	*07/06/18 18:09*	*1*
13C4 PFOS	*111*		*25 - 150*	*07/02/18 16:10*	*07/06/18 18:09*	*1*
13C8 FOSA	*94*		*25 - 150*	*07/02/18 16:10*	*07/06/18 18:09*	*1*
d3-NMeFOSAA	*115*		*25 - 150*	*07/02/18 16:10*	*07/06/18 18:09*	*1*
d5-NEtFOSAA	*115*		*25 - 150*	*07/02/18 16:10*	*07/06/18 18:09*	*1*
M2-6:2FTS	*136*		*25 - 150*	*07/02/18 16:10*	*07/06/18 18:09*	*1*
M2-8:2FTS	*133*		*25 - 150*	*07/02/18 16:10*	*07/06/18 18:09*	*1*

Client Sample Results

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Client Sample ID: NF33-SS-01

Date Collected: 06/19/18 16:10
Date Received: 06/22/18 09:05

Lab Sample ID: 320-40571-36

Matrix: Solid
Percent Solids: 87.8

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**0.00020**	**J**	0.00022	0.000031	mg/Kg	☼	06/28/18 05:15	07/14/18 05:38	1
Perfluoropentanoic acid (PFPeA)	ND		0.00022	0.000086	mg/Kg	☼	06/28/18 05:15	07/14/18 05:38	1
Perfluorohexanoic acid (PFHxA)	ND		0.00022	0.000047	mg/Kg	☼	06/28/18 05:15	07/14/18 05:38	1
Perfluoroheptanoic acid (PFHpA)	ND		0.00022	0.000032	mg/Kg	☼	06/28/18 05:15	07/14/18 05:38	1
Perfluorooctanoic acid (PFOA)	ND		0.00022	0.000096	mg/Kg	☼	06/28/18 05:15	07/14/18 05:38	1
Perfluorononanoic acid (PFNA)	ND		0.00022	0.000040	mg/Kg	☼	06/28/18 05:15	07/14/18 05:38	1
Perfluorodecanoic acid (PFDA)	ND		0.00022	0.000025	mg/Kg	☼	06/28/18 05:15	07/14/18 05:38	1
Perfluoroundecanoic acid (PFUnA)	ND		0.00022	0.000040	mg/Kg	☼	06/28/18 05:15	07/14/18 05:38	1
Perfluorododecanoic acid (PFDoA)	ND		0.00022	0.000075	mg/Kg	☼	06/28/18 05:15	07/14/18 05:38	1
Perfluorotridecanoic Acid (PFTriA)	ND		0.00022	0.000057	mg/Kg	☼	06/28/18 05:15	07/14/18 05:38	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.00022	0.000061	mg/Kg	☼	06/28/18 05:15	07/14/18 05:38	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.00022	0.000028	mg/Kg	☼	06/28/18 05:15	07/14/18 05:38	1
Perfluorohexanesulfonic acid (PFHxS)	ND		0.00022	0.000035	mg/Kg	☼	06/28/18 05:15	07/14/18 05:38	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.00022	0.000039	mg/Kg	☼	06/28/18 05:15	07/14/18 05:38	1
Perfluorooctanesulfonic acid (PFOS)	ND		0.00056	0.00022	mg/Kg	☼	06/28/18 05:15	07/14/18 05:38	1
Perfluorodecanesulfonic acid (PFDS)	ND		0.00022	0.000044	mg/Kg	☼	06/28/18 05:15	07/14/18 05:38	1
Perfluorooctane Sulfonamide (FOSA)	ND		0.00022	0.000092	mg/Kg	☼	06/28/18 05:15	07/14/18 05:38	1
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.0022	0.00044	mg/Kg	☼	06/28/18 05:15	07/14/18 05:38	1
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.0022	0.00041	mg/Kg	☼	06/28/18 05:15	07/14/18 05:38	1
6:2 FTS	ND		0.0022	0.00017	mg/Kg	☼	06/28/18 05:15	07/14/18 05:38	1
8:2 FTS	ND		0.0022	0.00028	mg/Kg	☼	06/28/18 05:15	07/14/18 05:38	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*78*		*25 - 150*	*06/28/18 05:15*	*07/14/18 05:38*	*1*
13C5 PFPeA	*83*		*25 - 150*	*06/28/18 05:15*	*07/14/18 05:38*	*1*
13C2 PFHxA	*69*		*25 - 150*	*06/28/18 05:15*	*07/14/18 05:38*	*1*
13C4-PFHpA	*92*		*25 - 150*	*06/28/18 05:15*	*07/14/18 05:38*	*1*
13C4 PFOA	*92*		*25 - 150*	*06/28/18 05:15*	*07/14/18 05:38*	*1*
13C5 PFNA	*93*		*25 - 150*	*06/28/18 05:15*	*07/14/18 05:38*	*1*
13C2 PFDA	*95*		*25 - 150*	*06/28/18 05:15*	*07/14/18 05:38*	*1*
13C2 PFUnA	*86*		*25 - 150*	*06/28/18 05:15*	*07/14/18 05:38*	*1*
13C2 PFDoA	*84*		*25 - 150*	*06/28/18 05:15*	*07/14/18 05:38*	*1*
13C2-PFTeDA	*93*		*25 - 150*	*06/28/18 05:15*	*07/14/18 05:38*	*1*
13C3-PFBS	*74*		*25 - 150*	*06/28/18 05:15*	*07/14/18 05:38*	*1*
18O2 PFHxS	*81*		*25 - 150*	*06/28/18 05:15*	*07/14/18 05:38*	*1*
13C4 PFOS	*72*		*25 - 150*	*06/28/18 05:15*	*07/14/18 05:38*	*1*
13C8 FOSA	*58*		*25 - 150*	*06/28/18 05:15*	*07/14/18 05:38*	*1*
d3-NMeFOSAA	*115*		*25 - 150*	*06/28/18 05:15*	*07/14/18 05:38*	*1*
d5-NEtFOSAA	*103*		*25 - 150*	*06/28/18 05:15*	*07/14/18 05:38*	*1*
M2-6:2FTS	*149*		*25 - 150*	*06/28/18 05:15*	*07/14/18 05:38*	*1*
M2-8:2FTS	*140*		*25 - 150*	*06/28/18 05:15*	*07/14/18 05:38*	*1*

Client Sample Results

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Client Sample ID: NF34-GW-01

Date Collected: 06/19/18 13:30
Date Received: 06/22/18 09:05

Lab Sample ID: 320-40571-37

Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**0.022**	**B**	0.0017	0.00030	ug/L		07/02/18 16:10	07/13/18 22:20	1
Perfluoropentanoic acid (PFPeA)	**0.011**		0.0017	0.00042	ug/L		07/02/18 16:10	07/13/18 22:20	1
Perfluorohexanoic acid (PFHxA)	**0.0028**		0.0017	0.00050	ug/L		07/02/18 16:10	07/13/18 22:20	1
Perfluoroheptanoic acid (PFHpA)	**0.0025**	**I**	0.0017	0.00021	ug/L		07/02/18 16:10	07/13/18 22:20	1
Perfluorooctanoic acid (PFOA)	**0.0031**		0.0017	0.00073	ug/L		07/02/18 16:10	07/13/18 22:20	1
Perfluorononanoic acid (PFNA)	**0.00071**	**J**	0.0017	0.00023	ug/L		07/02/18 16:10	07/13/18 22:20	1
Perfluorodecanoic acid (PFDA)	ND		0.0017	0.00027	ug/L		07/02/18 16:10	07/13/18 22:20	1
Perfluoroundecanoic acid (PFUnA)	ND		0.0017	0.00094	ug/L		07/02/18 16:10	07/13/18 22:20	1
Perfluorododecanoic acid (PFDoA)	ND		0.0017	0.00047	ug/L		07/02/18 16:10	07/13/18 22:20	1
Perfluorotridecanoic Acid (PFTriA)	ND		0.0017	0.0011	ug/L		07/02/18 16:10	07/13/18 22:20	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.0017	0.00025	ug/L		07/02/18 16:10	07/13/18 22:20	1
Perfluorobutanesulfonic acid (PFBS)	**0.00095**	**J**	0.0017	0.00017	ug/L		07/02/18 16:10	07/13/18 22:20	1
Perfluoropentanesulfonic acid (PFPeS)	ND		0.0017	0.00026	ug/L		07/02/18 16:10	07/13/18 22:20	1
Perfluorohexanesulfonic acid (PFHxS)	**0.00097**	**J B**	0.0017	0.00015	ug/L		07/02/18 16:10	07/13/18 22:20	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.0017	0.00016	ug/L		07/02/18 16:10	07/13/18 22:20	1
Perfluorooctanesulfonic acid (PFOS)	**0.052**		0.0017	0.00046	ug/L		07/02/18 16:10	07/13/18 22:20	1
Perfluorononanesulfonic acid (PFNS)	ND		0.0017	0.00014	ug/L		07/02/18 16:10	07/13/18 22:20	1
Perfluorodecanesulfonic acid (PFDS)	ND		0.0017	0.00027	ug/L		07/02/18 16:10	07/13/18 22:20	1
Perfluorooctane Sulfonamide (FOSA)	**0.00046**	**J**	0.0017	0.00030	ug/L		07/02/18 16:10	07/13/18 22:20	1
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.017	0.0027	ug/L		07/02/18 16:10	07/13/18 22:20	1
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.017	0.0016	ug/L		07/02/18 16:10	07/13/18 22:20	1
4:2 FTS	ND		0.017	0.0045	ug/L		07/02/18 16:10	07/13/18 22:20	1
6:2 FTS	**0.026**		0.017	0.0017	ug/L		07/02/18 16:10	07/13/18 22:20	1
8:2 FTS	ND		0.017	0.0017	ug/L		07/02/18 16:10	07/13/18 22:20	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*56*		*25 - 150*	*07/02/18 16:10*	*07/13/18 22:20*	*1*
13C5 PFPeA	*80*		*25 - 150*	*07/02/18 16:10*	*07/13/18 22:20*	*1*
13C2 PFHxA	*95*		*25 - 150*	*07/02/18 16:10*	*07/13/18 22:20*	*1*
13C4-PFHpA	*98*		*25 - 150*	*07/02/18 16:10*	*07/13/18 22:20*	*1*
13C4 PFOA	*103*		*25 - 150*	*07/02/18 16:10*	*07/13/18 22:20*	*1*
13C5 PFNA	*100*		*25 - 150*	*07/02/18 16:10*	*07/13/18 22:20*	*1*
13C2 PFDA	*92*		*25 - 150*	*07/02/18 16:10*	*07/13/18 22:20*	*1*
13C2 PFUnA	*93*		*25 - 150*	*07/02/18 16:10*	*07/13/18 22:20*	*1*
13C2 PFDoA	*91*		*25 - 150*	*07/02/18 16:10*	*07/13/18 22:20*	*1*
13C2-PFTeDA	*86*		*25 - 150*	*07/02/18 16:10*	*07/13/18 22:20*	*1*
13C3-PFBS	*88*		*25 - 150*	*07/02/18 16:10*	*07/13/18 22:20*	*1*
18O2 PFHxS	*100*		*25 - 150*	*07/02/18 16:10*	*07/13/18 22:20*	*1*
13C4 PFOS	*94*		*25 - 150*	*07/02/18 16:10*	*07/13/18 22:20*	*1*
13C8 FOSA	*82*		*25 - 150*	*07/02/18 16:10*	*07/13/18 22:20*	*1*
d3-NMeFOSAA	*94*		*25 - 150*	*07/02/18 16:10*	*07/13/18 22:20*	*1*
d5-NEtFOSAA	*97*		*25 - 150*	*07/02/18 16:10*	*07/13/18 22:20*	*1*
M2-6:2FTS	*120*		*25 - 150*	*07/02/18 16:10*	*07/13/18 22:20*	*1*
M2-8:2FTS	*90*		*25 - 150*	*07/02/18 16:10*	*07/13/18 22:20*	*1*

Client Sample Results

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Client Sample ID: NF34-SS-01

Date Collected: 06/19/18 11:55
Date Received: 06/22/18 09:05

Lab Sample ID: 320-40571-38

Matrix: Solid
Percent Solids: 84.2

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**0.000039**	**J**	0.00024	0.000033	mg/Kg	☼	06/28/18 06:06	07/14/18 14:32	1
Perfluoropentanoic acid (PFPeA)	ND		0.00024	0.000091	mg/Kg	☼	06/28/18 06:06	07/14/18 14:32	1
Perfluorohexanoic acid (PFHxA)	ND		0.00024	0.000050	mg/Kg	☼	06/28/18 06:06	07/14/18 14:32	1
Perfluoroheptanoic acid (PFHpA)	ND		0.00024	0.000034	mg/Kg	☼	06/28/18 06:06	07/14/18 14:32	1
Perfluorooctanoic acid (PFOA)	ND		0.00024	0.00010	mg/Kg	☼	06/28/18 06:06	07/14/18 14:32	1
Perfluorononanoic acid (PFNA)	ND		0.00024	0.000043	mg/Kg	☼	06/28/18 06:06	07/14/18 14:32	1
Perfluorodecanoic acid (PFDA)	ND		0.00024	0.000026	mg/Kg	☼	06/28/18 06:06	07/14/18 14:32	1
Perfluoroundecanoic acid (PFUnA)	ND		0.00024	0.000043	mg/Kg	☼	06/28/18 06:06	07/14/18 14:32	1
Perfluorododecanoic acid (PFDoA)	ND		0.00024	0.000080	mg/Kg	☼	06/28/18 06:06	07/14/18 14:32	1
Perfluorotridecanoic Acid (PFTriA)	ND		0.00024	0.000061	mg/Kg	☼	06/28/18 06:06	07/14/18 14:32	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.00024	0.000064	mg/Kg	☼	06/28/18 06:06	07/14/18 14:32	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.00024	0.000030	mg/Kg	☼	06/28/18 06:06	07/14/18 14:32	1
Perfluorohexanesulfonic acid (PFHxS)	ND		0.00024	0.000037	mg/Kg	☼	06/28/18 06:06	07/14/18 14:32	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.00024	0.000042	mg/Kg	☼	06/28/18 06:06	07/14/18 14:32	1
Perfluorooctanesulfonic acid (PFOS)	**0.00089**		0.00059	0.00024	mg/Kg	☼	06/28/18 06:06	07/14/18 14:32	1
Perfluorodecanesulfonic acid (PFDS)	ND		0.00024	0.000046	mg/Kg	☼	06/28/18 06:06	07/14/18 14:32	1
Perfluorooctane Sulfonamide (FOSA)	ND		0.00024	0.000097	mg/Kg	☼	06/28/18 06:06	07/14/18 14:32	1
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.0024	0.00046	mg/Kg	☼	06/28/18 06:06	07/14/18 14:32	1
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.0024	0.00044	mg/Kg	☼	06/28/18 06:06	07/14/18 14:32	1
6:2 FTS	ND		0.0024	0.00018	mg/Kg	☼	06/28/18 06:06	07/14/18 14:32	1
8:2 FTS	ND		0.0024	0.00030	mg/Kg	☼	06/28/18 06:06	07/14/18 14:32	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*69*		*25 - 150*	*06/28/18 06:06*	*07/14/18 14:32*	*1*
13C5 PFPeA	*76*		*25 - 150*	*06/28/18 06:06*	*07/14/18 14:32*	*1*
13C2 PFHxA	*71*		*25 - 150*	*06/28/18 06:06*	*07/14/18 14:32*	*1*
13C4-PFHpA	*82*		*25 - 150*	*06/28/18 06:06*	*07/14/18 14:32*	*1*
13C4 PFOA	*80*		*25 - 150*	*06/28/18 06:06*	*07/14/18 14:32*	*1*
13C5 PFNA	*82*		*25 - 150*	*06/28/18 06:06*	*07/14/18 14:32*	*1*
13C2 PFDA	*83*		*25 - 150*	*06/28/18 06:06*	*07/14/18 14:32*	*1*
13C2 PFUnA	*75*		*25 - 150*	*06/28/18 06:06*	*07/14/18 14:32*	*1*
13C2 PFDoA	*72*		*25 - 150*	*06/28/18 06:06*	*07/14/18 14:32*	*1*
13C2-PFTeDA	*78*		*25 - 150*	*06/28/18 06:06*	*07/14/18 14:32*	*1*
13C3-PFBS	*66*		*25 - 150*	*06/28/18 06:06*	*07/14/18 14:32*	*1*
18O2 PFHxS	*70*		*25 - 150*	*06/28/18 06:06*	*07/14/18 14:32*	*1*
13C4 PFOS	*63*		*25 - 150*	*06/28/18 06:06*	*07/14/18 14:32*	*1*
13C8 FOSA	*60*		*25 - 150*	*06/28/18 06:06*	*07/14/18 14:32*	*1*
d3-NMeFOSAA	*79*		*25 - 150*	*06/28/18 06:06*	*07/14/18 14:32*	*1*
d5-NEtFOSAA	*73*		*25 - 150*	*06/28/18 06:06*	*07/14/18 14:32*	*1*
M2-6:2FTS	*78*		*25 - 150*	*06/28/18 06:06*	*07/14/18 14:32*	*1*
M2-8:2FTS	*83*		*25 - 150*	*06/28/18 06:06*	*07/14/18 14:32*	*1*

Client Sample Results

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Client Sample ID: NF35-GW-01

Date Collected: 06/20/18 15:20
Date Received: 06/22/18 09:05

Lab Sample ID: 320-40571-39

Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**0.011**	**B**	0.0019	0.00033	ug/L		07/02/18 16:10	07/12/18 22:36	1
Perfluoropentanoic acid (PFPeA)	**0.0017**	**J**	0.0019	0.00047	ug/L		07/02/18 16:10	07/12/18 22:36	1
Perfluorohexanoic acid (PFHxA)	**0.0035**		0.0019	0.00055	ug/L		07/02/18 16:10	07/12/18 22:36	1
Perfluoroheptanoic acid (PFHpA)	**0.0026**		0.0019	0.00024	ug/L		07/02/18 16:10	07/12/18 22:36	1
Perfluorooctanoic acid (PFOA)	**0.0082**		0.0019	0.00081	ug/L		07/02/18 16:10	07/12/18 22:36	1
Perfluorononanoic acid (PFNA)	**0.0016**	**J**	0.0019	0.00026	ug/L		07/02/18 16:10	07/12/18 22:36	1
Perfluorodecanoic acid (PFDA)	ND		0.0019	0.00029	ug/L		07/02/18 16:10	07/12/18 22:36	1
Perfluoroundecanoic acid (PFUnA)	ND		0.0019	0.0010	ug/L		07/02/18 16:10	07/12/18 22:36	1
Perfluorododecanoic acid (PFDoA)	ND		0.0019	0.00052	ug/L		07/02/18 16:10	07/12/18 22:36	1
Perfluorotridecanoic Acid (PFTriA)	ND		0.0019	0.0012	ug/L		07/02/18 16:10	07/12/18 22:36	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.0019	0.00028	ug/L		07/02/18 16:10	07/12/18 22:36	1
Perfluorobutanesulfonic acid (PFBS)	**0.0055**		0.0019	0.00019	ug/L		07/02/18 16:10	07/12/18 22:36	1
Perfluoropentanesulfonic acid (PFPeS)	**0.00067**	**J**	0.0019	0.00029	ug/L		07/02/18 16:10	07/12/18 22:36	1
Perfluorohexanesulfonic acid (PFHxS)	**0.0017**	**J B**	0.0019	0.00016	ug/L		07/02/18 16:10	07/12/18 22:36	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.0019	0.00018	ug/L		07/02/18 16:10	07/12/18 22:36	1
Perfluorooctanesulfonic acid (PFOS)	**0.012**		0.0019	0.00051	ug/L		07/02/18 16:10	07/12/18 22:36	1
Perfluorononanesulfonic acid (PFNS)	ND		0.0019	0.00015	ug/L		07/02/18 16:10	07/12/18 22:36	1
Perfluorodecanesulfonic acid (PFDS)	ND		0.0019	0.00030	ug/L		07/02/18 16:10	07/12/18 22:36	1
Perfluorooctane Sulfonamide (FOSA)	ND		0.0019	0.00033	ug/L		07/02/18 16:10	07/12/18 22:36	1
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.019	0.0029	ug/L		07/02/18 16:10	07/12/18 22:36	1
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.019	0.0018	ug/L		07/02/18 16:10	07/12/18 22:36	1
4:2 FTS	ND		0.019	0.0049	ug/L		07/02/18 16:10	07/12/18 22:36	1
6:2 FTS	**0.0021**	**J**	0.019	0.0019	ug/L		07/02/18 16:10	07/12/18 22:36	1
8:2 FTS	ND		0.019	0.0019	ug/L		07/02/18 16:10	07/12/18 22:36	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*30*		*25 - 150*	*07/02/18 16:10*	*07/12/18 22:36*	*1*
13C5 PFPeA	*60*		*25 - 150*	*07/02/18 16:10*	*07/12/18 22:36*	*1*
13C2 PFHxA	*72*		*25 - 150*	*07/02/18 16:10*	*07/12/18 22:36*	*1*
13C4-PFHpA	*89*		*25 - 150*	*07/02/18 16:10*	*07/12/18 22:36*	*1*
13C4 PFOA	*102*		*25 - 150*	*07/02/18 16:10*	*07/12/18 22:36*	*1*
13C5 PFNA	*104*		*25 - 150*	*07/02/18 16:10*	*07/12/18 22:36*	*1*
13C2 PFDA	*105*		*25 - 150*	*07/02/18 16:10*	*07/12/18 22:36*	*1*
13C2 PFUnA	*97*		*25 - 150*	*07/02/18 16:10*	*07/12/18 22:36*	*1*
13C2 PFDoA	*94*		*25 - 150*	*07/02/18 16:10*	*07/12/18 22:36*	*1*
13C2-PFTeDA	*85*		*25 - 150*	*07/02/18 16:10*	*07/12/18 22:36*	*1*
13C3-PFBS	*79*		*25 - 150*	*07/02/18 16:10*	*07/12/18 22:36*	*1*
18O2 PFHxS	*96*		*25 - 150*	*07/02/18 16:10*	*07/12/18 22:36*	*1*
13C4 PFOS	*97*		*25 - 150*	*07/02/18 16:10*	*07/12/18 22:36*	*1*
13C8 FOSA	*82*		*25 - 150*	*07/02/18 16:10*	*07/12/18 22:36*	*1*
d3-NMeFOSAA	*102*		*25 - 150*	*07/02/18 16:10*	*07/12/18 22:36*	*1*
d5-NEtFOSAA	*107*		*25 - 150*	*07/02/18 16:10*	*07/12/18 22:36*	*1*
M2-6:2FTS	*202*	*	*25 - 150*	*07/02/18 16:10*	*07/12/18 22:36*	*1*
M2-8:2FTS	*131*		*25 - 150*	*07/02/18 16:10*	*07/12/18 22:36*	*1*

Client Sample Results

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Client Sample ID: NF35-SS-01

Date Collected: 06/20/18 15:00
Date Received: 06/22/18 09:05

Lab Sample ID: 320-40571-40

Matrix: Solid
Percent Solids: 85.6

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND		0.00023	0.000032	mg/Kg	☼	06/28/18 06:06	07/14/18 14:40	1
Perfluoropentanoic acid (PFPeA)	ND		0.00023	0.000089	mg/Kg	☼	06/28/18 06:06	07/14/18 14:40	1
Perfluorohexanoic acid (PFHxA)	ND		0.00023	0.000048	mg/Kg	☼	06/28/18 06:06	07/14/18 14:40	1
Perfluoroheptanoic acid (PFHpA)	ND		0.00023	0.000033	mg/Kg	☼	06/28/18 06:06	07/14/18 14:40	1
Perfluorooctanoic acid (PFOA)	**0.00019**	**J**	0.00023	0.000099	mg/Kg	☼	06/28/18 06:06	07/14/18 14:40	1
Perfluorononanoic acid (PFNA)	**0.000050**	**J**	0.00023	0.000041	mg/Kg	☼	06/28/18 06:06	07/14/18 14:40	1
Perfluorodecanoic acid (PFDA)	ND		0.00023	0.000025	mg/Kg	☼	06/28/18 06:06	07/14/18 14:40	1
Perfluoroundecanoic acid (PFUnA)	ND		0.00023	0.000041	mg/Kg	☼	06/28/18 06:06	07/14/18 14:40	1
Perfluorododecanoic acid (PFDoA)	ND		0.00023	0.000077	mg/Kg	☼	06/28/18 06:06	07/14/18 14:40	1
Perfluorotridecanoic Acid (PFTriA)	ND		0.00023	0.000059	mg/Kg	☼	06/28/18 06:06	07/14/18 14:40	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.00023	0.000062	mg/Kg	☼	06/28/18 06:06	07/14/18 14:40	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.00023	0.000029	mg/Kg	☼	06/28/18 06:06	07/14/18 14:40	1
Perfluorohexanesulfonic acid (PFHxS)	ND		0.00023	0.000036	mg/Kg	☼	06/28/18 06:06	07/14/18 14:40	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.00023	0.000040	mg/Kg	☼	06/28/18 06:06	07/14/18 14:40	1
Perfluorooctanesulfonic acid (PFOS)	**0.0014**		0.00058	0.00023	mg/Kg	☼	06/28/18 06:06	07/14/18 14:40	1
Perfluorodecanesulfonic acid (PFDS)	ND		0.00023	0.000045	mg/Kg	☼	06/28/18 06:06	07/14/18 14:40	1
Perfluorooctane Sulfonamide (FOSA)	ND		0.00023	0.000094	mg/Kg	☼	06/28/18 06:06	07/14/18 14:40	1
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.0023	0.00045	mg/Kg	☼	06/28/18 06:06	07/14/18 14:40	1
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.0023	0.00043	mg/Kg	☼	06/28/18 06:06	07/14/18 14:40	1
6:2 FTS	ND		0.0023	0.00017	mg/Kg	☼	06/28/18 06:06	07/14/18 14:40	1
8:2 FTS	ND		0.0023	0.00029	mg/Kg	☼	06/28/18 06:06	07/14/18 14:40	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*70*		*25 - 150*	*06/28/18 06:06*	*07/14/18 14:40*	*1*
13C5 PFPeA	*74*		*25 - 150*	*06/28/18 06:06*	*07/14/18 14:40*	*1*
13C2 PFHxA	*73*		*25 - 150*	*06/28/18 06:06*	*07/14/18 14:40*	*1*
13C4-PFHpA	*85*		*25 - 150*	*06/28/18 06:06*	*07/14/18 14:40*	*1*
13C4 PFOA	*87*		*25 - 150*	*06/28/18 06:06*	*07/14/18 14:40*	*1*
13C5 PFNA	*81*		*25 - 150*	*06/28/18 06:06*	*07/14/18 14:40*	*1*
13C2 PFDA	*87*		*25 - 150*	*06/28/18 06:06*	*07/14/18 14:40*	*1*
13C2 PFUnA	*85*		*25 - 150*	*06/28/18 06:06*	*07/14/18 14:40*	*1*
13C2 PFDoA	*65*		*25 - 150*	*06/28/18 06:06*	*07/14/18 14:40*	*1*
13C2-PFTeDA	*73*		*25 - 150*	*06/28/18 06:06*	*07/14/18 14:40*	*1*
13C3-PFBS	*65*		*25 - 150*	*06/28/18 06:06*	*07/14/18 14:40*	*1*
18O2 PFHxS	*70*		*25 - 150*	*06/28/18 06:06*	*07/14/18 14:40*	*1*
13C4 PFOS	*65*		*25 - 150*	*06/28/18 06:06*	*07/14/18 14:40*	*1*
13C8 FOSA	*59*		*25 - 150*	*06/28/18 06:06*	*07/14/18 14:40*	*1*
d3-NMeFOSAA	*97*		*25 - 150*	*06/28/18 06:06*	*07/14/18 14:40*	*1*
d5-NEtFOSAA	*96*		*25 - 150*	*06/28/18 06:06*	*07/14/18 14:40*	*1*
M2-6:2FTS	*175*	*	*25 - 150*	*06/28/18 06:06*	*07/14/18 14:40*	*1*
M2-8:2FTS	*123*		*25 - 150*	*06/28/18 06:06*	*07/14/18 14:40*	*1*

Client Sample Results

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Client Sample ID: NF36-GW-01

Date Collected: 06/21/18 10:35
Date Received: 06/22/18 09:05

Lab Sample ID: 320-40571-41

Matrix: Water

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**0.17**	**B**	0.0029	0.00051	ug/L		07/02/18 16:10	07/13/18 22:28	1
Perfluoropentanoic acid (PFPeA)	**0.18**		0.0029	0.00072	ug/L		07/02/18 16:10	07/13/18 22:28	1
Perfluorohexanoic acid (PFHxA)	**0.046**		0.0029	0.00085	ug/L		07/02/18 16:10	07/13/18 22:28	1
Perfluoroheptanoic acid (PFHpA)	**0.047**		0.0029	0.00037	ug/L		07/02/18 16:10	07/13/18 22:28	1
Perfluorooctanoic acid (PFOA)	**0.020**		0.0029	0.0012	ug/L		07/02/18 16:10	07/13/18 22:28	1
Perfluorononanoic acid (PFNA)	**0.020**		0.0029	0.00040	ug/L		07/02/18 16:10	07/13/18 22:28	1
Perfluorodecanoic acid (PFDA)	**0.0085**		0.0029	0.00046	ug/L		07/02/18 16:10	07/13/18 22:28	1
Perfluoroundecanoic acid (PFUnA)	**0.0096**		0.0029	0.0016	ug/L		07/02/18 16:10	07/13/18 22:28	1
Perfluorododecanoic acid (PFDoA)	**0.0039**		0.0029	0.00081	ug/L		07/02/18 16:10	07/13/18 22:28	1
Perfluorotridecanoic Acid (PFTriA)	**0.0043**		0.0029	0.0019	ug/L		07/02/18 16:10	07/13/18 22:28	1
Perfluorotetradecanoic acid (PFTeA)	**0.0032**		0.0029	0.00043	ug/L		07/02/18 16:10	07/13/18 22:28	1
Perfluorobutanesulfonic acid (PFBS)	**0.0076**		0.0029	0.00029	ug/L		07/02/18 16:10	07/13/18 22:28	1
Perfluoropentanesulfonic acid (PFPeS)	**0.00065**	**J**	0.0029	0.00044	ug/L		07/02/18 16:10	07/13/18 22:28	1
Perfluorohexanesulfonic acid (PFHxS)	**0.0032**	**B**	0.0029	0.00025	ug/L		07/02/18 16:10	07/13/18 22:28	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.0029	0.00028	ug/L		07/02/18 16:10	07/13/18 22:28	1
Perfluorooctanesulfonic acid (PFOS)	ND		0.0029	0.00079	ug/L		07/02/18 16:10	07/13/18 22:28	1
Perfluorononanesulfonic acid (PFNS)	ND		0.0029	0.00023	ug/L		07/02/18 16:10	07/13/18 22:28	1
Perfluorodecanesulfonic acid (PFDS)	ND		0.0029	0.00047	ug/L		07/02/18 16:10	07/13/18 22:28	1
Perfluorooctane Sulfonamide (FOSA)	ND		0.0029	0.00051	ug/L		07/02/18 16:10	07/13/18 22:28	1
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.029	0.0046	ug/L		07/02/18 16:10	07/13/18 22:28	1
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.029	0.0028	ug/L		07/02/18 16:10	07/13/18 22:28	1
4:2 FTS	ND		0.029	0.0076	ug/L		07/02/18 16:10	07/13/18 22:28	1
6:2 FTS	**0.0034**	**J**	0.029	0.0029	ug/L		07/02/18 16:10	07/13/18 22:28	1
8:2 FTS	ND		0.029	0.0029	ug/L		07/02/18 16:10	07/13/18 22:28	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*61*		*25 - 150*	*07/02/18 16:10*	*07/13/18 22:28*	*1*
13C5 PFPeA	*84*		*25 - 150*	*07/02/18 16:10*	*07/13/18 22:28*	*1*
13C2 PFHxA	*94*		*25 - 150*	*07/02/18 16:10*	*07/13/18 22:28*	*1*
13C4-PFHpA	*105*		*25 - 150*	*07/02/18 16:10*	*07/13/18 22:28*	*1*
13C4 PFOA	*103*		*25 - 150*	*07/02/18 16:10*	*07/13/18 22:28*	*1*
13C5 PFNA	*99*		*25 - 150*	*07/02/18 16:10*	*07/13/18 22:28*	*1*
13C2 PFDA	*96*		*25 - 150*	*07/02/18 16:10*	*07/13/18 22:28*	*1*
13C2 PFUnA	*98*		*25 - 150*	*07/02/18 16:10*	*07/13/18 22:28*	*1*
13C2 PFDoA	*93*		*25 - 150*	*07/02/18 16:10*	*07/13/18 22:28*	*1*
13C2-PFTeDA	*91*		*25 - 150*	*07/02/18 16:10*	*07/13/18 22:28*	*1*
13C3-PFBS	*89*		*25 - 150*	*07/02/18 16:10*	*07/13/18 22:28*	*1*
18O2 PFHxS	*100*		*25 - 150*	*07/02/18 16:10*	*07/13/18 22:28*	*1*
13C4 PFOS	*94*		*25 - 150*	*07/02/18 16:10*	*07/13/18 22:28*	*1*
13C8 FOSA	*80*		*25 - 150*	*07/02/18 16:10*	*07/13/18 22:28*	*1*
d3-NMeFOSAA	*98*		*25 - 150*	*07/02/18 16:10*	*07/13/18 22:28*	*1*
d5-NEtFOSAA	*97*		*25 - 150*	*07/02/18 16:10*	*07/13/18 22:28*	*1*
M2-6:2FTS	*132*		*25 - 150*	*07/02/18 16:10*	*07/13/18 22:28*	*1*

Client Sample Results

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Client Sample ID: NF36-GW-01

Lab Sample ID: 320-40571-41
Date Collected: 06/21/18 10:35
Matrix: Water
Date Received: 06/22/18 09:05

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
M2-8:2FTS	94		25 - 150	07/02/18 16:10	07/13/18 22:28	1

Client Sample ID: NF36-SS-02

Lab Sample ID: 320-40571-42
Date Collected: 06/20/18 16:50
Matrix: Solid
Date Received: 06/22/18 09:05
Percent Solids: 83.5

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND		0.00024	0.000033	mg/Kg	☼	06/28/18 06:06	07/14/18 14:48	1
Perfluoropentanoic acid (PFPeA)	ND		0.00024	0.000092	mg/Kg	☼	06/28/18 06:06	07/14/18 14:48	1
Perfluorohexanoic acid (PFHxA)	ND		0.00024	0.000050	mg/Kg	☼	06/28/18 06:06	07/14/18 14:48	1
Perfluoroheptanoic acid (PFHpA)	ND		0.00024	0.000035	mg/Kg	☼	06/28/18 06:06	07/14/18 14:48	1
Perfluorooctanoic acid (PFOA)	ND		0.00024	0.00010	mg/Kg	☼	06/28/18 06:06	07/14/18 14:48	1
Perfluorononanoic acid (PFNA)	ND		0.00024	0.000043	mg/Kg	☼	06/28/18 06:06	07/14/18 14:48	1
Perfluorodecanoic acid (PFDA)	ND		0.00024	0.000026	mg/Kg	☼	06/28/18 06:06	07/14/18 14:48	1
Perfluoroundecanoic acid (PFUnA)	ND		0.00024	0.000043	mg/Kg	☼	06/28/18 06:06	07/14/18 14:48	1
Perfluorododecanoic acid (PFDoA)	ND		0.00024	0.000080	mg/Kg	☼	06/28/18 06:06	07/14/18 14:48	1
Perfluorotridecanoic Acid (PFTriA)	ND		0.00024	0.000061	mg/Kg	☼	06/28/18 06:06	07/14/18 14:48	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.00024	0.000064	mg/Kg	☼	06/28/18 06:06	07/14/18 14:48	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.00024	0.000030	mg/Kg	☼	06/28/18 06:06	07/14/18 14:48	1
Perfluorohexanesulfonic acid (PFHxS)	ND		0.00024	0.000037	mg/Kg	☼	06/28/18 06:06	07/14/18 14:48	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.00024	0.000042	mg/Kg	☼	06/28/18 06:06	07/14/18 14:48	1
Perfluorooctanesulfonic acid (PFOS)	ND		0.00060	0.00024	mg/Kg	☼	06/28/18 06:06	07/14/18 14:48	1
Perfluorodecanesulfonic acid (PFDS)	ND		0.00024	0.000047	mg/Kg	☼	06/28/18 06:06	07/14/18 14:48	1
Perfluorooctane Sulfonamide (FOSA)	ND		0.00024	0.000098	mg/Kg	☼	06/28/18 06:06	07/14/18 14:48	1
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.0024	0.00047	mg/Kg	☼	06/28/18 06:06	07/14/18 14:48	1
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.0024	0.00044	mg/Kg	☼	06/28/18 06:06	07/14/18 14:48	1
6:2 FTS	ND		0.0024	0.00018	mg/Kg	☼	06/28/18 06:06	07/14/18 14:48	1
8:2 FTS	ND		0.0024	0.00030	mg/Kg	☼	06/28/18 06:06	07/14/18 14:48	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	80		25 - 150	06/28/18 06:06	07/14/18 14:48	1
13C5 PFPeA	84		25 - 150	06/28/18 06:06	07/14/18 14:48	1
13C2 PFHxA	86		25 - 150	06/28/18 06:06	07/14/18 14:48	1
13C4-PFHpA	90		25 - 150	06/28/18 06:06	07/14/18 14:48	1
13C4 PFOA	86		25 - 150	06/28/18 06:06	07/14/18 14:48	1
13C5 PFNA	83		25 - 150	06/28/18 06:06	07/14/18 14:48	1
13C2 PFDA	89		25 - 150	06/28/18 06:06	07/14/18 14:48	1
13C2 PFUnA	84		25 - 150	06/28/18 06:06	07/14/18 14:48	1
13C2 PFDoA	86		25 - 150	06/28/18 06:06	07/14/18 14:48	1
13C2-PFTeDA	84		25 - 150	06/28/18 06:06	07/14/18 14:48	1
13C3-PFBS	79		25 - 150	06/28/18 06:06	07/14/18 14:48	1
18O2 PFHxS	79		25 - 150	06/28/18 06:06	07/14/18 14:48	1
13C4 PFOS	76		25 - 150	06/28/18 06:06	07/14/18 14:48	1
13C8 FOSA	70		25 - 150	06/28/18 06:06	07/14/18 14:48	1
d3-NMeFOSAA	90		25 - 150	06/28/18 06:06	07/14/18 14:48	1
d5-NEtFOSAA	86		25 - 150	06/28/18 06:06	07/14/18 14:48	1
M2-6:2FTS	68		25 - 150	06/28/18 06:06	07/14/18 14:48	1

Client Sample Results

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Client Sample ID: NF36-SS-02

Lab Sample ID: 320-40571-42
Date Collected: 06/20/18 16:50
Matrix: Solid
Date Received: 06/22/18 09:05
Percent Solids: 83.5

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
M2-8:2FTS	70		25 - 150	06/28/18 06:06	07/14/18 14:48	1

Client Sample ID: NF-EB-02

Lab Sample ID: 320-40571-43
Date Collected: 06/21/18 09:20
Matrix: Water
Date Received: 06/22/18 09:05

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**0.00097**	**J B**	0.0018	0.00031	ug/L		07/02/18 16:10	07/06/18 19:04	1
Perfluoropentanoic acid (PFPeA)	ND		0.0018	0.00043	ug/L		07/02/18 16:10	07/06/18 19:04	1
Perfluorohexanoic acid (PFHxA)	ND		0.0018	0.00051	ug/L		07/02/18 16:10	07/06/18 19:04	1
Perfluoroheptanoic acid (PFHpA)	ND		0.0018	0.00022	ug/L		07/02/18 16:10	07/06/18 19:04	1
Perfluorooctanoic acid (PFOA)	ND		0.0018	0.00075	ug/L		07/02/18 16:10	07/06/18 19:04	1
Perfluorononanoic acid (PFNA)	ND		0.0018	0.00024	ug/L		07/02/18 16:10	07/06/18 19:04	1
Perfluorodecanoic acid (PFDA)	ND		0.0018	0.00027	ug/L		07/02/18 16:10	07/06/18 19:04	1
Perfluoroundecanoic acid (PFUnA)	ND		0.0018	0.00097	ug/L		07/02/18 16:10	07/06/18 19:04	1
Perfluorododecanoic acid (PFDoA)	ND		0.0018	0.00048	ug/L		07/02/18 16:10	07/06/18 19:04	1
Perfluorotridecanoic Acid (PFTriA)	ND		0.0018	0.0011	ug/L		07/02/18 16:10	07/06/18 19:04	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.0018	0.00026	ug/L		07/02/18 16:10	07/06/18 19:04	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.0018	0.00018	ug/L		07/02/18 16:10	07/06/18 19:04	1
Perfluoropentanesulfonic acid (PFPeS)	ND		0.0018	0.00026	ug/L		07/02/18 16:10	07/06/18 19:04	1
Perfluorohexanesulfonic acid (PFHxS)	ND		0.0018	0.00015	ug/L		07/02/18 16:10	07/06/18 19:04	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.0018	0.00017	ug/L		07/02/18 16:10	07/06/18 19:04	1
Perfluorooctanesulfonic acid (PFOS)	ND		0.0018	0.00047	ug/L		07/02/18 16:10	07/06/18 19:04	1
Perfluorononanesulfonic acid (PFNS)	ND		0.0018	0.00014	ug/L		07/02/18 16:10	07/06/18 19:04	1
Perfluorodecanesulfonic acid (PFDS)	ND		0.0018	0.00028	ug/L		07/02/18 16:10	07/06/18 19:04	1
Perfluorooctane Sulfonamide (FOSA)	ND		0.0018	0.00031	ug/L		07/02/18 16:10	07/06/18 19:04	1
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.018	0.0027	ug/L		07/02/18 16:10	07/06/18 19:04	1
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.018	0.0017	ug/L		07/02/18 16:10	07/06/18 19:04	1
4:2 FTS	ND		0.018	0.0046	ug/L		07/02/18 16:10	07/06/18 19:04	1
6:2 FTS	ND		0.018	0.0018	ug/L		07/02/18 16:10	07/06/18 19:04	1
8:2 FTS	ND		0.018	0.0018	ug/L		07/02/18 16:10	07/06/18 19:04	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	92		25 - 150	07/02/18 16:10	07/06/18 19:04	1
13C5 PFPeA	100		25 - 150	07/02/18 16:10	07/06/18 19:04	1
13C2 PFHxA	97		25 - 150	07/02/18 16:10	07/06/18 19:04	1
13C4-PFHpA	106		25 - 150	07/02/18 16:10	07/06/18 19:04	1
13C4 PFOA	107		25 - 150	07/02/18 16:10	07/06/18 19:04	1
13C5 PFNA	105		25 - 150	07/02/18 16:10	07/06/18 19:04	1
13C2 PFDA	115		25 - 150	07/02/18 16:10	07/06/18 19:04	1
13C2 PFUnA	100		25 - 150	07/02/18 16:10	07/06/18 19:04	1
13C2 PFDoA	102		25 - 150	07/02/18 16:10	07/06/18 19:04	1
13C2-PFTeDA	103		25 - 150	07/02/18 16:10	07/06/18 19:04	1
13C3-PFBS	97		25 - 150	07/02/18 16:10	07/06/18 19:04	1
18O2 PFHxS	107		25 - 150	07/02/18 16:10	07/06/18 19:04	1
13C4 PFOS	104		25 - 150	07/02/18 16:10	07/06/18 19:04	1

Client Sample Results

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Client Sample ID: NF-EB-02

Lab Sample ID: 320-40571-43

Date Collected: 06/21/18 09:20
Matrix: Water
Date Received: 06/22/18 09:05

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 FOSA	93		25 - 150	07/02/18 16:10	07/06/18 19:04	1
d3-NMeFOSAA	109		25 - 150	07/02/18 16:10	07/06/18 19:04	1
d5-NEtFOSAA	114		25 - 150	07/02/18 16:10	07/06/18 19:04	1
M2-6:2FTS	114		25 - 150	07/02/18 16:10	07/06/18 19:04	1
M2-8:2FTS	133		25 - 150	07/02/18 16:10	07/06/18 19:04	1

Client Sample ID: NF-FB-02

Lab Sample ID: 320-40571-44

Date Collected: 06/21/18 09:30
Matrix: Water
Date Received: 06/22/18 09:05

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**0.00093**	**J B**	0.0018	0.00032	ug/L		07/02/18 16:10	07/06/18 19:11	1
Perfluoropentanoic acid (PFPeA)	ND		0.0018	0.00044	ug/L		07/02/18 16:10	07/06/18 19:11	1
Perfluorohexanoic acid (PFHxA)	ND		0.0018	0.00052	ug/L		07/02/18 16:10	07/06/18 19:11	1
Perfluoroheptanoic acid (PFHpA)	ND		0.0018	0.00023	ug/L		07/02/18 16:10	07/06/18 19:11	1
Perfluorooctanoic acid (PFOA)	ND		0.0018	0.00077	ug/L		07/02/18 16:10	07/06/18 19:11	1
Perfluorononanoic acid (PFNA)	ND		0.0018	0.00024	ug/L		07/02/18 16:10	07/06/18 19:11	1
Perfluorodecanoic acid (PFDA)	ND		0.0018	0.00028	ug/L		07/02/18 16:10	07/06/18 19:11	1
Perfluoroundecanoic acid (PFUnA)	ND		0.0018	0.00099	ug/L		07/02/18 16:10	07/06/18 19:11	1
Perfluorododecanoic acid (PFDoA)	ND		0.0018	0.00050	ug/L		07/02/18 16:10	07/06/18 19:11	1
Perfluorotridecanoic Acid (PFTriA)	ND		0.0018	0.0012	ug/L		07/02/18 16:10	07/06/18 19:11	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.0018	0.00026	ug/L		07/02/18 16:10	07/06/18 19:11	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.0018	0.00018	ug/L		07/02/18 16:10	07/06/18 19:11	1
Perfluoropentanesulfonic acid (PFPeS)	ND		0.0018	0.00027	ug/L		07/02/18 16:10	07/06/18 19:11	1
Perfluorohexanesulfonic acid (PFHxS)	ND		0.0018	0.00015	ug/L		07/02/18 16:10	07/06/18 19:11	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.0018	0.00017	ug/L		07/02/18 16:10	07/06/18 19:11	1
Perfluorooctanesulfonic acid (PFOS)	ND		0.0018	0.00049	ug/L		07/02/18 16:10	07/06/18 19:11	1
Perfluorononanesulfonic acid (PFNS)	ND		0.0018	0.00014	ug/L		07/02/18 16:10	07/06/18 19:11	1
Perfluorodecanesulfonic acid (PFDS)	ND		0.0018	0.00029	ug/L		07/02/18 16:10	07/06/18 19:11	1
Perfluorooctane Sulfonamide (FOSA)	ND		0.0018	0.00032	ug/L		07/02/18 16:10	07/06/18 19:11	1
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.018	0.0028	ug/L		07/02/18 16:10	07/06/18 19:11	1
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.018	0.0017	ug/L		07/02/18 16:10	07/06/18 19:11	1
4:2 FTS	ND		0.018	0.0047	ug/L		07/02/18 16:10	07/06/18 19:11	1
6:2 FTS	ND		0.018	0.0018	ug/L		07/02/18 16:10	07/06/18 19:11	1
8:2 FTS	ND		0.018	0.0018	ug/L		07/02/18 16:10	07/06/18 19:11	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	99		25 - 150	07/02/18 16:10	07/06/18 19:11	1
13C5 PFPeA	95		25 - 150	07/02/18 16:10	07/06/18 19:11	1
13C2 PFHxA	93		25 - 150	07/02/18 16:10	07/06/18 19:11	1
13C4-PFHpA	104		25 - 150	07/02/18 16:10	07/06/18 19:11	1
13C4 PFOA	101		25 - 150	07/02/18 16:10	07/06/18 19:11	1
13C5 PFNA	102		25 - 150	07/02/18 16:10	07/06/18 19:11	1
13C2 PFDA	104		25 - 150	07/02/18 16:10	07/06/18 19:11	1
13C2 PFUnA	100		25 - 150	07/02/18 16:10	07/06/18 19:11	1
13C2 PFDoA	98		25 - 150	07/02/18 16:10	07/06/18 19:11	1

Client Sample Results

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Client Sample ID: NF-FB-02

Lab Sample ID: 320-40571-44
Date Collected: 06/21/18 09:30
Matrix: Water
Date Received: 06/22/18 09:05

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2-PFTeDA	97		25 - 150	07/02/18 16:10	07/06/18 19:11	1
13C3-PFBS	95		25 - 150	07/02/18 16:10	07/06/18 19:11	1
18O2 PFHxS	105		25 - 150	07/02/18 16:10	07/06/18 19:11	1
13C4 PFOS	104		25 - 150	07/02/18 16:10	07/06/18 19:11	1
13C8 FOSA	87		25 - 150	07/02/18 16:10	07/06/18 19:11	1
d3-NMeFOSAA	97		25 - 150	07/02/18 16:10	07/06/18 19:11	1
d5-NEtFOSAA	100		25 - 150	07/02/18 16:10	07/06/18 19:11	1
M2-6:2FTS	113		25 - 150	07/02/18 16:10	07/06/18 19:11	1
M2-8:2FTS	109		25 - 150	07/02/18 16:10	07/06/18 19:11	1

Client Sample ID: NFMW1-GW-01

Lab Sample ID: 320-40571-45
Date Collected: 06/18/18 15:15
Matrix: Water
Date Received: 06/22/18 09:05

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**0.017**	**B**	0.0019	0.00033	ug/L		07/02/18 14:58	07/07/18 04:51	1
Perfluoropentanoic acid (PFPeA)	**0.014**		0.0019	0.00047	ug/L		07/02/18 14:58	07/07/18 04:51	1
Perfluorohexanoic acid (PFHxA)	**0.011**		0.0019	0.00055	ug/L		07/02/18 14:58	07/07/18 04:51	1
Perfluoroheptanoic acid (PFHpA)	**0.0053**		0.0019	0.00024	ug/L		07/02/18 14:58	07/07/18 04:51	1
Perfluorooctanoic acid (PFOA)	**0.0087**		0.0019	0.00081	ug/L		07/02/18 14:58	07/07/18 04:51	1
Perfluorononanoic acid (PFNA)	**0.00037**	**J**	0.0019	0.00026	ug/L		07/02/18 14:58	07/07/18 04:51	1
Perfluorodecanoic acid (PFDA)	ND		0.0019	0.00030	ug/L		07/02/18 14:58	07/07/18 04:51	1
Perfluoroundecanoic acid (PFUnA)	ND		0.0019	0.0011	ug/L		07/02/18 14:58	07/07/18 04:51	1
Perfluorododecanoic acid (PFDoA)	ND		0.0019	0.00053	ug/L		07/02/18 14:58	07/07/18 04:51	1
Perfluorotridecanoic Acid (PFTriA)	ND		0.0019	0.0012	ug/L		07/02/18 14:58	07/07/18 04:51	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.0019	0.00028	ug/L		07/02/18 14:58	07/07/18 04:51	1
Perfluorobutanesulfonic acid (PFBS)	**0.011**		0.0019	0.00019	ug/L		07/02/18 14:58	07/07/18 04:51	1
Perfluoropentanesulfonic acid (PFPeS)	**0.0019**		0.0019	0.00029	ug/L		07/02/18 14:58	07/07/18 04:51	1
Perfluorohexanesulfonic acid (PFHxS)	**0.0053**	**B**	0.0019	0.00016	ug/L		07/02/18 14:58	07/07/18 04:51	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.0019	0.00018	ug/L		07/02/18 14:58	07/07/18 04:51	1
Perfluorooctanesulfonic acid (PFOS)	**0.0011**	**J**	0.0019	0.00052	ug/L		07/02/18 14:58	07/07/18 04:51	1
Perfluorononanesulfonic acid (PFNS)	ND		0.0019	0.00015	ug/L		07/02/18 14:58	07/07/18 04:51	1
Perfluorodecanesulfonic acid (PFDS)	ND		0.0019	0.00031	ug/L		07/02/18 14:58	07/07/18 04:51	1
Perfluorooctane Sulfonamide (FOSA)	ND		0.0019	0.00033	ug/L		07/02/18 14:58	07/07/18 04:51	1
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.019	0.0030	ug/L		07/02/18 14:58	07/07/18 04:51	1
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.019	0.0018	ug/L		07/02/18 14:58	07/07/18 04:51	1
4:2 FTS	ND		0.019	0.0050	ug/L		07/02/18 14:58	07/07/18 04:51	1
6:2 FTS	ND		0.019	0.0019	ug/L		07/02/18 14:58	07/07/18 04:51	1
8:2 FTS	ND		0.019	0.0019	ug/L		07/02/18 14:58	07/07/18 04:51	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	38		25 - 150	07/02/18 14:58	07/07/18 04:51	1
13C5 PFPeA	63		25 - 150	07/02/18 14:58	07/07/18 04:51	1
13C2 PFHxA	79		25 - 150	07/02/18 14:58	07/07/18 04:51	1

Client Sample Results

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Client Sample ID: NFMW1-GW-01

Lab Sample ID: 320-40571-45
Date Collected: 06/18/18 15:15
Matrix: Water
Date Received: 06/22/18 09:05

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4-PFHpA	95		25 - 150	07/02/18 14:58	07/07/18 04:51	1
13C4 PFOA	101		25 - 150	07/02/18 14:58	07/07/18 04:51	1
13C5 PFNA	103		25 - 150	07/02/18 14:58	07/07/18 04:51	1
13C2 PFDA	103		25 - 150	07/02/18 14:58	07/07/18 04:51	1
13C2 PFUnA	91		25 - 150	07/02/18 14:58	07/07/18 04:51	1
13C2 PFDoA	89		25 - 150	07/02/18 14:58	07/07/18 04:51	1
13C2-PFTeDA	88		25 - 150	07/02/18 14:58	07/07/18 04:51	1
13C3-PFBS	82		25 - 150	07/02/18 14:58	07/07/18 04:51	1
18O2 PFHxS	108		25 - 150	07/02/18 14:58	07/07/18 04:51	1
13C4 PFOS	107		25 - 150	07/02/18 14:58	07/07/18 04:51	1
13C8 FOSA	83		25 - 150	07/02/18 14:58	07/07/18 04:51	1
d3-NMeFOSAA	95		25 - 150	07/02/18 14:58	07/07/18 04:51	1
d5-NEtFOSAA	91		25 - 150	07/02/18 14:58	07/07/18 04:51	1
M2-6:2FTS	141		25 - 150	07/02/18 14:58	07/07/18 04:51	1
M2-8:2FTS	118		25 - 150	07/02/18 14:58	07/07/18 04:51	1

Client Sample ID: NFMW7-GW-01

Lab Sample ID: 320-40571-46
Date Collected: 06/21/18 11:55
Matrix: Water
Date Received: 06/22/18 09:05

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**0.022**	**B**	0.0019	0.00032	ug/L		07/02/18 16:10	07/06/18 19:19	1
Perfluoropentanoic acid (PFPeA)	**0.022**		0.0019	0.00045	ug/L		07/02/18 16:10	07/06/18 19:19	1
Perfluorohexanoic acid (PFHxA)	**0.0059**		0.0019	0.00054	ug/L		07/02/18 16:10	07/06/18 19:19	1
Perfluoroheptanoic acid (PFHpA)	**0.0050**		0.0019	0.00023	ug/L		07/02/18 16:10	07/06/18 19:19	1
Perfluorooctanoic acid (PFOA)	**0.0065**		0.0019	0.00079	ug/L		07/02/18 16:10	07/06/18 19:19	1
Perfluorononanoic acid (PFNA)	**0.00097**	**J**	0.0019	0.00025	ug/L		07/02/18 16:10	07/06/18 19:19	1
Perfluorodecanoic acid (PFDA)	ND		0.0019	0.00029	ug/L		07/02/18 16:10	07/06/18 19:19	1
Perfluoroundecanoic acid (PFUnA)	ND		0.0019	0.0010	ug/L		07/02/18 16:10	07/06/18 19:19	1
Perfluorododecanoic acid (PFDoA)	ND		0.0019	0.00051	ug/L		07/02/18 16:10	07/06/18 19:19	1
Perfluorotridecanoic Acid (PFTriA)	ND		0.0019	0.0012	ug/L		07/02/18 16:10	07/06/18 19:19	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.0019	0.00027	ug/L		07/02/18 16:10	07/06/18 19:19	1
Perfluorobutanesulfonic acid (PFBS)	**0.0054**		0.0019	0.00019	ug/L		07/02/18 16:10	07/06/18 19:19	1
Perfluoropentanesulfonic acid (PFPeS)	**0.00084**	**J**	0.0019	0.00028	ug/L		07/02/18 16:10	07/06/18 19:19	1
Perfluorohexanesulfonic acid (PFHxS)	**0.0034**	**B**	0.0019	0.00016	ug/L		07/02/18 16:10	07/06/18 19:19	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.0019	0.00018	ug/L		07/02/18 16:10	07/06/18 19:19	1
Perfluorooctanesulfonic acid (PFOS)	**0.0025**		0.0019	0.00050	ug/L		07/02/18 16:10	07/06/18 19:19	1
Perfluorononanesulfonic acid (PFNS)	ND		0.0019	0.00015	ug/L		07/02/18 16:10	07/06/18 19:19	1
Perfluorodecanesulfonic acid (PFDS)	ND		0.0019	0.00030	ug/L		07/02/18 16:10	07/06/18 19:19	1
Perfluorooctane Sulfonamide (FOSA)	ND		0.0019	0.00032	ug/L		07/02/18 16:10	07/06/18 19:19	1
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.019	0.0029	ug/L		07/02/18 16:10	07/06/18 19:19	1
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.019	0.0018	ug/L		07/02/18 16:10	07/06/18 19:19	1
4:2 FTS	ND		0.019	0.0048	ug/L		07/02/18 16:10	07/06/18 19:19	1

Client Sample Results

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Client Sample ID: NFMW7-GW-01

Lab Sample ID: 320-40571-46
Date Collected: 06/21/18 11:55
Matrix: Water
Date Received: 06/22/18 09:05

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
6:2 FTS	ND		0.019	0.0019	ug/L		07/02/18 16:10	07/06/18 19:19	1
8:2 FTS	ND		0.019	0.0019	ug/L		07/02/18 16:10	07/06/18 19:19	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*61*		*25 - 150*	*07/02/18 16:10*	*07/06/18 19:19*	*1*
13C5 PFPeA	*79*		*25 - 150*	*07/02/18 16:10*	*07/06/18 19:19*	*1*
13C2 PFHxA	*92*		*25 - 150*	*07/02/18 16:10*	*07/06/18 19:19*	*1*
13C4-PFHpA	*103*		*25 - 150*	*07/02/18 16:10*	*07/06/18 19:19*	*1*
13C4 PFOA	*99*		*25 - 150*	*07/02/18 16:10*	*07/06/18 19:19*	*1*
13C5 PFNA	*101*		*25 - 150*	*07/02/18 16:10*	*07/06/18 19:19*	*1*
13C2 PFDA	*98*		*25 - 150*	*07/02/18 16:10*	*07/06/18 19:19*	*1*
13C2 PFUnA	*94*		*25 - 150*	*07/02/18 16:10*	*07/06/18 19:19*	*1*
13C2 PFDoA	*92*		*25 - 150*	*07/02/18 16:10*	*07/06/18 19:19*	*1*
13C2-PFTeDA	*90*		*25 - 150*	*07/02/18 16:10*	*07/06/18 19:19*	*1*
13C3-PFBS	*87*		*25 - 150*	*07/02/18 16:10*	*07/06/18 19:19*	*1*
18O2 PFHxS	*102*		*25 - 150*	*07/02/18 16:10*	*07/06/18 19:19*	*1*
13C4 PFOS	*100*		*25 - 150*	*07/02/18 16:10*	*07/06/18 19:19*	*1*
13C8 FOSA	*86*		*25 - 150*	*07/02/18 16:10*	*07/06/18 19:19*	*1*
d3-NMeFOSAA	*91*		*25 - 150*	*07/02/18 16:10*	*07/06/18 19:19*	*1*
d5-NEtFOSAA	*89*		*25 - 150*	*07/02/18 16:10*	*07/06/18 19:19*	*1*
M2-6:2FTS	*114*		*25 - 150*	*07/02/18 16:10*	*07/06/18 19:19*	*1*
M2-8:2FTS	*100*		*25 - 150*	*07/02/18 16:10*	*07/06/18 19:19*	*1*

Client Sample ID: NFMW7-GW-01-DUP

Lab Sample ID: 320-40571-47
Date Collected: 06/21/18 12:00
Matrix: Water
Date Received: 06/22/18 09:05

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	**0.019**	**B**	0.0018	0.00031	ug/L		07/02/18 16:10	07/06/18 19:27	1
Perfluoropentanoic acid (PFPeA)	**0.018**		0.0018	0.00044	ug/L		07/02/18 16:10	07/06/18 19:27	1
Perfluorohexanoic acid (PFHxA)	**0.0055**		0.0018	0.00052	ug/L		07/02/18 16:10	07/06/18 19:27	1
Perfluoroheptanoic acid (PFHpA)	**0.0051**		0.0018	0.00022	ug/L		07/02/18 16:10	07/06/18 19:27	1
Perfluorooctanoic acid (PFOA)	**0.0063**		0.0018	0.00076	ug/L		07/02/18 16:10	07/06/18 19:27	1
Perfluorononanoic acid (PFNA)	**0.00082**	**J**	0.0018	0.00024	ug/L		07/02/18 16:10	07/06/18 19:27	1
Perfluorodecanoic acid (PFDA)	ND		0.0018	0.00028	ug/L		07/02/18 16:10	07/06/18 19:27	1
Perfluoroundecanoic acid (PFUnA)	ND		0.0018	0.00099	ug/L		07/02/18 16:10	07/06/18 19:27	1
Perfluorododecanoic acid (PFDoA)	ND		0.0018	0.00049	ug/L		07/02/18 16:10	07/06/18 19:27	1
Perfluorotridecanoic Acid (PFTriA)	ND		0.0018	0.0012	ug/L		07/02/18 16:10	07/06/18 19:27	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.0018	0.00026	ug/L		07/02/18 16:10	07/06/18 19:27	1
Perfluorobutanesulfonic acid (PFBS)	**0.0052**		0.0018	0.00018	ug/L		07/02/18 16:10	07/06/18 19:27	1
Perfluoropentanesulfonic acid (PFPeS)	**0.00080**	**J**	0.0018	0.00027	ug/L		07/02/18 16:10	07/06/18 19:27	1
Perfluorohexanesulfonic acid (PFHxS)	**0.0031**	**B**	0.0018	0.00015	ug/L		07/02/18 16:10	07/06/18 19:27	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.0018	0.00017	ug/L		07/02/18 16:10	07/06/18 19:27	1
Perfluorooctanesulfonic acid (PFOS)	**0.0025**		0.0018	0.00049	ug/L		07/02/18 16:10	07/06/18 19:27	1
Perfluorononanesulfonic acid (PFNS)	ND		0.0018	0.00014	ug/L		07/02/18 16:10	07/06/18 19:27	1
Perfluorodecanesulfonic acid (PFDS)	ND		0.0018	0.00029	ug/L		07/02/18 16:10	07/06/18 19:27	1

Client Sample Results

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Client Sample ID: NFMW7-GW-01-DUP

Lab Sample ID: 320-40571-47

Date Collected: 06/21/18 12:00
Matrix: Water
Date Received: 06/22/18 09:05

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctane Sulfonamide (FOSA)	ND		0.0018	0.00031	ug/L		07/02/18 16:10	07/06/18 19:27	1
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.018	0.0028	ug/L		07/02/18 16:10	07/06/18 19:27	1
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.018	0.0017	ug/L		07/02/18 16:10	07/06/18 19:27	1
4:2 FTS	ND		0.018	0.0047	ug/L		07/02/18 16:10	07/06/18 19:27	1
6:2 FTS	ND		0.018	0.0018	ug/L		07/02/18 16:10	07/06/18 19:27	1
8:2 FTS	ND		0.018	0.0018	ug/L		07/02/18 16:10	07/06/18 19:27	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*62*		*25 - 150*	*07/02/18 16:10*	*07/06/18 19:27*	*1*
13C5 PFPeA	*83*		*25 - 150*	*07/02/18 16:10*	*07/06/18 19:27*	*1*
13C2 PFHxA	*92*		*25 - 150*	*07/02/18 16:10*	*07/06/18 19:27*	*1*
13C4-PFHpA	*101*		*25 - 150*	*07/02/18 16:10*	*07/06/18 19:27*	*1*
13C4 PFOA	*104*		*25 - 150*	*07/02/18 16:10*	*07/06/18 19:27*	*1*
13C5 PFNA	*102*		*25 - 150*	*07/02/18 16:10*	*07/06/18 19:27*	*1*
13C2 PFDA	*105*		*25 - 150*	*07/02/18 16:10*	*07/06/18 19:27*	*1*
13C2 PFUnA	*96*		*25 - 150*	*07/02/18 16:10*	*07/06/18 19:27*	*1*
13C2 PFDoA	*96*		*25 - 150*	*07/02/18 16:10*	*07/06/18 19:27*	*1*
13C2-PFTeDA	*94*		*25 - 150*	*07/02/18 16:10*	*07/06/18 19:27*	*1*
13C3-PFBS	*88*		*25 - 150*	*07/02/18 16:10*	*07/06/18 19:27*	*1*
18O2 PFHxS	*113*		*25 - 150*	*07/02/18 16:10*	*07/06/18 19:27*	*1*
13C4 PFOS	*100*		*25 - 150*	*07/02/18 16:10*	*07/06/18 19:27*	*1*
13C8 FOSA	*86*		*25 - 150*	*07/02/18 16:10*	*07/06/18 19:27*	*1*
d3-NMeFOSAA	*93*		*25 - 150*	*07/02/18 16:10*	*07/06/18 19:27*	*1*
d5-NEtFOSAA	*99*		*25 - 150*	*07/02/18 16:10*	*07/06/18 19:27*	*1*
M2-6:2FTS	*115*		*25 - 150*	*07/02/18 16:10*	*07/06/18 19:27*	*1*
M2-8:2FTS	*112*		*25 - 150*	*07/02/18 16:10*	*07/06/18 19:27*	*1*

Default Detection Limits

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Method: 537 (modified) - Fluorinated Alkyl Substances
Prep: 3535

Analyte	RL	MDL	Units	Method
4:2 FTS	0.020	0.0052	ug/L	537 (modified)
6:2 FTS	0.020	0.0020	ug/L	537 (modified)
8:2 FTS	0.020	0.0020	ug/L	537 (modified)
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	0.020	0.0019	ug/L	537 (modified)
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	0.020	0.0031	ug/L	537 (modified)
Perfluorobutanesulfonic acid (PFBS)	0.0020	0.00020	ug/L	537 (modified)
Perfluorobutanoic acid (PFBA)	0.0020	0.00035	ug/L	537 (modified)
Perfluorodecanesulfonic acid (PFDS)	0.0020	0.00032	ug/L	537 (modified)
Perfluorodecanoic acid (PFDA)	0.0020	0.00031	ug/L	537 (modified)
Perfluorododecanoic acid (PFDoA)	0.0020	0.00055	ug/L	537 (modified)
Perfluoroheptanesulfonic Acid (PFHpS)	0.0020	0.00019	ug/L	537 (modified)
Perfluoroheptanoic acid (PFHpA)	0.0020	0.00025	ug/L	537 (modified)
Perfluorohexanesulfonic acid (PFHxS)	0.0020	0.00017	ug/L	537 (modified)
Perfluorohexanoic acid (PFHxA)	0.0020	0.00058	ug/L	537 (modified)
Perfluorononanesulfonic acid (PFNS)	0.0020	0.00016	ug/L	537 (modified)
Perfluorononanoic acid (PFNA)	0.0020	0.00027	ug/L	537 (modified)
Perfluorooctane Sulfonamide (FOSA)	0.0020	0.00035	ug/L	537 (modified)
Perfluorooctanesulfonic acid (PFOS)	0.0020	0.00054	ug/L	537 (modified)
Perfluorooctanoic acid (PFOA)	0.0020	0.00085	ug/L	537 (modified)
Perfluoropentanesulfonic acid (PFPeS)	0.0020	0.00030	ug/L	537 (modified)
Perfluoropentanoic acid (PFPeA)	0.0020	0.00049	ug/L	537 (modified)
Perfluorotetradecanoic acid (PFTeA)	0.0020	0.00029	ug/L	537 (modified)
Perfluorotridecanoic Acid (PFTriA)	0.0020	0.0013	ug/L	537 (modified)
Perfluoroundecanoic acid (PFUnA)	0.0020	0.0011	ug/L	537 (modified)

Method: 537 (modified) - Fluorinated Alkyl Substances
Prep: SHAKE

Analyte	RL	MDL	Units	Method
6:2 FTS	0.0020	0.00015	mg/Kg	537 (modified)
8:2 FTS	0.0020	0.00025	mg/Kg	537 (modified)
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	0.0020	0.00037	mg/Kg	537 (modified)
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	0.0020	0.00039	mg/Kg	537 (modified)
Perfluorobutanesulfonic acid (PFBS)	0.00020	0.000025	mg/Kg	537 (modified)
Perfluorobutanoic acid (PFBA)	0.00020	0.000028	mg/Kg	537 (modified)
Perfluorodecanesulfonic acid (PFDS)	0.00020	0.000039	mg/Kg	537 (modified)
Perfluorodecanoic acid (PFDA)	0.00020	0.000022	mg/Kg	537 (modified)
Perfluorododecanoic acid (PFDoA)	0.00020	0.000067	mg/Kg	537 (modified)
Perfluoroheptanesulfonic Acid (PFHpS)	0.00020	0.000035	mg/Kg	537 (modified)
Perfluoroheptanoic acid (PFHpA)	0.00020	0.000029	mg/Kg	537 (modified)
Perfluorohexanesulfonic acid (PFHxS)	0.00020	0.000031	mg/Kg	537 (modified)
Perfluorohexanoic acid (PFHxA)	0.00020	0.000042	mg/Kg	537 (modified)
Perfluorononanoic acid (PFNA)	0.00020	0.000036	mg/Kg	537 (modified)
Perfluorooctane Sulfonamide (FOSA)	0.00020	0.000082	mg/Kg	537 (modified)
Perfluorooctanesulfonic acid (PFOS)	0.00050	0.00020	mg/Kg	537 (modified)
Perfluorooctanoic acid (PFOA)	0.00020	0.000086	mg/Kg	537 (modified)
Perfluoropentanoic acid (PFPeA)	0.00020	0.000077	mg/Kg	537 (modified)
Perfluorotetradecanoic acid (PFTeA)	0.00020	0.000054	mg/Kg	537 (modified)

Default Detection Limits

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Prep: SHAKE

Analyte	RL	MDL	Units	Method
Perfluorotridecanoic Acid (PFTriA)	0.00020	0.000051	mg/Kg	537 (modified)
Perfluoroundecanoic acid (PFUnA)	0.00020	0.000036	mg/Kg	537 (modified)

Isotope Dilution Summary

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Solid **Prep Type: Total/NA**

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFBA (25-150)	PFPeA (25-150)	PFHxA (25-150)	PFHpA (25-150)	PFOA (25-150)	PFNA (25-150)	PFDA (25-150)	PFUnA (25-150)
320-40571-3	NF17-SS-01	76	83	86	86	86	85	93	79
320-40571-4	NF17-SS-01-DUP	74	79	80	86	83	80	87	79
320-40571-6	NF18-SS-02	74	79	76	85	85	88	90	84
320-40571-8	NF19-SS-02	77	85	87	87	85	80	87	81
320-40571-10	NF20-SS-02	73	77	81	82	81	74	86	81
320-40571-12	NF21-SS-01	82	86	88	93	91	87	95	88
320-40571-14	NF22-SS-01	82	87	86	91	90	80	91	89
320-40571-16	NF23-SS-01	78	83	87	89	86	86	95	88
320-40571-18	NF24-SS-02	83	87	89	94	91	84	95	87
320-40571-20	NF25-SS-02	54	56	56	60	58	54	61	64
320-40571-22	NF26-SS-02	99	105	109	109	103	102	113	104
320-40571-24	NF27-SS-01	79	81	87	89	87	84	94	78
320-40571-26	NF28-SS-01	79	81	85	88	81	80	92	80
320-40571-28	NF29-SS-01	82	84	89	93	89	85	97	88
320-40571-30	NF30-SS-02	72	76	80	80	79	74	79	79
320-40571-32	NF31-SS-02	79	83	84	91	87	87	90	82
320-40571-34	NF32-SS-02	78	82	83	91	90	88	90	80
320-40571-36	NF33-SS-01	78	83	69	92	92	93	95	86
320-40571-36 MS	NF33-SS-01	75	79	75	85	86	86	89	79
320-40571-36 MSD	NF33-SS-01	80	85	84	91	93	92	93	91
320-40571-38	NF34-SS-01	69	76	71	82	80	82	83	75
320-40571-40	NF35-SS-01	70	74	73	85	87	81	87	85
320-40571-42	NF36-SS-02	80	84	86	90	86	83	89	84
320-40571-42 MS	NF36-SS-02	80	83	86	88	87	78	86	81
320-40571-42 MSD	NF36-SS-02	79	84	87	91	86	79	84	86
LCS 320-231392/2-A	Lab Control Sample	86	93	93	98	95	88	90	89
LCS 320-231393/2-A	Lab Control Sample	86	92	92	99	94	84	86	91
LCSD 320-231392/3-A	Lab Control Sample Dup	60	94	96	99	94	86	92	95
LCSD 320-231393/3-A	Lab Control Sample Dup	88	91	93	99	91	85	84	92
MB 320-231392/1-A	Method Blank	85	91	92	95	92	87	92	96
MB 320-231393/1-A	Method Blank	84	87	91	91	89	82	87	89

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFDoA (25-150)	PFTDA (25-150)	3C3-PFBS (25-150)	PFHxS (25-150)	PFOS (25-150)	PFOSA (25-150)	-NMeFOSA (25-150)	-NEtFOSA (25-150)
320-40571-3	NF17-SS-01	79	85	70	74	68	66	73	81
320-40571-4	NF17-SS-01-DUP	82	81	70	76	67	62	77	80
320-40571-6	NF18-SS-02	81	83	73	75	73	63	102	86
320-40571-8	NF19-SS-02	86	88	74	79	73	68	80	87
320-40571-10	NF20-SS-02	80	84	68	72	67	62	80	85
320-40571-12	NF21-SS-01	84	94	74	78	79	69	89	95
320-40571-14	NF22-SS-01	89	90	81	85	78	75	86	93
320-40571-16	NF23-SS-01	87	79	76	81	75	76	110	101
320-40571-18	NF24-SS-02	89	92	84	86	83	77	83	94
320-40571-20	NF25-SS-02	66	69	51	51	49	51	60	68
320-40571-22	NF26-SS-02	96	102	92	95	88	82	98	107
320-40571-24	NF27-SS-01	82	87	72	76	71	64	70	79
320-40571-26	NF28-SS-01	87	89	72	77	70	67	74	87
320-40571-28	NF29-SS-01	87	91	78	76	76	74	83	86
320-40571-30	NF30-SS-02	76	81	75	76	71	68	50	55

Isotope Dilution Summary

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Matrix: Solid **Prep Type: Total/NA**

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFDoA (25-150)	PFTDA (25-150)	3C3-PFBS (25-150)	PFHxS (25-150)	PFOS (25-150)	PFOSA (25-150)	-NMeFOS/ (25-150)	-NEtFOSA (25-150)
320-40571-32	NF31-SS-02	85	86	73	78	73	65	86	81
320-40571-34	NF32-SS-02	81	90	72	77	72	62	87	85
320-40571-36	NF33-SS-01	84	93	74	81	72	58	115	103
320-40571-36 MS	NF33-SS-01	72	75	73	77	72	60	93	89
320-40571-36 MSD	NF33-SS-01	88	98	79	80	76	68	98	95
320-40571-38	NF34-SS-01	72	78	66	70	63	60	79	73
320-40571-40	NF35-SS-01	65	73	65	70	65	59	97	96
320-40571-42	NF36-SS-02	86	84	79	79	76	70	90	86
320-40571-42 MS	NF36-SS-02	82	85	79	79	74	68	74	78
320-40571-42 MSD	NF36-SS-02	84	85	80	82	76	70	75	80
LCS 320-231392/2-A	Lab Control Sample	97	96	91	92	88	84	89	95
LCS 320-231393/2-A	Lab Control Sample	91	97	90	91	89	84	84	92
LCSD 320-231392/3-A	Lab Control Sample Dup	93	96	93	93	88	92	93	100
LCSD 320-231393/3-A	Lab Control Sample Dup	94	94	89	93	89	84	91	85
MB 320-231392/1-A	Method Blank	92	95	88	88	90	87	100	101
MB 320-231393/1-A	Method Blank	87	90	83	88	82	81	88	86

		Percent Isotope Dilution Recovery (Acceptance Limits)	
Lab Sample ID	Client Sample ID	M262FTS (25-150)	M282FTS (25-150)
320-40571-3	NF17-SS-01	62	76
320-40571-4	NF17-SS-01-DUP	68	85
320-40571-6	NF18-SS-02	81	82
320-40571-8	NF19-SS-02	67	79
320-40571-10	NF20-SS-02	64	66
320-40571-12	NF21-SS-01	69	93
320-40571-14	NF22-SS-01	71	71
320-40571-16	NF23-SS-01	80	89
320-40571-18	NF24-SS-02	74	85
320-40571-20	NF25-SS-02	42	49
320-40571-22	NF26-SS-02	80	94
320-40571-24	NF27-SS-01	69	87
320-40571-26	NF28-SS-01	67	78
320-40571-28	NF29-SS-01	73	87
320-40571-30	NF30-SS-02	59	55
320-40571-32	NF31-SS-02	64	91
320-40571-34	NF32-SS-02	77	94
320-40571-36	NF33-SS-01	149	140
320-40571-36 MS	NF33-SS-01	107	111
320-40571-36 MSD	NF33-SS-01	103	116
320-40571-38	NF34-SS-01	78	83
320-40571-40	NF35-SS-01	175 *	123
320-40571-42	NF36-SS-02	68	70
320-40571-42 MS	NF36-SS-02	65	69
320-40571-42 MSD	NF36-SS-02	66	63
LCS 320-231392/2-A	Lab Control Sample	86	71
LCS 320-231393/2-A	Lab Control Sample	78	67
LCSD 320-231392/3-A	Lab Control Sample Dup	80	75
LCSD 320-231393/3-A	Lab Control Sample Dup	81	70
MB 320-231392/1-A	Method Blank	84	70

Isotope Dilution Summary

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Matrix: Solid **Prep Type: Total/NA**

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	M262FTS (25-150)	M282FTS (25-150)						
MB 320-231393/1-A	Method Blank	78	67						

Surrogate Legend

PFBA = 13C4 PFBA
PFPeA = 13C5 PFPeA
PFHxA = 13C2 PFHxA
PFHpA = 13C4-PFHpA
PFOA = 13C4 PFOA
PFNA = 13C5 PFNA
PFDA = 13C2 PFDA
PFUnA = 13C2 PFUnA
PFDoA = 13C2 PFDoA
PFTDA = 13C2-PFTeDA
13C3-PFBS = 13C3-PFBS
PFHxS = 18O2 PFHxS
PFOS = 13C4 PFOS
PFOSA = 13C8 FOSA
d3-NMeFOSAA = d3-NMeFOSAA
d5-NEtFOSAA = d5-NEtFOSAA
M262FTS = M2-6:2FTS
M282FTS = M2-8:2FTS

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Water **Prep Type: Total/NA**

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFBA (25-150)	PFPeA (25-150)	PFHxA (25-150)	PFHpA (25-150)	PFOA (25-150)	PFNA (25-150)	PFDA (25-150)	PFUnA (25-150)
320-40571-1	NF17-GW-01	68	82	93	102	102	91	92	83
320-40571-2	NF17-GW-01-DUP	74	87	96	103	105	98	100	88
320-40571-5	NF18-GW-01	57	74	83	94	100	97	93	92
320-40571-7	NF19-GW-01	63	81	96	101	103	101	111	98
320-40571-9	NF20-GW-01	66	81	89	103	101	104	102	95
320-40571-9 - DL	NF20-GW-01	95	102	102	107	99	101	101	97
320-40571-11	NF21-GW-01	81	87	92	98	101	104	108	90
320-40571-13	NF22-GW-01	68	82	89	100	102	106	105	95
320-40571-15	NF23-GW-01	59	76	91	101	104	99	110	104
320-40571-17	NF24-GW-01	60	78	87	97	99	95	94	89
320-40571-19	NF25-GW-01	43	68	68	97	102	97	96	95
320-40571-21	NF26-GW-01	54	78	86	110	105	108	118	113
320-40571-23	NF27-GW-01	60	84	87	99	105	96	96	96
320-40571-23 MS	NF27-GW-01	61	81	87	100	105	101	96	95
320-40571-23 MSD	NF27-GW-01	61	81	92	98	99	95	92	95
320-40571-25	NF28-GW-01	79	87	97	104	101	96	94	88
320-40571-27	NF29-GW-01	91	93	100	103	103	103	110	107
320-40571-29	NF30-GW-01	52	74	87	103	105	103	96	100
320-40571-31	NF31-GW-01	55	75	89	103	108	109	112	105
320-40571-31 - DL	NF31-GW-01	88	98	109	107	101	100	102	109
320-40571-33	NF32-GW-01	50	76	86	98	104	107	112	107

Isotope Dilution Summary

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Matrix: Water **Prep Type: Total/NA**

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFBA (25-150)	PFPeA (25-150)	PFHxA (25-150)	PFHpA (25-150)	PFOA (25-150)	PFNA (25-150)	PFDA (25-150)	PFUnA (25-150)
320-40571-35	NF33-GW-01	95	94	101	105	103	115	115	109
320-40571-35 MS	NF33-GW-01	90	92	96	102	104	104	108	95
320-40571-35 MSD	NF33-GW-01	88	94	94	103	100	104	98	104
320-40571-37	NF34-GW-01	56	80	95	98	103	100	92	93
320-40571-39	NF35-GW-01	30	60	72	89	102	104	105	97
320-40571-41	NF36-GW-01	61	84	94	105	103	99	96	98
320-40571-43	NF-EB-02	92	100	97	106	107	105	115	100
320-40571-44	NF-FB-02	99	95	93	104	101	102	104	100
320-40571-45	NFMW1-GW-01	38	63	79	95	101	103	103	91
320-40571-46	NFMW7-GW-01	61	79	92	103	99	101	98	94
320-40571-47	NFMW7-GW-01-DUP	62	83	92	101	104	102	105	96
LCS 320-232121/2-A	Lab Control Sample	88	94	98	96	105	105	110	103
LCS 320-232150/2-A	Lab Control Sample	102	98	100	110	103	109	108	103
LCSD 320-232121/3-A	Lab Control Sample Dup	78	93	99	100	104	105	102	101
LCSD 320-232150/3-A	Lab Control Sample Dup	96	95	100	101	102	100	97	100
MB 320-232121/1-A	Method Blank	87	94	97	103	106	109	108	108
MB 320-232150/1-A	Method Blank	97	91	90	103	100	98	95	95

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFDoA (25-150)	PFTDA (25-150)	3C3-PFBS (25-150)	PFHxS (25-150)	PFOS (25-150)	PFOSA (25-150)	-NMeFOSA (25-150)	-NEtFOSA (25-150)
320-40571-1	NF17-GW-01	74	47	87	92	91	75	84	90
320-40571-2	NF17-GW-01-DUP	89	69	91	97	95	84	100	102
320-40571-5	NF18-GW-01	85	84	81	93	87	80	96	98
320-40571-7	NF19-GW-01	90	69	90	104	101	81	100	96
320-40571-9	NF20-GW-01	87	52	86	105	96	78	99	95
320-40571-9 - DL	NF20-GW-01	81	52	97	103	96	82	101	102
320-40571-11	NF21-GW-01	78	60	88	105	96	88	95	82
320-40571-13	NF22-GW-01	99	78	87	110	104	88	110	102
320-40571-15	NF23-GW-01	92	78	86	112	102	90	112	105
320-40571-17	NF24-GW-01	81	52	84	91	90	79	89	87
320-40571-19	NF25-GW-01	86	59	81	97	95	79	92	92
320-40571-21	NF26-GW-01	110	108	99	112	108	99	116	116
320-40571-23	NF27-GW-01	91	91	89	102	91	88	97	102
320-40571-23 MS	NF27-GW-01	90	91	90	99	94	84	99	100
320-40571-23 MSD	NF27-GW-01	89	93	85	94	91	84	96	96
320-40571-25	NF28-GW-01	71	12 *	91	98	91	72	75	87
320-40571-27	NF29-GW-01	105	83	94	107	99	89	111	111
320-40571-29	NF30-GW-01	86	70	89	97	94	87	102	102
320-40571-31	NF31-GW-01	99	95	86	110	106	85	116	111
320-40571-31 - DL	NF31-GW-01	99	89	112	99	97	91	101	111
320-40571-33	NF32-GW-01	92	90	86	105	105	91	110	107
320-40571-35	NF33-GW-01	109	104	100	111	111	94	115	115
320-40571-35 MS	NF33-GW-01	90	77	95	104	101	91	97	91
320-40571-35 MSD	NF33-GW-01	98	90	93	109	104	89	105	96
320-40571-37	NF34-GW-01	91	86	88	100	94	82	94	97
320-40571-39	NF35-GW-01	94	85	79	96	97	82	102	107
320-40571-41	NF36-GW-01	93	91	89	100	94	80	98	97
320-40571-43	NF-EB-02	102	103	97	107	104	93	109	114
320-40571-44	NF-FB-02	98	97	95	105	104	87	97	100

Isotope Dilution Summary

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Matrix: Water **Prep Type: Total/NA**

		Percent Isotope Dilution Recovery (Acceptance Limits)							
		PFDoA	PFTDA	3C3-PFBS	PFHxS	PFOS	PFOSA	-NMeFOS/	-NEtFOSA
Lab Sample ID	Client Sample ID	(25-150)	(25-150)	(25-150)	(25-150)	(25-150)	(25-150)	(25-150)	(25-150)
320-40571-45	NFMW1-GW-01	89	88	82	108	107	83	95	91
320-40571-46	NFMW7-GW-01	92	90	87	102	100	86	91	89
320-40571-47	NFMW7-GW-01-DUP	96	94	88	113	100	86	93	99
LCS 320-232121/2-A	Lab Control Sample	102	98	96	108	101	88	105	100
LCS 320-232150/2-A	Lab Control Sample	103	100	99	111	106	94	97	99
LCSD 320-232121/3-A	Lab Control Sample Dup	93	100	94	108	96	86	99	99
LCSD 320-232150/3-A	Lab Control Sample Dup	102	98	96	103	102	88	96	101
MB 320-232121/1-A	Method Blank	108	103	94	109	105	89	107	112
MB 320-232150/1-A	Method Blank	100	92	90	101	96	85	92	96

		Percent Isotope Dilution Recovery (Acceptance Limits)	
		M262FTS	M282FTS
Lab Sample ID	Client Sample ID	(25-150)	(25-150)
320-40571-1	NF17-GW-01	115	81
320-40571-2	NF17-GW-01-DUP	116	87
320-40571-5	NF18-GW-01	175 *	99
320-40571-7	NF19-GW-01	139	113
320-40571-9	NF20-GW-01	123	118
320-40571-9 - DL	NF20-GW-01	93	102
320-40571-11	NF21-GW-01	107	98
320-40571-13	NF22-GW-01	140	119
320-40571-15	NF23-GW-01	138	134
320-40571-17	NF24-GW-01	134	89
320-40571-19	NF25-GW-01	137	87
320-40571-21	NF26-GW-01	175 *	112
320-40571-23	NF27-GW-01	122	94
320-40571-23 MS	NF27-GW-01	125	92
320-40571-23 MSD	NF27-GW-01	112	85
320-40571-25	NF28-GW-01	129	97
320-40571-27	NF29-GW-01	126	125
320-40571-29	NF30-GW-01	143	97
320-40571-31	NF31-GW-01	149	130
320-40571-31 - DL	NF31-GW-01	104	94
320-40571-33	NF32-GW-01	193 *	132
320-40571-35	NF33-GW-01	136	133
320-40571-35 MS	NF33-GW-01	123	114
320-40571-35 MSD	NF33-GW-01	125	127
320-40571-37	NF34-GW-01	120	90
320-40571-39	NF35-GW-01	202 *	131
320-40571-41	NF36-GW-01	132	94
320-40571-43	NF-EB-02	114	133
320-40571-44	NF-FB-02	113	109
320-40571-45	NFMW1-GW-01	141	118
320-40571-46	NFMW7-GW-01	114	100
320-40571-47	NFMW7-GW-01-DUP	115	112
LCS 320-232121/2-A	Lab Control Sample	102	114
LCS 320-232150/2-A	Lab Control Sample	113	108
LCSD 320-232121/3-A	Lab Control Sample Dup	109	102
LCSD 320-232150/3-A	Lab Control Sample Dup	110	105
MB 320-232121/1-A	Method Blank	111	117

Isotope Dilution Summary

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Matrix: Water **Prep Type: Total/NA**

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	**Client Sample ID**	**M262FTS (25-150)**	**M282FTS (25-150)**						
MB 320-232150/1-A	Method Blank	104	105						

Surrogate Legend

PFBA = 13C4 PFBA
PFPeA = 13C5 PFPeA
PFHxA = 13C2 PFHxA
PFHpA = 13C4-PFHpA
PFOA = 13C4 PFOA
PFNA = 13C5 PFNA
PFDA = 13C2 PFDA
PFUnA = 13C2 PFUnA
PFDoA = 13C2 PFDoA
PFTDA = 13C2-PFTeDA
13C3-PFBS = 13C3-PFBS
PFHxS = 18O2 PFHxS
PFOS = 13C4 PFOS
PFOSA = 13C8 FOSA
d3-NMeFOSAA = d3-NMeFOSAA
d5-NEtFOSAA = d5-NEtFOSAA
M262FTS = M2-6:2FTS
M282FTS = M2-8:2FTS

QC Sample Results

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-231392/1-A
Matrix: Solid
Analysis Batch: 233997

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 231392

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND		0.00020	0.000028	mg/Kg		06/28/18 05:15	07/14/18 03:41	1
Perfluoropentanoic acid (PFPeA)	ND		0.00020	0.000077	mg/Kg		06/28/18 05:15	07/14/18 03:41	1
Perfluorohexanoic acid (PFHxA)	ND		0.00020	0.000042	mg/Kg		06/28/18 05:15	07/14/18 03:41	1
Perfluoroheptanoic acid (PFHpA)	ND		0.00020	0.000029	mg/Kg		06/28/18 05:15	07/14/18 03:41	1
Perfluorooctanoic acid (PFOA)	ND		0.00020	0.000086	mg/Kg		06/28/18 05:15	07/14/18 03:41	1
Perfluorononanoic acid (PFNA)	ND		0.00020	0.000036	mg/Kg		06/28/18 05:15	07/14/18 03:41	1
Perfluorodecanoic acid (PFDA)	ND		0.00020	0.000022	mg/Kg		06/28/18 05:15	07/14/18 03:41	1
Perfluoroundecanoic acid (PFUnA)	ND		0.00020	0.000036	mg/Kg		06/28/18 05:15	07/14/18 03:41	1
Perfluorododecanoic acid (PFDoA)	ND		0.00020	0.000067	mg/Kg		06/28/18 05:15	07/14/18 03:41	1
Perfluorotridecanoic Acid (PFTriA)	ND		0.00020	0.000051	mg/Kg		06/28/18 05:15	07/14/18 03:41	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.00020	0.000054	mg/Kg		06/28/18 05:15	07/14/18 03:41	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.00020	0.000025	mg/Kg		06/28/18 05:15	07/14/18 03:41	1
Perfluorohexanesulfonic acid (PFHxS)	ND		0.00020	0.000031	mg/Kg		06/28/18 05:15	07/14/18 03:41	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.00020	0.000035	mg/Kg		06/28/18 05:15	07/14/18 03:41	1
Perfluorooctanesulfonic acid (PFOS)	ND		0.00050	0.00020	mg/Kg		06/28/18 05:15	07/14/18 03:41	1
Perfluorodecanesulfonic acid (PFDS)	ND		0.00020	0.000039	mg/Kg		06/28/18 05:15	07/14/18 03:41	1
Perfluorooctane Sulfonamide (FOSA)	ND		0.00020	0.000082	mg/Kg		06/28/18 05:15	07/14/18 03:41	1
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.0020	0.00039	mg/Kg		06/28/18 05:15	07/14/18 03:41	1
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.0020	0.00037	mg/Kg		06/28/18 05:15	07/14/18 03:41	1
6:2 FTS	ND		0.0020	0.00015	mg/Kg		06/28/18 05:15	07/14/18 03:41	1
8:2 FTS	ND		0.0020	0.00025	mg/Kg		06/28/18 05:15	07/14/18 03:41	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*85*		*25 - 150*	*06/28/18 05:15*	*07/14/18 03:41*	*1*
13C5 PFPeA	*91*		*25 - 150*	*06/28/18 05:15*	*07/14/18 03:41*	*1*
13C2 PFHxA	*92*		*25 - 150*	*06/28/18 05:15*	*07/14/18 03:41*	*1*
13C4-PFHpA	*95*		*25 - 150*	*06/28/18 05:15*	*07/14/18 03:41*	*1*
13C4 PFOA	*92*		*25 - 150*	*06/28/18 05:15*	*07/14/18 03:41*	*1*
13C5 PFNA	*87*		*25 - 150*	*06/28/18 05:15*	*07/14/18 03:41*	*1*
13C2 PFDA	*92*		*25 - 150*	*06/28/18 05:15*	*07/14/18 03:41*	*1*
13C2 PFUnA	*96*		*25 - 150*	*06/28/18 05:15*	*07/14/18 03:41*	*1*
13C2 PFDoA	*92*		*25 - 150*	*06/28/18 05:15*	*07/14/18 03:41*	*1*
13C2-PFTeDA	*95*		*25 - 150*	*06/28/18 05:15*	*07/14/18 03:41*	*1*
13C3-PFBS	*88*		*25 - 150*	*06/28/18 05:15*	*07/14/18 03:41*	*1*
18O2 PFHxS	*88*		*25 - 150*	*06/28/18 05:15*	*07/14/18 03:41*	*1*
13C4 PFOS	*90*		*25 - 150*	*06/28/18 05:15*	*07/14/18 03:41*	*1*
13C8 FOSA	*87*		*25 - 150*	*06/28/18 05:15*	*07/14/18 03:41*	*1*
d3-NMeFOSAA	*100*		*25 - 150*	*06/28/18 05:15*	*07/14/18 03:41*	*1*
d5-NEtFOSAA	*101*		*25 - 150*	*06/28/18 05:15*	*07/14/18 03:41*	*1*
M2-6:2FTS	*84*		*25 - 150*	*06/28/18 05:15*	*07/14/18 03:41*	*1*
M2-8:2FTS	*70*		*25 - 150*	*06/28/18 05:15*	*07/14/18 03:41*	*1*

QC Sample Results

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCS 320-231392/2-A
Matrix: Solid
Analysis Batch: 233997

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 231392

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	0.00200	0.00187		mg/Kg		94	81 - 133
Perfluoropentanoic acid (PFPeA)	0.00200	0.00181		mg/Kg		90	79 - 120
Perfluorohexanoic acid (PFHxA)	0.00200	0.00192		mg/Kg		96	75 - 125
Perfluoroheptanoic acid (PFHpA)	0.00200	0.00179		mg/Kg		89	76 - 124
Perfluorooctanoic acid (PFOA)	0.00200	0.00180		mg/Kg		90	76 - 121
Perfluorononanoic acid (PFNA)	0.00200	0.00178		mg/Kg		89	74 - 126
Perfluorodecanoic acid (PFDA)	0.00200	0.00190		mg/Kg		95	74 - 124
Perfluoroundecanoic acid (PFUnA)	0.00200	0.00184		mg/Kg		92	74 - 114
Perfluorododecanoic acid (PFDoA)	0.00200	0.00184		mg/Kg		92	75 - 123
Perfluorotridecanoic Acid (PFTriA)	0.00200	0.00185		mg/Kg		92	43 - 116
Perfluorotetradecanoic acid (PFTeA)	0.00200	0.00190		mg/Kg		95	22 - 129
Perfluorobutanesulfonic acid (PFBS)	0.00177	0.00171		mg/Kg		96	73 - 142
Perfluorohexanesulfonic acid (PFHxS)	0.00182	0.00160		mg/Kg		88	75 - 121
Perfluoroheptanesulfonic Acid (PFHpS)	0.00190	0.00189		mg/Kg		99	78 - 146
Perfluorooctanesulfonic acid (PFOS)	0.00186	0.00174		mg/Kg		94	69 - 131
Perfluorodecanesulfonic acid (PFDS)	0.00193	0.00189		mg/Kg		98	54 - 113
Perfluorooctane Sulfonamide (FOSA)	0.00200	0.00200		mg/Kg		100	62 - 135
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	0.00200	0.00189	J	mg/Kg		95	65 - 135
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	0.00200	0.00180	J	mg/Kg		90	65 - 135
6:2 FTS	0.00190	0.00172	J	mg/Kg		91	65 - 135
8:2 FTS	0.00192	0.00180	J	mg/Kg		94	65 - 135

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*86*		*25 - 150*
13C5 PFPeA	*93*		*25 - 150*
13C2 PFHxA	*93*		*25 - 150*
13C4-PFHpA	*98*		*25 - 150*
13C4 PFOA	*95*		*25 - 150*
13C5 PFNA	*88*		*25 - 150*
13C2 PFDA	*90*		*25 - 150*
13C2 PFUnA	*89*		*25 - 150*
13C2 PFDoA	*97*		*25 - 150*
13C2-PFTeDA	*96*		*25 - 150*
13C3-PFBS	*91*		*25 - 150*
18O2 PFHxS	*92*		*25 - 150*
13C4 PFOS	*88*		*25 - 150*
13C8 FOSA	*84*		*25 - 150*

QC Sample Results

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCS 320-231392/2-A
Matrix: Solid
Analysis Batch: 233997

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 231392

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
d3-NMeFOSAA	89		25 - 150
d5-NEtFOSAA	95		25 - 150
M2-6:2FTS	86		25 - 150
M2-8:2FTS	71		25 - 150

Lab Sample ID: LCSD 320-231392/3-A
Matrix: Solid
Analysis Batch: 233997

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 231392

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorobutanoic acid (PFBA)			0.00200	0.00188		mg/Kg		94	81 - 133	0	30
Perfluoropentanoic acid (PFPeA)			0.00200	0.00175		mg/Kg		88	79 - 120	3	30
Perfluorohexanoic acid (PFHxA)			0.00200	0.00186		mg/Kg		93	75 - 125	3	30
Perfluoroheptanoic acid (PFHpA)			0.00200	0.00176		mg/Kg		88	76 - 124	1	30
Perfluorooctanoic acid (PFOA)			0.00200	0.00178		mg/Kg		89	76 - 121	1	30
Perfluorononanoic acid (PFNA)			0.00200	0.00191		mg/Kg		96	74 - 126	7	30
Perfluorodecanoic acid (PFDA)			0.00200	0.00186		mg/Kg		93	74 - 124	2	30
Perfluoroundecanoic acid (PFUnA)			0.00200	0.00174		mg/Kg		87	74 - 114	5	30
Perfluorododecanoic acid (PFDoA)			0.00200	0.00188		mg/Kg		94	75 - 123	2	30
Perfluorotridecanoic Acid (PFTriA)			0.00200	0.00193		mg/Kg		97	43 - 116	5	30
Perfluorotetradecanoic acid (PFTeA)			0.00200	0.00185		mg/Kg		93	22 - 129	3	30
Perfluorobutanesulfonic acid (PFBS)			0.00177	0.00164		mg/Kg		93	73 - 142	4	30
Perfluorohexanesulfonic acid (PFHxS)			0.00182	0.00155		mg/Kg		85	75 - 121	4	30
Perfluoroheptanesulfonic Acid (PFHpS)			0.00190	0.00183		mg/Kg		96	78 - 146	3	30
Perfluorooctanesulfonic acid (PFOS)			0.00186	0.00177		mg/Kg		95	69 - 131	2	30
Perfluorodecanesulfonic acid (PFDS)			0.00193	0.00190		mg/Kg		99	54 - 113	1	30
Perfluorooctane Sulfonamide (FOSA)			0.00200	0.00188		mg/Kg		94	62 - 135	6	30
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)			0.00200	0.00187	J	mg/Kg		93	65 - 135	1	30
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)			0.00200	0.00182	J	mg/Kg		91	65 - 135	1	30
6:2 FTS			0.00190	0.00193	J	mg/Kg		102	65 - 135	12	30
8:2 FTS			0.00192	0.00165	J	mg/Kg		86	65 - 135	8	30

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	Limits
13C4 PFBA	60		25 - 150
13C5 PFPeA	94		25 - 150
13C2 PFHxA	96		25 - 150
13C4-PFHpA	99		25 - 150
13C4 PFOA	94		25 - 150

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCSD 320-231392/3-A
Matrix: Solid
Analysis Batch: 233997

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 231392

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C5 PFNA	*86*		*25 - 150*
13C2 PFDA	*92*		*25 - 150*
13C2 PFUnA	*95*		*25 - 150*
13C2 PFDoA	*93*		*25 - 150*
13C2-PFTeDA	*96*		*25 - 150*
13C3-PFBS	*93*		*25 - 150*
18O2 PFHxS	*93*		*25 - 150*
13C4 PFOS	*88*		*25 - 150*
13C8 FOSA	*92*		*25 - 150*
d3-NMeFOSAA	*93*		*25 - 150*
d5-NEtFOSAA	*100*		*25 - 150*
M2-6:2FTS	*80*		*25 - 150*
M2-8:2FTS	*75*		*25 - 150*

Lab Sample ID: 320-40571-36 MS
Matrix: Solid
Analysis Batch: 233997

Client Sample ID: NF33-SS-01
Prep Type: Total/NA
Prep Batch: 231392

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	0.00020	J	0.00225	0.00230		mg/Kg	☼	93	81 - 133
Perfluoropentanoic acid (PFPeA)	ND		0.00225	0.00208		mg/Kg	☼	92	79 - 120
Perfluorohexanoic acid (PFHxA)	ND		0.00225	0.00236		mg/Kg	☼	105	75 - 125
Perfluoroheptanoic acid (PFHpA)	ND		0.00225	0.00199		mg/Kg	☼	88	76 - 124
Perfluorooctanoic acid (PFOA)	ND		0.00226	0.00200		mg/Kg	☼	89	76 - 121
Perfluorononanoic acid (PFNA)	ND		0.00225	0.00203		mg/Kg	☼	90	74 - 126
Perfluorodecanoic acid (PFDA)	ND		0.00225	0.00213		mg/Kg	☼	95	74 - 124
Perfluoroundecanoic acid (PFUnA)	ND		0.00225	0.00229		mg/Kg	☼	101	74 - 114
Perfluorododecanoic acid (PFDoA)	ND		0.00225	0.00216		mg/Kg	☼	96	75 - 123
Perfluorotridecanoic Acid (PFTriA)	ND		0.00225	0.00214		mg/Kg	☼	95	43 - 116
Perfluorotetradecanoic acid (PFTeA)	ND		0.00225	0.00212		mg/Kg	☼	94	22 - 129
Perfluorobutanesulfonic acid (PFBS)	ND		0.00199	0.00196		mg/Kg	☼	98	73 - 142
Perfluorohexanesulfonic acid (PFHxS)	ND		0.00205	0.00183		mg/Kg	☼	89	75 - 121
Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.00215	0.00219		mg/Kg	☼	102	78 - 146
Perfluorooctanesulfonic acid (PFOS)	ND		0.00209	0.00201		mg/Kg	☼	96	69 - 131
Perfluorodecanesulfonic acid (PFDS)	ND		0.00217	0.00196		mg/Kg	☼	90	54 - 113
Perfluorooctane Sulfonamide (FOSA)	ND		0.00225	0.00226		mg/Kg	☼	100	62 - 135
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.00225	0.00197	J	mg/Kg	☼	87	65 - 135
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.00225	0.00213	J	mg/Kg	☼	94	65 - 135

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: 320-40571-36 MS — **Client Sample ID: NF33-SS-01**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 233997 — **Prep Batch: 231392**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
6:2 FTS	ND		0.00214	0.00219	J	mg/Kg	☼	102	65 - 135
8:2 FTS	ND		0.00216	0.00213	J	mg/Kg	☼	99	65 - 135

Isotope Dilution	*MS %Recovery*	*MS Qualifier*	*Limits*
13C4 PFBA	*75*		*25 - 150*
13C5 PFPeA	*79*		*25 - 150*
13C2 PFHxA	*75*		*25 - 150*
13C4-PFHpA	*85*		*25 - 150*
13C4 PFOA	*86*		*25 - 150*
13C5 PFNA	*86*		*25 - 150*
13C2 PFDA	*89*		*25 - 150*
13C2 PFUnA	*79*		*25 - 150*
13C2 PFDoA	*72*		*25 - 150*
13C2-PFTeDA	*75*		*25 - 150*
13C3-PFBS	*73*		*25 - 150*
18O2 PFHxS	*77*		*25 - 150*
13C4 PFOS	*72*		*25 - 150*
13C8 FOSA	*60*		*25 - 150*
d3-NMeFOSAA	*93*		*25 - 150*
d5-NEtFOSAA	*89*		*25 - 150*
M2-6:2FTS	*107*		*25 - 150*
M2-8:2FTS	*111*		*25 - 150*

Lab Sample ID: 320-40571-36 MSD — **Client Sample ID: NF33-SS-01**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 233997 — **Prep Batch: 231392**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorobutanoic acid (PFBA)	0.00020	J	0.00225	0.00228		mg/Kg	☼	93	81 - 133	1	30
Perfluoropentanoic acid (PFPeA)	ND		0.00225	0.00209		mg/Kg	☼	93	79 - 120	1	30
Perfluorohexanoic acid (PFHxA)	ND		0.00225	0.00204		mg/Kg	☼	91	75 - 125	15	30
Perfluoroheptanoic acid (PFHpA)	ND		0.00225	0.00196		mg/Kg	☼	87	76 - 124	1	30
Perfluorooctanoic acid (PFOA)	ND		0.00225	0.00197		mg/Kg	☼	88	76 - 121	1	30
Perfluorononanoic acid (PFNA)	ND		0.00225	0.00208		mg/Kg	☼	93	74 - 126	2	30
Perfluorodecanoic acid (PFDA)	ND		0.00225	0.00210		mg/Kg	☼	93	74 - 124	2	30
Perfluoroundecanoic acid (PFUnA)	ND		0.00225	0.00217		mg/Kg	☼	97	74 - 114	5	30
Perfluorododecanoic acid (PFDoA)	ND		0.00225	0.00212		mg/Kg	☼	95	75 - 123	2	30
Perfluorotridecanoic Acid (PFTriA)	ND		0.00225	0.00223		mg/Kg	☼	99	43 - 116	4	30
Perfluorotetradecanoic acid (PFTeA)	ND		0.00225	0.00198		mg/Kg	☼	88	22 - 129	7	30
Perfluorobutanesulfonic acid (PFBS)	ND		0.00199	0.00189		mg/Kg	☼	95	73 - 142	3	30
Perfluorohexanesulfonic acid (PFHxS)	ND		0.00204	0.00180		mg/Kg	☼	88	75 - 121	2	30
Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.00214	0.00213		mg/Kg	☼	100	78 - 146	2	30

QC Sample Results

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: 320-40571-36 MSD — **Client Sample ID: NF33-SS-01**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 233997 — **Prep Batch: 231392**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorooctanesulfonic acid (PFOS)	ND		0.00208	0.00201		mg/Kg	☼	96	69 - 131	0	30
Perfluorodecanesulfonic acid (PFDS)	ND		0.00216	0.00213		mg/Kg	☼	98	54 - 113	8	30
Perfluorooctane Sulfonamide (FOSA)	ND		0.00225	0.00224		mg/Kg	☼	100	62 - 135	1	30
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.00225	0.00225		mg/Kg	☼	100	65 - 135	13	30
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.00225	0.00233		mg/Kg	☼	104	65 - 135	9	30
6:2 FTS	ND		0.00213	0.00224		mg/Kg	☼	105	65 - 135	3	30
8:2 FTS	ND		0.00215	0.00210	J	mg/Kg	☼	98	65 - 135	1	30

Isotope Dilution	*MSD %Recovery*	*MSD Qualifier*	*Limits*
13C4 PFBA	*80*		*25 - 150*
13C5 PFPeA	*85*		*25 - 150*
13C2 PFHxA	*84*		*25 - 150*
13C4-PFHpA	*91*		*25 - 150*
13C4 PFOA	*93*		*25 - 150*
13C5 PFNA	*92*		*25 - 150*
13C2 PFDA	*93*		*25 - 150*
13C2 PFUnA	*91*		*25 - 150*
13C2 PFDoA	*88*		*25 - 150*
13C2-PFTeDA	*98*		*25 - 150*
13C3-PFBS	*79*		*25 - 150*
18O2 PFHxS	*80*		*25 - 150*
13C4 PFOS	*76*		*25 - 150*
13C8 FOSA	*68*		*25 - 150*
d3-NMeFOSAA	*98*		*25 - 150*
d5-NEtFOSAA	*95*		*25 - 150*
M2-6:2FTS	*103*		*25 - 150*
M2-8:2FTS	*116*		*25 - 150*

Lab Sample ID: MB 320-231393/1-A — **Client Sample ID: Method Blank**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 234231 — **Prep Batch: 231393**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND		0.00020	0.000028	mg/Kg		06/28/18 06:06	07/14/18 13:06	1
Perfluoropentanoic acid (PFPeA)	ND		0.00020	0.000077	mg/Kg		06/28/18 06:06	07/14/18 13:06	1
Perfluorohexanoic acid (PFHxA)	ND		0.00020	0.000042	mg/Kg		06/28/18 06:06	07/14/18 13:06	1
Perfluoroheptanoic acid (PFHpA)	ND		0.00020	0.000029	mg/Kg		06/28/18 06:06	07/14/18 13:06	1
Perfluorooctanoic acid (PFOA)	ND		0.00020	0.000086	mg/Kg		06/28/18 06:06	07/14/18 13:06	1
Perfluorononanoic acid (PFNA)	ND		0.00020	0.000036	mg/Kg		06/28/18 06:06	07/14/18 13:06	1
Perfluorodecanoic acid (PFDA)	ND		0.00020	0.000022	mg/Kg		06/28/18 06:06	07/14/18 13:06	1
Perfluoroundecanoic acid (PFUnA)	ND		0.00020	0.000036	mg/Kg		06/28/18 06:06	07/14/18 13:06	1
Perfluorododecanoic acid (PFDoA)	ND		0.00020	0.000067	mg/Kg		06/28/18 06:06	07/14/18 13:06	1
Perfluorotridecanoic Acid (PFTriA)	ND		0.00020	0.000051	mg/Kg		06/28/18 06:06	07/14/18 13:06	1

QC Sample Results

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: MB 320-231393/1-A — **Client Sample ID: Method Blank**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 234231 — **Prep Batch: 231393**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorotetradecanoic acid (PFTeA)	ND		0.00020	0.000054	mg/Kg		06/28/18 06:06	07/14/18 13:06	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.00020	0.000025	mg/Kg		06/28/18 06:06	07/14/18 13:06	1
Perfluorohexanesulfonic acid (PFHxS)	ND		0.00020	0.000031	mg/Kg		06/28/18 06:06	07/14/18 13:06	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.00020	0.000035	mg/Kg		06/28/18 06:06	07/14/18 13:06	1
Perfluorooctanesulfonic acid (PFOS)	ND		0.00050	0.00020	mg/Kg		06/28/18 06:06	07/14/18 13:06	1
Perfluorodecanesulfonic acid (PFDS)	ND		0.00020	0.000039	mg/Kg		06/28/18 06:06	07/14/18 13:06	1
Perfluorooctane Sulfonamide (FOSA)	ND		0.00020	0.000082	mg/Kg		06/28/18 06:06	07/14/18 13:06	1
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.0020	0.00039	mg/Kg		06/28/18 06:06	07/14/18 13:06	1
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.0020	0.00037	mg/Kg		06/28/18 06:06	07/14/18 13:06	1
6:2 FTS	ND		0.0020	0.00015	mg/Kg		06/28/18 06:06	07/14/18 13:06	1
8:2 FTS	ND		0.0020	0.00025	mg/Kg		06/28/18 06:06	07/14/18 13:06	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*84*		*25 - 150*	*06/28/18 06:06*	*07/14/18 13:06*	*1*
13C5 PFPeA	*87*		*25 - 150*	*06/28/18 06:06*	*07/14/18 13:06*	*1*
13C2 PFHxA	*91*		*25 - 150*	*06/28/18 06:06*	*07/14/18 13:06*	*1*
13C4-PFHpA	*91*		*25 - 150*	*06/28/18 06:06*	*07/14/18 13:06*	*1*
13C4 PFOA	*89*		*25 - 150*	*06/28/18 06:06*	*07/14/18 13:06*	*1*
13C5 PFNA	*82*		*25 - 150*	*06/28/18 06:06*	*07/14/18 13:06*	*1*
13C2 PFDA	*87*		*25 - 150*	*06/28/18 06:06*	*07/14/18 13:06*	*1*
13C2 PFUnA	*89*		*25 - 150*	*06/28/18 06:06*	*07/14/18 13:06*	*1*
13C2 PFDoA	*87*		*25 - 150*	*06/28/18 06:06*	*07/14/18 13:06*	*1*
13C2-PFTeDA	*90*		*25 - 150*	*06/28/18 06:06*	*07/14/18 13:06*	*1*
13C3-PFBS	*83*		*25 - 150*	*06/28/18 06:06*	*07/14/18 13:06*	*1*
18O2 PFHxS	*88*		*25 - 150*	*06/28/18 06:06*	*07/14/18 13:06*	*1*
13C4 PFOS	*82*		*25 - 150*	*06/28/18 06:06*	*07/14/18 13:06*	*1*
13C8 FOSA	*81*		*25 - 150*	*06/28/18 06:06*	*07/14/18 13:06*	*1*
d3-NMeFOSAA	*88*		*25 - 150*	*06/28/18 06:06*	*07/14/18 13:06*	*1*
d5-NEtFOSAA	*86*		*25 - 150*	*06/28/18 06:06*	*07/14/18 13:06*	*1*
M2-6:2FTS	*78*		*25 - 150*	*06/28/18 06:06*	*07/14/18 13:06*	*1*
M2-8:2FTS	*67*		*25 - 150*	*06/28/18 06:06*	*07/14/18 13:06*	*1*

Lab Sample ID: LCS 320-231393/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 234231 — **Prep Batch: 231393**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	0.00200	0.00192		mg/Kg		96	81 - 133
Perfluoropentanoic acid (PFPeA)	0.00200	0.00182		mg/Kg		91	79 - 120
Perfluorohexanoic acid (PFHxA)	0.00200	0.00199		mg/Kg		99	75 - 125
Perfluoroheptanoic acid (PFHpA)	0.00200	0.00180		mg/Kg		90	76 - 124
Perfluorooctanoic acid (PFOA)	0.00200	0.00177		mg/Kg		89	76 - 121
Perfluorononanoic acid (PFNA)	0.00200	0.00193		mg/Kg		97	74 - 126
Perfluorodecanoic acid (PFDA)	0.00200	0.00195		mg/Kg		98	74 - 124
Perfluoroundecanoic acid (PFUnA)	0.00200	0.00184		mg/Kg		92	74 - 114

QC Sample Results

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCS 320-231393/2-A
Matrix: Solid
Analysis Batch: 234231

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 231393

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorododecanoic acid (PFDoA)	0.00200	0.00204		mg/Kg		102	75 - 123
Perfluorotridecanoic Acid (PFTriA)	0.00200	0.00188		mg/Kg		94	43 - 116
Perfluorotetradecanoic acid (PFTeA)	0.00200	0.00191		mg/Kg		95	22 - 129
Perfluorobutanesulfonic acid (PFBS)	0.00177	0.00171		mg/Kg		97	73 - 142
Perfluorohexanesulfonic acid (PFHxS)	0.00182	0.00164		mg/Kg		90	75 - 121
Perfluoroheptanesulfonic Acid (PFHpS)	0.00190	0.00186		mg/Kg		98	78 - 146
Perfluorooctanesulfonic acid (PFOS)	0.00186	0.00189		mg/Kg		102	69 - 131
Perfluorodecanesulfonic acid (PFDS)	0.00193	0.00185		mg/Kg		96	54 - 113
Perfluorooctane Sulfonamide (FOSA)	0.00200	0.00201		mg/Kg		100	62 - 135
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	0.00200	0.00193	J	mg/Kg		97	65 - 135
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	0.00200	0.00186	J	mg/Kg		93	65 - 135
6:2 FTS	0.00190	0.00206		mg/Kg		109	65 - 135
8:2 FTS	0.00192	0.00195	J	mg/Kg		102	65 - 135

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*86*		*25 - 150*
13C5 PFPeA	*92*		*25 - 150*
13C2 PFHxA	*92*		*25 - 150*
13C4-PFHpA	*99*		*25 - 150*
13C4 PFOA	*94*		*25 - 150*
13C5 PFNA	*84*		*25 - 150*
13C2 PFDA	*86*		*25 - 150*
13C2 PFUnA	*91*		*25 - 150*
13C2 PFDoA	*91*		*25 - 150*
13C2-PFTeDA	*97*		*25 - 150*
13C3-PFBS	*90*		*25 - 150*
18O2 PFHxS	*91*		*25 - 150*
13C4 PFOS	*89*		*25 - 150*
13C8 FOSA	*84*		*25 - 150*
d3-NMeFOSAA	*84*		*25 - 150*
d5-NEtFOSAA	*92*		*25 - 150*
M2-6:2FTS	*78*		*25 - 150*
M2-8:2FTS	*67*		*25 - 150*

QC Sample Results

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCSD 320-231393/3-A
Matrix: Solid
Analysis Batch: 234231

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 231393

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorobutanoic acid (PFBA)			0.00200	0.00189		mg/Kg		94	81 - 133	2	30
Perfluoropentanoic acid (PFPeA)			0.00200	0.00183		mg/Kg		92	79 - 120	1	30
Perfluorohexanoic acid (PFHxA)			0.00200	0.00192		mg/Kg		96	75 - 125	4	30
Perfluoroheptanoic acid (PFHpA)			0.00200	0.00175		mg/Kg		87	76 - 124	3	30
Perfluorooctanoic acid (PFOA)			0.00200	0.00189		mg/Kg		94	76 - 121	6	30
Perfluorononanoic acid (PFNA)			0.00200	0.00194		mg/Kg		97	74 - 126	1	30
Perfluorodecanoic acid (PFDA)			0.00200	0.00199		mg/Kg		100	74 - 124	2	30
Perfluoroundecanoic acid (PFUnA)			0.00200	0.00176		mg/Kg		88	74 - 114	4	30
Perfluorododecanoic acid (PFDoA)			0.00200	0.00183		mg/Kg		91	75 - 123	11	30
Perfluorotridecanoic Acid (PFTriA)			0.00200	0.00184		mg/Kg		92	43 - 116	3	30
Perfluorotetradecanoic acid (PFTeA)			0.00200	0.00187		mg/Kg		93	22 - 129	2	30
Perfluorobutanesulfonic acid (PFBS)			0.00177	0.00177		mg/Kg		100	73 - 142	3	30
Perfluorohexanesulfonic acid (PFHxS)			0.00182	0.00163		mg/Kg		90	75 - 121	0	30
Perfluoroheptanesulfonic Acid (PFHpS)			0.00190	0.00184		mg/Kg		96	78 - 146	1	30
Perfluorooctanesulfonic acid (PFOS)			0.00186	0.00180		mg/Kg		97	69 - 131	5	30
Perfluorodecanesulfonic acid (PFDS)			0.00193	0.00186		mg/Kg		96	54 - 113	0	30
Perfluorooctane Sulfonamide (FOSA)			0.00200	0.00195		mg/Kg		97	62 - 135	3	30
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)			0.00200	0.00188	J	mg/Kg		94	65 - 135	3	30
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)			0.00200	0.00209		mg/Kg		104	65 - 135	11	30
6:2 FTS			0.00190	0.00203		mg/Kg		107	65 - 135	2	30
8:2 FTS			0.00192	0.00171	J	mg/Kg		89	65 - 135	13	30

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C4 PFBA	*88*		*25 - 150*
13C5 PFPeA	*91*		*25 - 150*
13C2 PFHxA	*93*		*25 - 150*
13C4-PFHpA	*99*		*25 - 150*
13C4 PFOA	*91*		*25 - 150*
13C5 PFNA	*85*		*25 - 150*
13C2 PFDA	*84*		*25 - 150*
13C2 PFUnA	*92*		*25 - 150*
13C2 PFDoA	*94*		*25 - 150*
13C2-PFTeDA	*94*		*25 - 150*
13C3-PFBS	*89*		*25 - 150*
18O2 PFHxS	*93*		*25 - 150*
13C4 PFOS	*89*		*25 - 150*
13C8 FOSA	*84*		*25 - 150*

QC Sample Results

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCSD 320-231393/3-A
Matrix: Solid
Analysis Batch: 234231

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 231393

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
d3-NMeFOSAA	*91*		*25 - 150*
d5-NEtFOSAA	*85*		*25 - 150*
M2-6:2FTS	*81*		*25 - 150*
M2-8:2FTS	*70*		*25 - 150*

Lab Sample ID: 320-40571-42 MS
Matrix: Solid
Analysis Batch: 234231

Client Sample ID: NF36-SS-02
Prep Type: Total/NA
Prep Batch: 231393

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	ND		0.00239	0.00232		mg/Kg	☼	97	81 - 133
Perfluoropentanoic acid (PFPeA)	ND		0.00239	0.00222		mg/Kg	☼	93	79 - 120
Perfluorohexanoic acid (PFHxA)	ND		0.00239	0.00230		mg/Kg	☼	96	75 - 125
Perfluoroheptanoic acid (PFHpA)	ND		0.00239	0.00213		mg/Kg	☼	89	76 - 124
Perfluorooctanoic acid (PFOA)	ND		0.00239	0.00209		mg/Kg	☼	87	76 - 121
Perfluorononanoic acid (PFNA)	ND		0.00239	0.00226		mg/Kg	☼	94	74 - 126
Perfluorodecanoic acid (PFDA)	ND		0.00239	0.00217		mg/Kg	☼	91	74 - 124
Perfluoroundecanoic acid (PFUnA)	ND		0.00239	0.00218		mg/Kg	☼	91	74 - 114
Perfluorododecanoic acid (PFDoA)	ND		0.00239	0.00233		mg/Kg	☼	97	75 - 123
Perfluorotridecanoic Acid (PFTriA)	ND		0.00239	0.00242		mg/Kg	☼	101	43 - 116
Perfluorotetradecanoic acid (PFTeA)	ND		0.00239	0.00220		mg/Kg	☼	92	22 - 129
Perfluorobutanesulfonic acid (PFBS)	ND		0.00211	0.00206		mg/Kg	☼	98	73 - 142
Perfluorohexanesulfonic acid (PFHxS)	ND		0.00217	0.00197		mg/Kg	☼	91	75 - 121
Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.00227	0.00230		mg/Kg	☼	101	78 - 146
Perfluorooctanesulfonic acid (PFOS)	ND		0.00222	0.00226		mg/Kg	☼	102	69 - 131
Perfluorodecanesulfonic acid (PFDS)	ND		0.00230	0.00224		mg/Kg	☼	97	54 - 113
Perfluorooctane Sulfonamide (FOSA)	ND		0.00239	0.00240		mg/Kg	☼	100	62 - 135
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.00239	0.00235	J	mg/Kg	☼	98	65 - 135
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.00239	0.00233	J	mg/Kg	☼	97	65 - 135
6:2 FTS	ND		0.00227	0.00225	J	mg/Kg	☼	99	65 - 135
8:2 FTS	ND		0.00229	0.00192	J	mg/Kg	☼	84	65 - 135

Isotope Dilution	*MS %Recovery*	*MS Qualifier*	*Limits*
13C4 PFBA	*80*		*25 - 150*
13C5 PFPeA	*83*		*25 - 150*
13C2 PFHxA	*86*		*25 - 150*
13C4-PFHpA	*88*		*25 - 150*
13C4 PFOA	*87*		*25 - 150*

QC Sample Results

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: 320-40571-42 MS
Matrix: Solid
Analysis Batch: 234231

Client Sample ID: NF36-SS-02
Prep Type: Total/NA
Prep Batch: 231393

Isotope Dilution	*MS %Recovery*	*MS Qualifier*	*Limits*
13C5 PFNA	*78*		*25 - 150*
13C2 PFDA	*86*		*25 - 150*
13C2 PFUnA	*81*		*25 - 150*
13C2 PFDoA	*82*		*25 - 150*
13C2-PFTeDA	*85*		*25 - 150*
13C3-PFBS	*79*		*25 - 150*
18O2 PFHxS	*79*		*25 - 150*
13C4 PFOS	*74*		*25 - 150*
13C8 FOSA	*68*		*25 - 150*
d3-NMeFOSAA	*74*		*25 - 150*
d5-NEtFOSAA	*78*		*25 - 150*
M2-6:2FTS	*65*		*25 - 150*
M2-8:2FTS	*69*		*25 - 150*

Lab Sample ID: 320-40571-42 MSD
Matrix: Solid
Analysis Batch: 234231

Client Sample ID: NF36-SS-02
Prep Type: Total/NA
Prep Batch: 231393

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorobutanoic acid (PFBA)	ND		0.00237	0.00229		mg/Kg	☼	97	81 - 133	1	30
Perfluoropentanoic acid (PFPeA)	ND		0.00237	0.00223		mg/Kg	☼	94	79 - 120	1	30
Perfluorohexanoic acid (PFHxA)	ND		0.00237	0.00228		mg/Kg	☼	96	75 - 125	1	30
Perfluoroheptanoic acid (PFHpA)	ND		0.00237	0.00209		mg/Kg	☼	88	76 - 124	2	30
Perfluorooctanoic acid (PFOA)	ND		0.00237	0.00216		mg/Kg	☼	91	76 - 121	4	30
Perfluorononanoic acid (PFNA)	ND		0.00237	0.00226		mg/Kg	☼	95	74 - 126	0	30
Perfluorodecanoic acid (PFDA)	ND		0.00237	0.00231		mg/Kg	☼	98	74 - 124	6	30
Perfluoroundecanoic acid (PFUnA)	ND		0.00237	0.00208		mg/Kg	☼	88	74 - 114	5	30
Perfluorododecanoic acid (PFDoA)	ND		0.00237	0.00225		mg/Kg	☼	95	75 - 123	3	30
Perfluorotridecanoic Acid (PFTriA)	ND		0.00237	0.00237		mg/Kg	☼	100	43 - 116	2	30
Perfluorotetradecanoic acid (PFTeA)	ND		0.00237	0.00229		mg/Kg	☼	97	22 - 129	4	30
Perfluorobutanesulfonic acid (PFBS)	ND		0.00210	0.00198		mg/Kg	☼	94	73 - 142	4	30
Perfluorohexanesulfonic acid (PFHxS)	ND		0.00216	0.00191		mg/Kg	☼	88	75 - 121	3	30
Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.00226	0.00222		mg/Kg	☼	99	78 - 146	3	30
Perfluorooctanesulfonic acid (PFOS)	ND		0.00220	0.00215		mg/Kg	☼	98	69 - 131	5	30
Perfluorodecanesulfonic acid (PFDS)	ND		0.00229	0.00220		mg/Kg	☼	96	54 - 113	2	30
Perfluorooctane Sulfonamide (FOSA)	ND		0.00237	0.00237		mg/Kg	☼	100	62 - 135	1	30
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.00237	0.00232	J	mg/Kg	☼	98	65 - 135	1	30
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.00237	0.00216	J	mg/Kg	☼	91	65 - 135	8	30

QC Sample Results

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: 320-40571-42 MSD — **Client Sample ID: NF36-SS-02**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 234231 — **Prep Batch: 231393**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
6:2 FTS	ND		0.00225	0.00222	J	mg/Kg	☼	99	65 - 135	1	30
8:2 FTS	ND		0.00227	0.00216	J	mg/Kg	☼	95	65 - 135	12	30

Isotope Dilution	*MSD %Recovery*	*MSD Qualifier*	*Limits*
13C4 PFBA	*79*		*25 - 150*
13C5 PFPeA	*84*		*25 - 150*
13C2 PFHxA	*87*		*25 - 150*
13C4-PFHpA	*91*		*25 - 150*
13C4 PFOA	*86*		*25 - 150*
13C5 PFNA	*79*		*25 - 150*
13C2 PFDA	*84*		*25 - 150*
13C2 PFUnA	*86*		*25 - 150*
13C2 PFDoA	*84*		*25 - 150*
13C2-PFTeDA	*85*		*25 - 150*
13C3-PFBS	*80*		*25 - 150*
18O2 PFHxS	*82*		*25 - 150*
13C4 PFOS	*76*		*25 - 150*
13C8 FOSA	*70*		*25 - 150*
d3-NMeFOSAA	*75*		*25 - 150*
d5-NEtFOSAA	*80*		*25 - 150*
M2-6:2FTS	*66*		*25 - 150*
M2-8:2FTS	*63*		*25 - 150*

Lab Sample ID: MB 320-232121/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 232800 — **Prep Batch: 232121**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	0.000469	J	0.0020	0.00035	ug/L		07/02/18 14:58	07/07/18 01:04	1
Perfluoropentanoic acid (PFPeA)	ND		0.0020	0.00049	ug/L		07/02/18 14:58	07/07/18 01:04	1
Perfluorohexanoic acid (PFHxA)	ND		0.0020	0.00058	ug/L		07/02/18 14:58	07/07/18 01:04	1
Perfluoroheptanoic acid (PFHpA)	ND		0.0020	0.00025	ug/L		07/02/18 14:58	07/07/18 01:04	1
Perfluorooctanoic acid (PFOA)	ND		0.0020	0.00085	ug/L		07/02/18 14:58	07/07/18 01:04	1
Perfluorononanoic acid (PFNA)	ND		0.0020	0.00027	ug/L		07/02/18 14:58	07/07/18 01:04	1
Perfluorodecanoic acid (PFDA)	ND		0.0020	0.00031	ug/L		07/02/18 14:58	07/07/18 01:04	1
Perfluoroundecanoic acid (PFUnA)	ND		0.0020	0.0011	ug/L		07/02/18 14:58	07/07/18 01:04	1
Perfluorododecanoic acid (PFDoA)	ND		0.0020	0.00055	ug/L		07/02/18 14:58	07/07/18 01:04	1
Perfluorotridecanoic Acid (PFTriA)	ND		0.0020	0.0013	ug/L		07/02/18 14:58	07/07/18 01:04	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.0020	0.00029	ug/L		07/02/18 14:58	07/07/18 01:04	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.0020	0.00020	ug/L		07/02/18 14:58	07/07/18 01:04	1
Perfluoropentanesulfonic acid (PFPeS)	ND		0.0020	0.00030	ug/L		07/02/18 14:58	07/07/18 01:04	1
Perfluorohexanesulfonic acid (PFHxS)	0.000272	J	0.0020	0.00017	ug/L		07/02/18 14:58	07/07/18 01:04	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.0020	0.00019	ug/L		07/02/18 14:58	07/07/18 01:04	1
Perfluorooctanesulfonic acid (PFOS)	ND		0.0020	0.00054	ug/L		07/02/18 14:58	07/07/18 01:04	1
Perfluorononanesulfonic acid (PFNS)	ND		0.0020	0.00016	ug/L		07/02/18 14:58	07/07/18 01:04	1
Perfluorodecanesulfonic acid (PFDS)	ND		0.0020	0.00032	ug/L		07/02/18 14:58	07/07/18 01:04	1
Perfluorooctane Sulfonamide (FOSA)	ND		0.0020	0.00035	ug/L		07/02/18 14:58	07/07/18 01:04	1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: MB 320-232121/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 232800 — **Prep Batch: 232121**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.020	0.0031	ug/L		07/02/18 14:58	07/07/18 01:04	1
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.020	0.0019	ug/L		07/02/18 14:58	07/07/18 01:04	1
4:2 FTS	ND		0.020	0.0052	ug/L		07/02/18 14:58	07/07/18 01:04	1
6:2 FTS	ND		0.020	0.0020	ug/L		07/02/18 14:58	07/07/18 01:04	1
8:2 FTS	ND		0.020	0.0020	ug/L		07/02/18 14:58	07/07/18 01:04	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*87*		*25 - 150*	*07/02/18 14:58*	*07/07/18 01:04*	*1*
13C5 PFPeA	*94*		*25 - 150*	*07/02/18 14:58*	*07/07/18 01:04*	*1*
13C2 PFHxA	*97*		*25 - 150*	*07/02/18 14:58*	*07/07/18 01:04*	*1*
13C4-PFHpA	*103*		*25 - 150*	*07/02/18 14:58*	*07/07/18 01:04*	*1*
13C4 PFOA	*106*		*25 - 150*	*07/02/18 14:58*	*07/07/18 01:04*	*1*
13C5 PFNA	*109*		*25 - 150*	*07/02/18 14:58*	*07/07/18 01:04*	*1*
13C2 PFDA	*108*		*25 - 150*	*07/02/18 14:58*	*07/07/18 01:04*	*1*
13C2 PFUnA	*108*		*25 - 150*	*07/02/18 14:58*	*07/07/18 01:04*	*1*
13C2 PFDoA	*108*		*25 - 150*	*07/02/18 14:58*	*07/07/18 01:04*	*1*
13C2-PFTeDA	*103*		*25 - 150*	*07/02/18 14:58*	*07/07/18 01:04*	*1*
13C3-PFBS	*94*		*25 - 150*	*07/02/18 14:58*	*07/07/18 01:04*	*1*
18O2 PFHxS	*109*		*25 - 150*	*07/02/18 14:58*	*07/07/18 01:04*	*1*
13C4 PFOS	*105*		*25 - 150*	*07/02/18 14:58*	*07/07/18 01:04*	*1*
13C8 FOSA	*89*		*25 - 150*	*07/02/18 14:58*	*07/07/18 01:04*	*1*
d3-NMeFOSAA	*107*		*25 - 150*	*07/02/18 14:58*	*07/07/18 01:04*	*1*
d5-NEtFOSAA	*112*		*25 - 150*	*07/02/18 14:58*	*07/07/18 01:04*	*1*
M2-6:2FTS	*111*		*25 - 150*	*07/02/18 14:58*	*07/07/18 01:04*	*1*
M2-8:2FTS	*117*		*25 - 150*	*07/02/18 14:58*	*07/07/18 01:04*	*1*

Lab Sample ID: LCS 320-232121/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 232800 — **Prep Batch: 232121**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	0.0400	0.0364		ug/L		91	70 - 130
Perfluoropentanoic acid (PFPeA)	0.0400	0.0363		ug/L		91	66 - 126
Perfluorohexanoic acid (PFHxA)	0.0400	0.0384		ug/L		96	66 - 126
Perfluoroheptanoic acid (PFHpA)	0.0400	0.0381		ug/L		95	66 - 126
Perfluorooctanoic acid (PFOA)	0.0400	0.0373		ug/L		93	64 - 124
Perfluorononanoic acid (PFNA)	0.0400	0.0366		ug/L		91	68 - 128
Perfluorodecanoic acid (PFDA)	0.0400	0.0368		ug/L		92	69 - 129
Perfluoroundecanoic acid (PFUnA)	0.0400	0.0358		ug/L		89	60 - 120
Perfluorododecanoic acid (PFDoA)	0.0400	0.0361		ug/L		90	71 - 131
Perfluorotridecanoic Acid (PFTriA)	0.0400	0.0327		ug/L		82	72 - 132
Perfluorotetradecanoic acid (PFTeA)	0.0400	0.0366		ug/L		91	68 - 128
Perfluorobutanesulfonic acid (PFBS)	0.0354	0.0337		ug/L		95	73 - 133

QC Sample Results

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCS 320-232121/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 232800 — **Prep Batch: 232121**

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Perfluoropentanesulfonic acid (PFPeS)			0.0375	0.0365		ug/L		97	70 - 130		
Perfluorohexanesulfonic acid (PFHxS)			0.0364	0.0309		ug/L		85	63 - 123		
Perfluoroheptanesulfonic Acid (PFHpS)			0.0381	0.0353		ug/L		93	68 - 128		
Perfluorooctanesulfonic acid (PFOS)			0.0371	0.0329		ug/L		89	67 - 127		
Perfluorononanesulfonic acid (PFNS)			0.0384	0.0333		ug/L		87	70 - 130		
Perfluorodecanesulfonic acid (PFDS)			0.0386	0.0326		ug/L		84	68 - 128		
Perfluorooctane Sulfonamide (FOSA)			0.0400	0.0374		ug/L		93	70 - 130		
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)			0.0400	0.0337		ug/L		84	67 - 127		
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)			0.0400	0.0365		ug/L		91	65 - 125		
4:2 FTS			0.0374	0.0402		ug/L		108	70 - 130		
6:2 FTS			0.0379	0.0379		ug/L		100	66 - 126		
8:2 FTS			0.0383	0.0336		ug/L		88	67 - 127		

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*88*		*25 - 150*
13C5 PFPeA	*94*		*25 - 150*
13C2 PFHxA	*98*		*25 - 150*
13C4-PFHpA	*96*		*25 - 150*
13C4 PFOA	*105*		*25 - 150*
13C5 PFNA	*105*		*25 - 150*
13C2 PFDA	*110*		*25 - 150*
13C2 PFUnA	*103*		*25 - 150*
13C2 PFDoA	*102*		*25 - 150*
13C2-PFTeDA	*98*		*25 - 150*
13C3-PFBS	*96*		*25 - 150*
18O2 PFHxS	*108*		*25 - 150*
13C4 PFOS	*101*		*25 - 150*
13C8 FOSA	*88*		*25 - 150*
d3-NMeFOSAA	*105*		*25 - 150*
d5-NEtFOSAA	*100*		*25 - 150*
M2-6:2FTS	*102*		*25 - 150*
M2-8:2FTS	*114*		*25 - 150*

Lab Sample ID: LCSD 320-232121/3-A — **Client Sample ID: Lab Control Sample Dup**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 232800 — **Prep Batch: 232121**

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorobutanoic acid (PFBA)			0.0400	0.0357		ug/L		89	70 - 130	2	30
Perfluoropentanoic acid (PFPeA)			0.0400	0.0356		ug/L		89	66 - 126	2	30

QC Sample Results

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCSD 320-232121/3-A
Matrix: Water
Analysis Batch: 232800

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 232121

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorohexanoic acid (PFHxA)	0.0400	0.0356		ug/L		89	66 - 126	7	30
Perfluoroheptanoic acid (PFHpA)	0.0400	0.0365		ug/L		91	66 - 126	4	30
Perfluorooctanoic acid (PFOA)	0.0400	0.0350		ug/L		87	64 - 124	6	30
Perfluorononanoic acid (PFNA)	0.0400	0.0366		ug/L		92	68 - 128	0	30
Perfluorodecanoic acid (PFDA)	0.0400	0.0390		ug/L		97	69 - 129	6	30
Perfluoroundecanoic acid (PFUnA)	0.0400	0.0340		ug/L		85	60 - 120	5	30
Perfluorododecanoic acid (PFDoA)	0.0400	0.0373		ug/L		93	71 - 131	3	30
Perfluorotridecanoic Acid (PFTriA)	0.0400	0.0367		ug/L		92	72 - 132	12	30
Perfluorotetradecanoic acid (PFTeA)	0.0400	0.0331		ug/L		83	68 - 128	10	30
Perfluorobutanesulfonic acid (PFBS)	0.0354	0.0331		ug/L		94	73 - 133	2	30
Perfluoropentanesulfonic acid (PFPeS)	0.0375	0.0352		ug/L		94	70 - 130	4	30
Perfluorohexanesulfonic acid (PFHxS)	0.0364	0.0290		ug/L		80	63 - 123	6	30
Perfluoroheptanesulfonic Acid (PFHpS)	0.0381	0.0363		ug/L		95	68 - 128	3	30
Perfluorooctanesulfonic acid (PFOS)	0.0371	0.0351		ug/L		95	67 - 127	6	30
Perfluorononanesulfonic acid (PFNS)	0.0384	0.0368		ug/L		96	70 - 130	10	30
Perfluorodecanesulfonic acid (PFDS)	0.0386	0.0342		ug/L		89	68 - 128	5	30
Perfluorooctane Sulfonamide (FOSA)	0.0400	0.0353		ug/L		88	70 - 130	6	30
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	0.0400	0.0345		ug/L		86	67 - 127	2	30
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	0.0400	0.0330		ug/L		83	65 - 125	10	30
4:2 FTS	0.0374	0.0384		ug/L		103	70 - 130	5	30
6:2 FTS	0.0379	0.0345		ug/L		91	66 - 126	9	30
8:2 FTS	0.0383	0.0348		ug/L		91	67 - 127	4	30

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C4 PFBA	*78*		*25 - 150*
13C5 PFPeA	*93*		*25 - 150*
13C2 PFHxA	*99*		*25 - 150*
13C4-PFHpA	*100*		*25 - 150*
13C4 PFOA	*104*		*25 - 150*
13C5 PFNA	*105*		*25 - 150*
13C2 PFDA	*102*		*25 - 150*
13C2 PFUnA	*101*		*25 - 150*
13C2 PFDoA	*93*		*25 - 150*
13C2-PFTeDA	*100*		*25 - 150*
13C3-PFBS	*94*		*25 - 150*
18O2 PFHxS	*108*		*25 - 150*

QC Sample Results

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCSD 320-232121/3-A
Matrix: Water
Analysis Batch: 232800

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 232121

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C4 PFOS	*96*		*25 - 150*
13C8 FOSA	*86*		*25 - 150*
d3-NMeFOSAA	*99*		*25 - 150*
d5-NEtFOSAA	*99*		*25 - 150*
M2-6:2FTS	*109*		*25 - 150*
M2-8:2FTS	*102*		*25 - 150*

Lab Sample ID: 320-40571-23 MS
Matrix: Water
Analysis Batch: 233989

Client Sample ID: NF27-GW-01
Prep Type: Total/NA
Prep Batch: 232121

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	0.017	B	0.0413	0.0537		ug/L		89	70 - 130
Perfluoropentanoic acid (PFPeA)	0.012		0.0413	0.0483		ug/L		88	66 - 126
Perfluorohexanoic acid (PFHxA)	0.0049		0.0413	0.0441		ug/L		95	66 - 126
Perfluoroheptanoic acid (PFHpA)	0.0031		0.0413	0.0413		ug/L		93	66 - 126
Perfluorooctanoic acid (PFOA)	0.0037		0.0413	0.0405		ug/L		89	64 - 124
Perfluorononanoic acid (PFNA)	0.0015	J	0.0413	0.0374		ug/L		87	68 - 128
Perfluorodecanoic acid (PFDA)	0.00051	J	0.0413	0.0383		ug/L		92	69 - 129
Perfluoroundecanoic acid (PFUnA)	ND		0.0413	0.0349		ug/L		85	60 - 120
Perfluorododecanoic acid (PFDoA)	ND		0.0413	0.0374		ug/L		91	71 - 131
Perfluorotridecanoic Acid (PFTriA)	ND		0.0413	0.0371		ug/L		90	72 - 132
Perfluorotetradecanoic acid (PFTeA)	ND		0.0413	0.0379		ug/L		92	68 - 128
Perfluorobutanesulfonic acid (PFBS)	0.0012	J	0.0365	0.0347		ug/L		92	73 - 133
Perfluoropentanesulfonic acid (PFPeS)	ND		0.0387	0.0376		ug/L		97	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	0.0012	J B	0.0376	0.0334		ug/L		86	63 - 123
Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.0393	0.0383		ug/L		97	68 - 128
Perfluorooctanesulfonic acid (PFOS)	0.0017	J	0.0383	0.0367		ug/L		91	67 - 127
Perfluorononanesulfonic acid (PFNS)	ND		0.0396	0.0356		ug/L		90	70 - 130
Perfluorodecanesulfonic acid (PFDS)	ND		0.0398	0.0331		ug/L		83	68 - 128
Perfluorooctane Sulfonamide (FOSA)	ND		0.0413	0.0399		ug/L		97	70 - 130
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.0413	0.0368		ug/L		89	67 - 127
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.0413	0.0378		ug/L		92	65 - 125
4:2 FTS	ND	F1	0.0385	0.0743	F1	ug/L		193	70 - 130
6:2 FTS	0.0034	J	0.0391	0.0436		ug/L		103	66 - 126
8:2 FTS	ND		0.0395	0.0361		ug/L		91	67 - 127

QC Sample Results

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Isotope Dilution	MS %Recovery	MS Qualifier	Limits
13C4 PFBA	61		25 - 150
13C5 PFPeA	81		25 - 150
13C2 PFHxA	87		25 - 150
13C4-PFHpA	100		25 - 150
13C4 PFOA	105		25 - 150
13C5 PFNA	101		25 - 150
13C2 PFDA	96		25 - 150
13C2 PFUnA	95		25 - 150
13C2 PFDoA	90		25 - 150
13C2-PFTeDA	91		25 - 150
13C3-PFBS	90		25 - 150
18O2 PFHxS	99		25 - 150
13C4 PFOS	94		25 - 150
13C8 FOSA	84		25 - 150
d3-NMeFOSAA	99		25 - 150
d5-NEtFOSAA	100		25 - 150
M2-6:2FTS	125		25 - 150
M2-8:2FTS	92		25 - 150

Lab Sample ID: 320-40571-23 MSD — **Client Sample ID: NF27-GW-01**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 233989 — **Prep Batch: 232121**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorobutanoic acid (PFBA)	0.017	B	0.0369	0.0550		ug/L		103	70 - 130	2	30
Perfluoropentanoic acid (PFPeA)	0.012		0.0369	0.0500		ug/L		102	66 - 126	3	30
Perfluorohexanoic acid (PFHxA)	0.0049		0.0369	0.0388		ug/L		92	66 - 126	13	30
Perfluoroheptanoic acid (PFHpA)	0.0031		0.0369	0.0382		ug/L		95	66 - 126	8	30
Perfluorooctanoic acid (PFOA)	0.0037		0.0370	0.0348		ug/L		84	64 - 124	15	30
Perfluorononanoic acid (PFNA)	0.0015	J	0.0369	0.0336		ug/L		87	68 - 128	11	30
Perfluorodecanoic acid (PFDA)	0.00051	J	0.0369	0.0342		ug/L		91	69 - 129	11	30
Perfluoroundecanoic acid (PFUnA)	ND		0.0369	0.0314		ug/L		85	60 - 120	11	30
Perfluorododecanoic acid (PFDoA)	ND		0.0369	0.0327		ug/L		88	71 - 131	13	30
Perfluorotridecanoic Acid (PFTriA)	ND		0.0369	0.0318		ug/L		86	72 - 132	15	30
Perfluorotetradecanoic acid (PFTeA)	ND		0.0369	0.0312		ug/L		84	68 - 128	19	30
Perfluorobutanesulfonic acid (PFBS)	0.0012	J	0.0326	0.0330		ug/L		97	73 - 133	5	30
Perfluoropentanesulfonic acid (PFPeS)	ND		0.0346	0.0326		ug/L		94	70 - 130	14	30
Perfluorohexanesulfonic acid (PFHxS)	0.0012	J B	0.0336	0.0305		ug/L		87	63 - 123	9	30
Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.0352	0.0328		ug/L		93	68 - 128	15	30
Perfluorooctanesulfonic acid (PFOS)	0.0017	J	0.0343	0.0327		ug/L		90	67 - 127	12	30
Perfluorononanesulfonic acid (PFNS)	ND		0.0355	0.0310		ug/L		87	70 - 130	14	30
Perfluorodecanesulfonic acid (PFDS)	ND		0.0356	0.0300		ug/L		84	68 - 128	10	30
Perfluorooctane Sulfonamide (FOSA)	ND		0.0369	0.0348		ug/L		94	70 - 130	14	30
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.0369	0.0323		ug/L		87	67 - 127	13	30

QC Sample Results

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: 320-40571-23 MSD — **Client Sample ID: NF27-GW-01**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 233989 — **Prep Batch: 232121**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.0369	0.0323		ug/L		88	65 - 125	16	30
4:2 FTS	ND	F1	0.0345	0.0631	F1	ug/L		183	70 - 130	16	30
6:2 FTS	0.0034	J	0.0350	0.0367		ug/L		95	66 - 126	17	30
8:2 FTS	ND		0.0354	0.0317		ug/L		89	67 - 127	13	30

Isotope Dilution	*MSD %Recovery*	*MSD Qualifier*	*Limits*
13C4 PFBA	*61*		*25 - 150*
13C5 PFPeA	*81*		*25 - 150*
13C2 PFHxA	*92*		*25 - 150*
13C4-PFHpA	*98*		*25 - 150*
13C4 PFOA	*99*		*25 - 150*
13C5 PFNA	*95*		*25 - 150*
13C2 PFDA	*92*		*25 - 150*
13C2 PFUnA	*95*		*25 - 150*
13C2 PFDoA	*89*		*25 - 150*
13C2-PFTeDA	*93*		*25 - 150*
13C3-PFBS	*85*		*25 - 150*
18O2 PFHxS	*94*		*25 - 150*
13C4 PFOS	*91*		*25 - 150*
13C8 FOSA	*84*		*25 - 150*
d3-NMeFOSAA	*96*		*25 - 150*
d5-NEtFOSAA	*96*		*25 - 150*
M2-6:2FTS	*112*		*25 - 150*
M2-8:2FTS	*85*		*25 - 150*

Lab Sample ID: MB 320-232150/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 232788 — **Prep Batch: 232150**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	0.000418	J	0.0020	0.00035	ug/L		07/02/18 16:10	07/06/18 17:38	1
Perfluoropentanoic acid (PFPeA)	ND		0.0020	0.00049	ug/L		07/02/18 16:10	07/06/18 17:38	1
Perfluorohexanoic acid (PFHxA)	ND		0.0020	0.00058	ug/L		07/02/18 16:10	07/06/18 17:38	1
Perfluoroheptanoic acid (PFHpA)	ND		0.0020	0.00025	ug/L		07/02/18 16:10	07/06/18 17:38	1
Perfluorooctanoic acid (PFOA)	ND		0.0020	0.00085	ug/L		07/02/18 16:10	07/06/18 17:38	1
Perfluorononanoic acid (PFNA)	ND		0.0020	0.00027	ug/L		07/02/18 16:10	07/06/18 17:38	1
Perfluorodecanoic acid (PFDA)	ND		0.0020	0.00031	ug/L		07/02/18 16:10	07/06/18 17:38	1
Perfluoroundecanoic acid (PFUnA)	ND		0.0020	0.0011	ug/L		07/02/18 16:10	07/06/18 17:38	1
Perfluorododecanoic acid (PFDoA)	ND		0.0020	0.00055	ug/L		07/02/18 16:10	07/06/18 17:38	1
Perfluorotridecanoic Acid (PFTriA)	ND		0.0020	0.0013	ug/L		07/02/18 16:10	07/06/18 17:38	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.0020	0.00029	ug/L		07/02/18 16:10	07/06/18 17:38	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.0020	0.00020	ug/L		07/02/18 16:10	07/06/18 17:38	1
Perfluoropentanesulfonic acid (PFPeS)	ND		0.0020	0.00030	ug/L		07/02/18 16:10	07/06/18 17:38	1
Perfluorohexanesulfonic acid (PFHxS)	0.000331	J	0.0020	0.00017	ug/L		07/02/18 16:10	07/06/18 17:38	1
Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.0020	0.00019	ug/L		07/02/18 16:10	07/06/18 17:38	1

QC Sample Results

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: MB 320-232150/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 232788 — **Prep Batch: 232150**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	ND		0.0020	0.00054	ug/L		07/02/18 16:10	07/06/18 17:38	1
Perfluorononanesulfonic acid (PFNS)	ND		0.0020	0.00016	ug/L		07/02/18 16:10	07/06/18 17:38	1
Perfluorodecanesulfonic acid (PFDS)	ND		0.0020	0.00032	ug/L		07/02/18 16:10	07/06/18 17:38	1
Perfluorooctane Sulfonamide (FOSA)	ND		0.0020	0.00035	ug/L		07/02/18 16:10	07/06/18 17:38	1
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.020	0.0031	ug/L		07/02/18 16:10	07/06/18 17:38	1
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.020	0.0019	ug/L		07/02/18 16:10	07/06/18 17:38	1
4:2 FTS	ND		0.020	0.0052	ug/L		07/02/18 16:10	07/06/18 17:38	1
6:2 FTS	ND		0.020	0.0020	ug/L		07/02/18 16:10	07/06/18 17:38	1
8:2 FTS	ND		0.020	0.0020	ug/L		07/02/18 16:10	07/06/18 17:38	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*97*		*25 - 150*	*07/02/18 16:10*	*07/06/18 17:38*	*1*
13C5 PFPeA	*91*		*25 - 150*	*07/02/18 16:10*	*07/06/18 17:38*	*1*
13C2 PFHxA	*90*		*25 - 150*	*07/02/18 16:10*	*07/06/18 17:38*	*1*
13C4-PFHpA	*103*		*25 - 150*	*07/02/18 16:10*	*07/06/18 17:38*	*1*
13C4 PFOA	*100*		*25 - 150*	*07/02/18 16:10*	*07/06/18 17:38*	*1*
13C5 PFNA	*98*		*25 - 150*	*07/02/18 16:10*	*07/06/18 17:38*	*1*
13C2 PFDA	*95*		*25 - 150*	*07/02/18 16:10*	*07/06/18 17:38*	*1*
13C2 PFUnA	*95*		*25 - 150*	*07/02/18 16:10*	*07/06/18 17:38*	*1*
13C2 PFDoA	*100*		*25 - 150*	*07/02/18 16:10*	*07/06/18 17:38*	*1*
13C2-PFTeDA	*92*		*25 - 150*	*07/02/18 16:10*	*07/06/18 17:38*	*1*
13C3-PFBS	*90*		*25 - 150*	*07/02/18 16:10*	*07/06/18 17:38*	*1*
18O2 PFHxS	*101*		*25 - 150*	*07/02/18 16:10*	*07/06/18 17:38*	*1*
13C4 PFOS	*96*		*25 - 150*	*07/02/18 16:10*	*07/06/18 17:38*	*1*
13C8 FOSA	*85*		*25 - 150*	*07/02/18 16:10*	*07/06/18 17:38*	*1*
d3-NMeFOSAA	*92*		*25 - 150*	*07/02/18 16:10*	*07/06/18 17:38*	*1*
d5-NEtFOSAA	*96*		*25 - 150*	*07/02/18 16:10*	*07/06/18 17:38*	*1*
M2-6:2FTS	*104*		*25 - 150*	*07/02/18 16:10*	*07/06/18 17:38*	*1*
M2-8:2FTS	*105*		*25 - 150*	*07/02/18 16:10*	*07/06/18 17:38*	*1*

Lab Sample ID: LCS 320-232150/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 232788 — **Prep Batch: 232150**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	0.0400	0.0358		ug/L		89	70 - 130
Perfluoropentanoic acid (PFPeA)	0.0400	0.0369		ug/L		92	66 - 126
Perfluorohexanoic acid (PFHxA)	0.0400	0.0387		ug/L		97	66 - 126
Perfluoroheptanoic acid (PFHpA)	0.0400	0.0355		ug/L		89	66 - 126
Perfluorooctanoic acid (PFOA)	0.0400	0.0367		ug/L		92	64 - 124
Perfluorononanoic acid (PFNA)	0.0400	0.0367		ug/L		92	68 - 128
Perfluorodecanoic acid (PFDA)	0.0400	0.0376		ug/L		94	69 - 129
Perfluoroundecanoic acid (PFUnA)	0.0400	0.0349		ug/L		87	60 - 120
Perfluorododecanoic acid (PFDoA)	0.0400	0.0359		ug/L		90	71 - 131
Perfluorotridecanoic Acid (PFTriA)	0.0400	0.0323		ug/L		81	72 - 132

QC Sample Results

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCS 320-232150/2-A
Matrix: Water
Analysis Batch: 232788

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 232150

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorotetradecanoic acid (PFTeA)	0.0400	0.0365		ug/L		91	68 - 128
Perfluorobutanesulfonic acid (PFBS)	0.0354	0.0335		ug/L		95	73 - 133
Perfluoropentanesulfonic acid (PFPeS)	0.0375	0.0376		ug/L		100	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	0.0364	0.0310		ug/L		85	63 - 123
Perfluoroheptanesulfonic Acid (PFHpS)	0.0381	0.0356		ug/L		94	68 - 128
Perfluorooctanesulfonic acid (PFOS)	0.0371	0.0333		ug/L		90	67 - 127
Perfluorononanesulfonic acid (PFNS)	0.0384	0.0330		ug/L		86	70 - 130
Perfluorodecanesulfonic acid (PFDS)	0.0386	0.0340		ug/L		88	68 - 128
Perfluorooctane Sulfonamide (FOSA)	0.0400	0.0370		ug/L		93	70 - 130
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	0.0400	0.0368		ug/L		92	67 - 127
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	0.0400	0.0341		ug/L		85	65 - 125
4:2 FTS	0.0374	0.0371		ug/L		99	70 - 130
6:2 FTS	0.0379	0.0368		ug/L		97	66 - 126
8:2 FTS	0.0383	0.0330		ug/L		86	67 - 127

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*102*		*25 - 150*
13C5 PFPeA	*98*		*25 - 150*
13C2 PFHxA	*100*		*25 - 150*
13C4-PFHpA	*110*		*25 - 150*
13C4 PFOA	*103*		*25 - 150*
13C5 PFNA	*109*		*25 - 150*
13C2 PFDA	*108*		*25 - 150*
13C2 PFUnA	*103*		*25 - 150*
13C2 PFDoA	*103*		*25 - 150*
13C2-PFTeDA	*100*		*25 - 150*
13C3-PFBS	*99*		*25 - 150*
18O2 PFHxS	*111*		*25 - 150*
13C4 PFOS	*106*		*25 - 150*
13C8 FOSA	*94*		*25 - 150*
d3-NMeFOSAA	*97*		*25 - 150*
d5-NEtFOSAA	*99*		*25 - 150*
M2-6:2FTS	*113*		*25 - 150*
M2-8:2FTS	*108*		*25 - 150*

QC Sample Results

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCSD 320-232150/3-A
Matrix: Water
Analysis Batch: 232788

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 232150

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorobutanoic acid (PFBA)			0.0400	0.0369		ug/L		92	70 - 130	3	30
Perfluoropentanoic acid (PFPeA)			0.0400	0.0348		ug/L		87	66 - 126	6	30
Perfluorohexanoic acid (PFHxA)			0.0400	0.0368		ug/L		92	66 - 126	5	30
Perfluoroheptanoic acid (PFHpA)			0.0400	0.0367		ug/L		92	66 - 126	3	30
Perfluorooctanoic acid (PFOA)			0.0400	0.0363		ug/L		91	64 - 124	1	30
Perfluorononanoic acid (PFNA)			0.0400	0.0377		ug/L		94	68 - 128	3	30
Perfluorodecanoic acid (PFDA)			0.0400	0.0393		ug/L		98	69 - 129	4	30
Perfluoroundecanoic acid (PFUnA)			0.0400	0.0350		ug/L		87	60 - 120	0	30
Perfluorododecanoic acid (PFDoA)			0.0400	0.0365		ug/L		91	71 - 131	2	30
Perfluorotridecanoic Acid (PFTriA)			0.0400	0.0309		ug/L		77	72 - 132	5	30
Perfluorotetradecanoic acid (PFTeA)			0.0400	0.0348		ug/L		87	68 - 128	5	30
Perfluorobutanesulfonic acid (PFBS)			0.0354	0.0341		ug/L		97	73 - 133	2	30
Perfluoropentanesulfonic acid (PFPeS)			0.0375	0.0368		ug/L		98	70 - 130	2	30
Perfluorohexanesulfonic acid (PFHxS)			0.0364	0.0313		ug/L		86	63 - 123	1	30
Perfluoroheptanesulfonic Acid (PFHpS)			0.0381	0.0359		ug/L		94	68 - 128	1	30
Perfluorooctanesulfonic acid (PFOS)			0.0371	0.0338		ug/L		91	67 - 127	1	30
Perfluorononanesulfonic acid (PFNS)			0.0384	0.0349		ug/L		91	70 - 130	6	30
Perfluorodecanesulfonic acid (PFDS)			0.0386	0.0349		ug/L		91	68 - 128	3	30
Perfluorooctane Sulfonamide (FOSA)			0.0400	0.0378		ug/L		94	70 - 130	2	30
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)			0.0400	0.0348		ug/L		87	67 - 127	6	30
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)			0.0400	0.0345		ug/L		86	65 - 125	1	30
4:2 FTS			0.0374	0.0368		ug/L		98	70 - 130	1	30
6:2 FTS			0.0379	0.0347		ug/L		91	66 - 126	6	30
8:2 FTS			0.0383	0.0312		ug/L		81	67 - 127	6	30

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C4 PFBA	*96*		*25 - 150*
13C5 PFPeA	*95*		*25 - 150*
13C2 PFHxA	*100*		*25 - 150*
13C4-PFHpA	*101*		*25 - 150*
13C4 PFOA	*102*		*25 - 150*
13C5 PFNA	*100*		*25 - 150*
13C2 PFDA	*97*		*25 - 150*
13C2 PFUnA	*100*		*25 - 150*
13C2 PFDoA	*102*		*25 - 150*
13C2-PFTeDA	*98*		*25 - 150*

QC Sample Results

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCSD 320-232150/3-A
Matrix: Water
Analysis Batch: 232788

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 232150

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C3-PFBS	*96*		*25 - 150*
18O2 PFHxS	*103*		*25 - 150*
13C4 PFOS	*102*		*25 - 150*
13C8 FOSA	*88*		*25 - 150*
d3-NMeFOSAA	*96*		*25 - 150*
d5-NEtFOSAA	*101*		*25 - 150*
M2-6:2FTS	*110*		*25 - 150*
M2-8:2FTS	*105*		*25 - 150*

Lab Sample ID: 320-40571-35 MS
Matrix: Water
Analysis Batch: 232788

Client Sample ID: NF33-GW-01
Prep Type: Total/NA
Prep Batch: 232150

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	0.014	B F2	0.0375	0.0603		ug/L		123	70 - 130
Perfluoropentanoic acid (PFPeA)	0.0096	F2	0.0375	0.0543		ug/L		119	66 - 126
Perfluorohexanoic acid (PFHxA)	0.0021		0.0375	0.0381		ug/L		96	66 - 126
Perfluoroheptanoic acid (PFHpA)	0.0015	J	0.0375	0.0352		ug/L		90	66 - 126
Perfluorooctanoic acid (PFOA)	ND		0.0375	0.0344		ug/L		92	64 - 124
Perfluorononanoic acid (PFNA)	0.00077	J	0.0375	0.0351		ug/L		91	68 - 128
Perfluorodecanoic acid (PFDA)	ND		0.0375	0.0333		ug/L		89	69 - 129
Perfluoroundecanoic acid (PFUnA)	ND		0.0375	0.0353		ug/L		94	60 - 120
Perfluorododecanoic acid (PFDoA)	ND		0.0375	0.0344		ug/L		92	71 - 131
Perfluorotridecanoic Acid (PFTriA)	ND		0.0375	0.0276		ug/L		74	72 - 132
Perfluorotetradecanoic acid (PFTeA)	ND		0.0375	0.0300		ug/L		80	68 - 128
Perfluorobutanesulfonic acid (PFBS)	0.0017	J	0.0332	0.0327		ug/L		94	73 - 133
Perfluoropentanesulfonic acid (PFPeS)	ND		0.0352	0.0355		ug/L		101	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	0.00047	J B	0.0341	0.0313		ug/L		90	63 - 123
Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.0357	0.0329		ug/L		92	68 - 128
Perfluorooctanesulfonic acid (PFOS)	0.00096	J	0.0348	0.0323		ug/L		90	67 - 127
Perfluorononanesulfonic acid (PFNS)	ND		0.0360	0.0315		ug/L		88	70 - 130
Perfluorodecanesulfonic acid (PFDS)	ND		0.0362	0.0287		ug/L		79	68 - 128
Perfluorooctane Sulfonamide (FOSA)	ND		0.0375	0.0339		ug/L		90	70 - 130
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.0375	0.0340		ug/L		91	67 - 127
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.0375	0.0348		ug/L		93	65 - 125
4:2 FTS	ND	F1	0.0350	0.0509	F1	ug/L		145	70 - 130

QC Sample Results

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: 320-40571-35 MS — **Client Sample ID: NF33-GW-01**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 232788 — **Prep Batch: 232150**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
6:2 FTS	0.0022	J	0.0356	0.0410		ug/L		109	66 - 126
8:2 FTS	ND		0.0359	0.0307		ug/L		86	67 - 127

Isotope Dilution	*MS %Recovery*	*MS Qualifier*	*Limits*
13C4 PFBA	*90*		*25 - 150*
13C5 PFPeA	*92*		*25 - 150*
13C2 PFHxA	*96*		*25 - 150*
13C4-PFHpA	*102*		*25 - 150*
13C4 PFOA	*104*		*25 - 150*
13C5 PFNA	*104*		*25 - 150*
13C2 PFDA	*108*		*25 - 150*
13C2 PFUnA	*95*		*25 - 150*
13C2 PFDoA	*90*		*25 - 150*
13C2-PFTeDA	*77*		*25 - 150*
13C3-PFBS	*95*		*25 - 150*
18O2 PFHxS	*104*		*25 - 150*
13C4 PFOS	*101*		*25 - 150*
13C8 FOSA	*91*		*25 - 150*
d3-NMeFOSAA	*97*		*25 - 150*
d5-NEtFOSAA	*91*		*25 - 150*
M2-6:2FTS	*123*		*25 - 150*
M2-8:2FTS	*114*		*25 - 150*

Lab Sample ID: 320-40571-35 MSD — **Client Sample ID: NF33-GW-01**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 232788 — **Prep Batch: 232150**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorobutanoic acid (PFBA)	0.014	B F2	0.0380	0.0430	F2	ug/L		77	70 - 130	33	30
Perfluoropentanoic acid (PFPeA)	0.0096	F2	0.0380	0.0388	F2	ug/L		77	66 - 126	33	30
Perfluorohexanoic acid (PFHxA)	0.0021		0.0380	0.0359		ug/L		89	66 - 126	6	30
Perfluoroheptanoic acid (PFHpA)	0.0015	J	0.0380	0.0349		ug/L		88	66 - 126	1	30
Perfluorooctanoic acid (PFOA)	ND		0.0381	0.0330		ug/L		87	64 - 124	4	30
Perfluorononanoic acid (PFNA)	0.00077	J	0.0380	0.0359		ug/L		92	68 - 128	2	30
Perfluorodecanoic acid (PFDA)	ND		0.0380	0.0368		ug/L		97	69 - 129	10	30
Perfluoroundecanoic acid (PFUnA)	ND		0.0380	0.0323		ug/L		85	60 - 120	9	30
Perfluorododecanoic acid (PFDoA)	ND		0.0380	0.0322		ug/L		85	71 - 131	7	30
Perfluorotridecanoic Acid (PFTriA)	ND		0.0380	0.0306		ug/L		80	72 - 132	10	30
Perfluorotetradecanoic acid (PFTeA)	ND		0.0380	0.0319		ug/L		84	68 - 128	6	30
Perfluorobutanesulfonic acid (PFBS)	0.0017	J	0.0336	0.0329		ug/L		93	73 - 133	1	30
Perfluoropentanesulfonic acid (PFPeS)	ND		0.0357	0.0349		ug/L		98	70 - 130	2	30
Perfluorohexanesulfonic acid (PFHxS)	0.00047	J B	0.0346	0.0288		ug/L		82	63 - 123	8	30

QC Sample Results

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: 320-40571-35 MSD
Matrix: Water
Analysis Batch: 232788

Client Sample ID: NF33-GW-01
Prep Type: Total/NA
Prep Batch: 232150

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.0362	0.0323		ug/L		89	68 - 128	2	30
Perfluorooctanesulfonic acid (PFOS)	0.00096	J	0.0353	0.0315		ug/L		87	67 - 127	2	30
Perfluorononanesulfonic acid (PFNS)	ND		0.0365	0.0313		ug/L		86	70 - 130	1	30
Perfluorodecanesulfonic acid (PFDS)	ND		0.0367	0.0294		ug/L		80	68 - 128	3	30
Perfluorooctane Sulfonamide (FOSA)	ND		0.0380	0.0355		ug/L		93	70 - 130	5	30
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.0380	0.0321		ug/L		84	67 - 127	6	30
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.0380	0.0344		ug/L		91	65 - 125	1	30
4:2 FTS	ND	F1	0.0355	0.0465	F1	ug/L		131	70 - 130	9	30
6:2 FTS	0.0022	J	0.0360	0.0373		ug/L		97	66 - 126	10	30
8:2 FTS	ND		0.0364	0.0296		ug/L		81	67 - 127	4	30

Isotope Dilution	*MSD %Recovery*	*MSD Qualifier*	*Limits*
13C4 PFBA	*88*		*25 - 150*
13C5 PFPeA	*94*		*25 - 150*
13C2 PFHxA	*94*		*25 - 150*
13C4-PFHpA	*103*		*25 - 150*
13C4 PFOA	*100*		*25 - 150*
13C5 PFNA	*104*		*25 - 150*
13C2 PFDA	*98*		*25 - 150*
13C2 PFUnA	*104*		*25 - 150*
13C2 PFDoA	*98*		*25 - 150*
13C2-PFTeDA	*90*		*25 - 150*
13C3-PFBS	*93*		*25 - 150*
18O2 PFHxS	*109*		*25 - 150*
13C4 PFOS	*104*		*25 - 150*
13C8 FOSA	*89*		*25 - 150*
d3-NMeFOSAA	*105*		*25 - 150*
d5-NEtFOSAA	*96*		*25 - 150*
M2-6:2FTS	*125*		*25 - 150*
M2-8:2FTS	*127*		*25 - 150*

QC Association Summary

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

LCMS

Prep Batch: 231392

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-40571-3	NF17-SS-01	Total/NA	Solid	SHAKE	
320-40571-4	NF17-SS-01-DUP	Total/NA	Solid	SHAKE	
320-40571-6	NF18-SS-02	Total/NA	Solid	SHAKE	
320-40571-8	NF19-SS-02	Total/NA	Solid	SHAKE	
320-40571-10	NF20-SS-02	Total/NA	Solid	SHAKE	
320-40571-12	NF21-SS-01	Total/NA	Solid	SHAKE	
320-40571-14	NF22-SS-01	Total/NA	Solid	SHAKE	
320-40571-16	NF23-SS-01	Total/NA	Solid	SHAKE	
320-40571-18	NF24-SS-02	Total/NA	Solid	SHAKE	
320-40571-20	NF25-SS-02	Total/NA	Solid	SHAKE	
320-40571-22	NF26-SS-02	Total/NA	Solid	SHAKE	
320-40571-36	NF33-SS-01	Total/NA	Solid	SHAKE	
MB 320-231392/1-A	Method Blank	Total/NA	Solid	SHAKE	
LCS 320-231392/2-A	Lab Control Sample	Total/NA	Solid	SHAKE	
LCSD 320-231392/3-A	Lab Control Sample Dup	Total/NA	Solid	SHAKE	
320-40571-36 MS	NF33-SS-01	Total/NA	Solid	SHAKE	
320-40571-36 MSD	NF33-SS-01	Total/NA	Solid	SHAKE	

Prep Batch: 231393

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-40571-24	NF27-SS-01	Total/NA	Solid	SHAKE	
320-40571-26	NF28-SS-01	Total/NA	Solid	SHAKE	
320-40571-28	NF29-SS-01	Total/NA	Solid	SHAKE	
320-40571-30	NF30-SS-02	Total/NA	Solid	SHAKE	
320-40571-32	NF31-SS-02	Total/NA	Solid	SHAKE	
320-40571-34	NF32-SS-02	Total/NA	Solid	SHAKE	
320-40571-38	NF34-SS-01	Total/NA	Solid	SHAKE	
320-40571-40	NF35-SS-01	Total/NA	Solid	SHAKE	
320-40571-42	NF36-SS-02	Total/NA	Solid	SHAKE	
MB 320-231393/1-A	Method Blank	Total/NA	Solid	SHAKE	
LCS 320-231393/2-A	Lab Control Sample	Total/NA	Solid	SHAKE	
LCSD 320-231393/3-A	Lab Control Sample Dup	Total/NA	Solid	SHAKE	
320-40571-42 MS	NF36-SS-02	Total/NA	Solid	SHAKE	
320-40571-42 MSD	NF36-SS-02	Total/NA	Solid	SHAKE	

Prep Batch: 232121

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-40571-1	NF17-GW-01	Total/NA	Water	3535	
320-40571-2	NF17-GW-01-DUP	Total/NA	Water	3535	
320-40571-5	NF18-GW-01	Total/NA	Water	3535	
320-40571-7	NF19-GW-01	Total/NA	Water	3535	
320-40571-9	NF20-GW-01	Total/NA	Water	3535	
320-40571-9 - DL	NF20-GW-01	Total/NA	Water	3535	
320-40571-11	NF21-GW-01	Total/NA	Water	3535	
320-40571-13	NF22-GW-01	Total/NA	Water	3535	
320-40571-15	NF23-GW-01	Total/NA	Water	3535	
320-40571-17	NF24-GW-01	Total/NA	Water	3535	
320-40571-19	NF25-GW-01	Total/NA	Water	3535	
320-40571-21	NF26-GW-01	Total/NA	Water	3535	
320-40571-23	NF27-GW-01	Total/NA	Water	3535	
320-40571-25	NF28-GW-01	Total/NA	Water	3535	

QC Association Summary

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

LCMS (Continued)

Prep Batch: 232121 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-40571-27	NF29-GW-01	Total/NA	Water	3535	
320-40571-29	NF30-GW-01	Total/NA	Water	3535	
320-40571-31	NF31-GW-01	Total/NA	Water	3535	
320-40571-31 - DL	NF31-GW-01	Total/NA	Water	3535	
320-40571-33	NF32-GW-01	Total/NA	Water	3535	
320-40571-45	NFMW1-GW-01	Total/NA	Water	3535	
MB 320-232121/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-232121/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-232121/3-A	Lab Control Sample Dup	Total/NA	Water	3535	
320-40571-23 MS	NF27-GW-01	Total/NA	Water	3535	
320-40571-23 MSD	NF27-GW-01	Total/NA	Water	3535	

Prep Batch: 232150

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-40571-35	NF33-GW-01	Total/NA	Water	3535	
320-40571-37	NF34-GW-01	Total/NA	Water	3535	
320-40571-39	NF35-GW-01	Total/NA	Water	3535	
320-40571-41	NF36-GW-01	Total/NA	Water	3535	
320-40571-43	NF-EB-02	Total/NA	Water	3535	
320-40571-44	NF-FB-02	Total/NA	Water	3535	
320-40571-46	NFMW7-GW-01	Total/NA	Water	3535	
320-40571-47	NFMW7-GW-01-DUP	Total/NA	Water	3535	
MB 320-232150/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-232150/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-232150/3-A	Lab Control Sample Dup	Total/NA	Water	3535	
320-40571-35 MS	NF33-GW-01	Total/NA	Water	3535	
320-40571-35 MSD	NF33-GW-01	Total/NA	Water	3535	

Analysis Batch: 232788

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-40571-35	NF33-GW-01	Total/NA	Water	537 (modified)	232150
320-40571-43	NF-EB-02	Total/NA	Water	537 (modified)	232150
320-40571-44	NF-FB-02	Total/NA	Water	537 (modified)	232150
320-40571-46	NFMW7-GW-01	Total/NA	Water	537 (modified)	232150
320-40571-47	NFMW7-GW-01-DUP	Total/NA	Water	537 (modified)	232150
MB 320-232150/1-A	Method Blank	Total/NA	Water	537 (modified)	232150
LCS 320-232150/2-A	Lab Control Sample	Total/NA	Water	537 (modified)	232150
LCSD 320-232150/3-A	Lab Control Sample Dup	Total/NA	Water	537 (modified)	232150
320-40571-35 MS	NF33-GW-01	Total/NA	Water	537 (modified)	232150
320-40571-35 MSD	NF33-GW-01	Total/NA	Water	537 (modified)	232150

Analysis Batch: 232800

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-40571-7	NF19-GW-01	Total/NA	Water	537 (modified)	232121
320-40571-9	NF20-GW-01	Total/NA	Water	537 (modified)	232121
320-40571-11	NF21-GW-01	Total/NA	Water	537 (modified)	232121
320-40571-13	NF22-GW-01	Total/NA	Water	537 (modified)	232121
320-40571-15	NF23-GW-01	Total/NA	Water	537 (modified)	232121
320-40571-27	NF29-GW-01	Total/NA	Water	537 (modified)	232121
320-40571-31	NF31-GW-01	Total/NA	Water	537 (modified)	232121
320-40571-33	NF32-GW-01	Total/NA	Water	537 (modified)	232121

QC Association Summary

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

LCMS (Continued)

Analysis Batch: 232800 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-40571-45	NFMW1-GW-01	Total/NA	Water	537 (modified)	232121
MB 320-232121/1-A	Method Blank	Total/NA	Water	537 (modified)	232121
LCS 320-232121/2-A	Lab Control Sample	Total/NA	Water	537 (modified)	232121
LCSD 320-232121/3-A	Lab Control Sample Dup	Total/NA	Water	537 (modified)	232121

Analysis Batch: 233511

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-40571-9 - DL	NF20-GW-01	Total/NA	Water	537 (modified)	232121
320-40571-31 - DL	NF31-GW-01	Total/NA	Water	537 (modified)	232121

Analysis Batch: 233774

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-40571-39	NF35-GW-01	Total/NA	Water	537 (modified)	232150

Analysis Batch: 233989

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-40571-1	NF17-GW-01	Total/NA	Water	537 (modified)	232121
320-40571-2	NF17-GW-01-DUP	Total/NA	Water	537 (modified)	232121
320-40571-17	NF24-GW-01	Total/NA	Water	537 (modified)	232121
320-40571-19	NF25-GW-01	Total/NA	Water	537 (modified)	232121
320-40571-21	NF26-GW-01	Total/NA	Water	537 (modified)	232121
320-40571-23	NF27-GW-01	Total/NA	Water	537 (modified)	232121
320-40571-25	NF28-GW-01	Total/NA	Water	537 (modified)	232121
320-40571-29	NF30-GW-01	Total/NA	Water	537 (modified)	232121
320-40571-37	NF34-GW-01	Total/NA	Water	537 (modified)	232150
320-40571-41	NF36-GW-01	Total/NA	Water	537 (modified)	232150
320-40571-23 MS	NF27-GW-01	Total/NA	Water	537 (modified)	232121
320-40571-23 MSD	NF27-GW-01	Total/NA	Water	537 (modified)	232121

Analysis Batch: 233997

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-40571-3	NF17-SS-01	Total/NA	Solid	537 (modified)	231392
320-40571-4	NF17-SS-01-DUP	Total/NA	Solid	537 (modified)	231392
320-40571-6	NF18-SS-02	Total/NA	Solid	537 (modified)	231392
320-40571-8	NF19-SS-02	Total/NA	Solid	537 (modified)	231392
320-40571-10	NF20-SS-02	Total/NA	Solid	537 (modified)	231392
320-40571-12	NF21-SS-01	Total/NA	Solid	537 (modified)	231392
320-40571-14	NF22-SS-01	Total/NA	Solid	537 (modified)	231392
320-40571-16	NF23-SS-01	Total/NA	Solid	537 (modified)	231392
320-40571-18	NF24-SS-02	Total/NA	Solid	537 (modified)	231392
320-40571-20	NF25-SS-02	Total/NA	Solid	537 (modified)	231392
320-40571-22	NF26-SS-02	Total/NA	Solid	537 (modified)	231392
320-40571-36	NF33-SS-01	Total/NA	Solid	537 (modified)	231392
MB 320-231392/1-A	Method Blank	Total/NA	Solid	537 (modified)	231392
LCS 320-231392/2-A	Lab Control Sample	Total/NA	Solid	537 (modified)	231392
LCSD 320-231392/3-A	Lab Control Sample Dup	Total/NA	Solid	537 (modified)	231392
320-40571-36 MS	NF33-SS-01	Total/NA	Solid	537 (modified)	231392
320-40571-36 MSD	NF33-SS-01	Total/NA	Solid	537 (modified)	231392

QC Association Summary

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

LCMS (Continued)

Analysis Batch: 234231

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-40571-24	NF27-SS-01	Total/NA	Solid	537 (modified)	231393
320-40571-26	NF28-SS-01	Total/NA	Solid	537 (modified)	231393
320-40571-28	NF29-SS-01	Total/NA	Solid	537 (modified)	231393
320-40571-30	NF30-SS-02	Total/NA	Solid	537 (modified)	231393
320-40571-32	NF31-SS-02	Total/NA	Solid	537 (modified)	231393
320-40571-34	NF32-SS-02	Total/NA	Solid	537 (modified)	231393
320-40571-38	NF34-SS-01	Total/NA	Solid	537 (modified)	231393
320-40571-40	NF35-SS-01	Total/NA	Solid	537 (modified)	231393
320-40571-42	NF36-SS-02	Total/NA	Solid	537 (modified)	231393
MB 320-231393/1-A	Method Blank	Total/NA	Solid	537 (modified)	231393
LCS 320-231393/2-A	Lab Control Sample	Total/NA	Solid	537 (modified)	231393
LCSD 320-231393/3-A	Lab Control Sample Dup	Total/NA	Solid	537 (modified)	231393
320-40571-42 MS	NF36-SS-02	Total/NA	Solid	537 (modified)	231393
320-40571-42 MSD	NF36-SS-02	Total/NA	Solid	537 (modified)	231393

Analysis Batch: 234295

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-40571-5	NF18-GW-01	Total/NA	Water	537 (modified)	232121

General Chemistry

Analysis Batch: 231318

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-40571-3	NF17-SS-01	Total/NA	Solid	D 2216	
320-40571-4	NF17-SS-01-DUP	Total/NA	Solid	D 2216	
320-40571-6	NF18-SS-02	Total/NA	Solid	D 2216	
320-40571-8	NF19-SS-02	Total/NA	Solid	D 2216	
320-40571-10	NF20-SS-02	Total/NA	Solid	D 2216	
320-40571-12	NF21-SS-01	Total/NA	Solid	D 2216	
320-40571-16	NF23-SS-01	Total/NA	Solid	D 2216	
320-40571-18	NF24-SS-02	Total/NA	Solid	D 2216	
320-40571-20	NF25-SS-02	Total/NA	Solid	D 2216	
320-40571-22	NF26-SS-02	Total/NA	Solid	D 2216	
320-40571-24	NF27-SS-01	Total/NA	Solid	D 2216	
320-40571-26	NF28-SS-01	Total/NA	Solid	D 2216	
320-40571-28	NF29-SS-01	Total/NA	Solid	D 2216	
320-40571-30	NF30-SS-02	Total/NA	Solid	D 2216	
320-40571-32	NF31-SS-02	Total/NA	Solid	D 2216	
320-40571-34	NF32-SS-02	Total/NA	Solid	D 2216	
320-40571-36	NF33-SS-01	Total/NA	Solid	D 2216	
320-40571-38	NF34-SS-01	Total/NA	Solid	D 2216	
320-40571-40	NF35-SS-01	Total/NA	Solid	D 2216	
320-40571-42	NF36-SS-02	Total/NA	Solid	D 2216	
320-40571-3 DU	NF17-SS-01	Total/NA	Solid	D 2216	

Analysis Batch: 231323

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-40571-14	NF22-SS-01	Total/NA	Solid	D 2216	
320-40571-14 DU	NF22-SS-01	Total/NA	Solid	D 2216	

Lab Chronicle

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Client Sample ID: NF17-GW-01 — Lab Sample ID: 320-40571-1

Date Collected: 06/20/18 09:30 — **Matrix: Water**
Date Received: 06/22/18 09:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			232121	07/02/18 14:58	JER	TAL SAC
Total/NA	Analysis	537 (modified)		1	233989	07/13/18 20:54	CBW	TAL SAC

Client Sample ID: NF17-GW-01-DUP — Lab Sample ID: 320-40571-2

Date Collected: 06/20/18 09:35 — **Matrix: Water**
Date Received: 06/22/18 09:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			232121	07/02/18 14:58	JER	TAL SAC
Total/NA	Analysis	537 (modified)		1	233989	07/13/18 21:01	CBW	TAL SAC

Client Sample ID: NF17-SS-01 — Lab Sample ID: 320-40571-3

Date Collected: 06/20/18 08:45 — **Matrix: Solid**
Date Received: 06/22/18 09:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	231318	06/27/18 16:03	JCB	TAL SAC

Client Sample ID: NF17-SS-01 — Lab Sample ID: 320-40571-3

Date Collected: 06/20/18 08:45 — **Matrix: Solid**
Date Received: 06/22/18 09:05 — **Percent Solids: 86.0**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			231392	06/28/18 05:15	KJP	TAL SAC
Total/NA	Analysis	537 (modified)		1	233997	07/14/18 04:04	S1M	TAL SAC

Client Sample ID: NF17-SS-01-DUP — Lab Sample ID: 320-40571-4

Date Collected: 06/20/18 08:55 — **Matrix: Solid**
Date Received: 06/22/18 09:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	231318	06/27/18 16:03	JCB	TAL SAC

Client Sample ID: NF17-SS-01-DUP — Lab Sample ID: 320-40571-4

Date Collected: 06/20/18 08:55 — **Matrix: Solid**
Date Received: 06/22/18 09:05 — **Percent Solids: 86.6**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			231392	06/28/18 05:15	KJP	TAL SAC
Total/NA	Analysis	537 (modified)		1	233997	07/14/18 04:12	S1M	TAL SAC

Lab Chronicle

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Client Sample ID: NF18-GW-01 — Lab Sample ID: 320-40571-5

Date Collected: 06/21/18 08:45 — **Matrix: Water**
Date Received: 06/22/18 09:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			232121	07/02/18 14:58	JER	TAL SAC
Total/NA	Analysis	537 (modified)		1	234295	07/16/18 13:10	CBW	TAL SAC

Client Sample ID: NF18-SS-02 — Lab Sample ID: 320-40571-6

Date Collected: 06/20/18 14:45 — **Matrix: Solid**
Date Received: 06/22/18 09:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	231318	06/27/18 16:03	JCB	TAL SAC

Client Sample ID: NF18-SS-02 — Lab Sample ID: 320-40571-6

Date Collected: 06/20/18 14:45 — **Matrix: Solid**
Date Received: 06/22/18 09:05 — **Percent Solids: 82.0**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			231392	06/28/18 05:15	KJP	TAL SAC
Total/NA	Analysis	537 (modified)		1	233997	07/14/18 04:20	S1M	TAL SAC

Client Sample ID: NF19-GW-01 — Lab Sample ID: 320-40571-7

Date Collected: 06/20/18 15:50 — **Matrix: Water**
Date Received: 06/22/18 09:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			232121	07/02/18 14:58	JER	TAL SAC
Total/NA	Analysis	537 (modified)		1	232800	07/07/18 01:59	S1M	TAL SAC

Client Sample ID: NF19-SS-02 — Lab Sample ID: 320-40571-8

Date Collected: 06/20/18 14:15 — **Matrix: Solid**
Date Received: 06/22/18 09:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	231318	06/27/18 16:03	JCB	TAL SAC

Client Sample ID: NF19-SS-02 — Lab Sample ID: 320-40571-8

Date Collected: 06/20/18 14:15 — **Matrix: Solid**
Date Received: 06/22/18 09:05 — **Percent Solids: 78.4**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			231392	06/28/18 05:15	KJP	TAL SAC
Total/NA	Analysis	537 (modified)		1	233997	07/14/18 04:28	S1M	TAL SAC

Lab Chronicle

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Client Sample ID: NF20-GW-01 — Lab Sample ID: 320-40571-9

Date Collected: 06/20/18 13:35 — **Matrix: Water**
Date Received: 06/22/18 09:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			232121	07/02/18 14:58	JER	TAL SAC
Total/NA	Analysis	537 (modified)		1	232800	07/07/18 02:06	S1M	TAL SAC
Total/NA	Prep	3535	DL		232121	07/02/18 14:58	JER	TAL SAC
Total/NA	Analysis	537 (modified)	DL	5	233511	07/11/18 22:01	S1M	TAL SAC

Client Sample ID: NF20-SS-02 — Lab Sample ID: 320-40571-10

Date Collected: 06/19/18 09:35 — **Matrix: Solid**
Date Received: 06/22/18 09:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	231318	06/27/18 16:03	JCB	TAL SAC

Client Sample ID: NF20-SS-02 — Lab Sample ID: 320-40571-10

Date Collected: 06/19/18 09:35 — **Matrix: Solid**
Date Received: 06/22/18 09:05 — **Percent Solids: 81.7**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			231392	06/28/18 05:15	KJP	TAL SAC
Total/NA	Analysis	537 (modified)		1	233997	07/14/18 04:36	S1M	TAL SAC

Client Sample ID: NF21-GW-01 — Lab Sample ID: 320-40571-11

Date Collected: 06/20/18 11:50 — **Matrix: Water**
Date Received: 06/22/18 09:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			232121	07/02/18 14:58	JER	TAL SAC
Total/NA	Analysis	537 (modified)		1	232800	07/07/18 02:30	S1M	TAL SAC

Client Sample ID: NF21-SS-01 — Lab Sample ID: 320-40571-12

Date Collected: 06/20/18 11:35 — **Matrix: Solid**
Date Received: 06/22/18 09:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	231318	06/27/18 16:03	JCB	TAL SAC

Client Sample ID: NF21-SS-01 — Lab Sample ID: 320-40571-12

Date Collected: 06/20/18 11:35 — **Matrix: Solid**
Date Received: 06/22/18 09:05 — **Percent Solids: 85.7**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			231392	06/28/18 05:15	KJP	TAL SAC
Total/NA	Analysis	537 (modified)		1	233997	07/14/18 04:43	S1M	TAL SAC

Lab Chronicle

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Client Sample ID: NF22-GW-01 — Lab Sample ID: 320-40571-13

Date Collected: 06/19/18 18:10 — **Matrix: Water**
Date Received: 06/22/18 09:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			232121	07/02/18 14:58	JER	TAL SAC
Total/NA	Analysis	537 (modified)		1	232800	07/07/18 02:46	S1M	TAL SAC

Client Sample ID: NF22-SS-01 — Lab Sample ID: 320-40571-14

Date Collected: 06/19/18 17:05 — **Matrix: Solid**
Date Received: 06/22/18 09:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	231323	06/27/18 16:03	JCB	TAL SAC

Client Sample ID: NF22-SS-01 — Lab Sample ID: 320-40571-14

Date Collected: 06/19/18 17:05 — **Matrix: Solid**
Date Received: 06/22/18 09:05 — **Percent Solids: 82.6**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			231392	06/28/18 05:15	KJP	TAL SAC
Total/NA	Analysis	537 (modified)		1	233997	07/14/18 04:59	S1M	TAL SAC

Client Sample ID: NF23-GW-01 — Lab Sample ID: 320-40571-15

Date Collected: 06/19/18 14:40 — **Matrix: Water**
Date Received: 06/22/18 09:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			232121	07/02/18 14:58	JER	TAL SAC
Total/NA	Analysis	537 (modified)		1	232800	07/07/18 02:53	S1M	TAL SAC

Client Sample ID: NF23-SS-01 — Lab Sample ID: 320-40571-16

Date Collected: 06/19/18 13:40 — **Matrix: Solid**
Date Received: 06/22/18 09:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	231318	06/27/18 16:03	JCB	TAL SAC

Client Sample ID: NF23-SS-01 — Lab Sample ID: 320-40571-16

Date Collected: 06/19/18 13:40 — **Matrix: Solid**
Date Received: 06/22/18 09:05 — **Percent Solids: 81.9**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			231392	06/28/18 05:15	KJP	TAL SAC
Total/NA	Analysis	537 (modified)		1	233997	07/14/18 05:07	S1M	TAL SAC

Lab Chronicle

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Client Sample ID: NF24-GW-01 — Lab Sample ID: 320-40571-17

Date Collected: 06/20/18 10:10 — **Matrix: Water**
Date Received: 06/22/18 09:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			232121	07/02/18 14:58	JER	TAL SAC
Total/NA	Analysis	537 (modified)		1	233989	07/13/18 21:09	CBW	TAL SAC

Client Sample ID: NF24-SS-02 — Lab Sample ID: 320-40571-18

Date Collected: 06/20/18 09:15 — **Matrix: Solid**
Date Received: 06/22/18 09:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	231318	06/27/18 16:03	JCB	TAL SAC

Client Sample ID: NF24-SS-02 — Lab Sample ID: 320-40571-18

Date Collected: 06/20/18 09:15 — **Matrix: Solid**
Date Received: 06/22/18 09:05 — **Percent Solids: 83.6**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			231392	06/28/18 05:15	KJP	TAL SAC
Total/NA	Analysis	537 (modified)		1	233997	07/14/18 05:15	S1M	TAL SAC

Client Sample ID: NF25-GW-01 — Lab Sample ID: 320-40571-19

Date Collected: 06/19/18 11:37 — **Matrix: Water**
Date Received: 06/22/18 09:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			232121	07/02/18 14:58	JER	TAL SAC
Total/NA	Analysis	537 (modified)		1	233989	07/13/18 21:17	CBW	TAL SAC

Client Sample ID: NF25-SS-02 — Lab Sample ID: 320-40571-20

Date Collected: 06/19/18 09:35 — **Matrix: Solid**
Date Received: 06/22/18 09:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	231318	06/27/18 16:03	JCB	TAL SAC

Client Sample ID: NF25-SS-02 — Lab Sample ID: 320-40571-20

Date Collected: 06/19/18 09:35 — **Matrix: Solid**
Date Received: 06/22/18 09:05 — **Percent Solids: 81.6**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			231392	06/28/18 05:15	KJP	TAL SAC
Total/NA	Analysis	537 (modified)		1	233997	07/14/18 05:23	S1M	TAL SAC

Lab Chronicle

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Client Sample ID: NF26-GW-01 — Lab Sample ID: 320-40571-21

Date Collected: 06/20/18 16:30 — **Matrix: Water**
Date Received: 06/22/18 09:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			232121	07/02/18 14:58	JER	TAL SAC
Total/NA	Analysis	537 (modified)		1	233989	07/13/18 21:25	CBW	TAL SAC

Client Sample ID: NF26-SS-02 — Lab Sample ID: 320-40571-22

Date Collected: 06/19/18 10:50 — **Matrix: Solid**
Date Received: 06/22/18 09:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	231318	06/27/18 16:03	JCB	TAL SAC

Client Sample ID: NF26-SS-02 — Lab Sample ID: 320-40571-22

Date Collected: 06/19/18 10:50 — **Matrix: Solid**
Date Received: 06/22/18 09:05 — **Percent Solids: 80.0**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			231392	06/28/18 05:15	KJP	TAL SAC
Total/NA	Analysis	537 (modified)		1	233997	07/14/18 05:31	S1M	TAL SAC

Client Sample ID: NF27-GW-01 — Lab Sample ID: 320-40571-23

Date Collected: 06/21/18 09:25 — **Matrix: Water**
Date Received: 06/22/18 09:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			232121	07/02/18 14:58	JER	TAL SAC
Total/NA	Analysis	537 (modified)		1	233989	07/13/18 21:33	CBW	TAL SAC

Client Sample ID: NF27-SS-01 — Lab Sample ID: 320-40571-24

Date Collected: 06/20/18 10:25 — **Matrix: Solid**
Date Received: 06/22/18 09:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	231318	06/27/18 16:03	JCB	TAL SAC

Client Sample ID: NF27-SS-01 — Lab Sample ID: 320-40571-24

Date Collected: 06/20/18 10:25 — **Matrix: Solid**
Date Received: 06/22/18 09:05 — **Percent Solids: 83.7**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			231393	06/28/18 06:06	KJP	TAL SAC
Total/NA	Analysis	537 (modified)		1	234231	07/14/18 13:29	AAR	TAL SAC

Lab Chronicle

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Client Sample ID: NF28-GW-01 — Lab Sample ID: 320-40571-25

Date Collected: 06/20/18 16:00 — **Matrix: Water**
Date Received: 06/22/18 09:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			232121	07/02/18 14:58	JER	TAL SAC
Total/NA	Analysis	537 (modified)		1	233989	07/13/18 21:56	CBW	TAL SAC

Client Sample ID: NF28-SS-01 — Lab Sample ID: 320-40571-26

Date Collected: 06/19/18 14:50 — **Matrix: Solid**
Date Received: 06/22/18 09:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	231318	06/27/18 16:03	JCB	TAL SAC

Client Sample ID: NF28-SS-01 — Lab Sample ID: 320-40571-26

Date Collected: 06/19/18 14:50 — **Matrix: Solid**
Date Received: 06/22/18 09:05 — **Percent Solids: 81.3**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			231393	06/28/18 06:06	KJP	TAL SAC
Total/NA	Analysis	537 (modified)		1	234231	07/14/18 13:37	AAR	TAL SAC

Client Sample ID: NF29-GW-01 — Lab Sample ID: 320-40571-27

Date Collected: 06/19/18 14:50 — **Matrix: Water**
Date Received: 06/22/18 09:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			232121	07/02/18 14:58	JER	TAL SAC
Total/NA	Analysis	537 (modified)		1	232800	07/07/18 04:19	S1M	TAL SAC

Client Sample ID: NF29-SS-01 — Lab Sample ID: 320-40571-28

Date Collected: 06/19/18 13:55 — **Matrix: Solid**
Date Received: 06/22/18 09:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	231318	06/27/18 16:03	JCB	TAL SAC

Client Sample ID: NF29-SS-01 — Lab Sample ID: 320-40571-28

Date Collected: 06/19/18 13:55 — **Matrix: Solid**
Date Received: 06/22/18 09:05 — **Percent Solids: 80.5**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			231393	06/28/18 06:06	KJP	TAL SAC
Total/NA	Analysis	537 (modified)		1	234231	07/14/18 13:45	AAR	TAL SAC

Lab Chronicle

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Client Sample ID: NF30-GW-01 — Lab Sample ID: 320-40571-29

Date Collected: 06/20/18 13:05 — **Matrix: Water**
Date Received: 06/22/18 09:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			232121	07/02/18 14:58	JER	TAL SAC
Total/NA	Analysis	537 (modified)		1	233989	07/13/18 22:04	CBW	TAL SAC

Client Sample ID: NF30-SS-02 — Lab Sample ID: 320-40571-30

Date Collected: 06/20/18 12:30 — **Matrix: Solid**
Date Received: 06/22/18 09:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	231318	06/27/18 16:03	JCB	TAL SAC

Client Sample ID: NF30-SS-02 — Lab Sample ID: 320-40571-30

Date Collected: 06/20/18 12:30 — **Matrix: Solid**
Date Received: 06/22/18 09:05 — **Percent Solids: 84.0**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			231393	06/28/18 06:06	KJP	TAL SAC
Total/NA	Analysis	537 (modified)		1	234231	07/14/18 14:09	AAR	TAL SAC

Client Sample ID: NF31-GW-01 — Lab Sample ID: 320-40571-31

Date Collected: 06/21/18 09:15 — **Matrix: Water**
Date Received: 06/22/18 09:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			232121	07/02/18 14:58	JER	TAL SAC
Total/NA	Analysis	537 (modified)		1	232800	07/07/18 04:35	S1M	TAL SAC
Total/NA	Prep	3535	DL		232121	07/02/18 14:58	JER	TAL SAC
Total/NA	Analysis	537 (modified)	DL	5	233511	07/11/18 22:09	S1M	TAL SAC

Client Sample ID: NF31-SS-02 — Lab Sample ID: 320-40571-32

Date Collected: 06/19/18 10:25 — **Matrix: Solid**
Date Received: 06/22/18 09:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	231318	06/27/18 16:03	JCB	TAL SAC

Client Sample ID: NF31-SS-02 — Lab Sample ID: 320-40571-32

Date Collected: 06/19/18 10:25 — **Matrix: Solid**
Date Received: 06/22/18 09:05 — **Percent Solids: 82.0**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			231393	06/28/18 06:06	KJP	TAL SAC
Total/NA	Analysis	537 (modified)		1	234231	07/14/18 14:16	AAR	TAL SAC

Lab Chronicle

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Client Sample ID: NF32-GW-01 — Lab Sample ID: 320-40571-33

Date Collected: 06/21/18 10:00 — **Matrix: Water**
Date Received: 06/22/18 09:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			232121	07/02/18 14:58	JER	TAL SAC
Total/NA	Analysis	537 (modified)		1	232800	07/07/18 04:43	S1M	TAL SAC

Client Sample ID: NF32-SS-02 — Lab Sample ID: 320-40571-34

Date Collected: 06/19/18 12:45 — **Matrix: Solid**
Date Received: 06/22/18 09:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	231318	06/27/18 16:03	JCB	TAL SAC

Client Sample ID: NF32-SS-02 — Lab Sample ID: 320-40571-34

Date Collected: 06/19/18 12:45 — **Matrix: Solid**
Date Received: 06/22/18 09:05 — **Percent Solids: 90.3**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			231393	06/28/18 06:06	KJP	TAL SAC
Total/NA	Analysis	537 (modified)		1	234231	07/14/18 14:24	AAR	TAL SAC

Client Sample ID: NF33-GW-01 — Lab Sample ID: 320-40571-35

Date Collected: 06/19/18 17:00 — **Matrix: Water**
Date Received: 06/22/18 09:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			232150	07/02/18 16:10	JER	TAL SAC
Total/NA	Analysis	537 (modified)		1	232788	07/06/18 18:09	S1M	TAL SAC

Client Sample ID: NF33-SS-01 — Lab Sample ID: 320-40571-36

Date Collected: 06/19/18 16:10 — **Matrix: Solid**
Date Received: 06/22/18 09:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	231318	06/27/18 16:03	JCB	TAL SAC

Client Sample ID: NF33-SS-01 — Lab Sample ID: 320-40571-36

Date Collected: 06/19/18 16:10 — **Matrix: Solid**
Date Received: 06/22/18 09:05 — **Percent Solids: 87.8**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			231392	06/28/18 05:15	KJP	TAL SAC
Total/NA	Analysis	537 (modified)		1	233997	07/14/18 05:38	S1M	TAL SAC

Lab Chronicle

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Client Sample ID: NF34-GW-01 — Lab Sample ID: 320-40571-37

Date Collected: 06/19/18 13:30 — **Matrix: Water**
Date Received: 06/22/18 09:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			232150	07/02/18 16:10	JER	TAL SAC
Total/NA	Analysis	537 (modified)		1	233989	07/13/18 22:20	CBW	TAL SAC

Client Sample ID: NF34-SS-01 — Lab Sample ID: 320-40571-38

Date Collected: 06/19/18 11:55 — **Matrix: Solid**
Date Received: 06/22/18 09:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	231318	06/27/18 16:03	JCB	TAL SAC

Client Sample ID: NF34-SS-01 — Lab Sample ID: 320-40571-38

Date Collected: 06/19/18 11:55 — **Matrix: Solid**
Date Received: 06/22/18 09:05 — **Percent Solids: 84.2**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			231393	06/28/18 06:06	KJP	TAL SAC
Total/NA	Analysis	537 (modified)		1	234231	07/14/18 14:32	AAR	TAL SAC

Client Sample ID: NF35-GW-01 — Lab Sample ID: 320-40571-39

Date Collected: 06/20/18 15:20 — **Matrix: Water**
Date Received: 06/22/18 09:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			232150	07/02/18 16:10	JER	TAL SAC
Total/NA	Analysis	537 (modified)		1	233774	07/12/18 22:36	S1M	TAL SAC

Client Sample ID: NF35-SS-01 — Lab Sample ID: 320-40571-40

Date Collected: 06/20/18 15:00 — **Matrix: Solid**
Date Received: 06/22/18 09:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	231318	06/27/18 16:03	JCB	TAL SAC

Client Sample ID: NF35-SS-01 — Lab Sample ID: 320-40571-40

Date Collected: 06/20/18 15:00 — **Matrix: Solid**
Date Received: 06/22/18 09:05 — **Percent Solids: 85.6**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			231393	06/28/18 06:06	KJP	TAL SAC
Total/NA	Analysis	537 (modified)		1	234231	07/14/18 14:40	AAR	TAL SAC

Lab Chronicle

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Client Sample ID: NF36-GW-01 — Lab Sample ID: 320-40571-41

Date Collected: 06/21/18 10:35 — **Matrix: Water**
Date Received: 06/22/18 09:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			232150	07/02/18 16:10	JER	TAL SAC
Total/NA	Analysis	537 (modified)		1	233989	07/13/18 22:28	CBW	TAL SAC

Client Sample ID: NF36-SS-02 — Lab Sample ID: 320-40571-42

Date Collected: 06/20/18 16:50 — **Matrix: Solid**
Date Received: 06/22/18 09:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	231318	06/27/18 16:03	JCB	TAL SAC

Client Sample ID: NF36-SS-02 — Lab Sample ID: 320-40571-42

Date Collected: 06/20/18 16:50 — **Matrix: Solid**
Date Received: 06/22/18 09:05 — **Percent Solids: 83.5**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			231393	06/28/18 06:06	KJP	TAL SAC
Total/NA	Analysis	537 (modified)		1	234231	07/14/18 14:48	AAR	TAL SAC

Client Sample ID: NF-EB-02 — Lab Sample ID: 320-40571-43

Date Collected: 06/21/18 09:20 — **Matrix: Water**
Date Received: 06/22/18 09:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			232150	07/02/18 16:10	JER	TAL SAC
Total/NA	Analysis	537 (modified)		1	232788	07/06/18 19:04	S1M	TAL SAC

Client Sample ID: NF-FB-02 — Lab Sample ID: 320-40571-44

Date Collected: 06/21/18 09:30 — **Matrix: Water**
Date Received: 06/22/18 09:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			232150	07/02/18 16:10	JER	TAL SAC
Total/NA	Analysis	537 (modified)		1	232788	07/06/18 19:11	S1M	TAL SAC

Client Sample ID: NFMW1-GW-01 — Lab Sample ID: 320-40571-45

Date Collected: 06/18/18 15:15 — **Matrix: Water**
Date Received: 06/22/18 09:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			232121	07/02/18 14:58	JER	TAL SAC
Total/NA	Analysis	537 (modified)		1	232800	07/07/18 04:51	S1M	TAL SAC

Lab Chronicle

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Client Sample ID: NFMW7-GW-01 — Lab Sample ID: 320-40571-46

Date Collected: 06/21/18 11:55 — **Matrix: Water**
Date Received: 06/22/18 09:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			232150	07/02/18 16:10	JER	TAL SAC
Total/NA	Analysis	537 (modified)		1	232788	07/06/18 19:19	S1M	TAL SAC

Client Sample ID: NFMW7-GW-01-DUP — Lab Sample ID: 320-40571-47

Date Collected: 06/21/18 12:00 — **Matrix: Water**
Date Received: 06/22/18 09:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			232150	07/02/18 16:10	JER	TAL SAC
Total/NA	Analysis	537 (modified)		1	232788	07/06/18 19:27	S1M	TAL SAC

Laboratory References:

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Accreditation/Certification Summary

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Laboratory: TestAmerica Sacramento

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	EPA Region	Identification Number	Expiration Date
Oregon	NELAP	10	4040	01-29-19

The following analytes are included in this report, but are not accredited/certified under this accreditation/certification:

Analysis Method	Prep Method	Matrix	Analyte
537 (modified)	3535	Water	4:2 FTS
537 (modified)	3535	Water	Perfluorononanesulfonic acid (PFNS)
537 (modified)	3535	Water	Perfluoropentanesulfonic acid (PFPeS)

Method Summary

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Method	Method Description	Protocol	Laboratory
537 (modified)	Fluorinated Alkyl Substances	EPA	TAL SAC
D 2216	Percent Moisture	ASTM	TAL SAC
3535	Solid-Phase Extraction (SPE)	SW846	TAL SAC
SHAKE	Shake Extraction with Ultrasonic Bath Extraction	SW846	TAL SAC

Protocol References:

ASTM = ASTM International

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Sample Summary

Client: Tetra Tech EM Inc.
Project/Site: National Fireworks

TestAmerica Job ID: 320-40571-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-40571-1	NF17-GW-01	Water	06/20/18 09:30	06/22/18 09:05
320-40571-2	NF17-GW-01-DUP	Water	06/20/18 09:35	06/22/18 09:05
320-40571-3	NF17-SS-01	Solid	06/20/18 08:45	06/22/18 09:05
320-40571-4	NF17-SS-01-DUP	Solid	06/20/18 08:55	06/22/18 09:05
320-40571-5	NF18-GW-01	Water	06/21/18 08:45	06/22/18 09:05
320-40571-6	NF18-SS-02	Solid	06/20/18 14:45	06/22/18 09:05
320-40571-7	NF19-GW-01	Water	06/20/18 15:50	06/22/18 09:05
320-40571-8	NF19-SS-02	Solid	06/20/18 14:15	06/22/18 09:05
320-40571-9	NF20-GW-01	Water	06/20/18 13:35	06/22/18 09:05
320-40571-10	NF20-SS-02	Solid	06/19/18 09:35	06/22/18 09:05
320-40571-11	NF21-GW-01	Water	06/20/18 11:50	06/22/18 09:05
320-40571-12	NF21-SS-01	Solid	06/20/18 11:35	06/22/18 09:05
320-40571-13	NF22-GW-01	Water	06/19/18 18:10	06/22/18 09:05
320-40571-14	NF22-SS-01	Solid	06/19/18 17:05	06/22/18 09:05
320-40571-15	NF23-GW-01	Water	06/19/18 14:40	06/22/18 09:05
320-40571-16	NF23-SS-01	Solid	06/19/18 13:40	06/22/18 09:05
320-40571-17	NF24-GW-01	Water	06/20/18 10:10	06/22/18 09:05
320-40571-18	NF24-SS-02	Solid	06/20/18 09:15	06/22/18 09:05
320-40571-19	NF25-GW-01	Water	06/19/18 11:37	06/22/18 09:05
320-40571-20	NF25-SS-02	Solid	06/19/18 09:35	06/22/18 09:05
320-40571-21	NF26-GW-01	Water	06/20/18 16:30	06/22/18 09:05
320-40571-22	NF26-SS-02	Solid	06/19/18 10:50	06/22/18 09:05
320-40571-23	NF27-GW-01	Water	06/21/18 09:25	06/22/18 09:05
320-40571-24	NF27-SS-01	Solid	06/20/18 10:25	06/22/18 09:05
320-40571-25	NF28-GW-01	Water	06/20/18 16:00	06/22/18 09:05
320-40571-26	NF28-SS-01	Solid	06/19/18 14:50	06/22/18 09:05
320-40571-27	NF29-GW-01	Water	06/19/18 14:50	06/22/18 09:05
320-40571-28	NF29-SS-01	Solid	06/19/18 13:55	06/22/18 09:05
320-40571-29	NF30-GW-01	Water	06/20/18 13:05	06/22/18 09:05
320-40571-30	NF30-SS-02	Solid	06/20/18 12:30	06/22/18 09:05
320-40571-31	NF31-GW-01	Water	06/21/18 09:15	06/22/18 09:05
320-40571-32	NF31-SS-02	Solid	06/19/18 10:25	06/22/18 09:05
320-40571-33	NF32-GW-01	Water	06/21/18 10:00	06/22/18 09:05
320-40571-34	NF32-SS-02	Solid	06/19/18 12:45	06/22/18 09:05
320-40571-35	NF33-GW-01	Water	06/19/18 17:00	06/22/18 09:05
320-40571-36	NF33-SS-01	Solid	06/19/18 16:10	06/22/18 09:05
320-40571-37	NF34-GW-01	Water	06/19/18 13:30	06/22/18 09:05
320-40571-38	NF34-SS-01	Solid	06/19/18 11:55	06/22/18 09:05
320-40571-39	NF35-GW-01	Water	06/20/18 15:20	06/22/18 09:05
320-40571-40	NF35-SS-01	Solid	06/20/18 15:00	06/22/18 09:05
320-40571-41	NF36-GW-01	Water	06/21/18 10:35	06/22/18 09:05
320-40571-42	NF36-SS-02	Solid	06/20/18 16:50	06/22/18 09:05
320-40571-43	NF-EB-02	Water	06/21/18 09:20	06/22/18 09:05
320-40571-44	NF-FB-02	Water	06/21/18 09:30	06/22/18 09:05
320-40571-45	NFMW1-GW-01	Water	06/18/18 15:15	06/22/18 09:05
320-40571-46	NFMW7-GW-01	Water	06/21/18 11:55	06/22/18 09:05
320-40571-47	NFMW7-GW-01-DUP	Water	06/21/18 12:00	06/22/18 09:05

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 232544

Lab Sample ID: IC 320-232544/2 Client Sample ID:

Date Analyzed: 07/05/18 08:51 Lab File ID: 2018.07.05LLICALAA_002.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorobutanoic acid (PFBA)	1.44	Baseline	hannigana	07/05/18 12:06
Perfluoropentanoic acid (PFPeA)	1.72	Baseline	hannigana	07/05/18 12:06
Perfluorohexanoic acid (PFHxA)	2.00	Assign Peak	hannigana	07/05/18 12:05
Perfluorooctanoic acid (PFOA)	2.68	Baseline	hannigana	07/05/18 12:06
Perfluorooctanesulfonic acid (PFOS)	3.04	Assign Peak	hannigana	07/05/18 12:07
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	3.74	Isomers	hannigana	07/05/18 12:07
Perfluorododecanoic acid (PFDoA)	4.03	Baseline	hannigana	07/05/18 12:08

Lab Sample ID: IC 320-232544/3 Client Sample ID:

Date Analyzed: 07/05/18 08:59 Lab File ID: 2018.07.05LLICALAA_003.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorobutanoic acid (PFBA)	1.44	Baseline	hannigana	07/05/18 12:08
Perfluorohexanoic acid (PFHxA)	2.00	Baseline	hannigana	07/05/18 12:09
Perfluorooctanoic acid (PFOA)	2.68	Baseline	hannigana	07/05/18 12:09
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	3.73	Isomers	hannigana	07/05/18 12:09

Lab Sample ID: IC 320-232544/4 Client Sample ID:

Date Analyzed: 07/05/18 09:07 Lab File ID: 2018.07.05LLICALAA_004.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	3.04	Isomers	hannigana	07/05/18 12:10

537 (modified)

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 232544

Lab Sample ID: IC 320-232544/5 ICIS Client Sample ID:

Date Analyzed: 07/05/18 09:14 Lab File ID: 2018.07.05LLICALAA_005.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	3.04	Isomers	hannigana	07/05/18 12:12

Lab Sample ID: ICB 320-232544/9 Client Sample ID:

Date Analyzed: 07/05/18 09:46 Lab File ID: 2018.07.05LLICALAA_009.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	3.71	Split Peak	hannigana	07/05/18 12:14

537 (modified)

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 232772

Lab Sample ID: CCVL 320-232772/2 Client Sample ID:

Date Analyzed: 07/06/18 15:48 Lab File ID: 2018.07.06LLAAA_004.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorobutanoic acid (PFBA)	1.43	Baseline	mongkols	07/09/18 08:47

537 (modified)

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 232788

Lab Sample ID: MB 320-232150/1-A Client Sample ID:

Date Analyzed: 07/06/18 17:38 Lab File ID: 2018.07.06LLAAA_032.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
13C4 PFBA	1.42	Incomplete Integration	mongkols	07/09/18 10:11
Perfluorobutanoic acid (PFBA)	1.43	Baseline	mongkols	07/09/18 10:12
Perfluorononanoic acid (PFNA)		Invalid Compound ID	mongkols	07/09/18 10:12
Perfluorooctanoic acid (PFOA)		Invalid Compound ID	mongkols	07/09/18 10:12
Perfluoropentanoic acid (PFPeA)		Invalid Compound ID	mongkols	07/09/18 10:12

Lab Sample ID: LCSD 320-232150/3-A Client Sample ID:

Date Analyzed: 07/06/18 17:53 Lab File ID: 2018.07.06LLAAA_034.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
13C4 PFBA	1.43	Incomplete Integration	mongkols	07/09/18 10:13

Lab Sample ID: 320-40571-35 Client Sample ID: NF33-GW-01

Date Analyzed: 07/06/18 18:09 Lab File ID: 2018.07.06LLAAA_036.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorobutanesulfonic acid (PFBS)	1.75	Baseline	mongkols	07/09/18 10:15
Perfluorohexanoic acid (PFHxA)	1.99	Baseline	mongkols	07/09/18 10:15
Perfluorooctanoic acid (PFOA)	2.66	Isomers	westendorfc	07/17/18 08:56
Perfluorooctanesulfonic acid (PFOS)	2.90	Assign Peak	mongkols	07/09/18 10:16
Perfluorodecanoic acid (PFDA)		Invalid Compound ID	mongkols	07/09/18 10:16
Perfluorododecanoic acid (PFDoA)		Invalid Compound ID	mongkols	07/09/18 10:16
Perfluorooctane Sulfonamide (FOSA)		Invalid Compound ID	mongkols	07/09/18 10:16
Perfluorotridecanoic Acid (PFTriA)		Invalid Compound ID	mongkols	07/09/18 10:16

537 (modified)

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 232788

Lab Sample ID: 320-40571-43 Client Sample ID: NF-EB-02

Date Analyzed: 07/06/18 19:04 Lab File ID: 2018.07.06LLAAA_043.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)		Invalid Compound ID	mongkols	07/09/18 10:23
Perfluorohexanesulfonic acid (PFHxS)		Invalid Compound ID	mongkols	07/09/18 10:23
Perfluorooctanoic acid (PFOA)		Invalid Compound ID	mongkols	07/09/18 10:23

Lab Sample ID: 320-40571-44 Client Sample ID: NF-FB-02

Date Analyzed: 07/06/18 19:11 Lab File ID: 2018.07.06LLAAA_044.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorobutanoic acid (PFBA)	1.43	Baseline	mongkols	07/09/18 10:24
Perfluorohexanesulfonic acid (PFHxS)		Invalid Compound ID	mongkols	07/09/18 10:24
Perfluorononanoic acid (PFNA)		Invalid Compound ID	mongkols	07/09/18 10:24
Perfluorooctanoic acid (PFOA)		Invalid Compound ID	mongkols	07/09/18 10:24
Perfluoropentanoic acid (PFPeA)		Invalid Compound ID	mongkols	07/09/18 10:24
Perfluoroundecanoic acid (PFUnA)		Invalid Compound ID	mongkols	07/09/18 10:24

537 (modified)

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 232788

Lab Sample ID: 320-40571-46 Client Sample ID: NFMW7-GW-01

Date Analyzed: 07/06/18 19:19 Lab File ID: 2018.07.06LLAAA_045.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorobutanoic acid (PFBA)	1.43	Baseline	mongkols	07/09/18 10:25
Perfluorobutanesulfonic acid (PFBS)	1.75	Baseline	mongkols	07/09/18 10:25
Perfluorohexanoic acid (PFHxA)	1.99	Baseline	mongkols	07/09/18 10:25
Perfluoropentanesulfonic acid (PFPeS)	2.01	Baseline	mongkols	07/09/18 10:25
Perfluorooctanoic acid (PFOA)	2.66	Isomers	mongkols	07/09/18 10:25
Perfluorooctanesulfonic acid (PFOS)	3.02	Isomers	mongkols	07/09/18 10:25
Perfluorodecanoic acid (PFDA)		Invalid Compound ID	mongkols	07/09/18 10:26
Perfluoroheptanesulfonic Acid (PFHpS)		Invalid Compound ID	mongkols	07/09/18 10:25

Lab Sample ID: 320-40571-47 Client Sample ID: NFMW7-GW-01-DUP

Date Analyzed: 07/06/18 19:27 Lab File ID: 2018.07.06LLAAA_046.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorobutanoic acid (PFBA)	1.43	Baseline	mongkols	07/09/18 10:26
Perfluorobutanesulfonic acid (PFBS)	1.75	Baseline	mongkols	07/09/18 10:26
Perfluorohexanoic acid (PFHxA)	1.99	Baseline	mongkols	07/09/18 10:26
Perfluorooctanoic acid (PFOA)	2.65	Isomers	mongkols	07/09/18 10:27
8:2 FTS		Invalid Compound ID	mongkols	07/09/18 10:27
Perfluorodecanoic acid (PFDA)		Invalid Compound ID	mongkols	07/09/18 10:27
Perfluoroheptanesulfonic Acid (PFHpS)		Invalid Compound ID	mongkols	07/09/18 10:27
Perfluorotetradecanoic acid (PFTeA)		Invalid Compound ID	mongkols	07/09/18 10:27
Perfluoroundecanoic acid (PFUnA)		Invalid Compound ID	mongkols	07/09/18 10:27

537 (modified)

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 232800

Lab Sample ID: MB 320-232121/1-A Client Sample ID:

Date Analyzed: 07/07/18 01:04 Lab File ID: 2018.07.06LLC_014.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)		Invalid Compound ID	mongkols	07/09/18 13:01
Perfluoropentanoic acid (PFPeA)		Invalid Compound ID	mongkols	07/09/18 13:01

Lab Sample ID: 320-40571-7 Client Sample ID: NF19-GW-01

Date Analyzed: 07/07/18 01:59 Lab File ID: 2018.07.06LLC_021.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorobutanoic acid (PFBA)	1.43	Baseline	mongkols	07/09/18 13:07
Perfluorobutanesulfonic acid (PFBS)	1.75	Baseline	mongkols	07/09/18 13:07
Perfluorohexanoic acid (PFHxA)	1.98	Baseline	mongkols	07/09/18 13:08
Perfluorooctanoic acid (PFOA)	2.65	Isomers	mongkols	07/09/18 13:08
Perfluorooctanesulfonic acid (PFOS)	3.02	Baseline	mongkols	07/09/18 13:08
4:2 FTS		Invalid Compound ID	mongkols	07/09/18 13:07
Perfluorodecanesulfonic acid (PFDS)		Invalid Compound ID	mongkols	07/09/18 13:09
Perfluorodecanoic acid (PFDA)		Invalid Compound ID	mongkols	07/09/18 13:09
Perfluorododecanoic acid (PFDoA)		Invalid Compound ID	mongkols	07/09/18 13:09
Perfluorononanesulfonic acid (PFNS)		Invalid Compound ID	mongkols	07/09/18 13:08
Perfluoropentanesulfonic acid (PFPeS)		Invalid Compound ID	mongkols	07/09/18 13:08

537 (modified)

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 232800

Lab Sample ID: 320-40571-9 Client Sample ID: NF20-GW-01

Date Analyzed: 07/07/18 02:06 Lab File ID: 2018.07.06LLC_022.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorohexanesulfonic acid (PFHxS)	2.32	Baseline	mongkols	07/09/18 13:09
Perfluorooctanesulfonic acid (PFOS)	3.01	Assign Peak	mongkols	07/09/18 13:10
Perfluoroundecanoic acid (PFUnA)	3.70	Split Peak	mongkols	07/09/18 13:10
Perfluorododecanoic acid (PFDoA)	3.99	Split Peak	mongkols	07/09/18 13:10
Perfluorotridecanoic Acid (PFTriA)	4.25	Split Peak	mongkols	07/09/18 13:10
Perfluorotetradecanoic acid (PFTeA)	4.49	Split Peak	mongkols	07/09/18 13:10
8:2 FTS		Invalid Compound ID	mongkols	07/09/18 13:10
Perfluorobutanesulfonic acid (PFBS)		Invalid Compound ID	mongkols	07/09/18 13:09
Perfluorooctane Sulfonamide (FOSA)		Invalid Compound ID	mongkols	07/09/18 13:10

537 (modified)

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 232800

Lab Sample ID: 320-40571-11 Client Sample ID: NF21-GW-01

Date Analyzed: 07/07/18 02:30 Lab File ID: 2018.07.06LLC_025.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorobutanoic acid (PFBA)	1.43	Baseline	mongkols	07/09/18 14:09
Perfluoropentanoic acid (PFPeA)	1.71	Baseline	mongkols	07/09/18 14:10
Perfluorobutanesulfonic acid (PFBS)	1.75	Baseline	mongkols	07/09/18 14:10
Perfluorooctanoic acid (PFOA)	2.66	Baseline	mongkols	07/09/18 14:10
Perfluorooctanesulfonic acid (PFOS)	2.91	Assign Peak	mongkols	07/09/18 14:10
8:2 FTS		Invalid Compound ID	mongkols	07/09/18 14:10
Perfluorodecanoic acid (PFDA)		Invalid Compound ID	mongkols	07/09/18 14:11
Perfluoroheptanesulfonic Acid (PFHpS)		Invalid Compound ID	mongkols	07/09/18 14:10
Perfluorononanoic acid (PFNA)		Invalid Compound ID	mongkols	07/09/18 14:10

Lab Sample ID: 320-40571-13 Client Sample ID: NF22-GW-01

Date Analyzed: 07/07/18 02:46 Lab File ID: 2018.07.06LLC_027.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorobutanoic acid (PFBA)	1.43	Baseline	mongkols	07/09/18 14:12
Perfluoropentanoic acid (PFPeA)	1.70	Baseline	mongkols	07/09/18 14:12
Perfluorobutanesulfonic acid (PFBS)	1.74	Baseline	mongkols	07/09/18 14:12
Perfluorooctanoic acid (PFOA)	2.65	Isomers	mongkols	07/09/18 14:12
Perfluorooctanesulfonic acid (PFOS)	2.90	Assign Peak	mongkols	07/09/18 14:13
Perfluoroheptanesulfonic Acid (PFHpS)		Invalid Compound ID	mongkols	07/09/18 14:12
Perfluorononanoic acid (PFNA)		Invalid Compound ID	mongkols	07/09/18 14:13
Perfluorooctane Sulfonamide (FOSA)		Invalid Compound ID	mongkols	07/09/18 14:13
Perfluorotridecanoic Acid (PFTriA)		Invalid Compound ID	mongkols	07/09/18 14:13

537 (modified)

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 232800

Lab Sample ID: 320-40571-15 Client Sample ID: NF23-GW-01

Date Analyzed: 07/07/18 02:53 Lab File ID: 2018.07.06LLC_028.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluoropentanoic acid (PFPeA)	1.70	Baseline	mongkols	07/09/18 14:14
Perfluorobutanesulfonic acid (PFBS)	1.74	Baseline	mongkols	07/09/18 14:14
Perfluoropentanesulfonic acid (PFPeS)	2.01	Baseline	mongkols	07/09/18 14:14
Perfluorooctanoic acid (PFOA)	2.65	Isomers	barnettj	07/13/18 10:58
Perfluorooctanesulfonic acid (PFOS)	2.90	Baseline	mongkols	07/09/18 14:15
8:2 FTS		Invalid Compound ID	mongkols	07/09/18 14:15
Perfluoroheptanesulfonic Acid (PFHpS)		Invalid Compound ID	mongkols	07/09/18 14:15
Perfluorononanoic acid (PFNA)		Invalid Compound ID	mongkols	07/09/18 14:15
Perfluoroundecanoic acid (PFUnA)		Invalid Compound ID	mongkols	07/09/18 14:15

Lab Sample ID: 320-40571-27 Client Sample ID: NF29-GW-01

Date Analyzed: 07/07/18 04:19 Lab File ID: 2018.07.06LLC_039.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorobutanoic acid (PFBA)	1.43	Baseline	mongkols	07/09/18 14:38
Perfluorobutanesulfonic acid (PFBS)	1.74	Baseline	mongkols	07/09/18 14:38
Perfluoroheptanesulfonic Acid (PFHpS)		Invalid Compound ID	mongkols	07/09/18 14:38
Perfluoroundecanoic acid (PFUnA)		Invalid Compound ID	mongkols	07/09/18 14:39

537 (modified)

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 232800

Lab Sample ID: 320-40571-31 Client Sample ID: NF31-GW-01

Date Analyzed: 07/07/18 04:35 Lab File ID: 2018.07.06LLC_041.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorobutanoic acid (PFBA)	1.43	Baseline	mongkols	07/09/18 14:41
Perfluorohexanoic acid (PFHxA)	1.99	Baseline	mongkols	07/09/18 14:42
Perfluoropentanesulfonic acid (PFPeS)	2.01	Baseline	mongkols	07/09/18 14:42
Perfluorooctanesulfonic acid (PFOS)	2.90	Baseline	mongkols	07/09/18 14:42
4:2 FTS		Invalid Compound ID	mongkols	07/09/18 14:42
Perfluorodecanesulfonic acid (PFDS)		Invalid Compound ID	mongkols	07/09/18 14:42
Perfluorodecanoic acid (PFDA)		Invalid Compound ID	mongkols	07/09/18 14:42
Perfluoroheptanesulfonic Acid (PFHpS)		Invalid Compound ID	mongkols	07/09/18 14:42
Perfluoroundecanoic acid (PFUnA)		Invalid Compound ID	mongkols	07/09/18 14:42

537 (modified)

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 232800

Lab Sample ID: 320-40571-33 Client Sample ID: NF32-GW-01

Date Analyzed: 07/07/18 04:43 Lab File ID: 2018.07.06LLC_042.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorobutanoic acid (PFBA)	1.43	Baseline	mongkols	07/09/18 14:43
Perfluoropentanoic acid (PFPeA)	1.71	Baseline	mongkols	07/09/18 14:44
Perfluorobutanesulfonic acid (PFBS)	1.75	Baseline	mongkols	07/09/18 14:44
Perfluorohexanoic acid (PFHxA)	1.99	Baseline	mongkols	07/09/18 14:44
Perfluoropentanesulfonic acid (PFPeS)	2.01	Baseline	mongkols	07/09/18 14:44
Perfluoroheptanoic acid (PFHpA)	2.32	Baseline	mongkols	07/09/18 14:44
Perfluorooctanoic acid (PFOA)	2.67	Isomers	mongkols	07/09/18 14:44
Perfluorooctanesulfonic acid (PFOS)	3.03	Baseline	mongkols	07/09/18 14:44
Perfluoroheptanesulfonic Acid (PFHpS)		Invalid Compound ID	mongkols	07/09/18 14:44
Perfluorooctane Sulfonamide (FOSA)		Invalid Compound ID	mongkols	07/09/18 14:46
Perfluorotetradecanoic acid (PFTeA)		Invalid Compound ID	mongkols	07/09/18 14:46
Perfluoroundecanoic acid (PFUnA)		Invalid Compound ID	mongkols	07/09/18 14:46

537 (modified)

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 232800

Lab Sample ID: 320-40571-45 Client Sample ID: NFMW1-GW-01

Date Analyzed: 07/07/18 04:51 Lab File ID: 2018.07.06LLC_043.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorobutanoic acid (PFBA)	1.43	Baseline	mongkols	07/09/18 14:46
Perfluoropentanoic acid (PFPeA)	1.71	Baseline	mongkols	07/09/18 14:46
Perfluorobutanesulfonic acid (PFBS)	1.75	Baseline	mongkols	07/09/18 14:47
Perfluorohexanoic acid (PFHxA)	1.99	Baseline	mongkols	07/09/18 14:47
Perfluoropentanesulfonic acid (PFPeS)	2.02	Baseline	mongkols	07/09/18 14:47
Perfluoroheptanoic acid (PFHpA)	2.31	Baseline	mongkols	07/09/18 14:47
Perfluorooctanoic acid (PFOA)	2.66	Isomers	mongkols	07/09/18 14:47
Perfluorooctanesulfonic acid (PFOS)	2.90	Isomers	mongkols	07/09/18 14:47
Perfluorodecanoic acid (PFDA)		Invalid Compound ID	mongkols	07/09/18 14:48
Perfluorododecanoic acid (PFDoA)		Invalid Compound ID	mongkols	07/09/18 14:48
Perfluoroheptanesulfonic Acid (PFHpS)		Invalid Compound ID	mongkols	07/09/18 14:47
Perfluorooctane Sulfonamide (FOSA)		Invalid Compound ID	mongkols	07/09/18 14:48
Perfluorotetradecanoic acid (PFTeA)		Invalid Compound ID	mongkols	07/09/18 14:48
Perfluorotridecanoic Acid (PFTriA)		Invalid Compound ID	mongkols	07/09/18 14:48

537 (modified)

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 233476

Lab Sample ID: IC 320-233476/2 Client Sample ID:

Date Analyzed: 07/11/18 14:48 Lab File ID: 2018.07.11LLICALA_002.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluoropentanoic acid (PFPeA)	1.63	Baseline	westendorfc	07/11/18 16:13
Perfluorohexanoic acid (PFHxA)	1.98	Baseline	westendorfc	07/11/18 16:13
Perfluorooctanesulfonic acid (PFOS)	3.04	Baseline	westendorfc	07/11/18 16:13

Lab Sample ID: IC 320-233476/3 Client Sample ID:

Date Analyzed: 07/11/18 14:59 Lab File ID: 2018.07.11LLICALA_003.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorohexanoic acid (PFHxA)	2.00	Baseline	westendorfc	07/11/18 16:14
HFPO-DA (GenX)	2.09	Split Peak	westendorfc	07/11/18 16:14

Lab Sample ID: IC 320-233476/4 Client Sample ID:

Date Analyzed: 07/11/18 15:07 Lab File ID: 2018.07.11LLICALA_004.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluoropentanoic acid (PFPeA)	1.72	Split Peak	westendorfc	07/11/18 16:15
Perfluorooctanesulfonic acid (PFOS)	3.04	Isomers	westendorfc	07/11/18 16:15

537 (modified)

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 233476

Lab Sample ID: IC 320-233476/5 ICIS Client Sample ID:

Date Analyzed: 07/11/18 15:15 Lab File ID: 2018.07.11LLICALA_005.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
13C4 PFBA	1.43	Incomplete Integration	westendorfc	07/11/18 16:16

Lab Sample ID: IC 320-233476/7 Client Sample ID:

Date Analyzed: 07/11/18 15:30 Lab File ID: 2018.07.11LLICALA_007.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	3.04	Isomers	westendorfc	07/11/18 16:16

Lab Sample ID: IC 320-233476/8 Client Sample ID:

Date Analyzed: 07/11/18 15:38 Lab File ID: 2018.07.11LLICALA_008.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
13C4 PFBA	1.43	Incomplete Integration	westendorfc	07/11/18 16:17

537 (modified)

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 233511

Lab Sample ID: 320-40571-9 DL Client Sample ID: NF20-GW-01 DL

Date Analyzed: 07/11/18 22:01 Lab File ID: 2018.07.11LLB_047.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.67	Baseline	mongkols	07/13/18 09:01
Perfluoroundecanoic acid (PFUnA)	3.71	Baseline	mongkols	07/13/18 09:01
Perfluorotridecanoic Acid (PFTriA)		Invalid Compound ID	mongkols	07/13/18 09:02

Lab Sample ID: 320-40571-31 DL Client Sample ID: NF31-GW-01 DL

Date Analyzed: 07/11/18 22:09 Lab File ID: 2018.07.11LLB_048.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorobutanoic acid (PFBA)	1.44	Baseline	mongkols	07/13/18 09:02
Perfluorohexanoic acid (PFHxA)	2.00	Baseline	mongkols	07/13/18 09:02
Perfluorooctanoic acid (PFOA)	2.67	Isomers	mongkols	07/13/18 09:02
Perfluoroheptanesulfonic Acid (PFHpS)		Invalid Compound ID	mongkols	07/13/18 09:03
Perfluorononanoic acid (PFNA)		Invalid Compound ID	mongkols	07/13/18 09:03

Lab Sample ID: CCV 320-233511/7 Client Sample ID:

Date Analyzed: 07/11/18 22:25 Lab File ID: 2018.07.11LLB_050.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	3.03	Isomers	mongkols	07/13/18 09:07

537 (modified)

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 233725

Lab Sample ID: CCVL 320-233725/2 Client Sample ID:

Date Analyzed: 07/12/18 15:02 Lab File ID: 2018.07.12LLB_QC_002.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
13C4 PFBA	1.41	Incomplete Integration	roycea	07/12/18 15:30
Perfluoropentanoic acid (PFPeA)	1.72	Baseline	mongkols	07/13/18 11:39

Lab Sample ID: CCV 320-233725/3 CCVIS Client Sample ID:

Date Analyzed: 07/12/18 15:18 Lab File ID: 2018.07.12LLAAAA_041.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorobutanoic acid (PFBA)	1.42	Incomplete Integration	mongkols	07/13/18 12:20
Perfluorooctanesulfonic acid (PFOS)	3.04	Isomers	mongkols	07/13/18 12:21

537 (modified)

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 233774

Lab Sample ID: 320-40571-39 Client Sample ID: NF35-GW-01

Date Analyzed: 07/12/18 22:36 Lab File ID: 2018.07.12LLC_025.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorobutanoic acid (PFBA)	1.42	Baseline	mongkols	07/13/18 13:21
Perfluoropentanoic acid (PFPeA)	1.72	Baseline	mongkols	07/13/18 13:21
Perfluorohexanoic acid (PFHxA)	2.01	Baseline	mongkols	07/13/18 13:21
Perfluoropentanesulfonic acid (PFPeS)	2.03	Baseline	mongkols	07/13/18 13:21
Perfluorooctanoic acid (PFOA)	2.68	Baseline	mongkols	07/13/18 13:21
Perfluorooctanesulfonic acid (PFOS)	3.03	Baseline	mongkols	07/13/18 13:21
Perfluorodecanoic acid (PFDA)		Invalid Compound ID	mongkols	07/13/18 13:22
Perfluoroheptanesulfonic Acid (PFHpS)		Invalid Compound ID	mongkols	07/13/18 13:21
Perfluorooctane Sulfonamide (FOSA)		Invalid Compound ID	mongkols	07/13/18 13:22
Perfluoroundecanoic acid (PFUnA)		Invalid Compound ID	mongkols	07/13/18 13:22

537 (modified)

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 233973

Lab Sample ID: CCB 320-233973/1 Client Sample ID:

Date Analyzed: 07/13/18 15:56 Lab File ID: 2018.07.13LLAA_004.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.66	Assign Peak	hannigana	07/13/18 16:15
Perfluoropentanoic acid (PFPeA)		Invalid Compound ID	hannigana	07/13/18 16:14

Lab Sample ID: CCVL 320-233973/2 Client Sample ID:

Date Analyzed: 07/13/18 16:04 Lab File ID: 2018.07.13LLAA_005.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorobutanoic acid (PFBA)	1.44	Incomplete Integration	hannigana	07/13/18 16:15
Perfluorohexanoic acid (PFHxA)	2.00	Baseline	hannigana	07/13/18 16:16

Lab Sample ID: CCV 320-233973/3 CCVIS Client Sample ID:

Date Analyzed: 07/13/18 16:12 Lab File ID: 2018.07.12LLD_045.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluoropentanoic acid (PFPeA)	1.72	Baseline	westendorfc	07/15/18 14:29

537 (modified)

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 233989

Lab Sample ID: CCV 320-233989/1 Client Sample ID:

Date Analyzed: 07/13/18 20:46 Lab File ID: 2018.07.13LLC_006.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	3.04	Isomers	westendorfc	07/16/18 08:16

Lab Sample ID: 320-40571-1 Client Sample ID: NF17-GW-01

Date Analyzed: 07/13/18 20:54 Lab File ID: 2018.07.13LLC_007.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorobutanoic acid (PFBA)	1.44	Baseline	mongkols	07/16/18 12:26
Perfluorobutanesulfonic acid (PFBS)	1.77	Baseline	mongkols	07/16/18 12:26
Perfluorohexanoic acid (PFHxA)	2.01	Baseline	mongkols	07/16/18 12:26
Perfluorooctanoic acid (PFOA)	2.67	Baseline	mongkols	07/16/18 12:26
8:2 FTS		Invalid Compound ID	mongkols	07/16/18 12:27
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)		Invalid Compound ID	mongkols	07/16/18 12:27
Perfluorodecanoic acid (PFDA)		Invalid Compound ID	mongkols	07/16/18 12:27
Perfluorododecanoic acid (PFDoA)		Invalid Compound ID	mongkols	07/16/18 12:27
Perfluoroheptanesulfonic Acid (PFHpS)		Invalid Compound ID	mongkols	07/16/18 12:27
Perfluorooctane Sulfonamide (FOSA)		Invalid Compound ID	mongkols	07/16/18 12:27
Perfluorotetradecanoic acid (PFTeA)		Invalid Compound ID	mongkols	07/16/18 12:27
Perfluorotridecanoic Acid (PFTriA)		Invalid Compound ID	mongkols	07/16/18 12:27
Perfluoroundecanoic acid (PFUnA)		Invalid Compound ID	mongkols	07/16/18 12:27

537 (modified)

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 233989

Lab Sample ID: 320-40571-2 Client Sample ID: NF17-GW-01-DUP

Date Analyzed: 07/13/18 21:01 Lab File ID: 2018.07.13LLC_008.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluoropentanoic acid (PFPeA)	1.72	Baseline	westendorfc	07/17/18 08:10
Perfluorobutanesulfonic acid (PFBS)	1.76	Baseline	mongkols	07/16/18 12:28
Perfluorohexanoic acid (PFHxA)	2.01	Baseline	mongkols	07/16/18 12:28
Perfluorooctanoic acid (PFOA)	2.67	Baseline	mongkols	07/16/18 12:29
Perfluoroheptanesulfonic Acid (PFHpS)		Invalid Compound ID	mongkols	07/16/18 12:29
Perfluorononanoic acid (PFNA)		Invalid Compound ID	mongkols	07/16/18 12:29
Perfluoroundecanoic acid (PFUnA)		Invalid Compound ID	mongkols	07/16/18 12:29

537 (modified)

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 233989

Lab Sample ID: 320-40571-17 Client Sample ID: NF24-GW-01

Date Analyzed: 07/13/18 21:09 Lab File ID: 2018.07.13LLC_009.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorobutanoic acid (PFBA)	1.44	Baseline	mongkols	07/16/18 12:29
Perfluorobutanesulfonic acid (PFBS)	1.76	Baseline	mongkols	07/16/18 12:30
Perfluorooctanoic acid (PFOA)	2.67	Isomers	mongkols	07/16/18 12:30
Perfluorononanoic acid (PFNA)	3.03	Baseline	mongkols	07/16/18 12:30
Perfluorodecanesulfonic acid (PFDS)		Invalid Compound ID	mongkols	07/16/18 12:30
Perfluorododecanoic acid (PFDoA)		Invalid Compound ID	mongkols	07/16/18 12:31
Perfluoroheptanesulfonic Acid (PFHpS)		Invalid Compound ID	mongkols	07/16/18 12:30
Perfluoroheptanoic acid (PFHpA)		Invalid Compound ID	mongkols	07/16/18 12:30
Perfluorooctane Sulfonamide (FOSA)		Invalid Compound ID	mongkols	07/16/18 12:30
Perfluoropentanesulfonic acid (PFPeS)		Invalid Compound ID	mongkols	07/16/18 12:30
Perfluoropentanoic acid (PFPeA)		Invalid Compound ID	mongkols	07/16/18 12:30
Perfluorotridecanoic Acid (PFTriA)		Invalid Compound ID	mongkols	07/16/18 12:31

537 (modified)

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 233989

Lab Sample ID: 320-40571-19 Client Sample ID: NF25-GW-01

Date Analyzed: 07/13/18 21:17 Lab File ID: 2018.07.13LLC_010.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorobutanoic acid (PFBA)	1.43	Baseline	mongkols	07/16/18 12:31
Perfluoropentanoic acid (PFPeA)	1.73	Baseline	mongkols	07/16/18 12:31
Perfluorobutanesulfonic acid (PFBS)	1.76	Baseline	mongkols	07/16/18 12:31
Perfluorohexanoic acid (PFHxA)	2.01	Baseline	mongkols	07/16/18 12:31
Perfluorohexanesulfonic acid (PFHxS)	2.33	Baseline	mongkols	07/16/18 12:32
Perfluorooctanoic acid (PFOA)	2.67	Isomers	mongkols	07/16/18 12:32
Perfluorooctanesulfonic acid (PFOS)	2.91	Baseline	mongkols	07/16/18 12:32
4:2 FTS		Invalid Compound ID	mongkols	07/16/18 12:31
Perfluoroheptanesulfonic Acid (PFHpS)		Invalid Compound ID	mongkols	07/16/18 12:32
Perfluoropentanesulfonic acid (PFPeS)		Baseline	mongkols	07/16/18 12:32
Perfluoroundecanoic acid (PFUnA)		Invalid Compound ID	mongkols	07/16/18 12:33

Lab Sample ID: 320-40571-21 Client Sample ID: NF26-GW-01

Date Analyzed: 07/13/18 21:25 Lab File ID: 2018.07.13LLC_011.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorobutanoic acid (PFBA)	1.44	Baseline	mongkols	07/16/18 12:33
Perfluoropentanoic acid (PFPeA)	1.72	Baseline	mongkols	07/16/18 12:33
Perfluorohexanoic acid (PFHxA)	2.00	Baseline	mongkols	07/16/18 12:33
Perfluoropentanesulfonic acid (PFPeS)	2.03	Baseline	mongkols	07/16/18 12:33
Perfluorooctanoic acid (PFOA)	2.67	Isomers	mongkols	07/16/18 12:34
Perfluorodecanesulfonic acid (PFDS)		Invalid Compound ID	mongkols	07/16/18 12:34
Perfluorotridecanoic Acid (PFTriA)		Invalid Compound ID	mongkols	07/16/18 12:34

537 (modified)

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 233989

Lab Sample ID: 320-40571-23 Client Sample ID: NF27-GW-01

Date Analyzed: 07/13/18 21:33 Lab File ID: 2018.07.13LLC_012.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorobutanoic acid (PFBA)	1.44	Baseline	mongkols	07/16/18 12:35
Perfluoropentanoic acid (PFPeA)	1.73	Baseline	mongkols	07/16/18 12:35
Perfluorobutanesulfonic acid (PFBS)	1.77	Baseline	mongkols	07/16/18 12:35
Perfluorohexanoic acid (PFHxA)	2.01	Baseline	mongkols	07/16/18 12:35
Perfluoroheptanoic acid (PFHpA)	2.32	Baseline	mongkols	07/16/18 12:36
Perfluoropentanesulfonic acid (PFPeS)		Invalid Compound ID	mongkols	07/16/18 12:35
Perfluorotetradecanoic acid (PFTeA)		Invalid Compound ID	mongkols	07/16/18 12:36
Perfluoroundecanoic acid (PFUnA)		Invalid Compound ID	mongkols	07/16/18 12:36

Lab Sample ID: 320-40571-23 MS Client Sample ID: NF27-GW-01 MS

Date Analyzed: 07/13/18 21:40 Lab File ID: 2018.07.13LLC_013.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorobutanoic acid (PFBA)	1.44	Baseline	mongkols	07/16/18 12:36
Perfluoropentanoic acid (PFPeA)	1.73	Baseline	mongkols	07/16/18 12:37
Perfluorobutanesulfonic acid (PFBS)	1.77	Baseline	mongkols	07/16/18 12:37
Perfluorooctanesulfonic acid (PFOS)	3.03	Isomers	mongkols	07/16/18 12:37

537 (modified)

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 233989

Lab Sample ID: 320-40571-23 MSD Client Sample ID: NF27-GW-01 MSD

Date Analyzed: 07/13/18 21:48 Lab File ID: 2018.07.13LLC_014.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorobutanoic acid (PFBA)	1.44	Baseline	mongkols	07/16/18 12:38
Perfluoropentanoic acid (PFPeA)	1.73	Baseline	mongkols	07/16/18 12:38
Perfluorobutanesulfonic acid (PFBS)	1.76	Baseline	mongkols	07/16/18 12:38
Perfluorohexanoic acid (PFHxA)	2.01	Baseline	mongkols	07/16/18 12:38

Lab Sample ID: 320-40571-25 Client Sample ID: NF28-GW-01

Date Analyzed: 07/13/18 21:56 Lab File ID: 2018.07.13LLC_015.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.67	Isomers	mongkols	07/16/18 12:40
Perfluorooctanesulfonic acid (PFOS)	2.96	Assign Peak	mongkols	07/16/18 12:41
Perfluorobutanesulfonic acid (PFBS)		Invalid Compound ID	mongkols	07/16/18 12:40
Perfluorodecanoic acid (PFDA)		Invalid Compound ID	mongkols	07/16/18 12:41
Perfluorononanoic acid (PFNA)		Invalid Compound ID	mongkols	07/16/18 12:41

537 (modified)

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 233989

Lab Sample ID: 320-40571-29 Client Sample ID: NF30-GW-01

Date Analyzed: 07/13/18 22:04 Lab File ID: 2018.07.13LLC_016.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorobutanesulfonic acid (PFBS)	1.76	Baseline	mongkols	07/16/18 12:41
Perfluorohexanoic acid (PFHxA)	2.00	Baseline	mongkols	07/16/18 12:41
Perfluoropentanesulfonic acid (PFPeS)	2.02	Baseline	mongkols	07/16/18 12:42
Perfluorooctanoic acid (PFOA)	2.67	Isomers	mongkols	07/16/18 12:42
Perfluorooctanesulfonic acid (PFOS)	2.91	Baseline	mongkols	07/16/18 12:42
8:2 FTS		Invalid Compound ID	mongkols	07/16/18 12:42
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)		Invalid Compound ID	mongkols	07/16/18 12:43
Perfluoroheptanesulfonic Acid (PFHpS)		Invalid Compound ID	mongkols	07/16/18 12:42
Perfluorooctane Sulfonamide (FOSA)		Invalid Compound ID	mongkols	07/16/18 12:42
Perfluoroundecanoic acid (PFUnA)		Invalid Compound ID	mongkols	07/16/18 12:43

537 (modified)

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 233989

Lab Sample ID: 320-40571-37 Client Sample ID: NF34-GW-01

Date Analyzed: 07/13/18 22:20 Lab File ID: 2018.07.13LLC_018.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorobutanoic acid (PFBA)	1.43	Baseline	mongkols	07/16/18 12:43
Perfluoropentanoic acid (PFPeA)	1.73	Baseline	mongkols	07/16/18 12:44
Perfluorobutanesulfonic acid (PFBS)	1.77	Baseline	mongkols	07/16/18 12:44
Perfluorooctanoic acid (PFOA)	2.68	Isomers	mongkols	07/16/18 12:44
Perfluorooctanesulfonic acid (PFOS)	3.04	Isomers	mongkols	07/16/18 12:45
4:2 FTS		Invalid Compound ID	mongkols	07/16/18 12:44
8:2 FTS		Invalid Compound ID	mongkols	07/16/18 12:45
Perfluorodecanoic acid (PFDA)		Invalid Compound ID	mongkols	07/16/18 12:45
Perfluoroheptanesulfonic Acid (PFHpS)		Invalid Compound ID	mongkols	07/16/18 12:44
Perfluoropentanesulfonic acid (PFPeS)		Invalid Compound ID	mongkols	07/16/18 12:44

537 (modified)

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 233989

Lab Sample ID: 320-40571-41 Client Sample ID: NF36-GW-01

Date Analyzed: 07/13/18 22:28 Lab File ID: 2018.07.13LLC_019.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorobutanoic acid (PFBA)	1.43	Baseline	mongkols	07/16/18 12:46
Perfluorobutanesulfonic acid (PFBS)	1.76	Baseline	mongkols	07/16/18 12:46
Perfluoropentanesulfonic acid (PFPeS)	2.02	Baseline	mongkols	07/16/18 12:46
Perfluorooctanoic acid (PFOA)	2.66	Isomers	mongkols	07/16/18 12:46
Perfluoroundecanoic acid (PFUnA)	3.70	Split Peak	mongkols	07/16/18 12:47
Perfluorododecanoic acid (PFDoA)	3.99	Split Peak	mongkols	07/16/18 12:47
Perfluorotridecanoic Acid (PFTriA)	4.25	Split Peak	mongkols	07/16/18 12:47
Perfluorotetradecanoic acid (PFTeA)	4.49	Split Peak	mongkols	07/16/18 12:47
4:2 FTS		Invalid Compound ID	mongkols	07/16/18 12:46
Perfluorooctane Sulfonamide (FOSA)		Invalid Compound ID	mongkols	07/16/18 12:47

Lab Sample ID: CCV 320-233989/15 Client Sample ID:

Date Analyzed: 07/13/18 22:35 Lab File ID: 2018.07.13LLC_020.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	3.03	Isomers	mongkols	07/16/18 12:48

537 (modified)

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 233992

Lab Sample ID: CCB 320-233992/1 Client Sample ID:

Date Analyzed: 07/13/18 22:51 Lab File ID: 2018.07.13LLB_004.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorohexanesulfonic acid (PFHxS)		Invalid Compound ID	mongkols	07/16/18 12:49
Perfluorooctanoic acid (PFOA)		Invalid Compound ID	mongkols	07/16/18 12:49
Perfluoropentanoic acid (PFPeA)		Invalid Compound ID	mongkols	07/16/18 12:49

Lab Sample ID: CCVL 320-233992/2 Client Sample ID:

Date Analyzed: 07/13/18 22:59 Lab File ID: 2018.07.13LLB_005.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
13C4 PFBA	1.44	Incomplete Integration	mongkols	07/16/18 12:49
Perfluoropentanoic acid (PFPeA)	1.72	Baseline	mongkols	07/16/18 12:50
Perfluorooctanoic acid (PFOA)	2.67	Baseline	mongkols	07/16/18 12:50

Lab Sample ID: CCV 320-233992/3 CCVIS Client Sample ID:

Date Analyzed: 07/13/18 23:07 Lab File ID: 2018.07.13LLB_018.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	3.03	Isomers	mongkols	07/16/18 12:50

537 (modified)

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 233997

Lab Sample ID: MB 320-231392/1-A Client Sample ID:

Date Analyzed: 07/14/18 03:41 Lab File ID: 2018.07.13LLB_053.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
13C4 PFBA	1.44	Incomplete Integration	mongkols	07/16/18 14:11
Perfluorobutanoic acid (PFBA)		Invalid Compound ID	mongkols	07/16/18 14:11
Perfluorononanoic acid (PFNA)		Invalid Compound ID	mongkols	07/16/18 14:11
Perfluorooctane Sulfonamide (FOSA)		Invalid Compound ID	mongkols	07/16/18 14:11
Perfluoroundecanoic acid (PFUnA)		Invalid Compound ID	mongkols	07/16/18 14:11

Lab Sample ID: LCS 320-231392/2-A Client Sample ID:

Date Analyzed: 07/14/18 03:49 Lab File ID: 2018.07.13LLB_054.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
13C4 PFBA	1.43	Incomplete Integration	mongkols	07/16/18 14:12
Perfluorobutanoic acid (PFBA)	1.44	Incomplete Integration	mongkols	07/16/18 14:12

Lab Sample ID: LCSD 320-231392/3-A Client Sample ID:

Date Analyzed: 07/14/18 03:57 Lab File ID: 2018.07.13LLB_055.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
13C4 PFBA	1.44	Incomplete Integration	mongkols	07/16/18 14:12
Perfluorobutanoic acid (PFBA)	1.44	Incomplete Integration	mongkols	07/16/18 14:12
Perfluoropentanoic acid (PFPeA)	1.72	Baseline	mongkols	07/16/18 14:13

537 (modified)

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 233997

Lab Sample ID: 320-40571-3 Client Sample ID: NF17-SS-01

Date Analyzed: 07/14/18 04:04 Lab File ID: 2018.07.13LLB_056.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
13C4 PFBA	1.44	Incomplete Integration	mongkols	07/16/18 14:13
Perfluorobutanoic acid (PFBA)	1.44	Incomplete Integration	mongkols	07/16/18 14:13
Perfluorohexanoic acid (PFHxA)	2.00	Baseline	mongkols	07/16/18 14:14
Perfluorooctanesulfonic acid (PFOS)	3.03	Assign Peak	mongkols	07/16/18 14:14
Perfluoroheptanoic acid (PFHpA)		Invalid Compound ID	mongkols	07/16/18 14:14
Perfluorononanoic acid (PFNA)		Invalid Compound ID	mongkols	07/16/18 14:14

Lab Sample ID: 320-40571-4 Client Sample ID: NF17-SS-01-DUP

Date Analyzed: 07/14/18 04:12 Lab File ID: 2018.07.13LLB_057.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
13C4 PFBA	1.43	Incomplete Integration	mongkols	07/16/18 14:15
Perfluorobutanoic acid (PFBA)	1.44	Incomplete Integration	mongkols	07/16/18 14:15
Perfluoropentanoic acid (PFPeA)	1.71	Baseline	mongkols	07/16/18 14:16
Perfluorobutanesulfonic acid (PFBS)		Invalid Compound ID	mongkols	07/16/18 14:16
Perfluorododecanoic acid (PFDoA)		Invalid Compound ID	mongkols	07/16/18 14:16
Perfluorotetradecanoic acid (PFTeA)		Invalid Compound ID	mongkols	07/16/18 14:16

537 (modified)

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 233997

Lab Sample ID: 320-40571-6 Client Sample ID: NF18-SS-02

Date Analyzed: 07/14/18 04:20 Lab File ID: 2018.07.13LLB_058.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
13C4 PFBA	1.44	Incomplete Integration	mongkols	07/16/18 14:16
Perfluorobutanoic acid (PFBA)	1.44	Incomplete Integration	mongkols	07/16/18 14:17
Perfluorohexanesulfonic acid (PFHxS)		Invalid Compound ID	mongkols	07/16/18 14:17
Perfluorononanoic acid (PFNA)		Invalid Compound ID	mongkols	07/16/18 14:17
Perfluorooctanoic acid (PFOA)		Invalid Compound ID	mongkols	07/16/18 14:17

Lab Sample ID: 320-40571-8 Client Sample ID: NF19-SS-02

Date Analyzed: 07/14/18 04:28 Lab File ID: 2018.07.13LLB_059.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
13C4 PFBA	1.44	Incomplete Integration	mongkols	07/16/18 14:18
Perfluorobutanoic acid (PFBA)	1.44	Incomplete Integration	mongkols	07/16/18 14:18
Perfluorohexanesulfonic acid (PFHxS)		Invalid Compound ID	mongkols	07/16/18 14:18
Perfluorooctanoic acid (PFOA)		Invalid Compound ID	mongkols	07/16/18 14:18

Lab Sample ID: 320-40571-10 Client Sample ID: NF20-SS-02

Date Analyzed: 07/14/18 04:36 Lab File ID: 2018.07.13LLB_060.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
13C4 PFBA	1.44	Incomplete Integration	mongkols	07/16/18 14:18
Perfluorobutanoic acid (PFBA)	1.44	Incomplete Integration	mongkols	07/16/18 14:19
Perfluorohexanesulfonic acid (PFHxS)		Invalid Compound ID	mongkols	07/16/18 14:19
Perfluorooctanoic acid (PFOA)		Invalid Compound ID	mongkols	07/16/18 14:19
Perfluoropentanoic acid (PFPeA)		Invalid Compound ID	mongkols	07/16/18 14:19
Perfluoroundecanoic acid (PFUnA)		Invalid Compound ID	mongkols	07/16/18 14:19

537 (modified)

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 233997

Lab Sample ID: 320-40571-12 Client Sample ID: NF21-SS-01

Date Analyzed: 07/14/18 04:43 Lab File ID: 2018.07.13LLB_061.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
13C4 PFBA	1.44	Incomplete Integration	mongkols	07/16/18 14:19
Perfluorobutanoic acid (PFBA)	1.44	Incomplete Integration	mongkols	07/16/18 14:19
6:2 FTS		Invalid Compound ID	mongkols	07/16/18 14:20
Perfluorononanoic acid (PFNA)		Invalid Compound ID	mongkols	07/16/18 14:20
Perfluoropentanoic acid (PFPeA)		Invalid Compound ID	mongkols	07/16/18 14:19

Lab Sample ID: 320-40571-14 Client Sample ID: NF22-SS-01

Date Analyzed: 07/14/18 04:59 Lab File ID: 2018.07.13LLB_063.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
13C4 PFBA	1.44	Incomplete Integration	mongkols	07/16/18 14:20
8:2 FTS		Invalid Compound ID	mongkols	07/16/18 14:21
Perfluorobutanoic acid (PFBA)		Invalid Compound ID	mongkols	07/16/18 14:21
Perfluorononanoic acid (PFNA)		Invalid Compound ID	mongkols	07/16/18 14:21
Perfluoropentanoic acid (PFPeA)		Invalid Compound ID	mongkols	07/16/18 14:21

Lab Sample ID: 320-40571-16 Client Sample ID: NF23-SS-01

Date Analyzed: 07/14/18 05:07 Lab File ID: 2018.07.13LLB_064.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
13C4 PFBA	1.44	Incomplete Integration	mongkols	07/16/18 14:21
Perfluorobutanoic acid (PFBA)	1.44	Baseline	mongkols	07/16/18 14:22
Perfluorooctanesulfonic acid (PFOS)	3.03	Baseline	mongkols	07/16/18 14:22
Perfluorodecanesulfonic acid (PFDS)		Invalid Compound ID	mongkols	07/16/18 14:22
Perfluorodecanoic acid (PFDA)		Invalid Compound ID	mongkols	07/16/18 14:22

537 (modified)

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 233997

Lab Sample ID: 320-40571-18 Client Sample ID: NF24-SS-02

Date Analyzed: 07/14/18 05:15 Lab File ID: 2018.07.13LLB_065.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
13C4 PFBA	1.43	Incomplete Integration	mongkols	07/16/18 14:23
6:2 FTS		Invalid Compound ID	mongkols	07/16/18 14:23
Perfluorooctanoic acid (PFOA)		Invalid Compound ID	mongkols	07/16/18 14:23
Perfluoropentanoic acid (PFPeA)		Invalid Compound ID	mongkols	07/16/18 14:23

Lab Sample ID: 320-40571-20 Client Sample ID: NF25-SS-02

Date Analyzed: 07/14/18 05:23 Lab File ID: 2018.07.13LLB_066.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
13C4 PFBA	1.44	Incomplete Integration	mongkols	07/16/18 14:24
Perfluorooctanoic acid (PFOA)		Invalid Compound ID	mongkols	07/16/18 14:24

Lab Sample ID: 320-40571-22 Client Sample ID: NF26-SS-02

Date Analyzed: 07/14/18 05:31 Lab File ID: 2018.07.13LLB_067.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
13C4 PFBA	1.44	Incomplete Integration	mongkols	07/16/18 14:24
Perfluorobutanoic acid (PFBA)	1.44	Incomplete Integration	mongkols	07/16/18 14:25
Perfluoropentanoic acid (PFPeA)	1.71	Baseline	mongkols	07/16/18 14:25
Perfluorononanoic acid (PFNA)		Invalid Compound ID	mongkols	07/16/18 14:25
Perfluorotetradecanoic acid (PFTeA)		Invalid Compound ID	mongkols	07/16/18 14:25

537 (modified)

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 233997

Lab Sample ID: 320-40571-36 Client Sample ID: NF33-SS-01

Date Analyzed: 07/14/18 05:38 Lab File ID: 2018.07.13LLB_068.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
13C4 PFBA	1.44	Incomplete Integration	mongkols	07/16/18 14:25
Perfluorobutanoic acid (PFBA)	1.46	Incomplete Integration	mongkols	07/16/18 14:26
Perfluorohexanesulfonic acid (PFHxS)		Invalid Compound ID	mongkols	07/16/18 14:26
Perfluorononanoic acid (PFNA)		Invalid Compound ID	mongkols	07/16/18 14:26
Perfluoropentanoic acid (PFPeA)		Invalid Compound ID	mongkols	07/16/18 14:26

Lab Sample ID: 320-40571-36 MS Client Sample ID: NF33-SS-01 MS

Date Analyzed: 07/14/18 05:46 Lab File ID: 2018.07.13LLB_069.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
13C4 PFBA	1.44	Incomplete Integration	mongkols	07/16/18 14:27
Perfluorobutanoic acid (PFBA)	1.44	Incomplete Integration	mongkols	07/16/18 14:27
Perfluoropentanoic acid (PFPeA)	1.72	Baseline	mongkols	07/16/18 14:27

Lab Sample ID: 320-40571-36 MSD Client Sample ID: NF33-SS-01 MSD

Date Analyzed: 07/14/18 05:54 Lab File ID: 2018.07.13LLB_070.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
13C4 PFBA	1.44	Incomplete Integration	mongkols	07/16/18 14:28
Perfluorobutanoic acid (PFBA)	1.44	Incomplete Integration	mongkols	07/16/18 14:28
Perfluoropentanoic acid (PFPeA)	1.72	Baseline	mongkols	07/16/18 14:28

537 (modified)

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 234011

Lab Sample ID: CCB 320-234011/1 Client Sample ID:

Date Analyzed: 07/14/18 11:08 Lab File ID: 2018.07.14LLA_004.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)		Invalid Compound ID	mongkols	07/16/18 14:47
Perfluoropentanoic acid (PFPeA)		Invalid Compound ID	mongkols	07/16/18 14:47

537 (modified)

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 234231

Lab Sample ID: MB 320-231393/1-A Client Sample ID:

Date Analyzed: 07/14/18 13:06 Lab File ID: 2018.07.14LLA_019.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
13C4 PFBA	1.44	Incomplete Integration	mongkols	07/17/18 08:10
Perfluorooctanesulfonic acid (PFOS)	3.02	Assign Peak	mongkols	07/17/18 08:10
6:2 FTS		Invalid Compound ID	mongkols	07/17/18 08:10
Perfluorobutanoic acid (PFBA)		Invalid Compound ID	mongkols	07/17/18 08:10
Perfluorooctane Sulfonamide (FOSA)		Invalid Compound ID	mongkols	07/17/18 08:10
Perfluorooctanoic acid (PFOA)		Invalid Compound ID	mongkols	07/17/18 08:10
Perfluoropentanoic acid (PFPeA)		Invalid Compound ID	mongkols	07/17/18 08:10

Lab Sample ID: LCS 320-231393/2-A Client Sample ID:

Date Analyzed: 07/14/18 13:14 Lab File ID: 2018.07.14LLA_020.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
13C4 PFBA	1.44	Incomplete Integration	mongkols	07/17/18 08:11
Perfluorobutanoic acid (PFBA)	1.44	Incomplete Integration	mongkols	07/17/18 08:11

Lab Sample ID: LCSD 320-231393/3-A Client Sample ID:

Date Analyzed: 07/14/18 13:22 Lab File ID: 2018.07.14LLA_021.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
13C4 PFBA	1.44	Incomplete Integration	mongkols	07/17/18 08:11
Perfluorobutanoic acid (PFBA)	1.44	Incomplete Integration	mongkols	07/17/18 08:12
Perfluoropentanoic acid (PFPeA)	1.72	Baseline	mongkols	07/17/18 08:12

537 (modified)

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 234231

Lab Sample ID: 320-40571-24 Client Sample ID: NF27-SS-01

Date Analyzed: 07/14/18 13:29 Lab File ID: 2018.07.14LLA_022.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
13C4 PFBA	1.44	Incomplete Integration	mongkols	07/17/18 08:14
Perfluorobutanoic acid (PFBA)	1.44	Incomplete Integration	mongkols	07/17/18 08:14
6:2 FTS		Invalid Compound ID	mongkols	07/17/18 08:15
Perfluorononanoic acid (PFNA)		Invalid Compound ID	mongkols	07/17/18 08:15
Perfluoropentanoic acid (PFPeA)		Invalid Compound ID	mongkols	07/17/18 08:15
Perfluoroundecanoic acid (PFUnA)		Invalid Compound ID	mongkols	07/17/18 08:15

Lab Sample ID: 320-40571-26 Client Sample ID: NF28-SS-01

Date Analyzed: 07/14/18 13:37 Lab File ID: 2018.07.14LLA_023.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
13C4 PFBA	1.43	Incomplete Integration	mongkols	07/17/18 08:18
Perfluoropentanoic acid (PFPeA)		Invalid Compound ID	mongkols	07/17/18 08:18
Perfluoroundecanoic acid (PFUnA)		Invalid Compound ID	mongkols	07/17/18 08:19

Lab Sample ID: 320-40571-28 Client Sample ID: NF29-SS-01

Date Analyzed: 07/14/18 13:45 Lab File ID: 2018.07.14LLA_024.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
13C4 PFBA	1.44	Incomplete Integration	mongkols	07/17/18 08:19
Perfluorobutanoic acid (PFBA)	1.44	Incomplete Integration	mongkols	07/17/18 08:19
Perfluorooctanoic acid (PFOA)	2.66	Isomers	mongkols	07/17/18 08:20
6:2 FTS		Invalid Compound ID	mongkols	07/17/18 08:19
Perfluoropentanoic acid (PFPeA)		Invalid Compound ID	mongkols	07/17/18 08:19

537 (modified)

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 234231

Lab Sample ID: 320-40571-30 Client Sample ID: NF30-SS-02

Date Analyzed: 07/14/18 14:09 Lab File ID: 2018.07.14LLA_027.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
13C4 PFBA	1.44	Incomplete Integration	mongkols	07/17/18 08:21
Perfluorobutanoic acid (PFBA)	1.44	Incomplete Integration	mongkols	07/17/18 08:21
6:2 FTS		Invalid Compound ID	mongkols	07/17/18 08:22
Perfluorododecanoic acid (PFDoA)		Invalid Compound ID	mongkols	07/17/18 08:22
Perfluoroheptanesulfonic Acid (PFHpS)		Invalid Compound ID	mongkols	07/17/18 08:22
Perfluorononanoic acid (PFNA)		Invalid Compound ID	mongkols	07/17/18 08:22
Perfluoroundecanoic acid (PFUnA)		Invalid Compound ID	mongkols	07/17/18 08:22

Lab Sample ID: 320-40571-32 Client Sample ID: NF31-SS-02

Date Analyzed: 07/14/18 14:16 Lab File ID: 2018.07.14LLA_028.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
13C4 PFBA	1.44	Incomplete Integration	mongkols	07/17/18 08:22
Perfluorooctanoic acid (PFOA)	2.66	Baseline	mongkols	07/17/18 08:23
Perfluorooctanesulfonic acid (PFOS)	3.02	Assign Peak	mongkols	07/17/18 08:23

Lab Sample ID: 320-40571-34 Client Sample ID: NF32-SS-02

Date Analyzed: 07/14/18 14:24 Lab File ID: 2018.07.14LLA_029.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
13C4 PFBA	1.44	Incomplete Integration	mongkols	07/17/18 08:24
Perfluorononanoic acid (PFNA)		Invalid Compound ID	mongkols	07/17/18 08:24
Perfluorooctanoic acid (PFOA)		Invalid Compound ID	mongkols	07/17/18 08:24
Perfluoropentanoic acid (PFPeA)		Invalid Compound ID	mongkols	07/17/18 08:24

537 (modified)

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 234231

Lab Sample ID: 320-40571-38 Client Sample ID: NF34-SS-01

Date Analyzed: 07/14/18 14:32 Lab File ID: 2018.07.14LLA_030.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
13C4 PFBA	1.43	Incomplete Integration	mongkols	07/17/18 08:25
Perfluorohexanesulfonic acid (PFHxS)	2.33	Incomplete Integration	mongkols	07/17/18 08:25
Perfluorooctanoic acid (PFOA)	2.66	Baseline	mongkols	07/17/18 08:25
6:2 FTS		Invalid Compound ID	mongkols	07/17/18 08:25
Perfluoroheptanoic acid (PFHpA)		Invalid Compound ID	mongkols	07/17/18 08:25
Perfluorononanoic acid (PFNA)		Invalid Compound ID	mongkols	07/17/18 08:26
Perfluoropentanoic acid (PFPeA)		Invalid Compound ID	mongkols	07/17/18 08:25
Perfluoroundecanoic acid (PFUnA)		Invalid Compound ID	mongkols	07/17/18 08:26

Lab Sample ID: 320-40571-40 Client Sample ID: NF35-SS-01

Date Analyzed: 07/14/18 14:40 Lab File ID: 2018.07.14LLA_031.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
13C4 PFBA	1.44	Incomplete Integration	mongkols	07/17/18 08:26
Perfluorobutanoic acid (PFBA)	1.44	Incomplete Integration	mongkols	07/17/18 08:27
Perfluorohexanesulfonic acid (PFHxS)	2.33	Baseline	mongkols	07/17/18 08:28
Perfluorooctanoic acid (PFOA)	2.66	Isomers	mongkols	07/17/18 08:28
Perfluorononanoic acid (PFNA)	3.02	Baseline	mongkols	07/17/18 08:29
Perfluoroheptanoic acid (PFHpA)		Invalid Compound ID	mongkols	07/17/18 08:27
Perfluorohexanoic acid (PFHxA)		Invalid Compound ID	mongkols	07/17/18 08:27
Perfluorooctane Sulfonamide (FOSA)		Invalid Compound ID	mongkols	07/17/18 08:29
Perfluoroundecanoic acid (PFUnA)		Invalid Compound ID	mongkols	07/17/18 08:29

537 (modified)

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 234231

Lab Sample ID: 320-40571-42 Client Sample ID: NF36-SS-02

Date Analyzed: 07/14/18 14:48 Lab File ID: 2018.07.14LLA_032.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
13C4 PFBA	1.44	Incomplete Integration	mongkols	07/17/18 08:29
Perfluorobutanoic acid (PFBA)	1.44	Incomplete Integration	mongkols	07/17/18 08:29
6:2 FTS		Invalid Compound ID	mongkols	07/17/18 08:30
8:2 FTS		Invalid Compound ID	mongkols	07/17/18 08:30
Perfluoroheptanesulfonic Acid (PFHpS)		Invalid Compound ID	mongkols	07/17/18 08:30
Perfluorononanoic acid (PFNA)		Invalid Compound ID	mongkols	07/17/18 08:30
Perfluorooctane Sulfonamide (FOSA)		Invalid Compound ID	mongkols	07/17/18 08:30
Perfluorooctanoic acid (PFOA)		Invalid Compound ID	mongkols	07/17/18 08:30
Perfluoropentanoic acid (PFPeA)		Invalid Compound ID	mongkols	07/17/18 08:29
Perfluorotridecanoic Acid (PFTriA)		Invalid Compound ID	mongkols	07/17/18 08:30
Perfluoroundecanoic acid (PFUnA)		Invalid Compound ID	mongkols	07/17/18 08:30

Lab Sample ID: 320-40571-42 MS Client Sample ID: NF36-SS-02 MS

Date Analyzed: 07/14/18 14:56 Lab File ID: 2018.07.14LLA_033.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
13C4 PFBA	1.44	Incomplete Integration	mongkols	07/17/18 08:30
Perfluorobutanoic acid (PFBA)	1.44	Incomplete Integration	mongkols	07/17/18 08:31

Lab Sample ID: 320-40571-42 MSD Client Sample ID: NF36-SS-02 MSD

Date Analyzed: 07/14/18 15:03 Lab File ID: 2018.07.14LLA_034.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
13C4 PFBA	1.44	Incomplete Integration	mongkols	07/17/18 08:31
Perfluorobutanoic acid (PFBA)	1.44	Incomplete Integration	mongkols	07/17/18 08:32

537 (modified)

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 234295

Lab Sample ID: CCB 320-234295/1 Client Sample ID:

Date Analyzed: 07/16/18 12:46 Lab File ID: 2018.07.16LLA_003.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
13C4 PFBA	1.44	Incomplete Integration	westendorfc	07/16/18 16:14

Lab Sample ID: CCVL 320-234295/2 Client Sample ID:

Date Analyzed: 07/16/18 12:54 Lab File ID: 2018.07.16LLA_004.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
13C4 PFBA	1.44	Incomplete Integration	roycea	07/16/18 14:02

Lab Sample ID: CCV 320-234295/3 CCVIS Client Sample ID:

Date Analyzed: 07/16/18 13:02 Lab File ID: 2018.07.16LLA_005.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	3.05	Isomers	westendorfc	07/16/18 16:15

537 (modified)

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 234295

Lab Sample ID: 320-40571-5 Client Sample ID: NF18-GW-01

Date Analyzed: 07/16/18 13:10 Lab File ID: 2018.07.16LLA_006.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorobutanoic acid (PFBA)	1.44	Baseline	westendorfc	07/16/18 16:15
Perfluoropentanoic acid (PFPeA)	1.74	Baseline	westendorfc	07/16/18 16:15
Perfluorobutanesulfonic acid (PFBS)	1.78	Baseline	westendorfc	07/16/18 16:15
Perfluorohexanoic acid (PFHxA)	2.04	Baseline	westendorfc	07/16/18 16:15
Perfluoropentanesulfonic acid (PFPeS)	2.06	Baseline	westendorfc	07/16/18 16:15
Perfluorooctanoic acid (PFOA)	2.70	Isomers	westendorfc	07/16/18 16:16
Perfluorodecanoic acid (PFDA)	3.41	Split Peak	westendorfc	07/16/18 16:16

Lab Sample ID: CCV 320-234295/6 Client Sample ID:

Date Analyzed: 07/16/18 13:25 Lab File ID: 2018.07.16LLA_008.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
13C4 PFBA	1.45	Incomplete Integration	roycea	07/16/18 14:03

537 (modified)

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
LCMPFC_ALL_SU_00080	12/13/18	06/13/18	Methanol, Lot Baker 141039	200 mL	LCd3-NMeFOSAA_00008	200 uL	d3-NMeFOSAA	0.05 ug/mL
					LCd5-NEtFOSAA_00008	200 uL	d5-NEtFOSAA	0.05 ug/mL
					LCM2-6:FTS_00008	200 uL	M2-6:2FTS	0.0475 ug/mL
					LCM2-8:2FTS_00010	200 uL	M2-8:2FTS	0.0479 ug/mL
					LCM2PFHxDA_00016	200 uL	13C2-PFHxDA	0.05 ug/mL
					LCM2PFTeDA_00014	200 uL	13C2-PFTeDA	0.05 ug/mL
					LCM3HFPO-DA_00003	200 uL	13C3 HFPO-DA	0.05 ug/mL
					LCM4PFHPA_00014	200 uL	13C4-PFHpA	0.05 ug/mL
					LCM5PFPEA_00015	200 uL	13C5 PFPeA	0.05 ug/mL
					LCM8FOSA_00019	200 uL	13C8 FOSA	0.05 ug/mL
					LCMPFBA_00015	200 uL	13C4 PFBA	0.05 ug/mL
					LCMPFBS_00008	200 uL	13C3-PFBS	0.0465 ug/mL
					LCMPFDA_00020	200 uL	13C2 PFDA	0.05 ug/mL
					LCMPFDoA_00015	200 uL	13C2 PFDoA	0.05 ug/mL
					LCMPFHxA_00022	200 uL	13C2 PFHxA	0.05 ug/mL
					LCMPFHxS_00015	200 uL	18O2 PFHxS	0.0473 ug/mL
					LCMPFNA_00015	200 uL	13C5 PFNA	0.05 ug/mL
					LCMPFOA_00019	200 uL	13C4 PFOA	0.05 ug/mL
					LCMPFOS_00027	200 uL	13C4 PFOS	0.0478 ug/mL
					LCMPFUdA_00017	200 uL	13C2 PFUnA	0.05 ug/mL
.LCd3-NMeFOSAA_00008	11/08/22	WELLINGTON, Lot d3NMeFOSAA1117			(Purchased Reagent)		d3-NMeFOSAA	50 ug/mL
.LCd5-NEtFOSAA_00008	11/08/22	WELLINGTON, Lot d5NEtFOSAA1117			(Purchased Reagent)		d5-NEtFOSAA	50 ug/mL
.LCM2-6:FTS_00008	02/16/23	WELLINGTON, Lot M262FTS0218			(Purchased Reagent)		M2-6:2FTS	47.5 ug/mL
.LCM2-8:2FTS_00010	01/24/23	WELLINGTON, Lot M282FTS0118			(Purchased Reagent)		M2-8:2FTS	47.9 ug/mL
.LCM2PFHxDA_00016	07/13/22	Wellington Laboratories, Lot M2PFHxDA0717			(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
.LCM2PFTeDA_00014	11/30/22	Wellington Laboratories, Lot M2PFTeDA1117			(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
.LCM3HFPO-DA_00003	05/18/21	WELLINGTON, Lot M3HFPODA0518			(Purchased Reagent)		13C3 HFPO-DA	50 ug/mL
.LCM4PFHPA_00014	05/03/22	Wellington Laboratories, Lot M4PFHpA0517			(Purchased Reagent)		13C4-PFHpA	50 ug/mL
.LCM5PFPEA_00015	07/20/22	Wellington Laboratories, Lot M5PFPeA0717			(Purchased Reagent)		13C5 PFPeA	50 ug/mL
.LCM8FOSA_00019	10/11/22	Wellington Laboratories, Lot M8FOSA1017I			(Purchased Reagent)		13C8 FOSA	50 ug/mL
.LCMPFBA_00015	02/16/23	Wellington Laboratories, Lot MPFBA0218			(Purchased Reagent)		13C4 PFBA	50 ug/mL
.LCMPFBS_00008	02/15/23	Wellington Laboratories, Lot M3PFBS0218			(Purchased Reagent)		13C3-PFBS	46.5 ug/mL
.LCMPFDA_00020	02/16/23	Wellington Laboratories, Lot MPFDA0218			(Purchased Reagent)		13C2 PFDA	50 ug/mL
.LCMPFDoA_00015	02/16/23	Wellington Laboratories, Lot MPFDoA0218			(Purchased Reagent)		13C2 PFDoA	50 ug/mL
.LCMPFHxA_00022	10/27/22	Wellington Laboratories, Lot MPFHxA1017			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
.LCMPFHxS_00015	03/22/23	Wellington Laboratories, Lot MPFHxS0318			(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
.LCMPFNA_00015	12/14/22	Wellington Laboratories, Lot MPFNA1217			(Purchased Reagent)		13C5 PFNA	50 ug/mL
.LCMPFOA_00019	05/04/23	Wellington Laboratories, Lot MPFOA0418			(Purchased Reagent)		13C4 PFOA	50 ug/mL
.LCMPFOS_00027	02/15/23	Wellington Laboratories, Lot MPFOS0218			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
.LCMPFUdA_00017	11/22/21	Wellington Laboratories, Lot MPFUdA1116			(Purchased Reagent)		13C2 PFUnA	50 ug/mL
LCPFC-IS_00058	12/13/18	06/13/18	Methanol, Lot 090285	200 mL	LCM2PFOA_00008	200 uL	13C2-PFOA	0.05 ug/mL
.LCM2PFOA_00008	02/12/21	Wellington Laboratories, Lot M2PFOA0216			(Purchased Reagent)		13C2-PFOA	50 ug/mL
LCPFC-IS_00061	12/13/18	06/13/18	Methanol, Lot 090285	200 mL	LCM2PFOA_00008	200 uL	13C2-PFOA	0.05 ug/mL
.LCM2PFOA_00008	02/12/21	Wellington Laboratories, Lot M2PFOA0216			(Purchased Reagent)		13C2-PFOA	50 ug/mL
LCPFC_LL0_00007	12/01/18	06/05/18	MeOH/H2O, Lot Baker 141039	200 mL	LCMPFC_ALL_SU_00075	10 mL	13C2-PFOA	2.5 ng/mL

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
.LCMPFC_ALL_SU_00075	12/05/18	06/05/18	Methanol, Lot Baker 141039	200 mL	LCM2PFOA_00008	200 uL	13C2-PFOA	0.05 ug/mL
..LCM2PFOA_00008	02/12/21	Wellington Laboratories, Lot M2PFOA0216			(Purchased Reagent)		13C2-PFOA	50 ug/mL
LCPFC_LL0_00007	12/01/18	06/05/18	MeOH/H2O, Lot Baker 141039	200 mL	LCMPFC_ALL_SU_00075	10 mL	d3-NMeFOSAA	2.5 ng/mL
							d5-NEtFOSAA	2.5 ng/mL
							M2-4:2FTS	2.335 ng/mL
							M2-6:2FTS	2.375 ng/mL
							M2-8:2FTS	2.395 ng/mL
							13C2-PFHxDA	2.5 ng/mL
							13C2-PFTeDA	2.5 ng/mL
							13C3 HFPO-DA	2.5 ng/mL
							13C4-PFHpA	2.5 ng/mL
							13C5 PFPeA	2.5 ng/mL
							13C8 FOSA	2.5 ng/mL
							13C4 PFBA	2.5 ng/mL
							13C3-PFBS	2.325 ng/mL
							13C2 PFDA	2.5 ng/mL
							13C2 PFDoA	2.5 ng/mL
							13C2 PFHxA	2.5 ng/mL
							18O2 PFHxS	2.365 ng/mL
							13C5 PFNA	2.5 ng/mL
							13C4 PFOA	2.5 ng/mL
							13C4 PFOS	2.39 ng/mL
							13C2 PFUnA	2.5 ng/mL
.LCMPFC_ALL_SU_00075	12/05/18	06/05/18	Methanol, Lot Baker 141039	200 mL	LCd3-NMeFOSAA_00008	200 uL	d3-NMeFOSAA	0.05 ug/mL
					LCd5-NEtFOSAA_00008	200 uL	d5-NEtFOSAA	0.05 ug/mL
					LCM2-4:FTS_00003	200 uL	M2-4:2FTS	0.0467 ug/mL
					LCM2-6:FTS_00008	200 uL	M2-6:2FTS	0.0475 ug/mL
					LCM2-8:2FTS_00010	200 uL	M2-8:2FTS	0.0479 ug/mL
					LCM2PFHxDA_00016	200 uL	13C2-PFHxDA	0.05 ug/mL
					LCM2PFTeDA_00014	200 uL	13C2-PFTeDA	0.05 ug/mL
					LCM3HFPO-DA_00003	200 uL	13C3 HFPO-DA	0.05 ug/mL
					LCM4PFHPA_00014	200 uL	13C4-PFHpA	0.05 ug/mL
					LCM5PFPEA_00015	200 uL	13C5 PFPeA	0.05 ug/mL
					LCM8FOSA_00019	200 uL	13C8 FOSA	0.05 ug/mL
					LCMPFBA_00015	200 uL	13C4 PFBA	0.05 ug/mL
					LCMPFBS_00008	200 uL	13C3-PFBS	0.0465 ug/mL
					LCMPFDA_00020	200 uL	13C2 PFDA	0.05 ug/mL
					LCMPFDoA_00015	200 uL	13C2 PFDoA	0.05 ug/mL
					LCMPFHxA_00022	200 uL	13C2 PFHxA	0.05 ug/mL
					LCMPFHxS_00015	200 uL	18O2 PFHxS	0.0473 ug/mL
					LCMPFNA_00015	200 uL	13C5 PFNA	0.05 ug/mL
					LCMPFOA_00019	200 uL	13C4 PFOA	0.05 ug/mL
					LCMPFOS_00027	200 uL	13C4 PFOS	0.0478 ug/mL
					LCMPFUdA_00017	200 uL	13C2 PFUnA	0.05 ug/mL
..LCd3-NMeFOSAA_00008	11/08/22	WELLINGTON, Lot d3NMeFOSAA1117			(Purchased Reagent)		d3-NMeFOSAA	50 ug/mL

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCd5-NEtFOSAA_00008	11/08/22	WELLINGTON, Lot d5NEtFOSAA1117			(Purchased Reagent)		d5-NEtFOSAA	50 ug/mL
..LCM2-4:FTS_00003	09/01/22	Wellington, Lot M242FTS0817			(Purchased Reagent)		M2-4:2FTS	46.7 ug/mL
..LCM2-6:FTS_00008	02/16/23	WELLINGTON, Lot M262FTS0218			(Purchased Reagent)		M2-6:2FTS	47.5 ug/mL
..LCM2-8:2FTS_00010	01/24/23	WELLINGTON, Lot M282FTS0118			(Purchased Reagent)		M2-8:2FTS	47.9 ug/mL
..LCM2PFHxDA_00016	07/13/22	Wellington Laboratories, Lot M2PFHxDA0717			(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFTeDA_00014	11/30/22	Wellington Laboratories, Lot M2PFTeDA1117			(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM3HFPO-DA_00003	05/18/21	WELLINGTON, Lot M3HFPODA0518			(Purchased Reagent)		13C3 HFPO-DA	50 ug/mL
..LCM4PFHPA_00014	05/03/22	Wellington Laboratories, Lot M4PFHpA0517			(Purchased Reagent)		13C4-PFHpA	50 ug/mL
..LCM5PFPEA_00015	07/20/22	Wellington Laboratories, Lot M5PFPeA0717			(Purchased Reagent)		13C5 PFPeA	50 ug/mL
..LCM8FOSA_00019	10/11/22	Wellington Laboratories, Lot M8FOSA1017I			(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA_00015	02/16/23	Wellington Laboratories, Lot MPFBA0218			(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFBS_00008	02/15/23	Wellington Laboratories, Lot M3PFBS0218			(Purchased Reagent)		13C3-PFBS	46.5 ug/mL
..LCMPFDA_00020	02/16/23	Wellington Laboratories, Lot MPFDA0218			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA_00015	02/16/23	Wellington Laboratories, Lot MPFDoA0218			(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA_00022	10/27/22	Wellington Laboratories, Lot MPFHxA1017			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS_00015	03/22/23	Wellington Laboratories, Lot MPFHxS0318			(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
..LCMPFNA_00015	12/14/22	Wellington Laboratories, Lot MPFNA1217			(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA_00019	05/04/23	Wellington Laboratories, Lot MPFOA0418			(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS_00027	02/15/23	Wellington Laboratories, Lot MPFOS0218			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUdA_00017	11/22/21	Wellington Laboratories, Lot MPFUdA1116			(Purchased Reagent)		13C2 PFUnA	50 ug/mL
LCPFC_LL1_00006	11/18/18	06/05/18	MeOH/H2O, Lot 90285	200 mL	LCMPFC_ALL_SU_00075	10 mL	d3-NMeFOSAA	2.5 ng/mL
							d5-NEtFOSAA	2.5 ng/mL
							M2-4:2FTS	2.335 ng/mL
							M2-6:2FTS	2.375 ng/mL
							M2-8:2FTS	2.395 ng/mL
							13C2-PFHxDA	2.5 ng/mL
							13C2-PFOA	2.5 ng/mL
							13C2-PFTeDA	2.5 ng/mL
							13C3 HFPO-DA	2.5 ng/mL
							13C4-PFHpA	2.5 ng/mL
							13C5 PFPeA	2.5 ng/mL
							13C8 FOSA	2.5 ng/mL
							13C4 PFBA	2.5 ng/mL
							13C3-PFBS	2.325 ng/mL
							13C2 PFDA	2.5 ng/mL
							13C2 PFDoA	2.5 ng/mL
							13C2 PFHxA	2.5 ng/mL
							18O2 PFHxS	2.365 ng/mL
							13C5 PFNA	2.5 ng/mL
							13C4 PFOA	2.5 ng/mL
							13C4 PFOS	2.39 ng/mL
							13C2 PFUnA	2.5 ng/mL
					LCPFCSP_00151	500 uL	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonate	0.02355 ng/mL
							4:2 FTS	0.02335 ng/mL
							6:2 FTS	0.0237 ng/mL
							8:2 FTS	0.02395 ng/mL

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Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							9-Chlorohexadecafluoro-3-oxanonane-1-sulfonate	0.0233 ng/mL
							N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	0.025 ng/mL
							N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	0.025 ng/mL
							ADONA	0.02355 ng/mL
							Perfluoro(2-propoxypropanoic) acid	0.025 ng/mL
							Perfluorobutanoic acid (PFBA)	0.025 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	0.0221 ng/mL
							Perfluorodecanoic acid (PFDA)	0.025 ng/mL
							Perfluorododecanoic acid (PFDoA)	0.025 ng/mL
							Perfluorodecanesulfonic acid (PFDS)	0.0241 ng/mL
							Perfluoroheptanoic acid (PFHpA)	0.025 ng/mL
							Perfluoroheptanesulfonic Acid (PFHpS)	0.0238 ng/mL
							Perfluorohexanoic acid (PFHxA)	0.025 ng/mL
							Perfluorohexadecanoic acid	0.025 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	0.02275 ng/mL
							Perfluorononanoic acid (PFNA)	0.025 ng/mL
							Perfluorooctanoic acid (PFOA)	0.025025 ng/mL
							Perfluorononanesulfonic acid (PFNS)	0.024 ng/mL
							Perfluorooctadecanoic acid	0.025 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	0.0232 ng/mL
							Perfluorooctane Sulfonamide (FOSA)	0.025 ng/mL
							Perfluoropentanoic acid (PFPeA)	0.025 ng/mL
							Perfluoropentanesulfonic acid (PFPeS)	0.02345 ng/mL
							Perfluorotetradecanoic acid (PFTeA)	0.025 ng/mL
							Perfluorotridecanoic Acid (PFTriA)	0.025 ng/mL
							Perfluoroundecanoic acid (PFUnA)	0.025 ng/mL
.LCMPFC_ALL_SU_00075	12/05/18	06/05/18	Methanol, Lot Baker 141039	200 mL	LCd3-NMeFOSAA_00008	200 uL	d3-NMeFOSAA	0.05 ug/mL
					LCd5-NEtFOSAA_00008	200 uL	d5-NEtFOSAA	0.05 ug/mL

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SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCM2-4:FTS_00003	200 uL	M2-4:2FTS	0.0467 ug/mL
					LCM2-6:FTS_00008	200 uL	M2-6:2FTS	0.0475 ug/mL
					LCM2-8:2FTS_00010	200 uL	M2-8:2FTS	0.0479 ug/mL
					LCM2PFHxDA_00016	200 uL	13C2-PFHxDA	0.05 ug/mL
					LCM2PFOA_00008	200 uL	13C2-PFOA	0.05 ug/mL
					LCM2PFTeDA_00014	200 uL	13C2-PFTeDA	0.05 ug/mL
					LCM3HFPO-DA_00003	200 uL	13C3 HFPO-DA	0.05 ug/mL
					LCM4PFHPA_00014	200 uL	13C4-PFHpA	0.05 ug/mL
					LCM5PFPEA_00015	200 uL	13C5 PFPeA	0.05 ug/mL
					LCM8FOSA_00019	200 uL	13C8 FOSA	0.05 ug/mL
					LCMPFBA_00015	200 uL	13C4 PFBA	0.05 ug/mL
					LCMPFBS_00008	200 uL	13C3-PFBS	0.0465 ug/mL
					LCMPFDA_00020	200 uL	13C2 PFDA	0.05 ug/mL
					LCMPFDoA_00015	200 uL	13C2 PFDoA	0.05 ug/mL
					LCMPFHxA_00022	200 uL	13C2 PFHxA	0.05 ug/mL
					LCMPFHxS_00015	200 uL	18O2 PFHxS	0.0473 ug/mL
					LCMPFNA_00015	200 uL	13C5 PFNA	0.05 ug/mL
					LCMPFOA_00019	200 uL	13C4 PFOA	0.05 ug/mL
					LCMPFOS_00027	200 uL	13C4 PFOS	0.0478 ug/mL
					LCMPFUdA_00017	200 uL	13C2 PFUnA	0.05 ug/mL
..LCd3-NMeFOSAA_00008	11/08/22	WELLINGTON, Lot d3NMeFOSAA1117			(Purchased Reagent)		d3-NMeFOSAA	50 ug/mL
..LCd5-NEtFOSAA_00008	11/08/22	WELLINGTON, Lot d5NEtFOSAA1117			(Purchased Reagent)		d5-NEtFOSAA	50 ug/mL
..LCM2-4:FTS_00003	09/01/22	Wellington, Lot M242FTS0817			(Purchased Reagent)		M2-4:2FTS	46.7 ug/mL
..LCM2-6:FTS_00008	02/16/23	WELLINGTON, Lot M262FTS0218			(Purchased Reagent)		M2-6:2FTS	47.5 ug/mL
..LCM2-8:2FTS_00010	01/24/23	WELLINGTON, Lot M282FTS0118			(Purchased Reagent)		M2-8:2FTS	47.9 ug/mL
..LCM2PFHxDA_00016	07/13/22	Wellington Laboratories, Lot M2PFHxDA0717			(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFOA_00008	02/12/21	Wellington Laboratories, Lot M2PFOA0216			(Purchased Reagent)		13C2-PFOA	50 ug/mL
..LCM2PFTeDA_00014	11/30/22	Wellington Laboratories, Lot M2PFTeDA1117			(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM3HFPO-DA_00003	05/18/21	WELLINGTON, Lot M3HFPODA0518			(Purchased Reagent)		13C3 HFPO-DA	50 ug/mL
..LCM4PFHPA_00014	05/03/22	Wellington Laboratories, Lot M4PFHpA0517			(Purchased Reagent)		13C4-PFHpA	50 ug/mL
..LCM5PFPEA_00015	07/20/22	Wellington Laboratories, Lot M5PFPeA0717			(Purchased Reagent)		13C5 PFPeA	50 ug/mL
..LCM8FOSA_00019	10/11/22	Wellington Laboratories, Lot M8FOSA1017I			(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA_00015	02/16/23	Wellington Laboratories, Lot MPFBA0218			(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFBS_00008	02/15/23	Wellington Laboratories, Lot M3PFBS0218			(Purchased Reagent)		13C3-PFBS	46.5 ug/mL
..LCMPFDA_00020	02/16/23	Wellington Laboratories, Lot MPFDA0218			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA_00015	02/16/23	Wellington Laboratories, Lot MPFDoA0218			(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA_00022	10/27/22	Wellington Laboratories, Lot MPFHxA1017			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS_00015	03/22/23	Wellington Laboratories, Lot MPFHxS0318			(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
..LCMPFNA_00015	12/14/22	Wellington Laboratories, Lot MPFNA1217			(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA_00019	05/04/23	Wellington Laboratories, Lot MPFOA0418			(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS_00027	02/15/23	Wellington Laboratories, Lot MPFOS0218			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUdA_00017	11/22/21	Wellington Laboratories, Lot MPFUdA1116			(Purchased Reagent)		13C2 PFUnA	50 ug/mL
.LCPFCSP_00151	11/18/18	05/17/18	Methanol, Lot 090285	10 mL	LCPFCSP_00148	200 uL	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonate	0.00942 ug/mL
							4:2 FTS	0.00934 ug/mL
							6:2 FTS	0.00948 ug/mL
							8:2 FTS	0.00958 ug/mL

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Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							9-Chlorohexadecafluoro-3-oxanonane-1-sulfonate	0.00932 ug/mL
							N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	0.01 ug/mL
							N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	0.01 ug/mL
							ADONA	0.00942 ug/mL
							Perfluoro(2-propoxypropanoic) acid	0.01 ug/mL
							Perfluorobutanoic acid (PFBA)	0.01 ug/mL
							Perfluorobutanesulfonic acid (PFBS)	0.00884 ug/mL
							Perfluorodecanoic acid (PFDA)	0.01 ug/mL
							Perfluorododecanoic acid (PFDoA)	0.01 ug/mL
							Perfluorodecanesulfonic acid (PFDS)	0.00964 ug/mL
							Perfluoroheptanoic acid (PFHpA)	0.01 ug/mL
							Perfluoroheptanesulfonic Acid (PFHpS)	0.00952 ug/mL
							Perfluorohexanoic acid (PFHxA)	0.01 ug/mL
							Perfluorohexadecanoic acid	0.01 ug/mL
							Perfluorohexanesulfonic acid (PFHxS)	0.0091 ug/mL
							Perfluorononanoic acid (PFNA)	0.01 ug/mL
							Perfluorooctanoic acid (PFOA)	0.01001 ug/mL
							Perfluorononanesulfonic acid (PFNS)	0.0096 ug/mL
							Perfluorooctadecanoic acid	0.01 ug/mL
							Perfluorooctanesulfonic acid (PFOS)	0.00928 ug/mL
							Perfluorooctane Sulfonamide (FOSA)	0.01 ug/mL
							Perfluoropentanoic acid (PFPeA)	0.01 ug/mL
							Perfluoropentanesulfonic acid (PFPeS)	0.00938 ug/mL
							Perfluorotetradecanoic acid (PFTeA)	0.01 ug/mL
							Perfluorotridecanoic Acid (PFTriA)	0.01 ug/mL
							Perfluoroundecanoic acid (PFUnA)	0.01 ug/mL
..LCPFCSP_00148	11/18/18	05/17/18	Methanol, Lot 090285	10 mL	LC11CIPF3OUdS_00002	100 uL	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonate	0.471 ug/mL
					LC4:2FTS_00005	100 uL	4:2 FTS	0.467 ug/mL
					LC6:2FTS_00007	100 uL	6:2 FTS	0.474 ug/mL

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Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LC8:2FTS_00007	100 uL	8:2 FTS	0.479 ug/mL
					LC9CI-PF3ONS_00002	100 uL	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonate	0.466 ug/mL
					LCbr-NEtFOSAA_00001	100 uL	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	0.5 ug/mL
					LCbr-NMeFOSAA_00001	100 uL	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	0.5 ug/mL
					LCDONA_00004	100 uL	ADONA	0.471 ug/mL
					LCHFPO-DA_00002	100 uL	Perfluoro(2-propoxypropanoic) acid	0.5 ug/mL
					LCPFBA_00008	100 uL	Perfluorobutanoic acid (PFBA)	0.5 ug/mL
					LCPFBS_00009	100 uL	Perfluorobutanesulfonic acid (PFBS)	0.442 ug/mL
					LCPFDA_00008	100 uL	Perfluorodecanoic acid (PFDA)	0.5 ug/mL
					LCPFDoA_00008	100 uL	Perfluorododecanoic acid (PFDoA)	0.5 ug/mL
					LCPFDS_00008	100 uL	Perfluorodecanesulfonic acid (PFDS)	0.482 ug/mL
					LCPFHpA_00011	100 uL	Perfluoroheptanoic acid (PFHpA)	0.5 ug/mL
					LCPFHpSA_00003	100 uL	Perfluoroheptanesulfonic Acid (PFHpS)	0.476 ug/mL
					LCPFHxA_00010	100 uL	Perfluorohexanoic acid (PFHxA)	0.5 ug/mL
					LCPFHxDA_00010	100 uL	Perfluorohexadecanoic acid	0.5 ug/mL
					LCPFHxS-br_00006	100 uL	Perfluorohexanesulfonic acid (PFHxS)	0.455 ug/mL
					LCPFNA_00010	100 uL	Perfluorononanoic acid (PFNA)	0.5 ug/mL
							Perfluorooctanoic acid (PFOA)	0.5005 ug/mL
					LCPFNS_00003	100 uL	Perfluorononanesulfonic acid (PFNS)	0.48 ug/mL
					LCPFOA_00011	100 uL	Perfluorooctanoic acid (PFOA)	0.5005 ug/mL
					LCPFODA_00010	100 uL	Perfluorooctadecanoic acid	0.5 ug/mL
					LCPFOS-br_00007	100 uL	Perfluorooctanesulfonic acid (PFOS)	0.464 ug/mL
					LCPFOSA_00013	100 uL	Perfluorooctane Sulfonamide (FOSA)	0.5 ug/mL
					LCPFPeA_00008	100 uL	Perfluoropentanoic acid (PFPeA)	0.5 ug/mL
					LCPFPeS_00003	100 uL	Perfluoropentanesulfonic acid (PFPeS)	0.469 ug/mL
					LCPFTeDA_00008	100 uL	Perfluorotetradecanoic acid (PFTeA)	0.5 ug/mL
					LCPFTrDA_00008	100 uL	Perfluorotridecanoic Acid (PFTriA)	0.5 ug/mL
					LCPFUdA_00008	100 uL	Perfluoroundecanoic acid (PFUnA)	0.5 ug/mL
...LC11CIPF3OUdS_00002	09/30/21	Wellington Labs, Lot 11CIPF3OUdS0916			(Purchased Reagent)		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonate	47.1 ug/mL

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Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
...LC4:2FTS_00005	12/12/21	WELLINGTON, Lot 42FTS1216			(Purchased Reagent)		4:2 FTS	46.7 ug/mL
...LC6:2FTS_00007	04/20/22	WELLINGTON, Lot 62FTS0417			(Purchased Reagent)		6:2 FTS	47.4 ug/mL
...LC8:2FTS_00007	12/12/21	WELLINGTON, Lot 82FTS1216			(Purchased Reagent)		8:2 FTS	47.9 ug/mL
...LC9CI-PF3ONS_00002	09/30/21	Wellington Labs, Lot 9CIPF3ONS0916			(Purchased Reagent)		9-Chlorohexadecafluoro-3-oxano nane-1-sulfonate	46.6 ug/mL
...LCbr-NEtFOSAA_00001	01/17/23	WELLINGTON, Lot brNEtFOSAA0118			(Purchased Reagent)		N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	50 ug/mL
...LCbr-NMeFOSAA_00001	01/17/23	WELLINGTON, Lot brNMeFOSAA0118			(Purchased Reagent)		N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	50 ug/mL
...LCDONA_00004	03/26/23	WELLINGTON, Lot NADONA0318			(Purchased Reagent)		ADONA	47.1 ug/mL
...LCHFPO-DA_00002	03/26/21	WELLINGTON, Lot HFPODA0318			(Purchased Reagent)		Perfluoro(2-propoxypropanoic) acid	50 ug/mL
...LCPFBA_00008	05/29/22	Wellington Laboratories, Lot PFBA0517			(Purchased Reagent)		Perfluorobutanoic acid (PFBA)	50 ug/mL
...LCPFBS_00009	09/21/22	Wellington Laboratories, Lot LPFBS0917			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
...LCPFDA_00008	05/29/22	Wellington Laboratories, Lot PFDA0517			(Purchased Reagent)		Perfluorodecanoic acid (PFDA)	50 ug/mL
...LCPFDoA_00008	05/29/22	Wellington Laboratories, Lot PFDoA0517			(Purchased Reagent)		Perfluorododecanoic acid (PFDoA)	50 ug/mL
...LCPFDS_00008	11/08/22	Wellington Laboratories, Lot LPFDS1117			(Purchased Reagent)		Perfluorodecanesulfonic acid (PFDS)	48.2 ug/mL
...LCPFHpA_00011	09/27/22	Wellington Laboratories, Lot PFHpA0917			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
...LCPFHpSA_00003	09/01/22	Wellington Laboratories, Lot LPFHpS0817			(Purchased Reagent)		Perfluoroheptanesulfonic Acid (PFHpS)	47.6 ug/mL
...LCPFHxA_00010	09/27/22	Wellington Laboratories, Lot PFHxA0917			(Purchased Reagent)		Perfluorohexanoic acid (PFHxA)	50 ug/mL
...LCPFHxDA_00010	07/13/22	Wellington Laboratories, Lot PFHxDA0717			(Purchased Reagent)		Perfluorohexadecanoic acid	50 ug/mL
...LCPFHxS-br_00006	01/04/22	Wellington Laboratories, Lot brPFHxSK0117			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	45.5 ug/mL
...LCPFNA_00010	07/20/22	Wellington Laboratories, Lot PFNA0717			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
							Perfluorooctanoic acid (PFOA)	0.05 ug/mL
...LCPFNS_00003	09/27/22	Wellington Laboratories, Lot LPFNS0917			(Purchased Reagent)		Perfluorononanesulfonic acid (PFNS)	48 ug/mL
...LCPFOA_00011	09/27/22	Wellington Laboratories, Lot PFOA0917			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
...LCPFODA_00010	07/13/22	Wellington Laboratories, Lot PFODA0717			(Purchased Reagent)		Perfluorooctadecanoic acid	50 ug/mL
...LCPFOS-br_00007	01/12/22	Wellington Laboratories, Lot brPFOSK0117			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	46.4 ug/mL
...LCPFOSA_00013	09/01/22	Wellington Laboratories, Lot FOSA0817I			(Purchased Reagent)		Perfluorooctane Sulfonamide (FOSA)	50 ug/mL
...LCPFPeA_00008	06/14/22	Wellington Laboratories, Lot PFPeA0617			(Purchased Reagent)		Perfluoropentanoic acid (PFPeA)	50 ug/mL
...LCPFPeS_00003	01/11/22	Wellington Laboratories, Lot LPFPeS0117			(Purchased Reagent)		Perfluoropentanesulfonic acid (PFPeS)	46.9 ug/mL
...LCPFTeDA_00008	09/30/21	Wellington Laboratories, Lot PFTeDA0916			(Purchased Reagent)		Perfluorotetradecanoic acid (PFTeA)	50 ug/mL
...LCPFTrDA_00008	05/02/22	Wellington Laboratories, Lot PFTrDA0517			(Purchased Reagent)		Perfluorotridecanoic Acid (PFTriA)	50 ug/mL
...LCPFUdA_00008	10/18/21	Wellington Laboratories, Lot PFUdA1016			(Purchased Reagent)		Perfluoroundecanoic acid (PFUnA)	50 ug/mL

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Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
LCPFC_LL2_00005	11/18/18	06/05/18	MeOH/H2O, Lot 090285	200 mL	LCMPFC_ALL_SU_00075	10 mL	d3-NMeFOSAA	2.5 ng/mL
							d5-NEtFOSAA	2.5 ng/mL
							M2-4:2FTS	2.335 ng/mL
							M2-6:2FTS	2.375 ng/mL
							M2-8:2FTS	2.395 ng/mL
							13C2-PFHxDA	2.5 ng/mL
							13C2-PFOA	2.5 ng/mL
							13C2-PFTeDA	2.5 ng/mL
							13C3 HFPO-DA	2.5 ng/mL
							13C4-PFHpA	2.5 ng/mL
							13C5 PFPeA	2.5 ng/mL
							13C8 FOSA	2.5 ng/mL
							13C4 PFBA	2.5 ng/mL
							13C3-PFBS	2.325 ng/mL
							13C2 PFDA	2.5 ng/mL
							13C2 PFDoA	2.5 ng/mL
							13C2 PFHxA	2.5 ng/mL
							18O2 PFHxS	2.365 ng/mL
							13C5 PFNA	2.5 ng/mL
							13C4 PFOA	2.5 ng/mL
							13C4 PFOS	2.39 ng/mL
							13C2 PFUnA	2.5 ng/mL
					LCPFCSP_00151	1000 uL	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonate	0.0471 ng/mL
							4:2 FTS	0.0467 ng/mL
							6:2 FTS	0.0474 ng/mL
							8:2 FTS	0.0479 ng/mL
							9-Chlorohexadecafluoro-3-oxanonane-1-sulfonate	0.0466 ng/mL
							N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	0.05 ng/mL
							N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	0.05 ng/mL
							ADONA	0.0471 ng/mL
							Perfluoro(2-propoxypropanoic) acid	0.05 ng/mL
							Perfluorobutanoic acid (PFBA)	0.05 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	0.0442 ng/mL
							Perfluorodecanoic acid (PFDA)	0.05 ng/mL
							Perfluorododecanoic acid (PFDoA)	0.05 ng/mL
							Perfluorodecanesulfonic acid (PFDS)	0.0482 ng/mL
							Perfluoroheptanoic acid (PFHpA)	0.05 ng/mL

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SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluoroheptanesulfonic Acid (PFHpS)	0.0476 ng/mL
							Perfluorohexanoic acid (PFHxA)	0.05 ng/mL
							Perfluorohexadecanoic acid	0.05 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	0.0455 ng/mL
							Perfluorononanoic acid (PFNA)	0.05 ng/mL
							Perfluorooctanoic acid (PFOA)	0.05005 ng/mL
							Perfluorononanesulfonic acid (PFNS)	0.048 ng/mL
							Perfluorooctadecanoic acid	0.05 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	0.0464 ng/mL
							Perfluorooctane Sulfonamide (FOSA)	0.05 ng/mL
							Perfluoropentanoic acid (PFPeA)	0.05 ng/mL
							Perfluoropentanesulfonic acid (PFPeS)	0.0469 ng/mL
							Perfluorotetradecanoic acid (PFTeA)	0.05 ng/mL
							Perfluorotridecanoic Acid (PFTriA)	0.05 ng/mL
							Perfluoroundecanoic acid (PFUnA)	0.05 ng/mL
.LCMPFC_ALL_SU_00075	12/05/18	06/05/18	Methanol, Lot Baker 141039	200 mL	LCd3-NMeFOSAA_00008	200 uL	d3-NMeFOSAA	0.05 ug/mL
					LCd5-NEtFOSAA_00008	200 uL	d5-NEtFOSAA	0.05 ug/mL
					LCM2-4:FTS_00003	200 uL	M2-4:2FTS	0.0467 ug/mL
					LCM2-6:FTS_00008	200 uL	M2-6:2FTS	0.0475 ug/mL
					LCM2-8:2FTS_00010	200 uL	M2-8:2FTS	0.0479 ug/mL
					LCM2PFHxDA_00016	200 uL	13C2-PFHxDA	0.05 ug/mL
					LCM2PFOA_00008	200 uL	13C2-PFOA	0.05 ug/mL
					LCM2PFTeDA_00014	200 uL	13C2-PFTeDA	0.05 ug/mL
					LCM3HFPO-DA_00003	200 uL	13C3 HFPO-DA	0.05 ug/mL
					LCM4PFHPA_00014	200 uL	13C4-PFHpA	0.05 ug/mL
					LCM5PFPEA_00015	200 uL	13C5 PFPeA	0.05 ug/mL
					LCM8FOSA_00019	200 uL	13C8 FOSA	0.05 ug/mL
					LCMPFBA_00015	200 uL	13C4 PFBA	0.05 ug/mL
					LCMPFBS_00008	200 uL	13C3-PFBS	0.0465 ug/mL
					LCMPFDA_00020	200 uL	13C2 PFDA	0.05 ug/mL
					LCMPFDoA_00015	200 uL	13C2 PFDoA	0.05 ug/mL
					LCMPFHxA_00022	200 uL	13C2 PFHxA	0.05 ug/mL
					LCMPFHxS_00015	200 uL	18O2 PFHxS	0.0473 ug/mL
					LCMPFNA_00015	200 uL	13C5 PFNA	0.05 ug/mL
					LCMPFOA_00019	200 uL	13C4 PFOA	0.05 ug/mL
					LCMPFOS_00027	200 uL	13C4 PFOS	0.0478 ug/mL
					LCMPFUdA_00017	200 uL	13C2 PFUnA	0.05 ug/mL
..LCd3-NMeFOSAA_00008	11/08/22	WELLINGTON, Lot d3NMeFOSAA1117			(Purchased Reagent)		d3-NMeFOSAA	50 ug/mL

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Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCd5-NEtFOSAA_00008	11/08/22	WELLINGTON, Lot d5NEtFOSAA1117			(Purchased Reagent)		d5-NEtFOSAA	50 ug/mL
..LCM2-4:FTS_00003	09/01/22	Wellington, Lot M242FTS0817			(Purchased Reagent)		M2-4:2FTS	46.7 ug/mL
..LCM2-6:FTS_00008	02/16/23	WELLINGTON, Lot M262FTS0218			(Purchased Reagent)		M2-6:2FTS	47.5 ug/mL
..LCM2-8:2FTS_00010	01/24/23	WELLINGTON, Lot M282FTS0118			(Purchased Reagent)		M2-8:2FTS	47.9 ug/mL
..LCM2PFHxDA_00016	07/13/22	Wellington Laboratories, Lot M2PFHxDA0717			(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFOA_00008	02/12/21	Wellington Laboratories, Lot M2PFOA0216			(Purchased Reagent)		13C2-PFOA	50 ug/mL
..LCM2PFTeDA_00014	11/30/22	Wellington Laboratories, Lot M2PFTeDA1117			(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM3HFPO-DA_00003	05/18/21	WELLINGTON, Lot M3HFPODA0518			(Purchased Reagent)		13C3 HFPO-DA	50 ug/mL
..LCM4PFHPA_00014	05/03/22	Wellington Laboratories, Lot M4PFHpA0517			(Purchased Reagent)		13C4-PFHpA	50 ug/mL
..LCM5PFPEA_00015	07/20/22	Wellington Laboratories, Lot M5PFPeA0717			(Purchased Reagent)		13C5 PFPeA	50 ug/mL
..LCM8FOSA_00019	10/11/22	Wellington Laboratories, Lot M8FOSA1017I			(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA_00015	02/16/23	Wellington Laboratories, Lot MPFBA0218			(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFBS_00008	02/15/23	Wellington Laboratories, Lot M3PFBS0218			(Purchased Reagent)		13C3-PFBS	46.5 ug/mL
..LCMPFDA_00020	02/16/23	Wellington Laboratories, Lot MPFDA0218			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA_00015	02/16/23	Wellington Laboratories, Lot MPFDoA0218			(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA_00022	10/27/22	Wellington Laboratories, Lot MPFHxA1017			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS_00015	03/22/23	Wellington Laboratories, Lot MPFHxS0318			(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
..LCMPFNA_00015	12/14/22	Wellington Laboratories, Lot MPFNA1217			(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA_00019	05/04/23	Wellington Laboratories, Lot MPFOA0418			(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS_00027	02/15/23	Wellington Laboratories, Lot MPFOS0218			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUdA_00017	11/22/21	Wellington Laboratories, Lot MPFUdA1116			(Purchased Reagent)		13C2 PFUnA	50 ug/mL
.LCPFCSP_00151	11/18/18	05/17/18	Methanol, Lot 090285	10 mL	LCPFCSP_00148	200 uL	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonate	0.00942 ug/mL
							4:2 FTS	0.00934 ug/mL
							6:2 FTS	0.00948 ug/mL
							8:2 FTS	0.00958 ug/mL
							9-Chlorohexadecafluoro-3-oxanonane-1-sulfonate	0.00932 ug/mL
							N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	0.01 ug/mL
							N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	0.01 ug/mL
							ADONA	0.00942 ug/mL
							Perfluoro(2-propoxypropanoic) acid	0.01 ug/mL
							Perfluorobutanoic acid (PFBA)	0.01 ug/mL
							Perfluorobutanesulfonic acid (PFBS)	0.00884 ug/mL
							Perfluorodecanoic acid (PFDA)	0.01 ug/mL
							Perfluorododecanoic acid (PFDoA)	0.01 ug/mL
							Perfluorodecanesulfonic acid (PFDS)	0.00964 ug/mL
							Perfluoroheptanoic acid (PFHpA)	0.01 ug/mL
							Perfluoroheptanesulfonic Acid (PFHpS)	0.00952 ug/mL

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Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluorohexanoic acid (PFHxA)	0.01 ug/mL
							Perfluorohexadecanoic acid	0.01 ug/mL
							Perfluorohexanesulfonic acid (PFHxS)	0.0091 ug/mL
							Perfluorononanoic acid (PFNA)	0.01 ug/mL
							Perfluorooctanoic acid (PFOA)	0.01001 ug/mL
							Perfluorononanesulfonic acid (PFNS)	0.0096 ug/mL
							Perfluorooctadecanoic acid	0.01 ug/mL
							Perfluorooctanesulfonic acid (PFOS)	0.00928 ug/mL
							Perfluorooctane Sulfonamide (FOSA)	0.01 ug/mL
							Perfluoropentanoic acid (PFPeA)	0.01 ug/mL
							Perfluoropentanesulfonic acid (PFPeS)	0.00938 ug/mL
							Perfluorotetradecanoic acid (PFTeA)	0.01 ug/mL
							Perfluorotridecanoic Acid (PFTriA)	0.01 ug/mL
							Perfluoroundecanoic acid (PFUnA)	0.01 ug/mL
..LCPFCSP_00148	11/18/18	05/17/18	Methanol, Lot 090285	10 mL	LC11CIPF3OUdS_00002	100 uL	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonate	0.471 ug/mL
					LC4:2FTS_00005	100 uL	4:2 FTS	0.467 ug/mL
					LC6:2FTS_00007	100 uL	6:2 FTS	0.474 ug/mL
					LC8:2FTS_00007	100 uL	8:2 FTS	0.479 ug/mL
					LC9CI-PF3ONS_00002	100 uL	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonate	0.466 ug/mL
					LCbr-NEtFOSAA_00001	100 uL	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	0.5 ug/mL
					LCbr-NMeFOSAA_00001	100 uL	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	0.5 ug/mL
					LCDONA_00004	100 uL	ADONA	0.471 ug/mL
					LCHFPO-DA_00002	100 uL	Perfluoro(2-propoxypropanoic) acid	0.5 ug/mL
					LCPFBA_00008	100 uL	Perfluorobutanoic acid (PFBA)	0.5 ug/mL
					LCPFBS_00009	100 uL	Perfluorobutanesulfonic acid (PFBS)	0.442 ug/mL
					LCPFDA_00008	100 uL	Perfluorodecanoic acid (PFDA)	0.5 ug/mL
					LCPFDoA_00008	100 uL	Perfluorododecanoic acid (PFDoA)	0.5 ug/mL
					LCPFDS_00008	100 uL	Perfluorodecanesulfonic acid (PFDS)	0.482 ug/mL
					LCPFHpA_00011	100 uL	Perfluoroheptanoic acid (PFHpA)	0.5 ug/mL

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Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCPFHpSA_00003	100 uL	Perfluoroheptanesulfonic Acid (PFHpS)	0.476 ug/mL
					LCPFHxA_00010	100 uL	Perfluorohexanoic acid (PFHxA)	0.5 ug/mL
					LCPFHxDA_00010	100 uL	Perfluorohexadecanoic acid	0.5 ug/mL
					LCPFHxS-br_00006	100 uL	Perfluorohexanesulfonic acid (PFHxS)	0.455 ug/mL
					LCPFNA_00010	100 uL	Perfluorononanoic acid (PFNA)	0.5 ug/mL
							Perfluorooctanoic acid (PFOA)	0.5005 ug/mL
					LCPFNS_00003	100 uL	Perfluorononanesulfonic acid (PFNS)	0.48 ug/mL
					LCPFOA_00011	100 uL	Perfluorooctanoic acid (PFOA)	0.5005 ug/mL
					LCPFODA_00010	100 uL	Perfluorooctadecanoic acid	0.5 ug/mL
					LCPFOS-br_00007	100 uL	Perfluorooctanesulfonic acid (PFOS)	0.464 ug/mL
					LCPFOSA_00013	100 uL	Perfluorooctane Sulfonamide (FOSA)	0.5 ug/mL
					LCPFPeA_00008	100 uL	Perfluoropentanoic acid (PFPeA)	0.5 ug/mL
					LCPFPeS_00003	100 uL	Perfluoropentanesulfonic acid (PFPeS)	0.469 ug/mL
					LCPFTeDA_00008	100 uL	Perfluorotetradecanoic acid (PFTeA)	0.5 ug/mL
					LCPFTrDA_00008	100 uL	Perfluorotridecanoic Acid (PFTriA)	0.5 ug/mL
					LCPFUdA_00008	100 uL	Perfluoroundecanoic acid (PFUnA)	0.5 ug/mL
...LC11CIPF3OUdS_00002	09/30/21	Wellington Labs, Lot 11CIPF3OUdS0916			(Purchased Reagent)		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonate	47.1 ug/mL
...LC4:2FTS_00005	12/12/21	WELLINGTON, Lot 42FTS1216			(Purchased Reagent)		4:2 FTS	46.7 ug/mL
...LC6:2FTS_00007	04/20/22	WELLINGTON, Lot 62FTS0417			(Purchased Reagent)		6:2 FTS	47.4 ug/mL
...LC8:2FTS_00007	12/12/21	WELLINGTON, Lot 82FTS1216			(Purchased Reagent)		8:2 FTS	47.9 ug/mL
...LC9CI-PF3ONS_00002	09/30/21	Wellington Labs, Lot 9CIPF3ONS0916			(Purchased Reagent)		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonate	46.6 ug/mL
...LCbr-NEtFOSAA_00001	01/17/23	WELLINGTON, Lot brNEtFOSAA0118			(Purchased Reagent)		N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	50 ug/mL
...LCbr-NMeFOSAA_00001	01/17/23	WELLINGTON, Lot brNMeFOSAA0118			(Purchased Reagent)		N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	50 ug/mL
...LCDONA_00004	03/26/23	WELLINGTON, Lot NADONA0318			(Purchased Reagent)		ADONA	47.1 ug/mL
...LCHFPO-DA_00002	03/26/21	WELLINGTON, Lot HFPODA0318			(Purchased Reagent)		Perfluoro(2-propoxypropanoic) acid	50 ug/mL
...LCPFBA_00008	05/29/22	Wellington Laboratories, Lot PFBA0517			(Purchased Reagent)		Perfluorobutanoic acid (PFBA)	50 ug/mL
...LCPFBS_00009	09/21/22	Wellington Laboratories, Lot LPFBS0917			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
...LCPFDA_00008	05/29/22	Wellington Laboratories, Lot PFDA0517			(Purchased Reagent)		Perfluorodecanoic acid (PFDA)	50 ug/mL
...LCPFDoA_00008	05/29/22	Wellington Laboratories, Lot PFDoA0517			(Purchased Reagent)		Perfluorododecanoic acid (PFDoA)	50 ug/mL
...LCPFDS_00008	11/08/22	Wellington Laboratories, Lot LPFDS1117			(Purchased Reagent)		Perfluorodecanesulfonic acid (PFDS)	48.2 ug/mL

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Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
...LCPFHpA_00011	09/27/22	Wellington Laboratories, Lot PFHpA0917			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
...LCPFHpSA_00003	09/01/22	Wellington Laboratories, Lot LPFHpS0817			(Purchased Reagent)		Perfluoroheptanesulfonic Acid (PFHpS)	47.6 ug/mL
...LCPFHxA_00010	09/27/22	Wellington Laboratories, Lot PFHxA0917			(Purchased Reagent)		Perfluorohexanoic acid (PFHxA)	50 ug/mL
...LCPFHxDA_00010	07/13/22	Wellington Laboratories, Lot PFHxDA0717			(Purchased Reagent)		Perfluorohexadecanoic acid	50 ug/mL
...LCPFHxS-br_00006	01/04/22	Wellington Laboratories, Lot brPFHxSK0117			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	45.5 ug/mL
...LCPFNA_00010	07/20/22	Wellington Laboratories, Lot PFNA0717			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
							Perfluorooctanoic acid (PFOA)	0.05 ug/mL
...LCPFNS_00003	09/27/22	Wellington Laboratories, Lot LPFNS0917			(Purchased Reagent)		Perfluorononanesulfonic acid (PFNS)	48 ug/mL
...LCPFOA_00011	09/27/22	Wellington Laboratories, Lot PFOA0917			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
...LCPFODA_00010	07/13/22	Wellington Laboratories, Lot PFODA0717			(Purchased Reagent)		Perfluorooctadecanoic acid	50 ug/mL
...LCPFOS-br_00007	01/12/22	Wellington Laboratories, Lot brPFOSK0117			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	46.4 ug/mL
...LCPFOSA_00013	09/01/22	Wellington Laboratories, Lot FOSA0817I			(Purchased Reagent)		Perfluorooctane Sulfonamide (FOSA)	50 ug/mL
...LCPFPeA_00008	06/14/22	Wellington Laboratories, Lot PFPeA0617			(Purchased Reagent)		Perfluoropentanoic acid (PFPeA)	50 ug/mL
...LCPFPeS_00003	01/11/22	Wellington Laboratories, Lot LPFPeS0117			(Purchased Reagent)		Perfluoropentanesulfonic acid (PFPeS)	46.9 ug/mL
...LCPFTeDA_00008	09/30/21	Wellington Laboratories, Lot PFTeDA0916			(Purchased Reagent)		Perfluorotetradecanoic acid (PFTeA)	50 ug/mL
...LCPFTrDA_00008	05/02/22	Wellington Laboratories, Lot PFTrDA0517			(Purchased Reagent)		Perfluorotridecanoic Acid (PFTriA)	50 ug/mL
...LCPFUdA_00008	10/18/21	Wellington Laboratories, Lot PFUdA1016			(Purchased Reagent)		Perfluoroundecanoic acid (PFUnA)	50 ug/mL
LCPFC_LL3_00005	11/18/18	06/05/18	MeOH/H2O, Lot 090285	200 mL	LCMPFC_ALL_SU_00075	10 mL	d3-NMeFOSAA	2.5 ng/mL
							d5-NEtFOSAA	2.5 ng/mL
							M2-4:2FTS	2.335 ng/mL
							M2-6:2FTS	2.375 ng/mL
							M2-8:2FTS	2.395 ng/mL
							13C2-PFHxDA	2.5 ng/mL
							13C2-PFOA	2.5 ng/mL
							13C2-PFTeDA	2.5 ng/mL
							13C3 HFPO-DA	2.5 ng/mL
							13C4-PFHpA	2.5 ng/mL
							13C5 PFPeA	2.5 ng/mL
							13C8 FOSA	2.5 ng/mL
							13C4 PFBA	2.5 ng/mL
							13C3-PFBS	2.325 ng/mL
							13C2 PFDA	2.5 ng/mL
							13C2 PFDoA	2.5 ng/mL
							13C2 PFHxA	2.5 ng/mL
							18O2 PFHxS	2.365 ng/mL
							13C5 PFNA	2.5 ng/mL
							13C4 PFOA	2.5 ng/mL
							13C4 PFOS	2.39 ng/mL

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Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							13C2 PFUnA	2.5 ng/mL
					LCPFCSP_00148	100 uL	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonate	0.2355 ng/mL
							4:2 FTS	0.2335 ng/mL
							6:2 FTS	0.237 ng/mL
							8:2 FTS	0.2395 ng/mL
							9-Chlorohexadecafluoro-3-oxanonane-1-sulfonate	0.233 ng/mL
							N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	0.25 ng/mL
							N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	0.25 ng/mL
							ADONA	0.2355 ng/mL
							Perfluoro(2-propoxypropanoic) acid	0.25 ng/mL
							Perfluorobutanoic acid (PFBA)	0.25 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	0.221 ng/mL
							Perfluorodecanoic acid (PFDA)	0.25 ng/mL
							Perfluorododecanoic acid (PFDoA)	0.25 ng/mL
							Perfluorodecanesulfonic acid (PFDS)	0.241 ng/mL
							Perfluoroheptanoic acid (PFHpA)	0.25 ng/mL
							Perfluoroheptanesulfonic Acid (PFHpS)	0.238 ng/mL
							Perfluorohexanoic acid (PFHxA)	0.25 ng/mL
							Perfluorohexadecanoic acid	0.25 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	0.2275 ng/mL
							Perfluorononanoic acid (PFNA)	0.25 ng/mL
							Perfluorooctanoic acid (PFOA)	0.25025 ng/mL
							Perfluorononanesulfonic acid (PFNS)	0.24 ng/mL
							Perfluorooctadecanoic acid	0.25 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	0.232 ng/mL
							Perfluorooctane Sulfonamide (FOSA)	0.25 ng/mL
							Perfluoropentanoic acid (PFPeA)	0.25 ng/mL
							Perfluoropentanesulfonic acid (PFPeS)	0.2345 ng/mL
							Perfluorotetradecanoic acid (PFTeA)	0.25 ng/mL
							Perfluorotridecanoic Acid (PFTriA)	0.25 ng/mL

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Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluoroundecanoic acid (PFUnA)	0.25 ng/mL
.LCMPFC_ALL_SU_00075	12/05/18	06/05/18	Methanol, Lot Baker 141039	200 mL	LCd3-NMeFOSAA_00008	200 uL	d3-NMeFOSAA	0.05 ug/mL
					LCd5-NEtFOSAA_00008	200 uL	d5-NEtFOSAA	0.05 ug/mL
					LCM2-4:FTS_00003	200 uL	M2-4:2FTS	0.0467 ug/mL
					LCM2-6:FTS_00008	200 uL	M2-6:2FTS	0.0475 ug/mL
					LCM2-8:2FTS_00010	200 uL	M2-8:2FTS	0.0479 ug/mL
					LCM2PFHxDA_00016	200 uL	13C2-PFHxDA	0.05 ug/mL
					LCM2PFOA_00008	200 uL	13C2-PFOA	0.05 ug/mL
					LCM2PFTeDA_00014	200 uL	13C2-PFTeDA	0.05 ug/mL
					LCM3HFPO-DA_00003	200 uL	13C3 HFPO-DA	0.05 ug/mL
					LCM4PFHPA_00014	200 uL	13C4-PFHpA	0.05 ug/mL
					LCM5PFPEA_00015	200 uL	13C5 PFPeA	0.05 ug/mL
					LCM8FOSA_00019	200 uL	13C8 FOSA	0.05 ug/mL
					LCMPFBA_00015	200 uL	13C4 PFBA	0.05 ug/mL
					LCMPFBS_00008	200 uL	13C3-PFBS	0.0465 ug/mL
					LCMPFDA_00020	200 uL	13C2 PFDA	0.05 ug/mL
					LCMPFDoA_00015	200 uL	13C2 PFDoA	0.05 ug/mL
					LCMPFHxA_00022	200 uL	13C2 PFHxA	0.05 ug/mL
					LCMPFHxS_00015	200 uL	18O2 PFHxS	0.0473 ug/mL
					LCMPFNA_00015	200 uL	13C5 PFNA	0.05 ug/mL
					LCMPFOA_00019	200 uL	13C4 PFOA	0.05 ug/mL
					LCMPFOS_00027	200 uL	13C4 PFOS	0.0478 ug/mL
					LCMPFUdA_00017	200 uL	13C2 PFUnA	0.05 ug/mL
..LCd3-NMeFOSAA_00008	11/08/22	WELLINGTON, Lot d3NMeFOSAA1117			(Purchased Reagent)		d3-NMeFOSAA	50 ug/mL
..LCd5-NEtFOSAA_00008	11/08/22	WELLINGTON, Lot d5NEtFOSAA1117			(Purchased Reagent)		d5-NEtFOSAA	50 ug/mL
..LCM2-4:FTS_00003	09/01/22	Wellington, Lot M242FTS0817			(Purchased Reagent)		M2-4:2FTS	46.7 ug/mL
..LCM2-6:FTS_00008	02/16/23	WELLINGTON, Lot M262FTS0218			(Purchased Reagent)		M2-6:2FTS	47.5 ug/mL
..LCM2-8:2FTS_00010	01/24/23	WELLINGTON, Lot M282FTS0118			(Purchased Reagent)		M2-8:2FTS	47.9 ug/mL
..LCM2PFHxDA_00016	07/13/22	Wellington Laboratories, Lot M2PFHxDA0717			(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFOA_00008	02/12/21	Wellington Laboratories, Lot M2PFOA0216			(Purchased Reagent)		13C2-PFOA	50 ug/mL
..LCM2PFTeDA_00014	11/30/22	Wellington Laboratories, Lot M2PFTeDA1117			(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM3HFPO-DA_00003	05/18/21	WELLINGTON, Lot M3HFPODA0518			(Purchased Reagent)		13C3 HFPO-DA	50 ug/mL
..LCM4PFHPA_00014	05/03/22	Wellington Laboratories, Lot M4PFHpA0517			(Purchased Reagent)		13C4-PFHpA	50 ug/mL
..LCM5PFPEA_00015	07/20/22	Wellington Laboratories, Lot M5PFPeA0717			(Purchased Reagent)		13C5 PFPeA	50 ug/mL
..LCM8FOSA_00019	10/11/22	Wellington Laboratories, Lot M8FOSA1017I			(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA_00015	02/16/23	Wellington Laboratories, Lot MPFBA0218			(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFBS_00008	02/15/23	Wellington Laboratories, Lot M3PFBS0218			(Purchased Reagent)		13C3-PFBS	46.5 ug/mL
..LCMPFDA_00020	02/16/23	Wellington Laboratories, Lot MPFDA0218			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA_00015	02/16/23	Wellington Laboratories, Lot MPFDoA0218			(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA_00022	10/27/22	Wellington Laboratories, Lot MPFHxA1017			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS_00015	03/22/23	Wellington Laboratories, Lot MPFHxS0318			(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
..LCMPFNA_00015	12/14/22	Wellington Laboratories, Lot MPFNA1217			(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA_00019	05/04/23	Wellington Laboratories, Lot MPFOA0418			(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS_00027	02/15/23	Wellington Laboratories, Lot MPFOS0218			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUdA_00017	11/22/21	Wellington Laboratories, Lot MPFUdA1116			(Purchased Reagent)		13C2 PFUnA	50 ug/mL

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Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
.LCPFCSP_00148	11/18/18	05/17/18	Methanol, Lot 090285	10 mL	LC11CIPF3OUdS_00002	100 uL	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonate	0.471 ug/mL
					LC4:2FTS_00005	100 uL	4:2 FTS	0.467 ug/mL
					LC6:2FTS_00007	100 uL	6:2 FTS	0.474 ug/mL
					LC8:2FTS_00007	100 uL	8:2 FTS	0.479 ug/mL
					LC9CI-PF3ONS_00002	100 uL	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonate	0.466 ug/mL
					LCbr-NEtFOSAA_00001	100 uL	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	0.5 ug/mL
					LCbr-NMeFOSAA_00001	100 uL	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	0.5 ug/mL
					LCDONA_00004	100 uL	ADONA	0.471 ug/mL
					LCHFPO-DA_00002	100 uL	Perfluoro(2-propoxypropanoic) acid	0.5 ug/mL
					LCPFBA_00008	100 uL	Perfluorobutanoic acid (PFBA)	0.5 ug/mL
					LCPFBS_00009	100 uL	Perfluorobutanesulfonic acid (PFBS)	0.442 ug/mL
					LCPFDA_00008	100 uL	Perfluorodecanoic acid (PFDA)	0.5 ug/mL
					LCPFDoA_00008	100 uL	Perfluorododecanoic acid (PFDoA)	0.5 ug/mL
					LCPFDS_00008	100 uL	Perfluorodecanesulfonic acid (PFDS)	0.482 ug/mL
					LCPFHpA_00011	100 uL	Perfluoroheptanoic acid (PFHpA)	0.5 ug/mL
					LCPFHpSA_00003	100 uL	Perfluoroheptanesulfonic Acid (PFHpS)	0.476 ug/mL
					LCPFHxA_00010	100 uL	Perfluorohexanoic acid (PFHxA)	0.5 ug/mL
					LCPFHxDA_00010	100 uL	Perfluorohexadecanoic acid	0.5 ug/mL
					LCPFHxS-br_00006	100 uL	Perfluorohexanesulfonic acid (PFHxS)	0.455 ug/mL
					LCPFNA_00010	100 uL	Perfluorononanoic acid (PFNA)	0.5 ug/mL
							Perfluorooctanoic acid (PFOA)	0.5005 ug/mL
					LCPFNS_00003	100 uL	Perfluorononanesulfonic acid (PFNS)	0.48 ug/mL
					LCPFOA_00011	100 uL	Perfluorooctanoic acid (PFOA)	0.5005 ug/mL
					LCPFODA_00010	100 uL	Perfluorooctadecanoic acid	0.5 ug/mL
					LCPFOS-br_00007	100 uL	Perfluorooctanesulfonic acid (PFOS)	0.464 ug/mL
					LCPFOSA_00013	100 uL	Perfluorooctane Sulfonamide (FOSA)	0.5 ug/mL
					LCPFPeA_00008	100 uL	Perfluoropentanoic acid (PFPeA)	0.5 ug/mL
					LCPFPeS_00003	100 uL	Perfluoropentanesulfonic acid (PFPeS)	0.469 ug/mL
					LCPFTeDA_00008	100 uL	Perfluorotetradecanoic acid (PFTeA)	0.5 ug/mL
					LCPFTrDA_00008	100 uL	Perfluorotridecanoic Acid (PFTriA)	0.5 ug/mL

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Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCPFUdA_00008	100 uL	Perfluoroundecanoic acid (PFUnA)	0.5 ug/mL
..LC11CIPF3OUdS_00002	09/30/21	Wellington Labs, Lot 11CIPF3OUdS0916			(Purchased Reagent)		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonate	47.1 ug/mL
..LC4:2FTS_00005	12/12/21	WELLINGTON, Lot 42FTS1216			(Purchased Reagent)		4:2 FTS	46.7 ug/mL
..LC6:2FTS_00007	04/20/22	WELLINGTON, Lot 62FTS0417			(Purchased Reagent)		6:2 FTS	47.4 ug/mL
..LC8:2FTS_00007	12/12/21	WELLINGTON, Lot 82FTS1216			(Purchased Reagent)		8:2 FTS	47.9 ug/mL
..LC9CI-PF3ONS_00002	09/30/21	Wellington Labs, Lot 9CIPF3ONS0916			(Purchased Reagent)		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonate	46.6 ug/mL
..LCbr-NEtFOSAA_00001	01/17/23	WELLINGTON, Lot brNEtFOSAA0118			(Purchased Reagent)		N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	50 ug/mL
..LCbr-NMeFOSAA_00001	01/17/23	WELLINGTON, Lot brNMeFOSAA0118			(Purchased Reagent)		N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	50 ug/mL
..LCDONA_00004	03/26/23	WELLINGTON, Lot NADONA0318			(Purchased Reagent)		ADONA	47.1 ug/mL
..LCHFPO-DA_00002	03/26/21	WELLINGTON, Lot HFPODA0318			(Purchased Reagent)		Perfluoro(2-propoxypropanoic) acid	50 ug/mL
..LCPFBA_00008	05/29/22	Wellington Laboratories, Lot PFBA0517			(Purchased Reagent)		Perfluorobutanoic acid (PFBA)	50 ug/mL
..LCPFBS_00009	09/21/22	Wellington Laboratories, Lot LPFBS0917			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
..LCPFDA_00008	05/29/22	Wellington Laboratories, Lot PFDA0517			(Purchased Reagent)		Perfluorodecanoic acid (PFDA)	50 ug/mL
..LCPFDoA_00008	05/29/22	Wellington Laboratories, Lot PFDoA0517			(Purchased Reagent)		Perfluorododecanoic acid (PFDoA)	50 ug/mL
..LCPFDS_00008	11/08/22	Wellington Laboratories, Lot LPFDS1117			(Purchased Reagent)		Perfluorodecanesulfonic acid (PFDS)	48.2 ug/mL
..LCPFHpA_00011	09/27/22	Wellington Laboratories, Lot PFHpA0917			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
..LCPFHpSA_00003	09/01/22	Wellington Laboratories, Lot LPFHpS0817			(Purchased Reagent)		Perfluoroheptanesulfonic Acid (PFHpS)	47.6 ug/mL
..LCPFHxA_00010	09/27/22	Wellington Laboratories, Lot PFHxA0917			(Purchased Reagent)		Perfluorohexanoic acid (PFHxA)	50 ug/mL
..LCPFHxDA_00010	07/13/22	Wellington Laboratories, Lot PFHxDA0717			(Purchased Reagent)		Perfluorohexadecanoic acid	50 ug/mL
..LCPFHxS-br_00006	01/04/22	Wellington Laboratories, Lot brPFHxSK0117			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	45.5 ug/mL
..LCPFNA_00010	07/20/22	Wellington Laboratories, Lot PFNA0717			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
							Perfluorooctanoic acid (PFOA)	0.05 ug/mL
..LCPFNS_00003	09/27/22	Wellington Laboratories, Lot LPFNS0917			(Purchased Reagent)		Perfluorononanesulfonic acid (PFNS)	48 ug/mL
..LCPFOA_00011	09/27/22	Wellington Laboratories, Lot PFOA0917			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
..LCPFODA_00010	07/13/22	Wellington Laboratories, Lot PFODA0717			(Purchased Reagent)		Perfluorooctadecanoic acid	50 ug/mL
..LCPFOS-br_00007	01/12/22	Wellington Laboratories, Lot brPFOSK0117			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	46.4 ug/mL
..LCPFOSA_00013	09/01/22	Wellington Laboratories, Lot FOSA0817I			(Purchased Reagent)		Perfluorooctane Sulfonamide (FOSA)	50 ug/mL
..LCPFPeA_00008	06/14/22	Wellington Laboratories, Lot PFPeA0617			(Purchased Reagent)		Perfluoropentanoic acid (PFPeA)	50 ug/mL
..LCPFPeS_00003	01/11/22	Wellington Laboratories, Lot LPFPeS0117			(Purchased Reagent)		Perfluoropentanesulfonic acid (PFPeS)	46.9 ug/mL
..LCPFTeDA_00008	09/30/21	Wellington Laboratories, Lot PFTeDA0916			(Purchased Reagent)		Perfluorotetradecanoic acid (PFTeA)	50 ug/mL

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Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCPFTrDA_00008	05/02/22	Wellington Laboratories, Lot PFTrDA0517			(Purchased Reagent)		Perfluorotridecanoic Acid (PFTriA)	50 ug/mL
..LCPFUdA_00008	10/18/21	Wellington Laboratories, Lot PFUdA1016			(Purchased Reagent)		Perfluoroundecanoic acid (PFUnA)	50 ug/mL
LCPFC_LL4_00005	11/18/18	06/05/18	MeOH/H2O, Lot 090285	200 mL	LCMPFC_ALL_SU_00075	10 mL	d3-NMeFOSAA	2.5 ng/mL
							d5-NEtFOSAA	2.5 ng/mL
							M2-4:2FTS	2.335 ng/mL
							M2-6:2FTS	2.375 ng/mL
							M2-8:2FTS	2.395 ng/mL
							13C2-PFHxDA	2.5 ng/mL
							13C2-PFOA	2.5 ng/mL
							13C2-PFTeDA	2.5 ng/mL
							13C3 HFPO-DA	2.5 ng/mL
							13C4-PFHpA	2.5 ng/mL
							13C5 PFPeA	2.5 ng/mL
							13C8 FOSA	2.5 ng/mL
							13C4 PFBA	2.5 ng/mL
							13C3-PFBS	2.325 ng/mL
							13C2 PFDA	2.5 ng/mL
							13C2 PFDoA	2.5 ng/mL
							13C2 PFHxA	2.5 ng/mL
							18O2 PFHxS	2.365 ng/mL
							13C5 PFNA	2.5 ng/mL
							13C4 PFOA	2.5 ng/mL
							13C4 PFOS	2.39 ng/mL
							13C2 PFUnA	2.5 ng/mL
					LCPFCSP_00148	400 uL	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonate	0.942 ng/mL
							4:2 FTS	0.934 ng/mL
							6:2 FTS	0.948 ng/mL
							8:2 FTS	0.958 ng/mL
							9-Chlorohexadecafluoro-3-oxanonane-1-sulfonate	0.932 ng/mL
							N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	1 ng/mL
							N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	1 ng/mL
							ADONA	0.942 ng/mL
							Perfluoro(2-propoxypropanoic) acid	1 ng/mL
							Perfluorobutanoic acid (PFBA)	1 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	0.884 ng/mL
							Perfluorodecanoic acid (PFDA)	1 ng/mL
							Perfluorododecanoic acid (PFDoA)	1 ng/mL

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SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluorodecanesulfonic acid (PFDS)	0.964 ng/mL
							Perfluoroheptanoic acid (PFHpA)	1 ng/mL
							Perfluoroheptanesulfonic Acid (PFHpS)	0.952 ng/mL
							Perfluorohexanoic acid (PFHxA)	1 ng/mL
							Perfluorohexadecanoic acid	1 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	0.91 ng/mL
							Perfluorononanoic acid (PFNA)	1 ng/mL
							Perfluorooctanoic acid (PFOA)	1.001 ng/mL
							Perfluorononanesulfonic acid (PFNS)	0.96 ng/mL
							Perfluorooctadecanoic acid	1 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	0.928 ng/mL
							Perfluorooctane Sulfonamide (FOSA)	1 ng/mL
							Perfluoropentanoic acid (PFPeA)	1 ng/mL
							Perfluoropentanesulfonic acid (PFPeS)	0.938 ng/mL
							Perfluorotetradecanoic acid (PFTeA)	1 ng/mL
							Perfluorotridecanoic Acid (PFTriA)	1 ng/mL
							Perfluoroundecanoic acid (PFUnA)	1 ng/mL
.LCMPFC_ALL_SU_00075	12/05/18	06/05/18	Methanol, Lot Baker 141039	200 mL	LCd3-NMeFOSAA_00008	200 uL	d3-NMeFOSAA	0.05 ug/mL
					LCd5-NEtFOSAA_00008	200 uL	d5-NEtFOSAA	0.05 ug/mL
					LCM2-4:FTS_00003	200 uL	M2-4:2FTS	0.0467 ug/mL
					LCM2-6:FTS_00008	200 uL	M2-6:2FTS	0.0475 ug/mL
					LCM2-8:2FTS_00010	200 uL	M2-8:2FTS	0.0479 ug/mL
					LCM2PFHxDA_00016	200 uL	13C2-PFHxDA	0.05 ug/mL
					LCM2PFOA_00008	200 uL	13C2-PFOA	0.05 ug/mL
					LCM2PFTeDA_00014	200 uL	13C2-PFTeDA	0.05 ug/mL
					LCM3HFPO-DA_00003	200 uL	13C3 HFPO-DA	0.05 ug/mL
					LCM4PFHPA_00014	200 uL	13C4-PFHpA	0.05 ug/mL
					LCM5PFPEA_00015	200 uL	13C5 PFPeA	0.05 ug/mL
					LCM8FOSA_00019	200 uL	13C8 FOSA	0.05 ug/mL
					LCMPFBA_00015	200 uL	13C4 PFBA	0.05 ug/mL
					LCMPFBS_00008	200 uL	13C3-PFBS	0.0465 ug/mL
					LCMPFDA_00020	200 uL	13C2 PFDA	0.05 ug/mL
					LCMPFDoA_00015	200 uL	13C2 PFDoA	0.05 ug/mL
					LCMPFHxA_00022	200 uL	13C2 PFHxA	0.05 ug/mL
					LCMPFHxS_00015	200 uL	18O2 PFHxS	0.0473 ug/mL
					LCMPFNA_00015	200 uL	13C5 PFNA	0.05 ug/mL

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Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCMPFOA_00019	200 uL	13C4 PFOA	0.05 ug/mL
					LCMPFOS_00027	200 uL	13C4 PFOS	0.0478 ug/mL
					LCMPFUdA_00017	200 uL	13C2 PFUnA	0.05 ug/mL
..LCd3-NMeFOSAA_00008	11/08/22	WELLINGTON, Lot d3NMeFOSAA1117			(Purchased Reagent)		d3-NMeFOSAA	50 ug/mL
..LCd5-NEtFOSAA_00008	11/08/22	WELLINGTON, Lot d5NEtFOSAA1117			(Purchased Reagent)		d5-NEtFOSAA	50 ug/mL
..LCM2-4:FTS_00003	09/01/22	Wellington, Lot M242FTS0817			(Purchased Reagent)		M2-4:2FTS	46.7 ug/mL
..LCM2-6:FTS_00008	02/16/23	WELLINGTON, Lot M262FTS0218			(Purchased Reagent)		M2-6:2FTS	47.5 ug/mL
..LCM2-8:2FTS_00010	01/24/23	WELLINGTON, Lot M282FTS0118			(Purchased Reagent)		M2-8:2FTS	47.9 ug/mL
..LCM2PFHxDA_00016	07/13/22	Wellington Laboratories, Lot M2PFHxDA0717			(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFOA_00008	02/12/21	Wellington Laboratories, Lot M2PFOA0216			(Purchased Reagent)		13C2-PFOA	50 ug/mL
..LCM2PFTeDA_00014	11/30/22	Wellington Laboratories, Lot M2PFTeDA1117			(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM3HFPO-DA_00003	05/18/21	WELLINGTON, Lot M3HFPODA0518			(Purchased Reagent)		13C3 HFPO-DA	50 ug/mL
..LCM4PFHPA_00014	05/03/22	Wellington Laboratories, Lot M4PFHpA0517			(Purchased Reagent)		13C4-PFHpA	50 ug/mL
..LCM5PFPEA_00015	07/20/22	Wellington Laboratories, Lot M5PFPeA0717			(Purchased Reagent)		13C5 PFPeA	50 ug/mL
..LCM8FOSA_00019	10/11/22	Wellington Laboratories, Lot M8FOSA1017I			(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA_00015	02/16/23	Wellington Laboratories, Lot MPFBA0218			(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFBS_00008	02/15/23	Wellington Laboratories, Lot M3PFBS0218			(Purchased Reagent)		13C3-PFBS	46.5 ug/mL
..LCMPFDA_00020	02/16/23	Wellington Laboratories, Lot MPFDA0218			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA_00015	02/16/23	Wellington Laboratories, Lot MPFDoA0218			(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA_00022	10/27/22	Wellington Laboratories, Lot MPFHxA1017			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS_00015	03/22/23	Wellington Laboratories, Lot MPFHxS0318			(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
..LCMPFNA_00015	12/14/22	Wellington Laboratories, Lot MPFNA1217			(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA_00019	05/04/23	Wellington Laboratories, Lot MPFOA0418			(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS_00027	02/15/23	Wellington Laboratories, Lot MPFOS0218			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUdA_00017	11/22/21	Wellington Laboratories, Lot MPFUdA1116			(Purchased Reagent)		13C2 PFUnA	50 ug/mL
.LCPFCSP_00148	11/18/18	05/17/18	Methanol, Lot 090285	10 mL	LC11CIPF3OUdS_00002	100 uL	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonate	0.471 ug/mL
					LC4:2FTS_00005	100 uL	4:2 FTS	0.467 ug/mL
					LC6:2FTS_00007	100 uL	6:2 FTS	0.474 ug/mL
					LC8:2FTS_00007	100 uL	8:2 FTS	0.479 ug/mL
					LC9CI-PF3ONS_00002	100 uL	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonate	0.466 ug/mL
					LCbr-NEtFOSAA_00001	100 uL	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	0.5 ug/mL
					LCbr-NMeFOSAA_00001	100 uL	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	0.5 ug/mL
					LCDONA_00004	100 uL	ADONA	0.471 ug/mL
					LCHFPO-DA_00002	100 uL	Perfluoro(2-propoxypropanoic) acid	0.5 ug/mL
					LCPFBA_00008	100 uL	Perfluorobutanoic acid (PFBA)	0.5 ug/mL
					LCPFBS_00009	100 uL	Perfluorobutanesulfonic acid (PFBS)	0.442 ug/mL
					LCPFDA_00008	100 uL	Perfluorodecanoic acid (PFDA)	0.5 ug/mL
					LCPFDoA_00008	100 uL	Perfluorododecanoic acid (PFDoA)	0.5 ug/mL
					LCPFDS_00008	100 uL	Perfluorodecanesulfonic acid (PFDS)	0.482 ug/mL

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCPFHpA_00011	100 uL	Perfluoroheptanoic acid (PFHpA)	0.5 ug/mL
					LCPFHpSA_00003	100 uL	Perfluoroheptanesulfonic Acid (PFHpS)	0.476 ug/mL
					LCPFHxA_00010	100 uL	Perfluorohexanoic acid (PFHxA)	0.5 ug/mL
					LCPFHxDA_00010	100 uL	Perfluorohexadecanoic acid	0.5 ug/mL
					LCPFHxS-br_00006	100 uL	Perfluorohexanesulfonic acid (PFHxS)	0.455 ug/mL
					LCPFNA_00010	100 uL	Perfluorononanoic acid (PFNA)	0.5 ug/mL
							Perfluorooctanoic acid (PFOA)	0.5005 ug/mL
					LCPFNS_00003	100 uL	Perfluorononanesulfonic acid (PFNS)	0.48 ug/mL
					LCPFOA_00011	100 uL	Perfluorooctanoic acid (PFOA)	0.5005 ug/mL
					LCPFODA_00010	100 uL	Perfluorooctadecanoic acid	0.5 ug/mL
					LCPFOS-br_00007	100 uL	Perfluorooctanesulfonic acid (PFOS)	0.464 ug/mL
					LCPFOSA_00013	100 uL	Perfluorooctane Sulfonamide (FOSA)	0.5 ug/mL
					LCPFPeA_00008	100 uL	Perfluoropentanoic acid (PFPeA)	0.5 ug/mL
					LCPFPeS_00003	100 uL	Perfluoropentanesulfonic acid (PFPeS)	0.469 ug/mL
					LCPFTeDA_00008	100 uL	Perfluorotetradecanoic acid (PFTeA)	0.5 ug/mL
					LCPFTrDA_00008	100 uL	Perfluorotridecanoic Acid (PFTriA)	0.5 ug/mL
					LCPFUdA_00008	100 uL	Perfluoroundecanoic acid (PFUnA)	0.5 ug/mL
..LC11CIPF3OUdS_00002	09/30/21	Wellington Labs, Lot 11CIPF3OUdS0916			(Purchased Reagent)		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonate	47.1 ug/mL
..LC4:2FTS_00005	12/12/21	WELLINGTON, Lot 42FTS1216			(Purchased Reagent)		4:2 FTS	46.7 ug/mL
..LC6:2FTS_00007	04/20/22	WELLINGTON, Lot 62FTS0417			(Purchased Reagent)		6:2 FTS	47.4 ug/mL
..LC8:2FTS_00007	12/12/21	WELLINGTON, Lot 82FTS1216			(Purchased Reagent)		8:2 FTS	47.9 ug/mL
..LC9CI-PF3ONS_00002	09/30/21	Wellington Labs, Lot 9CIPF3ONS0916			(Purchased Reagent)		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonate	46.6 ug/mL
..LCbr-NEtFOSAA_00001	01/17/23	WELLINGTON, Lot brNEtFOSAA0118			(Purchased Reagent)		N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	50 ug/mL
..LCbr-NMeFOSAA_00001	01/17/23	WELLINGTON, Lot brNMeFOSAA0118			(Purchased Reagent)		N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	50 ug/mL
..LCDONA_00004	03/26/23	WELLINGTON, Lot NADONA0318			(Purchased Reagent)		ADONA	47.1 ug/mL
..LCHFPO-DA_00002	03/26/21	WELLINGTON, Lot HFPODA0318			(Purchased Reagent)		Perfluoro(2-propoxypropanoic) acid	50 ug/mL
..LCPFBA_00008	05/29/22	Wellington Laboratories, Lot PFBA0517			(Purchased Reagent)		Perfluorobutanoic acid (PFBA)	50 ug/mL
..LCPFBS_00009	09/21/22	Wellington Laboratories, Lot LPFBS0917			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
..LCPFDA_00008	05/29/22	Wellington Laboratories, Lot PFDA0517			(Purchased Reagent)		Perfluorodecanoic acid (PFDA)	50 ug/mL
..LCPFDoA_00008	05/29/22	Wellington Laboratories, Lot PFDoA0517			(Purchased Reagent)		Perfluorododecanoic acid (PFDoA)	50 ug/mL

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCPFDS_00008	11/08/22	Wellington Laboratories, Lot LPFDS1117			(Purchased Reagent)		Perfluorodecanesulfonic acid (PFDS)	48.2 ug/mL
..LCPFHpA_00011	09/27/22	Wellington Laboratories, Lot PFHpA0917			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
..LCPFHpSA_00003	09/01/22	Wellington Laboratories, Lot LPFHpS0817			(Purchased Reagent)		Perfluoroheptanesulfonic Acid (PFHpS)	47.6 ug/mL
..LCPFHxA_00010	09/27/22	Wellington Laboratories, Lot PFHxA0917			(Purchased Reagent)		Perfluorohexanoic acid (PFHxA)	50 ug/mL
..LCPFHxDA_00010	07/13/22	Wellington Laboratories, Lot PFHxDA0717			(Purchased Reagent)		Perfluorohexadecanoic acid	50 ug/mL
..LCPFHxS-br_00006	01/04/22	Wellington Laboratories, Lot brPFHxSK0117			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	45.5 ug/mL
..LCPFNA_00010	07/20/22	Wellington Laboratories, Lot PFNA0717			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
							Perfluorooctanoic acid (PFOA)	0.05 ug/mL
..LCPFNS_00003	09/27/22	Wellington Laboratories, Lot LPFNS0917			(Purchased Reagent)		Perfluorononanesulfonic acid (PFNS)	48 ug/mL
..LCPFOA_00011	09/27/22	Wellington Laboratories, Lot PFOA0917			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
..LCPFODA_00010	07/13/22	Wellington Laboratories, Lot PFODA0717			(Purchased Reagent)		Perfluorooctadecanoic acid	50 ug/mL
..LCPFOS-br_00007	01/12/22	Wellington Laboratories, Lot brPFOSK0117			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	46.4 ug/mL
..LCPFOSA_00013	09/01/22	Wellington Laboratories, Lot FOSA0817I			(Purchased Reagent)		Perfluorooctane Sulfonamide (FOSA)	50 ug/mL
..LCPFPeA_00008	06/14/22	Wellington Laboratories, Lot PFPeA0617			(Purchased Reagent)		Perfluoropentanoic acid (PFPeA)	50 ug/mL
..LCPFPeS_00003	01/11/22	Wellington Laboratories, Lot LPFPeS0117			(Purchased Reagent)		Perfluoropentanesulfonic acid (PFPeS)	46.9 ug/mL
..LCPFTeDA_00008	09/30/21	Wellington Laboratories, Lot PFTeDA0916			(Purchased Reagent)		Perfluorotetradecanoic acid (PFTeA)	50 ug/mL
..LCPFTrDA_00008	05/02/22	Wellington Laboratories, Lot PFTrDA0517			(Purchased Reagent)		Perfluorotridecanoic Acid (PFTriA)	50 ug/mL
..LCPFUdA_00008	10/18/21	Wellington Laboratories, Lot PFUdA1016			(Purchased Reagent)		Perfluoroundecanoic acid (PFUnA)	50 ug/mL
LCPFC_LL5_00005	11/18/18	06/05/18	MeOH/H2O, Lot 090285	200 mL	LCMPFC_ALL_SU_00075	10 mL	d3-NMeFOSAA	2.5 ng/mL
							d5-NEtFOSAA	2.5 ng/mL
							M2-4:2FTS	2.335 ng/mL
							M2-6:2FTS	2.375 ng/mL
							M2-8:2FTS	2.395 ng/mL
							13C2-PFHxDA	2.5 ng/mL
							13C2-PFOA	2.5 ng/mL
							13C2-PFTeDA	2.5 ng/mL
							13C3 HFPO-DA	2.5 ng/mL
							13C4-PFHpA	2.5 ng/mL
							13C5 PFPeA	2.5 ng/mL
							13C8 FOSA	2.5 ng/mL
							13C4 PFBA	2.5 ng/mL
							13C3-PFBS	2.325 ng/mL
							13C2 PFDA	2.5 ng/mL
							13C2 PFDoA	2.5 ng/mL
							13C2 PFHxA	2.5 ng/mL
							18O2 PFHxS	2.365 ng/mL
							13C5 PFNA	2.5 ng/mL

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SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							13C4 PFOA	2.5 ng/mL
							13C4 PFOS	2.39 ng/mL
							13C2 PFUnA	2.5 ng/mL
					LCPFCSP_00148	1000 uL	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonate	2.355 ng/mL
							4:2 FTS	2.335 ng/mL
							6:2 FTS	2.37 ng/mL
							8:2 FTS	2.395 ng/mL
							9-Chlorohexadecafluoro-3-oxanonane-1-sulfonate	2.33 ng/mL
							N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	2.5 ng/mL
							N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	2.5 ng/mL
							ADONA	2.355 ng/mL
							Perfluoro(2-propoxypropanoic) acid	2.5 ng/mL
							Perfluorobutanoic acid (PFBA)	2.5 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	2.21 ng/mL
							Perfluorodecanoic acid (PFDA)	2.5 ng/mL
							Perfluorododecanoic acid (PFDoA)	2.5 ng/mL
							Perfluorodecanesulfonic acid (PFDS)	2.41 ng/mL
							Perfluoroheptanoic acid (PFHpA)	2.5 ng/mL
							Perfluoroheptanesulfonic Acid (PFHpS)	2.38 ng/mL
							Perfluorohexanoic acid (PFHxA)	2.5 ng/mL
							Perfluorohexadecanoic acid	2.5 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	2.275 ng/mL
							Perfluorononanoic acid (PFNA)	2.5 ng/mL
							Perfluorooctanoic acid (PFOA)	2.5025 ng/mL
							Perfluorononanesulfonic acid (PFNS)	2.4 ng/mL
							Perfluorooctadecanoic acid	2.5 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	2.32 ng/mL
							Perfluorooctane Sulfonamide (FOSA)	2.5 ng/mL
							Perfluoropentanoic acid (PFPeA)	2.5 ng/mL
							Perfluoropentanesulfonic acid (PFPeS)	2.345 ng/mL
							Perfluorotetradecanoic acid (PFTeA)	2.5 ng/mL

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluorotridecanoic Acid (PFTriA)	2.5 ng/mL
							Perfluoroundecanoic acid (PFUnA)	2.5 ng/mL
.LCMPFC_ALL_SU_00075	12/05/18	06/05/18	Methanol, Lot Baker 141039	200 mL	LCd3-NMeFOSAA_00008	200 uL	d3-NMeFOSAA	0.05 ug/mL
					LCd5-NEtFOSAA_00008	200 uL	d5-NEtFOSAA	0.05 ug/mL
					LCM2-4:FTS_00003	200 uL	M2-4:2FTS	0.0467 ug/mL
					LCM2-6:FTS_00008	200 uL	M2-6:2FTS	0.0475 ug/mL
					LCM2-8:2FTS_00010	200 uL	M2-8:2FTS	0.0479 ug/mL
					LCM2PFHxDA_00016	200 uL	13C2-PFHxDA	0.05 ug/mL
					LCM2PFOA_00008	200 uL	13C2-PFOA	0.05 ug/mL
					LCM2PFTeDA_00014	200 uL	13C2-PFTeDA	0.05 ug/mL
					LCM3HFPO-DA_00003	200 uL	13C3 HFPO-DA	0.05 ug/mL
					LCM4PFHPA_00014	200 uL	13C4-PFHpA	0.05 ug/mL
					LCM5PFPEA_00015	200 uL	13C5 PFPeA	0.05 ug/mL
					LCM8FOSA_00019	200 uL	13C8 FOSA	0.05 ug/mL
					LCMPFBA_00015	200 uL	13C4 PFBA	0.05 ug/mL
					LCMPFBS_00008	200 uL	13C3-PFBS	0.0465 ug/mL
					LCMPFDA_00020	200 uL	13C2 PFDA	0.05 ug/mL
					LCMPFDoA_00015	200 uL	13C2 PFDoA	0.05 ug/mL
					LCMPFHxA_00022	200 uL	13C2 PFHxA	0.05 ug/mL
					LCMPFHxS_00015	200 uL	18O2 PFHxS	0.0473 ug/mL
					LCMPFNA_00015	200 uL	13C5 PFNA	0.05 ug/mL
					LCMPFOA_00019	200 uL	13C4 PFOA	0.05 ug/mL
					LCMPFOS_00027	200 uL	13C4 PFOS	0.0478 ug/mL
					LCMPFUdA_00017	200 uL	13C2 PFUnA	0.05 ug/mL
..LCd3-NMeFOSAA_00008	11/08/22	WELLINGTON, Lot d3NMeFOSAA1117			(Purchased Reagent)		d3-NMeFOSAA	50 ug/mL
..LCd5-NEtFOSAA_00008	11/08/22	WELLINGTON, Lot d5NEtFOSAA1117			(Purchased Reagent)		d5-NEtFOSAA	50 ug/mL
..LCM2-4:FTS_00003	09/01/22	Wellington, Lot M242FTS0817			(Purchased Reagent)		M2-4:2FTS	46.7 ug/mL
..LCM2-6:FTS_00008	02/16/23	WELLINGTON, Lot M262FTS0218			(Purchased Reagent)		M2-6:2FTS	47.5 ug/mL
..LCM2-8:2FTS_00010	01/24/23	WELLINGTON, Lot M282FTS0118			(Purchased Reagent)		M2-8:2FTS	47.9 ug/mL
..LCM2PFHxDA_00016	07/13/22	Wellington Laboratories, Lot M2PFHxDA0717			(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFOA_00008	02/12/21	Wellington Laboratories, Lot M2PFOA0216			(Purchased Reagent)		13C2-PFOA	50 ug/mL
..LCM2PFTeDA_00014	11/30/22	Wellington Laboratories, Lot M2PFTeDA1117			(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM3HFPO-DA_00003	05/18/21	WELLINGTON, Lot M3HFPODA0518			(Purchased Reagent)		13C3 HFPO-DA	50 ug/mL
..LCM4PFHPA_00014	05/03/22	Wellington Laboratories, Lot M4PFHpA0517			(Purchased Reagent)		13C4-PFHpA	50 ug/mL
..LCM5PFPEA_00015	07/20/22	Wellington Laboratories, Lot M5PFPeA0717			(Purchased Reagent)		13C5 PFPeA	50 ug/mL
..LCM8FOSA_00019	10/11/22	Wellington Laboratories, Lot M8FOSA1017I			(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA_00015	02/16/23	Wellington Laboratories, Lot MPFBA0218			(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFBS_00008	02/15/23	Wellington Laboratories, Lot M3PFBS0218			(Purchased Reagent)		13C3-PFBS	46.5 ug/mL
..LCMPFDA_00020	02/16/23	Wellington Laboratories, Lot MPFDA0218			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA_00015	02/16/23	Wellington Laboratories, Lot MPFDoA0218			(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA_00022	10/27/22	Wellington Laboratories, Lot MPFHxA1017			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS_00015	03/22/23	Wellington Laboratories, Lot MPFHxS0318			(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
..LCMPFNA_00015	12/14/22	Wellington Laboratories, Lot MPFNA1217			(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA_00019	05/04/23	Wellington Laboratories, Lot MPFOA0418			(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS_00027	02/15/23	Wellington Laboratories, Lot MPFOS0218			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCMPFUdA_00017	11/22/21	Wellington Laboratories, Lot MPFUdA1116			(Purchased Reagent)		13C2 PFUnA	50 ug/mL
.LCPFCSP_00148	11/18/18	05/17/18	Methanol, Lot 090285	10 mL	LC11CIPF3OUdS_00002	100 uL	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonate	0.471 ug/mL
					LC4:2FTS_00005	100 uL	4:2 FTS	0.467 ug/mL
					LC6:2FTS_00007	100 uL	6:2 FTS	0.474 ug/mL
					LC8:2FTS_00007	100 uL	8:2 FTS	0.479 ug/mL
					LC9CI-PF3ONS_00002	100 uL	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonate	0.466 ug/mL
					LCbr-NEtFOSAA_00001	100 uL	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	0.5 ug/mL
					LCbr-NMeFOSAA_00001	100 uL	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	0.5 ug/mL
					LCDONA_00004	100 uL	ADONA	0.471 ug/mL
					LCHFPO-DA_00002	100 uL	Perfluoro(2-propoxypropanoic) acid	0.5 ug/mL
					LCPFBA_00008	100 uL	Perfluorobutanoic acid (PFBA)	0.5 ug/mL
					LCPFBS_00009	100 uL	Perfluorobutanesulfonic acid (PFBS)	0.442 ug/mL
					LCPFDA_00008	100 uL	Perfluorodecanoic acid (PFDA)	0.5 ug/mL
					LCPFDoA_00008	100 uL	Perfluorododecanoic acid (PFDoA)	0.5 ug/mL
					LCPFDS_00008	100 uL	Perfluorodecanesulfonic acid (PFDS)	0.482 ug/mL
					LCPFHpA_00011	100 uL	Perfluoroheptanoic acid (PFHpA)	0.5 ug/mL
					LCPFHpSA_00003	100 uL	Perfluoroheptanesulfonic Acid (PFHpS)	0.476 ug/mL
					LCPFHxA_00010	100 uL	Perfluorohexanoic acid (PFHxA)	0.5 ug/mL
					LCPFHxDA_00010	100 uL	Perfluorohexadecanoic acid	0.5 ug/mL
					LCPFHxS-br_00006	100 uL	Perfluorohexanesulfonic acid (PFHxS)	0.455 ug/mL
					LCPFNA_00010	100 uL	Perfluorononanoic acid (PFNA)	0.5 ug/mL
							Perfluorooctanoic acid (PFOA)	0.5005 ug/mL
					LCPFNS_00003	100 uL	Perfluorononanesulfonic acid (PFNS)	0.48 ug/mL
					LCPFOA_00011	100 uL	Perfluorooctanoic acid (PFOA)	0.5005 ug/mL
					LCPFODA_00010	100 uL	Perfluorooctadecanoic acid	0.5 ug/mL
					LCPFOS-br_00007	100 uL	Perfluorooctanesulfonic acid (PFOS)	0.464 ug/mL
					LCPFOSA_00013	100 uL	Perfluorooctane Sulfonamide (FOSA)	0.5 ug/mL
					LCPFPeA_00008	100 uL	Perfluoropentanoic acid (PFPeA)	0.5 ug/mL
					LCPFPeS_00003	100 uL	Perfluoropentanesulfonic acid (PFPeS)	0.469 ug/mL
					LCPFTeDA_00008	100 uL	Perfluorotetradecanoic acid (PFTeA)	0.5 ug/mL

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCPFTrDA_00008	100 uL	Perfluorotridecanoic Acid (PFTriA)	0.5 ug/mL
					LCPFUdA_00008	100 uL	Perfluoroundecanoic acid (PFUnA)	0.5 ug/mL
..LC11CIPF3OUdS_00002	09/30/21	Wellington Labs, Lot 11CIPF3OUdS0916			(Purchased Reagent)		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonate	47.1 ug/mL
..LC4:2FTS_00005	12/12/21	WELLINGTON, Lot 42FTS1216			(Purchased Reagent)		4:2 FTS	46.7 ug/mL
..LC6:2FTS_00007	04/20/22	WELLINGTON, Lot 62FTS0417			(Purchased Reagent)		6:2 FTS	47.4 ug/mL
..LC8:2FTS_00007	12/12/21	WELLINGTON, Lot 82FTS1216			(Purchased Reagent)		8:2 FTS	47.9 ug/mL
..LC9CI-PF3ONS_00002	09/30/21	Wellington Labs, Lot 9CIPF3ONS0916			(Purchased Reagent)		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonate	46.6 ug/mL
..LCbr-NEtFOSAA_00001	01/17/23	WELLINGTON, Lot brNEtFOSAA0118			(Purchased Reagent)		N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	50 ug/mL
..LCbr-NMeFOSAA_00001	01/17/23	WELLINGTON, Lot brNMeFOSAA0118			(Purchased Reagent)		N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	50 ug/mL
..LCDONA_00004	03/26/23	WELLINGTON, Lot NADONA0318			(Purchased Reagent)		ADONA	47.1 ug/mL
..LCHFPO-DA_00002	03/26/21	WELLINGTON, Lot HFPODA0318			(Purchased Reagent)		Perfluoro(2-propoxypropanoic) acid	50 ug/mL
..LCPFBA_00008	05/29/22	Wellington Laboratories, Lot PFBA0517			(Purchased Reagent)		Perfluorobutanoic acid (PFBA)	50 ug/mL
..LCPFBS_00009	09/21/22	Wellington Laboratories, Lot LPFBS0917			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
..LCPFDA_00008	05/29/22	Wellington Laboratories, Lot PFDA0517			(Purchased Reagent)		Perfluorodecanoic acid (PFDA)	50 ug/mL
..LCPFDoA_00008	05/29/22	Wellington Laboratories, Lot PFDoA0517			(Purchased Reagent)		Perfluorododecanoic acid (PFDoA)	50 ug/mL
..LCPFDS_00008	11/08/22	Wellington Laboratories, Lot LPFDS1117			(Purchased Reagent)		Perfluorodecanesulfonic acid (PFDS)	48.2 ug/mL
..LCPFHpA_00011	09/27/22	Wellington Laboratories, Lot PFHpA0917			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
..LCPFHpSA_00003	09/01/22	Wellington Laboratories, Lot LPFHpS0817			(Purchased Reagent)		Perfluoroheptanesulfonic Acid (PFHpS)	47.6 ug/mL
..LCPFHxA_00010	09/27/22	Wellington Laboratories, Lot PFHxA0917			(Purchased Reagent)		Perfluorohexanoic acid (PFHxA)	50 ug/mL
..LCPFHxDA_00010	07/13/22	Wellington Laboratories, Lot PFHxDA0717			(Purchased Reagent)		Perfluorohexadecanoic acid	50 ug/mL
..LCPFHxS-br_00006	01/04/22	Wellington Laboratories, Lot brPFHxSK0117			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	45.5 ug/mL
..LCPFNA_00010	07/20/22	Wellington Laboratories, Lot PFNA0717			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
							Perfluorooctanoic acid (PFOA)	0.05 ug/mL
..LCPFNS_00003	09/27/22	Wellington Laboratories, Lot LPFNS0917			(Purchased Reagent)		Perfluorononanesulfonic acid (PFNS)	48 ug/mL
..LCPFOA_00011	09/27/22	Wellington Laboratories, Lot PFOA0917			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
..LCPFODA_00010	07/13/22	Wellington Laboratories, Lot PFODA0717			(Purchased Reagent)		Perfluorooctadecanoic acid	50 ug/mL
..LCPFOS-br_00007	01/12/22	Wellington Laboratories, Lot brPFOSK0117			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	46.4 ug/mL
..LCPFOSA_00013	09/01/22	Wellington Laboratories, Lot FOSA0817I			(Purchased Reagent)		Perfluorooctane Sulfonamide (FOSA)	50 ug/mL
..LCPFPeA_00008	06/14/22	Wellington Laboratories, Lot PFPeA0617			(Purchased Reagent)		Perfluoropentanoic acid (PFPeA)	50 ug/mL
..LCPFPeS_00003	01/11/22	Wellington Laboratories, Lot LPFPeS0117			(Purchased Reagent)		Perfluoropentanesulfonic acid (PFPeS)	46.9 ug/mL

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					Reagent ID	Volume Added		
..LCPFTeDA_00008	09/30/21	Wellington Laboratories, Lot PFTeDA0916			(Purchased Reagent)		Perfluorotetradecanoic acid (PFTeA)	50 ug/mL
..LCPFTrDA_00008	05/02/22	Wellington Laboratories, Lot PFTrDA0517			(Purchased Reagent)		Perfluorotridecanoic Acid (PFTriA)	50 ug/mL
..LCPFUdA_00008	10/18/21	Wellington Laboratories, Lot PFUdA1016			(Purchased Reagent)		Perfluoroundecanoic acid (PFUnA)	50 ug/mL
LCPFC_LL6_00006	11/18/18	06/05/18	MeOH/H2O, Lot 090285	200 mL	LCMPFC_ALL_SU_00075	10 mL	d3-NMeFOSAA	2.5 ng/mL
							d5-NEtFOSAA	2.5 ng/mL
							M2-4:2FTS	2.335 ng/mL
							M2-6:2FTS	2.375 ng/mL
							M2-8:2FTS	2.395 ng/mL
							13C2-PFHxDA	2.5 ng/mL
							13C2-PFOA	2.5 ng/mL
							13C2-PFTeDA	2.5 ng/mL
							13C3 HFPO-DA	2.5 ng/mL
							13C4-PFHpA	2.5 ng/mL
							13C5 PFPeA	2.5 ng/mL
							13C8 FOSA	2.5 ng/mL
							13C4 PFBA	2.5 ng/mL
							13C3-PFBS	2.325 ng/mL
							13C2 PFDA	2.5 ng/mL
							13C2 PFDoA	2.5 ng/mL
							13C2 PFHxA	2.5 ng/mL
							18O2 PFHxS	2.365 ng/mL
							13C5 PFNA	2.5 ng/mL
							13C4 PFOA	2.5 ng/mL
							13C4 PFOS	2.39 ng/mL
							13C2 PFUnA	2.5 ng/mL
					LCPFCSP_00148	2 mL	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonate	4.71 ng/mL
							4:2 FTS	4.67 ng/mL
							6:2 FTS	4.74 ng/mL
							8:2 FTS	4.79 ng/mL
							9-Chlorohexadecafluoro-3-oxanonane-1-sulfonate	4.66 ng/mL
							N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	5 ng/mL
							N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	5 ng/mL
							ADONA	4.71 ng/mL
							Perfluoro(2-propoxypropanoic) acid	5 ng/mL
							Perfluorobutanoic acid (PFBA)	5 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	4.42 ng/mL
							Perfluorodecanoic acid (PFDA)	5 ng/mL

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Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluorododecanoic acid (PFDoA)	5 ng/mL
							Perfluorodecanesulfonic acid (PFDS)	4.82 ng/mL
							Perfluoroheptanoic acid (PFHpA)	5 ng/mL
							Perfluoroheptanesulfonic Acid (PFHpS)	4.76 ng/mL
							Perfluorohexanoic acid (PFHxA)	5 ng/mL
							Perfluorohexadecanoic acid	5 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	4.55 ng/mL
							Perfluorononanoic acid (PFNA)	5 ng/mL
							Perfluorooctanoic acid (PFOA)	5.005 ng/mL
							Perfluorononanesulfonic acid (PFNS)	4.8 ng/mL
							Perfluorooctadecanoic acid	5 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	4.64 ng/mL
							Perfluorooctane Sulfonamide (FOSA)	5 ng/mL
							Perfluoropentanoic acid (PFPeA)	5 ng/mL
							Perfluoropentanesulfonic acid (PFPeS)	4.69 ng/mL
							Perfluorotetradecanoic acid (PFTeA)	5 ng/mL
							Perfluorotridecanoic Acid (PFTriA)	5 ng/mL
							Perfluoroundecanoic acid (PFUnA)	5 ng/mL
.LCMPFC_ALL_SU_00075	12/05/18	06/05/18	Methanol, Lot Baker 141039	200 mL	LCd3-NMeFOSAA_00008	200 uL	d3-NMeFOSAA	0.05 ug/mL
					LCd5-NEtFOSAA_00008	200 uL	d5-NEtFOSAA	0.05 ug/mL
					LCM2-4:FTS_00003	200 uL	M2-4:2FTS	0.0467 ug/mL
					LCM2-6:FTS_00008	200 uL	M2-6:2FTS	0.0475 ug/mL
					LCM2-8:2FTS_00010	200 uL	M2-8:2FTS	0.0479 ug/mL
					LCM2PFHxDA_00016	200 uL	13C2-PFHxDA	0.05 ug/mL
					LCM2PFOA_00008	200 uL	13C2-PFOA	0.05 ug/mL
					LCM2PFTeDA_00014	200 uL	13C2-PFTeDA	0.05 ug/mL
					LCM3HFPO-DA_00003	200 uL	13C3 HFPO-DA	0.05 ug/mL
					LCM4PFHPA_00014	200 uL	13C4-PFHpA	0.05 ug/mL
					LCM5PFPEA_00015	200 uL	13C5 PFPeA	0.05 ug/mL
					LCM8FOSA_00019	200 uL	13C8 FOSA	0.05 ug/mL
					LCMPFBA_00015	200 uL	13C4 PFBA	0.05 ug/mL
					LCMPFBS_00008	200 uL	13C3-PFBS	0.0465 ug/mL
					LCMPFDA_00020	200 uL	13C2 PFDA	0.05 ug/mL
					LCMPFDoA_00015	200 uL	13C2 PFDoA	0.05 ug/mL
					LCMPFHxA_00022	200 uL	13C2 PFHxA	0.05 ug/mL

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Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCMPFHxS_00015	200 uL	18O2 PFHxS	0.0473 ug/mL
					LCMPFNA_00015	200 uL	13C5 PFNA	0.05 ug/mL
					LCMPFOA_00019	200 uL	13C4 PFOA	0.05 ug/mL
					LCMPFOS_00027	200 uL	13C4 PFOS	0.0478 ug/mL
					LCMPFUdA_00017	200 uL	13C2 PFUnA	0.05 ug/mL
..LCd3-NMeFOSAA_00008	11/08/22	WELLINGTON, Lot d3NMeFOSAA1117			(Purchased Reagent)		d3-NMeFOSAA	50 ug/mL
..LCd5-NEtFOSAA_00008	11/08/22	WELLINGTON, Lot d5NEtFOSAA1117			(Purchased Reagent)		d5-NEtFOSAA	50 ug/mL
..LCM2-4:FTS_00003	09/01/22	Wellington, Lot M242FTS0817			(Purchased Reagent)		M2-4:2FTS	46.7 ug/mL
..LCM2-6:FTS_00008	02/16/23	WELLINGTON, Lot M262FTS0218			(Purchased Reagent)		M2-6:2FTS	47.5 ug/mL
..LCM2-8:2FTS_00010	01/24/23	WELLINGTON, Lot M282FTS0118			(Purchased Reagent)		M2-8:2FTS	47.9 ug/mL
..LCM2PFHxDA_00016	07/13/22	Wellington Laboratories, Lot M2PFHxDA0717			(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFOA_00008	02/12/21	Wellington Laboratories, Lot M2PFOA0216			(Purchased Reagent)		13C2-PFOA	50 ug/mL
..LCM2PFTeDA_00014	11/30/22	Wellington Laboratories, Lot M2PFTeDA1117			(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM3HFPO-DA_00003	05/18/21	WELLINGTON, Lot M3HFPODA0518			(Purchased Reagent)		13C3 HFPO-DA	50 ug/mL
..LCM4PFHPA_00014	05/03/22	Wellington Laboratories, Lot M4PFHpA0517			(Purchased Reagent)		13C4-PFHpA	50 ug/mL
..LCM5PFPEA_00015	07/20/22	Wellington Laboratories, Lot M5PFPeA0717			(Purchased Reagent)		13C5 PFPeA	50 ug/mL
..LCM8FOSA_00019	10/11/22	Wellington Laboratories, Lot M8FOSA1017I			(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA_00015	02/16/23	Wellington Laboratories, Lot MPFBA0218			(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFBS_00008	02/15/23	Wellington Laboratories, Lot M3PFBS0218			(Purchased Reagent)		13C3-PFBS	46.5 ug/mL
..LCMPFDA_00020	02/16/23	Wellington Laboratories, Lot MPFDA0218			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA_00015	02/16/23	Wellington Laboratories, Lot MPFDoA0218			(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA_00022	10/27/22	Wellington Laboratories, Lot MPFHxA1017			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS_00015	03/22/23	Wellington Laboratories, Lot MPFHxS0318			(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
..LCMPFNA_00015	12/14/22	Wellington Laboratories, Lot MPFNA1217			(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA_00019	05/04/23	Wellington Laboratories, Lot MPFOA0418			(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS_00027	02/15/23	Wellington Laboratories, Lot MPFOS0218			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUdA_00017	11/22/21	Wellington Laboratories, Lot MPFUdA1116			(Purchased Reagent)		13C2 PFUnA	50 ug/mL
.LCPFCSP_00148	11/18/18	05/17/18	Methanol, Lot 090285	10 mL	LC11CIPF3OUdS_00002	100 uL	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonate	0.471 ug/mL
					LC4:2FTS_00005	100 uL	4:2 FTS	0.467 ug/mL
					LC6:2FTS_00007	100 uL	6:2 FTS	0.474 ug/mL
					LC8:2FTS_00007	100 uL	8:2 FTS	0.479 ug/mL
					LC9CI-PF3ONS_00002	100 uL	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonate	0.466 ug/mL
					LCbr-NEtFOSAA_00001	100 uL	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	0.5 ug/mL
					LCbr-NMeFOSAA_00001	100 uL	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	0.5 ug/mL
					LCDONA_00004	100 uL	ADONA	0.471 ug/mL
					LCHFPO-DA_00002	100 uL	Perfluoro(2-propoxypropanoic) acid	0.5 ug/mL
					LCPFBA_00008	100 uL	Perfluorobutanoic acid (PFBA)	0.5 ug/mL
					LCPFBS_00009	100 uL	Perfluorobutanesulfonic acid (PFBS)	0.442 ug/mL
					LCPFDA_00008	100 uL	Perfluorodecanoic acid (PFDA)	0.5 ug/mL
					LCPFDoA_00008	100 uL	Perfluorododecanoic acid (PFDoA)	0.5 ug/mL

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Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCPFDS_00008	100 uL	Perfluorodecanesulfonic acid (PFDS)	0.482 ug/mL
					LCPFHpA_00011	100 uL	Perfluoroheptanoic acid (PFHpA)	0.5 ug/mL
					LCPFHpSA_00003	100 uL	Perfluoroheptanesulfonic Acid (PFHpS)	0.476 ug/mL
					LCPFHxA_00010	100 uL	Perfluorohexanoic acid (PFHxA)	0.5 ug/mL
					LCPFHxDA_00010	100 uL	Perfluorohexadecanoic acid	0.5 ug/mL
					LCPFHxS-br_00006	100 uL	Perfluorohexanesulfonic acid (PFHxS)	0.455 ug/mL
					LCPFNA_00010	100 uL	Perfluorononanoic acid (PFNA)	0.5 ug/mL
							Perfluorooctanoic acid (PFOA)	0.5005 ug/mL
					LCPFNS_00003	100 uL	Perfluorononanesulfonic acid (PFNS)	0.48 ug/mL
					LCPFOA_00011	100 uL	Perfluorooctanoic acid (PFOA)	0.5005 ug/mL
					LCPFODA_00010	100 uL	Perfluorooctadecanoic acid	0.5 ug/mL
					LCPFOS-br_00007	100 uL	Perfluorooctanesulfonic acid (PFOS)	0.464 ug/mL
					LCPFOSA_00013	100 uL	Perfluorooctane Sulfonamide (FOSA)	0.5 ug/mL
					LCPFPeA_00008	100 uL	Perfluoropentanoic acid (PFPeA)	0.5 ug/mL
					LCPFPeS_00003	100 uL	Perfluoropentanesulfonic acid (PFPeS)	0.469 ug/mL
					LCPFTeDA_00008	100 uL	Perfluorotetradecanoic acid (PFTeA)	0.5 ug/mL
					LCPFTrDA_00008	100 uL	Perfluorotridecanoic Acid (PFTriA)	0.5 ug/mL
					LCPFUdA_00008	100 uL	Perfluoroundecanoic acid (PFUnA)	0.5 ug/mL
..LC11CIPF3OUdS_00002	09/30/21	Wellington Labs, Lot 11CIPF3OUdS0916			(Purchased Reagent)		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonate	47.1 ug/mL
..LC4:2FTS_00005	12/12/21	WELLINGTON, Lot 42FTS1216			(Purchased Reagent)		4:2 FTS	46.7 ug/mL
..LC6:2FTS_00007	04/20/22	WELLINGTON, Lot 62FTS0417			(Purchased Reagent)		6:2 FTS	47.4 ug/mL
..LC8:2FTS_00007	12/12/21	WELLINGTON, Lot 82FTS1216			(Purchased Reagent)		8:2 FTS	47.9 ug/mL
..LC9CI-PF3ONS_00002	09/30/21	Wellington Labs, Lot 9CIPF3ONS0916			(Purchased Reagent)		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonate	46.6 ug/mL
..LCbr-NEtFOSAA_00001	01/17/23	WELLINGTON, Lot brNEtFOSAA0118			(Purchased Reagent)		N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	50 ug/mL
..LCbr-NMeFOSAA_00001	01/17/23	WELLINGTON, Lot brNMeFOSAA0118			(Purchased Reagent)		N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	50 ug/mL
..LCDONA_00004	03/26/23	WELLINGTON, Lot NADONA0318			(Purchased Reagent)		ADONA	47.1 ug/mL
..LCHFPO-DA_00002	03/26/21	WELLINGTON, Lot HFPODA0318			(Purchased Reagent)		Perfluoro(2-propoxypropanoic) acid	50 ug/mL
..LCPFBA_00008	05/29/22	Wellington Laboratories, Lot PFBA0517			(Purchased Reagent)		Perfluorobutanoic acid (PFBA)	50 ug/mL
..LCPFBS_00009	09/21/22	Wellington Laboratories, Lot LPFBS0917			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
..LCPFDA_00008	05/29/22	Wellington Laboratories, Lot PFDA0517			(Purchased Reagent)		Perfluorodecanoic acid (PFDA)	50 ug/mL

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Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCPFDoA_00008	05/29/22	Wellington Laboratories, Lot PFDoA0517			(Purchased Reagent)		Perfluorododecanoic acid (PFDoA)	50 ug/mL
..LCPFDS_00008	11/08/22	Wellington Laboratories, Lot LPFDS1117			(Purchased Reagent)		Perfluorodecanesulfonic acid (PFDS)	48.2 ug/mL
..LCPFHpA_00011	09/27/22	Wellington Laboratories, Lot PFHpA0917			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
..LCPFHpSA_00003	09/01/22	Wellington Laboratories, Lot LPFHpS0817			(Purchased Reagent)		Perfluoroheptanesulfonic Acid (PFHpS)	47.6 ug/mL
..LCPFHxA_00010	09/27/22	Wellington Laboratories, Lot PFHxA0917			(Purchased Reagent)		Perfluorohexanoic acid (PFHxA)	50 ug/mL
..LCPFHxDA_00010	07/13/22	Wellington Laboratories, Lot PFHxDA0717			(Purchased Reagent)		Perfluorohexadecanoic acid	50 ug/mL
..LCPFHxS-br_00006	01/04/22	Wellington Laboratories, Lot brPFHxSK0117			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	45.5 ug/mL
..LCPFNA_00010	07/20/22	Wellington Laboratories, Lot PFNA0717			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
							Perfluorooctanoic acid (PFOA)	0.05 ug/mL
..LCPFNS_00003	09/27/22	Wellington Laboratories, Lot LPFNS0917			(Purchased Reagent)		Perfluorononanesulfonic acid (PFNS)	48 ug/mL
..LCPFOA_00011	09/27/22	Wellington Laboratories, Lot PFOA0917			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
..LCPFODA_00010	07/13/22	Wellington Laboratories, Lot PFODA0717			(Purchased Reagent)		Perfluorooctadecanoic acid	50 ug/mL
..LCPFOS-br_00007	01/12/22	Wellington Laboratories, Lot brPFOSK0117			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	46.4 ug/mL
..LCPFOSA_00013	09/01/22	Wellington Laboratories, Lot FOSA0817I			(Purchased Reagent)		Perfluorooctane Sulfonamide (FOSA)	50 ug/mL
..LCPFPeA_00008	06/14/22	Wellington Laboratories, Lot PFPeA0617			(Purchased Reagent)		Perfluoropentanoic acid (PFPeA)	50 ug/mL
..LCPFPeS_00003	01/11/22	Wellington Laboratories, Lot LPFPeS0117			(Purchased Reagent)		Perfluoropentanesulfonic acid (PFPeS)	46.9 ug/mL
..LCPFTeDA_00008	09/30/21	Wellington Laboratories, Lot PFTeDA0916			(Purchased Reagent)		Perfluorotetradecanoic acid (PFTeA)	50 ug/mL
..LCPFTrDA_00008	05/02/22	Wellington Laboratories, Lot PFTrDA0517			(Purchased Reagent)		Perfluorotridecanoic Acid (PFTriA)	50 ug/mL
..LCPFUdA_00008	10/18/21	Wellington Laboratories, Lot PFUdA1016			(Purchased Reagent)		Perfluoroundecanoic acid (PFUnA)	50 ug/mL
LCPFC_LL7_00005	11/18/18	06/05/18	MeOH/H2O, Lot 090285	200 mL	LCMPFC_ALL_SU_00075	10 mL	d3-NMeFOSAA	2.5 ng/mL
							d5-NEtFOSAA	2.5 ng/mL
							M2-4:2FTS	2.335 ng/mL
							M2-6:2FTS	2.375 ng/mL
							M2-8:2FTS	2.395 ng/mL
							13C2-PFHxDA	2.5 ng/mL
							13C2-PFOA	2.5 ng/mL
							13C2-PFTeDA	2.5 ng/mL
							13C3 HFPO-DA	2.5 ng/mL
							13C4-PFHpA	2.5 ng/mL
							13C5 PFPeA	2.5 ng/mL
							13C8 FOSA	2.5 ng/mL
							13C4 PFBA	2.5 ng/mL
							13C3-PFBS	2.325 ng/mL
							13C2 PFDA	2.5 ng/mL
							13C2 PFDoA	2.5 ng/mL
							13C2 PFHxA	2.5 ng/mL

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					Reagent ID	Volume Added		
							18O2 PFHxS	2.365 ng/mL
							13C5 PFNA	2.5 ng/mL
							13C4 PFOA	2.5 ng/mL
							13C4 PFOS	2.39 ng/mL
							13C2 PFUnA	2.5 ng/mL
					LCPFCSP_00148	4 mL	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonate	9.42 ng/mL
							4:2 FTS	9.34 ng/mL
							6:2 FTS	9.48 ng/mL
							8:2 FTS	9.58 ng/mL
							9-Chlorohexadecafluoro-3-oxanonane-1-sulfonate	9.32 ng/mL
							N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	10 ng/mL
							N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	10 ng/mL
							ADONA	9.42 ng/mL
							Perfluoro(2-propoxypropanoic) acid	10 ng/mL
							Perfluorobutanoic acid (PFBA)	10 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	8.84 ng/mL
							Perfluorodecanoic acid (PFDA)	10 ng/mL
							Perfluorododecanoic acid (PFDoA)	10 ng/mL
							Perfluorodecanesulfonic acid (PFDS)	9.64 ng/mL
							Perfluoroheptanoic acid (PFHpA)	10 ng/mL
							Perfluoroheptanesulfonic Acid (PFHpS)	9.52 ng/mL
							Perfluorohexanoic acid (PFHxA)	10 ng/mL
							Perfluorohexadecanoic acid	10 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	9.1 ng/mL
							Perfluorononanoic acid (PFNA)	10 ng/mL
							Perfluorooctanoic acid (PFOA)	10.01 ng/mL
							Perfluorononanesulfonic acid (PFNS)	9.6 ng/mL
							Perfluorooctadecanoic acid	10 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	9.28 ng/mL
							Perfluorooctane Sulfonamide (FOSA)	10 ng/mL
							Perfluoropentanoic acid (PFPeA)	10 ng/mL
							Perfluoropentanesulfonic acid (PFPeS)	9.38 ng/mL

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Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluorotetradecanoic acid (PFTeA)	10 ng/mL
							Perfluorotridecanoic Acid (PFTriA)	10 ng/mL
							Perfluoroundecanoic acid (PFUnA)	10 ng/mL
.LCMPFC_ALL_SU_00075	12/05/18	06/05/18	Methanol, Lot Baker 141039	200 mL	LCd3-NMeFOSAA_00008	200 uL	d3-NMeFOSAA	0.05 ug/mL
					LCd5-NEtFOSAA_00008	200 uL	d5-NEtFOSAA	0.05 ug/mL
					LCM2-4:FTS_00003	200 uL	M2-4:2FTS	0.0467 ug/mL
					LCM2-6:FTS_00008	200 uL	M2-6:2FTS	0.0475 ug/mL
					LCM2-8:2FTS_00010	200 uL	M2-8:2FTS	0.0479 ug/mL
					LCM2PFHxDA_00016	200 uL	13C2-PFHxDA	0.05 ug/mL
					LCM2PFOA_00008	200 uL	13C2-PFOA	0.05 ug/mL
					LCM2PFTeDA_00014	200 uL	13C2-PFTeDA	0.05 ug/mL
					LCM3HFPO-DA_00003	200 uL	13C3 HFPO-DA	0.05 ug/mL
					LCM4PFHPA_00014	200 uL	13C4-PFHpA	0.05 ug/mL
					LCM5PFPEA_00015	200 uL	13C5 PFPeA	0.05 ug/mL
					LCM8FOSA_00019	200 uL	13C8 FOSA	0.05 ug/mL
					LCMPFBA_00015	200 uL	13C4 PFBA	0.05 ug/mL
					LCMPFBS_00008	200 uL	13C3-PFBS	0.0465 ug/mL
					LCMPFDA_00020	200 uL	13C2 PFDA	0.05 ug/mL
					LCMPFDoA_00015	200 uL	13C2 PFDoA	0.05 ug/mL
					LCMPFHxA_00022	200 uL	13C2 PFHxA	0.05 ug/mL
					LCMPFHxS_00015	200 uL	18O2 PFHxS	0.0473 ug/mL
					LCMPFNA_00015	200 uL	13C5 PFNA	0.05 ug/mL
					LCMPFOA_00019	200 uL	13C4 PFOA	0.05 ug/mL
					LCMPFOS_00027	200 uL	13C4 PFOS	0.0478 ug/mL
					LCMPFUdA_00017	200 uL	13C2 PFUnA	0.05 ug/mL
..LCd3-NMeFOSAA_00008	11/08/22	WELLINGTON, Lot d3NMeFOSAA1117			(Purchased Reagent)		d3-NMeFOSAA	50 ug/mL
..LCd5-NEtFOSAA_00008	11/08/22	WELLINGTON, Lot d5NEtFOSAA1117			(Purchased Reagent)		d5-NEtFOSAA	50 ug/mL
..LCM2-4:FTS_00003	09/01/22	Wellington, Lot M242FTS0817			(Purchased Reagent)		M2-4:2FTS	46.7 ug/mL
..LCM2-6:FTS_00008	02/16/23	WELLINGTON, Lot M262FTS0218			(Purchased Reagent)		M2-6:2FTS	47.5 ug/mL
..LCM2-8:2FTS_00010	01/24/23	WELLINGTON, Lot M282FTS0118			(Purchased Reagent)		M2-8:2FTS	47.9 ug/mL
..LCM2PFHxDA_00016	07/13/22	Wellington Laboratories, Lot M2PFHxDA0717			(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFOA_00008	02/12/21	Wellington Laboratories, Lot M2PFOA0216			(Purchased Reagent)		13C2-PFOA	50 ug/mL
..LCM2PFTeDA_00014	11/30/22	Wellington Laboratories, Lot M2PFTeDA1117			(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM3HFPO-DA_00003	05/18/21	WELLINGTON, Lot M3HFPODA0518			(Purchased Reagent)		13C3 HFPO-DA	50 ug/mL
..LCM4PFHPA_00014	05/03/22	Wellington Laboratories, Lot M4PFHpA0517			(Purchased Reagent)		13C4-PFHpA	50 ug/mL
..LCM5PFPEA_00015	07/20/22	Wellington Laboratories, Lot M5PFPeA0717			(Purchased Reagent)		13C5 PFPeA	50 ug/mL
..LCM8FOSA_00019	10/11/22	Wellington Laboratories, Lot M8FOSA1017I			(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA_00015	02/16/23	Wellington Laboratories, Lot MPFBA0218			(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFBS_00008	02/15/23	Wellington Laboratories, Lot M3PFBS0218			(Purchased Reagent)		13C3-PFBS	46.5 ug/mL
..LCMPFDA_00020	02/16/23	Wellington Laboratories, Lot MPFDA0218			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA_00015	02/16/23	Wellington Laboratories, Lot MPFDoA0218			(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA_00022	10/27/22	Wellington Laboratories, Lot MPFHxA1017			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS_00015	03/22/23	Wellington Laboratories, Lot MPFHxS0318			(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
..LCMPFNA_00015	12/14/22	Wellington Laboratories, Lot MPFNA1217			(Purchased Reagent)		13C5 PFNA	50 ug/mL

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Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCMPFOA_00019	05/04/23	Wellington Laboratories, Lot MPFOA0418			(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS_00027	02/15/23	Wellington Laboratories, Lot MPFOS0218			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUdA_00017	11/22/21	Wellington Laboratories, Lot MPFUdA1116			(Purchased Reagent)		13C2 PFUnA	50 ug/mL
.LCPFCSP_00148	11/18/18	05/17/18	Methanol, Lot 090285	10 mL	LC11CIPF3OUdS_00002	100 uL	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonate	0.471 ug/mL
					LC4:2FTS_00005	100 uL	4:2 FTS	0.467 ug/mL
					LC6:2FTS_00007	100 uL	6:2 FTS	0.474 ug/mL
					LC8:2FTS_00007	100 uL	8:2 FTS	0.479 ug/mL
					LC9CI-PF3ONS_00002	100 uL	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonate	0.466 ug/mL
					LCbr-NEtFOSAA_00001	100 uL	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	0.5 ug/mL
					LCbr-NMeFOSAA_00001	100 uL	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	0.5 ug/mL
					LCDONA_00004	100 uL	ADONA	0.471 ug/mL
					LCHFPO-DA_00002	100 uL	Perfluoro(2-propoxypropanoic) acid	0.5 ug/mL
					LCPFBA_00008	100 uL	Perfluorobutanoic acid (PFBA)	0.5 ug/mL
					LCPFBS_00009	100 uL	Perfluorobutanesulfonic acid (PFBS)	0.442 ug/mL
					LCPFDA_00008	100 uL	Perfluorodecanoic acid (PFDA)	0.5 ug/mL
					LCPFDoA_00008	100 uL	Perfluorododecanoic acid (PFDoA)	0.5 ug/mL
					LCPFDS_00008	100 uL	Perfluorodecanesulfonic acid (PFDS)	0.482 ug/mL
					LCPFHpA_00011	100 uL	Perfluoroheptanoic acid (PFHpA)	0.5 ug/mL
					LCPFHpSA_00003	100 uL	Perfluoroheptanesulfonic Acid (PFHpS)	0.476 ug/mL
					LCPFHxA_00010	100 uL	Perfluorohexanoic acid (PFHxA)	0.5 ug/mL
					LCPFHxDA_00010	100 uL	Perfluorohexadecanoic acid	0.5 ug/mL
					LCPFHxS-br_00006	100 uL	Perfluorohexanesulfonic acid (PFHxS)	0.455 ug/mL
					LCPFNA_00010	100 uL	Perfluorononanoic acid (PFNA)	0.5 ug/mL
							Perfluorooctanoic acid (PFOA)	0.5005 ug/mL
					LCPFNS_00003	100 uL	Perfluorononanesulfonic acid (PFNS)	0.48 ug/mL
					LCPFOA_00011	100 uL	Perfluorooctanoic acid (PFOA)	0.5005 ug/mL
					LCPFODA_00010	100 uL	Perfluorooctadecanoic acid	0.5 ug/mL
					LCPFOS-br_00007	100 uL	Perfluorooctanesulfonic acid (PFOS)	0.464 ug/mL
					LCPFOSA_00013	100 uL	Perfluorooctane Sulfonamide (FOSA)	0.5 ug/mL
					LCPFPeA_00008	100 uL	Perfluoropentanoic acid (PFPeA)	0.5 ug/mL
					LCPFPeS_00003	100 uL	Perfluoropentanesulfonic acid (PFPeS)	0.469 ug/mL

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Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCPFTeDA_00008	100 uL	Perfluorotetradecanoic acid (PFTeA)	0.5 ug/mL
					LCPFTrDA_00008	100 uL	Perfluorotridecanoic Acid (PFTriA)	0.5 ug/mL
					LCPFUdA_00008	100 uL	Perfluoroundecanoic acid (PFUnA)	0.5 ug/mL
..LC11CIPF3OUdS_00002	09/30/21	Wellington Labs, Lot 11CIPF3OUdS0916			(Purchased Reagent)		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonate	47.1 ug/mL
..LC4:2FTS_00005	12/12/21	WELLINGTON, Lot 42FTS1216			(Purchased Reagent)		4:2 FTS	46.7 ug/mL
..LC6:2FTS_00007	04/20/22	WELLINGTON, Lot 62FTS0417			(Purchased Reagent)		6:2 FTS	47.4 ug/mL
..LC8:2FTS_00007	12/12/21	WELLINGTON, Lot 82FTS1216			(Purchased Reagent)		8:2 FTS	47.9 ug/mL
..LC9CI-PF3ONS_00002	09/30/21	Wellington Labs, Lot 9CIPF3ONS0916			(Purchased Reagent)		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonate	46.6 ug/mL
..LCbr-NEtFOSAA_00001	01/17/23	WELLINGTON, Lot brNEtFOSAA0118			(Purchased Reagent)		N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	50 ug/mL
..LCbr-NMeFOSAA_00001	01/17/23	WELLINGTON, Lot brNMeFOSAA0118			(Purchased Reagent)		N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	50 ug/mL
..LCDONA_00004	03/26/23	WELLINGTON, Lot NADONA0318			(Purchased Reagent)		ADONA	47.1 ug/mL
..LCHFPO-DA_00002	03/26/21	WELLINGTON, Lot HFPODA0318			(Purchased Reagent)		Perfluoro(2-propoxypropanoic) acid	50 ug/mL
..LCPFBA_00008	05/29/22	Wellington Laboratories, Lot PFBA0517			(Purchased Reagent)		Perfluorobutanoic acid (PFBA)	50 ug/mL
..LCPFBS_00009	09/21/22	Wellington Laboratories, Lot LPFBS0917			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
..LCPFDA_00008	05/29/22	Wellington Laboratories, Lot PFDA0517			(Purchased Reagent)		Perfluorodecanoic acid (PFDA)	50 ug/mL
..LCPFDoA_00008	05/29/22	Wellington Laboratories, Lot PFDoA0517			(Purchased Reagent)		Perfluorododecanoic acid (PFDoA)	50 ug/mL
..LCPFDS_00008	11/08/22	Wellington Laboratories, Lot LPFDS1117			(Purchased Reagent)		Perfluorodecanesulfonic acid (PFDS)	48.2 ug/mL
..LCPFHpA_00011	09/27/22	Wellington Laboratories, Lot PFHpA0917			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
..LCPFHpSA_00003	09/01/22	Wellington Laboratories, Lot LPFHpS0817			(Purchased Reagent)		Perfluoroheptanesulfonic Acid (PFHpS)	47.6 ug/mL
..LCPFHxA_00010	09/27/22	Wellington Laboratories, Lot PFHxA0917			(Purchased Reagent)		Perfluorohexanoic acid (PFHxA)	50 ug/mL
..LCPFHxDA_00010	07/13/22	Wellington Laboratories, Lot PFHxDA0717			(Purchased Reagent)		Perfluorohexadecanoic acid	50 ug/mL
..LCPFHxS-br_00006	01/04/22	Wellington Laboratories, Lot brPFHxSK0117			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	45.5 ug/mL
..LCPFNA_00010	07/20/22	Wellington Laboratories, Lot PFNA0717			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
							Perfluorooctanoic acid (PFOA)	0.05 ug/mL
..LCPFNS_00003	09/27/22	Wellington Laboratories, Lot LPFNS0917			(Purchased Reagent)		Perfluorononanesulfonic acid (PFNS)	48 ug/mL
..LCPFOA_00011	09/27/22	Wellington Laboratories, Lot PFOA0917			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
..LCPFODA_00010	07/13/22	Wellington Laboratories, Lot PFODA0717			(Purchased Reagent)		Perfluorooctadecanoic acid	50 ug/mL
..LCPFOS-br_00007	01/12/22	Wellington Laboratories, Lot brPFOSK0117			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	46.4 ug/mL
..LCPFOSA_00013	09/01/22	Wellington Laboratories, Lot FOSA0817I			(Purchased Reagent)		Perfluorooctane Sulfonamide (FOSA)	50 ug/mL
..LCPFPeA_00008	06/14/22	Wellington Laboratories, Lot PFPeA0617			(Purchased Reagent)		Perfluoropentanoic acid (PFPeA)	50 ug/mL

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Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCPFPeS_00003	01/11/22	Wellington Laboratories, Lot LPFPeS0117			(Purchased Reagent)		Perfluoropentanesulfonic acid (PFPeS)	46.9 ug/mL
..LCPFTeDA_00008	09/30/21	Wellington Laboratories, Lot PFTeDA0916			(Purchased Reagent)		Perfluorotetradecanoic acid (PFTeA)	50 ug/mL
..LCPFTrDA_00008	05/02/22	Wellington Laboratories, Lot PFTrDA0517			(Purchased Reagent)		Perfluorotridecanoic Acid (PFTriA)	50 ug/mL
..LCPFUdA_00008	10/18/21	Wellington Laboratories, Lot PFUdA1016			(Purchased Reagent)		Perfluoroundecanoic acid (PFUnA)	50 ug/mL
LCPFCIC_FULL_00012	12/05/18	07/05/18	MeOH/H2O, Lot 09285	10 mL	LCMPFC_ALL_SU_00075	0.5 mL	13C2-PFOA	2.5 ng/mL
.LCMPFC_ALL_SU_00075	12/05/18	06/05/18	Methanol, Lot Baker 141039	200 mL	LCM2PFOA_00008	200 uL	13C2-PFOA	0.05 ug/mL
..LCM2PFOA_00008	02/12/21	Wellington Laboratories, Lot M2PFOA0216			(Purchased Reagent)		13C2-PFOA	50 ug/mL
LCPFCIC_FULL_00012	12/05/18	07/05/18	MeOH/H2O, Lot 09285	10 mL	LCMPFC_ALL_SU_00075	0.5 mL	d3-NMeFOSAA	2.5 ng/mL
							d5-NEtFOSAA	2.5 ng/mL
							M2-4:2FTS	2.335 ng/mL
							M2-6:2FTS	2.375 ng/mL
							M2-8:2FTS	2.395 ng/mL
							13C2-PFHxDA	2.5 ng/mL
							13C2-PFTeDA	2.5 ng/mL
							13C3 HFPO-DA	2.5 ng/mL
							13C4-PFHpA	2.5 ng/mL
							13C5 PFPeA	2.5 ng/mL
							13C8 FOSA	2.5 ng/mL
							13C4 PFBA	2.5 ng/mL
							13C3-PFBS	2.325 ng/mL
							13C2 PFDA	2.5 ng/mL
							13C2 PFDoA	2.5 ng/mL
							13C2 PFHxA	2.5 ng/mL
							18O2 PFHxS	2.365 ng/mL
							13C5 PFNA	2.5 ng/mL
							13C4 PFOA	2.5 ng/mL
							13C4 PFOS	2.39 ng/mL
							13C2 PFUnA	2.5 ng/mL
					LCPFCSP_00155	1.25 mL	4:2 FTS	2.335 ng/mL
							6:2 FTS	2.37 ng/mL
							8:2 FTS	2.395 ng/mL
							N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	2.5 ng/mL
							N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	2.5 ng/mL
							Perfluorobutanoic acid (PFBA)	2.5 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	2.21 ng/mL
							Perfluorodecanoic acid (PFDA)	2.5 ng/mL
							Perfluorododecanoic acid (PFDoA)	2.5 ng/mL

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Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluorodecanesulfonic acid (PFDS)	2.41 ng/mL
							Perfluoroheptanoic acid (PFHpA)	2.5 ng/mL
							Perfluoroheptanesulfonic Acid (PFHpS)	2.38 ng/mL
							Perfluorohexanoic acid (PFHxA)	2.5 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	2.275 ng/mL
							Perfluorononanoic acid (PFNA)	2.5 ng/mL
							Perfluorooctanoic acid (PFOA)	2.5025 ng/mL
							Perfluorononanesulfonic acid (PFNS)	2.4 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	2.32 ng/mL
							Perfluorooctane Sulfonamide (FOSA)	2.5 ng/mL
							Perfluoropentanoic acid (PFPeA)	2.5 ng/mL
							Perfluoropentanesulfonic acid (PFPeS)	2.345 ng/mL
							Perfluorotetradecanoic acid (PFTeA)	2.5 ng/mL
							Perfluorotridecanoic Acid (PFTriA)	2.5 ng/mL
							Perfluoroundecanoic acid (PFUnA)	2.5 ng/mL
.LCMPFC_ALL_SU_00075	12/05/18	06/05/18	Methanol, Lot Baker 141039	200 mL	LCd3-NMeFOSAA_00008	200 uL	d3-NMeFOSAA	0.05 ug/mL
					LCd5-NEtFOSAA_00008	200 uL	d5-NEtFOSAA	0.05 ug/mL
					LCM2-4:FTS_00003	200 uL	M2-4:2FTS	0.0467 ug/mL
					LCM2-6:FTS_00008	200 uL	M2-6:2FTS	0.0475 ug/mL
					LCM2-8:2FTS_00010	200 uL	M2-8:2FTS	0.0479 ug/mL
					LCM2PFHxDA_00016	200 uL	13C2-PFHxDA	0.05 ug/mL
					LCM2PFTeDA_00014	200 uL	13C2-PFTeDA	0.05 ug/mL
					LCM3HFPO-DA_00003	200 uL	13C3 HFPO-DA	0.05 ug/mL
					LCM4PFHPA_00014	200 uL	13C4-PFHpA	0.05 ug/mL
					LCM5PFPEA_00015	200 uL	13C5 PFPeA	0.05 ug/mL
					LCM8FOSA_00019	200 uL	13C8 FOSA	0.05 ug/mL
					LCMPFBA_00015	200 uL	13C4 PFBA	0.05 ug/mL
					LCMPFBS_00008	200 uL	13C3-PFBS	0.0465 ug/mL
					LCMPFDA_00020	200 uL	13C2 PFDA	0.05 ug/mL
					LCMPFDoA_00015	200 uL	13C2 PFDoA	0.05 ug/mL
					LCMPFHxA_00022	200 uL	13C2 PFHxA	0.05 ug/mL
					LCMPFHxS_00015	200 uL	18O2 PFHxS	0.0473 ug/mL
					LCMPFNA_00015	200 uL	13C5 PFNA	0.05 ug/mL
					LCMPFOA_00019	200 uL	13C4 PFOA	0.05 ug/mL
					LCMPFOS_00027	200 uL	13C4 PFOS	0.0478 ug/mL
					LCMPFUdA_00017	200 uL	13C2 PFUnA	0.05 ug/mL

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SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCd3-NMeFOSAA_00008	11/08/22	WELLINGTON, Lot d3NMeFOSAA1117			(Purchased Reagent)		d3-NMeFOSAA	50 ug/mL
..LCd5-NEtFOSAA_00008	11/08/22	WELLINGTON, Lot d5NEtFOSAA1117			(Purchased Reagent)		d5-NEtFOSAA	50 ug/mL
..LCM2-4:FTS_00003	09/01/22	Wellington, Lot M242FTS0817			(Purchased Reagent)		M2-4:2FTS	46.7 ug/mL
..LCM2-6:FTS_00008	02/16/23	WELLINGTON, Lot M262FTS0218			(Purchased Reagent)		M2-6:2FTS	47.5 ug/mL
..LCM2-8:2FTS_00010	01/24/23	WELLINGTON, Lot M282FTS0118			(Purchased Reagent)		M2-8:2FTS	47.9 ug/mL
..LCM2PFHxDA_00016	07/13/22	Wellington Laboratories, Lot M2PFHxDA0717			(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFTeDA_00014	11/30/22	Wellington Laboratories, Lot M2PFTeDA1117			(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM3HFPO-DA_00003	05/18/21	WELLINGTON, Lot M3HFPODA0518			(Purchased Reagent)		13C3 HFPO-DA	50 ug/mL
..LCM4PFHPA_00014	05/03/22	Wellington Laboratories, Lot M4PFHpA0517			(Purchased Reagent)		13C4-PFHpA	50 ug/mL
..LCM5PFPEA_00015	07/20/22	Wellington Laboratories, Lot M5PFPeA0717			(Purchased Reagent)		13C5 PFPeA	50 ug/mL
..LCM8FOSA_00019	10/11/22	Wellington Laboratories, Lot M8FOSA1017I			(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA_00015	02/16/23	Wellington Laboratories, Lot MPFBA0218			(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFBS_00008	02/15/23	Wellington Laboratories, Lot M3PFBS0218			(Purchased Reagent)		13C3-PFBS	46.5 ug/mL
..LCMPFDA_00020	02/16/23	Wellington Laboratories, Lot MPFDA0218			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA_00015	02/16/23	Wellington Laboratories, Lot MPFDoA0218			(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA_00022	10/27/22	Wellington Laboratories, Lot MPFHxA1017			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS_00015	03/22/23	Wellington Laboratories, Lot MPFHxS0318			(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
..LCMPFNA_00015	12/14/22	Wellington Laboratories, Lot MPFNA1217			(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA_00019	05/04/23	Wellington Laboratories, Lot MPFOA0418			(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS_00027	02/15/23	Wellington Laboratories, Lot MPFOS0218			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUdA_00017	11/22/21	Wellington Laboratories, Lot MPFUdA1116			(Purchased Reagent)		13C2 PFUnA	50 ug/mL
.LCPFCSP_00155	12/17/18	06/17/18	Methanol, Lot 180632	250 mL	LC4:2FTS_00005	100 uL	4:2 FTS	0.01868 ug/mL
					LC6:2FTS_00007	100 uL	6:2 FTS	0.01896 ug/mL
					LC8:2FTS_00007	100 uL	8:2 FTS	0.01916 ug/mL
					LCbr-NEtFOSAA_00001	100 uL	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	0.02 ug/mL
					LCbr-NMeFOSAA_00001	100 uL	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	0.02 ug/mL
					LCPFBA_00008	100 uL	Perfluorobutanoic acid (PFBA)	0.02 ug/mL
					LCPFBS_00009	100 uL	Perfluorobutanesulfonic acid (PFBS)	0.01768 ug/mL
					LCPFDA_00008	100 uL	Perfluorodecanoic acid (PFDA)	0.02 ug/mL
					LCPFDoA_00010	100 uL	Perfluorododecanoic acid (PFDoA)	0.02 ug/mL
					LCPFDS_00008	100 uL	Perfluorodecanesulfonic acid (PFDS)	0.01928 ug/mL
					LCPFHpA_00011	100 uL	Perfluoroheptanoic acid (PFHpA)	0.02 ug/mL
					LCPFHpSA_00003	100 uL	Perfluoroheptanesulfonic Acid (PFHpS)	0.01904 ug/mL
					LCPFHxA_00010	100 uL	Perfluorohexanoic acid (PFHxA)	0.02 ug/mL
					LCPFHxS-br_00006	100 uL	Perfluorohexanesulfonic acid (PFHxS)	0.0182 ug/mL
					LCPFNA_00010	100 uL	Perfluorononanoic acid (PFNA)	0.02 ug/mL
							Perfluorooctanoic acid (PFOA)	0.02002 ug/mL
					LCPFNS_00003	100 uL	Perfluorononanesulfonic acid (PFNS)	0.0192 ug/mL

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCPFOA_00011	100 uL	Perfluorooctanoic acid (PFOA)	0.02002 ug/mL
					LCPFOS-br_00007	100 uL	Perfluorooctanesulfonic acid (PFOS)	0.01856 ug/mL
					LCPFOSA_00013	100 uL	Perfluorooctane Sulfonamide (FOSA)	0.02 ug/mL
					LCPFPeA_00010	100 uL	Perfluoropentanoic acid (PFPeA)	0.02 ug/mL
					LCPFPeS_00003	100 uL	Perfluoropentanesulfonic acid (PFPeS)	0.01876 ug/mL
					LCPFTeDA_00009	100 uL	Perfluorotetradecanoic acid (PFTeA)	0.02 ug/mL
					LCPFTrDA_00009	100 uL	Perfluorotridecanoic Acid (PFTriA)	0.02 ug/mL
					LCPFUdA_00008	100 uL	Perfluoroundecanoic acid (PFUnA)	0.02 ug/mL
..LC4:2FTS_00005	12/12/21	WELLINGTON, Lot 42FTS1216			(Purchased Reagent)		4:2 FTS	46.7 ug/mL
..LC6:2FTS_00007	04/20/22	WELLINGTON, Lot 62FTS0417			(Purchased Reagent)		6:2 FTS	47.4 ug/mL
..LC8:2FTS_00007	12/12/21	WELLINGTON, Lot 82FTS1216			(Purchased Reagent)		8:2 FTS	47.9 ug/mL
..LCbr-NEtFOSAA_00001	01/17/23	WELLINGTON, Lot brNEtFOSAA0118			(Purchased Reagent)		N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	50 ug/mL
..LCbr-NMeFOSAA_00001	01/17/23	WELLINGTON, Lot brNMeFOSAA0118			(Purchased Reagent)		N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	50 ug/mL
..LCPFBA_00008	05/29/22	Wellington Laboratories, Lot PFBA0517			(Purchased Reagent)		Perfluorobutanoic acid (PFBA)	50 ug/mL
..LCPFBS_00009	09/21/22	Wellington Laboratories, Lot LPFBS0917			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
..LCPFDA_00008	05/29/22	Wellington Laboratories, Lot PFDA0517			(Purchased Reagent)		Perfluorodecanoic acid (PFDA)	50 ug/mL
..LCPFDoA_00010	05/29/22	Wellington Laboratories, Lot PFDoA0517			(Purchased Reagent)		Perfluorododecanoic acid (PFDoA)	50 ug/mL
..LCPFDS_00008	11/08/22	Wellington Laboratories, Lot LPFDS1117			(Purchased Reagent)		Perfluorodecanesulfonic acid (PFDS)	48.2 ug/mL
..LCPFHpA_00011	09/27/22	Wellington Laboratories, Lot PFHpA0917			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
..LCPFHpSA_00003	09/01/22	Wellington Laboratories, Lot LPFHpS0817			(Purchased Reagent)		Perfluoroheptanesulfonic Acid (PFHpS)	47.6 ug/mL
..LCPFHxA_00010	09/27/22	Wellington Laboratories, Lot PFHxA0917			(Purchased Reagent)		Perfluorohexanoic acid (PFHxA)	50 ug/mL
..LCPFHxS-br_00006	01/04/22	Wellington Laboratories, Lot brPFHxSK0117			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	45.5 ug/mL
..LCPFNA_00010	07/20/22	Wellington Laboratories, Lot PFNA0717			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
							Perfluorooctanoic acid (PFOA)	0.05 ug/mL
..LCPFNS_00003	09/27/22	Wellington Laboratories, Lot LPFNS0917			(Purchased Reagent)		Perfluorononanesulfonic acid (PFNS)	48 ug/mL
..LCPFOA_00011	09/27/22	Wellington Laboratories, Lot PFOA0917			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
..LCPFOS-br_00007	01/12/22	Wellington Laboratories, Lot brPFOSK0117			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	46.4 ug/mL
..LCPFOSA_00013	09/01/22	Wellington Laboratories, Lot FOSA0817I			(Purchased Reagent)		Perfluorooctane Sulfonamide (FOSA)	50 ug/mL
..LCPFPeA_00010	06/14/22	Wellington Laboratories, Lot PFPeA0617			(Purchased Reagent)		Perfluoropentanoic acid (PFPeA)	50 ug/mL

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SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCPFPeS_00003	01/11/22	Wellington Laboratories, Lot LPFPeS0117			(Purchased Reagent)		Perfluoropentanesulfonic acid (PFPeS)	46.9 ug/mL
..LCPFTeDA_00009	09/30/21	Wellington Laboratories, Lot PFTeDA0916			(Purchased Reagent)		Perfluorotetradecanoic acid (PFTeA)	50 ug/mL
..LCPFTrDA_00009	05/02/22	Wellington Laboratories, Lot PFTrDA0517			(Purchased Reagent)		Perfluorotridecanoic Acid (PFTriA)	50 ug/mL
..LCPFUdA_00008	10/18/21	Wellington Laboratories, Lot PFUdA1016			(Purchased Reagent)		Perfluoroundecanoic acid (PFUnA)	50 ug/mL
LCPFCSP_00150	11/18/18	05/17/18	Methanol, Lot 090285	250 mL	LC11CIPF3OUdS_00002	100 uL	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonate	0.01884 ug/mL
					LC4:2FTS_00005	100 uL	4:2 FTS	0.01868 ug/mL
					LC6:2FTS_00007	100 uL	6:2 FTS	0.01896 ug/mL
					LC8:2FTS_00007	100 uL	8:2 FTS	0.01916 ug/mL
					LC9CI-PF3ONS_00002	100 uL	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonate	0.01864 ug/mL
					LCbr-NEtFOSAA_00001	100 uL	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	0.02 ug/mL
					LCbr-NMeFOSAA_00001	100 uL	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	0.02 ug/mL
					LCDONA_00002	100 uL	ADONA	0.02 ug/mL
					LCHFPO-DA_00002	100 uL	Perfluoro(2-propoxypropanoic) acid	0.02 ug/mL
					LCPFBA_00008	100 uL	Perfluorobutanoic acid (PFBA)	0.02 ug/mL
					LCPFBS_00009	100 uL	Perfluorobutane Sulfonate	0.01768 ug/mL
							Perfluorobutanesulfonic acid (PFBS)	0.01768 ug/mL
					LCPFDA_00008	100 uL	Perfluorodecanoic acid (PFDA)	0.02 ug/mL
					LCPFDoA_00008	100 uL	Perfluorododecanoic acid (PFDoA)	0.02 ug/mL
					LCPFDS_00008	100 uL	Perfluorodecanesulfonic acid (PFDS)	0.01928 ug/mL
					LCPFHpA_00011	100 uL	Perfluoroheptanoic acid (PFHpA)	0.02 ug/mL
					LCPFHpSA_00003	100 uL	Perfluoroheptanesulfonic Acid (PFHpS)	0.01904 ug/mL
					LCPFHxA_00010	100 uL	Perfluorohexanoic acid (PFHxA)	0.02 ug/mL
					LCPFHxDA_00010	100 uL	Perfluorohexadecanoic acid	0.02 ug/mL
					LCPFHxS-br_00006	100 uL	Perfluorohexane Sulfonate	0.0182 ug/mL
							Perfluorohexanesulfonic acid (PFHxS)	0.0182 ug/mL
					LCPFNA_00010	100 uL	Perfluorononanoic acid (PFNA)	0.02 ug/mL
							Perfluorooctanoic acid (PFOA)	0.02002 ug/mL
					LCPFNS_00003	100 uL	Perfluorononanesulfonic acid (PFNS)	0.0192 ug/mL
					LCPFOA_00011	100 uL	Perfluorooctanoic acid (PFOA)	0.02002 ug/mL
					LCPFODA_00010	100 uL	Perfluorooctadecanoic acid	0.02 ug/mL
					LCPFOS-br_00007	100 uL	Perfluorooctanesulfonic acid (PFOS)	0.01856 ug/mL

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SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCPFOSA_00013	100 uL	Perfluorooctane Sulfonamide (FOSA)	0.02 ug/mL
					LCPFPeA_00008	100 uL	Perfluoropentanoic acid (PFPeA)	0.02 ug/mL
					LCPFPeS_00003	100 uL	Perfluoropentanesulfonic acid (PFPeS)	0.01876 ug/mL
					LCPFTeDA_00008	100 uL	Perfluorotetradecanoic acid (PFTeA)	0.02 ug/mL
					LCPFTrDA_00008	100 uL	Perfluorotridecanoic Acid (PFTriA)	0.02 ug/mL
					LCPFUdA_00008	100 uL	Perfluoroundecanoic acid (PFUnA)	0.02 ug/mL
.LC11CIPF3OUdS_00002	09/30/21	Wellington Labs, Lot 11CIPF3OUdS0916			(Purchased Reagent)		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonate	47.1 ug/mL
.LC4:2FTS_00005	12/12/21	WELLINGTON, Lot 42FTS1216			(Purchased Reagent)		4:2 FTS	46.7 ug/mL
.LC6:2FTS_00007	04/20/22	WELLINGTON, Lot 62FTS0417			(Purchased Reagent)		6:2 FTS	47.4 ug/mL
.LC8:2FTS_00007	12/12/21	WELLINGTON, Lot 82FTS1216			(Purchased Reagent)		8:2 FTS	47.9 ug/mL
.LC9CI-PF3ONS_00002	09/30/21	Wellington Labs, Lot 9CIPF3ONS0916			(Purchased Reagent)		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonate	46.6 ug/mL
.LCbr-NEtFOSAA_00001	01/17/23	WELLINGTON, Lot brNEtFOSAA0118			(Purchased Reagent)		N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	50 ug/mL
.LCbr-NMeFOSAA_00001	01/17/23	WELLINGTON, Lot brNMeFOSAA0118			(Purchased Reagent)		N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	50 ug/mL
.LCDONA_00002	03/26/23	WELLINGTON, Lot NADONA0318			(Purchased Reagent)		ADONA	50 ug/mL
.LCHFPO-DA_00002	03/26/21	WELLINGTON, Lot HFPODA0318			(Purchased Reagent)		Perfluoro(2-propoxypropanoic) acid	50 ug/mL
.LCPFBA_00008	05/29/22	Wellington Laboratories, Lot PFBA0517			(Purchased Reagent)		Perfluorobutanoic acid (PFBA)	50 ug/mL
.LCPFBS_00009	09/21/22	Wellington Laboratories, Lot LPFBS0917			(Purchased Reagent)		Perfluorobutane Sulfonate	44.2 ug/mL
							Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
.LCPFDA_00008	05/29/22	Wellington Laboratories, Lot PFDA0517			(Purchased Reagent)		Perfluorodecanoic acid (PFDA)	50 ug/mL
.LCPFDoA_00008	05/29/22	Wellington Laboratories, Lot PFDoA0517			(Purchased Reagent)		Perfluorododecanoic acid (PFDoA)	50 ug/mL
.LCPFDS_00008	11/08/22	Wellington Laboratories, Lot LPFDS1117			(Purchased Reagent)		Perfluorodecanesulfonic acid (PFDS)	48.2 ug/mL
.LCPFHpA_00011	09/27/22	Wellington Laboratories, Lot PFHpA0917			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
.LCPFHpSA_00003	09/01/22	Wellington Laboratories, Lot LPFHpS0817			(Purchased Reagent)		Perfluoroheptanesulfonic Acid (PFHpS)	47.6 ug/mL
.LCPFHxA_00010	09/27/22	Wellington Laboratories, Lot PFHxA0917			(Purchased Reagent)		Perfluorohexanoic acid (PFHxA)	50 ug/mL
.LCPFHxDA_00010	07/13/22	Wellington Laboratories, Lot PFHxDA0717			(Purchased Reagent)		Perfluorohexadecanoic acid	50 ug/mL
.LCPFHxS-br_00006	01/04/22	Wellington Laboratories, Lot brPFHxSK0117			(Purchased Reagent)		Perfluorohexane Sulfonate	45.5 ug/mL
							Perfluorohexanesulfonic acid (PFHxS)	45.5 ug/mL
.LCPFNA_00010	07/20/22	Wellington Laboratories, Lot PFNA0717			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
							Perfluorooctanoic acid (PFOA)	0.05 ug/mL
.LCPFNS_00003	09/27/22	Wellington Laboratories, Lot LPFNS0917			(Purchased Reagent)		Perfluorononanesulfonic acid (PFNS)	48 ug/mL

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SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
.LCPFOA_00011	09/27/22	Wellington Laboratories, Lot PFOA0917			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
.LCPFODA_00010	07/13/22	Wellington Laboratories, Lot PFODA0717			(Purchased Reagent)		Perfluorooctadecanoic acid	50 ug/mL
.LCPFOS-br_00007	01/12/22	Wellington Laboratories, Lot brPFOSK0117			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	46.4 ug/mL
.LCPFOSA_00013	09/01/22	Wellington Laboratories, Lot FOSA0817I			(Purchased Reagent)		Perfluorooctane Sulfonamide (FOSA)	50 ug/mL
.LCPFPeA_00008	06/14/22	Wellington Laboratories, Lot PFPeA0617			(Purchased Reagent)		Perfluoropentanoic acid (PFPeA)	50 ug/mL
.LCPFPeS_00003	01/11/22	Wellington Laboratories, Lot LPFPeS0117			(Purchased Reagent)		Perfluoropentanesulfonic acid (PFPeS)	46.9 ug/mL
.LCPFTeDA_00008	09/30/21	Wellington Laboratories, Lot PFTeDA0916			(Purchased Reagent)		Perfluorotetradecanoic acid (PFTeA)	50 ug/mL
.LCPFTrDA_00008	05/02/22	Wellington Laboratories, Lot PFTrDA0517			(Purchased Reagent)		Perfluorotridecanoic Acid (PFTriA)	50 ug/mL
.LCPFUdA_00008	10/18/21	Wellington Laboratories, Lot PFUdA1016			(Purchased Reagent)		Perfluoroundecanoic acid (PFUnA)	50 ug/mL
LCPFCSP_00155	12/17/18	06/17/18	Methanol, Lot 180632	250 mL	LC11CIPF3OUdS_00002	100 uL	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonate	0.01884 ug/mL
					LC4:2FTS_00005	100 uL	4:2 FTS	0.01868 ug/mL
					LC6:2FTS_00007	100 uL	6:2 FTS	0.01896 ug/mL
					LC8:2FTS_00007	100 uL	8:2 FTS	0.01916 ug/mL
					LC9CI-PF3ONS_00002	100 uL	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonate	0.01864 ug/mL
					LCbr-NEtFOSAA_00001	100 uL	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	0.02 ug/mL
					LCbr-NMeFOSAA_00001	100 uL	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	0.02 ug/mL
					LCDONA_00002	100 uL	ADONA	0.02 ug/mL
					LCHFPO-DA_00002	100 uL	Perfluoro(2-propoxypropanoic) acid	0.02 ug/mL
					LCPFBA_00008	100 uL	Perfluorobutanoic acid (PFBA)	0.02 ug/mL
					LCPFBS_00009	100 uL	Perfluorobutane Sulfonate	0.01768 ug/mL
							Perfluorobutanesulfonic acid (PFBS)	0.01768 ug/mL
					LCPFDA_00008	100 uL	Perfluorodecanoic acid (PFDA)	0.02 ug/mL
					LCPFDoA_00010	100 uL	Perfluorododecanoic acid (PFDoA)	0.02 ug/mL
					LCPFDS_00008	100 uL	Perfluorodecanesulfonic acid (PFDS)	0.01928 ug/mL
					LCPFHpA_00011	100 uL	Perfluoroheptanoic acid (PFHpA)	0.02 ug/mL
					LCPFHpSA_00003	100 uL	Perfluoroheptanesulfonic Acid (PFHpS)	0.01904 ug/mL
					LCPFHxA_00010	100 uL	Perfluorohexanoic acid (PFHxA)	0.02 ug/mL
					LCPFHxDA_00010	100 uL	Perfluorohexadecanoic acid	0.02 ug/mL
					LCPFHxS-br_00006	100 uL	Perfluorohexane Sulfonate	0.0182 ug/mL
							Perfluorohexanesulfonic acid (PFHxS)	0.0182 ug/mL

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SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCPFNA_00010	100 uL	Perfluorononanoic acid (PFNA)	0.02 ug/mL
							Perfluorooctanoic acid (PFOA)	0.02002 ug/mL
					LCPFNS_00003	100 uL	Perfluorononanesulfonic acid (PFNS)	0.0192 ug/mL
					LCPFOA_00011	100 uL	Perfluorooctanoic acid (PFOA)	0.02002 ug/mL
					LCPFODA_00010	100 uL	Perfluorooctadecanoic acid	0.02 ug/mL
					LCPFOS-br_00007	100 uL	Perfluorooctanesulfonic acid (PFOS)	0.01856 ug/mL
					LCPFOSA_00013	100 uL	Perfluorooctane Sulfonamide (FOSA)	0.02 ug/mL
					LCPFPeA_00010	100 uL	Perfluoropentanoic acid (PFPeA)	0.02 ug/mL
					LCPFPeS_00003	100 uL	Perfluoropentanesulfonic acid (PFPeS)	0.01876 ug/mL
					LCPFTeDA_00009	100 uL	Perfluorotetradecanoic acid (PFTeA)	0.02 ug/mL
					LCPFTrDA_00009	100 uL	Perfluorotridecanoic Acid (PFTriA)	0.02 ug/mL
					LCPFUdA_00008	100 uL	Perfluoroundecanoic acid (PFUnA)	0.02 ug/mL
.LC11CIPF3OUdS_00002	09/30/21	Wellington Labs, Lot 11CIPF3OUdS0916			(Purchased Reagent)		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonate	47.1 ug/mL
.LC4:2FTS_00005	12/12/21	WELLINGTON, Lot 42FTS1216			(Purchased Reagent)		4:2 FTS	46.7 ug/mL
.LC6:2FTS_00007	04/20/22	WELLINGTON, Lot 62FTS0417			(Purchased Reagent)		6:2 FTS	47.4 ug/mL
.LC8:2FTS_00007	12/12/21	WELLINGTON, Lot 82FTS1216			(Purchased Reagent)		8:2 FTS	47.9 ug/mL
.LC9CI-PF3ONS_00002	09/30/21	Wellington Labs, Lot 9CIPF3ONS0916			(Purchased Reagent)		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonate	46.6 ug/mL
.LCbr-NEtFOSAA_00001	01/17/23	WELLINGTON, Lot brNEtFOSAA0118			(Purchased Reagent)		N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	50 ug/mL
.LCbr-NMeFOSAA_00001	01/17/23	WELLINGTON, Lot brNMeFOSAA0118			(Purchased Reagent)		N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	50 ug/mL
.LCDONA_00002	03/26/23	WELLINGTON, Lot NADONA0318			(Purchased Reagent)		ADONA	50 ug/mL
.LCHFPO-DA_00002	03/26/21	WELLINGTON, Lot HFPODA0318			(Purchased Reagent)		Perfluoro(2-propoxypropanoic) acid	50 ug/mL
.LCPFBA_00008	05/29/22	Wellington Laboratories, Lot PFBA0517			(Purchased Reagent)		Perfluorobutanoic acid (PFBA)	50 ug/mL
.LCPFBS_00009	09/21/22	Wellington Laboratories, Lot LPFBS0917			(Purchased Reagent)		Perfluorobutane Sulfonate	44.2 ug/mL
							Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
.LCPFDA_00008	05/29/22	Wellington Laboratories, Lot PFDA0517			(Purchased Reagent)		Perfluorodecanoic acid (PFDA)	50 ug/mL
.LCPFDoA_00010	05/29/22	Wellington Laboratories, Lot PFDoA0517			(Purchased Reagent)		Perfluorododecanoic acid (PFDoA)	50 ug/mL
.LCPFDS_00008	11/08/22	Wellington Laboratories, Lot LPFDS1117			(Purchased Reagent)		Perfluorodecanesulfonic acid (PFDS)	48.2 ug/mL
.LCPFHpA_00011	09/27/22	Wellington Laboratories, Lot PFHpA0917			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
.LCPFHpSA_00003	09/01/22	Wellington Laboratories, Lot LPFHpS0817			(Purchased Reagent)		Perfluoroheptanesulfonic Acid (PFHpS)	47.6 ug/mL
.LCPFHxA_00010	09/27/22	Wellington Laboratories, Lot PFHxA0917			(Purchased Reagent)		Perfluorohexanoic acid (PFHxA)	50 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
.LCPFHxDA_00010	07/13/22	Wellington Laboratories, Lot PFHxDA0717			(Purchased Reagent)		Perfluorohexadecanoic acid	50 ug/mL
.LCPFHxS-br_00006	01/04/22	Wellington Laboratories, Lot brPFHxSK0117			(Purchased Reagent)		Perfluorohexane Sulfonate	45.5 ug/mL
							Perfluorohexanesulfonic acid (PFHxS)	45.5 ug/mL
.LCPFNA_00010	07/20/22	Wellington Laboratories, Lot PFNA0717			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
							Perfluorooctanoic acid (PFOA)	0.05 ug/mL
.LCPFNS_00003	09/27/22	Wellington Laboratories, Lot LPFNS0917			(Purchased Reagent)		Perfluorononanesulfonic acid (PFNS)	48 ug/mL
.LCPFOA_00011	09/27/22	Wellington Laboratories, Lot PFOA0917			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
.LCPFODA_00010	07/13/22	Wellington Laboratories, Lot PFODA0717			(Purchased Reagent)		Perfluorooctadecanoic acid	50 ug/mL
.LCPFOS-br_00007	01/12/22	Wellington Laboratories, Lot brPFOSK0117			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	46.4 ug/mL
.LCPFOSA_00013	09/01/22	Wellington Laboratories, Lot FOSA0817I			(Purchased Reagent)		Perfluorooctane Sulfonamide (FOSA)	50 ug/mL
.LCPFPeA_00010	06/14/22	Wellington Laboratories, Lot PFPeA0617			(Purchased Reagent)		Perfluoropentanoic acid (PFPeA)	50 ug/mL
.LCPFPeS_00003	01/11/22	Wellington Laboratories, Lot LPFPeS0117			(Purchased Reagent)		Perfluoropentanesulfonic acid (PFPeS)	46.9 ug/mL
.LCPFTeDA_00009	09/30/21	Wellington Laboratories, Lot PFTeDA0916			(Purchased Reagent)		Perfluorotetradecanoic acid (PFTeA)	50 ug/mL
.LCPFTrDA_00009	05/02/22	Wellington Laboratories, Lot PFTrDA0517			(Purchased Reagent)		Perfluorotridecanoic Acid (PFTriA)	50 ug/mL
.LCPFUdA_00008	10/18/21	Wellington Laboratories, Lot PFUdA1016			(Purchased Reagent)		Perfluoroundecanoic acid (PFUnA)	50 ug/mL

Reagent

LC11CIPF3OUdS_00002

h: 4/16/18 E-484

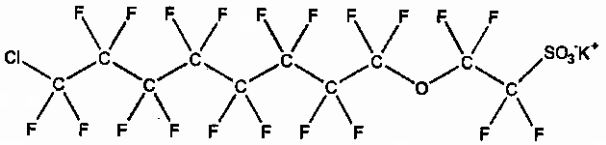
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: 11Cl-PF3OUdS **LOT NUMBER:** 11ClPF3OUdS0916

COMPOUND: Potassium 11-chloroeicosafluoro-3-oxaundecane-1-sulfonate

STRUCTURE: **CAS #:** 83329-89-9



MOLECULAR FORMULA: $C_{10}F_{20}ClSO_4K$ **MOLECULAR WEIGHT:** 670.69

CONCENTRATION: 50.0 ± 2.5 µg/ml (K Salt) **SOLVENT(S):** Methanol

47.1 ± 2.4 µg/ml (11Cl-PF3OUdS anion)

CHEMICAL PURITY: >98%

LAST TESTED: (mm/dd/yyyy) 09/30/2016

EXPIRY DATE: (mm/dd/yyyy) 09/30/2021

RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- This compound is a minor component of the commercial formulation known as F-53B.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 10/19/2016 (mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \ldots x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \ldots x_n)) = \sqrt{\sum_{i=1}^{n} u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of ±5% (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

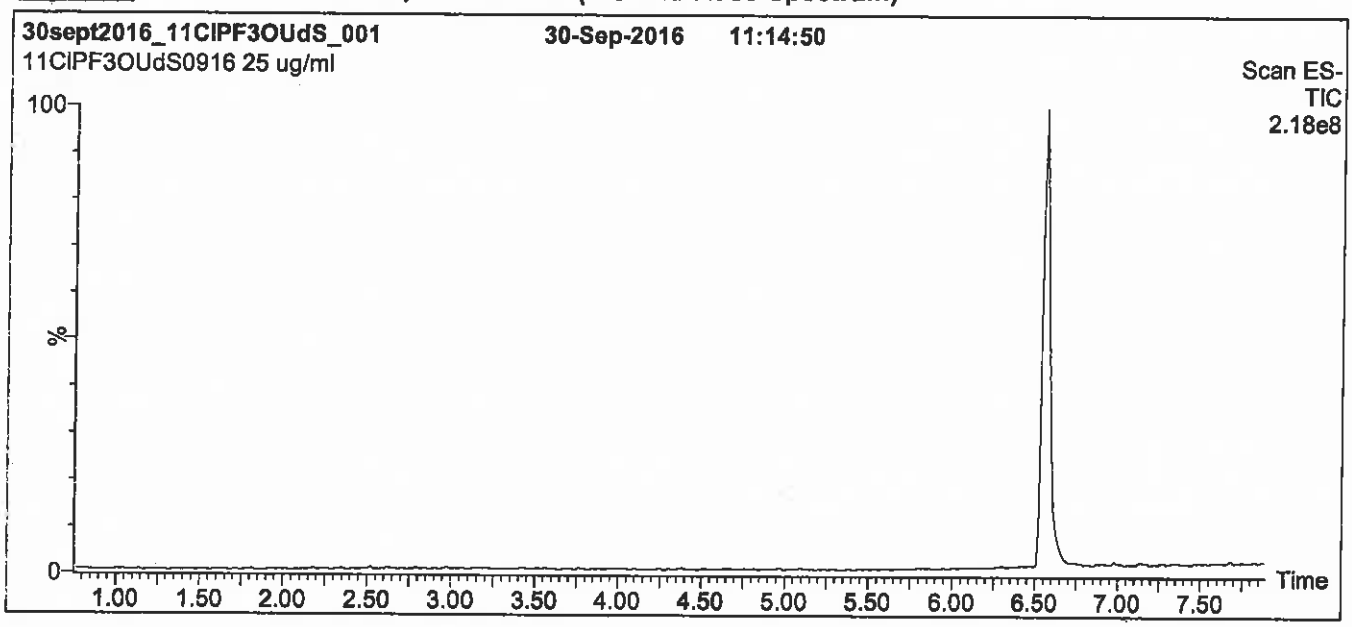
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

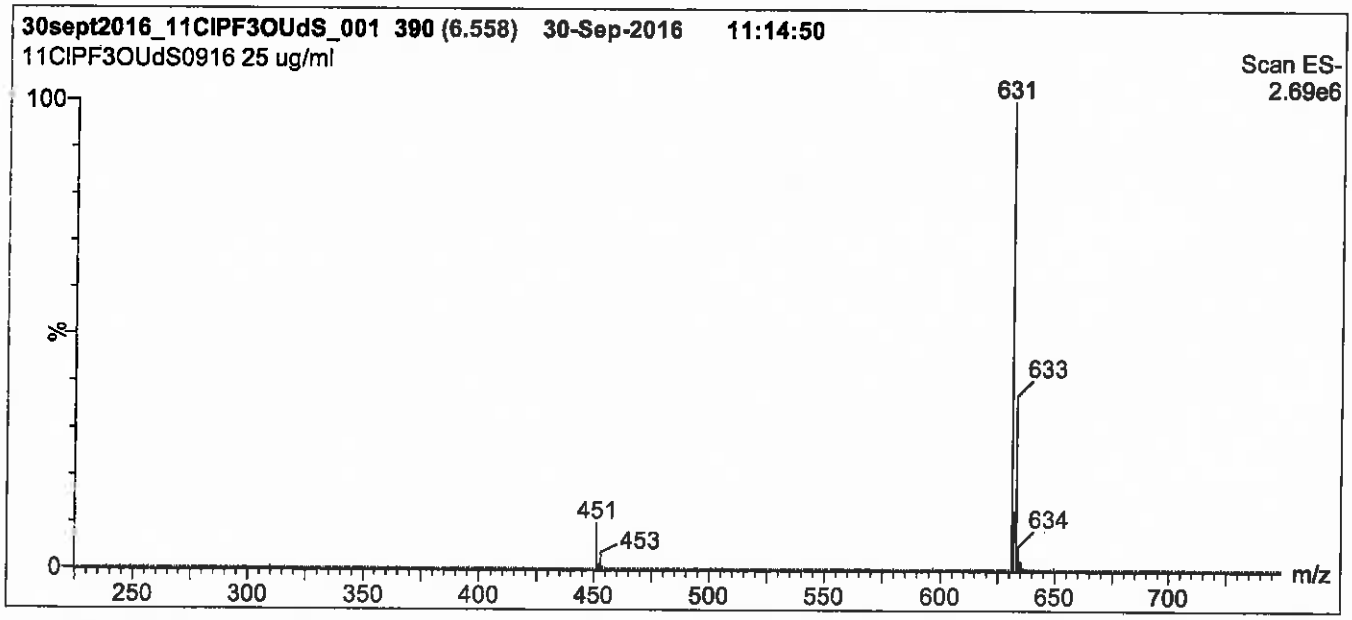
CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

Figure 1: **11Cl-PF3OUdS; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

LC: **Waters Acquity Ultra Performance LC**
MS: **Micromass Quattro *micro* API MS**

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for
1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

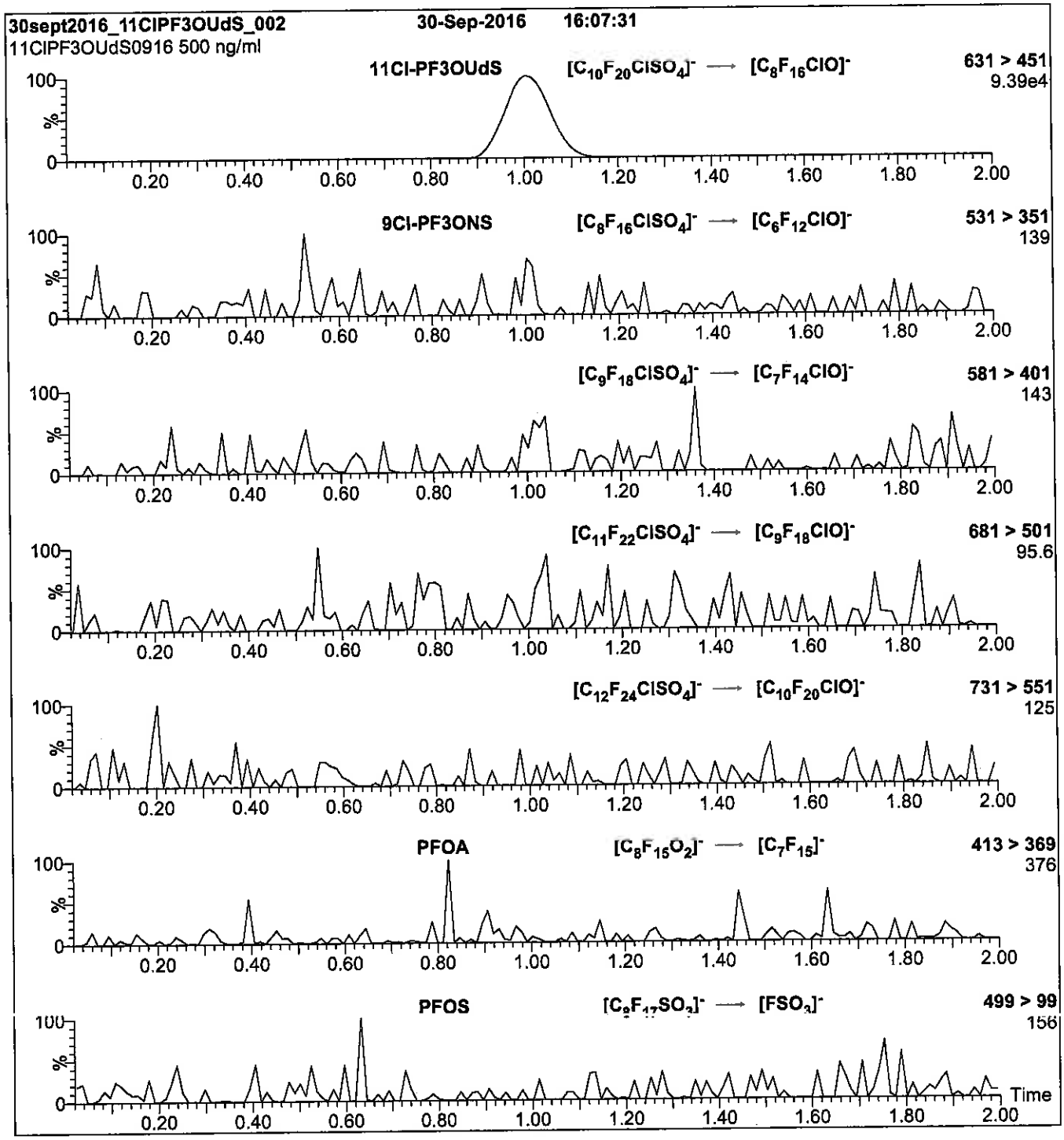
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 45.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: **11Cl-PF3OUdS; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml 11Cl-PF3OUdS)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.24e-3
Collision Energy (eV) = 20

Reagent

LC4:2FTS_00005

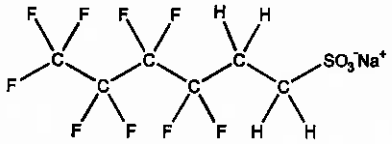
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: 4:2FTS **LOT NUMBER:** 42FTS1216

COMPOUND: Sodium 1H,1H,2H,2H-perfluorohexane sulfonate

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: $C_6H_4F_9SO_3Na$ **MOLECULAR WEIGHT:** 350.13

CONCENTRATION: 50.0 ± 2.5 µg/ml (Na salt) **SOLVENT(S):** Methanol

46.7 ± 2.3 µg/ml (4:2FTS anion)

CHEMICAL PURITY: >98%

LAST TESTED: (mm/dd/yyyy) 12/12/2016

EXPIRY DATE: (mm/dd/yyyy) 12/12/2021

RECOMMENDED STORAGE: Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 12/21/2016 (mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

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$$u_c(y(x_1, x_2, \ldots x_n)) = \sqrt{\sum_{i=1}^{n} u(y, x_i)^2}$$

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All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

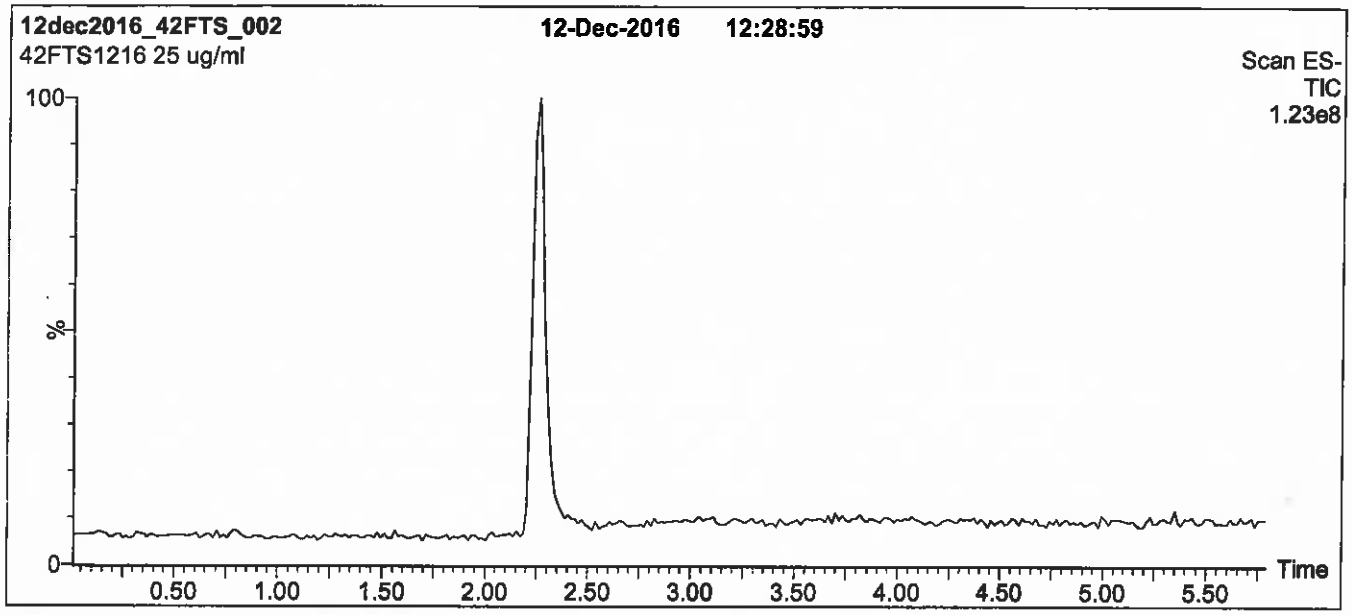
At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

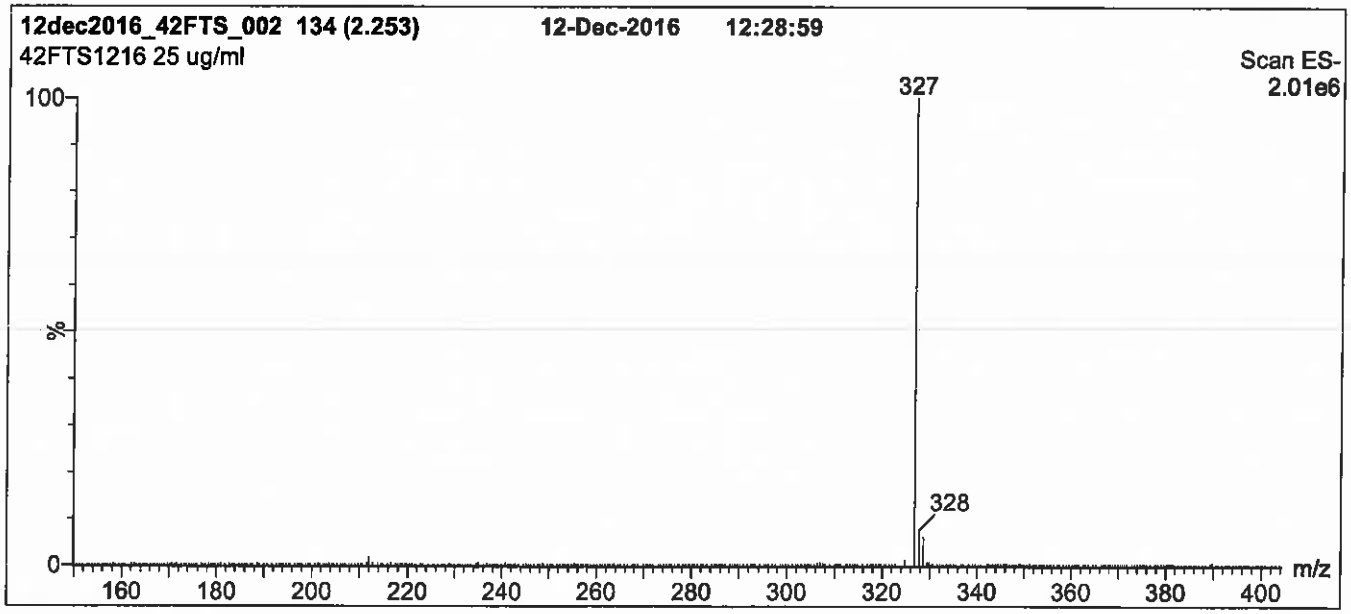
QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

Figure 1: **4:2FTS; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7.5 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

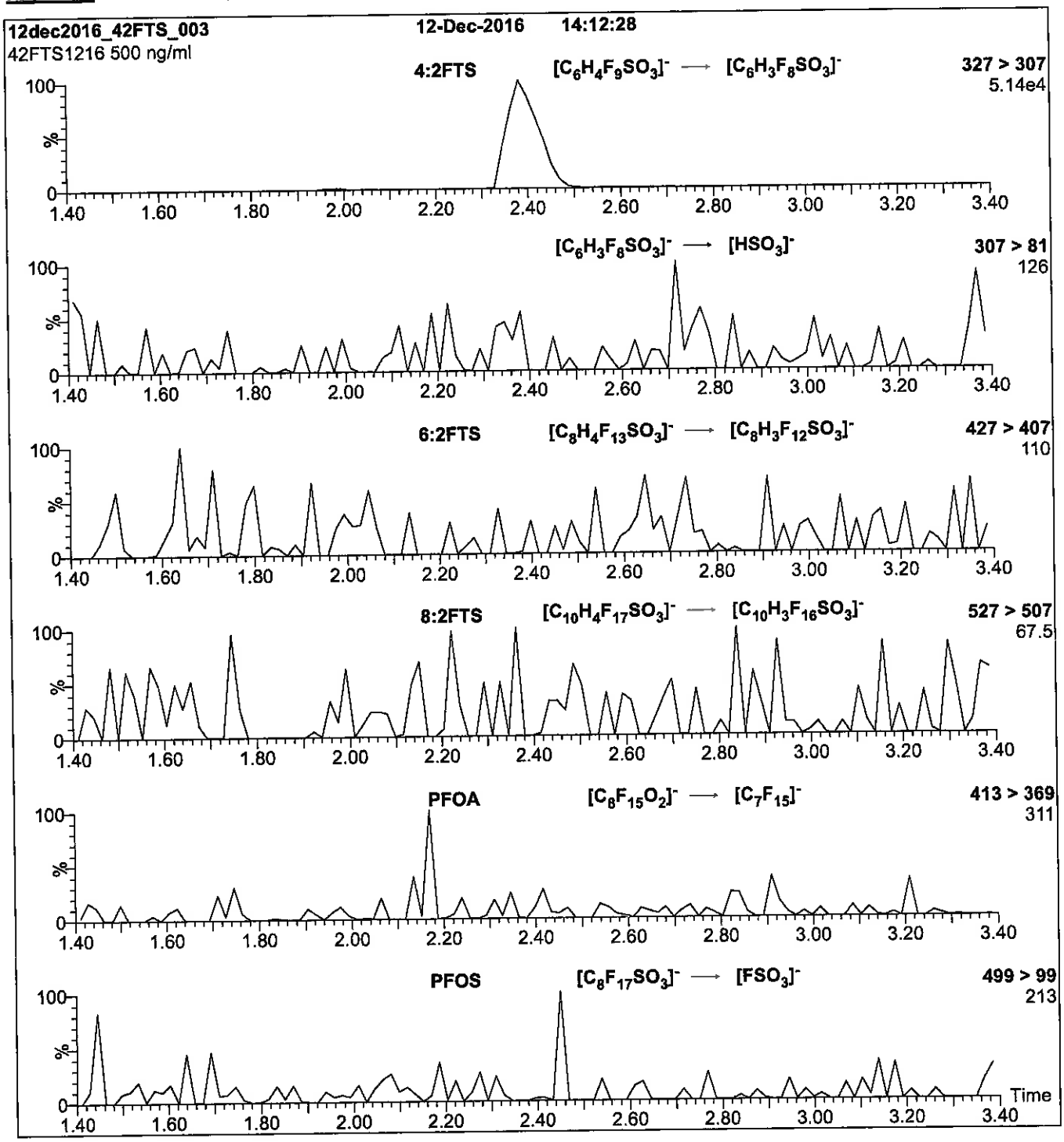
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 25.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

Figure 2: **4:2FTS; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml 4:2FTS)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.31e-3
Collision Energy (eV) = 25

Reagent

LC6:2FTS_00007

r: 9/21/17 SW/E-494

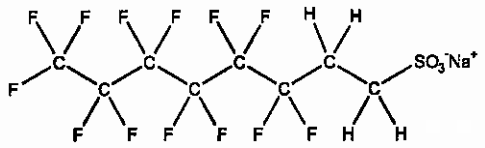
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: 6:2FTS **LOT NUMBER:** 62FTS0417

COMPOUND: Sodium 1H,1H,2H,2H-perfluorooctane sulfonate

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: $C_8H_4F_{13}SO_3Na$ **MOLECULAR WEIGHT:** 450.15

CONCENTRATION: 50.0 ± 2.5 µg/ml (Na salt) **SOLVENT(S):** Methanol

47.4 ± 2.4 µg/ml (6:2FTS anion)

CHEMICAL PURITY: >98%

LAST TESTED: (mm/dd/yyyy) 04/20/2017

EXPIRY DATE: (mm/dd/yyyy) 04/20/2022

RECOMMENDED STORAGE: Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 04/24/2017 (mm/dd/yyyy)

B.G. Chittim, General Manager

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

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UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \ldots x_n$ on which it depends is:

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EXPIRY DATE / PERIOD OF VALIDITY:

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CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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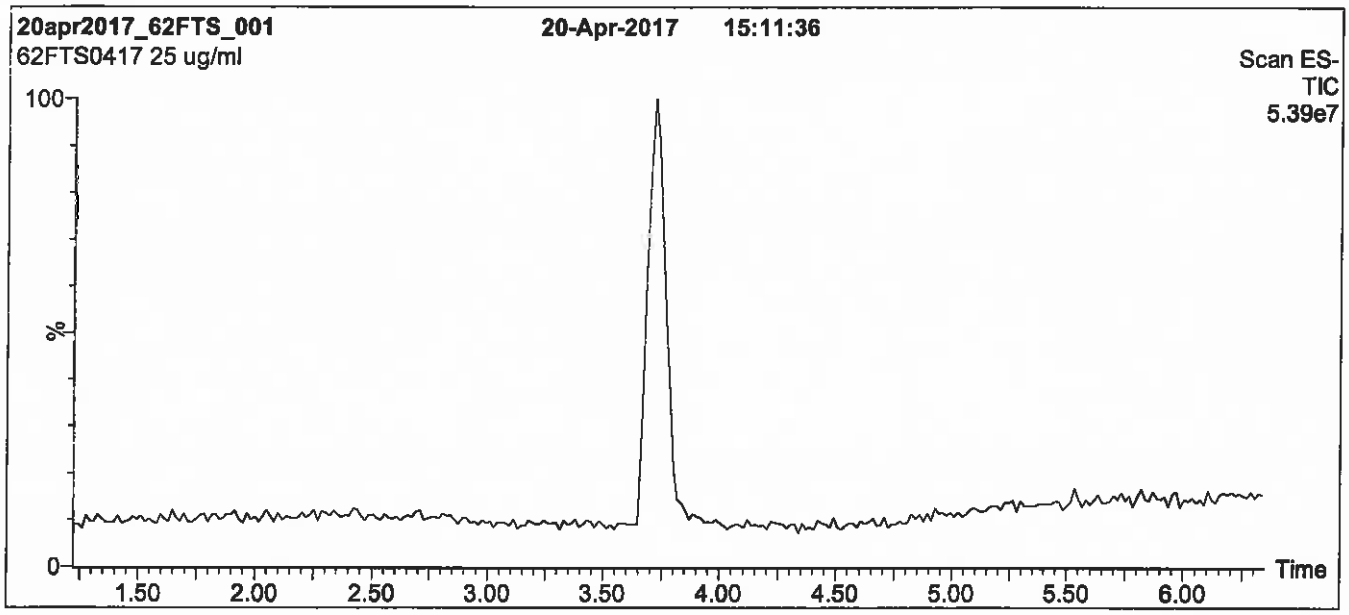
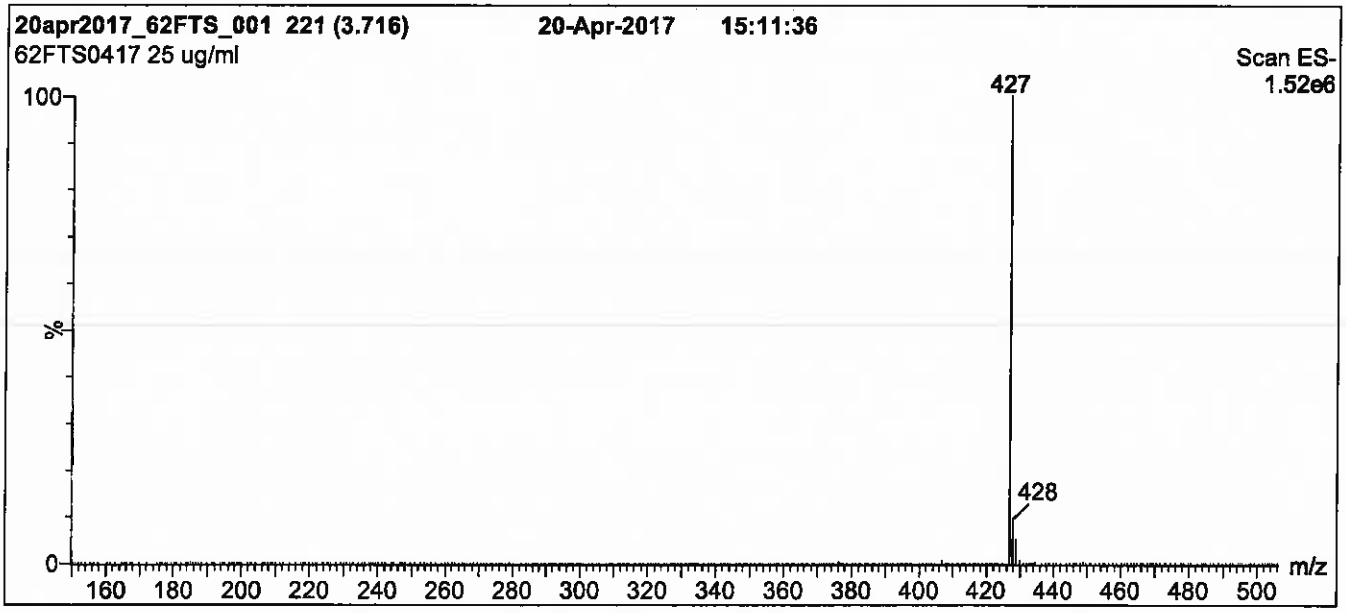
Figure 1: **6:2FTS; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

LC: **Waters Acquity Ultra Performance LC**
MS: **Micromass Quattro *micro* API MS**

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 85% organic over 7.5 min and hold for 1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

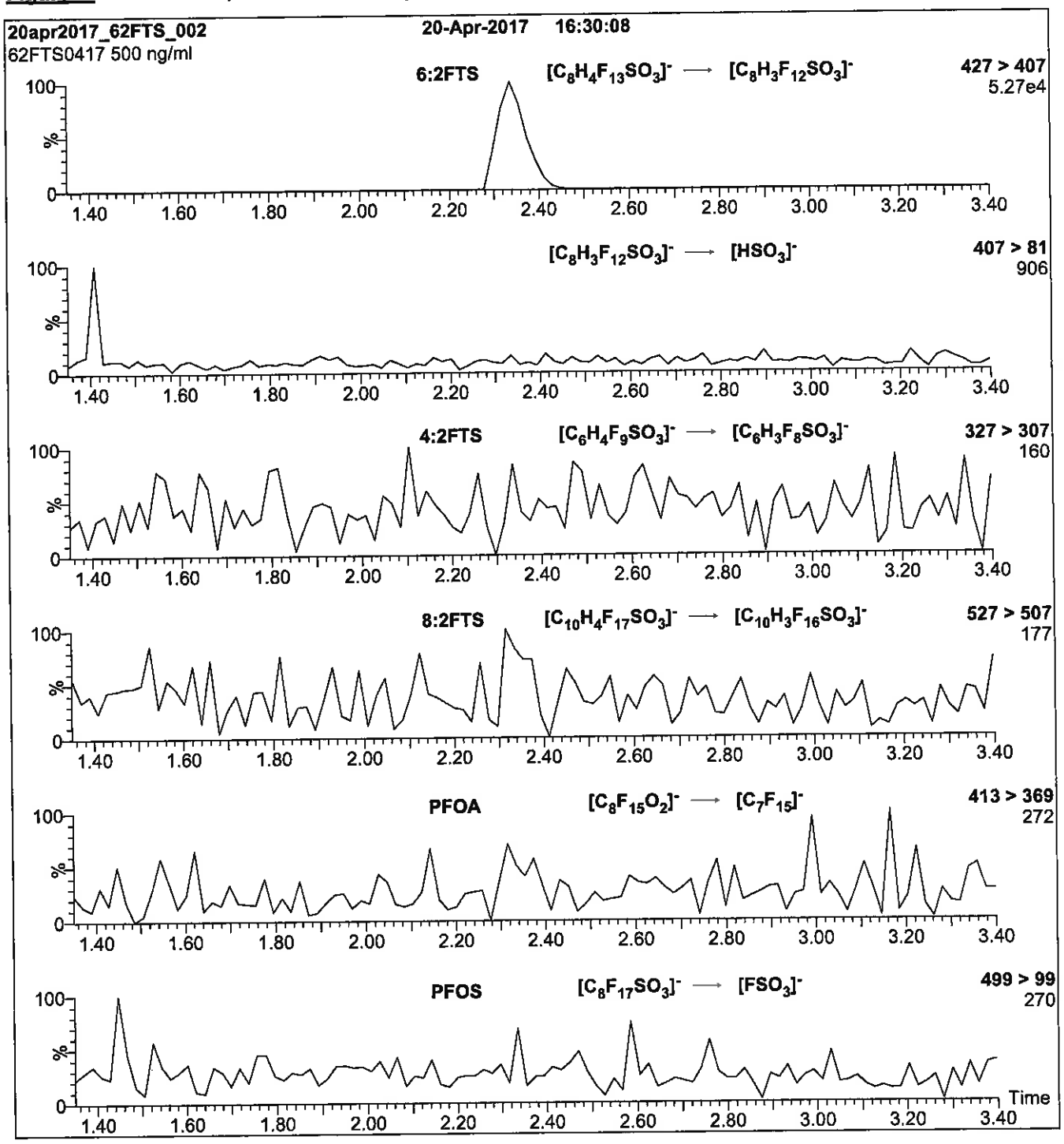
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 30.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: **6:2FTS; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml 6:2FTS)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.35e-3
Collision Energy (eV) = 25

Reagent

LC8:2FTS_00007

r: 9/21/17 SK

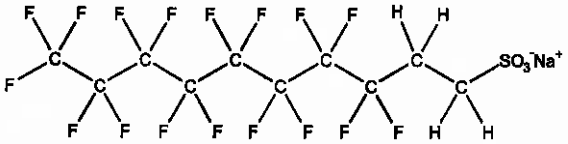
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: 8:2FTS **LOT NUMBER:** 82FTS1216

COMPOUND: Sodium 1H,1H,2H,2H-perfluorodecane sulfonate

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: $C_{10}H_4F_{17}SO_3Na$ **MOLECULAR WEIGHT:** 550.16

CONCENTRATION: 50.0 ± 2.5 µg/ml (Na salt) **SOLVENT(S):** Methanol

47.9 ± 2.4 µg/ml (8:2FTS anion)

CHEMICAL PURITY: >98%

LAST TESTED: (mm/dd/yyyy) 12/12/2016

EXPIRY DATE: (mm/dd/yyyy) 12/12/2021

RECOMMENDED STORAGE: Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 12/21/2016 (mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

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HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \ldots x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \ldots x_n)) = \sqrt{\sum_{i=1}^{n} u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of ±5% (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

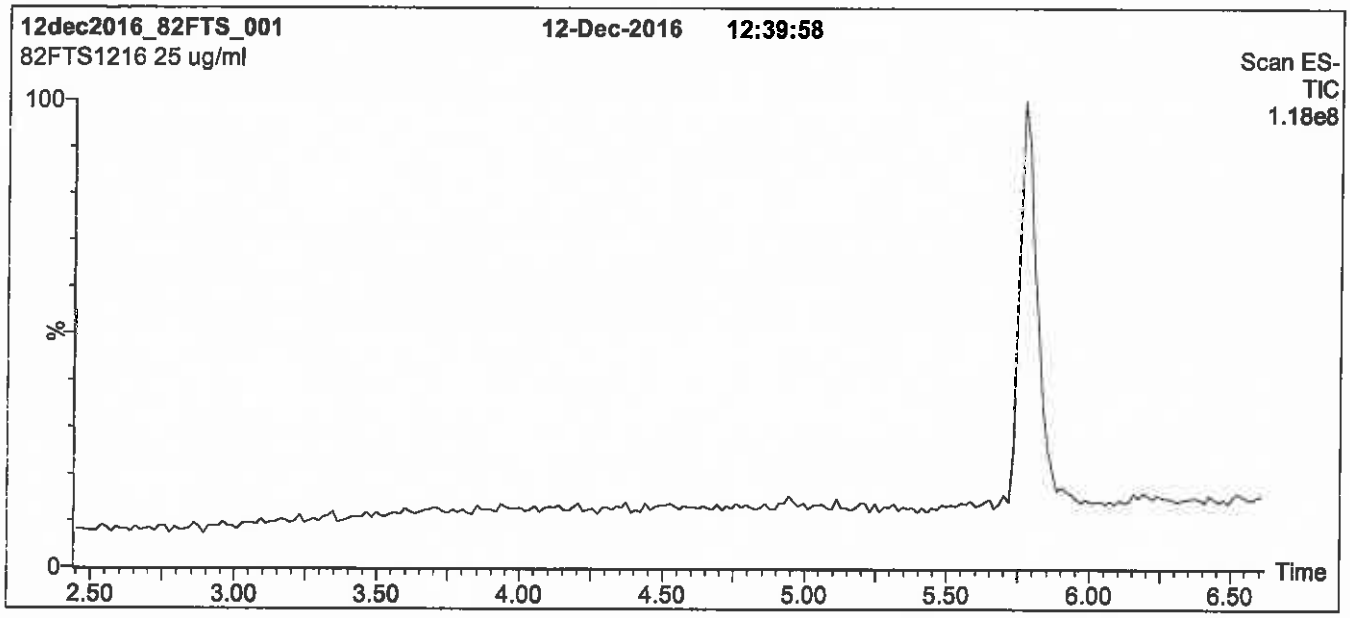
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

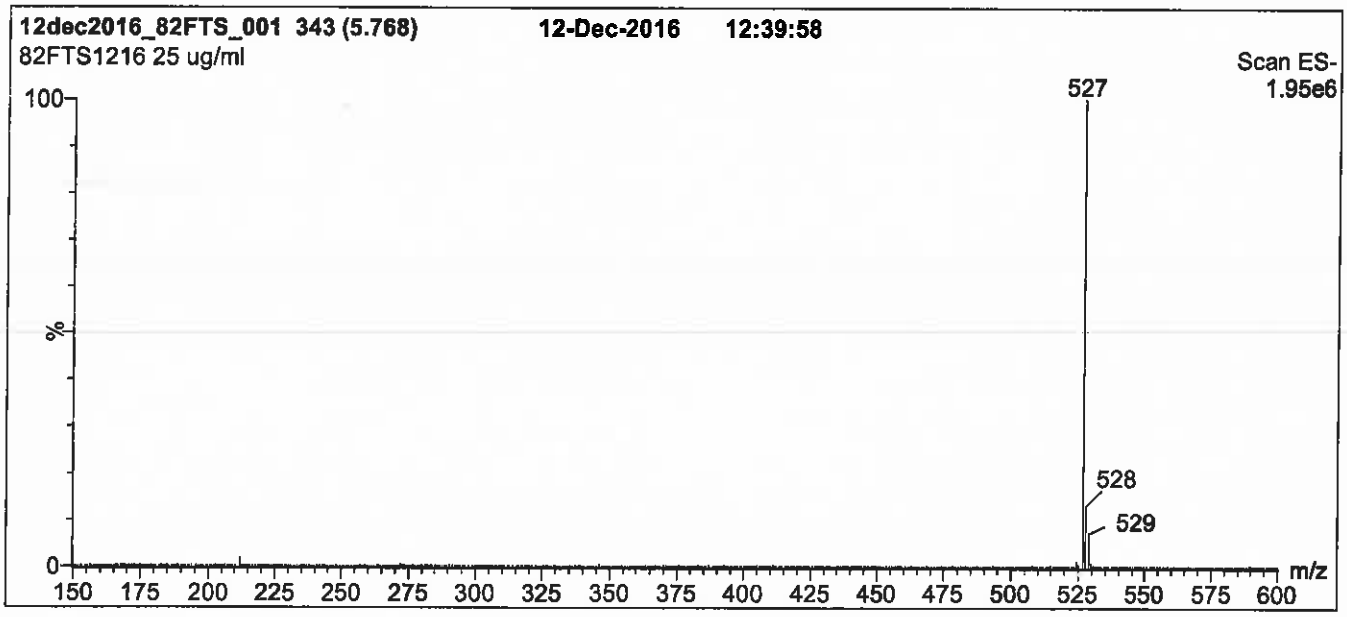
CALA

ANAB ACCREDITED

For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

Figure 1: **8:2FTS; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 85% organic over 7.5 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

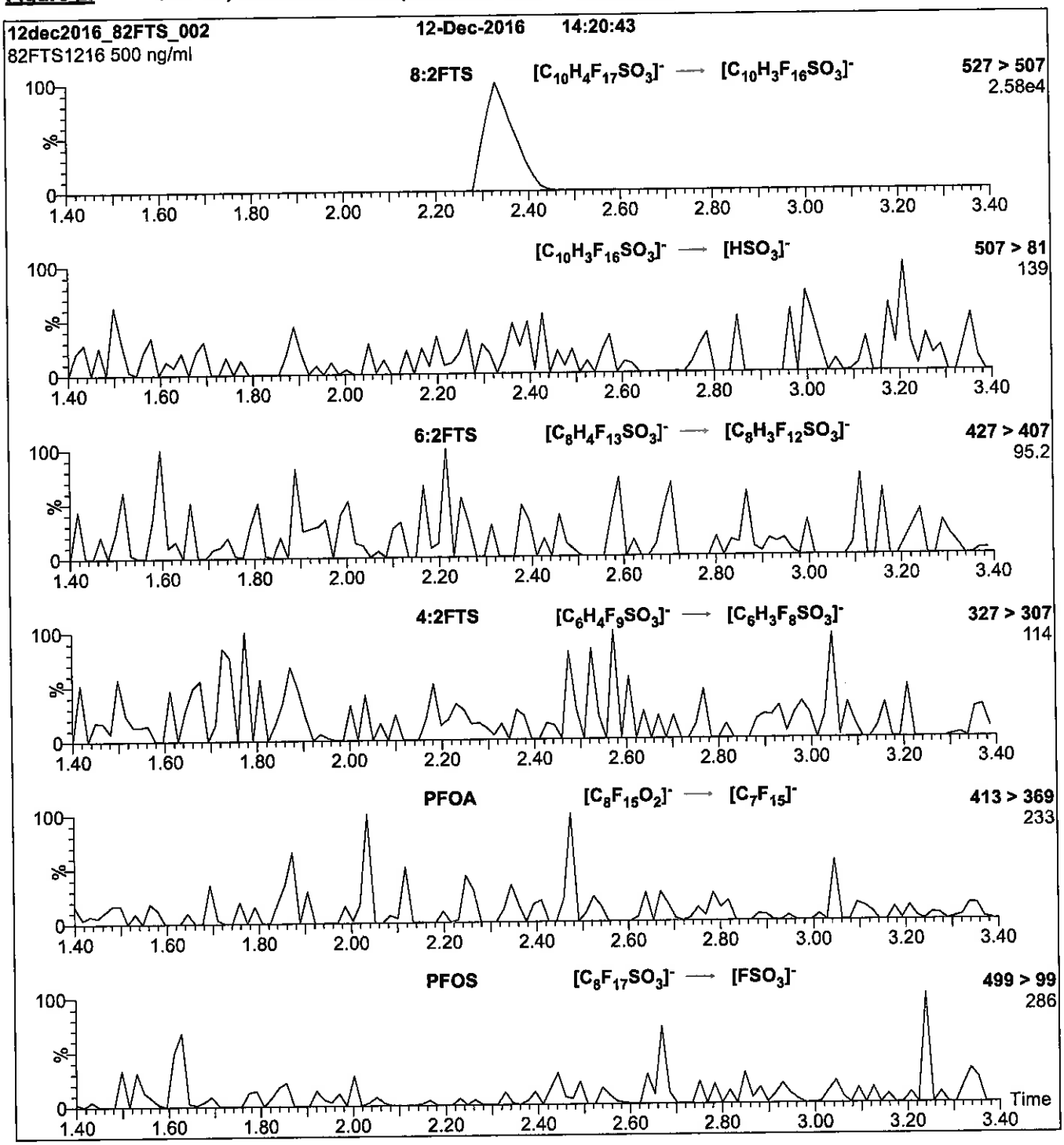
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 30.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

Figure 2: **8:2FTS; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml 8:2FTS)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.28e-3
Collision Energy (eV) = 30

Reagent

LC9CI-PF3ONS_00002

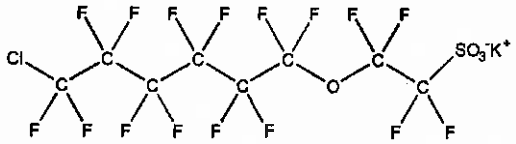
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: 9Cl-PF3ONS **LOT NUMBER:** 9ClPF3ONS0916

COMPOUND: Potassium 9-chlorohexadecafluoro-3-oxanonane-1-sulfonate

STRUCTURE: **CAS #:** 73606-19-6



MOLECULAR FORMULA: $C_8F_{16}ClSO_4K$ **MOLECULAR WEIGHT:** 570.67

CONCENTRATION: 50.0 ± 2.5 µg/ml (K Salt) **SOLVENT(S):** Methanol

46.6 ± 2.3 µg/ml (9Cl-PF3ONS anion)

CHEMICAL PURITY: >98%

LAST TESTED: (mm/dd/yyyy) 09/30/2016

EXPIRY DATE: (mm/dd/yyyy) 09/30/2021

RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- This compound is the major component of the commercial formulation known as F-53B.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 10/19/2016 (mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

UNCERTAINTY:

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$$u_c(y(x_1, x_2, \ldots x_n)) = \sqrt{\sum_{i=1}^{n} u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of ±5% (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

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QUALITY MANAGEMENT:

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CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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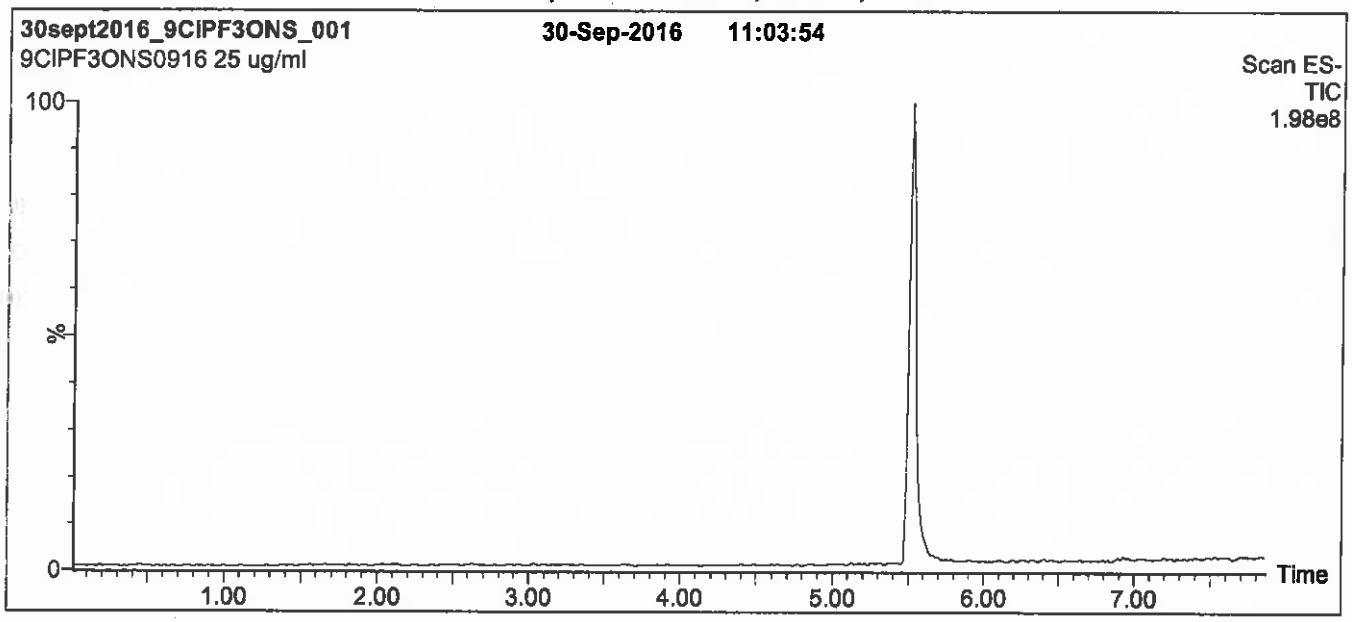
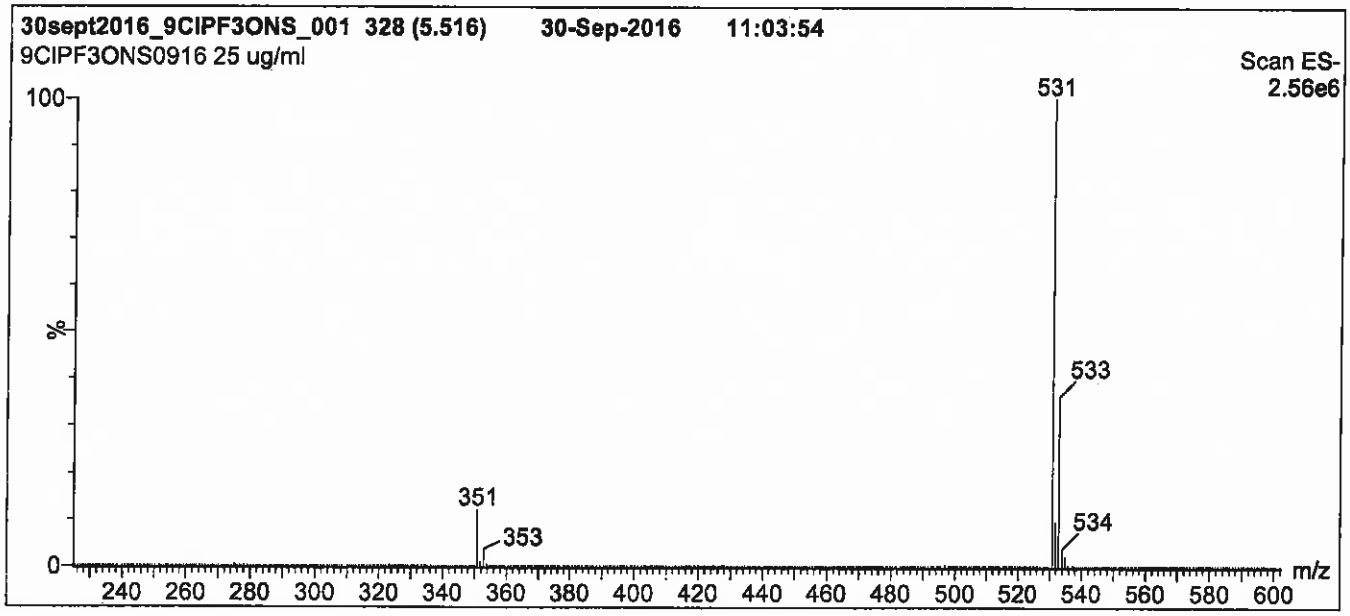
Figure 1: **9Cl-PF3ONS; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for
1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

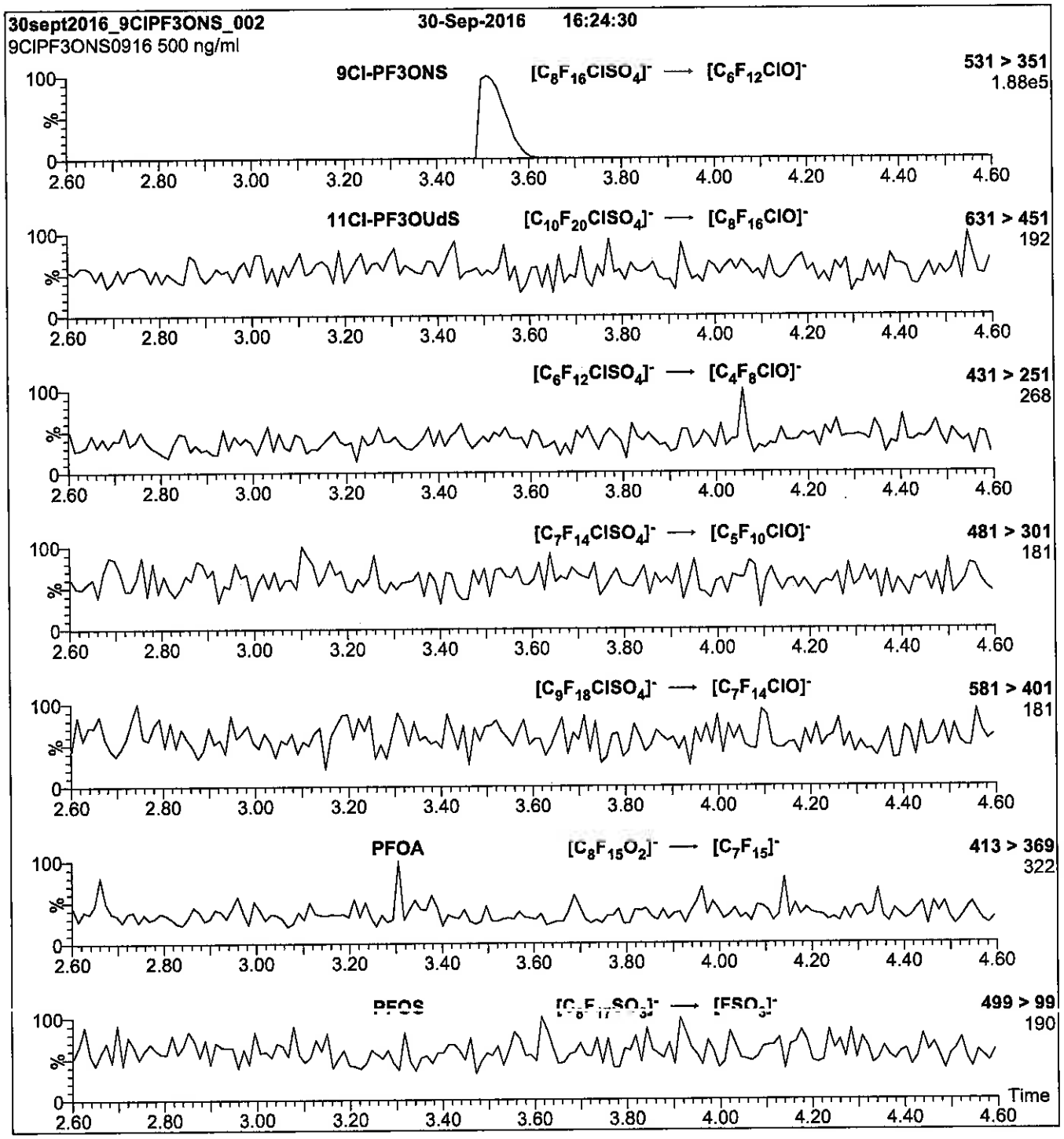
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 40.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: **9Cl-PF3ONS; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml 9Cl-PF3ONS)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.35e-3
Collision Energy (eV) = 25

Reagent

LCbr-NEtFOSAA_00001

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

br-NEtFOSAA

N-Ethylperfluorooctanesulfonamidoacetic Acid Solution/Mixture of Linear and Branched Isomers

PRODUCT CODE:	br-NEtFOSAA
LOT NUMBER:	brNEtFOSAA0118
CONCENTRATION:	50.0 ± 2.5 µg/ml
SOLVENT(S):	Methanol/Water (<1%)
DATE PREPARED: (mm/dd/yyyy)	01/10/2018
LAST TESTED: (mm/dd/yyyy)	01/17/2018
EXPIRY DATE: (mm/dd/yyyy)	01/17/2023
RECOMMENDED STORAGE:	Refrigerate ampoule

DESCRIPTION:

The chemical purity has been determined to be ≥98% N-ethylperfluorooctanesulfonamidoacetic acid (linear and branched isomers). The full name, structure and percent composition for each of the identified isomeric components are given in Table A.

DOCUMENTATION/ DATA ATTACHED:

Table A: Isomeric Components and Percent Composition by ^{19}F-NMR
Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS Data (SIR)
Figure 3: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the acetic acid moiety to its respective methyl ester.

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HANDLING:

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UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \ldots x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \ldots x_n)) = \sqrt{\sum_{i=1}^{n} u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

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EXPIRY DATE / PERIOD OF VALIDITY:

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CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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Table A: **br-NEtFOSAA; Isomeric Components and Percent Composition (by ^{19}F-NMR)***

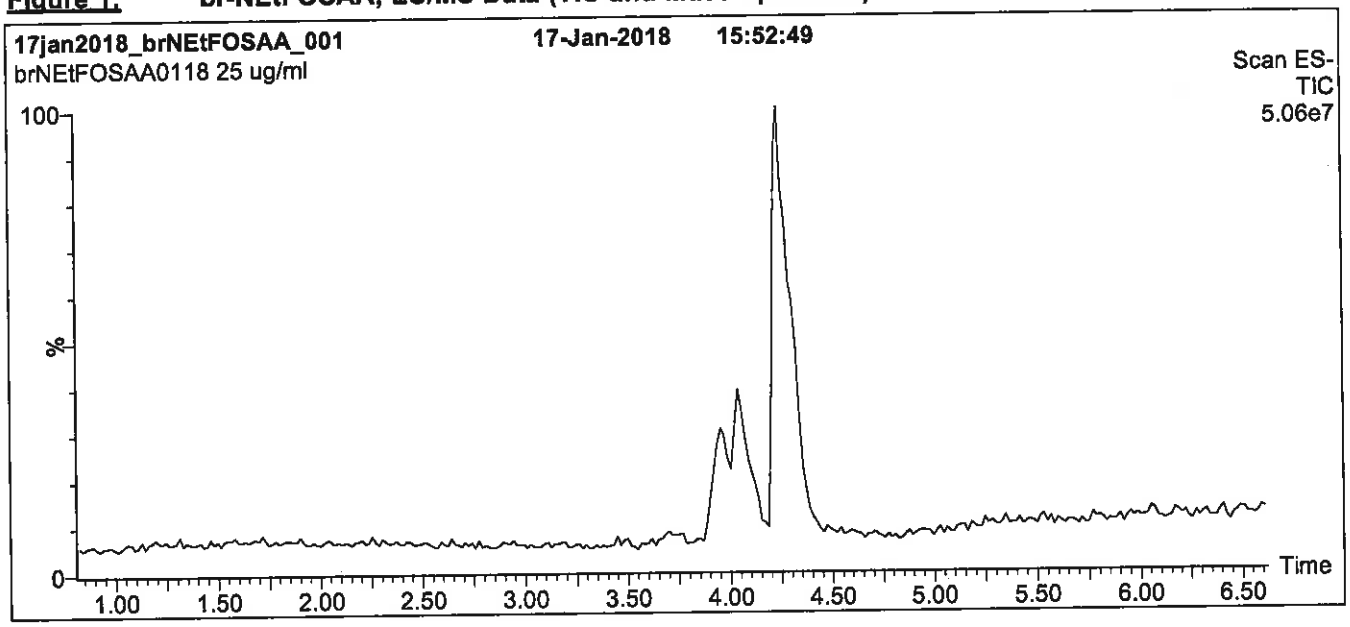
Isomer	Name	Structure	Percent Composition by ^{19}F-NMR
1	N-ethylperfluoro-1-octanesulfonamidoacetic acid	$CF_3(CF_2)_7SO_2N(C_2H_5)CH_2CO_2H$	77.5
2	N-ethylperfluoro-3-methylheptanesulfonamidoacetic acid	$CF_3(CF_2)_3CF(CF_3)(CF_2)_2SO_2N(C_2H_5)CH_2CO_2H$	2.3
3	N-ethylperfluoro-4-methylheptanesulfonamidoacetic acid	$CF_3(CF_2)_2CF(CF_3)(CF_2)_3SO_2N(C_2H_5)CH_2CO_2H$	2.2
4	N-ethylperfluoro-5-methylheptanesulfonamidoacetic acid	$CF_3CF_2CF(CF_3)(CF_2)_4SO_2N(C_2H_5)CH_2CO_2H$	5.4
5	N-ethylperfluoro-6-methylheptanesulfonamidoacetic acid	$CF_3CF(CF_3)(CF_2)_5SO_2N(C_2H_5)CH_2CO_2H$	10.4
6	N-ethylperfluoro-5,5-dimethylhexanesulfonamidoacetic acid	$CF_3C(CF_3)_2(CF_2)_4SO_2N(C_2H_5)CH_2CO_2H$	0.3
7	N-ethylperfluoro-4,5-dimethylhexanesulfonamidoacetic acid	$CF_3CF(CF_3)CF(CF_2)_3SO_2N(C_2H_5)CH_2CO_2H$	0.3
8	N-ethylperfluoro-3,5-dimethylhexanesulfonamidoacetic acid	$CF_3CF(CF_3)CF_2CF(CF_2)_2SO_2N(C_2H_5)CH_2CO_2H$	0.3
9	Other Unidentified Isomers		1.3

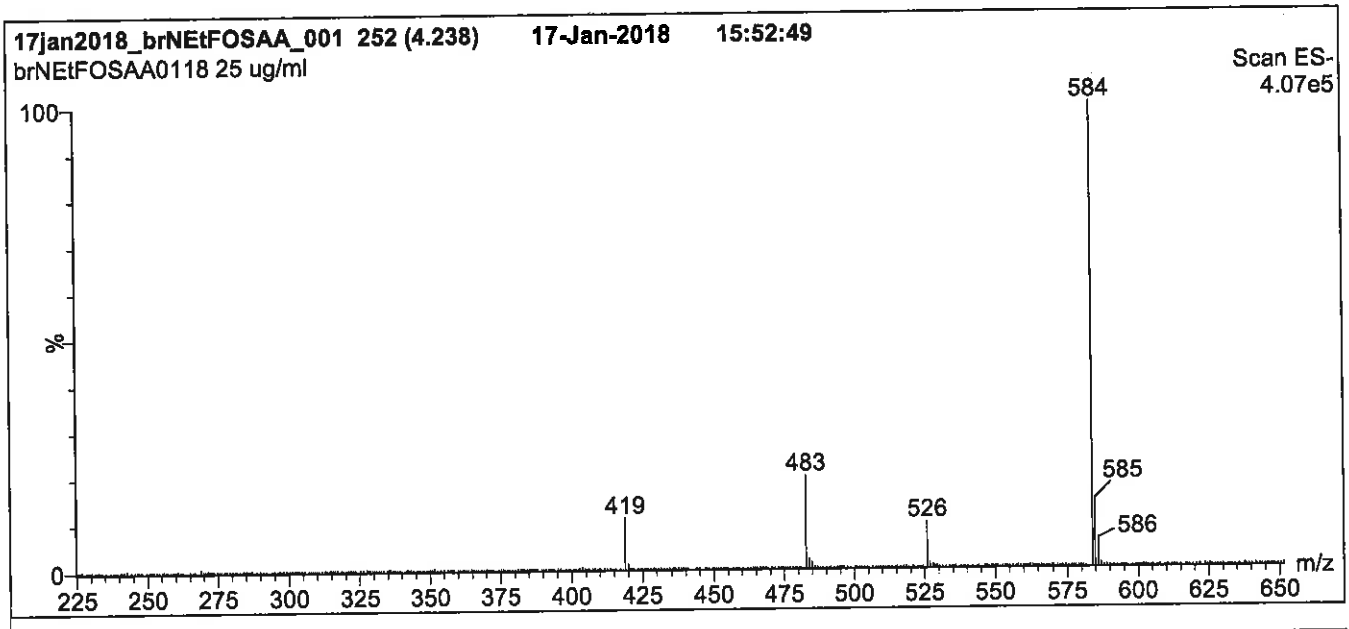
* Percent of total N-ethylperfluorooctanesulfonamidoacetic acid isomers only.

Certified By: _____ **Date:** 03/22/2018 (mm/dd/yyyy)

B.G. Chittim, General Manager

Figure 1: **br-NEtFOSAA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

LC: **Waters Acquity Ultra Performance LC**
MS: **Micromass Quattro *micro* API MS**

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 55% (80:20 MeOH:ACN) / 45% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for
2 min before returning to initial conditions in 0.5 min.

Time: 10 min

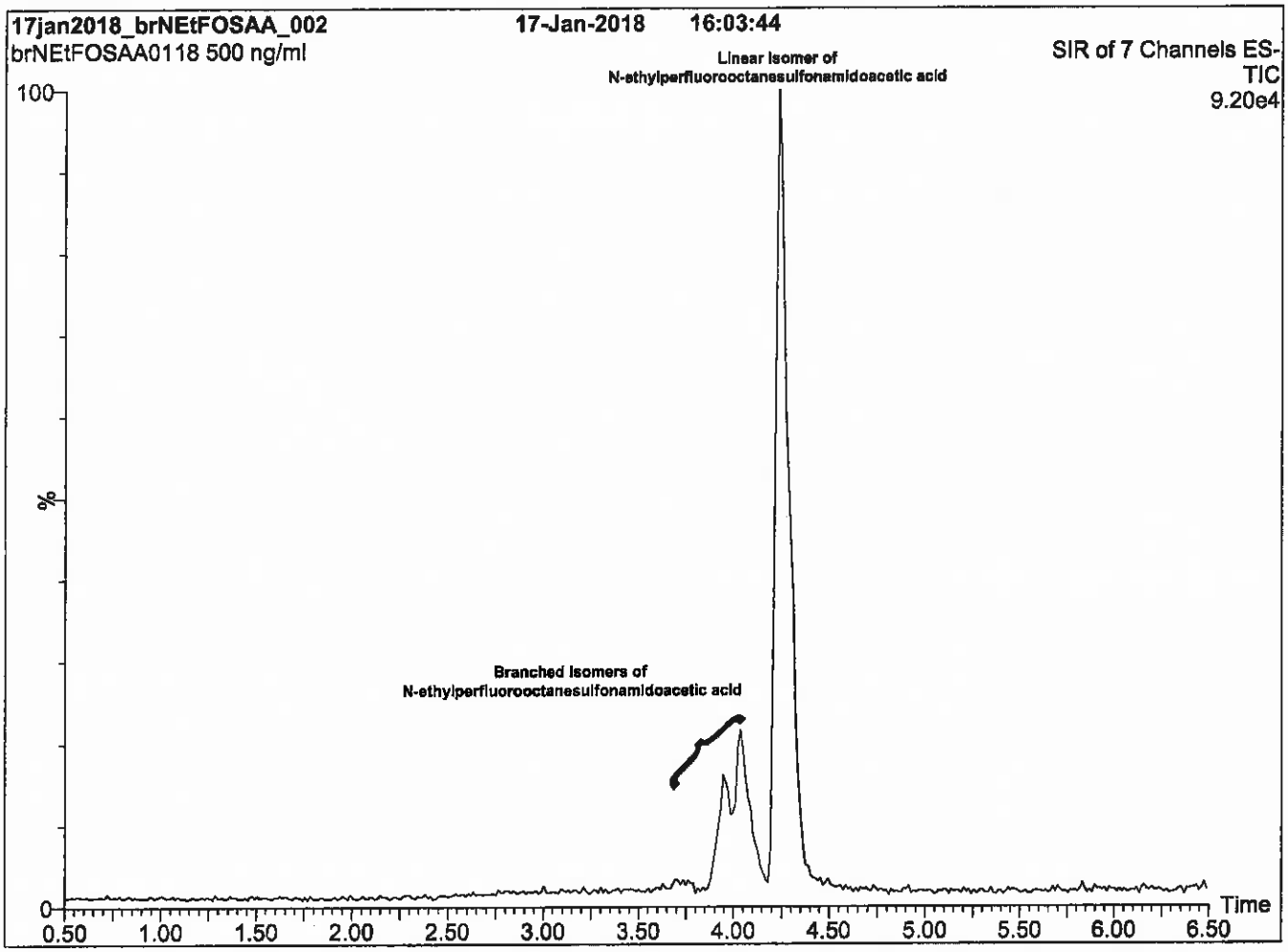
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 35.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: **br-NEtFOSAA; LC/MS Data (SIR)**



Conditions for Figure 2:

LC: **Waters Acquity Ultra Performance LC**
MS: **Micromass Quattro *micro* API MS**

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 55% (80:20 MeOH:ACN) / 45% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for
2 min before returning to initial conditions in 0.5 min.

Time: 10 min

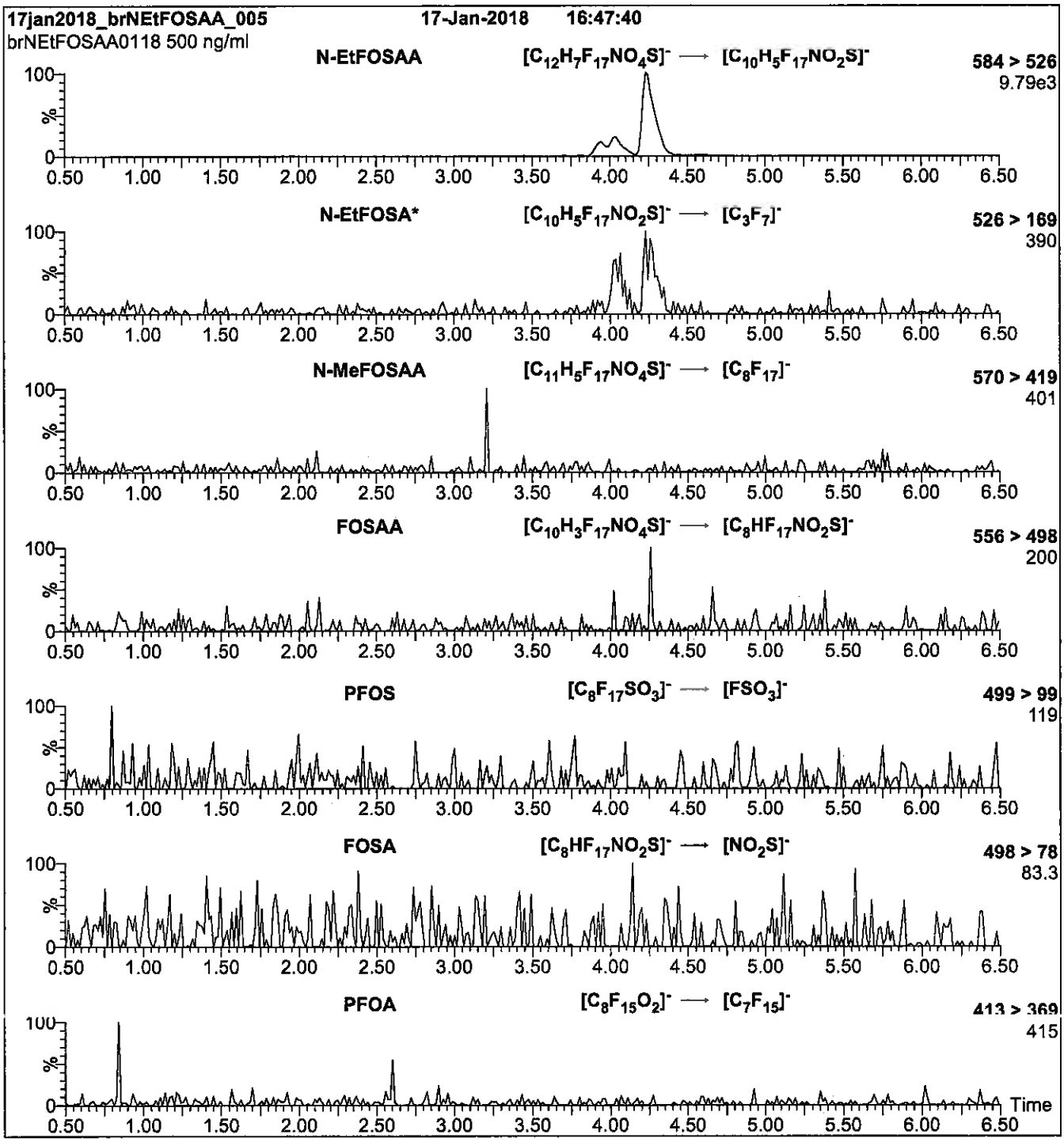
Flow: 300 µl/min

MS Parameters

Experiment: SIR (7 channels)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 15-60
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 3: **br-NEtFOSAA; LC/MS/MS Data (Selected MRM Transitions)**



*Note: N-EtFOSA is formed by in-source fragmentation.

Conditions for Figure 3:

Injection: On-column

Mobile phase: Same as Figure 2

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.39e-3
Collision Energy (eV) = 11-40 (variable)

Reagent

LCbr-NMeFOSAA_00001

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

br-NMeFOSAA

N-Methylperfluorooctanesulfonamidoacetic Acid Solution/Mixture of Linear and Branched Isomers

PRODUCT CODE:	br-NMeFOSAA
LOT NUMBER:	brNMeFOSAA0118
CONCENTRATION:	50.0 ± 2.5 µg/ml
SOLVENT(S):	Methanol/Water (<1%)
DATE PREPARED: (mm/dd/yyyy)	01/10/2018
LAST TESTED: (mm/dd/yyyy)	01/17/2018
EXPIRY DATE: (mm/dd/yyyy)	01/17/2023
RECOMMENDED STORAGE:	Refrigerate ampoule

DESCRIPTION:

The chemical purity has been determined to be ≥98% N-methylperfluorooctanesulfonamidoacetic acid (linear and branched isomers). The full name, structure and percent composition for each of the identified isomeric components are given in Table A.

DOCUMENTATION/ DATA ATTACHED:

Table A: Isomeric Components and Percent Composition by ^{19}F-NMR
Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS Data (SIR)
Figure 3: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the acetic acid moiety to its respective methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compounds it contains.

HANDLING:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Our products are synthesized using single-product unambiguous routes whenever possible. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS, and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products, as well as mixtures and calibration solutions, are compared to older lots in a similar manner. This further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers. In order to maintain the integrity of the assigned value(s), and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

UNCERTAINTY:

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The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \ldots x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \ldots x_n)) = \sqrt{\sum_{i=1}^{n} u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of ±5% (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

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CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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Table A: **br-NMeFOSAA; Isomeric Components and Percent Composition (by ^{19}F-NMR)***

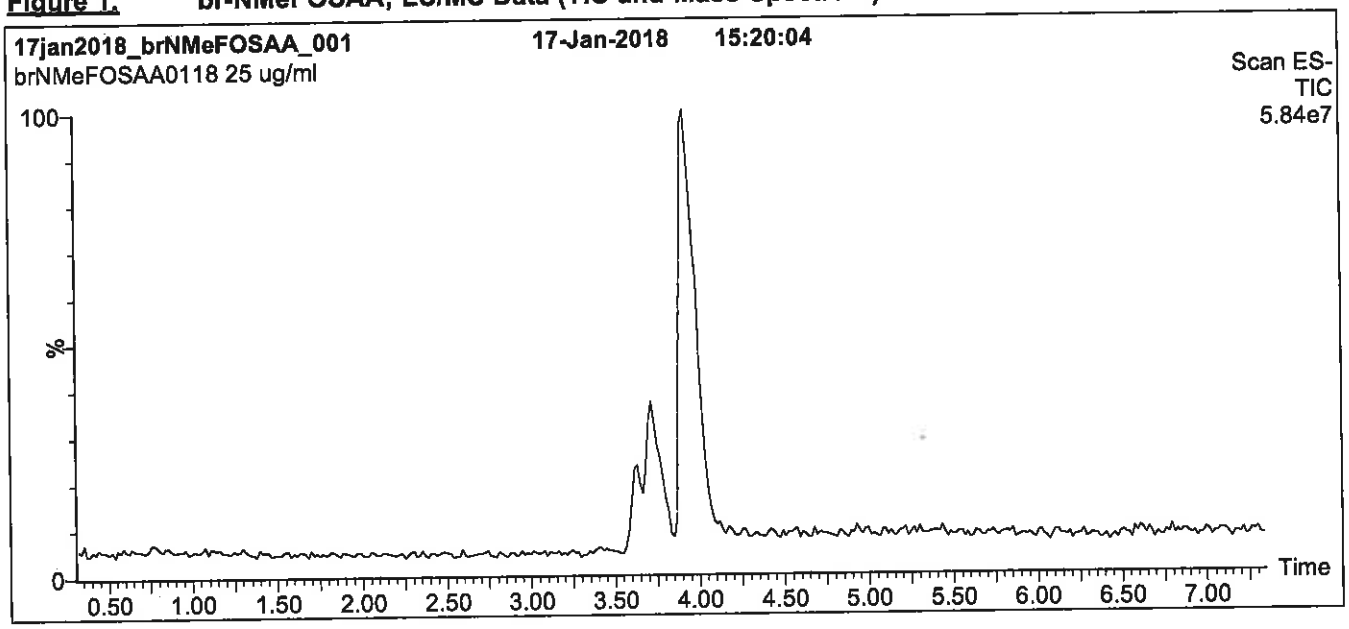
Isomer	Name	Structure	Percent Composition by ^{19}F-NMR
1	N-methylperfluoro-1-octanesulfonamidoacetic acid	$CF_3(CF_2)_7SO_2N(CH_3)CH_2CO_2H$	76.0
2	N-methylperfluoro-3-methylheptanesulfonamidoacetic acid	$CF_3(CF_2)_3CF(CF_3)(CF_2)_2SO_2N(CH_3)CH_2CO_2H$	0.7
3	N-methylperfluoro-4-methylheptanesulfonamidoacetic acid	$CF_3(CF_2)_2CF(CF_3)(CF_2)_3SO_2N(CH_3)CH_2CO_2H$	2.0
4	N-methylperfluoro-5-methylheptanesulfonamidoacetic acid	$CF_3CF_2CF(CF_3)(CF_2)_4SO_2N(CH_3)CH_2CO_2H$	6.0
5	N-methylperfluoro-6-methylheptanesulfonamidoacetic acid	$CF_3CF(CF_3)(CF_2)_5SO_2N(CH_3)CH_2CO_2H$	14.0
6	N-methylperfluoro-5,5-dimethylhexanesulfonamidoacetic acid	$CF_3C(CF_3)_2(CF_2)_4SO_2N(CH_3)CH_2CO_2H$	0.2
7	Other Unidentified Isomers		1.1

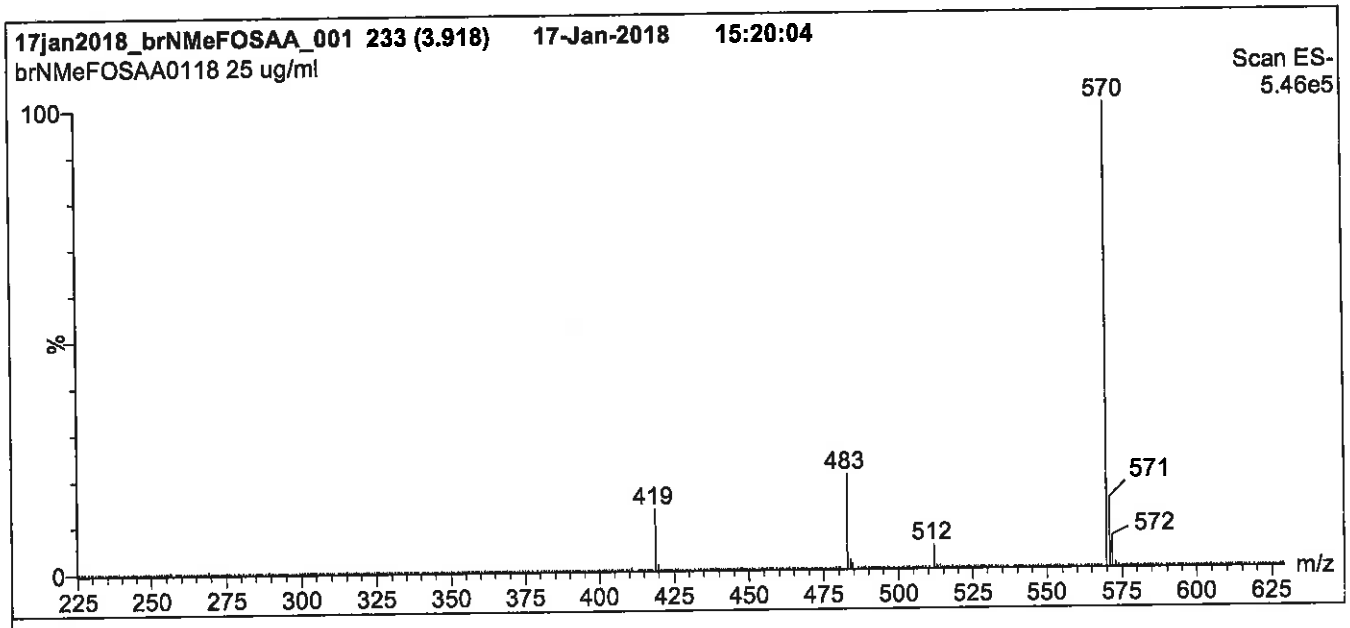
* Percent of total N-methylperfluorooctanesulfonamidoacetic acid isomers only.

Certified By: _____ **Date:** 03/22/2018 (mm/dd/yyyy)

B.G. Chittim, General Manager

Figure 1: **br-NMeFOSAA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 55% (80:20 MeOH:ACN) / 45% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for
2 min before returning to initial conditions in 0.5 min.

Time: 10 min

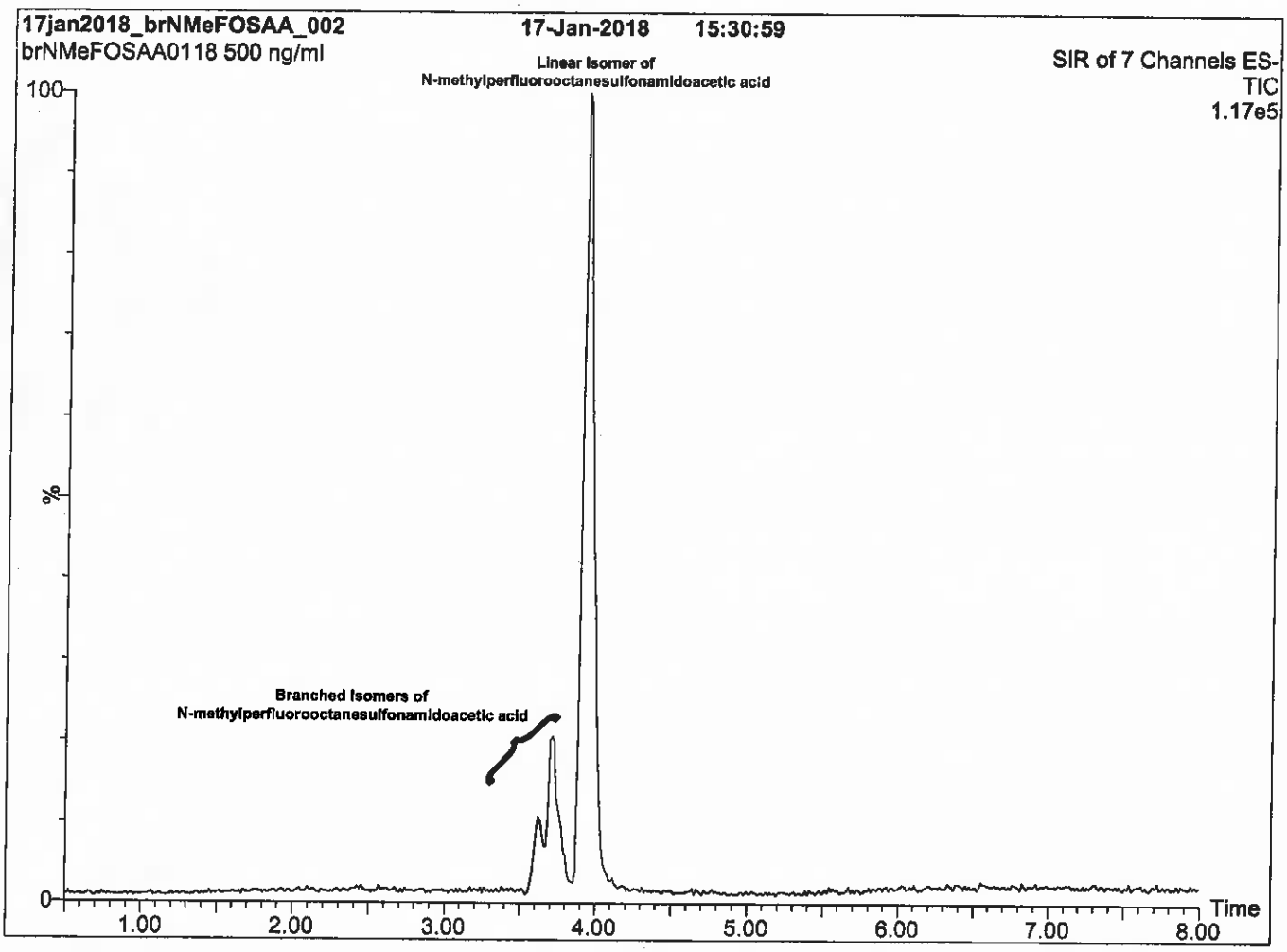
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 35.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: **br-NMeFOSAA; LC/MS Data (SIR)**



Conditions for Figure 2:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 55% (80:20 MeOH:ACN) / 45% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for
2 min before returning to initial conditions in 0.5 min.

Time: 10 min

Flow: 300 µl/min

MS Parameters

Experiment: SIR (7 channels)

Source: Electrospray (negative)
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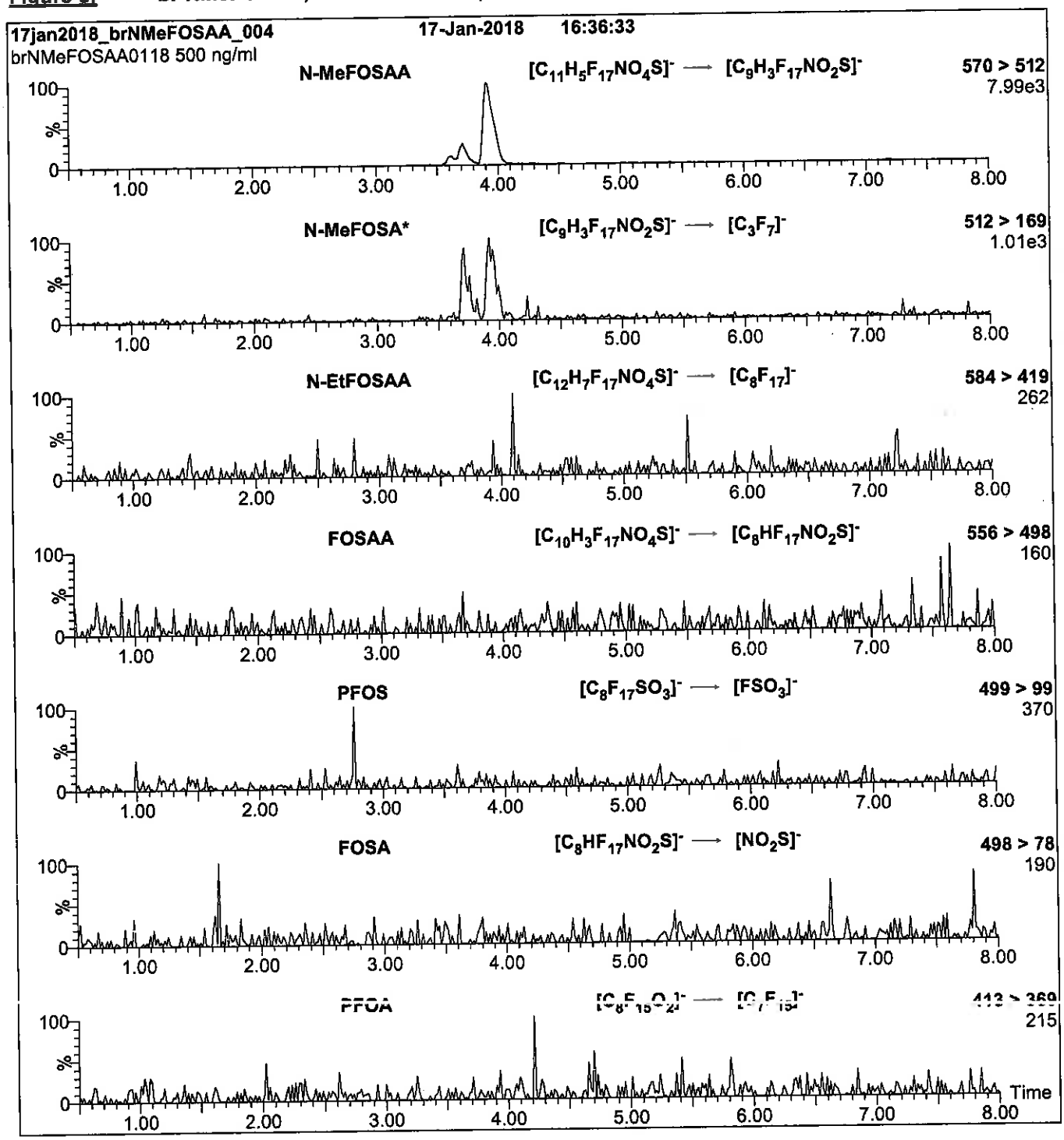
Cone Voltage (V) = 15-60
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 3: **br-NMeFOSAA; LC/MS/MS Data (Selected MRM Transitions)**



***Note**: N-MeFOSA is formed by in-source fragmentation.

Conditions for Figure 3:

Injection: On-column

Mobile phase: Same as Figure 2

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.39e-3
Collision Energy (eV) = 11-40 (variable)

Reagent

LCd3-NMeFOSAA_00008

1263171
ID: LCd3-NMeFOSAA_00008
Exp:11/08/22 Prpd:CBW Opn:05/30/18
d3-N-MeFOSAA

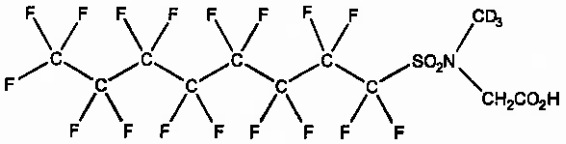
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: d3-N-MeFOSAA **LOT NUMBER:** d3NMeFOSAA1117

COMPOUND: N-methyl-d3-perfluoro-1-octanesulfonamidoacetic acid

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: $C_{11}D_3H_3F_{17}NO_4S$ **MOLECULAR WEIGHT:** 574.23

CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol, Water (<1%)

CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** ≥98% $^2H_3$

LAST TESTED: (mm/dd/yyyy) 11/08/2017

EXPIRY DATE: (mm/dd/yyyy) 11/08/2022

RECOMMENDED STORAGE: Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent the conversion of the acetic acid moiety to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 11/16/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

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EXPIRY DATE / PERIOD OF VALIDITY:

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CALA

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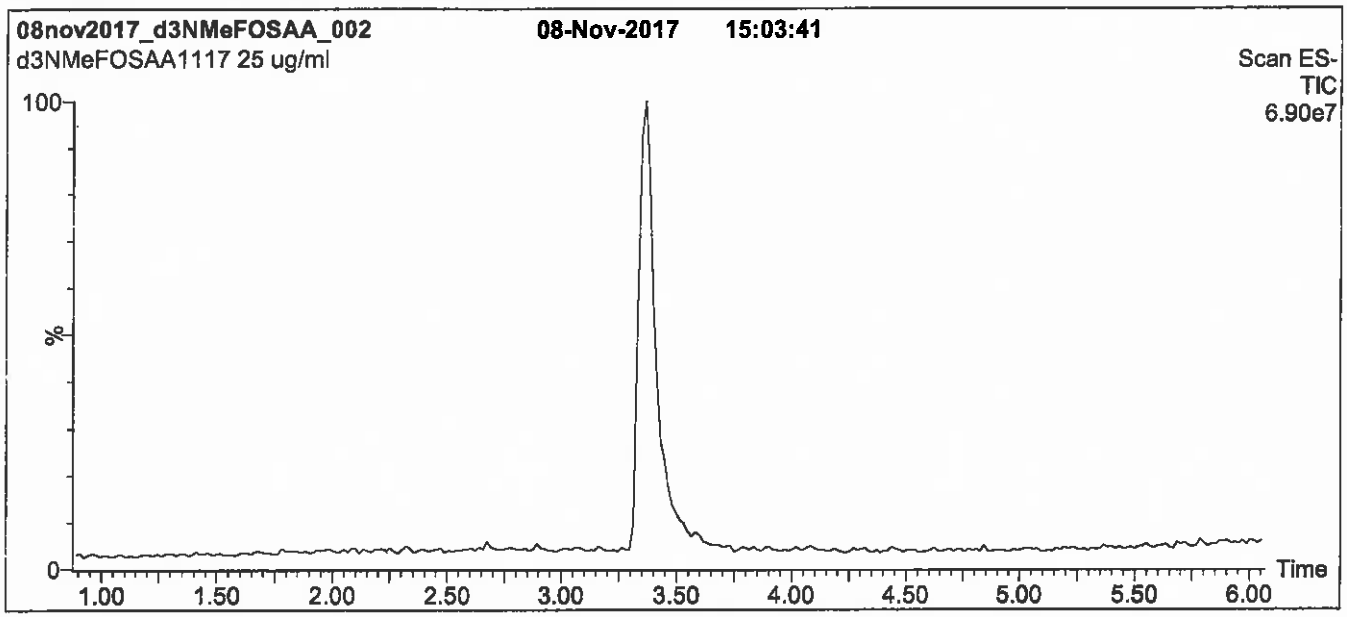
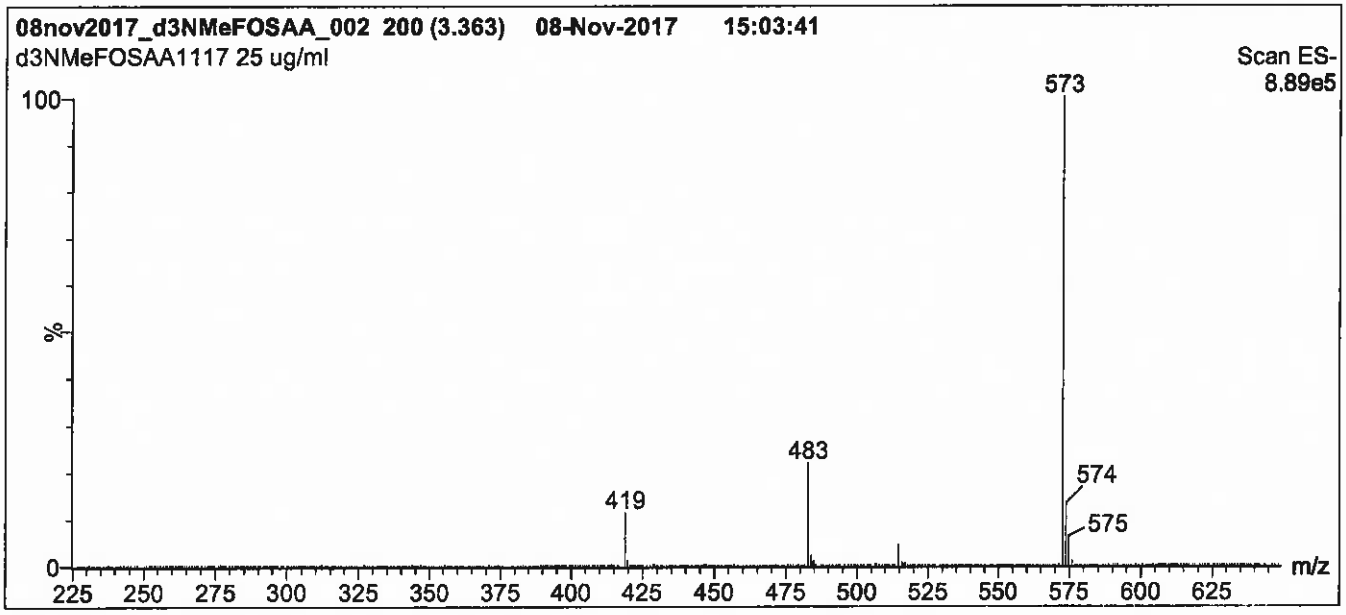
Figure 1: **d3-N-MeFOSAA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

LC: **Waters Acquity Ultra Performance LC**
MS: **Micromass Quattro *micro* API MS**

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

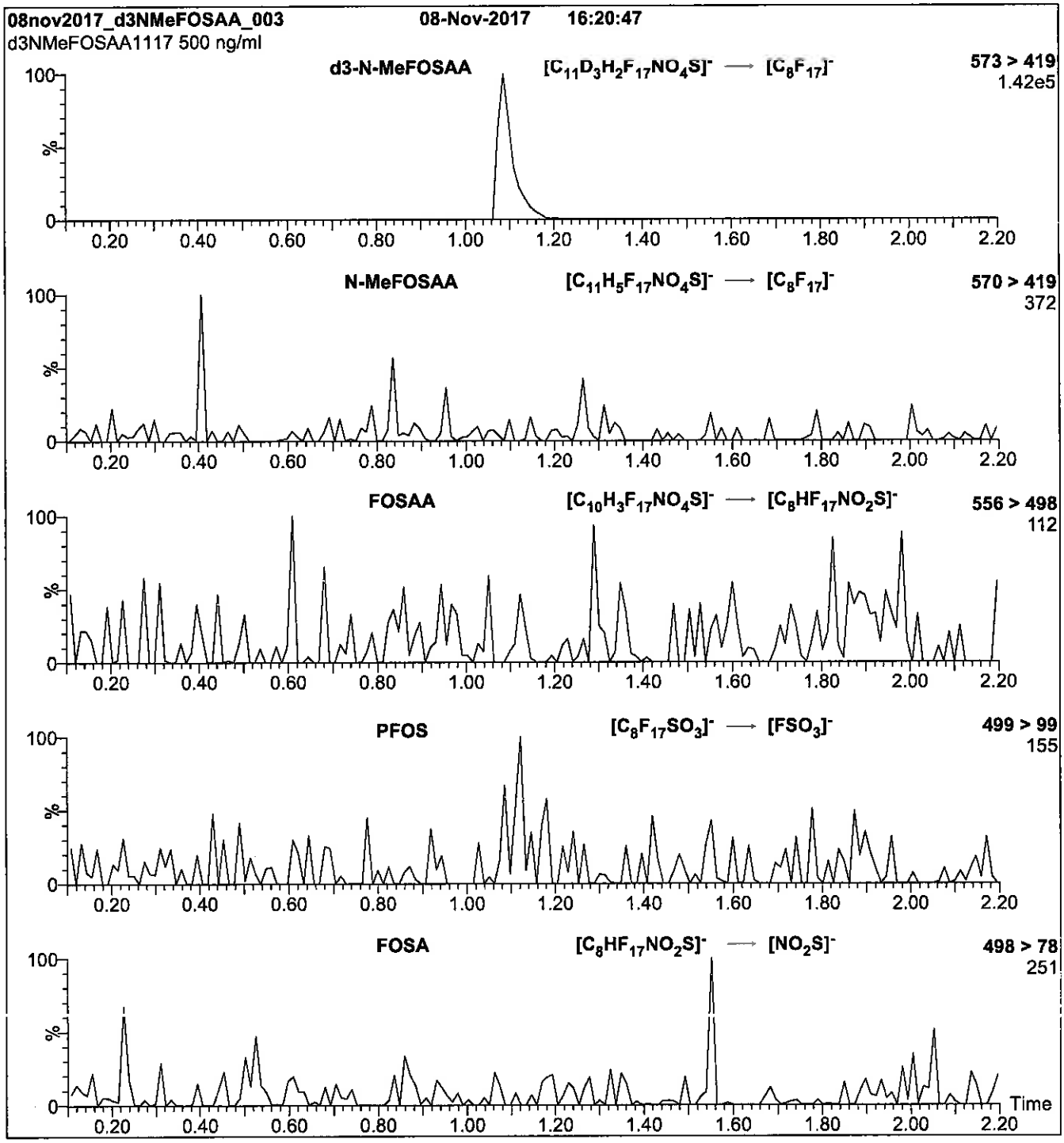
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 35.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: **d3-N-MeFOSAA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml d3-N-MeFOSAA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.43e-3
Collision Energy (eV) = 20

Reagent

LCd5-NEtFOSAA_00008

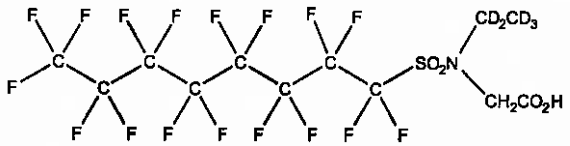
1263180
ID: LCd5-NEtFOSAA_00008
Exp:11/08/22 Prpd:CBW Opn:05/30/18
d5-N-EtFOSAA

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: d5-N-EtFOSAA **LOT NUMBER:** d5NEtFOSAA1117
COMPOUND: N-ethyl-d5-perfluoro-1-octanesulfonamidoacetic acid

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: $C_{12}D_5H_3F_{17}NO_4S$ **MOLECULAR WEIGHT:** 590.26
CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol, Water (<1%)
CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** ≥98% $^2H_5$
LAST TESTED: (mm/dd/yyyy) 11/08/2017
EXPIRY DATE: (mm/dd/yyyy) 11/08/2022
RECOMMENDED STORAGE: Refrigerate ampoule

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Figure 1: LC/MS Data (TIC and Mass Spectrum)
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B.G. Chittim, General Manager

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CALA

ANAB ACCREDITED

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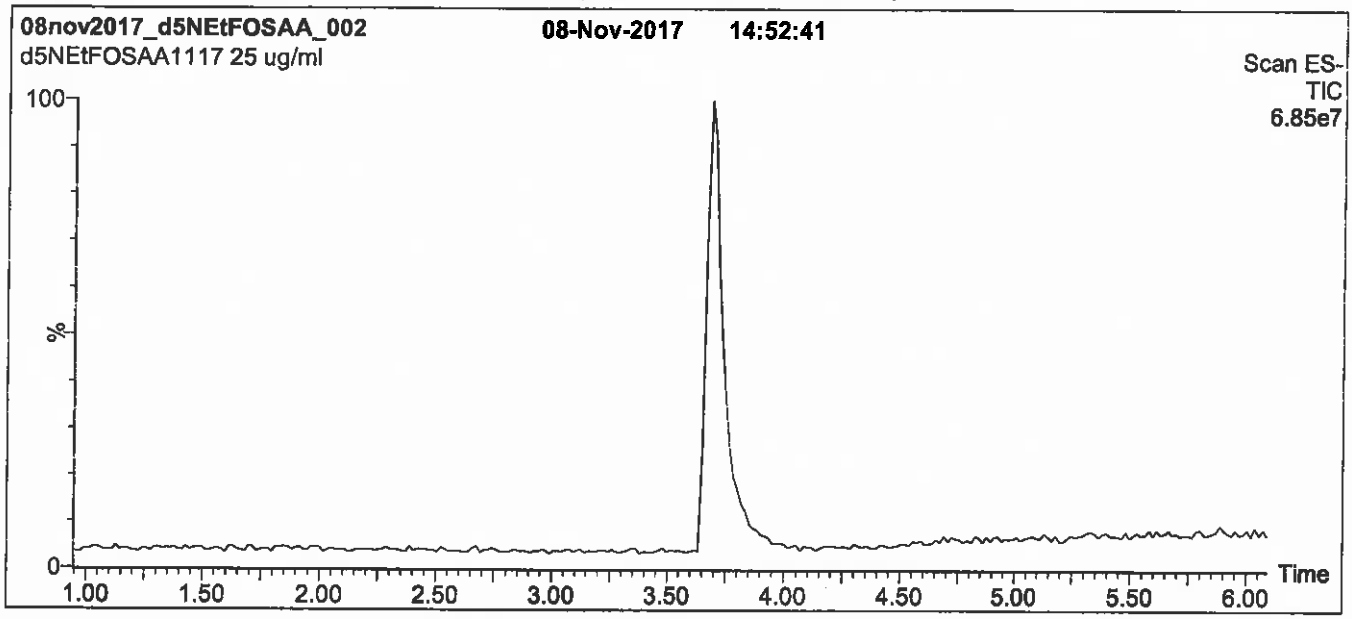
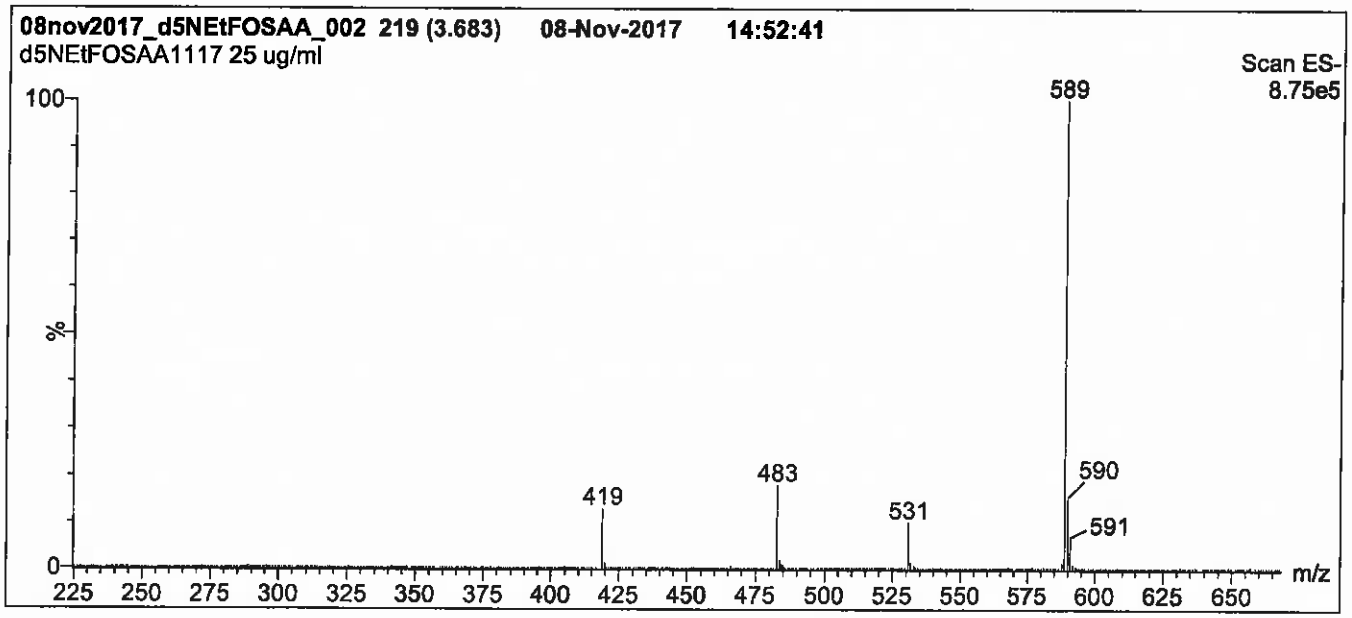
Figure 1: **d5-N-EtFOSAA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

LC: **Waters Acquity Ultra Performance LC**
MS: **Micromass Quattro *micro* API MS**

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

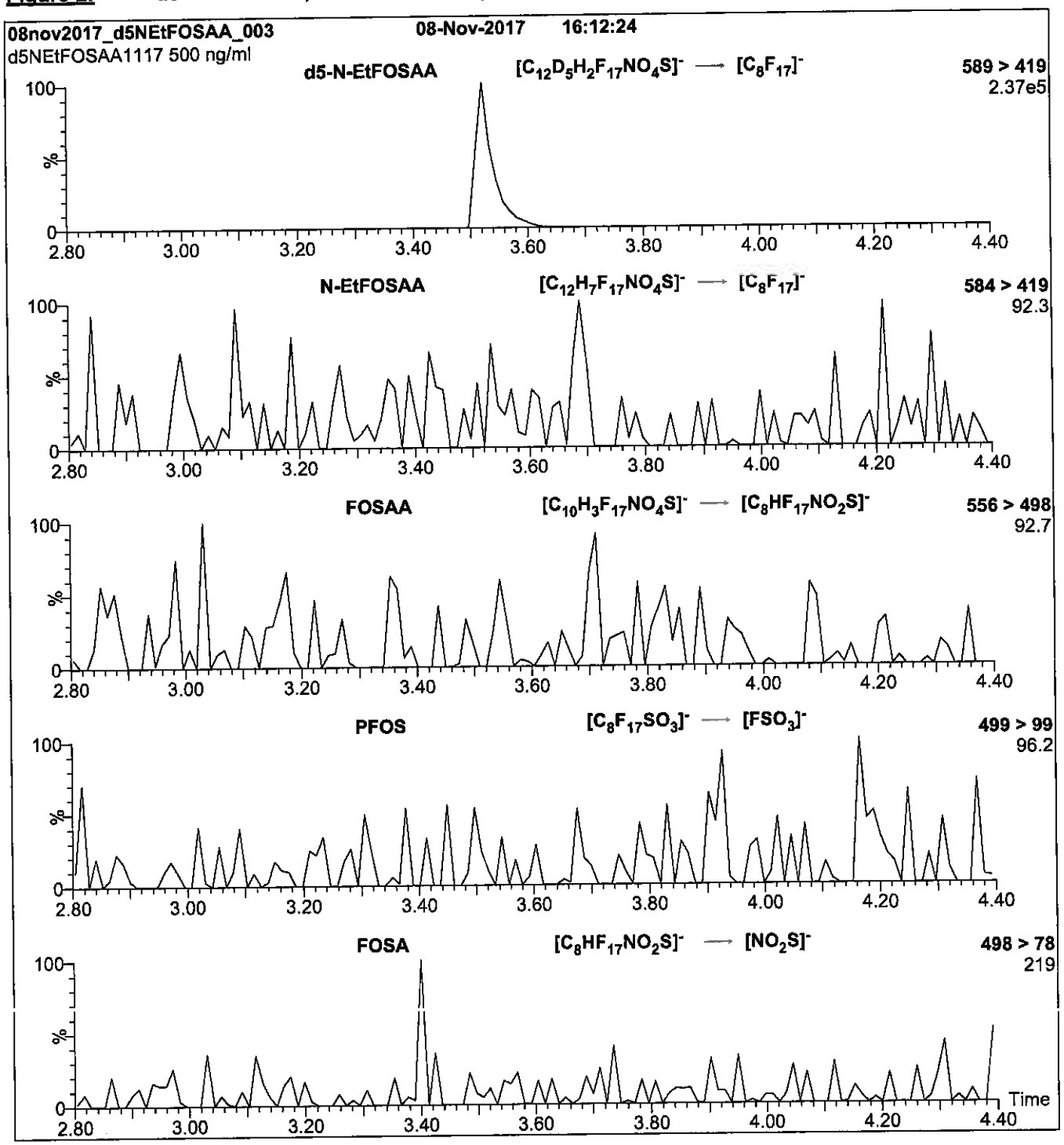
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 35.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: **d5-N-EtFOSAA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml d5-N-EtFOSAA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.50e-3
Collision Energy (eV) = 20

Reagent

LCDONA_00002

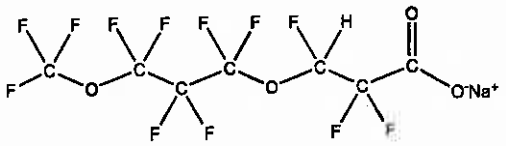
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: NaDONA
LOT NUMBER: NaDONA0318
COMPOUND: Sodium dodecafluoro-3H-4,8-dioxanonanoate

STRUCTURE:

CAS #: 958445-44-8 (ammonium salt)



MOLECULAR FORMULA: $C_7HF_{12}O_4Na$
MOLECULAR WEIGHT: 400.05
CONCENTRATION: 50 ± 2.5 µg/ml (Na Salt)
SOLVENT(S): Methanol, Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 03/26/2018
EXPIRY DATE: (mm/dd/yyyy) 03/26/2023
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Product is commercially known as ADONA.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 03/27/2018 (mm/dd/yyyy)
B.G. Chittim, General Manager

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HANDLING:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Our products are synthesized using single-product unambiguous routes whenever possible. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS, and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers. In order to maintain the integrity of the assigned value(s), and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \ldots x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \ldots x_n)) = \sqrt{\sum_{i=1}^{n} u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of ±5% (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly calibrated by an external ISO/IEC 17025 accredited laboratory. In addition, their calibration is verified prior to each weighing using calibrated external weights traceable to an ISO/IEC 17025 accredited laboratory. All volumetric glassware used is calibrated, of Class A tolerance, and traceable to an ISO/IEC 17025 accredited laboratory. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO 17034 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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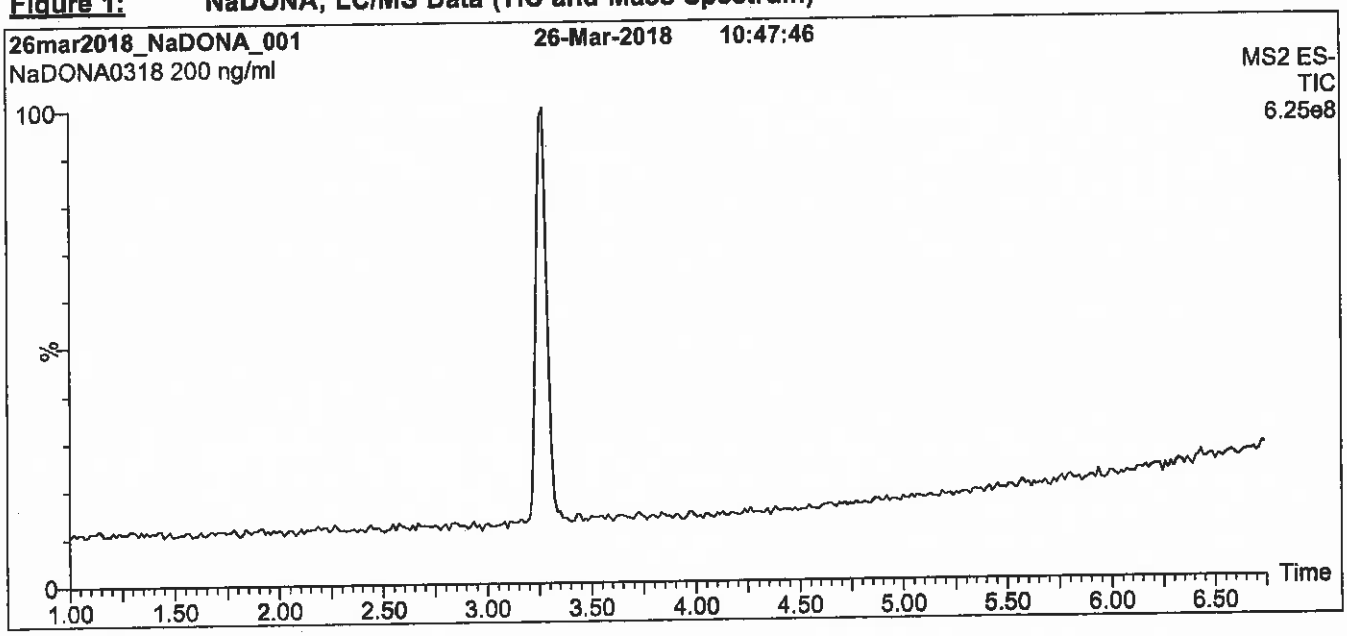
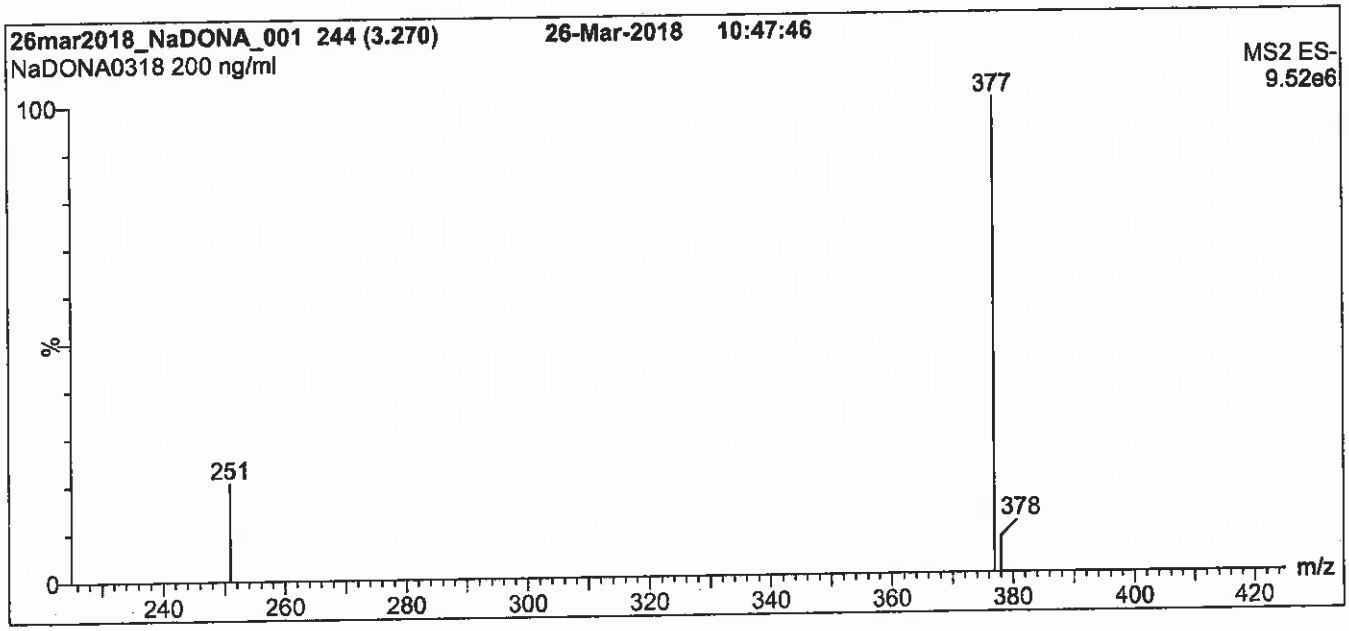
Figure 1: **NaDONA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Waters Xevo TQ-S micro MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 80% organic over 7 min and hold for
3 min before returning to initial conditions in 0.75 min.
Time: 12 min

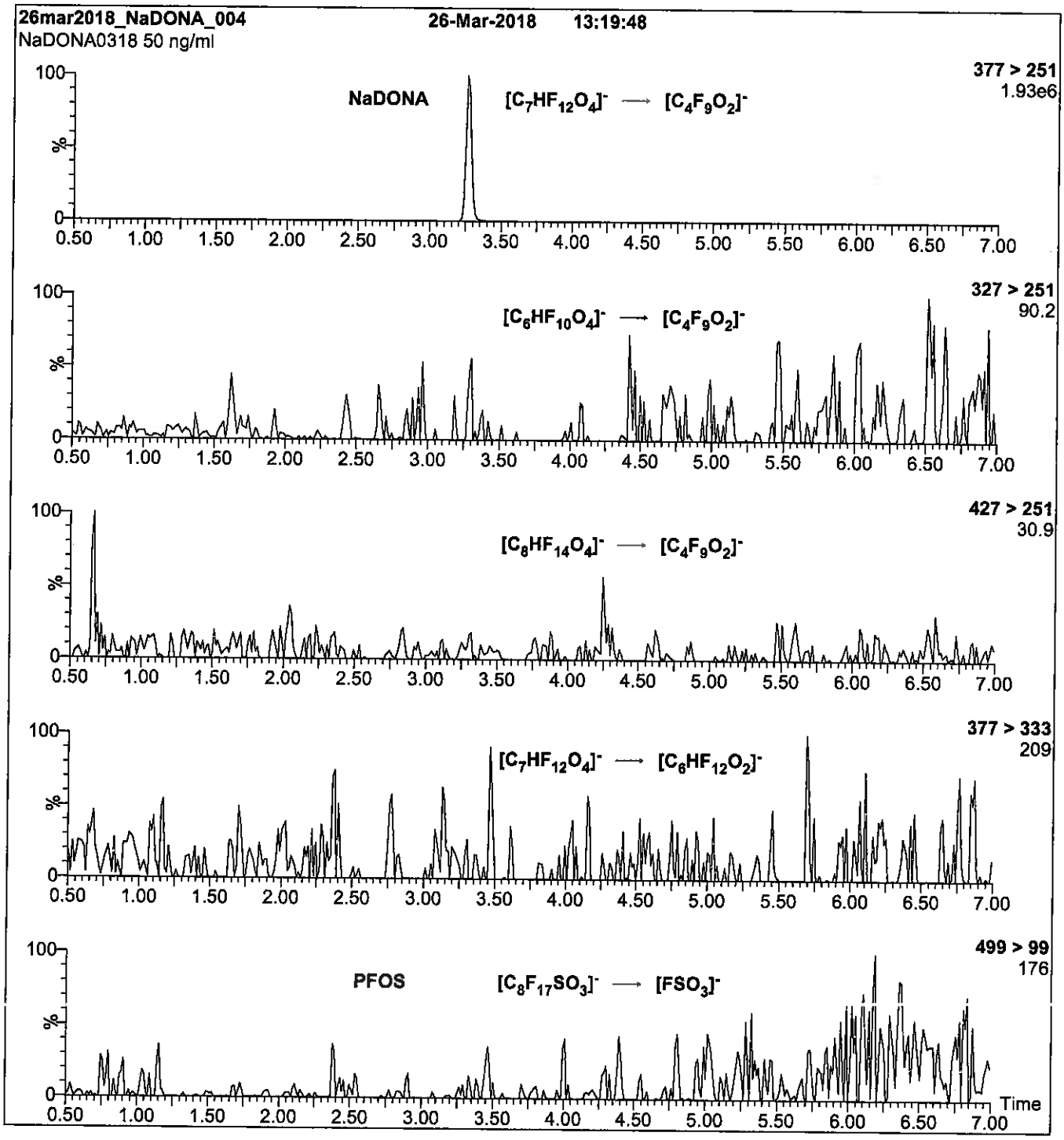
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.70
Cone Voltage (V) = 20.00
Desolvation Temperature (°C) = 500
Desolvation Gas Flow (l/hr) = 750

Figure 2: **NaDONA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: On-column (NaDONA)

Mobile phase: Same as Figure 1

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.65e-3
Collision Energy (eV) = 10

Reagent

LCDONA_00004

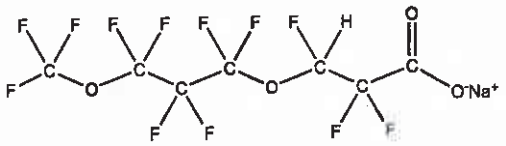
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: NaDONA
LOT NUMBER: NaDONA0318
COMPOUND: Sodium dodecafluoro-3H-4,8-dioxanonanoate

STRUCTURE:

CAS #: 958445-44-8 (ammonium salt)



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CONCENTRATION: 50 ± 2.5 µg/ml (Na Salt)
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CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 03/26/2018
EXPIRY DATE: (mm/dd/yyyy) 03/26/2023
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

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Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Product is commercially known as ADONA.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

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Certified By: _____ **Date:** 03/27/2018 (mm/dd/yyyy)
B.G. Chittim, General Manager

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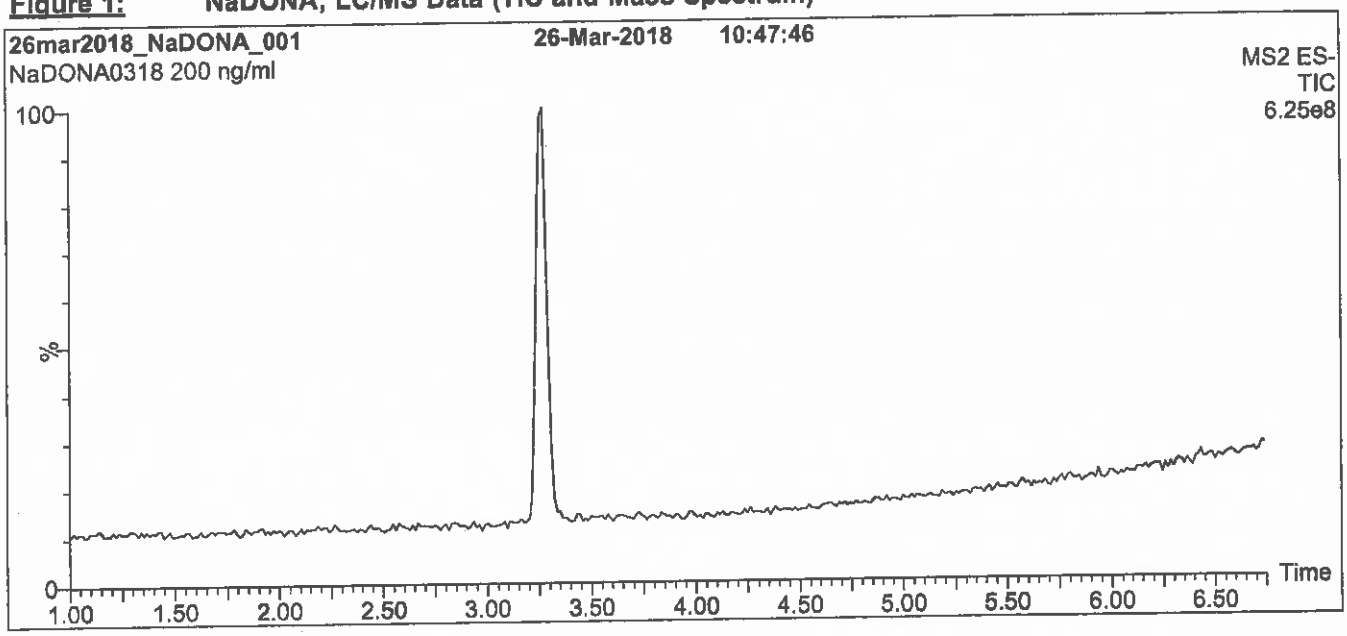

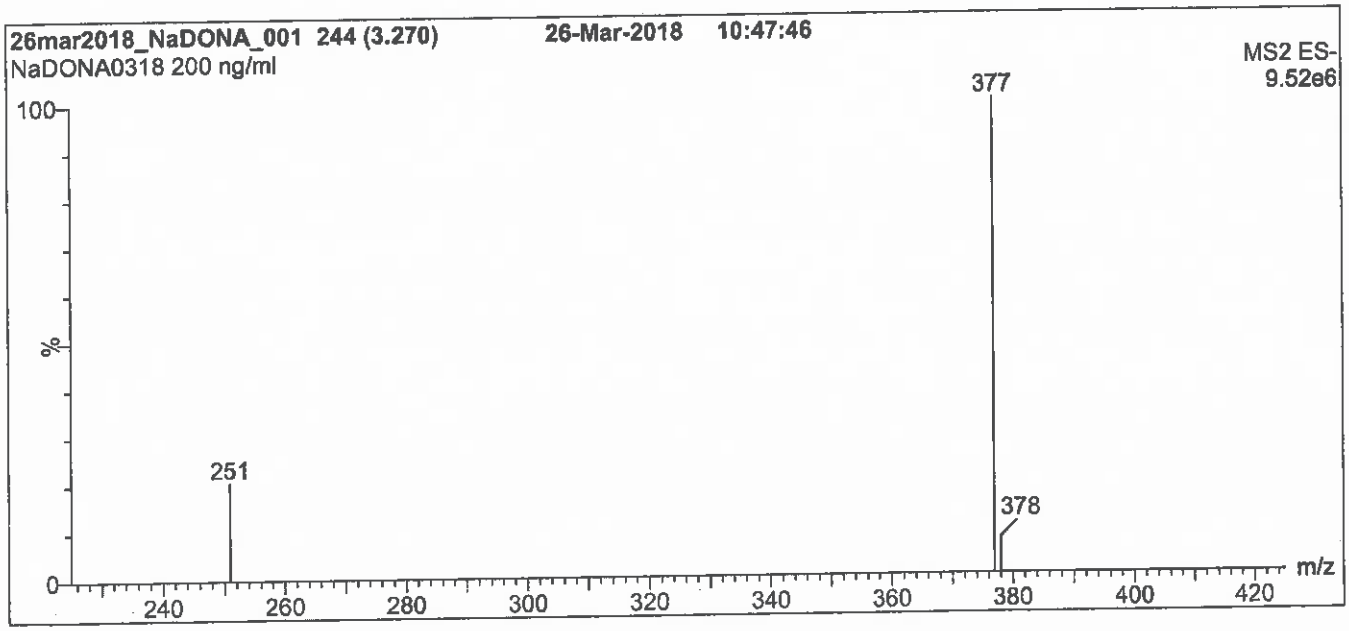

Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Waters Xevo TQ-S micro MS

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1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 80% organic over 7 min and hold for
3 min before returning to initial conditions in 0.75 min.
Time: 12 min

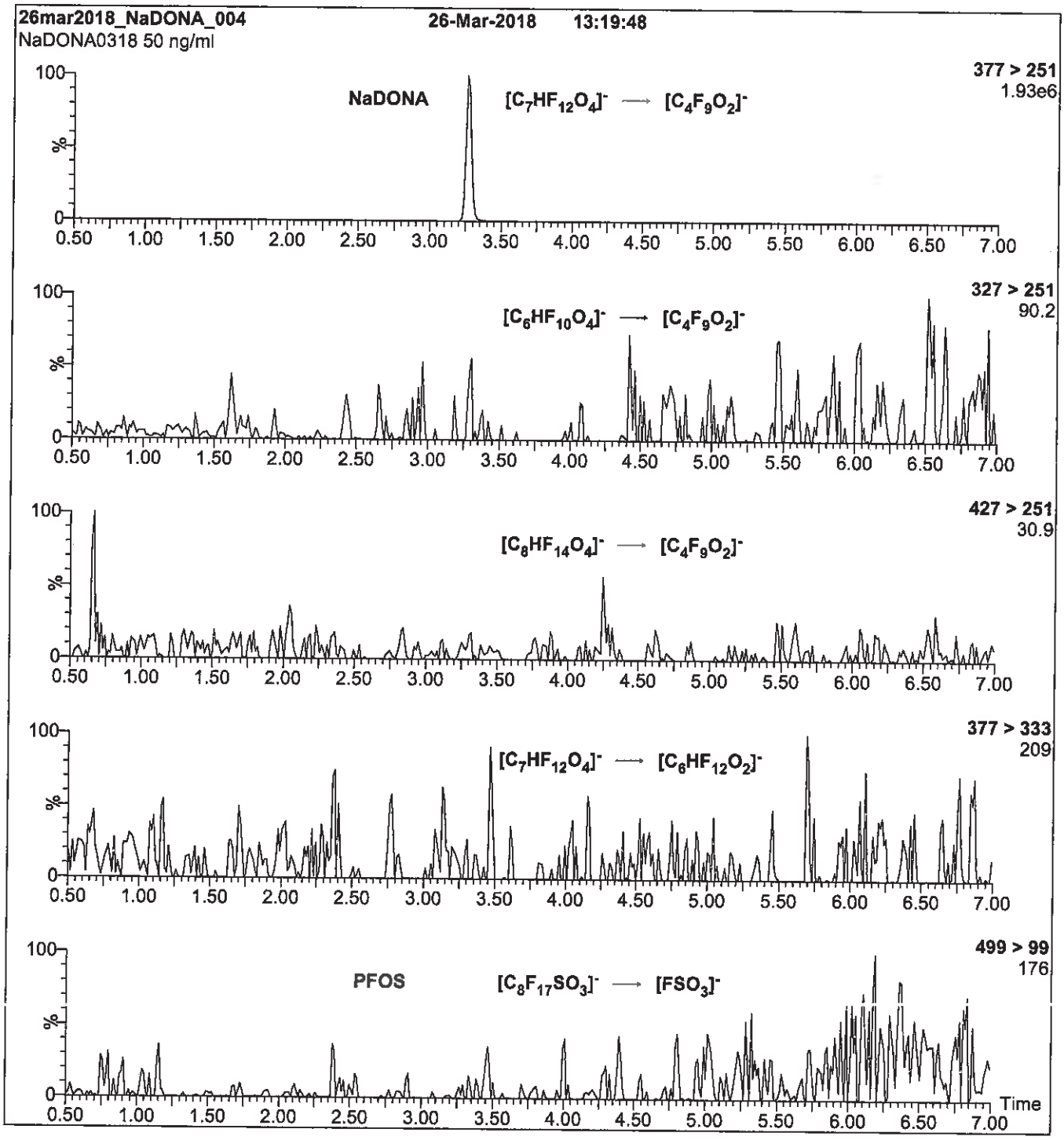
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.70
Cone Voltage (V) = 20.00
Desolvation Temperature (°C) = 500
Desolvation Gas Flow (l/hr) = 750

Figure 2: **NaDONA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: On-column (NaDONA)

Mobile phase: Same as Figure 1

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.65e-3
Collision Energy (eV) = 10

Reagent

LCHFPO-DA_00002

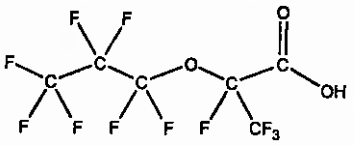
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: HFPO-DA **LOT NUMBER:** HFPODA0318

COMPOUND: 2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)-propanoic acid

STRUCTURE: **CAS #:** 13252-13-6



MOLECULAR FORMULA: $C_6HF_{11}O_3$ **MOLECULAR WEIGHT:** 330.05

CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol

CHEMICAL PURITY: >98%

LAST TESTED: (mm/dd/yyyy) 03/26/2018

EXPIRY DATE: (mm/dd/yyyy) 03/26/2021

RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Product is commercially known as GenX.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 03/28/2018 (mm/dd/yyyy)

B.G. Chittim, General Manager

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

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CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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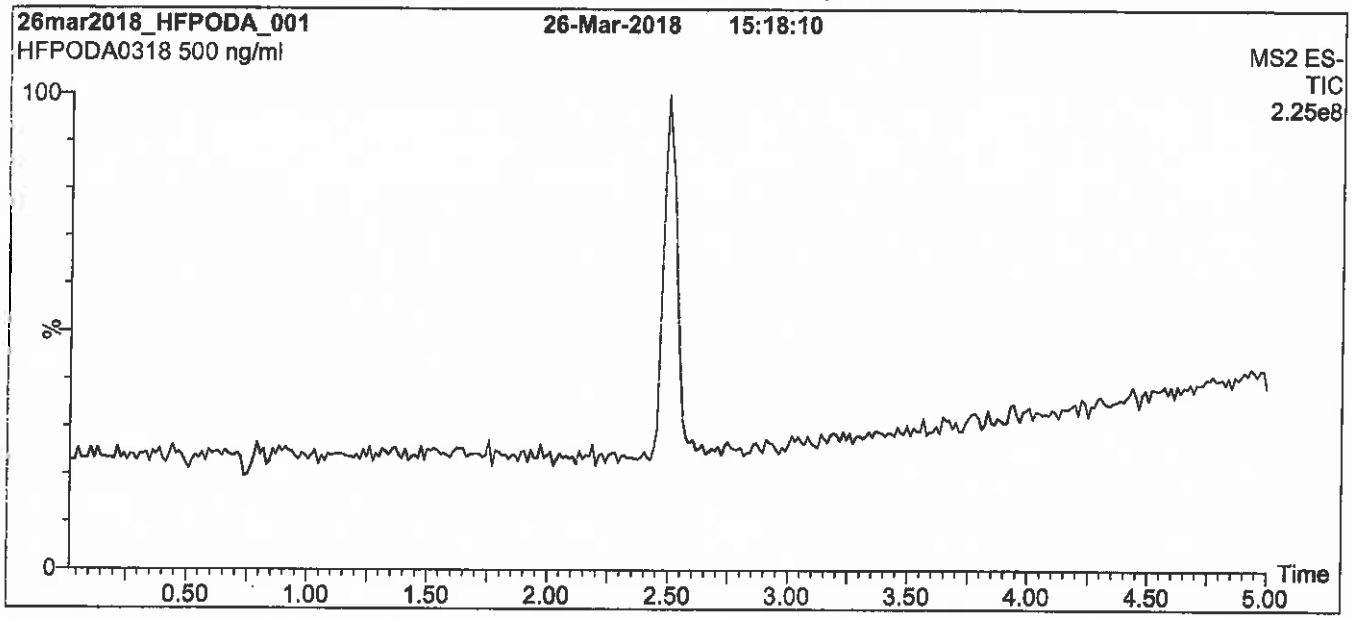
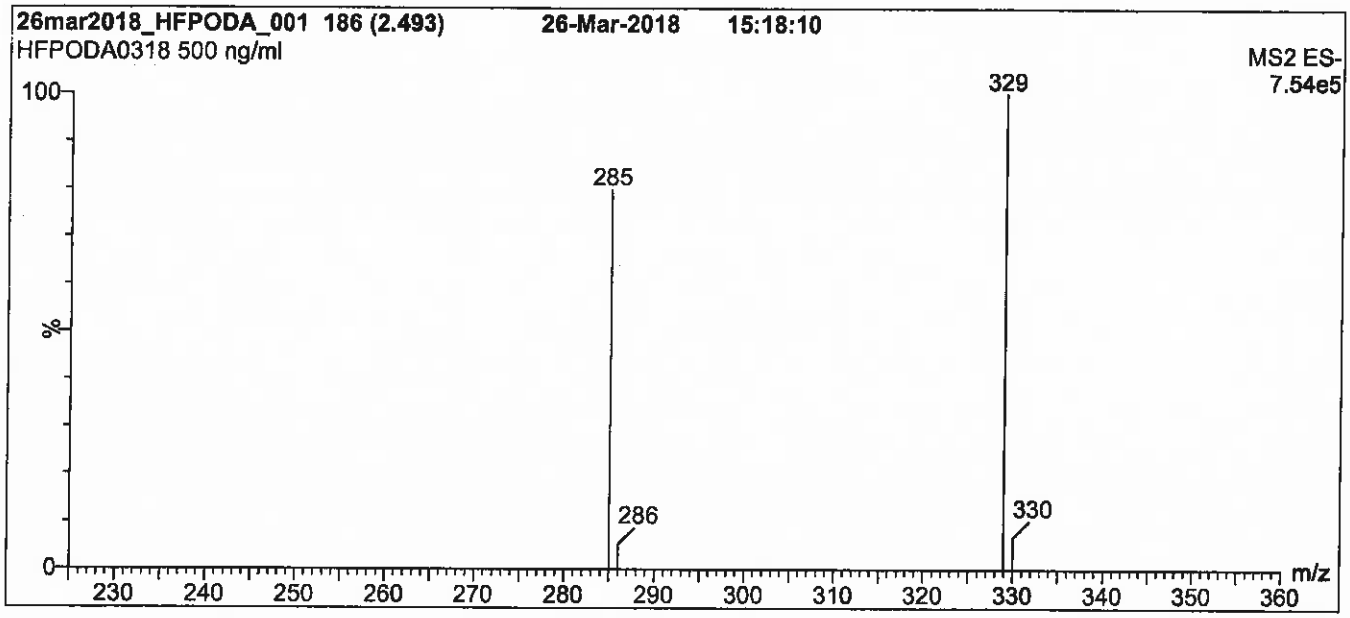
Figure 1: **HFPO-DA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

LC: **Waters Acquity Ultra Performance LC**
MS: **Waters Xevo TQ-S micro MS**

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 80% organic over 7 min and hold for
3 min before returning to initial conditions in 0.75 min.
Time: 12 min

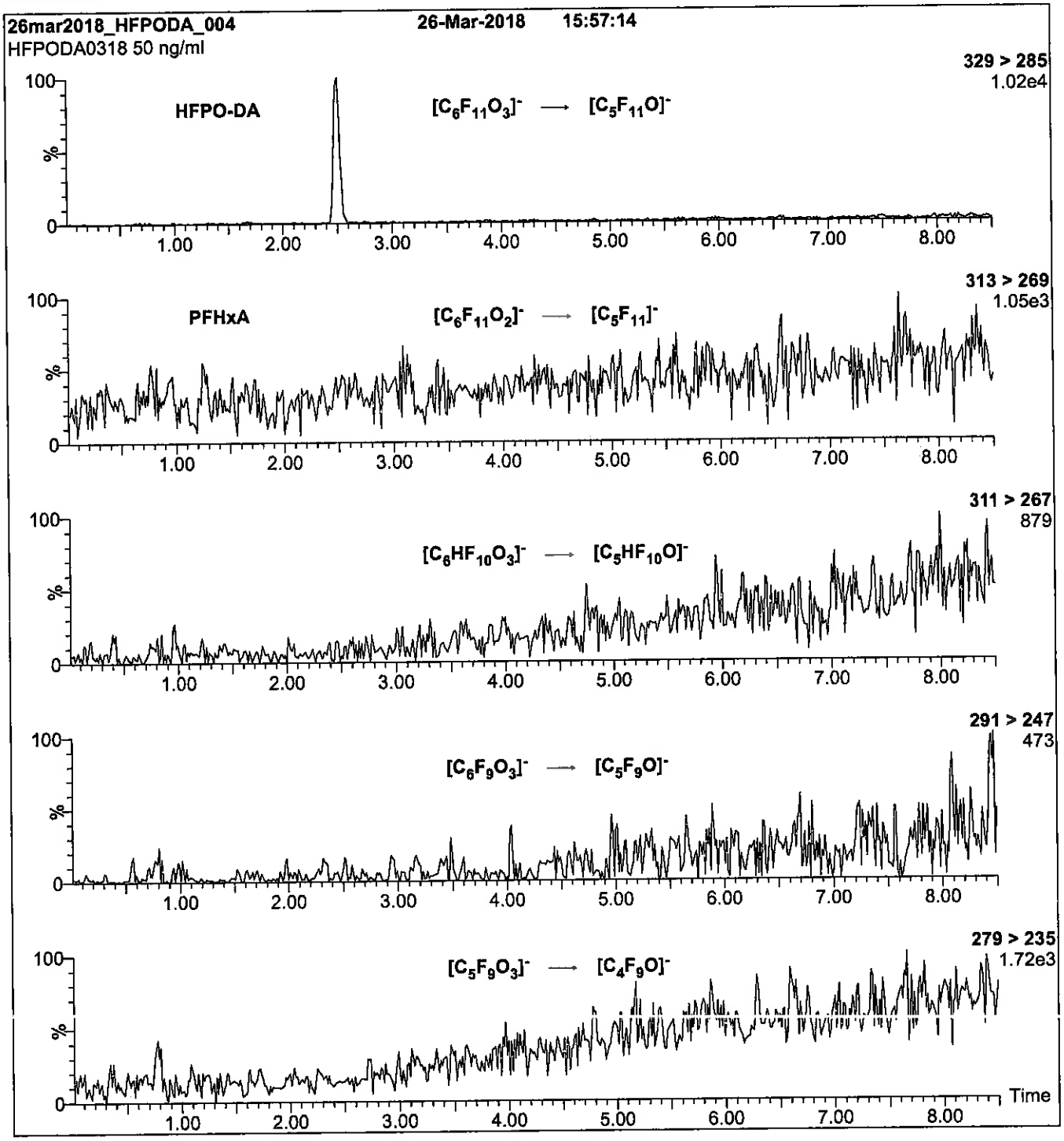
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.10
Cone Voltage (V) = 7.50
Desolvation Temperature (°C) = 350
Desolvation Gas Flow (l/hr) = 750

Figure 2: **HFPO-DA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: On-column (HFPO-DA)

Mobile phase: Same as Figure 1

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.69e-3
Collision Energy (eV) = 6

Reagent

LCM2-4:FTS_00003

1106086
ID: LCM2-4:FTS_00003
Exp: 09/01/22 Prpd: CCL
M2-4:2FTS 46.7 ug/mL

r: 12/4/17 E-548

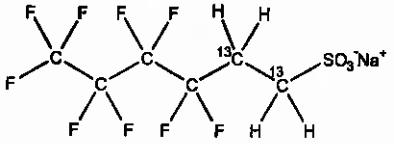
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M2-4:2FTS **LOT NUMBER:** M242FTS0817

COMPOUND: Sodium 1H,1H,2H,2H-perfluoro-[1,2-$^{13}C_2$]hexane sulfonate

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: $^{13}C_2{}^{12}C_4H_4F_8SO_3Na$ **MOLECULAR WEIGHT:** 352.12

CONCENTRATION: 50.0 ± 2.5 µg/ml (Na salt) **SOLVENT(S):** Methanol

46.7 ± 2.3 µg/ml (M2-4:2FTS anion)

CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** ≥99% ^{13}C (1,2-$^{13}C_2$)

LAST TESTED: (mm/dd/yyyy) 09/01/2017

EXPIRY DATE: (mm/dd/yyyy) 09/01/2022

RECOMMENDED STORAGE: Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- The native 4:2FTS contains 4.22% of ^{34}S (due to natural isotopic abundance) therefore both native 4:2FTS and M2-4:2FTS will produce signals in the m/z 329 to m/z 309 channel during SRM analysis. We recommend using the m/z 329 to m/z 81 transition to monitor for M2-4:2FTS during quantitative analysis as it will be free of any native contribution (see Figure 2).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 09/29/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers. In order to maintain the integrity of the assigned value(s), and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \ldots x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \ldots x_n)) = \sqrt{\sum_{i=1}^{n} u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of ±5% (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using calibrated NIST and/or NRC traceable external weights. All volumetric glassware used is calibrated, of Class A tolerance, and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

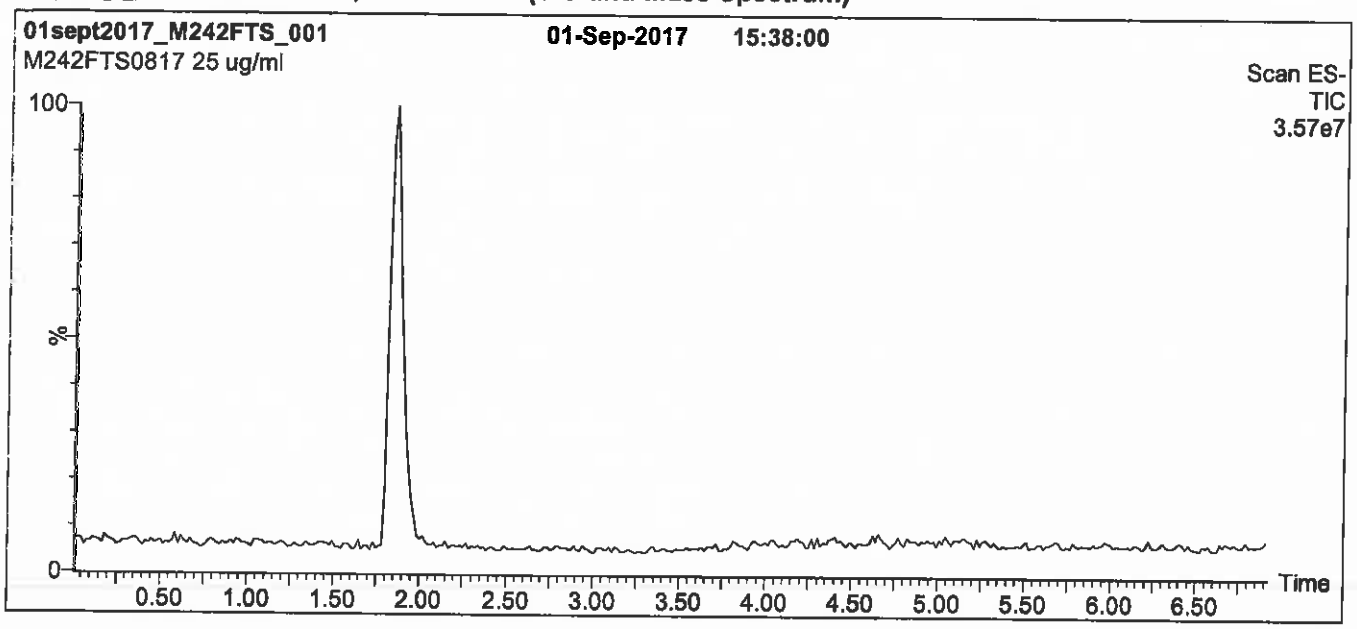
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

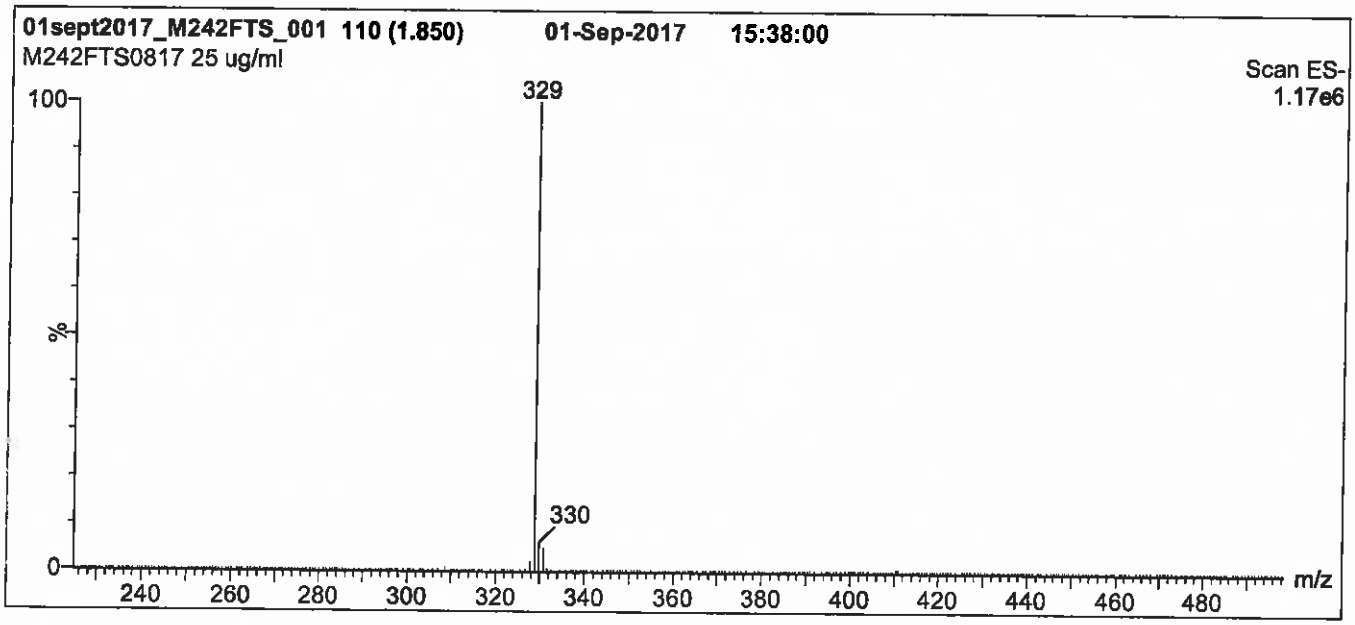
CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

Figure 1: **M2-4:2FTS; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

LC: **Waters Acquity Ultra Performance LC**
MS: **Micromass Quattro *micro* API MS**

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 8 min
and hold for 1 min before returning
to initial conditions in 0.5 min.
Time: 10 min

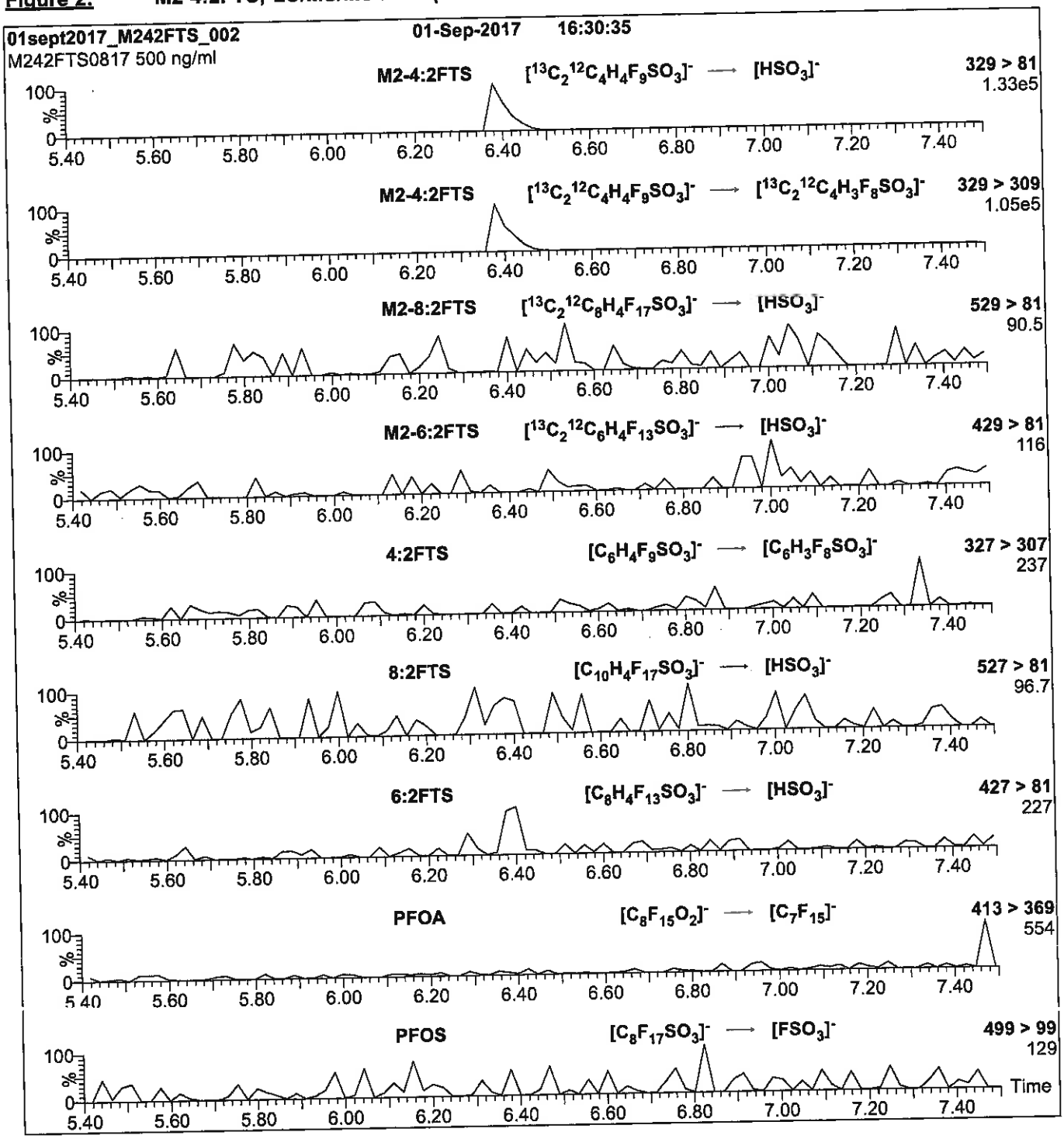
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 25.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

Figure 2: **M2-4:2FTS; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml M2-4:2FTS)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.28e-3
Collision Energy (eV) = 25

Reagent

LCM2-6:FTS_00008

1263197
ID: LCM2-6:FTS_00008
Exp:02/16/23 Prpd:CBW Opn:05/30/18
M2-6:2FTS

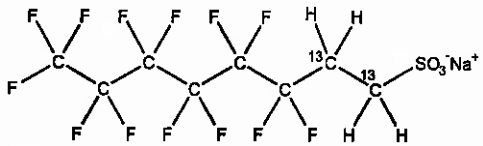
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M2-6:2FTS **LOT NUMBER:** M262FTS0218

COMPOUND: Sodium 1H,1H,2H,2H-perfluoro-[1,2-$^{13}C_2$]octane sulfonate

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA:	$^{13}C_2{}^{12}C_6H_4F_{13}SO_3Na$	**MOLECULAR WEIGHT:**	452.13
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt) 47.5 ± 2.4 µg/ml (M2-6:2FTS anion)	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C (1,2-$^{13}C_2$)
LAST TESTED: (mm/dd/yyyy)	02/16/2018		
EXPIRY DATE: (mm/dd/yyyy)	02/16/2023		
RECOMMENDED STORAGE:	Refrigerate ampoule		

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- The native 6:2FTS contains 4.22% of ^{34}S (due to natural isotopic abundance) therefore both native 6:2FTS and M2-6:2FTS will produce signals in the m/z 429 to m/z 409 channel during SRM analysis. We recommend using the m/z 429 to m/z 81 transition to monitor for M2-6:2FTS during quantitative analysis as it will be free of any native contribution (see Figure 2).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 03/07/2018 (mm/dd/yyyy)
B.G. Chittim, General Manager

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HANDLING:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Our products are synthesized using single-product unambiguous routes whenever possible. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS, and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers. In order to maintain the integrity of the assigned value(s), and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \ldots x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \ldots x_n)) = \sqrt{\sum_{i=1}^{n} u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of ±5% (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly calibrated by an external ISO/IEC 17025 accredited laboratory. In addition, their calibration is verified prior to each weighing using calibrated external weights traceable to an ISO/IEC 17025 accredited laboratory. All volumetric glassware used is calibrated, of Class A tolerance, and traceable to an ISO/IEC 17025 accredited laboratory. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO 17034 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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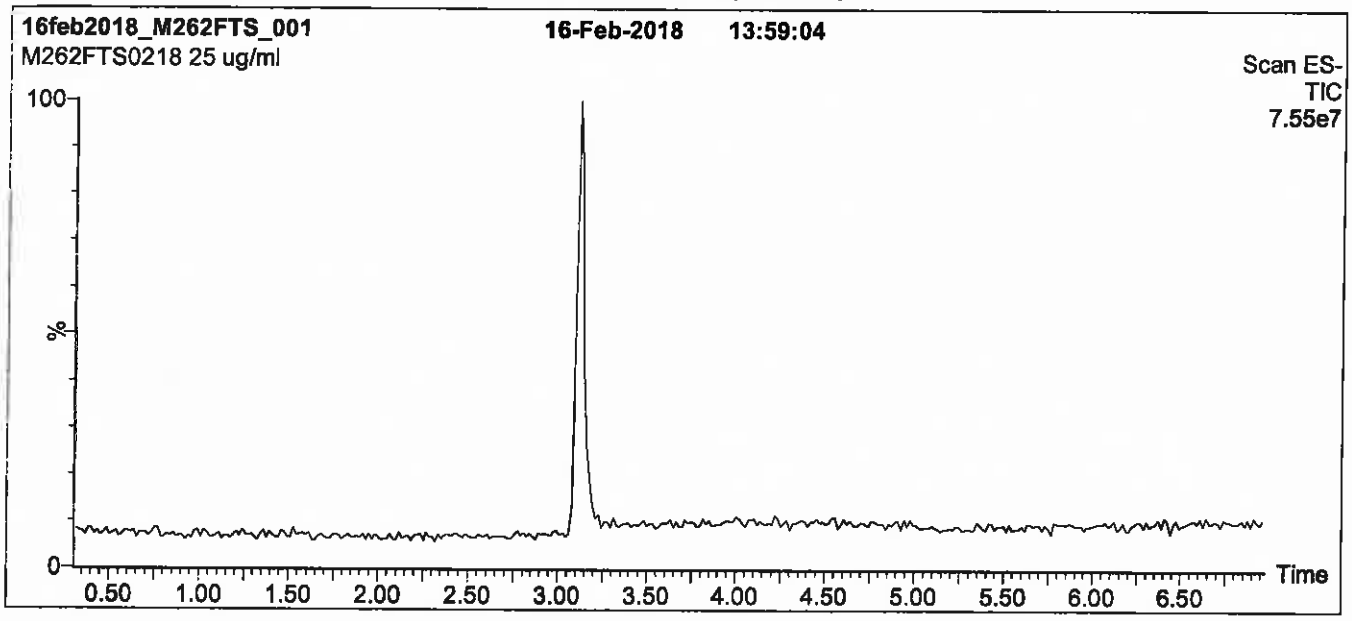
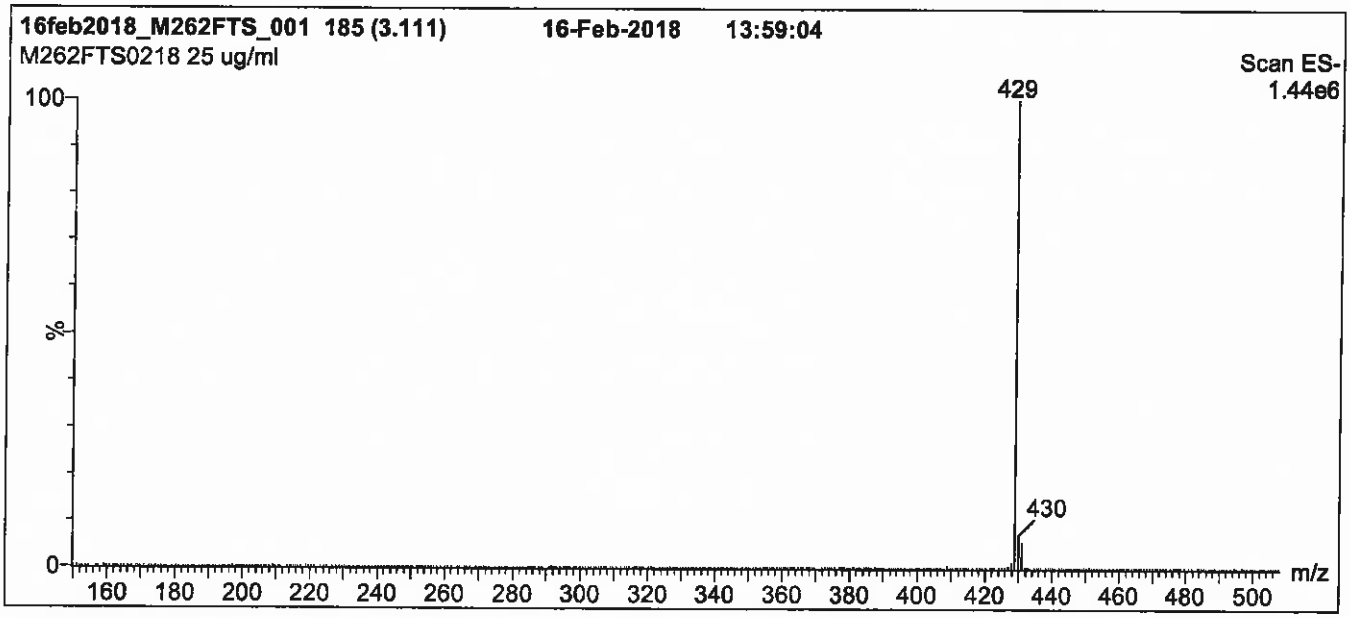
Figure 1: **M2-6:2FTS; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

LC: **Waters Acquity Ultra Performance LC**
MS: **Micromass Quattro *micro* API MS**

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min
before returning to initial conditions in 0.5 min.
Time: 10 min

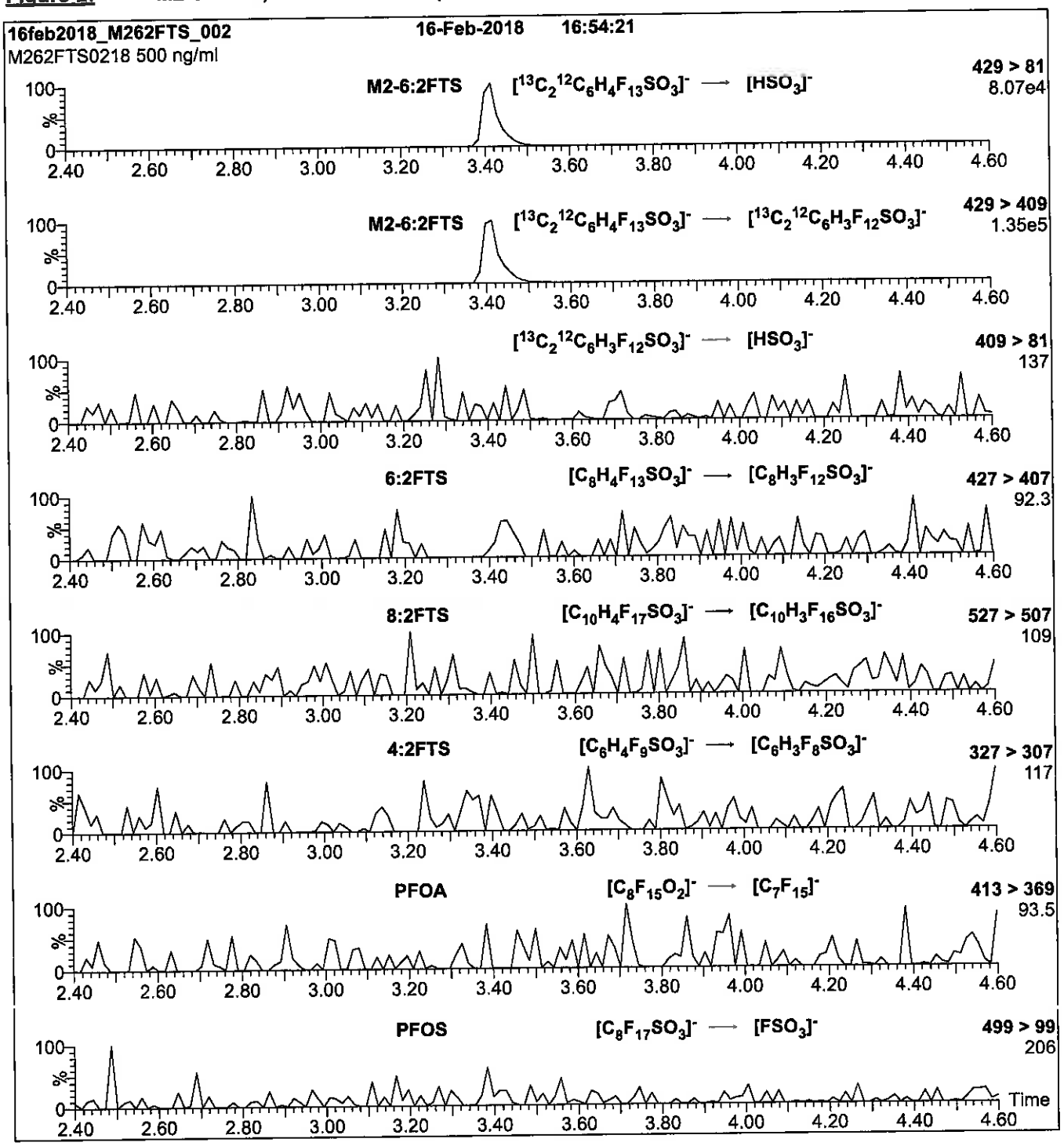
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source:Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 30.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: **M2-6:2FTS; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml M2-6:2FTS)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.39e-3
Collision Energy (eV) = 25

Reagent

LCM2-8:2FTS_00010

1263198
ID: LCM2-8:2FTS_00010
Exp:01/24/23 Prpd:CBW Opn:05/30/18
M2-8:2FTS

R: 5/30/18 CBW

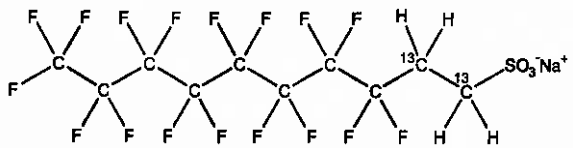
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M2-8:2FTS **LOT NUMBER:** M282FTS0118

COMPOUND: Sodium 1H,1H,2H,2H-perfluoro-[1,2-$^{13}C_2$]decane sulfonate

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: $^{13}C_2{}^{12}C_8H_4F_{17}SO_3Na$ **MOLECULAR WEIGHT:** 552.15

CONCENTRATION: 50.0 ± 2.5 µg/ml (Na salt) **SOLVENT(S):** Methanol
47.9 ± 2.4 µg/ml (M2-8:2FTS anion)

CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** ≥99% ^{13}C (1,2-$^{13}C_2$)

LAST TESTED: (mm/dd/yyyy) 01/24/2018

EXPIRY DATE: (mm/dd/yyyy) 01/24/2023

RECOMMENDED STORAGE: Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- The native 8:2FTS contains 4.22% of ^{34}S (due to natural isotopic abundance) therefore both native 8:2FTS and M2-8:2FTS will produce signals in the m/z 529 to m/z 509 channel during SRM analysis. We recommend using the m/z 529 to m/z 81 transition to monitor for M2-8:2FTS during quantitative analysis as it will be free of any native contribution (see Figure 2).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 01/26/2018 (mm/dd/yyyy)
B.G. Chittim, General Manager

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

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CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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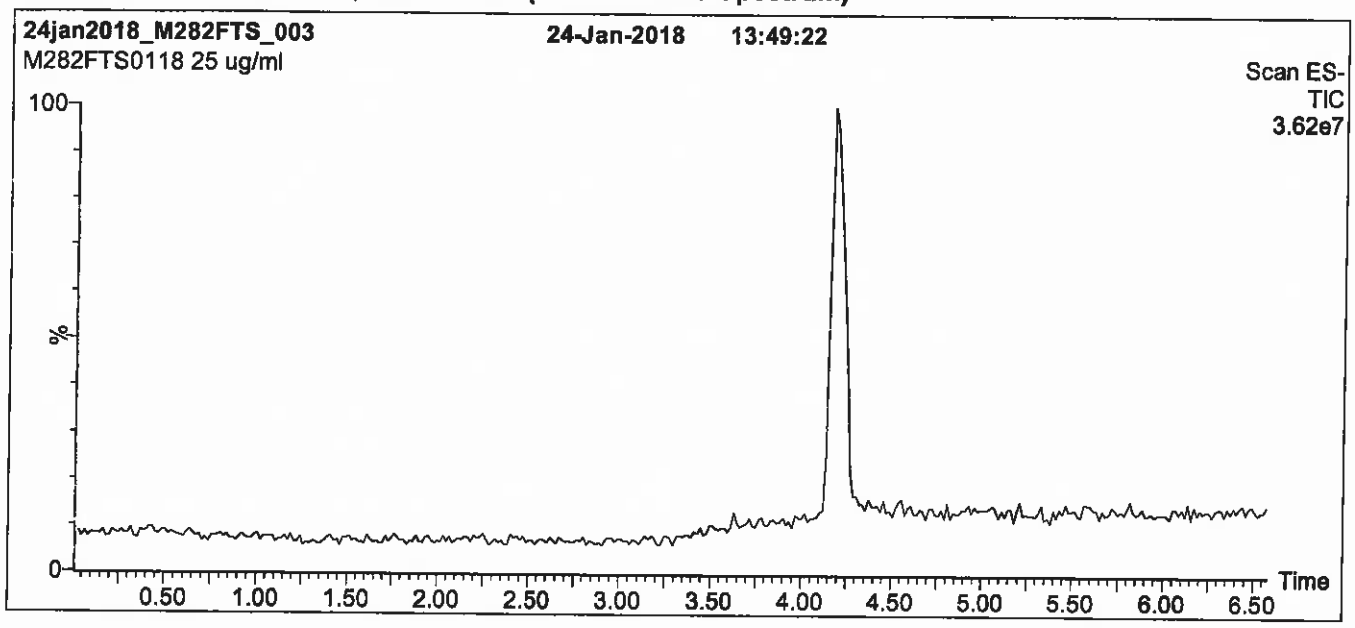
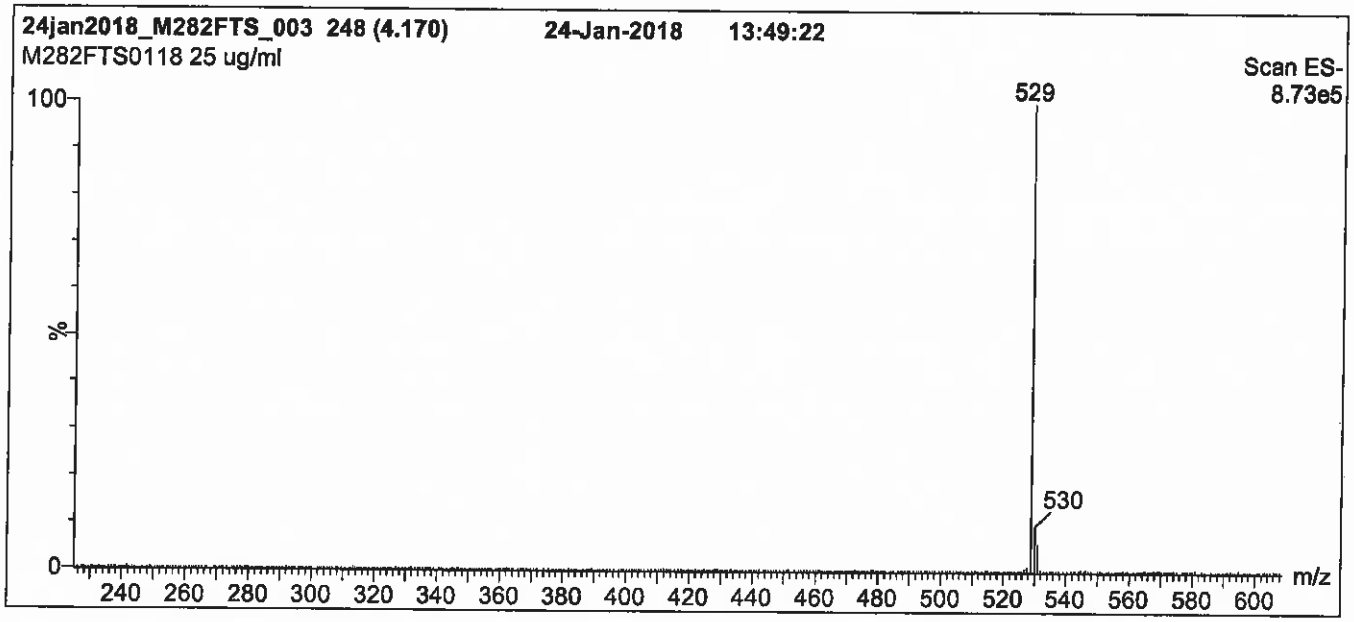
Figure 1: **M2-8:2FTS; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

LC: **Waters Acquity Ultra Performance LC**
MS: **Micromass Quattro *micro* API MS**

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min
before returning to initial conditions in 0.5 min.
Time: 10 min

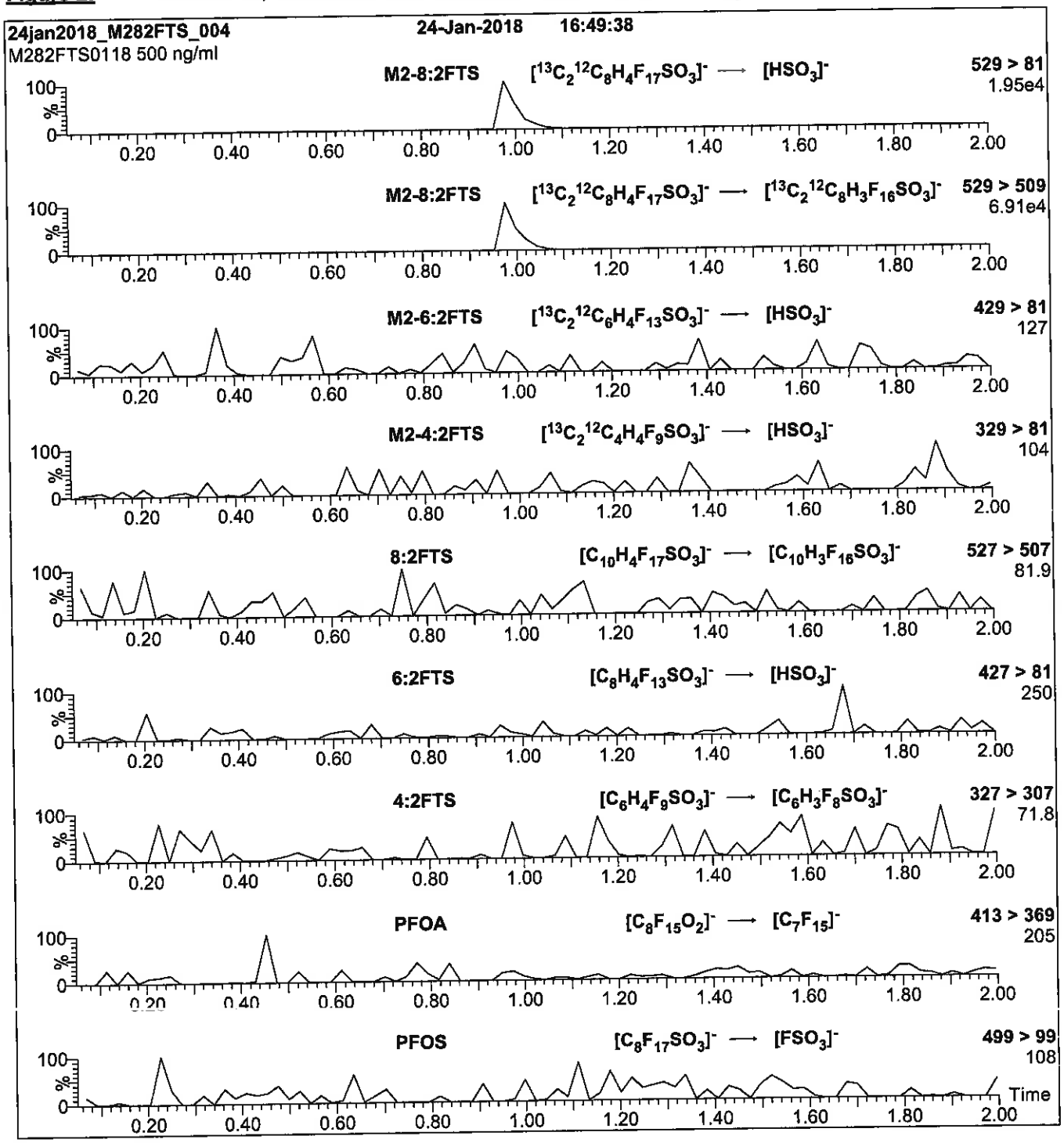
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source:Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 30.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

Figure 2: **M2-8:2FTS; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml M2-8:2FTS)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.43e-3
Collision Energy (eV) = 25

Reagent

LCM2PFHxDA_00016

1263133
ID: LCM2PFHxDA_00016
Exp:07/13/22 Prpd:CBW Opn:06/30/18
13C2-PFHxDA at 50ug/mL

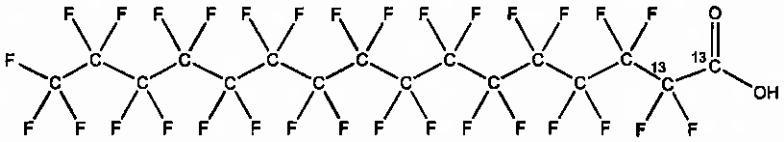
R: 5/30/18 E-863

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M2PFHxDA
LOT NUMBER: M2PFHxDA0717
COMPOUND: Perfluoro-n-[1,2-$^{13}C_2$]hexadecanoic acid

STRUCTURE:
CAS #: Not available



MOLECULAR FORMULA: $^{13}C_2{}^{12}C_{14}HF_{31}O_2$
MOLECULAR WEIGHT: 816.11
CONCENTRATION: 50 ± 2.5 µg/ml
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
ISOTOPIC PURITY: ≥99% ^{13}C (1,2-$^{13}C_2$)
LAST TESTED: (mm/dd/yyyy) 07/13/2017
EXPIRY DATE: (mm/dd/yyyy) 07/13/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.3% of native perfluoro-n-hexadecanoic acid.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 07/14/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers. In order to maintain the integrity of the assigned value(s), and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \ldots x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \ldots x_n)) = \sqrt{\sum_{i=1}^{n} u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of ±5% (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using calibrated NIST and/or NRC traceable external weights. All volumetric glassware used is calibrated, of Class A tolerance, and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

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QUALITY MANAGEMENT:

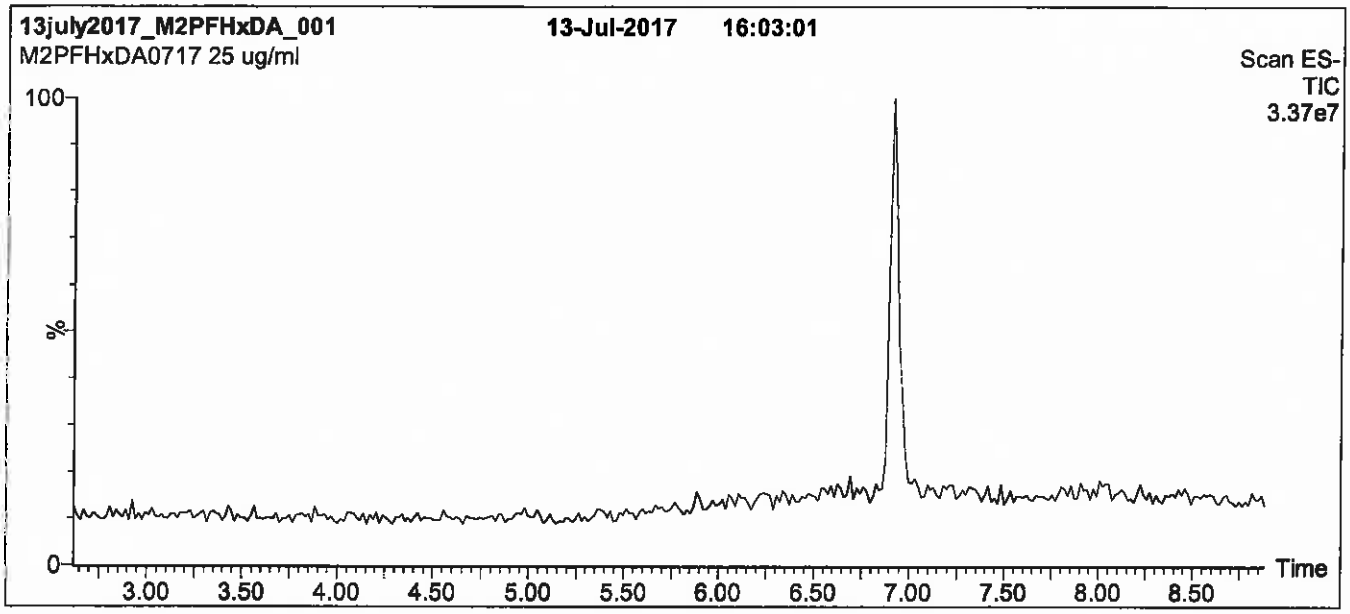
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

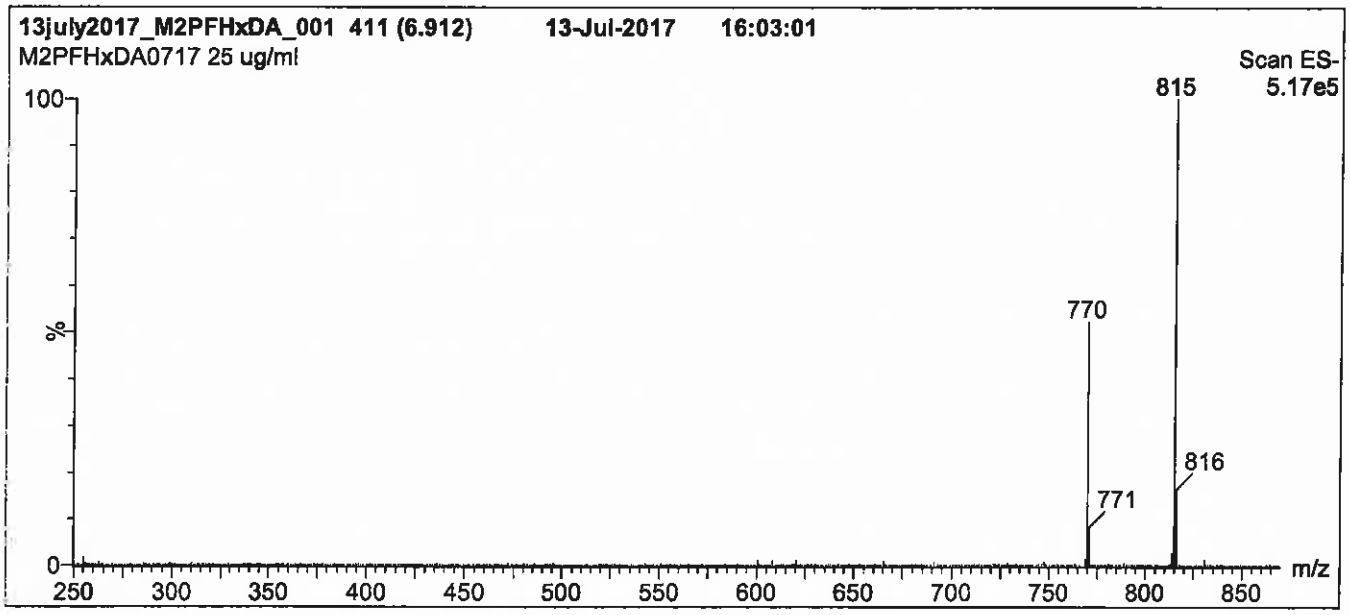
CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

Figure 1: **M2PFHxDA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

LC: **Waters Acquity Ultra Performance LC**
MS: **Micromass Quattro *micro* API MS**

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 55% (80:20 MeOH:ACN) / 45% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min before returning to initial conditions in 0.5 min.
Time: 10 min

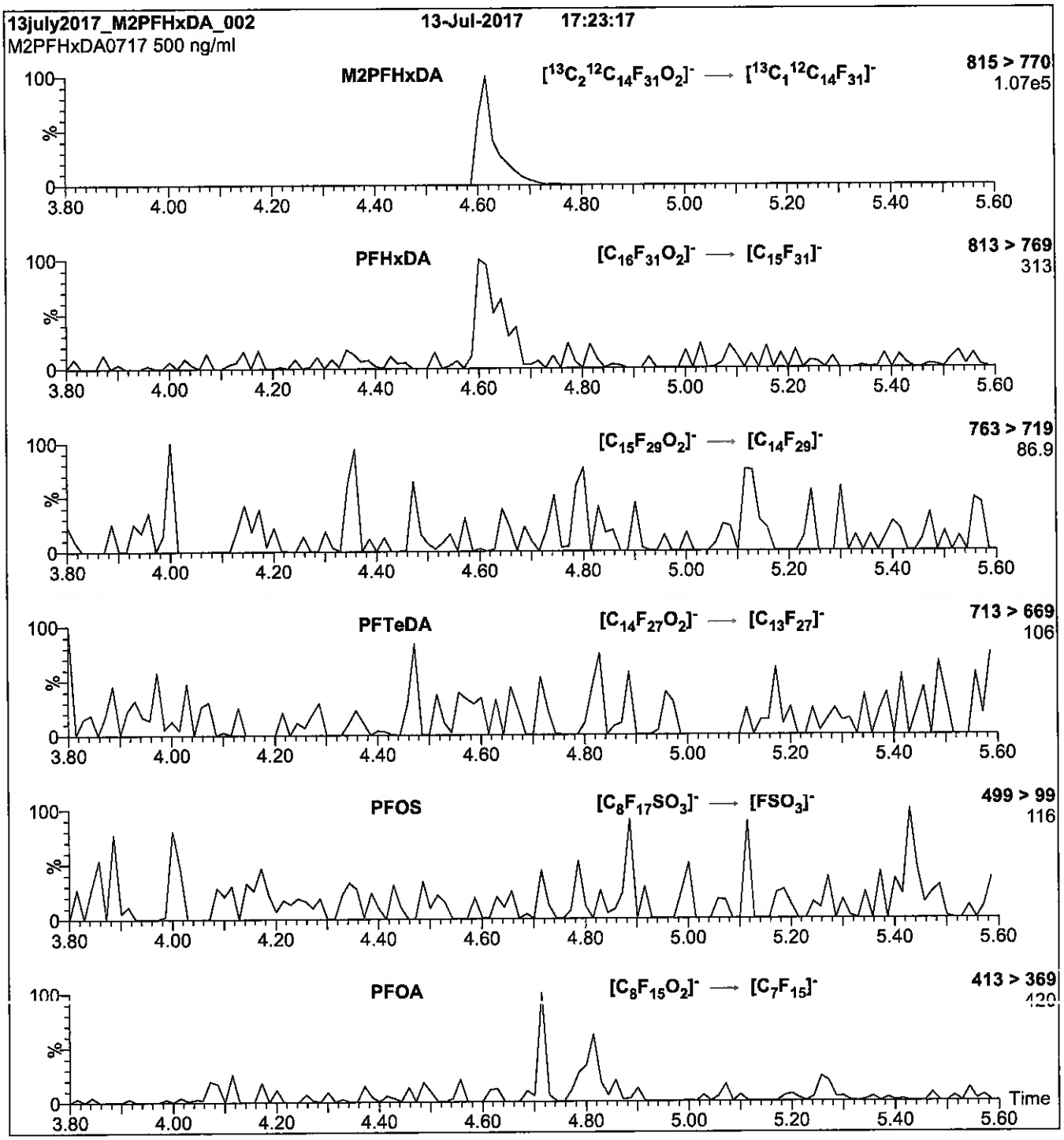
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (250 - 1250 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 25.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

Figure 2: **M2PFHxDA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml M2PFHxDA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.28e-3
Collision Energy (eV) = 15

Reagent

LCM2PFOA_00008

r. 5/3/17 SKW

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

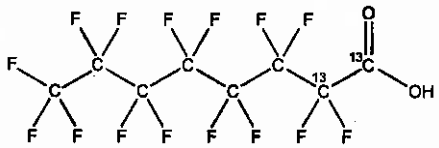
PRODUCT CODE: M2PFOA

COMPOUND: Perfluoro-n-[1,2-$^{13}C_2$]octanoic acid

LOT NUMBER: M2PFOA0216

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: $^{13}C_2{}^{12}C_6HF_{16}O_2$

MOLECULAR WEIGHT: 416.05

CONCENTRATION: 50 ± 2.5 µg/ml

SOLVENT(S): Methanol, Water (<1%)

CHEMICAL PURITY: >98%

ISOTOPIC PURITY: ≥99% ^{13}C (1,2-$^{13}C_2$)

LAST TESTED: (mm/dd/yyyy) 02/12/2016

EXPIRY DATE: (mm/dd/yyyy) 02/12/2021

RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 02/24/2016 (mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

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CALA

ANAB

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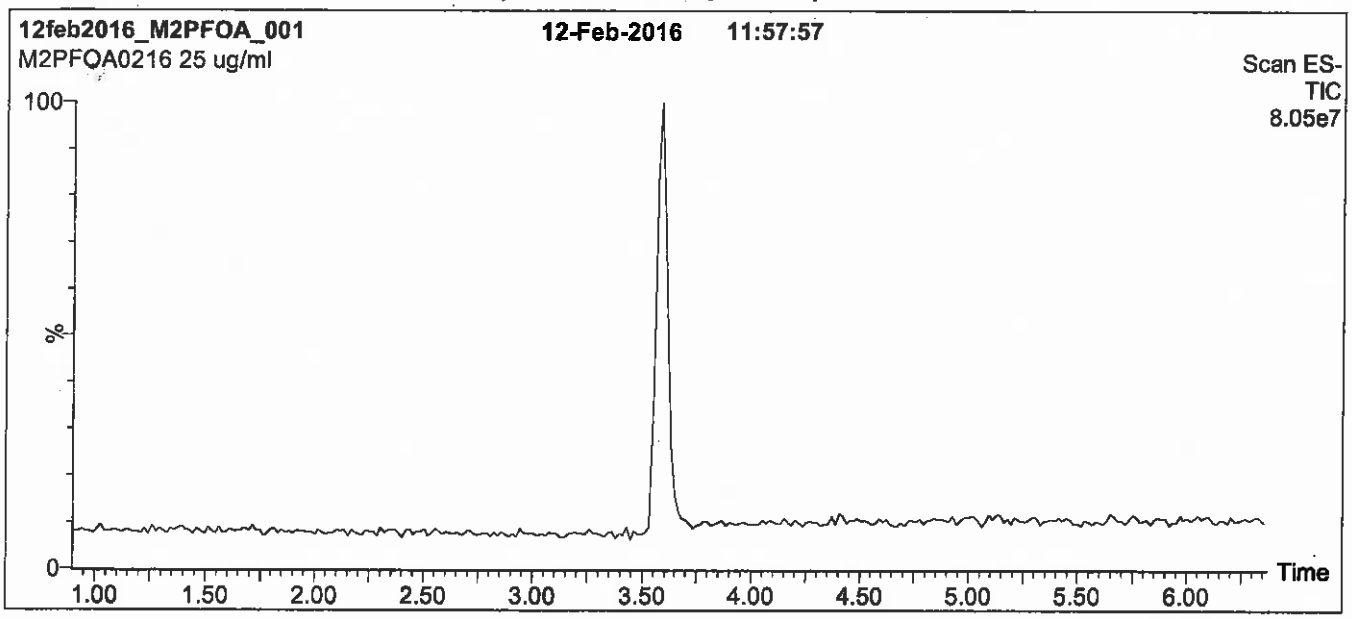
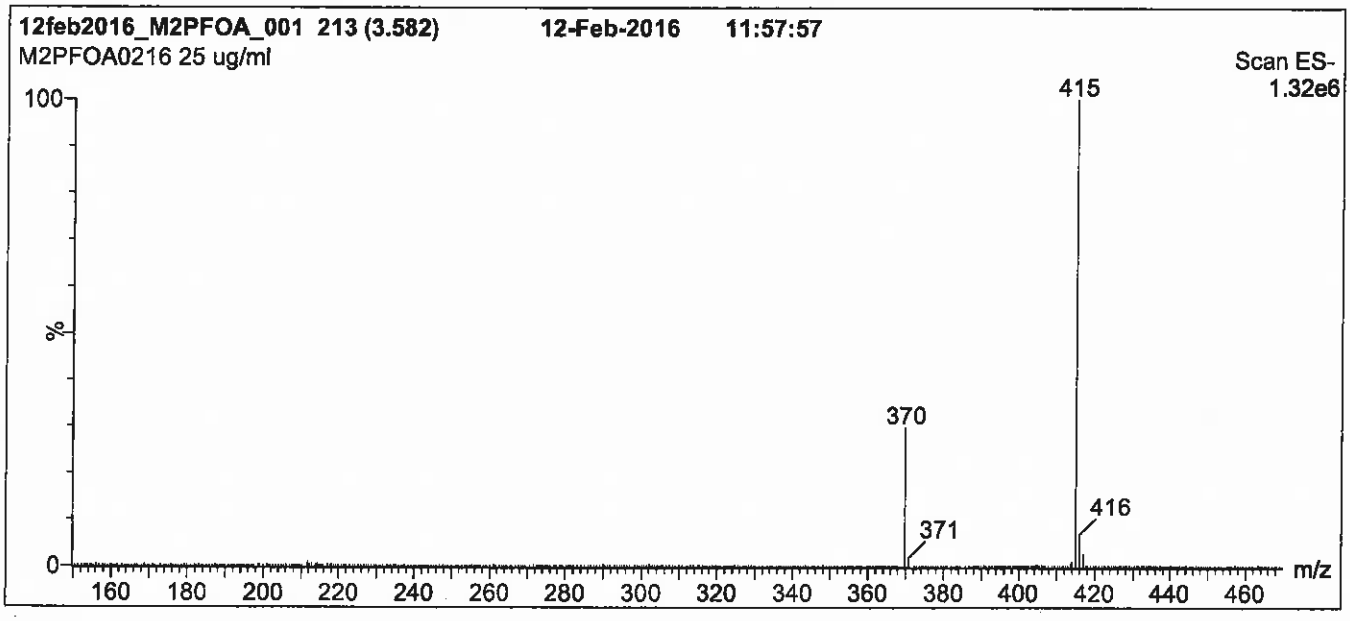
Figure 1: **M2PFOA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

LC: **Waters Acquity Ultra Performance LC**
MS: **Micromass Quattro *micro* API MS**

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7.5 min and hold for 1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

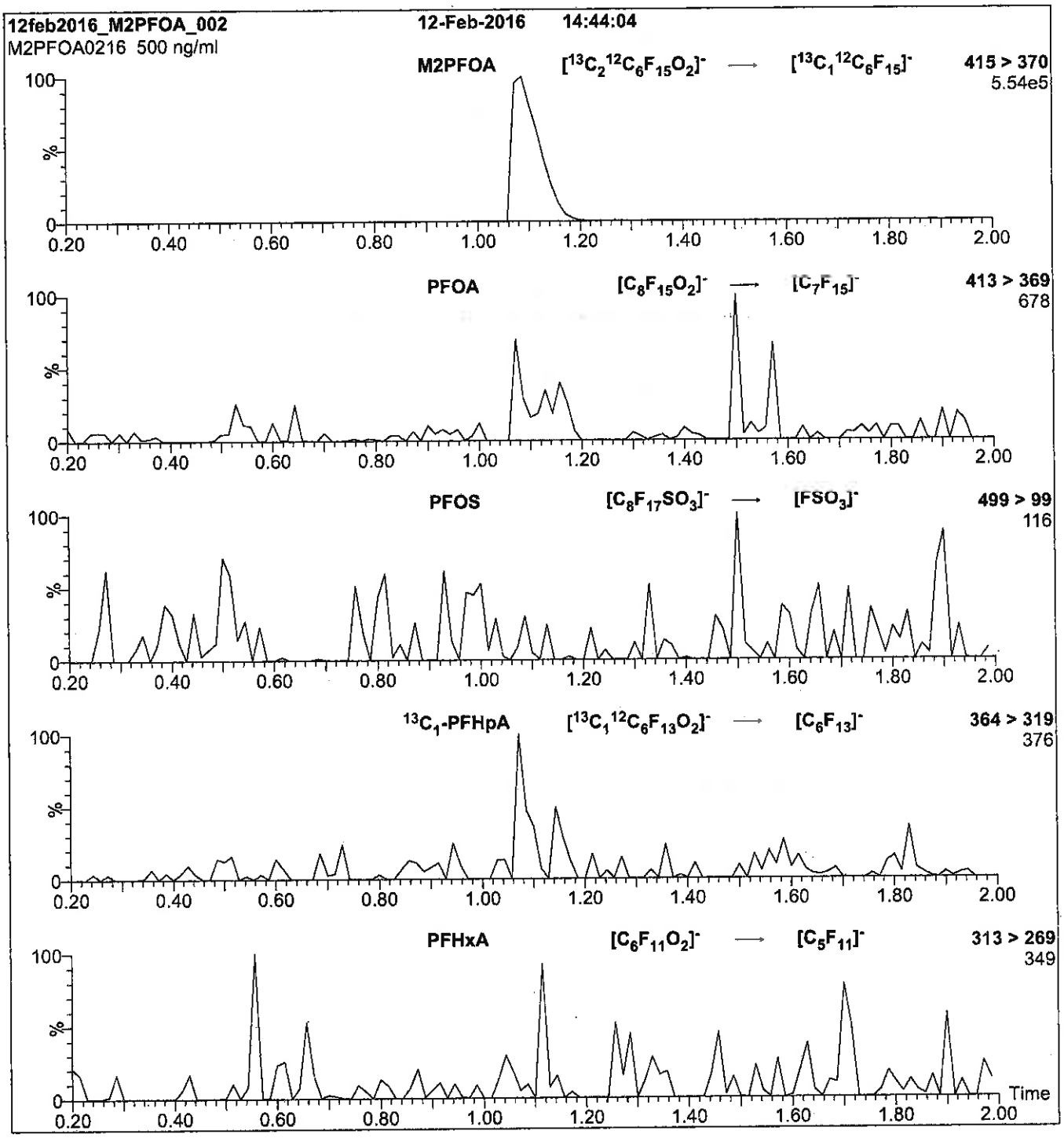
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

Figure 2: **M2PFOA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml M2PFOA)

Mobile phase: Isocratic 80% MeOH / 20% H_2O

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.39e-3
Collision Energy (eV) = 10

Reagent

LCM2PFTeDA_00014

1263136
ID: LCM2PFTeDA_00014
Exp:11/30/22 Prpd:CBW Opn:05/30/18
13C2-PFTeDA at 50ug/mL

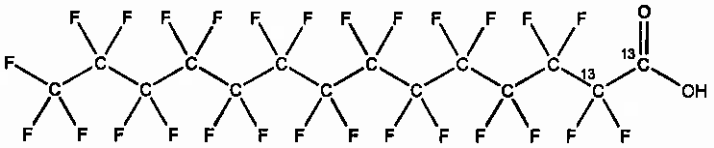
R: 5/30/18 CBW 573

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M2PFTeDA
LOT NUMBER: M2PFTeDA1117
COMPOUND: Perfluoro-n-[1,2-$^{13}C_2$]tetradecanoic acid

STRUCTURE:
CAS #: Not available



MOLECULAR FORMULA: $^{13}C_2{}^{12}C_{12}HF_{27}O_2$
MOLECULAR WEIGHT: 716.10
CONCENTRATION: 50 ± 2.5 µg/ml
SOLVENT(S): Methanol, Water (<1%)
CHEMICAL PURITY: >98%
ISOTOPIC PURITY: ≥99% ^{13}C (1,2-$^{13}C_2$)
LAST TESTED: (mm/dd/yyyy) 11/30/2017
EXPIRY DATE: (mm/dd/yyyy) 11/30/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 12/01/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

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CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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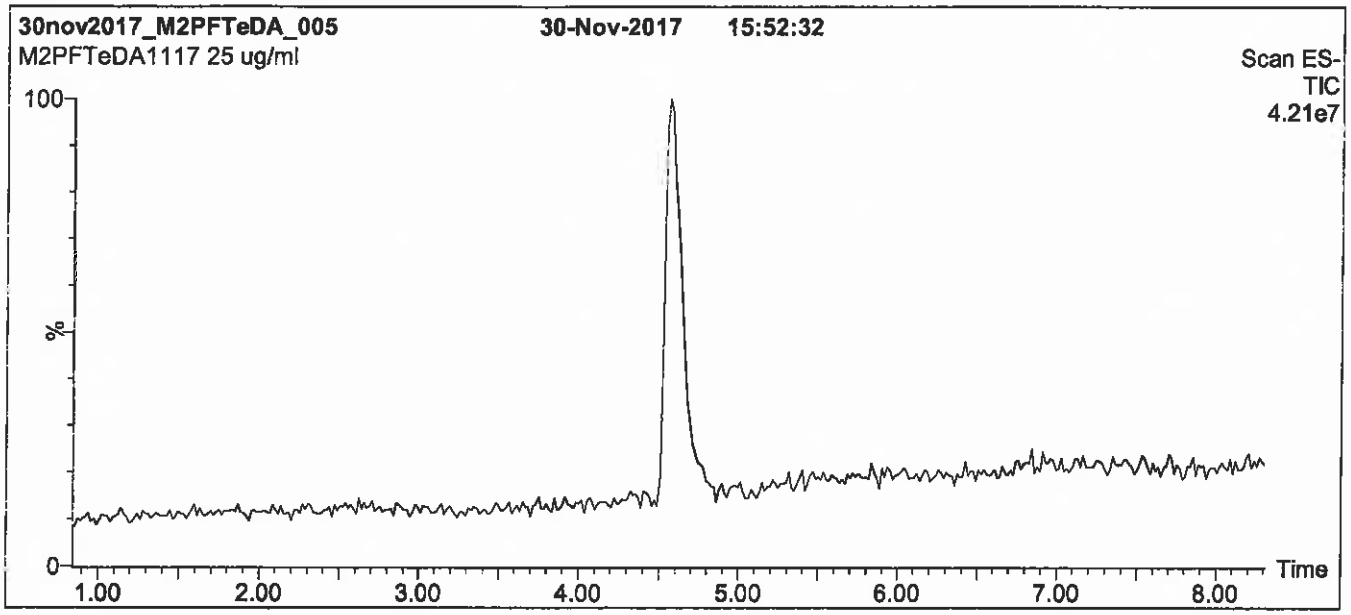
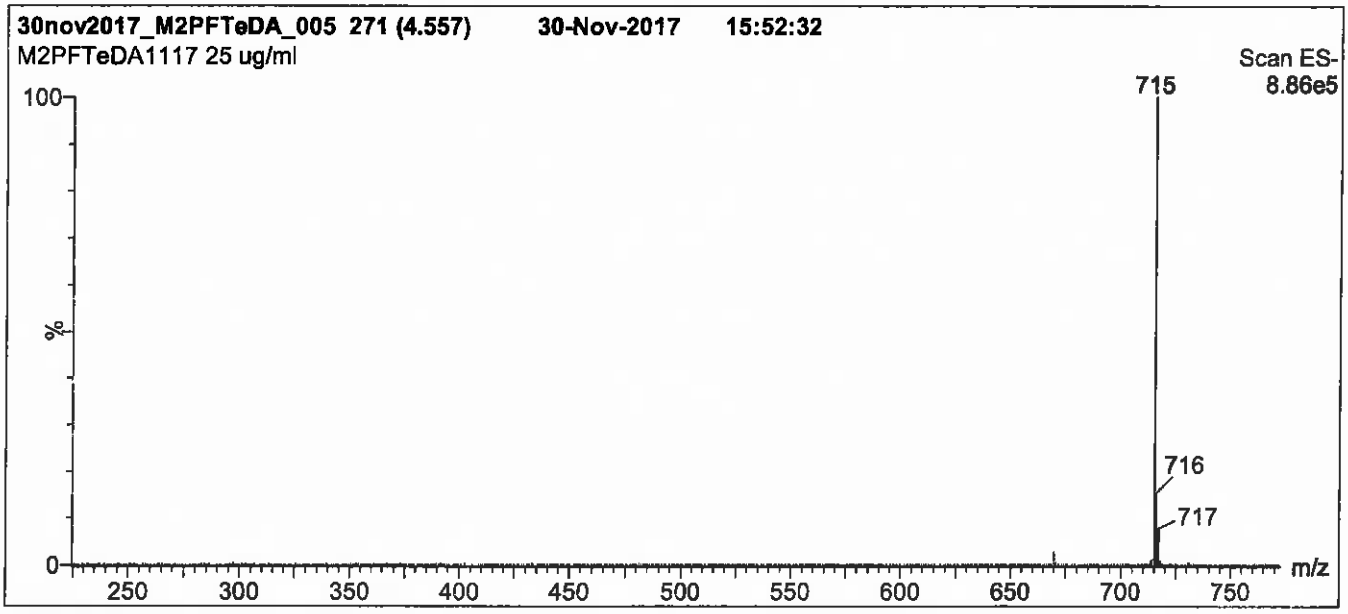
Figure 1: **M2PFTeDA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 65% (80:20 MeOH:ACN) / 35% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7.5 min and hold for 1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

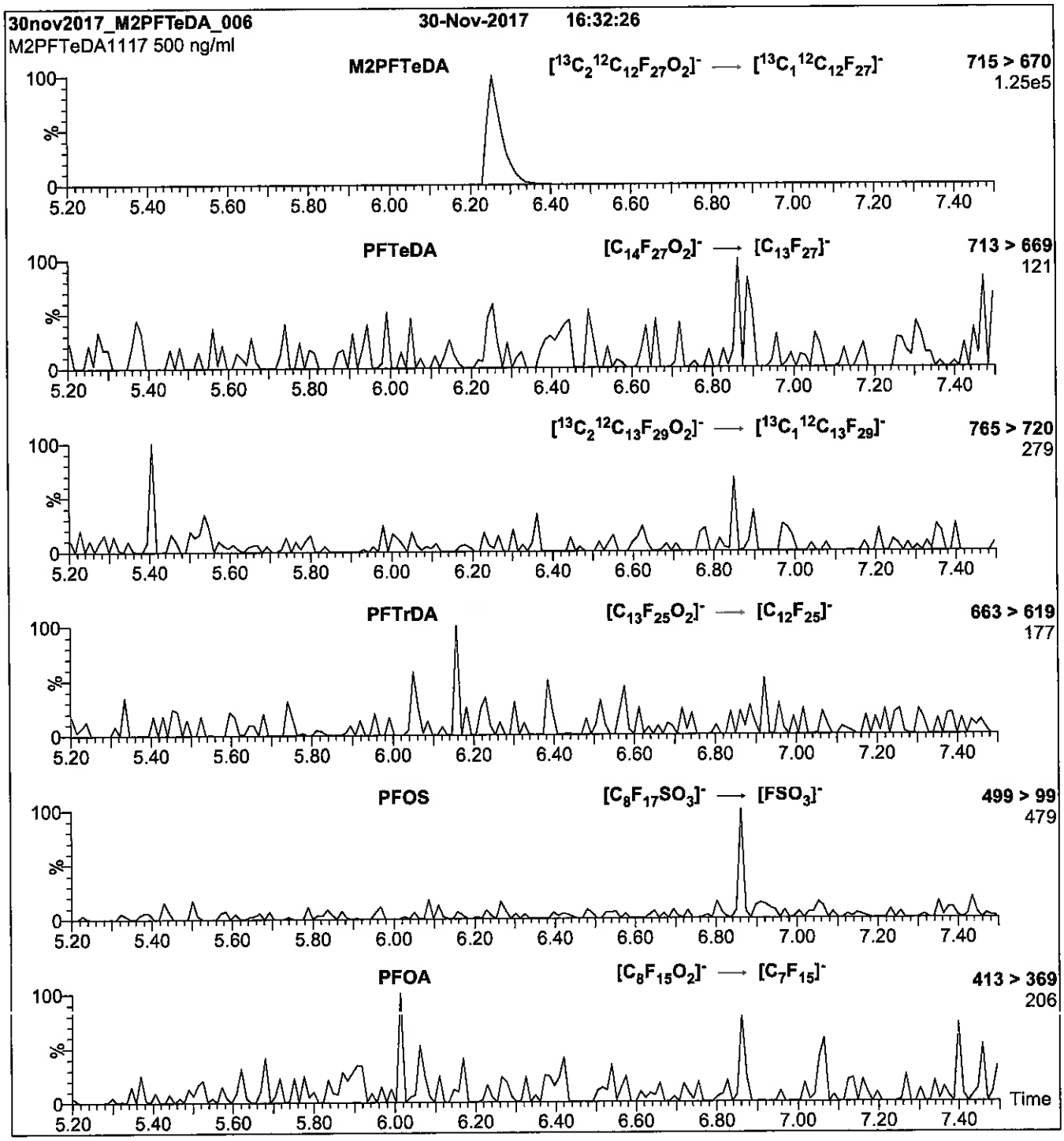
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

Figure 2: **M2PFTeDA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml M2PFTeDA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.31e-3
Collision Energy (eV) = 14

Reagent

LCM3HFPO-DA_00003

1263201
ID: LCM3HFPO-DA_00003
Exp:05/18/21 Prpd:CBW Opn:05/30/18
M3HFPO-DA

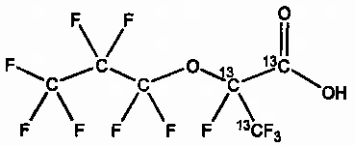
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M3HFPO-DA **LOT NUMBER:** M3HFPODA0518

COMPOUND: 2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)-$^{13}C_3$-propanoic acid

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA:	$^{13}C_3{}^{12}C_3HF_{11}O_3$	**MOLECULAR WEIGHT:**	333.03
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($^{13}C_3$)
LAST TESTED: (mm/dd/yyyy)	05/18/2018		
EXPIRY DATE: (mm/dd/yyyy)	05/18/2021		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains ~ 1.5% of two constitutional isomers.
- Product is commercially known as GenX.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 05/25/2018 (mm/dd/yyyy)
B.G. Chittim, General Manager

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$$u_c(y(x_1, x_2, \ldots x_n)) = \sqrt{\sum_{i=1}^{n} u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of ±5% (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

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EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

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QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO 17034 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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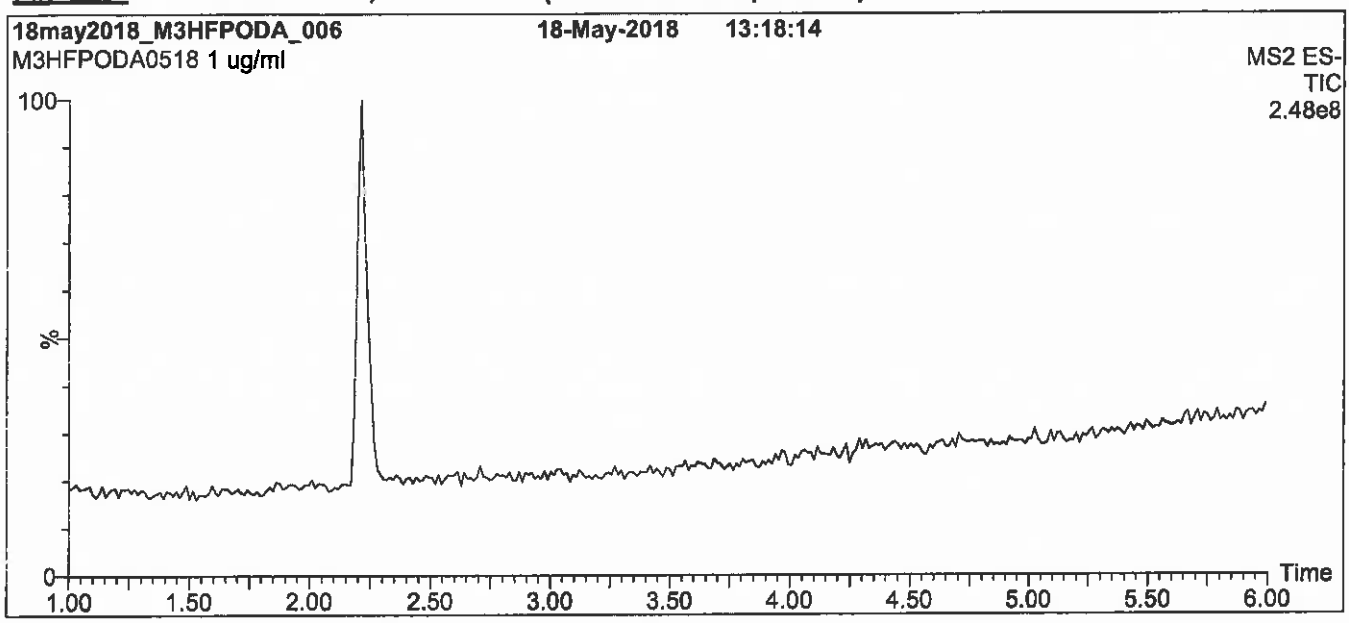
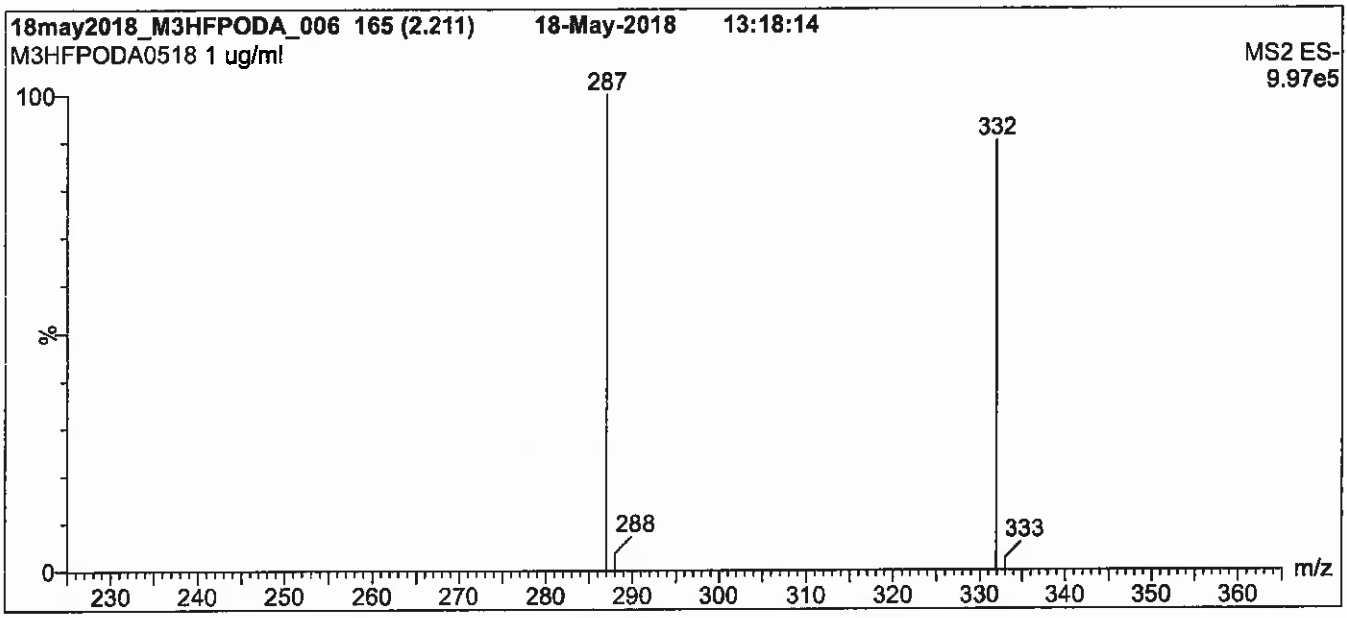
Figure 1: **M3HFPO-DA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

LC: **Waters Acquity Ultra Performance LC**
MS: **Waters Xevo TQ-S micro MS**

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 80% organic over 8 min and hold for
2 min before returning to initial conditions in 0.75 min.
Time: 12 min

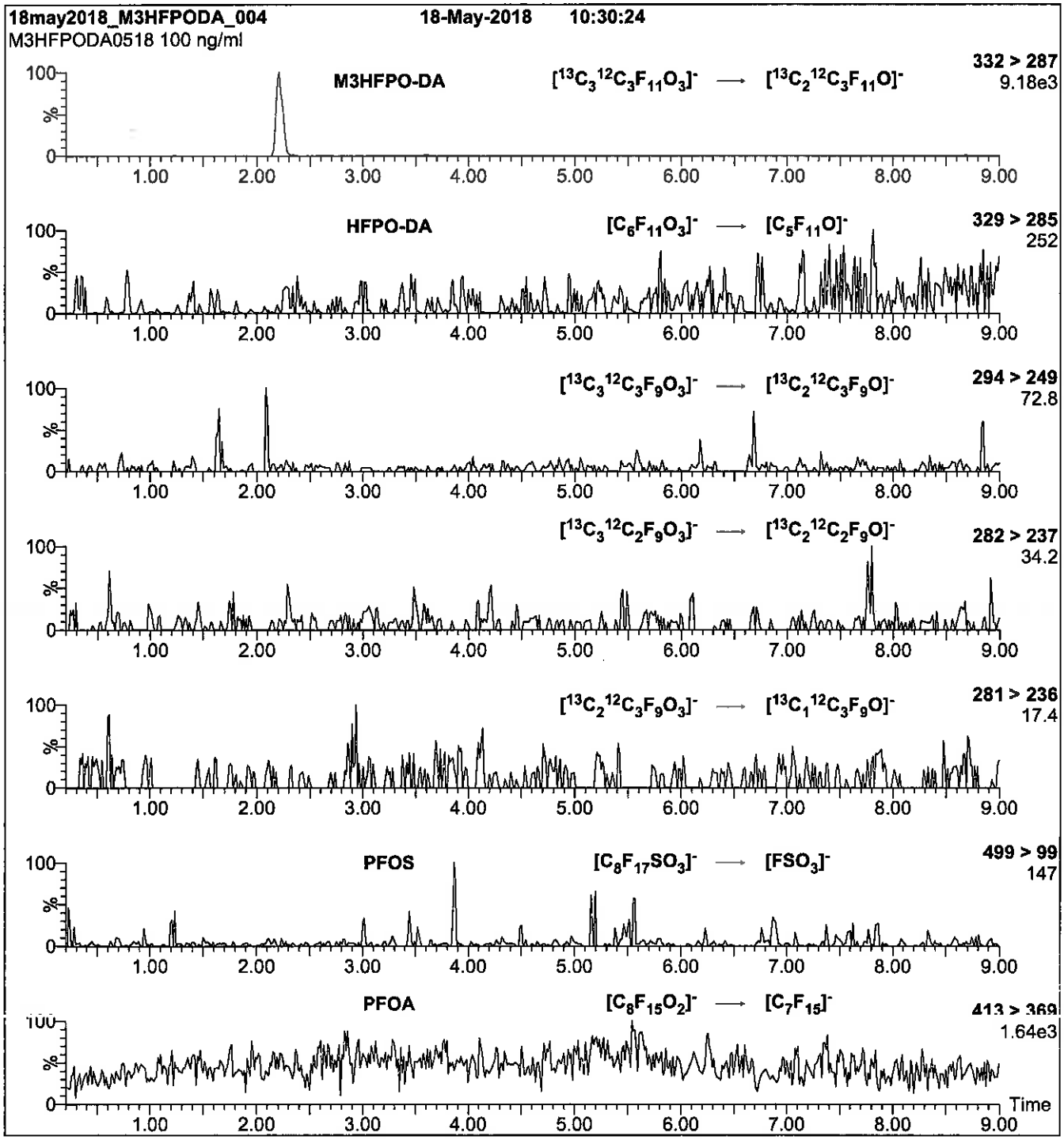
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.10
Cone Voltage (V) = 7.50
Desolvation Temperature (°C) = 350
Desolvation Gas Flow (l/hr) = 750

Figure 2: **M3HFPO-DA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: On-column (M3HFPO-DA)

Mobile phase: Same as Figure 1

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.50e-3
Collision Energy (eV) = 6

Reagent

LCM4PFHPA_00014

1263142
ID: LCM4PFHPA_00014
Exp:05/03/22 Prpd:CBW Opn:05/30/18
13C4-Perfluoroheptanoic a

R: 12T 5/30/18 CBW

WELLINGTON LABORATORIES

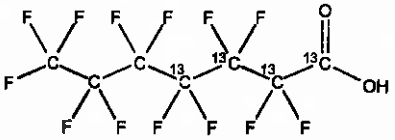
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M4PFHpA
COMPOUND: Perfluoro-n-[1,2,3,4-$^{13}C_4$]heptanoic acid

LOT NUMBER: M4PFHpA0517

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: $^{13}C_4{}^{12}C_3HF_{13}O_2$
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 368.03
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 05/03/2017
EXPIRY DATE: (mm/dd/yyyy) 05/03/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

ISOTOPIC PURITY: ≥99% ^{13}C (1,2,3,4-$^{13}C_4$)

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 05/11/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

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CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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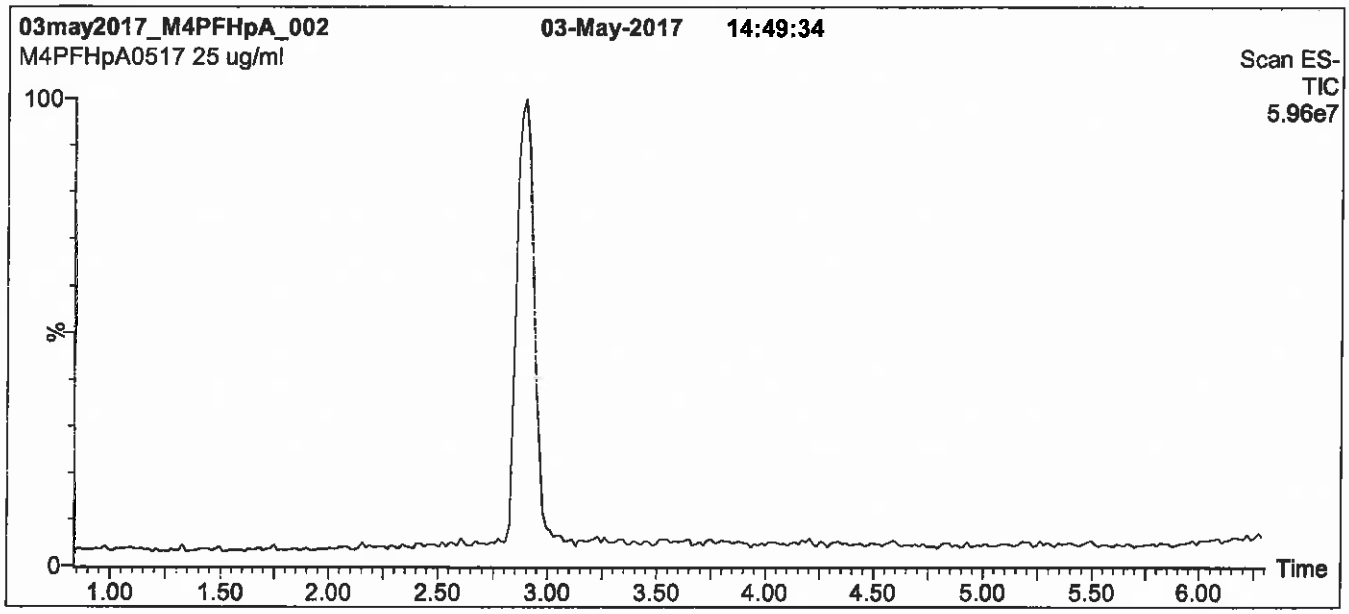
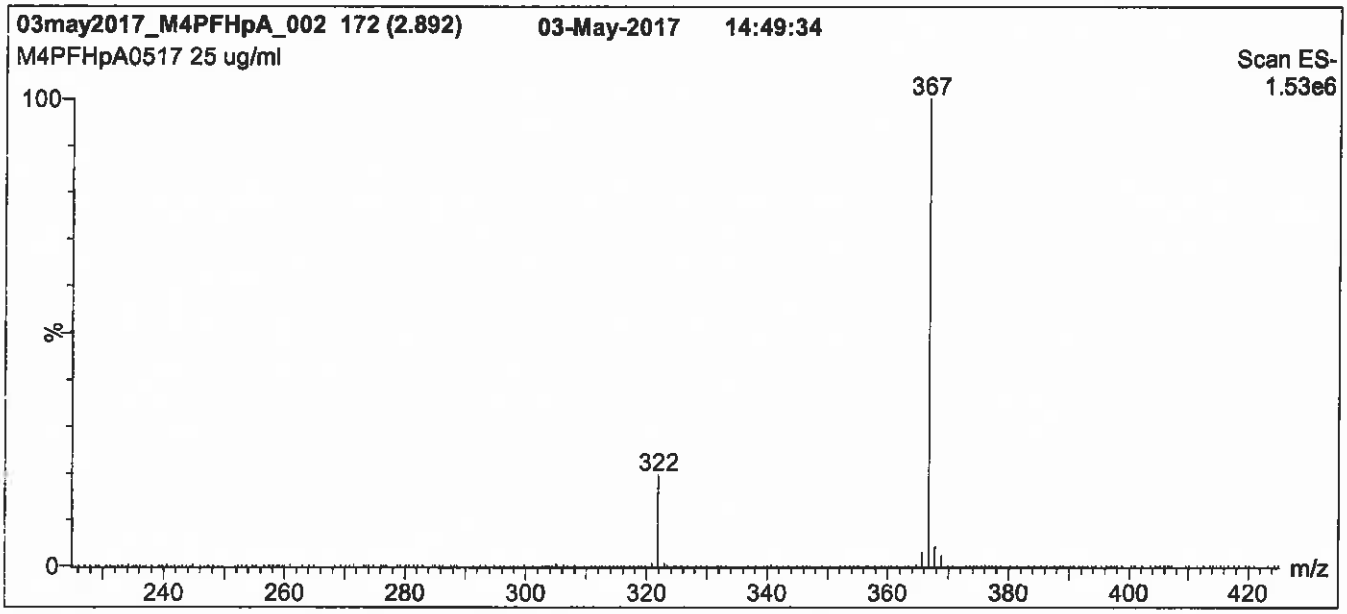
Figure 1: **M4PFHpA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 8 min and hold for 1 min before returning to initial conditions in 0.5 min.
Time: 10 min

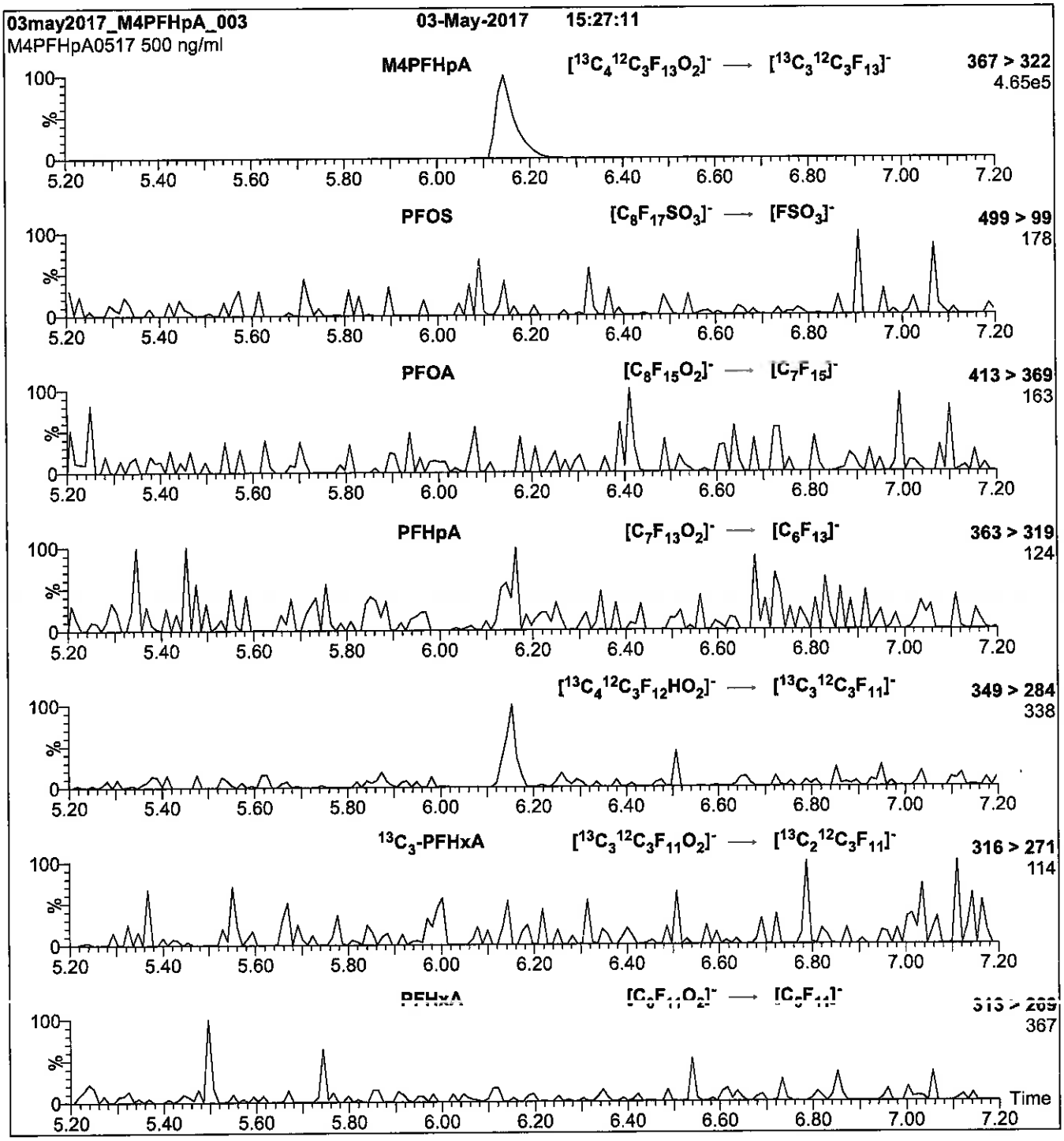
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: **M4PFHpA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml M4PFHpA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.46e-3
Collision Energy (eV) = 9

Reagent

LCM5PFPEA_00015

1263145
ID: LCM5PFPEA_00015
Exp:07/20/22 Prpd:CBW Opn:05/30/18
13C5-Perfluoropentanoic a

R: 5/30/18 cbw

E-588

WELLINGTON LABORATORIES

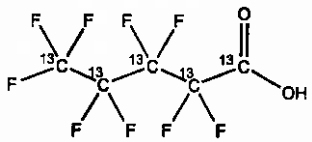
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M5PFPeA
COMPOUND: Perfluoro-n-[$^{13}C_5$]pentanoic acid

LOT NUMBER: M5PFPeA0717

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: $^{13}C_5HF_9O_2$
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 269.01
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 07/20/2017
EXPIRY DATE: (mm/dd/yyyy) 07/20/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

ISOTOPIC PURITY: ≥99% ^{13}C ($^{13}C_5$)

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains < 0.1% of perfluoro-n-pentanoic acid.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 07/26/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

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CALA

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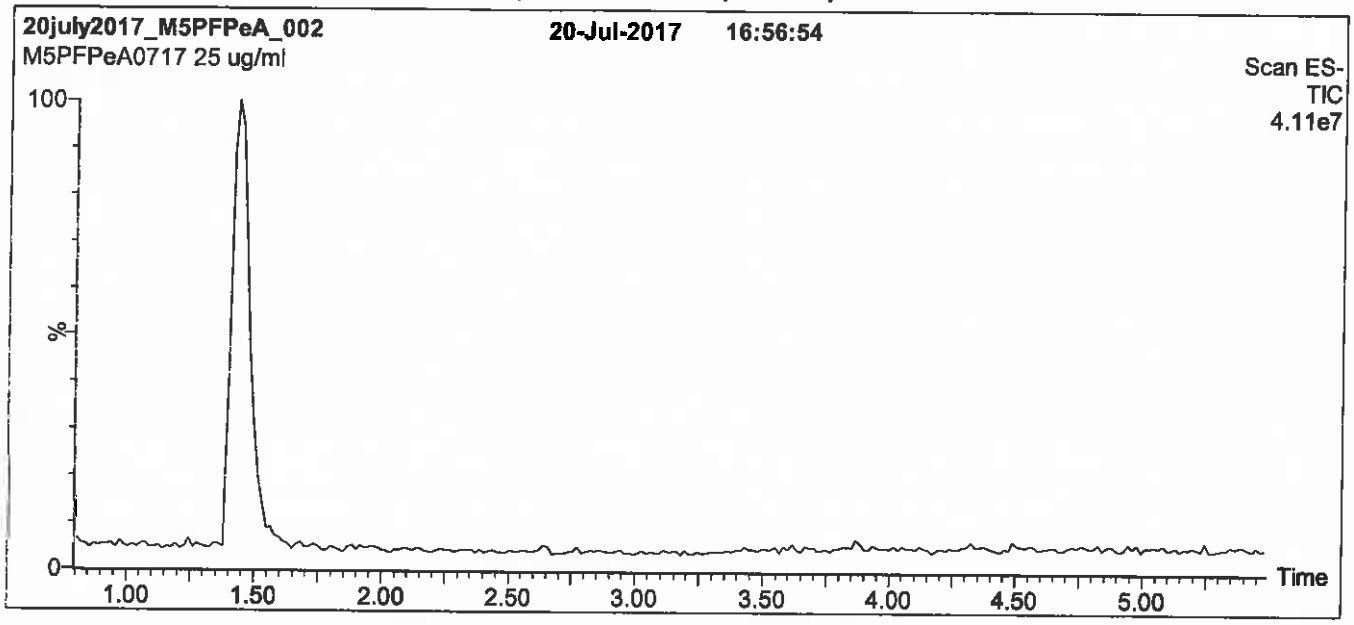
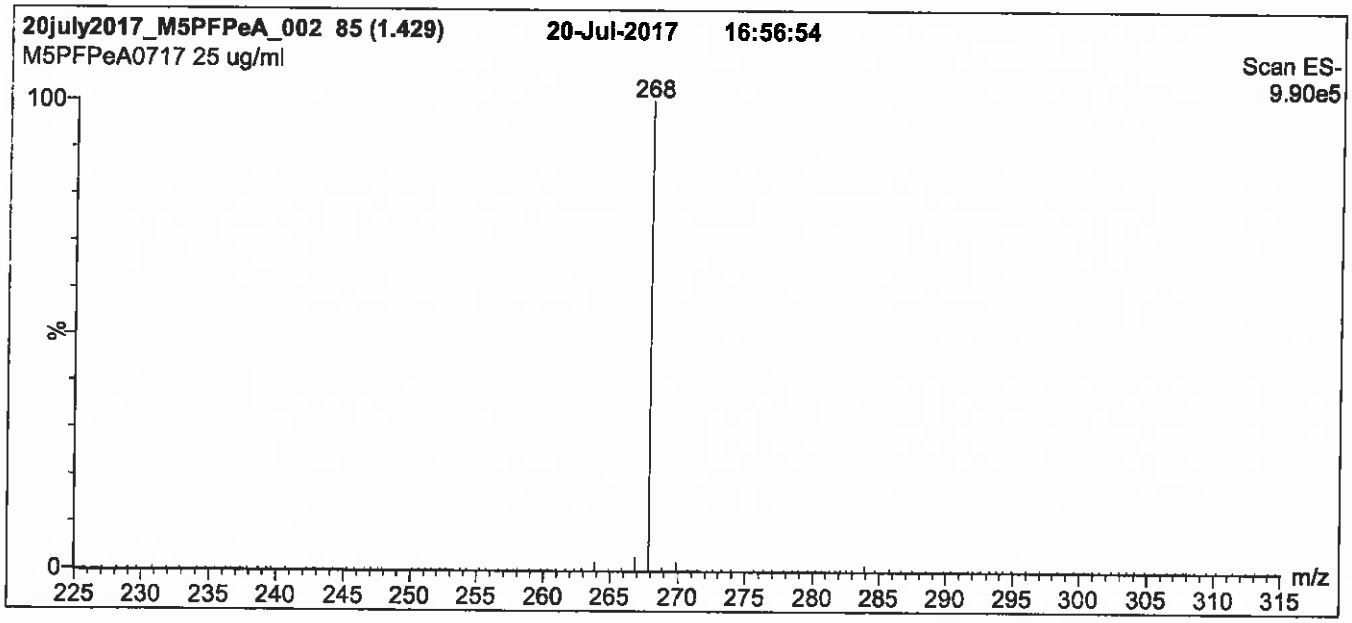




Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Hold for 1 min. Ramp to 90% organic over 7 min and hold for 1 min before returning to initial conditions in 0.5 min.
Time: 10 min

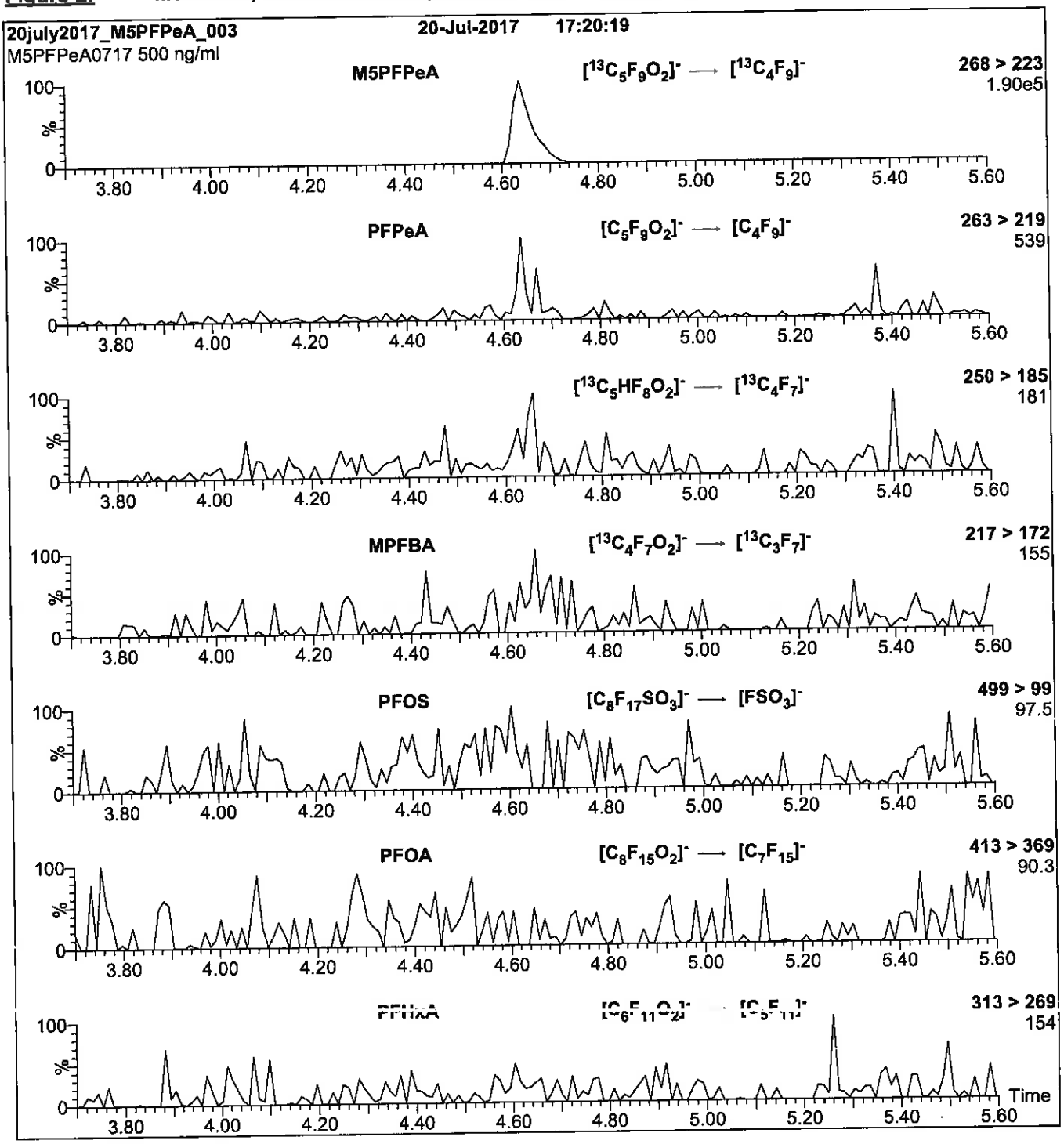
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

Figure 2: **M5PFPeA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml M5PFPeA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.54e-3
Collision Energy (eV) = 9

Reagent

LCM8FOSA_00019

1263151
ID: LCM8FOSA_00019
Exp:10/11/22 Prpd:CBW Opn:05/30/18
13C8-Perfluorooctanesulfo

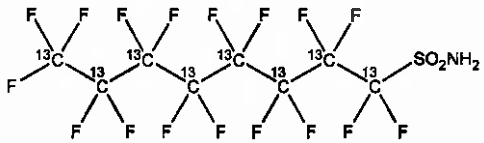
R: 5/30/18 CBW E-593

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M8FOSA-I
LOT NUMBER: M8FOSA1017I
COMPOUND: Perfluoro-1-[$^{13}C_8$]octanesulfonamide

STRUCTURE:
CAS #: Not available



MOLECULAR FORMULA:	$^{13}C_8H_2F_{17}NO_2S$	**MOLECULAR WEIGHT:**	507.09
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Isopropanol
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($^{13}C_8$)
LAST TESTED: (mm/dd/yyyy)	10/11/2017		
EXPIRY DATE: (mm/dd/yyyy)	10/11/2022		
RECOMMENDED STORAGE:	Refrigerate ampoule		

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains ~ 1.1% of perfluoro-1-[$^{13}C_4$]octanesulfonamide and ~ 0.01% of perfluoro-1-[$^{13}C_7$]heptanesulfonamide.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 10/20/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
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All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using calibrated NIST and/or NRC traceable external weights. All volumetric glassware used is calibrated, of Class A tolerance, and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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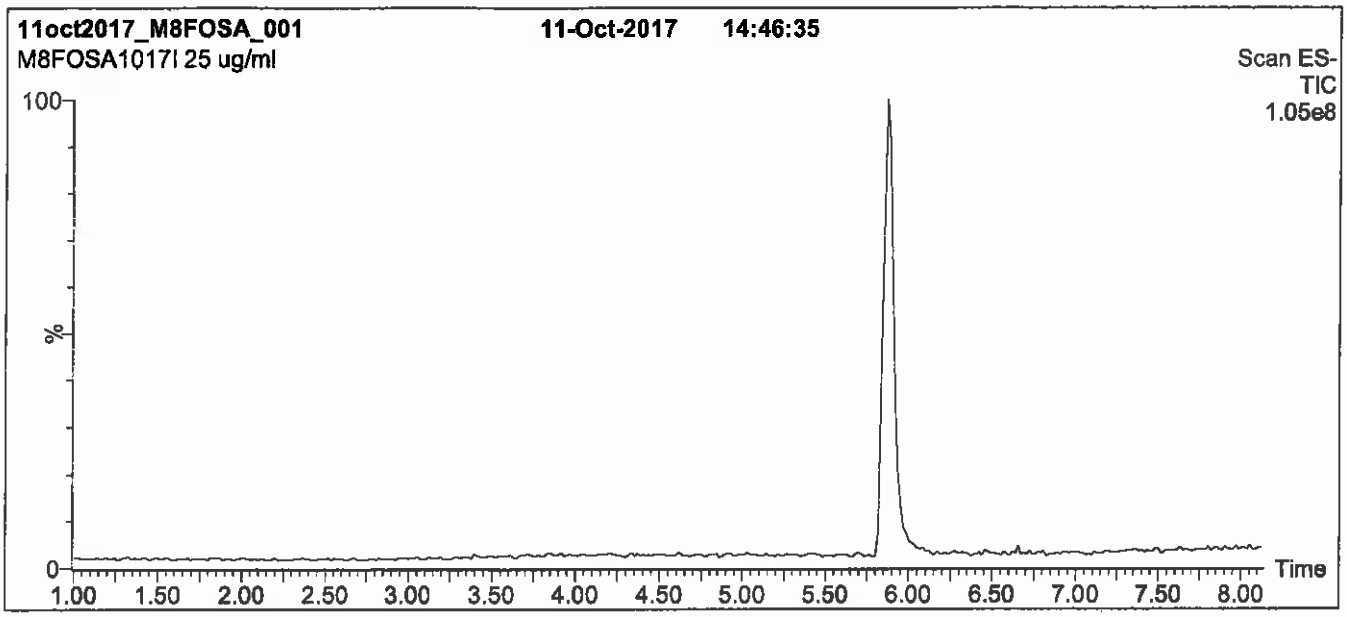
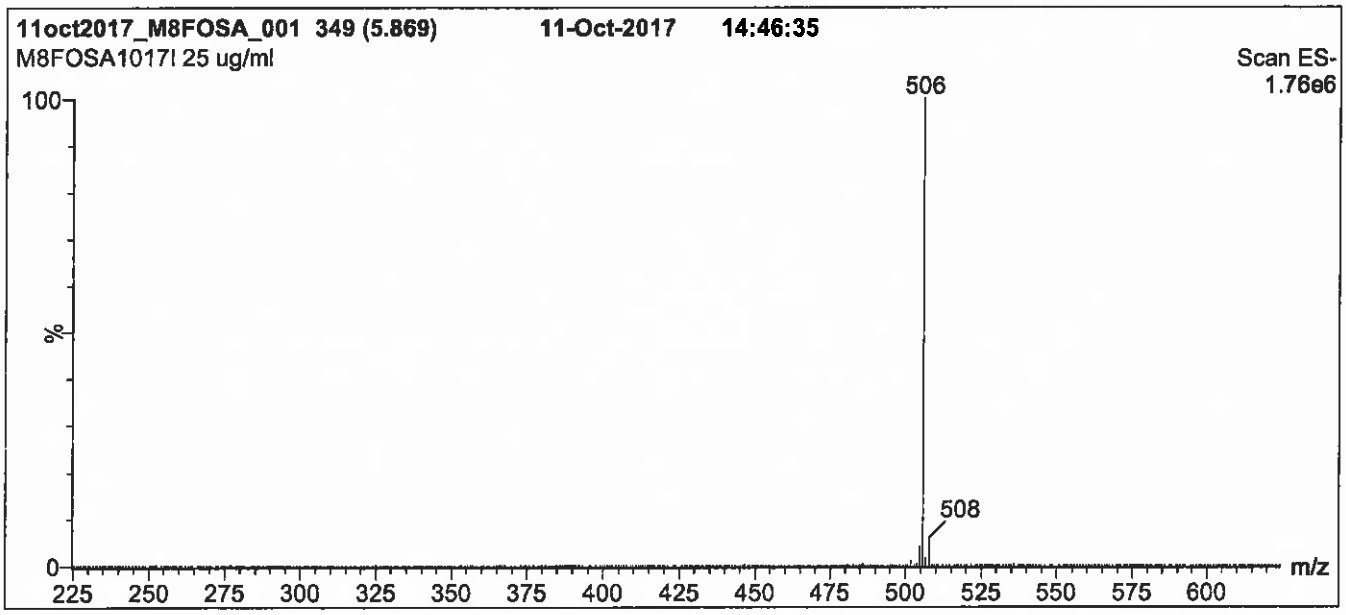
Figure 1: **M8FOSA-I; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

LC: **Waters Acquity Ultra Performance LC**
MS: **Micromass Quattro *micro* API MS**

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 85% organic over 7.5 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

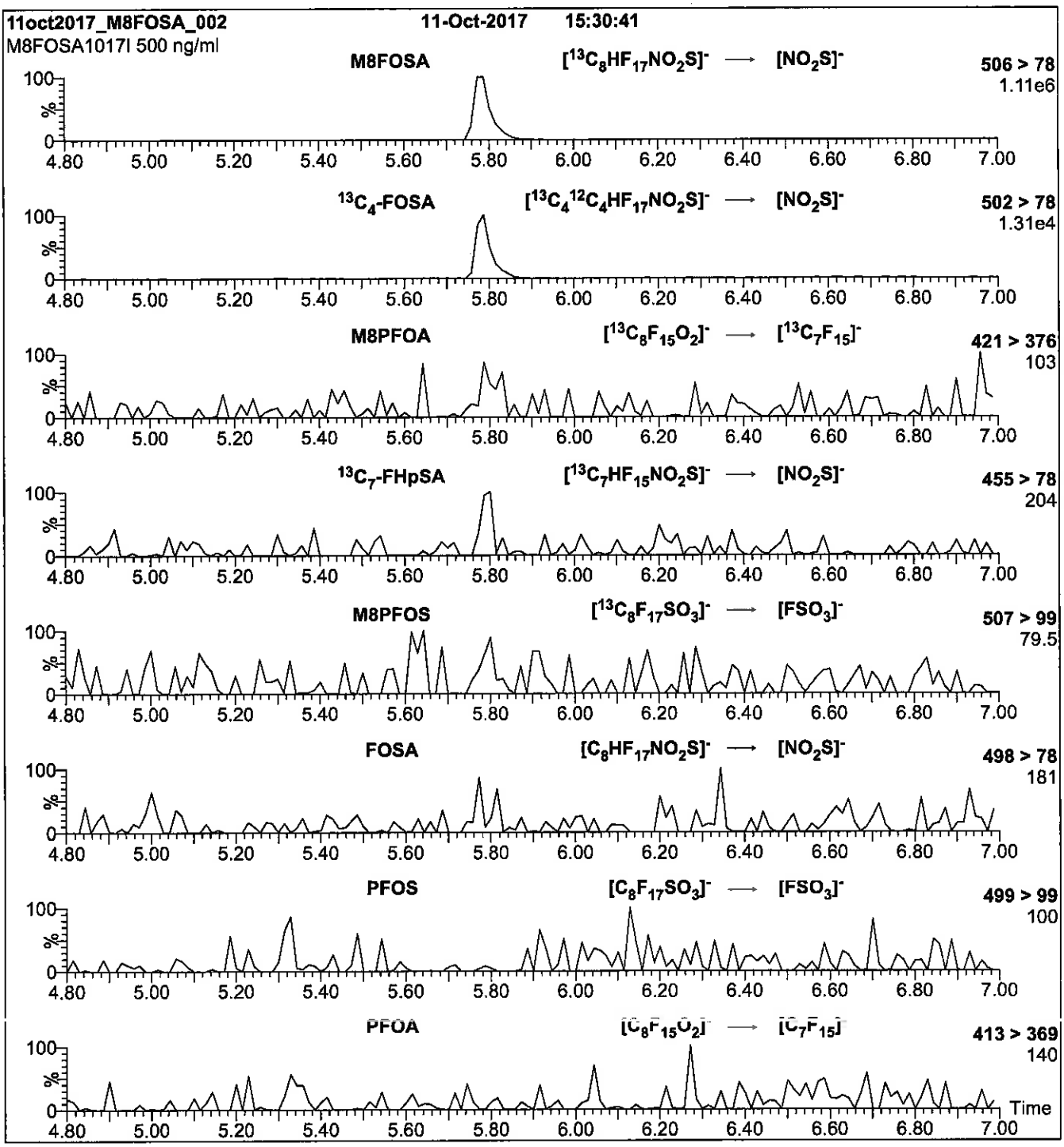
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.50
Cone Voltage (V) = 40.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: **M8FOSA-I; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml M8FOSA-I)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.43e-3
Collision Energy (eV) = 30

Reagent

LCMPFBA_00015

1263154
ID: LCMPFBA_00015
Exp:02/16/23 Prpd:CBW Opn:05/30/18
13C4-Perfluorobutanoic ac

R: 5/30/18 CBW

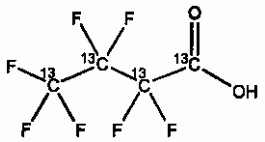
E-598

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MPFBA
LOT NUMBER: MPFBA0218
COMPOUND: Perfluoro-n-[1,2,3,4-$^{13}C_4$]butanoic acid

STRUCTURE:



CAS #: Not available

MOLECULAR FORMULA: $^{13}C_4HF_7O_2$
MOLECULAR WEIGHT: 218.01
CONCENTRATION: 50 ± 2.5 µg/ml
SOLVENT(S): Methanol
Water (<1%)
CHEMICAL PURITY: >98%
ISOTOPIC PURITY: ≥99% ^{13}C (1,2,3,4-$^{13}C_4$)
LAST TESTED: (mm/dd/yyyy) 02/16/2018
EXPIRY DATE: (mm/dd/yyyy) 02/16/2023
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 02/22/2018 (mm/dd/yyyy)
B.G. Chittim, General Manager

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HANDLING:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Our products are synthesized using single-product unambiguous routes whenever possible. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS, and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers. In order to maintain the integrity of the assigned value(s), and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \ldots x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \ldots x_n)) = \sqrt{\sum_{i=1}^{n} u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of ±5% (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

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CALA

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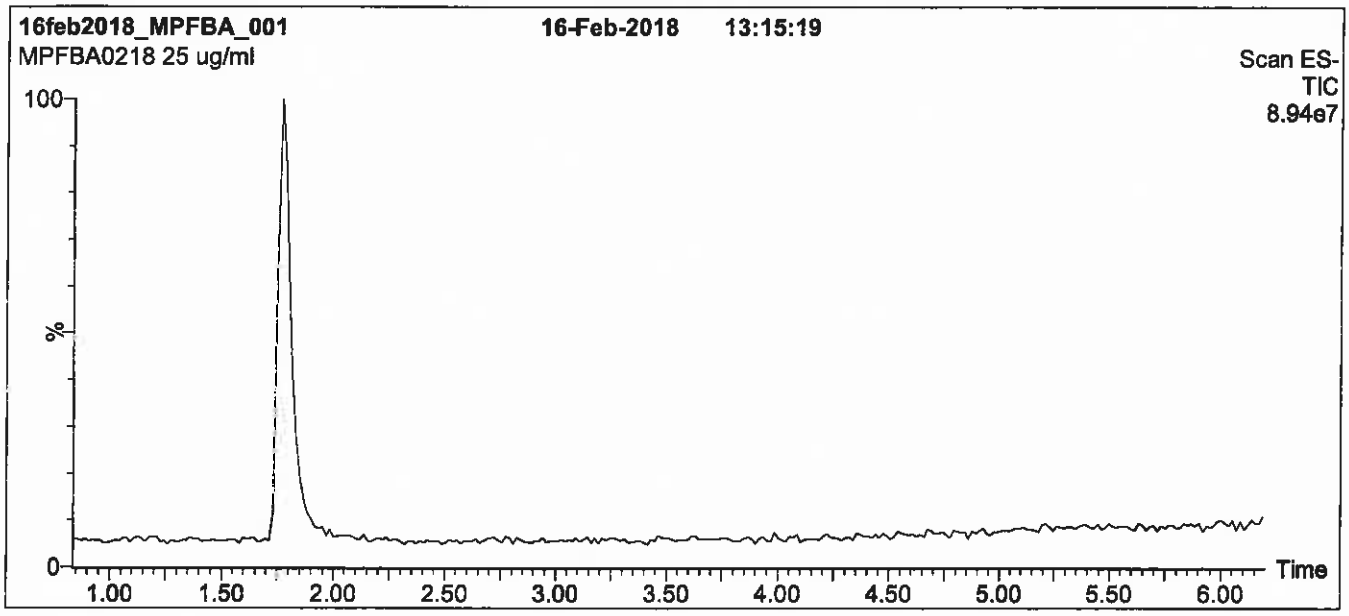
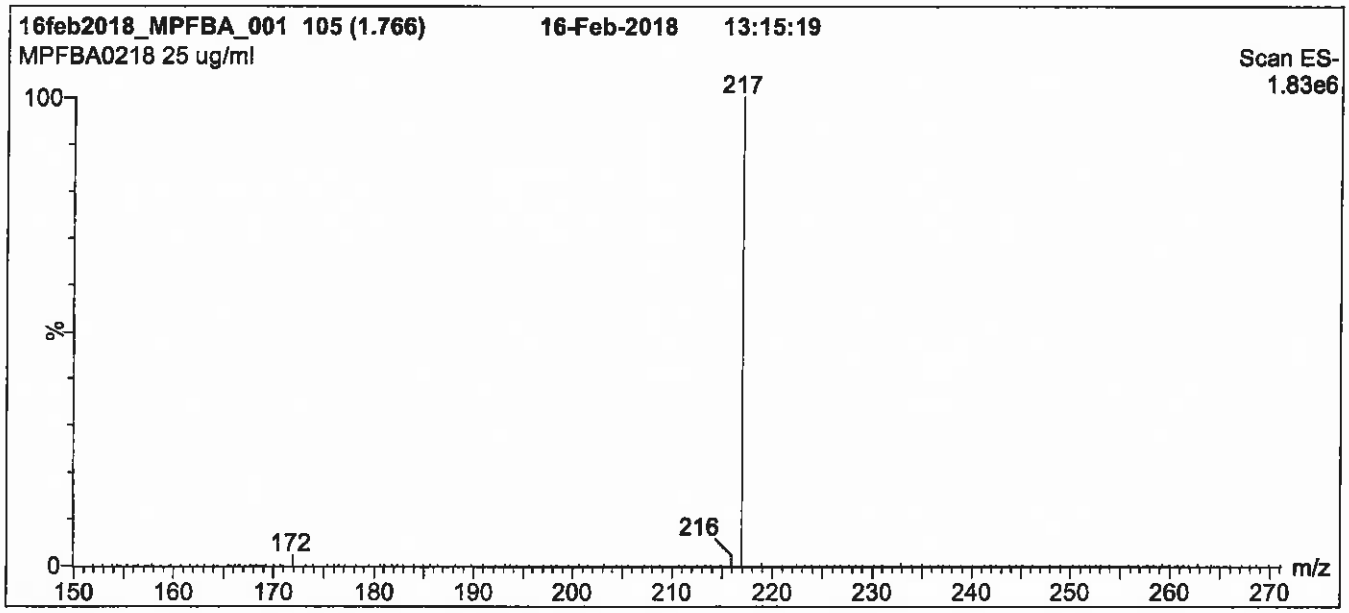
Figure 1: **MPFBA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

LC: **Waters Acquity Ultra Performance LC**
MS: **Micromass Quattro *micro* API MS**

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 30% (80:20 MeOH:ACN) / 70% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

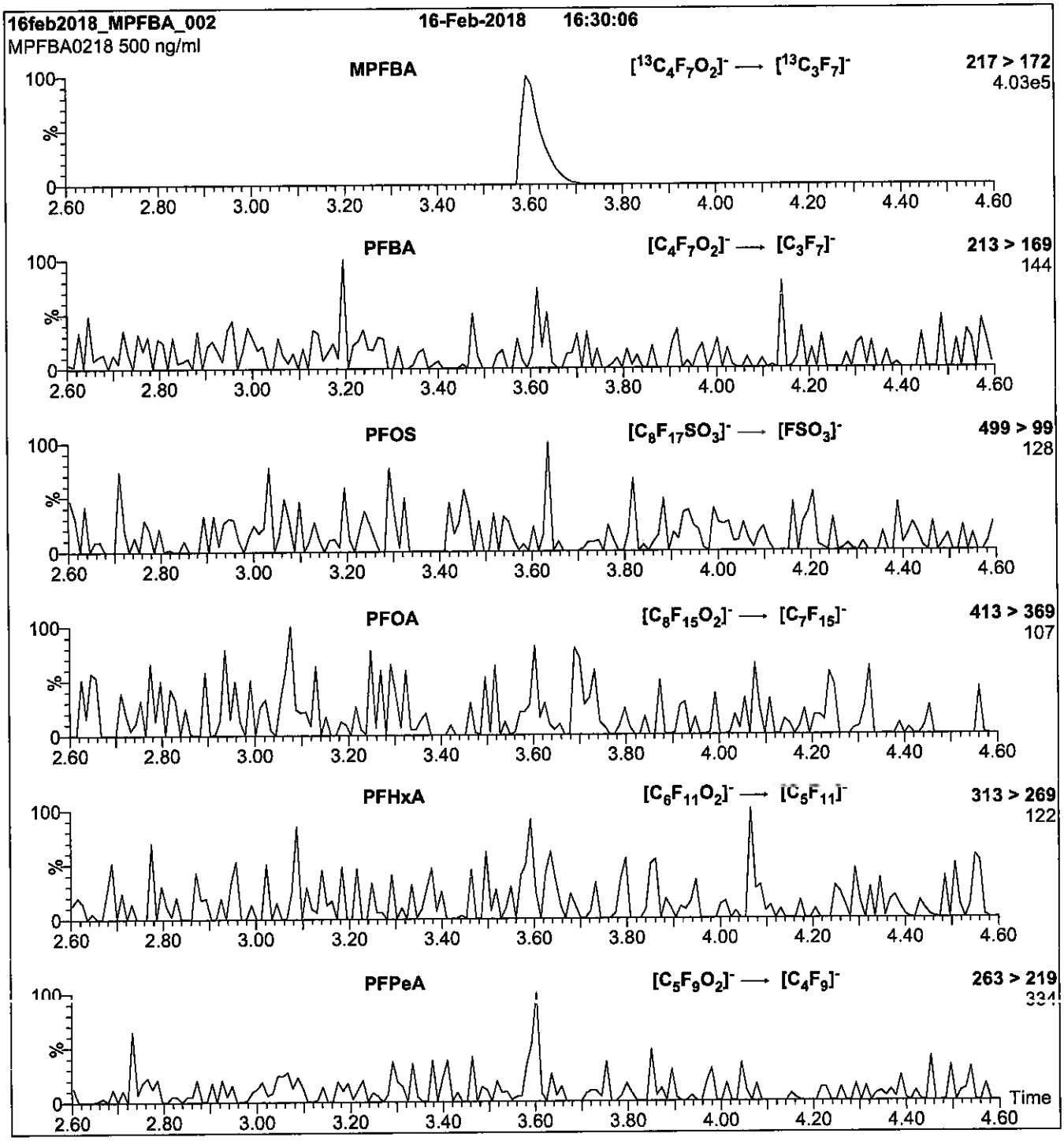
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 10.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

Figure 2: **MPFBA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml MPFBA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.31e-3
Collision Energy (eV) = 10

Reagent

LCMPFBS_00008

1263177
ID: LCMPFBS_00008
Exp:02/15/23 Prpd:CBW Opn:05/30/18
13C3-Perfluorobutanesulfo

K: 5/30/18

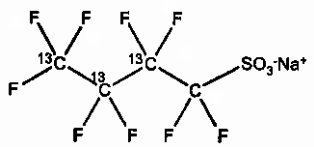
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M3PFBS **LOT NUMBER:** M3PFBS0218

COMPOUND: Sodium perfluoro-1-[2,3,4-$^{13}C_3$]butanesulfonate

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA:	$^{13}C_3{}^{12}CF_9SO_3Na$	**MOLECULAR WEIGHT:**	325.06
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt) 46.5 ± 2.3 µg/ml (M3PFBS anion)	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C (2,3,4-$^{13}C_3$)
LAST TESTED: (mm/dd/yyyy)	02/15/2018		
EXPIRY DATE: (mm/dd/yyyy)	02/15/2023		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 02/16/2018 (mm/dd/yyyy)
B.G. Chittim, General Manager

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

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CALA

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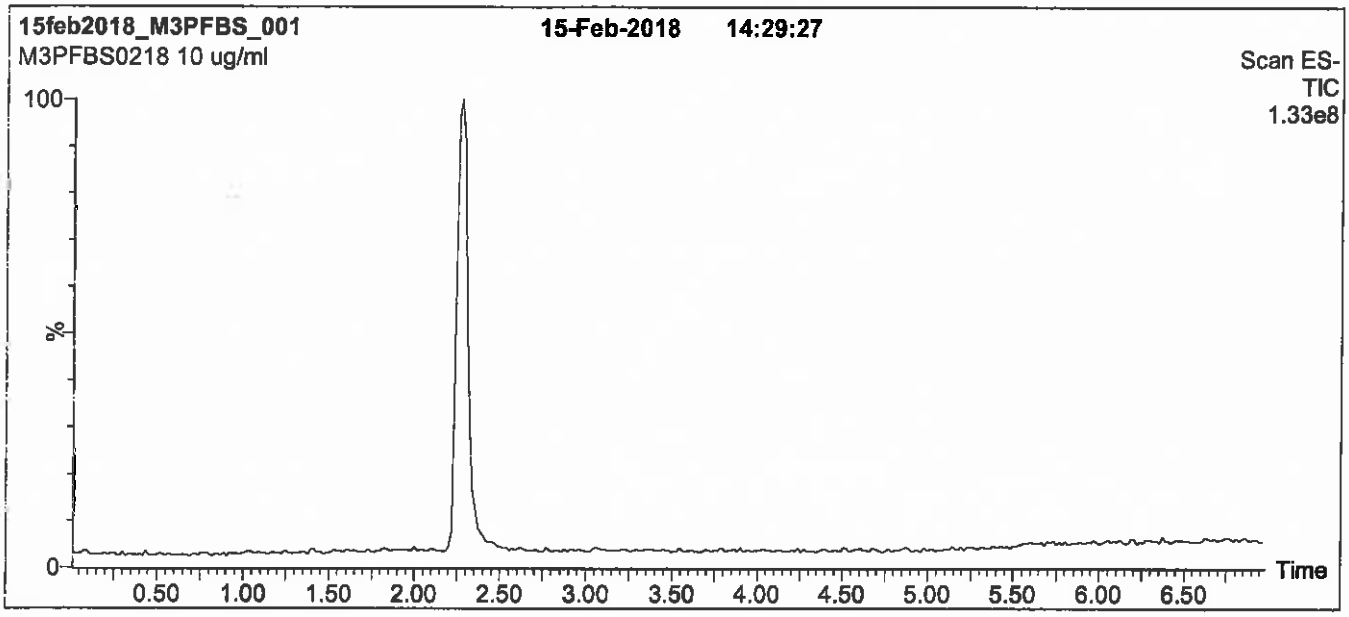
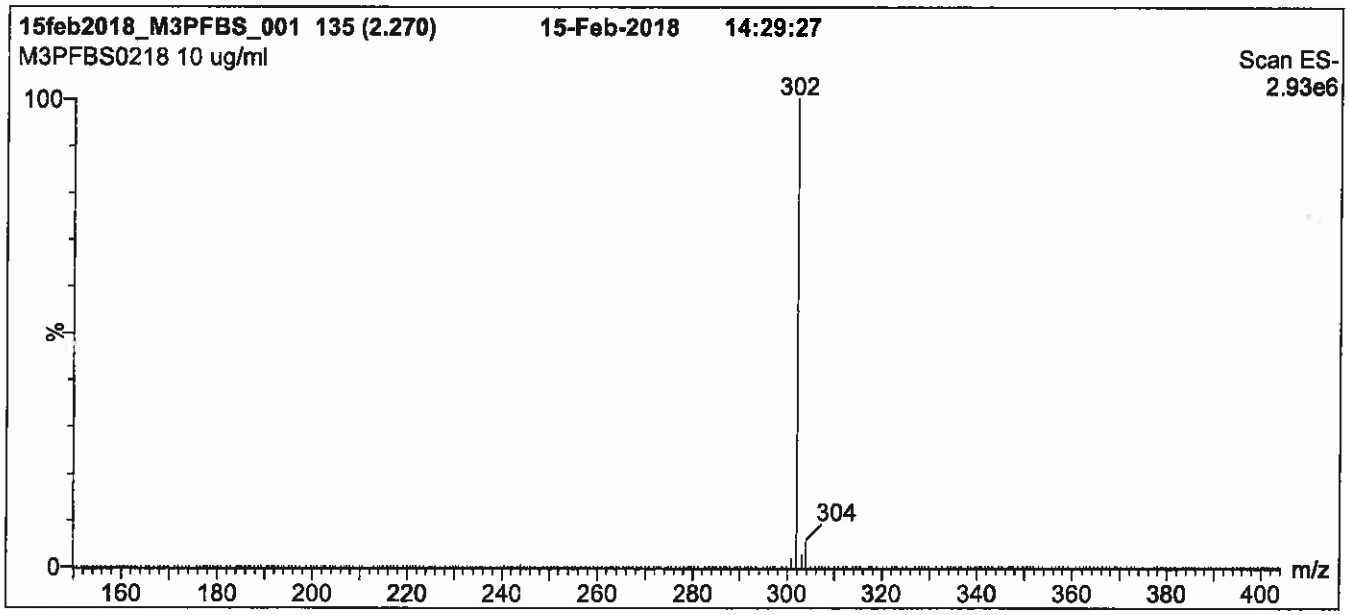
Figure 1: **M3PFBS; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

LC: **Waters Acquity Ultra Performance LC**
MS: **Micromass Quattro *micro* API MS**

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 40% (80:20 MeOH:ACN) / 60% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for
2 min before returning to initial conditions in 0.5 min.
Time: 10 min

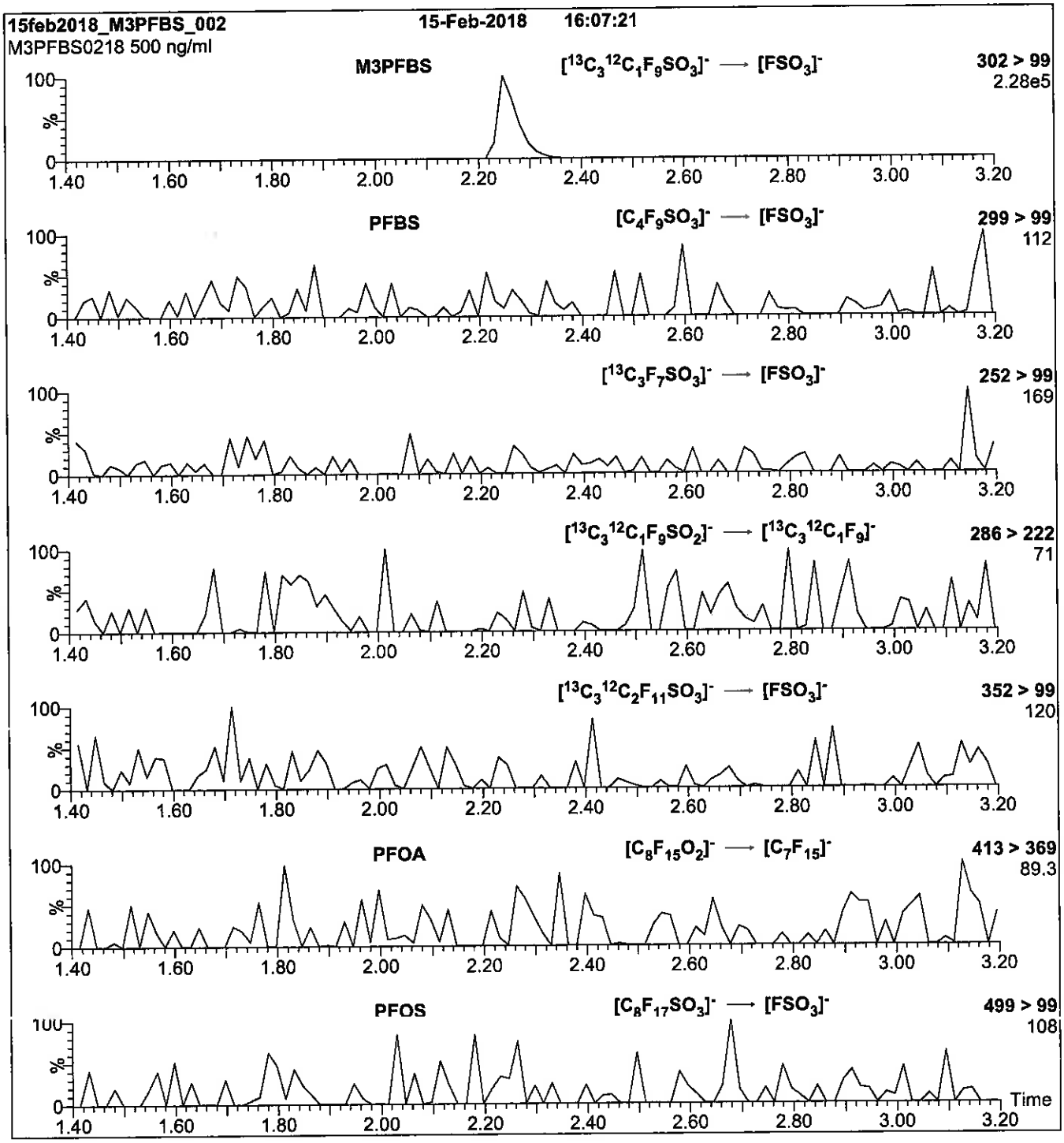
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 40.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: **M3PFBS; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml M3PFBS)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.17e-3
Collision Energy (eV) = 25

Reagent

LCMPFDA_00020

R: 5/30/18 CBW

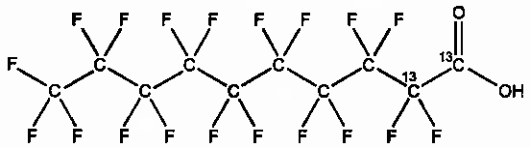
E-608

1263165
ID: LCMPFDA_00020
Exp:02/16/23 Prpd:CBW Opn:05/30/18
13C2-Perfluoromodecanoic a

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MPFDA
LOT NUMBER: MPFDA0218
COMPOUND: Perfluoro-n-[1,2-$^{13}C_2$]decanoic acid
STRUCTURE:
CAS #: Not available



MOLECULAR FORMULA: $^{13}C_2{}^{12}C_8HF_{19}O_2$
MOLECULAR WEIGHT: 516.07
CONCENTRATION: 50 ± 2.5 µg/ml
SOLVENT(S): Methanol, Water (<1%)
CHEMICAL PURITY: >98%
ISOTOPIC PURITY: ≥99% ^{13}C (1,2-$^{13}C_2$)
LAST TESTED: (mm/dd/yyyy) 02/16/2018
EXPIRY DATE: (mm/dd/yyyy) 02/16/2023
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains < 0.1% of $^{13}C_1$-PFNA.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 03/07/2018 (mm/dd/yyyy)
B.G. Chittim, General Manager

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

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CALA

ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

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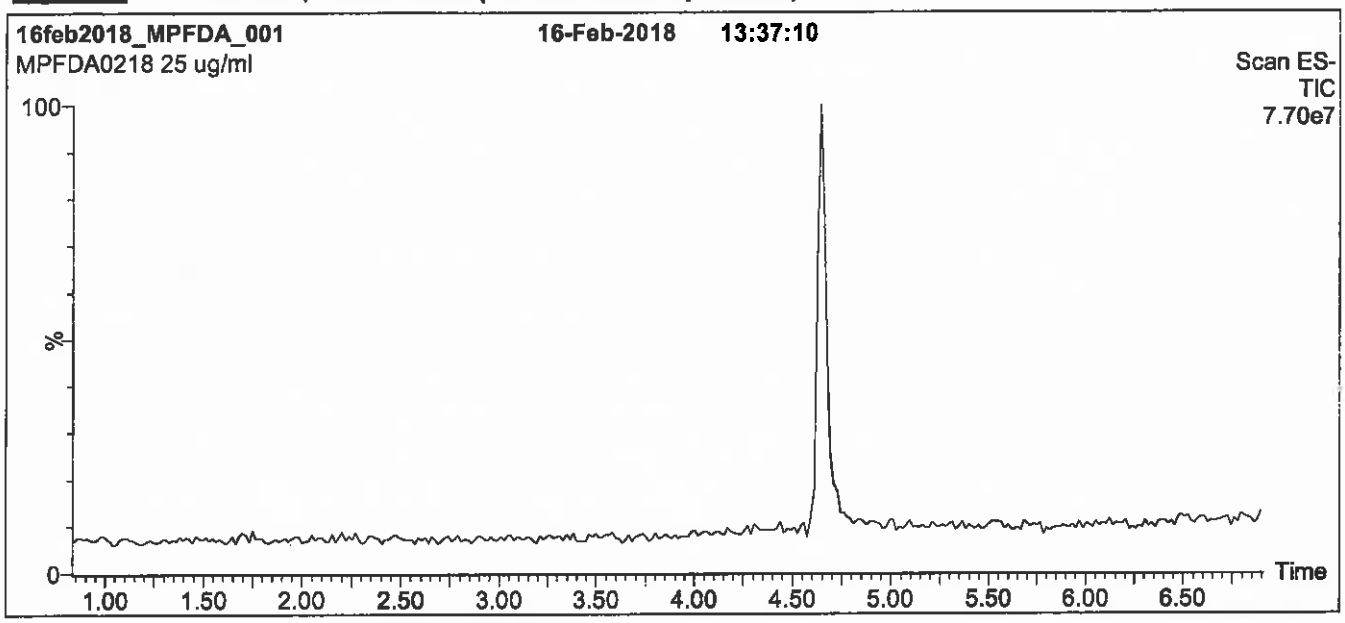
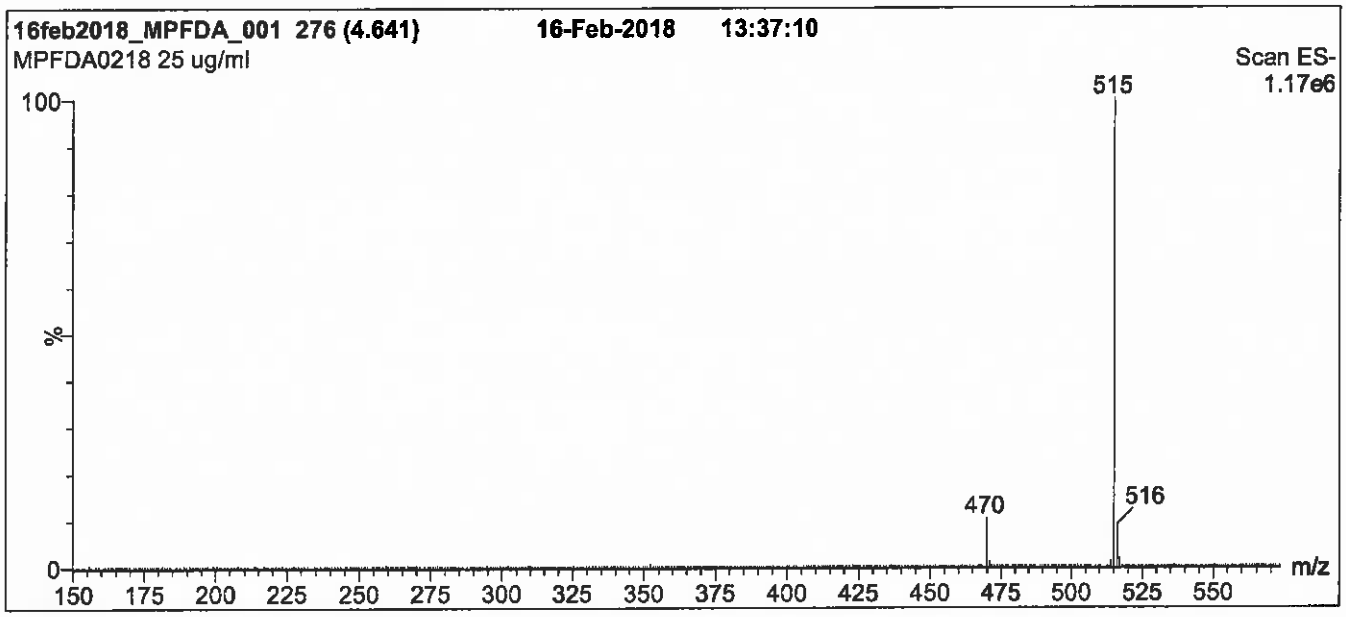
Figure 1: **MPFDA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

LC: **Waters Acquity Ultra Performance LC**
MS: **Micromass Quattro *micro* API MS**

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min before returning to initial conditions in 0.5 min.
Time: 10 min

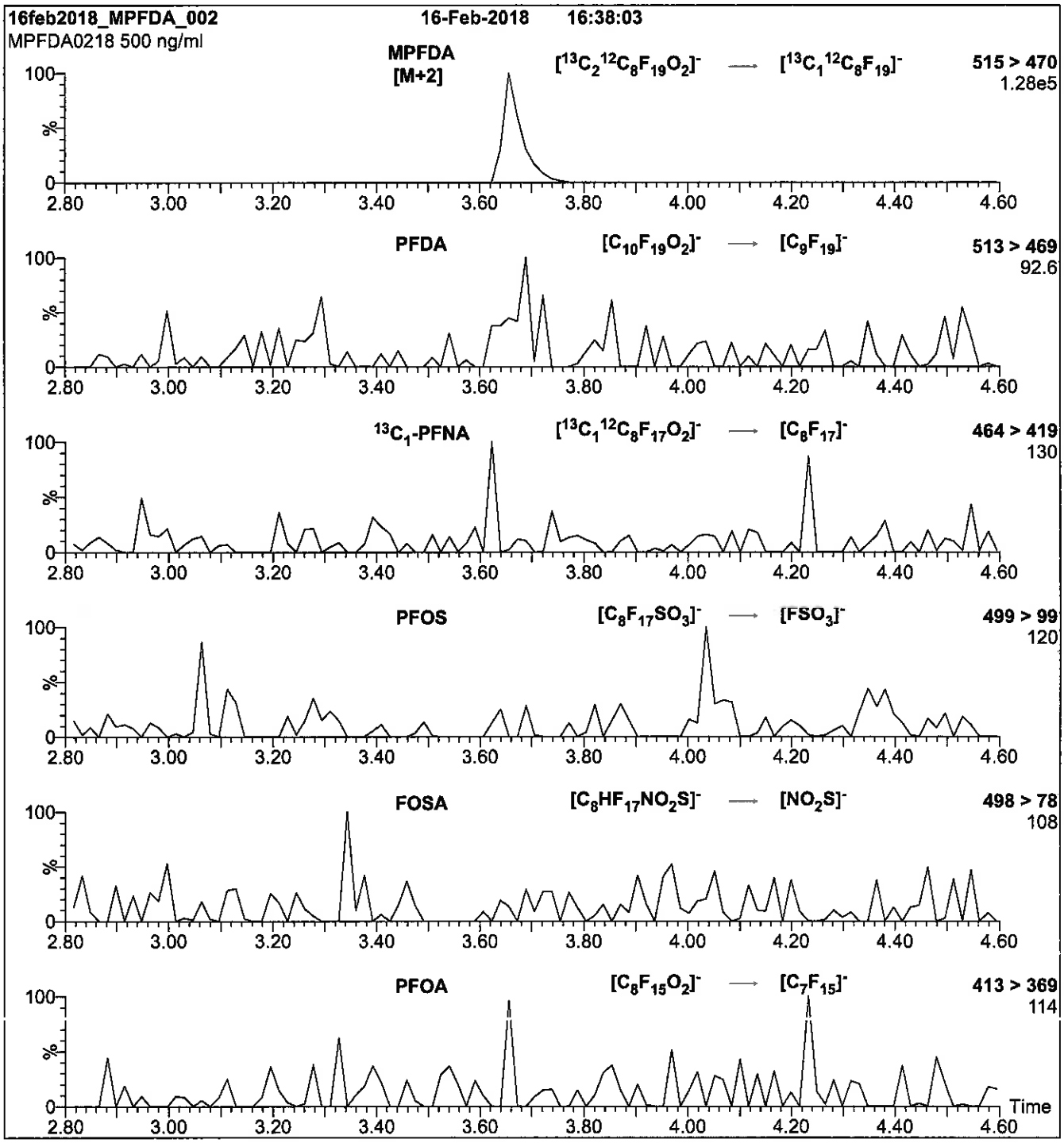
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: **MPFDA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection:	Direct loop injection 10 µl (500 ng/ml MPFDA)	**MS Parameters**
Mobile phase:	Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O (both with 10 mM NH_4OAc buffer)	Collision Gas (mbar) = 3.39e-3 Collision Energy (eV) = 13
Flow:	300 µl/min	

Reagent

LCMPFDoA_00015

1263139
ID: LCMPFDoA_00015
Exp:02/16/23 Prpd:CBW Opn:05/30/18
13C2-Perfluorododecanoic

R: 5/30/18 B-613

WELLINGTON LABORATORIES

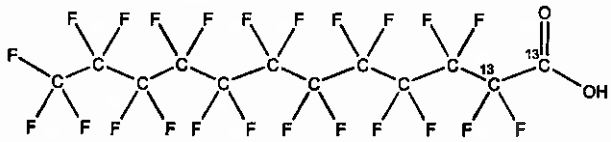
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MPFDoA
COMPOUND: Perfluoro-n-[1,2-$^{13}C_2$]dodecanoic acid

LOT NUMBER: MPFDoA0218

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: $^{13}C_2{}^{12}C_{10}HF_{23}O_2$
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 616.08
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 02/16/2018
EXPIRY DATE: (mm/dd/yyyy) 02/16/2023
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

ISOTOPIC PURITY: ≥99% ^{13}C (1,2-$^{13}C_2$)

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 02/23/2018 (mm/dd/yyyy)
B.G. Chittim, General Manager

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HANDLING:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Our products are synthesized using single-product unambiguous routes whenever possible. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS, and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers. In order to maintain the integrity of the assigned value(s), and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \ldots x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \ldots x_n)) = \sqrt{\sum_{i=1}^{n} u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of ±5% (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly calibrated by an external ISO/IEC 17025 accredited laboratory. In addition, their calibration is verified prior to each weighing using calibrated external weights traceable to an ISO/IEC 17025 accredited laboratory. All volumetric glassware used is calibrated, of Class A tolerance, and traceable to an ISO/IEC 17025 accredited laboratory. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO 17034 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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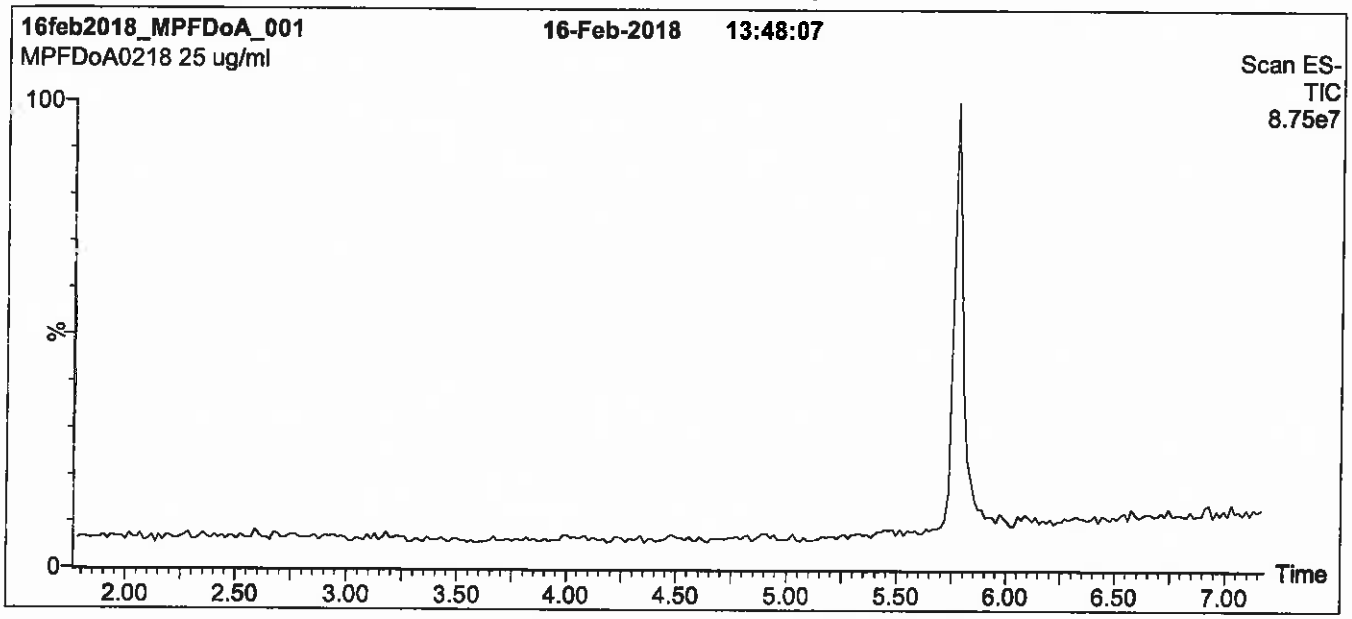
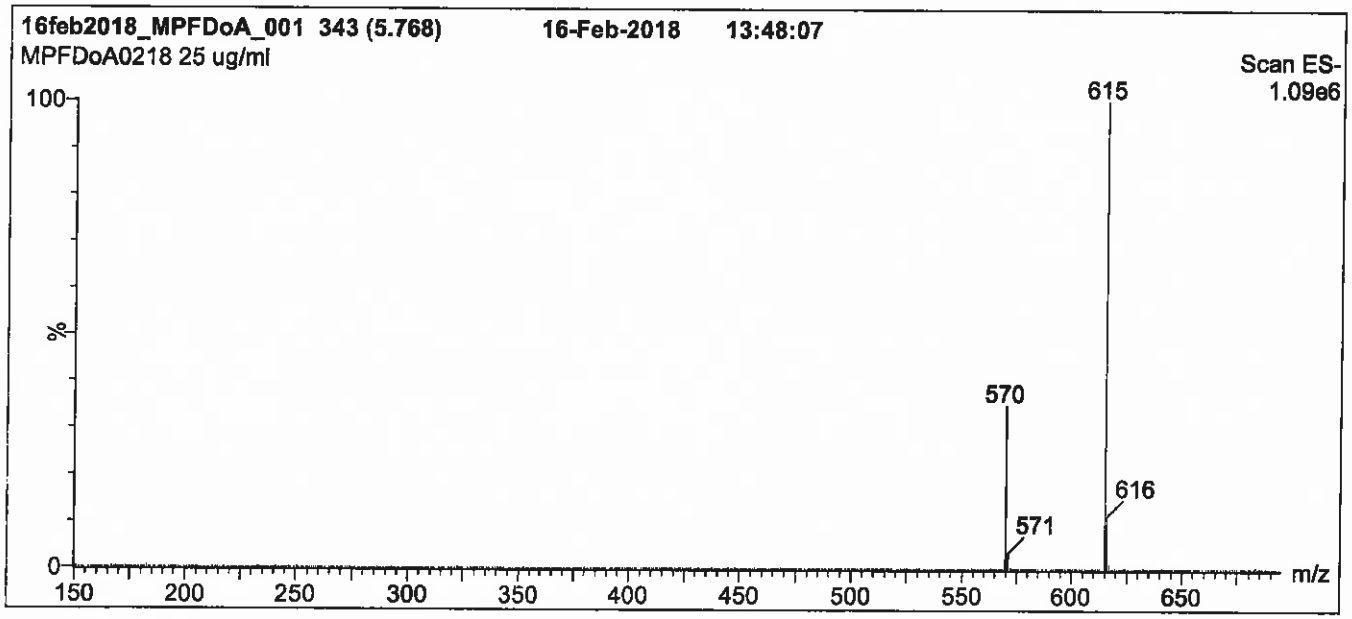
Figure 1: **MPFDoA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min before returning to initial conditions in 0.5 min.
Time: 10 min

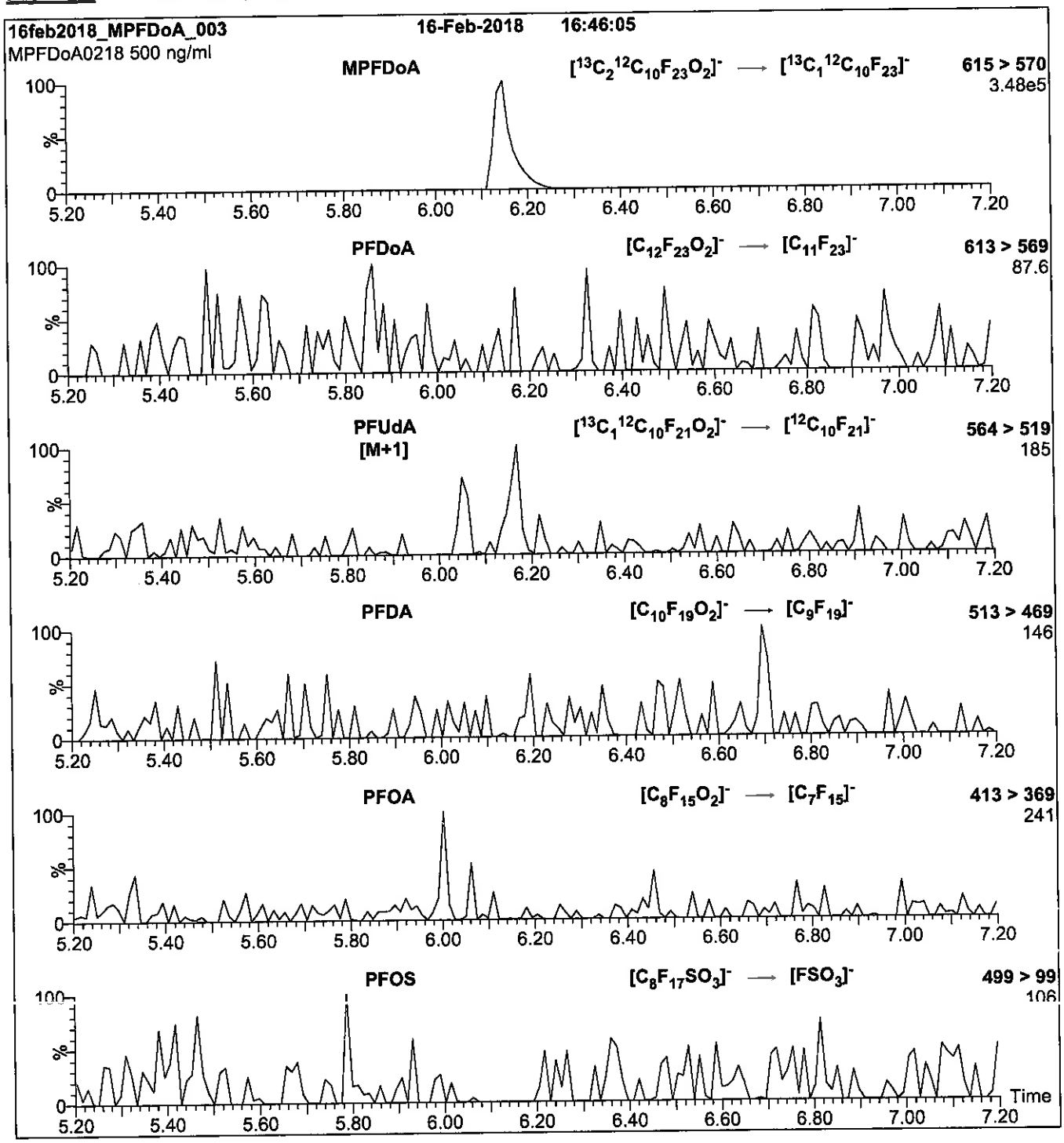
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 20.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: **MPFDoA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml MPFDoA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.31e-3
Collision Energy (eV) = 13

Reagent

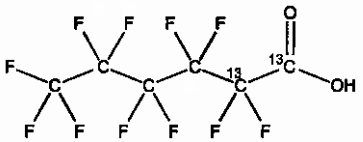
LCMPFHxA_00022

1263168
ID: LCMPFHxA_00022
Exp:10/27/22 Prpd:CBW Opn:05/30/18
13C2-Perfluorohexanoic ac

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MPFHxA
LOT NUMBER: MPFHxA1017
COMPOUND: Perfluoro-n-[1,2-$^{13}C_2$]hexanoic acid
STRUCTURE:
CAS #: Not available



MOLECULAR FORMULA: $^{13}C_2{}^{12}C_4HF_{11}O_2$
MOLECULAR WEIGHT: 316.04
CONCENTRATION: 50 ± 2.5 µg/ml
SOLVENT(S): Methanol, Water (<1%)
CHEMICAL PURITY: >98%
ISOTOPIC PURITY: ≥99% ^{13}C (1,2-$^{13}C_2$)
LAST TESTED: (mm/dd/yyyy) 10/27/2017
EXPIRY DATE: (mm/dd/yyyy) 10/27/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains < 0.1% of perfluoro-n-hexanoic acid and < 0.3% of perfluoro-n-octanoic acid.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 10/30/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers. In order to maintain the integrity of the assigned value(s), and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

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$$u_c(y(x_1, x_2, \ldots x_n)) = \sqrt{\sum_{i=1}^{n} u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of ±5% (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using calibrated NIST and/or NRC traceable external weights. All volumetric glassware used is calibrated, of Class A tolerance, and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

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QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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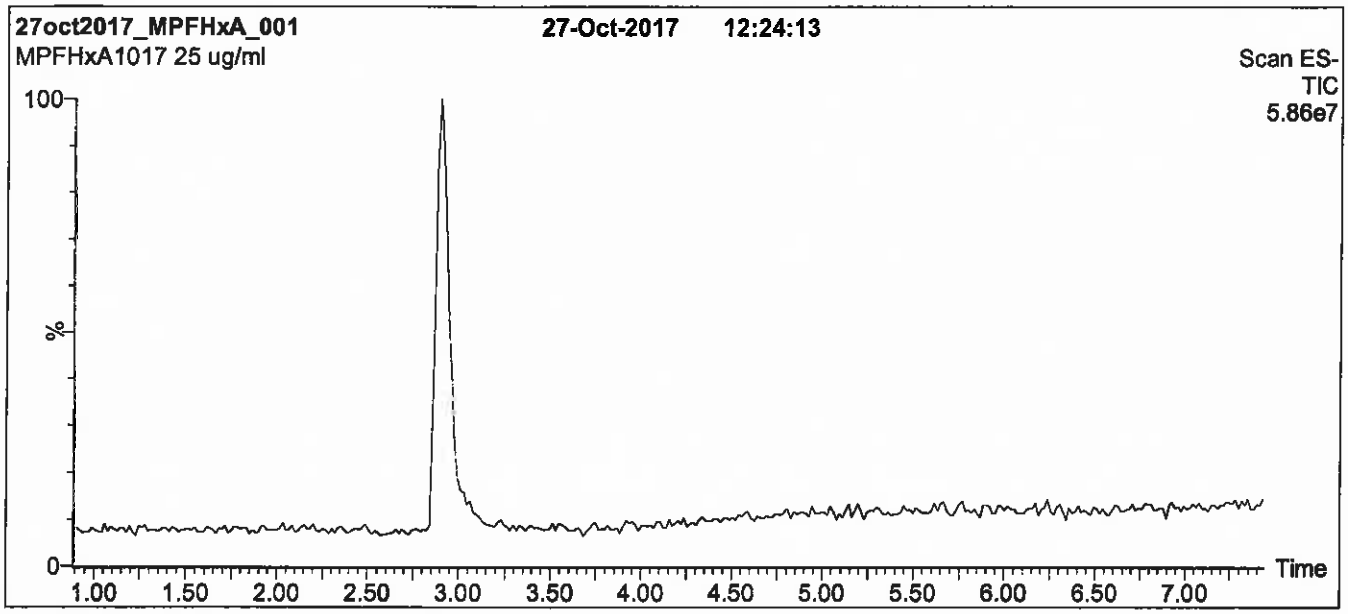
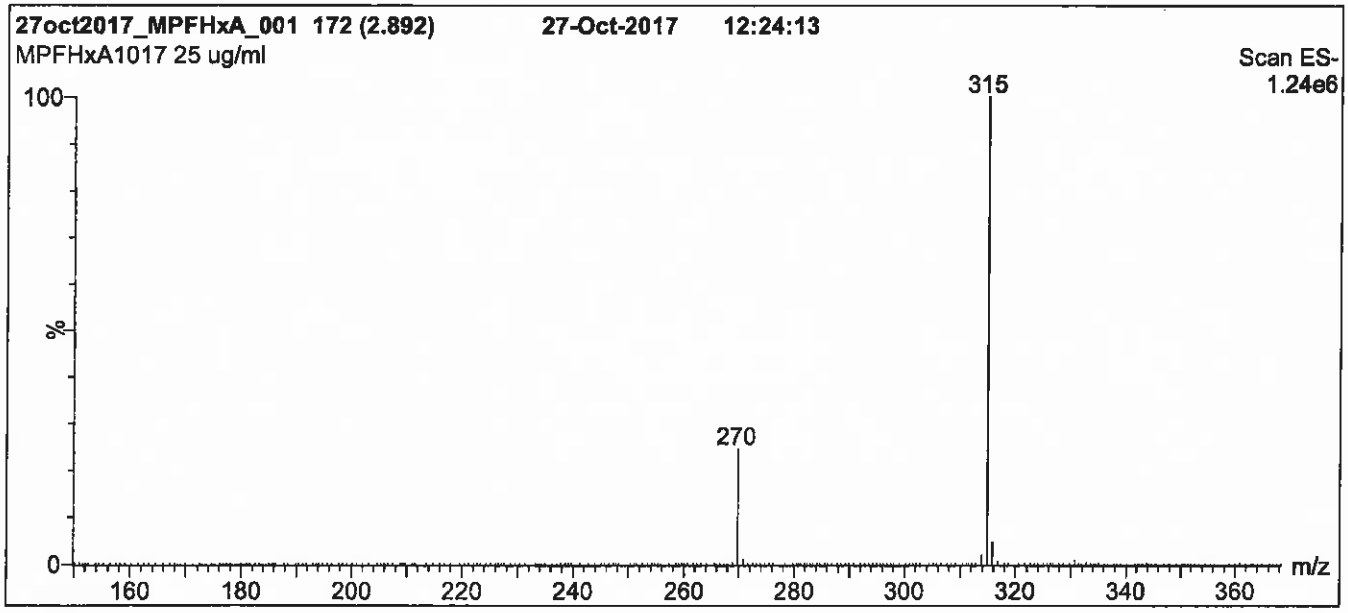
Figure 1: **MPFHxA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

LC: **Waters Acquity Ultra Performance LC**
MS: **Micromass Quattro *micro* API MS**

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 40% (80:20 MeOH:ACN) / 60% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min before returning to initial conditions over 0.5 min.
Time: 10 min

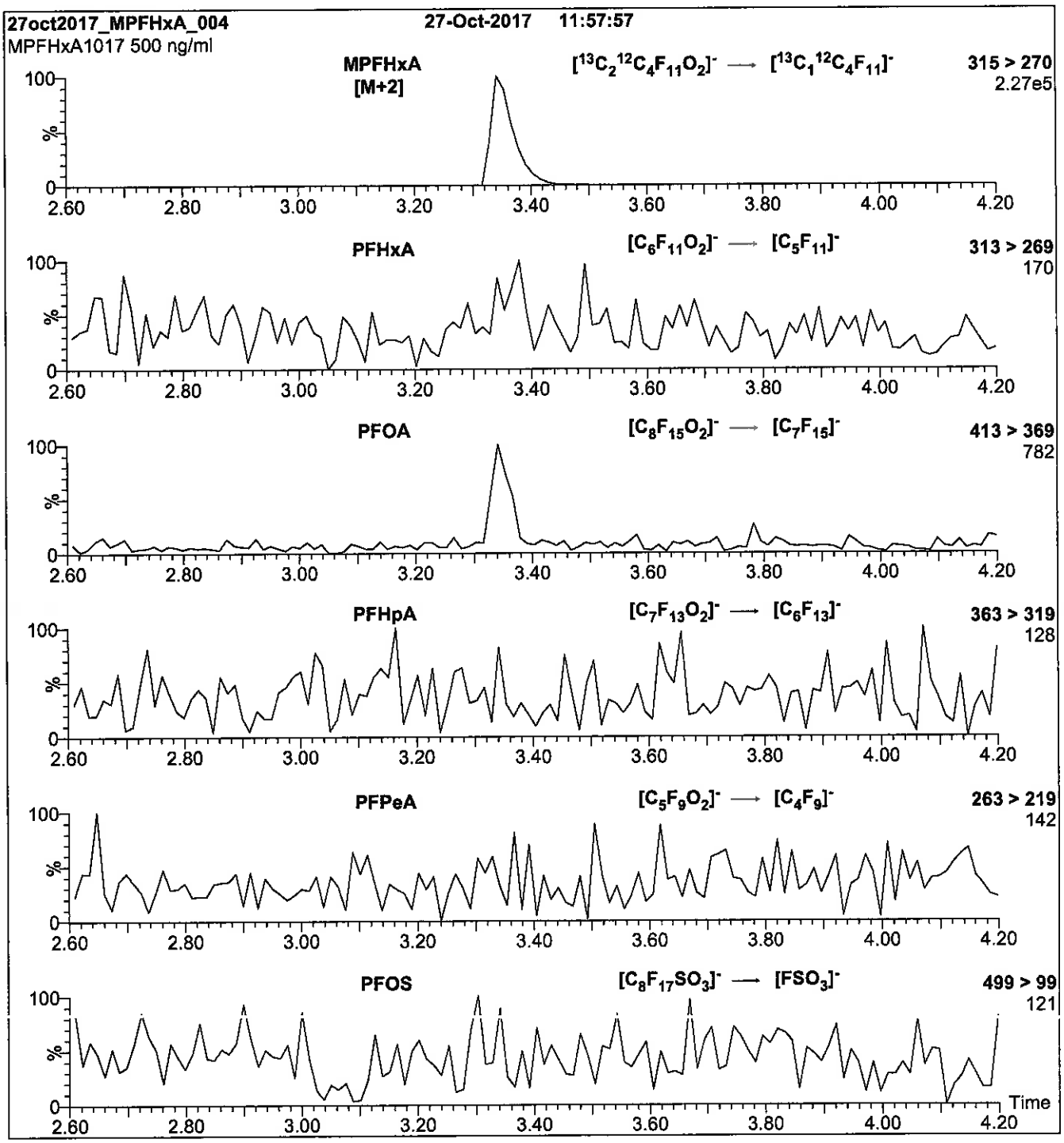
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

Figure 2: **MPFHxA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml MPFHxA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.58e-3
Collision Energy (eV) = 10

Reagent

LCMPFHxS_00015

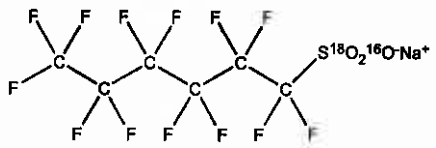
1263157
ID: LCMPFHxS_00015
Exp:03/22/23 Prpd:CBW Opn:05/30/18
18O2-Perfluorohexanesulfo

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MPFHxS
LOT NUMBER: MPFHxS0318
COMPOUND: Sodium perfluoro-1-hexane[$^{18}O_2$]sulfonate

STRUCTURE:
CAS #: Not available



MOLECULAR FORMULA: $C_6F_{13}S^{18}O_2{}^{16}ONa$
MOLECULAR WEIGHT: 426.10
CONCENTRATION: 50.0 ± 2.5 µg/ml (Na salt)
47.3 ± 2.4 µg/ml (MPFHxS anion)
SOLVENT(S): Methanol
CHEMICAL PURITY: >98%
ISOTOPIC PURITY: >94% ($^{18}O_2$)
LAST TESTED: (mm/dd/yyyy) 03/22/2018
EXPIRY DATE: (mm/dd/yyyy) 03/22/2023
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- The response factor for MPFHxS ($C_6F_{13}S^{18}O_2{}^{16}O^-$) has been observed to be up to 10% lower than for PFHxS ($C_6F_{13}S^{16}O_3^-$) when both compounds are injected together. This difference may vary between instruments.
- Contains ~ 1.0% of sodium perfluoro-1-octane[$^{18}O_2$]sulfonate ($^{18}O_2$-PFOS) and ~ 0.3% of sodium perfluoro-1-heptane[$^{18}O_2$]sulfonate ($^{18}O_2$-PFHpS).
- Due to the isotopic purity of the starting material ($^{18}O_2$ >94%), MPFHxS contains ~ 0.3% of PFHxS. This value agrees with the theoretical percent relative abundance that is expected based on the stated isotopic purity.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 03/27/2018 (mm/dd/yyyy)
B.G. Chittim, General Manager

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

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where x is expressed as a relative standard uncertainty of the individual parameter.

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QUALITY MANAGEMENT:

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CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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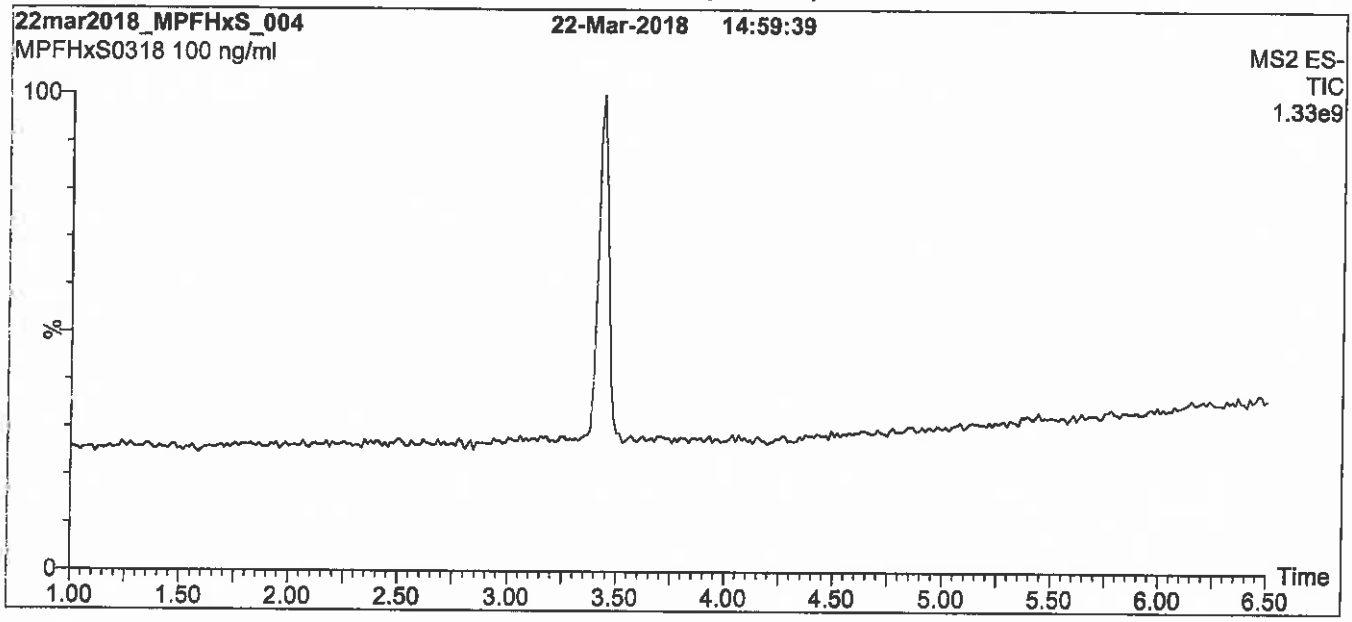
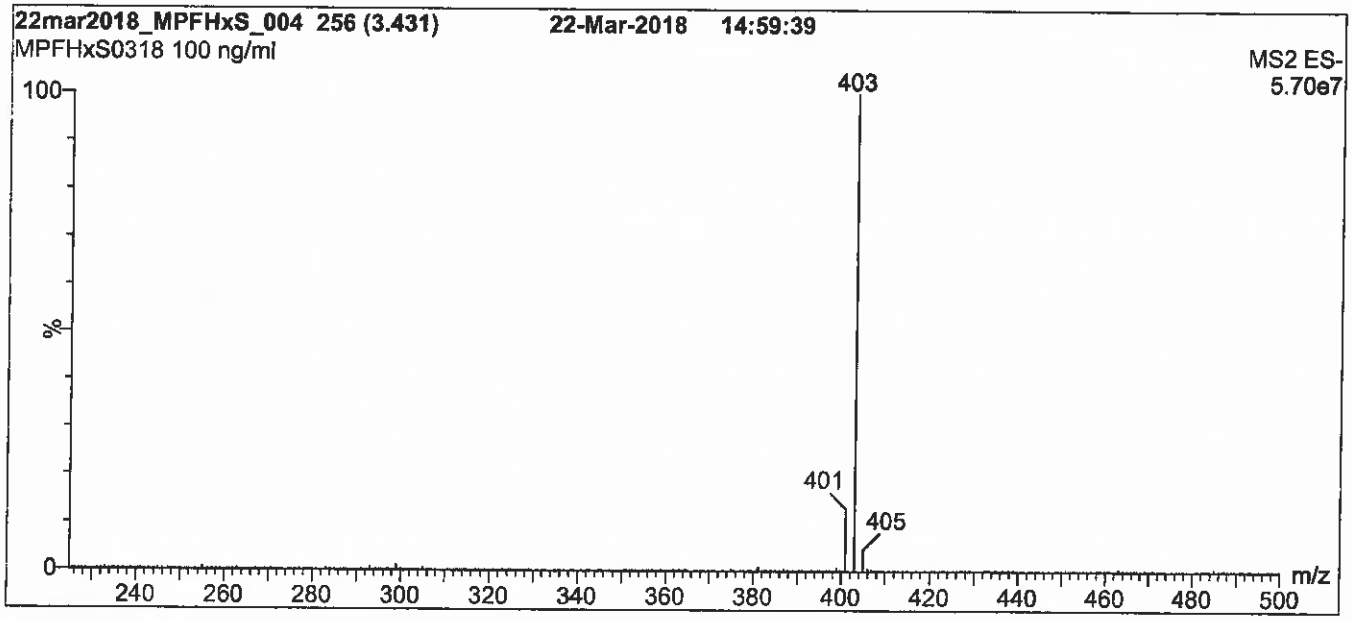
Figure 1: **MPFHxS; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Waters Xevo TQ-S micro MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 80% organic over 7 min and hold for 3 min before returning to initial conditions in 0.75 min.
Time: 12 min

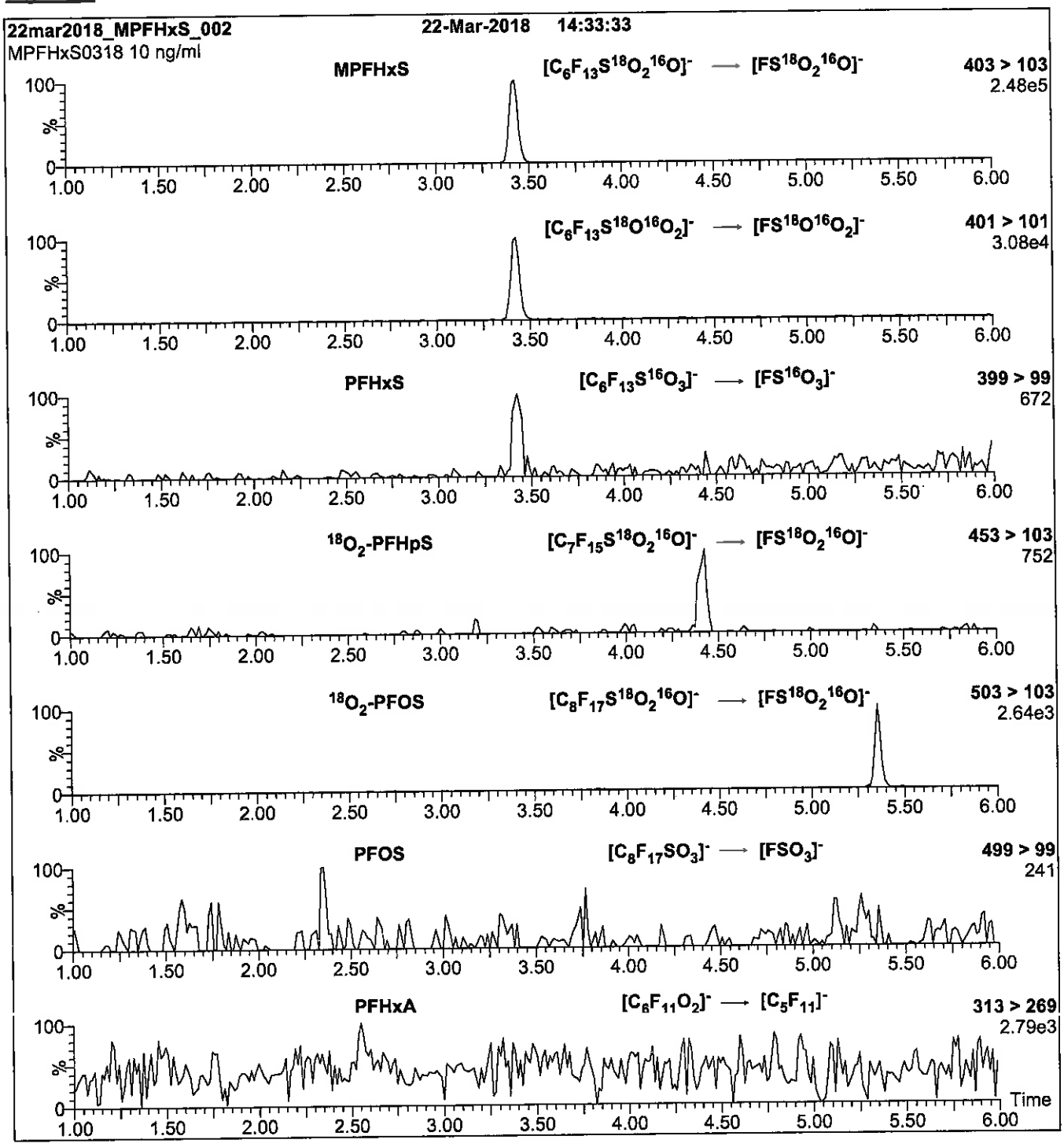
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 0.50
Cone Voltage (V) = 5.00
Desolvation Temperature (°C) = 500
Desolvation Gas Flow (l/hr) = 750

Figure 2: **MPFHxS; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: On-column (MPFHxS)

Mobile phase: Same as Figure 1

Flow: 300 µl/min

MS Parameters
Collision Gas (mbar) = 3.64e-3
Collision Energy (eV) = 32

Reagent

LCMPFNA_00015

1263148
ID: LCMPFNA_00015
Exp:12/14/22 Rpd:CBW Opn:05/30/18
13C5-Perfluorononanoic aci

R: 5/30/18 CBW

WELLINGTON LABORATORIES

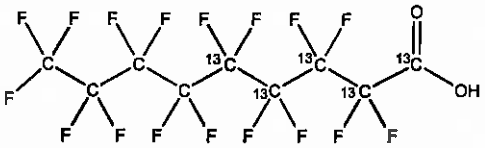
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: MPFNA
COMPOUND: Perfluoro-n-[1,2,3,4,5-$^{13}C_5$]nonanoic acid

LOT NUMBER: MPFNA1217

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: $^{13}C_5{}^{12}C_4HF_{17}O_2$
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 469.04
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 12/14/2017
EXPIRY DATE: (mm/dd/yyyy) 12/14/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

ISOTOPIC PURITY: ≥99% ^{13}C (1,2,3,4,5-$^{13}C_5$)

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 12/19/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers. In order to maintain the integrity of the assigned value(s), and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \ldots x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \ldots x_n)) = \sqrt{\sum_{i=1}^{n} u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of ±5% (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using calibrated NIST and/or NRC traceable external weights. All volumetric glassware used is calibrated, of Class A tolerance, and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

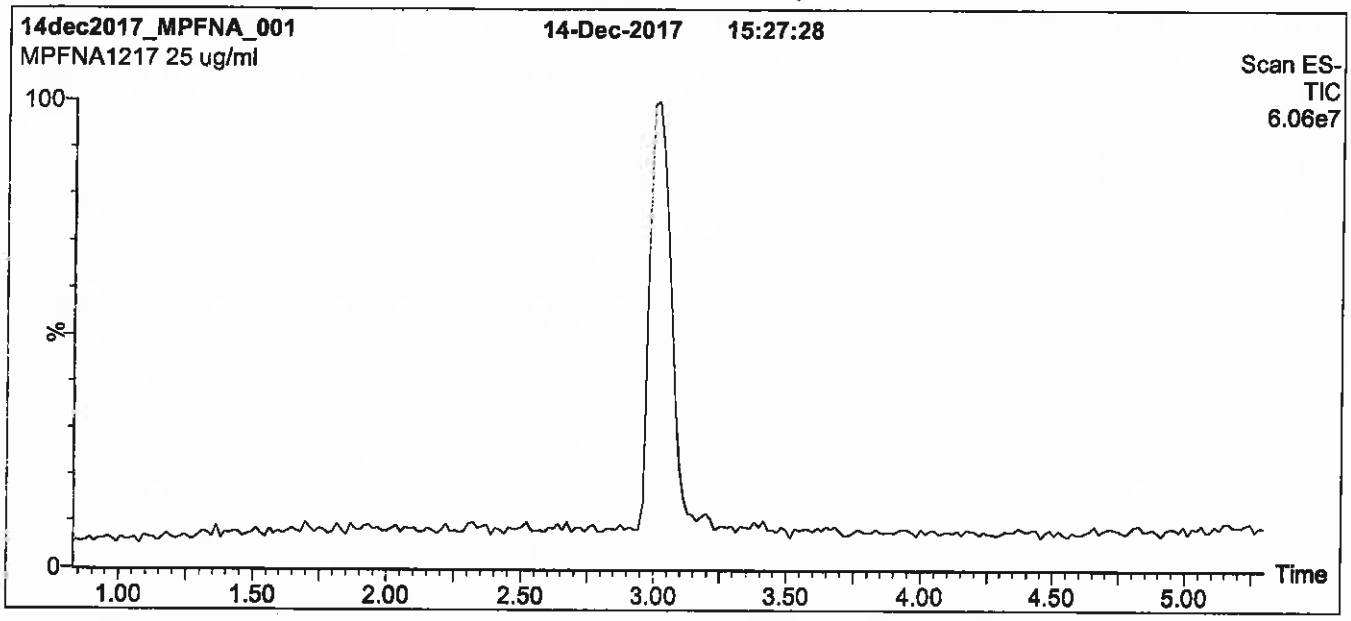
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

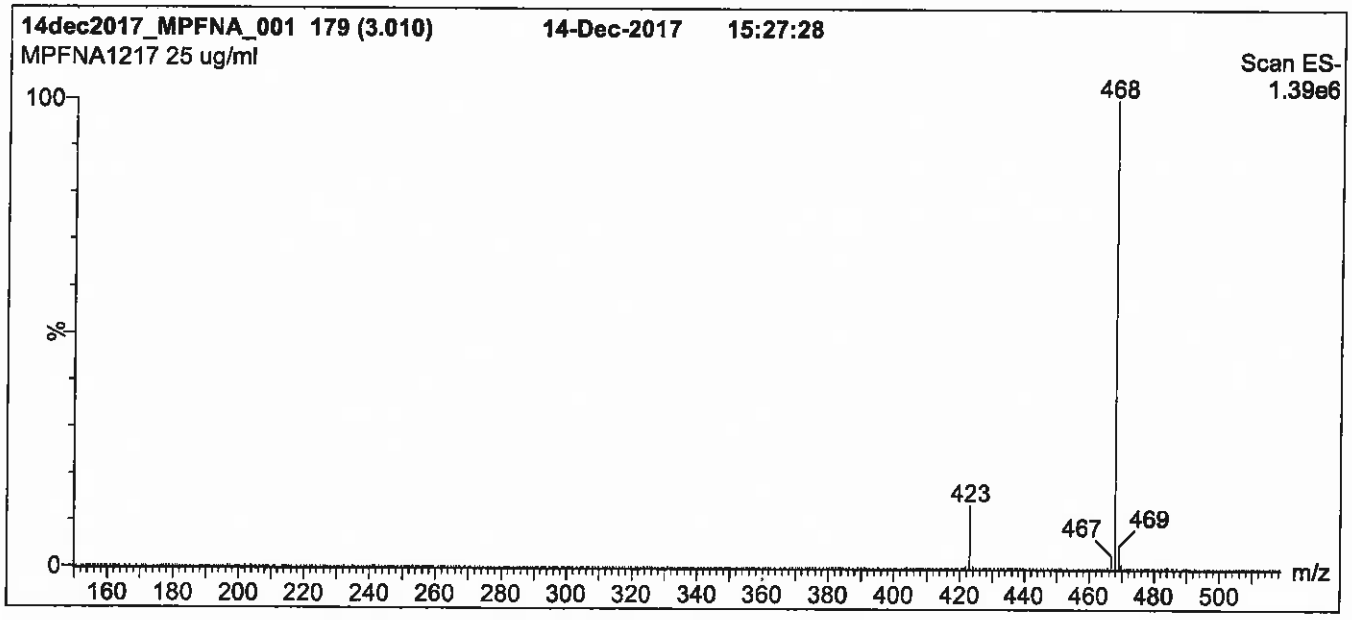
CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

Figure 1: **MPFNA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 55% (80:20 MeOH:ACN) / 45% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min before returning to initial conditions in 0.5 min.
Time: 10 min

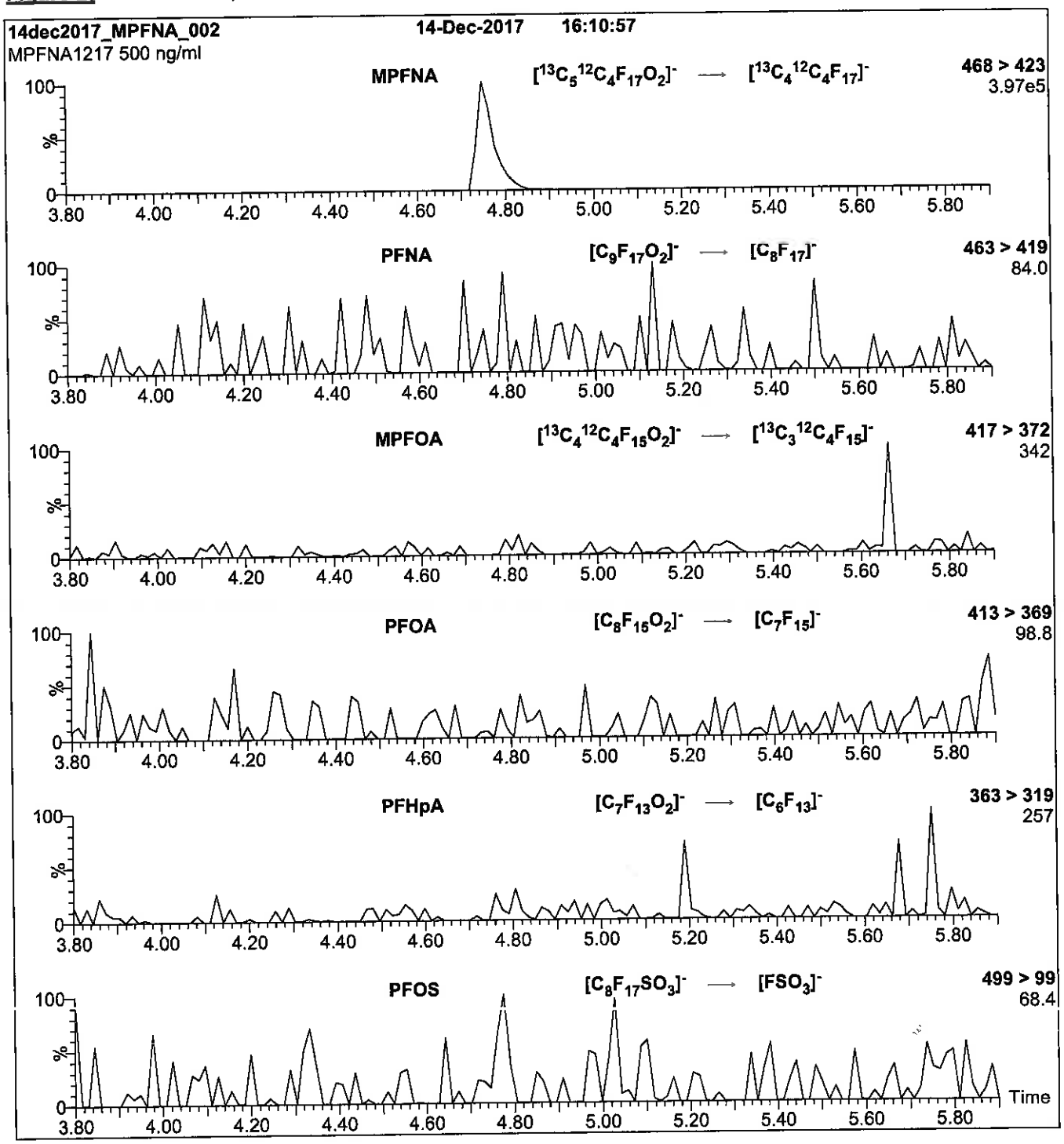
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: **MPFNA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml MPFNA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.43e-3
Collision Energy (eV) = 11

Reagent

LCMPFOA_00019

1263125
ID: LCMPFOA_00019
Exp:05/04/23 Prpd:CBW Opn:05/30/18
13C4-Perfluorooctanoic ac

r: 5/30/18 CBW

WELLINGTON LABORATORIES

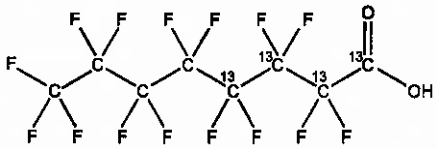
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MPFOA
COMPOUND: Perfluoro-n-[1,2,3,4-$^{13}C_4$]octanoic acid

LOT NUMBER: MPFOA0418

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: $^{13}C_4{}^{12}C_4HF_{15}O_2$
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 418.04
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 05/04/2018
EXPIRY DATE: (mm/dd/yyyy) 05/04/2023
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

ISOTOPIC PURITY: ≥99% ^{13}C (1,2,3,4-$^{13}C_4$)

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.1% of native perfluoro-n-octanoic acid (PFOA).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 05/17/2018 (mm/dd/yyyy)
B.G. Chittim, General Manager

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

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HANDLING:

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SYNTHESIS / CHARACTERIZATION:

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HOMOGENEITY:

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TRACEABILITY:

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CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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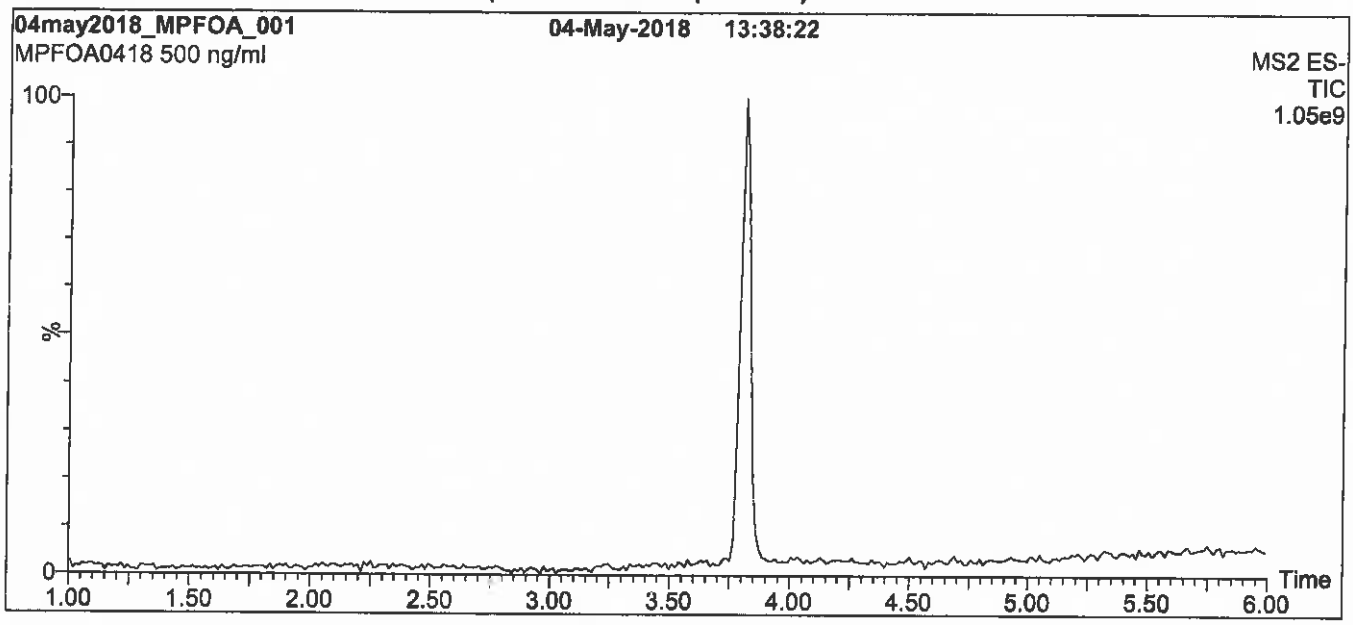
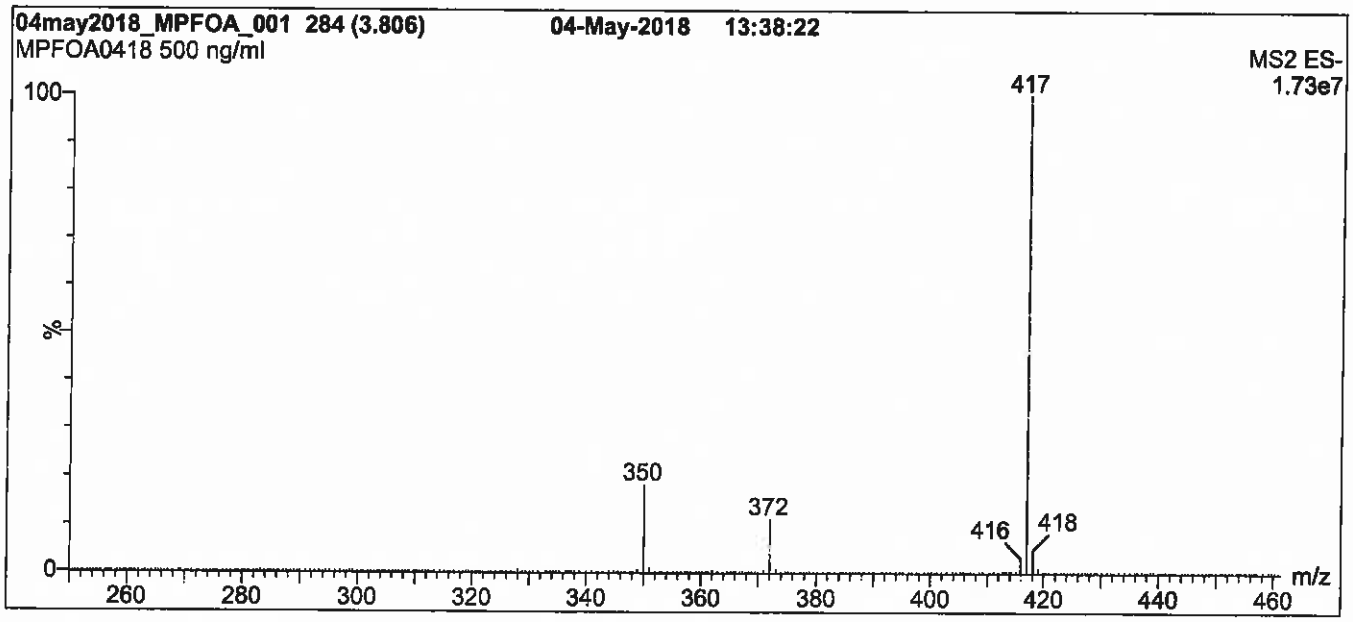
Figure 1: **MPFOA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Waters Xevo TQ-S micro MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 80% organic over 7 min and hold for 3 min
before returning to initial conditions in 0.75 min.
Time: 12 min

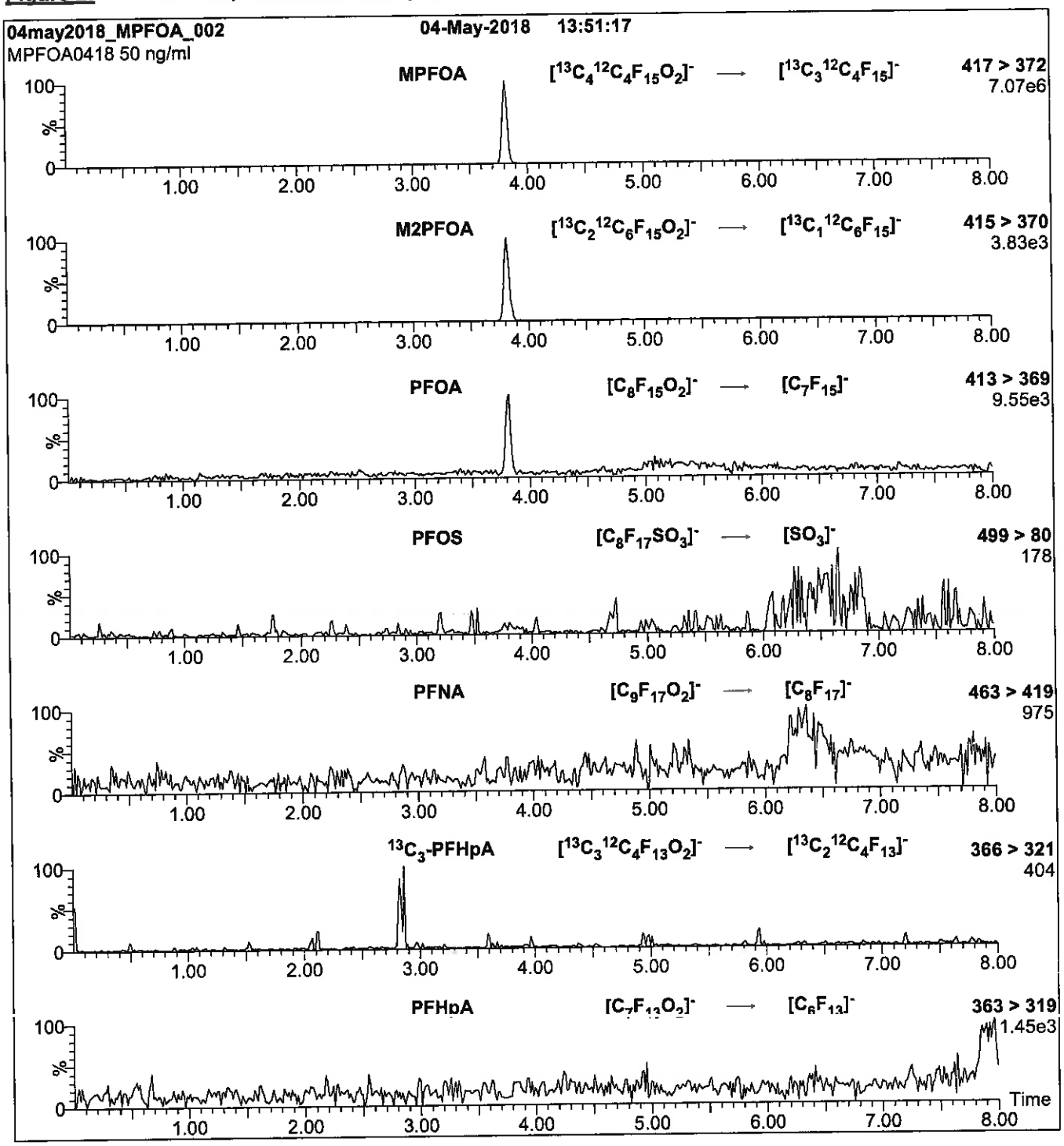
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (250 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 0.50
Cone Voltage (V) = 5.00
Desolvation Temperature (°C) = 500
Desolvation Gas Flow (l/hr) = 750

Figure 2: **MPFOA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: On-column (MPFOA)

Mobile phase: Same as Figure 1

Flow: 300 µl/min

MS Parameters
Collision Gas (mbar) = 3.45e-3
Collision Energy (eV) = 8

Reagent

LCMPFOS_00027

1263174
ID: LCMPFOS_00027
Exp:02/15/23 Prpd:CBW Opn:05/30/18
13C4-Perfluorooctanesulfo

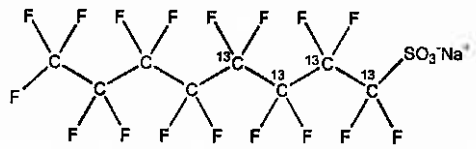
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MPFOS **LOT NUMBER:** MPFOS0218

COMPOUND: Sodium perfluoro-1-[1,2,3,4-$^{13}C_4$]octanesulfonate

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: $^{13}C_4{}^{12}C_4F_{17}SO_3Na$ **MOLECULAR WEIGHT:** 526.08

CONCENTRATION: 50.0 ± 2.5 µg/ml (Na salt) **SOLVENT(S):** Methanol
47.8 ± 2.4 µg/ml (MPFOS anion)

CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** ≥99% ^{13}C (1,2,3,4-$^{13}C_4$)

LAST TESTED: (mm/dd/yyyy) 02/15/2018

EXPIRY DATE: (mm/dd/yyyy) 02/15/2023

RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains ~ 0.6% Sodium perfluoro-1-[1,2,3-$^{13}C_3$]heptanesulfonate.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 02/20/2018 (mm/dd/yyyy)
B.G. Chittim, General Manager

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

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LIMITED WARRANTY:

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QUALITY MANAGEMENT:

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CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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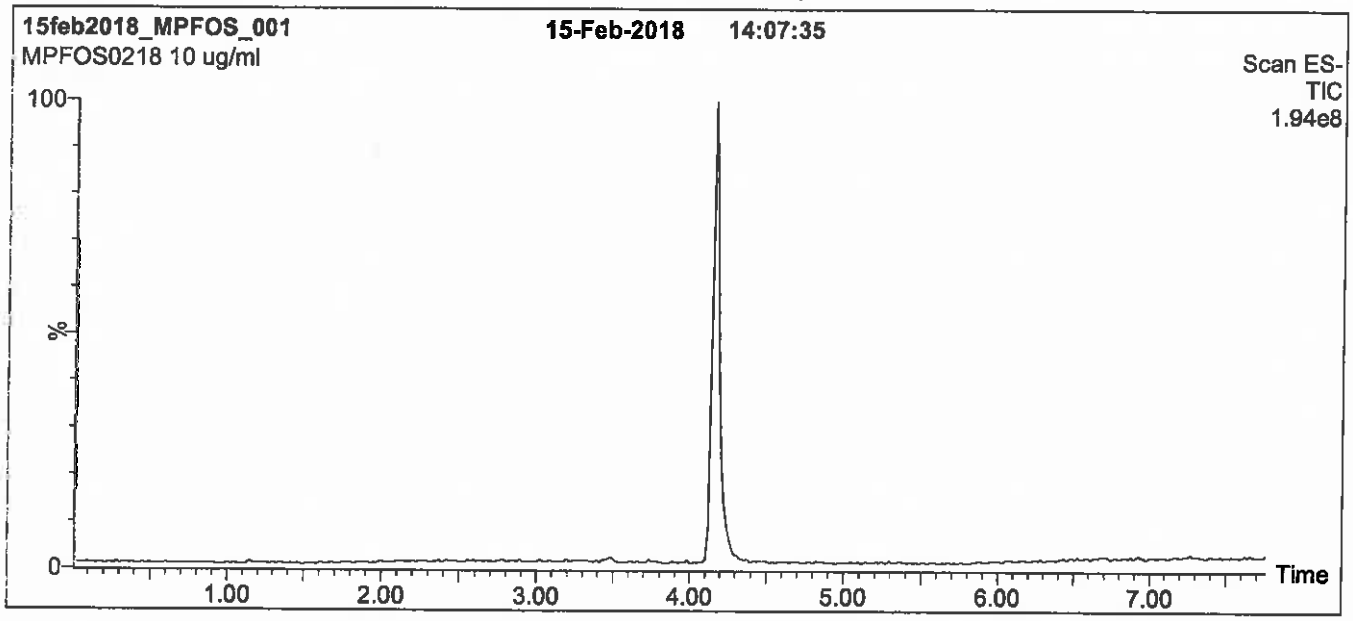
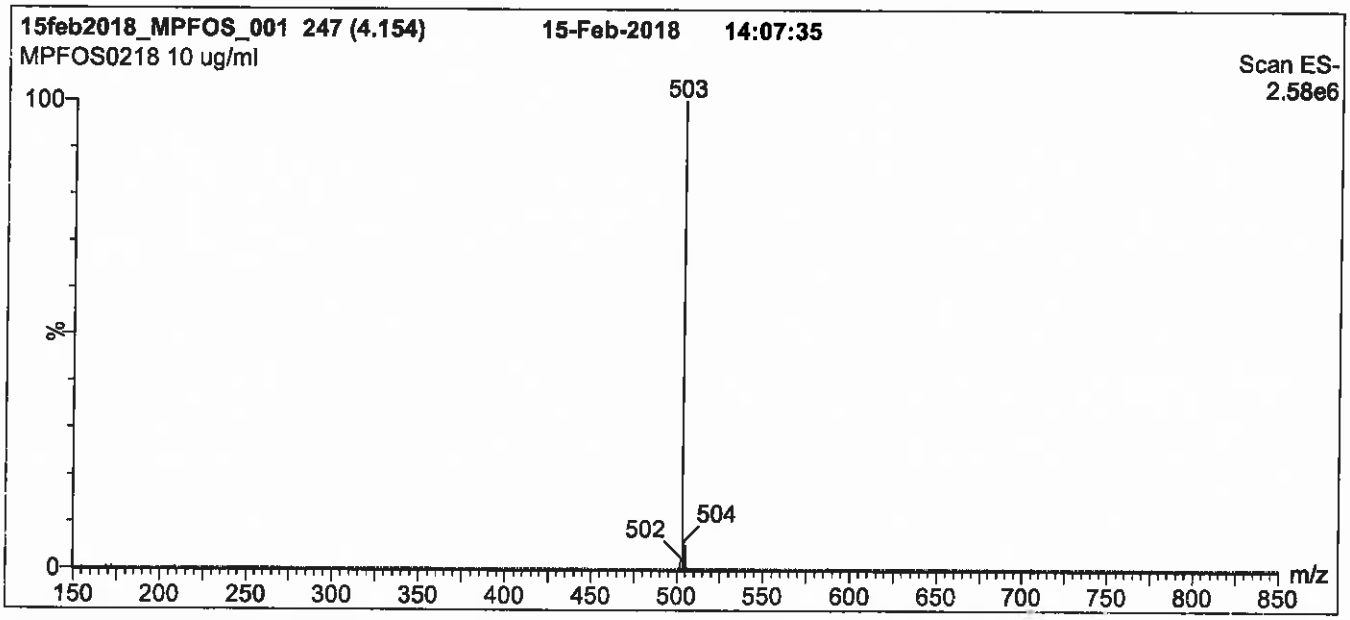
Figure 1: **MPFOS; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

LC: **Waters Acquity Ultra Performance LC**
MS: **Micromass Quattro *micro* API MS**

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min
before returning to initial conditions in 0.5 min.
Time: 10 min

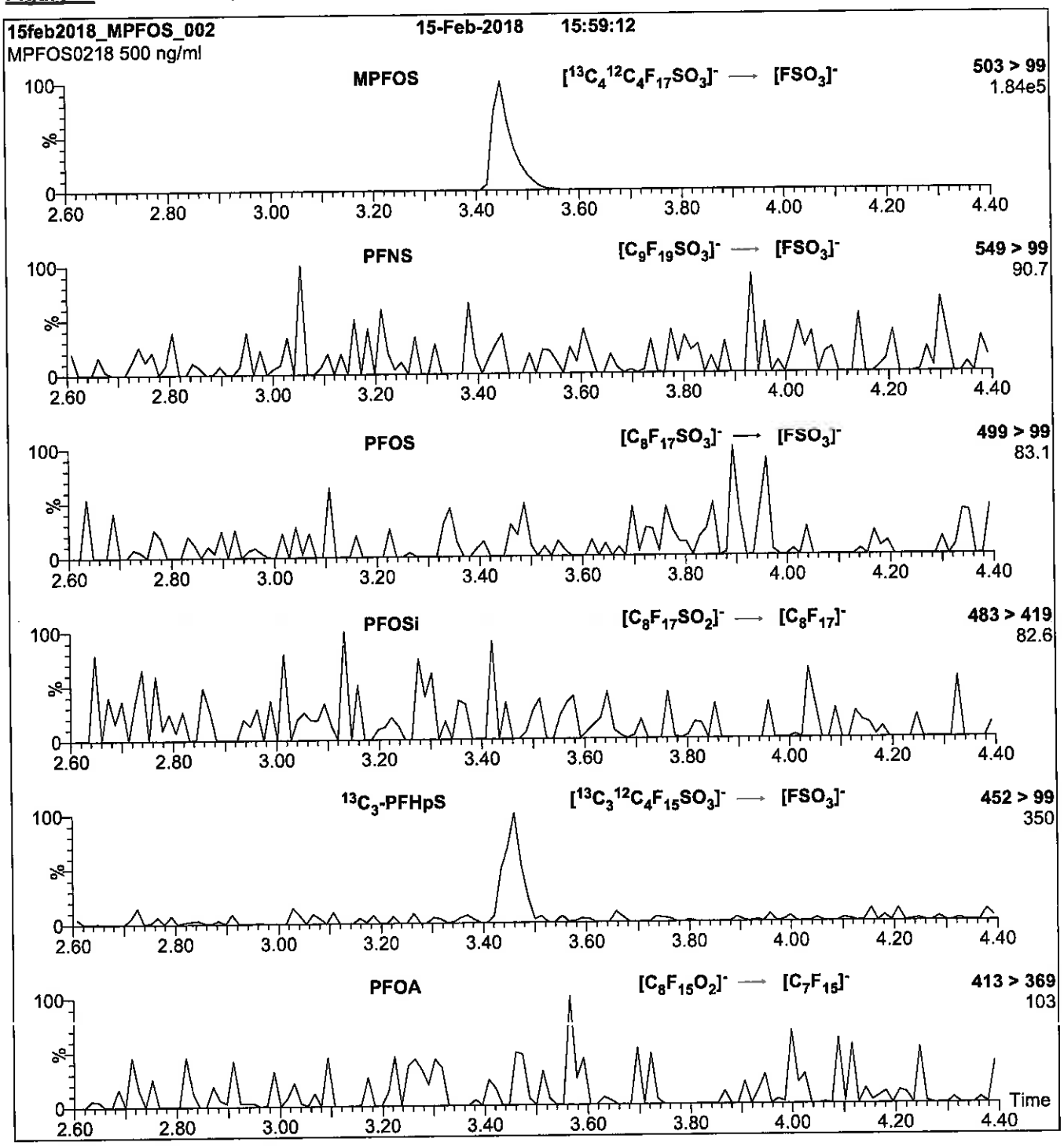
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 60.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: **MPFOS; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml MPFOS)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.28e-3
Collision Energy (eV) = 40

Reagent

LCMPFUdA_00017

1263162
ID: LCMPFUdA_00017
Exp:11/22/21 Prpd:CBW Opn:05/30/18
13C2-Perfluoroundecanoic

WELLINGTON LABORATORIES

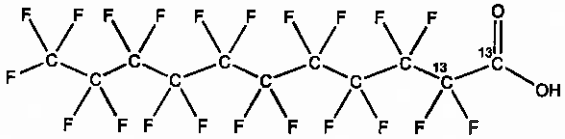
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MPFUdA
COMPOUND: Perfluoro-n-[1,2-$^{13}C_2$]undecanoic acid

LOT NUMBER: MPFUdA1116

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: $^{13}C_2{}^{12}C_9HF_{21}O_2$
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 566.08
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 11/22/2016
EXPIRY DATE: (mm/dd/yyyy) 11/22/2021
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

ISOTOPIC PURITY: ≥99% ^{13}C (1,2-$^{13}C_2$)

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Presence of 1-$^{13}C_1$-PFUdA (~1%; see Figure 2), 2-$^{13}C_1$-PFUdA (~1%), and PFUdA (~0.2%; see Figure 2) are due to the isotopic purity of the ^{13}C-precursor.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 12/07/2016 (mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

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HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \ldots x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \ldots x_n)) = \sqrt{\sum_{i=1}^{n} u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of ±5% (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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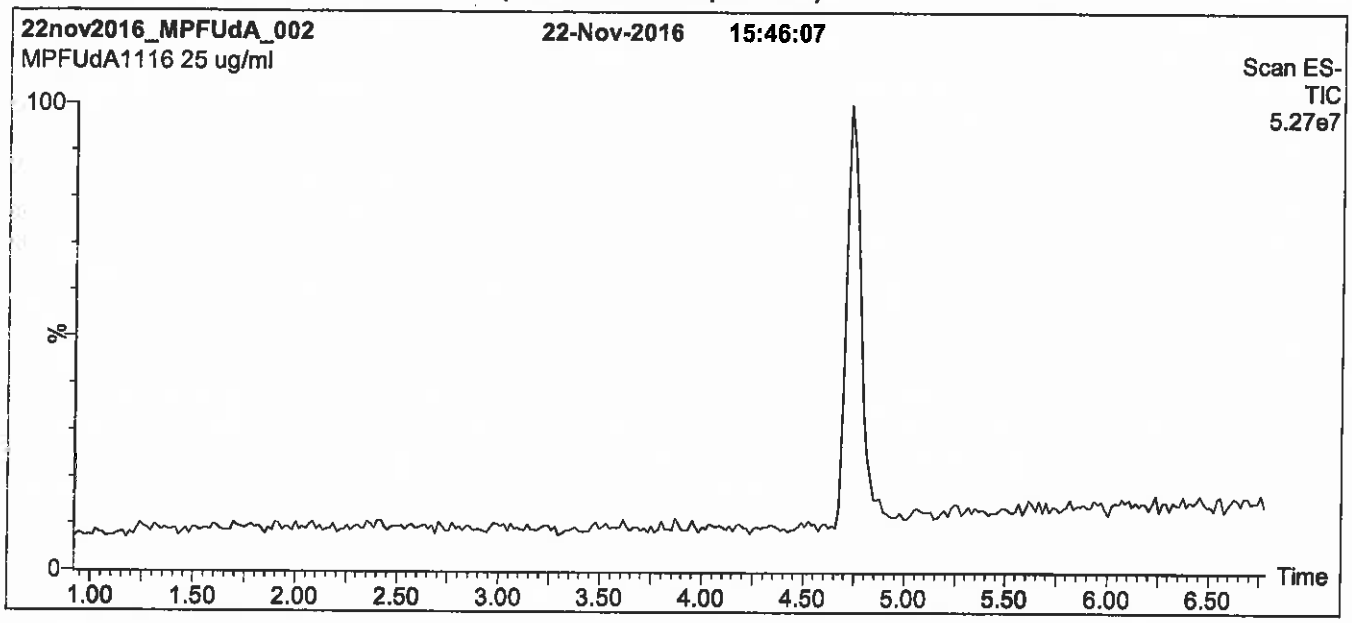
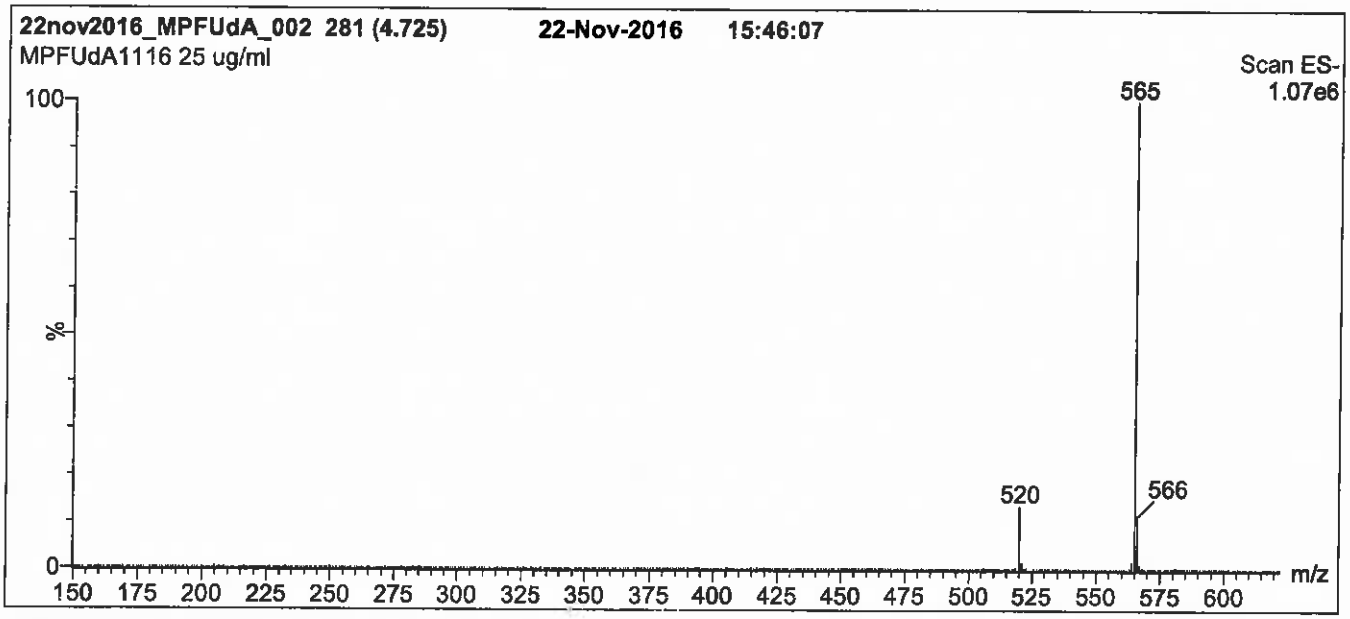
Figure 1: **MPFUdA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

LC: **Waters Acquity Ultra Performance LC**
MS: **Micromass Quattro *micro* API MS**

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for
1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

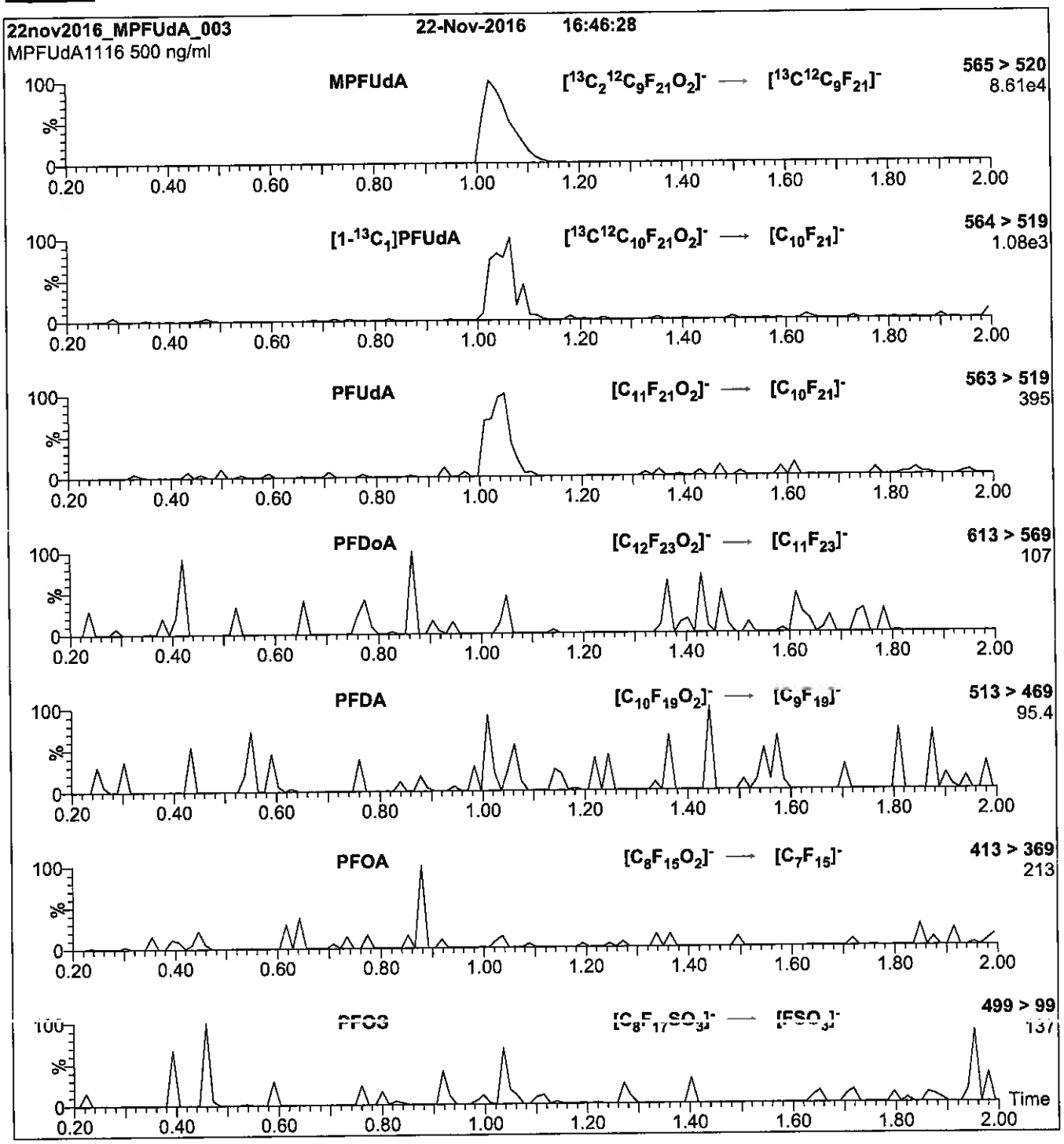
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 65
Desolvation Gas Flow (l/hr) = 750

Figure 2: **MPFUdA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml MPFUdA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.46e-3
Collision Energy (eV) = 11

Reagent

LCPFBA_00008

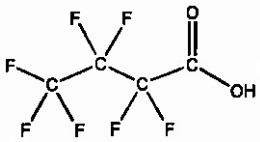
P: 9/21/17 SKV

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFBA
LOT NUMBER: PFBA0517
COMPOUND: Perfluoro-n-butanoic acid

STRUCTURE:
CAS #: 375-22-4



MOLECULAR FORMULA: $C_4HF_7O_2$
MOLECULAR WEIGHT: 214.04
CONCENTRATION: 50 ± 2.5 µg/ml
SOLVENT(S): Methanol, Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 05/29/2017
EXPIRY DATE: (mm/dd/yyyy) 05/29/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

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Certified By: _____ **Date:** 05/30/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

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QUALITY MANAGEMENT:

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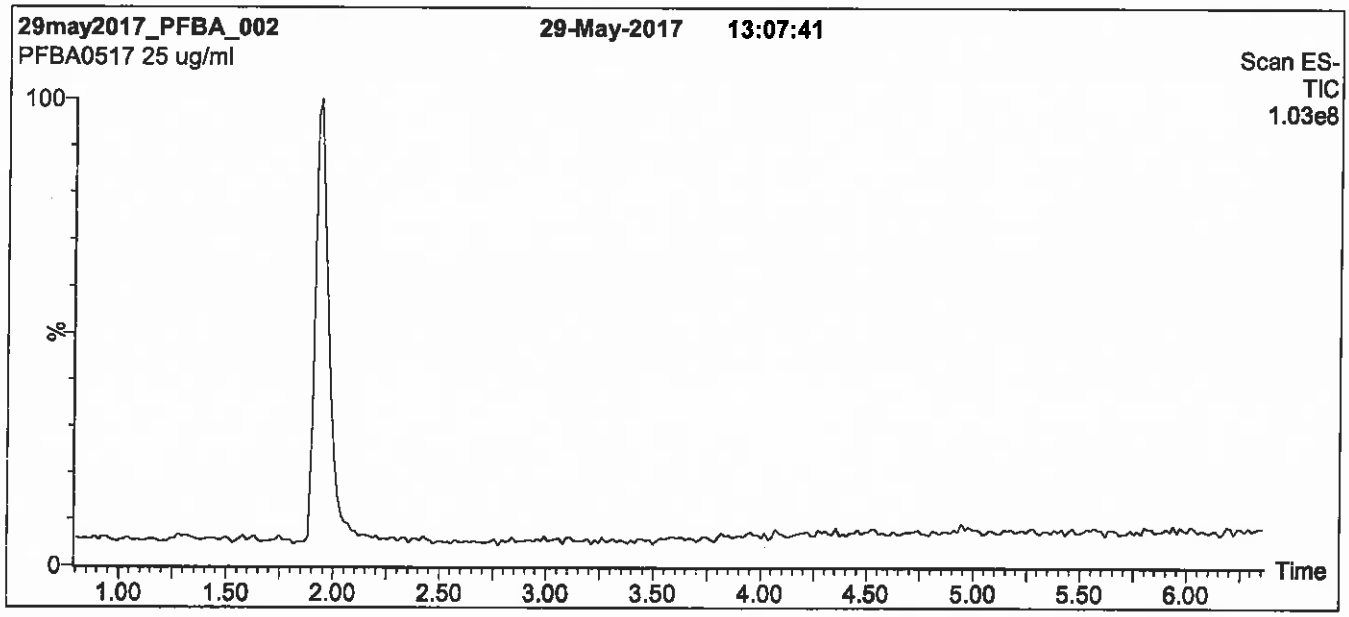
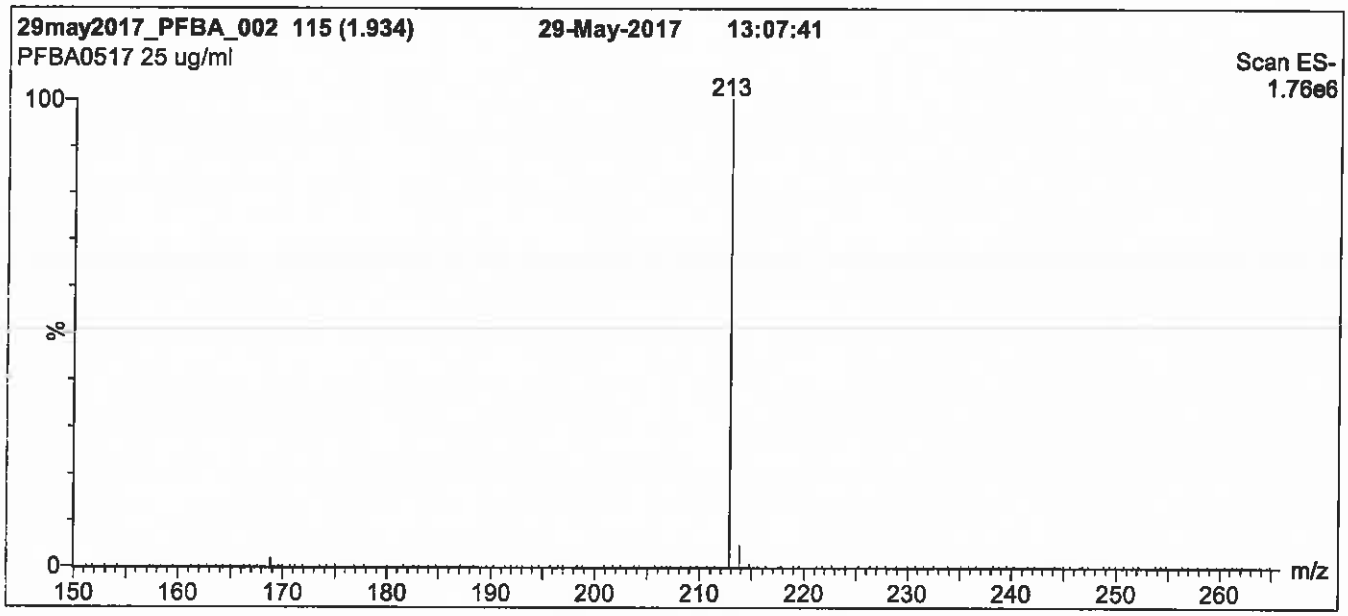
Figure 1: **PFBA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

LC: **Waters Acquity Ultra Performance LC**
MS: **Micromass Quattro *micro* API MS**

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 30% (80:20 MeOH:ACN) / 70% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

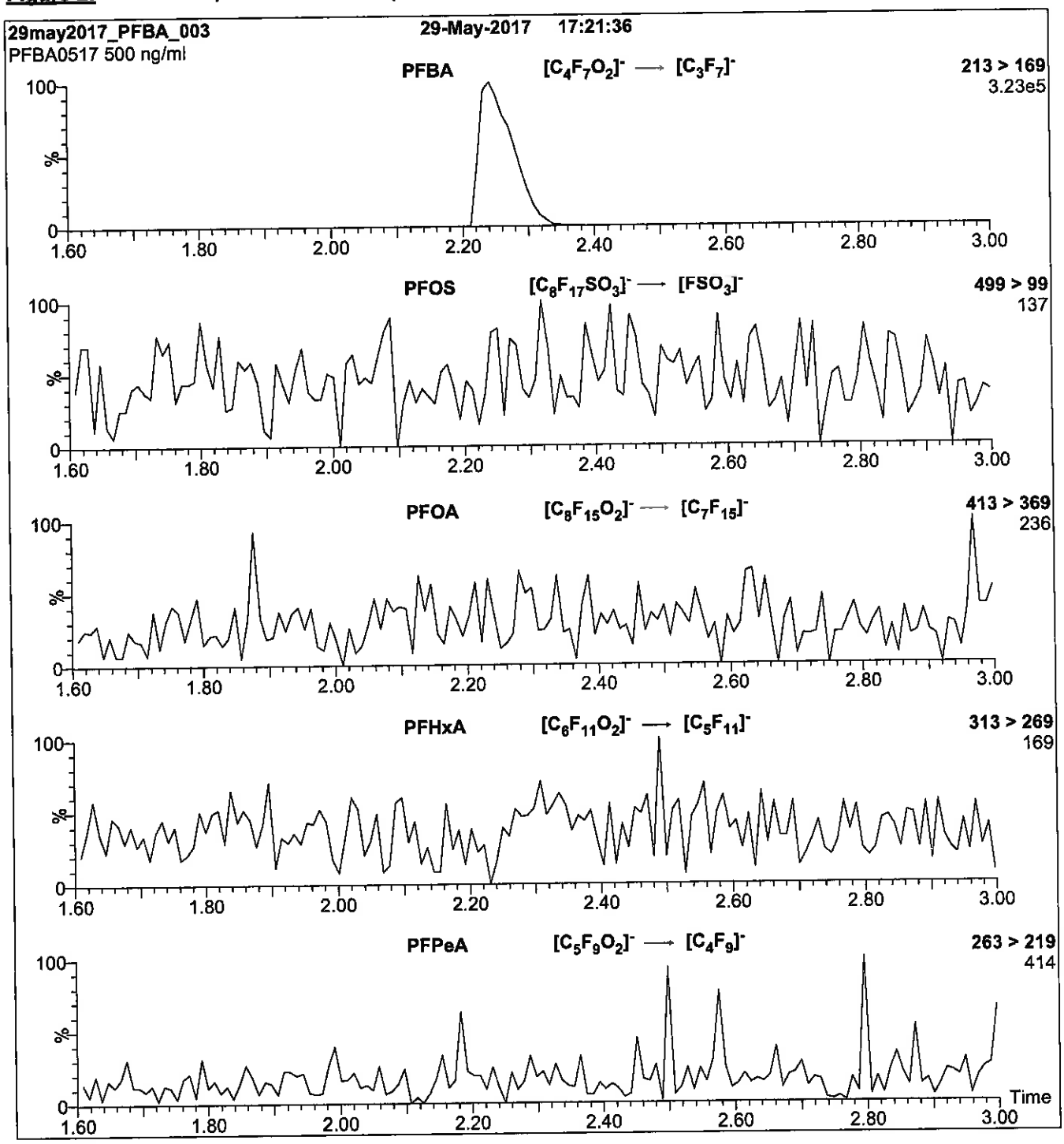
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 10.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

Figure 2: **PFBA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml PFBA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.39e-3
Collision Energy (eV) = 10

Reagent

LCPFBS_00009

D: 2/16/18 SW

E-653

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

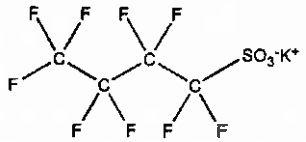
PRODUCT CODE: L-PFBS

LOT NUMBER: LPFBS0917

COMPOUND: Potassium perfluoro-1-butanesulfonate

STRUCTURE:

CAS #: 29420-49-3



MOLECULAR FORMULA: $C_4F_9SO_3K$

MOLECULAR WEIGHT: 338.19

CONCENTRATION: 50.0 ± 2.5 µg/ml (K salt)
44.2 ± 2.2 µg/ml (PFBS anion)

SOLVENT(S): Methanol

CHEMICAL PURITY: >98%

LAST TESTED: (mm/dd/yyyy) 09/21/2017

EXPIRY DATE: (mm/dd/yyyy) 09/21/2022

RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.

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Certified By: _____ **Date:** 09/22/2017 (mm/dd/yyyy)

B.G. Chittim, General Manager

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CALA

ANAB ACCREDITED

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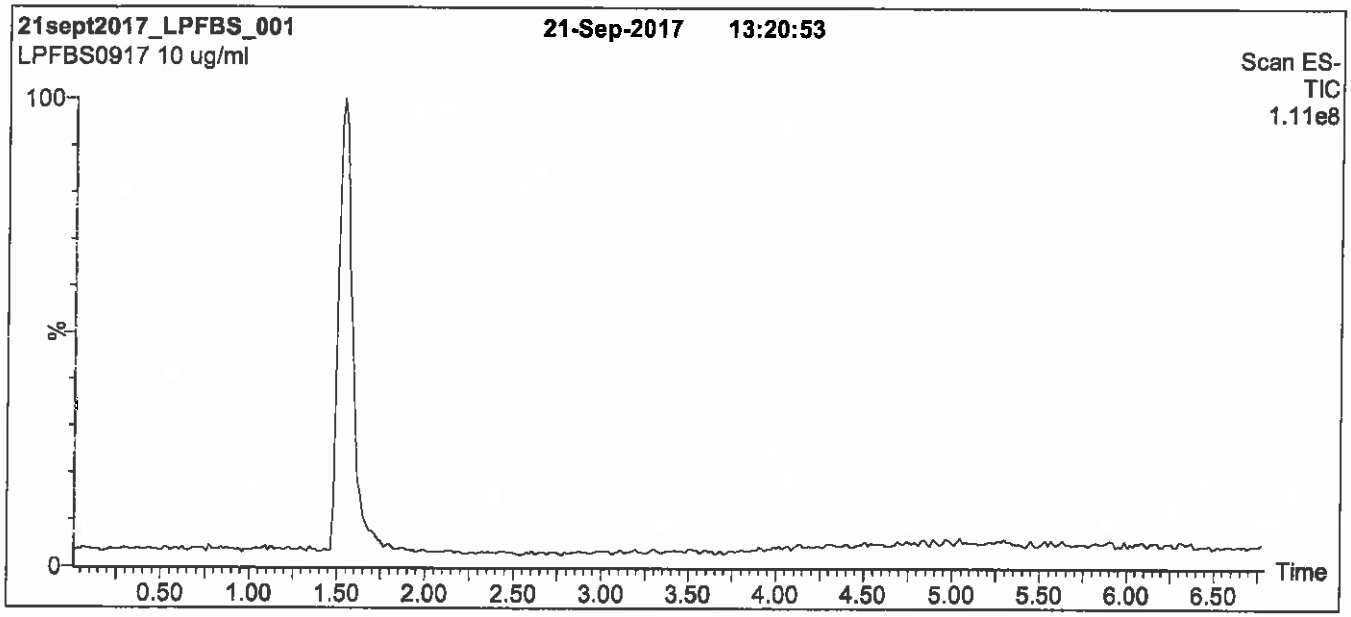
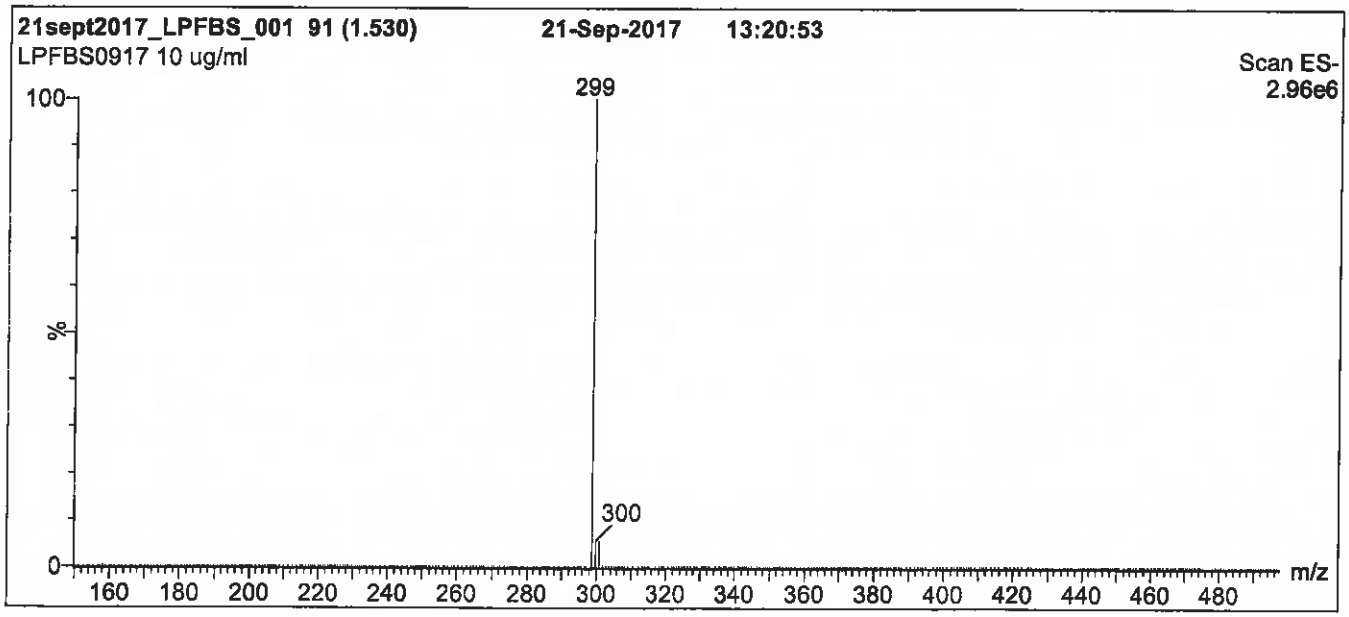
Figure 1: **L-PFBS; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min
before returning to initial conditions in 0.5 min.
Time: 10 min

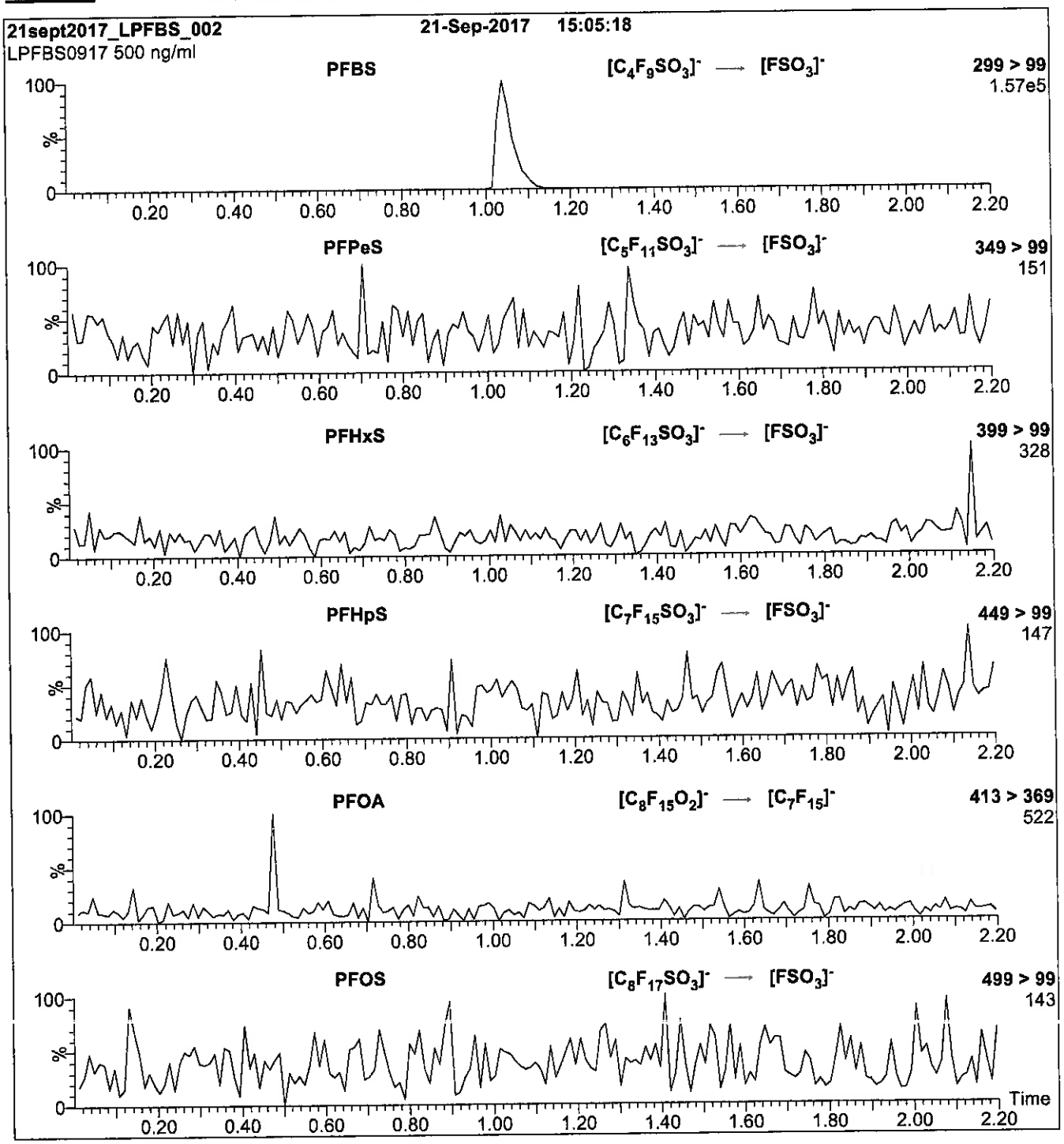
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 40.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: **L-PFBS; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml L-PFBS)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.39e-3
Collision Energy (eV) = 25

Reagent

LCPFDA_00008

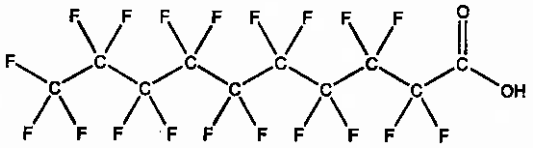
n: 9/21/17 SKV

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFDA
COMPOUND: Perfluoro-n-decanoic acid
LOT NUMBER: PFDA0517

STRUCTURE:
CAS #: 335-76-2



MOLECULAR FORMULA: $C_{10}HF_{19}O_2$
MOLECULAR WEIGHT: 514.08
CONCENTRATION: 50 ± 2.5 µg/ml
SOLVENT(S): Methanol, Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 05/29/2017
EXPIRY DATE: (mm/dd/yyyy) 05/29/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.2% of perfluoro-n-nonanoic acid (PFNA).

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Certified By: _____ **Date:** 05/30/2017 (mm/dd/yyyy)
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UNCERTAINTY:

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The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \ldots x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \ldots x_n)) = \sqrt{\sum_{i=1}^{n} u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of ±5% (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

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LIMITED WARRANTY:

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QUALITY MANAGEMENT:

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CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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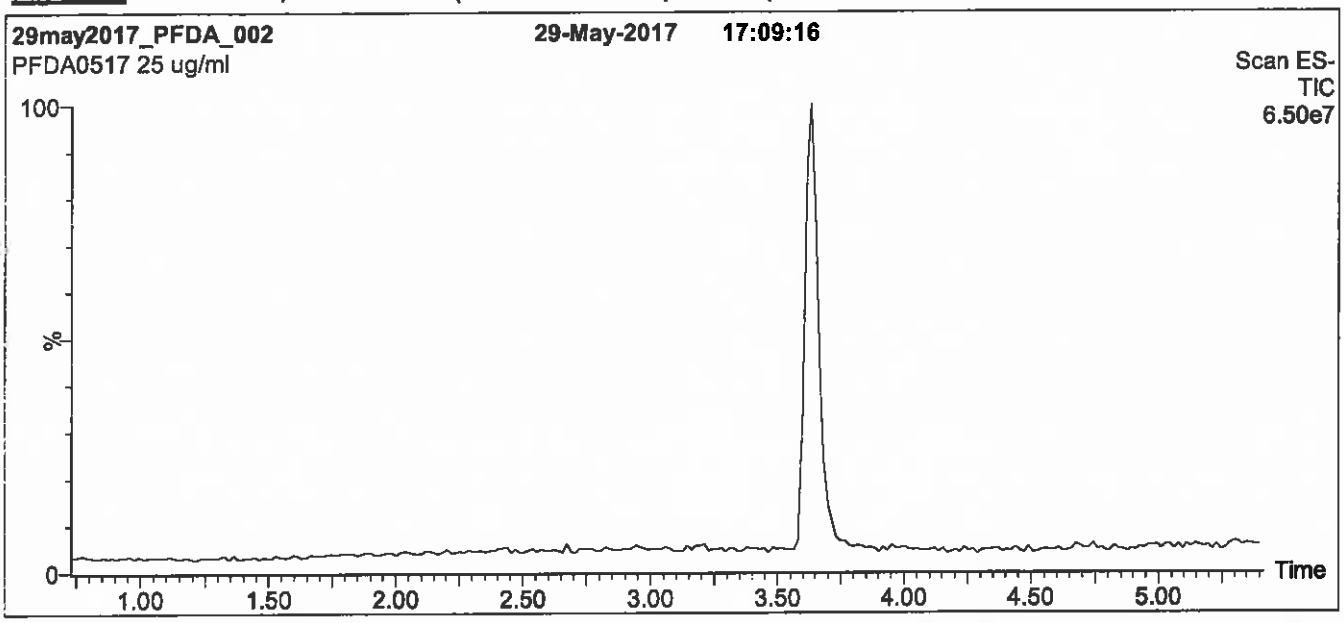
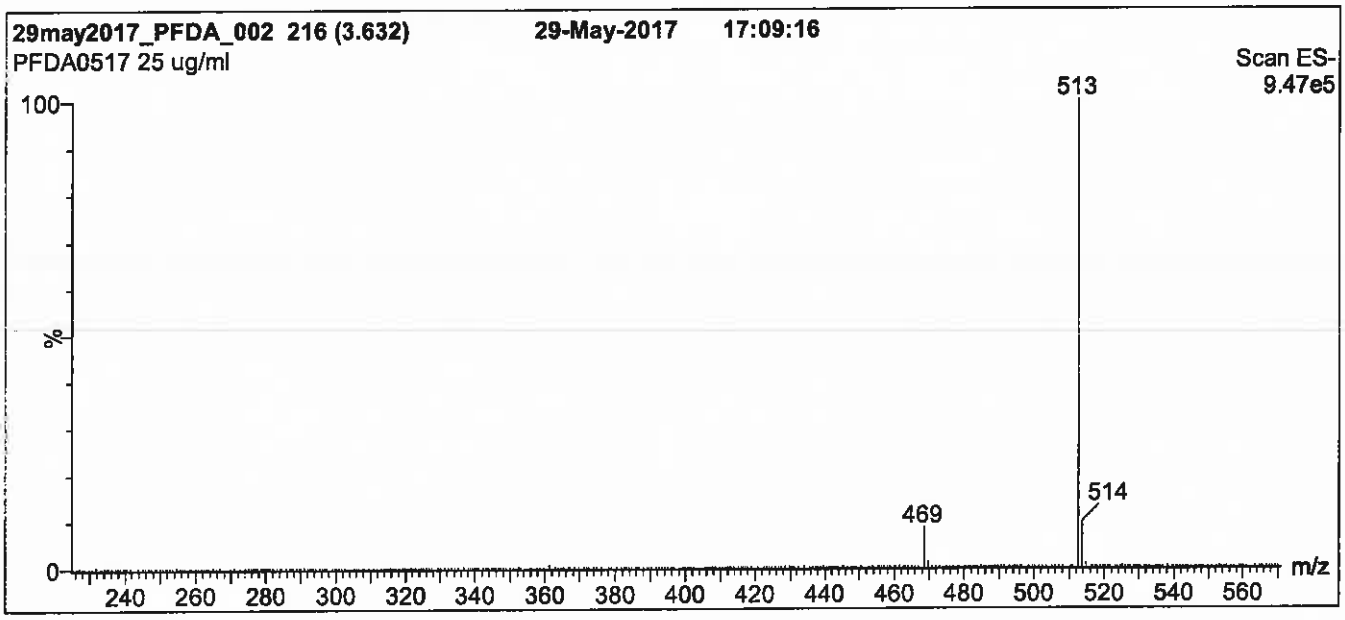
Figure 1: **PFDA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

LC: **Waters Acquity Ultra Performance LC**
MS: **Micromass Quattro *micro* API MS**

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for
1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

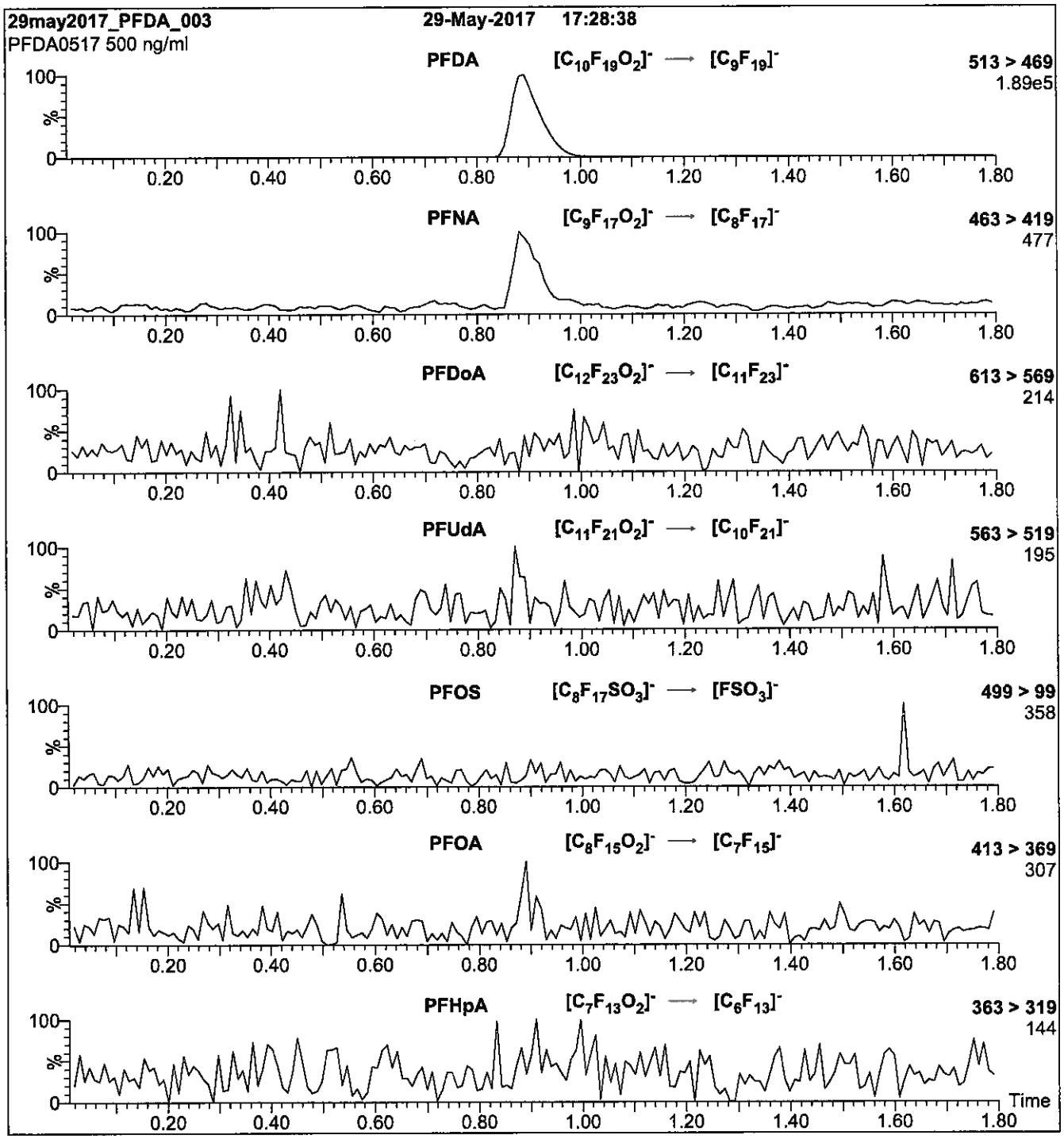
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: **PFDA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml PFDA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.20e-3
Collision Energy (eV) = 13

Reagent

LCPFDoA_00008

P: 10/20/17 SKV

E-663

WELLINGTON LABORATORIES

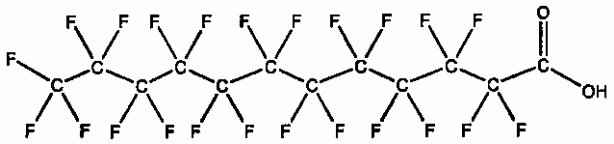
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFDoA
COMPOUND: Perfluoro-n-dodecanoic acid

LOT NUMBER: PFDoA0517

STRUCTURE:

CAS #: 307-55-1



MOLECULAR FORMULA: $C_{12}HF_{23}O_2$
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 614.10
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 05/29/2017
EXPIRY DATE: (mm/dd/yyyy) 05/29/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 05/30/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

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CALA

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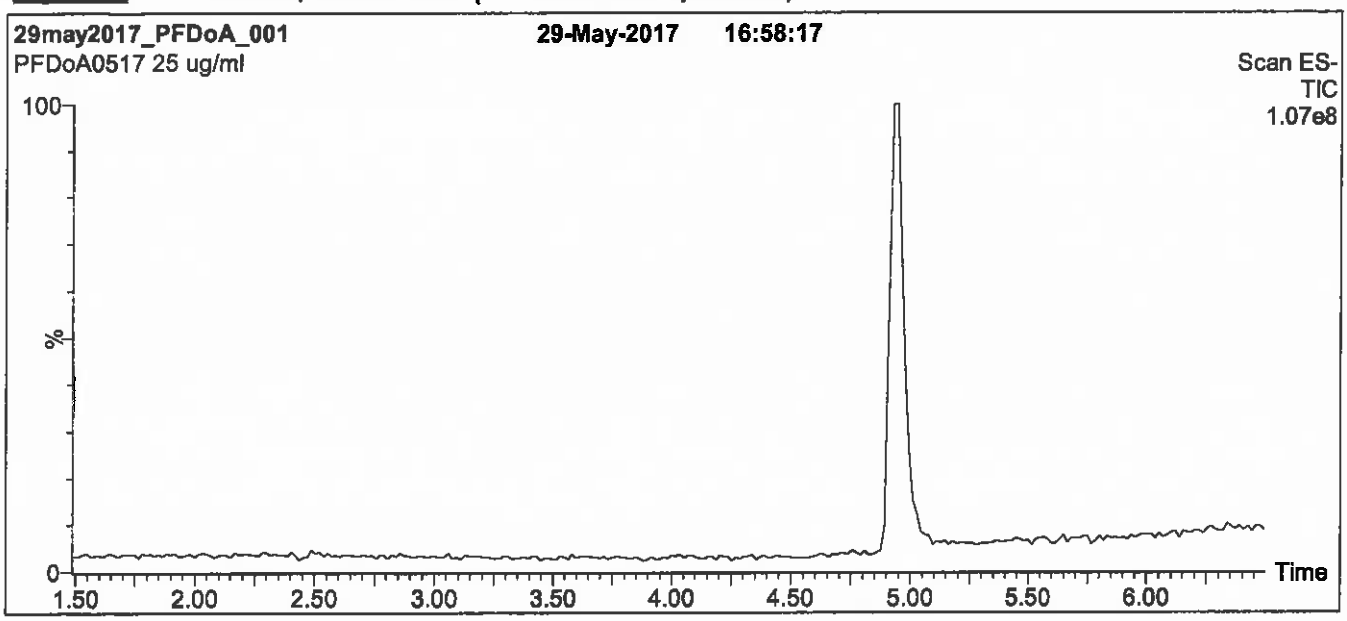

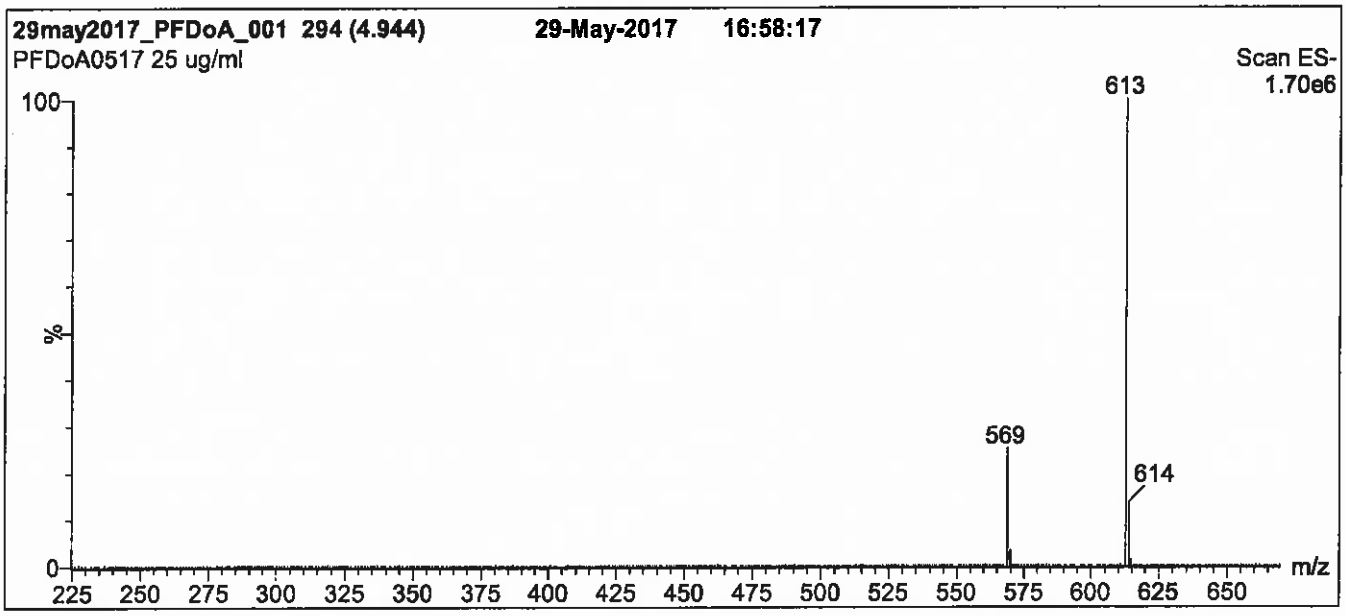

Conditions for Figure 1:

LC: **Waters Acquity Ultra Performance LC**
MS: **Micromass Quattro *micro* API MS**

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for
1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
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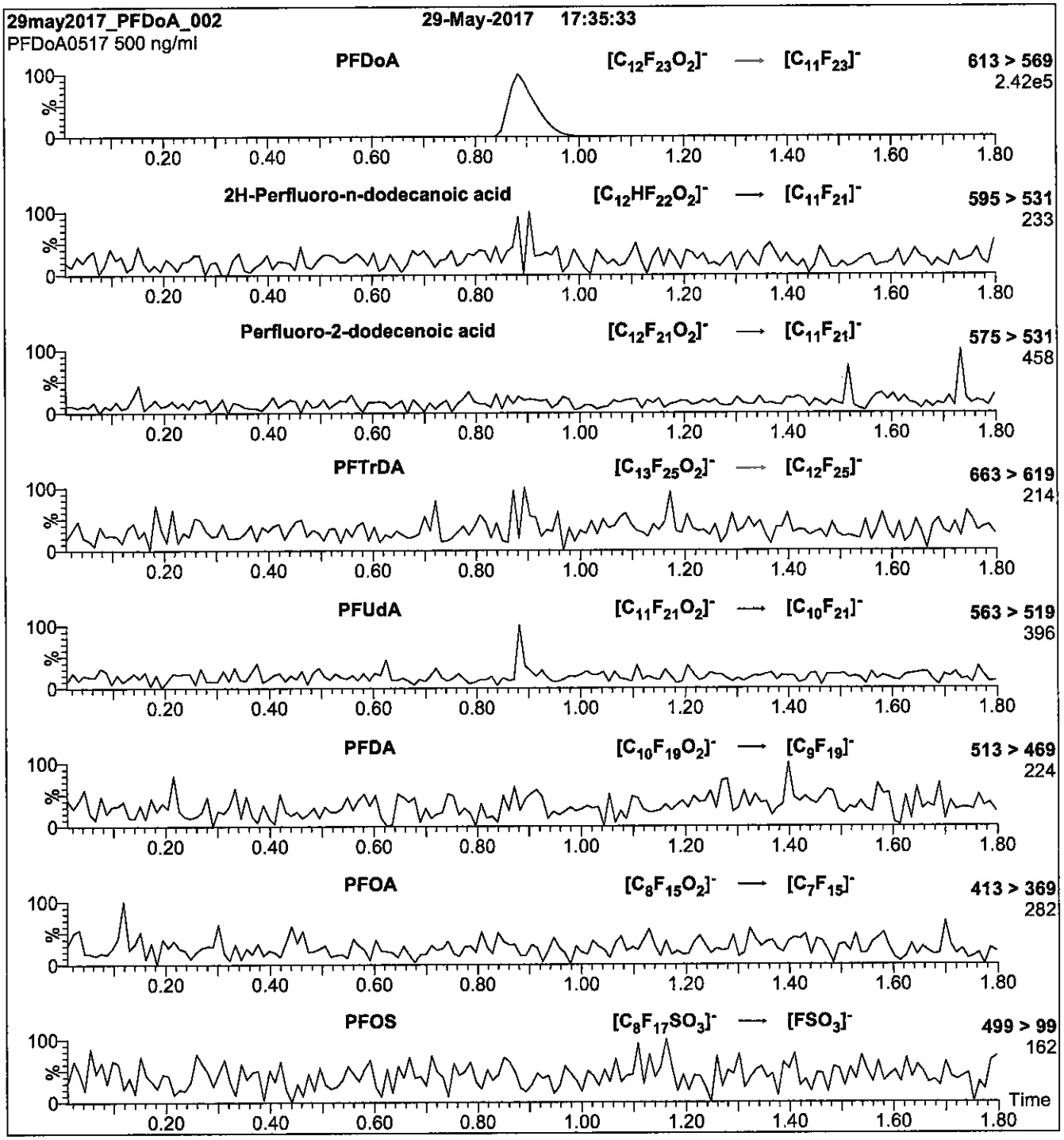
Figure 2: **PFDoA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml PFDoA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.39e-3
Collision Energy (eV) = 13

Reagent

LCPFDoA_00010

r: 10/20/17 SKV

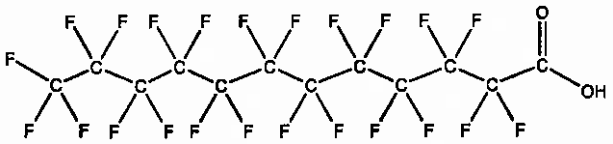
E-668

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFDoA
LOT NUMBER: PFDoA0517
COMPOUND: Perfluoro-n-dodecanoic acid

STRUCTURE:
CAS #: 307-55-1



MOLECULAR FORMULA: $C_{12}HF_{23}O_2$
MOLECULAR WEIGHT: 614.10
CONCENTRATION: 50 ± 2.5 µg/ml
SOLVENT(S): Methanol, Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 05/29/2017
EXPIRY DATE: (mm/dd/yyyy) 05/29/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 05/30/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

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CALA

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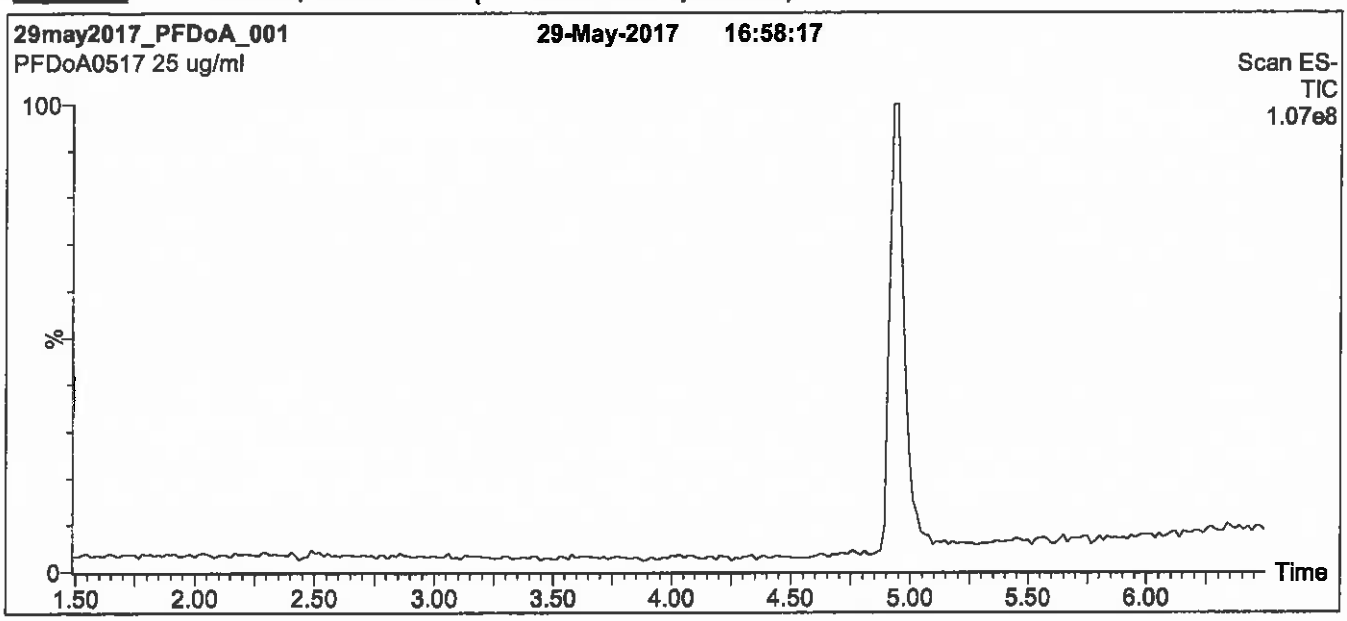

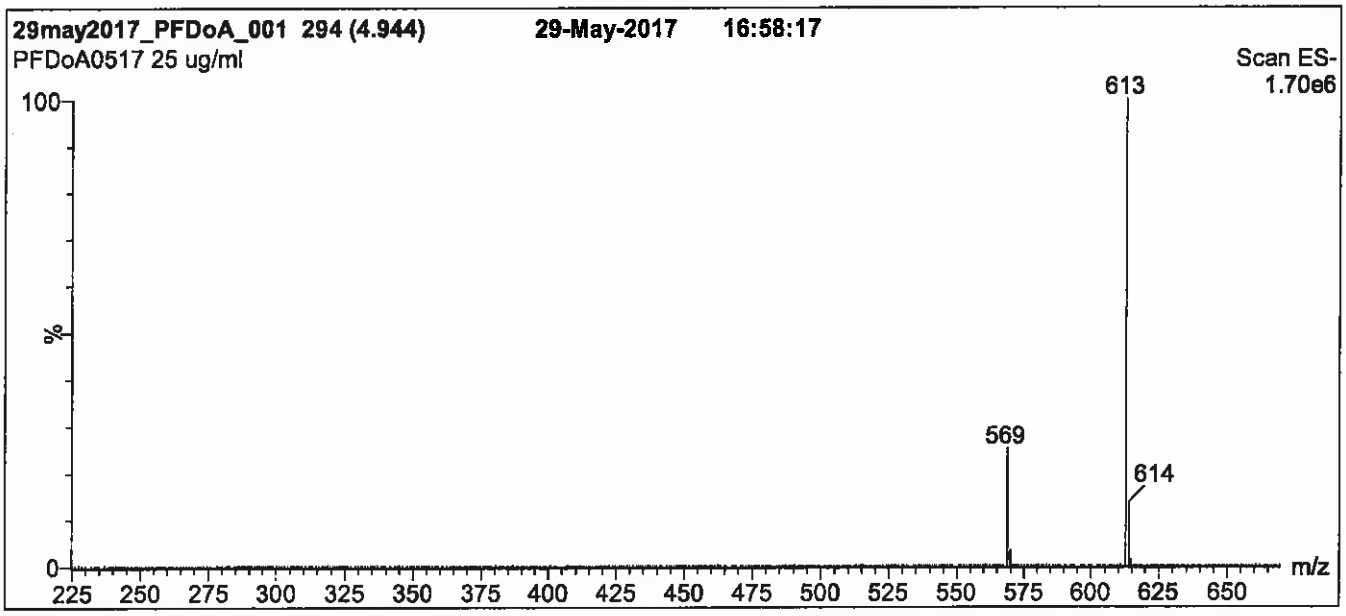

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MS: **Micromass Quattro *micro* API MS**

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for
1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

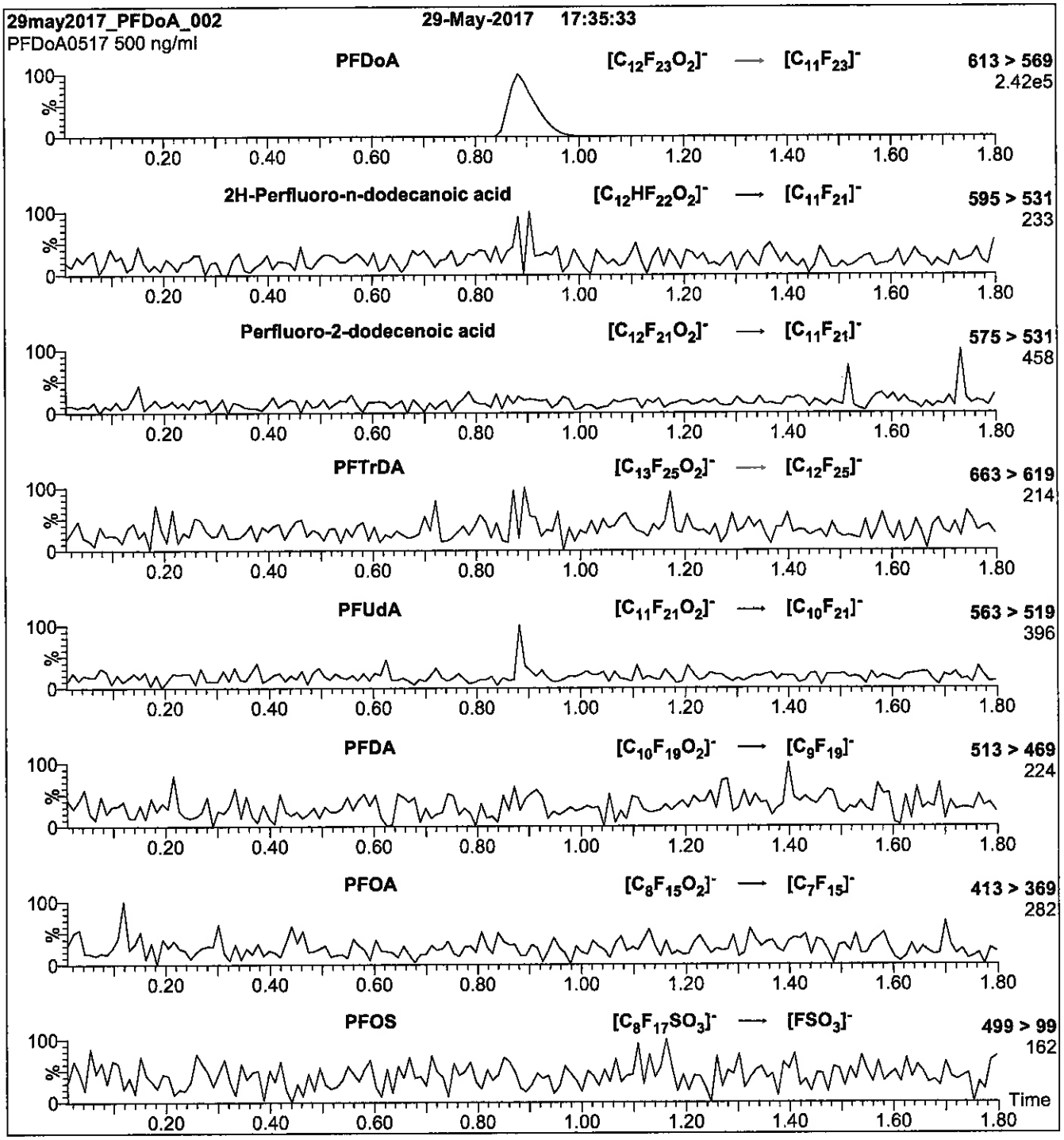
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 20.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

Figure 2: **PFDoA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml PFDoA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.39e-3
Collision Energy (eV) = 13

Reagent

LCPFDS_00008

P: 2/16/18 SKJ

E-673

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

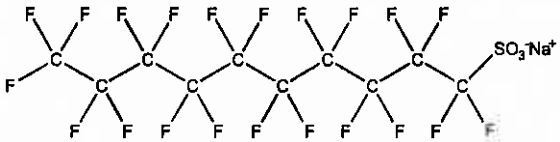
PRODUCT CODE: L-PFDS

LOT NUMBER: LPFDS1117

COMPOUND: Sodium perfluoro-1-decanesulfonate

STRUCTURE:

CAS #: 2806-15-7



MOLECULAR FORMULA: $C_{10}F_{21}SO_3Na$

MOLECULAR WEIGHT: 622.13

CONCENTRATION: 50.0 ± 2.5 µg/ml (Na salt)
48.2 ± 2.4 µg/ml (PFDS anion)

SOLVENT(S): Methanol

CHEMICAL PURITY: >98%

LAST TESTED: (mm/dd/yyyy) 11/08/2017

EXPIRY DATE: (mm/dd/yyyy) 11/08/2022

RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
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ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains ~ 0.9% of sodium perfluoro-1-dodecanesulfonate (L-PFDoS).

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QUALITY MANAGEMENT:

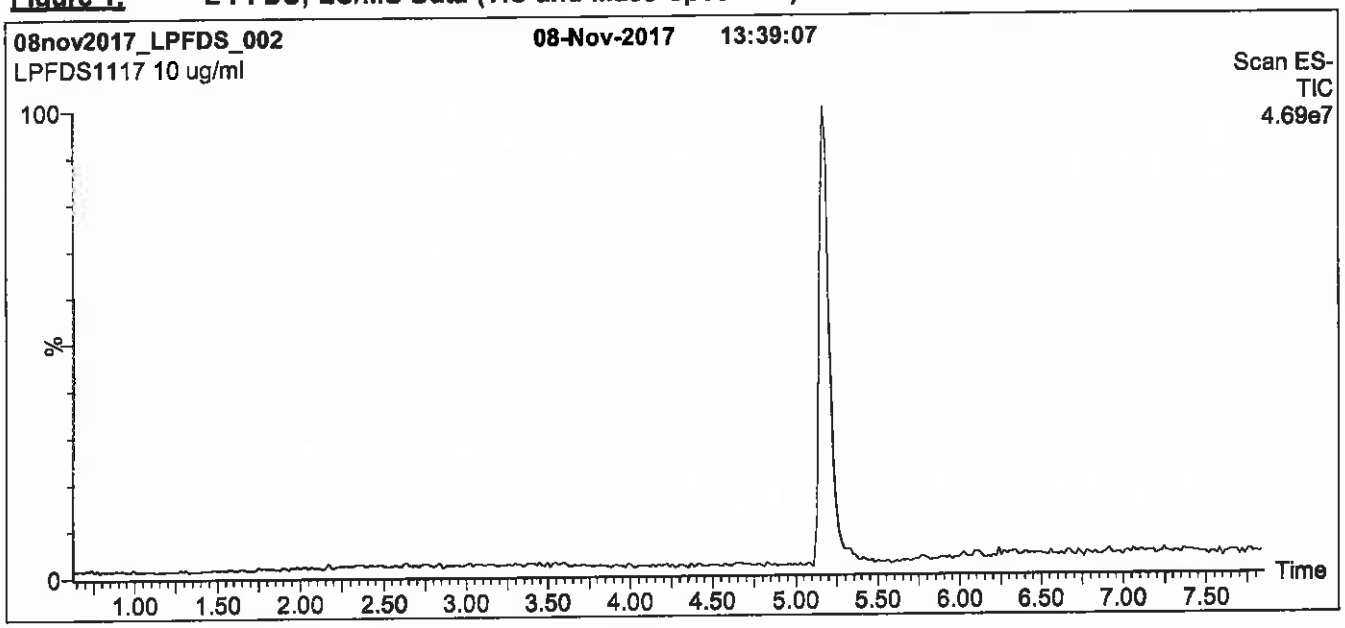
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

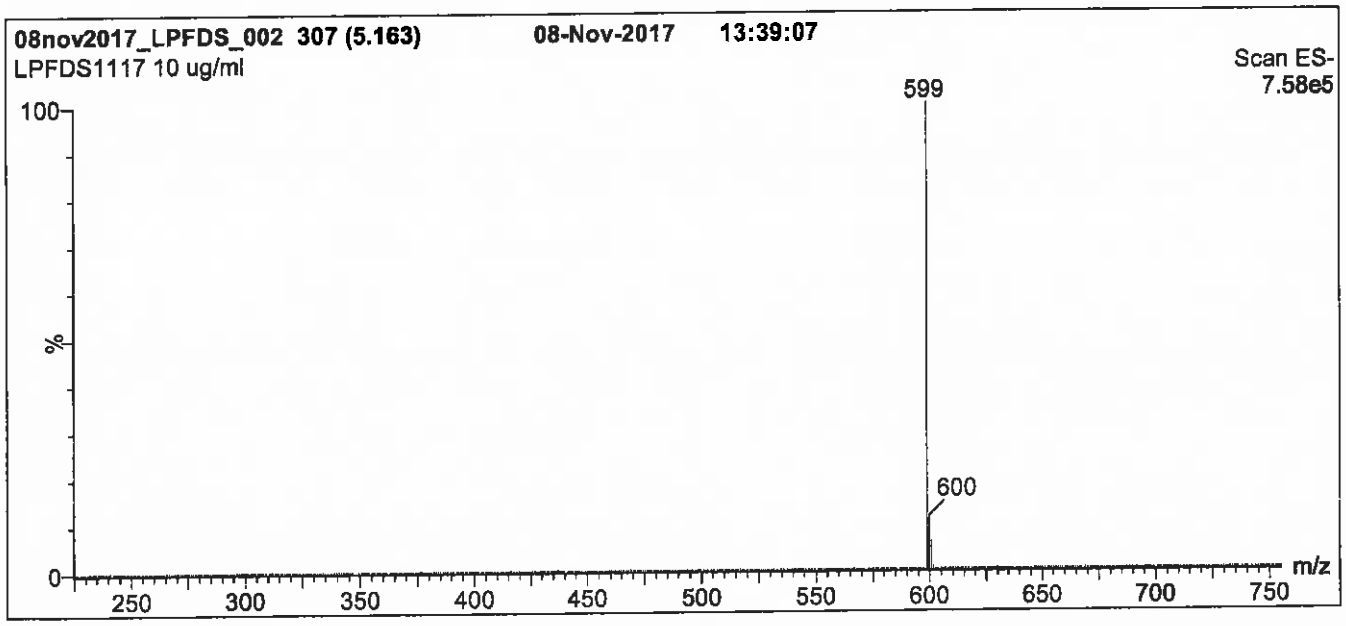
CALA

ANAB ACCREDITED

For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

Figure 1: **L-PFDS; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

LC: **Waters Acquity Ultra Performance LC**
MS: **Micromass Quattro *micro* API MS**

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for
2 min before returning to initial conditions in 0.5 min.
Time: 10 min

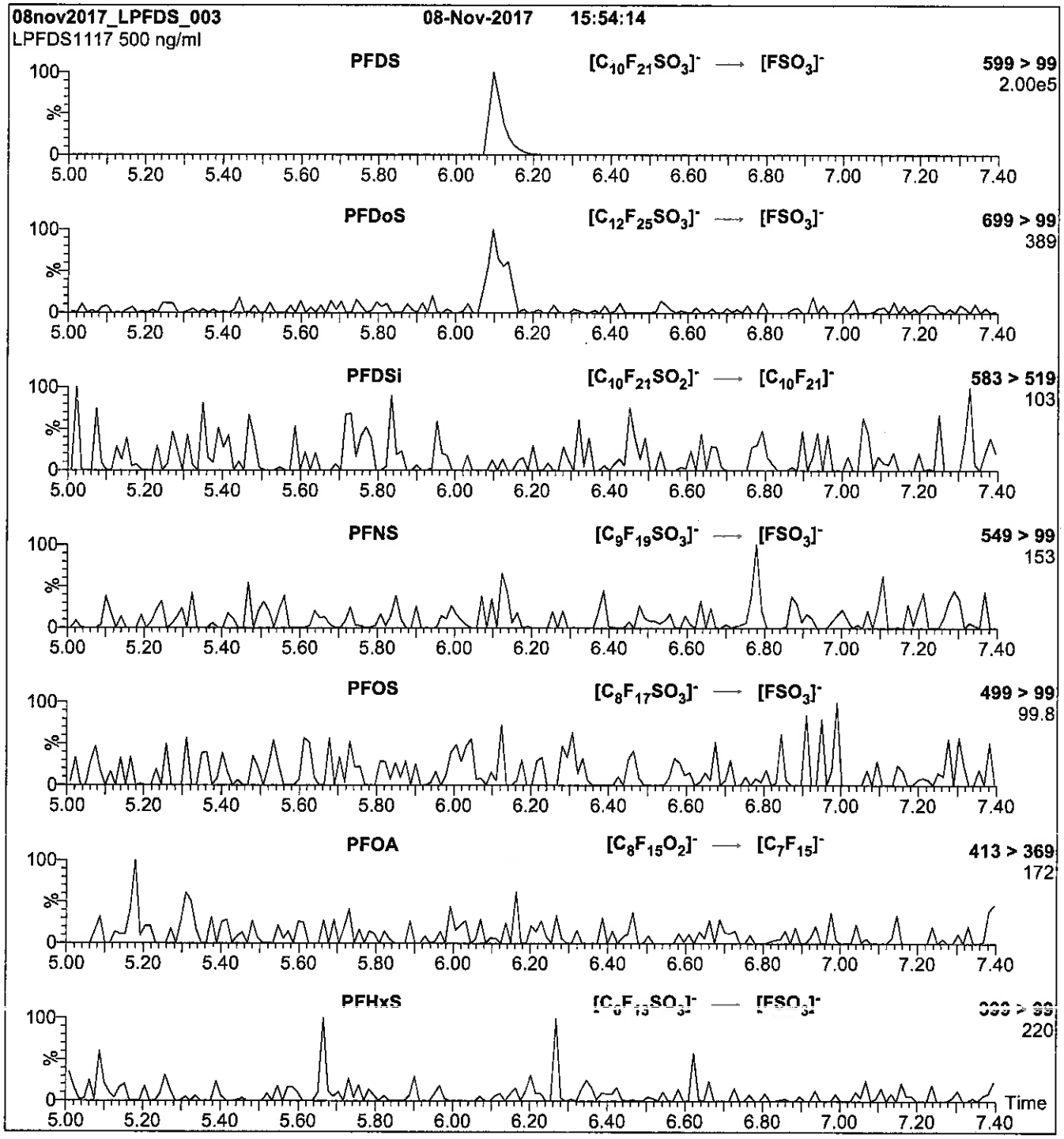
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 70.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: **L-PFDS; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection:	Direct loop injection 10 µl (500 ng/ml L-PFDS)	**MS Parameters**
Mobile phase:	Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O (both with 10 mM NH_4OAc buffer)	Collision Gas (mbar) = 3.46e-3 Collision Energy (eV) = 50
Flow:	300 µl/min	

Reagent

LCPFHpA_00011

WELLINGTON LABORATORIES

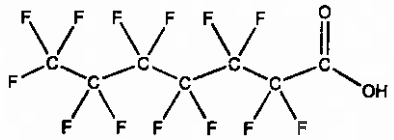
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFHpA
COMPOUND: Perfluoro-n-heptanoic acid

LOT NUMBER: PFHpA0917

STRUCTURE:

CAS #: 375-85-9



MOLECULAR FORMULA: $C_7HF_{13}O_2$
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 364.06
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 09/27/2017
EXPIRY DATE: (mm/dd/yyyy) 09/27/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 09/29/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers. In order to maintain the integrity of the assigned value(s), and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \ldots x_n$ on which it depends is:

$$u_r(y(x_1, x_2, \ldots x_n)) = \sqrt{\sum_{i=1}^{n} u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of ±5% (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using calibrated NIST and/or NRC traceable external weights. All volumetric glassware used is calibrated, of Class A tolerance, and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

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CALA

ANAB ACCREDITED

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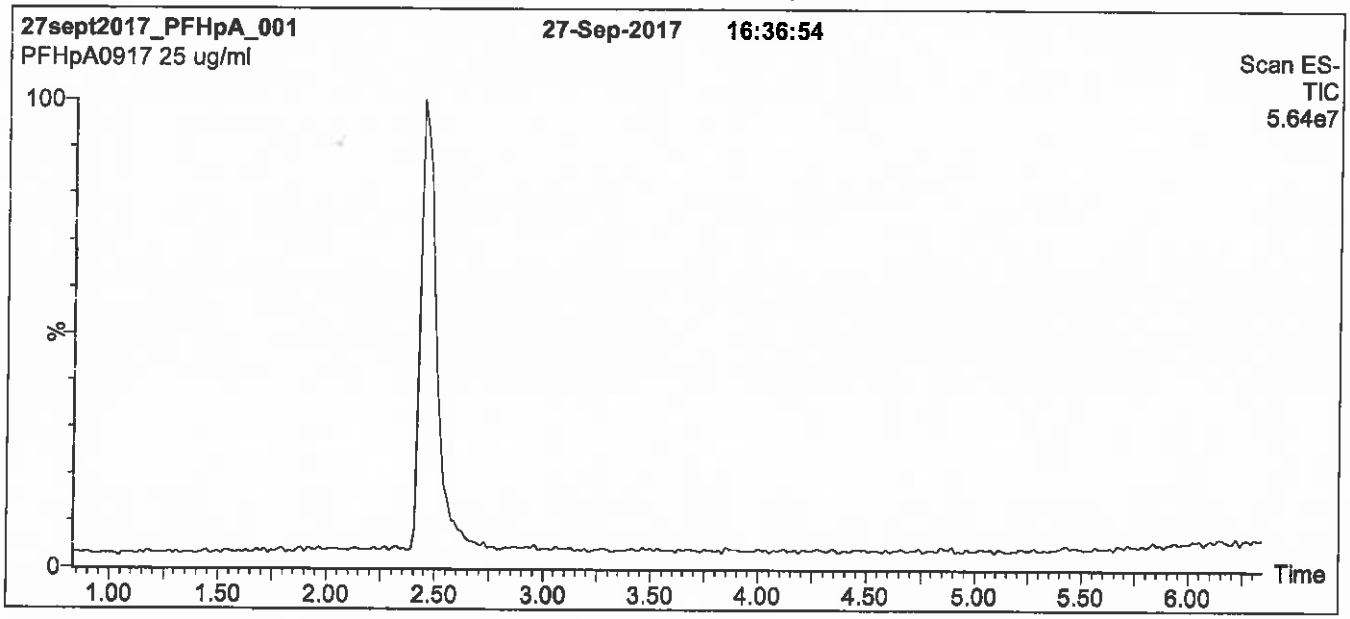
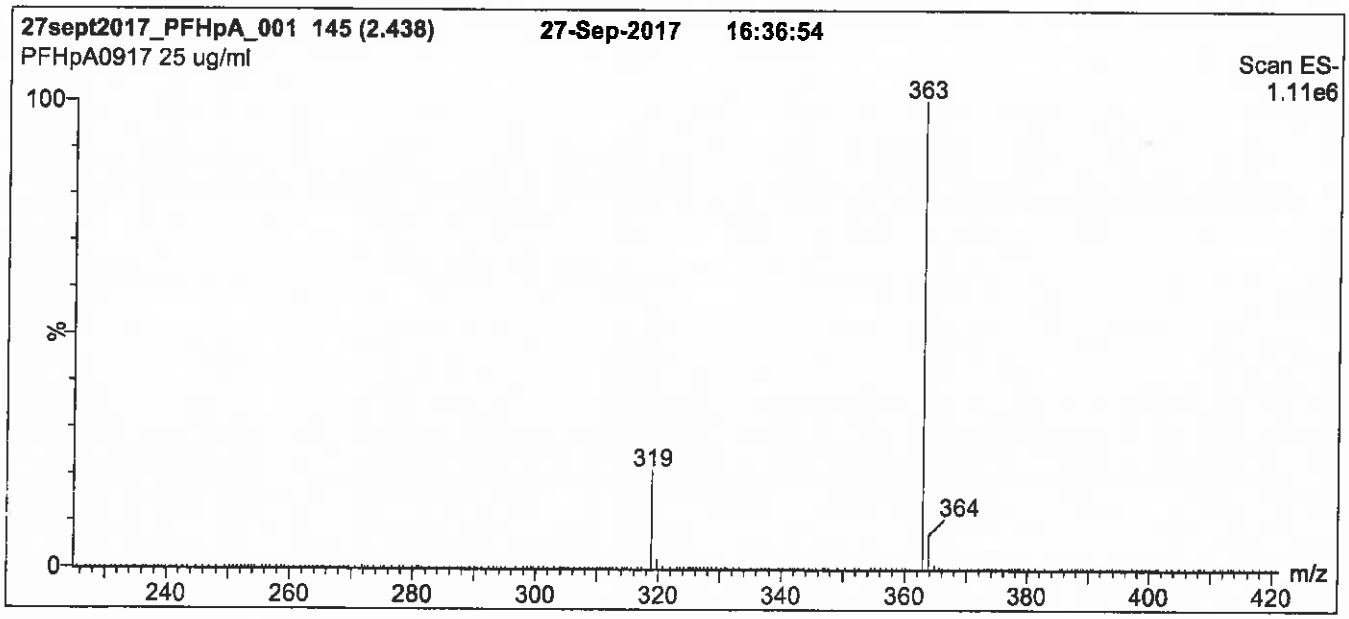
Figure 1: **PFHpA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min before returning to initial conditions in 0.5 min.
Time: 10 min

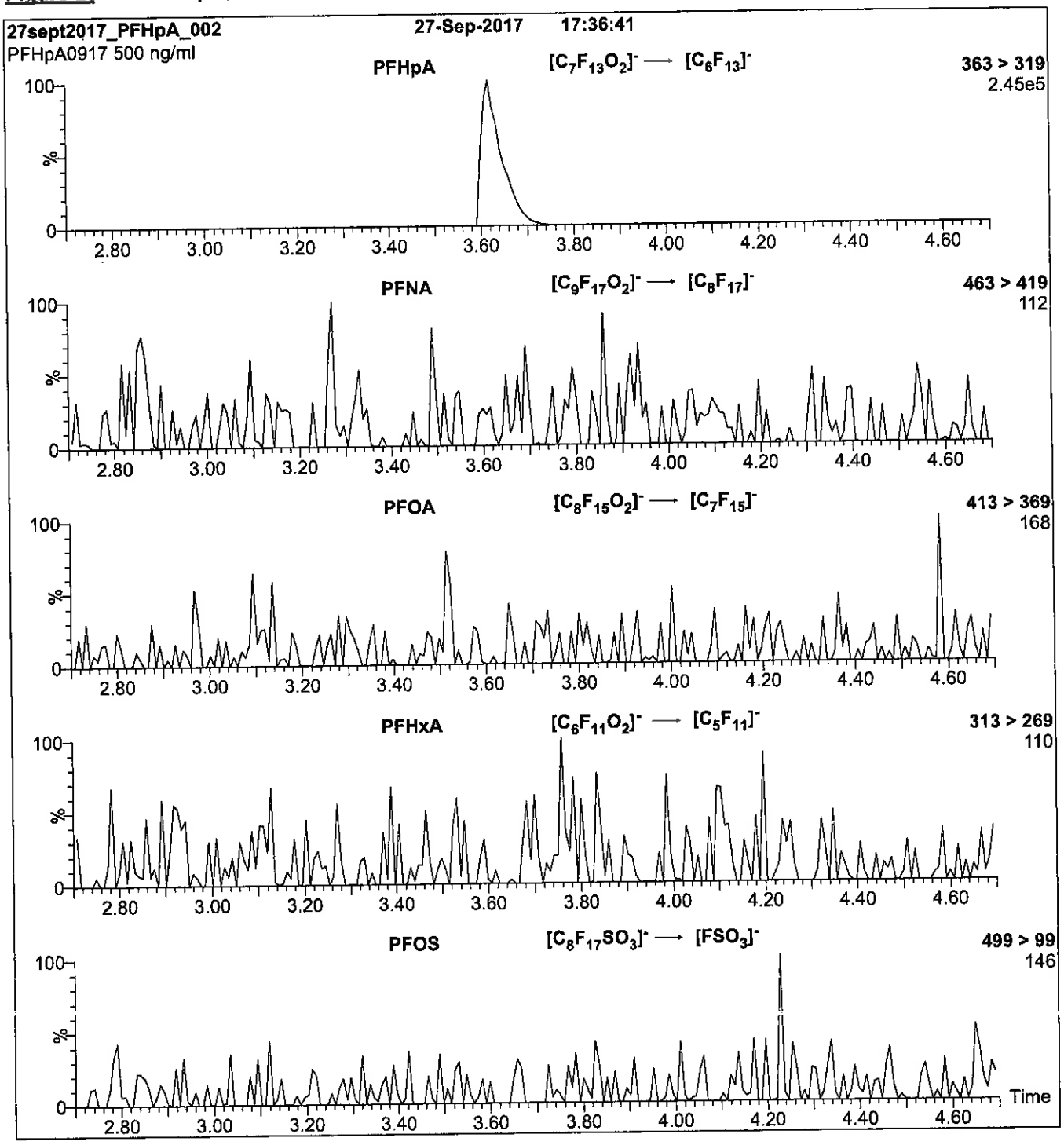
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: **PFHpA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml PFHpA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.43e-3
Collision Energy (eV) = 11

Reagent

LCPFHpSA_00003

R: 9/21/17 SKV

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

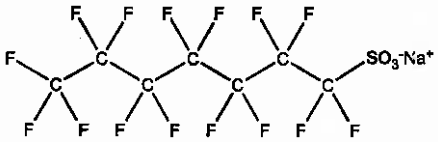
PRODUCT CODE: L-PFHpS

LOT NUMBER: LPFHpS0817

COMPOUND: Sodium perfluoro-1-heptanesulfonate

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: $C_7F_{15}SO_3Na$

MOLECULAR WEIGHT: 472.10

CONCENTRATION: 50.0 ± 2.5 µg/ml (Na salt)
47.6 ± 2.4 µg/ml (PFHpS anion)

SOLVENT(S): Methanol

CHEMICAL PURITY: >98%

LAST TESTED: (mm/dd/yyyy) 09/01/2017

EXPIRY DATE: (mm/dd/yyyy) 09/01/2022

RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains ~ 0.2% of L-PFHxS ($C_6F_{13}SO_3Na$) and ~ 0.1% of L-PFOS ($C_8F_{17}SO_3Na$).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 09/07/2017 (mm/dd/yyyy)

B.G. Chittim, General Manager

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

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ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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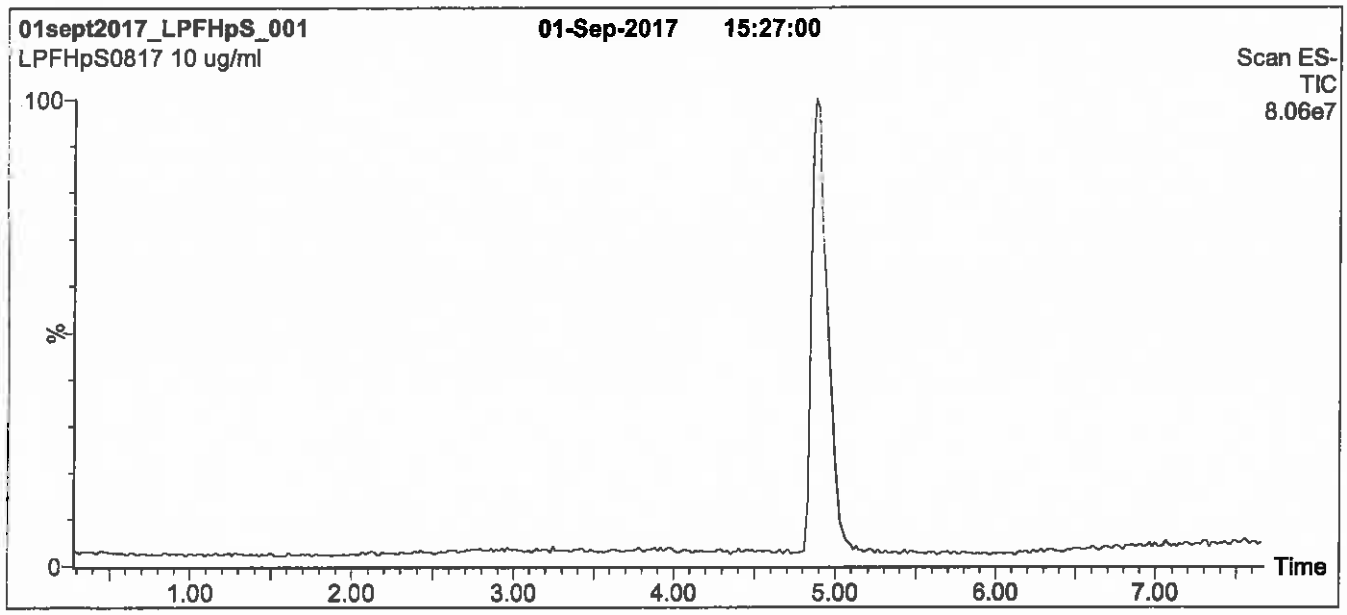
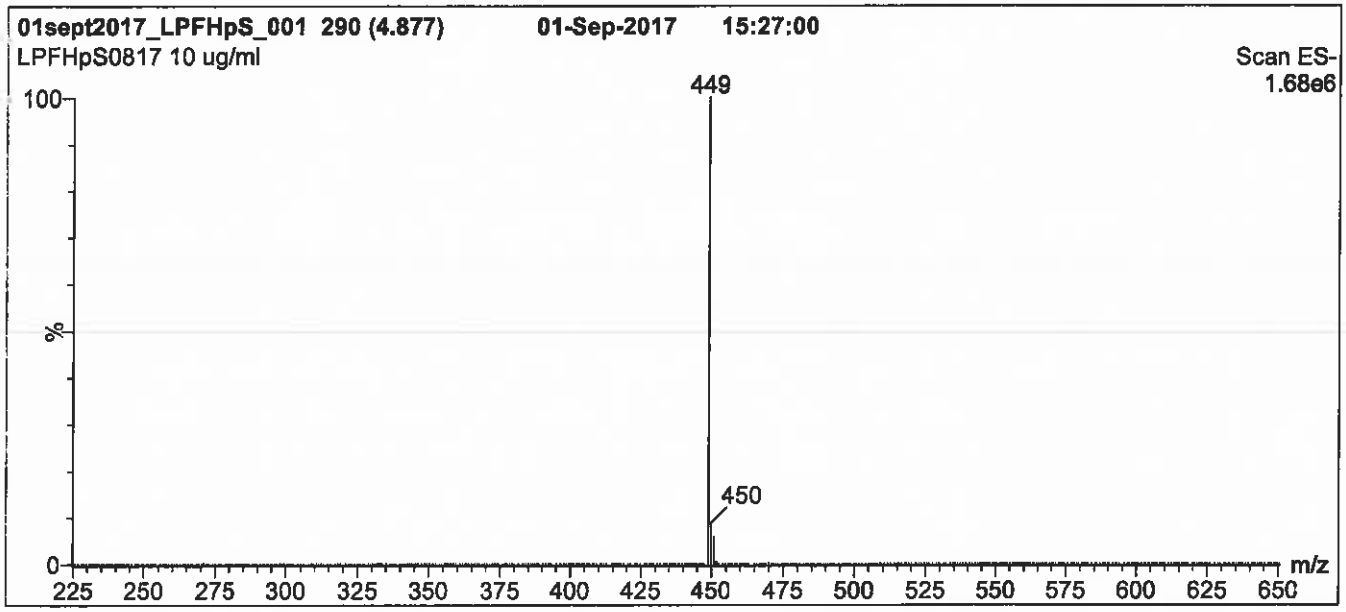
Figure 1: **L-PFHpS; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

LC: **Waters Acquity Ultra Performance LC**
MS: **Micromass Quattro *micro* API MS**

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 8 min and hold
for 1 min before returning to initial conditions in 0.5 min.
Time: 10 min

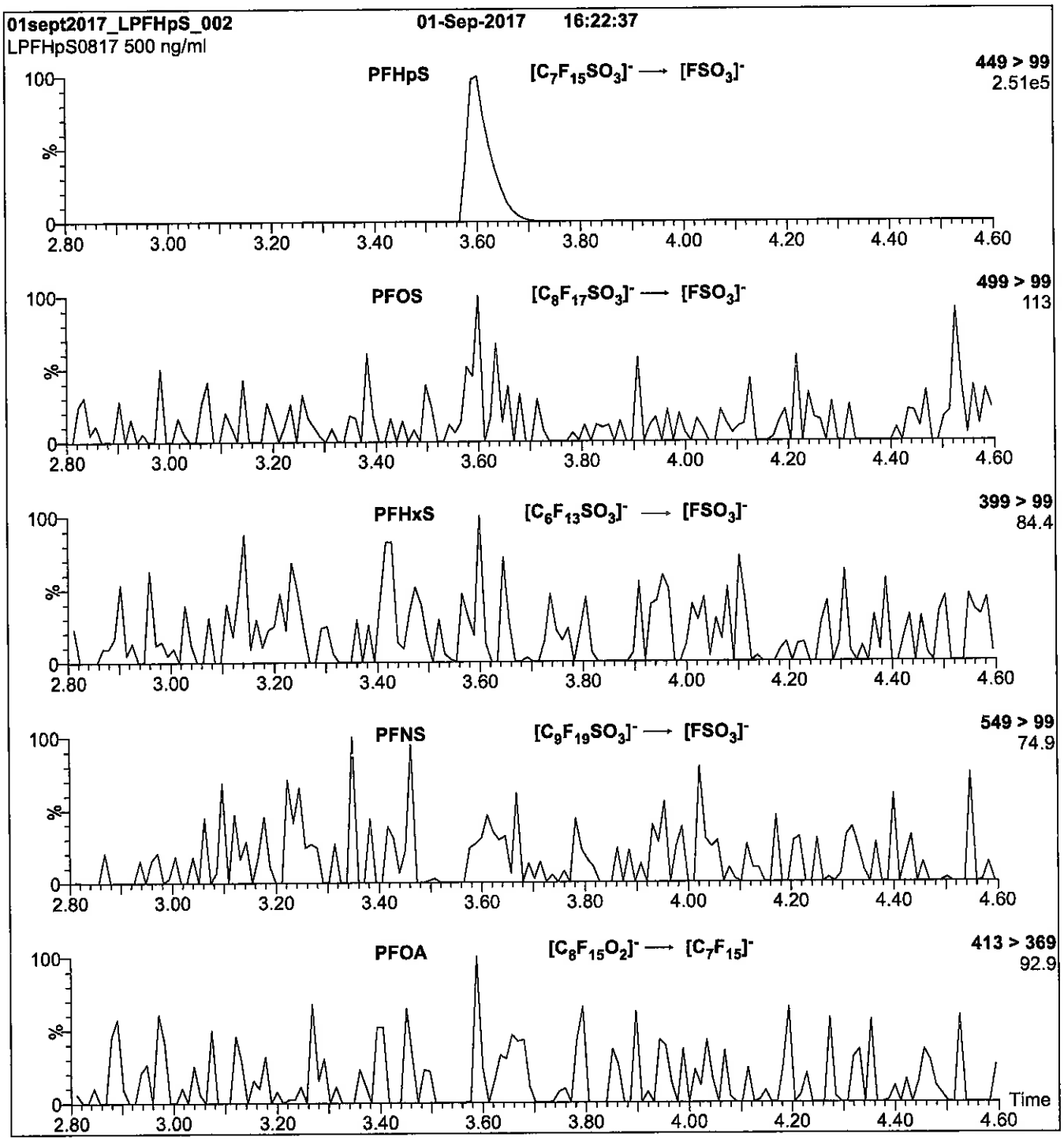
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 60.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

Figure 2: **L-PFHpS; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection:	Direct loop injection 10 µl (500 ng/ml L-PFHpS)
Mobile phase:	Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O (both with 10 mM NH_4OAc buffer)
Flow:	300 µl/min

MS Parameters

Collision Gas (mbar) = 3.35e-3
Collision Energy (eV) = 35

Reagent

LCPFHxA_00010

WELLINGTON LABORATORIES

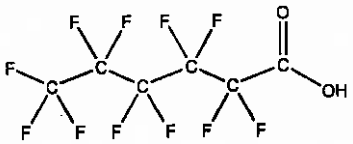
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFHxA
COMPOUND: Perfluoro-n-hexanoic acid

LOT NUMBER: PFHxA0917

STRUCTURE:

CAS #: 307-24-4



MOLECULAR FORMULA: $C_6HF_{11}O_2$
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 314.05
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 09/27/2017
EXPIRY DATE: (mm/dd/yyyy) 09/27/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 1.0% of branched isomers.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 11/01/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

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CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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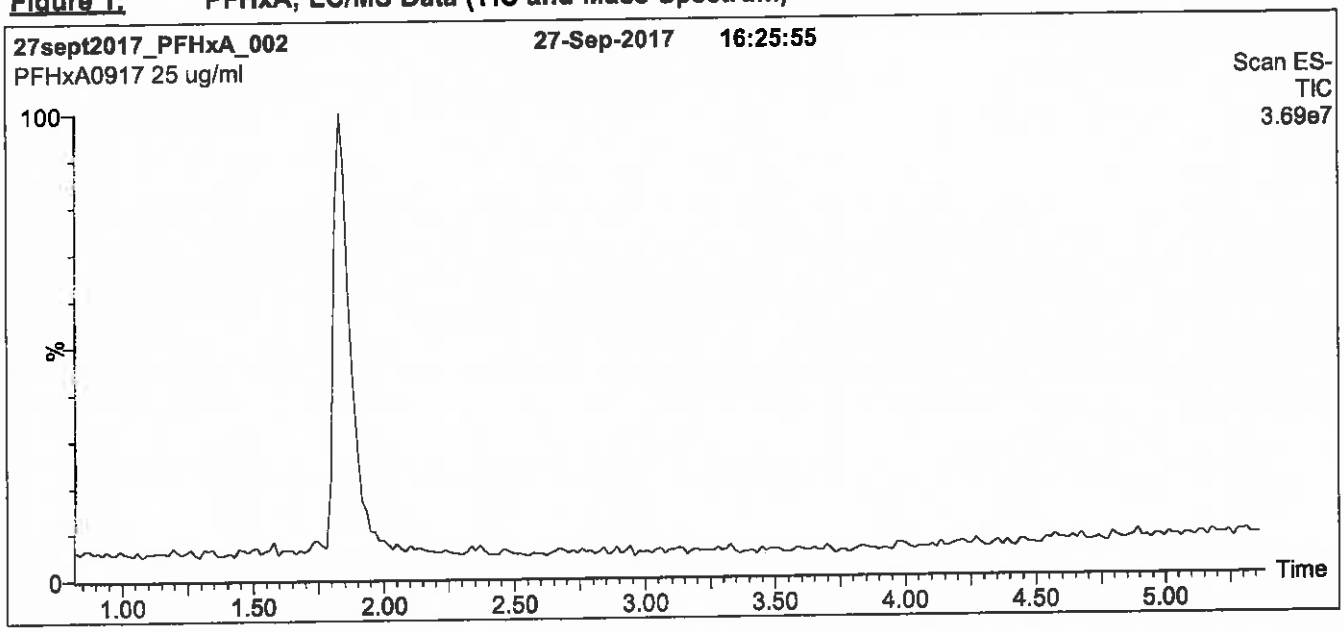
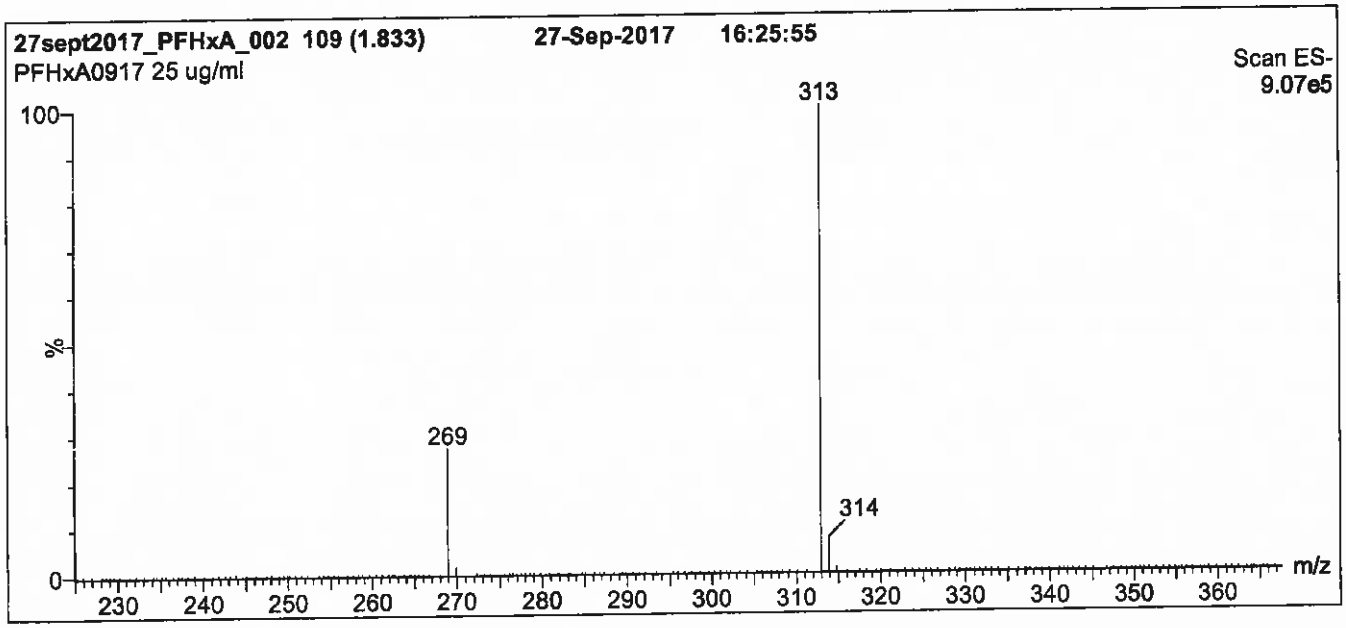
Figure 1: **PFHxA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

LC: **Waters Acquity Ultra Performance LC**
MS: **Micromass Quattro *micro* API MS**

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min before returning to initial conditions in 0.5 min.
Time: 10 min

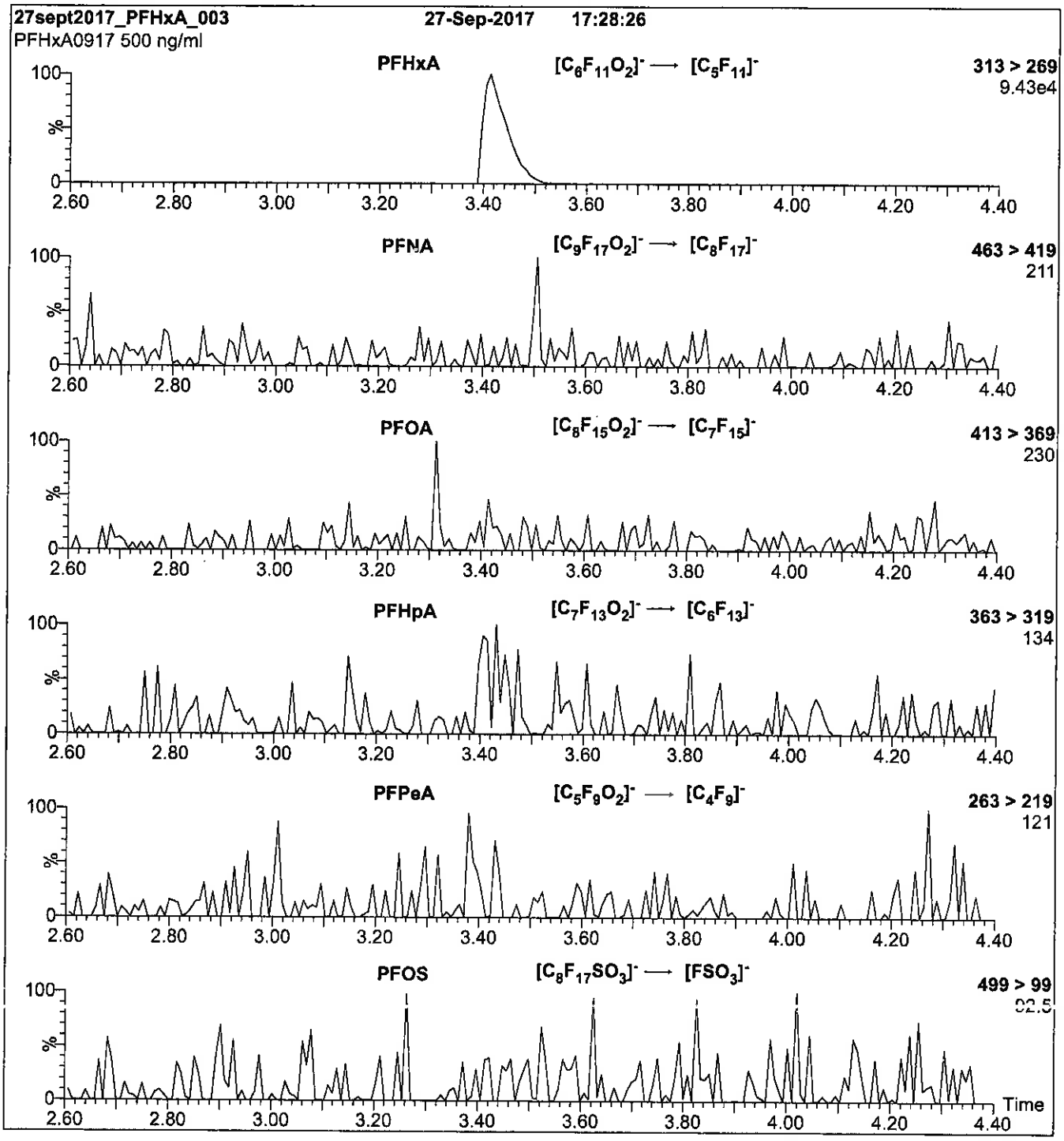
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

Figure 2: **PFHxA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection:	Direct loop injection 10 µl (500 ng/ml PFHxA)	**MS Parameters**
Mobile phase:	Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O (both with 10 mM NH_4OAc buffer)	Collision Gas (mbar) = 3.46e-3 Collision Energy (eV) = 10
Flow:	300 µl/min	

Reagent

LCPFHxDA_00010

r: 9/21/17 SCW

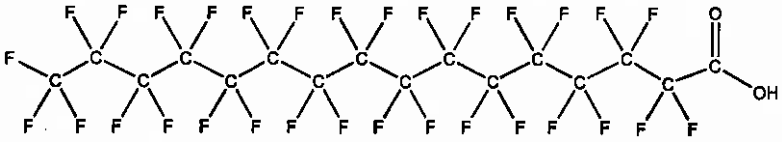
E-693

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFHxDA
COMPOUND: Perfluoro-n-hexadecanoic acid
LOT NUMBER: PFHxDA0717

STRUCTURE:
CAS #: 67905-19-5



MOLECULAR FORMULA: $C_{16}HF_{31}O_2$
MOLECULAR WEIGHT: 814.13
CONCENTRATION: 50 ± 2.5 µg/ml
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 07/13/2017
EXPIRY DATE: (mm/dd/yyyy) 07/13/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 08/04/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

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SYNTHESIS / CHARACTERIZATION:

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HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers. In order to maintain the integrity of the assigned value(s), and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \ldots x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \ldots x_n)) = \sqrt{\sum_{i=1}^{n} u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

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CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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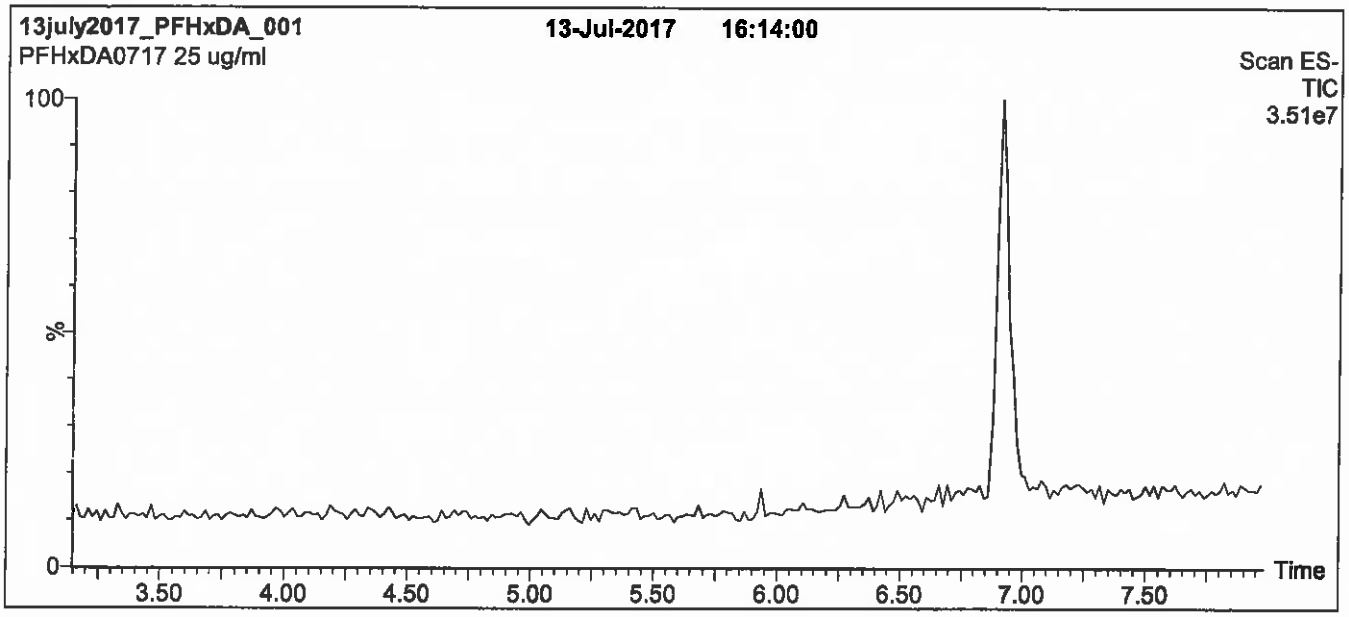
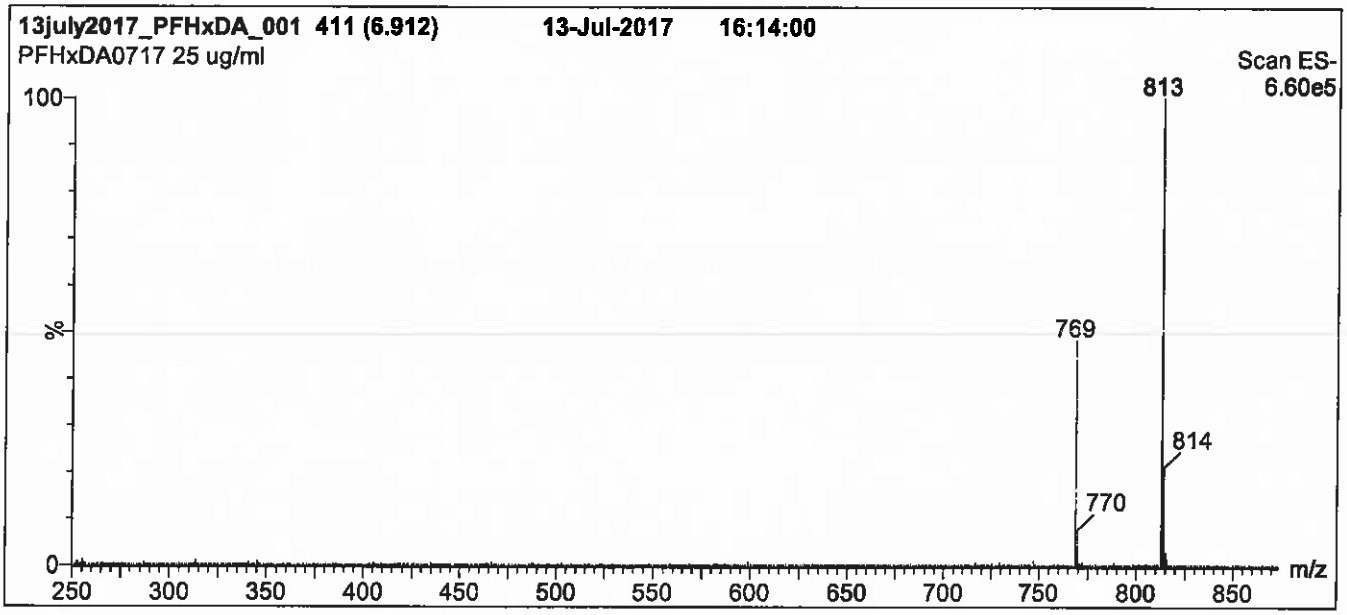
Figure 1: **PFHxDA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

LC: **Waters Acquity Ultra Performance LC**
MS: **Micromass Quattro *micro* API MS**

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 55% (80:20 MeOH:ACN) / 45% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min before returning to initial conditions in 0.5 min.
Time: 10 min

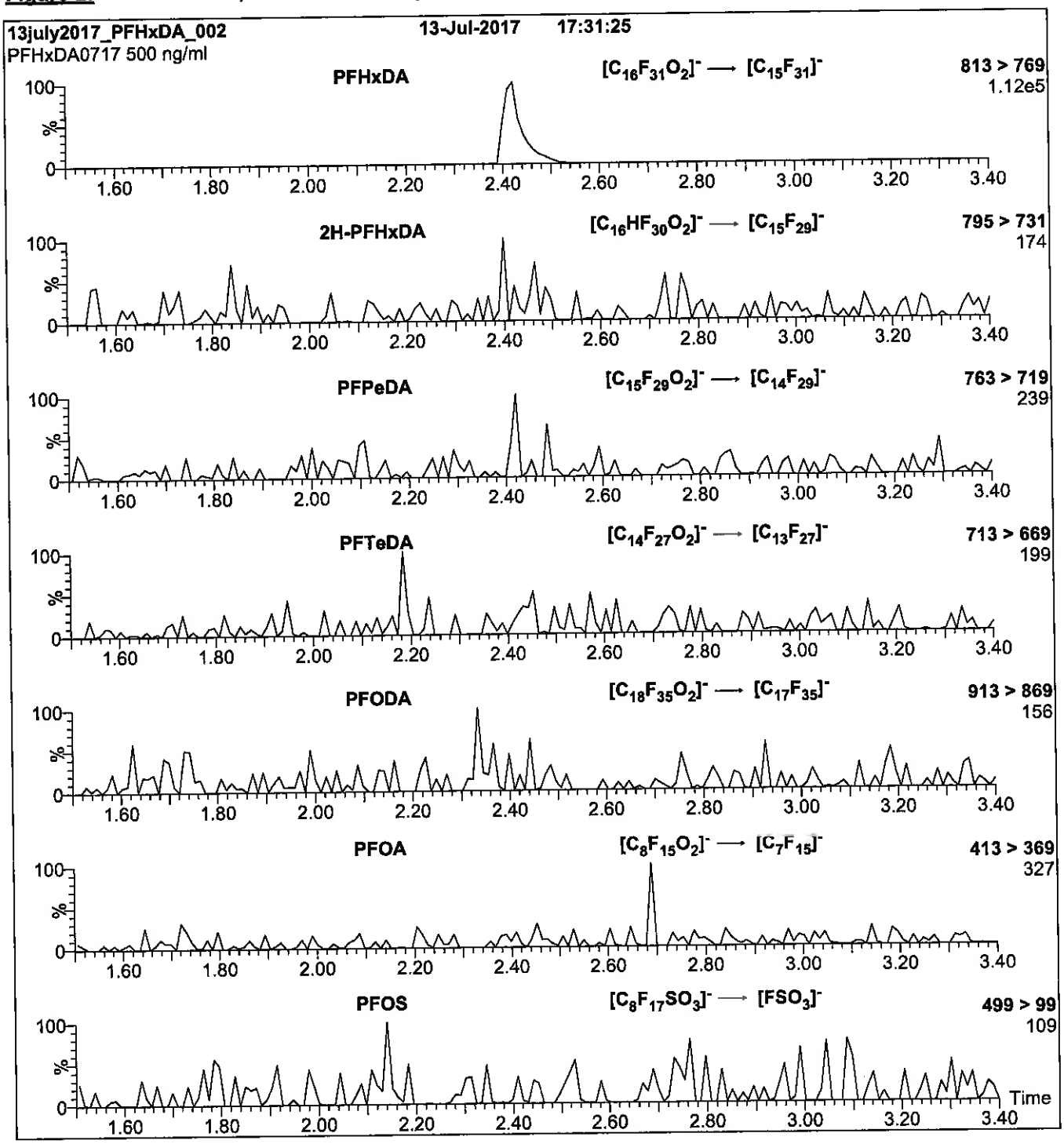
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (250 - 1250 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 25.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

Figure 2: **PFHxDA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml PFHxDA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.13e-3
Collision Energy (eV) = 15

Reagent

LCPFHxS-br_00006

P: 10/20/A SKV

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

br-PFHxSK

Potassium Perfluorohexanesulfonate Solution/Mixture of Linear and Branched Isomers

PRODUCT CODE:	br-PFHxSK
LOT NUMBER:	brPFHxSK0117
CONCENTRATION:	50.0 ± 2.5 µg/ml (total potassium salt)
	45.5 ± 2.3 µg/ml (total PFHxS anion)
SOLVENT(S):	Methanol
DATE PREPARED: (mm/dd/yyyy)	01/03/2017
LAST TESTED: (mm/dd/yyyy)	01/04/2017
EXPIRY DATE: (mm/dd/yyyy)	01/04/2022
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place

DESCRIPTION:

The chemical purity has been determined to be ≥98% perfluorohexanesulfonate linear and branched isomers. The full name, structure and percent composition for each of the identified isomeric components are given in Table A.

DOCUMENTATION/ DATA ATTACHED:

Table A: Isomeric Components and Percent Composition by ^{19}F-NMR
Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS Data (SIR)
Figure 3: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains ~ 0.5% of perfluoro-1-pentanesulfonate and ~ 0.2% of perfluoro-1-octanesulfonate.
- CAS#: 3871-99-6 (for linear isomer; potassium salt).

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Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

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HAZARDS:

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HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

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$$u_c(y(x_1, x_2, \ldots x_n)) = \sqrt{\sum_{i=1}^{n} u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of ±5% (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

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EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

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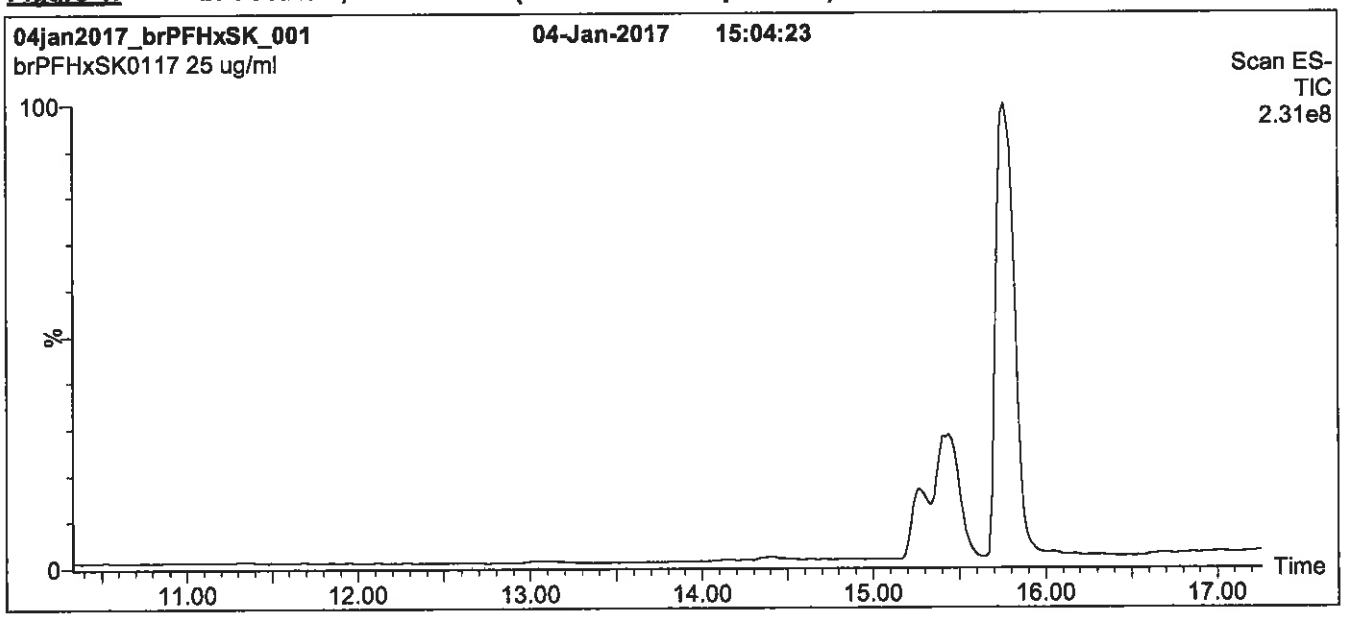
Table A: **br-PFHxSK; Isomeric Components and Percent Composition (by ^{19}F-NMR)***

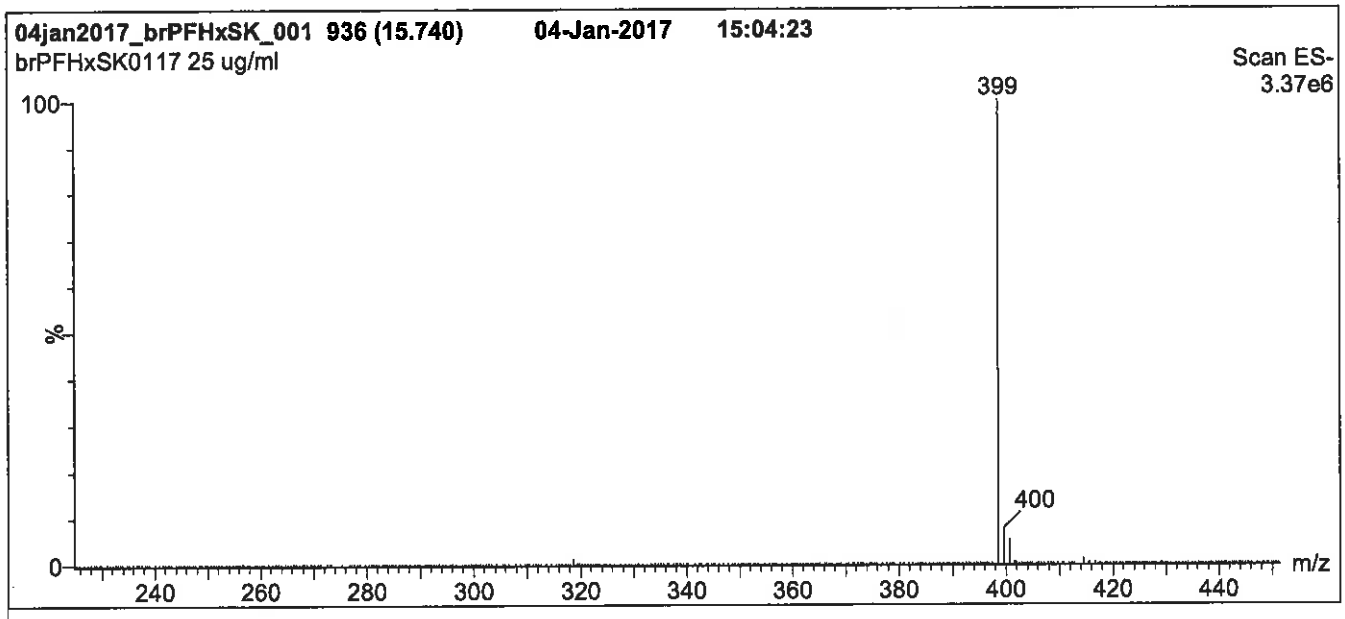
Isomer	Name	Structure	Percent Composition by ^{19}F-NMR
1	Potassium perfluoro-1-hexanesulfonate	$CF_3CF_2CF_2CF_2CF_2CF_2SO_3^-K^+$	81.1
2	Potassium 1-trifluoromethylperfluoropentanesulfonate**	$CF_3CF_2CF_2CF_2CF(CF_3)SO_3^-K^+$	2.9
3	Potassium 2-trifluoromethylperfluoropentanesulfonate	$CF_3CF_2CF_2CF(CF_3)CF_2SO_3^-K^+$	1.4
4	Potassium 3-trifluoromethylperfluoropentanesulfonate	$CF_3CF_2CF(CF_3)CF_2CF_2SO_3^-K^+$	5.0
5	Potassium 4-trifluoromethylperfluoropentanesulfonate	$CF_3CF(CF_3)CF_2CF_2CF_2SO_3^-K^+$	8.9
6	Potassium 3,3-di(trifluoromethyl)perfluorobutanesulfonate	$CF_3C(CF_3)_2CF_2CF_2SO_3^-K^+$	0.2
7	Other Unidentified Isomers		0.5

* Percent of total perfluorohexanesulfonate isomers only.
** Systematic Name: Potassium perfluorohexane-2-sulfonate.

Certified By: B.G. Chittim **Date:** 01/20/2017 (mm/dd/yyyy)

Figure 1: **br-PFHxSK; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 20% (80:20 MeOH:ACN) / 80% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 50% organic over 14 min. Ramp to 90% organic over 3 min and hold for 1.5 min before returning to initial conditions in 0.5 min.
Time: 20 min

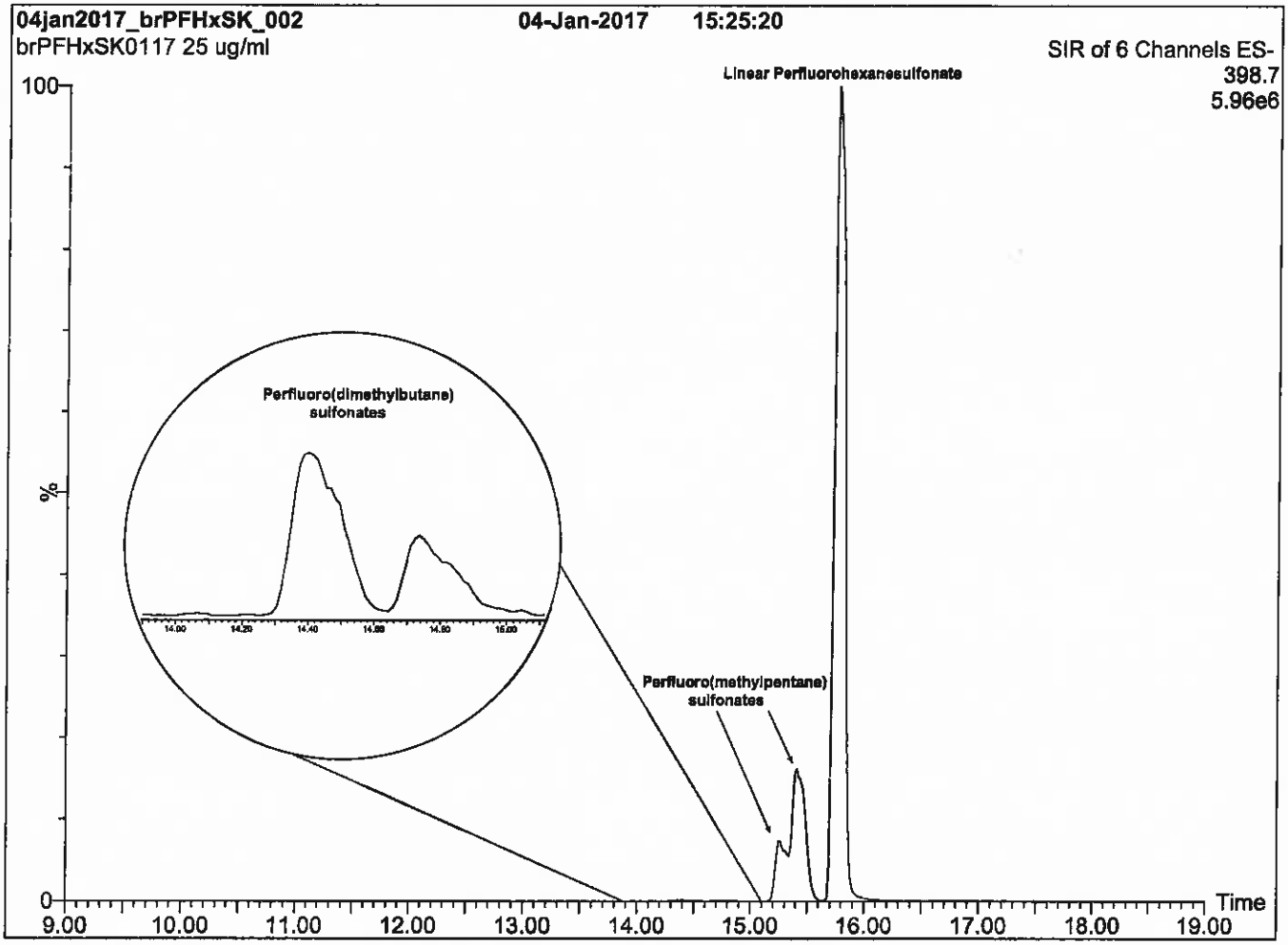
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 50.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

Figure 2: **br-PFHxSK; LC/MS Data (SIR)**



Conditions for Figure 2:

LC: **Waters Acquity Ultra Performance LC**
MS: **Micromass Quattro *micro* API MS**

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 20% (80:20 MeOH:ACN) / 80% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 50% organic over 14 min. Ramp to 90% organic over 3 min and hold for 1.5 min before returning to initial conditions in 0.5 min.
Time: 20 min

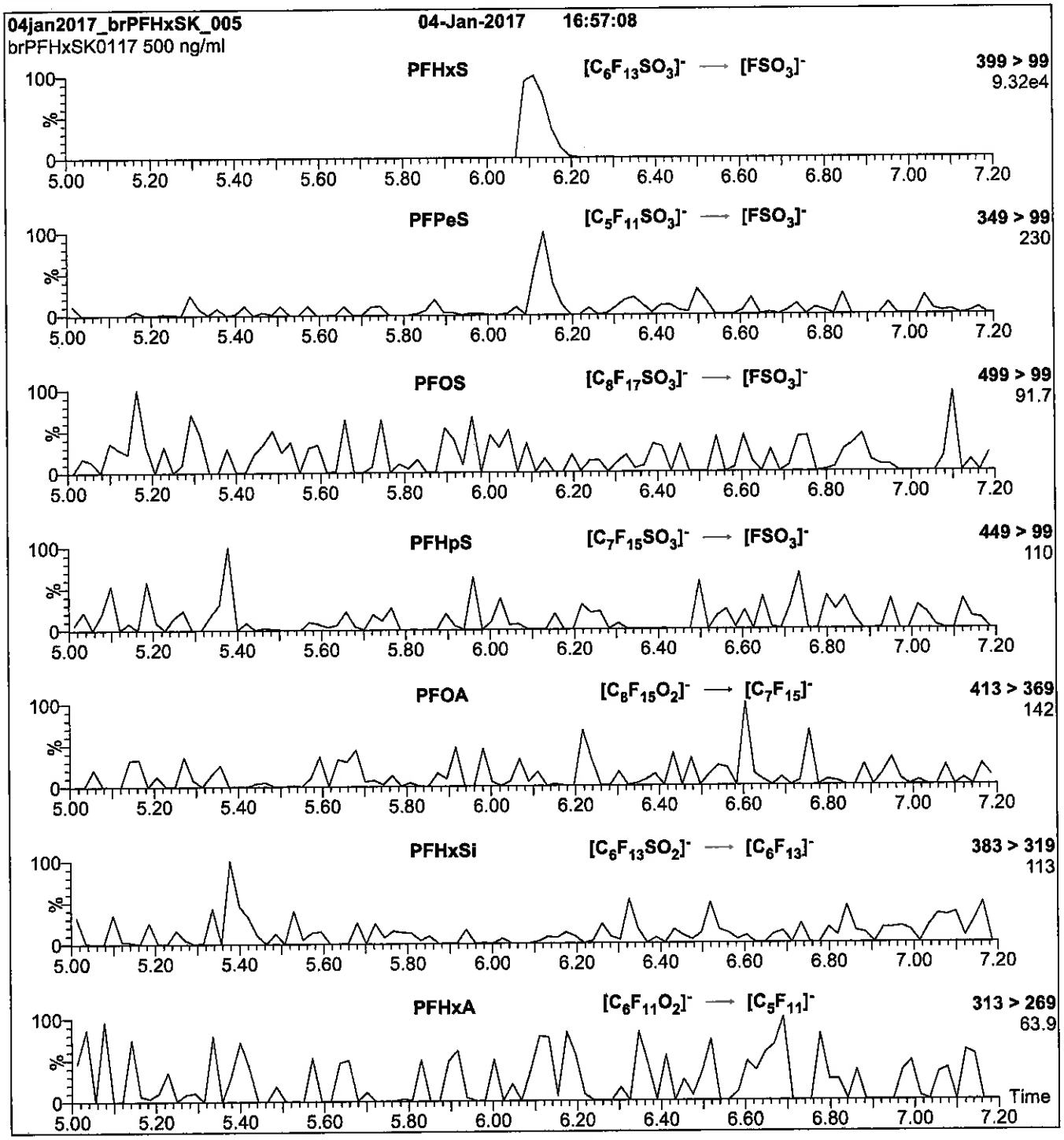
Flow: 300 µl/min

MS Parameters

Experiment: SIR (6 channels)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = variable (15-62)
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

Figure 3: **br-PFHxSK; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 3:

Injection: Direct loop injection
10 µl (500 ng/ml br-PFHxSK)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.35e-3
Collision Energy (eV) = 30

Reagent

LCPFNA_00010

r: 2/16/18 SKJ

E-705

WELLINGTON LABORATORIES

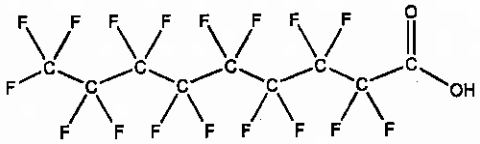
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFNA
COMPOUND: Perfluoro-n-nonanoic acid

LOT NUMBER: PFNA0717

STRUCTURE:

CAS #: 375-95-1



MOLECULAR FORMULA: $C_9HF_{17}O_2$
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 464.08
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 07/20/2017
EXPIRY DATE: (mm/dd/yyyy) 07/20/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.1% of perfluoro-n-octanoic acid (PFOA), < 0.1% of perfluoro-n-heptanoic acid (PFHpA), and < 0.1% of perfluoro-n-undecanoic acid (PFUdA).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 07/24/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

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CALA

ANAB ACCREDITED

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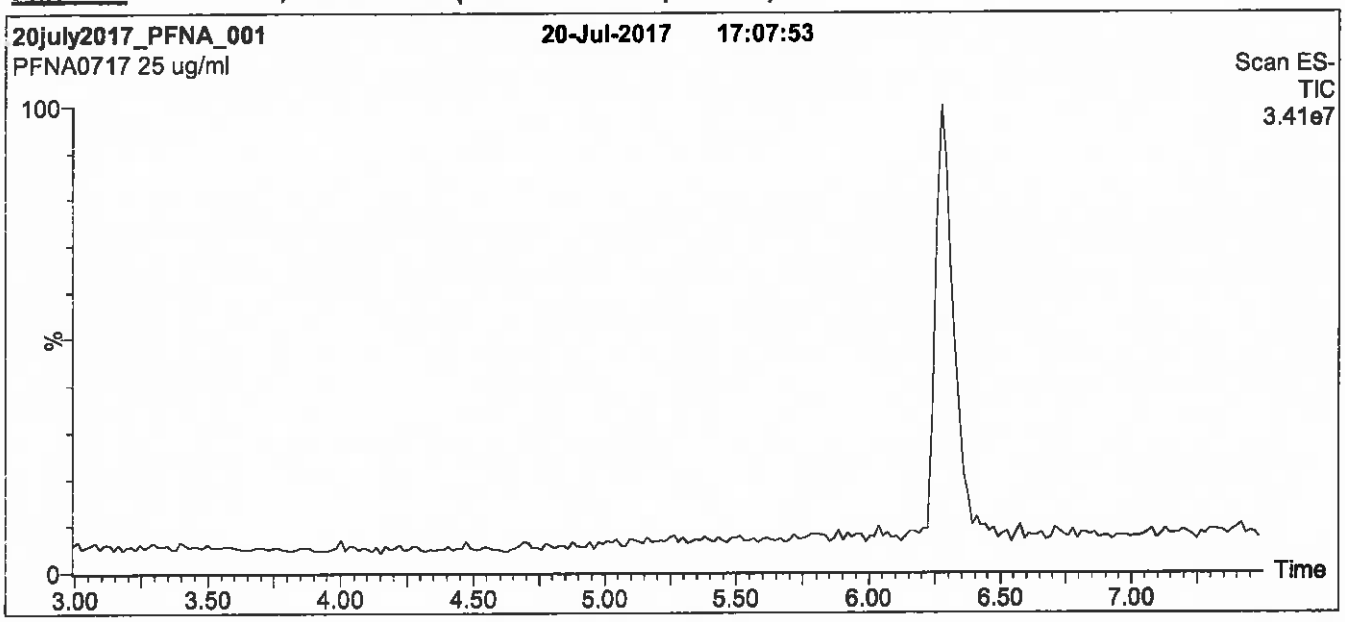
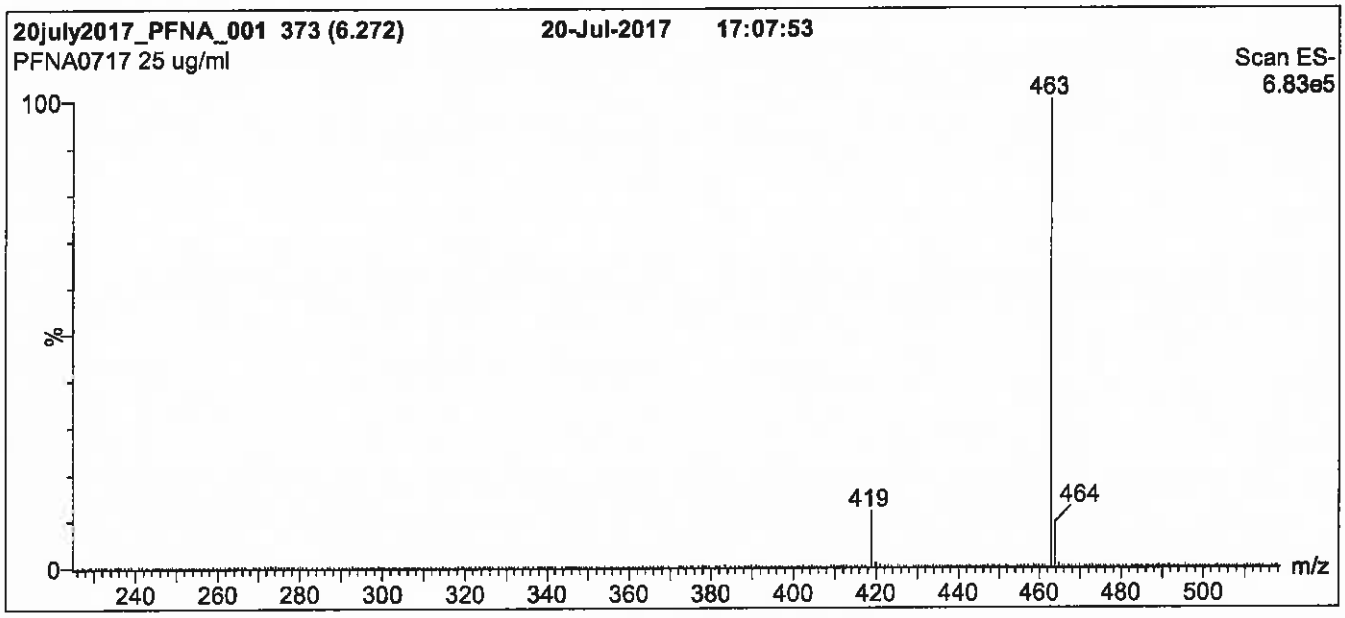
Figure 1: **PFNA; LC/MS Data (TIC and Mass Spectrum)**





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1.7 µm, 2.1 x 100 mm

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Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Hold for 1 min. Ramp to 90% organic over 7 min and hold for 1 min before returning to initial conditions in 0.5 min.
Time: 10 min

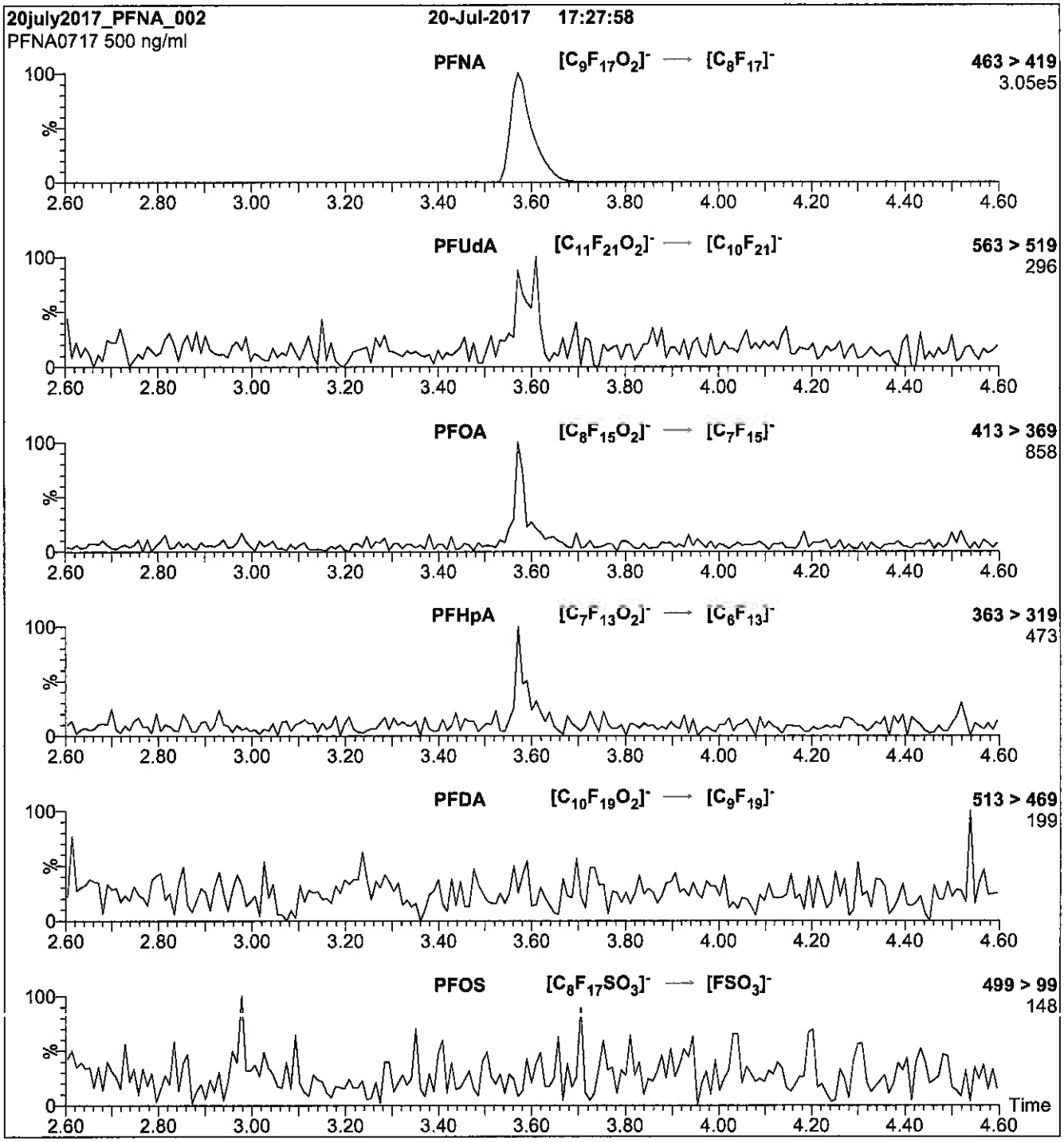
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: **PFNA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml PFNA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.50e-3
Collision Energy (eV) = 11

Reagent

LCPFNS_00003

1106804
ID: LCPFNS_00003
Exp: 09/27/22 Prpd: SKV
L-PFNS at 48.0ug/mL

r: 12/4/17 SKV

E-710

WELLINGTON LABORATORIES

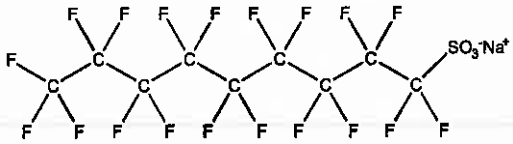
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: L-PFNS
COMPOUND: Sodium perfluoro-1-nonanesulfonate

LOT NUMBER: LPFNS0917

STRUCTURE:

CAS #: 98789-57-2



MOLECULAR FORMULA: $C_9F_{19}SO_3Na$
CONCENTRATION: 50.0 ± 2.5 µg/ml (Na salt)
48.0 ± 2.4 µg/ml (PFNS anion)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 09/27/2017
EXPIRY DATE: (mm/dd/yyyy) 09/27/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

MOLECULAR WEIGHT: 572.12
SOLVENT(S): Methanol

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 09/28/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

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HAZARDS:

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UNCERTAINTY:

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The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \ldots x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \ldots x_n)) = \sqrt{\sum_{i=1}^{n} u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of ±5% (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

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EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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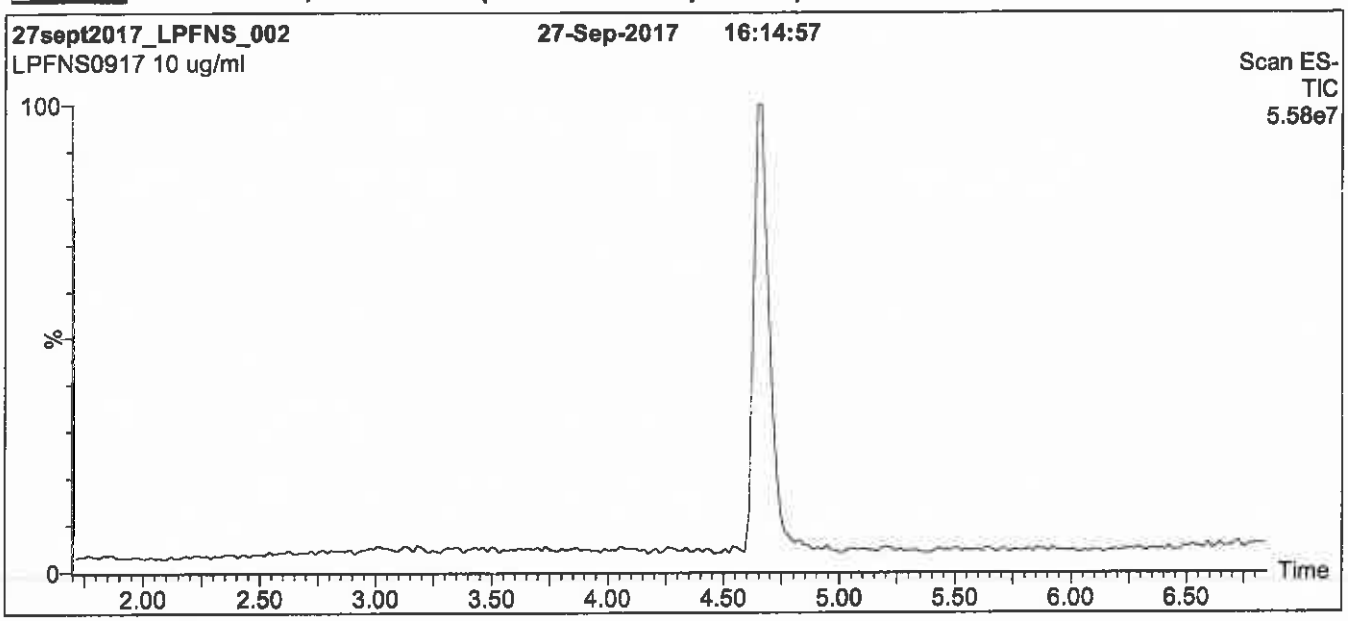
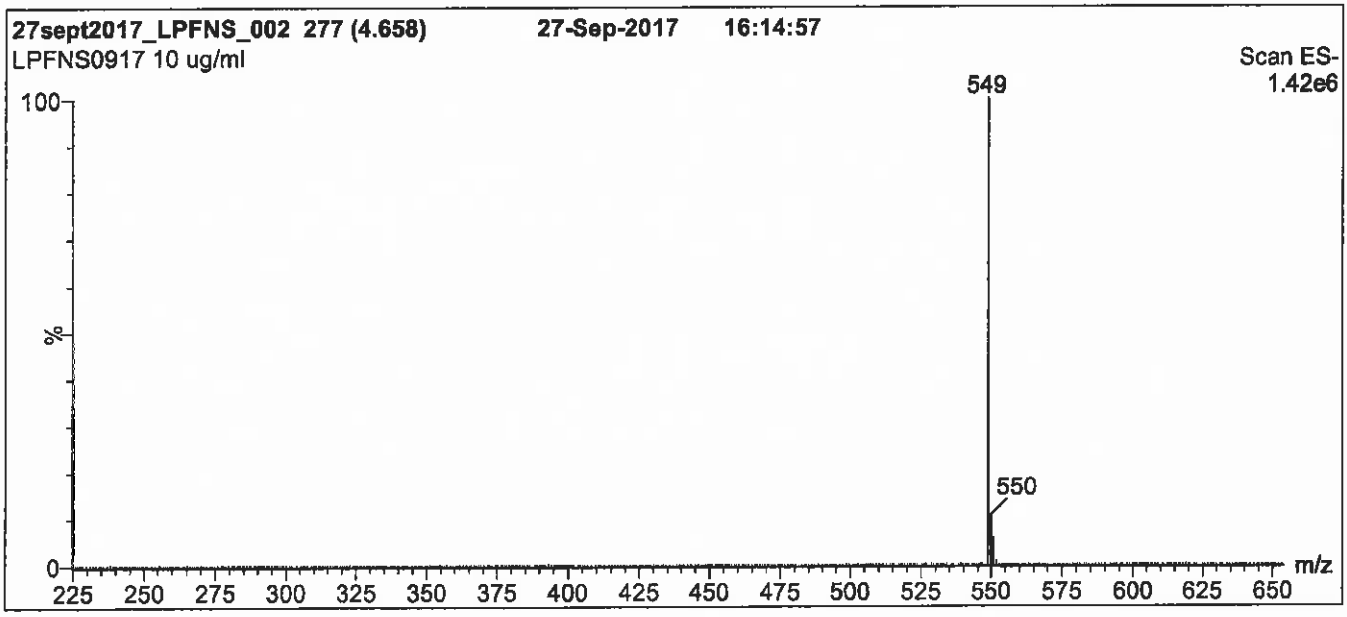
Figure 1: **L-PFNS; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

LC: **Waters Acquity Ultra Performance LC**
MS: **Micromass Quattro *micro* API MS**

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min
before returning to initial conditions in 0.5 min.
Time: 10 min

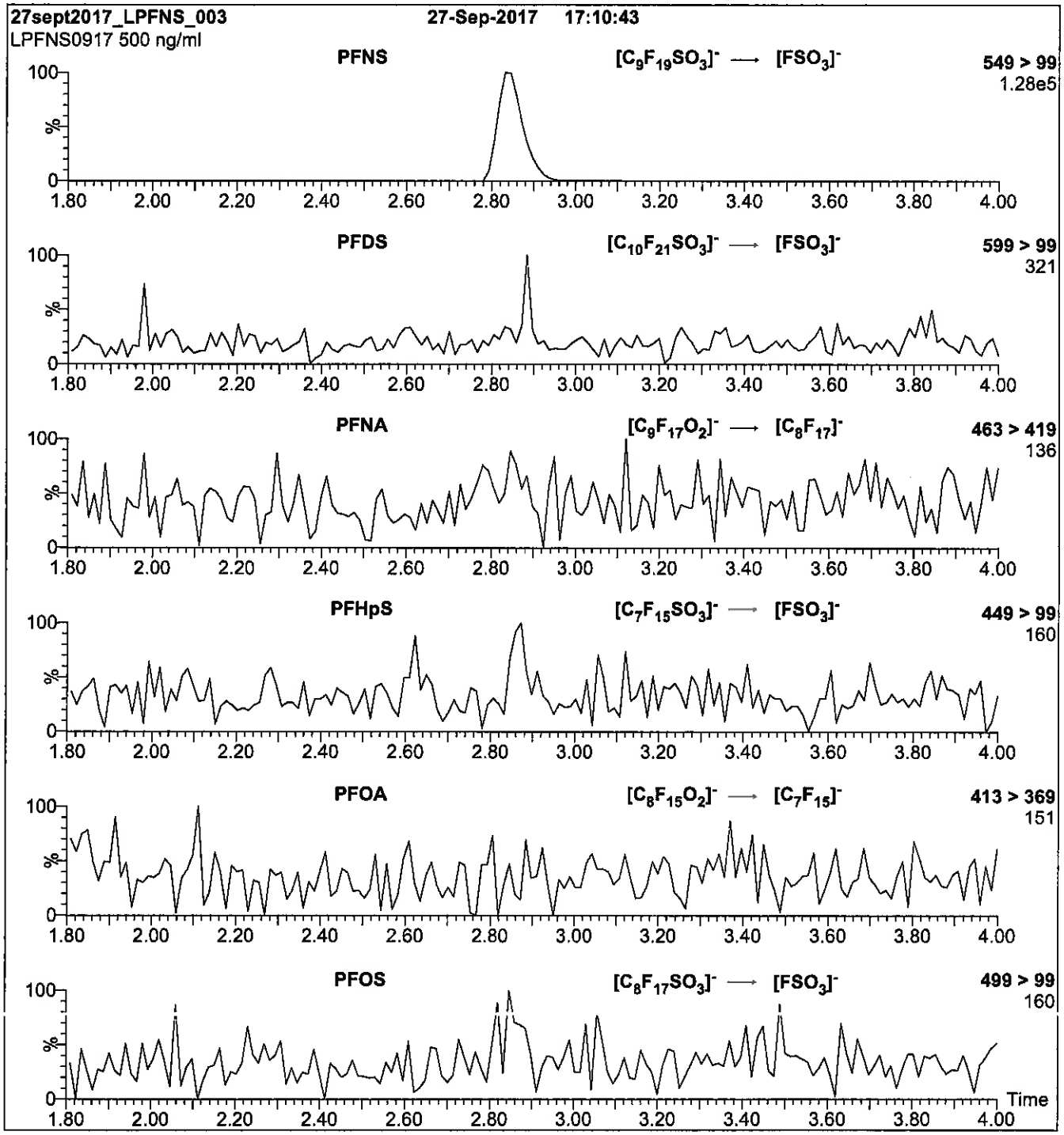
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 65.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: **L-PFNS; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml L-PFNS)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.50e-3
Collision Energy (eV) = 45

Reagent

LCPFOA_00011

P: 10/20/17 SKV

E-715

WELLINGTON LABORATORIES

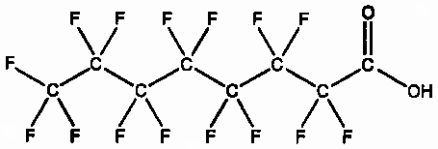
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFOA
COMPOUND: Perfluoro-n-octanoic acid

LOT NUMBER: PFOA0917

STRUCTURE:

CAS #: 335-67-1



MOLECULAR FORMULA: $C_8HF_{15}O_2$
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 414.07
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 09/27/2017
EXPIRY DATE: (mm/dd/yyyy) 09/27/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 09/28/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

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HOMOGENEITY:

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EXPIRY DATE / PERIOD OF VALIDITY:

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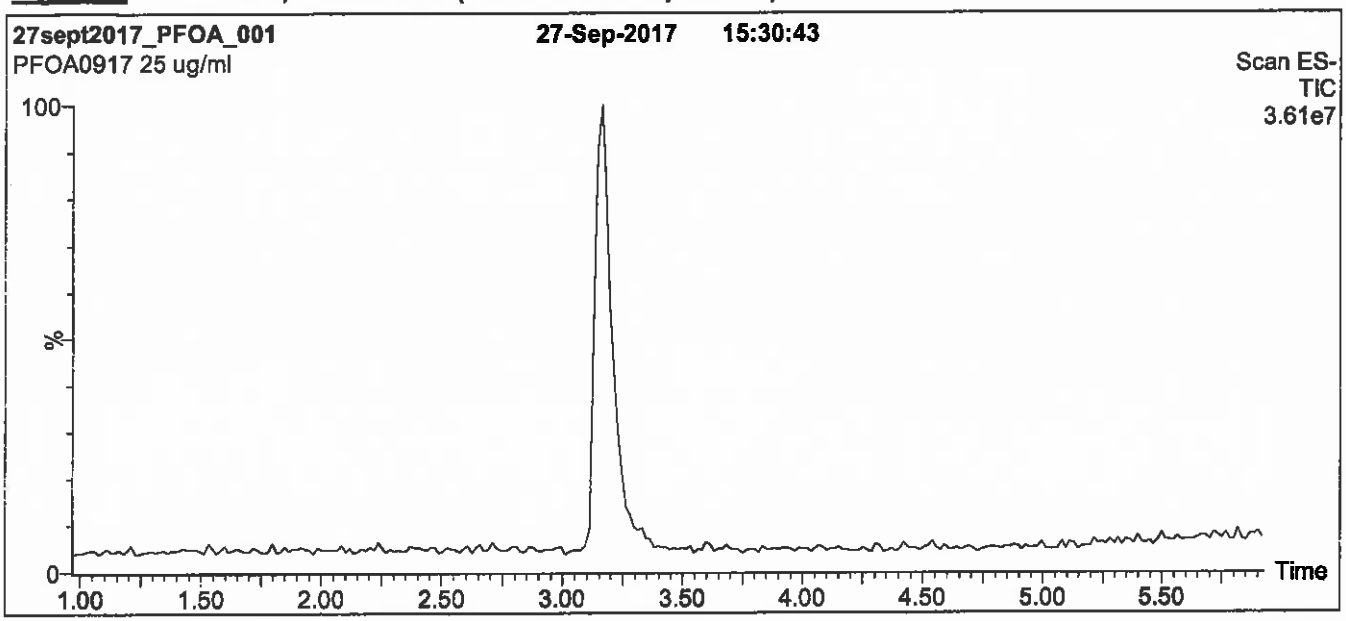
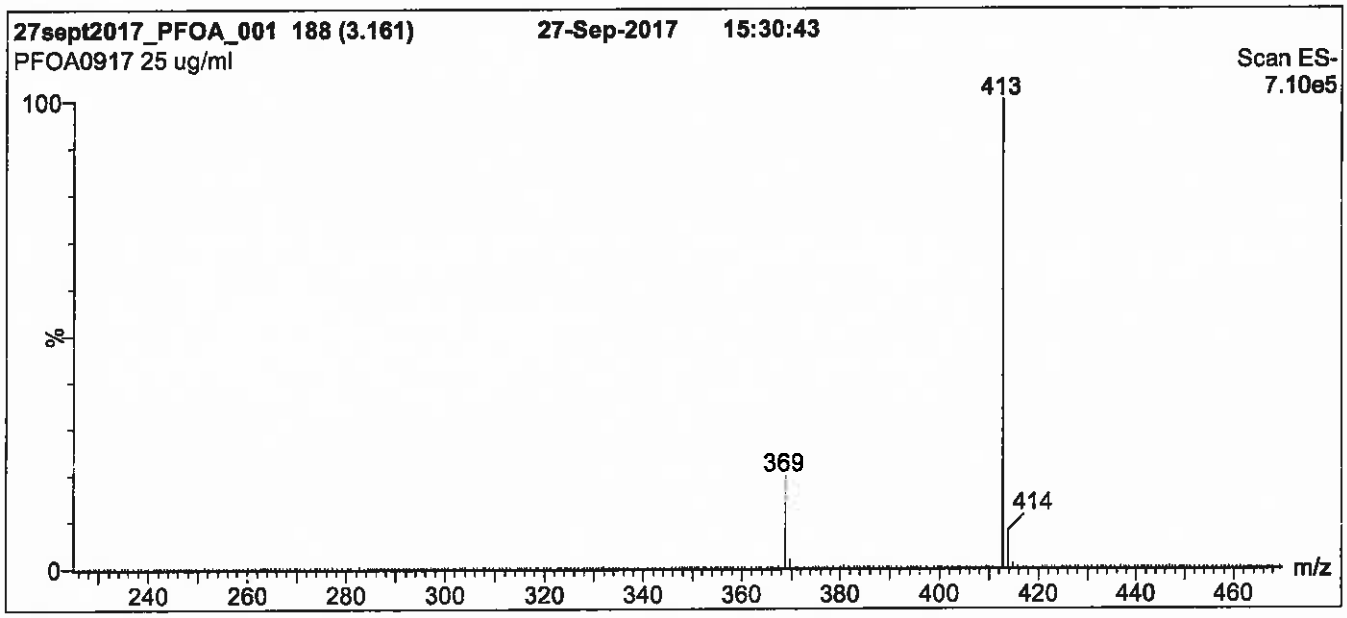
Figure 1: **PFOA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

LC: **Waters Acquity Ultra Performance LC**
MS: **Micromass Quattro *micro* API MS**

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for
2 min before returning to initial conditions in 0.5 min.
Time: 10 min

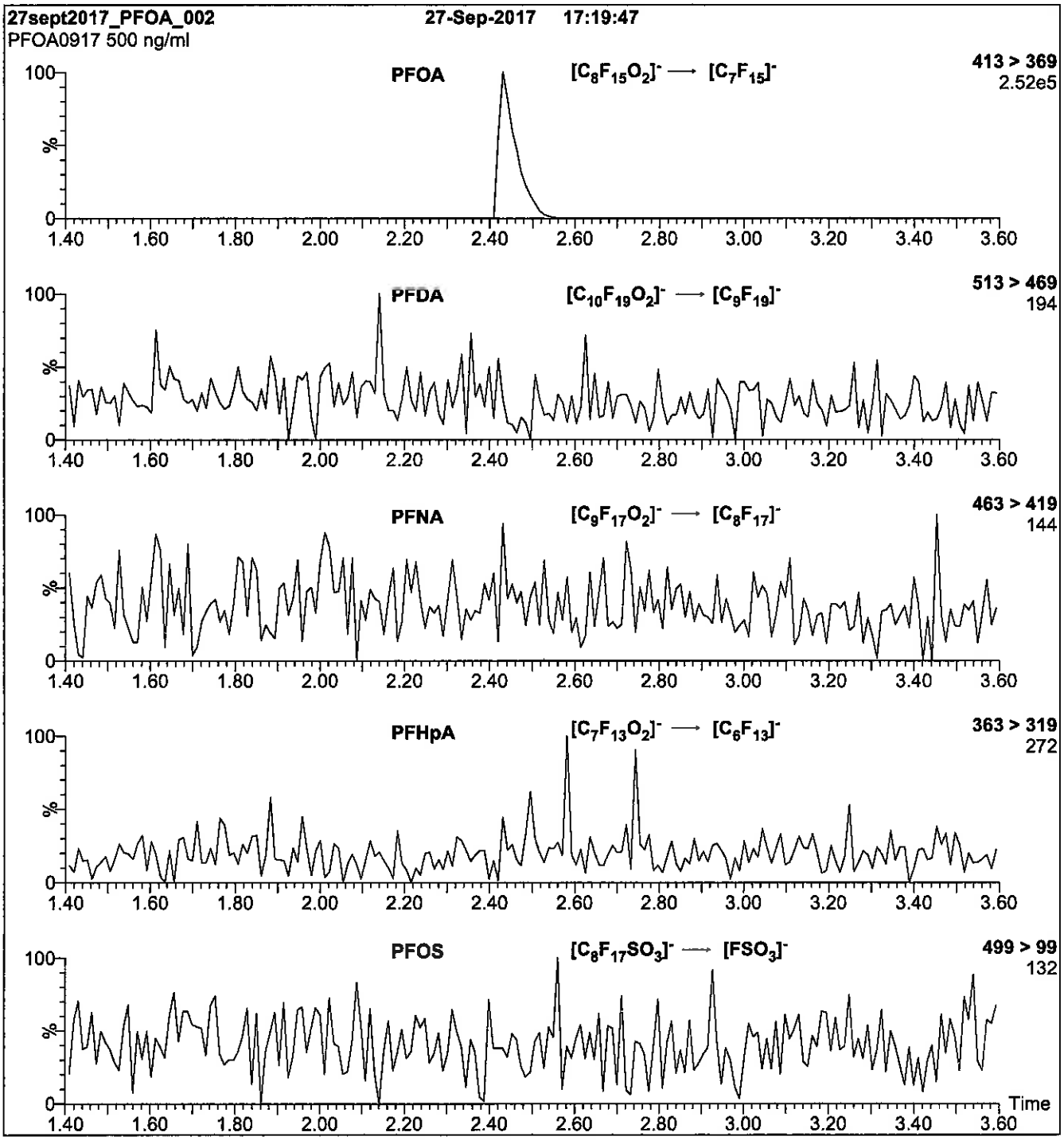
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

Figure 2: **PFOA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection:	Direct loop injection 10 µl (500 ng/ml PFOA)	**MS Parameters**
Mobile phase:	Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O (both with 10 mM NH_4OAc buffer)	Collision Gas (mbar) = 3.46e-3 Collision Energy (eV) = 11
Flow:	300 µl/min	

Reagent

LCPFODA_00010

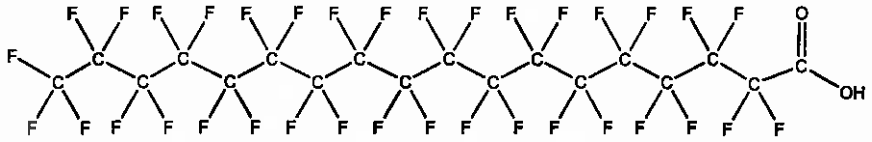
r. 9/2/17 SW

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFODA
LOT NUMBER: PFODA0717
COMPOUND: Perfluoro-n-octadecanoic acid

STRUCTURE:
CAS #: 16517-11-6



MOLECULAR FORMULA: $C_{18}HF_{35}O_2$
MOLECULAR WEIGHT: 914.14
CONCENTRATION: 50 ± 2.5 µg/ml
SOLVENT(S): Methanol, Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 07/13/2017
EXPIRY DATE: (mm/dd/yyyy) 07/13/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 07/14/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

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CALA

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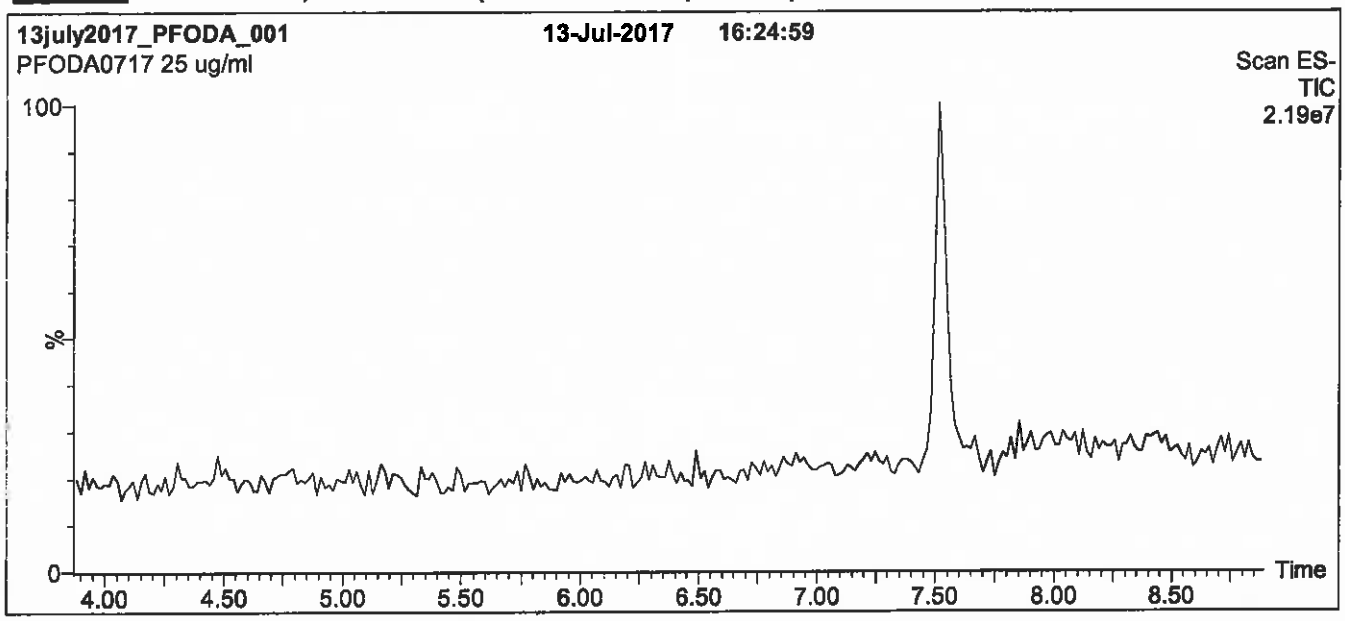
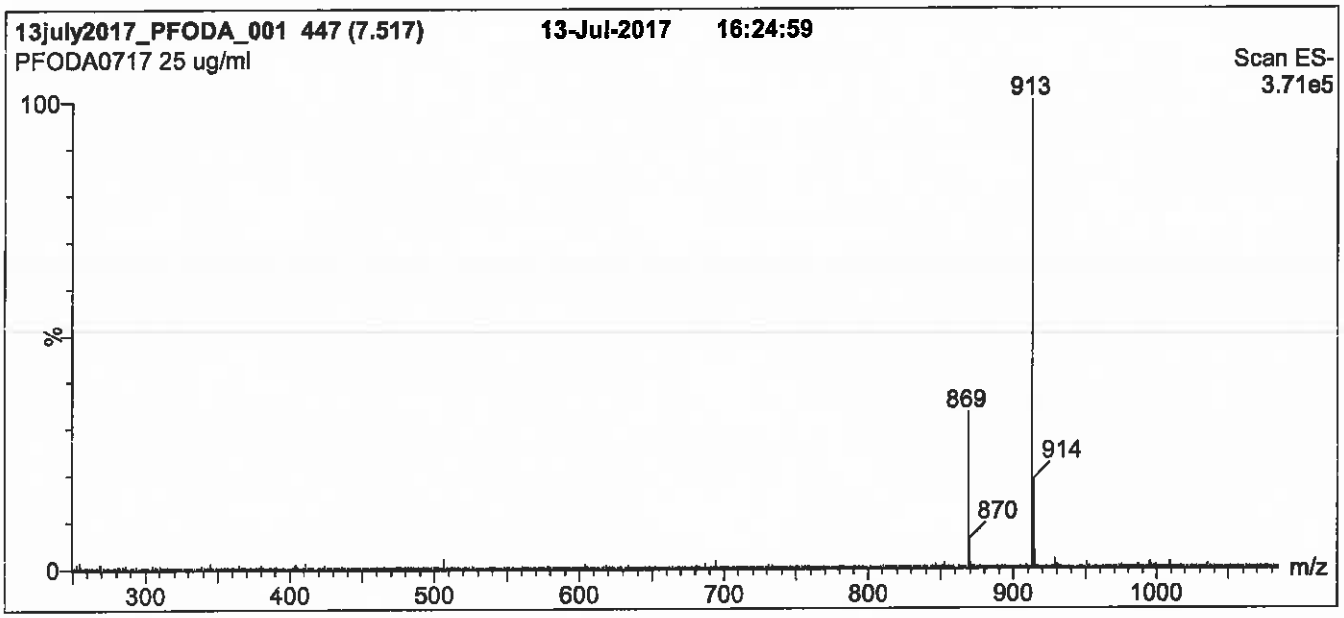
Figure 1: **PFODA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 55% (80:20 MeOH:ACN) / 45% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for
2 min before returning to initial conditions in 0.5 min.
Time: 10 min

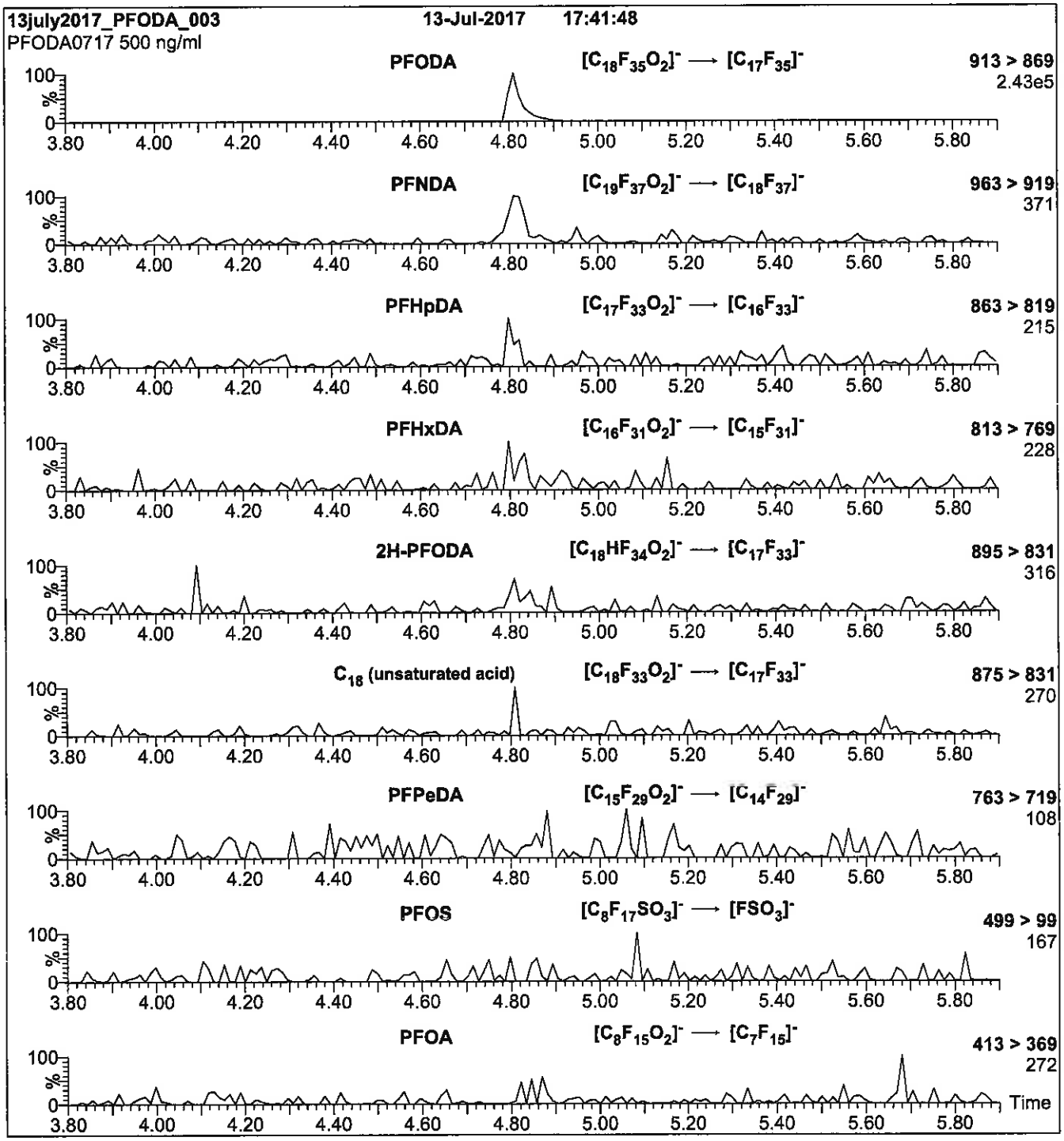
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (250 - 1250 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 25.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

Figure 2: **PFODA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml PFODA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.31e-3
Collision Energy (eV) = 15

Reagent

LCPFOS-br_00007

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

br-PFOSK

Potassium Perfluorooctanesulfonate Solution/Mixture of Linear and Branched Isomers

PRODUCT CODE:	br-PFOSK
LOT NUMBER:	brPFOSK0117
CONCENTRATION:	50 ± 2.5 µg/ml (total potassium salt)
	46.4 ± 2.3 µg/ml (total PFOS anion)
SOLVENT(S):	Methanol
DATE PREPARED: (mm/dd/yyyy)	01/09/2017
LAST TESTED: (mm/dd/yyyy)	01/12/2017
EXPIRY DATE: (mm/dd/yyyy)	01/12/2022
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place

DESCRIPTION:

The chemical purity has been determined to be ≥98% perfluorooctanesulfonate linear and branched isomers. The full name, structure and percent composition for each of the isomeric components are given in Table A.

DOCUMENTATION/ DATA ATTACHED:

Table A: Isomeric Components and Percent Composition by ^{19}F-NMR
Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS Data (SIR)
Figure 3: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- A 5-point calibration curve was generated using linear PFOS (potassium salt) and mass-labelled PFOS as an internal standard to enable quantitation of br-PFOSK using isotopic dilution.
- CAS#: 2795-39-3 (for linear isomer; potassium salt).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

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HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

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where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of ±5% (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

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CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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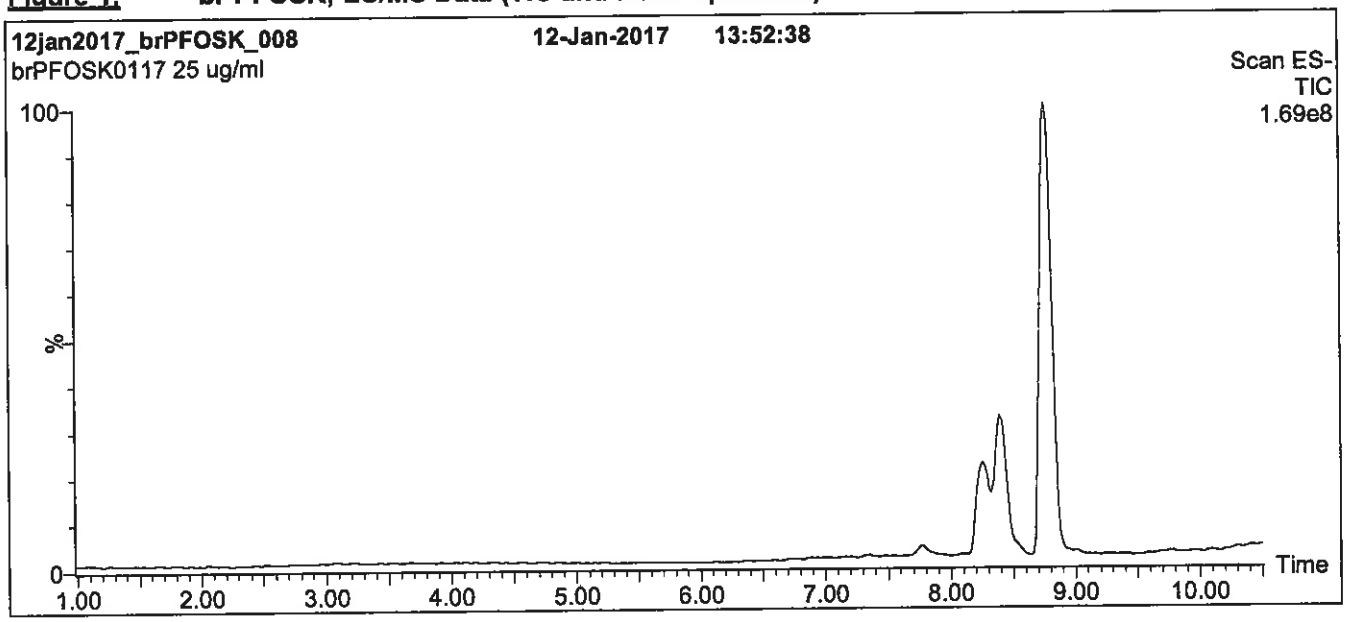
Table A: **br-PFOSK; Isomeric Components and Percent Composition (by ^{19}F-NMR)***

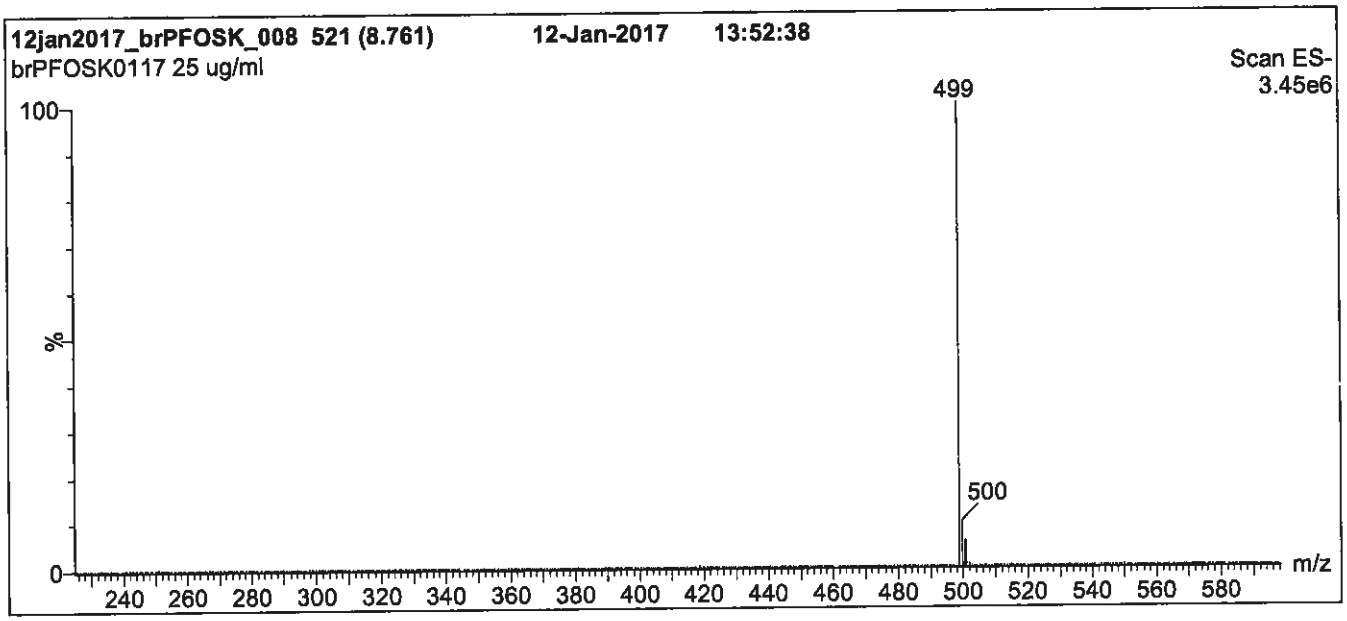
Isomer	Name	Structure	Percent Composition by ^{19}F-NMR
1	Potassium perfluoro-1-octanesulfonate	$CF_3CF_2CF_2CF_2CF_2CF_2CF_2CF_2SO_3^-K^+$	78.8
2	Potassium 1-trifluoromethylperfluoroheptanesulfonate**	$CF_3CF_2CF_2CF_2CF_2CF_2CF(CF_3)SO_3^-K^+$	1.2
3	Potassium 2-trifluoromethylperfluoroheptanesulfonate	$CF_3CF_2CF_2CF_2CF_2CF(CF_3)CF_2SO_3^-K^+$	0.6
4	Potassium 3-trifluoromethylperfluoroheptanesulfonate	$CF_3CF_2CF_2CF_2CF(CF_3)CF_2CF_2SO_3^-K^+$	1.9
5	Potassium 4-trifluoromethylperfluoroheptanesulfonate	$CF_3CF_2CF_2CF(CF_3)CF_2CF_2CF_2SO_3^-K^+$	2.2
6	Potassium 5-trifluoromethylperfluoroheptanesulfonate	$CF_3CF_2CF(CF_3)CF_2CF_2CF_2CF_2SO_3^-K^+$	4.5
7	Potassium 6-trifluoromethylperfluoroheptanesulfonate	$CF_3CF(CF_3)CF_2CF_2CF_2CF_2CF_2SO_3^-K^+$	10.0
8	Potassium 5,5-di(trifluoromethyl)perfluorohexanesulfonate	$CF_3C(CF_3)_2CF_2CF_2CF_2CF_2SO_3^-K^+$	0.2
9	Potassium 4,4-di(trifluoromethyl)perfluorohexanesulfonate	$CF_3CF_2C(CF_3)_2CF_2CF_2CF_2SO_3^-K^+$	0.03
10	Potassium 4,5-di(trifluoromethyl)perfluorohexanesulfonate	$CF_3CF(CF_3)CF(CF_3)CF_2CF_2CF_2SO_3^-K^+$	0.4
11	Potassium 3,5-di(trifluoromethyl)perfluorohexanesulfonate	$CF_3CF(CF_3)CF_2CF(CF_3)CF_2CF_2SO_3^-K^+$	0.07

* Percent of total perfluorooctanesulfonate isomers only. Isomers are labelled in Figure 2.
** Systematic Name: Potassium perfluorooctane-2-sulfonate.

Certified By: B.G. Chittim **Date:** 01/20/2017 (mm/dd/yyyy)

Figure 1: **br-PFOSK; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

LC: **Waters Acquity Ultra Performance LC**
MS: **Micromass Quattro *micro* API MS**

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 45% (80:20 MeOH:ACN) / 55% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 12 min and hold for 2 min.
Return to initial conditions over 0.5 min.
Time: 16 min

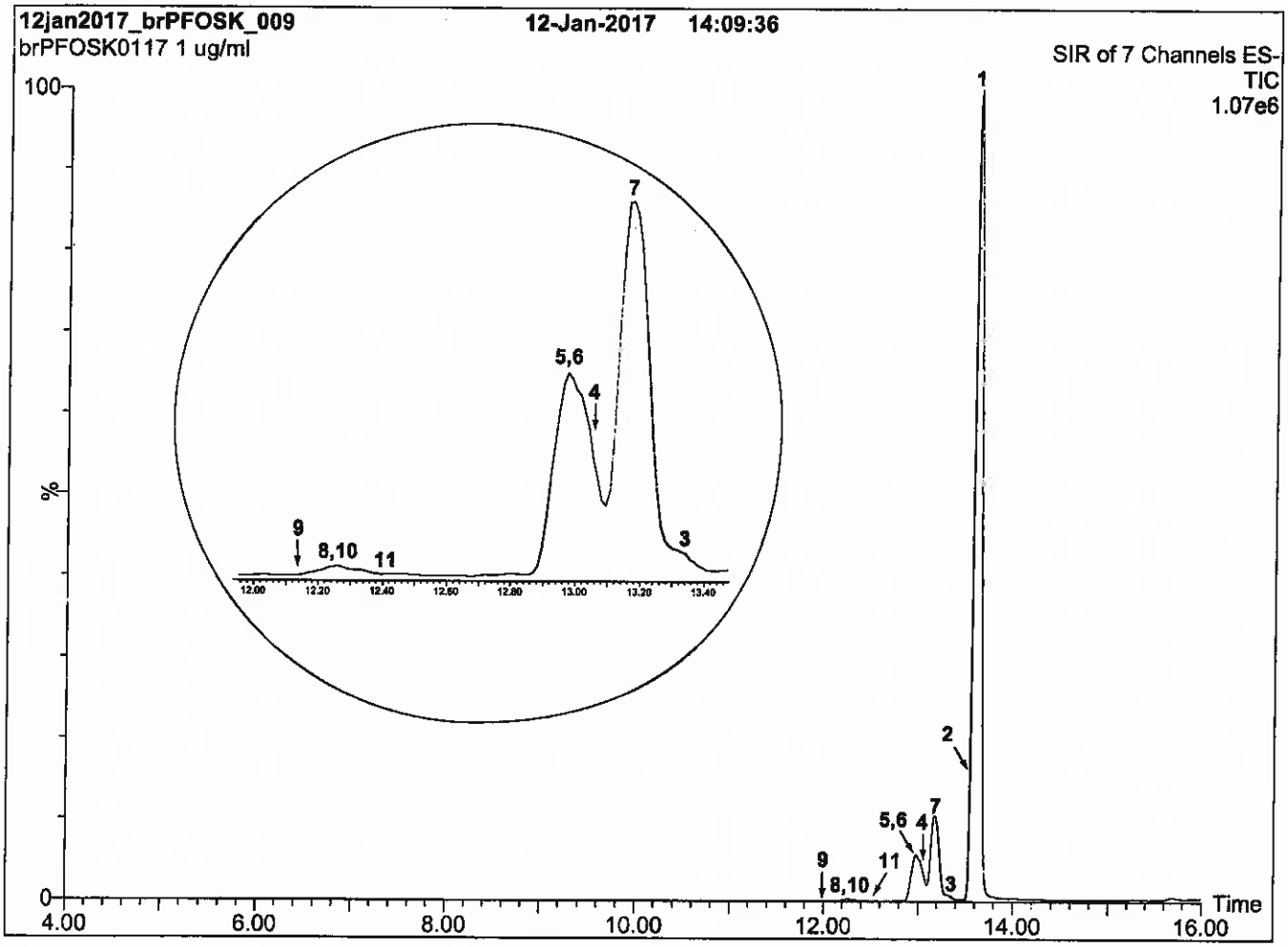
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 60.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: **br-PFOSK; LC/MS Data (SIR)**



Conditions for Figure 2:

LC: **Waters Acquity Ultra Performance LC**
MS: **Micromass Quattro *micro* API MS**

Chromatographic Conditions:

Column: Acquity UPLC BEH Shield RP_{18} (1.7 µm, 2.1 x 100 mm)

Injection: 1.0 µg/ml of br-PFOSK

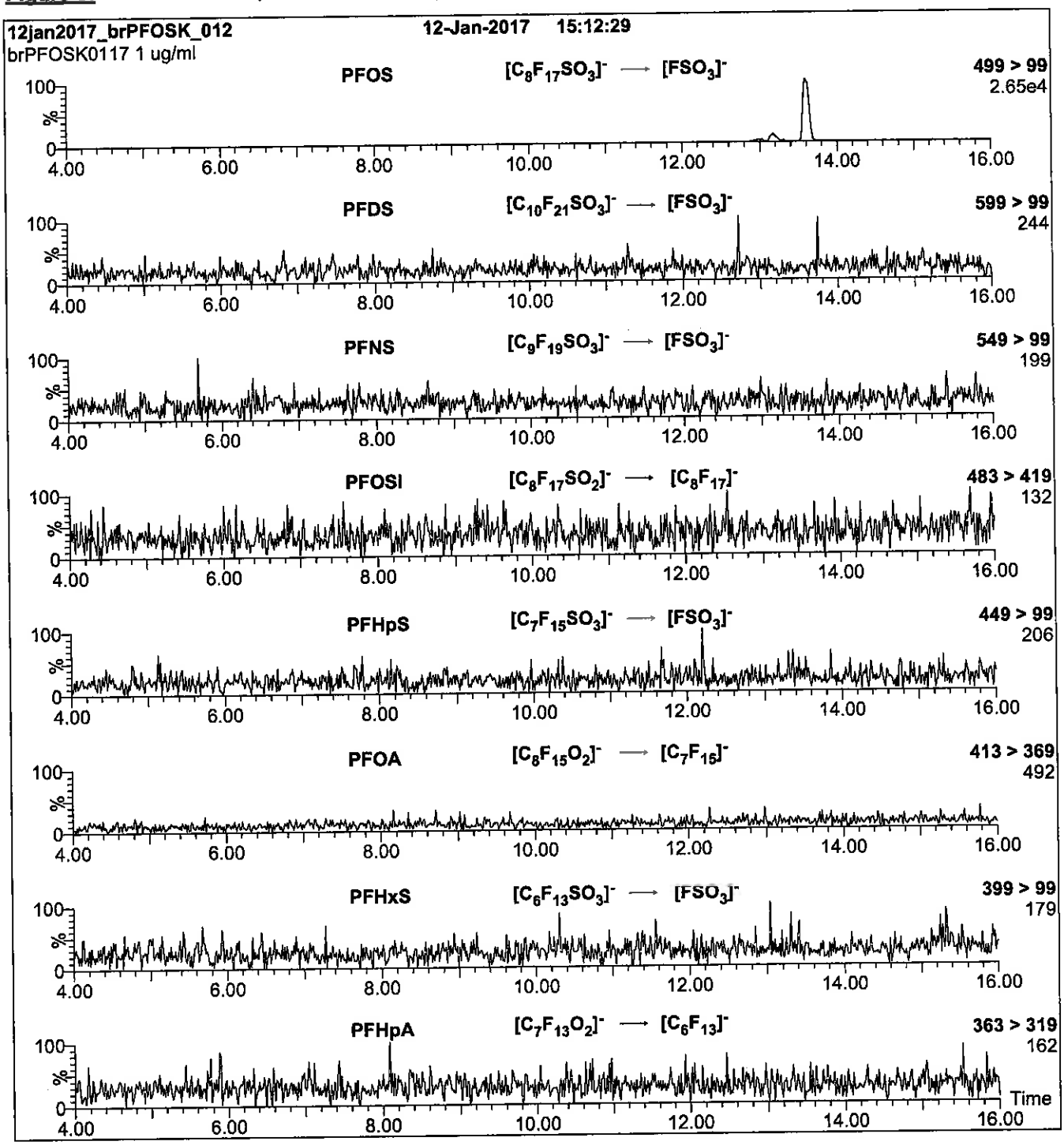
Mobile Phase: Gradient
45% (80:20 MeOH:ACN) / 55% H_2O (both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 15 min and hold for 3 min.
Return to initial conditions over 1 min.
Time: 20 min

Flow: 300 µl/min

MS Conditions:

SIR (ES^-)
Source = 110 °C
Desolvation = 325 °C
Cone Voltage = 60V

Figure 3: **br-PFOSK; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 3:

Injection: On-column

Mobile phase: Same as Figure 2

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.31e-3
Collision Energy (eV) = 11-50 (variable)

Reagent

LCPFOSA_00013

WELLINGTON LABORATORIES

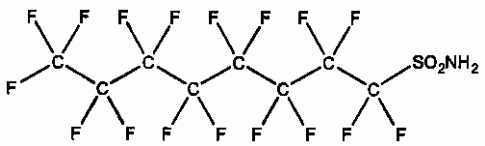
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: FOSA-I
COMPOUND: Perfluoro-1-octanesulfonamide

LOT NUMBER: FOSA0817I

STRUCTURE:

CAS #: 754-91-6



MOLECULAR FORMULA: $C_8H_2F_{17}NO_2S$
CONCENTRATION: 50 ± 2.5 µg/ml
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 09/01/2017
EXPIRY DATE: (mm/dd/yyyy) 09/01/2022
RECOMMENDED STORAGE: Refrigerate ampoule

MOLECULAR WEIGHT: 499.14
SOLVENT(S): Isopropanol

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 09/14/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
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CALA

ANAB ACCREDITED

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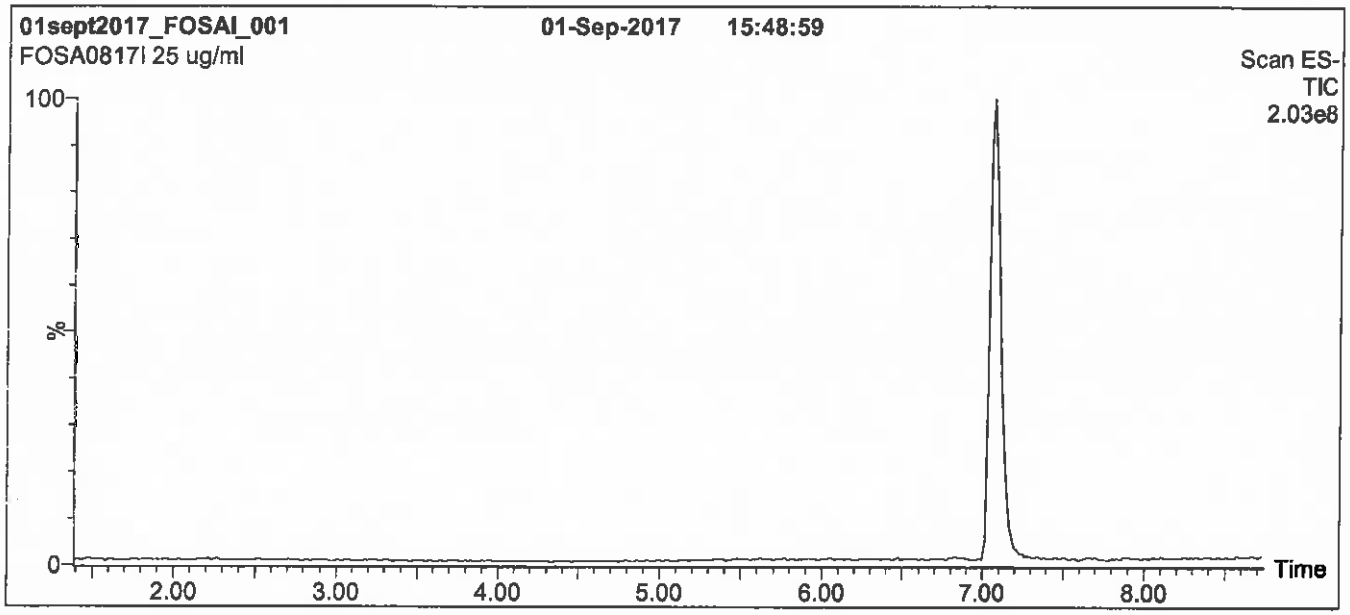
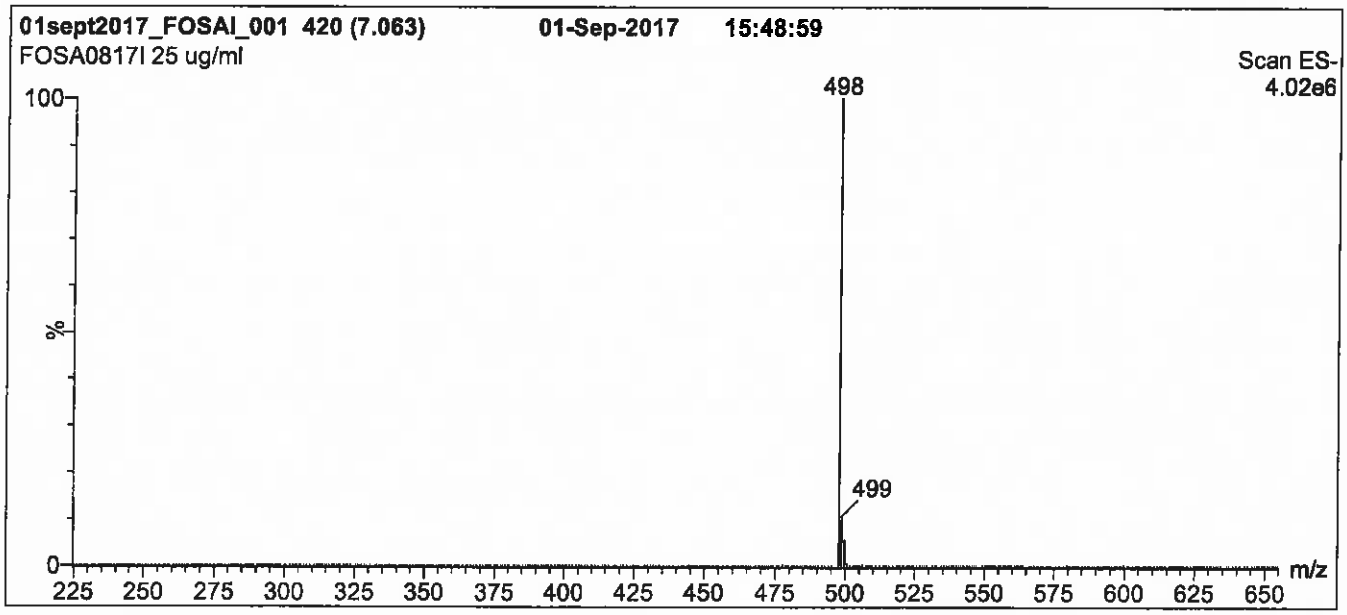
Figure 1: **FOSA-I; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

LC: **Waters Acquity Ultra Performance LC**
MS: **Micromass Quattro *micro* API MS**

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 8 min and hold for 1 min
before returning to initial conditions in 0.5 min.
Time: 10 min

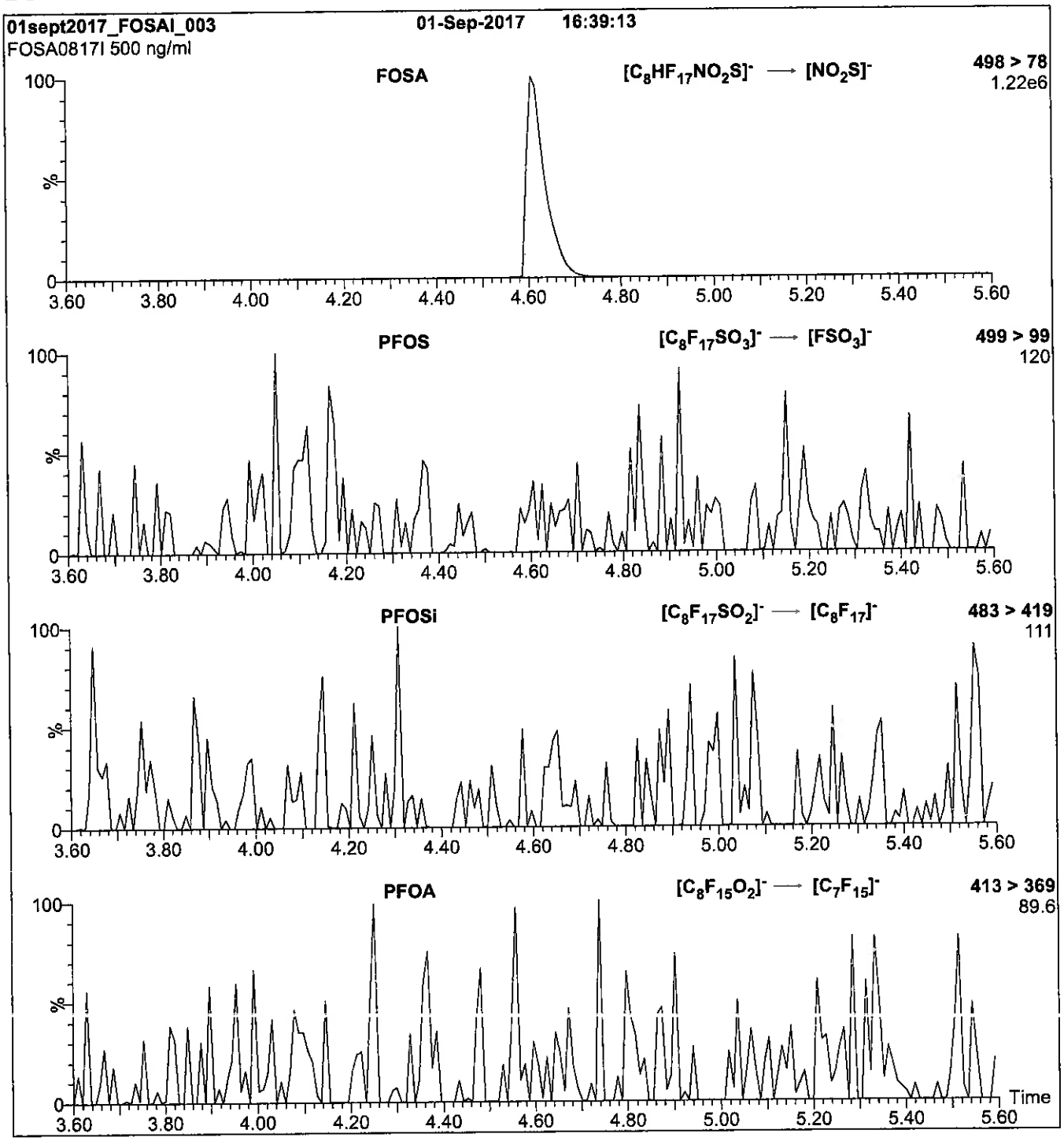
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.50
Cone Voltage (V) = 40.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: **FOSA-I; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection:	Direct loop injection 10 µl (500 ng/ml FOSA-I)
Mobile phase:	Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O (both with 10 mM NH_4OAc buffer)
Flow:	300 µl/min

MS Parameters

Collision Gas (mbar) = 3.20e-3
Collision Energy (eV) = 30

Reagent

LCPFPeA_00008

r: 10/20/17 SW

WELLINGTON LABORATORIES

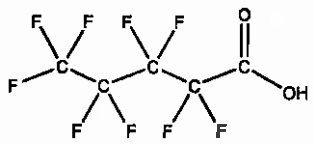
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFPeA
COMPOUND: Perfluoro-n-pentanoic acid

LOT NUMBER: PFPeA0617

STRUCTURE:

CAS #: 2706-90-3



MOLECULAR FORMULA: $C_5HF_9O_2$
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 264.05
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 06/14/2017
EXPIRY DATE: (mm/dd/yyyy) 06/14/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.3% of Perfluoro-n-heptanoic acid (PFHpA) and ~ 0.2% of $C_5H_2F_8O_2$ (hydrido - derivative) as measured by ^{19}F NMR.

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Certified By: _____ **Date:** 06/16/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

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CALA

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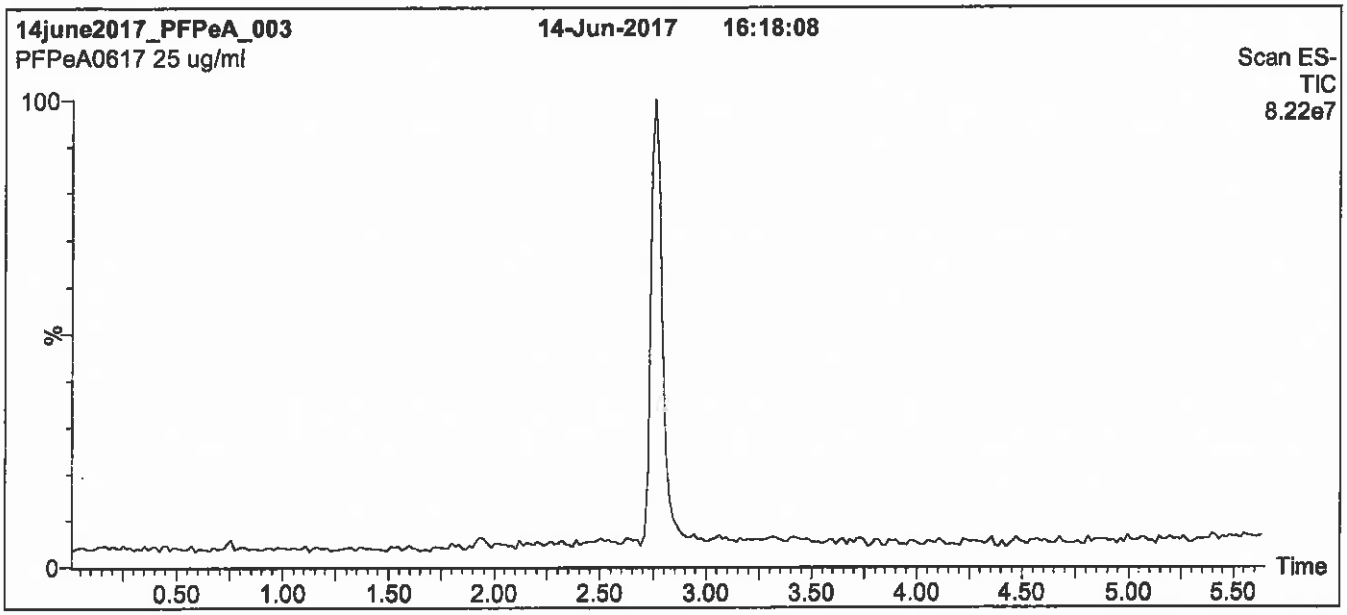
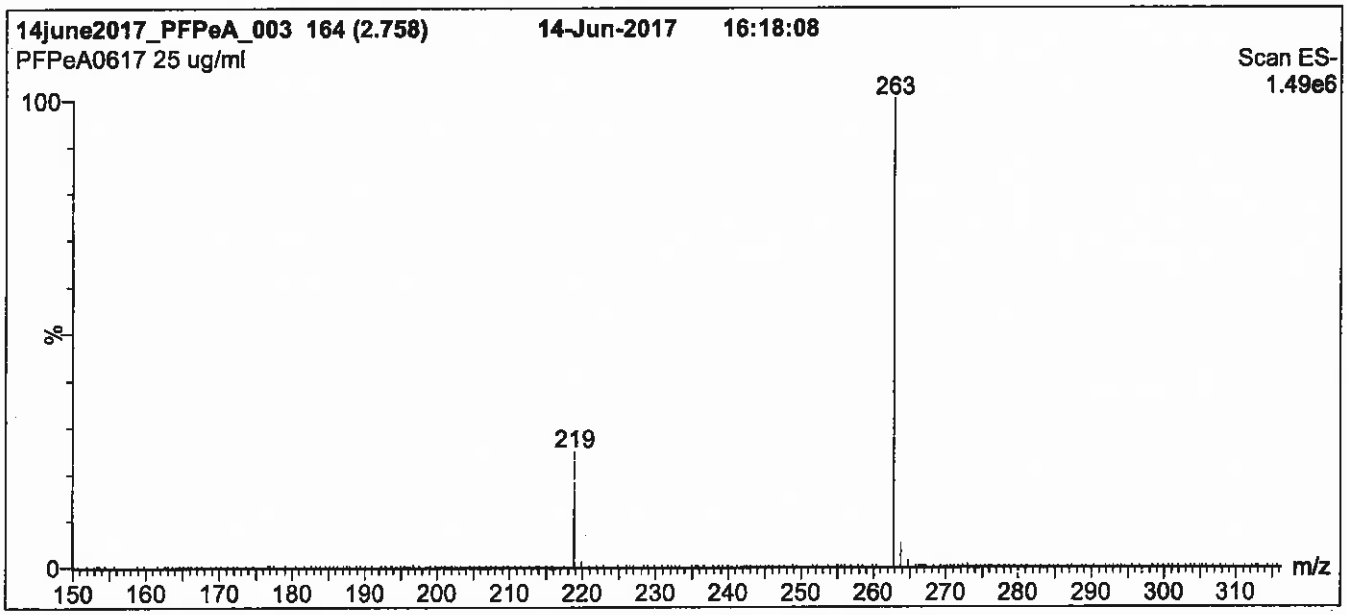
Figure 1: **PFPeA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

LC: **Waters Acquity Ultra Performance LC**
MS: **Micromass Quattro *micro* API MS**

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 30% (80:20 MeOH:ACN) / 70% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

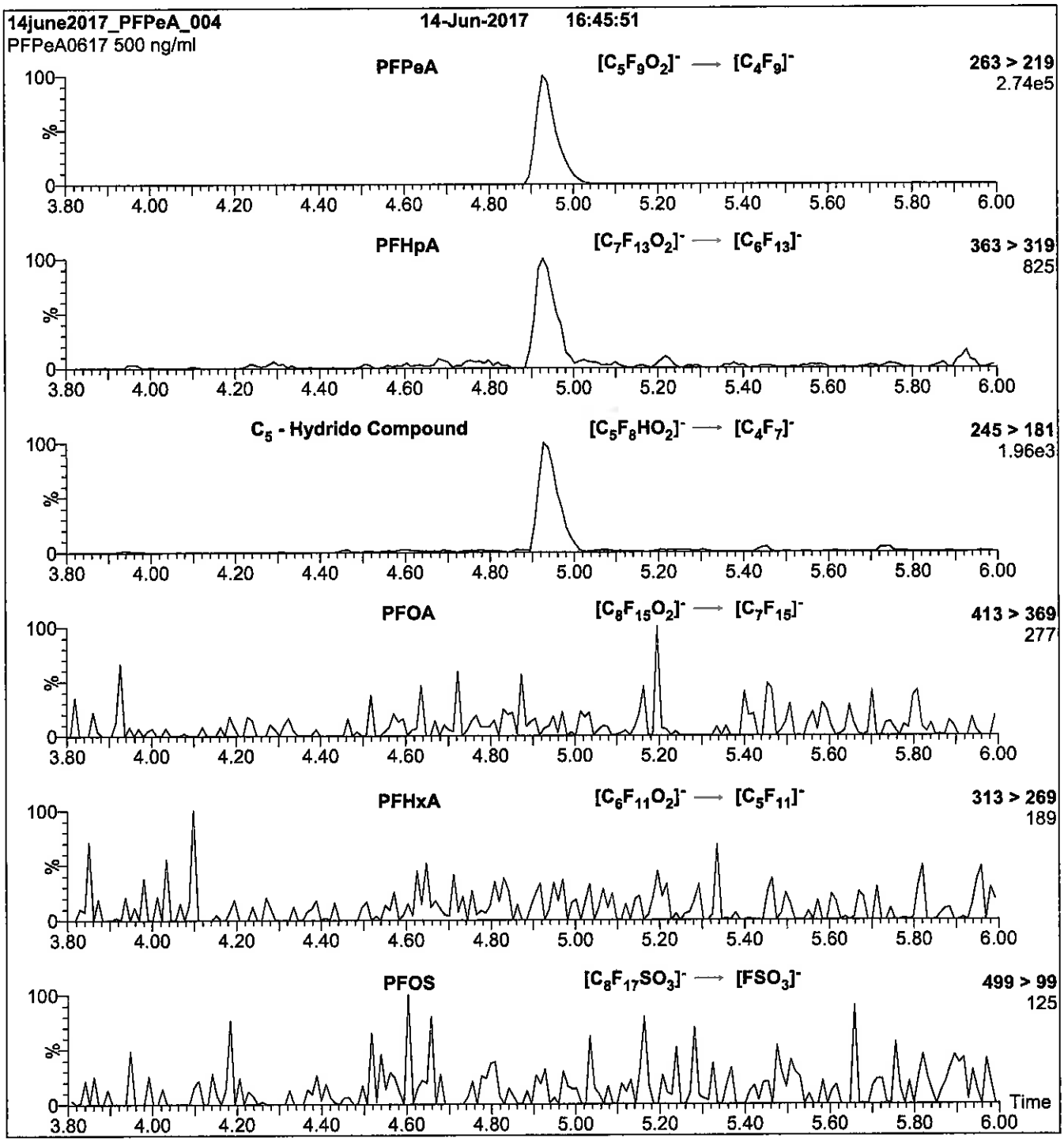
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

Figure 2: **PFPeA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml PFPeA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.62e-3
Collision Energy (eV) = 9

Reagent

LCPFPeA_00010

WELLINGTON LABORATORIES

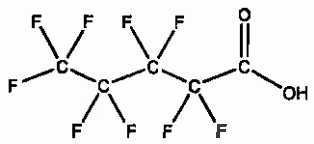
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFPeA
COMPOUND: Perfluoro-n-pentanoic acid

LOT NUMBER: PFPeA0617

STRUCTURE:

CAS #: 2706-90-3



MOLECULAR FORMULA: $C_5HF_9O_2$
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 264.05
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 06/14/2017
EXPIRY DATE: (mm/dd/yyyy) 06/14/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.3% of Perfluoro-n-heptanoic acid (PFHpA) and ~ 0.2% of $C_5H_2F_8O_2$ (hydrido - derivative) as measured by ^{19}F NMR.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 06/16/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers. In order to maintain the integrity of the assigned value(s), and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \ldots x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \ldots x_n)) = \sqrt{\sum_{i=1}^{n} u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of ±5% (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using calibrated NIST and/or NRC traceable external weights. All volumetric glassware used is calibrated, of Class A tolerance, and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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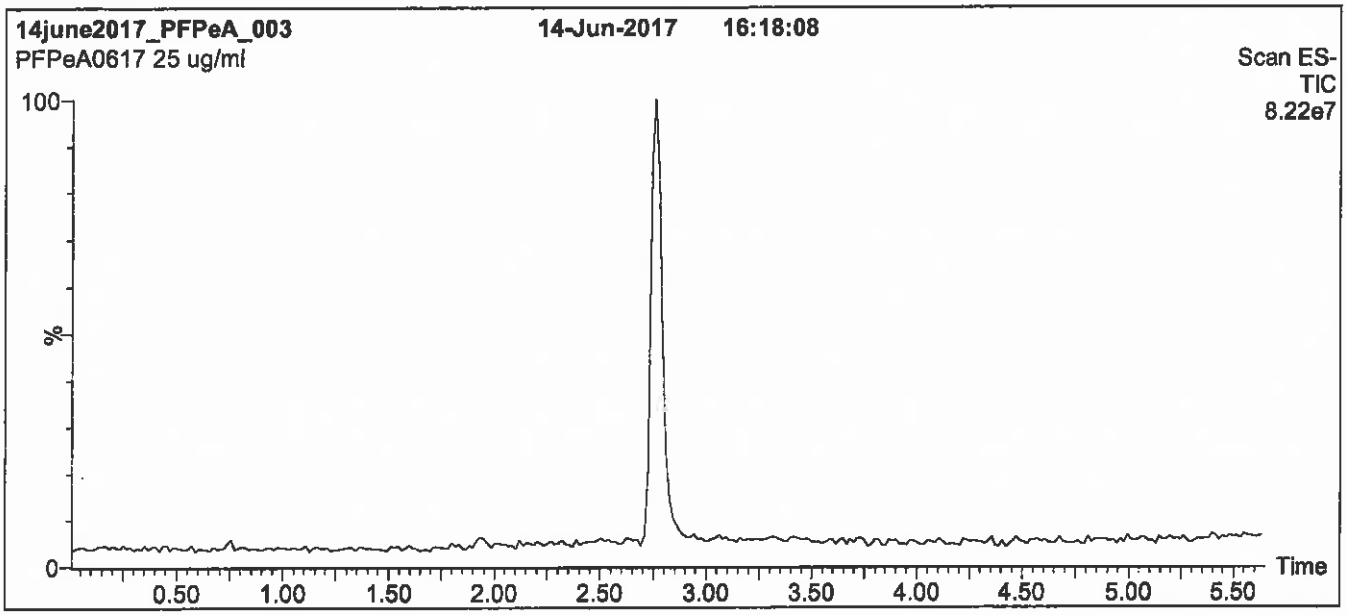
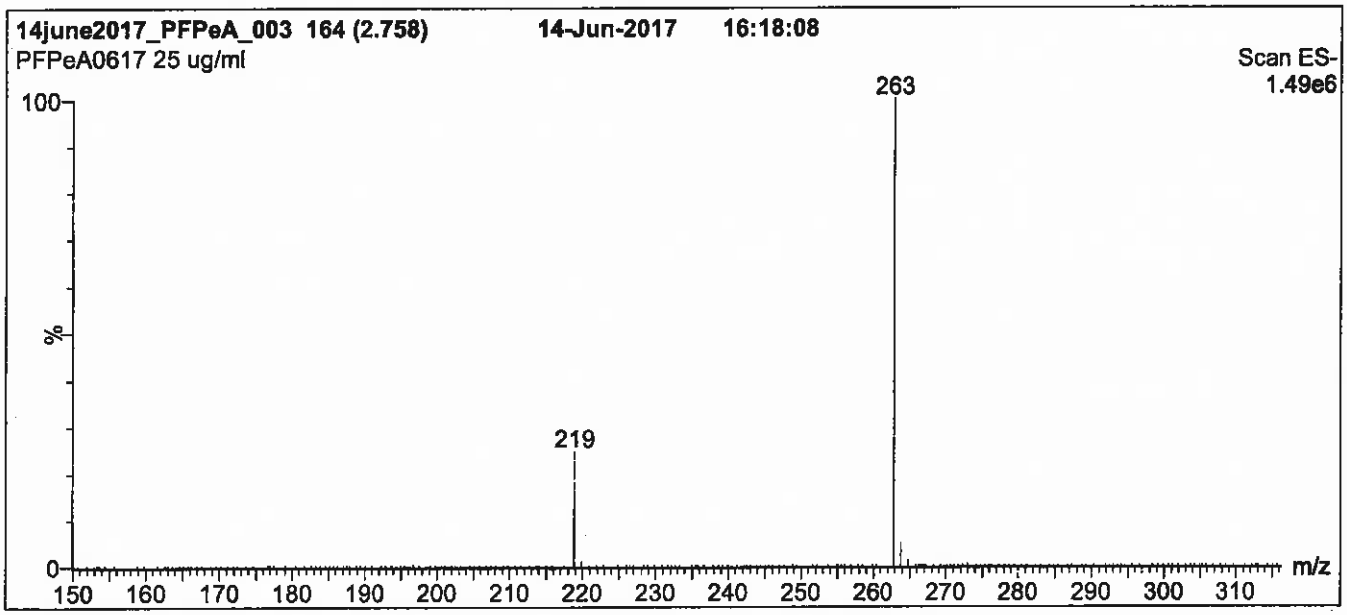
Figure 1: **PFPeA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

LC: **Waters Acquity Ultra Performance LC**
MS: **Micromass Quattro *micro* API MS**

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 30% (80:20 MeOH:ACN) / 70% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

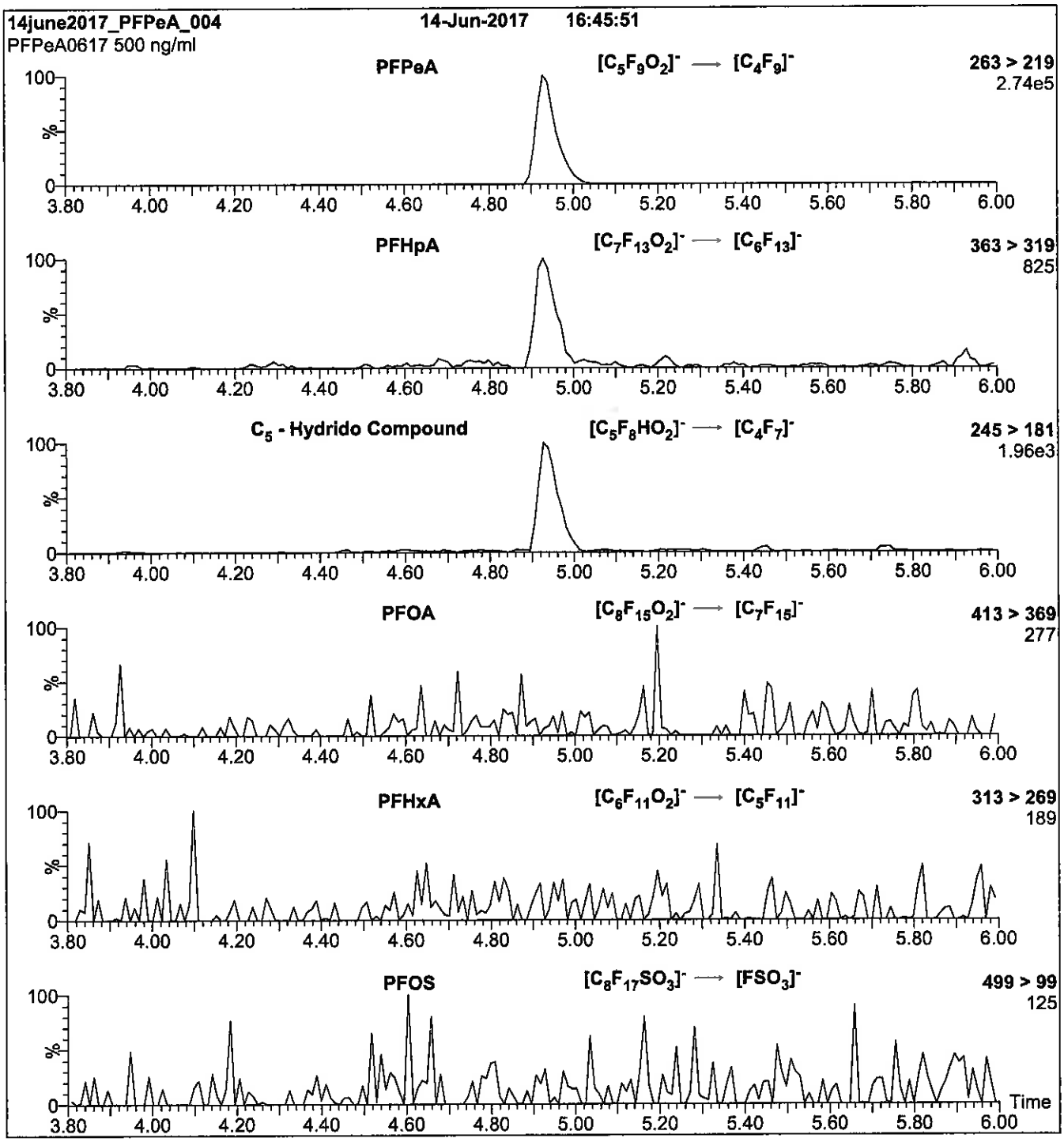
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

Figure 2: **PFPeA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection:	Direct loop injection 10 µl (500 ng/ml PFPeA)	**MS Parameters**	
Mobile phase:	Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O (both with 10 mM NH_4OAc buffer)	Collision Gas (mbar) = 3.62e-3 Collision Energy (eV) = 9	
Flow:	300 µl/min		

Reagent

LCPFPeS_00003

1106801
ID: LCPFPeS_00003
Exp: 01/11/22 Prpd: SKV
PF-1-pentanesulfonate Na

P: 12/4/17 SKV

E-747

WELLINGTON LABORATORIES

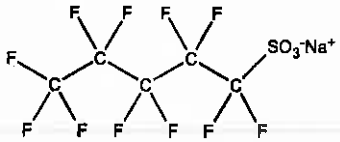
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: L-PFPeS
COMPOUND: Sodium perfluoro-1-pentanesulfonate

LOT NUMBER: LPFPeS0117

STRUCTURE:

CAS #: 630402-22-1



MOLECULAR FORMULA: $C_5F_{11}SO_3Na$
CONCENTRATION: 50.0 ± 2.5 µg/ml (Na salt)
46.9 ± 2.3 µg/ml (PFPeS anion)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 01/11/2017
EXPIRY DATE: (mm/dd/yyyy) 01/11/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

MOLECULAR WEIGHT: 372.09
SOLVENT(S): Methanol

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.

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Certified By: _____ **Date:** 09/06/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

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CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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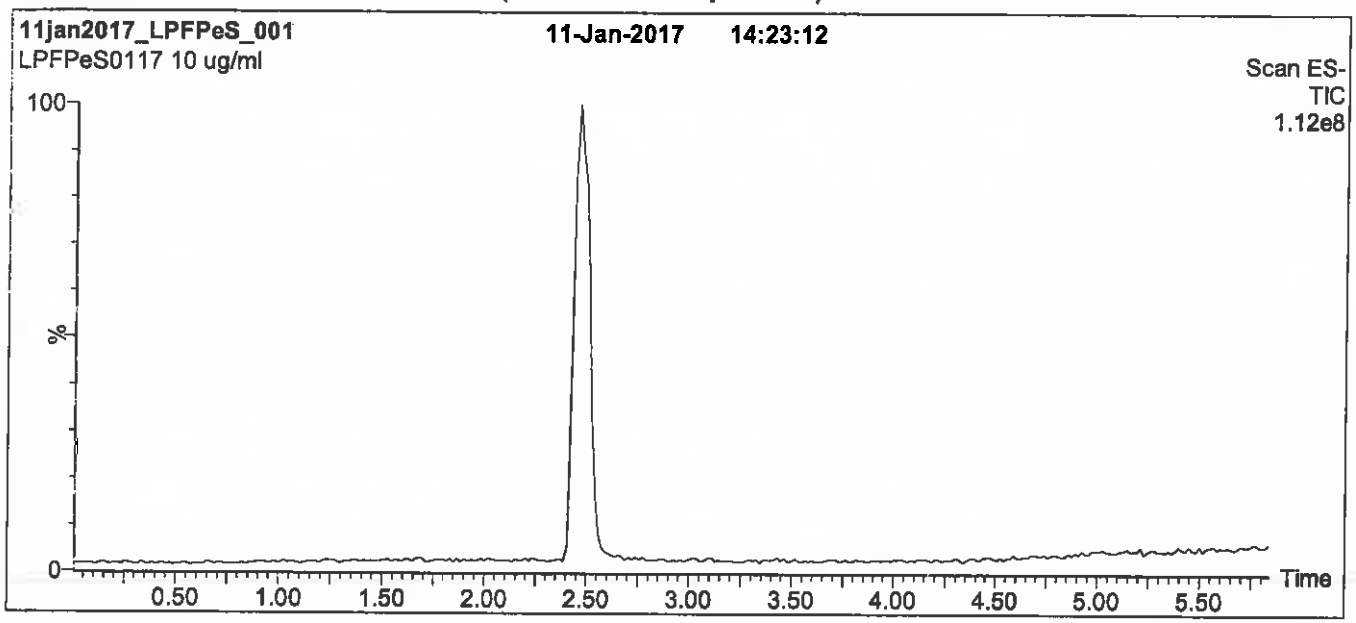
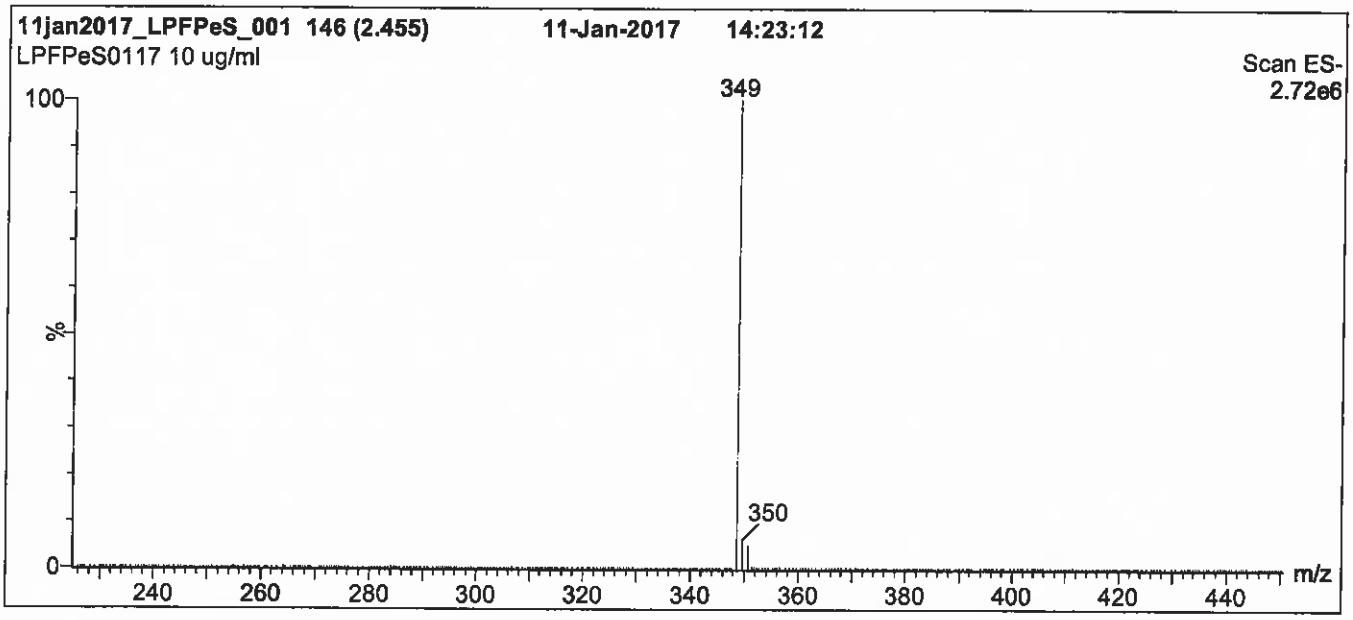
Figure 1: **L-PFPeS; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7.5 min and hold for 1.5 min before returning to initial conditions over 0.5 min.
Time: 10 min

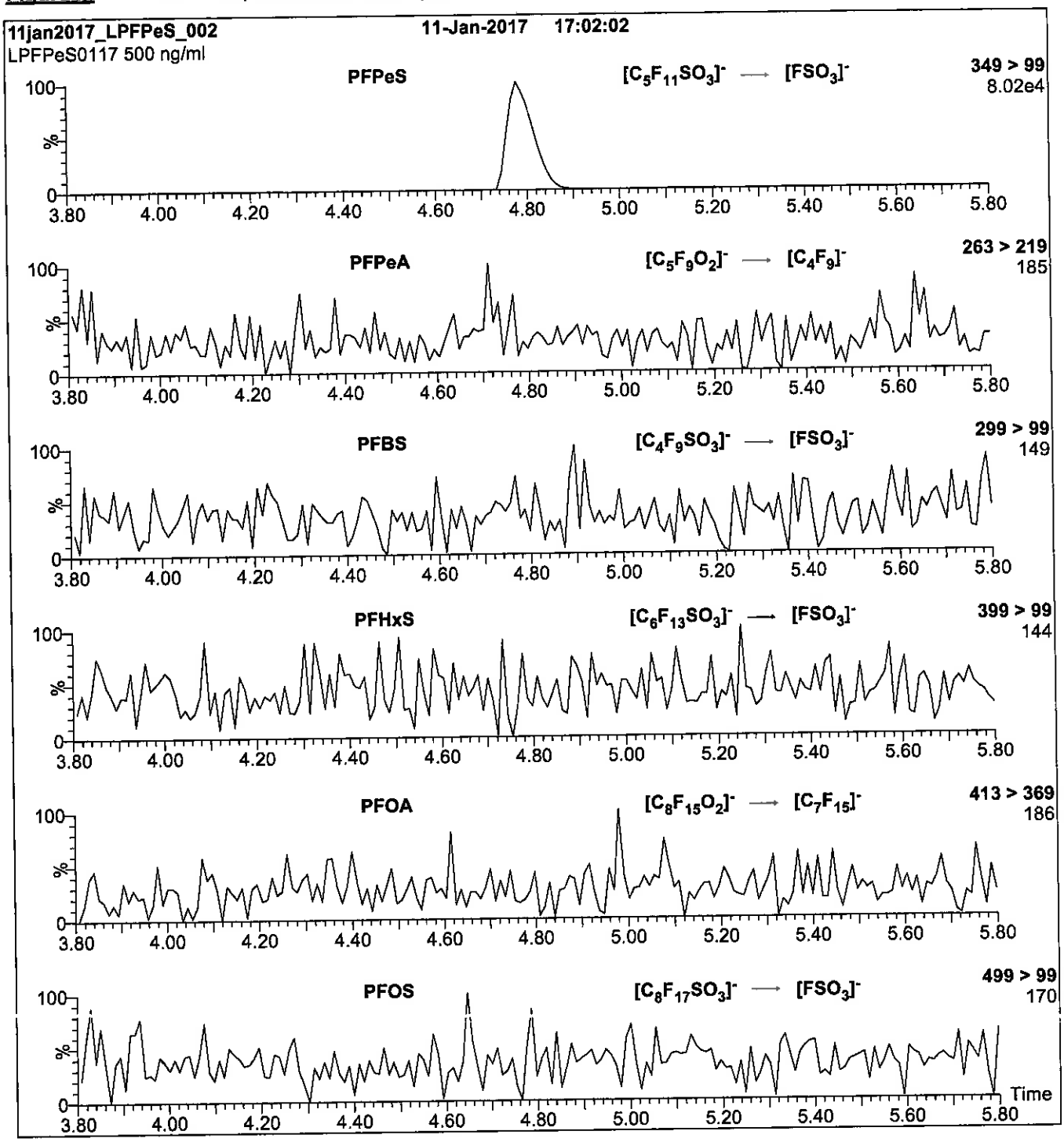
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 50.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

Figure 2: **L-PFPeS; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml L-PFPeS)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.39e-3
Collision Energy (eV) = 30

Reagent

LCPFTeDA_00008

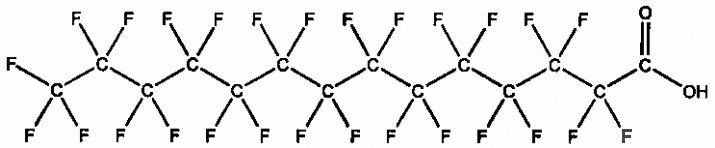
P: 9/21/17 SKN

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFTeDA
LOT NUMBER: PFTeDA0916
COMPOUND: Perfluoro-n-tetradecanoic acid

STRUCTURE:
CAS #: 376-06-7



MOLECULAR FORMULA: $C_{14}HF_{27}O_2$
MOLECULAR WEIGHT: 714.11
CONCENTRATION: 50 ± 2.5 µg/ml
SOLVENT(S): Methanol, Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 09/30/2016
EXPIRY DATE: (mm/dd/yyyy) 09/30/2021
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.2% of PFDoA ($C_{12}HF_{23}O_2$) and ~ 0.2% of PFPeDA ($C_{15}HF_{29}O_2$).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 10/05/2016 (mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

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CALA

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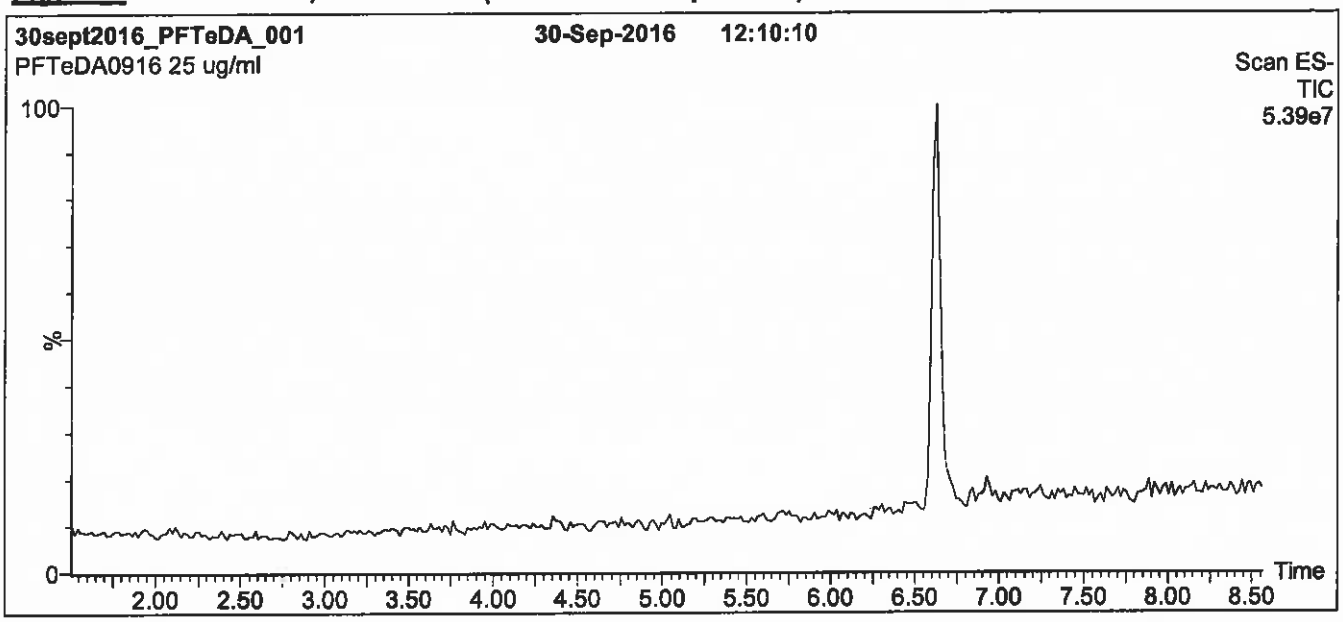
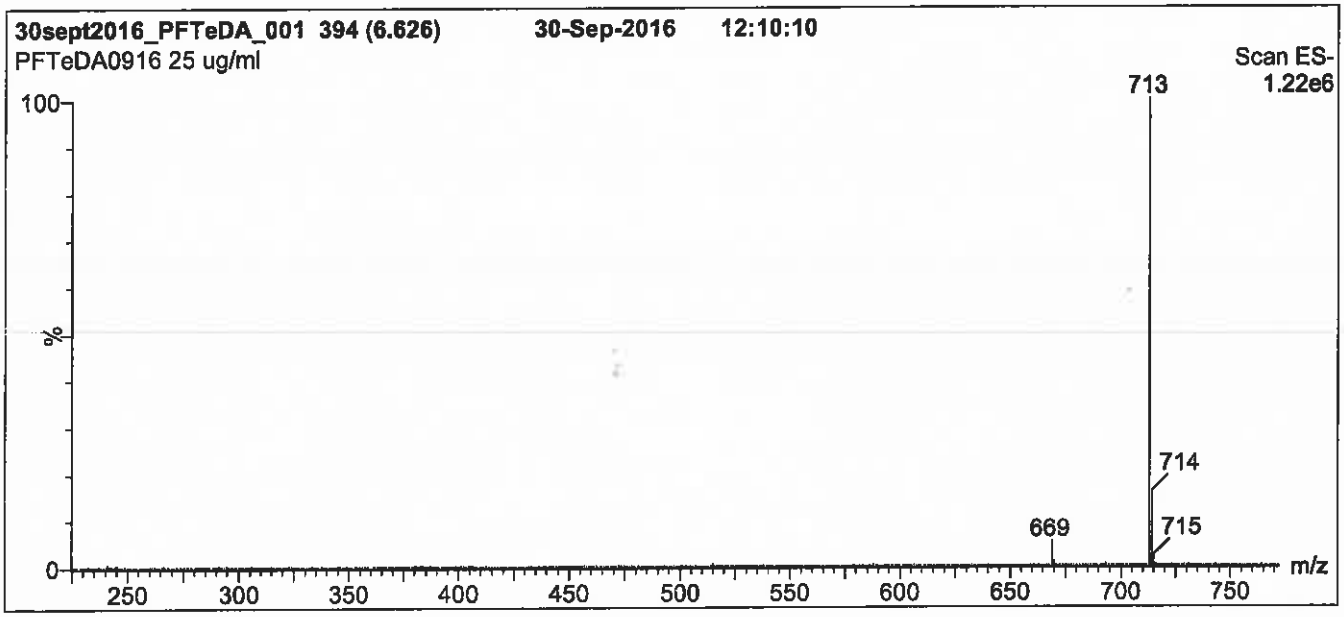
Figure 1: **PFTeDA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 65% (80:20 MeOH:ACN) / 35% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7.5 min and hold for 1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

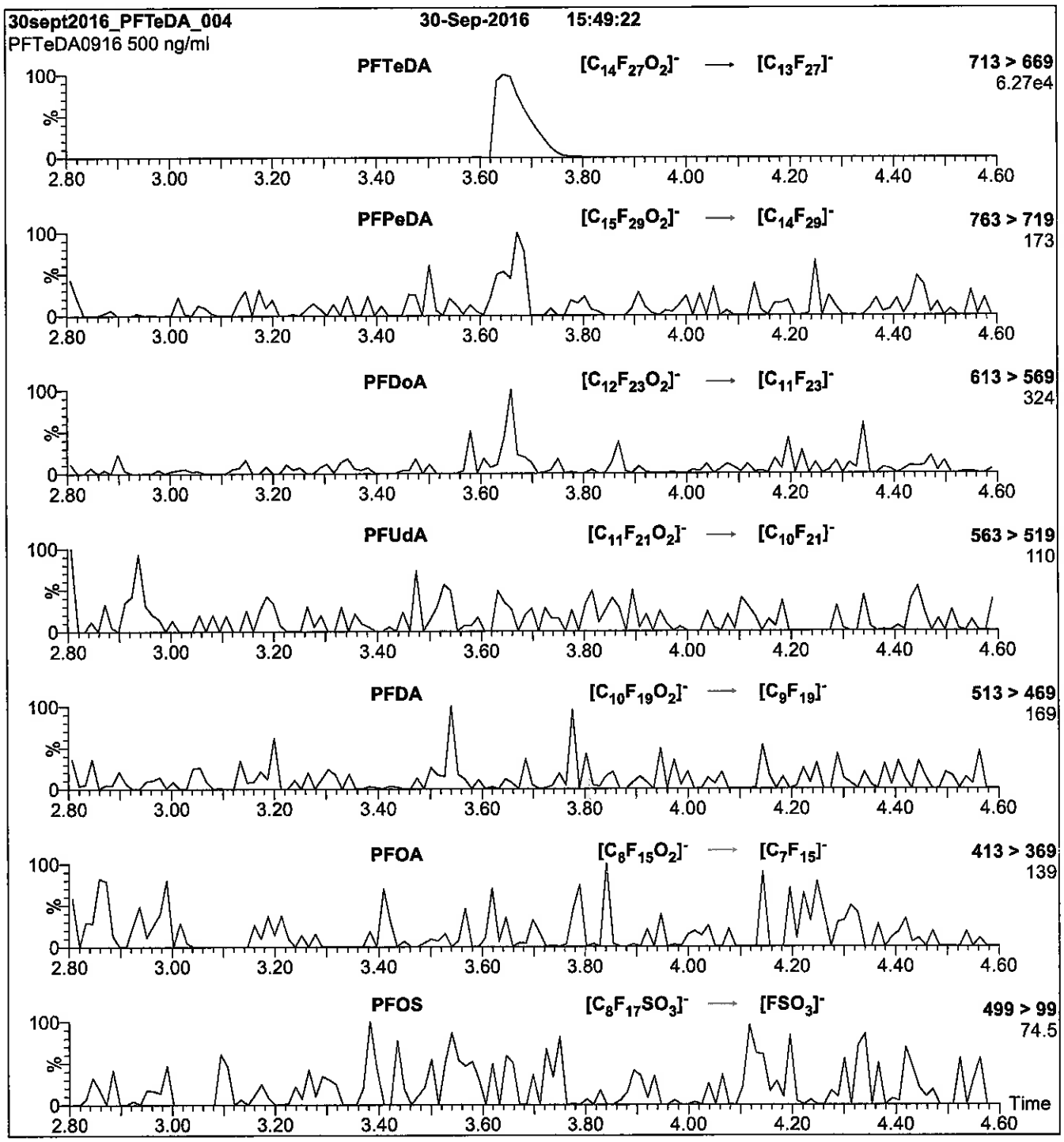
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

Figure 2: **PFTeDA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml PFTeDA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.20e-3
Collision Energy (eV) = 14

Reagent

LCPFTeDA_00009

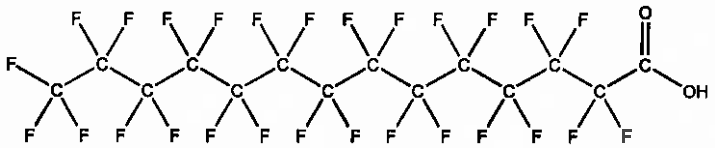
P: 9/21/17 SKN

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFTeDA
LOT NUMBER: PFTeDA0916
COMPOUND: Perfluoro-n-tetradecanoic acid

STRUCTURE:
CAS #: 376-06-7



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CONCENTRATION: 50 ± 2.5 µg/ml
SOLVENT(S): Methanol, Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 09/30/2016
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UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \ldots x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \ldots x_n)) = \sqrt{\sum_{i=1}^{n} u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of ±5% (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

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EXPIRY DATE / PERIOD OF VALIDITY:

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LIMITED WARRANTY:

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QUALITY MANAGEMENT:

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CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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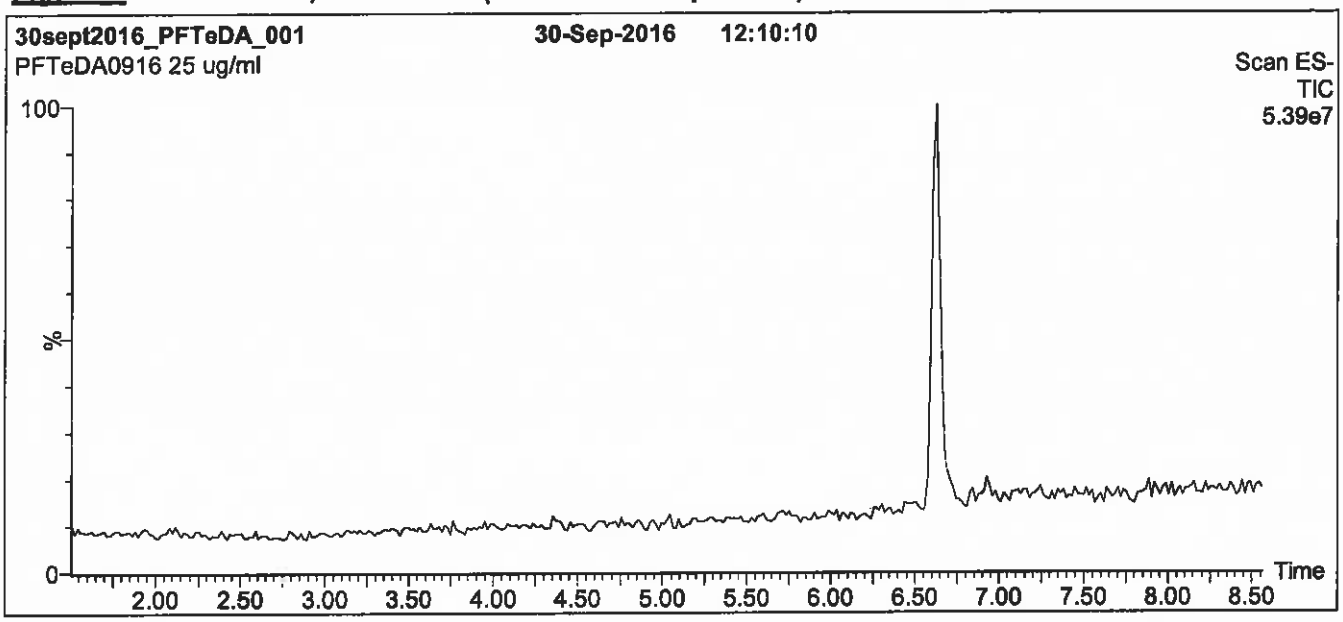
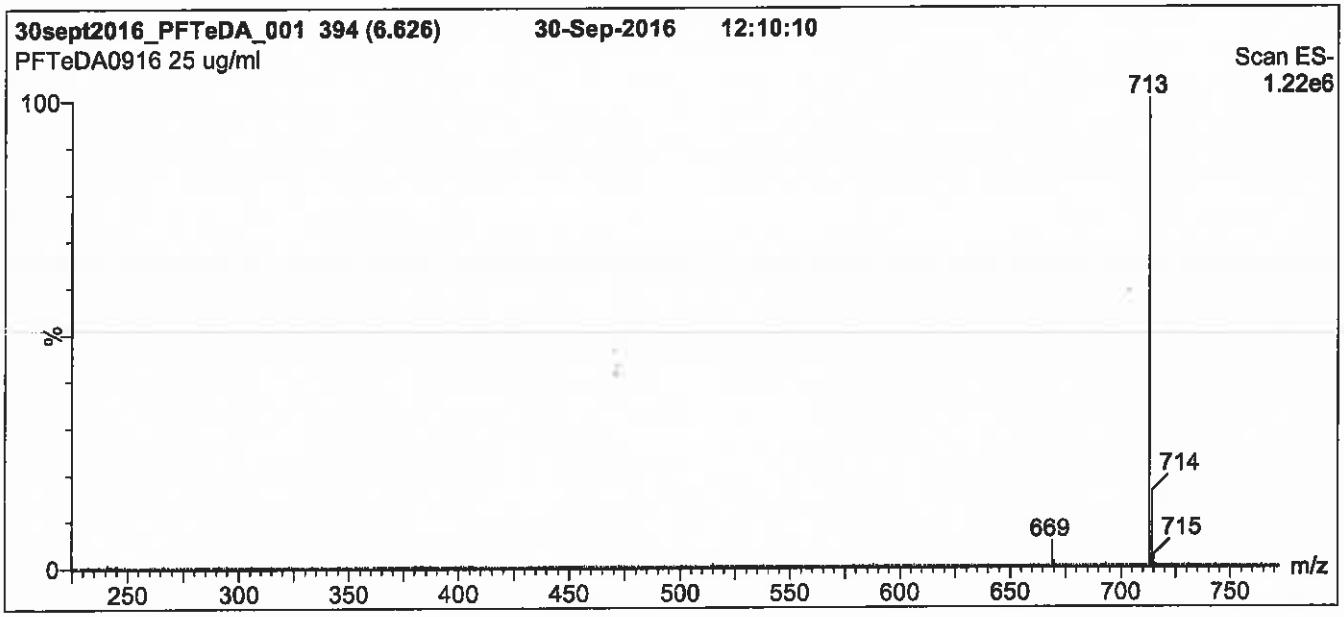
Figure 1: **PFTeDA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 65% (80:20 MeOH:ACN) / 35% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7.5 min and hold for 1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

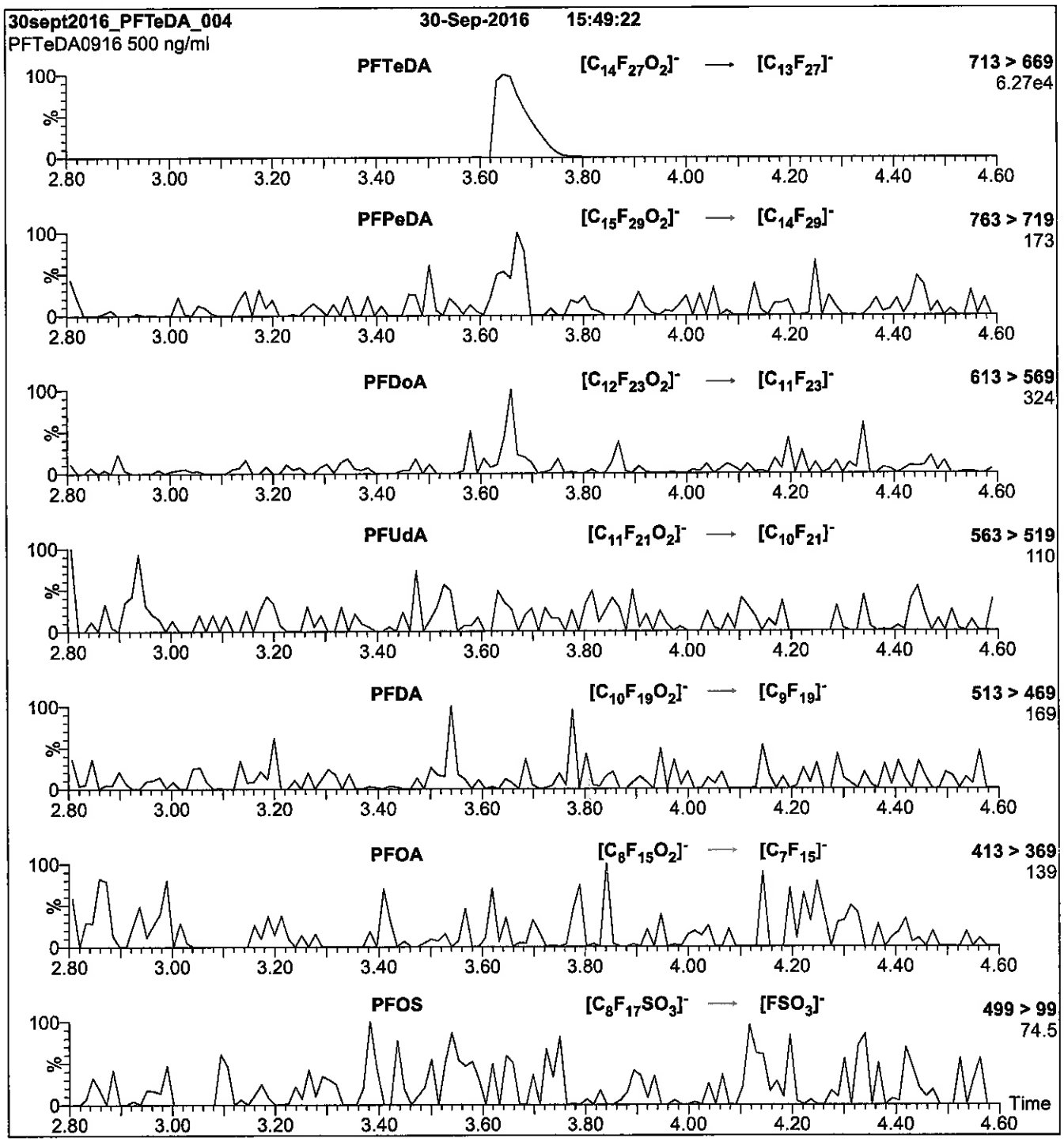
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

Figure 2: **PFTeDA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml PFTeDA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.20e-3
Collision Energy (eV) = 14

Reagent

LCPFTrDA_00008

r: 9/21/17 SAN

E-762

WELLINGTON LABORATORIES

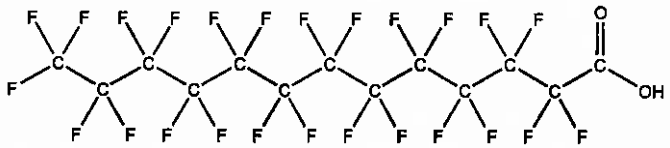
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFTrDA
COMPOUND: Perfluoro-n-tridecanoic acid

LOT NUMBER: PFTrDA0517

STRUCTURE:

CAS #: 72629-94-8



MOLECULAR FORMULA: $C_{13}HF_{25}O_2$
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 664.11
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 05/02/2017
EXPIRY DATE: (mm/dd/yyyy) 05/02/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.1% of PFUdA ($C_{11}HF_{21}O_2$), ~ 0.4% of PFDoA ($C_{12}HF_{23}O_2$), and ~ 0.1% of PFTeDA ($C_{14}HF_{27}O_2$).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 05/04/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

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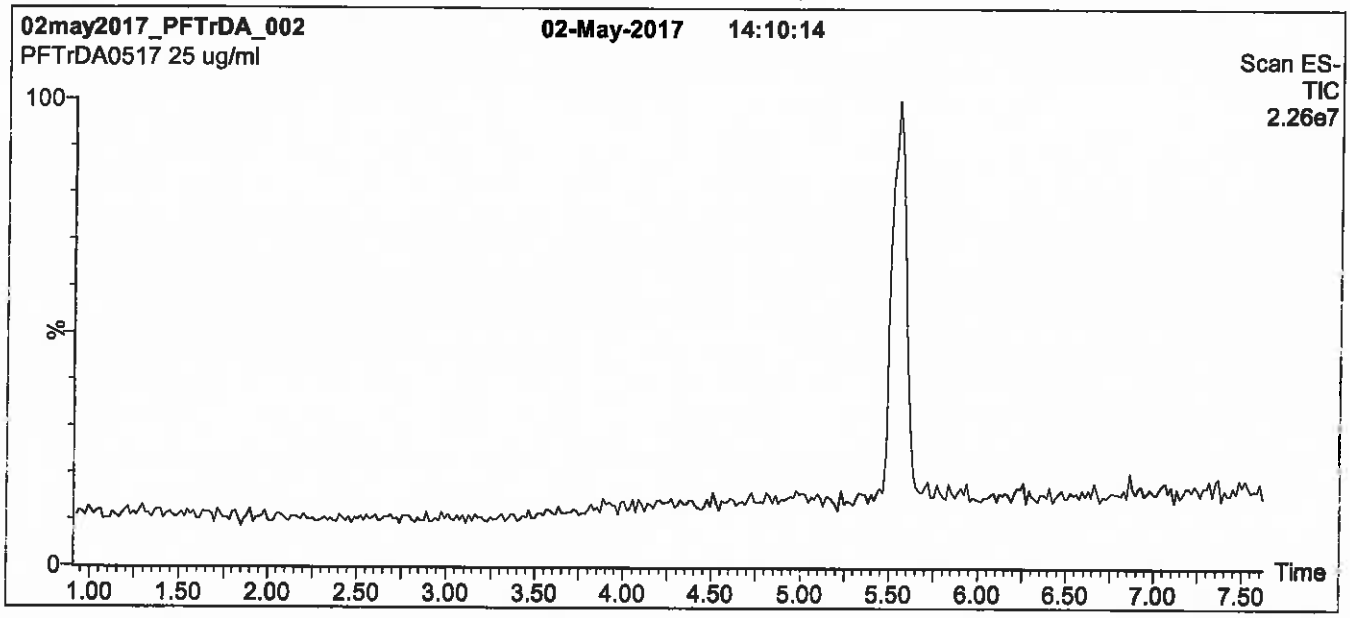
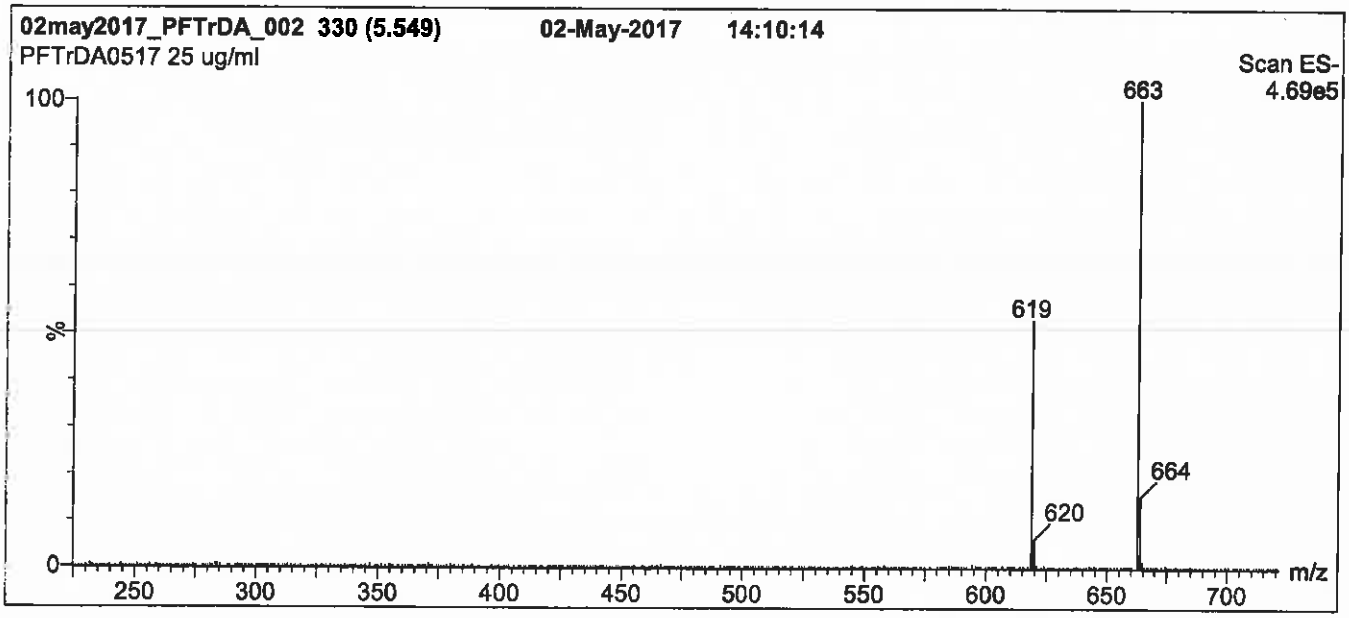




Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

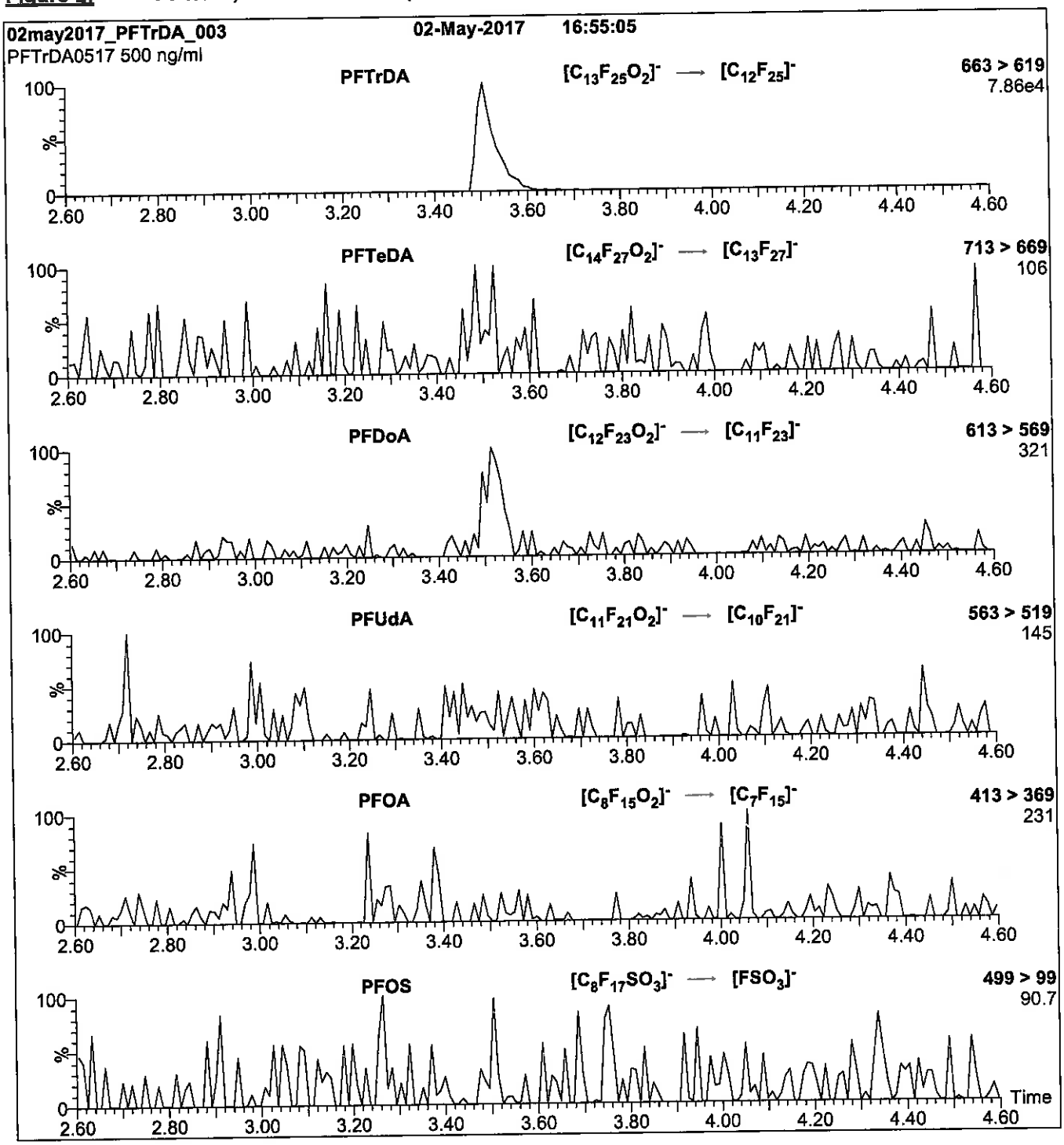
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 22.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 650

Figure 2: **PFTrDA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml PFTrDA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.17e-3
Collision Energy (eV) = 15

Reagent

LCPFTrDA_00009

r: 9/21/17 SAN

E-767

WELLINGTON LABORATORIES

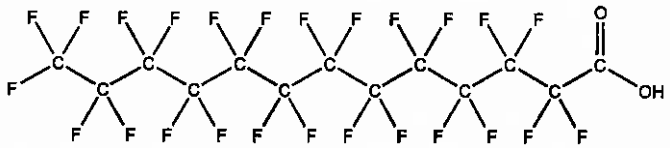
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFTrDA
COMPOUND: Perfluoro-n-tridecanoic acid

LOT NUMBER: PFTrDA0517

STRUCTURE:

CAS #: 72629-94-8



MOLECULAR FORMULA: $C_{13}HF_{25}O_2$
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 664.11
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 05/02/2017
EXPIRY DATE: (mm/dd/yyyy) 05/02/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
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Certified By: _____ **Date:** 05/04/2017 (mm/dd/yyyy)
B.G. Chittim, General Manager

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

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CALA

ANAB ACCREDITED

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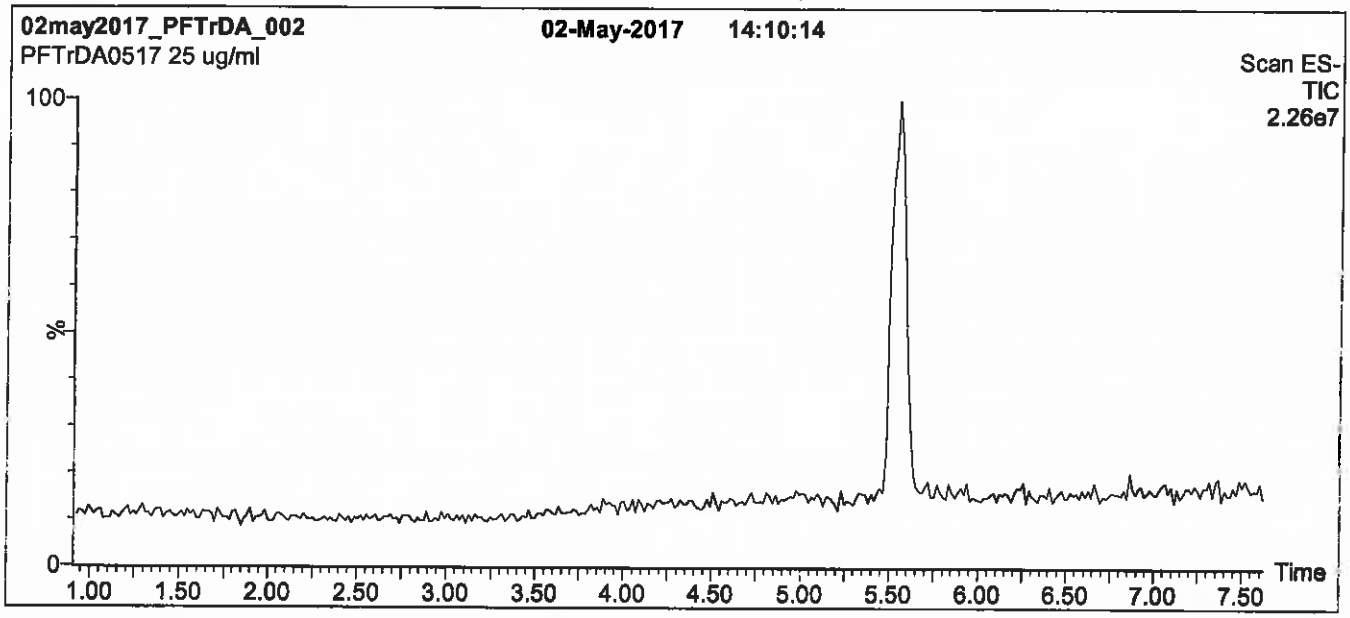

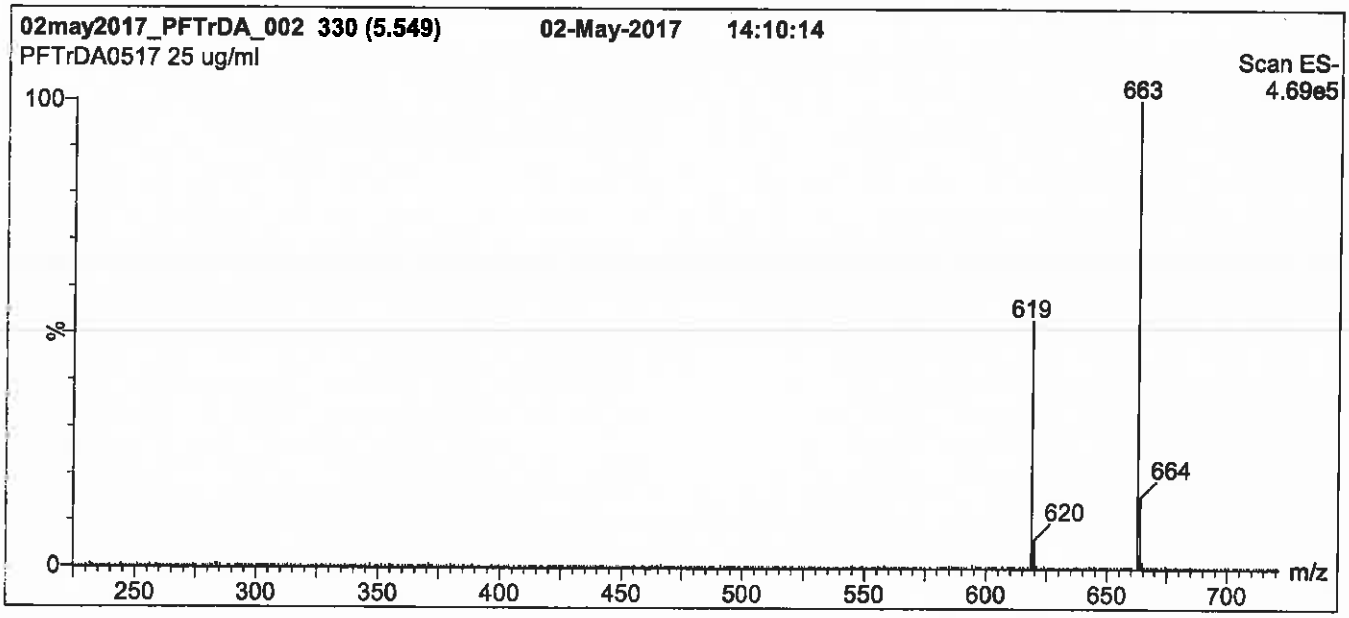

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LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

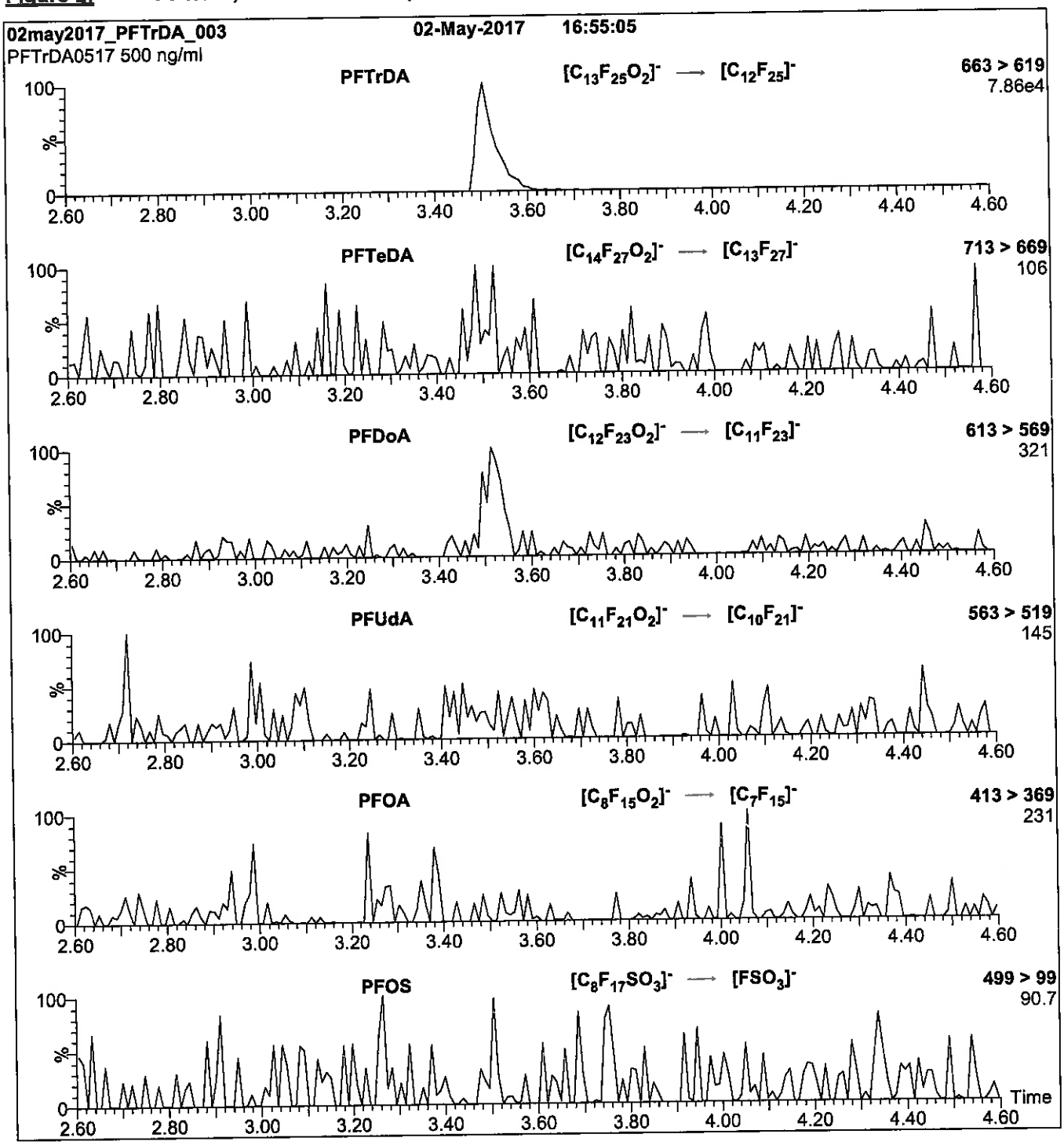
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 22.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 650

Figure 2: **PFTrDA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml PFTrDA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.17e-3
Collision Energy (eV) = 15

Reagent

LCPFUdA_00008

r: 9/21/17 SKJ

E-772

WELLINGTON LABORATORIES

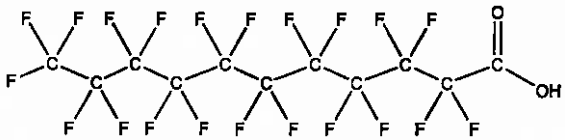
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFUdA
COMPOUND: Perfluoro-n-undecanoic acid

LOT NUMBER: PFUdA1016

STRUCTURE:

CAS #: 2058-94-8



MOLECULAR FORMULA: $C_{11}HF_{21}O_2$
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 564.09
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 10/18/2016
EXPIRY DATE: (mm/dd/yyyy) 10/18/2021
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Figure 1: LC/MS Data (TIC and Mass Spectrum)
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- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

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Certified By: B.G. Chittim **Date:** 10/19/2016 (mm/dd/yyyy)

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At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

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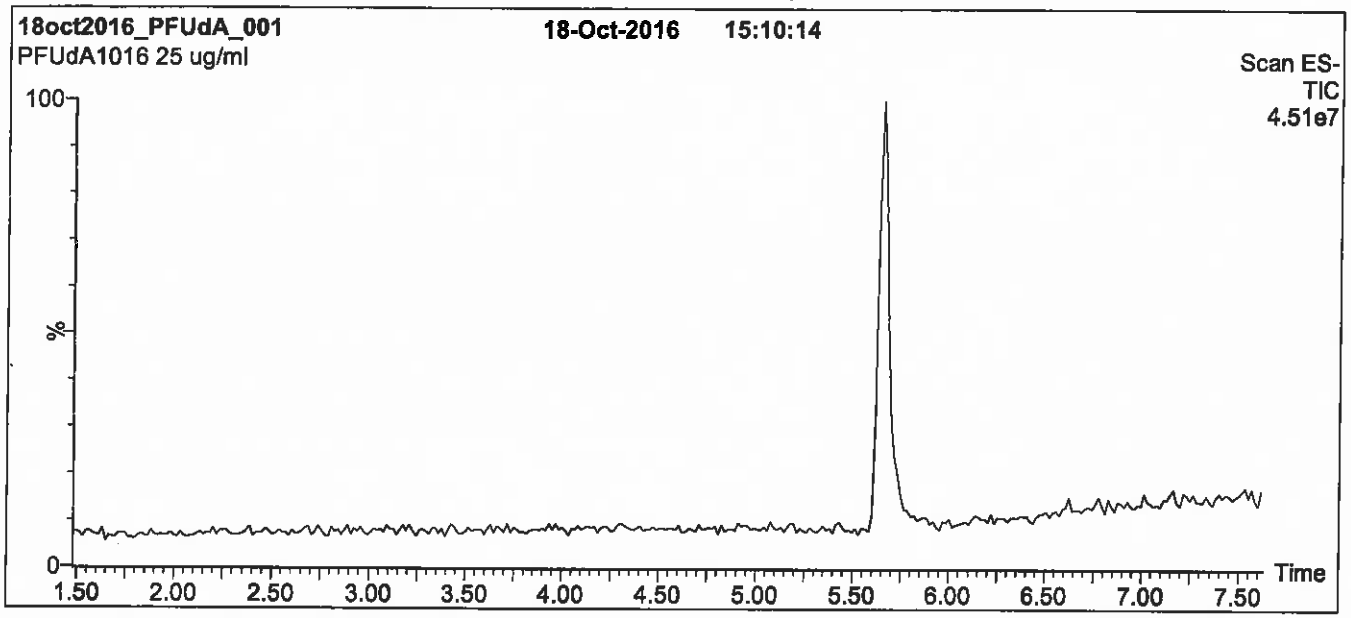
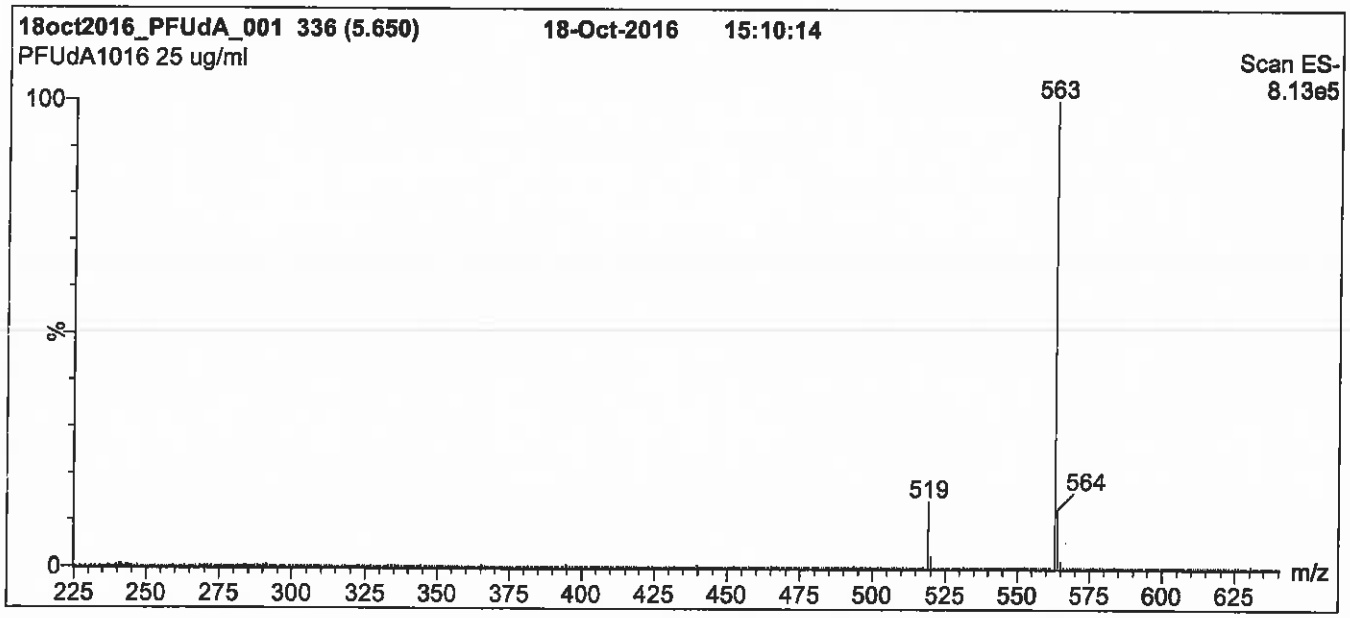
Figure 1: **PFUdA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 55% (80:20 MeOH:ACN) / 45% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min before returning to initial conditions in 0.5 min.
Time: 10 min

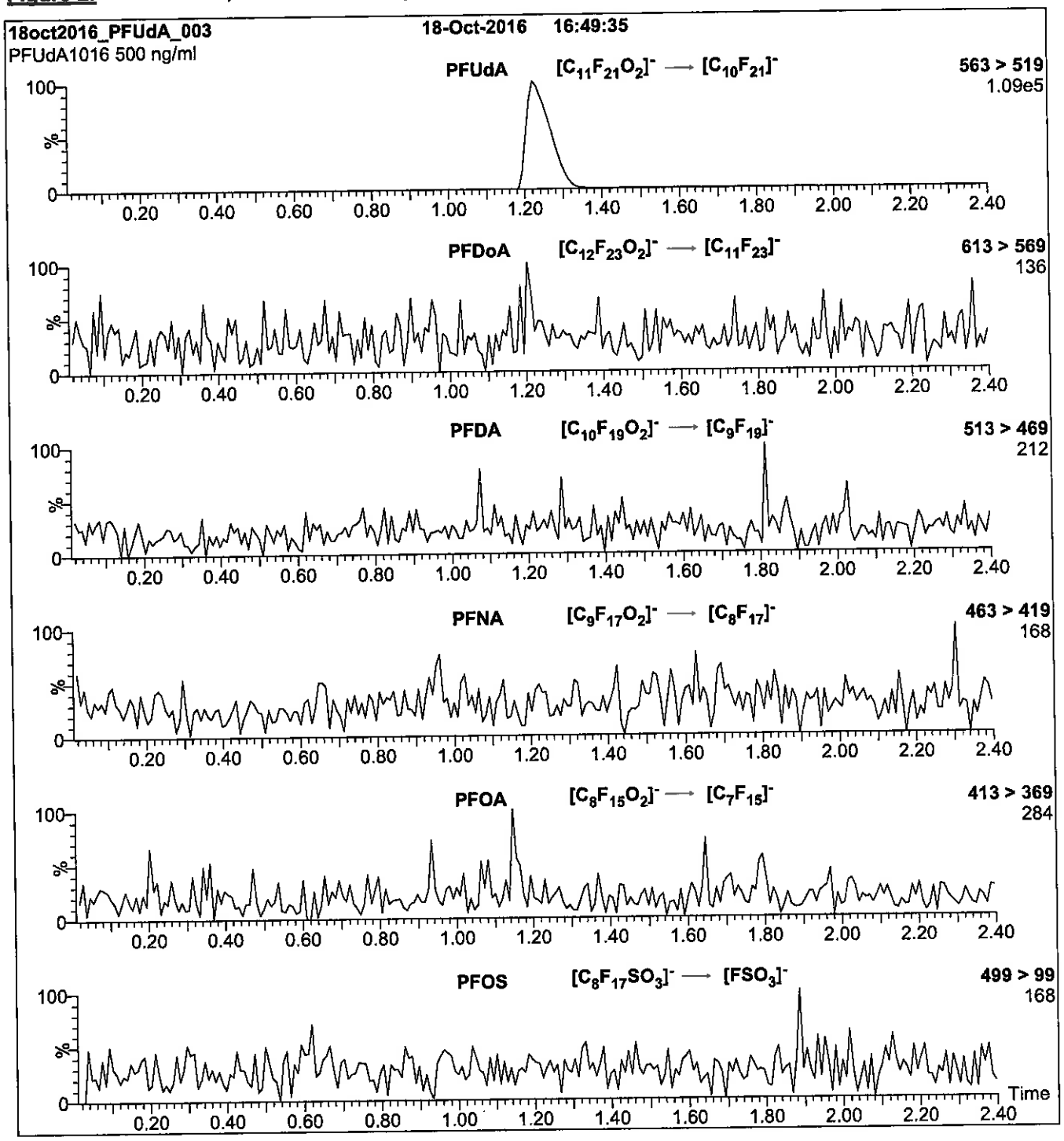
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 65
Desolvation Gas Flow (l/hr) = 750

Figure 2: **PFUdA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml PFUdA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.24e-3
Collision Energy (eV) = 11

Method PFC IDA

Fluorinated Hydrocarbons by Method PFAS IDA

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Matrix: Solid Level: Low

GC Column (1): GeminiC18 3 ID: 3 (mm)

Client Sample ID	Lab Sample ID	PFBA #	PFPeA #	PFBS #	PFHxA #	PFHpA #	PFHxS #	M262FTS #	PFOA #
NF17-SS-01	320-40571-3	76	83	70	86	86	74	62	86
NF17-SS-01-DUP	320-40571-4	74	79	70	80	86	76	68	83
NF18-SS-02	320-40571-6	74	79	73	76	85	75	81	85
NF19-SS-02	320-40571-8	77	85	74	87	87	79	67	85
NF20-SS-02	320-40571-10	73	77	68	81	82	72	64	81
NF21-SS-01	320-40571-12	82	86	74	88	93	78	69	91
NF22-SS-01	320-40571-14	82	87	81	86	91	85	71	90
NF23-SS-01	320-40571-16	78	83	76	87	89	81	80	86
NF24-SS-02	320-40571-18	83	87	84	89	94	86	74	91
NF25-SS-02	320-40571-20	54	56	51	56	60	51	42	58
NF26-SS-02	320-40571-22	99	105	92	109	109	95	80	103
NF27-SS-01	320-40571-24	79	81	72	87	89	76	69	87
NF28-SS-01	320-40571-26	79	81	72	85	88	77	67	81
NF29-SS-01	320-40571-28	82	84	78	89	93	76	73	89
NF30-SS-02	320-40571-30	72	76	75	80	80	76	59	79
NF31-SS-02	320-40571-32	79	83	73	84	91	78	64	87
NF32-SS-02	320-40571-34	78	82	72	83	91	77	77	90
NF33-SS-01	320-40571-36	78	83	74	69	92	81	149	92
NF34-SS-01	320-40571-38	69	76	66	71	82	70	78	80
NF35-SS-01	320-40571-40	70	74	65	73	85	70	175 *	87
NF36-SS-02	320-40571-42	80	84	79	86	90	79	68	86
	MB 320-231392/1-A	85	91	88	92	95	88	84	92
	MB 320-231393/1-A	84	87	83	91	91	88	78	89
	LCS 320-231392/2-A	86	93	91	93	98	92	86	95
	LCS 320-231393/2-A	86	92	90	92	99	91	78	94
	LCSD 320-231392/3-A	60	94	93	96	99	93	80	94
	LCSD 320-231393/3-A	88	91	89	93	99	93	81	91
NF33-SS-01 MS	320-40571-36 MS	75	79	73	75	85	77	107	86
NF36-SS-02 MS	320-40571-42 MS	80	83	79	86	88	79	65	87
NF33-SS-01 MSD	320-40571-36 MSD	80	85	79	84	91	80	103	93
NF36-SS-02 MSD	320-40571-42 MSD	79	84	80	87	91	82	66	86

	QC LIMITS
PFBA = 13C4 PFBA	25-150
PFPeA = 13C5 PFPeA	25-150
PFBS = 13C3-PFBS	25-150
PFHxA = 13C2 PFHxA	25-150
PFHpA = 13C4-PFHpA	25-150
PFHxS = 18O2 PFHxS	25-150
M262FTS = M2-6:2FTS	25-150
PFOA = 13C4 PFOA	25-150

Column to be used to flag recovery values

FORM II 537 (modified)

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Matrix: Solid Level: Low

GC Column (1): GeminiC18 3 ID: 3 (mm)

Client Sample ID	Lab Sample ID	PFNA #	PFOS #	M282FTS #	PFOSA #	PFDA #	d3NMFOS #	d5NEFOS #	PFUnA #
NF17-SS-01	320-40571-3	85	68	76	66	93	73	81	79
NF17-SS-01-DUP	320-40571-4	80	67	85	62	87	77	80	79
NF18-SS-02	320-40571-6	88	73	82	63	90	102	86	84
NF19-SS-02	320-40571-8	80	73	79	68	87	80	87	81
NF20-SS-02	320-40571-10	74	67	66	62	86	80	85	81
NF21-SS-01	320-40571-12	87	79	93	69	95	89	95	88
NF22-SS-01	320-40571-14	80	78	71	75	91	86	93	89
NF23-SS-01	320-40571-16	86	75	89	76	95	110	101	88
NF24-SS-02	320-40571-18	84	83	85	77	95	83	94	87
NF25-SS-02	320-40571-20	54	49	49	51	61	60	68	64
NF26-SS-02	320-40571-22	102	88	94	82	113	98	107	104
NF27-SS-01	320-40571-24	84	71	87	64	94	70	79	78
NF28-SS-01	320-40571-26	80	70	78	67	92	74	87	80
NF29-SS-01	320-40571-28	85	76	87	74	97	83	86	88
NF30-SS-02	320-40571-30	74	71	55	68	79	50	55	79
NF31-SS-02	320-40571-32	87	73	91	65	90	86	81	82
NF32-SS-02	320-40571-34	88	72	94	62	90	87	85	80
NF33-SS-01	320-40571-36	93	72	140	58	95	115	103	86
NF34-SS-01	320-40571-38	82	63	83	60	83	79	73	75
NF35-SS-01	320-40571-40	81	65	123	59	87	97	96	85
NF36-SS-02	320-40571-42	83	76	70	70	89	90	86	84
	MB 320-231392/1-A	87	90	70	87	92	100	101	96
	MB 320-231393/1-A	82	82	67	81	87	88	86	89
	LCS 320-231392/2-A	88	88	71	84	90	89	95	89
	LCS 320-231393/2-A	84	89	67	84	86	84	92	91
	LCSD 320-231392/3-A	86	88	75	92	92	93	100	95
	LCSD 320-231393/3-A	85	89	70	84	84	91	85	92
NF33-SS-01 MS	320-40571-36 MS	86	72	111	60	89	93	89	79
NF36-SS-02 MS	320-40571-42 MS	78	74	69	68	86	74	78	81
NF33-SS-01 MSD	320-40571-36 MSD	92	76	116	68	93	98	95	91
NF36-SS-02 MSD	320-40571-42 MSD	79	76	63	70	84	75	80	86

	QC LIMITS
PFNA = 13C5 PFNA	25-150
PFOS = 13C4 PFOS	25-150
PFOSA = 13C8 FOSA	25-150
M282FTS = M2-8:2FTS	25-150
PFDA = 13C2 PFDA	25-150
d3NMFOS = d3-NMeFOSAA	25-150
d5NEFOS = d5-NEtFOSAA	25-150
PFUnA = 13C2 PFUnA	25-150

Column to be used to flag recovery values

FORM II 537 (modified)

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Matrix: Solid Level: Low

GC Column (1): GeminiC18 3 ID: 3 (mm)

Client Sample ID	Lab Sample ID	PFDoA #	PFTDA #
NF17-SS-01	320-40571-3	79	85
NF17-SS-01-DUP	320-40571-4	82	81
NF18-SS-02	320-40571-6	81	83
NF19-SS-02	320-40571-8	86	88
NF20-SS-02	320-40571-10	80	84
NF21-SS-01	320-40571-12	84	94
NF22-SS-01	320-40571-14	89	90
NF23-SS-01	320-40571-16	87	79
NF24-SS-02	320-40571-18	89	92
NF25-SS-02	320-40571-20	66	69
NF26-SS-02	320-40571-22	96	102
NF27-SS-01	320-40571-24	82	87
NF28-SS-01	320-40571-26	87	89
NF29-SS-01	320-40571-28	87	91
NF30-SS-02	320-40571-30	76	81
NF31-SS-02	320-40571-32	85	86
NF32-SS-02	320-40571-34	81	90
NF33-SS-01	320-40571-36	84	93
NF34-SS-01	320-40571-38	72	78
NF35-SS-01	320-40571-40	65	73
NF36-SS-02	320-40571-42	86	84
	MB 320-231392/1-A	92	95
	MB 320-231393/1-A	87	90
	LCS 320-231392/2-A	97	96
	LCS 320-231393/2-A	91	97
	LCSD 320-231392/3-A	93	96
	LCSD 320-231393/3-A	94	94
NF33-SS-01 MS	320-40571-36 MS	72	75
NF36-SS-02 MS	320-40571-42 MS	82	85
NF33-SS-01 MSD	320-40571-36 MSD	88	98
NF36-SS-02 MSD	320-40571-42 MSD	84	85

	QC LIMITS
PFDoA = 13C2 PFDoA	25-150
PFTDA = 13C2-PFTeDA	25-150

Column to be used to flag recovery values

FORM II 537 (modified)

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Matrix: Water Level: Low

GC Column (1): GeminiC18 3 ID: 3 (mm)

Client Sample ID	Lab Sample ID	PFBA #	PFPeA #	PFBS #	PFHxA #	PFHpA #	PFHxS #	M262FTS #	PFOA #
NF17-GW-01	320-40571-1	68	82	87	93	102	92	115	102
NF17-GW-01-DUP	320-40571-2	74	87	91	96	103	97	116	105
NF18-GW-01	320-40571-5	57	74	81	83	94	93	175 *	100
NF19-GW-01	320-40571-7	63	81	90	96	101	104	139	103
NF20-GW-01	320-40571-9	66	81	86	89	103	105	123	101
NF20-GW-01 DL	320-40571-9 DL	95	102	97	102	107	103	93	99
NF21-GW-01	320-40571-11	81	87	88	92	98	105	107	101
NF22-GW-01	320-40571-13	68	82	87	89	100	110	140	102
NF23-GW-01	320-40571-15	59	76	86	91	101	112	138	104
NF24-GW-01	320-40571-17	60	78	84	87	97	91	134	99
NF25-GW-01	320-40571-19	43	68	81	68	97	97	137	102
NF26-GW-01	320-40571-21	54	78	99	86	110	112	175 *	105
NF27-GW-01	320-40571-23	60	84	89	87	99	102	122	105
NF28-GW-01	320-40571-25	79	87	91	97	104	98	129	101
NF29-GW-01	320-40571-27	91	93	94	100	103	107	126	103
NF30-GW-01	320-40571-29	52	74	89	87	103	97	143	105
NF31-GW-01	320-40571-31	55	75	86	89	103	110	149	108
NF31-GW-01 DL	320-40571-31 DL	88	98	112	109	107	99	104	101
NF32-GW-01	320-40571-33	50	76	86	86	98	105	193 *	104
NF33-GW-01	320-40571-35	95	94	100	101	105	111	136	103
NF34-GW-01	320-40571-37	56	80	88	95	98	100	120	103
NF35-GW-01	320-40571-39	30	60	79	72	89	96	202 *	102
NF36-GW-01	320-40571-41	61	84	89	94	105	100	132	103
NF-EB-02	320-40571-43	92	100	97	97	106	107	114	107
NF-FB-02	320-40571-44	99	95	95	93	104	105	113	101
NFMW1-GW-01	320-40571-45	38	63	82	79	95	108	141	101
NFMW7-GW-01	320-40571-46	61	79	87	92	103	102	114	99
NFMW7-GW-01-DUP	320-40571-47	62	83	88	92	101	113	115	104
	MB 320-232121/1-A	87	94	94	97	103	109	111	106
	MB 320-232150/1-A	97	91	90	90	103	101	104	100
	LCS 320-232121/2-A	88	94	96	98	96	108	102	105
	LCS 320-232150/2-A	102	98	99	100	110	111	113	103

	QC LIMITS
PFBA = 13C4 PFBA	25-150
PFPeA = 13C5 PFPeA	25-150
PFBS = 13C3-PFBS	25-150
PFHxA = 13C2 PFHxA	25-150
PFHpA = 13C4-PFHpA	25-150
PFHxS = 18O2 PFHxS	25-150
M262FTS = M2-6:2FTS	25-150
PFOA = 13C4 PFOA	25-150

Column to be used to flag recovery values

FORM II 537 (modified)

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Matrix: Water Level: Low

GC Column (1): GeminiC18 3 ID: 3 (mm)

Client Sample ID	Lab Sample ID	PFBA #	PFPeA #	PFBS #	PFHxA #	PFHpA #	PFHxS #	M262FTS #	PFOA #
	LCSD 320-232121/3-A	78	93	94	99	100	108	109	104
	LCSD 320-232150/3-A	96	95	96	100	101	103	110	102
NF27-GW-01 MS	320-40571-23 MS	61	81	90	87	100	99	125	105
NF33-GW-01 MS	320-40571-35 MS	90	92	95	96	102	104	123	104
NF27-GW-01 MSD	320-40571-23 MSD	61	81	85	92	98	94	112	99
NF33-GW-01 MSD	320-40571-35 MSD	88	94	93	94	103	109	125	100

	QC LIMITS
PFBA = 13C4 PFBA	25-150
PFPeA = 13C5 PFPeA	25-150
PFBS = 13C3-PFBS	25-150
PFHxA = 13C2 PFHxA	25-150
PFHpA = 13C4-PFHpA	25-150
PFHxS = 18O2 PFHxS	25-150
M262FTS = M2-6:2FTS	25-150
PFOA = 13C4 PFOA	25-150

Column to be used to flag recovery values

FORM II 537 (modified)

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Matrix: Water Level: Low

GC Column (1): GeminiC18 3 ID: 3 (mm)

Client Sample ID	Lab Sample ID	PFNA #	PFOS #	M282FTS #	PFOSA #	PFDA #	d3NMFOS #	d5NEFOS #	PFUnA #
NF17-GW-01	320-40571-1	91	91	81	75	92	84	90	83
NF17-GW-01-DUP	320-40571-2	98	95	87	84	100	100	102	88
NF18-GW-01	320-40571-5	97	87	99	80	93	96	98	92
NF19-GW-01	320-40571-7	101	101	113	81	111	100	96	98
NF20-GW-01	320-40571-9	104	96	118	78	102	99	95	95
NF20-GW-01 DL	320-40571-9 DL	101	96	102	82	101	101	102	97
NF21-GW-01	320-40571-11	104	96	98	88	108	95	82	90
NF22-GW-01	320-40571-13	106	104	119	88	105	110	102	95
NF23-GW-01	320-40571-15	99	102	134	90	110	112	105	104
NF24-GW-01	320-40571-17	95	90	89	79	94	89	87	89
NF25-GW-01	320-40571-19	97	95	87	79	96	92	92	95
NF26-GW-01	320-40571-21	108	108	112	99	118	116	116	113
NF27-GW-01	320-40571-23	96	91	94	88	96	97	102	96
NF28-GW-01	320-40571-25	96	91	97	72	94	75	87	88
NF29-GW-01	320-40571-27	103	99	125	89	110	111	111	107
NF30-GW-01	320-40571-29	103	94	97	87	96	102	102	100
NF31-GW-01	320-40571-31	109	106	130	85	112	116	111	105
NF31-GW-01 DL	320-40571-31 DL	100	97	94	91	102	101	111	109
NF32-GW-01	320-40571-33	107	105	132	91	112	110	107	107
NF33-GW-01	320-40571-35	115	111	133	94	115	115	115	109
NF34-GW-01	320-40571-37	100	94	90	82	92	94	97	93
NF35-GW-01	320-40571-39	104	97	131	82	105	102	107	97
NF36-GW-01	320-40571-41	99	94	94	80	96	98	97	98
NF-EB-02	320-40571-43	105	104	133	93	115	109	114	100
NF-FB-02	320-40571-44	102	104	109	87	104	97	100	100
NFMW1-GW-01	320-40571-45	103	107	118	83	103	95	91	91
NFMW7-GW-01	320-40571-46	101	100	100	86	98	91	89	94
NFMW7-GW-01-DUP	320-40571-47	102	100	112	86	105	93	99	96
	MB 320-232121/1-A	109	105	117	89	108	107	112	108
	MB 320-232150/1-A	98	96	105	85	95	92	96	95
	LCS 320-232121/2-A	105	101	114	88	110	105	100	103
	LCS 320-232150/2-A	109	106	108	94	108	97	99	103

	QC LIMITS
PFNA = 13C5 PFNA	25-150
PFOS = 13C4 PFOS	25-150
PFOSA = 13C8 FOSA	25-150
M282FTS = M2-8:2FTS	25-150
PFDA = 13C2 PFDA	25-150
d3NMFOS = d3-NMeFOSAA	25-150
d5NEFOS = d5-NEtFOSAA	25-150
PFUnA = 13C2 PFUnA	25-150

Column to be used to flag recovery values

FORM II 537 (modified)

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Matrix: Water Level: Low

GC Column (1): GeminiC18 3 ID: 3 (mm)

Client Sample ID	Lab Sample ID	PFNA #	PFOS #	M282FTS #	PFOSA #	PFDA #	d3NMFOS #	d5NEFOS #	PFUnA #
	LCSD 320-232121/3-A	105	96	102	86	102	99	99	101
	LCSD 320-232150/3-A	100	102	105	88	97	96	101	100
NF27-GW-01 MS	320-40571-23 MS	101	94	92	84	96	99	100	95
NF33-GW-01 MS	320-40571-35 MS	104	101	114	91	108	97	91	95
NF27-GW-01 MSD	320-40571-23 MSD	95	91	85	84	92	96	96	95
NF33-GW-01 MSD	320-40571-35 MSD	104	104	127	89	98	105	96	104

	QC LIMITS
PFNA = 13C5 PFNA	25-150
PFOS = 13C4 PFOS	25-150
PFOSA = 13C8 FOSA	25-150
M282FTS = M2-8:2FTS	25-150
PFDA = 13C2 PFDA	25-150
d3NMFOS = d3-NMeFOSAA	25-150
d5NEFOS = d5-NEtFOSAA	25-150
PFUnA = 13C2 PFUnA	25-150

Column to be used to flag recovery values

FORM II 537 (modified)

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Matrix: Water Level: Low

GC Column (1): GeminiC18 3 ID: 3 (mm)

Client Sample ID	Lab Sample ID	PFDoA #	PFTDA #
NF17-GW-01	320-40571-1	74	47
NF17-GW-01-DUP	320-40571-2	89	69
NF18-GW-01	320-40571-5	85	84
NF19-GW-01	320-40571-7	90	69
NF20-GW-01	320-40571-9	87	52
NF20-GW-01 DL	320-40571-9 DL	81	52
NF21-GW-01	320-40571-11	78	60
NF22-GW-01	320-40571-13	99	78
NF23-GW-01	320-40571-15	92	78
NF24-GW-01	320-40571-17	81	52
NF25-GW-01	320-40571-19	86	59
NF26-GW-01	320-40571-21	110	108
NF27-GW-01	320-40571-23	91	91
NF28-GW-01	320-40571-25	71	12 *
NF29-GW-01	320-40571-27	105	83
NF30-GW-01	320-40571-29	86	70
NF31-GW-01	320-40571-31	99	95
NF31-GW-01 DL	320-40571-31 DL	99	89
NF32-GW-01	320-40571-33	92	90
NF33-GW-01	320-40571-35	109	104
NF34-GW-01	320-40571-37	91	86
NF35-GW-01	320-40571-39	94	85
NF36-GW-01	320-40571-41	93	91
NF-EB-02	320-40571-43	102	103
NF-FB-02	320-40571-44	98	97
NFMW1-GW-01	320-40571-45	89	88
NFMW7-GW-01	320-40571-46	92	90
NFMW7-GW-01-DUP	320-40571-47	96	94
	MB 320-232121/1-A	108	103
	MB 320-232150/1-A	100	92
	LCS 320-232121/2-A	102	98
	LCS 320-232150/2-A	103	100

	QC LIMITS
PFDoA = 13C2 PFDoA	25-150
PFTDA = 13C2-PFTeDA	25-150

Column to be used to flag recovery values

FORM II 537 (modified)

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Matrix: Water Level: Low

GC Column (1): GeminiC18 3 ID: 3 (mm)

Client Sample ID	Lab Sample ID	PFDoA #	PFTDA #
	LCSD 320-232121/3-A	93	100
	LCSD 320-232150/3-A	102	98
NF27-GW-01 MS	320-40571-23 MS	90	91
NF33-GW-01 MS	320-40571-35 MS	90	77
NF27-GW-01 MSD	320-40571-23 MSD	89	93
NF33-GW-01 MSD	320-40571-35 MSD	98	90

	QC LIMITS
PFDoA = 13C2 PFDoA	25-150
PFTDA = 13C2-PFTeDA	25-150

Column to be used to flag recovery values

FORM II 537 (modified)

FORM III
LCMS LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Matrix: Solid Level: Low Lab File ID: 2018.07.13LLB_054.d

Lab ID: LCS 320-231392/2-A Client ID:

COMPOUND	SPIKE ADDED (mg/Kg)	LCS CONCENTRATION (mg/Kg)	LCS % REC	QC LIMITS REC	#
Perfluorobutanoic acid (PFBA)	0.00200	0.00187	94	81-133	
Perfluoropentanoic acid (PFPeA)	0.00200	0.00181	90	79-120	
Perfluorohexanoic acid (PFHxA)	0.00200	0.00192	96	75-125	
Perfluoroheptanoic acid (PFHpA)	0.00200	0.00179	89	76-124	
Perfluorooctanoic acid (PFOA)	0.00200	0.00180	90	76-121	
Perfluorononanoic acid (PFNA)	0.00200	0.00178	89	74-126	
Perfluorodecanoic acid (PFDA)	0.00200	0.00190	95	74-124	
Perfluoroundecanoic acid (PFUnA)	0.00200	0.00184	92	74-114	
Perfluorododecanoic acid (PFDoA)	0.00200	0.00184	92	75-123	
Perfluorotridecanoic Acid (PFTriA)	0.00200	0.00185	92	43-116	
Perfluorotetradecanoic acid (PFTeA)	0.00200	0.00190	95	22-129	
Perfluorobutanesulfonic acid (PFBS)	0.00177	0.00171	96	73-142	
Perfluorohexanesulfonic acid (PFHxS)	0.00182	0.00160	88	75-121	
Perfluoroheptanesulfonic Acid (PFHpS)	0.00190	0.00189	99	78-146	
Perfluorooctanesulfonic acid (PFOS)	0.00186	0.00174	94	69-131	
Perfluorodecanesulfonic acid (PFDS)	0.00193	0.00189	98	54-113	
Perfluorooctane Sulfonamide (FOSA)	0.00200	0.00200	100	62-135	
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	0.00200	0.00189 J	95	65-135	
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	0.00200	0.00180 J	90	65-135	
6:2 FTS	0.00190	0.00172 J	91	65-135	
8:2 FTS	0.00192	0.00180 J	94	65-135	
13C4 PFBA	0.00500	0.00429	86	25-150	
13C5 PFPeA	0.00500	0.00463	93	25-150	
13C2 PFHxA	0.00500	0.00467	93	25-150	
13C4-PFHpA	0.00500	0.00489	98	25-150	
13C4 PFOA	0.00500	0.00473	95	25-150	
13C5 PFNA	0.00500	0.00438	88	25-150	
13C2 PFDA	0.00500	0.00448	90	25-150	
13C2 PFUnA	0.00500	0.00446	89	25-150	
13C2 PFDoA	0.00500	0.00485	97	25-150	

Column to be used to flag recovery and RPD values

FORM III 537 (modified)

FORM III
LCMS LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Matrix: Solid Level: Low Lab File ID: 2018.07.13LLB_054.d

Lab ID: LCS 320-231392/2-A Client ID:

COMPOUND	SPIKE ADDED (mg/Kg)	LCS CONCENTRATION (mg/Kg)	LCS % REC	QC LIMITS REC	#
13C2-PFTeDA	0.00500	0.00481	96	25-150	
13C3-PFBS	0.00465	0.00423	91	25-150	
18O2 PFHxS	0.00473	0.00433	92	25-150	
13C4 PFOS	0.00478	0.00422	88	25-150	
13C8 FOSA	0.00500	0.00421	84	25-150	
d3-NMeFOSAA	0.00500	0.00447	89	25-150	
d5-NEtFOSAA	0.00500	0.00476	95	25-150	
M2-6:2FTS	0.00475	0.00409	86	25-150	
M2-8:2FTS	0.00479	0.00340	71	25-150	

Column to be used to flag recovery and RPD values

FORM III 537 (modified)

FORM III
LCMS LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Matrix: Solid Level: Low Lab File ID: 2018.07.14LLA_020.d

Lab ID: LCS 320-231393/2-A Client ID:

COMPOUND	SPIKE ADDED (mg/Kg)	LCS CONCENTRATION (mg/Kg)	LCS % REC	QC LIMITS REC	#
Perfluorobutanoic acid (PFBA)	0.00200	0.00192	96	81-133	
Perfluoropentanoic acid (PFPeA)	0.00200	0.00182	91	79-120	
Perfluorohexanoic acid (PFHxA)	0.00200	0.00199	99	75-125	
Perfluoroheptanoic acid (PFHpA)	0.00200	0.00180	90	76-124	
Perfluorooctanoic acid (PFOA)	0.00200	0.00177	89	76-121	
Perfluorononanoic acid (PFNA)	0.00200	0.00193	97	74-126	
Perfluorodecanoic acid (PFDA)	0.00200	0.00195	98	74-124	
Perfluoroundecanoic acid (PFUnA)	0.00200	0.00184	92	74-114	
Perfluorododecanoic acid (PFDoA)	0.00200	0.00204	102	75-123	
Perfluorotridecanoic Acid (PFTriA)	0.00200	0.00188	94	43-116	
Perfluorotetradecanoic acid (PFTeA)	0.00200	0.00191	95	22-129	
Perfluorobutanesulfonic acid (PFBS)	0.00177	0.00171	97	73-142	
Perfluorohexanesulfonic acid (PFHxS)	0.00182	0.00164	90	75-121	
Perfluoroheptanesulfonic Acid (PFHpS)	0.00190	0.00186	98	78-146	
Perfluorooctanesulfonic acid (PFOS)	0.00186	0.00189	102	69-131	
Perfluorodecanesulfonic acid (PFDS)	0.00193	0.00185	96	54-113	
Perfluorooctane Sulfonamide (FOSA)	0.00200	0.00201	100	62-135	
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	0.00200	0.00193 J	97	65-135	
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	0.00200	0.00186 J	93	65-135	
6:2 FTS	0.00190	0.00206	109	65-135	
8:2 FTS	0.00192	0.00195 J	102	65-135	
13C4 PFBA	0.00500	0.00430	86	25-150	
13C5 PFPeA	0.00500	0.00458	92	25-150	
13C2 PFHxA	0.00500	0.00462	92	25-150	
13C4-PFHpA	0.00500	0.00497	99	25-150	
13C4 PFOA	0.00500	0.00471	94	25-150	
13C5 PFNA	0.00500	0.00419	84	25-150	
13C2 PFDA	0.00500	0.00432	86	25-150	
13C2 PFUnA	0.00500	0.00453	91	25-150	
13C2 PFDoA	0.00500	0.00456	91	25-150	

Column to be used to flag recovery and RPD values

FORM III 537 (modified)

FORM III
LCMS LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Matrix: Solid Level: Low Lab File ID: 2018.07.14LLA_020.d

Lab ID: LCS 320-231393/2-A Client ID:

COMPOUND	SPIKE ADDED (mg/Kg)	LCS CONCENTRATION (mg/Kg)	LCS % REC	QC LIMITS REC	#
13C2-PFTeDA	0.00500	0.00487	97	25-150	
13C3-PFBS	0.00465	0.00420	90	25-150	
18O2 PFHxS	0.00473	0.00429	91	25-150	
13C4 PFOS	0.00478	0.00424	89	25-150	
13C8 FOSA	0.00500	0.00422	84	25-150	
d3-NMeFOSAA	0.00500	0.00419	84	25-150	
d5-NEtFOSAA	0.00500	0.00461	92	25-150	
M2-6:2FTS	0.00475	0.00373	78	25-150	
M2-8:2FTS	0.00479	0.00320	67	25-150	

Column to be used to flag recovery and RPD values

FORM III 537 (modified)

FORM III
LCMS LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 2018.07.06LLC_015.d

Lab ID: LCS 320-232121/2-A Client ID:

COMPOUND	SPIKE ADDED (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC	QC LIMITS REC	#
Perfluorobutanoic acid (PFBA)	0.0400	0.0364	91	70-130	
Perfluoropentanoic acid (PFPeA)	0.0400	0.0363	91	66-126	
Perfluorohexanoic acid (PFHxA)	0.0400	0.0384	96	66-126	
Perfluoroheptanoic acid (PFHpA)	0.0400	0.0381	95	66-126	
Perfluorooctanoic acid (PFOA)	0.0400	0.0373	93	64-124	
Perfluorononanoic acid (PFNA)	0.0400	0.0366	91	68-128	
Perfluorodecanoic acid (PFDA)	0.0400	0.0368	92	69-129	
Perfluoroundecanoic acid (PFUnA)	0.0400	0.0358	89	60-120	
Perfluorododecanoic acid (PFDoA)	0.0400	0.0361	90	71-131	
Perfluorotridecanoic Acid (PFTriA)	0.0400	0.0327	82	72-132	
Perfluorotetradecanoic acid (PFTeA)	0.0400	0.0366	91	68-128	
Perfluorobutanesulfonic acid (PFBS)	0.0354	0.0337	95	73-133	
Perfluoropentanesulfonic acid (PFPeS)	0.0375	0.0365	97	70-130	
Perfluorohexanesulfonic acid (PFHxS)	0.0364	0.0309	85	63-123	
Perfluoroheptanesulfonic Acid (PFHpS)	0.0381	0.0353	93	68-128	
Perfluorooctanesulfonic acid (PFOS)	0.0371	0.0329	89	67-127	
Perfluorononanesulfonic acid (PFNS)	0.0384	0.0333	87	70-130	
Perfluorodecanesulfonic acid (PFDS)	0.0386	0.0326	84	68-128	
Perfluorooctane Sulfonamide (FOSA)	0.0400	0.0374	93	70-130	
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	0.0400	0.0337	84	67-127	
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	0.0400	0.0365	91	65-125	
4:2 FTS	0.0374	0.0402	108	70-130	
6:2 FTS	0.0379	0.0379	100	66-126	
8:2 FTS	0.0383	0.0336	88	67-127	
13C4 PFBA	0.100	0.0877	88	25-150	
13C5 PFPeA	0.100	0.0939	94	25-150	
13C2 PFHxA	0.100	0.0981	98	25-150	
13C4-PFHpA	0.100	0.0960	96	25-150	

Column to be used to flag recovery and RPD values

FORM III 537 (modified)

FORM III
LCMS LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 2018.07.06LLC_015.d

Lab ID: LCS 320-232121/2-A Client ID:

COMPOUND	SPIKE ADDED (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC	QC LIMITS REC	#
13C4 PFOA	0.100	0.105	105	25-150	
13C5 PFNA	0.100	0.105	105	25-150	
13C2 PFDA	0.100	0.110	110	25-150	
13C2 PFUnA	0.100	0.103	103	25-150	
13C2 PFDoA	0.100	0.102	102	25-150	
13C2-PFTeDA	0.100	0.0979	98	25-150	
13C3-PFBS	0.0930	0.0896	96	25-150	
18O2 PFHxS	0.0946	0.102	108	25-150	
13C4 PFOS	0.0956	0.0966	101	25-150	
13C8 FOSA	0.100	0.0880	88	25-150	
d3-NMeFOSAA	0.100	0.105	105	25-150	
d5-NEtFOSAA	0.100	0.0996	100	25-150	
M2-6:2FTS	0.0950	0.0972	102	25-150	
M2-8:2FTS	0.0958	0.109	114	25-150	

Column to be used to flag recovery and RPD values

FORM III 537 (modified)

FORM III
LCMS LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 2018.07.06LLAAA_033.d

Lab ID: LCS 320-232150/2-A Client ID:

COMPOUND	SPIKE ADDED (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC	QC LIMITS REC	#
Perfluorobutanoic acid (PFBA)	0.0400	0.0358	89	70-130	
Perfluoropentanoic acid (PFPeA)	0.0400	0.0369	92	66-126	
Perfluorohexanoic acid (PFHxA)	0.0400	0.0387	97	66-126	
Perfluoroheptanoic acid (PFHpA)	0.0400	0.0355	89	66-126	
Perfluorooctanoic acid (PFOA)	0.0400	0.0367	92	64-124	
Perfluorononanoic acid (PFNA)	0.0400	0.0367	92	68-128	
Perfluorodecanoic acid (PFDA)	0.0400	0.0376	94	69-129	
Perfluoroundecanoic acid (PFUnA)	0.0400	0.0349	87	60-120	
Perfluorododecanoic acid (PFDoA)	0.0400	0.0359	90	71-131	
Perfluorotridecanoic Acid (PFTriA)	0.0400	0.0323	81	72-132	
Perfluorotetradecanoic acid (PFTeA)	0.0400	0.0365	91	68-128	
Perfluorobutanesulfonic acid (PFBS)	0.0354	0.0335	95	73-133	
Perfluoropentanesulfonic acid (PFPeS)	0.0375	0.0376	100	70-130	
Perfluorohexanesulfonic acid (PFHxS)	0.0364	0.0310	85	63-123	
Perfluoroheptanesulfonic Acid (PFHpS)	0.0381	0.0356	94	68-128	
Perfluorooctanesulfonic acid (PFOS)	0.0371	0.0333	90	67-127	
Perfluorononanesulfonic acid (PFNS)	0.0384	0.0330	86	70-130	
Perfluorodecanesulfonic acid (PFDS)	0.0386	0.0340	88	68-128	
Perfluorooctane Sulfonamide (FOSA)	0.0400	0.0370	93	70-130	
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	0.0400	0.0368	92	67-127	
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	0.0400	0.0341	85	65-125	
4:2 FTS	0.0374	0.0371	99	70-130	
6:2 FTS	0.0379	0.0368	97	66-126	
8:2 FTS	0.0383	0.0330	86	67-127	
13C4 PFBA	0.100	0.102	102	25-150	
13C5 PFPeA	0.100	0.0976	98	25-150	
13C2 PFHxA	0.100	0.100	100	25-150	
13C4-PFHpA	0.100	0.110	110	25-150	

Column to be used to flag recovery and RPD values

FORM III 537 (modified)

FORM III
LCMS LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 2018.07.06LLAAA_033.d

Lab ID: LCS 320-232150/2-A Client ID:

COMPOUND	SPIKE ADDED (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC	QC LIMITS REC	#
13C4 PFOA	0.100	0.103	103	25-150	
13C5 PFNA	0.100	0.109	109	25-150	
13C2 PFDA	0.100	0.108	108	25-150	
13C2 PFUnA	0.100	0.103	103	25-150	
13C2 PFDoA	0.100	0.103	103	25-150	
13C2-PFTeDA	0.100	0.100	100	25-150	
13C3-PFBS	0.0930	0.0919	99	25-150	
18O2 PFHxS	0.0946	0.105	111	25-150	
13C4 PFOS	0.0956	0.102	106	25-150	
13C8 FOSA	0.100	0.0939	94	25-150	
d3-NMeFOSAA	0.100	0.0975	97	25-150	
d5-NEtFOSAA	0.100	0.0986	99	25-150	
M2-6:2FTS	0.0950	0.108	113	25-150	
M2-8:2FTS	0.0958	0.104	108	25-150	

Column to be used to flag recovery and RPD values

FORM III 537 (modified)

FORM III
LCMS LAB CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Matrix: Solid Level: Low Lab File ID: 2018.07.13LLB_055.d

Lab ID: LCSD 320-231392/3-A Client ID:

COMPOUND	SPIKE ADDED (mg/Kg)	LCSD CONCENTRATION (mg/Kg)	LCSD % REC	% RPD	QC LIMITS RPD	QC LIMITS REC	#
Perfluorobutanoic acid (PFBA)	0.00200	0.00188	94	0	30	81-133	
Perfluoropentanoic acid (PFPeA)	0.00200	0.00175	88	3	30	79-120	
Perfluorohexanoic acid (PFHxA)	0.00200	0.00186	93	3	30	75-125	
Perfluoroheptanoic acid (PFHpA)	0.00200	0.00176	88	1	30	76-124	
Perfluorooctanoic acid (PFOA)	0.00200	0.00178	89	1	30	76-121	
Perfluorononanoic acid (PFNA)	0.00200	0.00191	96	7	30	74-126	
Perfluorodecanoic acid (PFDA)	0.00200	0.00186	93	2	30	74-124	
Perfluoroundecanoic acid (PFUnA)	0.00200	0.00174	87	5	30	74-114	
Perfluorododecanoic acid (PFDoA)	0.00200	0.00188	94	2	30	75-123	
Perfluorotridecanoic Acid (PFTriA)	0.00200	0.00193	97	5	30	43-116	
Perfluorotetradecanoic acid (PFTeA)	0.00200	0.00185	93	3	30	22-129	
Perfluorobutanesulfonic acid (PFBS)	0.00177	0.00164	93	4	30	73-142	
Perfluorohexanesulfonic acid (PFHxS)	0.00182	0.00155	85	4	30	75-121	
Perfluoroheptanesulfonic Acid (PFHpS)	0.00190	0.00183	96	3	30	78-146	
Perfluorooctanesulfonic acid (PFOS)	0.00186	0.00177	95	2	30	69-131	
Perfluorodecanesulfonic acid (PFDS)	0.00193	0.00190	99	1	30	54-113	
Perfluorooctane Sulfonamide (FOSA)	0.00200	0.00188	94	6	30	62-135	
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	0.00200	0.00187 J	93	1	30	65-135	
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	0.00200	0.00182 J	91	1	30	65-135	
6:2 FTS	0.00190	0.00193 J	102	12	30	65-135	
8:2 FTS	0.00192	0.00165 J	86	8	30	65-135	
13C4 PFBA	0.00500	0.00302	60			25-150	
13C5 PFPeA	0.00500	0.00471	94			25-150	
13C2 PFHxA	0.00500	0.00481	96			25-150	
13C4-PFHpA	0.00500	0.00497	99			25-150	
13C4 PFOA	0.00500	0.00469	94			25-150	
13C5 PFNA	0.00500	0.00431	86			25-150	
13C2 PFDA	0.00500	0.00458	92			25-150	
13C2 PFUnA	0.00500	0.00474	95			25-150	
13C2 PFDoA	0.00500	0.00464	93			25-150	

Column to be used to flag recovery and RPD values

FORM III 537 (modified)

FORM III
LCMS LAB CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Matrix: Solid Level: Low Lab File ID: 2018.07.13LLB_055.d

Lab ID: LCSD 320-231392/3-A Client ID:

COMPOUND	SPIKE ADDED (mg/Kg)	LCSD CONCENTRATION (mg/Kg)	LCSD % REC	% RPD	QC LIMITS RPD	QC LIMITS REC	#
13C2-PFTeDA	0.00500	0.00482	96			25-150	
13C3-PFBS	0.00465	0.00434	93			25-150	
18O2 PFHxS	0.00473	0.00439	93			25-150	
13C4 PFOS	0.00478	0.00419	88			25-150	
13C8 FOSA	0.00500	0.00461	92			25-150	
d3-NMeFOSAA	0.00500	0.00467	93			25-150	
d5-NEtFOSAA	0.00500	0.00502	100			25-150	
M2-6:2FTS	0.00475	0.00381	80			25-150	
M2-8:2FTS	0.00479	0.00360	75			25-150	

Column to be used to flag recovery and RPD values

FORM III 537 (modified)

FORM III
LCMS LAB CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Matrix: Solid Level: Low Lab File ID: 2018.07.14LLA_021.d

Lab ID: LCSD 320-231393/3-A Client ID:

COMPOUND	SPIKE ADDED (mg/Kg)	LCSD CONCENTRATION (mg/Kg)	LCSD % REC	% RPD	QC LIMITS RPD	QC LIMITS REC	#
Perfluorobutanoic acid (PFBA)	0.00200	0.00189	94	2	30	81-133	
Perfluoropentanoic acid (PFPeA)	0.00200	0.00183	92	1	30	79-120	
Perfluorohexanoic acid (PFHxA)	0.00200	0.00192	96	4	30	75-125	
Perfluoroheptanoic acid (PFHpA)	0.00200	0.00175	87	3	30	76-124	
Perfluorooctanoic acid (PFOA)	0.00200	0.00189	94	6	30	76-121	
Perfluorononanoic acid (PFNA)	0.00200	0.00194	97	1	30	74-126	
Perfluorodecanoic acid (PFDA)	0.00200	0.00199	100	2	30	74-124	
Perfluoroundecanoic acid (PFUnA)	0.00200	0.00176	88	4	30	74-114	
Perfluorododecanoic acid (PFDoA)	0.00200	0.00183	91	11	30	75-123	
Perfluorotridecanoic Acid (PFTriA)	0.00200	0.00184	92	3	30	43-116	
Perfluorotetradecanoic acid (PFTeA)	0.00200	0.00187	93	2	30	22-129	
Perfluorobutanesulfonic acid (PFBS)	0.00177	0.00177	100	3	30	73-142	
Perfluorohexanesulfonic acid (PFHxS)	0.00182	0.00163	90	0	30	75-121	
Perfluoroheptanesulfonic Acid (PFHpS)	0.00190	0.00184	96	1	30	78-146	
Perfluorooctanesulfonic acid (PFOS)	0.00186	0.00180	97	5	30	69-131	
Perfluorodecanesulfonic acid (PFDS)	0.00193	0.00186	96	0	30	54-113	
Perfluorooctane Sulfonamide (FOSA)	0.00200	0.00195	97	3	30	62-135	
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	0.00200	0.00188 J	94	3	30	65-135	
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	0.00200	0.00209	104	11	30	65-135	
6:2 FTS	0.00190	0.00203	107	2	30	65-135	
8:2 FTS	0.00192	0.00171 J	89	13	30	65-135	
13C4 PFBA	0.00500	0.00438	88			25-150	
13C5 PFPeA	0.00500	0.00454	91			25-150	
13C2 PFHxA	0.00500	0.00465	93			25-150	
13C4-PFHpA	0.00500	0.00493	99			25-150	
13C4 PFOA	0.00500	0.00454	91			25-150	
13C5 PFNA	0.00500	0.00427	85			25-150	
13C2 PFDA	0.00500	0.00422	84			25-150	
13C2 PFUnA	0.00500	0.00458	92			25-150	
13C2 PFDoA	0.00500	0.00470	94			25-150	

Column to be used to flag recovery and RPD values

FORM III 537 (modified)

FORM III
LCMS LAB CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Matrix: Solid Level: Low Lab File ID: 2018.07.14LLA_021.d

Lab ID: LCSD 320-231393/3-A Client ID:

COMPOUND	SPIKE ADDED (mg/Kg)	LCSD CONCENTRATION (mg/Kg)	LCSD % REC	% RPD	QC LIMITS RPD	QC LIMITS REC	#
13C2-PFTeDA	0.00500	0.00469	94			25-150	
13C3-PFBS	0.00465	0.00415	89			25-150	
18O2 PFHxS	0.00473	0.00441	93			25-150	
13C4 PFOS	0.00478	0.00426	89			25-150	
13C8 FOSA	0.00500	0.00419	84			25-150	
d3-NMeFOSAA	0.00500	0.00453	91			25-150	
d5-NEtFOSAA	0.00500	0.00427	85			25-150	
M2-6:2FTS	0.00475	0.00384	81			25-150	
M2-8:2FTS	0.00479	0.00335	70			25-150	

Column to be used to flag recovery and RPD values

FORM III 537 (modified)

FORM III
LCMS LAB CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 2018.07.06LLC_016.d

Lab ID: LCSD 320-232121/3-A Client ID:

COMPOUND	SPIKE ADDED (ug/L)	LCSD CONCENTRATION (ug/L)	LCSD % REC	% RPD	QC LIMITS RPD	QC LIMITS REC	#
Perfluorobutanoic acid (PFBA)	0.0400	0.0357	89	2	30	70-130	
Perfluoropentanoic acid (PFPeA)	0.0400	0.0356	89	2	30	66-126	
Perfluorohexanoic acid (PFHxA)	0.0400	0.0356	89	7	30	66-126	
Perfluoroheptanoic acid (PFHpA)	0.0400	0.0365	91	4	30	66-126	
Perfluorooctanoic acid (PFOA)	0.0400	0.0350	87	6	30	64-124	
Perfluorononanoic acid (PFNA)	0.0400	0.0366	92	0	30	68-128	
Perfluorodecanoic acid (PFDA)	0.0400	0.0390	97	6	30	69-129	
Perfluoroundecanoic acid (PFUnA)	0.0400	0.0340	85	5	30	60-120	
Perfluorododecanoic acid (PFDoA)	0.0400	0.0373	93	3	30	71-131	
Perfluorotridecanoic Acid (PFTriA)	0.0400	0.0367	92	12	30	72-132	
Perfluorotetradecanoic acid (PFTeA)	0.0400	0.0331	83	10	30	68-128	
Perfluorobutanesulfonic acid (PFBS)	0.0354	0.0331	94	2	30	73-133	
Perfluoropentanesulfonic acid (PFPeS)	0.0375	0.0352	94	4	30	70-130	
Perfluorohexanesulfonic acid (PFHxS)	0.0364	0.0290	80	6	30	63-123	
Perfluoroheptanesulfonic Acid (PFHpS)	0.0381	0.0363	95	3	30	68-128	
Perfluorooctanesulfonic acid (PFOS)	0.0371	0.0351	95	6	30	67-127	
Perfluorononanesulfonic acid (PFNS)	0.0384	0.0368	96	10	30	70-130	
Perfluorodecanesulfonic acid (PFDS)	0.0386	0.0342	89	5	30	68-128	
Perfluorooctane Sulfonamide (FOSA)	0.0400	0.0353	88	6	30	70-130	
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	0.0400	0.0345	86	2	30	67-127	
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	0.0400	0.0330	83	10	30	65-125	
4:2 FTS	0.0374	0.0384	103	5	30	70-130	
6:2 FTS	0.0379	0.0345	91	9	30	66-126	
8:2 FTS	0.0383	0.0348	91	4	30	67-127	
13C4 PFBA	0.100	0.0777	78			25-150	
13C5 PFPeA	0.100	0.0930	93			25-150	
13C2 PFHxA	0.100	0.0991	99			25-150	
13C4-PFHpA	0.100	0.100	100			25-150	

Column to be used to flag recovery and RPD values

FORM III 537 (modified)

FORM III
LCMS LAB CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 2018.07.06LLC_016.d

Lab ID: LCSD 320-232121/3-A Client ID:

COMPOUND	SPIKE ADDED (ug/L)	LCSD CONCENTRATION (ug/L)	LCSD % REC	% RPD	QC LIMITS RPD	QC LIMITS REC	#
13C4 PFOA	0.100	0.104	104			25-150	
13C5 PFNA	0.100	0.105	105			25-150	
13C2 PFDA	0.100	0.102	102			25-150	
13C2 PFUnA	0.100	0.101	101			25-150	
13C2 PFDoA	0.100	0.0935	93			25-150	
13C2-PFTeDA	0.100	0.0996	100			25-150	
13C3-PFBS	0.0930	0.0878	94			25-150	
18O2 PFHxS	0.0946	0.102	108			25-150	
13C4 PFOS	0.0956	0.0914	96			25-150	
13C8 FOSA	0.100	0.0863	86			25-150	
d3-NMeFOSAA	0.100	0.0995	99			25-150	
d5-NEtFOSAA	0.100	0.0989	99			25-150	
M2-6:2FTS	0.0950	0.104	109			25-150	
M2-8:2FTS	0.0958	0.0974	102			25-150	

Column to be used to flag recovery and RPD values

FORM III 537 (modified)

FORM III
LCMS LAB CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 2018.07.06LLAAA_034.d

Lab ID: LCSD 320-232150/3-A Client ID:

COMPOUND	SPIKE ADDED (ug/L)	LCSD CONCENTRATION (ug/L)	LCSD % REC	% RPD	QC LIMITS RPD	QC LIMITS REC	#
Perfluorobutanoic acid (PFBA)	0.0400	0.0369	92	3	30	70-130	
Perfluoropentanoic acid (PFPeA)	0.0400	0.0348	87	6	30	66-126	
Perfluorohexanoic acid (PFHxA)	0.0400	0.0368	92	5	30	66-126	
Perfluoroheptanoic acid (PFHpA)	0.0400	0.0367	92	3	30	66-126	
Perfluorooctanoic acid (PFOA)	0.0400	0.0363	91	1	30	64-124	
Perfluorononanoic acid (PFNA)	0.0400	0.0377	94	3	30	68-128	
Perfluorodecanoic acid (PFDA)	0.0400	0.0393	98	4	30	69-129	
Perfluoroundecanoic acid (PFUnA)	0.0400	0.0350	87	0	30	60-120	
Perfluorododecanoic acid (PFDoA)	0.0400	0.0365	91	2	30	71-131	
Perfluorotridecanoic Acid (PFTriA)	0.0400	0.0309	77	5	30	72-132	
Perfluorotetradecanoic acid (PFTeA)	0.0400	0.0348	87	5	30	68-128	
Perfluorobutanesulfonic acid (PFBS)	0.0354	0.0341	97	2	30	73-133	
Perfluoropentanesulfonic acid (PFPeS)	0.0375	0.0368	98	2	30	70-130	
Perfluorohexanesulfonic acid (PFHxS)	0.0364	0.0313	86	1	30	63-123	
Perfluoroheptanesulfonic Acid (PFHpS)	0.0381	0.0359	94	1	30	68-128	
Perfluorooctanesulfonic acid (PFOS)	0.0371	0.0338	91	1	30	67-127	
Perfluorononanesulfonic acid (PFNS)	0.0384	0.0349	91	6	30	70-130	
Perfluorodecanesulfonic acid (PFDS)	0.0386	0.0349	91	3	30	68-128	
Perfluorooctane Sulfonamide (FOSA)	0.0400	0.0378	94	2	30	70-130	
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	0.0400	0.0348	87	6	30	67-127	
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	0.0400	0.0345	86	1	30	65-125	
4:2 FTS	0.0374	0.0368	98	1	30	70-130	
6:2 FTS	0.0379	0.0347	91	6	30	66-126	
8:2 FTS	0.0383	0.0312	81	6	30	67-127	
13C4 PFBA	0.100	0.0957	96			25-150	
13C5 PFPeA	0.100	0.0955	95			25-150	
13C2 PFHxA	0.100	0.100	100			25-150	
13C4-PFHpA	0.100	0.101	101			25-150	

Column to be used to flag recovery and RPD values

FORM III 537 (modified)

FORM III
LCMS LAB CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 2018.07.06LLAAA_034.d

Lab ID: LCSD 320-232150/3-A Client ID:

COMPOUND	SPIKE ADDED (ug/L)	LCSD CONCENTRATION (ug/L)	LCSD % REC	% RPD	QC LIMITS RPD	QC LIMITS REC	#
13C4 PFOA	0.100	0.102	102			25-150	
13C5 PFNA	0.100	0.100	100			25-150	
13C2 PFDA	0.100	0.0968	97			25-150	
13C2 PFUnA	0.100	0.100	100			25-150	
13C2 PFDoA	0.100	0.102	102			25-150	
13C2-PFTeDA	0.100	0.0978	98			25-150	
13C3-PFBS	0.0930	0.0890	96			25-150	
18O2 PFHxS	0.0946	0.0974	103			25-150	
13C4 PFOS	0.0956	0.0970	102			25-150	
13C8 FOSA	0.100	0.0879	88			25-150	
d3-NMeFOSAA	0.100	0.0964	96			25-150	
d5-NEtFOSAA	0.100	0.101	101			25-150	
M2-6:2FTS	0.0950	0.105	110			25-150	
M2-8:2FTS	0.0958	0.101	105			25-150	

Column to be used to flag recovery and RPD values

FORM III 537 (modified)

FORM III
LCMS MATRIX SPIKE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 2018.07.13LLC_013.d

Lab ID: 320-40571-23 MS Client ID: NF27-GW-01 MS

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC	QC LIMITS REC	#
Perfluorobutanoic acid (PFBA)	0.0413	0.017	0.0537	89	70-130	
Perfluoropentanoic acid (PFPeA)	0.0413	0.012	0.0483	88	66-126	
Perfluorohexanoic acid (PFHxA)	0.0413	0.0049	0.0441	95	66-126	
Perfluoroheptanoic acid (PFHpA)	0.0413	0.0031	0.0413	93	66-126	
Perfluorooctanoic acid (PFOA)	0.0413	0.0037	0.0405	89	64-124	
Perfluorononanoic acid (PFNA)	0.0413	0.0015 J	0.0374	87	68-128	
Perfluorodecanoic acid (PFDA)	0.0413	0.00051 J	0.0383	92	69-129	
Perfluoroundecanoic acid (PFUnA)	0.0413	ND	0.0349	85	60-120	
Perfluorododecanoic acid (PFDoA)	0.0413	ND	0.0374	91	71-131	
Perfluorotridecanoic Acid (PFTriA)	0.0413	ND	0.0371	90	72-132	
Perfluorotetradecanoic acid (PFTeA)	0.0413	ND	0.0379	92	68-128	
Perfluorobutanesulfonic acid (PFBS)	0.0365	0.0012 J	0.0347	92	73-133	
Perfluoropentanesulfonic acid (PFPeS)	0.0387	ND	0.0376	97	70-130	
Perfluorohexanesulfonic acid (PFHxS)	0.0376	0.0012 J	0.0334	86	63-123	
Perfluoroheptanesulfonic Acid (PFHpS)	0.0393	ND	0.0383	97	68-128	
Perfluorooctanesulfonic acid (PFOS)	0.0383	0.0017 J	0.0367	91	67-127	
Perfluorononanesulfonic acid (PFNS)	0.0396	ND	0.0356	90	70-130	
Perfluorodecanesulfonic acid (PFDS)	0.0398	ND	0.0331	83	68-128	
Perfluorooctane Sulfonamide (FOSA)	0.0413	ND	0.0399	97	70-130	
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	0.0413	ND	0.0368	89	67-127	
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	0.0413	ND	0.0378	92	65-125	
4:2 FTS	0.0385	ND	0.0743	193	70-130	F1
6:2 FTS	0.0391	0.0034 J	0.0436	103	66-126	
8:2 FTS	0.0395	ND	0.0361	91	67-127	
13C4 PFBA	0.103	0.059	0.0627	61	25-150	
13C5 PFPeA	0.103	0.083	0.0834	81	25-150	
13C2 PFHxA	0.103	0.086	0.0897	87	25-150	
13C4-PFHpA	0.103	0.097	0.103	100	25-150	

Column to be used to flag recovery and RPD values

FORM III 537 (modified)

FORM III
LCMS MATRIX SPIKE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 2018.07.13LLC_013.d

Lab ID: 320-40571-23 MS Client ID: NF27-GW-01 MS

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC	QC LIMITS REC	#
13C4 PFOA	0.103	0.10	0.108	105	25-150	
13C5 PFNA	0.103	0.094	0.104	101	25-150	
13C2 PFDA	0.103	0.095	0.0992	96	25-150	
13C2 PFUnA	0.103	0.094	0.0978	95	25-150	
13C2 PFDoA	0.103	0.089	0.0925	90	25-150	
13C2-PFTeDA	0.103	0.089	0.0938	91	25-150	
13C3-PFBS	0.0960	0.081	0.0864	90	25-150	
18O2 PFHxS	0.0976	0.095	0.0966	99	25-150	
13C4 PFOS	0.0986	0.086	0.0927	94	25-150	
13C8 FOSA	0.103	0.086	0.0862	84	25-150	
d3-NMeFOSAA	0.103	0.095	0.102	99	25-150	
d5-NEtFOSAA	0.103	0.10	0.104	100	25-150	
M2-6:2FTS	0.0980	0.11	0.122	125	25-150	
M2-8:2FTS	0.0988	0.089	0.0905	92	25-150	

Column to be used to flag recovery and RPD values

FORM III 537 (modified)

FORM III
LCMS MATRIX SPIKE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 2018.07.06LLAAA_037.d

Lab ID: 320-40571-35 MS Client ID: NF33-GW-01 MS

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC	QC LIMITS REC	#
Perfluorobutanoic acid (PFBA)	0.0375	0.014	0.0603	123	70-130	
Perfluoropentanoic acid (PFPeA)	0.0375	0.0096	0.0543	119	66-126	
Perfluorohexanoic acid (PFHxA)	0.0375	0.0021	0.0381	96	66-126	
Perfluoroheptanoic acid (PFHpA)	0.0375	0.0015 J	0.0352	90	66-126	
Perfluorooctanoic acid (PFOA)	0.0375	ND	0.0344	92	64-124	
Perfluorononanoic acid (PFNA)	0.0375	0.00077 J	0.0351	91	68-128	
Perfluorodecanoic acid (PFDA)	0.0375	ND	0.0333	89	69-129	
Perfluoroundecanoic acid (PFUnA)	0.0375	ND	0.0353	94	60-120	
Perfluorododecanoic acid (PFDoA)	0.0375	ND	0.0344	92	71-131	
Perfluorotridecanoic Acid (PFTriA)	0.0375	ND	0.0276	74	72-132	
Perfluorotetradecanoic acid (PFTeA)	0.0375	ND	0.0300	80	68-128	
Perfluorobutanesulfonic acid (PFBS)	0.0332	0.0017 J	0.0327	94	73-133	
Perfluoropentanesulfonic acid (PFPeS)	0.0352	ND	0.0355	101	70-130	
Perfluorohexanesulfonic acid (PFHxS)	0.0341	0.00047 J	0.0313	90	63-123	
Perfluoroheptanesulfonic Acid (PFHpS)	0.0357	ND	0.0329	92	68-128	
Perfluorooctanesulfonic acid (PFOS)	0.0348	0.00096 J	0.0323	90	67-127	
Perfluorononanesulfonic acid (PFNS)	0.0360	ND	0.0315	88	70-130	
Perfluorodecanesulfonic acid (PFDS)	0.0362	ND	0.0287	79	68-128	
Perfluorooctane Sulfonamide (FOSA)	0.0375	ND	0.0339	90	70-130	
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	0.0375	ND	0.0340	91	67-127	
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	0.0375	ND	0.0348	93	65-125	
4:2 FTS	0.0350	ND	0.0509	145	70-130	F1
6:2 FTS	0.0356	0.0022 J	0.0410	109	66-126	
8:2 FTS	0.0359	ND	0.0307	86	67-127	
13C4 PFBA	0.0938	0.093	0.0843	90	25-150	
13C5 PFPeA	0.0938	0.092	0.0865	92	25-150	
13C2 PFHxA	0.0938	0.099	0.0904	96	25-150	
13C4-PFHpA	0.0938	0.10	0.0959	102	25-150	

Column to be used to flag recovery and RPD values

FORM III 537 (modified)

FORM III
LCMS MATRIX SPIKE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 2018.07.06LLAAA_037.d

Lab ID: 320-40571-35 MS Client ID: NF33-GW-01 MS

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC	QC LIMITS REC	#
13C4 PFOA	0.0938	0.10	0.0979	104	25-150	
13C5 PFNA	0.0938	0.11	0.0979	104	25-150	
13C2 PFDA	0.0938	0.11	0.101	108	25-150	
13C2 PFUnA	0.0938	0.11	0.0895	95	25-150	
13C2 PFDoA	0.0938	0.11	0.0847	90	25-150	
13C2-PFTeDA	0.0938	0.10	0.0726	77	25-150	
13C3-PFBS	0.0872	0.091	0.0826	95	25-150	
18O2 PFHxS	0.0887	0.10	0.0923	104	25-150	
13C4 PFOS	0.0896	0.10	0.0905	101	25-150	
13C8 FOSA	0.0938	0.092	0.0852	91	25-150	
d3-NMeFOSAA	0.0938	0.11	0.0913	97	25-150	
d5-NEtFOSAA	0.0938	0.11	0.0854	91	25-150	
M2-6:2FTS	0.0891	0.13	0.110	123	25-150	
M2-8:2FTS	0.0898	0.13	0.102	114	25-150	

Column to be used to flag recovery and RPD values

FORM III 537 (modified)

FORM III
LCMS MATRIX SPIKE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Matrix: Solid Level: Low Lab File ID: 2018.07.13LLB_069.d

Lab ID: 320-40571-36 MS Client ID: NF33-SS-01 MS

COMPOUND	SPIKE ADDED (mg/Kg)	SAMPLE CONCENTRATION (mg/Kg)	MS CONCENTRATION (mg/Kg)	MS % REC	QC LIMITS REC	#
Perfluorobutanoic acid (PFBA)	0.00225	0.00020 J	0.00230	93	81-133	
Perfluoropentanoic acid (PFPeA)	0.00225	ND	0.00208	92	79-120	
Perfluorohexanoic acid (PFHxA)	0.00225	ND	0.00236	105	75-125	
Perfluoroheptanoic acid (PFHpA)	0.00225	ND	0.00199	88	76-124	
Perfluorooctanoic acid (PFOA)	0.00226	ND	0.00200	89	76-121	
Perfluorononanoic acid (PFNA)	0.00225	ND	0.00203	90	74-126	
Perfluorodecanoic acid (PFDA)	0.00225	ND	0.00213	95	74-124	
Perfluoroundecanoic acid (PFUnA)	0.00225	ND	0.00229	101	74-114	
Perfluorododecanoic acid (PFDoA)	0.00225	ND	0.00216	96	75-123	
Perfluorotridecanoic Acid (PFTriA)	0.00225	ND	0.00214	95	43-116	
Perfluorotetradecanoic acid (PFTeA)	0.00225	ND	0.00212	94	22-129	
Perfluorobutanesulfonic acid (PFBS)	0.00199	ND	0.00196	98	73-142	
Perfluorohexanesulfonic acid (PFHxS)	0.00205	ND	0.00183	89	75-121	
Perfluoroheptanesulfonic Acid (PFHpS)	0.00215	ND	0.00219	102	78-146	
Perfluorooctanesulfonic acid (PFOS)	0.00209	ND	0.00201	96	69-131	
Perfluorodecanesulfonic acid (PFDS)	0.00217	ND	0.00196	90	54-113	
Perfluorooctane Sulfonamide (FOSA)	0.00225	ND	0.00226	100	62-135	
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	0.00225	ND	0.00197 J	87	65-135	
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	0.00225	ND	0.00213 J	94	65-135	
6:2 FTS	0.00214	ND	0.00219 J	102	65-135	
8:2 FTS	0.00216	ND	0.00213 J	99	65-135	
13C4 PFBA	0.00564	0.0043	0.00423	75	25-150	
13C5 PFPeA	0.00564	0.0046	0.00445	79	25-150	
13C2 PFHxA	0.00564	0.0039	0.00421	75	25-150	
13C4-PFHpA	0.00564	0.0051	0.00480	85	25-150	
13C4 PFOA	0.00564	0.0052	0.00486	86	25-150	
13C5 PFNA	0.00564	0.0052	0.00486	86	25-150	
13C2 PFDA	0.00564	0.0054	0.00499	89	25-150	
13C2 PFUnA	0.00564	0.0048	0.00445	79	25-150	
13C2 PFDoA	0.00564	0.0047	0.00404	72	25-150	

Column to be used to flag recovery and RPD values

FORM III 537 (modified)

FORM III
LCMS MATRIX SPIKE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Matrix: Solid Level: Low Lab File ID: 2018.07.13LLB_069.d

Lab ID: 320-40571-36 MS Client ID: NF33-SS-01 MS

COMPOUND	SPIKE ADDED (mg/Kg)	SAMPLE CONCENTRATION (mg/Kg)	MS CONCENTRATION (mg/Kg)	MS % REC	QC LIMITS REC	#
13C2-PFTeDA	0.00564	0.0052	0.00425	75	25-150	
13C3-PFBS	0.00524	0.0039	0.00383	73	25-150	
18O2 PFHxS	0.00533	0.0043	0.00409	77	25-150	
13C4 PFOS	0.00539	0.0039	0.00386	72	25-150	
13C8 FOSA	0.00564	0.0032	0.00336	60	25-150	
d3-NMeFOSAA	0.00564	0.0064	0.00526	93	25-150	
d5-NEtFOSAA	0.00564	0.0057	0.00500	89	25-150	
M2-6:2FTS	0.00535	0.0080	0.00571	107	25-150	
M2-8:2FTS	0.00540	0.0075	0.00598	111	25-150	

Column to be used to flag recovery and RPD values

FORM III 537 (modified)

FORM III
LCMS MATRIX SPIKE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Matrix: Solid Level: Low Lab File ID: 2018.07.14LLA_033.d

Lab ID: 320-40571-42 MS Client ID: NF36-SS-02 MS

COMPOUND	SPIKE ADDED (mg/Kg)	SAMPLE CONCENTRATION (mg/Kg)	MS CONCENTRATION (mg/Kg)	MS % REC	QC LIMITS REC	#
Perfluorobutanoic acid (PFBA)	0.00239	ND	0.00232	97	81-133	
Perfluoropentanoic acid (PFPeA)	0.00239	ND	0.00222	93	79-120	
Perfluorohexanoic acid (PFHxA)	0.00239	ND	0.00230	96	75-125	
Perfluoroheptanoic acid (PFHpA)	0.00239	ND	0.00213	89	76-124	
Perfluorooctanoic acid (PFOA)	0.00239	ND	0.00209	87	76-121	
Perfluorononanoic acid (PFNA)	0.00239	ND	0.00226	94	74-126	
Perfluorodecanoic acid (PFDA)	0.00239	ND	0.00217	91	74-124	
Perfluoroundecanoic acid (PFUnA)	0.00239	ND	0.00218	91	74-114	
Perfluorododecanoic acid (PFDoA)	0.00239	ND	0.00233	97	75-123	
Perfluorotridecanoic Acid (PFTriA)	0.00239	ND	0.00242	101	43-116	
Perfluorotetradecanoic acid (PFTeA)	0.00239	ND	0.00220	92	22-129	
Perfluorobutanesulfonic acid (PFBS)	0.00211	ND	0.00206	98	73-142	
Perfluorohexanesulfonic acid (PFHxS)	0.00217	ND	0.00197	91	75-121	
Perfluoroheptanesulfonic Acid (PFHpS)	0.00227	ND	0.00230	101	78-146	
Perfluorooctanesulfonic acid (PFOS)	0.00222	ND	0.00226	102	69-131	
Perfluorodecanesulfonic acid (PFDS)	0.00230	ND	0.00224	97	54-113	
Perfluorooctane Sulfonamide (FOSA)	0.00239	ND	0.00240	100	62-135	
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	0.00239	ND	0.00235 J	98	65-135	
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	0.00239	ND	0.00233 J	97	65-135	
6:2 FTS	0.00227	ND	0.00225 J	99	65-135	
8:2 FTS	0.00229	ND	0.00192 J	84	65-135	
13C4 PFBA	0.00597	0.0048	0.00477	80	25-150	
13C5 PFPeA	0.00597	0.0050	0.00495	83	25-150	
13C2 PFHxA	0.00597	0.0051	0.00515	86	25-150	
13C4-PFHpA	0.00597	0.0053	0.00528	88	25-150	
13C4 PFOA	0.00597	0.0051	0.00520	87	25-150	
13C5 PFNA	0.00597	0.0050	0.00469	78	25-150	
13C2 PFDA	0.00597	0.0053	0.00513	86	25-150	
13C2 PFUnA	0.00597	0.0050	0.00485	81	25-150	
13C2 PFDoA	0.00597	0.0052	0.00490	82	25-150	

Column to be used to flag recovery and RPD values

FORM III 537 (modified)

FORM III
LCMS MATRIX SPIKE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Matrix: Solid Level: Low Lab File ID: 2018.07.14LLA_033.d

Lab ID: 320-40571-42 MS Client ID: NF36-SS-02 MS

COMPOUND	SPIKE ADDED (mg/Kg)	SAMPLE CONCENTRATION (mg/Kg)	MS CONCENTRATION (mg/Kg)	MS % REC	QC LIMITS REC	#
13C2-PFTeDA	0.00597	0.0050	0.00507	85	25-150	
13C3-PFBS	0.00556	0.0044	0.00436	79	25-150	
18O2 PFHxS	0.00565	0.0044	0.00449	79	25-150	
13C4 PFOS	0.00571	0.0043	0.00421	74	25-150	
13C8 FOSA	0.00597	0.0042	0.00407	68	25-150	
d3-NMeFOSAA	0.00597	0.0053	0.00441	74	25-150	
d5-NEtFOSAA	0.00597	0.0051	0.00465	78	25-150	
M2-6:2FTS	0.00568	0.0039	0.00371	65	25-150	
M2-8:2FTS	0.00572	0.0040	0.00396	69	25-150	

Column to be used to flag recovery and RPD values

FORM III 537 (modified)

FORM III
LCMS MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 2018.07.13LLC_014.d

Lab ID: 320-40571-23 MSD Client ID: NF27-GW-01 MSD

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC	% RPD	QC LIMITS RPD	QC LIMITS REC	#
Perfluorobutanoic acid (PFBA)	0.0369	0.0550	103	2	30	70-130	
Perfluoropentanoic acid (PFPeA)	0.0369	0.0500	102	3	30	66-126	
Perfluorohexanoic acid (PFHxA)	0.0369	0.0388	92	13	30	66-126	
Perfluoroheptanoic acid (PFHpA)	0.0369	0.0382	95	8	30	66-126	
Perfluorooctanoic acid (PFOA)	0.0370	0.0348	84	15	30	64-124	
Perfluorononanoic acid (PFNA)	0.0369	0.0336	87	11	30	68-128	
Perfluorodecanoic acid (PFDA)	0.0369	0.0342	91	11	30	69-129	
Perfluoroundecanoic acid (PFUnA)	0.0369	0.0314	85	11	30	60-120	
Perfluorododecanoic acid (PFDoA)	0.0369	0.0327	88	13	30	71-131	
Perfluorotridecanoic Acid (PFTriA)	0.0369	0.0318	86	15	30	72-132	
Perfluorotetradecanoic acid (PFTeA)	0.0369	0.0312	84	19	30	68-128	
Perfluorobutanesulfonic acid (PFBS)	0.0326	0.0330	97	5	30	73-133	
Perfluoropentanesulfonic acid (PFPeS)	0.0346	0.0326	94	14	30	70-130	
Perfluorohexanesulfonic acid (PFHxS)	0.0336	0.0305	87	9	30	63-123	
Perfluoroheptanesulfonic Acid (PFHpS)	0.0352	0.0328	93	15	30	68-128	
Perfluorooctanesulfonic acid (PFOS)	0.0343	0.0327	90	12	30	67-127	
Perfluorononanesulfonic acid (PFNS)	0.0355	0.0310	87	14	30	70-130	
Perfluorodecanesulfonic acid (PFDS)	0.0356	0.0300	84	10	30	68-128	
Perfluorooctane Sulfonamide (FOSA)	0.0369	0.0348	94	14	30	70-130	
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	0.0369	0.0323	87	13	30	67-127	
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	0.0369	0.0323	88	16	30	65-125	
4:2 FTS	0.0345	0.0631	183	16	30	70-130	F1
6:2 FTS	0.0350	0.0367	95	17	30	66-126	
8:2 FTS	0.0354	0.0317	89	13	30	67-127	
13C4 PFBA	0.0923	0.0562	61			25-150	
13C5 PFPeA	0.0923	0.0749	81			25-150	
13C2 PFHxA	0.0923	0.0847	92			25-150	
13C4-PFHpA	0.0923	0.0903	98			25-150	

Column to be used to flag recovery and RPD values

FORM III 537 (modified)

FORM III
LCMS MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 2018.07.13LLC_014.d

Lab ID: 320-40571-23 MSD Client ID: NF27-GW-01 MSD

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC	% RPD	QC LIMITS RPD	QC LIMITS REC	#
13C4 PFOA	0.0923	0.0913	99			25-150	
13C5 PFNA	0.0923	0.0875	95			25-150	
13C2 PFDA	0.0923	0.0850	92			25-150	
13C2 PFUnA	0.0923	0.0874	95			25-150	
13C2 PFDoA	0.0923	0.0818	89			25-150	
13C2-PFTeDA	0.0923	0.0859	93			25-150	
13C3-PFBS	0.0859	0.0729	85			25-150	
18O2 PFHxS	0.0873	0.0821	94			25-150	
13C4 PFOS	0.0883	0.0807	91			25-150	
13C8 FOSA	0.0923	0.0774	84			25-150	
d3-NMeFOSAA	0.0923	0.0883	96			25-150	
d5-NEtFOSAA	0.0923	0.0886	96			25-150	
M2-6:2FTS	0.0877	0.0979	112			25-150	
M2-8:2FTS	0.0884	0.0755	85			25-150	

Column to be used to flag recovery and RPD values

FORM III 537 (modified)

FORM III
LCMS MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 2018.07.06LLAAA_038.d

Lab ID: 320-40571-35 MSD Client ID: NF33-GW-01 MSD

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC	% RPD	QC LIMITS RPD	QC LIMITS REC	#
Perfluorobutanoic acid (PFBA)	0.0380	0.0430	77	33	30	70-130	F2
Perfluoropentanoic acid (PFPeA)	0.0380	0.0388	77	33	30	66-126	F2
Perfluorohexanoic acid (PFHxA)	0.0380	0.0359	89	6	30	66-126	
Perfluoroheptanoic acid (PFHpA)	0.0380	0.0349	88	1	30	66-126	
Perfluorooctanoic acid (PFOA)	0.0381	0.0330	87	4	30	64-124	
Perfluorononanoic acid (PFNA)	0.0380	0.0359	92	2	30	68-128	
Perfluorodecanoic acid (PFDA)	0.0380	0.0368	97	10	30	69-129	
Perfluoroundecanoic acid (PFUnA)	0.0380	0.0323	85	9	30	60-120	
Perfluorododecanoic acid (PFDoA)	0.0380	0.0322	85	7	30	71-131	
Perfluorotridecanoic Acid (PFTriA)	0.0380	0.0306	80	10	30	72-132	
Perfluorotetradecanoic acid (PFTeA)	0.0380	0.0319	84	6	30	68-128	
Perfluorobutanesulfonic acid (PFBS)	0.0336	0.0329	93	1	30	73-133	
Perfluoropentanesulfonic acid (PFPeS)	0.0357	0.0349	98	2	30	70-130	
Perfluorohexanesulfonic acid (PFHxS)	0.0346	0.0288	82	8	30	63-123	
Perfluoroheptanesulfonic Acid (PFHpS)	0.0362	0.0323	89	2	30	68-128	
Perfluorooctanesulfonic acid (PFOS)	0.0353	0.0315	87	2	30	67-127	
Perfluorononanesulfonic acid (PFNS)	0.0365	0.0313	86	1	30	70-130	
Perfluorodecanesulfonic acid (PFDS)	0.0367	0.0294	80	3	30	68-128	
Perfluorooctane Sulfonamide (FOSA)	0.0380	0.0355	93	5	30	70-130	
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	0.0380	0.0321	84	6	30	67-127	
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	0.0380	0.0344	91	1	30	65-125	
4:2 FTS	0.0355	0.0465	131	9	30	70-130	F1
6:2 FTS	0.0360	0.0373	97	10	30	66-126	
8:2 FTS	0.0364	0.0296	81	4	30	67-127	
13C4 PFBA	0.0951	0.0835	88			25-150	
13C5 PFPeA	0.0951	0.0898	94			25-150	
13C2 PFHxA	0.0951	0.0890	94			25-150	
13C4-PFHpA	0.0951	0.0981	103			25-150	

Column to be used to flag recovery and RPD values

FORM III 537 (modified)

FORM III
LCMS MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 2018.07.06LLAAA_038.d

Lab ID: 320-40571-35 MSD Client ID: NF33-GW-01 MSD

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC	% RPD	QC LIMITS RPD	QC LIMITS REC	#
13C4 PFOA	0.0951	0.0948	100			25-150	
13C5 PFNA	0.0951	0.0991	104			25-150	
13C2 PFDA	0.0951	0.0931	98			25-150	
13C2 PFUnA	0.0951	0.0986	104			25-150	
13C2 PFDoA	0.0951	0.0928	98			25-150	
13C2-PFTeDA	0.0951	0.0853	90			25-150	
13C3-PFBS	0.0884	0.0823	93			25-150	
18O2 PFHxS	0.0899	0.0977	109			25-150	
13C4 PFOS	0.0909	0.0941	104			25-150	
13C8 FOSA	0.0951	0.0850	89			25-150	
d3-NMeFOSAA	0.0951	0.100	105			25-150	
d5-NEtFOSAA	0.0951	0.0909	96			25-150	
M2-6:2FTS	0.0903	0.112	125			25-150	
M2-8:2FTS	0.0911	0.116	127			25-150	

Column to be used to flag recovery and RPD values

FORM III 537 (modified)

FORM III
LCMS MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Matrix: Solid Level: Low Lab File ID: 2018.07.13LLB_070.d

Lab ID: 320-40571-36 MSD Client ID: NF33-SS-01 MSD

COMPOUND	SPIKE ADDED (mg/Kg)	MSD CONCENTRATION (mg/Kg)	MSD % REC	% RPD	QC LIMITS RPD	QC LIMITS REC	#
Perfluorobutanoic acid (PFBA)	0.00225	0.00228	93	1	30	81-133	
Perfluoropentanoic acid (PFPeA)	0.00225	0.00209	93	1	30	79-120	
Perfluorohexanoic acid (PFHxA)	0.00225	0.00204	91	15	30	75-125	
Perfluoroheptanoic acid (PFHpA)	0.00225	0.00196	87	1	30	76-124	
Perfluorooctanoic acid (PFOA)	0.00225	0.00197	88	1	30	76-121	
Perfluorononanoic acid (PFNA)	0.00225	0.00208	93	2	30	74-126	
Perfluorodecanoic acid (PFDA)	0.00225	0.00210	93	2	30	74-124	
Perfluoroundecanoic acid (PFUnA)	0.00225	0.00217	97	5	30	74-114	
Perfluorododecanoic acid (PFDoA)	0.00225	0.00212	95	2	30	75-123	
Perfluorotridecanoic Acid (PFTriA)	0.00225	0.00223	99	4	30	43-116	
Perfluorotetradecanoic acid (PFTeA)	0.00225	0.00198	88	7	30	22-129	
Perfluorobutanesulfonic acid (PFBS)	0.00199	0.00189	95	3	30	73-142	
Perfluorohexanesulfonic acid (PFHxS)	0.00204	0.00180	88	2	30	75-121	
Perfluoroheptanesulfonic Acid (PFHpS)	0.00214	0.00213	100	2	30	78-146	
Perfluorooctanesulfonic acid (PFOS)	0.00208	0.00201	96	0	30	69-131	
Perfluorodecanesulfonic acid (PFDS)	0.00216	0.00213	98	8	30	54-113	
Perfluorooctane Sulfonamide (FOSA)	0.00225	0.00224	100	1	30	62-135	
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	0.00225	0.00225	100	13	30	65-135	
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	0.00225	0.00233	104	9	30	65-135	
6:2 FTS	0.00213	0.00224	105	3	30	65-135	
8:2 FTS	0.00215	0.00210 J	98	1	30	65-135	
13C4 PFBA	0.00561	0.00451	80			25-150	
13C5 PFPeA	0.00561	0.00479	85			25-150	
13C2 PFHxA	0.00561	0.00474	84			25-150	
13C4-PFHpA	0.00561	0.00510	91			25-150	
13C4 PFOA	0.00561	0.00520	93			25-150	
13C5 PFNA	0.00561	0.00516	92			25-150	
13C2 PFDA	0.00561	0.00520	93			25-150	
13C2 PFUnA	0.00561	0.00509	91			25-150	
13C2 PFDoA	0.00561	0.00495	88			25-150	

Column to be used to flag recovery and RPD values

FORM III 537 (modified)

FORM III
LCMS MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Matrix: Solid Level: Low Lab File ID: 2018.07.13LLB_070.d

Lab ID: 320-40571-36 MSD Client ID: NF33-SS-01 MSD

COMPOUND	SPIKE ADDED (mg/Kg)	MSD CONCENTRATION (mg/Kg)	MSD % REC	% RPD	QC LIMITS RPD	QC LIMITS REC	#
13C2-PFTeDA	0.00561	0.00550	98			25-150	
13C3-PFBS	0.00522	0.00411	79			25-150	
18O2 PFHxS	0.00531	0.00426	80			25-150	
13C4 PFOS	0.00537	0.00406	76			25-150	
13C8 FOSA	0.00561	0.00384	68			25-150	
d3-NMeFOSAA	0.00561	0.00551	98			25-150	
d5-NEtFOSAA	0.00561	0.00534	95			25-150	
M2-6:2FTS	0.00533	0.00551	103			25-150	
M2-8:2FTS	0.00538	0.00624	116			25-150	

Column to be used to flag recovery and RPD values

FORM III 537 (modified)

FORM III
LCMS MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Matrix: Solid Level: Low Lab File ID: 2018.07.14LLA_034.d

Lab ID: 320-40571-42 MSD Client ID: NF36-SS-02 MSD

COMPOUND	SPIKE ADDED (mg/Kg)	MSD CONCENTRATION (mg/Kg)	MSD % REC	% RPD	QC LIMITS RPD	QC LIMITS REC	#
Perfluorobutanoic acid (PFBA)	0.00237	0.00229	97	1	30	81-133	
Perfluoropentanoic acid (PFPeA)	0.00237	0.00223	94	1	30	79-120	
Perfluorohexanoic acid (PFHxA)	0.00237	0.00228	96	1	30	75-125	
Perfluoroheptanoic acid (PFHpA)	0.00237	0.00209	88	2	30	76-124	
Perfluorooctanoic acid (PFOA)	0.00237	0.00216	91	4	30	76-121	
Perfluorononanoic acid (PFNA)	0.00237	0.00226	95	0	30	74-126	
Perfluorodecanoic acid (PFDA)	0.00237	0.00231	98	6	30	74-124	
Perfluoroundecanoic acid (PFUnA)	0.00237	0.00208	88	5	30	74-114	
Perfluorododecanoic acid (PFDoA)	0.00237	0.00225	95	3	30	75-123	
Perfluorotridecanoic Acid (PFTriA)	0.00237	0.00237	100	2	30	43-116	
Perfluorotetradecanoic acid (PFTeA)	0.00237	0.00229	97	4	30	22-129	
Perfluorobutanesulfonic acid (PFBS)	0.00210	0.00198	94	4	30	73-142	
Perfluorohexanesulfonic acid (PFHxS)	0.00216	0.00191	88	3	30	75-121	
Perfluoroheptanesulfonic Acid (PFHpS)	0.00226	0.00222	99	3	30	78-146	
Perfluorooctanesulfonic acid (PFOS)	0.00220	0.00215	98	5	30	69-131	
Perfluorodecanesulfonic acid (PFDS)	0.00229	0.00220	96	2	30	54-113	
Perfluorooctane Sulfonamide (FOSA)	0.00237	0.00237	100	1	30	62-135	
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	0.00237	0.00232 J	98	1	30	65-135	
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	0.00237	0.00216 J	91	8	30	65-135	
6:2 FTS	0.00225	0.00222 J	99	1	30	65-135	
8:2 FTS	0.00227	0.00216 J	95	12	30	65-135	
13C4 PFBA	0.00593	0.00469	79			25-150	
13C5 PFPeA	0.00593	0.00500	84			25-150	
13C2 PFHxA	0.00593	0.00514	87			25-150	
13C4-PFHpA	0.00593	0.00542	91			25-150	
13C4 PFOA	0.00593	0.00508	86			25-150	
13C5 PFNA	0.00593	0.00466	79			25-150	
13C2 PFDA	0.00593	0.00501	84			25-150	
13C2 PFUnA	0.00593	0.00509	86			25-150	
13C2 PFDoA	0.00593	0.00495	84			25-150	

Column to be used to flag recovery and RPD values

FORM III 537 (modified)

FORM III
LCMS MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Matrix: Solid Level: Low Lab File ID: 2018.07.14LLA_034.d

Lab ID: 320-40571-42 MSD Client ID: NF36-SS-02 MSD

COMPOUND	SPIKE ADDED (mg/Kg)	MSD CONCENTRATION (mg/Kg)	MSD % REC	% RPD	QC LIMITS RPD	QC LIMITS REC	#
13C2-PFTeDA	0.00593	0.00507	85			25-150	
13C3-PFBS	0.00551	0.00442	80			25-150	
18O2 PFHxS	0.00561	0.00459	82			25-150	
13C4 PFOS	0.00567	0.00428	76			25-150	
13C8 FOSA	0.00593	0.00414	70			25-150	
d3-NMeFOSAA	0.00593	0.00443	75			25-150	
d5-NEtFOSAA	0.00593	0.00474	80			25-150	
M2-6:2FTS	0.00563	0.00370	66			25-150	
M2-8:2FTS	0.00568	0.00358	63			25-150	

Column to be used to flag recovery and RPD values

FORM III 537 (modified)

FORM IV
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Lab File ID: 2018.07.13LLB_053.d Lab Sample ID: MB 320-231392/1-A

Matrix: Solid Date Extracted: 06/28/2018 05:15

Instrument ID: A8_N Date Analyzed: 07/14/2018 03:41

Level:(Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 320-231392/2-A	2018.07.13LLB_054.d	07/14/2018 03:49
	LCSD 320-231392/3-A	2018.07.13LLB_055.d	07/14/2018 03:57
NF17-SS-01	320-40571-3	2018.07.13LLB_056.d	07/14/2018 04:04
NF17-SS-01-DUP	320-40571-4	2018.07.13LLB_057.d	07/14/2018 04:12
NF18-SS-02	320-40571-6	2018.07.13LLB_058.d	07/14/2018 04:20
NF19-SS-02	320-40571-8	2018.07.13LLB_059.d	07/14/2018 04:28
NF20-SS-02	320-40571-10	2018.07.13LLB_060.d	07/14/2018 04:36
NF21-SS-01	320-40571-12	2018.07.13LLB_061.d	07/14/2018 04:43
NF22-SS-01	320-40571-14	2018.07.13LLB_063.d	07/14/2018 04:59
NF23-SS-01	320-40571-16	2018.07.13LLB_064.d	07/14/2018 05:07
NF24-SS-02	320-40571-18	2018.07.13LLB_065.d	07/14/2018 05:15
NF25-SS-02	320-40571-20	2018.07.13LLB_066.d	07/14/2018 05:23
NF26-SS-02	320-40571-22	2018.07.13LLB_067.d	07/14/2018 05:31
NF33-SS-01	320-40571-36	2018.07.13LLB_068.d	07/14/2018 05:38
NF33-SS-01 MS	320-40571-36 MS	2018.07.13LLB_069.d	07/14/2018 05:46
NF33-SS-01 MSD	320-40571-36 MSD	2018.07.13LLB_070.d	07/14/2018 05:54

FORM IV 537 (modified)

FORM IV
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Lab File ID: 2018.07.14LLA_019.d Lab Sample ID: MB 320-231393/1-A

Matrix: Solid Date Extracted: 06/28/2018 06:06

Instrument ID: A8_N Date Analyzed: 07/14/2018 13:06

Level:(Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 320-231393/2-A	2018.07.14LLA_020.d	07/14/2018 13:14
	LCSD 320-231393/3-A	2018.07.14LLA_021.d	07/14/2018 13:22
NF27-SS-01	320-40571-24	2018.07.14LLA_022.d	07/14/2018 13:29
NF28-SS-01	320-40571-26	2018.07.14LLA_023.d	07/14/2018 13:37
NF29-SS-01	320-40571-28	2018.07.14LLA_024.d	07/14/2018 13:45
NF30-SS-02	320-40571-30	2018.07.14LLA_027.d	07/14/2018 14:09
NF31-SS-02	320-40571-32	2018.07.14LLA_028.d	07/14/2018 14:16
NF32-SS-02	320-40571-34	2018.07.14LLA_029.d	07/14/2018 14:24
NF34-SS-01	320-40571-38	2018.07.14LLA_030.d	07/14/2018 14:32
NF35-SS-01	320-40571-40	2018.07.14LLA_031.d	07/14/2018 14:40
NF36-SS-02	320-40571-42	2018.07.14LLA_032.d	07/14/2018 14:48
NF36-SS-02 MS	320-40571-42 MS	2018.07.14LLA_033.d	07/14/2018 14:56
NF36-SS-02 MSD	320-40571-42 MSD	2018.07.14LLA_034.d	07/14/2018 15:03

FORM IV 537 (modified)

FORM IV
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Lab File ID: 2018.07.06LLC_014.d Lab Sample ID: MB 320-232121/1-A

Matrix: Water Date Extracted: 07/02/2018 14:58

Instrument ID: A8_N Date Analyzed: 07/07/2018 01:04

Level:(Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 320-232121/2-A	2018.07.06LLC_015.d	07/07/2018 01:12
	LCSD 320-232121/3-A	2018.07.06LLC_016.d	07/07/2018 01:19
NF19-GW-01	320-40571-7	2018.07.06LLC_021.d	07/07/2018 01:59
NF20-GW-01	320-40571-9	2018.07.06LLC_022.d	07/07/2018 02:06
NF21-GW-01	320-40571-11	2018.07.06LLC_025.d	07/07/2018 02:30
NF22-GW-01	320-40571-13	2018.07.06LLC_027.d	07/07/2018 02:46
NF23-GW-01	320-40571-15	2018.07.06LLC_028.d	07/07/2018 02:53
NF29-GW-01	320-40571-27	2018.07.06LLC_039.d	07/07/2018 04:19
NF31-GW-01	320-40571-31	2018.07.06LLC_041.d	07/07/2018 04:35
NF32-GW-01	320-40571-33	2018.07.06LLC_042.d	07/07/2018 04:43
NFMW1-GW-01	320-40571-45	2018.07.06LLC_043.d	07/07/2018 04:51
NF20-GW-01 DL	320-40571-9 DL	2018.07.11LLB_047.d	07/11/2018 22:01
NF31-GW-01 DL	320-40571-31 DL	2018.07.11LLB_048.d	07/11/2018 22:09
NF17-GW-01	320-40571-1	2018.07.13LLC_007.d	07/13/2018 20:54
NF17-GW-01-DUP	320-40571-2	2018.07.13LLC_008.d	07/13/2018 21:01
NF24-GW-01	320-40571-17	2018.07.13LLC_009.d	07/13/2018 21:09
NF25-GW-01	320-40571-19	2018.07.13LLC_010.d	07/13/2018 21:17
NF26-GW-01	320-40571-21	2018.07.13LLC_011.d	07/13/2018 21:25
NF27-GW-01	320-40571-23	2018.07.13LLC_012.d	07/13/2018 21:33
NF27-GW-01 MS	320-40571-23 MS	2018.07.13LLC_013.d	07/13/2018 21:40
NF27-GW-01 MSD	320-40571-23 MSD	2018.07.13LLC_014.d	07/13/2018 21:48
NF28-GW-01	320-40571-25	2018.07.13LLC_015.d	07/13/2018 21:56

FORM IV 537 (modified)

FORM IV
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Lab File ID: 2018.07.06LLC_014.d Lab Sample ID: MB 320-232121/1-A

Matrix: Water Date Extracted: 07/02/2018 14:58

Instrument ID: A8_N Date Analyzed: 07/07/2018 01:04

Level:(Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
NF30-GW-01	320-40571-29	2018.07.13LLC_016.d	07/13/2018 22:04
NF18-GW-01	320-40571-5	2018.07.16LLA_006.d	07/16/2018 13:10

FORM IV 537 (modified)

FORM IV
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Lab File ID: 2018.07.06LLAAA_032.d Lab Sample ID: MB 320-232150/1-A

Matrix: Water Date Extracted: 07/02/2018 16:10

Instrument ID: A8_N Date Analyzed: 07/06/2018 17:38

Level:(Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 320-232150/2-A	2018.07.06L LAAA_033.d	07/06/2018 17:45
	LCSD 320-232150/3-A	2018.07.06L LAAA_034.d	07/06/2018 17:53
NF33-GW-01	320-40571-35	2018.07.06L LAAA_036.d	07/06/2018 18:09
NF33-GW-01 MS	320-40571-35 MS	2018.07.06L LAAA_037.d	07/06/2018 18:17
NF33-GW-01 MSD	320-40571-35 MSD	2018.07.06L LAAA_038.d	07/06/2018 18:25
NF-EB-02	320-40571-43	2018.07.06L LAAA_043.d	07/06/2018 19:04
NF-FB-02	320-40571-44	2018.07.06L LAAA_044.d	07/06/2018 19:11
NFMW7-GW-01	320-40571-46	2018.07.06L LAAA_045.d	07/06/2018 19:19
NFMW7-GW-01-DUP	320-40571-47	2018.07.06L LAAA_046.d	07/06/2018 19:27
NF35-GW-01	320-40571-39	2018.07.12L LC_025.d	07/12/2018 22:36
NF34-GW-01	320-40571-37	2018.07.13L LC_018.d	07/13/2018 22:20
NF36-GW-01	320-40571-41	2018.07.13L LC_019.d	07/13/2018 22:28

FORM IV 537 (modified)

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Sample No.: IC 320-232544/5 Date Analyzed: 07/05/2018 09:14

Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3(mm)

Lab File ID (Standard): 2018.07.05LLICALAA_ Heated Purge: (Y/N) N

Calibration ID: 39943

		13PFOA					
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MID-POINT		4451960	2.67				
UPPER LIMIT		6677940	2.87				
LOWER LIMIT		2225980	2.47				
LAB SAMPLE ID	CLIENT SAMPLE ID						
ICB 320-232544/9		4449433	2.67				
ICV 320-232544/10		4482111	2.66				
CCV 320-232772/3 CCVIS		4133089	2.65				
CCV 320-232797/3 CCVIS		4453728	2.65				

13PFOA = 13C2-PFOA

Area Limit = 50%-150% of internal standard area
RT Limit = ± 0.2 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII 537 (MODIFIED)

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Sample No.: CCV 320-232772/3 Date Analyzed: 07/06/2018 15:56

Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3(mm)

Lab File ID (Standard): 2018.07.06LLAAA_019 Heated Purge: (Y/N) N

Calibration ID: 39943

		13PFOA					
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		4133089	2.65				
UPPER LIMIT		6199634	2.85				
LOWER LIMIT		2066545	2.45				
LAB SAMPLE ID	CLIENT SAMPLE ID						
CCB 320-232772/1		4730610	2.65				
CCVL 320-232772/2		4142718	2.66				
CCV 320-232788/1		3996449	2.65				
MB 320-232150/1-A		5418889	2.65				
LCS 320-232150/2-A		4718064	2.65				
LCSD 320-232150/3-A		4876893	2.65				
320-40571-35	NF33-GW-01	4825229	2.65				
320-40571-35 MS	NF33-GW-01 MS	4999457	2.66				
320-40571-35 MSD	NF33-GW-01 MSD	5222940	2.67				
CCV 320-232788/11		4301824	2.66				
320-40571-43	NF-EB-02	4897412	2.67				
320-40571-44	NF-FB-02	4924941	2.65				
320-40571-46	NFMW7-GW-01	5179321	2.66				
320-40571-47	NFMW7-GW-01-DUP	4988026	2.65				
CCV 320-232788/19		3828485	2.65				

13PFOA = 13C2-PFOA
13PFOA = 13C2-PFOA

Area Limit = 50%-150% of internal standard area
RT Limit = ± 0.2 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII 537 (MODIFIED)

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Sample No.: CCV 320-232797/3 Date Analyzed: 07/06/2018 23:53

Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3(mm)

Lab File ID (Standard): 2018.07.06LLC_005.d Heated Purge: (Y/N) N

Calibration ID: 39943

		13PFOA					
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		4453728	2.65				
UPPER LIMIT		6680592	2.85				
LOWER LIMIT		2226864	2.45				
LAB SAMPLE ID	CLIENT SAMPLE ID						
CCB 320-232797/1		4580635	2.66				
CCVL 320-232797/2		4630864	2.65				
CCV 320-232800/1		4291508	2.65				
MB 320-232121/1-A		4528295	2.66				
LCS 320-232121/2-A		4662128	2.66				
LCSD 320-232121/3-A		4825165	2.67				
320-40571-7	NF19-GW-01	5076098	2.65				
320-40571-9	NF20-GW-01	4917430	2.66				
CCV 320-232800/12		4405819	2.65				
320-40571-11	NF21-GW-01	5062606	2.66				
320-40571-13	NF22-GW-01	5109934	2.65				
320-40571-15	NF23-GW-01	5179040	2.65				
CCV 320-232800/23		4100346	2.66				
320-40571-27	NF29-GW-01	5056393	2.66				
320-40571-31	NF31-GW-01	5035528	2.65				
320-40571-33	NF32-GW-01	4987291	2.67				
320-40571-45	NFMW1-GW-01	5343825	2.66				
CCV 320-232800/33		4373610	2.65				

13PFOA = 13C2-PFOA
13PFOA = 13C2-PFOA

Area Limit = 50%-150% of internal standard area
RT Limit = ± 0.2 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII 537 (MODIFIED)

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Sample No.: IC 320-233476/5 Date Analyzed: 07/11/2018 15:15

Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3(mm)

Lab File ID (Standard): 2018.07.11LLICALA_0 Heated Purge: (Y/N) N

Calibration ID: 39998

		13PFOA					
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MID-POINT		4343809	2.67				
UPPER LIMIT		6515714	2.87				
LOWER LIMIT		2171905	2.47				
LAB SAMPLE ID	CLIENT SAMPLE ID						
ICB 320-233476/9		3951281	2.66				
ICV 320-233476/10		4109601	2.67				
CCV 320-233511/1		3544592	2.65				
320-40571-9 DL	NF20-GW-01 DL	831278*	2.67				
320-40571-31 DL	NF31-GW-01 DL	891727*	2.67				
CCV 320-233511/7		3163684	2.67				
CCV 320-233725/3 CCVIS		3787538	2.68				
CCV 320-233973/3 CCVIS		3840969	2.66				
CCV 320-233992/3 CCVIS		3671011	2.66				
CCV 320-234011/3 CCVIS		3701261	2.66				
CCV 320-234295/3 CCVIS		3955070	2.68				

13PFOA = 13C2-PFOA

Area Limit = 50%-150% of internal standard area
RT Limit = ± 0.2 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII 537 (MODIFIED)

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Sample No.: CCV 320-233725/3 Date Analyzed: 07/12/2018 15:18

Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3(mm)

Lab File ID (Standard): 2018.07.12LLAAAA_04 Heated Purge: (Y/N) N

Calibration ID: 39998

		13PFOA					
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		3787538	2.68				
UPPER LIMIT		5681307	2.88				
LOWER LIMIT		1893769	2.48				
LAB SAMPLE ID	CLIENT SAMPLE ID						
CCB 320-233725/1		3905479	2.67				
CCVL 320-233725/2		4047580	2.68				
CCV 320-233774/1		3773350	2.67				
320-40571-39	NF35-GW-01	4355332	2.68				
CCV 320-233774/4		3166079	2.67				

13PFOA = 13C2-PFOA

Area Limit = 50%-150% of internal standard area
RT Limit = ± 0.2 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII 537 (MODIFIED)

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Sample No.: CCV 320-233973/3 Date Analyzed: 07/13/2018 16:12

Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3(mm)

Lab File ID (Standard): 2018.07.12LLD_045.d Heated Purge: (Y/N) N

Calibration ID: 39998

		13PFOA					
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		3840969	2.66				
UPPER LIMIT		5761454	2.86				
LOWER LIMIT		1920485	2.46				
LAB SAMPLE ID	CLIENT SAMPLE ID						
CCB 320-233973/1		3737523	2.66				
CCVL 320-233973/2		3928203	2.66				
CCV 320-233989/1		3734286	2.67				
320-40571-1	NF17-GW-01	4842389	2.67				
320-40571-2	NF17-GW-01-DUP	4376936	2.67				
320-40571-17	NF24-GW-01	4970689	2.67				
320-40571-19	NF25-GW-01	4795990	2.67				
320-40571-21	NF26-GW-01	4066808	2.67				
320-40571-23	NF27-GW-01	4792517	2.68				
320-40571-23 MS	NF27-GW-01 MS	4833102	2.68				
320-40571-23 MSD	NF27-GW-01 MSD	4704125	2.67				
320-40571-25	NF28-GW-01	4551311	2.67				
320-40571-29	NF30-GW-01	4575968	2.67				
CCV 320-233989/12		3672283	2.66				
320-40571-37	NF34-GW-01	4686309	2.68				
320-40571-41	NF36-GW-01	4552482	2.66				
CCV 320-233989/15		3400861	2.67				

13PFOA = 13C2-PFOA
13PFOA = 13C2-PFOA

Area Limit = 50%-150% of internal standard area
RT Limit = ± 0.2 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII 537 (MODIFIED)

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Sample No.: CCV 320-233992/3 Date Analyzed: 07/13/2018 23:07

Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3(mm)

Lab File ID (Standard): 2018.07.13LLB_018.d Heated Purge: (Y/N) N

Calibration ID: 39998

		13PFOA					
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		3671011	2.66				
UPPER LIMIT		5506517	2.86				
LOWER LIMIT		1835506	2.46				
LAB SAMPLE ID	CLIENT SAMPLE ID						
CCB 320-233992/1		3960372	2.66				
CCVL 320-233992/2		3979952	2.67				
CCV 320-233997/1		3852715	2.67				
MB 320-231392/1-A		4314005	2.67				
LCS 320-231392/2-A		4285601	2.67				
LCSD 320-231392/3-A		4363780	2.67				
320-40571-3	NF17-SS-01	4498120	2.66				
320-40571-4	NF17-SS-01-DUP	4826844	2.66				
320-40571-6	NF18-SS-02	4817783	2.66				
320-40571-8	NF19-SS-02	4376336	2.67				
320-40571-10	NF20-SS-02	4624248	2.67				
320-40571-12	NF21-SS-01	4302506	2.67				
CCV 320-233997/11		3721520	2.67				
320-40571-14	NF22-SS-01	4352753	2.66				
320-40571-16	NF23-SS-01	4719119	2.67				
320-40571-18	NF24-SS-02	4215396	2.66				
320-40571-20	NF25-SS-02	4792946	2.66				
320-40571-22	NF26-SS-02	4443005	2.66				
320-40571-36	NF33-SS-01	4816811	2.66				
320-40571-36 MS	NF33-SS-01 MS	4838788	2.67				
320-40571-36 MSD	NF33-SS-01 MSD	4588783	2.66				
CCV 320-233997/20		3795503	2.66				

13PFOA = 13C2-PFOA
13PFOA = 13C2-PFOA

Area Limit = 50%-150% of internal standard area
RT Limit = ± 0.2 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII 537 (MODIFIED)

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Sample No.: CCV 320-234011/3 Date Analyzed: 07/14/2018 11:24

Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3(mm)

Lab File ID (Standard): 2018.07.14LLA_006.d Heated Purge: (Y/N) N

Calibration ID: 39998

		13PFOA					
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		3701261	2.66				
UPPER LIMIT		5551892	2.86				
LOWER LIMIT		1850631	2.46				
LAB SAMPLE ID	CLIENT SAMPLE ID						
CCB 320-234011/1		3793498	2.65				
CCVL 320-234011/2		3945973	2.65				
CCV 320-234231/1		3769148	2.66				
MB 320-231393/1-A		4477893	2.66				
LCS 320-231393/2-A		4352830	2.67				
LCSD 320-231393/3-A		4332976	2.66				
320-40571-24	NF27-SS-01	4679406	2.67				
320-40571-26	NF28-SS-01	4499053	2.66				
320-40571-28	NF29-SS-01	4518445	2.66				
CCV 320-234231/9		3857497	2.67				
320-40571-30	NF30-SS-02	4315412	2.67				
320-40571-32	NF31-SS-02	4506542	2.66				
320-40571-34	NF32-SS-02	4781391	2.66				
320-40571-38	NF34-SS-01	5062098	2.66				
320-40571-40	NF35-SS-01	5248976	2.66				
320-40571-42	NF36-SS-02	4514006	2.66				
320-40571-42 MS	NF36-SS-02 MS	4483425	2.67				
320-40571-42 MSD	NF36-SS-02 MSD	4379904	2.67				
CCV 320-234231/20		3824847	2.67				

13PFOA = 13C2-PFOA
13PFOA = 13C2-PFOA

Area Limit = 50%-150% of internal standard area
RT Limit = ± 0.2 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII 537 (MODIFIED)

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Sample No.: CCV 320-234295/3 Date Analyzed: 07/16/2018 13:02

Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3(mm)

Lab File ID (Standard): 2018.07.16LLA_005.d Heated Purge: (Y/N) N

Calibration ID: 39998

		13PFOA					
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		3955070	2.68				
UPPER LIMIT		5932605	2.88				
LOWER LIMIT		1977535	2.48				
LAB SAMPLE ID	CLIENT SAMPLE ID						
CCB 320-234295/1		4245827	2.69				
CCVL 320-234295/2		4178400	2.68				
320-40571-5	NF18-GW-01	5231051	2.70				
CCV 320-234295/6		4008716	2.70				

13PFOA = 13C2-PFOA
13PFOA = 13C2-PFOA

Area Limit = 50%-150% of internal standard area
RT Limit = ± 0.2 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII 537 (MODIFIED)

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF17-GW-01
Lab Sample ID: 320-40571-1
Matrix: Water
Lab File ID: 2018.07.13LLC_007.d
Analysis Method: 537 (modified)
Date Collected: 06/20/2018 09:30
Extraction Method: 3535
Date Extracted: 07/02/2018 14:58
Sample wt/vol: 277.5(mL)
Date Analyzed: 07/13/2018 20:54
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 233989
Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	0.0035	B	0.0018	0.00032
2706-90-3	Perfluoropentanoic acid (PFPeA)	0.0013	J	0.0018	0.00044
307-24-4	Perfluorohexanoic acid (PFHxA)	0.00089	J	0.0018	0.00052
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.00074	J	0.0018	0.00023
335-67-1	Perfluorooctanoic acid (PFOA)	0.0031		0.0018	0.00077
375-95-1	Perfluorononanoic acid (PFNA)	0.00062	J	0.0018	0.00024
335-76-2	Perfluorodecanoic acid (PFDA)	ND		0.0018	0.00028
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		0.0018	0.00099
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		0.0018	0.00050
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		0.0018	0.0012
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		0.0018	0.00026
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.0017	J	0.0018	0.00018
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	0.00029	J I	0.0018	0.00027
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.0012	J B	0.0018	0.00015
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.0018	0.00017
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.0069		0.0018	0.00049
8789-57-2	Perfluorononanesulfonic acid (PFNS)	ND		0.0018	0.00014
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		0.0018	0.00029
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		0.0018	0.00032
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.018	0.0028
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.018	0.0017
757124-72-4	4:2 FTS	ND		0.018	0.0047
27619-97-2	6:2 FTS	0.0038	J	0.018	0.0018
39108-34-4	8:2 FTS	ND		0.018	0.0018

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF17-GW-01
Lab Sample ID: 320-40571-1
Matrix: Water
Lab File ID: 2018.07.13LLC_007.d
Analysis Method: 537 (modified)
Date Collected: 06/20/2018 09:30
Extraction Method: 3535
Date Extracted: 07/02/2018 14:58
Sample wt/vol: 277.5(mL)
Date Analyzed: 07/13/2018 20:54
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 233989
Units: ug/L

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00992	13C4 PFBA	68		25-150
STL01893	13C5 PFPeA	82		25-150
STL00993	13C2 PFHxA	93		25-150
STL01892	13C4-PFHpA	102		25-150
STL00990	13C4 PFOA	102		25-150
STL00995	13C5 PFNA	91		25-150
STL00996	13C2 PFDA	92		25-150
STL00997	13C2 PFUnA	83		25-150
STL00998	13C2 PFDoA	74		25-150
STL02116	13C2-PFTeDA	47		25-150
STL02337	13C3-PFBS	87		25-150
STL00994	18O2 PFHxS	92		25-150
STL00991	13C4 PFOS	91		25-150
STL01056	13C8 FOSA	75		25-150
STL02118	d3-NMeFOSAA	84		25-150
STL02117	d5-NEtFOSAA	90		25-150
STL02279	M2-6:2FTS	115		25-150
STL02280	M2-8:2FTS	81		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\2018.07.13LLC_007.d
Lims ID: 320-40571-A-1-A
Client ID: NF17-GW-01
Sample Type: Client
Inject. Date: 13-Jul-2018 20:54:06 ALS Bottle#: 1 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-40571-a-1-a (232121)
Misc. Info.: Plate: 1 Rack: 4
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 16-Jul-2018 12:27:50 Calib Date: 11-Jul-2018 15:38:42
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK023

First Level Reviewer: mongkols Date: 16-Jul-2018 12:27:50

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										M
212.90 > 169.00	1.439	1.433	0.006	1.000	169176	0.0968			22.3	M
D 1 13C4 PFBA										
217.00 > 172.00	1.439	1.445	-0.006	0.538	4432521	1.69		67.5	21925	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.725	1.716	0.009	1.000	64195	0.0353			5.7	
D 3 13C5-PFPeA										
267.90 > 223.00	1.725	1.725	0.0	0.645	3746485	2.05		82.1	24276	
5 Perfluorobutanesulfonic acid										M
298.90 > 80.00	1.770	1.761	0.009	1.005	145495	0.0477			50.0	M
298.90 > 99.00	1.761	1.761	0.0	1.000	54928		2.65(1.25-3.74)		61.8	
D 47 13C3-PFBS										
301.90 > 83.00	1.761	1.762	-0.001	0.659	92622	2.02		86.8	231	
6 Perfluorohexanoic acid										M
313.00 > 269.00	2.010	1.999	0.011	1.000	46764	0.0247			6.9	M
313.00 > 119.00	2.022	1.999	0.023	1.006	6840		6.84(5.03-15.10)		31.9	
D 7 13C2 PFHxA										
315.00 > 270.00	2.010	2.011	-0.001	0.752	4597644	2.33		93.3	70289	
70 Perfluoropentanesulfonic acid										R
349.00 > 80.00	2.033	2.022	0.011	1.154	22650	0.008148			17.5	R
349.00 > 99.00	2.033	2.022	0.011	1.154	20212		1.12(1.36-4.07)		27.6	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.328	2.316	0.012	1.000	43894	0.0205			10.9	
363.00 > 169.00	2.328	2.316	0.012	1.000	21369		2.05(1.13-3.40)		134	
D 9 13C4-PFHpA										
367.00 > 322.00	2.328	2.329	-0.001	0.871	4627738	2.55		102	41431	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.341	2.329	0.012	1.000	86575	0.0320			36.2	
399.00 > 99.00	2.341	2.329	0.012	1.000	26886		3.22(1.50-4.49)		47.4	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 11 18O2 PFHxS										
403.00 > 84.00	2.341	2.342	-0.001	0.876	5582372	2.17		91.8	48002	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.650	2.634	0.016	1.000	74845	0.1065			606	
D 12 M2-6:2FTS										
429.00 > 81.00	2.650	2.651	-0.001	0.992	1067125	2.74		115	5025	
* 62 13C2-PFOA										
415.00 > 370.00	2.673	2.658	0.015		4842389	2.50			46678	
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.673	2.658	0.015	1.000	203155	0.0872			48.5	M
413.00 > 169.00	2.680	2.658	0.022	1.003	117273		1.73(0.84-2.52)		504	M
D 14 13C4 PFOA										
417.00 > 372.00	2.673	2.673	0.0	1.000	4730081	2.55		102	47298	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.039	3.018	0.021	1.002	376082	0.1929			656	
499.00 > 99.00	3.032	3.018	0.014	1.000	72393		5.20(2.31-6.93)		489	
20 Perfluorononanoic acid										
463.00 > 419.00	3.039	3.025	0.014	1.000	28861	0.0172			24.4	
463.00 > 169.00	3.039	3.025	0.014	1.000	7410		3.89(1.90-5.69)		134	
D 18 13C4 PFOS										
503.00 > 80.00	3.032	3.036	-0.004	1.134	4112945	2.18		91.2	17574	
D 19 13C5 PFNA										
468.00 > 423.00	3.039	3.036	0.003	1.137	3781410	2.28		91.4	44554	
D 21 13C8 FOSA										
506.00 > 78.00	3.379	3.376	0.003	1.264	5095634	1.87		74.9	40368	
D 26 M2-8:2FTS										
529.00 > 81.00	3.379	3.376	0.003	1.264	1102479	1.94		80.9	8756	
D 23 13C2 PFDA										
515.00 > 470.00	3.388	3.385	0.003	1.268	3332337	2.29		91.7	42117	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.538	3.544	-0.006	1.324	1244210	2.09		83.6	24747	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.708	3.705	0.003	1.387	1375052	2.25		90.1	3873	
D 30 13C2 PFUnA										
565.00 > 520.00	3.719	3.715	0.004	1.391	2522186	2.08		83.1	40133	
D 36 13C2 PFDoA										
615.00 > 570.00	4.008	4.005	0.003	1.500	2312635	1.84		73.5	20400	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.500	4.500	0.0	1.684	1524036	1.17		46.7	11540	

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Review Flags

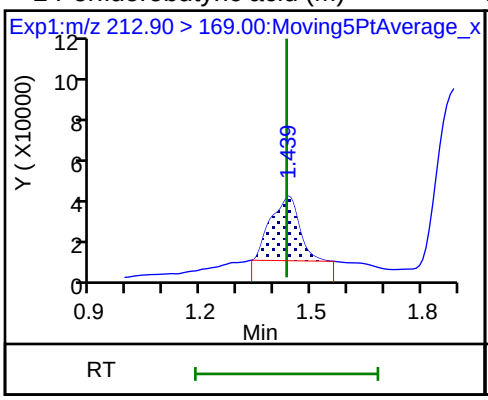
M - Manually Integrated

Report Date: 16-Jul-2018 12:27:50 Chrom Revision: 2.2 07-Jun-2018 07:41:54

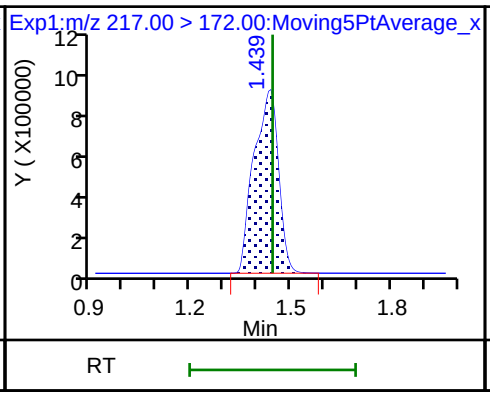
TestAmerica Sacramento

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\2018.07.13LLC_007.d				
Injection Date:	13-Jul-2018 20:54:06	Instrument ID:	A8_N		
Lims ID:	320-40571-A-1-A	Lab Sample ID:	320-40571-1		
Client ID:	NF17-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	1	Worklist Smp#:	2
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		

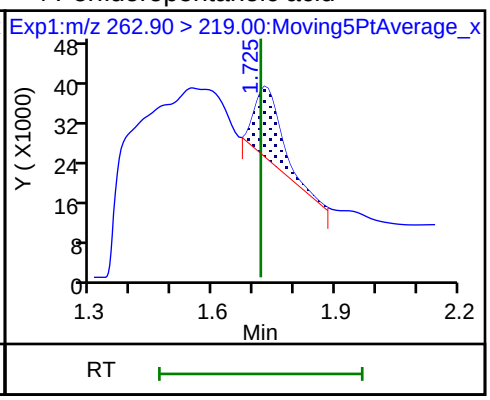
2 Perfluorobutyric acid (M)



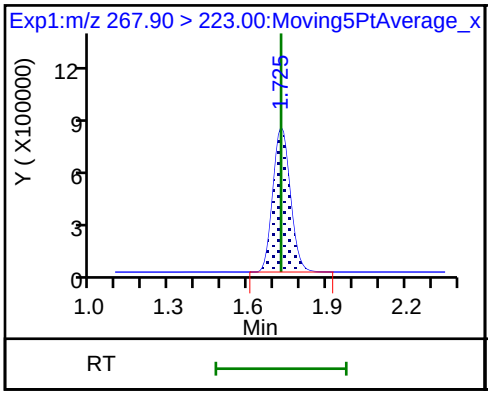
D 1 13C4 PFBA



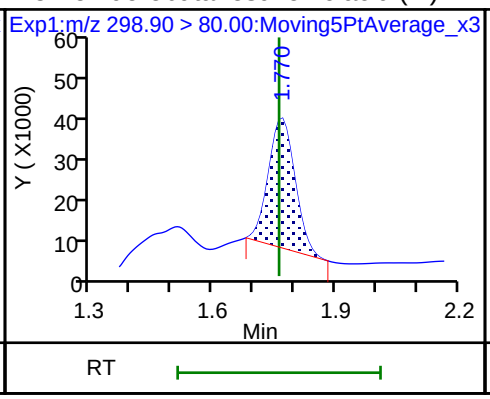
4 Perfluoropentanoic acid



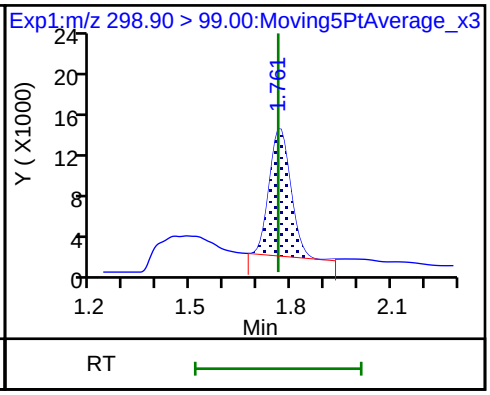
D 3 13C5-PFPeA



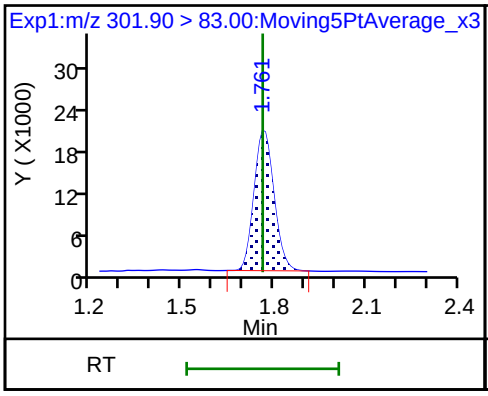
5 Perfluorobutanesulfonic acid (M)



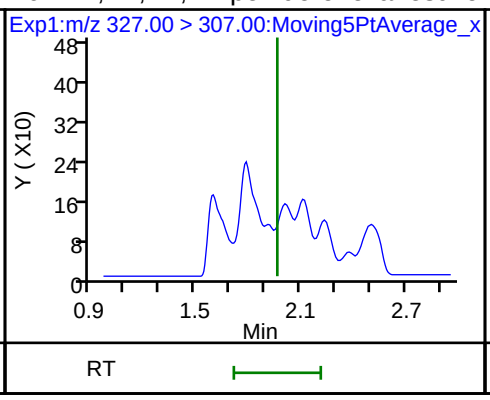
5 Perfluorobutanesulfonic acid



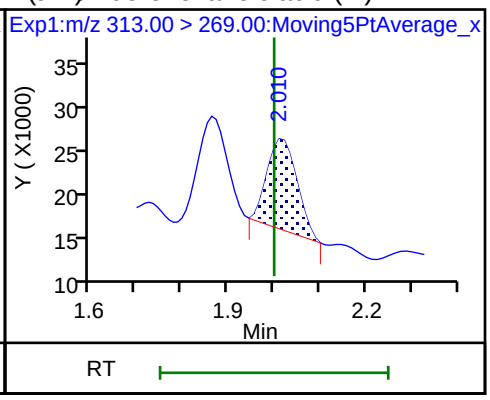
D 47 13C3-PFBS



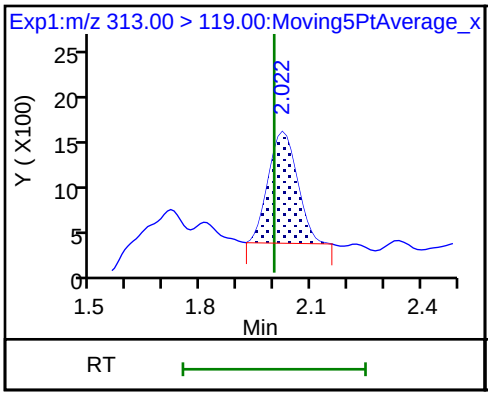
61 1H,1H,2H,2H-perfluorohexanesulfoni (ND)



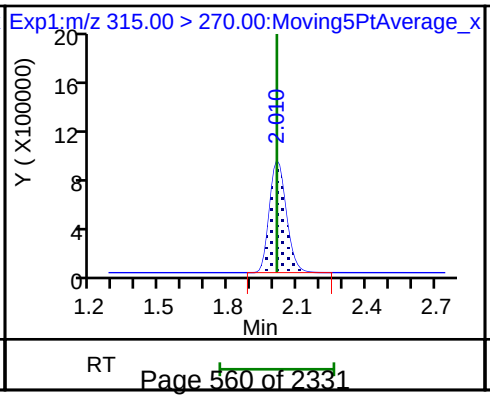
6 Perfluorohexanoic acid (M)



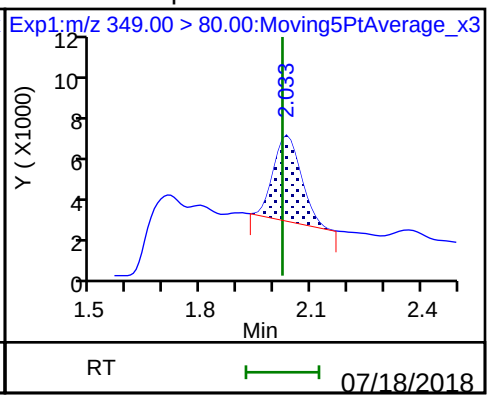
6 Perfluorohexanoic acid



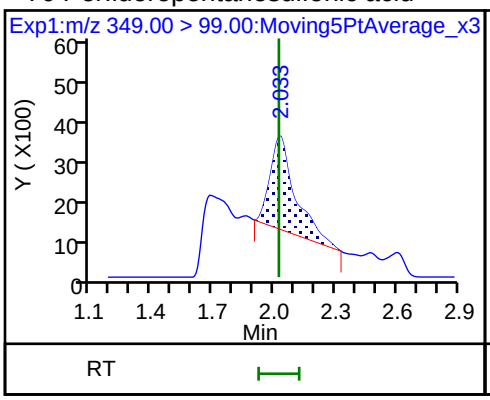
D 7 13C2 PFHxA



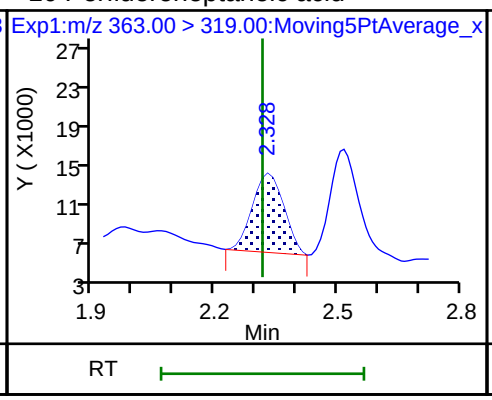
70 Perfluoropentanesulfonic acid



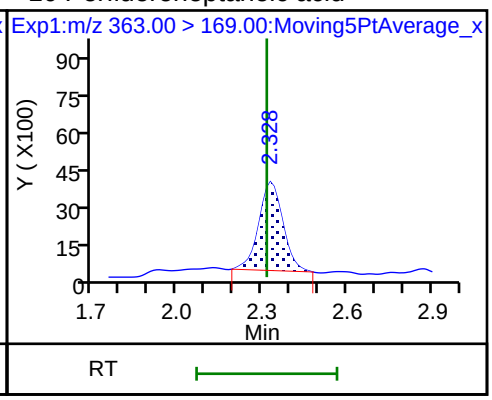
70 Perfluoropentanesulfonic acid



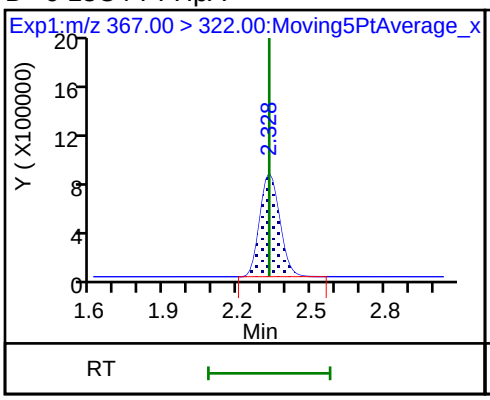
10 Perfluoroheptanoic acid



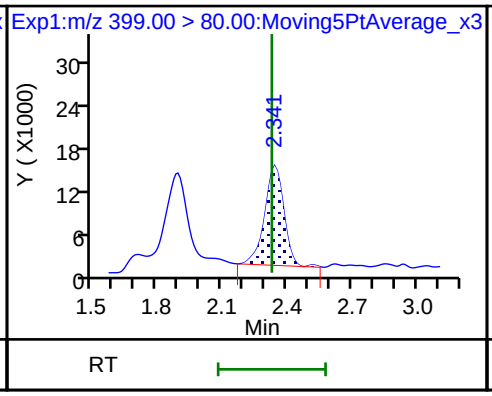
10 Perfluoroheptanoic acid



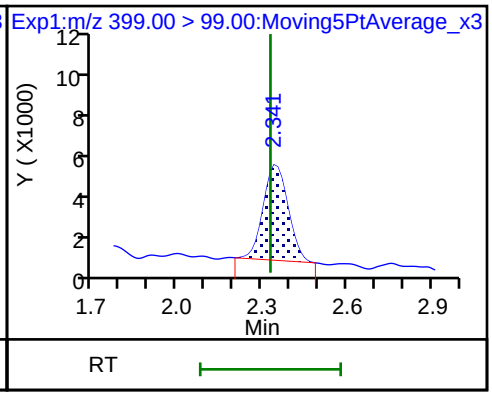
D 9 13C4-PFHpA



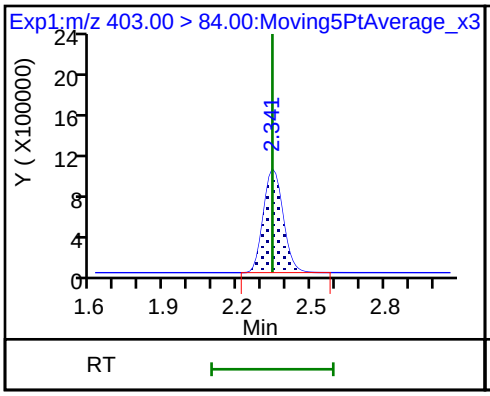
8 Perfluorohexanesulfonic acid



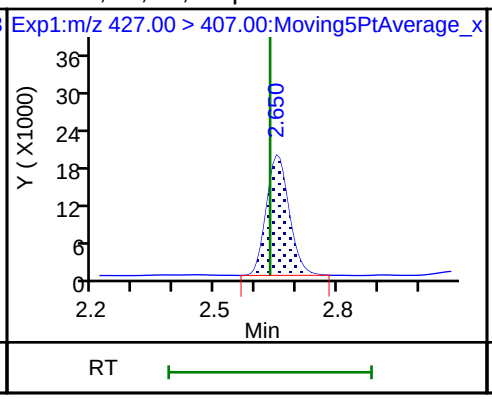
8 Perfluorohexanesulfonic acid



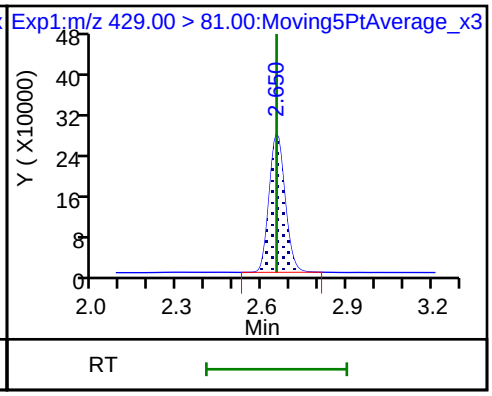
D 11 18O2 PFHxS



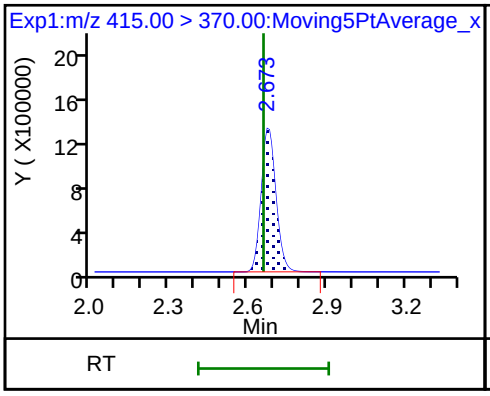
13 1H,1H,2H,2H-perfluorooctanesulfon



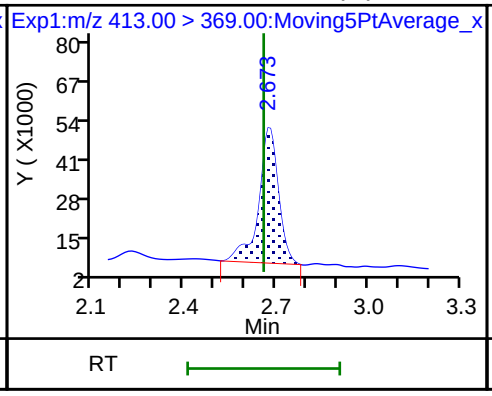
D 12 M2-6:2FTS



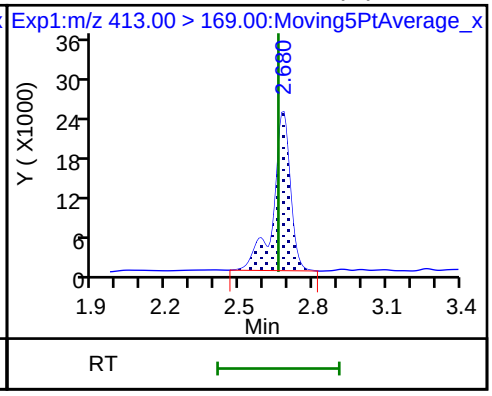
* 62 13C2-PFOA



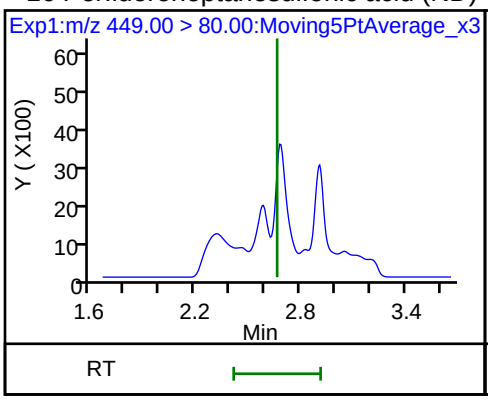
15 Perfluorooctanoic acid (M)



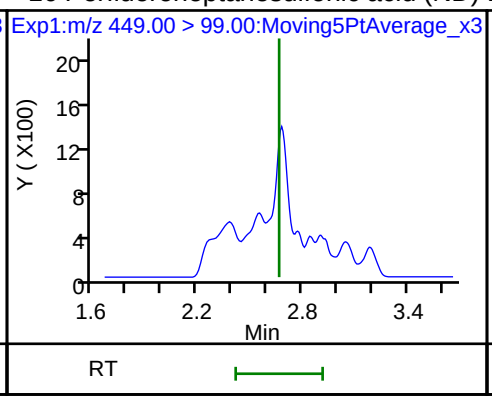
15 Perfluorooctanoic acid (M)



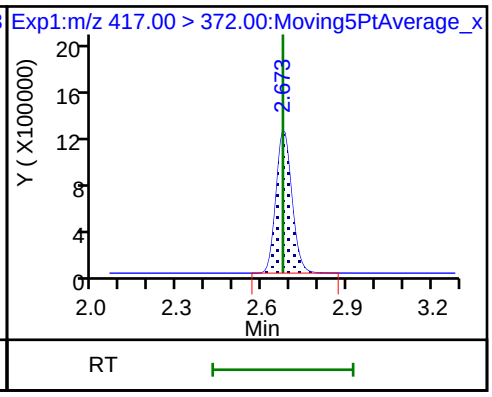
16 Perfluoroheptanesulfonic acid (ND)



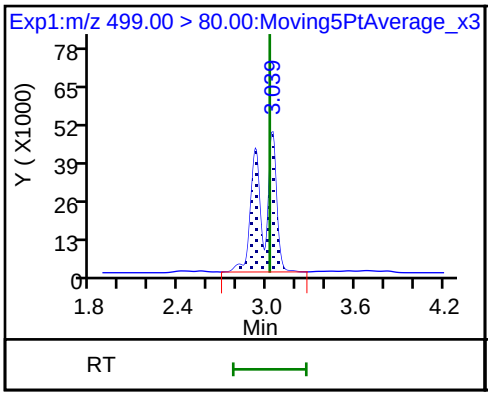
16 Perfluoroheptanesulfonic acid (ND)



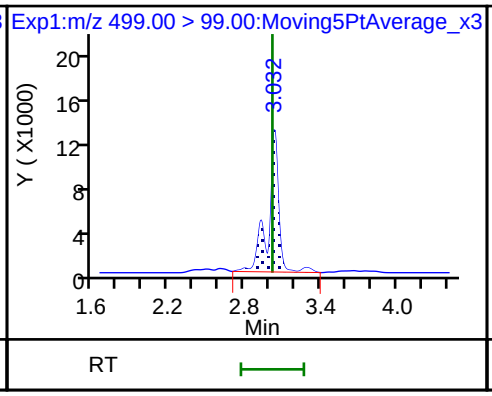
D 14 13C4 PFOA



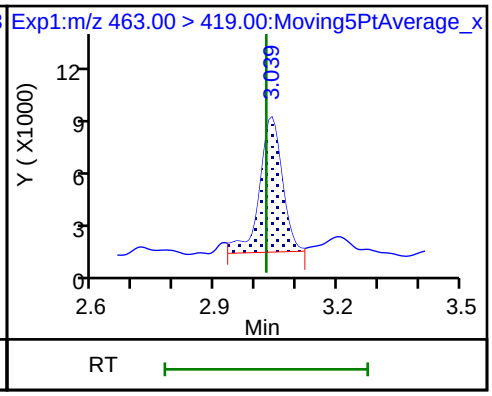
17 Perfluorooctane sulfonic acid



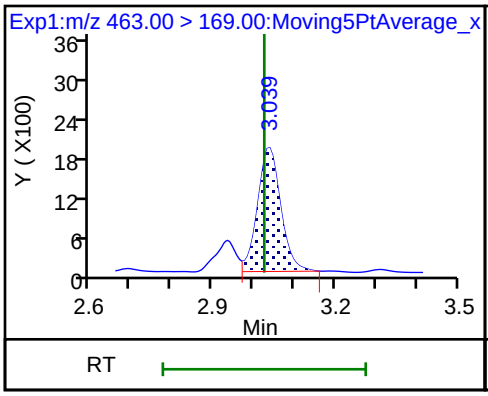
17 Perfluorooctane sulfonic acid



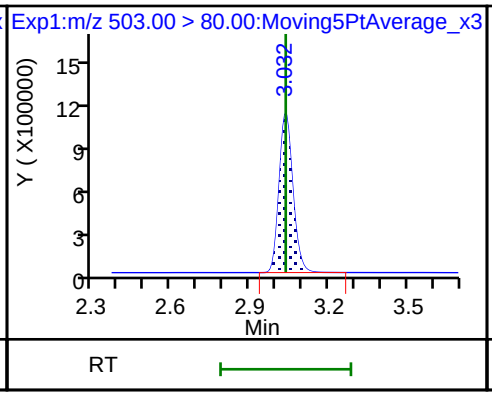
20 Perfluorononanoic acid



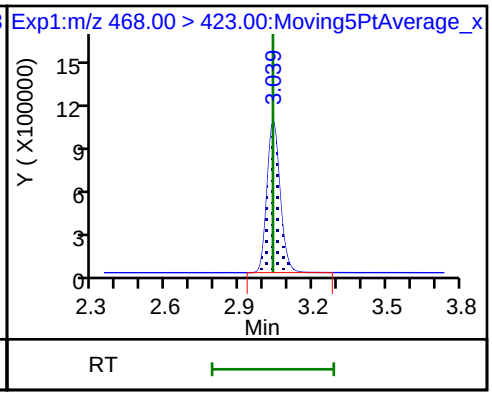
20 Perfluorononanoic acid



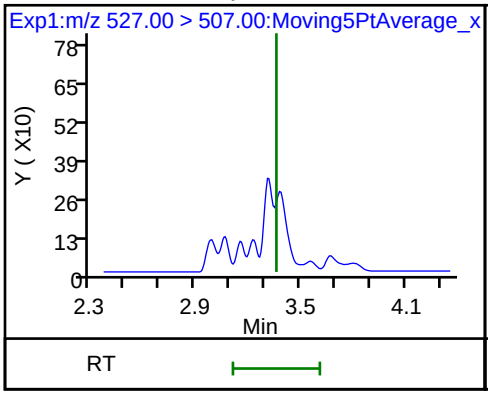
D 18 13C4 PFOS



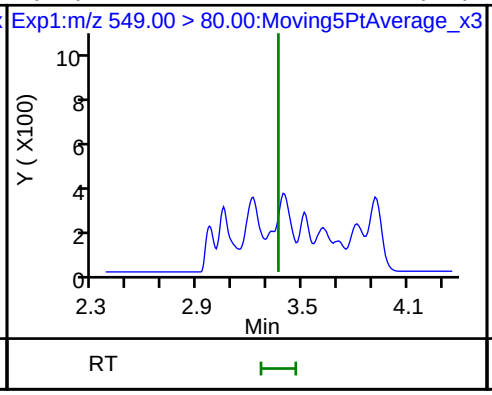
D 19 13C5 PFNA



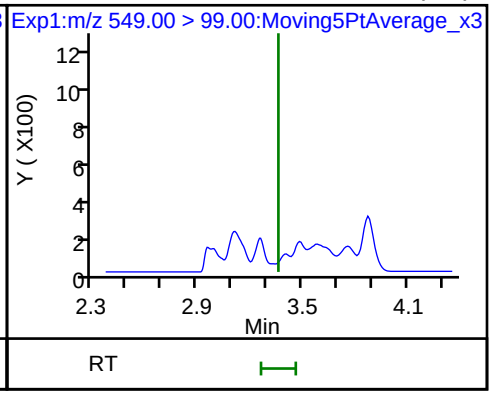
25 1H,1H,2H,2H-perfluorodecanesulfoni (ND)



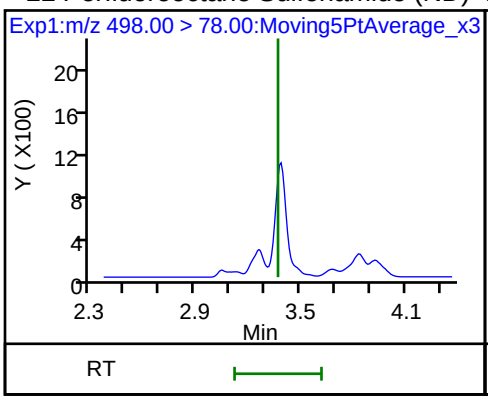
68 Perfluorononanesulfonic acid (ND)



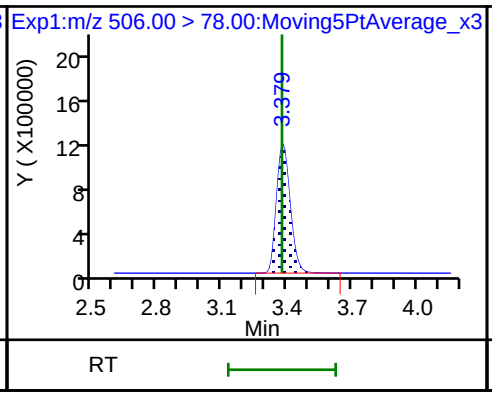
68 Perfluorononanesulfonic acid (ND)



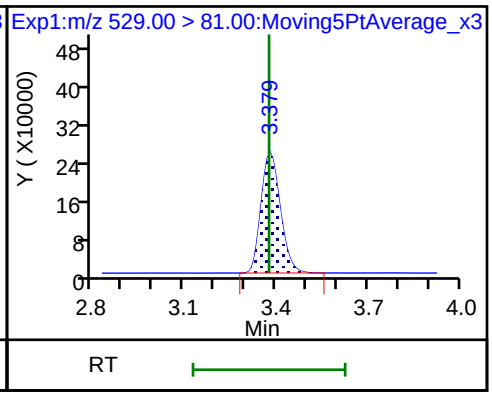
22 Perfluorooctane Sulfonamide (ND)



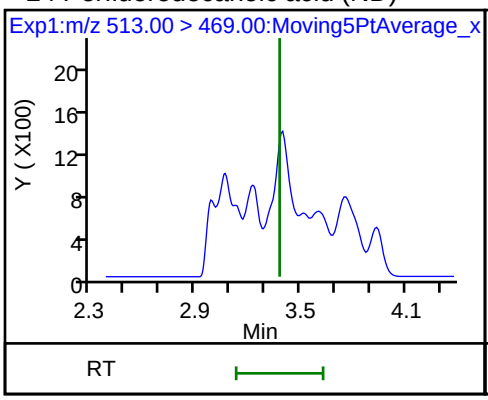
D 21 13C8 FOSA



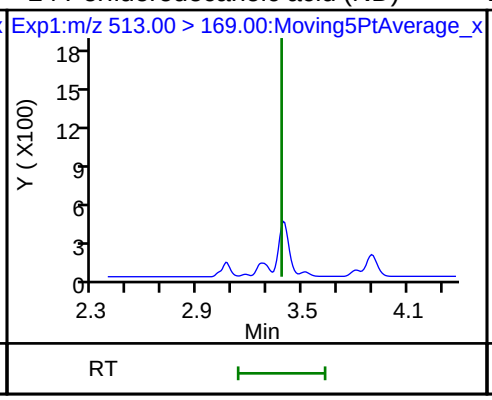
D 26 M2-8:2FTS



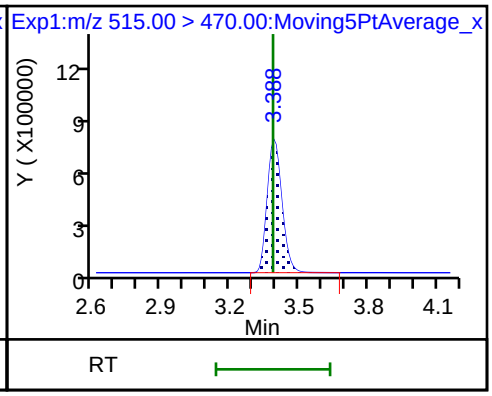
24 Perfluorodecanoic acid (ND)



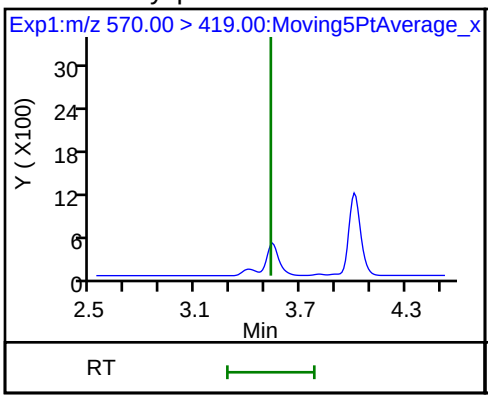
24 Perfluorodecanoic acid (ND)



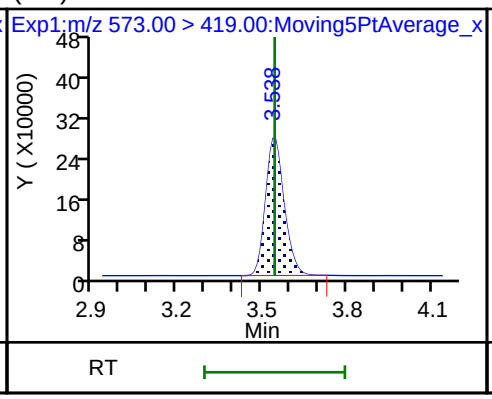
D 23 13C2 PFDA



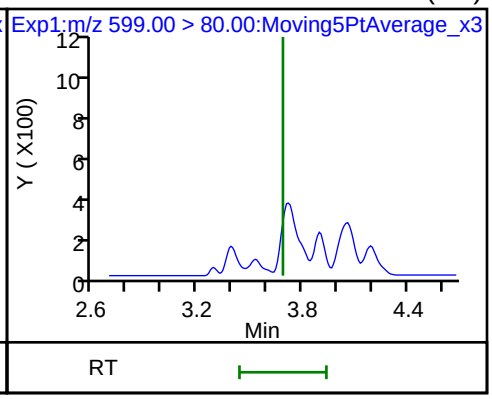
28 N-methyl perfluorooctane sulfonamid (ND)



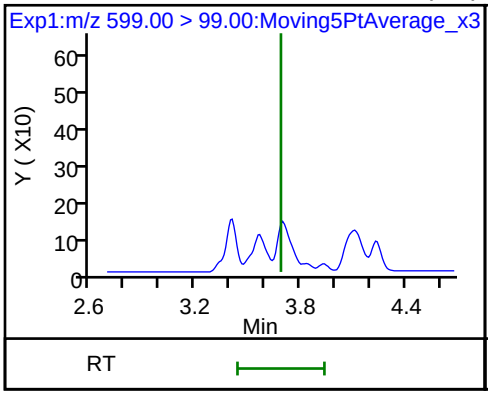
D 27 d3-NMeFOSAA



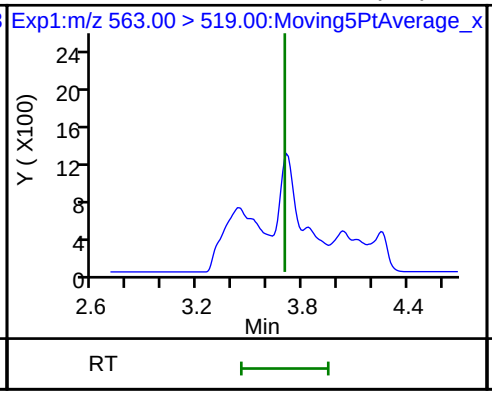
29 Perfluorodecane Sulfonic acid (ND)



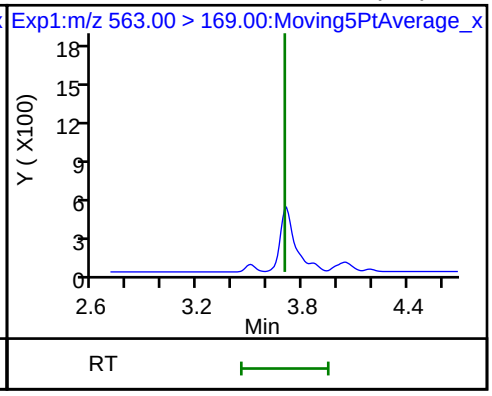
29 Perfluorodecane Sulfonic acid (ND)



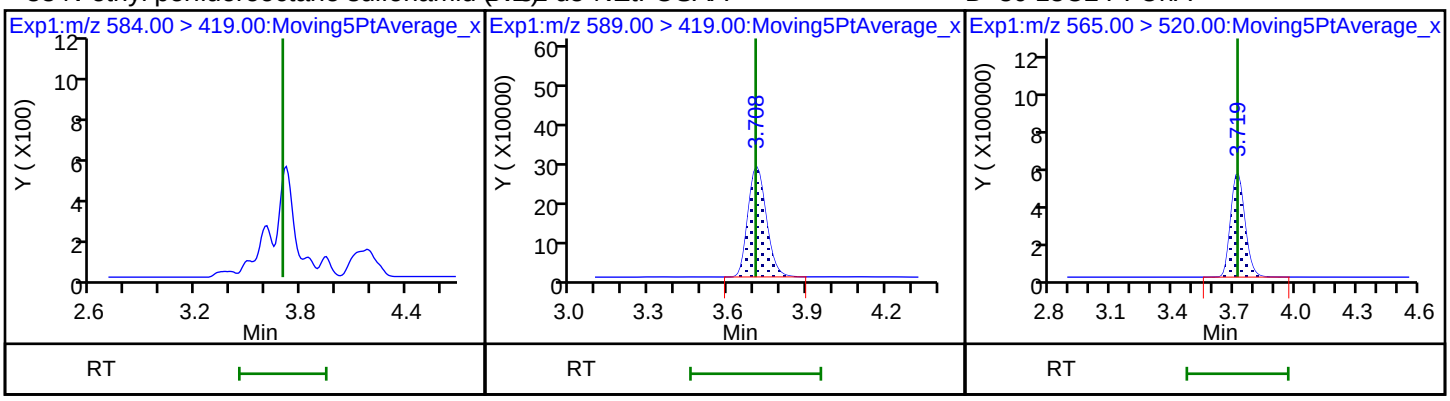
31 Perfluoroundecanoic acid (ND)



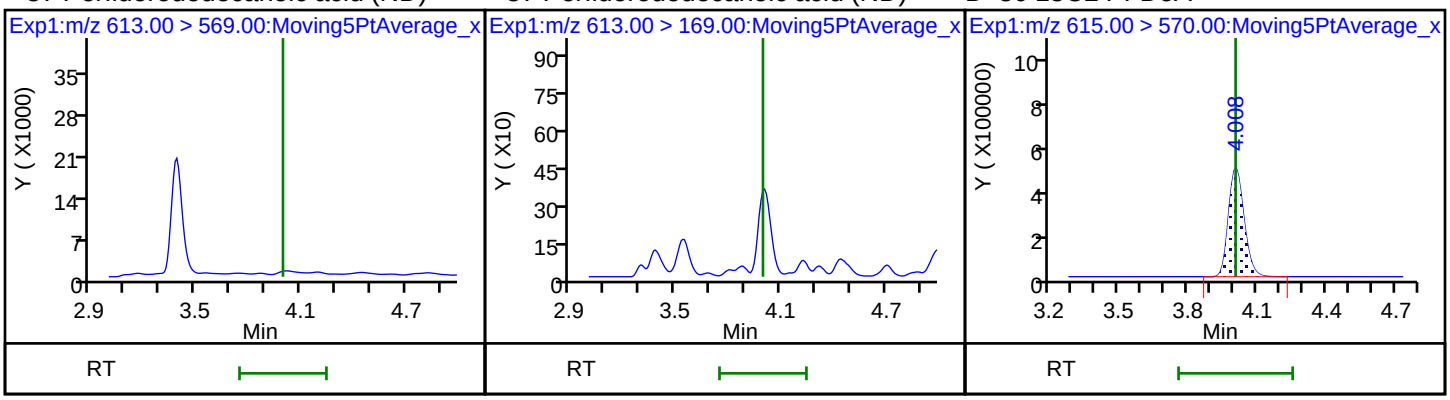
31 Perfluoroundecanoic acid (ND)



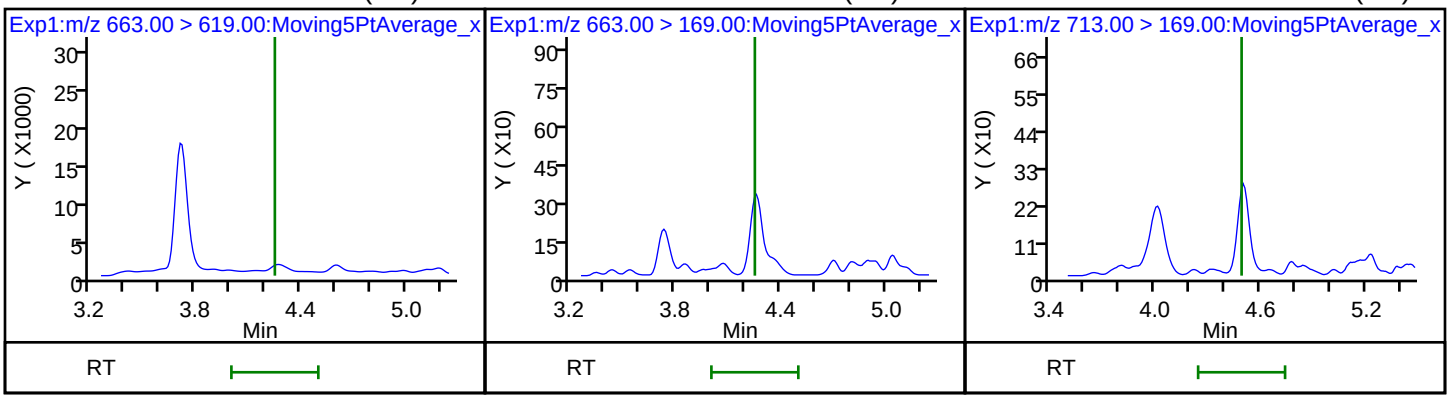
33 N-ethyl perfluorooctane sulfonamid (ND) D 32 d5-NEtFOSAA D 30 13C2 PFUnA



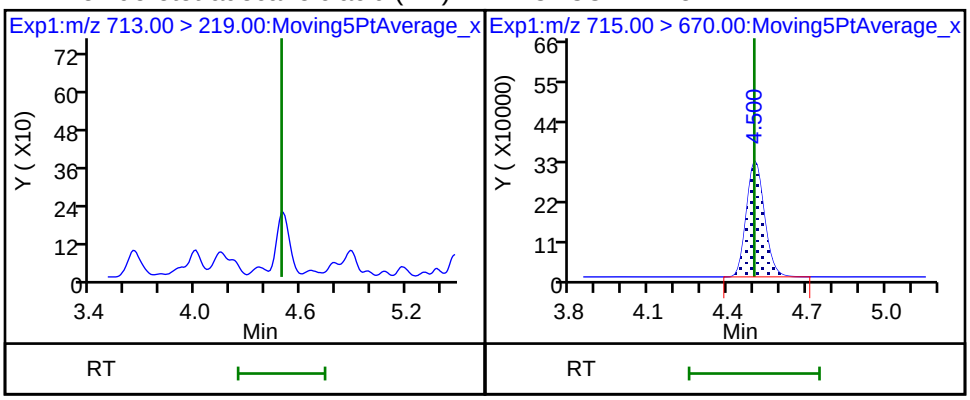
37 Perfluorododecanoic acid (ND) 37 Perfluorododecanoic acid (ND) D 36 13C2 PFDoA



41 Perfluorotridecanoic acid (ND) 41 Perfluorotridecanoic acid (ND) 42 Perfluorotetradecanoic acid (ND)



42 Perfluorotetradecanoic acid (ND) D 43 13C2-PFTeDA



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

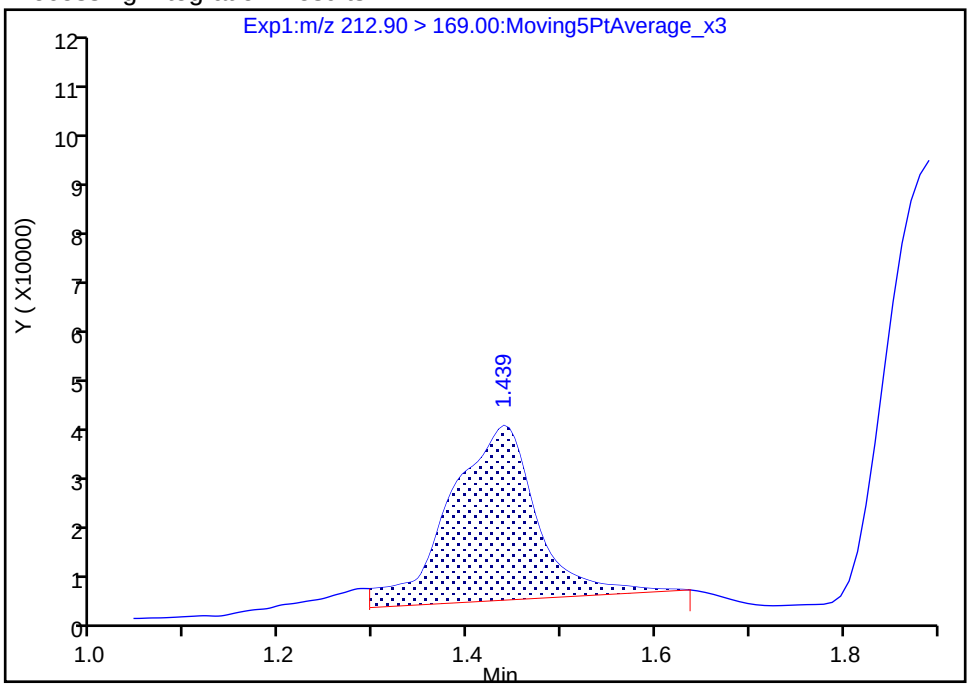
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\2018.07.13LLC_007.d				
Injection Date:	13-Jul-2018 20:54:06	Instrument ID:	A8_N		
Lims ID:	320-40571-A-1-A	Lab Sample ID:	320-40571-1		
Client ID:	NF17-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	1	Worklist Smp#:	2
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

2 Perfluorobutyric acid, CAS: 375-22-4

Signal: 1

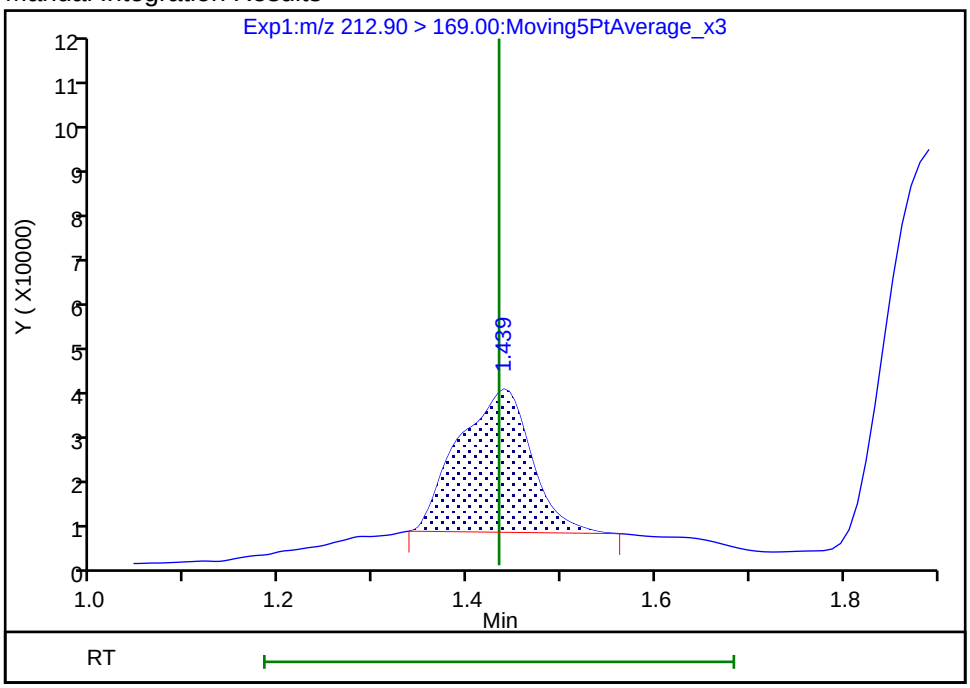
Processing Integration Results

RT: 1.44
Area: 224230
Amount: 0.128319
Amount Units: ng/ml



Manual Integration Results

RT: 1.44
Area: 169176
Amount: 0.096814
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 12:26:05
Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

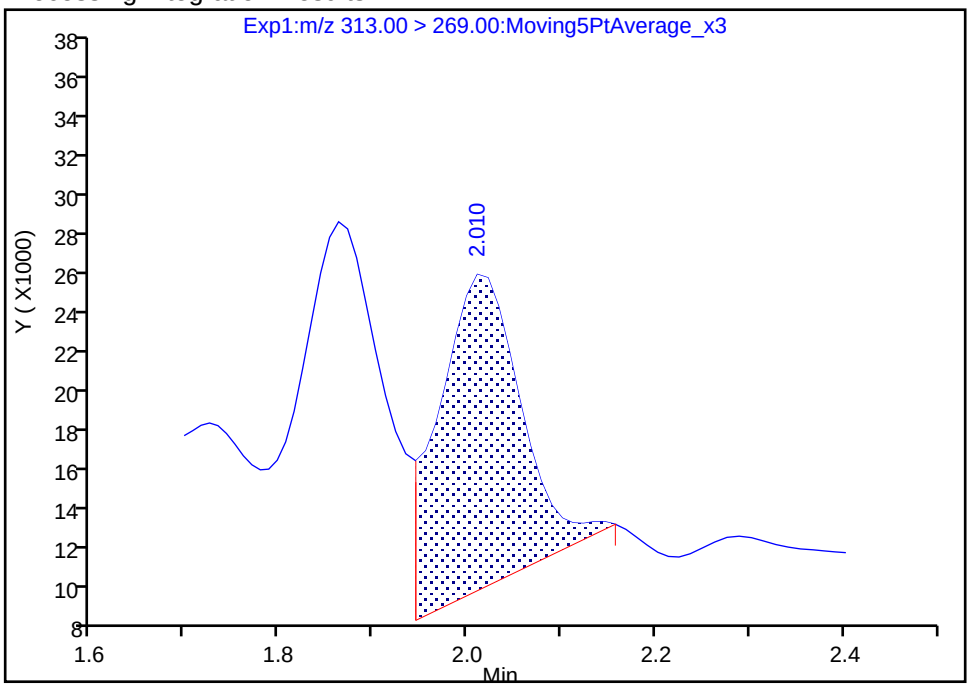
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\2018.07.13LLC_007.d				
Injection Date:	13-Jul-2018 20:54:06	Instrument ID:	A8_N		
Lims ID:	320-40571-A-1-A	Lab Sample ID:	320-40571-1		
Client ID:	NF17-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	1	Worklist Smp#:	2
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

6 Perfluorohexanoic acid, CAS: 307-24-4

Signal: 1

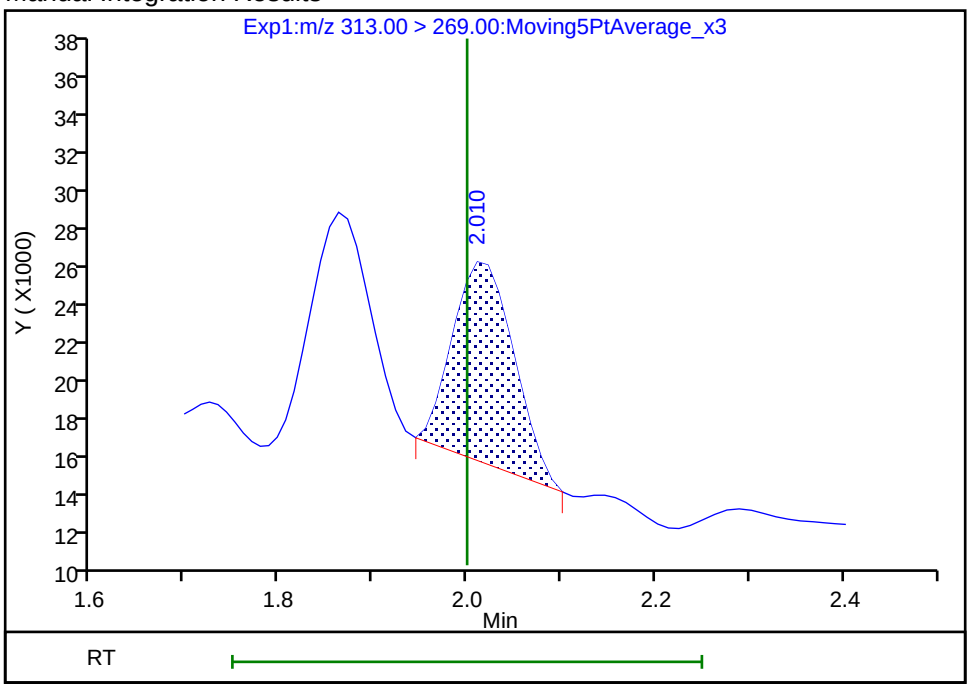
Processing Integration Results

RT: 2.01
Area: 92714
Amount: 0.048979
Amount Units: ng/ml



Manual Integration Results

RT: 2.01
Area: 46764
Amount: 0.024704
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 12:26:30
Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

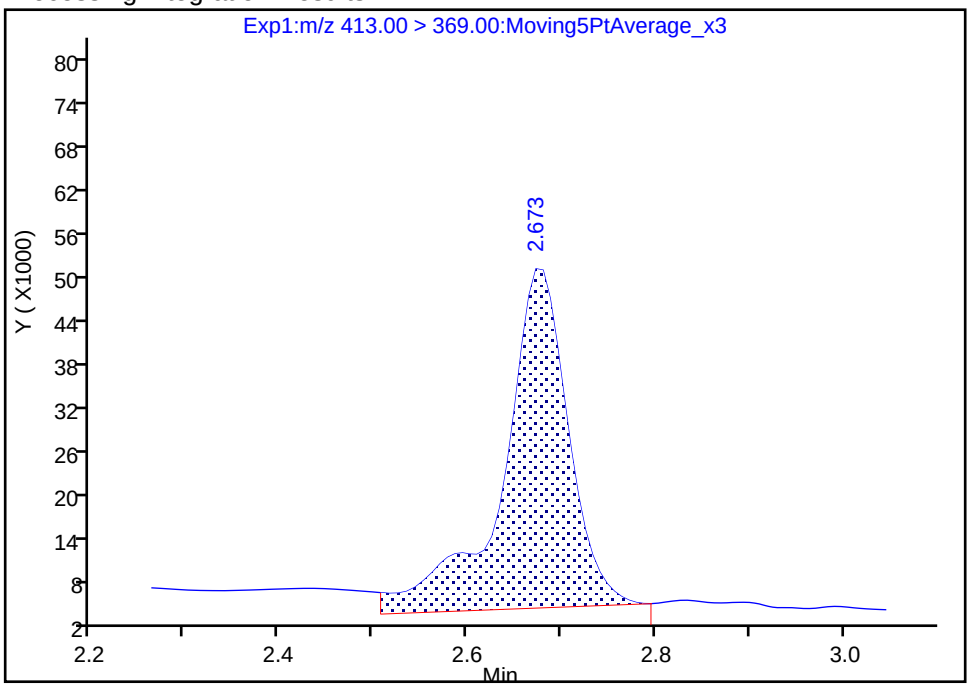
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\2018.07.13LLC_007.d				
Injection Date:	13-Jul-2018 20:54:06	Instrument ID:	A8_N		
Lims ID:	320-40571-A-1-A	Lab Sample ID:	320-40571-1		
Client ID:	NF17-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	1	Worklist Smp#:	2
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

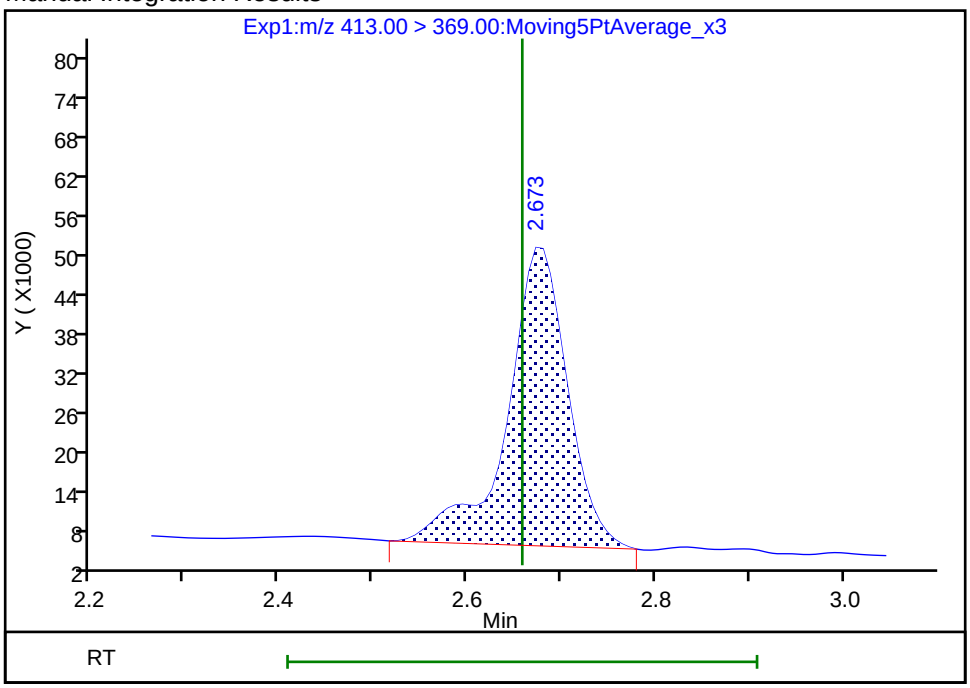
Processing Integration Results

RT: 2.67
Area: 228734
Amount: 0.098164
Amount Units: ng/ml



Manual Integration Results

RT: 2.67
Area: 203155
Amount: 0.087186
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 12:26:57

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

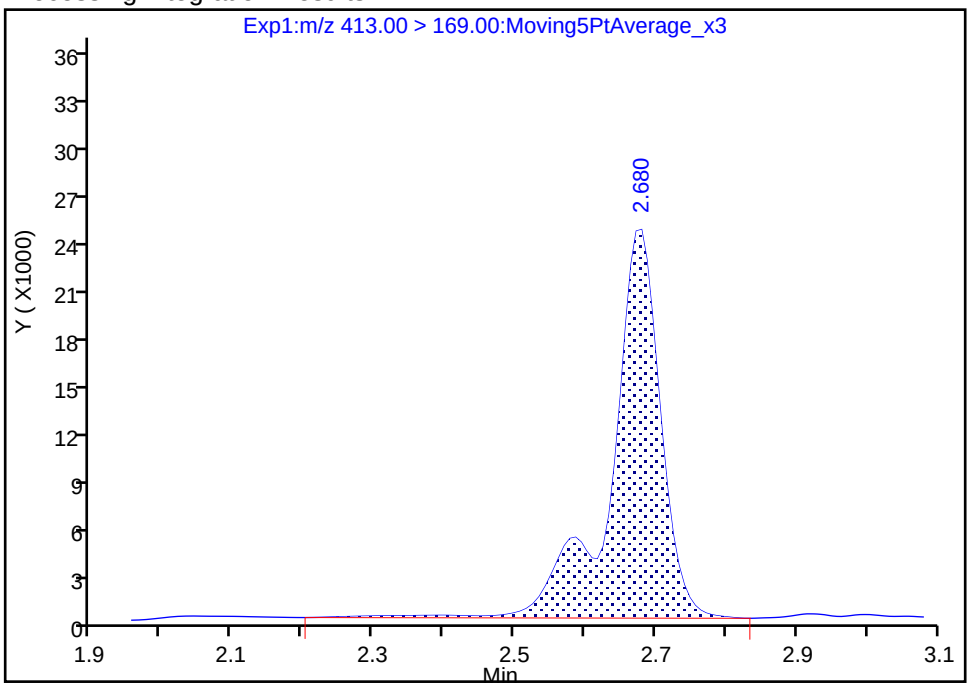
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\2018.07.13LLC_007.d				
Injection Date:	13-Jul-2018 20:54:06	Instrument ID:	A8_N		
Lims ID:	320-40571-A-1-A	Lab Sample ID:	320-40571-1		
Client ID:	NF17-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	1	Worklist Smp#:	2
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 2

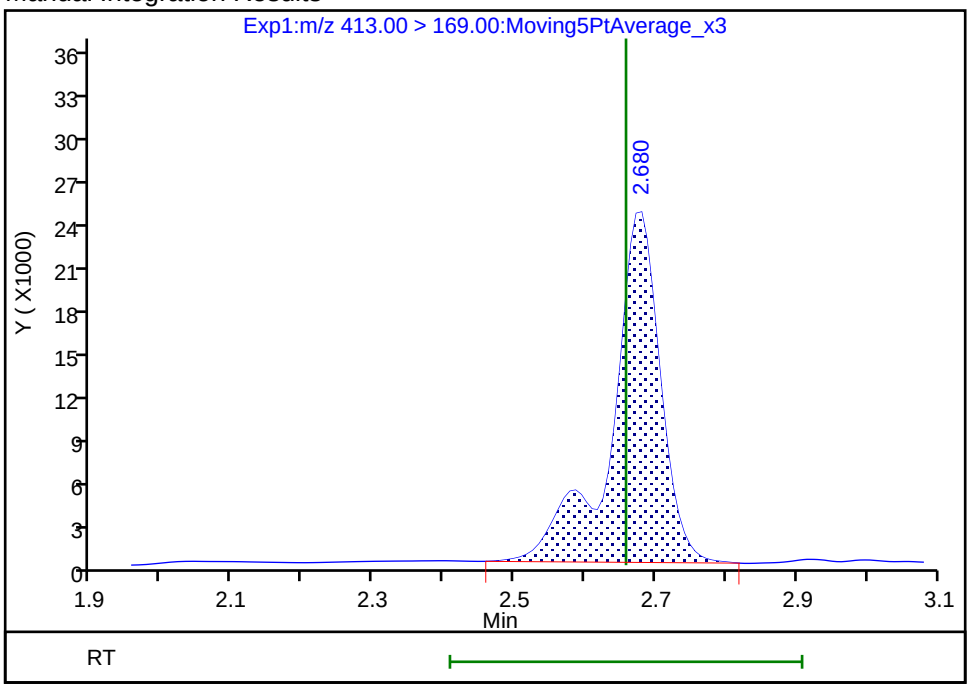
Processing Integration Results

RT: 2.68
Area: 120169
Amount: 0.098164
Amount Units: ng/ml



Manual Integration Results

RT: 2.68
Area: 117273
Amount: 0.087186
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 12:27:13

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

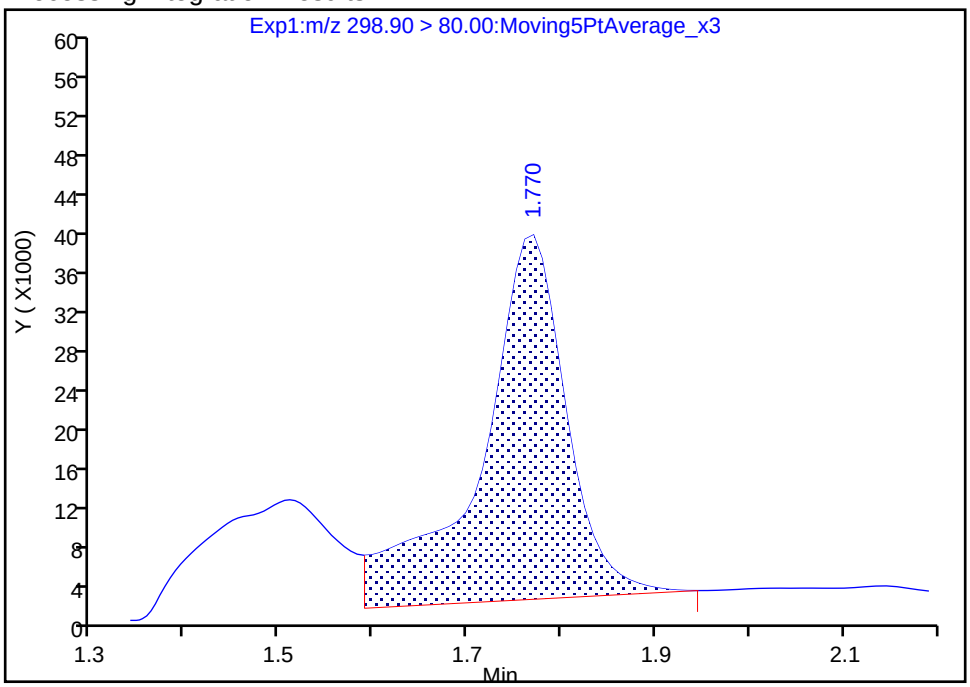
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\2018.07.13LLC_007.d				
Injection Date:	13-Jul-2018 20:54:06	Instrument ID:	A8_N		
Lims ID:	320-40571-A-1-A	Lab Sample ID:	320-40571-1		
Client ID:	NF17-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	1	Worklist Smp#:	2
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

5 Perfluorobutanesulfonic acid, CAS: 375-73-5

Signal: 1

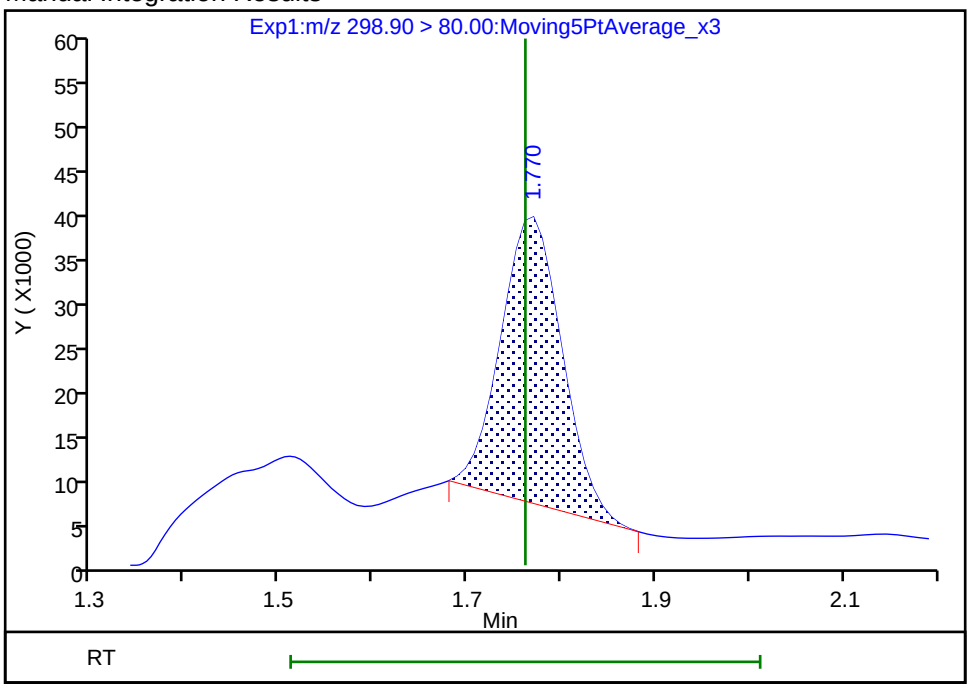
Processing Integration Results

RT: 1.77
Area: 235594
Amount: 0.077310
Amount Units: ng/ml



Manual Integration Results

RT: 1.77
Area: 145495
Amount: 0.047744
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 12:26:21

Audit Action: Manually Integrated Audit Reason: Baseline

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF17-GW-01-DUP
Lab Sample ID: 320-40571-2
Matrix: Water
Lab File ID: 2018.07.13LLC_008.d
Analysis Method: 537 (modified)
Date Collected: 06/20/2018 09:35
Extraction Method: 3535
Date Extracted: 07/02/2018 14:58
Sample wt/vol: 260.1(mL)
Date Analyzed: 07/13/2018 21:01
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 233989
Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	0.0041	B	0.0019	0.00034
2706-90-3	Perfluoropentanoic acid (PFPeA)	0.00094	J	0.0019	0.00047
307-24-4	Perfluorohexanoic acid (PFHxA)	0.00068	J	0.0019	0.00056
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.00065	J	0.0019	0.00024
335-67-1	Perfluorooctanoic acid (PFOA)	0.0032		0.0019	0.00082
375-95-1	Perfluorononanoic acid (PFNA)	ND		0.0019	0.00026
335-76-2	Perfluorodecanoic acid (PFDA)	ND		0.0019	0.00030
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		0.0019	0.0011
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		0.0019	0.00053
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		0.0019	0.0012
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		0.0019	0.00028
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.0016	J	0.0019	0.00019
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	0.00039	J	0.0019	0.00029
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.0013	J B	0.0019	0.00016
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.0019	0.00018
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.0075		0.0019	0.00052
8789-57-2	Perfluorononanesulfonic acid (PFNS)	ND		0.0019	0.00015
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		0.0019	0.00031
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		0.0019	0.00034
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.019	0.0030
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.019	0.0018
757124-72-4	4:2 FTS	ND		0.019	0.0050
27619-97-2	6:2 FTS	0.0019	J	0.019	0.0019
39108-34-4	8:2 FTS	ND		0.019	0.0019

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF17-GW-01-DUP
Lab Sample ID: 320-40571-2
Matrix: Water
Lab File ID: 2018.07.13LLC_008.d
Analysis Method: 537 (modified)
Date Collected: 06/20/2018 09:35
Extraction Method: 3535
Date Extracted: 07/02/2018 14:58
Sample wt/vol: 260.1(mL)
Date Analyzed: 07/13/2018 21:01
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 233989
Units: ug/L

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00992	13C4 PFBA	74		25-150
STL01893	13C5 PFPeA	87		25-150
STL00993	13C2 PFHxA	96		25-150
STL01892	13C4-PFHpA	103		25-150
STL00990	13C4 PFOA	105		25-150
STL00995	13C5 PFNA	98		25-150
STL00996	13C2 PFDA	100		25-150
STL00997	13C2 PFUnA	88		25-150
STL00998	13C2 PFDoA	89		25-150
STL02116	13C2-PFTeDA	69		25-150
STL02337	13C3-PFBS	91		25-150
STL00994	18O2 PFHxS	97		25-150
STL00991	13C4 PFOS	95		25-150
STL01056	13C8 FOSA	84		25-150
STL02118	d3-NMeFOSAA	100		25-150
STL02117	d5-NEtFOSAA	102		25-150
STL02279	M2-6:2FTS	116		25-150
STL02280	M2-8:2FTS	87		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\2018.07.13LLC_008.d
Lims ID: 320-40571-A-2-A
Client ID: NF17-GW-01-DUP
Sample Type: Client
Inject. Date: 13-Jul-2018 21:01:54 ALS Bottle#: 2 Worklist Smp#: 3
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-40571-a-2-a
Misc. Info.: Plate: 1 Rack: 4
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 17-Jul-2018 08:10:53 Calib Date: 11-Jul-2018 15:38:42
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK028

First Level Reviewer: westendorfc Date: 17-Jul-2018 08:10:53

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.90 > 169.00	1.439	1.445	-0.006	1.000	185091	0.1072			25.4	
D 1 13C4 PFBA										
217.00 > 172.00	1.439	1.445	-0.006	0.538	4379691	1.84		73.8	21647	
4 Perfluoropentanoic acid										M
262.90 > 219.00	1.716	1.725	-0.009	0.995	42617	0.0244			3.4	M
D 3 13C5-PFPeA										
267.90 > 223.00	1.725	1.725	0.0	0.645	3594851	2.18		87.1	22164	
D 47 13C3-PFBS										
301.90 > 83.00	1.761	1.762	-0.001	0.659	87391	2.11		90.6	222	
5 Perfluorobutanesulfonic acid										M
298.90 > 80.00	1.761	1.771	-0.009	1.000	123300	0.0429			48.0	M
298.90 > 99.00	1.761	1.771	-0.009	1.000	45056		2.74(1.25-3.74)		58.6	M
6 Perfluorohexanoic acid										M
313.00 > 269.00	2.011	2.011	0.0	1.000	31045	0.0176			5.3	M
313.00 > 119.00	1.999	2.011	-0.012	0.994	5540		5.60(5.03-15.10)		32.4	
D 7 13C2 PFHxA										
315.00 > 270.00	2.011	2.011	0.0	0.752	4276421	2.40		96.1	58663	
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.033	2.033	0.0	1.154	26460	0.0101			22.4	
349.00 > 99.00	2.022	2.033	-0.011	1.148	7167		3.69(1.36-4.07)		12.4	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.316	2.329	-0.013	0.994	33052	0.0168			9.1	
363.00 > 169.00	2.316	2.329	-0.013	0.994	16621		1.99(1.13-3.40)		117	
D 9 13C4-PFHpA										
367.00 > 322.00	2.329	2.329	0.0	0.871	4242875	2.59		103	35646	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.342	2.342	0.0	1.000	86091	0.0333			45.4	
399.00 > 99.00	2.342	2.342	0.0	1.000	23811		3.62(1.50-4.49)		44.0	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 11 18O2 PFHxS										
403.00 > 84.00	2.342	2.342	0.0	0.876	5325573	2.29		96.9	50067	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.651	2.651	0.0	1.000	31217	0.0490			262	
D 12 M2-6:2FTS										
429.00 > 81.00	2.651	2.651	0.0	0.992	966610	2.75		116	4312	
* 62 13C2-PFOA										
415.00 > 370.00	2.673	2.673	0.0		4376936	2.50			43255	
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.673	2.673	0.0	1.000	179691	0.0834			47.5	M
413.00 > 169.00	2.673	2.673	0.0	1.000	105554		1.70(0.84-2.52)		546	
D 14 13C4 PFOA										
417.00 > 372.00	2.673	2.673	0.0	1.000	4374319	2.61		105	51053	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.033	3.036	-0.003	1.000	357653	0.1946			743	
499.00 > 99.00	3.033	3.036	-0.003	1.000	61913		5.78(2.31-6.93)		371	
D 18 13C4 PFOS										
503.00 > 80.00	3.033	3.036	-0.003	1.135	3876940	2.27		95.1	16889	
D 19 13C5 PFNA										
468.00 > 423.00	3.033	3.036	-0.003	1.135	3656487	2.44		97.7	44865	
D 21 13C8 FOSA										
506.00 > 78.00	3.380	3.376	0.004	1.264	5151658	2.09		83.8	53407	
D 26 M2-8:2FTS										
529.00 > 81.00	3.380	3.376	0.004	1.264	1069876	2.08		86.8	9465	
D 23 13C2 PFDA										
515.00 > 470.00	3.389	3.385	0.004	1.268	3297123	2.51		100	43983	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.538	3.544	-0.006	1.324	1344892	2.50		99.9	27532	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.709	3.705	0.004	1.387	1402662	2.54		102	3659	
D 30 13C2 PFUnA										
565.00 > 520.00	3.709	3.715	-0.006	1.387	2406763	2.19		87.8	41735	
D 36 13C2 PFDoA										
615.00 > 570.00	3.999	4.005	-0.006	1.496	2519326	2.22		88.6	20681	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.500	4.500	0.0	1.684	2047637	1.74		69.4	14022	

QC Flag Legend

Review Flags

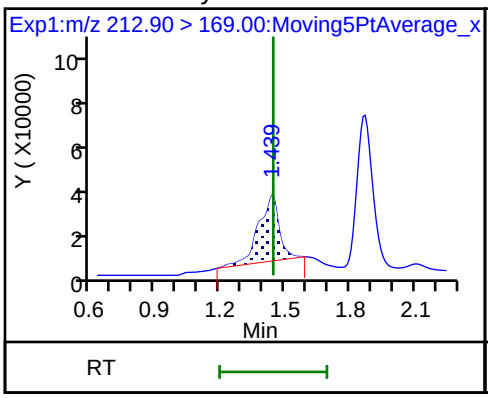
M - Manually Integrated

Report Date: 17-Jul-2018 08:10:55 Chrom Revision: 2.3 16-Jul-2018 18:07:38

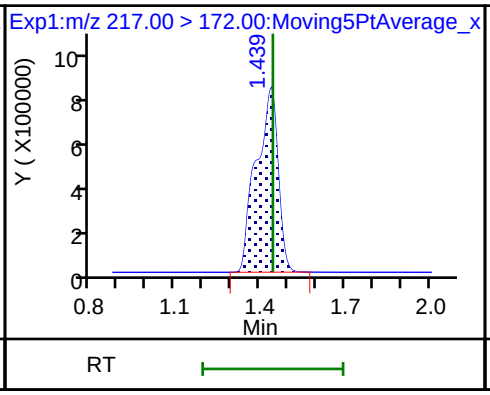
TestAmerica Sacramento

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\2018.07.13LLC_008.d				
Injection Date:	13-Jul-2018 21:01:54	Instrument ID:	A8_N		
Lims ID:	320-40571-A-2-A	Lab Sample ID:	320-40571-2		
Client ID:	NF17-GW-01-DUP				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	2	Worklist Smp#:	3
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		

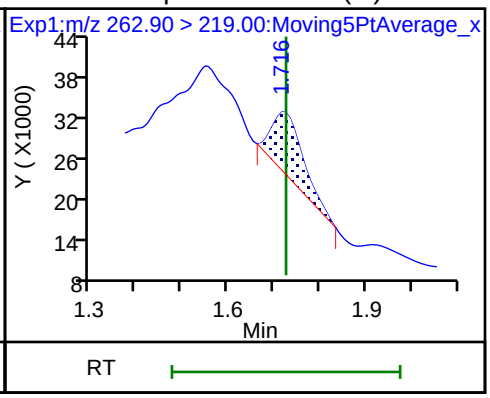
2 Perfluorobutyric acid



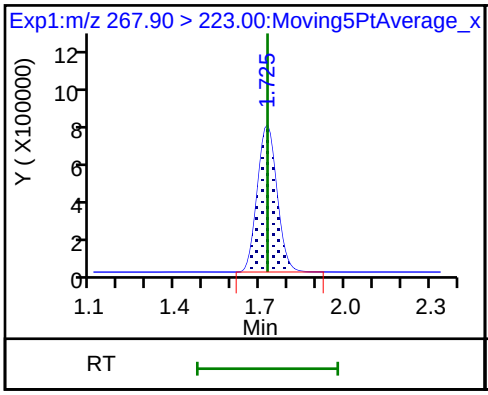
D 1 13C4 PFBA



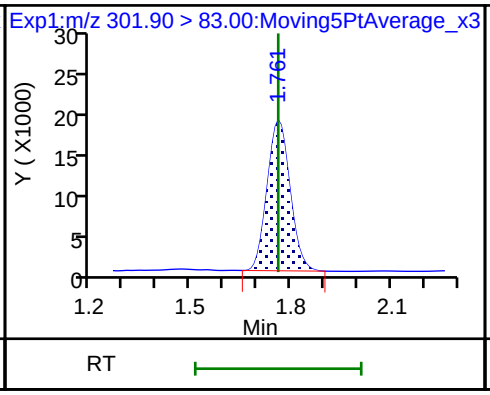
4 Perfluoropentanoic acid (M)



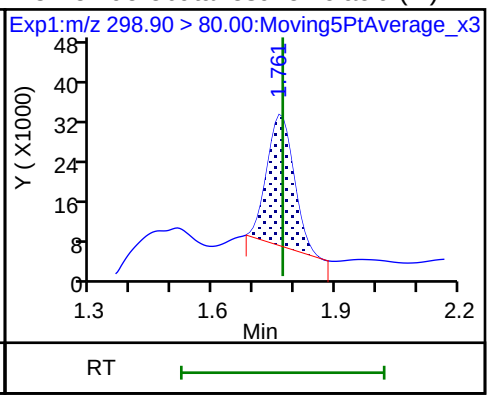
D 3 13C5-PFPeA



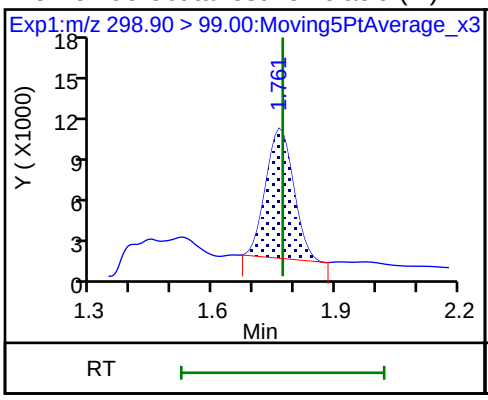
D 47 13C3-PFBS



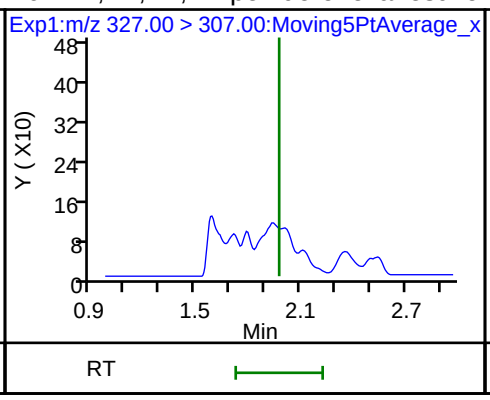
5 Perfluorobutanesulfonic acid (M)



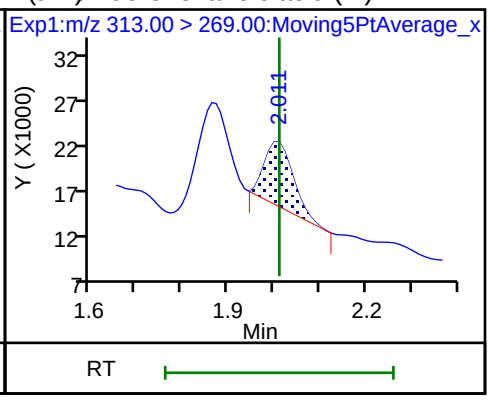
5 Perfluorobutanesulfonic acid (M)



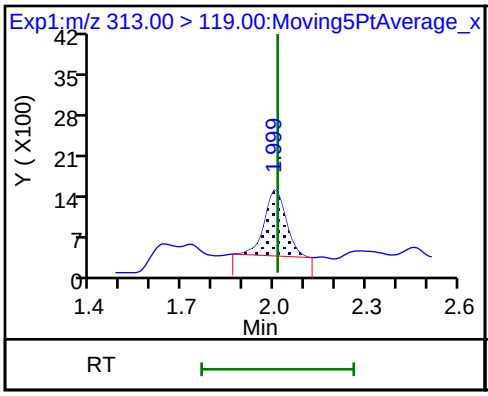
61 1H,1H,2H,2H-perfluorohexanesulfoni (ND)



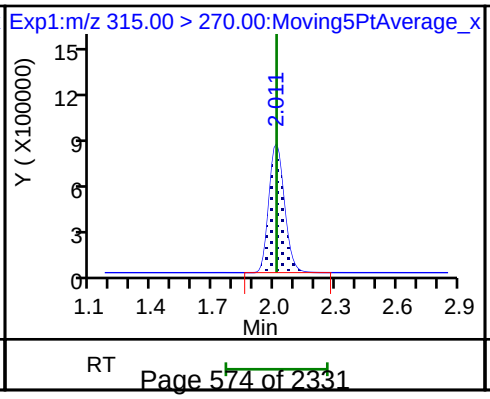
6 Perfluorohexanoic acid (M)



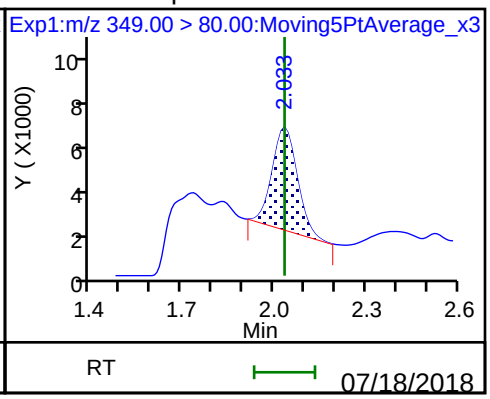
6 Perfluorohexanoic acid



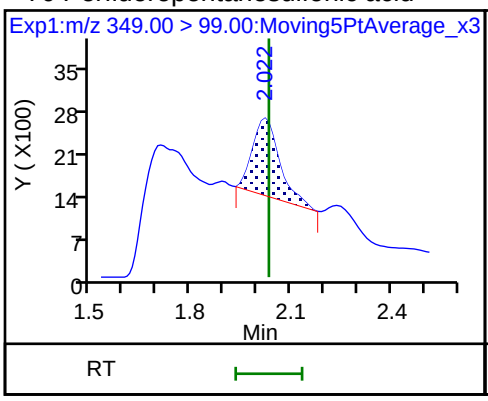
D 7 13C2 PFHxA



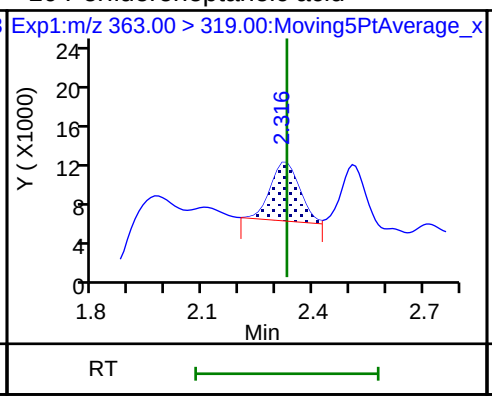
70 Perfluoropentanesulfonic acid



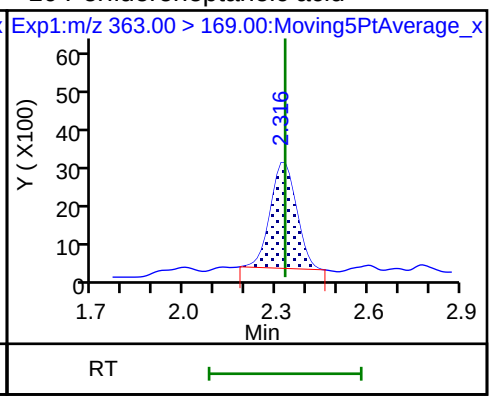
70 Perfluoropentanesulfonic acid



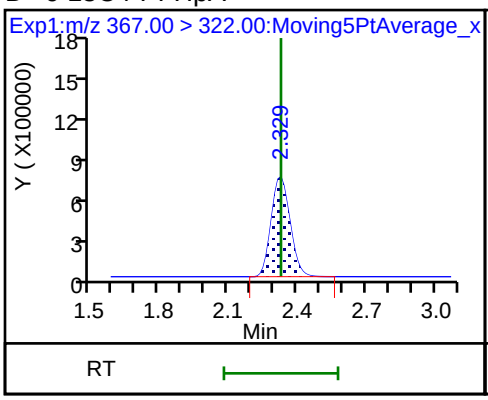
10 Perfluoroheptanoic acid



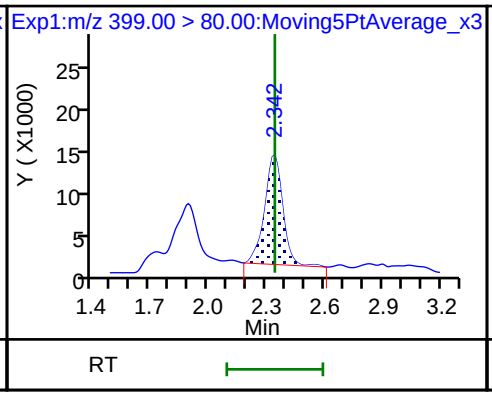
10 Perfluoroheptanoic acid



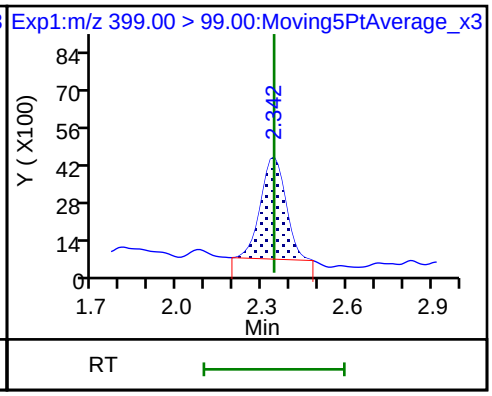
D 9 13C4-PFHpA



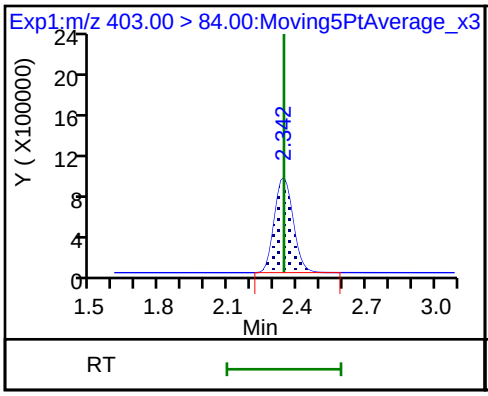
8 Perfluorohexanesulfonic acid



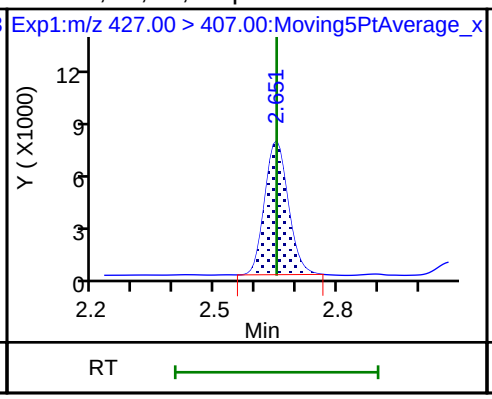
8 Perfluorohexanesulfonic acid



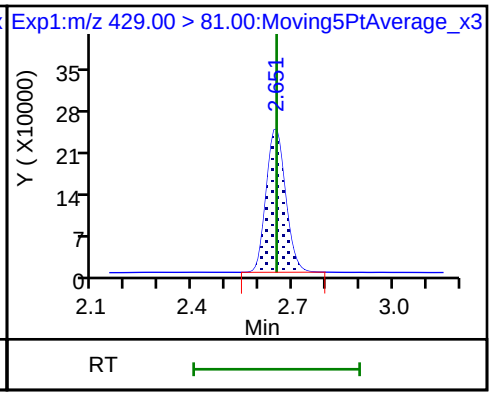
D 11 18O2 PFHxS



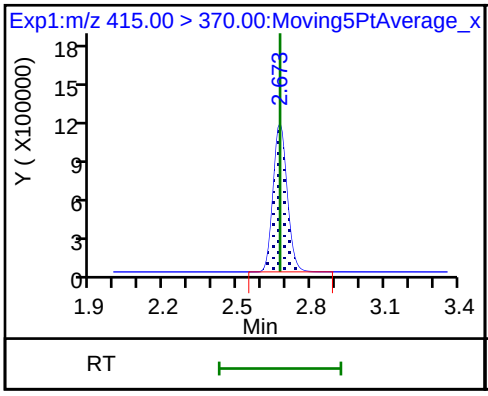
13 1H,1H,2H,2H-perfluorooctanesulfon



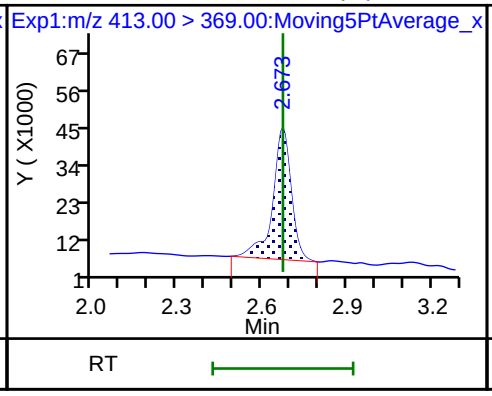
D 12 M2-6:2FTS



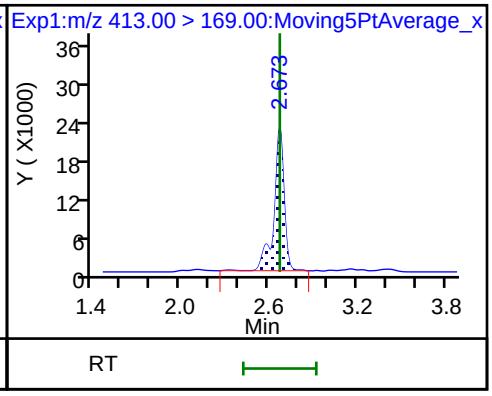
* 62 13C2-PFOA



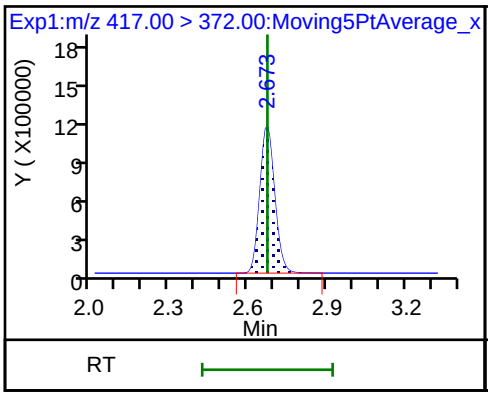
15 Perfluorooctanoic acid (M)



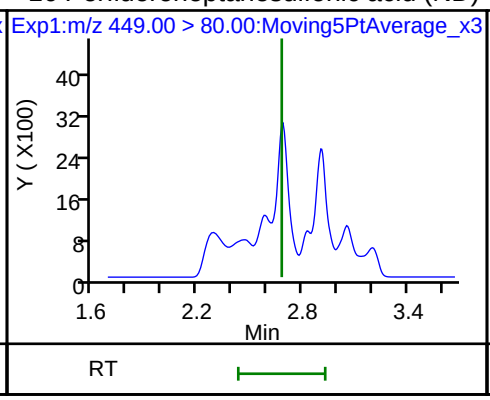
15 Perfluorooctanoic acid



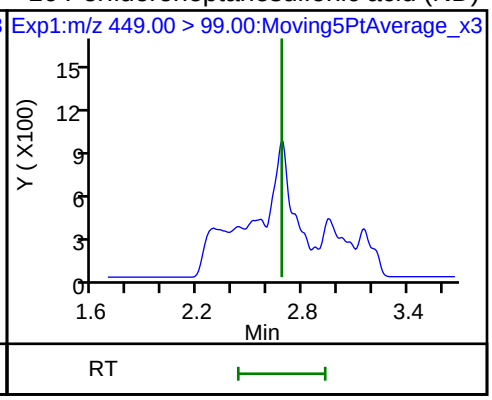
D 14 13C4 PFOA



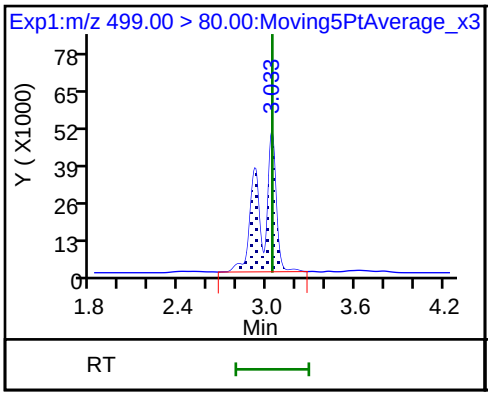
16 Perfluoroheptanesulfonic acid (ND)



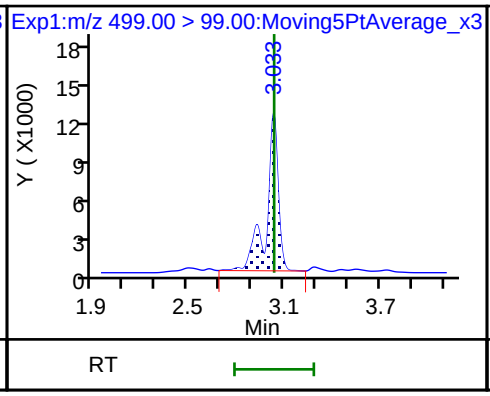
16 Perfluoroheptanesulfonic acid (ND)



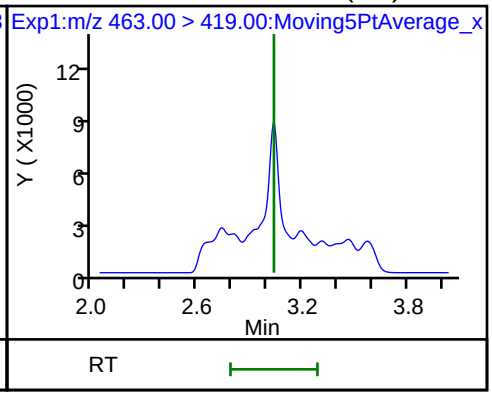
17 Perfluorooctane sulfonic acid



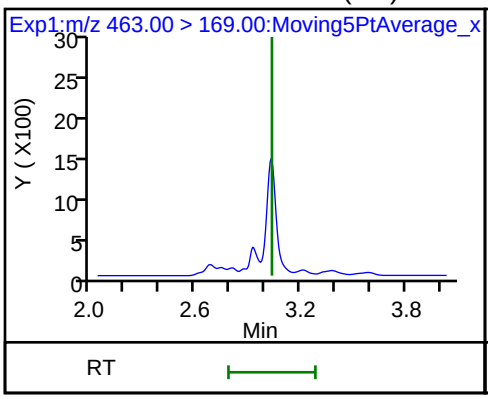
17 Perfluorooctane sulfonic acid



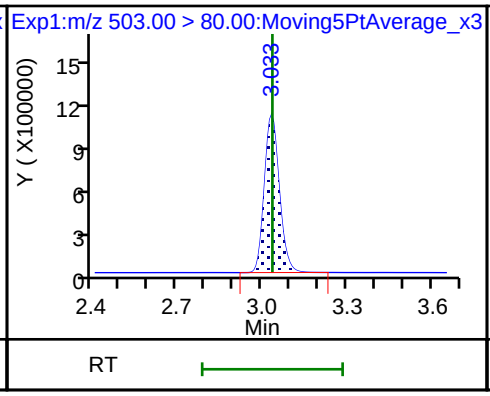
20 Perfluorononanoic acid (ND)



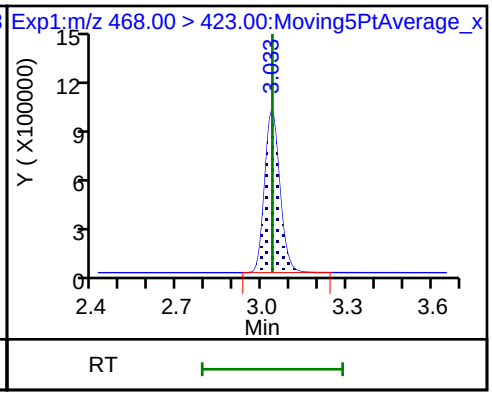
20 Perfluorononanoic acid (ND)



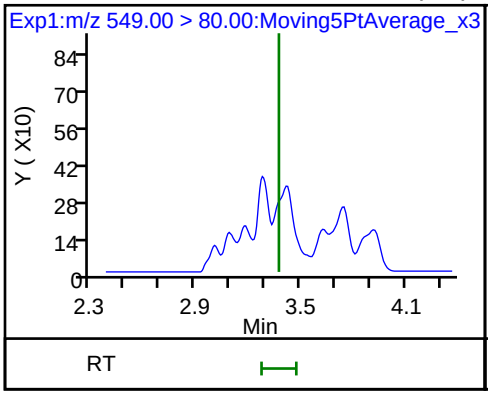
D 18 13C4 PFOS



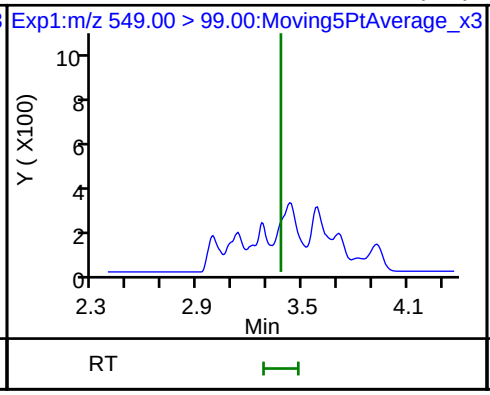
D 19 13C5 PFNA



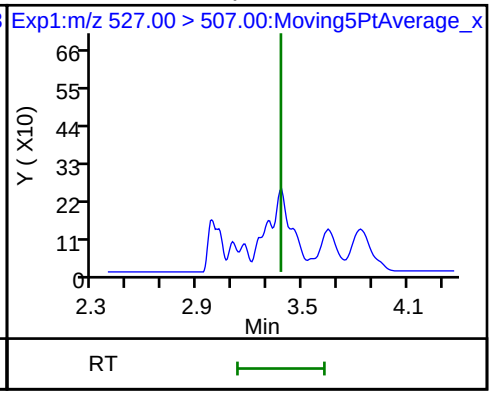
68 Perfluorononanesulfonic acid (ND)



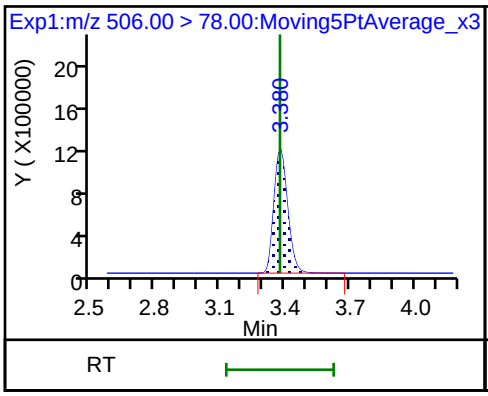
68 Perfluorononanesulfonic acid (ND)



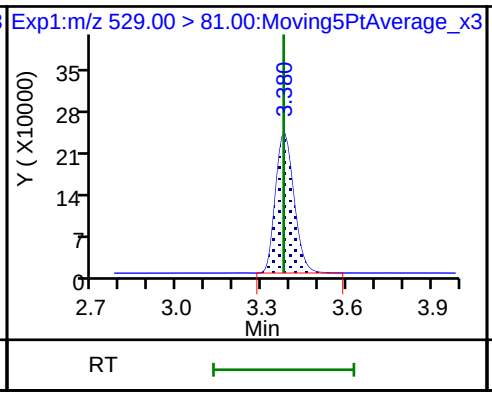
25 1H,1H,2H,2H-perfluorodecanesulfoni (ND)



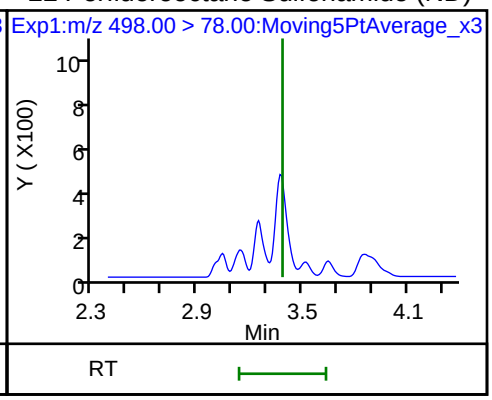
D 21 13C8 FOSA



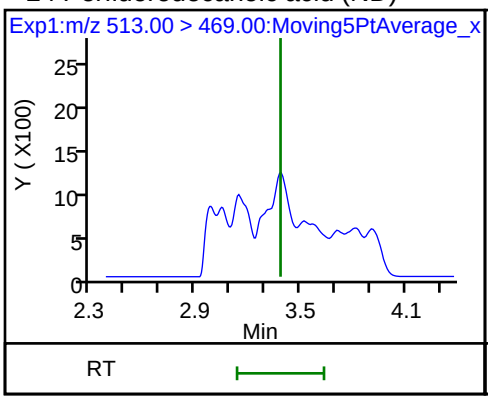
D 26 M2-8:2FTS



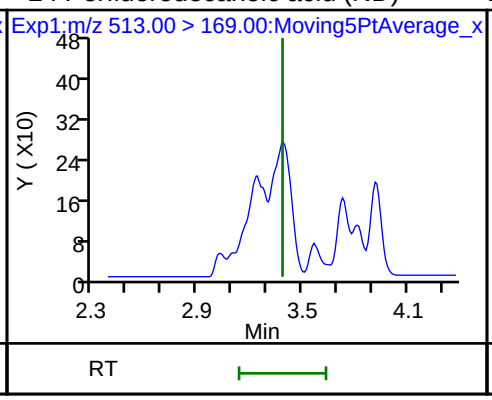
22 Perfluorooctane Sulfonamide (ND)



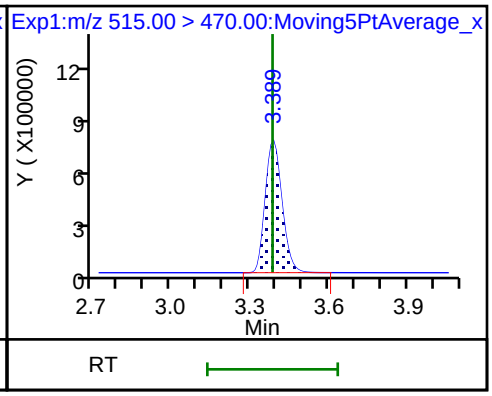
24 Perfluorodecanoic acid (ND)



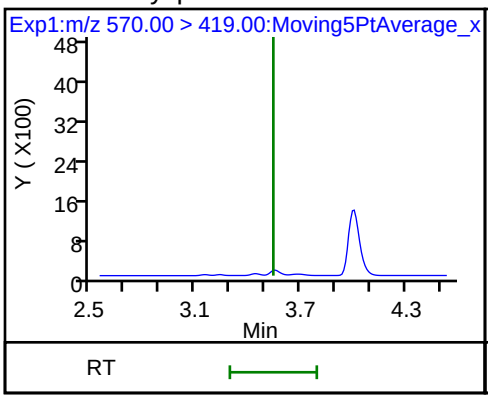
24 Perfluorodecanoic acid (ND)



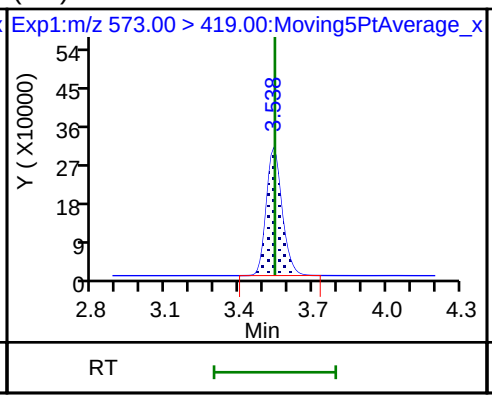
D 23 13C2 PFDA



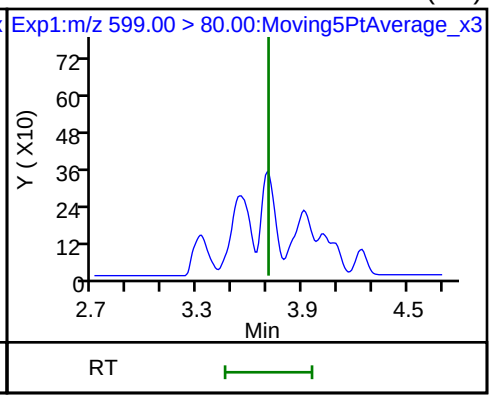
28 N-methyl perfluorooctane sulfonamid (ND)



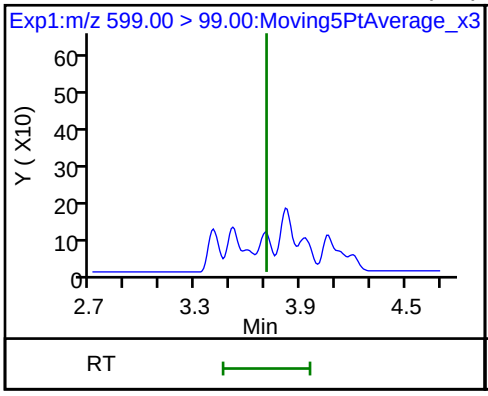
D 27 d3-NMeFOSAA



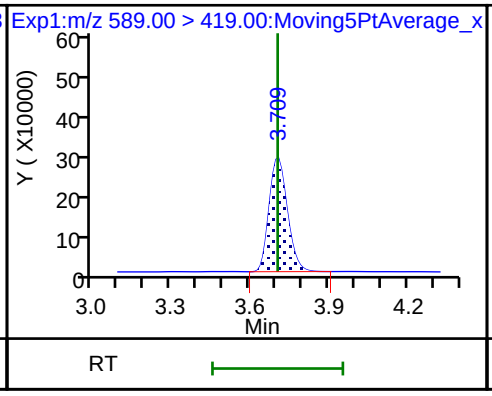
29 Perfluorodecane Sulfonic acid (ND)



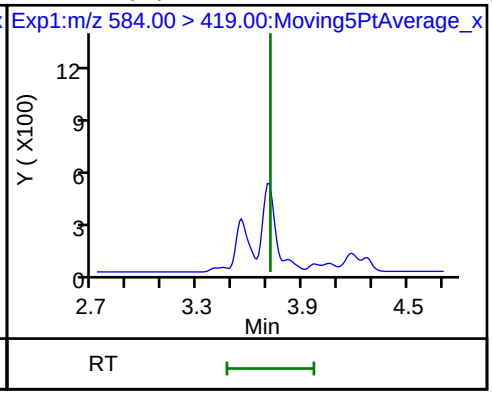
29 Perfluorodecane Sulfonic acid (ND)



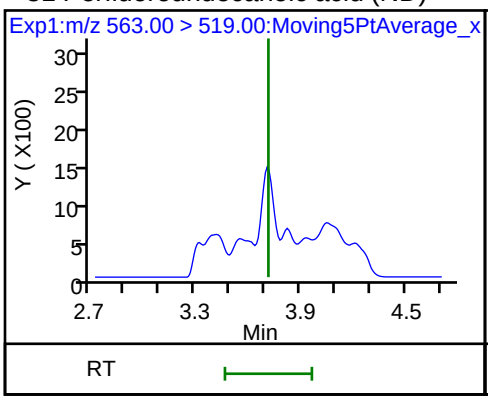
D 32 d5-NEtFOSAA



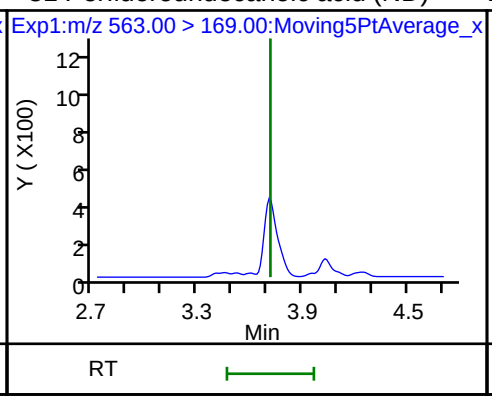
33 N-ethyl perfluorooctane sulfonamid (ND)



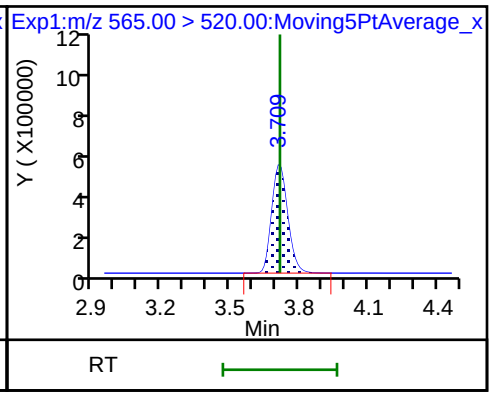
31 Perfluoroundecanoic acid (ND)



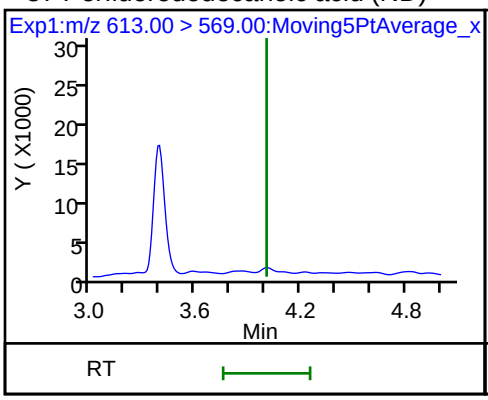
31 Perfluoroundecanoic acid (ND)



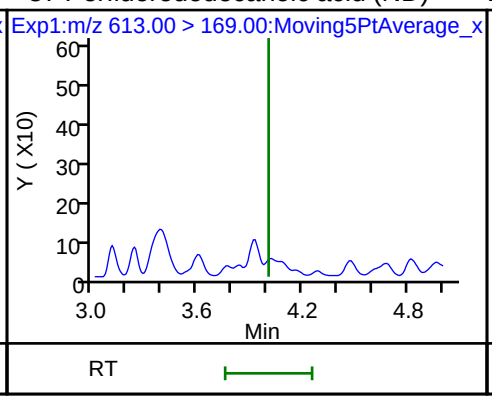
D 30 13C2 PFUnA



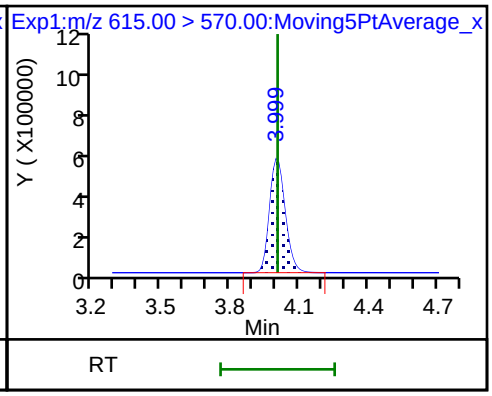
37 Perfluorododecanoic acid (ND)



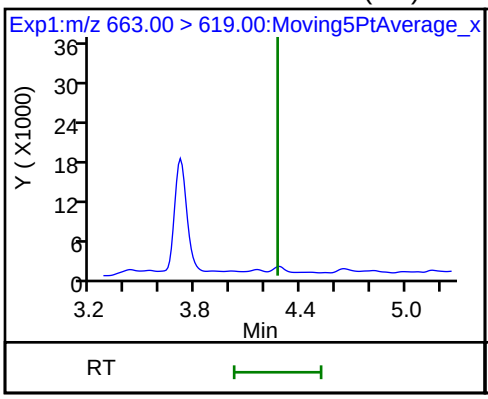
37 Perfluorododecanoic acid (ND)



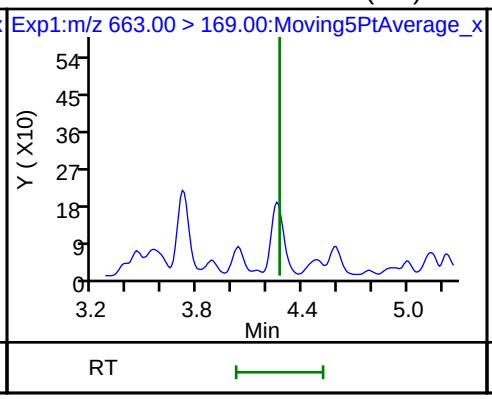
D 36 13C2 PFDoA



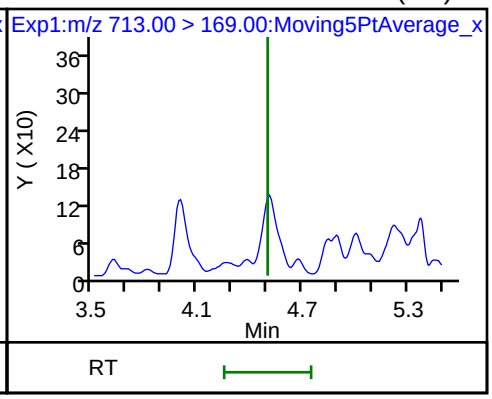
41 Perfluorotridecanoic acid (ND)



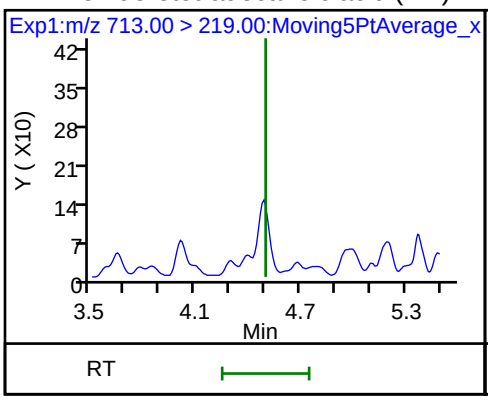
41 Perfluorotridecanoic acid (ND)



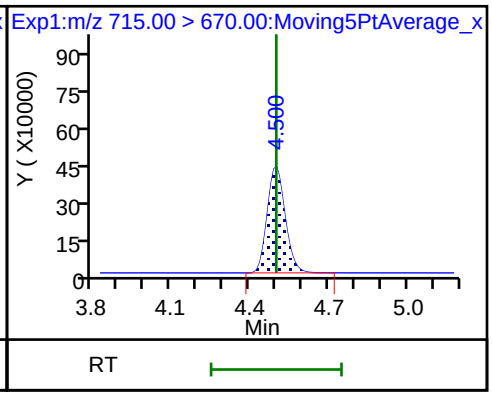
42 Perfluorotetradecanoic acid (ND)



42 Perfluorotetradecanoic acid (ND)



D 43 13C2-PFTeDA



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

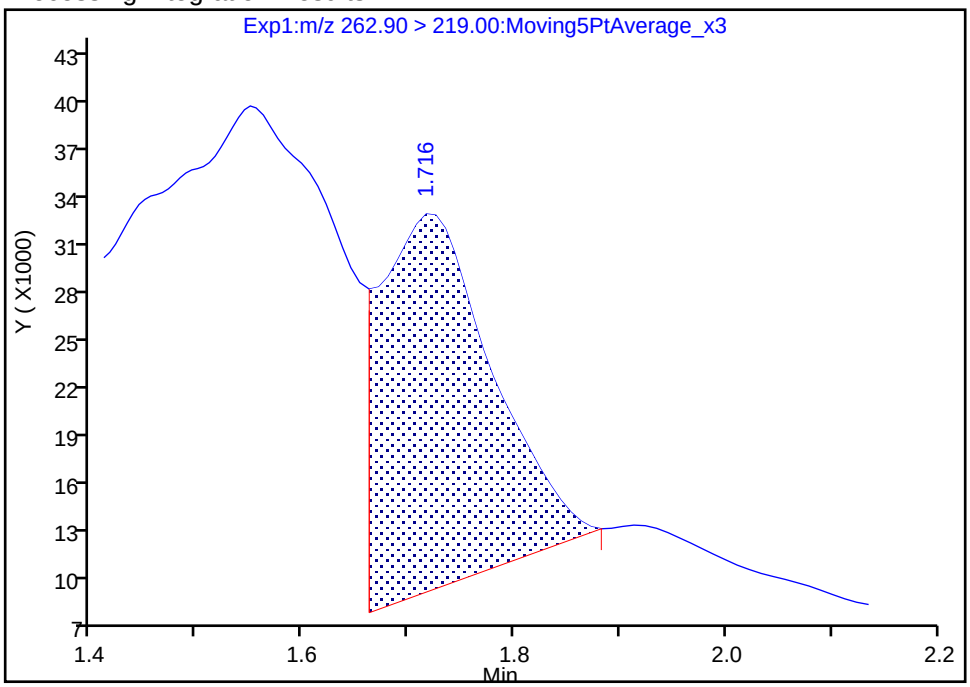
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\2018.07.13LLC_008.d				
Injection Date:	13-Jul-2018 21:01:54	Instrument ID:	A8_N		
Lims ID:	320-40571-A-2-A	Lab Sample ID:	320-40571-2		
Client ID:	NF17-GW-01-DUP				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	2	Worklist Smp#:	3
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

4 Perfluoropentanoic acid, CAS: 2706-90-3

Signal: 1

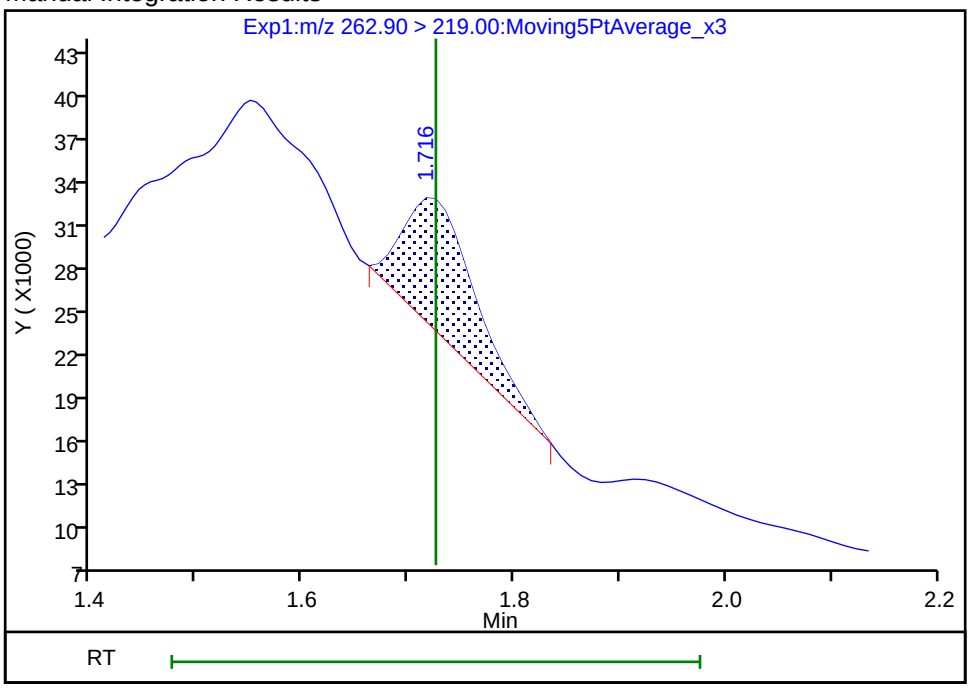
Processing Integration Results

RT: 1.72
Area: 170907
Amount: 0.097973
Amount Units: ng/ml



Manual Integration Results

RT: 1.72
Area: 42617
Amount: 0.024430
Amount Units: ng/ml



Reviewer: westendorfc, 17-Jul-2018 08:10:48

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

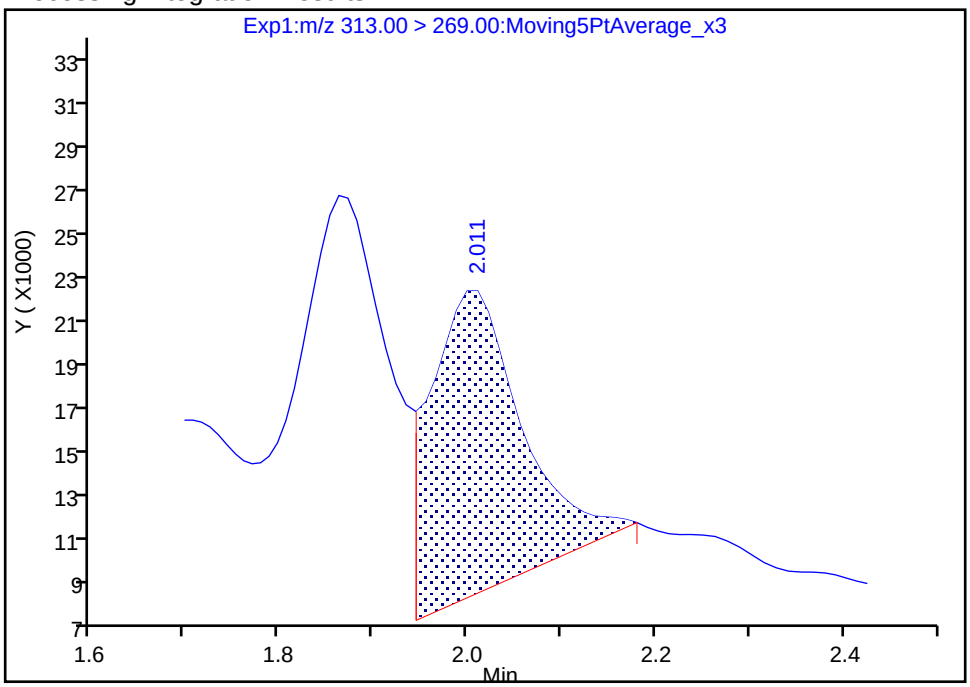
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\2018.07.13LLC_008.d				
Injection Date:	13-Jul-2018 21:01:54	Instrument ID:	A8_N		
Lims ID:	320-40571-A-2-A	Lab Sample ID:	320-40571-2		
Client ID:	NF17-GW-01-DUP				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	2	Worklist Smp#:	3
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

6 Perfluorohexanoic acid, CAS: 307-24-4

Signal: 1

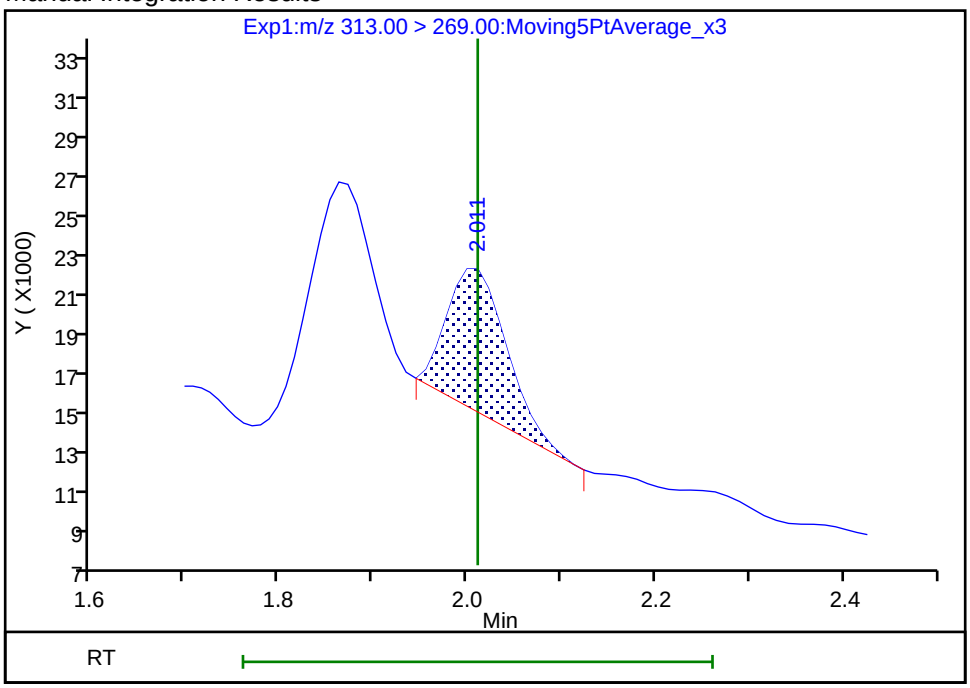
Processing Integration Results

RT: 2.01
Area: 92537
Amount: 0.052557
Amount Units: ng/ml



Manual Integration Results

RT: 2.01
Area: 31045
Amount: 0.017632
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 12:28:48
Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

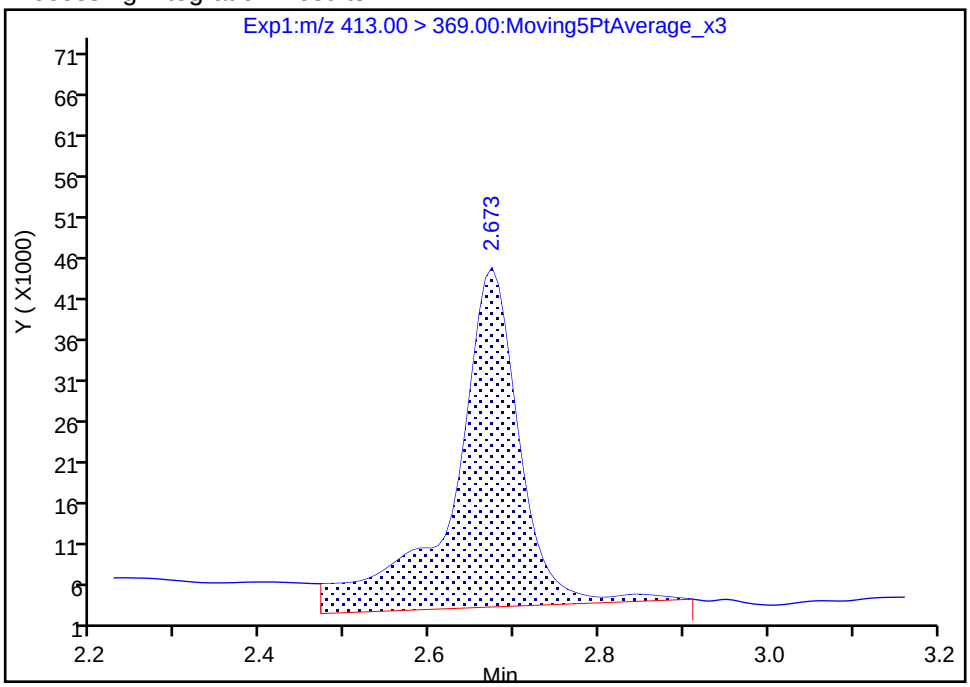
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\2018.07.13LLC_008.d				
Injection Date:	13-Jul-2018 21:01:54	Instrument ID:	A8_N		
Lims ID:	320-40571-A-2-A	Lab Sample ID:	320-40571-2		
Client ID:	NF17-GW-01-DUP				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	2	Worklist Smp#:	3
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

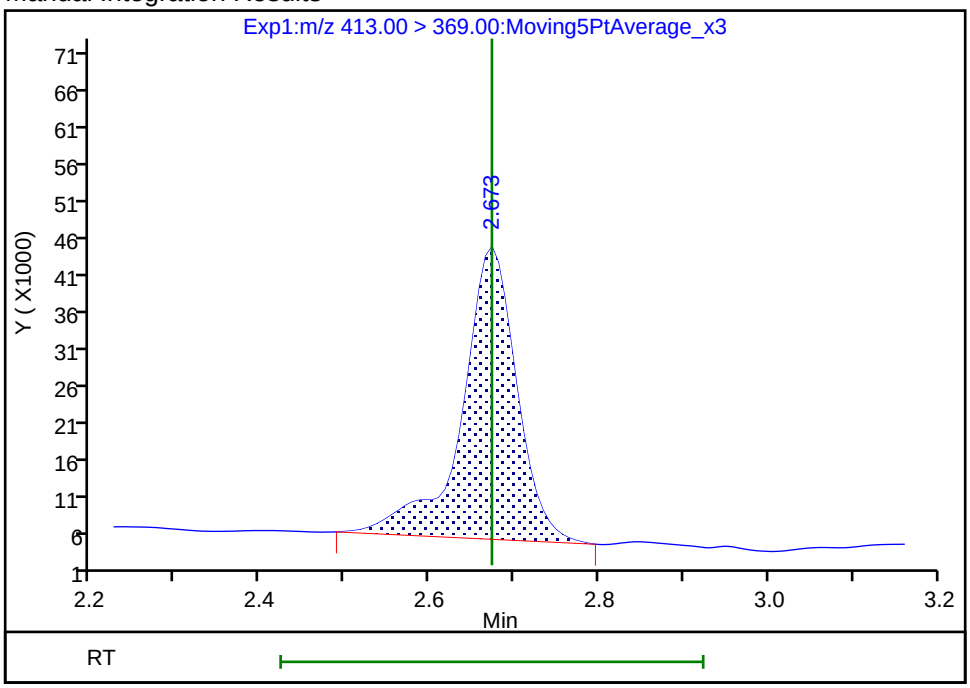
Processing Integration Results

RT: 2.67
Area: 227688
Amount: 0.105662
Amount Units: ng/ml



Manual Integration Results

RT: 2.67
Area: 179691
Amount: 0.083388
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 12:29:03

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

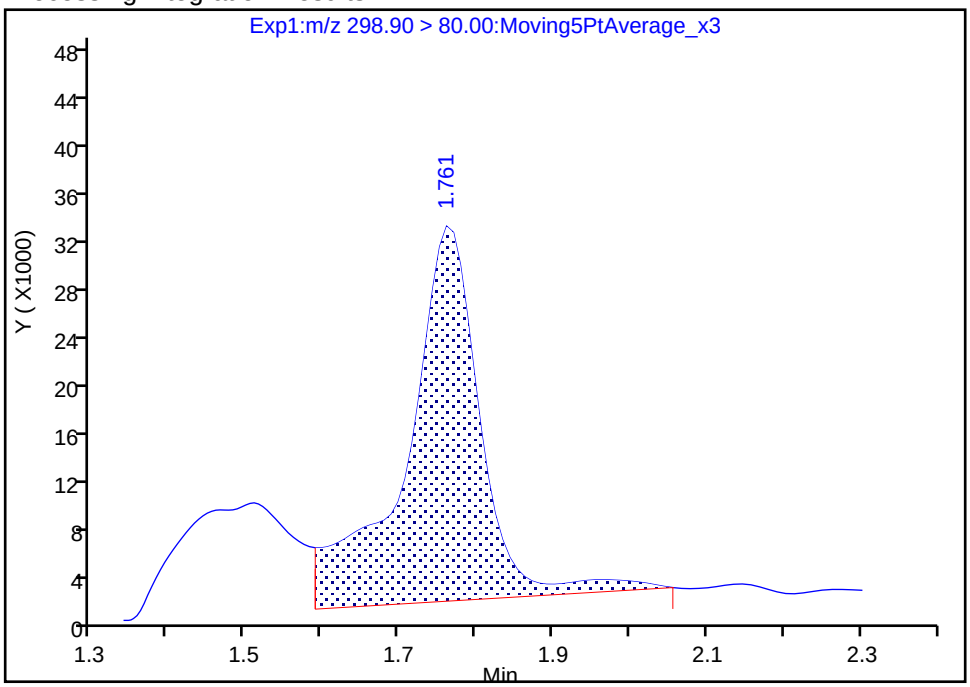
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\2018.07.13LLC_008.d				
Injection Date:	13-Jul-2018 21:01:54	Instrument ID:	A8_N		
Lims ID:	320-40571-A-2-A	Lab Sample ID:	320-40571-2		
Client ID:	NF17-GW-01-DUP				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	2	Worklist Smp#:	3
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

5 Perfluorobutanesulfonic acid, CAS: 375-73-5

Signal: 1

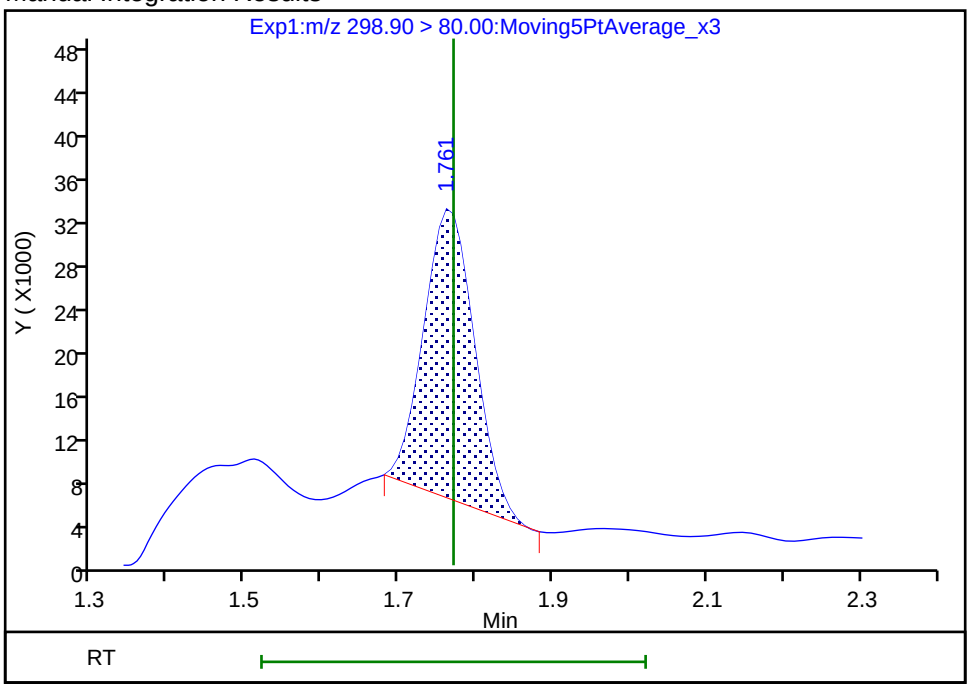
Processing Integration Results

RT: 1.76
Area: 212975
Amount: 0.074071
Amount Units: ng/ml



Manual Integration Results

RT: 1.76
Area: 123300
Amount: 0.042883
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 12:28:34

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

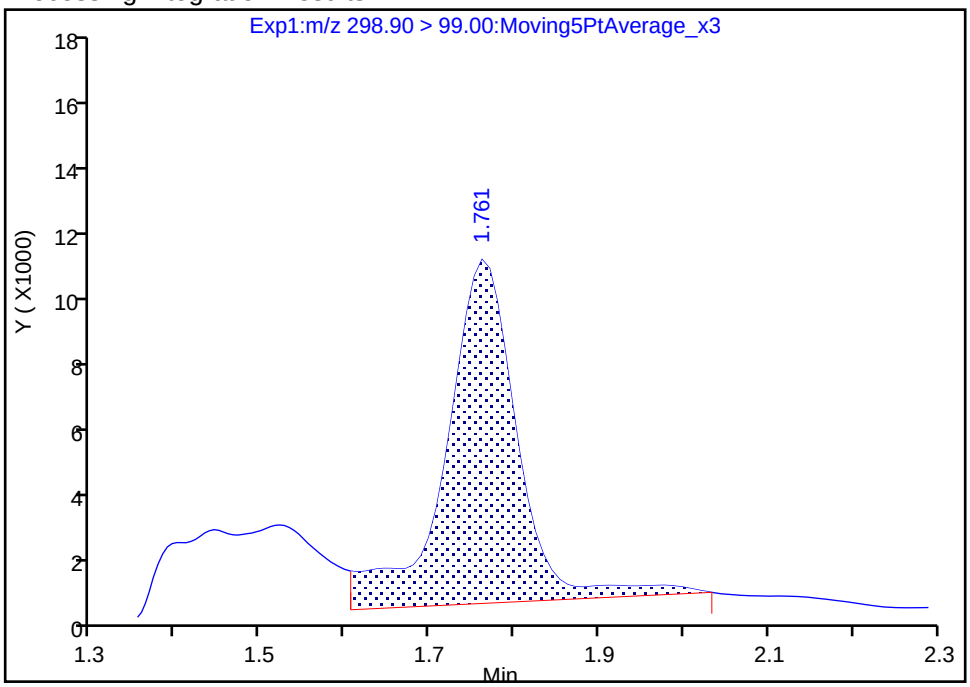
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\2018.07.13LLC_008.d				
Injection Date:	13-Jul-2018 21:01:54	Instrument ID:	A8_N		
Lims ID:	320-40571-A-2-A	Lab Sample ID:	320-40571-2		
Client ID:	NF17-GW-01-DUP				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	2	Worklist Smp#:	3
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

5 Perfluorobutanesulfonic acid, CAS: 375-73-5

Signal: 2

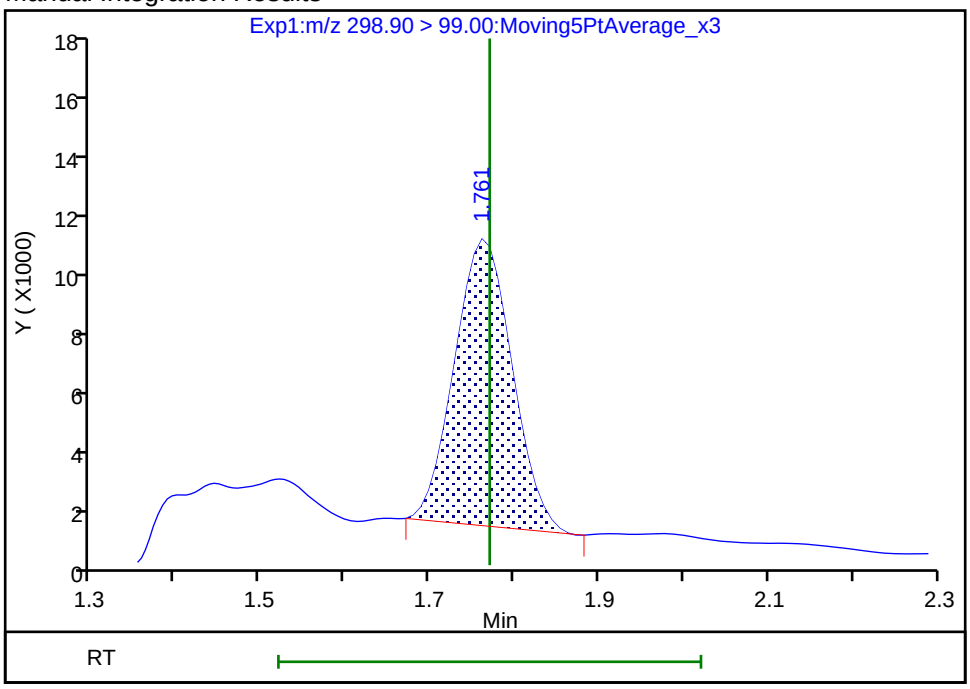
Processing Integration Results

RT: 1.76
Area: 61479
Amount: 0.074071
Amount Units: ng/ml



Manual Integration Results

RT: 1.76
Area: 45056
Amount: 0.042883
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 12:28:37
Audit Action: Manually Integrated Audit Reason: Baseline

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF17-SS-01
Lab Sample ID: 320-40571-3
Matrix: Solid
Lab File ID: 2018.07.13LLB_056.d
Analysis Method: 537 (modified)
Date Collected: 06/20/2018 08:45
Extraction Method: SHAKE
Date Extracted: 06/28/2018 05:15
Sample wt/vol: 5.04(g)
Date Analyzed: 07/14/2018 04:04
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture: 14.0
GPC Cleanup:(Y/N) N
Analysis Batch No.: 233997
Units: mg/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	0.000080	J	0.00023	0.000032
2706-90-3	Perfluoropentanoic acid (PFPeA)	ND		0.00023	0.000089
307-24-4	Perfluorohexanoic acid (PFHxA)	ND		0.00023	0.000048
375-85-9	Perfluoroheptanoic acid (PFHpA)	ND		0.00023	0.000033
335-67-1	Perfluorooctanoic acid (PFOA)	ND		0.00023	0.000099
375-95-1	Perfluorononanoic acid (PFNA)	ND		0.00023	0.000042
335-76-2	Perfluorodecanoic acid (PFDA)	ND		0.00023	0.000025
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		0.00023	0.000042
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		0.00023	0.000077
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		0.00023	0.000059
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		0.00023	0.000062
375-73-5	Perfluorobutanesulfonic acid (PFBS)	ND		0.00023	0.000029
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	ND		0.00023	0.000036
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.00023	0.000040
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	ND		0.00058	0.00023
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		0.00023	0.000045
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		0.00023	0.000095
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.0023	0.00045
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.0023	0.00043
27619-97-2	6:2 FTS	ND		0.0023	0.00017
39108-34-4	8:2 FTS	ND		0.0023	0.00029

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF17-SS-01
Lab Sample ID: 320-40571-3
Matrix: Solid
Lab File ID: 2018.07.13LLB_056.d
Analysis Method: 537 (modified)
Date Collected: 06/20/2018 08:45
Extraction Method: SHAKE
Date Extracted: 06/28/2018 05:15
Sample wt/vol: 5.04(g)
Date Analyzed: 07/14/2018 04:04
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture: 14.0
GPC Cleanup:(Y/N) N
Analysis Batch No.: 233997
Units: mg/Kg

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00992	13C4 PFBA	76		25-150
STL01893	13C5 PFPeA	83		25-150
STL00993	13C2 PFHxA	86		25-150
STL01892	13C4-PFHpA	86		25-150
STL00990	13C4 PFOA	86		25-150
STL00995	13C5 PFNA	85		25-150
STL00996	13C2 PFDA	93		25-150
STL00997	13C2 PFUnA	79		25-150
STL00998	13C2 PFDoA	79		25-150
STL02116	13C2-PFTeDA	85		25-150
STL02337	13C3-PFBS	70		25-150
STL00994	18O2 PFHxS	74		25-150
STL00991	13C4 PFOS	68		25-150
STL01056	13C8 FOSA	66		25-150
STL02118	d3-NMeFOSAA	73		25-150
STL02117	d5-NEtFOSAA	81		25-150
STL02279	M2-6:2FTS	62		25-150
STL02280	M2-8:2FTS	76		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\2018.07.13LLB_056.d
Lims ID: 320-40571-A-3-A
Client ID: NF17-SS-01
Sample Type: Client
Inject. Date: 14-Jul-2018 04:04:56 ALS Bottle#: 41 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-40571-a-3-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 16-Jul-2018 14:15:08 Calib Date: 11-Jul-2018 15:38:42
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK023

First Level Reviewer: mongkols Date: 16-Jul-2018 14:15:08

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										M
217.00 > 172.00	1.439	1.441	-0.002	0.541	4641704	1.90		76.1	46750	M
2 Perfluorobutyric acid										M
212.90 > 169.00	1.439	1.444	-0.005	1.000	63218	0.0345			16.7	M
D 3 13C5-PFPeA										
267.90 > 223.00	1.716	1.720	-0.004	0.646	3521921	2.08		83.1	37864	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.716	1.725	-0.009	1.000	25463	0.0149			7.0	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.761	1.761	0.0	1.000	19367	0.008430			88.3	
298.90 > 99.00	1.761	1.761	0.0	1.000	8600		2.25(1.25-3.74)		37.7	
D 47 13C3-PFBS										
301.90 > 83.00	1.761	1.765	-0.004	0.663	69825	1.64		70.5	331	
D 7 13C2 PFHxA										
315.00 > 270.00	1.999	2.003	-0.004	0.752	3946294	2.16		86.2	76110	
6 Perfluorohexanoic acid										M
313.00 > 269.00	1.999	2.011	-0.012	1.000	27255	0.0168			34.9	
313.00 > 119.00	1.999	2.011	-0.012	1.000	2408		11.32(5.03-15.10)		48.9	M
D 9 13C4-PFHpA										
367.00 > 322.00	2.316	2.319	-0.003	0.871	3633839	2.16		86.2	50862	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.329	2.329	0.0	1.000	23879	0.0117			149	
399.00 > 99.00	2.329	2.329	0.0	1.000	7297		3.27(1.50-4.49)		23.3	
D 11 18O2 PFHxS										
403.00 > 84.00	2.329	2.332	-0.003	0.876	4192344	1.76		74.2	47179	
D 12 M2-6:2FTS										
429.00 > 81.00	2.634	2.644	-0.010	0.991	533904	1.48		62.2	5915	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.634	2.651	-0.017	1.000	17964	0.0511			143	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 14 13C4 PFOA										
417.00 > 372.00	2.658	2.667	-0.009	1.000	3718080	2.16		86.5	52682	
* 62 13C2-PFOA										
415.00 > 370.00	2.658	2.673	-0.015		4498120	2.50			47331	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.666	2.673	-0.007	1.003	39454	0.0215			20.3	
413.00 > 169.00	2.666	2.673	-0.007	1.003	31682		1.25(0.84-2.52)		142	
D 18 13C4 PFOS										
503.00 > 80.00	3.019	3.027	-0.008	1.136	2863307	1.63		68.4	31475	
17 Perfluorooctane sulfonic acid										M
499.00 > 80.00	3.026	3.033	-0.007	1.002	50298	0.0371			397	
499.00 > 99.00	3.026	3.033	-0.007	1.002	10084		4.99(2.31-6.93)		99.7	M
D 19 13C5 PFNA										
468.00 > 423.00	3.026	3.034	-0.008	1.138	3249695	2.11		84.5	60526	
D 26 M2-8:2FTS										
529.00 > 81.00	3.370	3.379	-0.009	1.268	956887	1.81		75.6	10602	
D 21 13C8 FOSA										
506.00 > 78.00	3.370	3.379	-0.009	1.268	4186665	1.66		66.3	38448	
D 23 13C2 PFDA										
515.00 > 470.00	3.379	3.389	-0.010	1.271	3126838	2.32		92.6	55541	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.529	3.538	-0.009	1.328	1002852	1.81		72.5	24536	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.698	3.708	-0.010	1.391	1150745	2.03		81.2	3253	
D 30 13C2 PFUnA										
565.00 > 520.00	3.698	3.708	-0.010	1.391	2233837	1.98		79.3	33314	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.698	3.709	-0.011	1.000	8778	0.0216			200	
D 36 13C2 PFDoA										
615.00 > 570.00	3.998	3.999	-0.001	1.504	2316106	1.98		79.3	22169	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.490	4.501	-0.011	1.689	2570249	2.12		84.8	17576	

QC Flag Legend

Review Flags

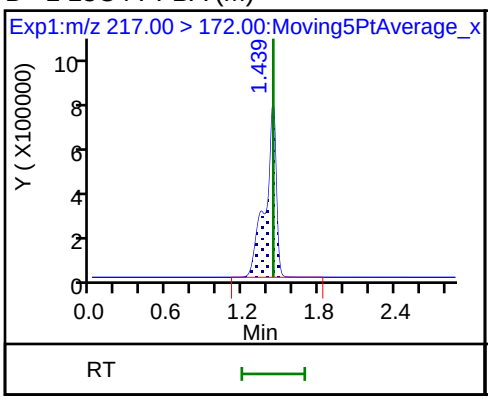
M - Manually Integrated

Report Date: 16-Jul-2018 14:15:08 Chrom Revision: 2.2 07-Jun-2018 07:41:54

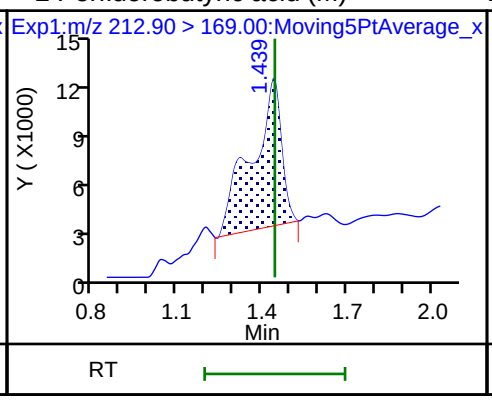
TestAmerica Sacramento

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\2018.07.13LLB_056.d				
Injection Date:	14-Jul-2018 04:04:56	Instrument ID:	A8_N		
Lims ID:	320-40571-A-3-A	Lab Sample ID:	320-40571-3		
Client ID:	NF17-SS-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	41	Worklist Smp#:	5
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		

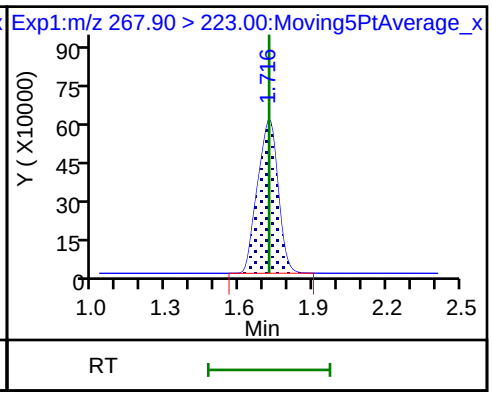
D 1 13C4 PFBA (M)



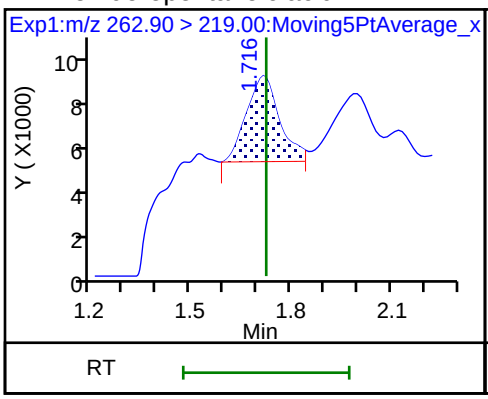
2 Perfluorobutyric acid (M)



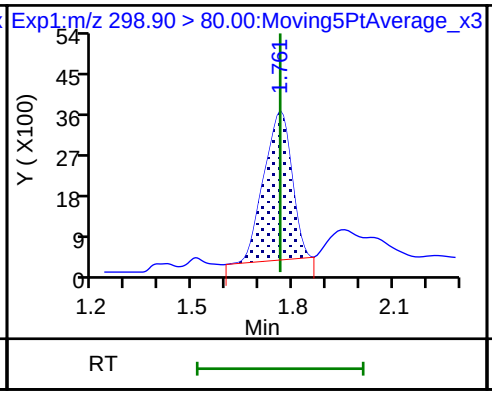
D 3 13C5-PFPeA



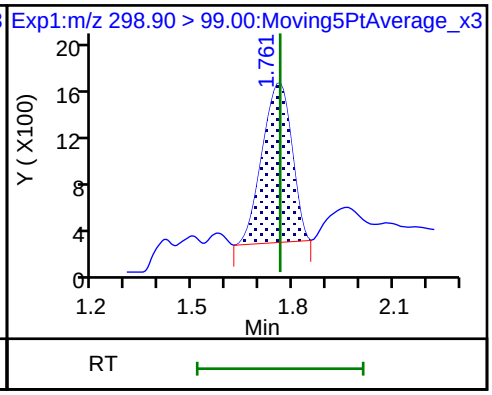
4 Perfluoropentanoic acid



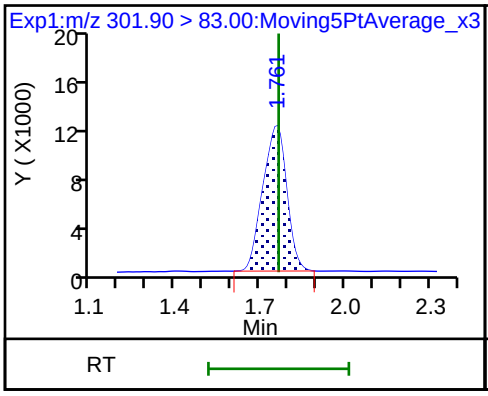
5 Perfluorobutanesulfonic acid



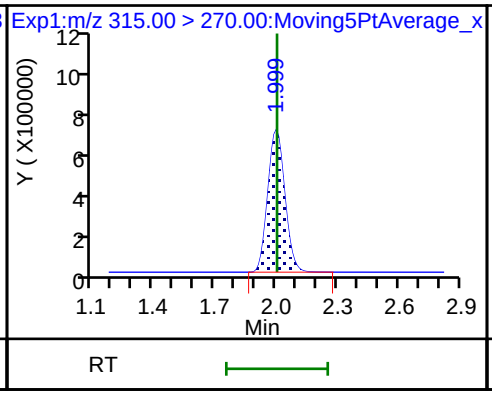
5 Perfluorobutanesulfonic acid



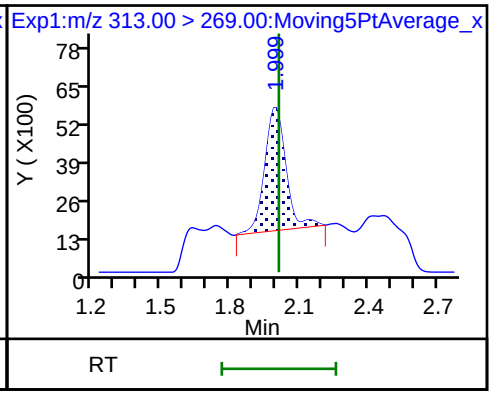
D 47 13C3-PFBS



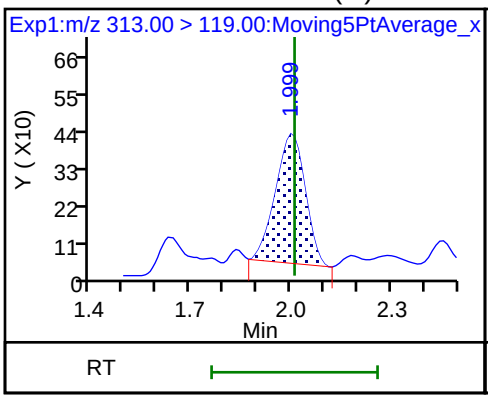
D 7 13C2 PFHxA



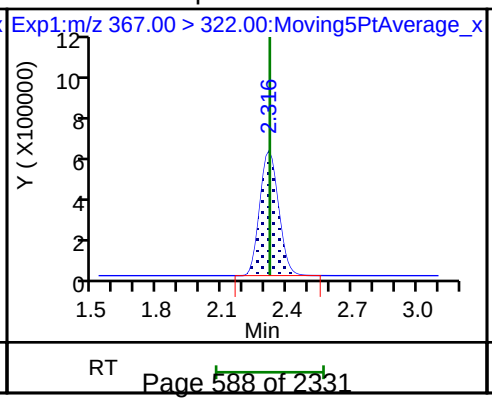
6 Perfluorohexanoic acid



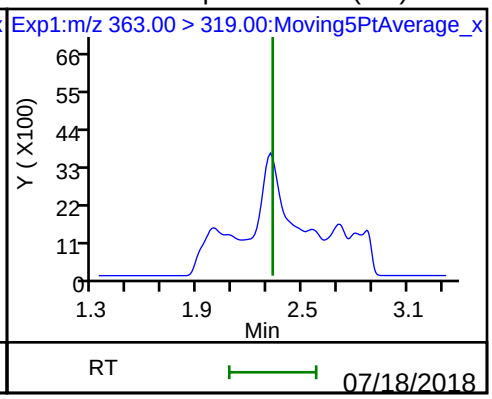
6 Perfluorohexanoic acid (M)



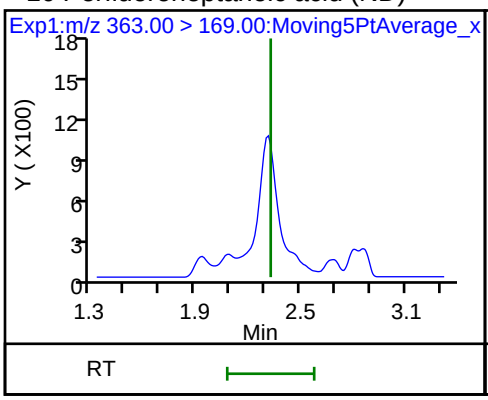
D 9 13C4-PFHpA



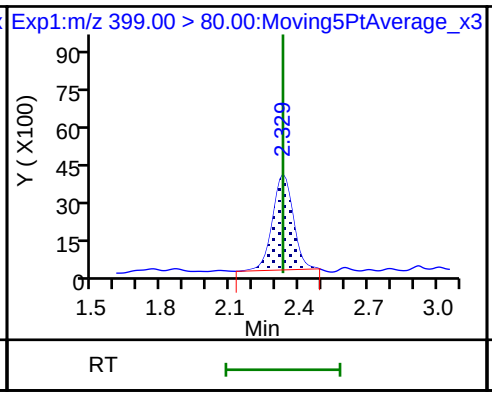
10 Perfluoroheptanoic acid (ND)



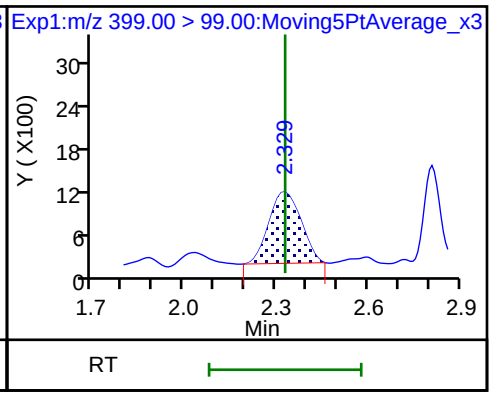
10 Perfluoroheptanoic acid (ND)



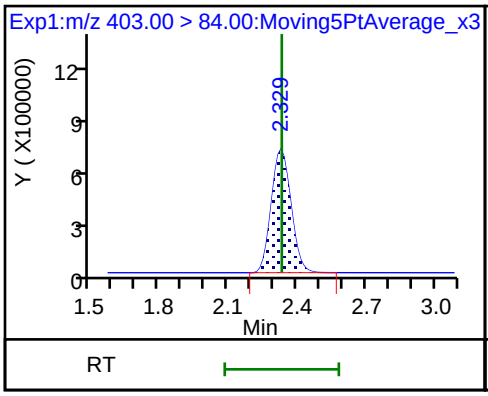
8 Perfluorohexanesulfonic acid



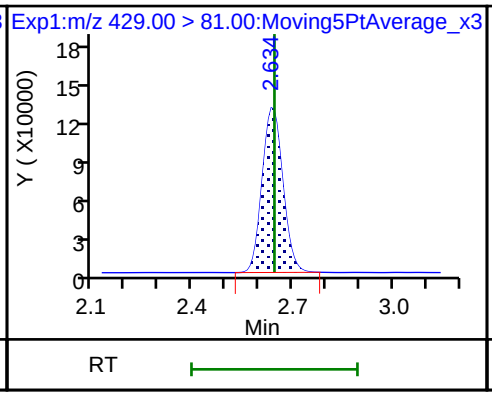
8 Perfluorohexanesulfonic acid



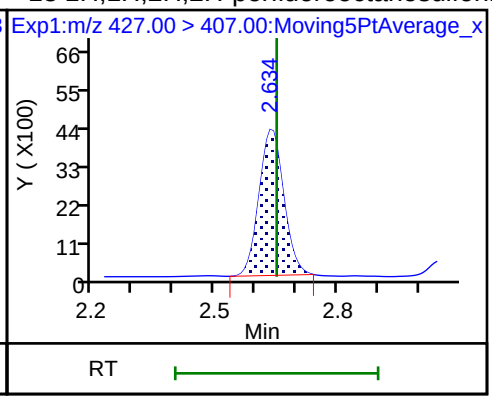
D 11 18O2 PFHxS



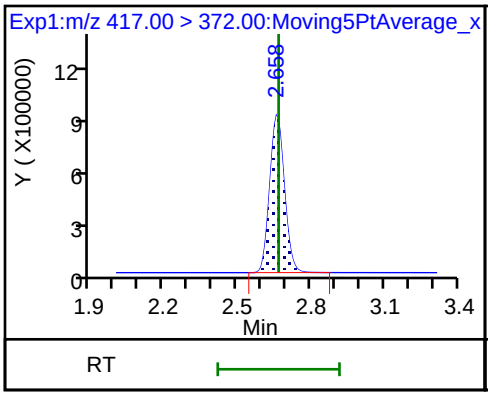
D 12 M2-6:2FTS



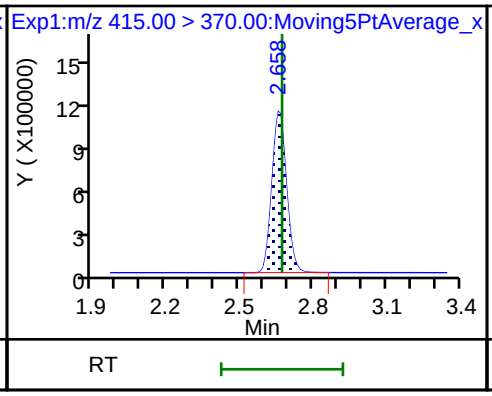
13 1H,1H,2H,2H-perfluorooctanesulfoni



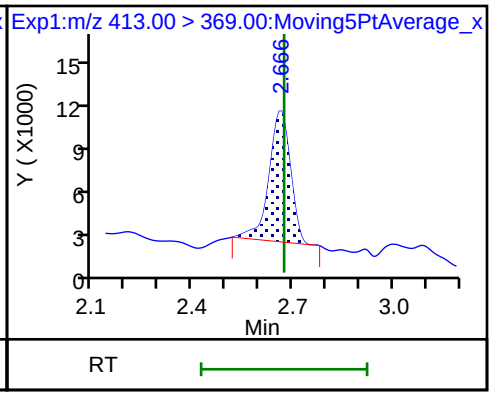
D 14 13C4 PFOA



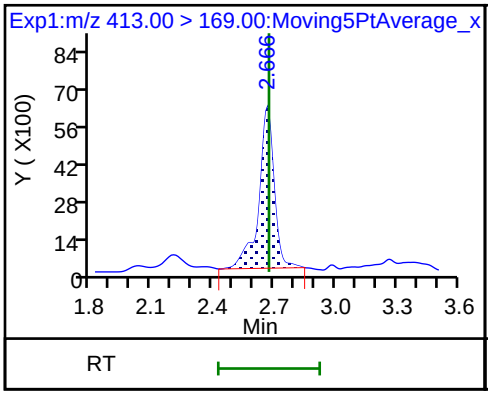
* 62 13C2-PFOA



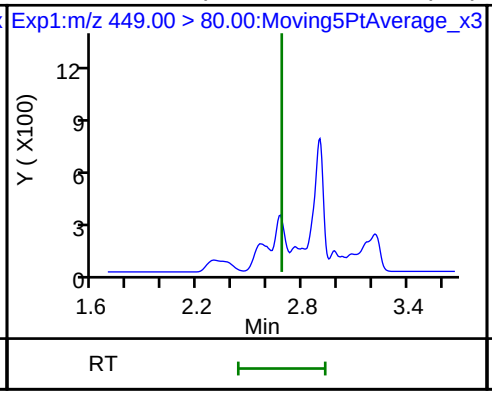
15 Perfluorooctanoic acid



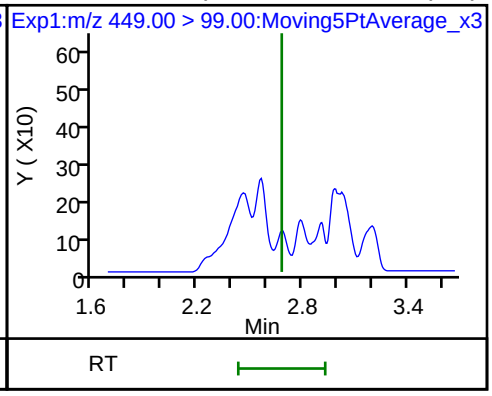
15 Perfluorooctanoic acid



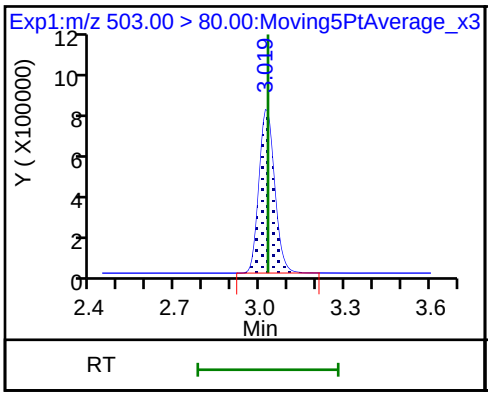
16 Perfluoroheptanesulfonic acid (ND)



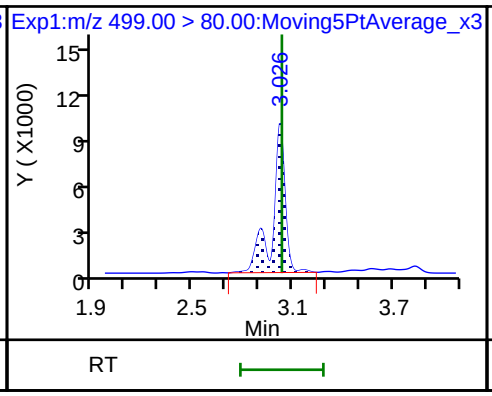
16 Perfluoroheptanesulfonic acid (ND)



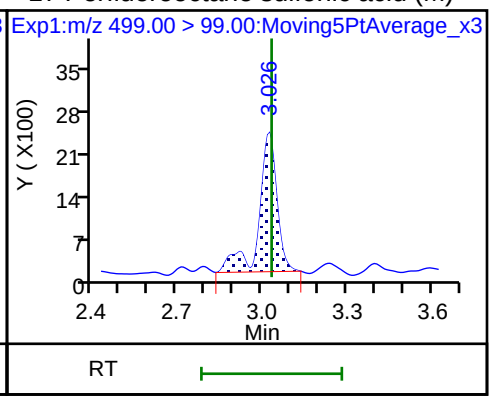
D 18 13C4 PFOS



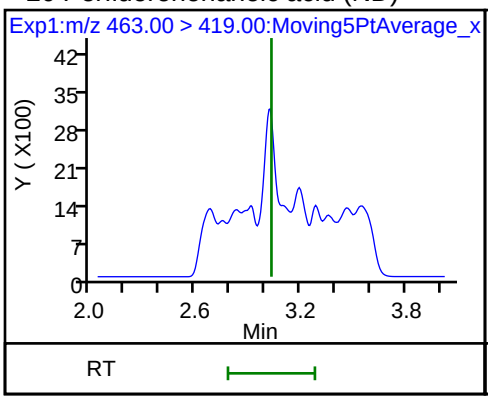
17 Perfluorooctane sulfonic acid



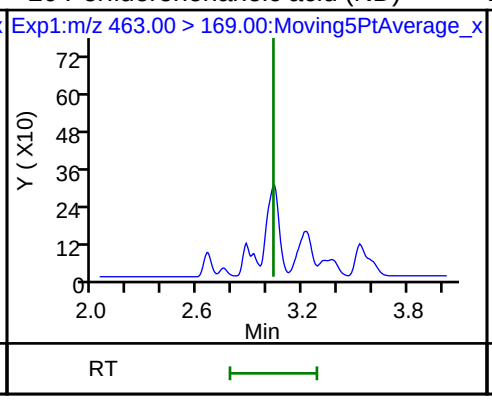
17 Perfluorooctane sulfonic acid (M)



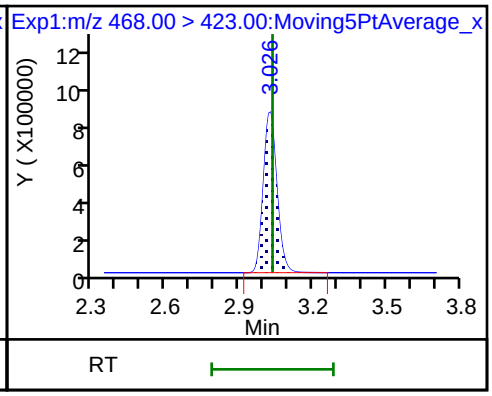
20 Perfluorononanoic acid (ND)



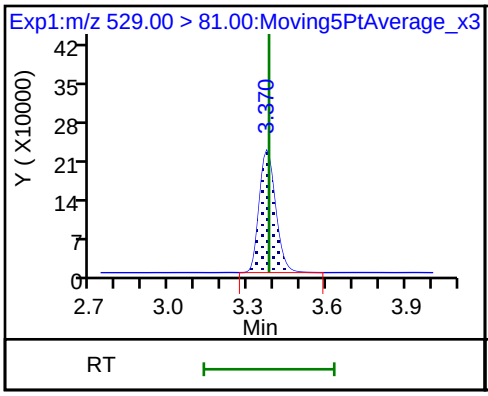
20 Perfluorononanoic acid (ND)



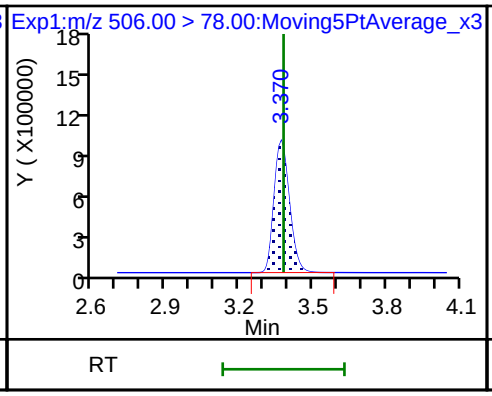
D 19 13C5 PFNA



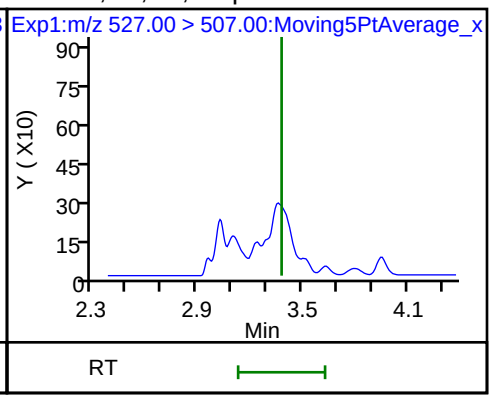
D 26 M2-8:2FTS



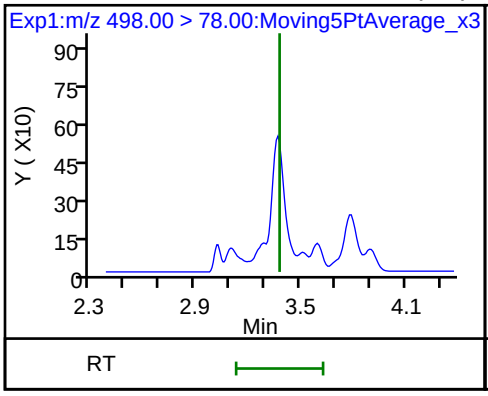
D 21 13C8 FOSA



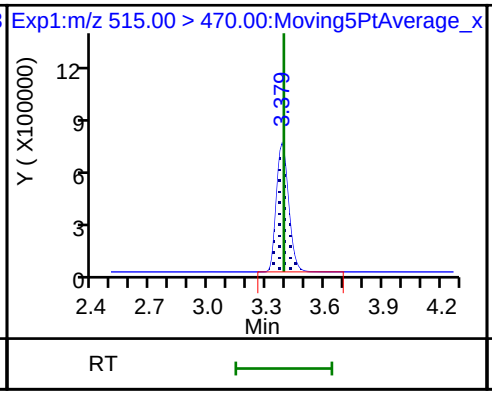
25 1H,1H,2H,2H-perfluorodecanesulfoni (ND)



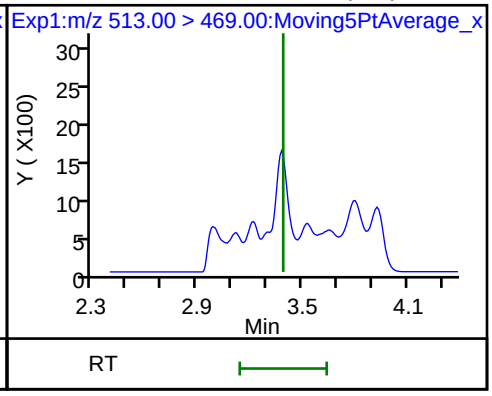
22 Perfluorooctane Sulfonamide (ND)



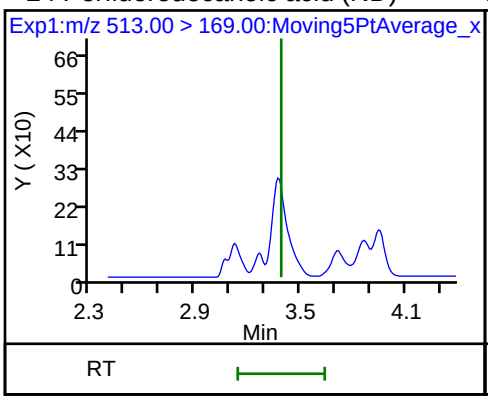
D 23 13C2 PFDA



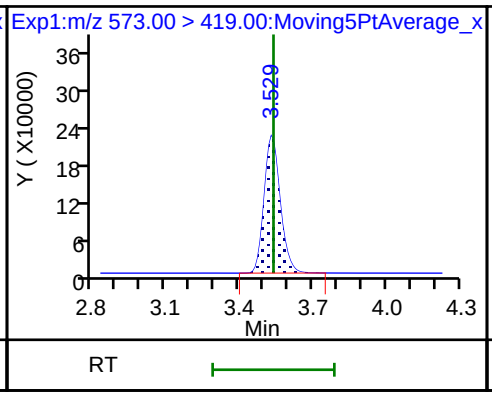
24 Perfluorodecanoic acid (ND)



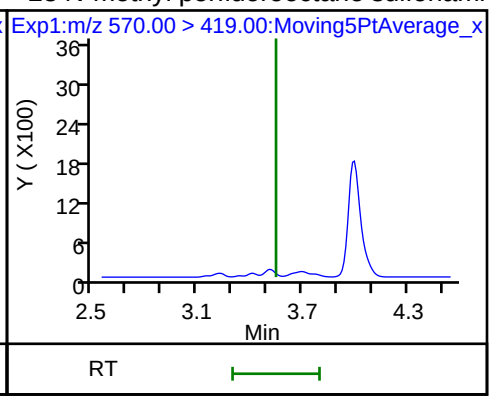
24 Perfluorodecanoic acid (ND)



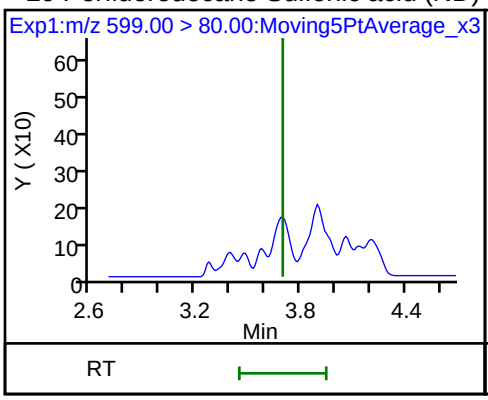
D 27 d3-NMeFOSAA



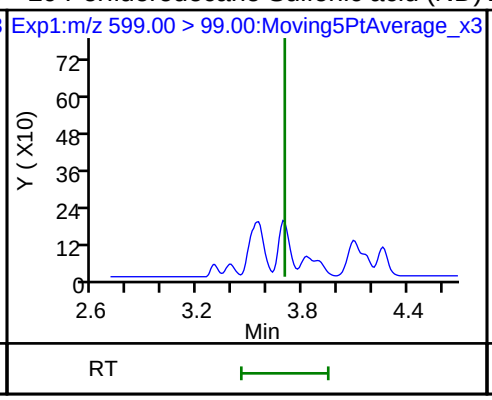
28 N-methyl perfluorooctane sulfonami (ND)



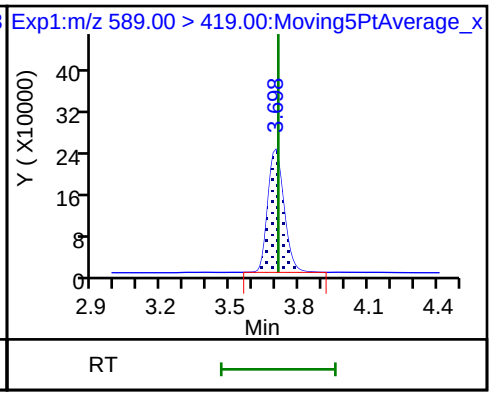
29 Perfluorodecane Sulfonic acid (ND)



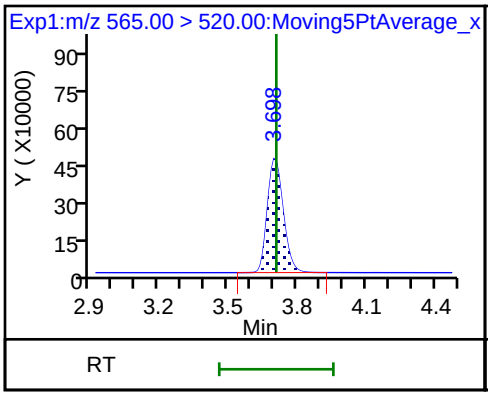
29 Perfluorodecane Sulfonic acid (ND)



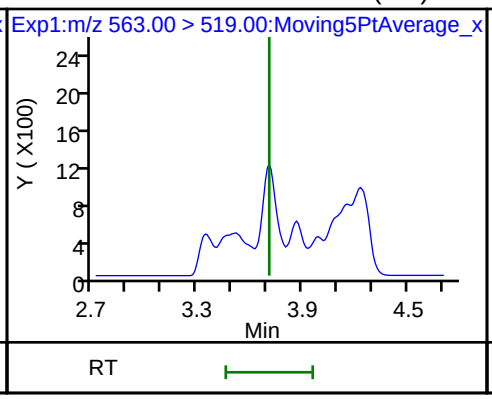
D 32 d5-NEtFOSAA



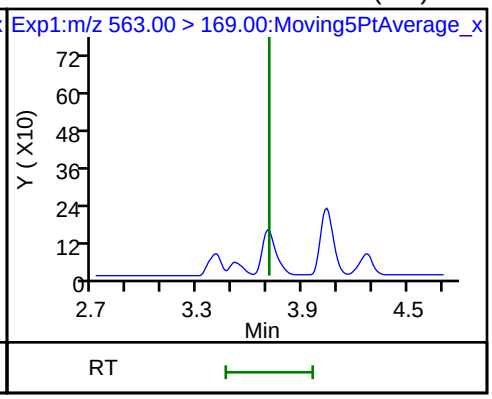
D 30 13C2 PFUnA



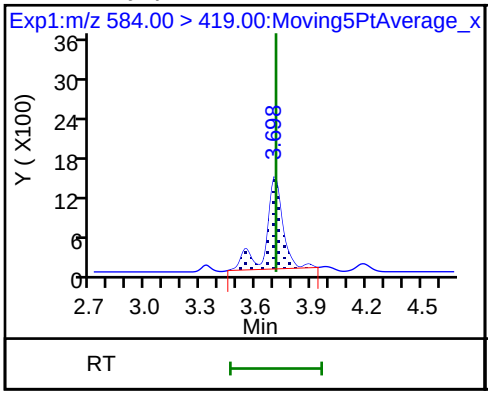
31 Perfluoroundecanoic acid (ND)



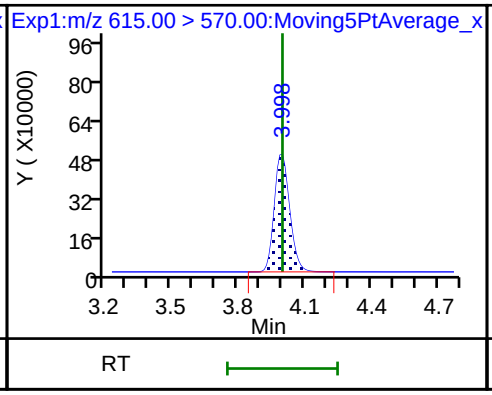
31 Perfluoroundecanoic acid (ND)



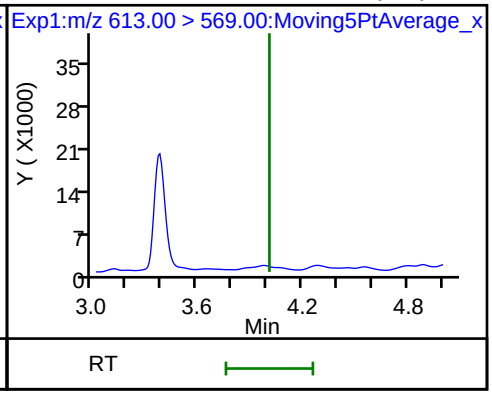
33 N-ethyl perfluorooctane sulfonamid



D 36 13C2 PFDoA

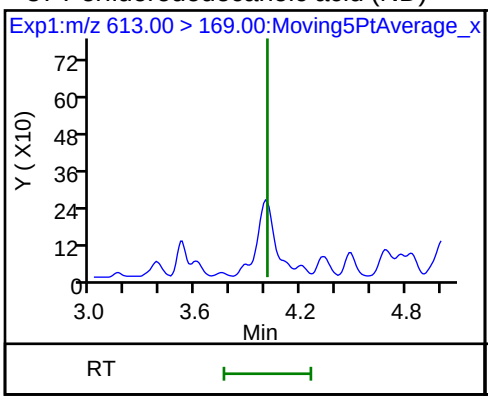


37 Perfluorododecanoic acid (ND)

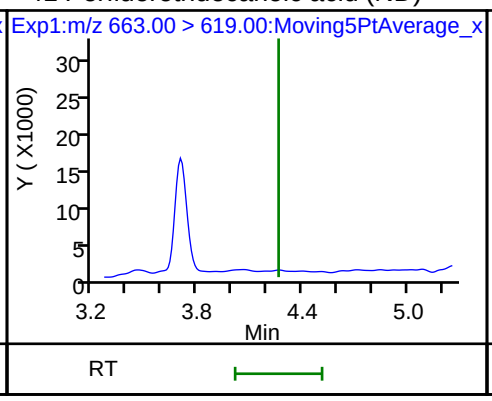


Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\2018.07.13LLB_056.d

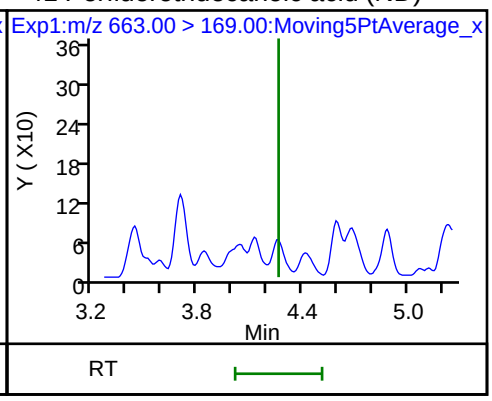
37 Perfluorododecanoic acid (ND)



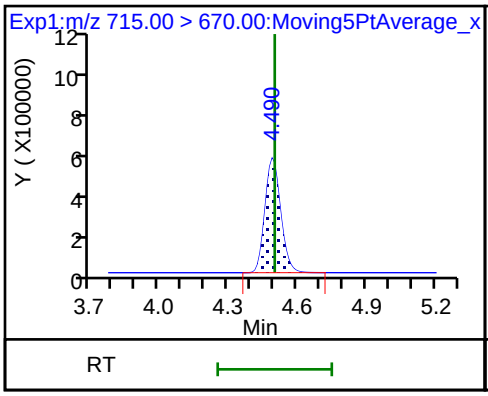
41 Perfluorotridecanoic acid (ND)



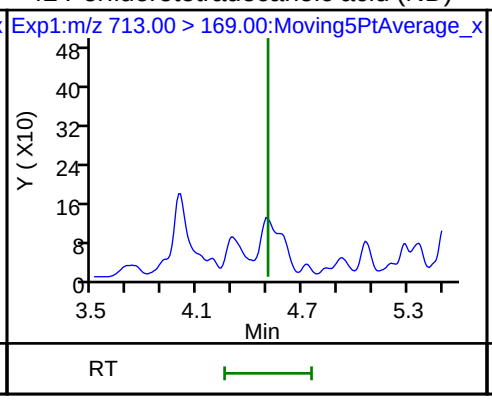
41 Perfluorotridecanoic acid (ND)



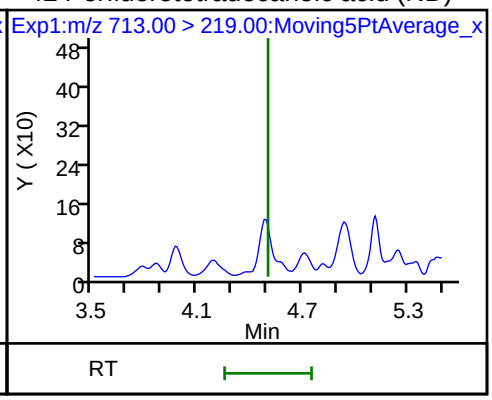
D 43 13C2-PFTeDA



42 Perfluorotetradecanoic acid (ND)



42 Perfluorotetradecanoic acid (ND)



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

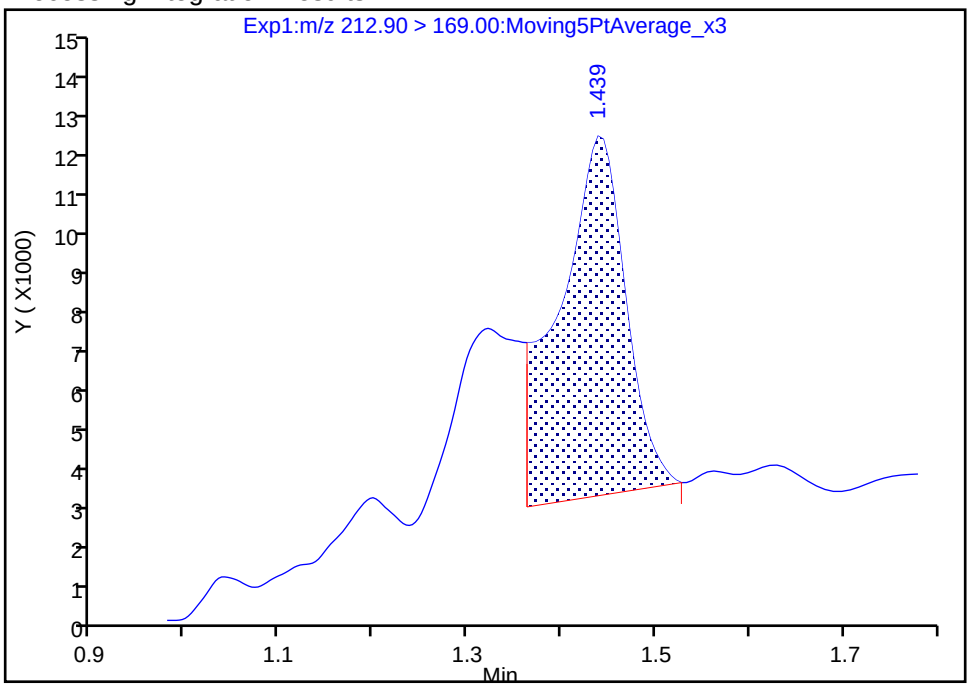
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\2018.07.13LLB_056.d				
Injection Date:	14-Jul-2018 04:04:56	Instrument ID:	A8_N		
Lims ID:	320-40571-A-3-A	Lab Sample ID:	320-40571-3		
Client ID:	NF17-SS-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	41	Worklist Smp#:	5
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

2 Perfluorobutyric acid, CAS: 375-22-4

Signal: 1

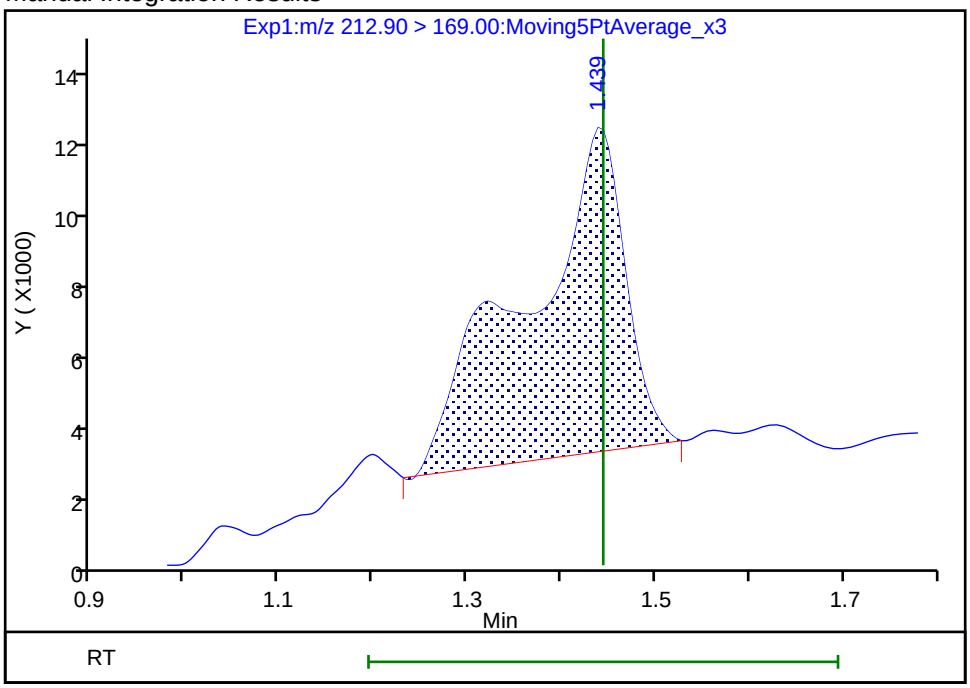
Processing Integration Results

RT: 1.44
Area: 42367
Amount: 0.023153
Amount Units: ng/ml



Manual Integration Results

RT: 1.44
Area: 63218
Amount: 0.034547
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 14:13:53

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

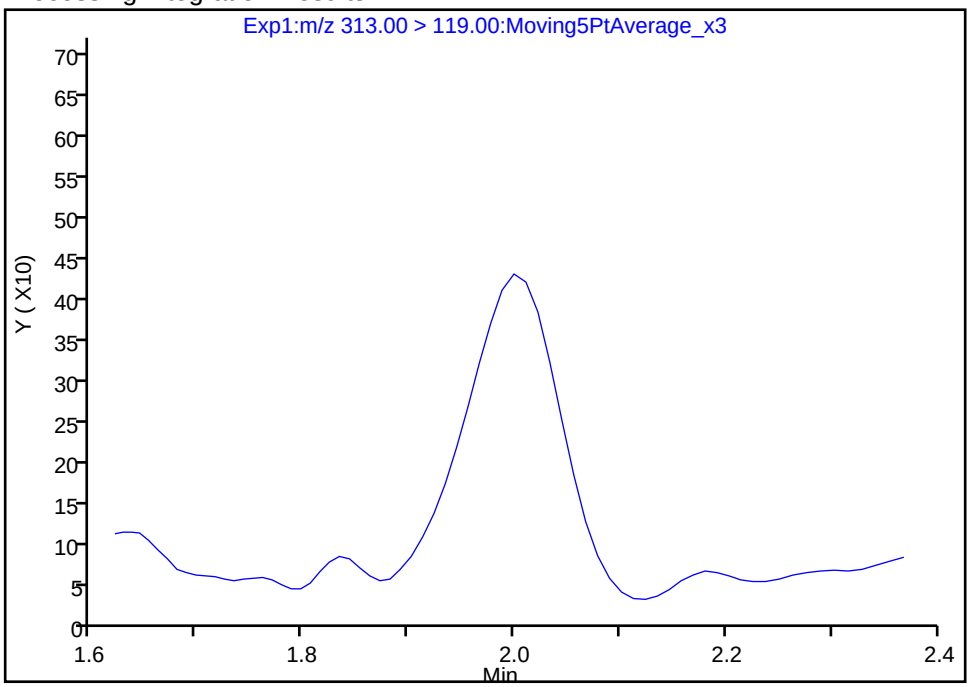
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\2018.07.13LLB_056.d				
Injection Date:	14-Jul-2018 04:04:56	Instrument ID:	A8_N		
Lims ID:	320-40571-A-3-A	Lab Sample ID:	320-40571-3		
Client ID:	NF17-SS-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	41	Worklist Smp#:	5
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

6 Perfluorohexanoic acid, CAS: 307-24-4

Signal: 2

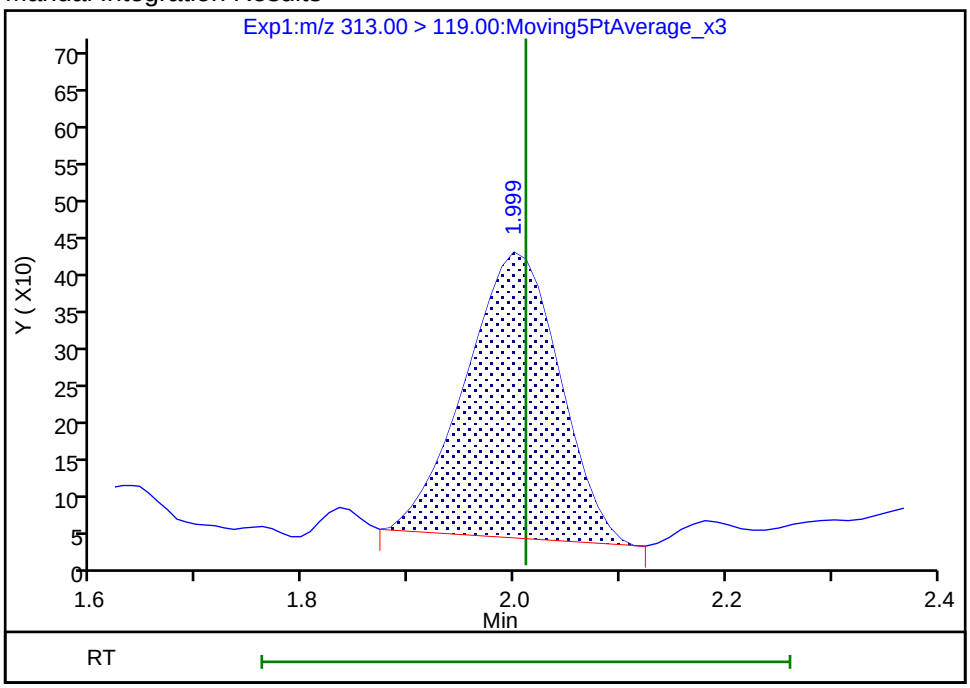
Not Detected
Expected RT: 2.01

Processing Integration Results



RT: 2.00
Area: 2408
Amount: 0.016775
Amount Units: ng/ml

Manual Integration Results



Reviewer: mongkols, 16-Jul-2018 14:14:15
Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

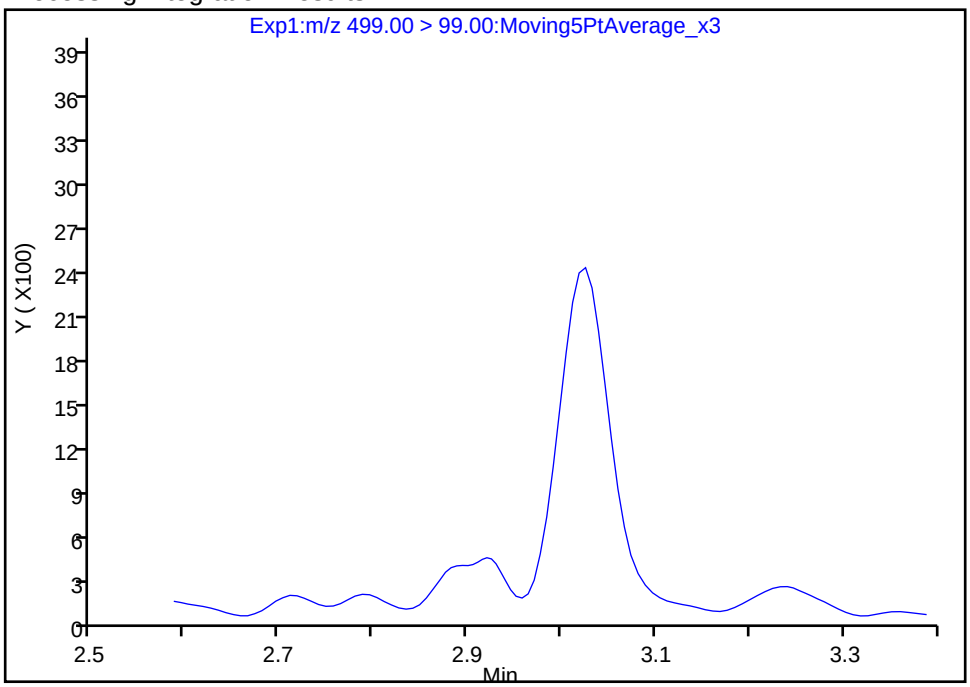
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\2018.07.13LLB_056.d				
Injection Date:	14-Jul-2018 04:04:56	Instrument ID:	A8_N		
Lims ID:	320-40571-A-3-A	Lab Sample ID:	320-40571-3		
Client ID:	NF17-SS-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	41	Worklist Smp#:	5
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

17 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 2

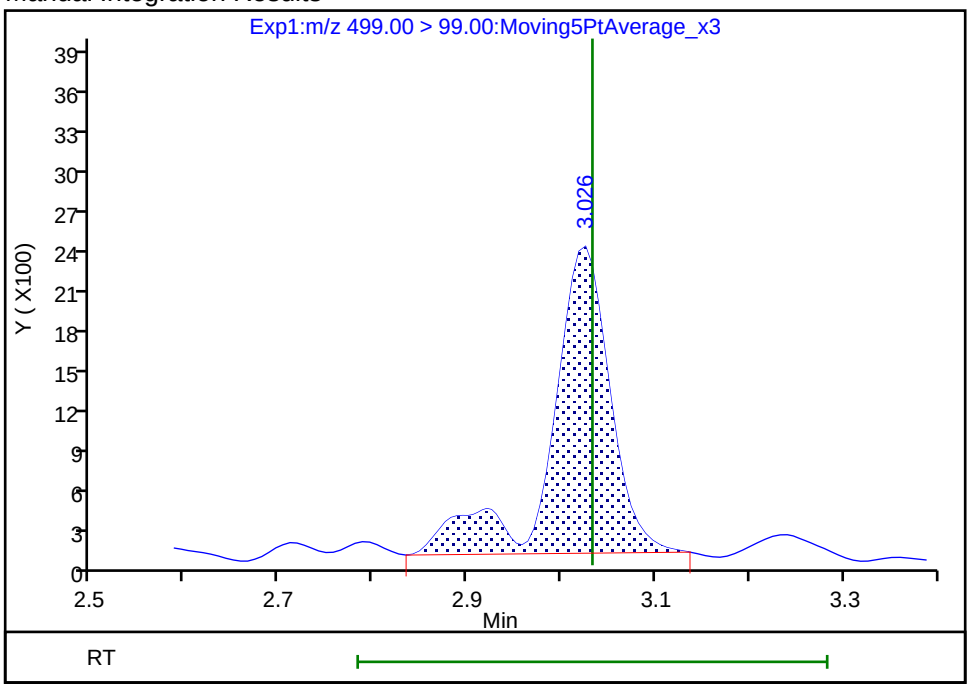
Processing Integration Results

RT: 3.03
Area: 0
Amount: 0.037050
Amount Units: ng/ml



Manual Integration Results

RT: 3.03
Area: 10084
Amount: 0.037050
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 14:14:38

Audit Action: Manually Integrated Audit Reason: Assign Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

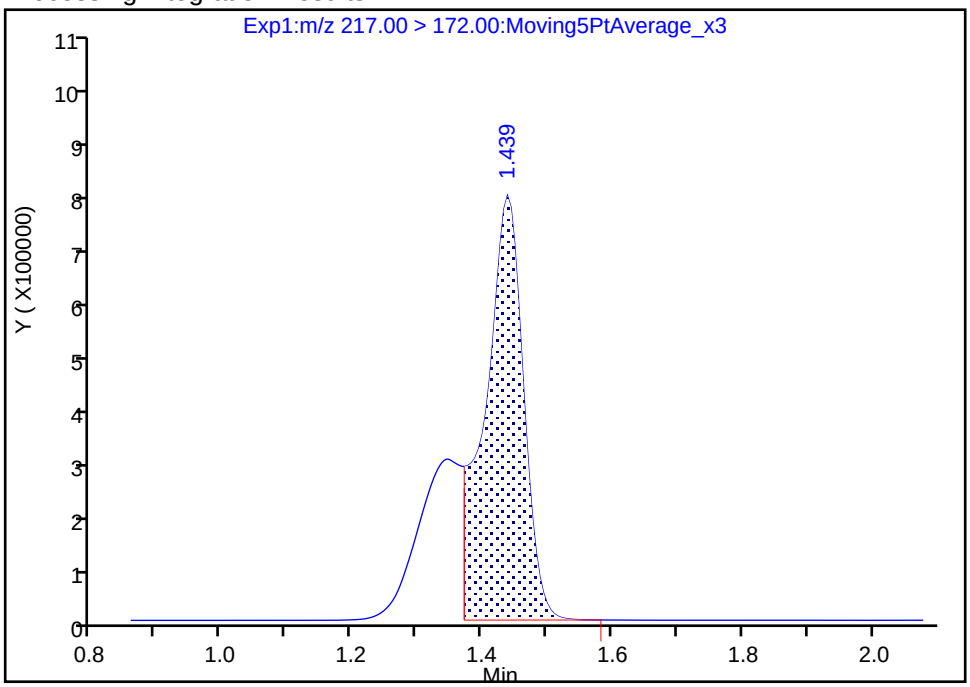
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\2018.07.13LLB_056.d				
Injection Date:	14-Jul-2018 04:04:56	Instrument ID:	A8_N		
Lims ID:	320-40571-A-3-A	Lab Sample ID:	320-40571-3		
Client ID:	NF17-SS-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	41	Worklist Smp#:	5
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

D 1 13C4 PFBA, CAS: STL00992

Signal: 1

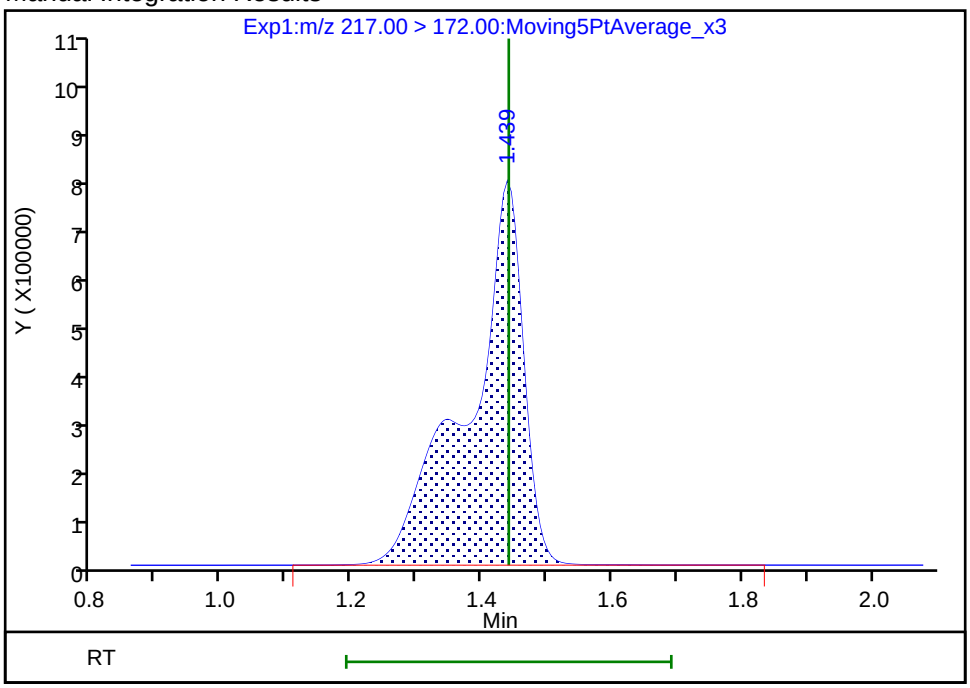
Processing Integration Results

RT: 1.44
Area: 3223334
Amount: 1.321246
Amount Units: ng/ml



Manual Integration Results

RT: 1.44
Area: 4641704
Amount: 1.902636
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 14:13:37

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF17-SS-01-DUP
Lab Sample ID: 320-40571-4
Matrix: Solid
Lab File ID: 2018.07.13LLB_057.d
Analysis Method: 537 (modified)
Date Collected: 06/20/2018 08:55
Extraction Method: SHAKE
Date Extracted: 06/28/2018 05:15
Sample wt/vol: 5.07(g)
Date Analyzed: 07/14/2018 04:12
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture: 13.4
GPC Cleanup:(Y/N) N
Analysis Batch No.: 233997
Units: mg/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	0.00012	J	0.00023	0.000032
2706-90-3	Perfluoropentanoic acid (PFPeA)	ND		0.00023	0.000088
307-24-4	Perfluorohexanoic acid (PFHxA)	ND		0.00023	0.000048
375-85-9	Perfluoroheptanoic acid (PFHpA)	ND		0.00023	0.000033
335-67-1	Perfluorooctanoic acid (PFOA)	ND		0.00023	0.000098
375-95-1	Perfluorononanoic acid (PFNA)	ND		0.00023	0.000041
335-76-2	Perfluorodecanoic acid (PFDA)	0.000033	J	0.00023	0.000025
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		0.00023	0.000041
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		0.00023	0.000076
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		0.00023	0.000058
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		0.00023	0.000062
375-73-5	Perfluorobutanesulfonic acid (PFBS)	ND		0.00023	0.000028
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	ND		0.00023	0.000035
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.00023	0.000040
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	ND		0.00057	0.00023
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		0.00023	0.000044
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		0.00023	0.000093
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.0023	0.00044
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.0023	0.00042
27619-97-2	6:2 FTS	ND		0.0023	0.00017
39108-34-4	8:2 FTS	ND		0.0023	0.00028

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF17-SS-01-DUP
Lab Sample ID: 320-40571-4
Matrix: Solid
Lab File ID: 2018.07.13LLB_057.d
Analysis Method: 537 (modified)
Date Collected: 06/20/2018 08:55
Extraction Method: SHAKE
Date Extracted: 06/28/2018 05:15
Sample wt/vol: 5.07(g)
Date Analyzed: 07/14/2018 04:12
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture: 13.4
GPC Cleanup:(Y/N) N
Analysis Batch No.: 233997
Units: mg/Kg

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00992	13C4 PFBA	74		25-150
STL01893	13C5 PFPeA	79		25-150
STL00993	13C2 PFHxA	80		25-150
STL01892	13C4-PFHpA	86		25-150
STL00990	13C4 PFOA	83		25-150
STL00995	13C5 PFNA	80		25-150
STL00996	13C2 PFDA	87		25-150
STL00997	13C2 PFUnA	79		25-150
STL00998	13C2 PFDoA	82		25-150
STL02116	13C2-PFTeDA	81		25-150
STL02337	13C3-PFBS	70		25-150
STL00994	18O2 PFHxS	76		25-150
STL00991	13C4 PFOS	67		25-150
STL01056	13C8 FOSA	62		25-150
STL02118	d3-NMeFOSAA	77		25-150
STL02117	d5-NEtFOSAA	80		25-150
STL02279	M2-6:2FTS	68		25-150
STL02280	M2-8:2FTS	85		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\2018.07.13LLB_057.d
Lims ID: 320-40571-A-4-A
Client ID: NF17-SS-01-DUP
Sample Type: Client
Inject. Date: 14-Jul-2018 04:12:46 ALS Bottle#: 42 Worklist Smp#: 6
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-40571-a-4-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 16-Jul-2018 14:16:43 Calib Date: 11-Jul-2018 15:38:42
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK023

First Level Reviewer: mongkols Date: 16-Jul-2018 14:16:43

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										M
217.00 > 172.00	1.433	1.441	-0.008	0.539	4860890	1.86		74.3	45770	M
2 Perfluorobutyric acid										M
212.90 > 169.00	1.439	1.444	-0.005	1.004	103830	0.0542			25.9	M
D 3 13C5-PFPeA										
267.90 > 223.00	1.716	1.720	-0.004	0.646	3595911	1.98		79.0	39453	
4 Perfluoropentanoic acid										M
262.90 > 219.00	1.707	1.725	-0.018	0.995	25016	0.0143			8.4	M
D 47 13C3-PFBS										
301.90 > 83.00	1.752	1.765	-0.013	0.659	74184	1.62		69.8	350	
D 7 13C2 PFHxA										
315.00 > 270.00	1.999	2.003	-0.004	0.752	3938554	2.01		80.2	62846	
D 9 13C4-PFHpA										
367.00 > 322.00	2.316	2.319	-0.003	0.871	3890412	2.15		86.0	50217	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.316	2.329	-0.013	1.000	20152	0.0112			21.5	
363.00 > 169.00	2.316	2.329	-0.013	1.000	8536		2.36(1.13-3.40)		75.2	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.329	2.329	0.0	1.000	23853	0.0107			104	
399.00 > 99.00	2.329	2.329	0.0	1.000	6338		3.76(1.50-4.49)		26.7	
D 11 18O2 PFHxS										
403.00 > 84.00	2.329	2.332	-0.003	0.876	4606047	1.80		76.0	55924	
D 12 M2-6:2FTS										
429.00 > 81.00	2.634	2.644	-0.010	0.991	627489	1.62		68.1	6805	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.634	2.651	-0.017	1.000	8170	0.0198			48.4	
D 14 13C4 PFOA										
417.00 > 372.00	2.658	2.667	-0.009	1.000	3811490	2.06		82.6	44200	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
* 62 13C2-PFOA										
415.00 > 370.00	2.658	2.673	-0.015		4826844	2.50			62185	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.658	2.673	-0.015	1.000	69418	0.0370			32.5	
413.00 > 169.00	2.666	2.673	-0.007	1.003	47827		1.45(0.84-2.52)		230	
D 18 13C4 PFOS										
503.00 > 80.00	3.019	3.027	-0.008	1.136	3030472	1.61		67.4	26005	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.026	3.033	-0.007	1.002	114162	0.0795			631	
499.00 > 99.00	3.026	3.033	-0.007	1.002	28468		4.01(2.31-6.93)		292	
20 Perfluorononanoic acid										
463.00 > 419.00	3.026	3.033	-0.007	1.000	20634	0.0141			25.1	
463.00 > 169.00	3.026	3.033	-0.007	1.000	3994		5.17(1.90-5.69)		75.8	
D 19 13C5 PFNA										
468.00 > 423.00	3.026	3.034	-0.008	1.138	3298143	2.00		80.0	43398	
D 26 M2-8:2FTS										
529.00 > 81.00	3.370	3.379	-0.009	1.268	1158522	2.04		85.3	9280	
D 21 13C8 FOSA										
506.00 > 78.00	3.370	3.379	-0.009	1.268	4173707	1.54		61.6	47000	
D 23 13C2 PFDA										
515.00 > 470.00	3.380	3.389	-0.009	1.271	3157476	2.18		87.2	42274	
24 Perfluorodecanoic acid										R
513.00 > 469.00	3.380	3.389	-0.009	1.000	19146	0.0144			42.3	R
513.00 > 169.00	3.380	3.389	-0.009	1.000	2679		7.15(2.36-7.09)		64.0	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.529	3.538	-0.009	1.328	1137637	1.92		76.6	25192	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.698	3.708	-0.010	1.391	1213869	2.00		79.8	3829	
D 30 13C2 PFUnA										
565.00 > 520.00	3.698	3.708	-0.010	1.391	2401759	1.99		79.4	41649	
31 Perfluoroundecanoic acid										R
563.00 > 519.00	3.709	3.709	0.0	1.003	10210	0.0130			22.5	R
563.00 > 169.00	3.698	3.709	-0.011	1.000	1304		7.83(2.12-6.36)		47.8	
D 36 13C2 PFDoA										
615.00 > 570.00	3.999	3.999	0.0	1.504	2559502	2.04		81.6	25814	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.490	4.501	-0.011	1.689	2635339	2.03		81.0	15930	

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Review Flags

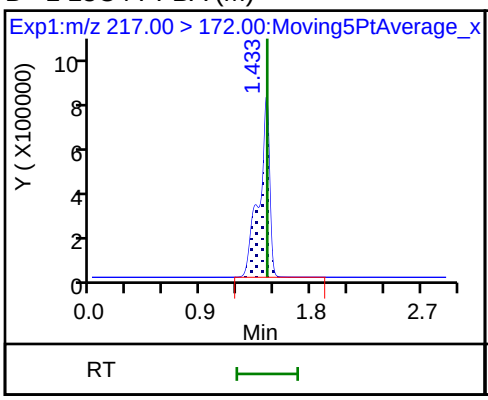
M - Manually Integrated

Report Date: 16-Jul-2018 14:16:43 Chrom Revision: 2.2 07-Jun-2018 07:41:54

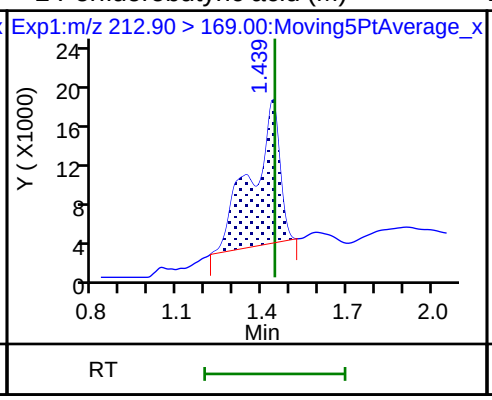
TestAmerica Sacramento

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\2018.07.13LLB_057.d				
Injection Date:	14-Jul-2018 04:12:46	Instrument ID:	A8_N		
Lims ID:	320-40571-A-4-A	Lab Sample ID:	320-40571-4		
Client ID:	NF17-SS-01-DUP				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	42	Worklist Smp#:	6
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		

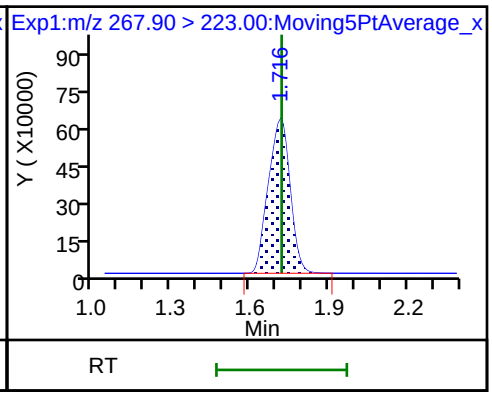
D 1 13C4 PFBA (M)



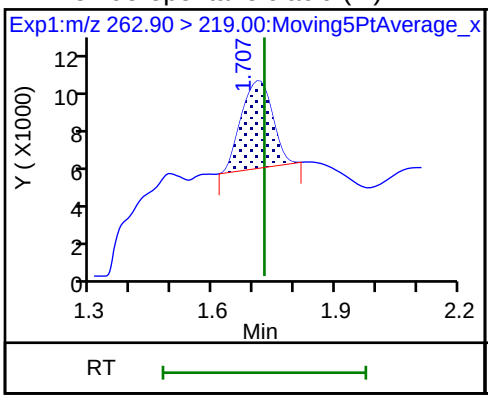
2 Perfluorobutyric acid (M)



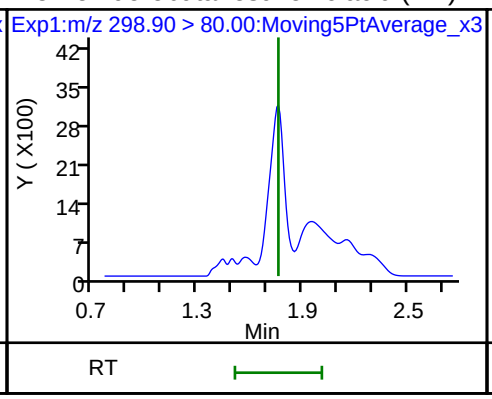
D 3 13C5-PFPeA



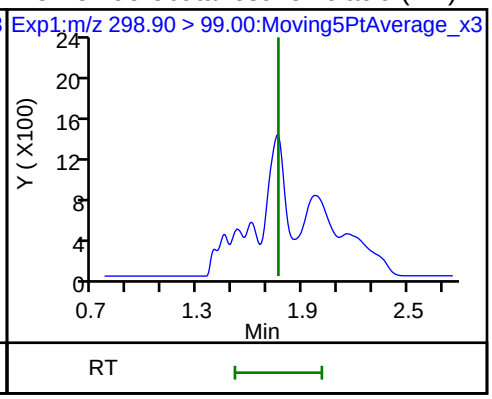
4 Perfluoropentanoic acid (M)



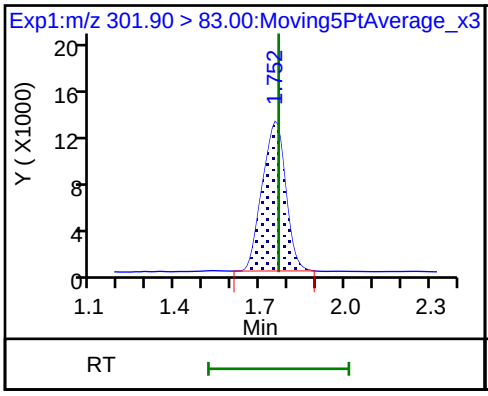
5 Perfluorobutanesulfonic acid (ND)



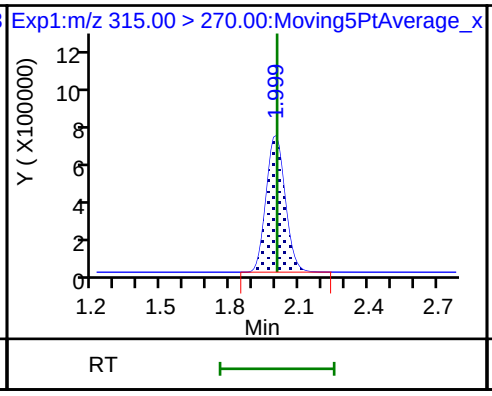
5 Perfluorobutanesulfonic acid (ND)



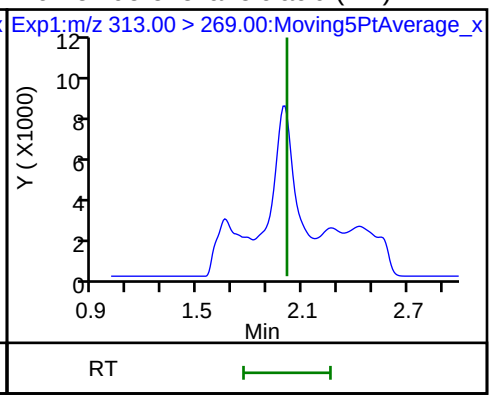
D 47 13C3-PFBS



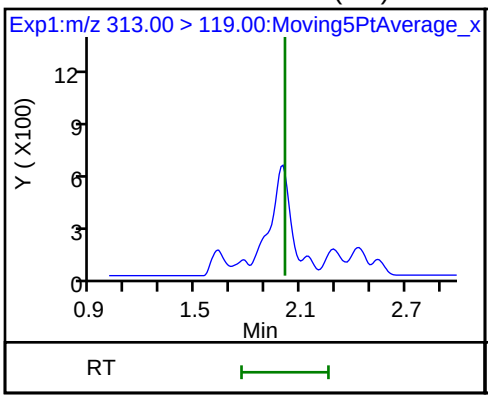
D 7 13C2 PFHxA



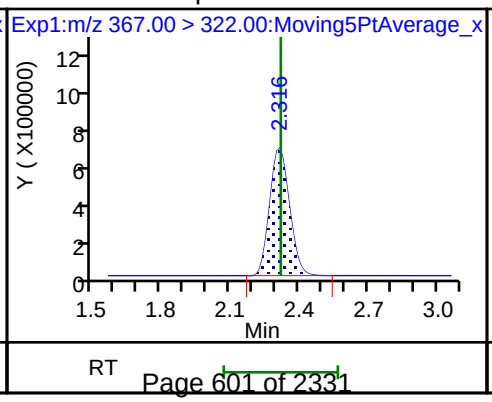
6 Perfluorohexanoic acid (ND)



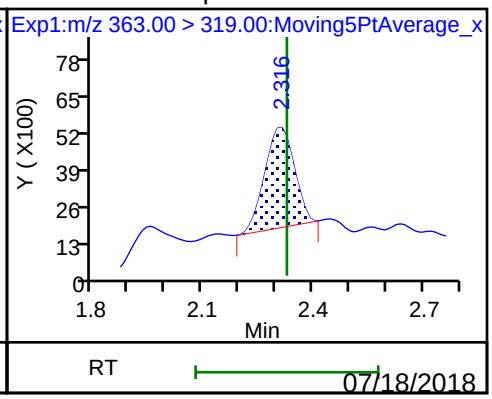
6 Perfluorohexanoic acid (ND)



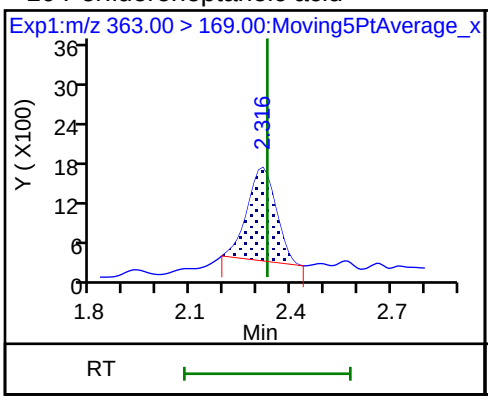
D 9 13C4-PFHpA



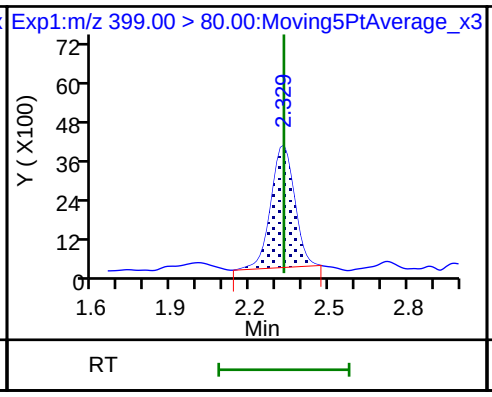
10 Perfluoroheptanoic acid



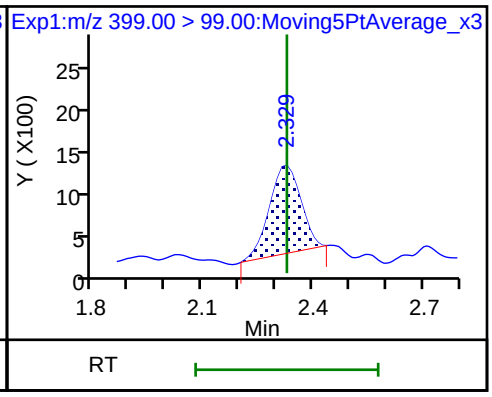
10 Perfluoroheptanoic acid



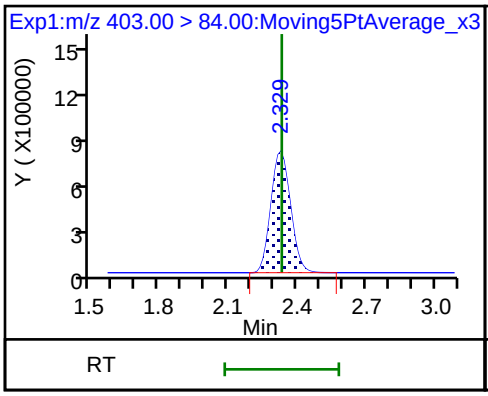
8 Perfluorohexanesulfonic acid



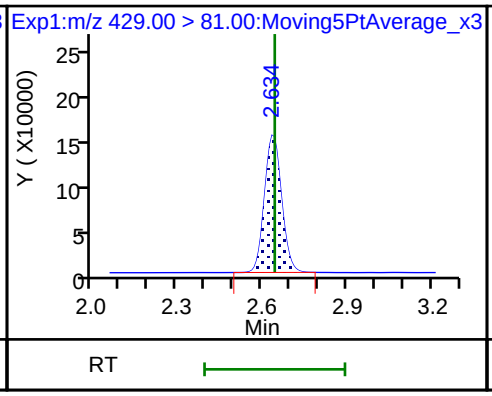
8 Perfluorohexanesulfonic acid



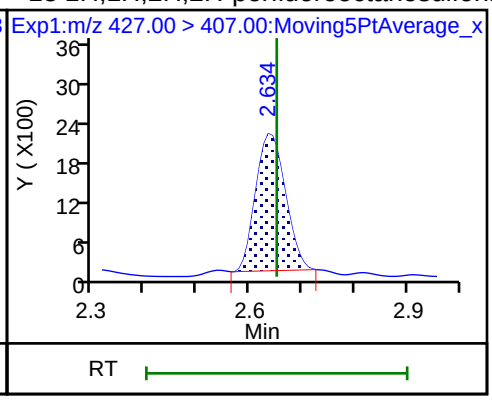
D 11 18O2 PFHxS



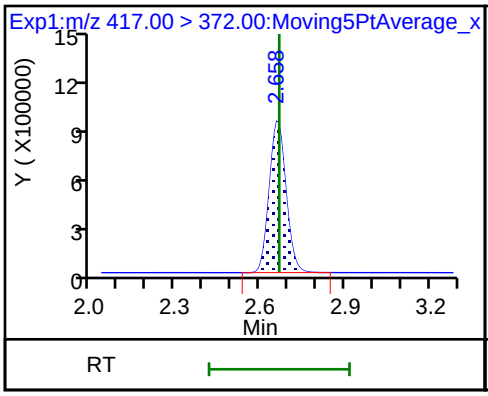
D 12 M2-6:2FTS



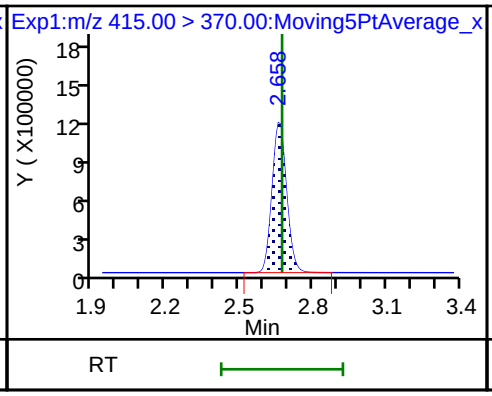
13 1H,1H,2H,2H-perfluorooctanesulfoni



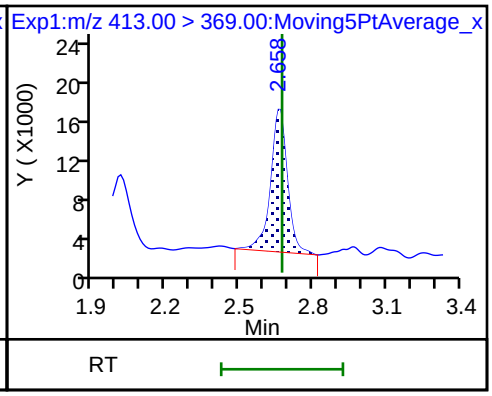
D 14 13C4 PFOA



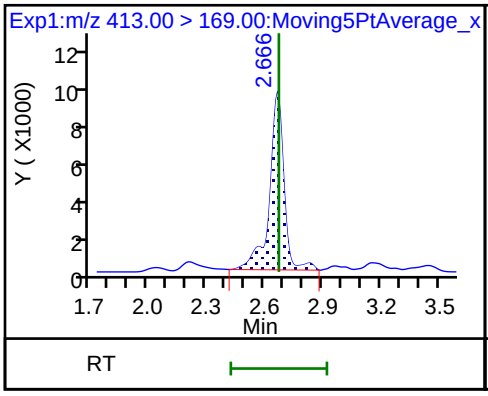
* 62 13C2-PFOA



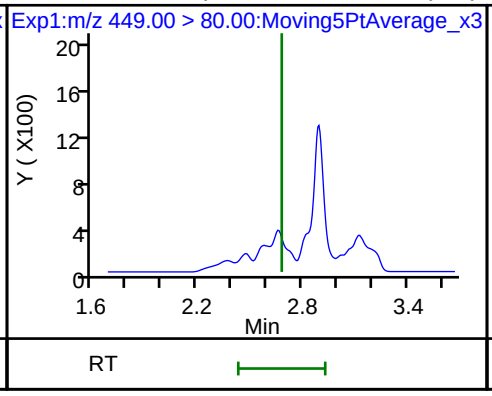
15 Perfluorooctanoic acid



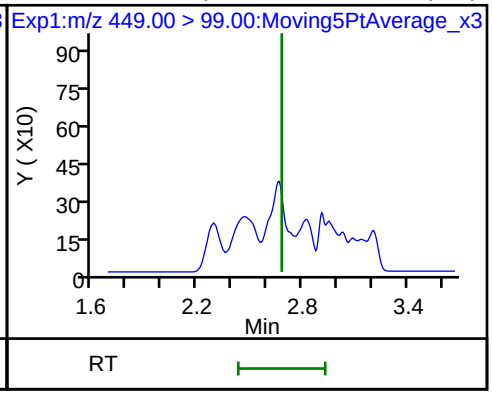
15 Perfluorooctanoic acid



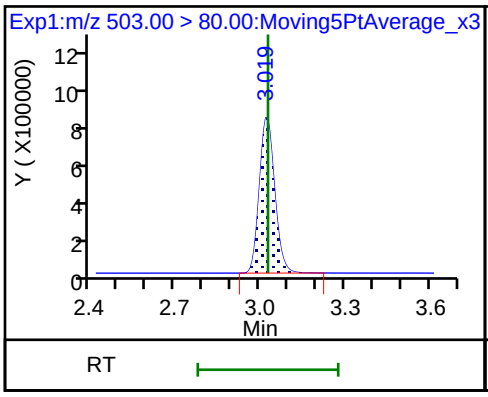
16 Perfluoroheptanesulfonic acid (ND)



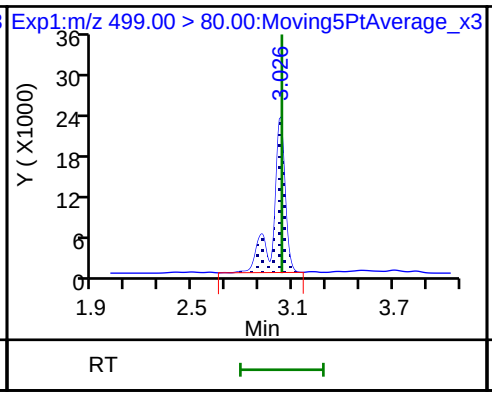
16 Perfluoroheptanesulfonic acid (ND)



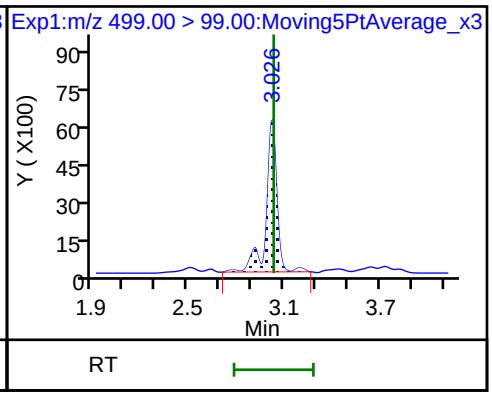
D 18 13C4 PFOS



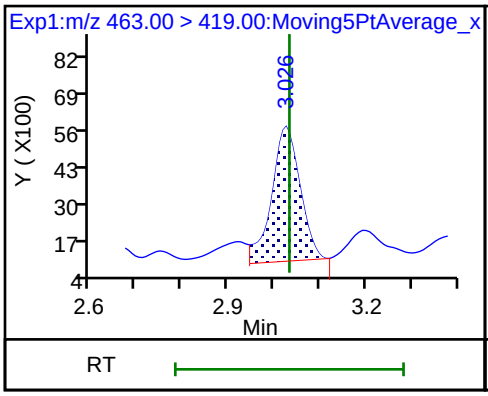
17 Perfluorooctane sulfonic acid



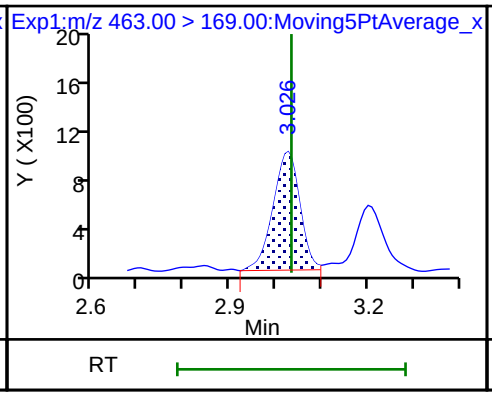
17 Perfluorooctane sulfonic acid



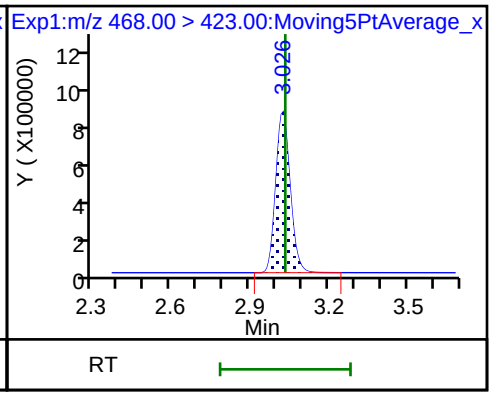
20 Perfluorononanoic acid



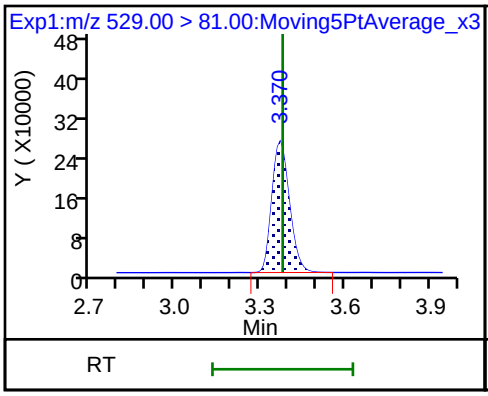
20 Perfluorononanoic acid



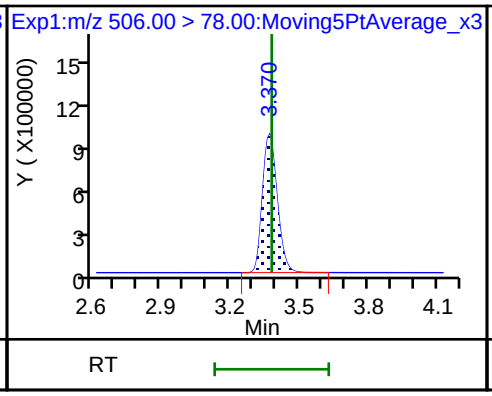
D 19 13C5 PFNA



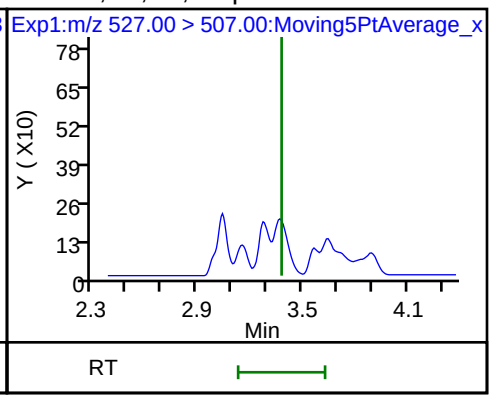
D 26 M2-8:2FTS



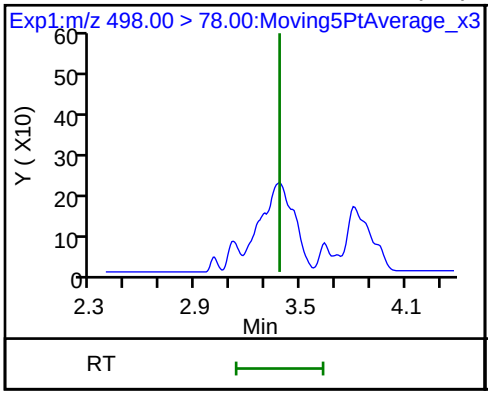
D 21 13C8 FOSA



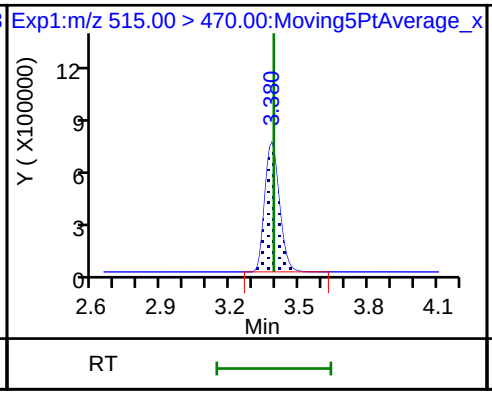
25 1H,1H,2H,2H-perfluorodecanesulfoni (ND)



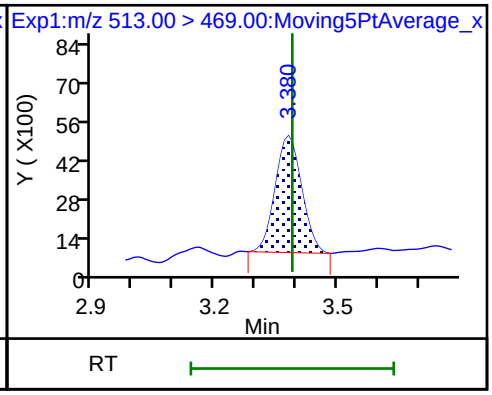
22 Perfluorooctane Sulfonamide (ND)



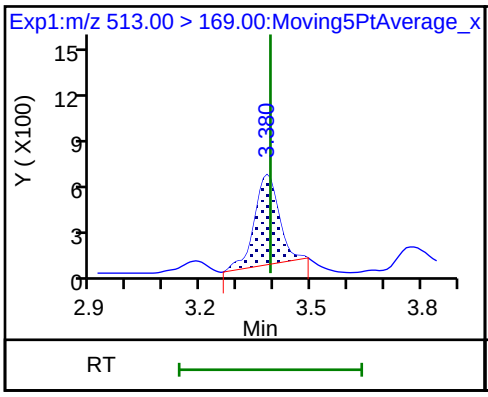
D 23 13C2 PFDA



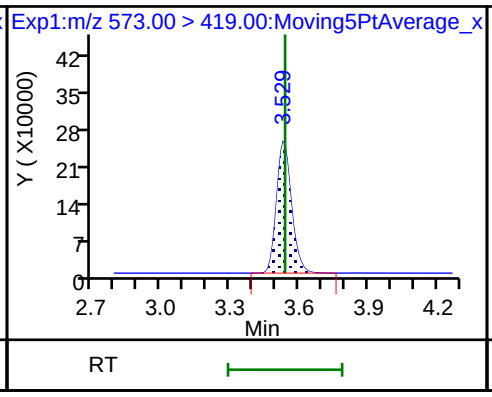
24 Perfluorodecanoic acid



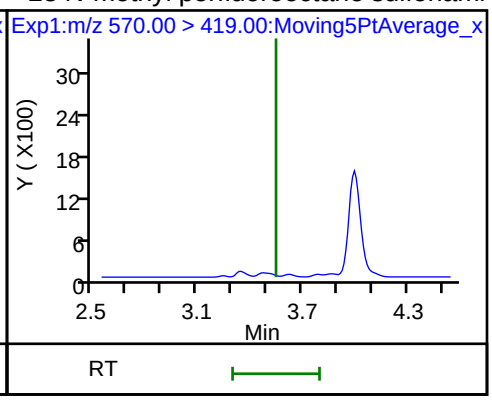
24 Perfluorodecanoic acid



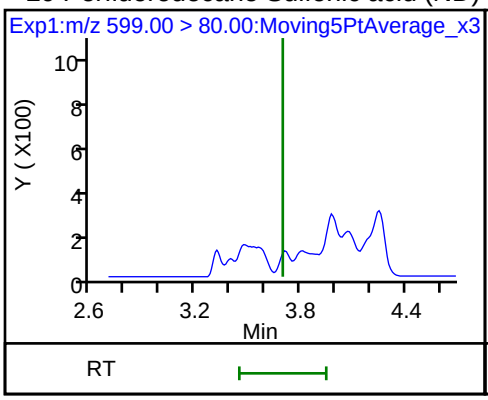
D 27 d3-NMeFOSAA



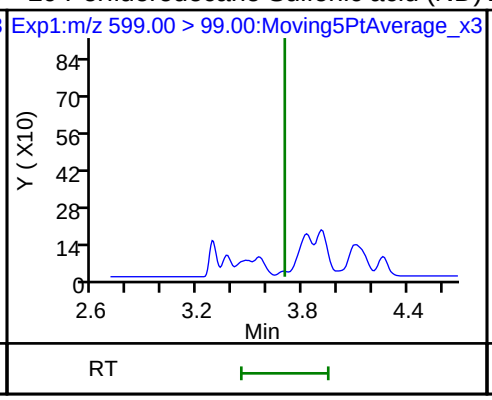
28 N-methyl perfluorooctane sulfonami (ND)



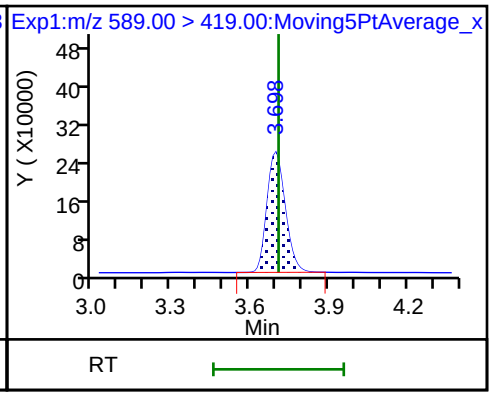
29 Perfluorodecane Sulfonic acid (ND)



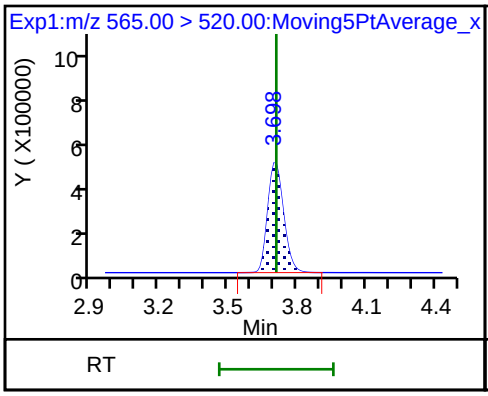
29 Perfluorodecane Sulfonic acid (ND)



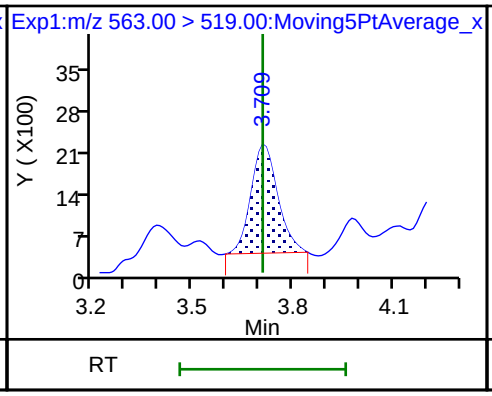
D 32 d5-NEtFOSAA



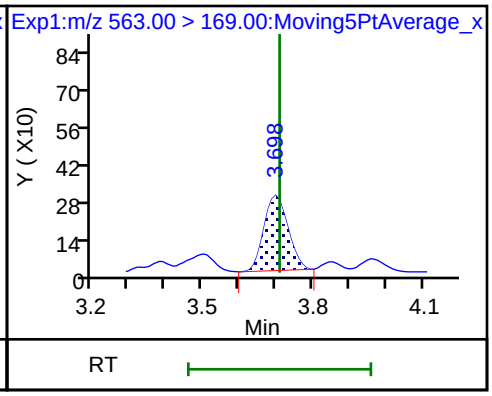
D 30 13C2 PFUnA



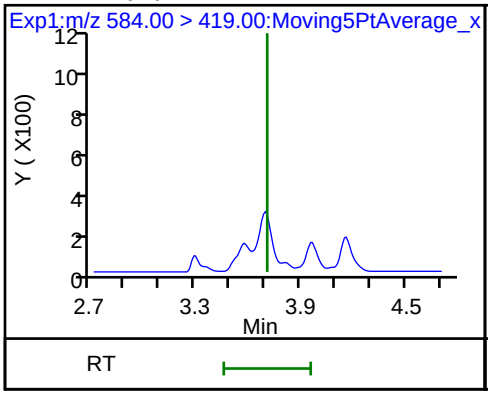
31 Perfluoroundecanoic acid



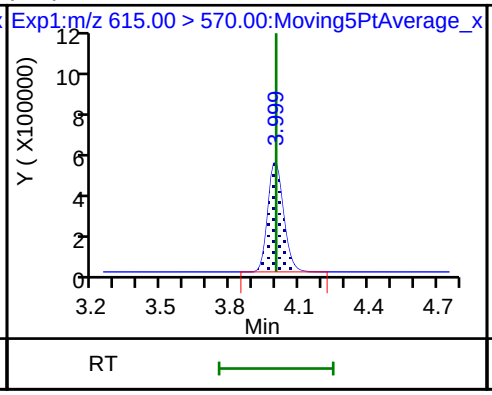
31 Perfluoroundecanoic acid



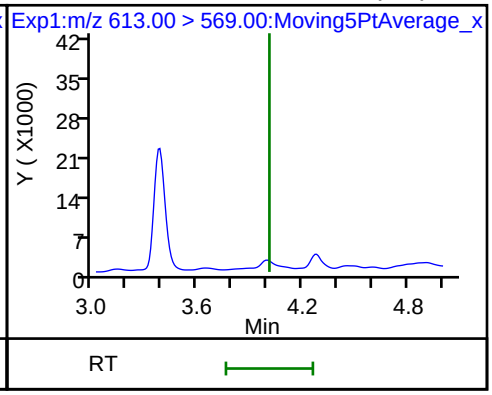
33 N-ethyl perfluorooctane sulfonamid (ND)



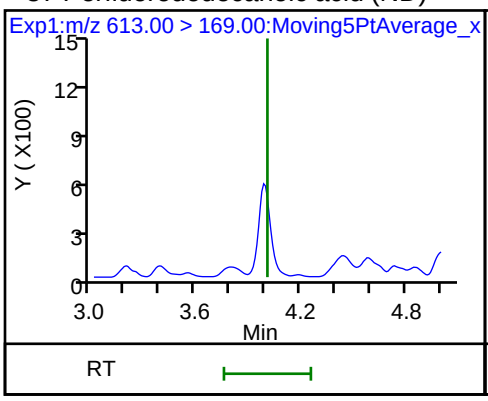
D 36 13C2 PFDoA



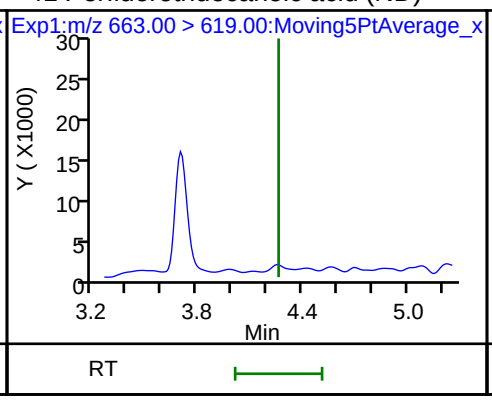
37 Perfluorododecanoic acid (ND)



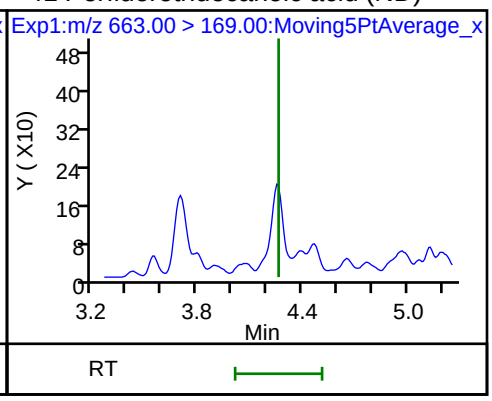
37 Perfluorododecanoic acid (ND)



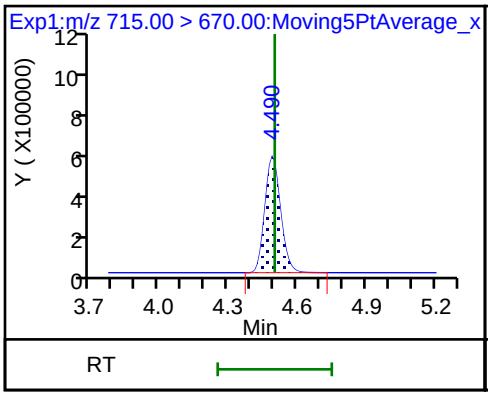
41 Perfluorotridecanoic acid (ND)



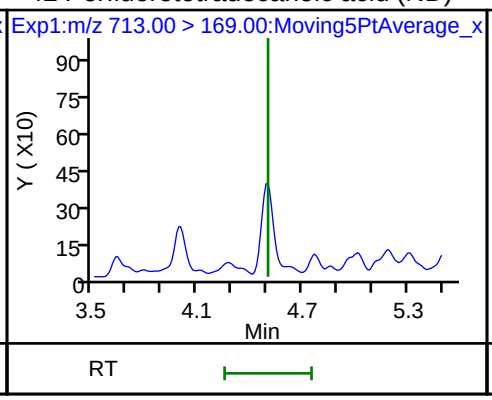
41 Perfluorotridecanoic acid (ND)



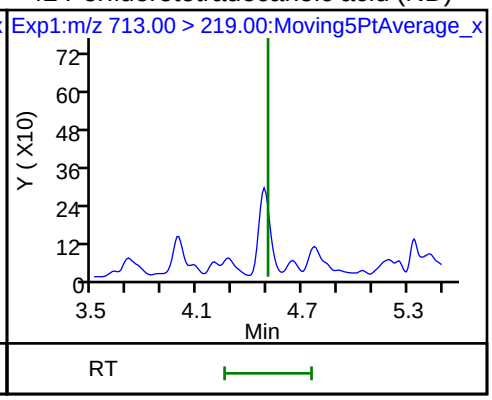
D 43 13C2-PFTeDA



42 Perfluorotetradecanoic acid (ND)



42 Perfluorotetradecanoic acid (ND)



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

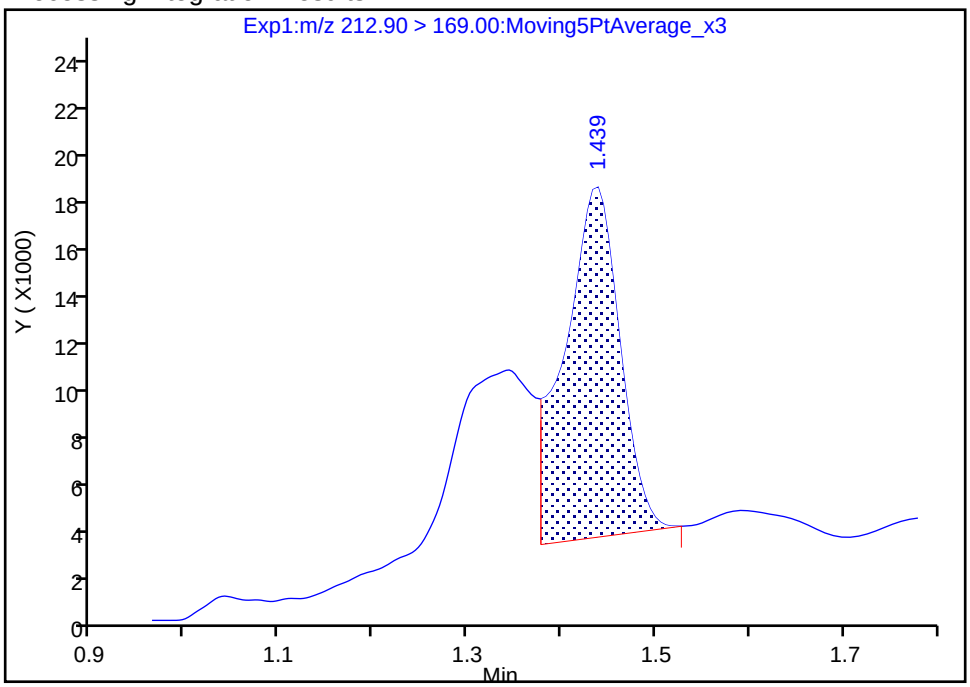
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\2018.07.13LLB_057.d				
Injection Date:	14-Jul-2018 04:12:46	Instrument ID:	A8_N		
Lims ID:	320-40571-A-4-A	Lab Sample ID:	320-40571-4		
Client ID:	NF17-SS-01-DUP				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	42	Worklist Smp#:	6
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

2 Perfluorobutyric acid, CAS: 375-22-4

Signal: 1

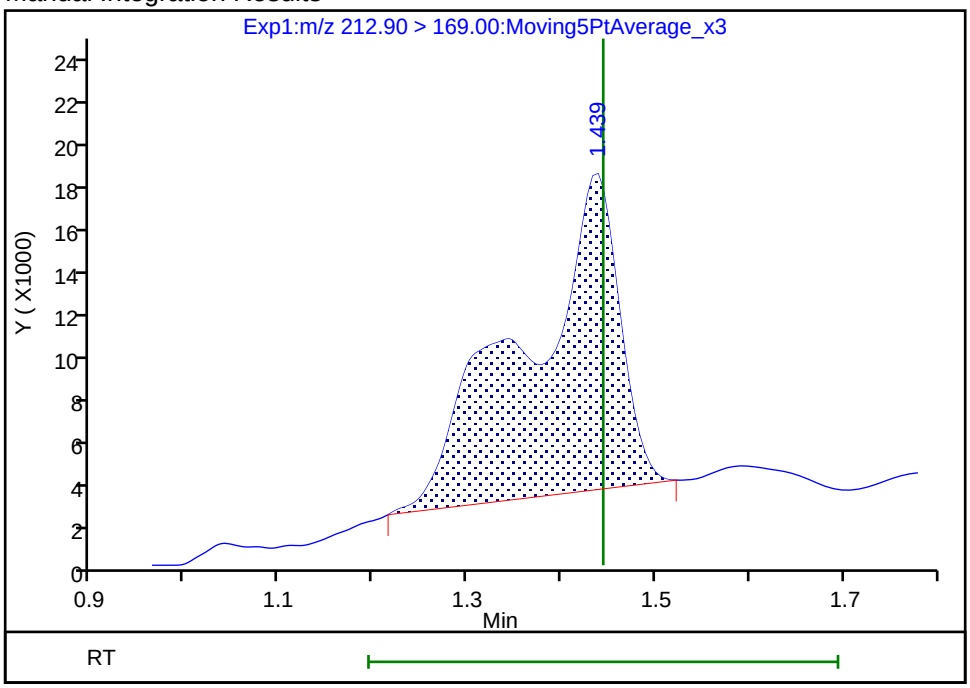
Processing Integration Results

RT: 1.44
Area: 60555
Amount: 0.031600
Amount Units: ng/ml



Manual Integration Results

RT: 1.44
Area: 103830
Amount: 0.054182
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 14:15:53

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

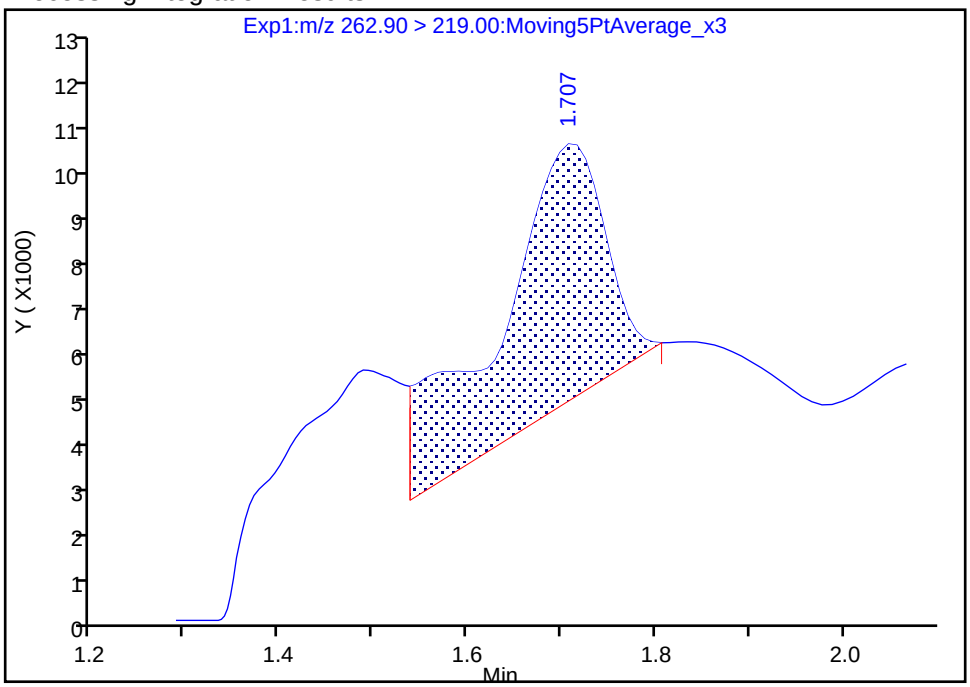
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\2018.07.13LLB_057.d				
Injection Date:	14-Jul-2018 04:12:46	Instrument ID:	A8_N		
Lims ID:	320-40571-A-4-A	Lab Sample ID:	320-40571-4		
Client ID:	NF17-SS-01-DUP				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	42	Worklist Smp#:	6
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

4 Perfluoropentanoic acid, CAS: 2706-90-3

Signal: 1

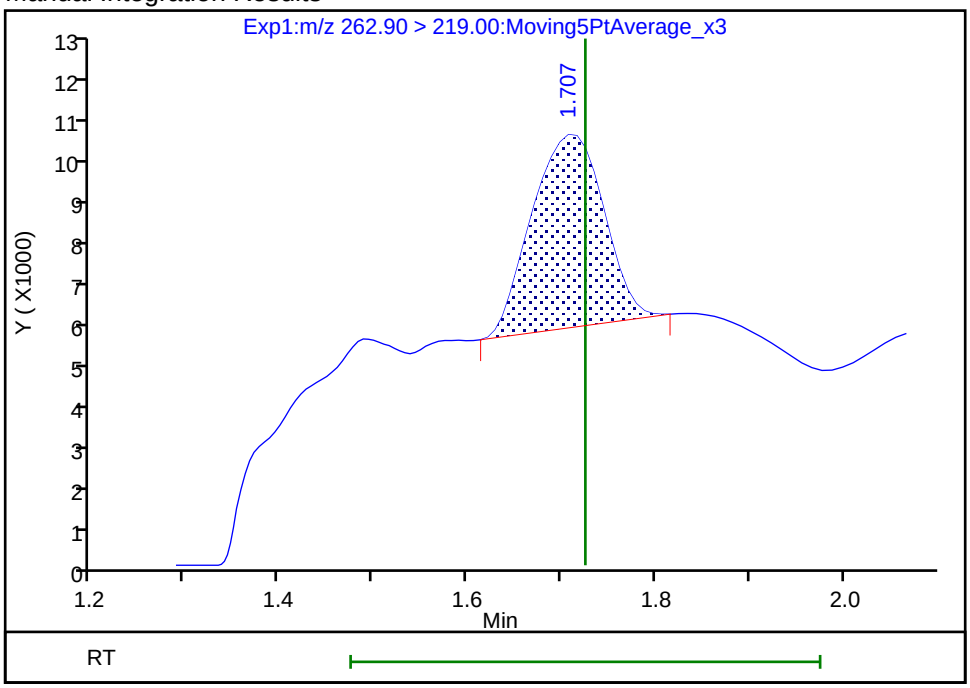
Processing Integration Results

RT: 1.71
Area: 45984
Amount: 0.026353
Amount Units: ng/ml



Manual Integration Results

RT: 1.71
Area: 25016
Amount: 0.014336
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 14:16:04

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

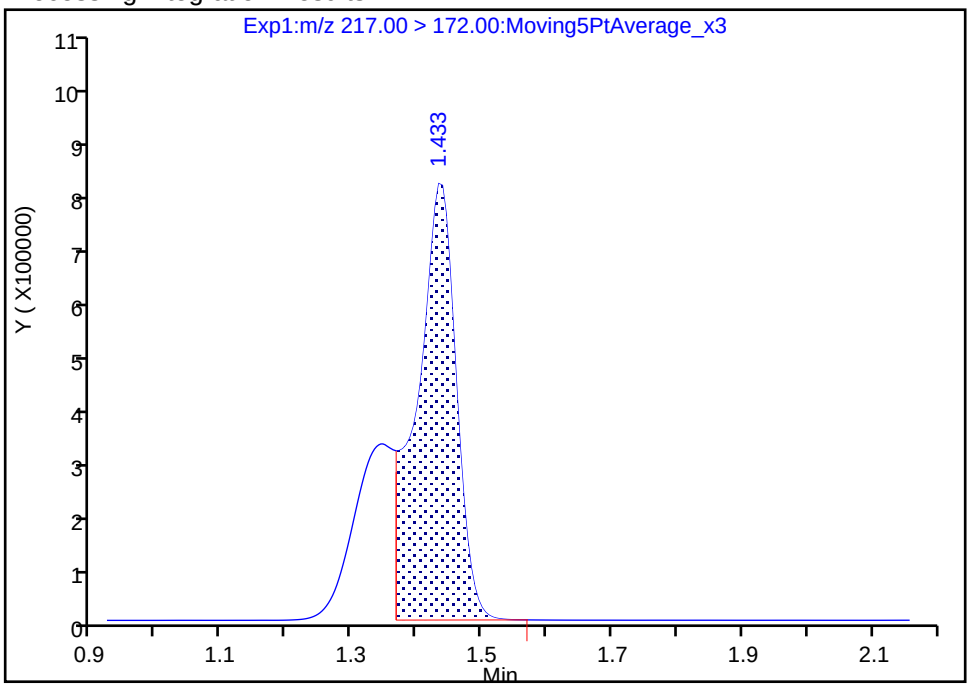
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\2018.07.13LLB_057.d				
Injection Date:	14-Jul-2018 04:12:46	Instrument ID:	A8_N		
Lims ID:	320-40571-A-4-A	Lab Sample ID:	320-40571-4		
Client ID:	NF17-SS-01-DUP				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	42	Worklist Smp#:	6
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

D 1 13C4 PFBA, CAS: STL00992

Signal: 1

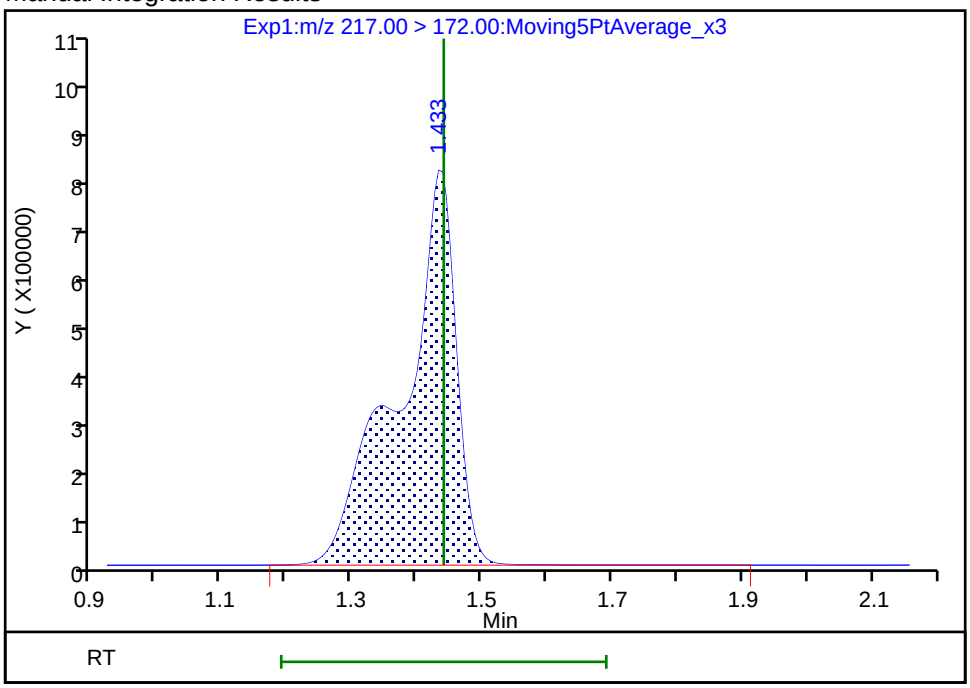
Processing Integration Results

RT: 1.43
Area: 3425138
Amount: 1.308350
Amount Units: ng/ml



Manual Integration Results

RT: 1.43
Area: 4860890
Amount: 1.856786
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 14:15:33

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF18-GW-01
Lab Sample ID: 320-40571-5
Matrix: Water
Lab File ID: 2018.07.16LLA_006.d
Analysis Method: 537 (modified)
Date Collected: 06/21/2018 08:45
Extraction Method: 3535
Date Extracted: 07/02/2018 14:58
Sample wt/vol: 272.1(mL)
Date Analyzed: 07/16/2018 13:10
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 234295
Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	0.016	B	0.0018	0.00032
2706-90-3	Perfluoropentanoic acid (PFPeA)	0.0060		0.0018	0.00045
307-24-4	Perfluorohexanoic acid (PFHxA)	0.0046		0.0018	0.00053
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.0039		0.0018	0.00023
335-67-1	Perfluorooctanoic acid (PFOA)	0.018		0.0018	0.00078
375-95-1	Perfluorononanoic acid (PFNA)	0.0027		0.0018	0.00025
335-76-2	Perfluorodecanoic acid (PFDA)	0.00049	J	0.0018	0.00028
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		0.0018	0.0010
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		0.0018	0.00051
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		0.0018	0.0012
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		0.0018	0.00027
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.010		0.0018	0.00018
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	0.0018		0.0018	0.00028
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.0070	B	0.0018	0.00016
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	0.00088	J	0.0018	0.00017
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.022		0.0018	0.00050
8789-57-2	Perfluorononanesulfonic acid (PFNS)	ND		0.0018	0.00015
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		0.0018	0.00029
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		0.0018	0.00032
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.018	0.0028
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.018	0.0017
757124-72-4	4:2 FTS	ND		0.018	0.0048
27619-97-2	6:2 FTS	ND		0.018	0.0018
39108-34-4	8:2 FTS	ND		0.018	0.0018

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF18-GW-01
Lab Sample ID: 320-40571-5
Matrix: Water
Lab File ID: 2018.07.16LLA_006.d
Analysis Method: 537 (modified)
Date Collected: 06/21/2018 08:45
Extraction Method: 3535
Date Extracted: 07/02/2018 14:58
Sample wt/vol: 272.1(mL)
Date Analyzed: 07/16/2018 13:10
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 234295
Units: ug/L

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00992	13C4 PFBA	57		25-150
STL01893	13C5 PFPeA	74		25-150
STL00993	13C2 PFHxA	83		25-150
STL01892	13C4-PFHpA	94		25-150
STL00990	13C4 PFOA	100		25-150
STL00995	13C5 PFNA	97		25-150
STL00996	13C2 PFDA	93		25-150
STL00997	13C2 PFUnA	92		25-150
STL00998	13C2 PFDoA	85		25-150
STL02116	13C2-PFTeDA	84		25-150
STL02337	13C3-PFBS	81		25-150
STL00994	18O2 PFHxS	93		25-150
STL00991	13C4 PFOS	87		25-150
STL01056	13C8 FOSA	80		25-150
STL02118	d3-NMeFOSAA	96		25-150
STL02117	d5-NEtFOSAA	98		25-150
STL02279	M2-6:2FTS	175	*	25-150
STL02280	M2-8:2FTS	99		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180716-61126.b\2018.07.16LLA_006.d
Lims ID: 320-40571-A-5-A
Client ID: NF18-GW-01
Sample Type: Client
Inject. Date: 16-Jul-2018 13:10:11 ALS Bottle#: 1 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-40571-a-5-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180716-61126.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 16-Jul-2018 16:17:44 Calib Date: 11-Jul-2018 15:38:42
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK023

First Level Reviewer: westendorfc Date: 16-Jul-2018 16:16:29

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										M
212.90 > 169.00	1.435	1.435	0.0	1.000	670771	0.4225			34.5	M
D 1 13C4 PFBA										
217.00 > 172.00	1.435	1.442	-0.007	0.532	4027508	1.42		56.8	19621	
D 3 13C5-PFPeA										
267.90 > 223.00	1.738	1.721	0.017	0.644	3631313	1.84		73.7	11669	
4 Perfluoropentanoic acid										M
262.90 > 219.00	1.738	1.737	0.001	1.000	289183	0.1641			18.5	M
D 47 13C3-PFBS										
301.90 > 83.00	1.783	1.757	0.026	0.661	93402	1.88		81.1	138	
5 Perfluorobutanesulfonic acid										M
298.90 > 80.00	1.783	1.773	0.010	1.000	854628	0.2781			110	M
298.90 > 99.00	1.783	1.773	0.010	1.000	323394		2.64(1.25-3.74)		280	
61 1H,1H,2H,2H-perfluorohexanesulfoni										
327.00 > 307.00	1.885	1.991	-0.106	1.058	6320	0.0121			40.3	
D 7 13C2 PFHxA										
315.00 > 270.00	2.036	2.005	0.031	0.755	4406723	2.07		82.8	51604	
6 Perfluorohexanoic acid										M
313.00 > 269.00	2.036	2.025	0.011	1.000	227530	0.1254			27.9	M
313.00 > 119.00	2.036	2.025	0.011	1.000	16055		14.17(5.03-15.10)		66.2	
70 Perfluoropentanesulfonic acid										M
349.00 > 80.00	2.059	2.047	0.012	1.155	136930	0.0488			27.7	M
349.00 > 99.00	2.059	2.047	0.012	1.155	58601		2.34(1.36-4.07)		78.6	M
D 9 13C4-PFHpA										
367.00 > 322.00	2.345	2.321	0.024	0.869	4588809	2.34		93.6	51526	
D 11 18O2 PFHxS										
403.00 > 84.00	2.371	2.334	0.037	0.879	6111814	2.20		93.0	41390	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.345	2.345	0.0	1.000	223153	0.1051			33.8	
363.00 > 169.00	2.345	2.345	0.0	1.000	87000		2.56(1.13-3.40)		452	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.358	2.345	0.013	0.994	564961	0.1904			100	
399.00 > 99.00	2.371	2.345	0.026	1.000	169927		3.32(1.50-4.49)		175	
D 12 M2-6:2FTS										
429.00 > 81.00	2.674	2.644	0.030	0.992	1743409	4.15		175	3183	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.674	2.659	0.015	1.000	20417	0.0178			90.4	
D 14 13C4 PFOA										
417.00 > 372.00	2.697	2.668	0.029	1.000	5011592	2.51		100	52653	
* 62 13C2-PFOA										
415.00 > 370.00	2.697	2.681	0.016		5231051	2.50			69043	
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.697	2.689	0.008	1.000	1196694	0.4847			287	M
413.00 > 169.00	2.697	2.689	0.008	1.000	718665		1.67(0.84-2.52)		2883	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.704	2.689	0.015	0.885	56387	0.0240			16.8	
449.00 > 99.00	2.704	2.689	0.015	0.885	17132		3.29(1.94-5.82)		46.7	
D 18 13C4 PFOS										
503.00 > 80.00	3.056	3.031	0.025	1.133	4261231	2.09		87.5	7623	
D 19 13C5 PFNA										
468.00 > 423.00	3.056	3.031	0.025	1.133	4329584	2.42		96.8	44828	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	2.937	3.045	-0.108	0.961	1184812	0.5864			1103	
499.00 > 99.00	3.056	3.045	0.011	1.000	185638		6.38(2.31-6.93)		696	
20 Perfluorononanoic acid										
463.00 > 419.00	3.056	3.045	0.011	1.000	143575	0.0747			104	
463.00 > 169.00	3.056	3.045	0.011	1.000	31897		4.50(1.90-5.69)		148	
D 21 13C8 FOSA										
506.00 > 78.00	3.393	3.379	0.014	1.258	5868794	2.00		79.9	36364	
D 26 M2-8:2FTS										
529.00 > 81.00	3.393	3.379	0.014	1.258	1460240	2.37		99.2	4962	
D 23 13C2 PFDA										
515.00 > 470.00	3.412	3.388	0.024	1.265	3644167	2.32		92.8	42826	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.393	3.389	0.004	1.000	8380	0.003622			62.1	
24 Perfluorodecanoic acid										M
513.00 > 469.00	3.412	3.398	0.014	1.000	20367	0.0133			36.4	
513.00 > 169.00	3.412	3.398	0.014	1.000	3448		5.91(2.36-7.09)		46.8	M
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.561	3.538	0.023	1.320	1538171	2.39		95.6	24042	
D 30 13C2 PFUnA										
565.00 > 520.00	3.733	3.708	0.025	1.384	3016078	2.30		92.0	57060	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.722	3.708	0.014	1.380	1616117	2.45		98.1	6153	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.733	3.719	0.014	1.000	6697	0.006774			21.3	
563.00 > 169.00	3.733	3.719	0.014	1.000	1840		3.64(2.12-6.36)		30.5	
D 36 13C2 PFDoA										
615.00 > 570.00	4.020	4.008	0.012	1.491	2897915	2.13		85.3	22105	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.522	4.501	0.021	1.677	2959630	2.10		83.9	17078	

QC Flag Legend

Review Flags

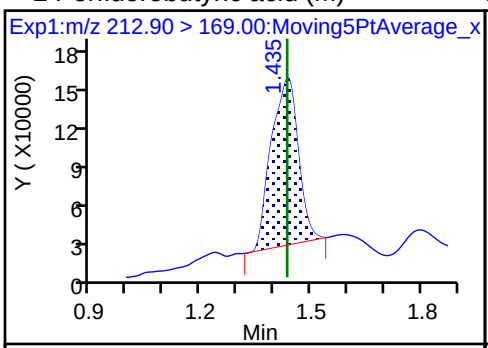
M - Manually Integrated

Report Date: 16-Jul-2018 16:17:50 Chrom Revision: 2.2 07-Jun-2018 07:41:54

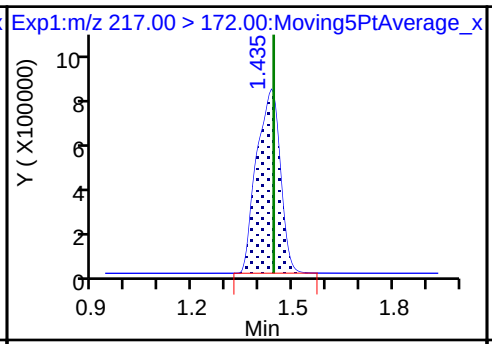
TestAmerica Sacramento

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180716-61126.b\2018.07.16LLA_006.d				
Injection Date:	16-Jul-2018 13:10:11	Instrument ID:	A8_N		
Lims ID:	320-40571-A-5-A	Lab Sample ID:	320-40571-5		
Client ID:	NF18-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	1	Worklist Smp#:	4
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		

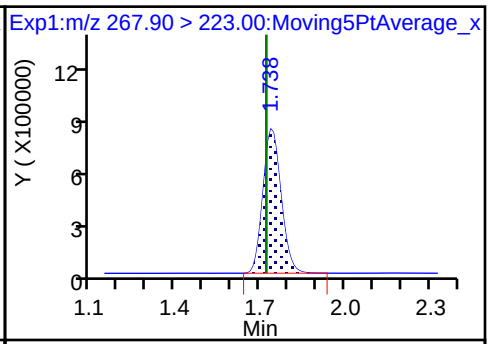
2 Perfluorobutyric acid (M)



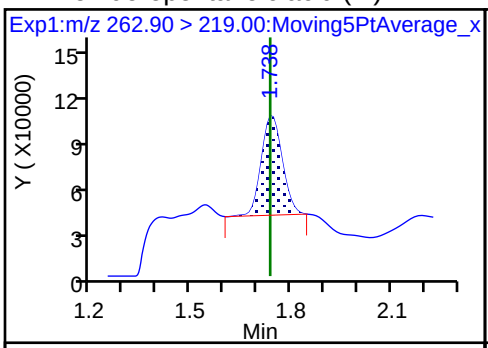
D 1 13C4 PFBA



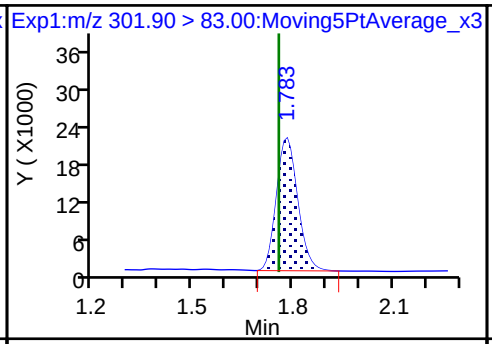
D 3 13C5-PFPeA



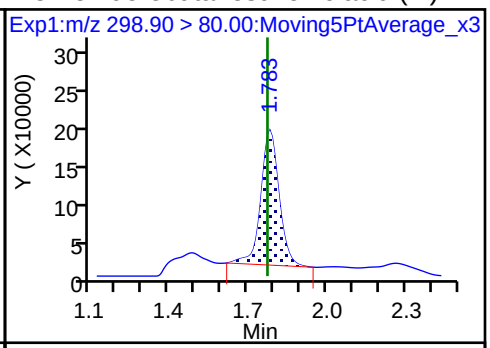
4 Perfluoropentanoic acid (M)



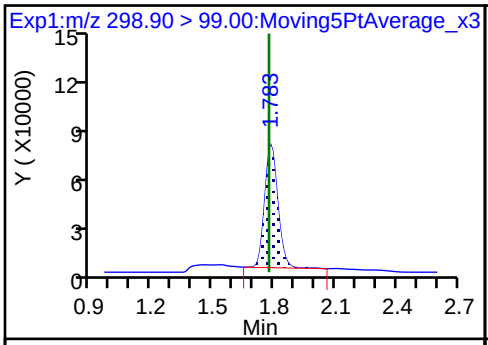
D 47 13C3-PFBS



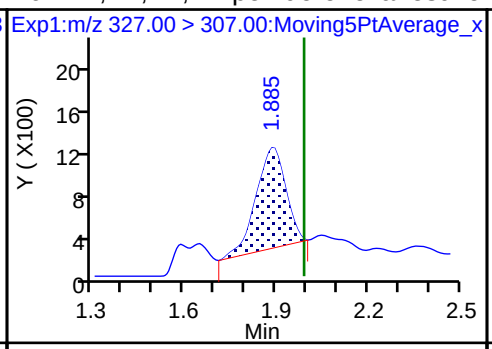
5 Perfluorobutanesulfonic acid (M)



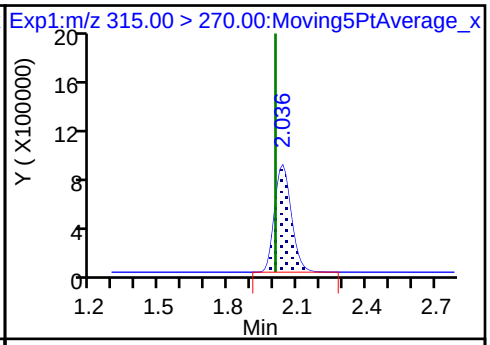
5 Perfluorobutanesulfonic acid



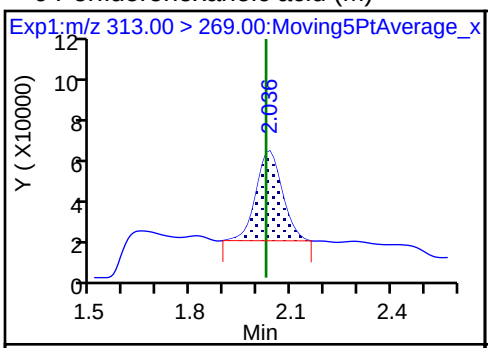
61 1H,1H,2H,2H-perfluorohexanesulfon



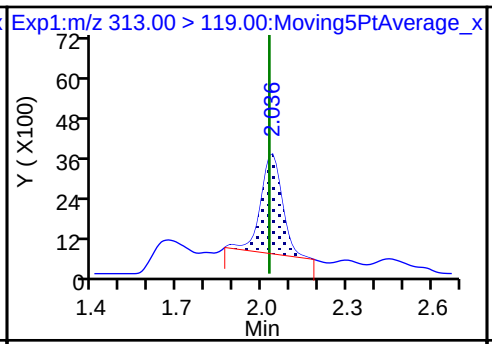
D 7 13C2 PFHxA



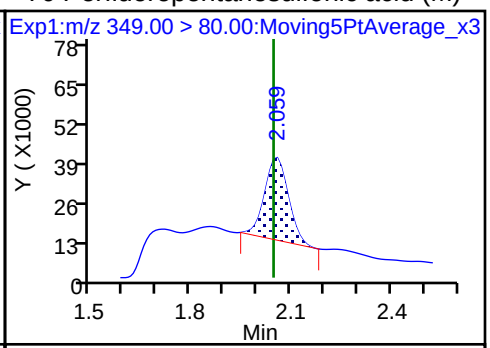
6 Perfluorohexanoic acid (M)



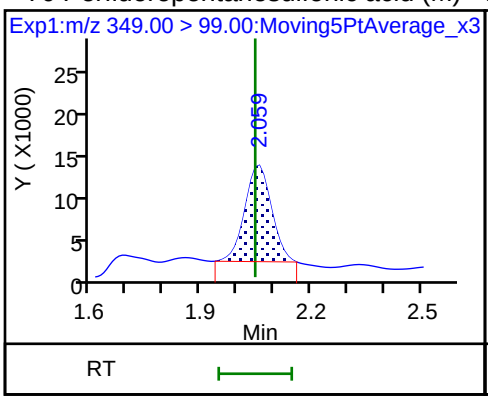
6 Perfluorohexanoic acid



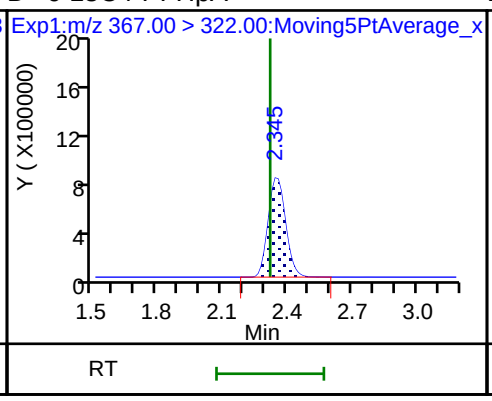
70 Perfluoropentanesulfonic acid (M)



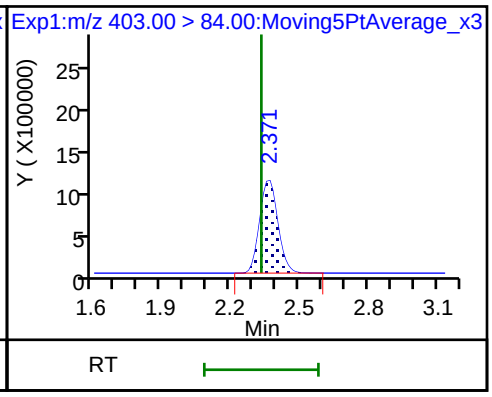
70 Perfluoropentanesulfonic acid (M)



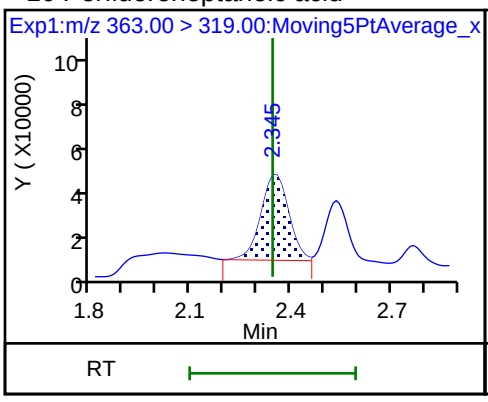
D 9 13C4-PFHpA



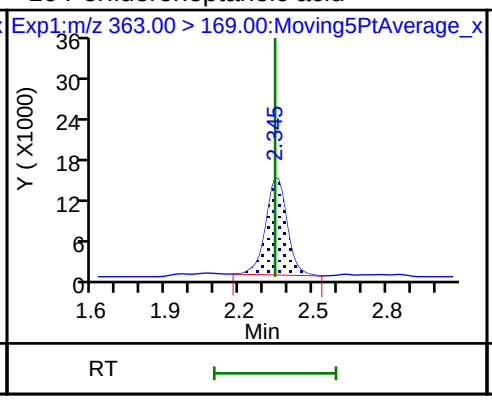
D 11 18O2 PFHxS



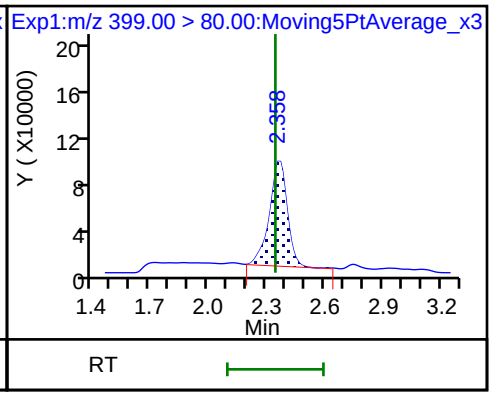
10 Perfluoroheptanoic acid



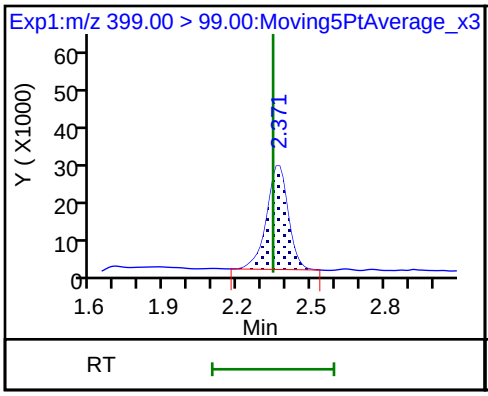
10 Perfluoroheptanoic acid



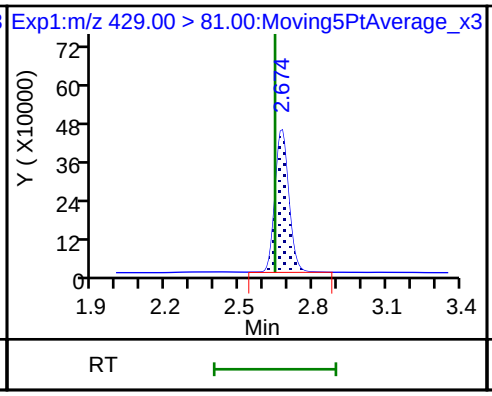
8 Perfluorohexanesulfonic acid



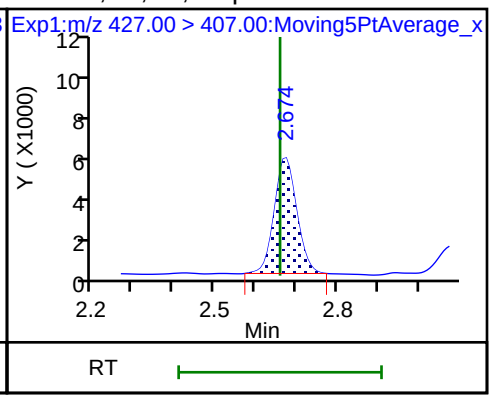
8 Perfluorohexanesulfonic acid



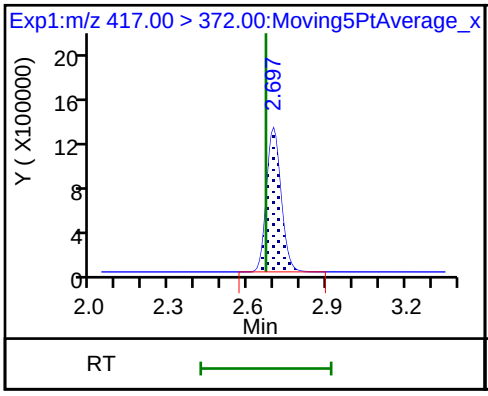
D 12 M2-6:2FTS



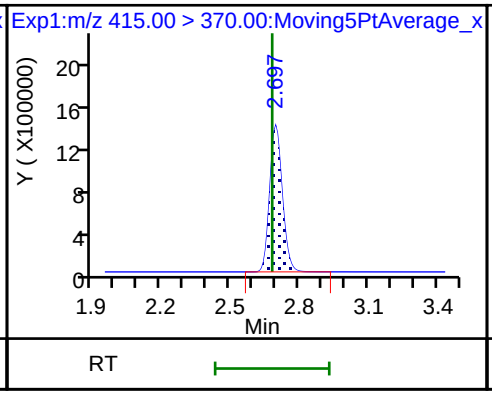
13 1H,1H,2H,2H-perfluorooctanesulfoni



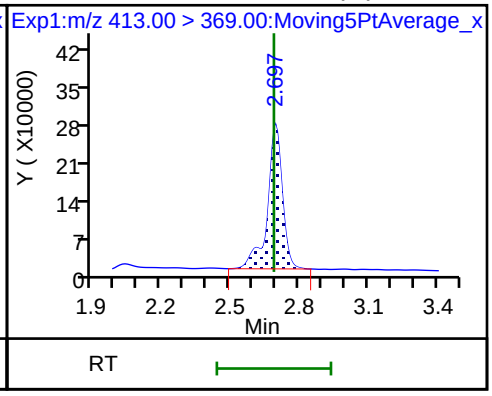
D 14 13C4 PFOA



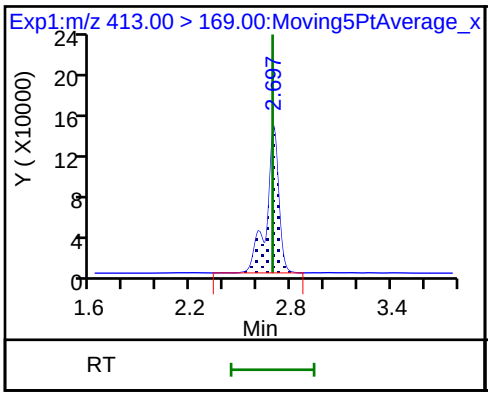
* 62 13C2-PFOA



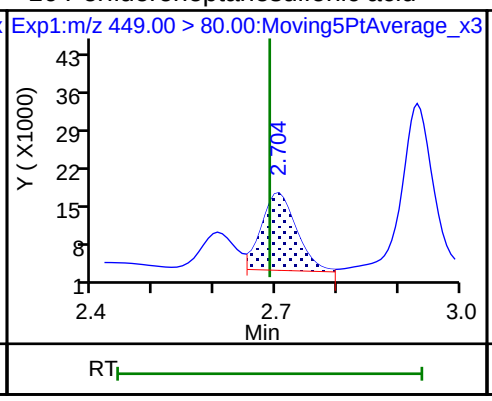
15 Perfluorooctanoic acid (M)



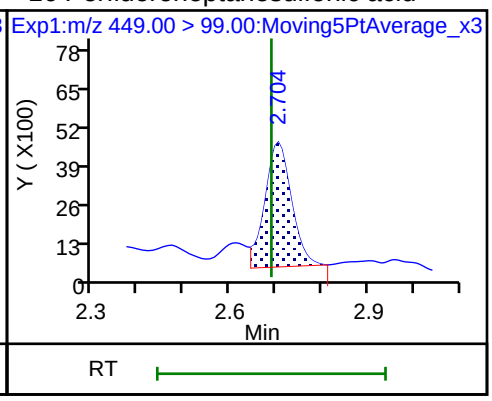
15 Perfluorooctanoic acid



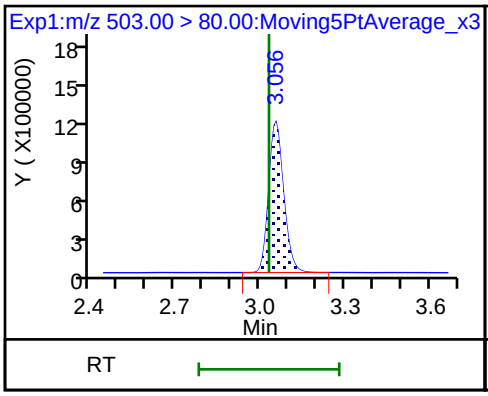
16 Perfluoroheptanesulfonic acid



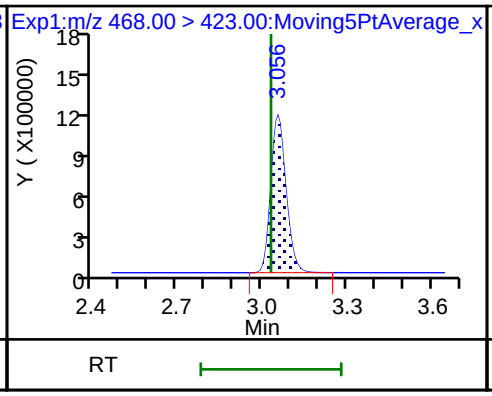
16 Perfluoroheptanesulfonic acid



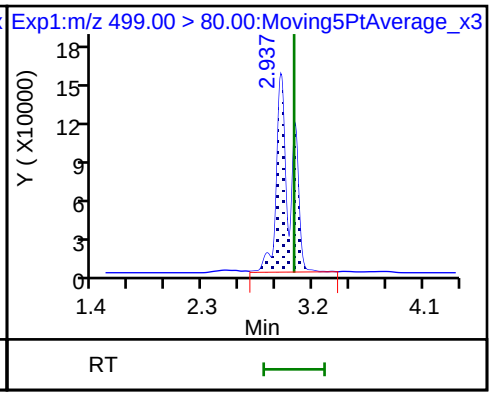
D 18 13C4 PFOS



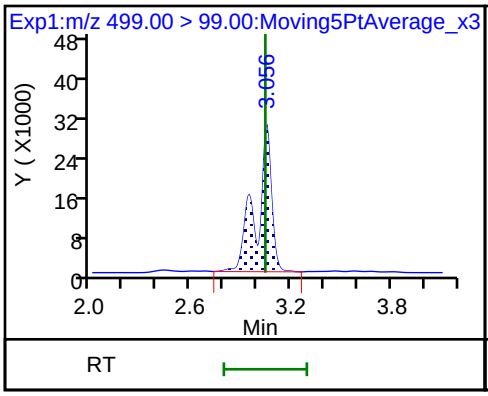
D 19 13C5 PFNA



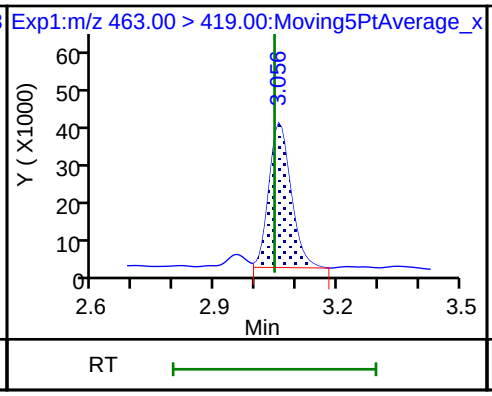
17 Perfluorooctane sulfonic acid



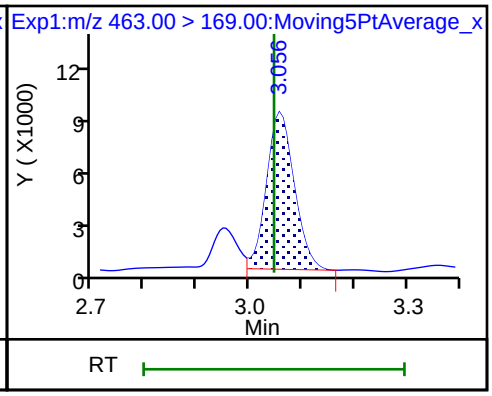
17 Perfluorooctane sulfonic acid



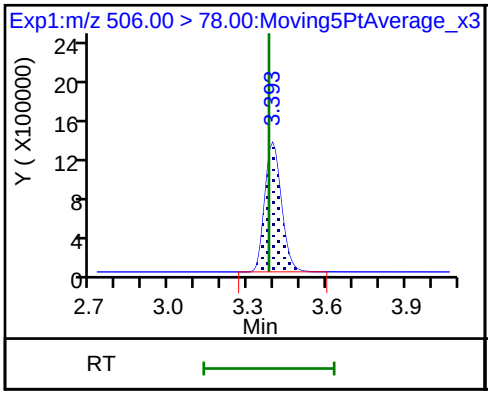
20 Perfluorononanoic acid



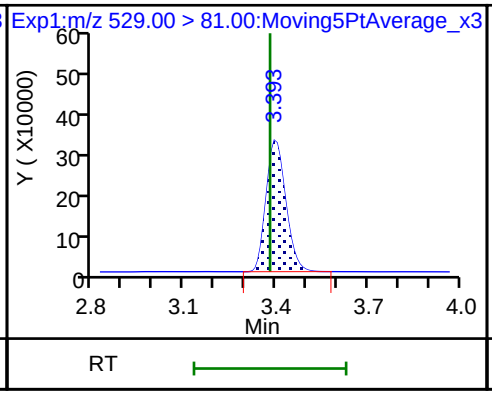
20 Perfluorononanoic acid



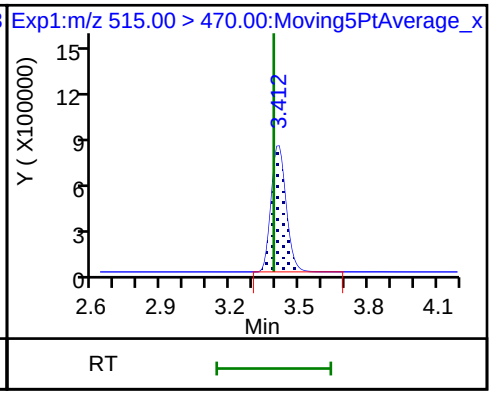
D 21 13C8 FOSA



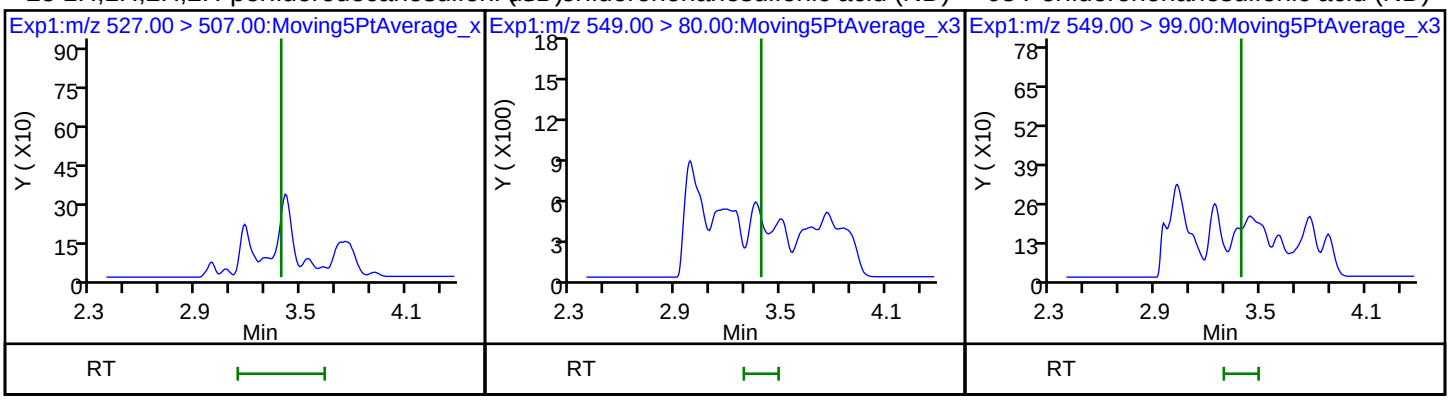
D 26 M2-8:2FTS



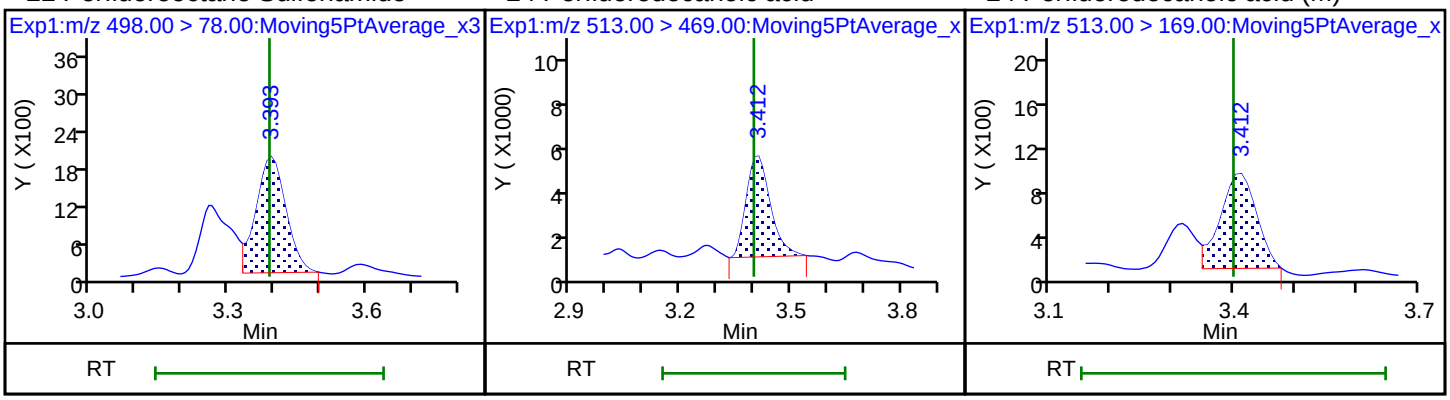
D 23 13C2 PFDA



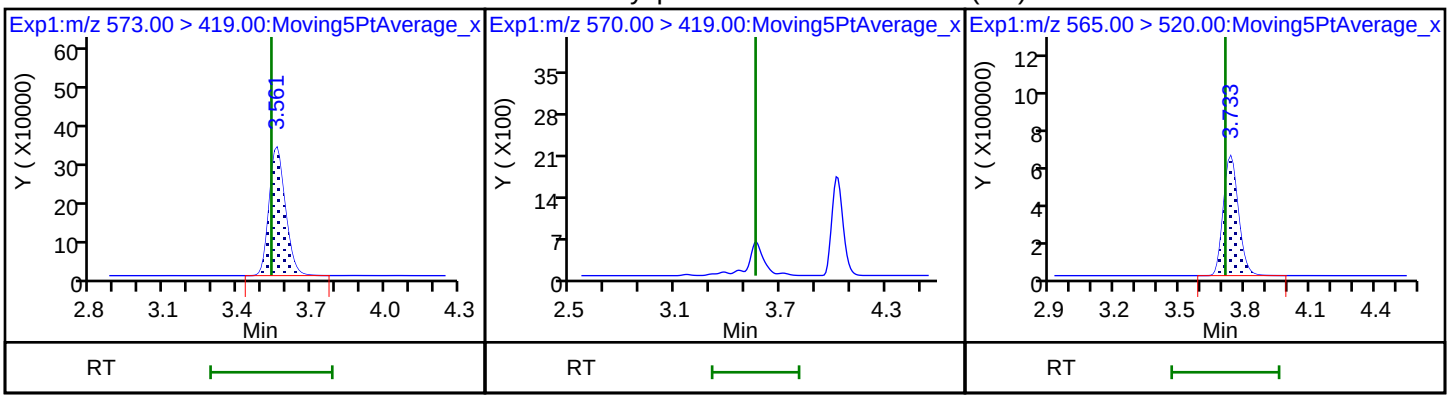
25 1H,1H,2H,2H-perfluorodecanesulfoni (ND) 68 Perfluorononanesulfonic acid (ND) 68 Perfluorononanesulfonic acid (ND)



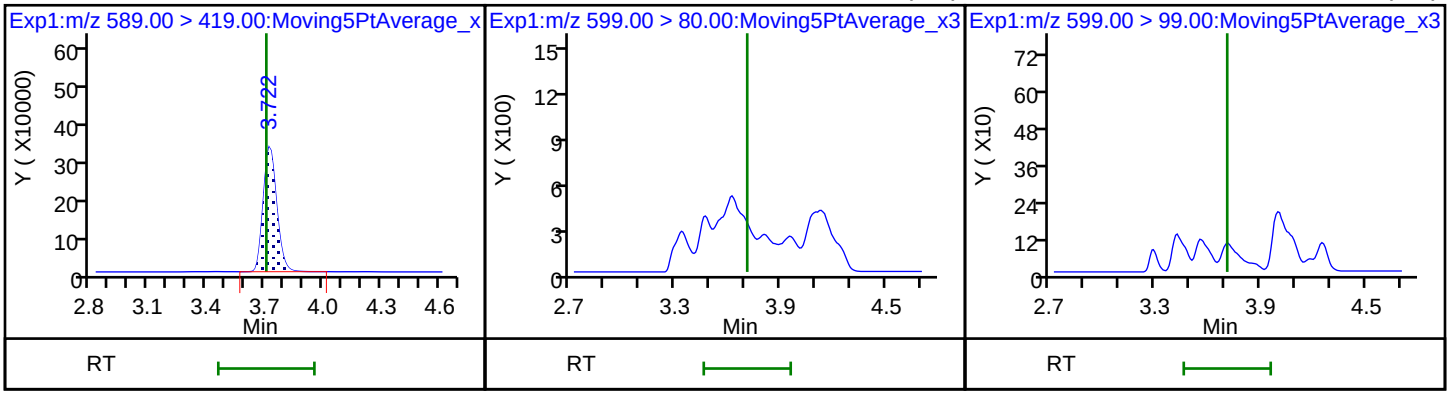
22 Perfluorooctane Sulfonamide 24 Perfluorodecanoic acid 24 Perfluorodecanoic acid (M)



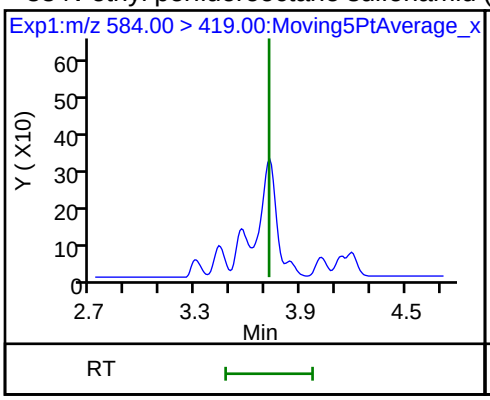
D 27 d3-NMeFOSAA 28 N-methyl perfluorooctane sulfonami (ND) D 30 13C2 PFUnA



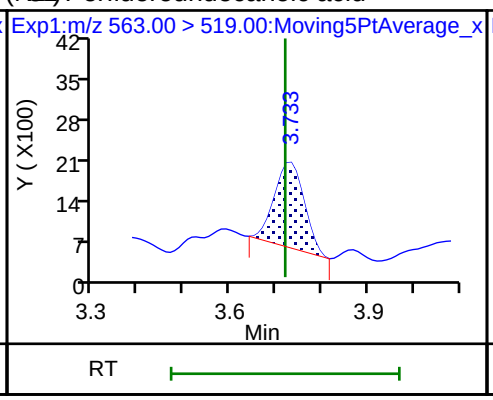
D 32 d5-NEtFOSAA 29 Perfluorodecane Sulfonic acid (ND) 29 Perfluorodecane Sulfonic acid (ND)



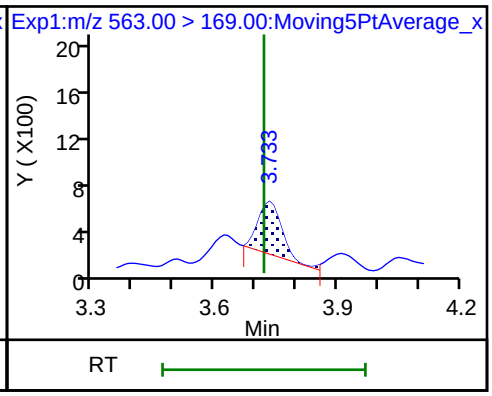
33 N-ethyl perfluorooctane sulfonamid (ND)



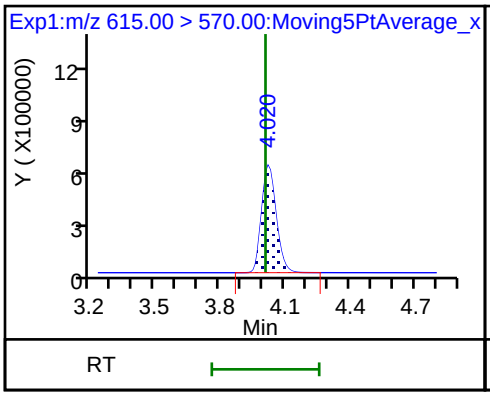
31 Perfluoroundecanoic acid



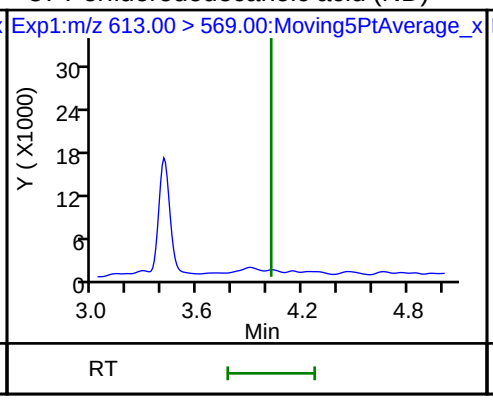
31 Perfluoroundecanoic acid



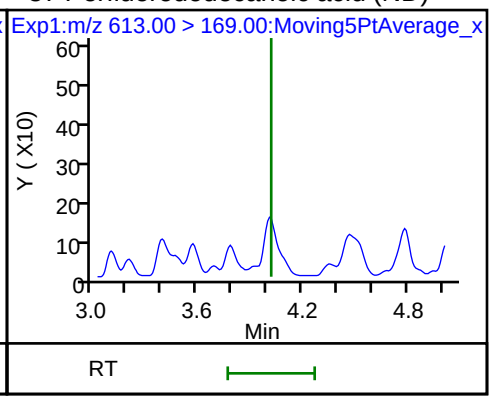
D 36 13C2 PFDoA



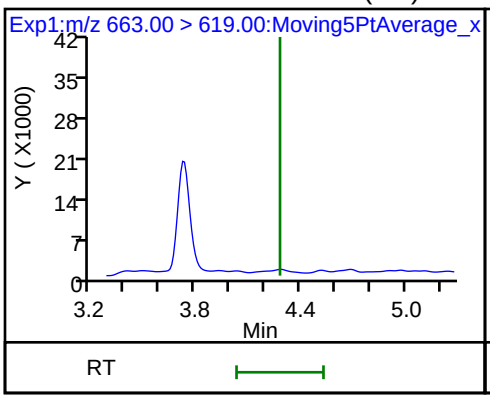
37 Perfluorododecanoic acid (ND)



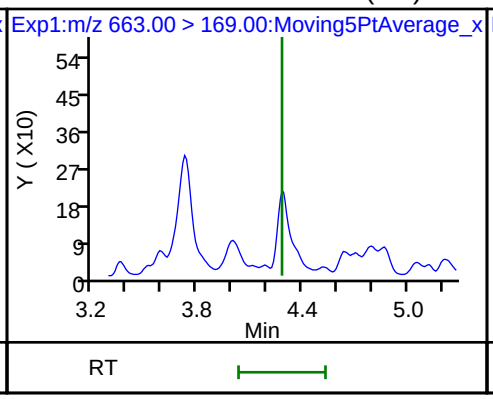
37 Perfluorododecanoic acid (ND)



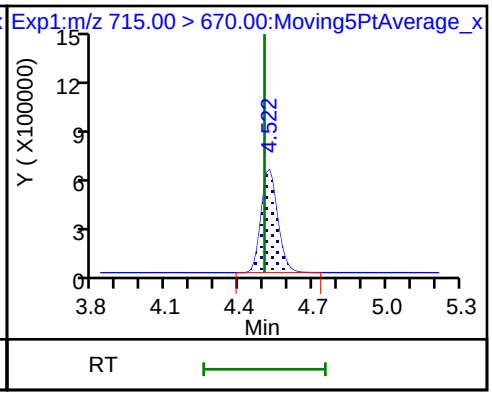
41 Perfluorotridecanoic acid (ND)



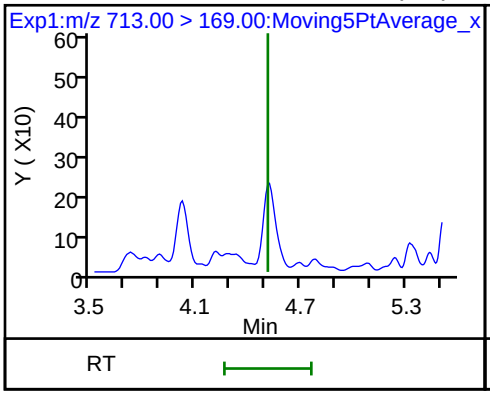
41 Perfluorotridecanoic acid (ND)



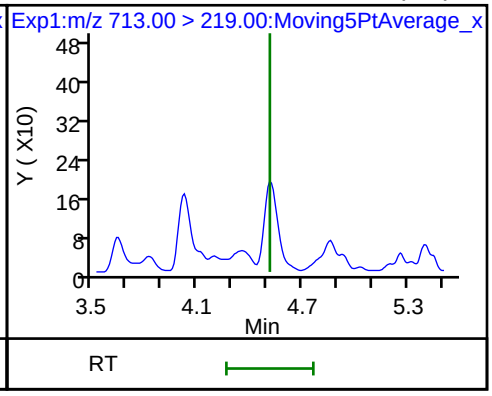
D 43 13C2-PFTeDA



42 Perfluorotetradecanoic acid (ND)



42 Perfluorotetradecanoic acid (ND)



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

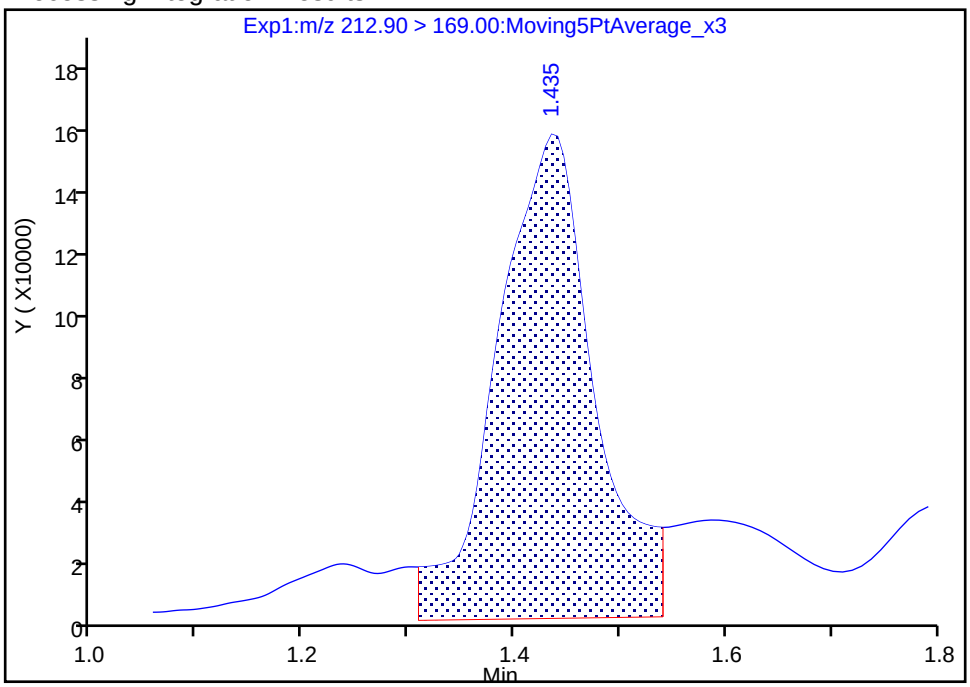
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180716-61126.b\2018.07.16LLA_006.d				
Injection Date:	16-Jul-2018 13:10:11	Instrument ID:	A8_N		
Lims ID:	320-40571-A-5-A	Lab Sample ID:	320-40571-5		
Client ID:	NF18-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	1	Worklist Smp#:	4
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

2 Perfluorobutyric acid, CAS: 375-22-4

Signal: 1

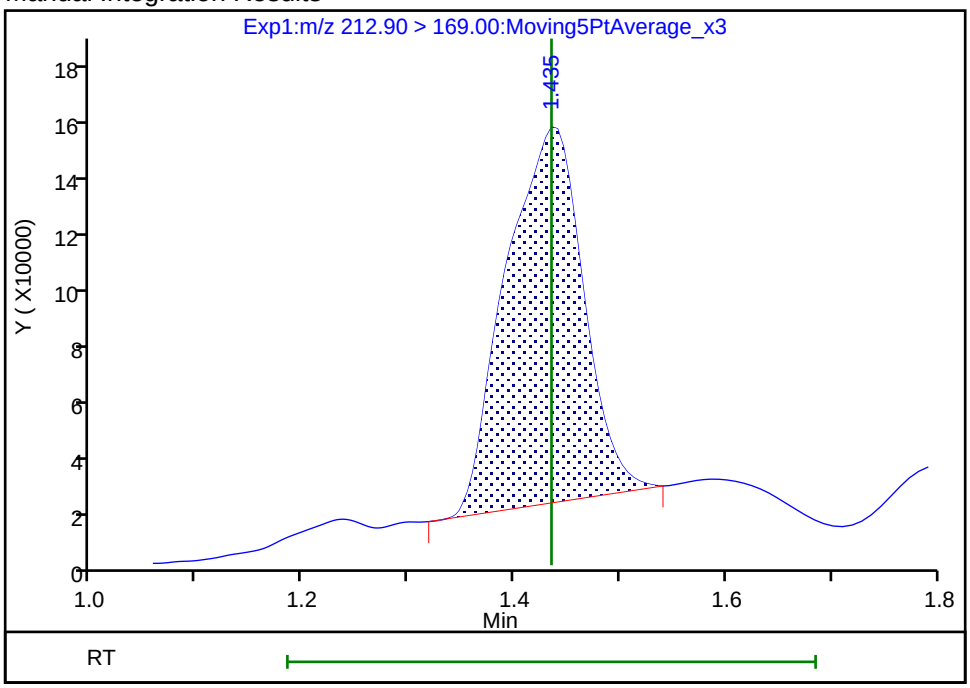
Processing Integration Results

RT: 1.44
Area: 985389
Amount: 0.620613
Amount Units: ng/ml



Manual Integration Results

RT: 1.44
Area: 670771
Amount: 0.422462
Amount Units: ng/ml



Reviewer: westendorfc, 16-Jul-2018 16:15:27

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

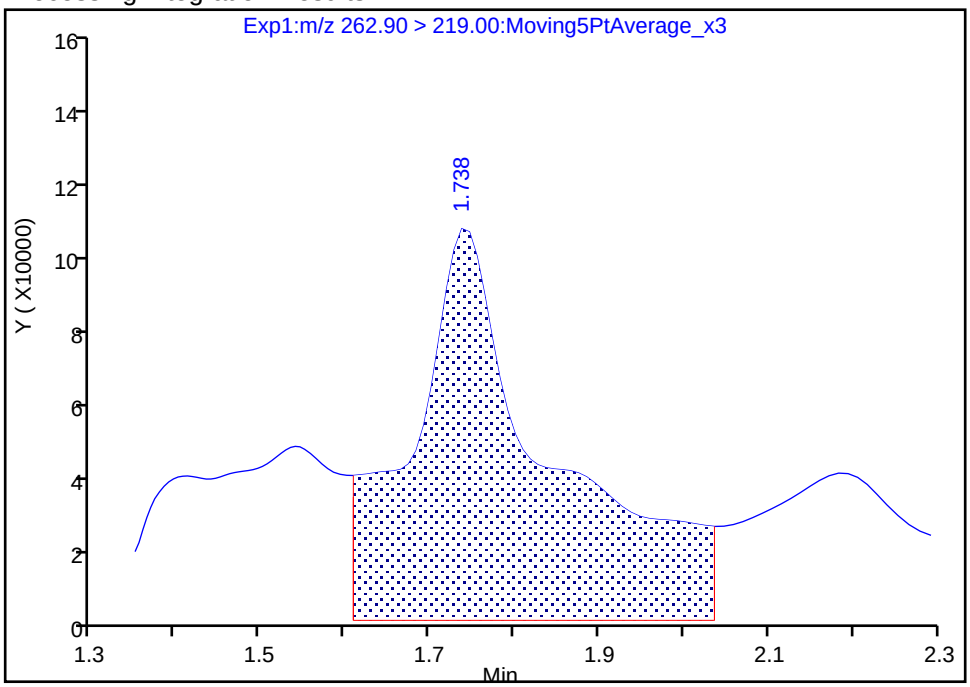
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180716-61126.b\2018.07.16LLA_006.d				
Injection Date:	16-Jul-2018 13:10:11	Instrument ID:	A8_N		
Lims ID:	320-40571-A-5-A	Lab Sample ID:	320-40571-5		
Client ID:	NF18-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	1	Worklist Smp#:	4
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

4 Perfluoropentanoic acid, CAS: 2706-90-3

Signal: 1

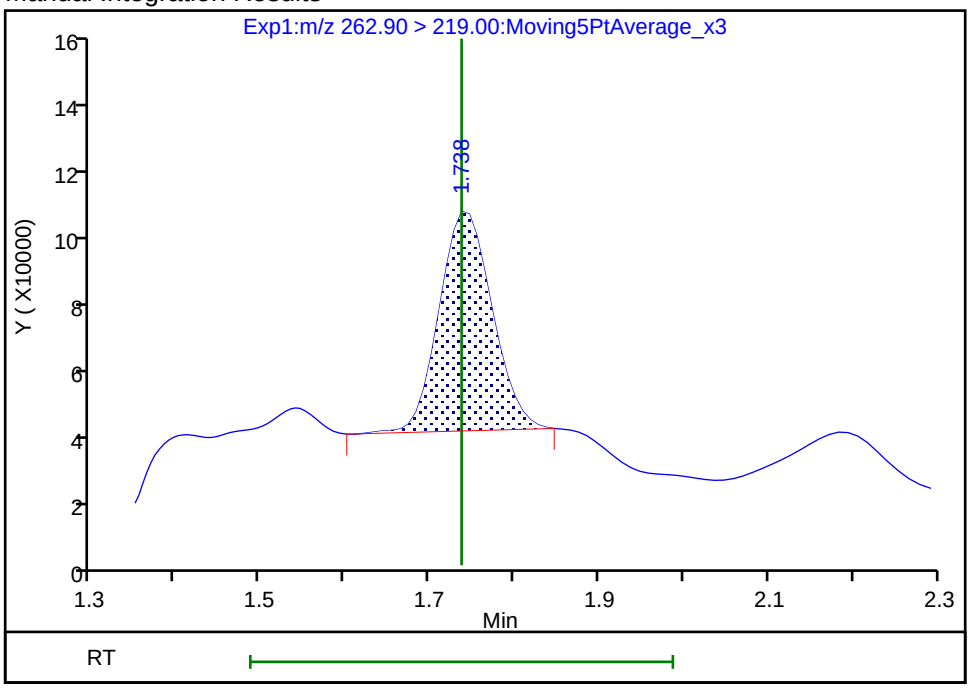
Processing Integration Results

RT: 1.74
Area: 1233165
Amount: 0.699820
Amount Units: ng/ml



Manual Integration Results

RT: 1.74
Area: 289183
Amount: 0.164111
Amount Units: ng/ml



Reviewer: westendorfc, 16-Jul-2018 16:15:32

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

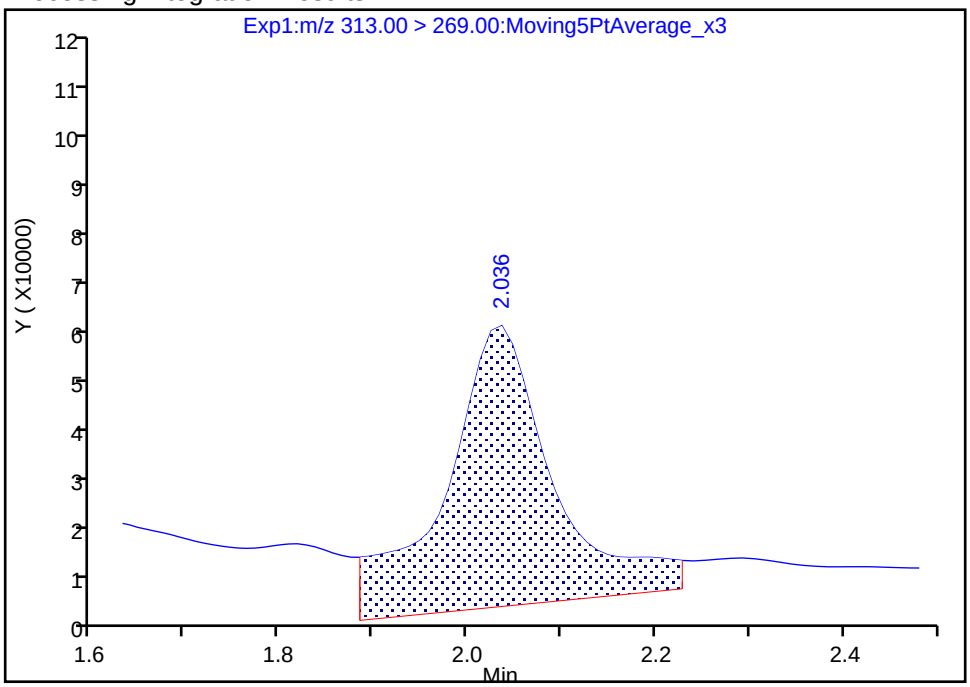
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180716-61126.b\2018.07.16LLA_006.d				
Injection Date:	16-Jul-2018 13:10:11	Instrument ID:	A8_N		
Lims ID:	320-40571-A-5-A	Lab Sample ID:	320-40571-5		
Client ID:	NF18-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	1	Worklist Smp#:	4
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

6 Perfluorohexanoic acid, CAS: 307-24-4

Signal: 1

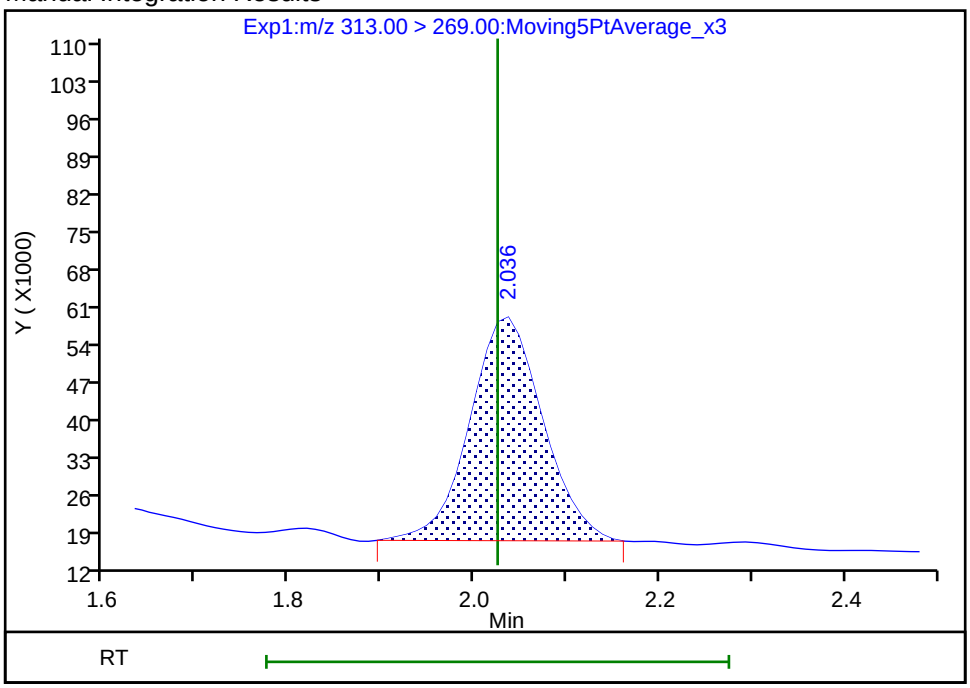
Processing Integration Results

RT: 2.04
Area: 404384
Amount: 0.222882
Amount Units: ng/ml



Manual Integration Results

RT: 2.04
Area: 227530
Amount: 0.125406
Amount Units: ng/ml



Reviewer: westendorfc, 16-Jul-2018 16:15:42

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

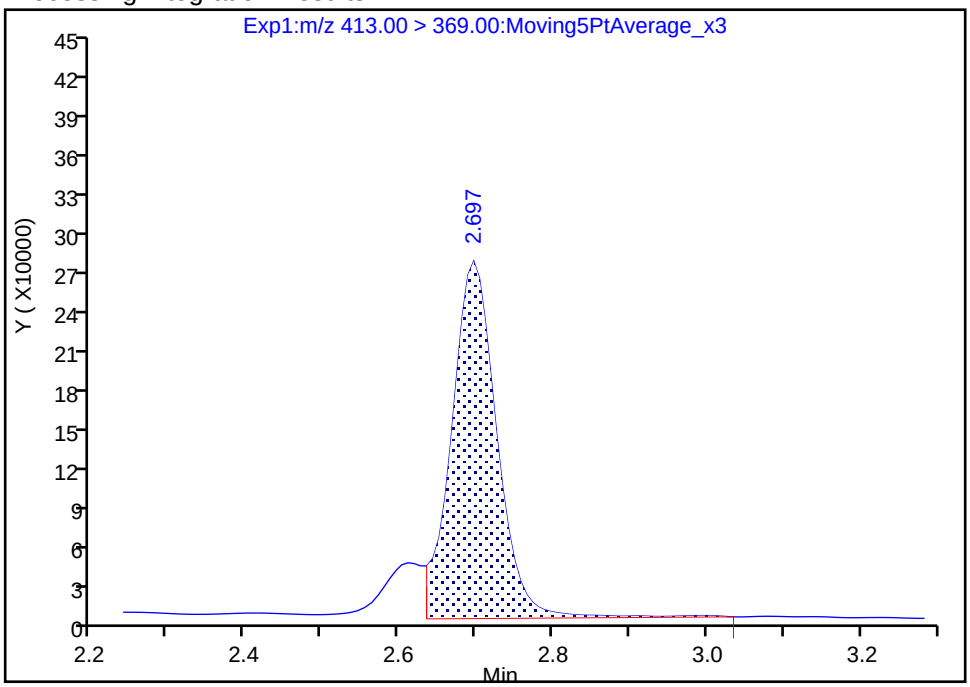
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180716-61126.b\2018.07.16LLA_006.d				
Injection Date:	16-Jul-2018 13:10:11	Instrument ID:	A8_N		
Lims ID:	320-40571-A-5-A	Lab Sample ID:	320-40571-5		
Client ID:	NF18-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	1	Worklist Smp#:	4
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

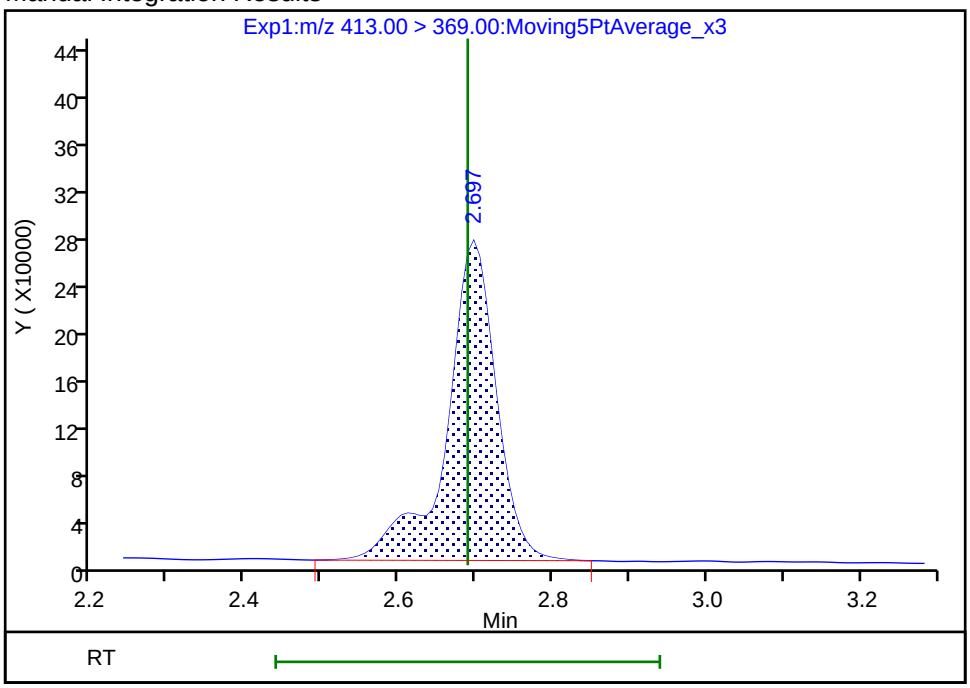
Processing Integration Results

RT: 2.70
Area: 1099169
Amount: 0.445222
Amount Units: ng/ml



Manual Integration Results

RT: 2.70
Area: 1196694
Amount: 0.484725
Amount Units: ng/ml



Reviewer: westendorfc, 16-Jul-2018 16:16:01

Audit Action: Manually Integrated Audit Reason: Isomers

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

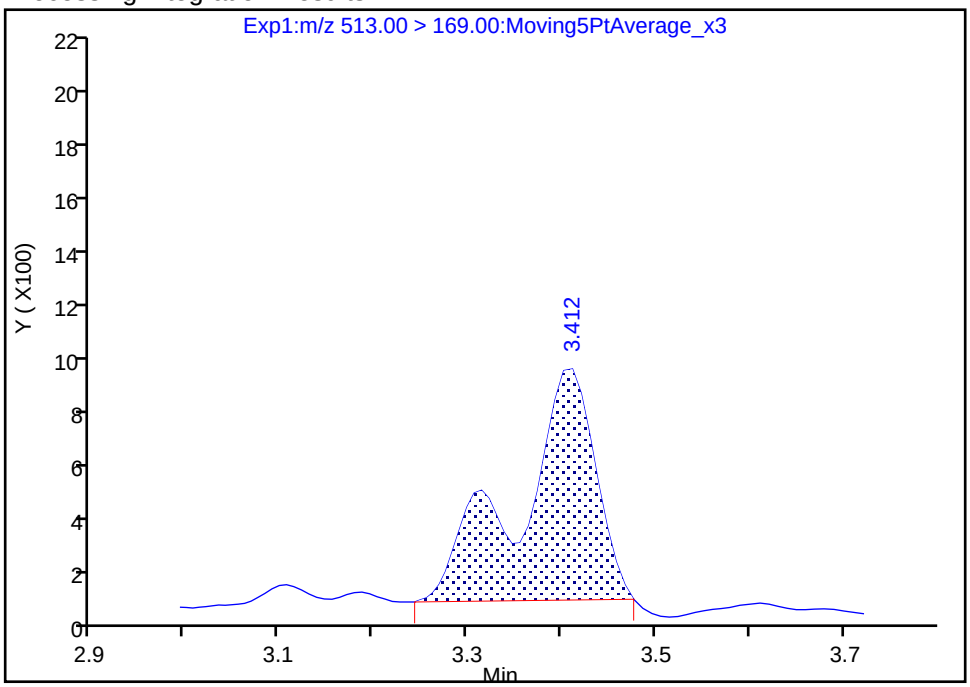
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180716-61126.b\2018.07.16LLA_006.d				
Injection Date:	16-Jul-2018 13:10:11	Instrument ID:	A8_N		
Lims ID:	320-40571-A-5-A	Lab Sample ID:	320-40571-5		
Client ID:	NF18-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	1	Worklist Smp#:	4
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

24 Perfluorodecanoic acid, CAS: 335-76-2

Signal: 2

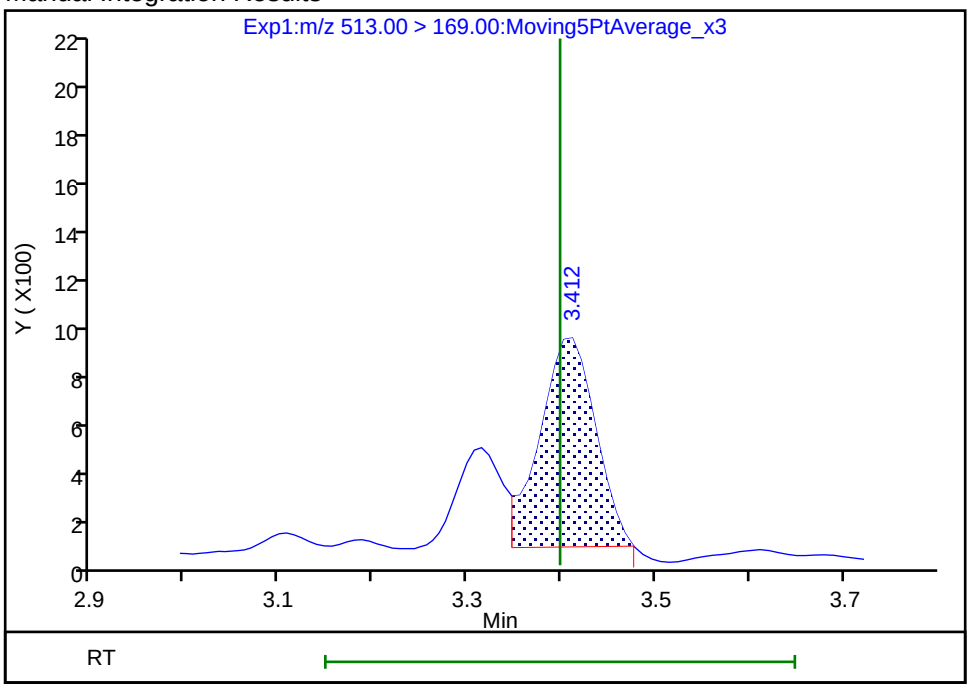
Processing Integration Results

RT: 3.41
Area: 4782
Amount: 0.013315
Amount Units: ng/ml



Manual Integration Results

RT: 3.41
Area: 3448
Amount: 0.013315
Amount Units: ng/ml



Reviewer: westendorfc, 16-Jul-2018 16:16:21

Audit Action: Manually Integrated Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

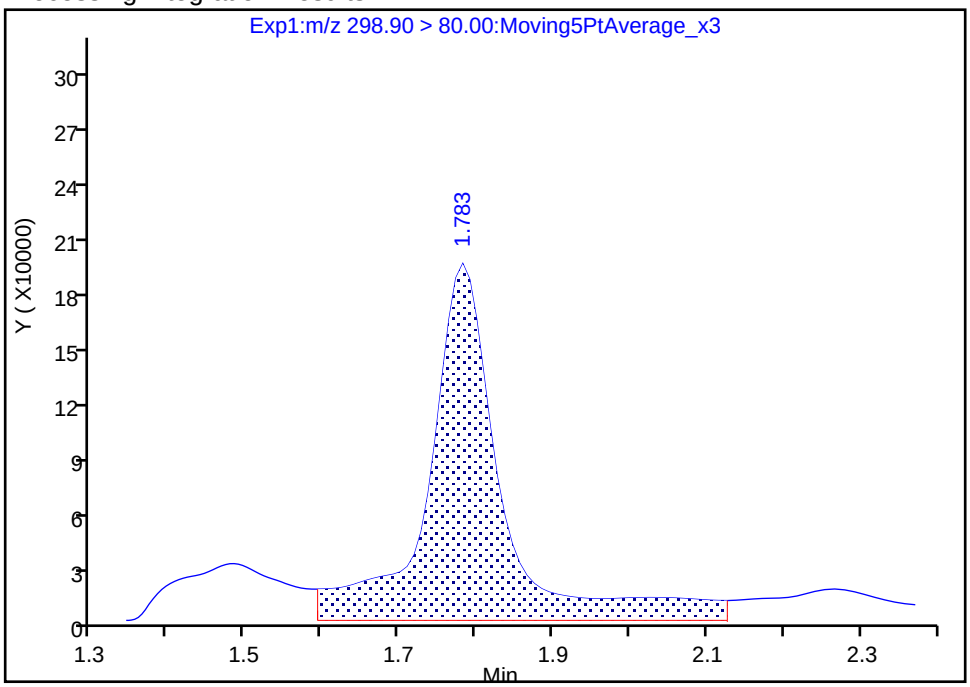
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180716-61126.b\2018.07.16LLA_006.d				
Injection Date:	16-Jul-2018 13:10:11	Instrument ID:	A8_N		
Lims ID:	320-40571-A-5-A	Lab Sample ID:	320-40571-5		
Client ID:	NF18-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	1	Worklist Smp#:	4
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

5 Perfluorobutanesulfonic acid, CAS: 375-73-5

Signal: 1

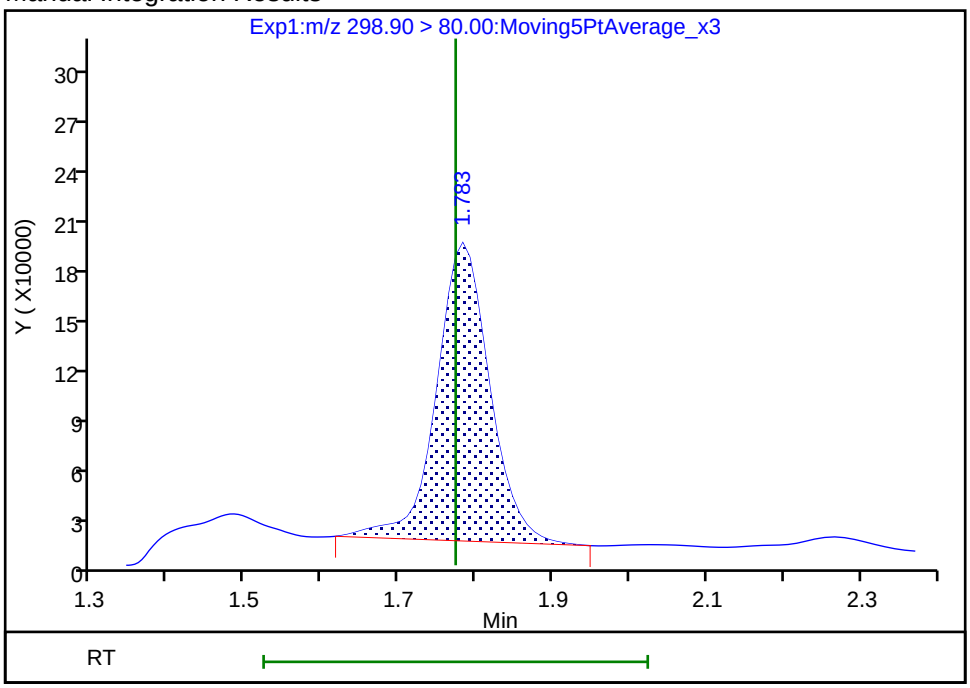
Processing Integration Results

RT: 1.78
Area: 1290922
Amount: 0.420079
Amount Units: ng/ml



Manual Integration Results

RT: 1.78
Area: 854628
Amount: 0.278104
Amount Units: ng/ml



Reviewer: westendorfc, 16-Jul-2018 16:15:37

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

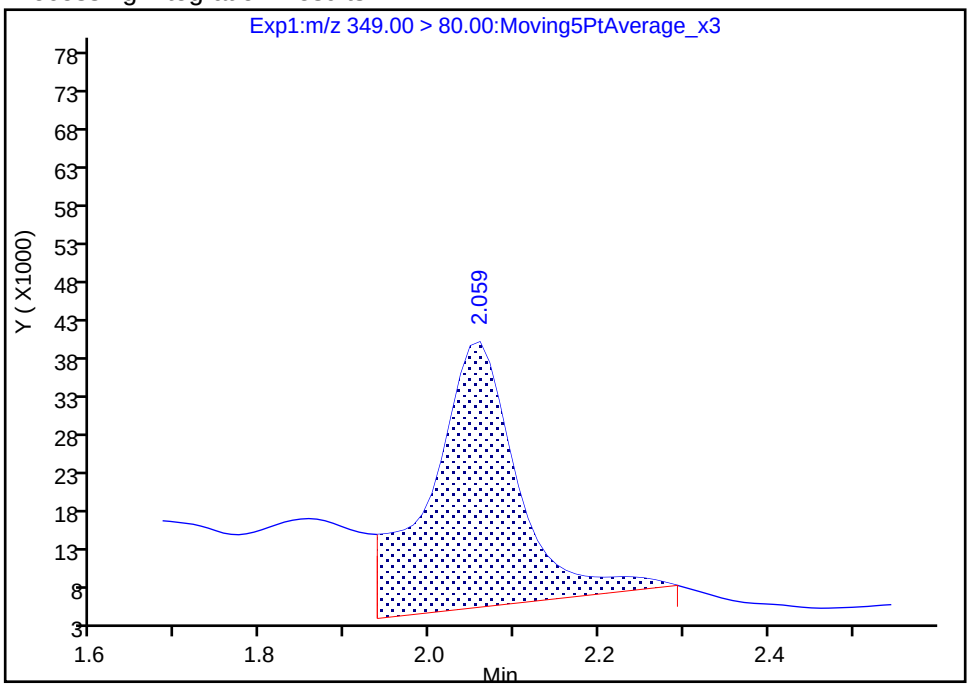
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180716-61126.b\2018.07.16LLA_006.d				
Injection Date:	16-Jul-2018 13:10:11	Instrument ID:	A8_N		
Lims ID:	320-40571-A-5-A	Lab Sample ID:	320-40571-5		
Client ID:	NF18-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	1	Worklist Smp#:	4
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

70 Perfluoropentanesulfonic acid, CAS: 2706-91-4

Signal: 1

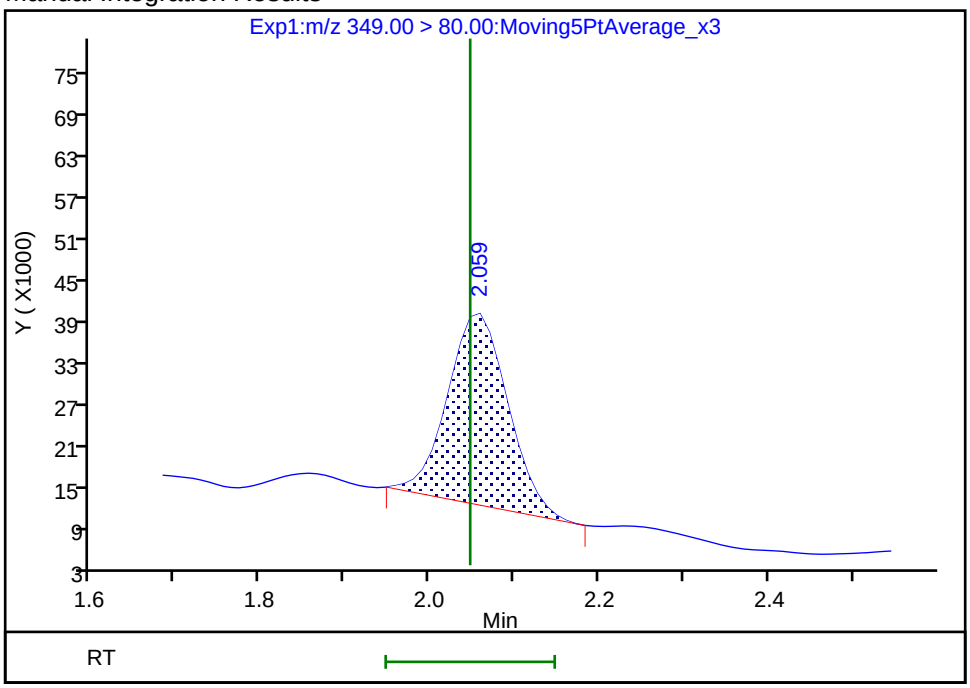
Processing Integration Results

RT: 2.06
Area: 248774
Amount: 0.088743
Amount Units: ng/ml



Manual Integration Results

RT: 2.06
Area: 136930
Amount: 0.048846
Amount Units: ng/ml



Reviewer: westendorfc, 16-Jul-2018 16:15:47

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

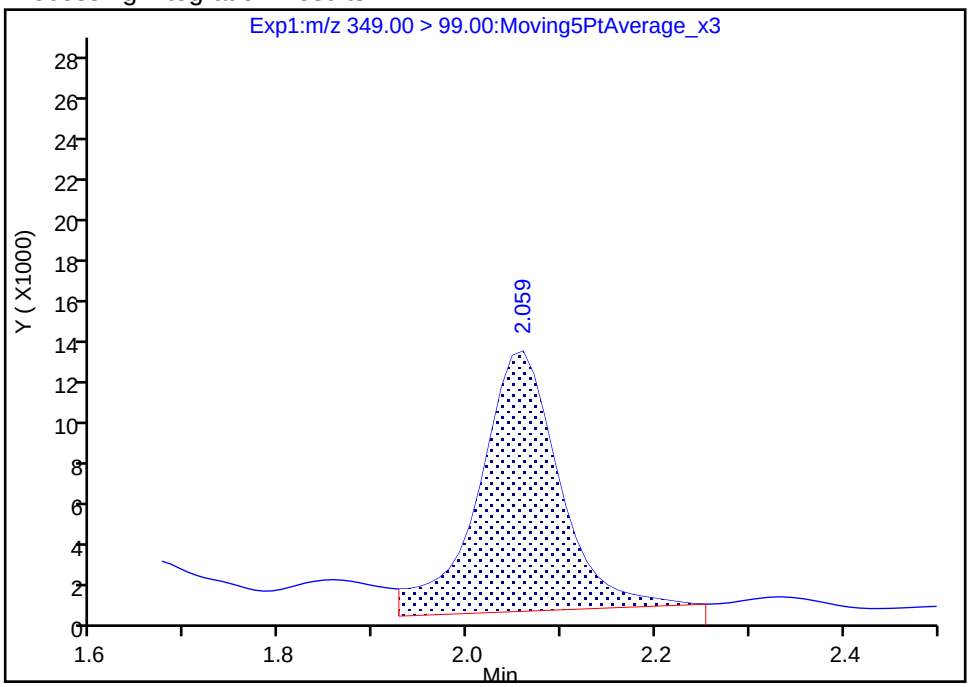
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180716-61126.b\2018.07.16LLA_006.d				
Injection Date:	16-Jul-2018 13:10:11	Instrument ID:	A8_N		
Lims ID:	320-40571-A-5-A	Lab Sample ID:	320-40571-5		
Client ID:	NF18-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	1	Worklist Smp#:	4
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

70 Perfluoropentanesulfonic acid, CAS: 2706-91-4

Signal: 2

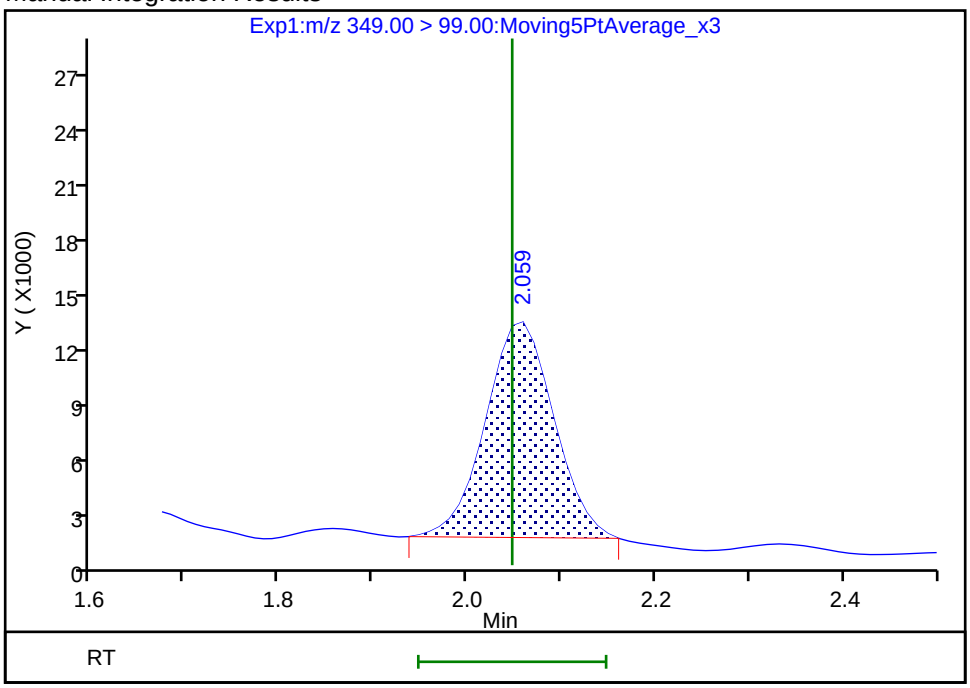
Processing Integration Results

RT: 2.06
Area: 75693
Amount: 0.088743
Amount Units: ng/ml



Manual Integration Results

RT: 2.06
Area: 58601
Amount: 0.048846
Amount Units: ng/ml



Reviewer: westendorfc, 16-Jul-2018 16:15:49

Audit Action: Manually Integrated Audit Reason: Baseline

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF18-SS-02
Lab Sample ID: 320-40571-6
Matrix: Solid
Lab File ID: 2018.07.13LLB_058.d
Analysis Method: 537 (modified)
Date Collected: 06/20/2018 14:45
Extraction Method: SHAKE
Date Extracted: 06/28/2018 05:15
Sample wt/vol: 5.07(g)
Date Analyzed: 07/14/2018 04:20
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture: 18.0
GPC Cleanup:(Y/N) N
Analysis Batch No.: 233997
Units: mg/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	0.000040	J	0.00024	0.000034
2706-90-3	Perfluoropentanoic acid (PFPeA)	ND		0.00024	0.000093
307-24-4	Perfluorohexanoic acid (PFHxA)	ND		0.00024	0.000051
375-85-9	Perfluoroheptanoic acid (PFHpA)	ND		0.00024	0.000035
335-67-1	Perfluorooctanoic acid (PFOA)	ND		0.00024	0.00010
375-95-1	Perfluorononanoic acid (PFNA)	ND		0.00024	0.000043
335-76-2	Perfluorodecanoic acid (PFDA)	ND		0.00024	0.000026
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		0.00024	0.000043
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		0.00024	0.000081
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		0.00024	0.000061
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		0.00024	0.000065
375-73-5	Perfluorobutanesulfonic acid (PFBS)	ND		0.00024	0.000030
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	ND		0.00024	0.000037
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.00024	0.000042
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	ND		0.00060	0.00024
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		0.00024	0.000047
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		0.00024	0.000099
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.0024	0.00047
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.0024	0.00044
27619-97-2	6:2 FTS	ND		0.0024	0.00018
39108-34-4	8:2 FTS	ND		0.0024	0.00030

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF18-SS-02
Lab Sample ID: 320-40571-6
Matrix: Solid
Lab File ID: 2018.07.13LLB_058.d
Analysis Method: 537 (modified)
Date Collected: 06/20/2018 14:45
Extraction Method: SHAKE
Date Extracted: 06/28/2018 05:15
Sample wt/vol: 5.07(g)
Date Analyzed: 07/14/2018 04:20
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture: 18.0
GPC Cleanup:(Y/N) N
Analysis Batch No.: 233997
Units: mg/Kg

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00992	13C4 PFBA	74		25-150
STL01893	13C5 PFPeA	79		25-150
STL00993	13C2 PFHxA	76		25-150
STL01892	13C4-PFHpA	85		25-150
STL00990	13C4 PFOA	85		25-150
STL00995	13C5 PFNA	88		25-150
STL00996	13C2 PFDA	90		25-150
STL00997	13C2 PFUnA	84		25-150
STL00998	13C2 PFDoA	81		25-150
STL02116	13C2-PFTeDA	83		25-150
STL02337	13C3-PFBS	73		25-150
STL00994	18O2 PFHxS	75		25-150
STL00991	13C4 PFOS	73		25-150
STL01056	13C8 FOSA	63		25-150
STL02118	d3-NMeFOSAA	102		25-150
STL02117	d5-NEtFOSAA	86		25-150
STL02279	M2-6:2FTS	81		25-150
STL02280	M2-8:2FTS	82		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\2018.07.13LLB_058.d
Lims ID: 320-40571-A-6-A
Client ID: NF18-SS-02
Sample Type: Client
Inject. Date: 14-Jul-2018 04:20:33 ALS Bottle#: 43 Worklist Smp#: 7
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-40571-a-6-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 16-Jul-2018 14:17:48 Calib Date: 11-Jul-2018 15:38:42
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK023

First Level Reviewer: mongkols Date: 16-Jul-2018 14:17:48

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										M
217.00 > 172.00	1.436	1.441	-0.005	0.540	4845713	1.85		74.2	51420	M
2 Perfluorobutyric acid										M
212.90 > 169.00	1.436	1.444	-0.008	1.000	31744	0.0166			9.5	M
D 3 13C5-PFPeA										
267.90 > 223.00	1.711	1.720	-0.009	0.643	3583867	1.97		78.9	42756	
D 47 13C3-PFBS										
301.90 > 83.00	1.756	1.765	-0.009	0.660	77469	1.70		73.0	419	
D 7 13C2 PFHxA										
315.00 > 270.00	1.992	2.003	-0.011	0.749	3723751	1.90		76.0	63310	
D 9 13C4-PFHpA										
367.00 > 322.00	2.307	2.319	-0.012	0.867	3838757	2.13		85.0	53248	
D 11 18O2 PFHxS										
403.00 > 84.00	2.320	2.332	-0.012	0.872	4515088	1.76		74.6	49756	
D 12 M2-6:2FTS										
429.00 > 81.00	2.637	2.644	-0.007	0.991	749129	1.93		81.5	11781	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.637	2.651	-0.014	1.000	12150	0.0246			54.4	
D 14 13C4 PFOA										
417.00 > 372.00	2.660	2.667	-0.007	1.000	3922428	2.13		85.2	47268	
* 62 13C2-PFOA										
415.00 > 370.00	2.660	2.673	-0.013		4817783	2.50			61121	
D 18 13C4 PFOS										
503.00 > 80.00	3.022	3.027	-0.005	1.136	3286775	1.75		73.3	48822	
D 19 13C5 PFNA										
468.00 > 423.00	3.022	3.034	-0.012	1.136	3630063	2.20		88.2	48398	
D 26 M2-8:2FTS										
529.00 > 81.00	3.367	3.379	-0.012	1.266	1109077	1.96		81.8	15954	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 21 13C8 FOSA										
506.00 > 78.00	3.367	3.379	-0.012	1.266	4269038	1.58		63.1	43828	
D 23 13C2 PFDA										
515.00 > 470.00	3.376	3.389	-0.013	1.269	3270368	2.26		90.5	41705	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.525	3.538	-0.013	1.325	1510800	2.55		102	41851	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.694	3.708	-0.014	1.389	1307610	2.15		86.2	3965	
D 30 13C2 PFUnA										
565.00 > 520.00	3.705	3.708	-0.003	1.393	2530006	2.10		83.8	37633	
D 36 13C2 PFDoA										
615.00 > 570.00	3.995	3.999	-0.004	1.502	2524206	2.02		80.7	24442	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.489	4.501	-0.012	1.687	2695977	2.08		83.0	17855	

QC Flag Legend

Review Flags

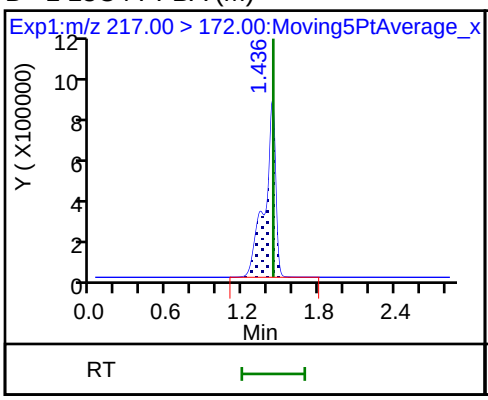
M - Manually Integrated

Report Date: 16-Jul-2018 14:17:49 Chrom Revision: 2.2 07-Jun-2018 07:41:54

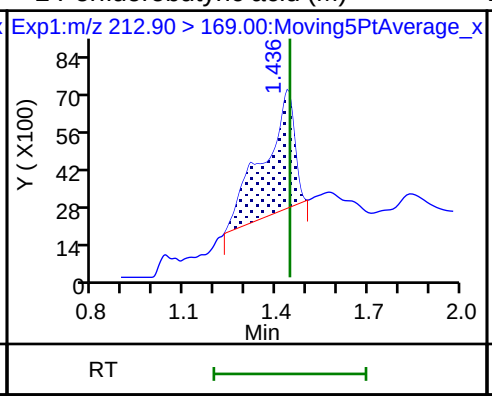
TestAmerica Sacramento

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\2018.07.13LLB_058.d				
Injection Date:	14-Jul-2018 04:20:33	Instrument ID:	A8_N		
Lims ID:	320-40571-A-6-A	Lab Sample ID:	320-40571-6		
Client ID:	NF18-SS-02				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	43	Worklist Smp#:	7
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		

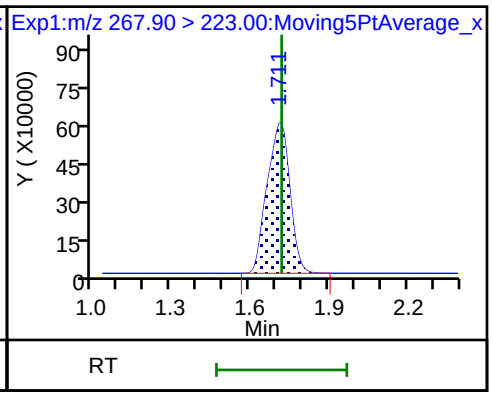
D 1 13C4 PFBA (M)



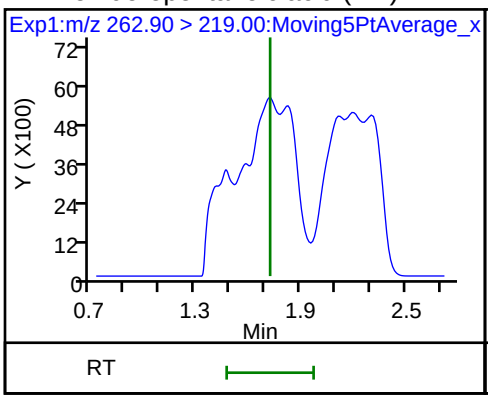
2 Perfluorobutyric acid (M)



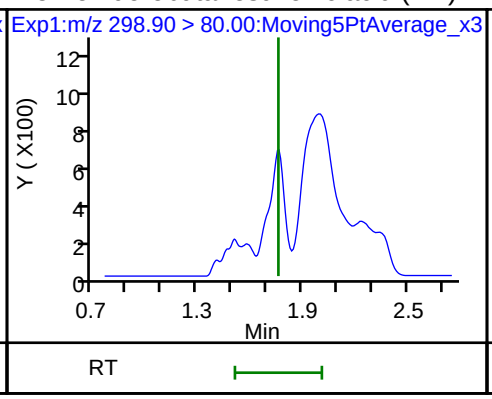
D 3 13C5-PFPeA



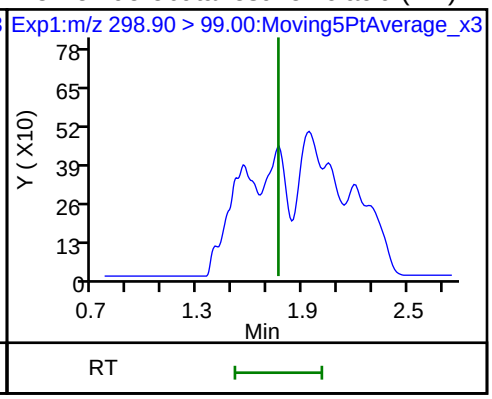
4 Perfluoropentanoic acid (ND)



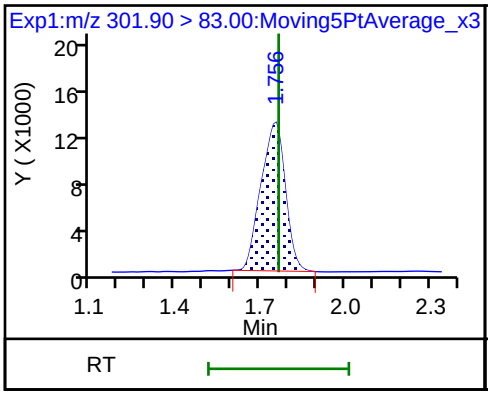
5 Perfluorobutanesulfonic acid (ND)



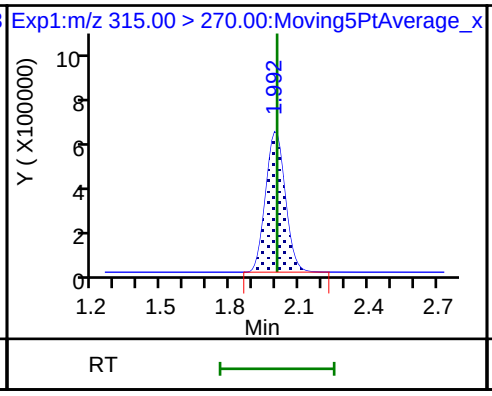
5 Perfluorobutanesulfonic acid (ND)



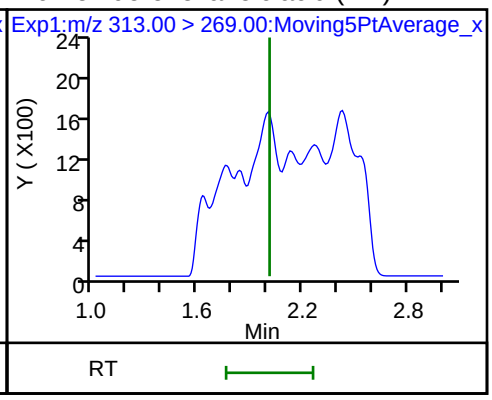
D 47 13C3-PFBS



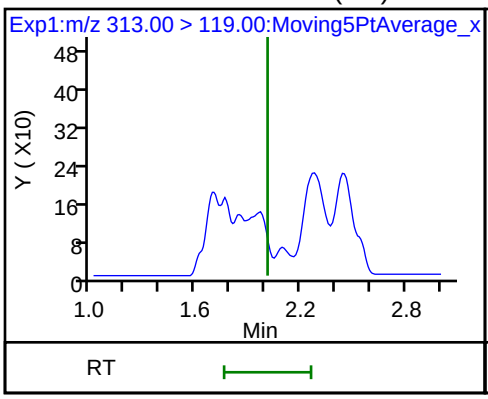
D 7 13C2 PFHxA



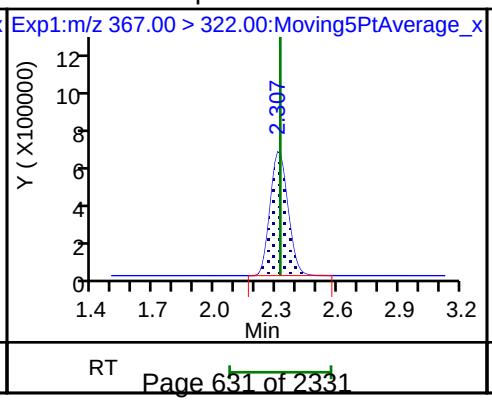
6 Perfluorohexanoic acid (ND)



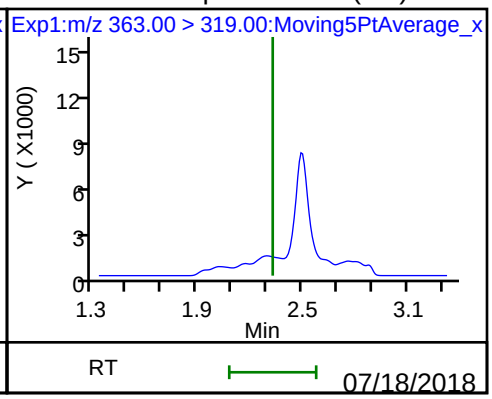
6 Perfluorohexanoic acid (ND)



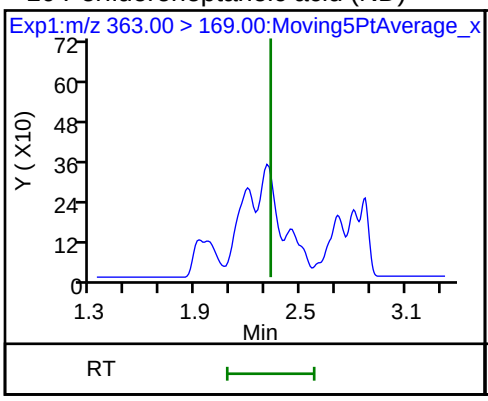
D 9 13C4-PFHpA



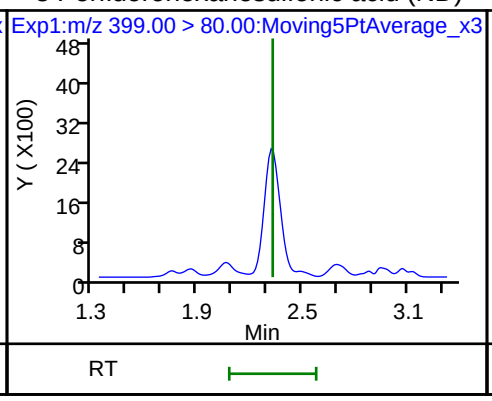
10 Perfluoroheptanoic acid (ND)



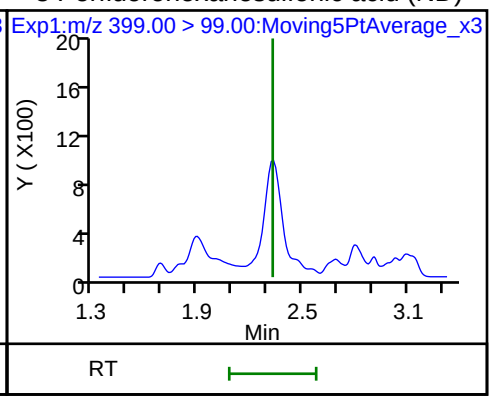
10 Perfluoroheptanoic acid (ND)



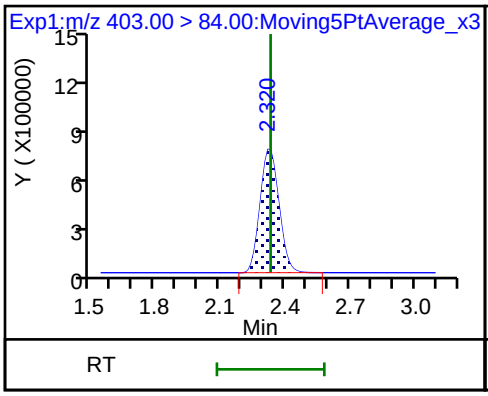
8 Perfluorohexanesulfonic acid (ND)



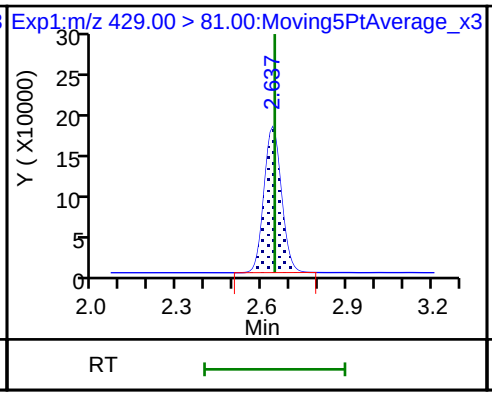
8 Perfluorohexanesulfonic acid (ND)



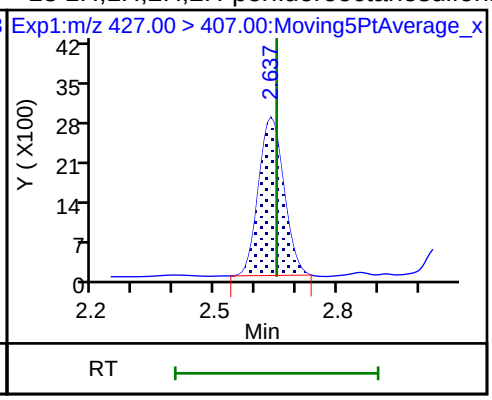
D 11 18O2 PFHxS



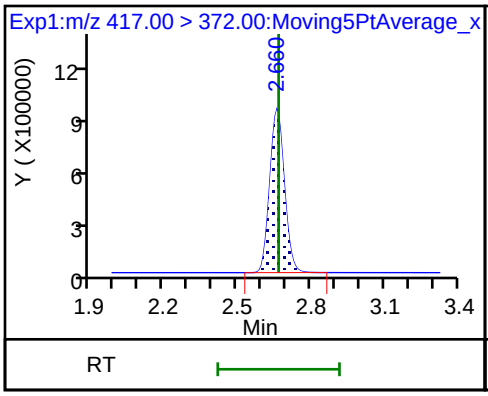
D 12 M2-6:2FTS



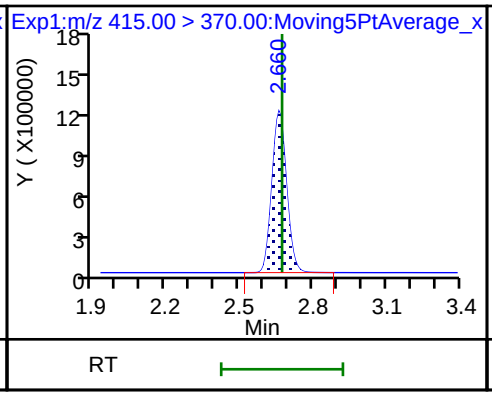
13 1H,1H,2H,2H-perfluorooctanesulfoni



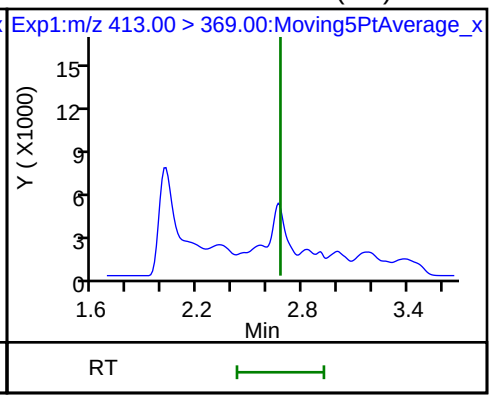
D 14 13C4 PFOA



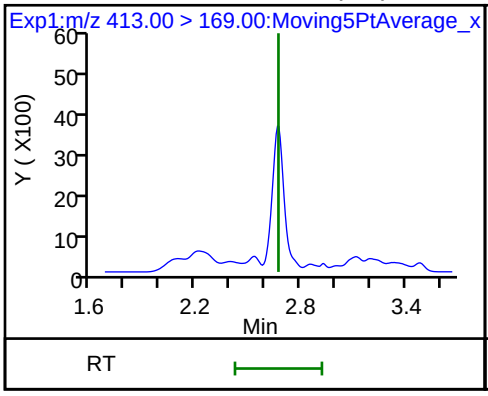
* 62 13C2-PFOA



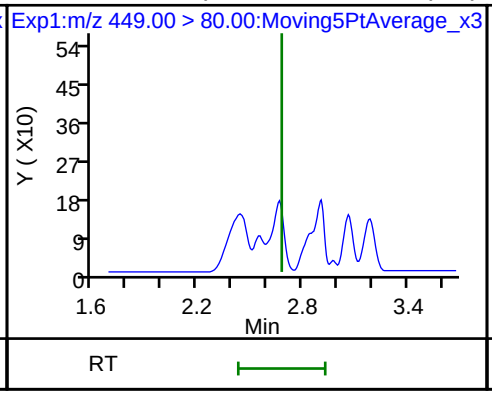
15 Perfluorooctanoic acid (ND)



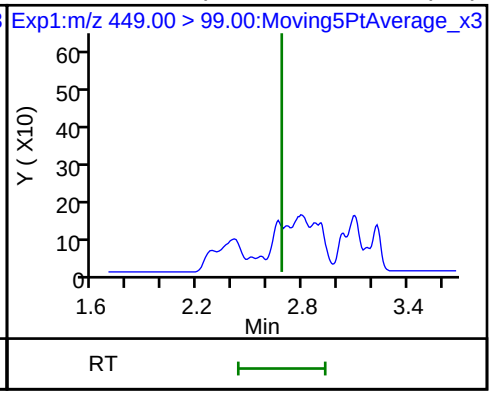
15 Perfluorooctanoic acid (ND)



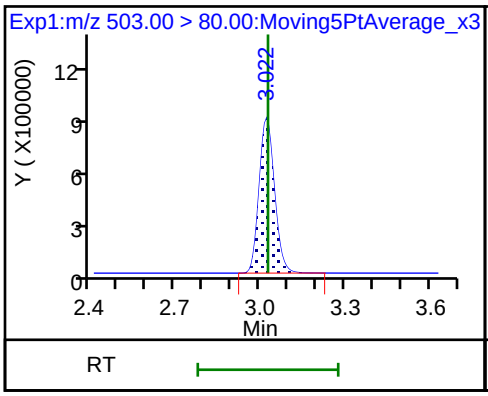
16 Perfluoroheptanesulfonic acid (ND)



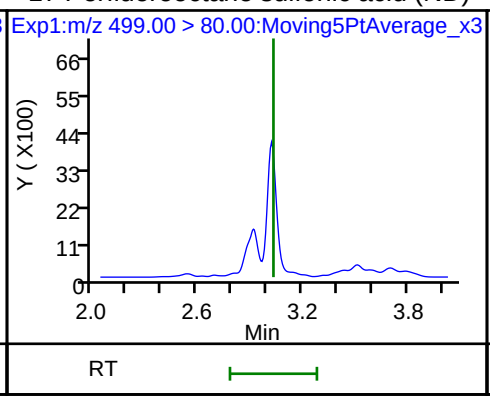
16 Perfluoroheptanesulfonic acid (ND)



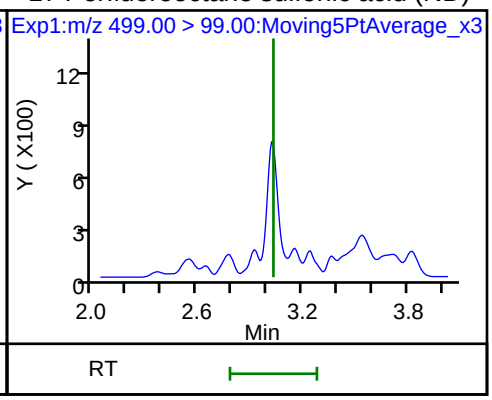
D 18 13C4 PFOS



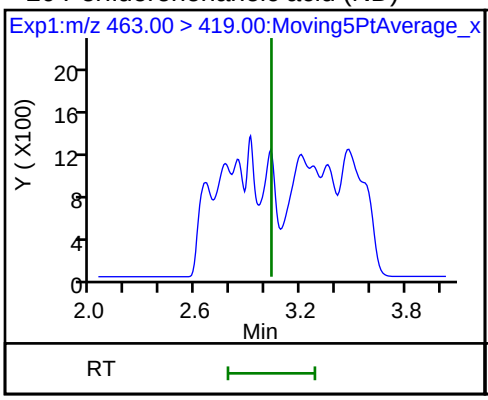
17 Perfluorooctane sulfonic acid (ND)



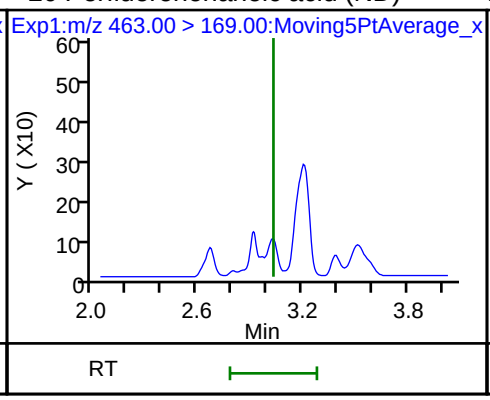
17 Perfluorooctane sulfonic acid (ND)



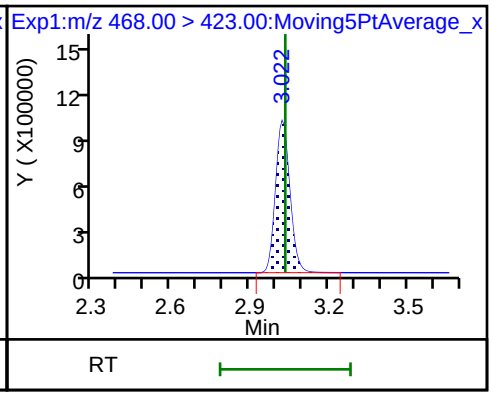
20 Perfluorononanoic acid (ND)



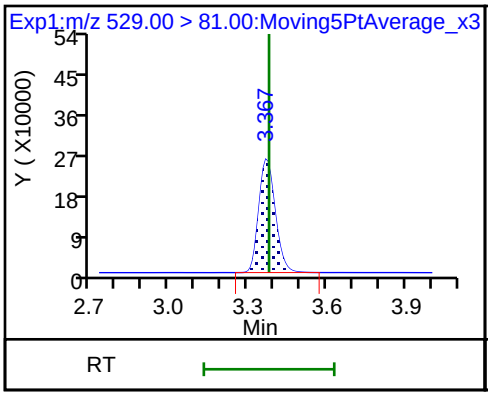
20 Perfluorononanoic acid (ND)



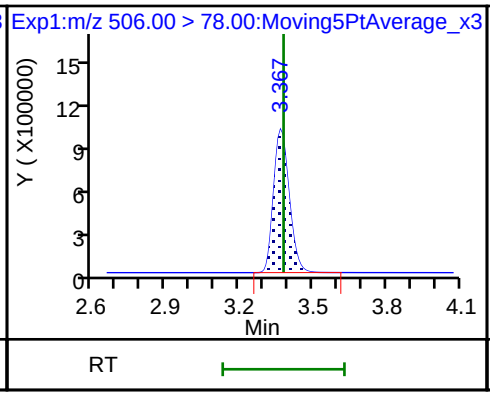
D 19 13C5 PFNA



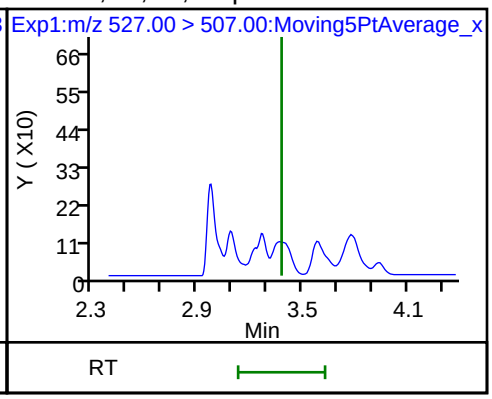
D 26 M2-8:2FTS



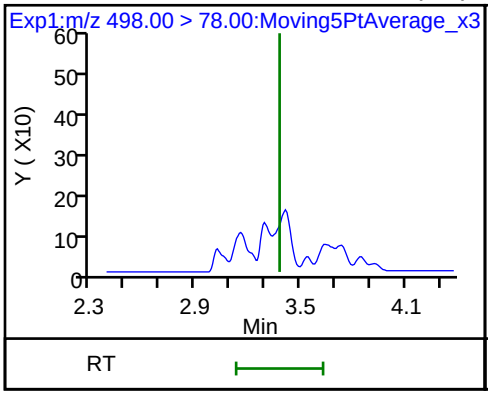
D 21 13C8 FOSA



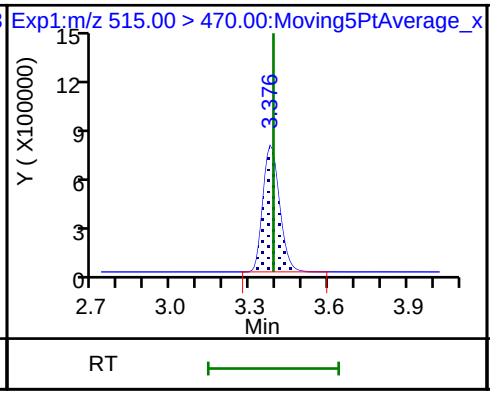
25 1H,1H,2H,2H-perfluorodecanesulfoni (ND)



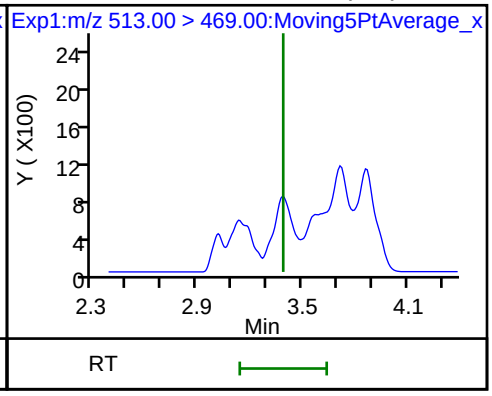
22 Perfluorooctane Sulfonamide (ND)



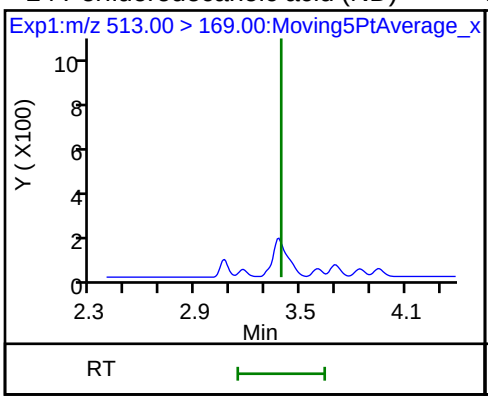
D 23 13C2 PFDA



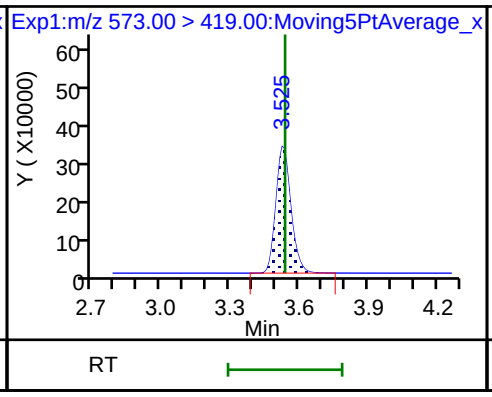
24 Perfluorodecanoic acid (ND)



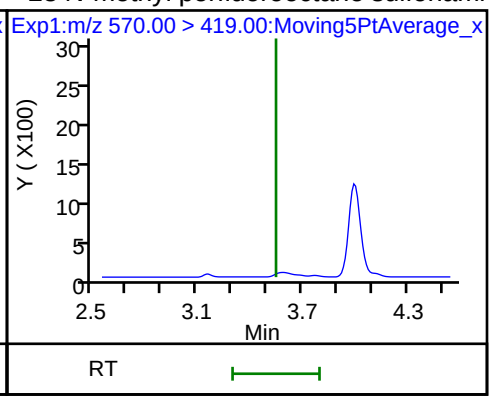
24 Perfluorodecanoic acid (ND)



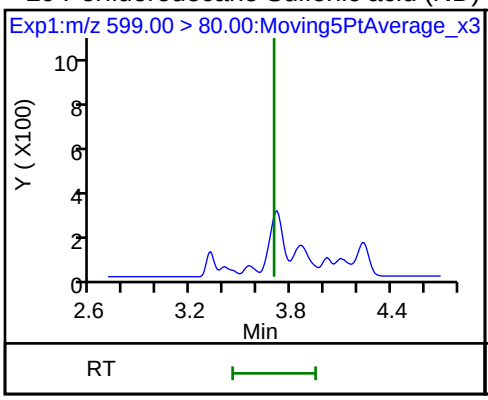
D 27 d3-NMeFOSAA



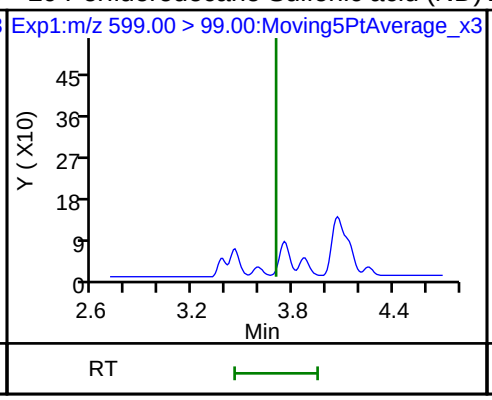
28 N-methyl perfluorooctane sulfonami (ND)



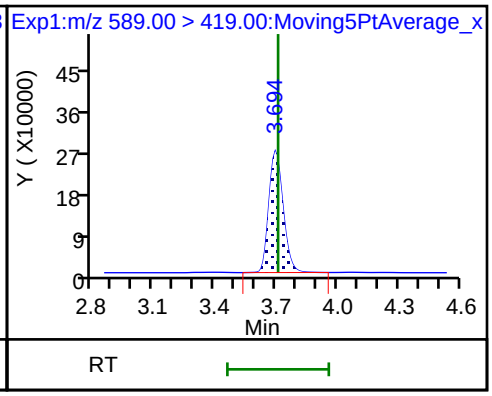
29 Perfluorodecane Sulfonic acid (ND)



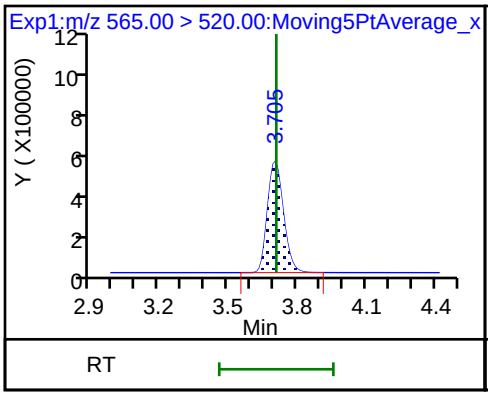
29 Perfluorodecane Sulfonic acid (ND)



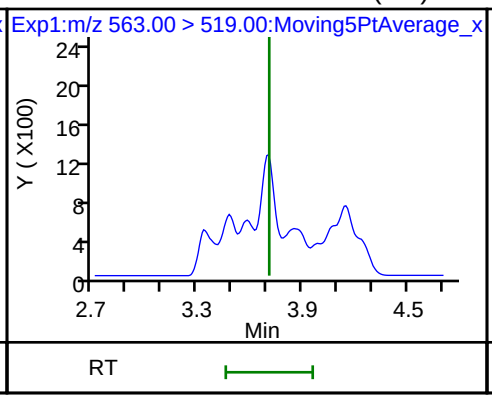
D 32 d5-NEtFOSAA



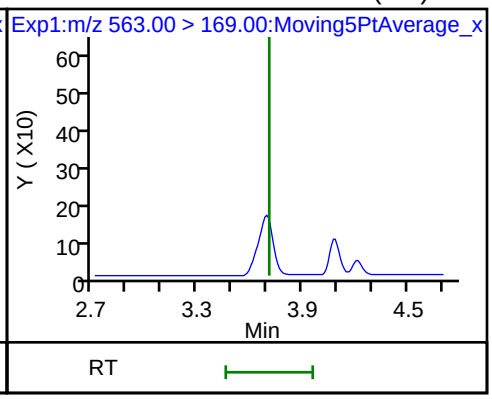
D 30 13C2 PFUnA



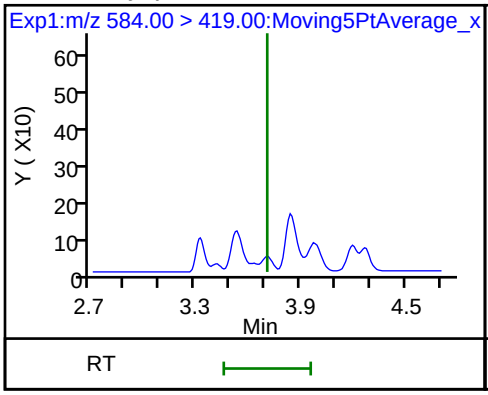
31 Perfluoroundecanoic acid (ND)



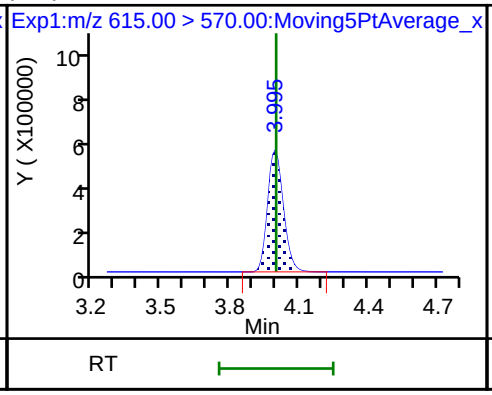
31 Perfluoroundecanoic acid (ND)



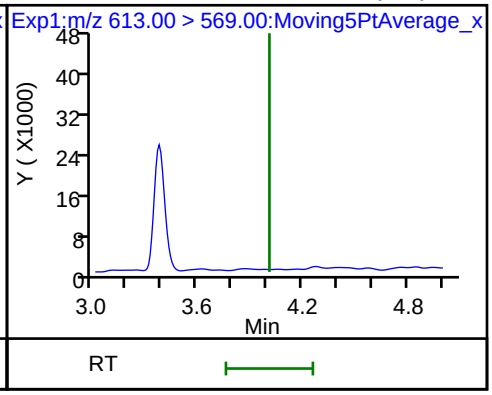
33 N-ethyl perfluorooctane sulfonamid (ND)



D 36 13C2 PFDoA

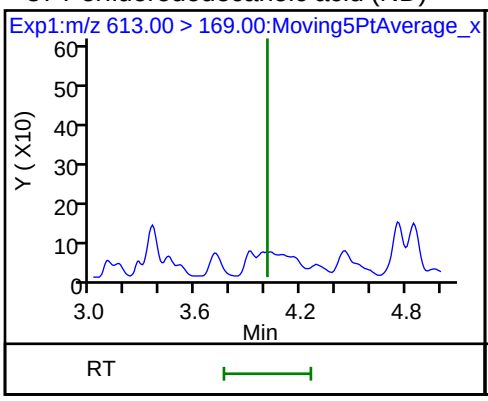


37 Perfluorododecanoic acid (ND)

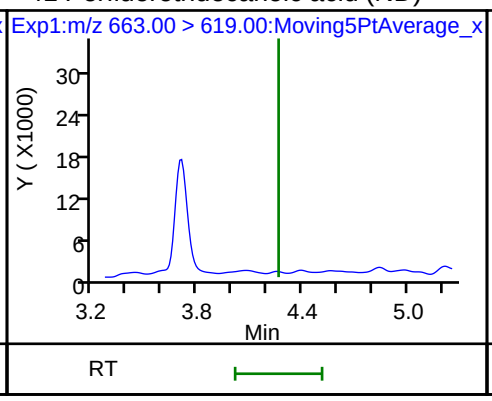


Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\2018.07.13LLB_058.d

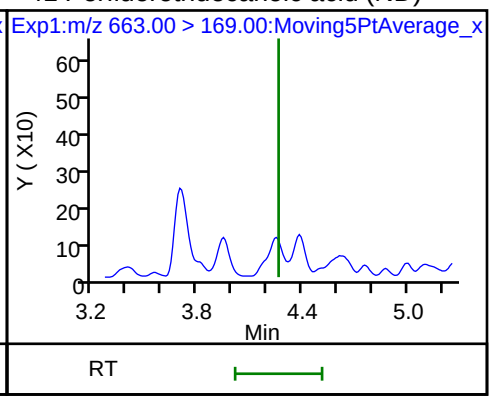
37 Perfluorododecanoic acid (ND)



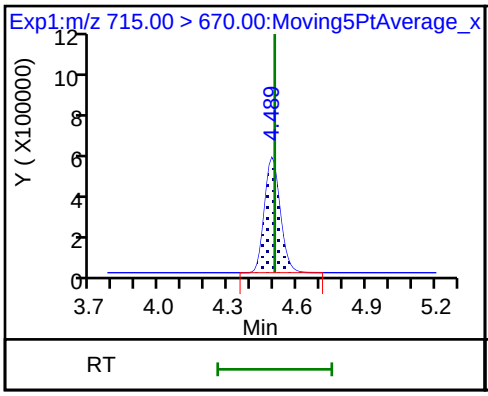
41 Perfluorotridecanoic acid (ND)



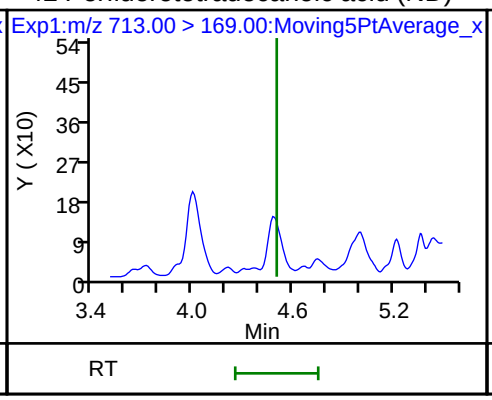
41 Perfluorotridecanoic acid (ND)



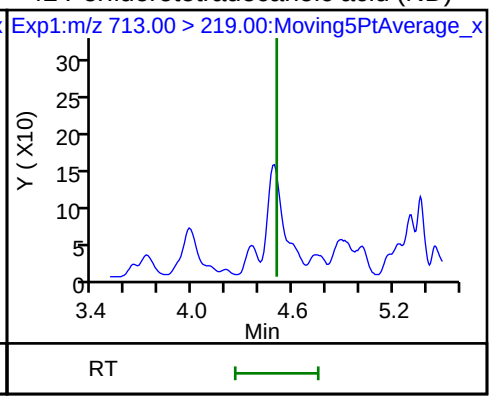
D 43 13C2-PFTeDA



42 Perfluorotetradecanoic acid (ND)



42 Perfluorotetradecanoic acid (ND)



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

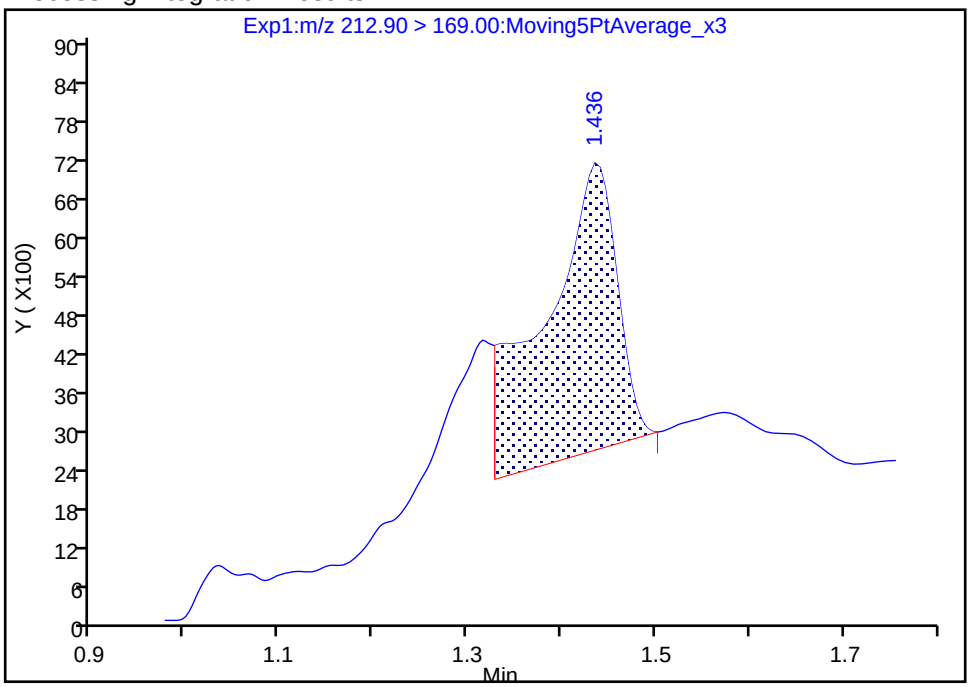
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\2018.07.13LLB_058.d				
Injection Date:	14-Jul-2018 04:20:33	Instrument ID:	A8_N		
Lims ID:	320-40571-A-6-A	Lab Sample ID:	320-40571-6		
Client ID:	NF18-SS-02				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	43	Worklist Smp#:	7
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

2 Perfluorobutyric acid, CAS: 375-22-4

Signal: 1

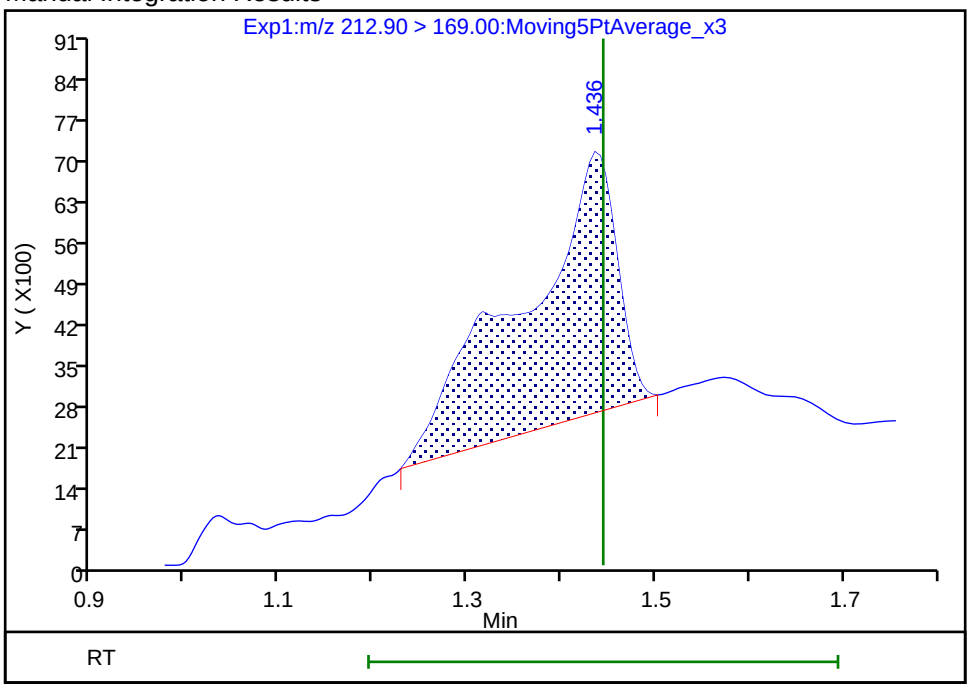
Processing Integration Results

RT: 1.44
Area: 23886
Amount: 0.012504
Amount Units: ng/ml



Manual Integration Results

RT: 1.44
Area: 31744
Amount: 0.016617
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 14:17:21

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

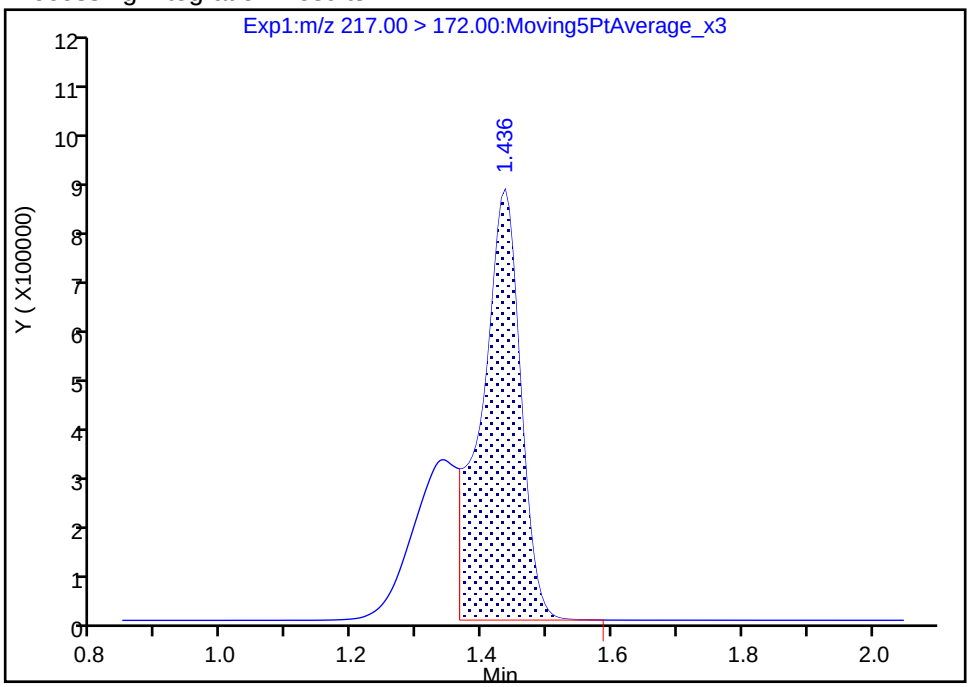
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\2018.07.13LLB_058.d				
Injection Date:	14-Jul-2018 04:20:33	Instrument ID:	A8_N		
Lims ID:	320-40571-A-6-A	Lab Sample ID:	320-40571-6		
Client ID:	NF18-SS-02				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	43	Worklist Smp#:	7
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

D 1 13C4 PFBA, CAS: STL00992

Signal: 1

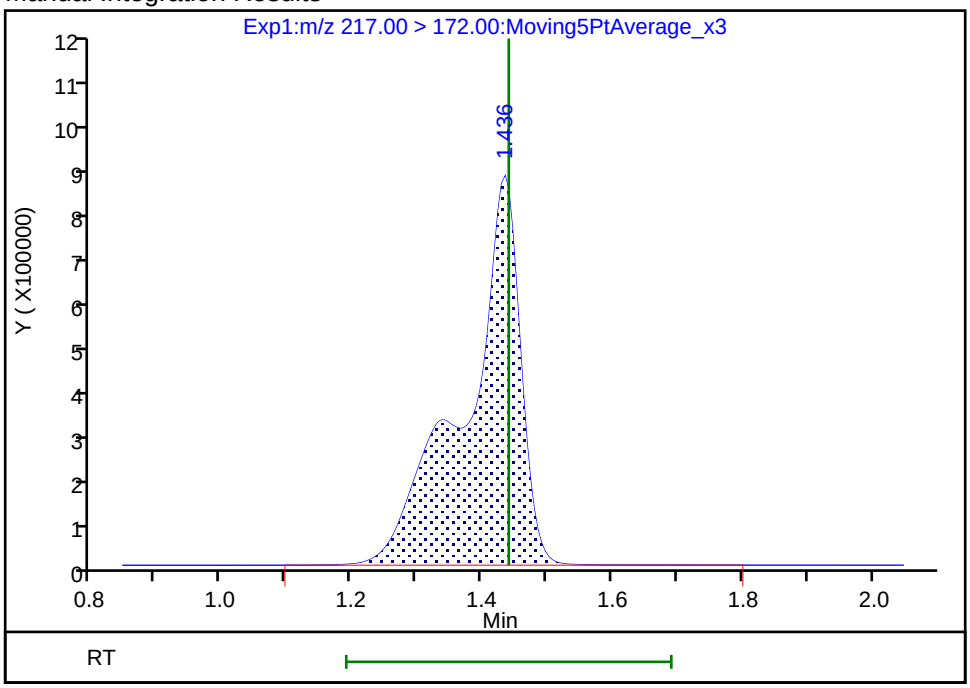
Processing Integration Results

RT: 1.44
Area: 3385100
Amount: 1.295488
Amount Units: ng/ml



Manual Integration Results

RT: 1.44
Area: 4845713
Amount: 1.854470
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 14:16:57

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF19-GW-01
Lab Sample ID: 320-40571-7
Matrix: Water
Lab File ID: 2018.07.06LLC_021.d
Analysis Method: 537 (modified)
Date Collected: 06/20/2018 15:50
Extraction Method: 3535
Date Extracted: 07/02/2018 14:58
Sample wt/vol: 268.1(mL)
Date Analyzed: 07/07/2018 01:59
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 232800
Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	0.014	B	0.0019	0.00033
2706-90-3	Perfluoropentanoic acid (PFPeA)	0.0083		0.0019	0.00046
307-24-4	Perfluorohexanoic acid (PFHxA)	0.0030		0.0019	0.00054
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.0020		0.0019	0.00023
335-67-1	Perfluorooctanoic acid (PFOA)	0.0025		0.0019	0.00079
375-95-1	Perfluorononanoic acid (PFNA)	0.00077	J	0.0019	0.00025
335-76-2	Perfluorodecanoic acid (PFDA)	ND		0.0019	0.00029
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		0.0019	0.0010
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		0.0019	0.00051
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		0.0019	0.0012
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		0.0019	0.00027
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.0010	J	0.0019	0.00019
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	ND		0.0019	0.00028
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.0011	J B	0.0019	0.00016
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.0019	0.00018
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.00088	J	0.0019	0.00050
8789-57-2	Perfluorononanesulfonic acid (PFNS)	ND		0.0019	0.00015
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		0.0019	0.00030
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		0.0019	0.00033
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.019	0.0029
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.019	0.0018
757124-72-4	4:2 FTS	ND		0.019	0.0048
27619-97-2	6:2 FTS	0.0034	J	0.019	0.0019
39108-34-4	8:2 FTS	ND		0.019	0.0019

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF19-GW-01
Lab Sample ID: 320-40571-7
Matrix: Water
Lab File ID: 2018.07.06LLC_021.d
Analysis Method: 537 (modified)
Date Collected: 06/20/2018 15:50
Extraction Method: 3535
Date Extracted: 07/02/2018 14:58
Sample wt/vol: 268.1(mL)
Date Analyzed: 07/07/2018 01:59
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 232800
Units: ug/L

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00992	13C4 PFBA	63		25-150
STL01893	13C5 PFPeA	81		25-150
STL00993	13C2 PFHxA	96		25-150
STL01892	13C4-PFHpA	101		25-150
STL00990	13C4 PFOA	103		25-150
STL00995	13C5 PFNA	101		25-150
STL00996	13C2 PFDA	111		25-150
STL00997	13C2 PFUnA	98		25-150
STL00998	13C2 PFDoA	90		25-150
STL02116	13C2-PFTeDA	69		25-150
STL02337	13C3-PFBS	90		25-150
STL00994	18O2 PFHxS	104		25-150
STL00991	13C4 PFOS	101		25-150
STL01056	13C8 FOSA	81		25-150
STL02118	d3-NMeFOSAA	100		25-150
STL02117	d5-NEtFOSAA	96		25-150
STL02279	M2-6:2FTS	139		25-150
STL02280	M2-8:2FTS	113		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\2018.07.06LLC_021.d
Lims ID: 320-40571-A-7-A
Client ID: NF19-GW-01
Sample Type: Client
Inject. Date: 07-Jul-2018 01:59:05 ALS Bottle#: 13 Worklist Smp#: 9
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-40571-a-7-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 09-Jul-2018 13:09:22 Calib Date: 05-Jul-2018 09:38:17
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180705-60684.b\2018.07.05LLICALAA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK010

First Level Reviewer: mongkols Date: 09-Jul-2018 13:09:22

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.425	1.428	-0.003	0.537	4412062	1.57		62.8	18623	
2 Perfluorobutyric acid										M
212.90 > 169.00	1.425	1.428	-0.003	1.000	655945	0.3639			82.9	M
4 Perfluoropentanoic acid										
262.90 > 219.00	1.703	1.698	0.005	1.000	444614	0.2228			62.1	
D 3 13C5-PFPeA										
267.90 > 223.00	1.703	1.707	-0.004	0.642	4188716	2.01		80.5	19137	
D 47 13C3-PFBS										
301.90 > 83.00	1.748	1.743	0.005	0.659	104041	2.09		89.9	238	
5 Perfluorobutanesulfonic acid										M
298.90 > 80.00	1.748	1.743	0.005	1.000	94438	0.0278			18.5	M
298.90 > 99.00	1.748	1.743	0.005	1.000	43126		2.19(1.25-3.74)		37.7	M
6 Perfluorohexanoic acid										M
313.00 > 269.00	1.982	1.978	0.004	0.994	174314	0.0799			60.4	M
313.00 > 119.00	1.993	1.978	0.015	1.000	14579		11.96(5.03-15.10)		165	
D 7 13C2 PFHxA										
315.00 > 270.00	1.993	1.988	0.005	0.751	5356537	2.41		96.2	70241	
D 9 13C4-PFHpA										
367.00 > 322.00	2.308	2.302	0.006	0.870	5003172	2.53		101	55540	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.308	2.303	0.005	1.000	118859	0.0526			69.3	
363.00 > 169.00	2.308	2.303	0.005	1.000	37560		3.16(1.13-3.40)		245	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.321	2.303	0.018	1.000	83150	0.0285			13.5	
399.00 > 99.00	2.321	2.303	0.018	1.000	28816		2.89(1.50-4.49)		49.3	
D 11 18O2 PFHxS										
403.00 > 84.00	2.321	2.315	0.006	0.875	5977320	2.46		104	59317	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 12 M2-6:2FTS										
429.00 > 81.00	2.628	2.626	0.002	0.991	1462153	3.29		139	7315	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.628	2.627	0.002	1.000	86837	0.0900			435	
D 14 13C4 PFOA										
417.00 > 372.00	2.652	2.650	0.002	1.000	4988937	2.58		103	55723	
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.652	2.651	0.001	1.000	157864	0.0667			50.1	M
413.00 > 169.00	2.652	2.651	0.001	1.000	88296		1.79(0.84-2.52)		344	
* 62 13C2-PFOA										
415.00 > 370.00	2.652	2.651	0.001		5076098	2.50			48455	
17 Perfluorooctane sulfonic acid										M
499.00 > 80.00	3.015	3.008	0.007	1.000	48434	0.0235			88.4	M
499.00 > 99.00	3.015	3.008	0.007	1.000	8972		5.40(2.31-6.93)		42.3	M
20 Perfluorononanoic acid										
463.00 > 419.00	3.015	3.015	0.0	1.000	36982	0.0206			50.8	
463.00 > 169.00	3.015	3.015	0.0	1.000	8009		4.62(1.90-5.69)		180	
D 18 13C4 PFOS										
503.00 > 80.00	3.015	3.015	0.0	1.137	4210451	2.43		101	18771	
D 19 13C5 PFNA										
468.00 > 423.00	3.015	3.015	0.0	1.137	4169711	2.53		101	60398	
D 26 M2-8:2FTS										
529.00 > 81.00	3.357	3.367	-0.010	1.266	1334003	2.70		113	14050	
D 21 13C8 FOSA										
506.00 > 78.00	3.366	3.367	-0.001	1.269	4858994	2.02		80.6	31096	
D 23 13C2 PFDA										
515.00 > 470.00	3.366	3.376	-0.010	1.269	3955720	2.79		111	41682	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.525	3.525	0.0	1.329	2092381	2.50		100	31110	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.694	3.694	0.0	1.000	4408	0.006194			97.8	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.694	3.694	0.0	1.393	1973060	2.39		95.5	16251	
D 30 13C2 PFUnA										
565.00 > 520.00	3.694	3.705	-0.011	1.393	2915787	2.44		97.8	36144	
D 36 13C2 PFDoA										
615.00 > 570.00	3.984	3.995	-0.011	1.502	2885017	2.26		90.3	22777	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.488	4.489	-0.001	1.692	2690144	1.73		69.1	12875	

QC Flag Legend

Review Flags

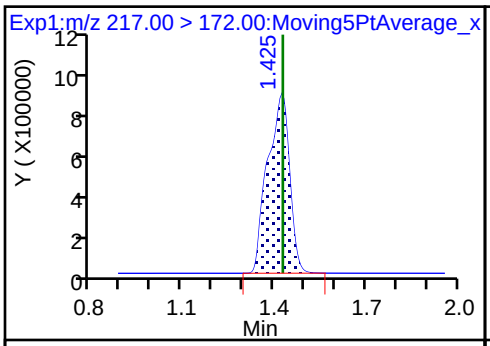
M - Manually Integrated

Report Date: 09-Jul-2018 13:09:22 Chrom Revision: 2.2 07-Jun-2018 07:41:54

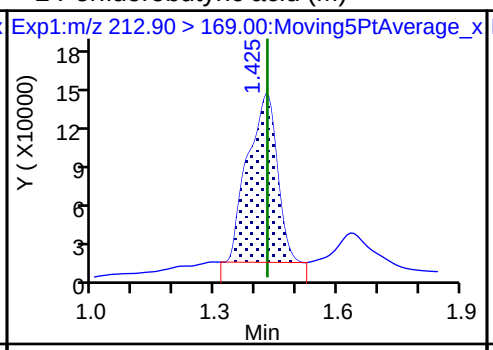
TestAmerica Sacramento

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\2018.07.06LLC_021.d				
Injection Date:	07-Jul-2018 01:59:05	Instrument ID:	A8_N		
Lims ID:	320-40571-A-7-A	Lab Sample ID:	320-40571-7		
Client ID:	NF19-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	13	Worklist Smp#:	9
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		

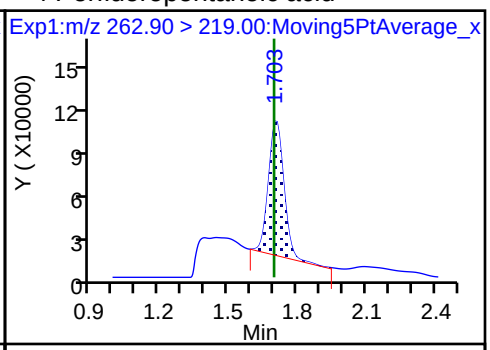
D 1 13C4 PFBA



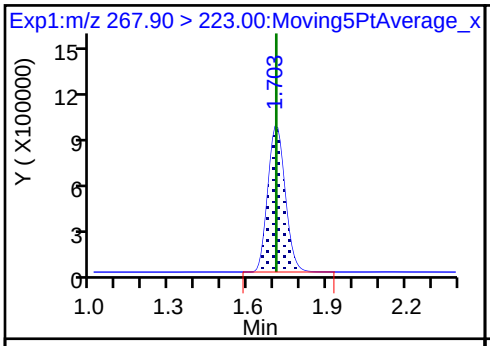
2 Perfluorobutyric acid (M)



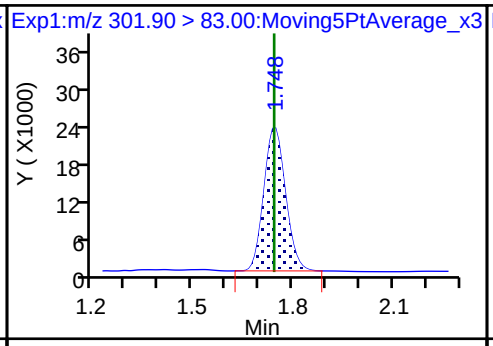
4 Perfluoropentanoic acid



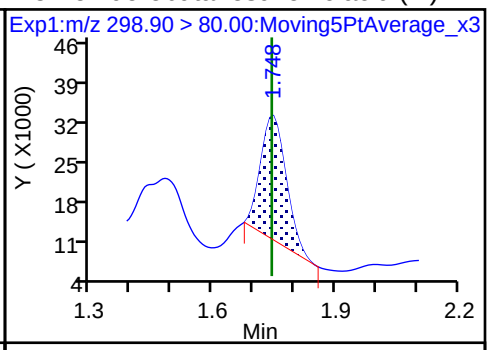
D 3 13C5-PFPeA



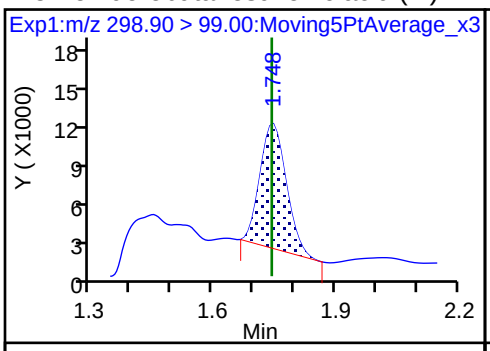
D 47 13C3-PFBS



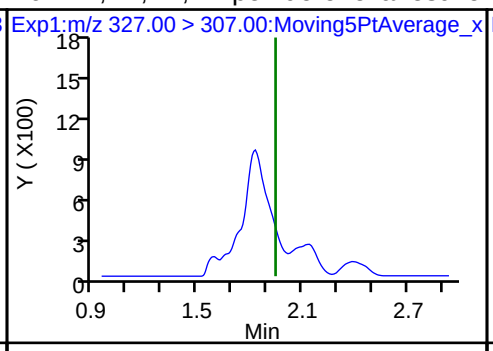
5 Perfluorobutanesulfonic acid (M)



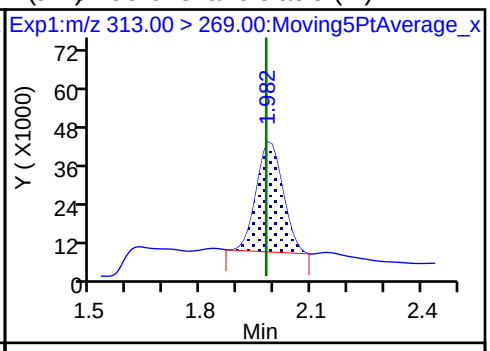
5 Perfluorobutanesulfonic acid (M)



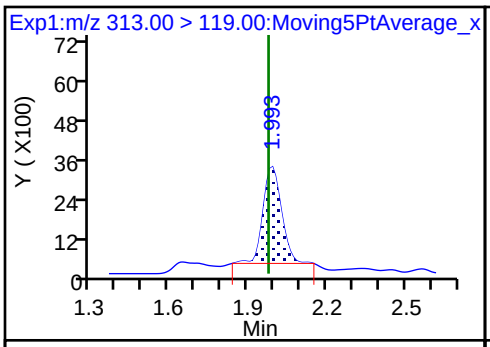
61 1H,1H,2H,2H-perfluorohexanesulfoni (ND)



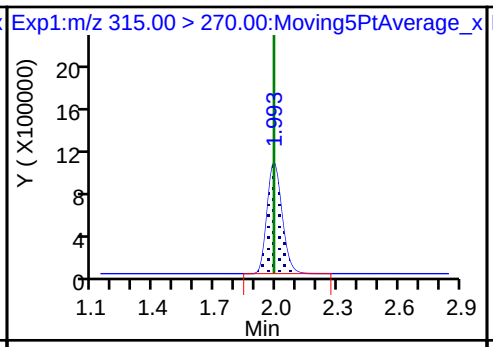
6 Perfluorohexanoic acid (M)



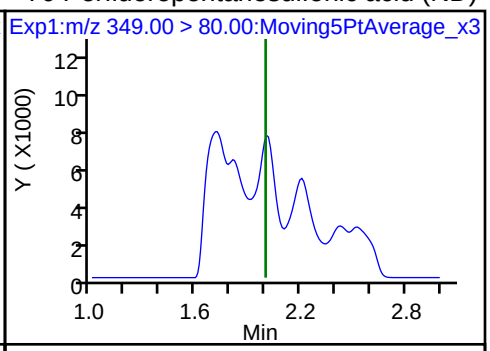
6 Perfluorohexanoic acid



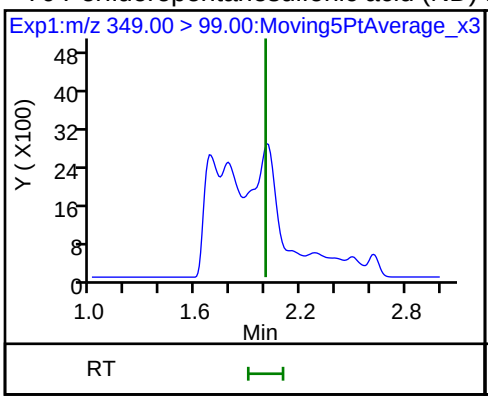
D 7 13C2 PFHxA



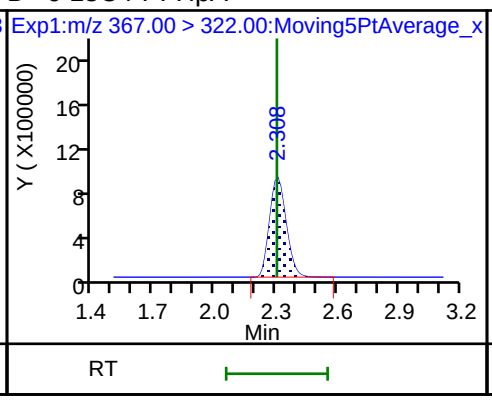
70 Perfluoropentanesulfonic acid (ND)



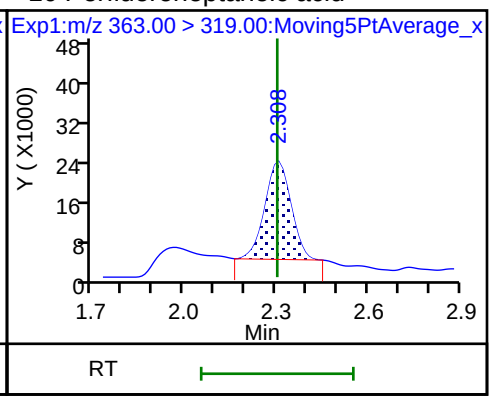
70 Perfluoropentanesulfonic acid (ND)



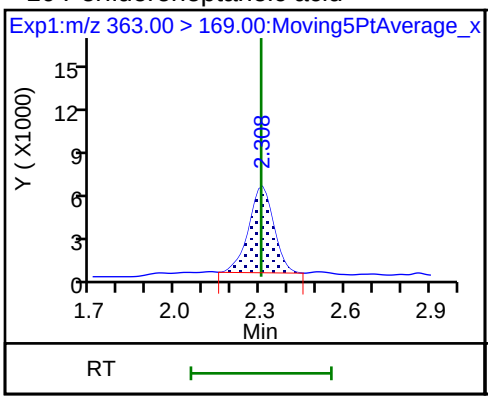
D 9 13C4-PFHpA



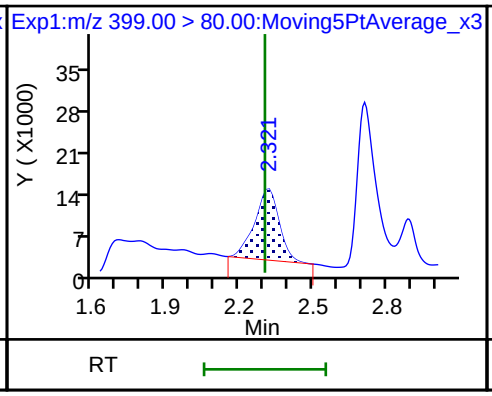
10 Perfluoroheptanoic acid



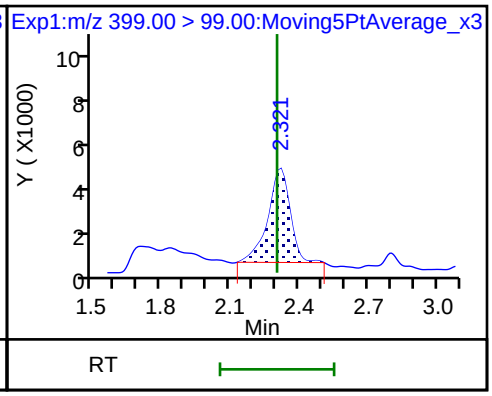
10 Perfluoroheptanoic acid



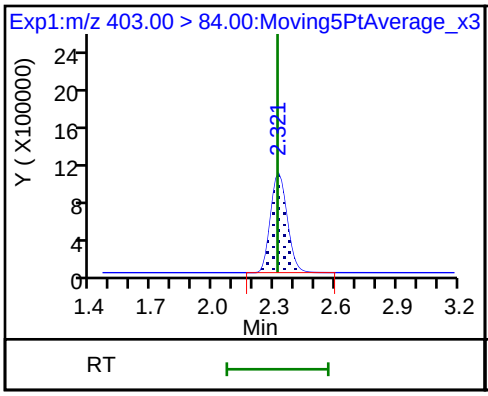
8 Perfluorohexanesulfonic acid



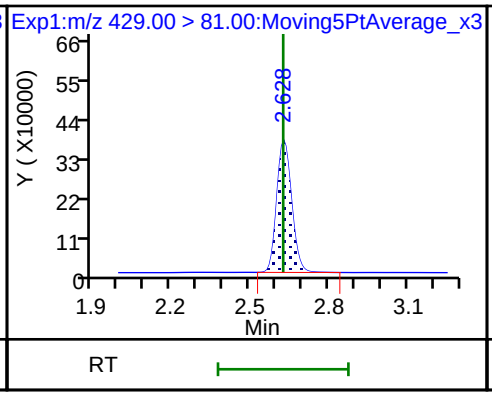
8 Perfluorohexanesulfonic acid



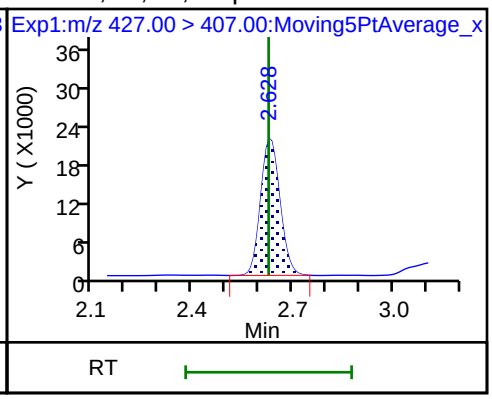
D 11 18O2 PFHxS



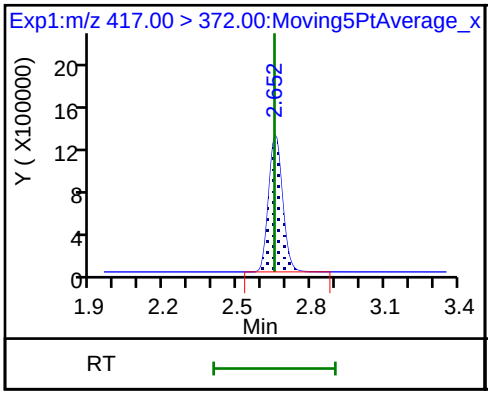
D 12 M2-6:2FTS



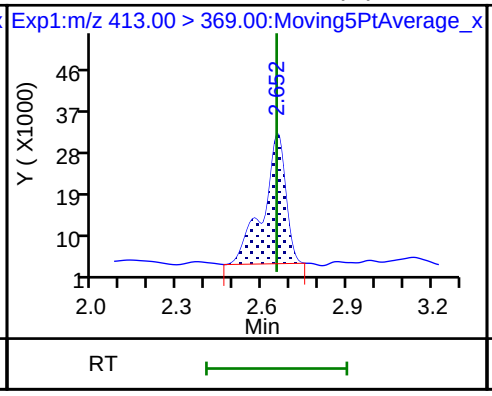
13 1H,1H,2H,2H-perfluorooctanesulfoni



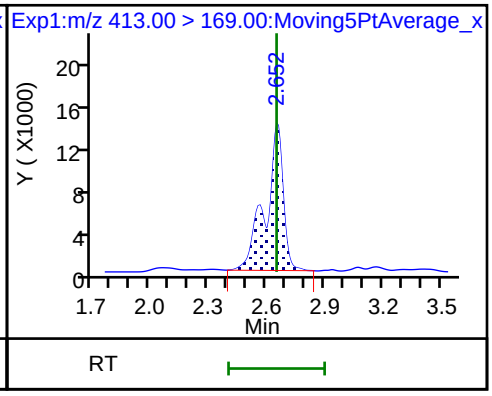
D 14 13C4 PFOA



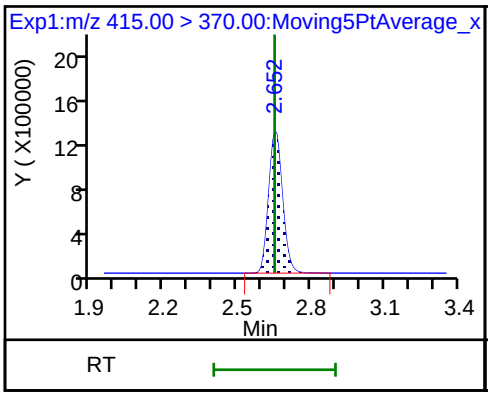
15 Perfluorooctanoic acid (M)



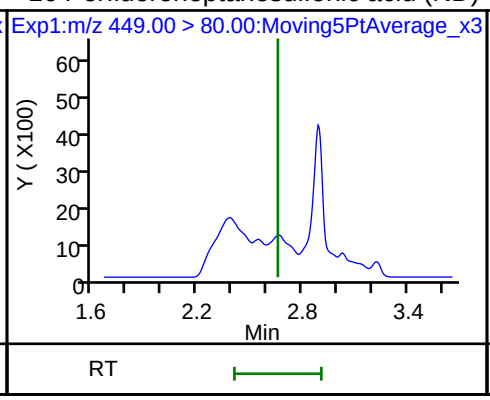
15 Perfluorooctanoic acid



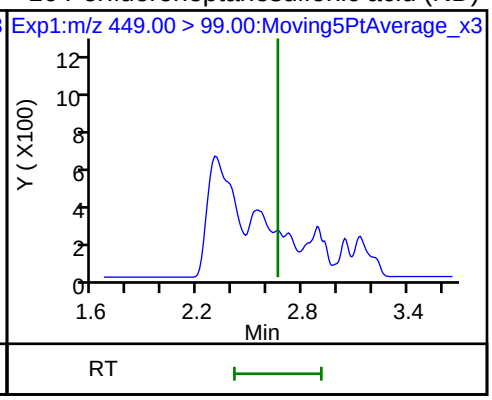
* 62 13C2-PFOA



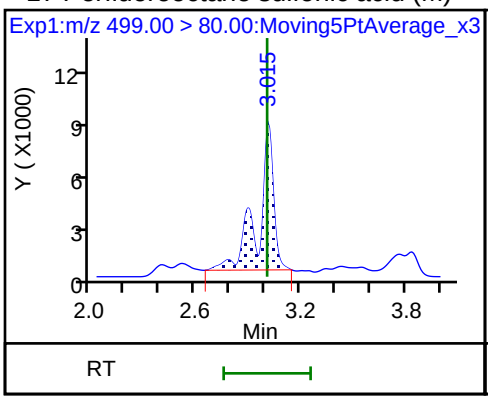
16 Perfluoroheptanesulfonic acid (ND)



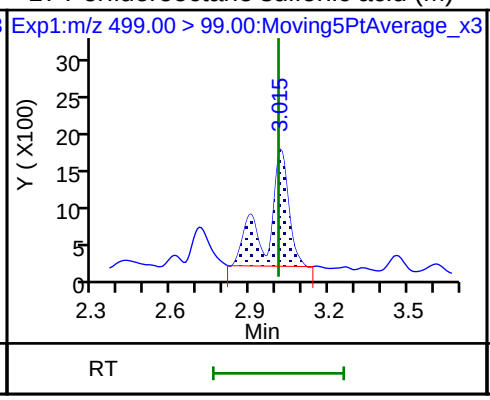
16 Perfluoroheptanesulfonic acid (ND)



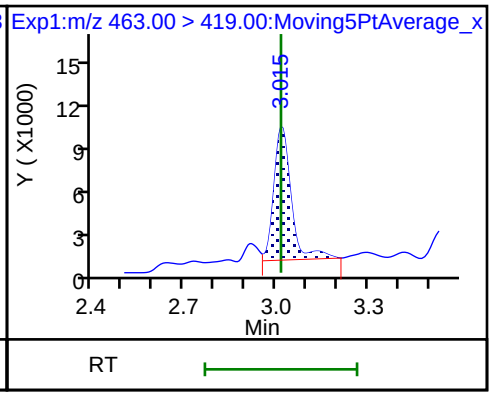
17 Perfluorooctane sulfonic acid (M)



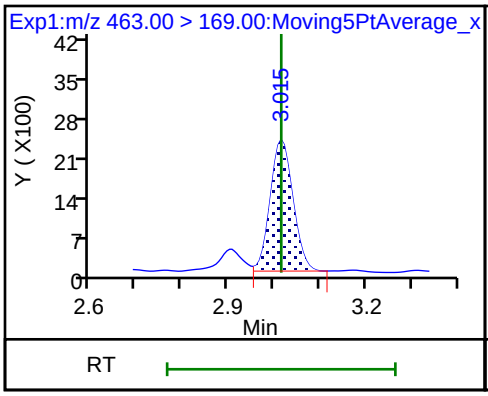
17 Perfluorooctane sulfonic acid (M)



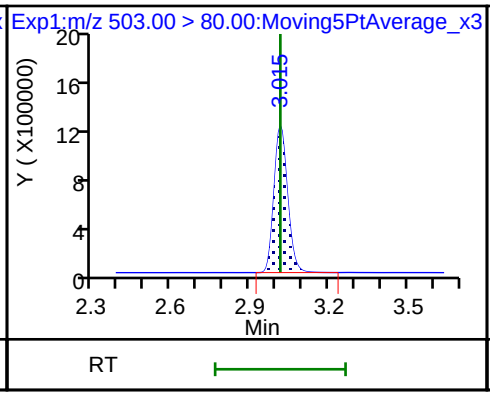
20 Perfluorononanoic acid



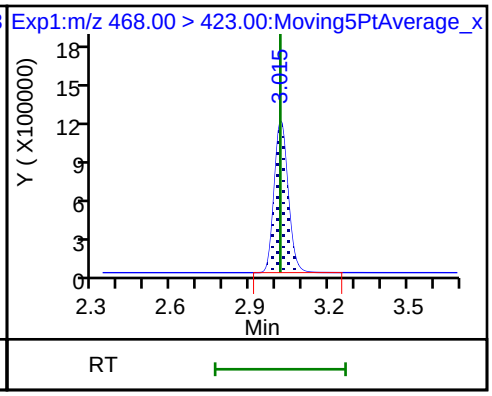
20 Perfluorononanoic acid



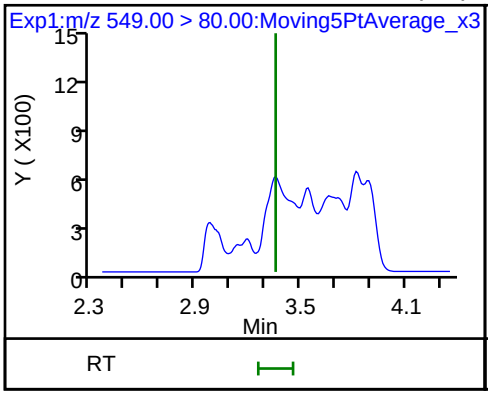
D 18 13C4 PFOS



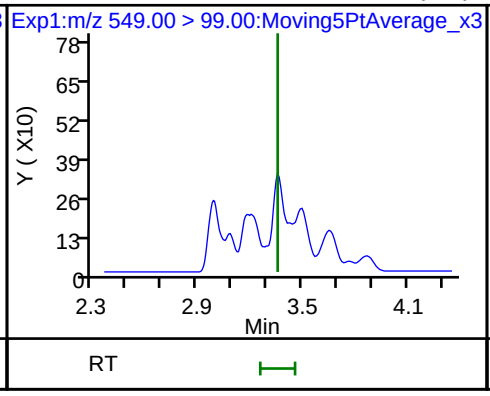
D 19 13C5 PFNA



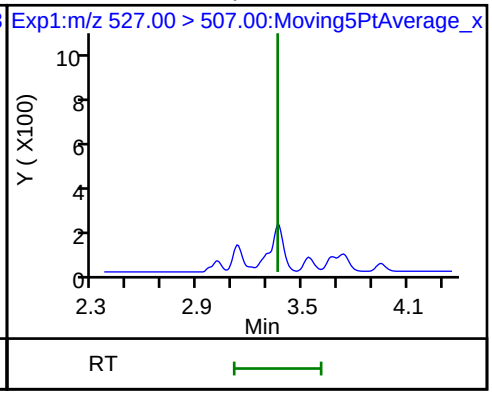
68 Perfluorononanesulfonic acid (ND)



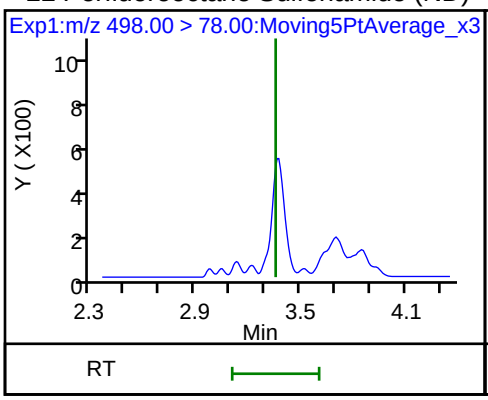
68 Perfluorononanesulfonic acid (ND)



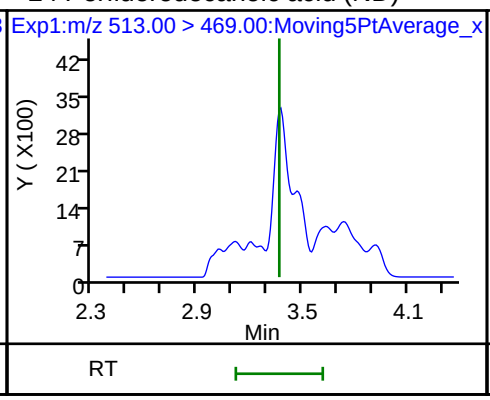
25 1H,1H,2H,2H-perfluorodecanesulfoni (ND)



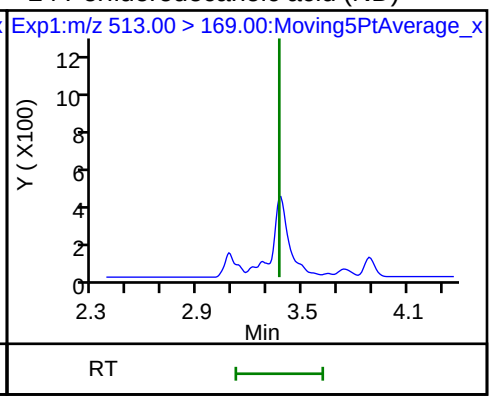
22 Perfluorooctane Sulfonamide (ND)



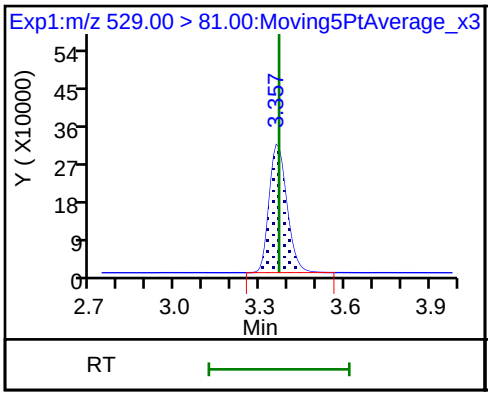
24 Perfluorodecanoic acid (ND)



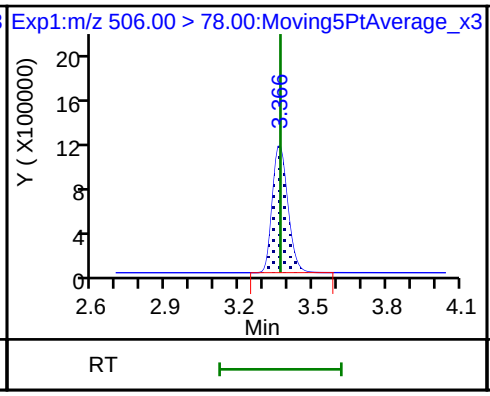
24 Perfluorodecanoic acid (ND)



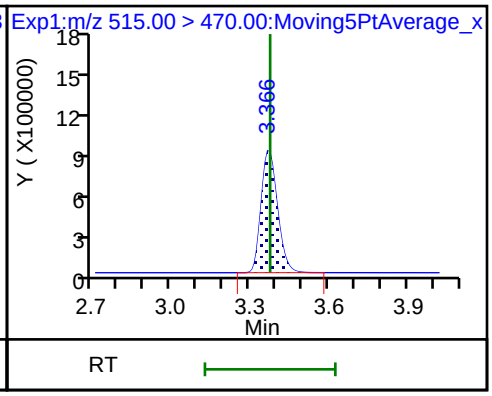
D 26 M2-8:2FTS



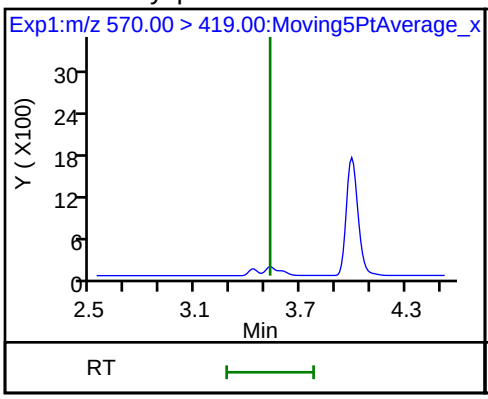
D 21 13C8 FOSA



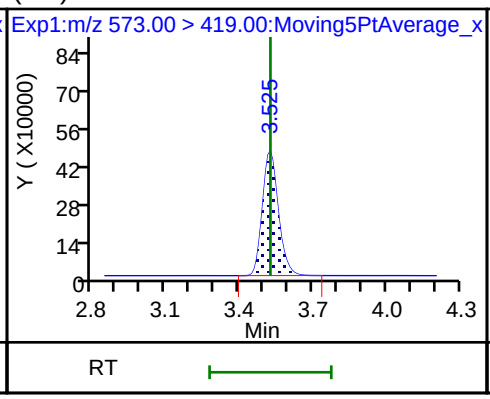
D 23 13C2 PFDA



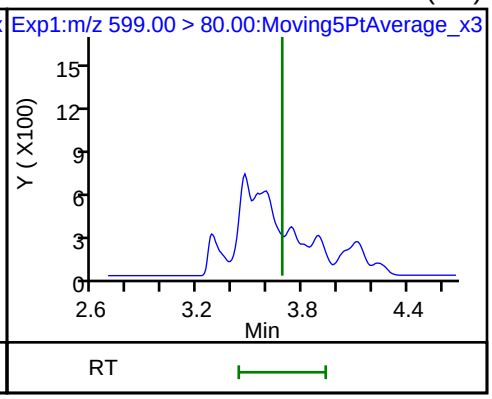
28 N-methyl perfluorooctane sulfonamid (ND)



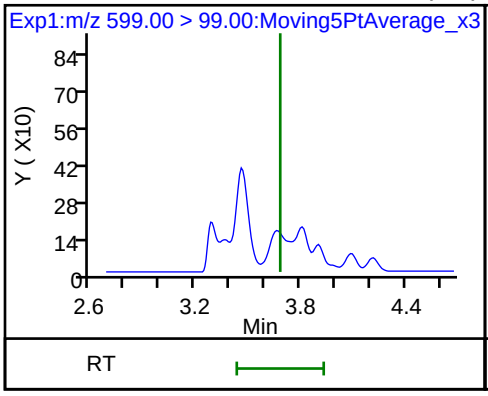
D 27 d3-NMeFOSAA



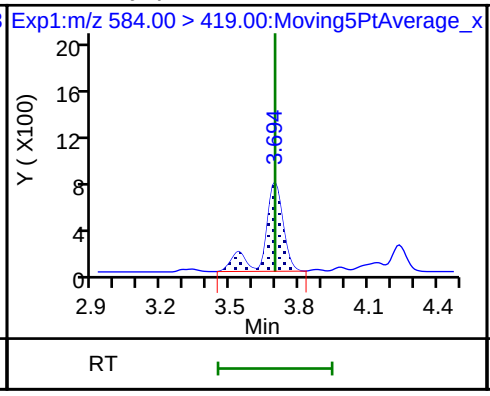
29 Perfluorodecane Sulfonic acid (ND)



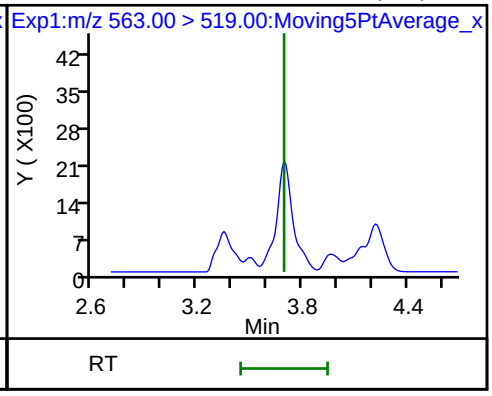
29 Perfluorodecane Sulfonic acid (ND)



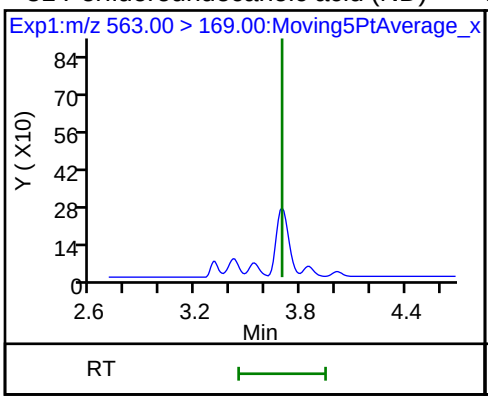
33 N-ethyl perfluorooctane sulfonamid



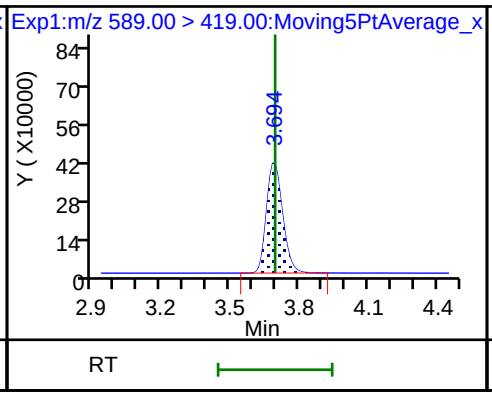
31 Perfluoroundecanoic acid (ND)



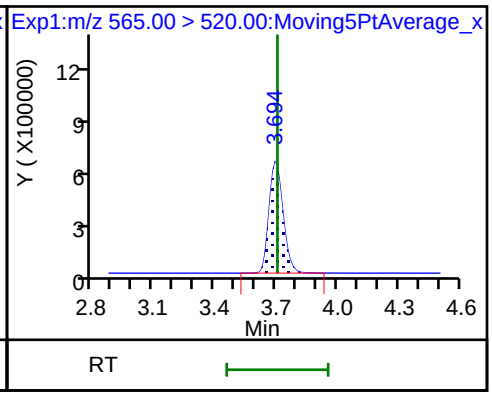
31 Perfluoroundecanoic acid (ND)



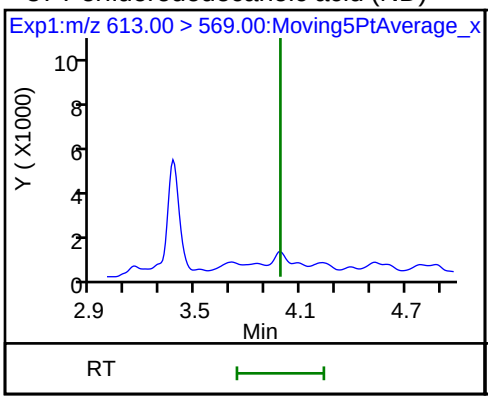
D 32 d5-NEtFOSAA



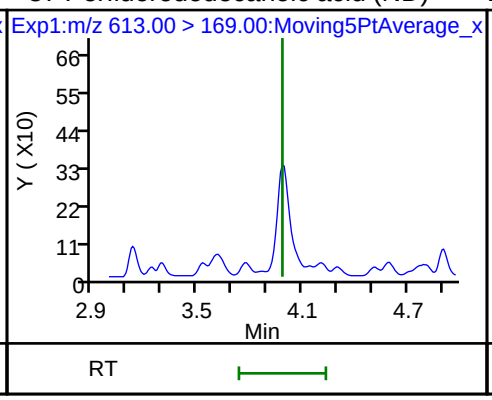
D 30 13C2 PFUnA



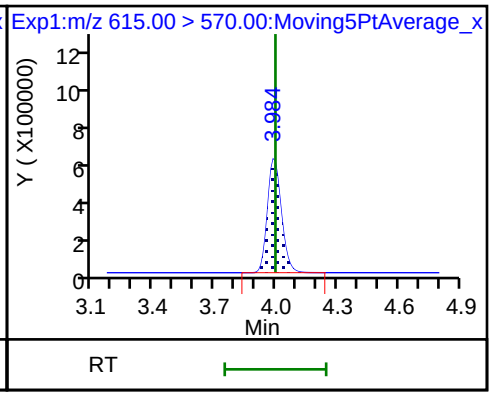
37 Perfluorododecanoic acid (ND)



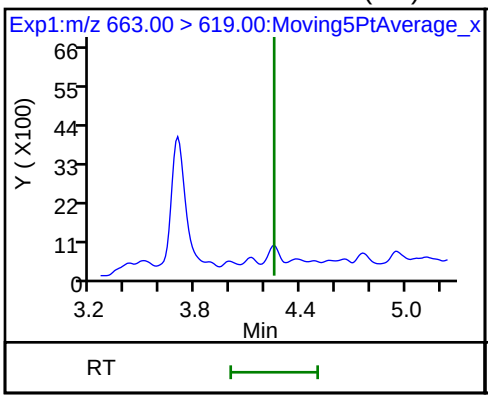
37 Perfluorododecanoic acid (ND)



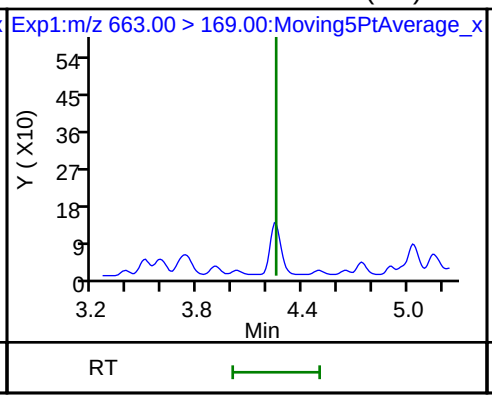
D 36 13C2 PFDoA



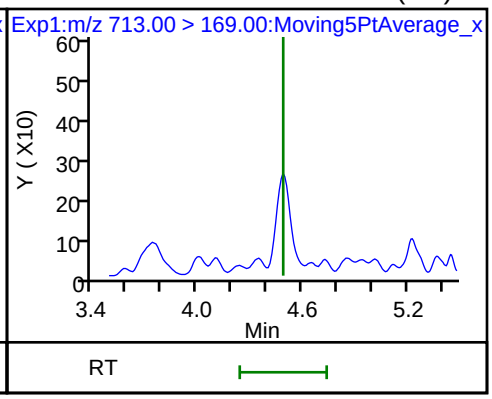
41 Perfluorotridecanoic acid (ND)



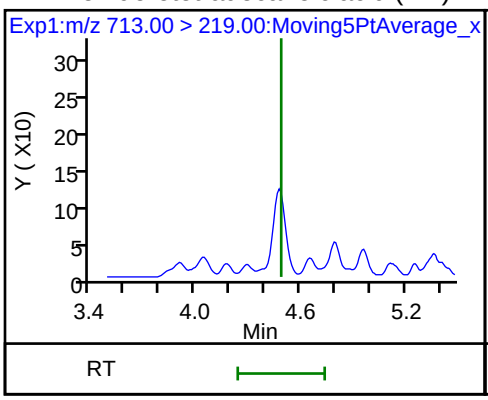
41 Perfluorotridecanoic acid (ND)



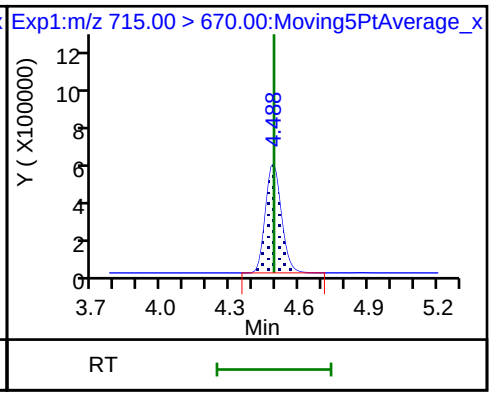
42 Perfluorotetradecanoic acid (ND)



42 Perfluorotetradecanoic acid (ND)



D 43 13C2-PFTeDA



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

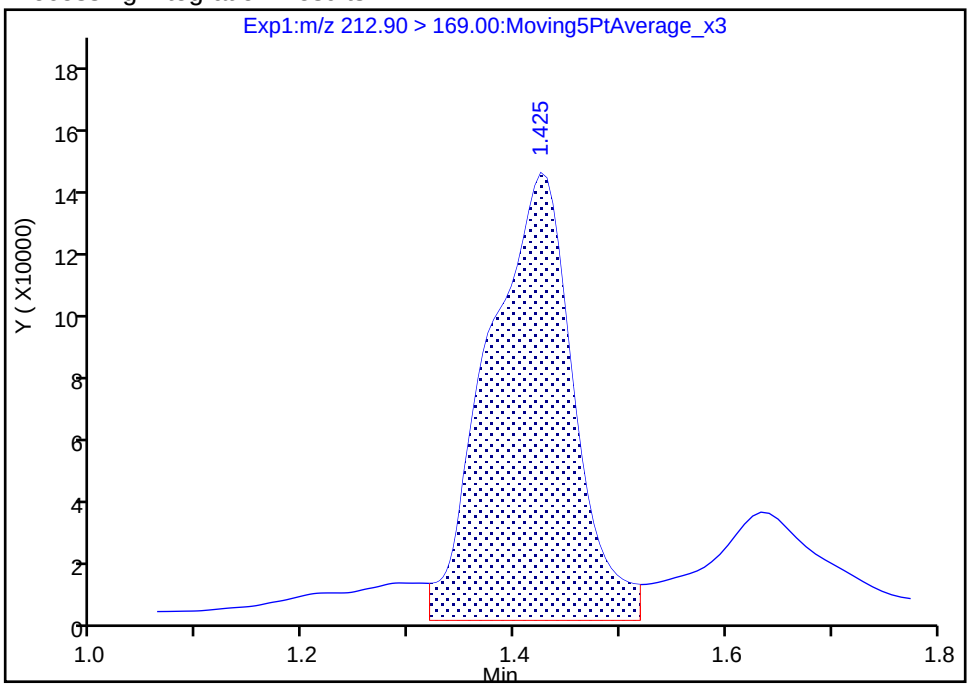
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\2018.07.06LLC_021.d				
Injection Date:	07-Jul-2018 01:59:05	Instrument ID:	A8_N		
Lims ID:	320-40571-A-7-A	Lab Sample ID:	320-40571-7		
Client ID:	NF19-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	13	Worklist Smp#:	9
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

2 Perfluorobutyric acid, CAS: 375-22-4

Signal: 1

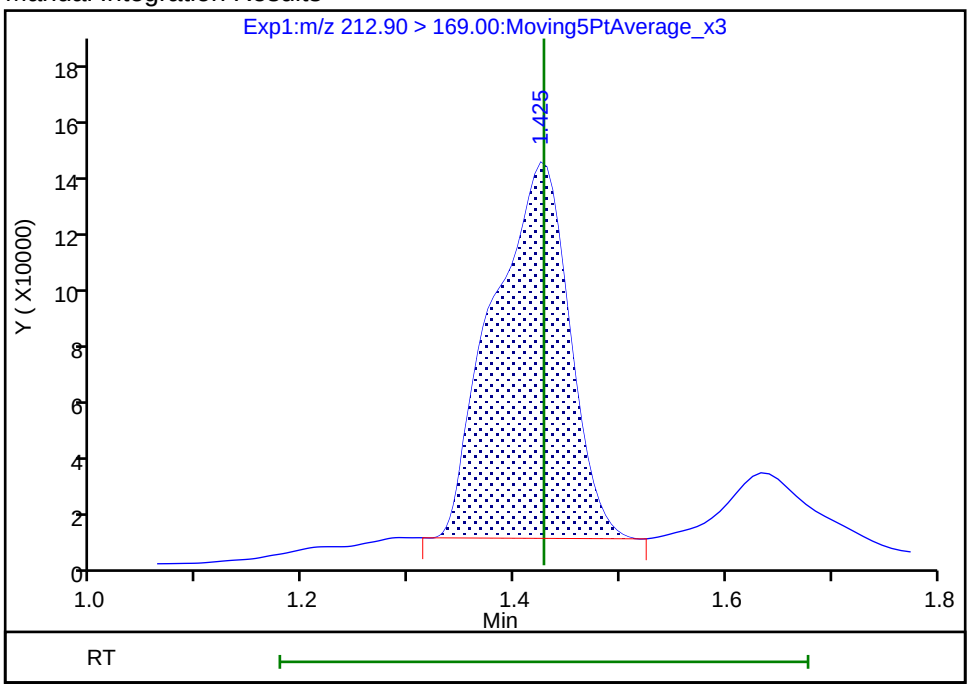
Processing Integration Results

RT: 1.42
Area: 795316
Amount: 0.441194
Amount Units: ng/ml



Manual Integration Results

RT: 1.42
Area: 655945
Amount: 0.363879
Amount Units: ng/ml



Reviewer: mongkols, 09-Jul-2018 13:07:44
Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

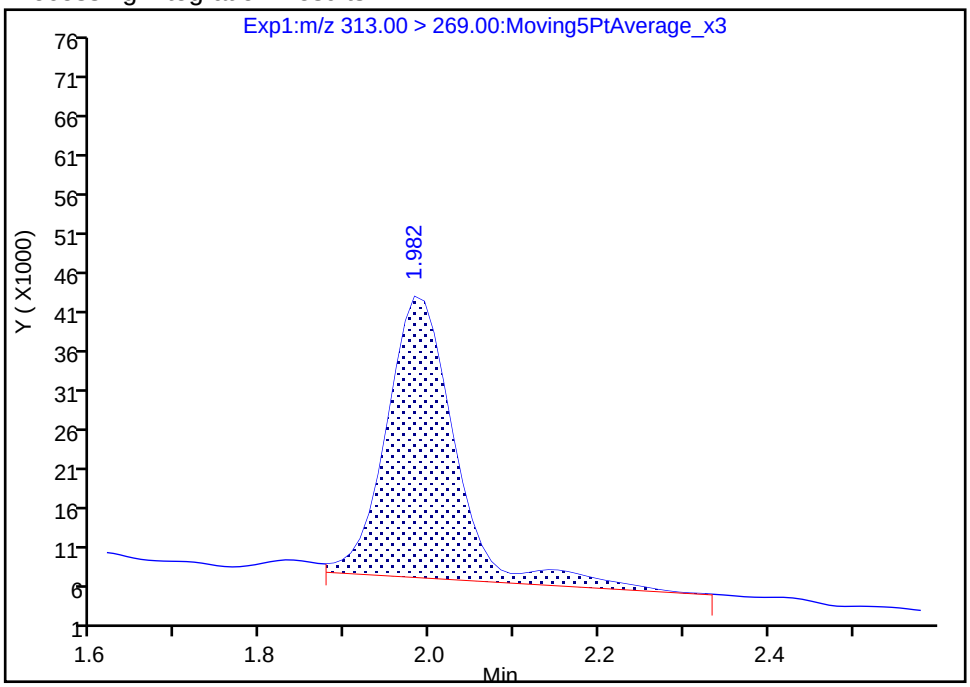
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\2018.07.06LLC_021.d				
Injection Date:	07-Jul-2018 01:59:05	Instrument ID:	A8_N		
Lims ID:	320-40571-A-7-A	Lab Sample ID:	320-40571-7		
Client ID:	NF19-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	13	Worklist Smp#:	9
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

6 Perfluorohexanoic acid, CAS: 307-24-4

Signal: 1

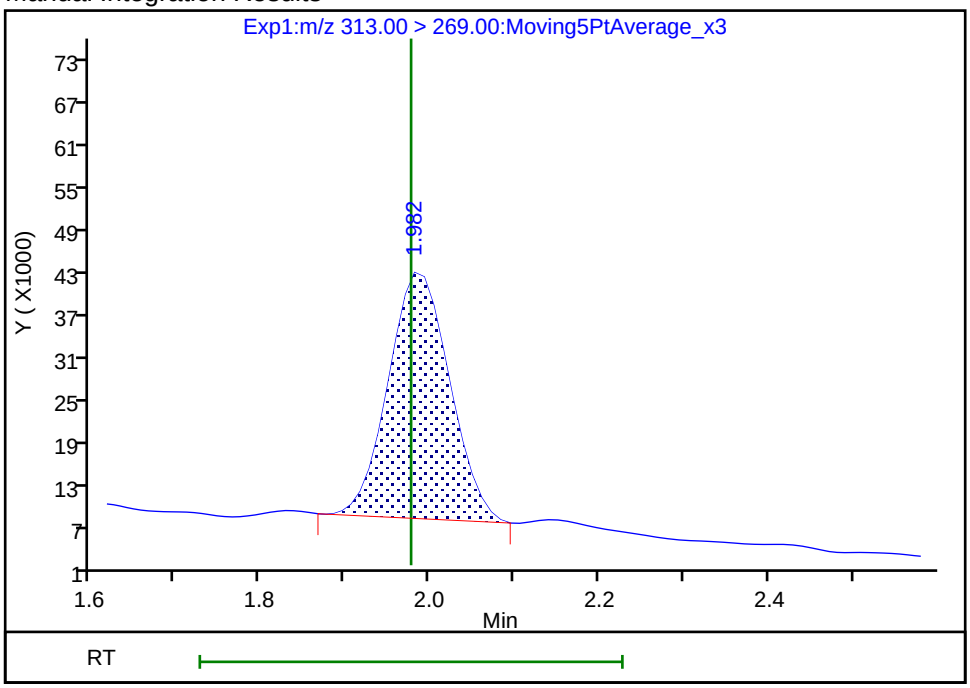
Processing Integration Results

RT: 1.98
Area: 202673
Amount: 0.092896
Amount Units: ng/ml



Manual Integration Results

RT: 1.98
Area: 174314
Amount: 0.079898
Amount Units: ng/ml



Reviewer: mongkols, 09-Jul-2018 13:08:02
Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

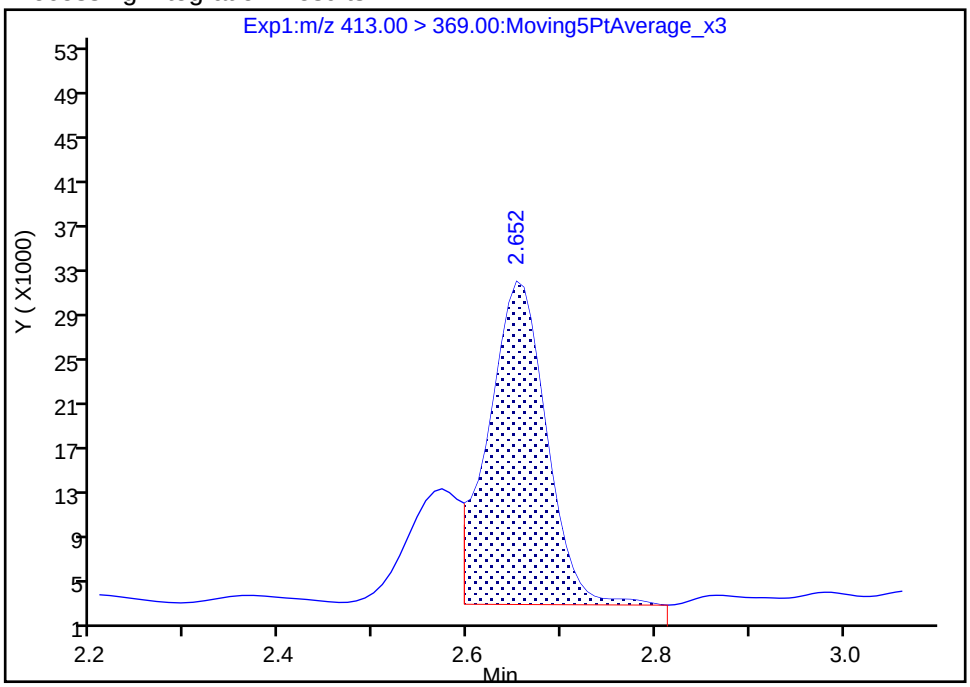
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\2018.07.06LLC_021.d				
Injection Date:	07-Jul-2018 01:59:05	Instrument ID:	A8_N		
Lims ID:	320-40571-A-7-A	Lab Sample ID:	320-40571-7		
Client ID:	NF19-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	13	Worklist Smp#:	9
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

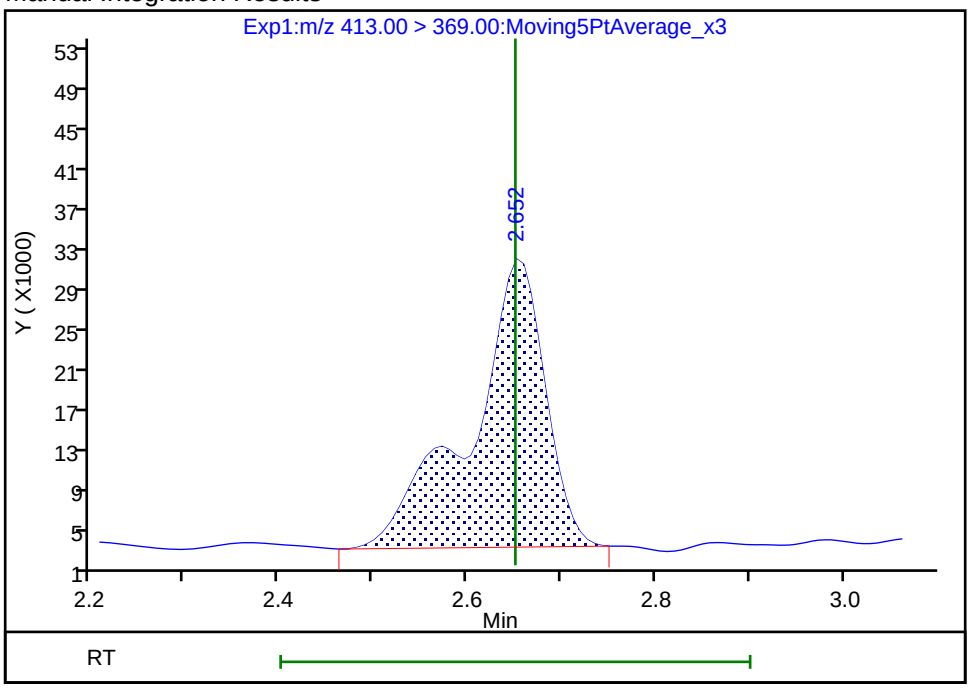
Processing Integration Results

RT: 2.65
Area: 123959
Amount: 0.052385
Amount Units: ng/ml



Manual Integration Results

RT: 2.65
Area: 157864
Amount: 0.066713
Amount Units: ng/ml



Reviewer: mongkols, 09-Jul-2018 13:08:20

Audit Action: Manually Integrated Audit Reason: Isomers

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

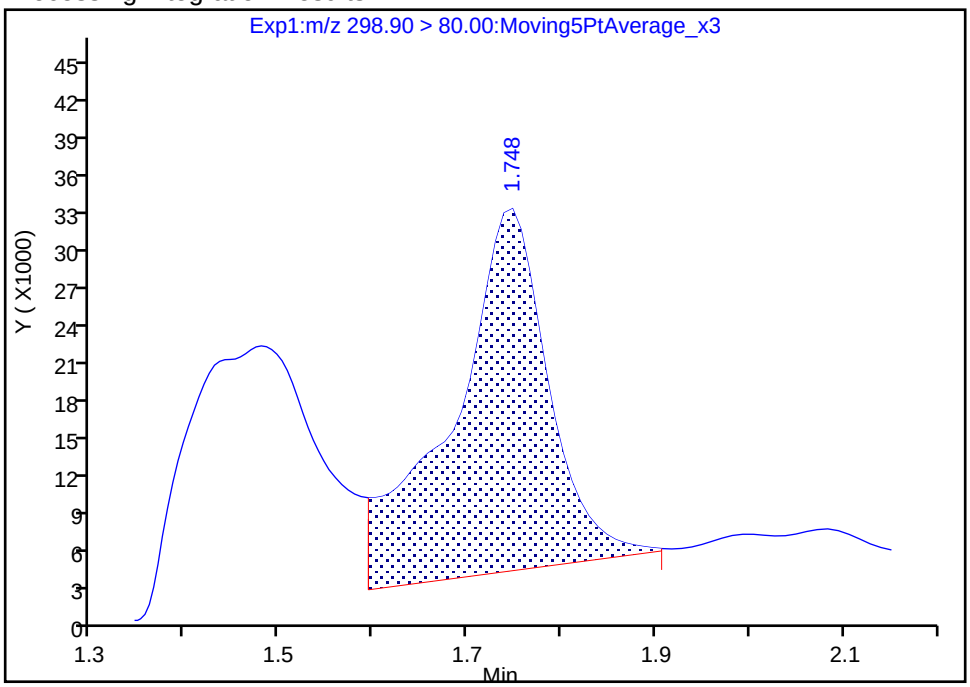
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\2018.07.06LLC_021.d				
Injection Date:	07-Jul-2018 01:59:05	Instrument ID:	A8_N		
Lims ID:	320-40571-A-7-A	Lab Sample ID:	320-40571-7		
Client ID:	NF19-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	13	Worklist Smp#:	9
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

5 Perfluorobutanesulfonic acid, CAS: 375-73-5

Signal: 1

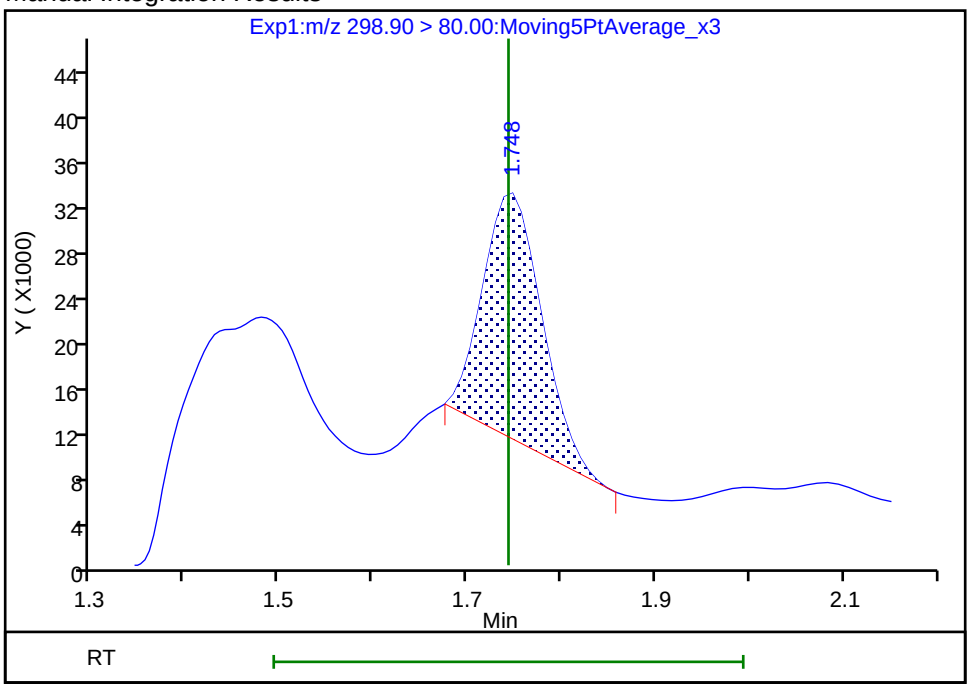
Processing Integration Results

RT: 1.75
Area: 207423
Amount: 0.061148
Amount Units: ng/ml



Manual Integration Results

RT: 1.75
Area: 94438
Amount: 0.027840
Amount Units: ng/ml



Reviewer: mongkols, 09-Jul-2018 13:07:51
Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

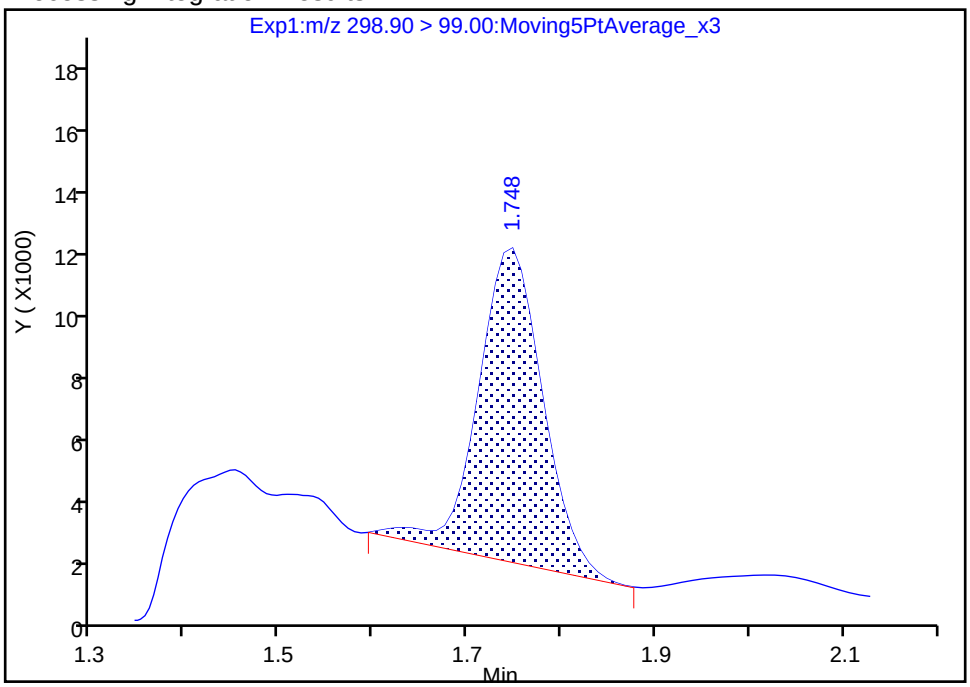
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\2018.07.06LLC_021.d				
Injection Date:	07-Jul-2018 01:59:05	Instrument ID:	A8_N		
Lims ID:	320-40571-A-7-A	Lab Sample ID:	320-40571-7		
Client ID:	NF19-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	13	Worklist Smp#:	9
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

5 Perfluorobutanesulfonic acid, CAS: 375-73-5

Signal: 2

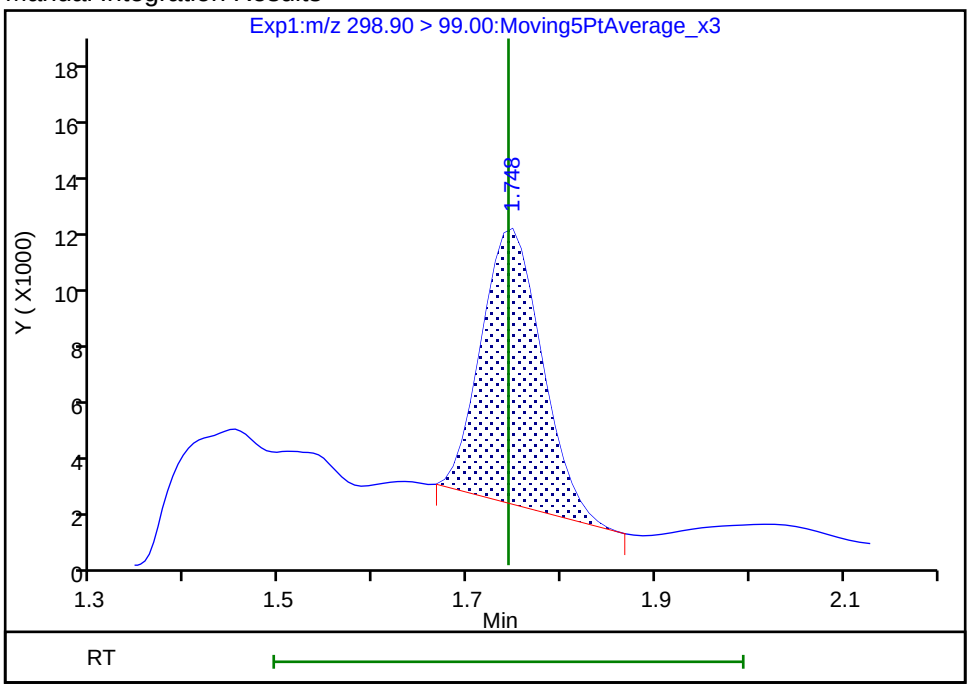
Processing Integration Results

RT: 1.75
Area: 47589
Amount: 0.061148
Amount Units: ng/ml



Manual Integration Results

RT: 1.75
Area: 43126
Amount: 0.027840
Amount Units: ng/ml



Reviewer: mongkols, 09-Jul-2018 13:07:54
Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

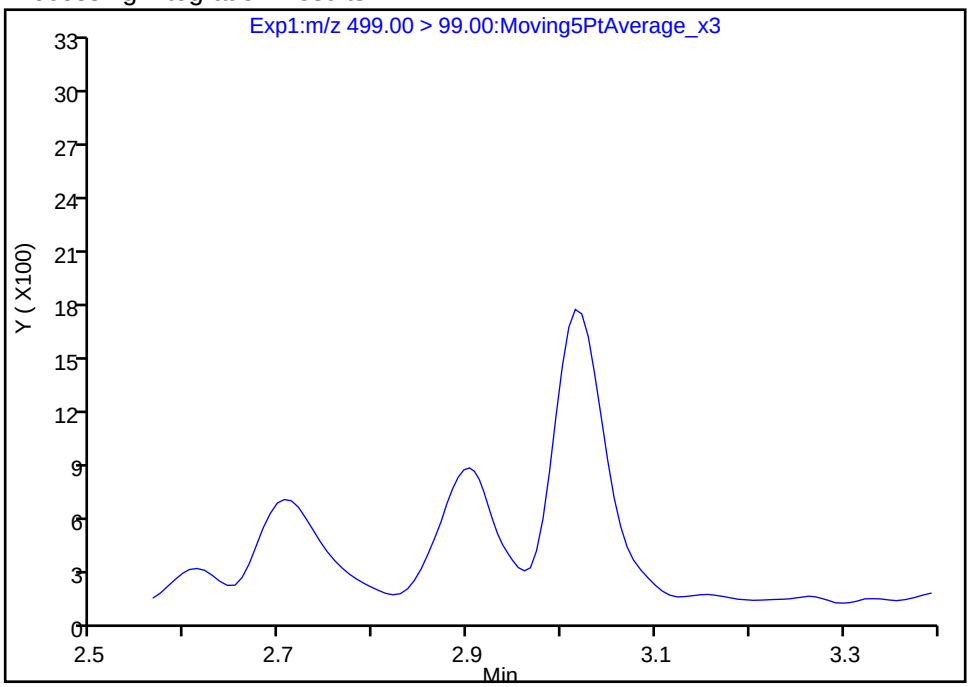
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\2018.07.06LLC_021.d				
Injection Date:	07-Jul-2018 01:59:05	Instrument ID:	A8_N		
Lims ID:	320-40571-A-7-A	Lab Sample ID:	320-40571-7		
Client ID:	NF19-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	13	Worklist Smp#:	9
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

17 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 2

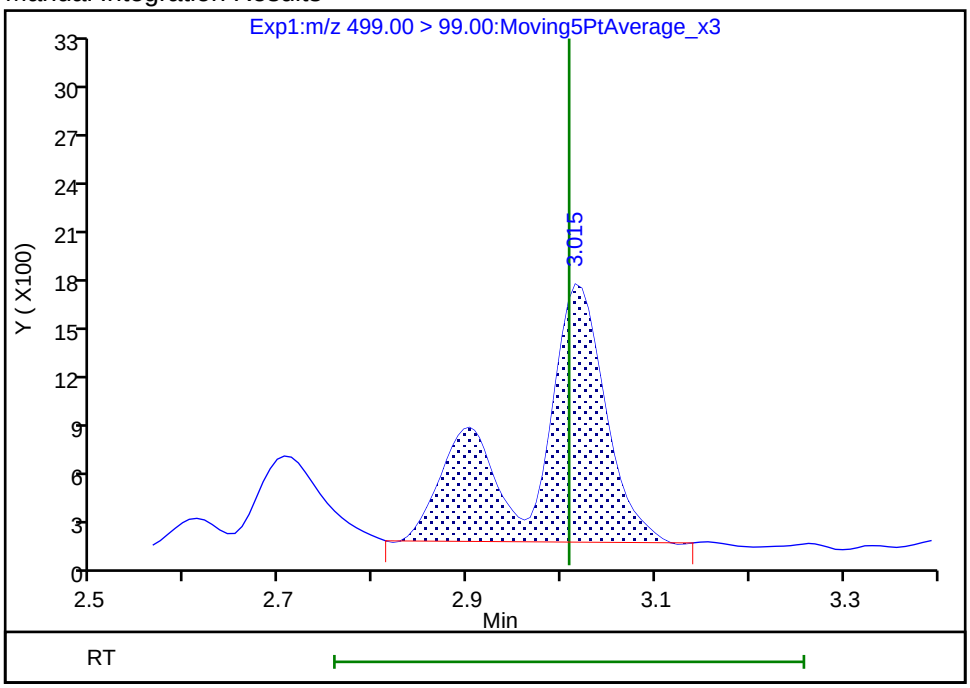
Processing Integration Results

RT: 3.02
Area: 0
Amount: 0.022673
Amount Units: ng/ml



Manual Integration Results

RT: 3.01
Area: 8972
Amount: 0.023536
Amount Units: ng/ml



Reviewer: mongkols, 09-Jul-2018 13:08:39

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

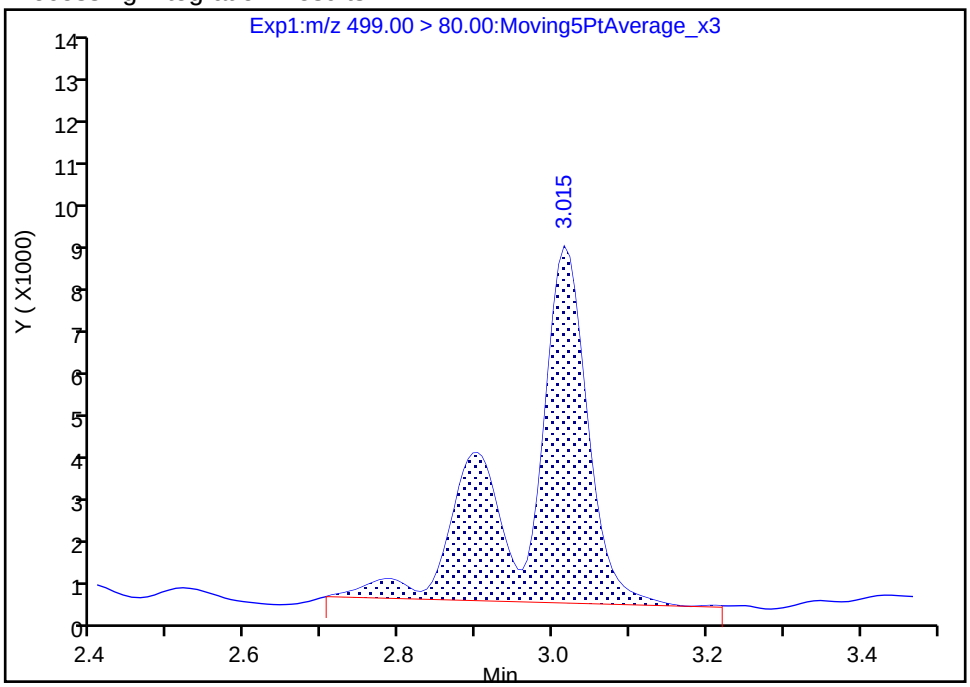
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\2018.07.06LLC_021.d				
Injection Date:	07-Jul-2018 01:59:05	Instrument ID:	A8_N		
Lims ID:	320-40571-A-7-A	Lab Sample ID:	320-40571-7		
Client ID:	NF19-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	13	Worklist Smp#:	9
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

17 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

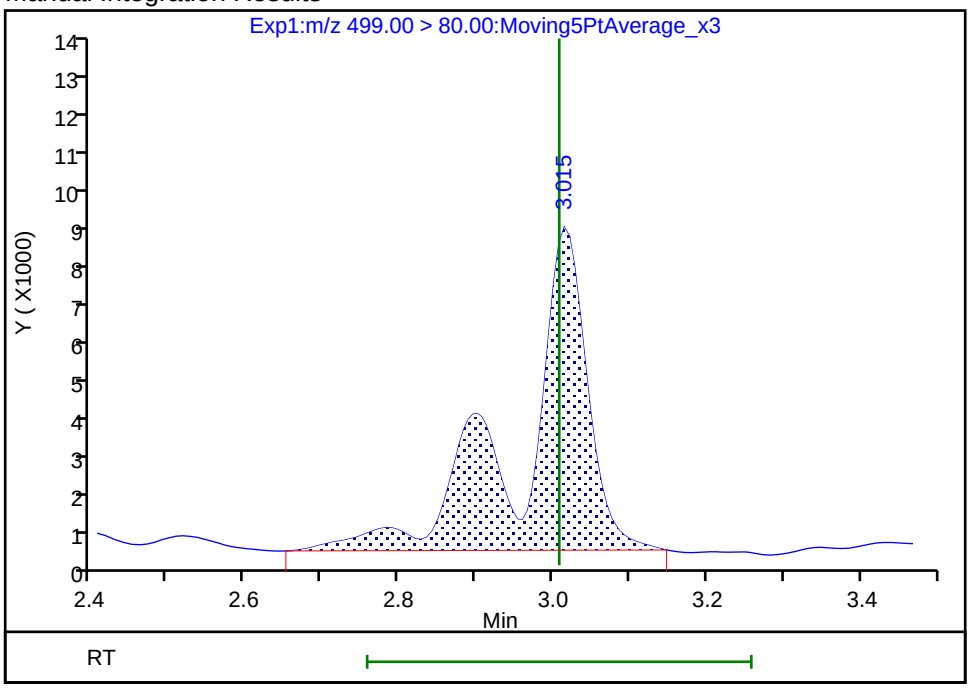
Processing Integration Results

RT: 3.01
Area: 46658
Amount: 0.022673
Amount Units: ng/ml



Manual Integration Results

RT: 3.01
Area: 48434
Amount: 0.023536
Amount Units: ng/ml



Reviewer: mongkols, 09-Jul-2018 13:08:39

Audit Action: Manually Integrated Audit Reason: Baseline

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF19-SS-02
Lab Sample ID: 320-40571-8
Matrix: Solid
Lab File ID: 2018.07.13LLB_059.d
Analysis Method: 537 (modified)
Date Collected: 06/20/2018 14:15
Extraction Method: SHAKE
Date Extracted: 06/28/2018 05:15
Sample wt/vol: 5.09(g)
Date Analyzed: 07/14/2018 04:28
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture: 21.6
GPC Cleanup:(Y/N) N
Analysis Batch No.: 233997
Units: mg/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	ND		0.00025	0.000035
2706-90-3	Perfluoropentanoic acid (PFPeA)	ND		0.00025	0.000096
307-24-4	Perfluorohexanoic acid (PFHxA)	ND		0.00025	0.000053
375-85-9	Perfluoroheptanoic acid (PFHpA)	ND		0.00025	0.000036
335-67-1	Perfluorooctanoic acid (PFOA)	ND		0.00025	0.00011
375-95-1	Perfluorononanoic acid (PFNA)	ND		0.00025	0.000045
335-76-2	Perfluorodecanoic acid (PFDA)	ND		0.00025	0.000028
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		0.00025	0.000045
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		0.00025	0.000084
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		0.00025	0.000064
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		0.00025	0.000068
375-73-5	Perfluorobutanesulfonic acid (PFBS)	ND		0.00025	0.000031
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	ND		0.00025	0.000039
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.00025	0.000044
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	ND		0.00063	0.00025
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		0.00025	0.000049
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		0.00025	0.00010
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.0025	0.00049
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.0025	0.00046
27619-97-2	6:2 FTS	ND		0.0025	0.00019
39108-34-4	8:2 FTS	ND		0.0025	0.00031

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF19-SS-02
Lab Sample ID: 320-40571-8
Matrix: Solid
Lab File ID: 2018.07.13LLB_059.d
Analysis Method: 537 (modified)
Date Collected: 06/20/2018 14:15
Extraction Method: SHAKE
Date Extracted: 06/28/2018 05:15
Sample wt/vol: 5.09(g)
Date Analyzed: 07/14/2018 04:28
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture: 21.6
GPC Cleanup:(Y/N) N
Analysis Batch No.: 233997
Units: mg/Kg

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00992	13C4 PFBA	77		25-150
STL01893	13C5 PFPeA	85		25-150
STL00993	13C2 PFHxA	87		25-150
STL01892	13C4-PFHpA	87		25-150
STL00990	13C4 PFOA	85		25-150
STL00995	13C5 PFNA	80		25-150
STL00996	13C2 PFDA	87		25-150
STL00997	13C2 PFUnA	81		25-150
STL00998	13C2 PFDoA	86		25-150
STL02116	13C2-PFTeDA	88		25-150
STL02337	13C3-PFBS	74		25-150
STL00994	18O2 PFHxS	79		25-150
STL00991	13C4 PFOS	73		25-150
STL01056	13C8 FOSA	68		25-150
STL02118	d3-NMeFOSAA	80		25-150
STL02117	d5-NEtFOSAA	87		25-150
STL02279	M2-6:2FTS	67		25-150
STL02280	M2-8:2FTS	79		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\2018.07.13LLB_059.d
Lims ID: 320-40571-A-8-A
Client ID: NF19-SS-02
Sample Type: Client
Inject. Date: 14-Jul-2018 04:28:21 ALS Bottle#: 44 Worklist Smp#: 8
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-40571-a-8-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 16-Jul-2018 14:18:39 Calib Date: 11-Jul-2018 15:38:42
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK023

First Level Reviewer: mongkols Date: 16-Jul-2018 14:18:39

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										M
217.00 > 172.00	1.435	1.441	-0.006	0.538	4566586	1.92		77.0	43310	M
2 Perfluorobutyric acid										M
212.90 > 169.00	1.441	1.444	-0.003	1.004	17007	0.009447			5.9	M
D 3 13C5-PFPeA										
267.90 > 223.00	1.720	1.720	0.0	0.645	3514154	2.13		85.2	45666	
D 47 13C3-PFBS										
301.90 > 83.00	1.756	1.765	-0.009	0.658	70988	1.71		73.6	414	
D 7 13C2 PFHxA										
315.00 > 270.00	2.002	2.003	-0.001	0.751	3851735	2.16		86.5	59179	
D 9 13C4-PFHpA										
367.00 > 322.00	2.319	2.319	0.0	0.870	3583461	2.18		87.4	42131	
D 11 18O2 PFHxS										
403.00 > 84.00	2.332	2.332	0.0	0.874	4326434	1.86		78.7	44703	
D 12 M2-6:2FTS										
429.00 > 81.00	2.635	2.644	-0.009	0.988	556768	1.58		66.7	9970	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.644	2.651	-0.007	1.003	3689	0.0101			38.7	
D 14 13C4 PFOA										
417.00 > 372.00	2.659	2.667	-0.008	0.997	3552004	2.12		84.9	56294	
* 62 13C2-PFOA										
415.00 > 370.00	2.667	2.673	-0.006		4376336	2.50			38541	
D 18 13C4 PFOS										
503.00 > 80.00	3.028	3.027	0.001	1.135	2966750	1.74		72.8	41188	
D 19 13C5 PFNA										
468.00 > 423.00	3.028	3.034	-0.006	1.135	3005654	2.01		80.4	60251	
D 26 M2-8:2FTS										
529.00 > 81.00	3.374	3.379	-0.005	1.265	973824	1.89		79.0	18818	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 21 13C8 FOSA										
506.00 > 78.00	3.374	3.379	-0.005	1.265	4174977	1.70		67.9	44816	
D 23 13C2 PFDA										
515.00 > 470.00	3.383	3.389	-0.006	1.269	2855660	2.17		87.0	28468	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.533	3.538	-0.005	1.325	1071789	1.99		79.6	29685	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.700	3.708	-0.008	1.388	1195696	2.17		86.7	3030	
D 30 13C2 PFUnA										
565.00 > 520.00	3.711	3.708	0.003	1.392	2227033	2.03		81.2	51539	
D 36 13C2 PFDoA										
615.00 > 570.00	3.999	3.999	0.0	1.500	2440530	2.15		85.8	16918	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.490	4.501	-0.011	1.684	2596382	2.20		88.0	18262	

QC Flag Legend

Review Flags

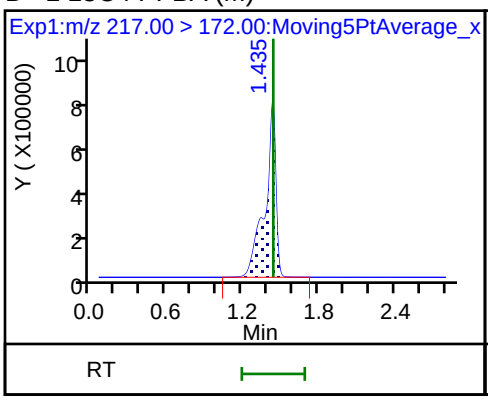
M - Manually Integrated

Report Date: 16-Jul-2018 14:18:40 Chrom Revision: 2.2 07-Jun-2018 07:41:54

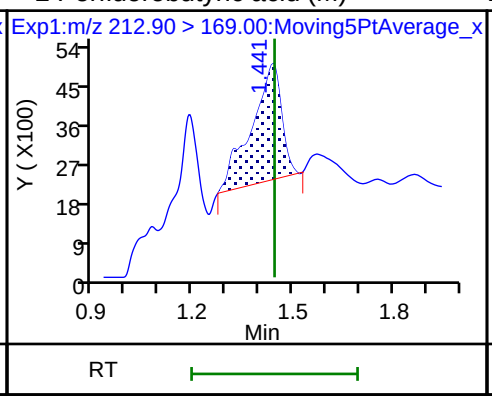
TestAmerica Sacramento

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\2018.07.13LLB_059.d				
Injection Date:	14-Jul-2018 04:28:21	Instrument ID:	A8_N		
Lims ID:	320-40571-A-8-A	Lab Sample ID:	320-40571-8		
Client ID:	NF19-SS-02				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	44	Worklist Smp#:	8
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		

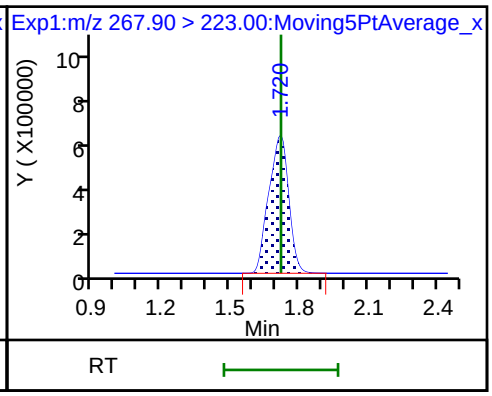
D 1 13C4 PFBA (M)



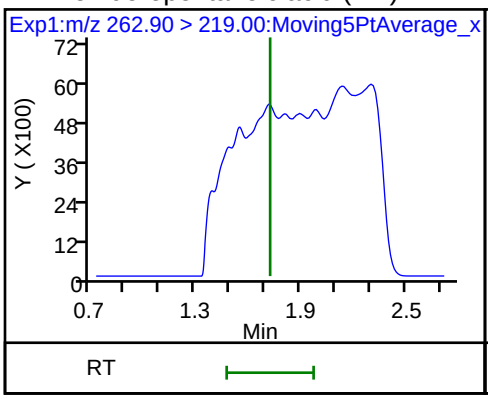
2 Perfluorobutyric acid (M)



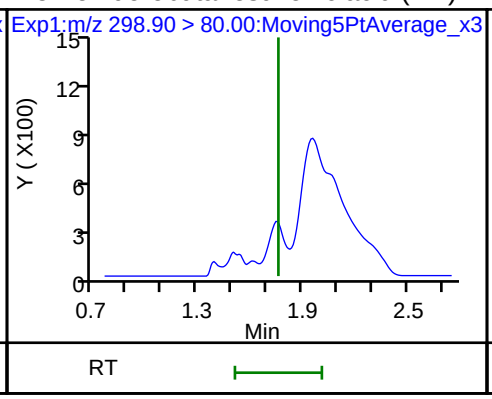
D 3 13C5-PFPeA



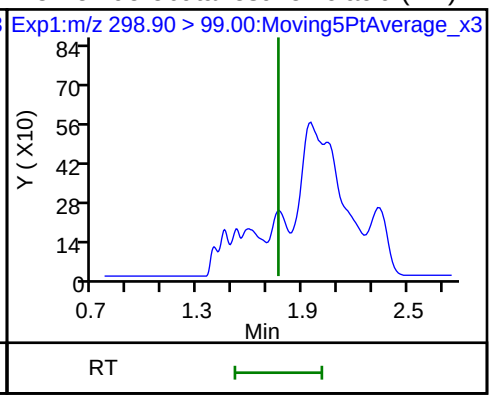
4 Perfluoropentanoic acid (ND)



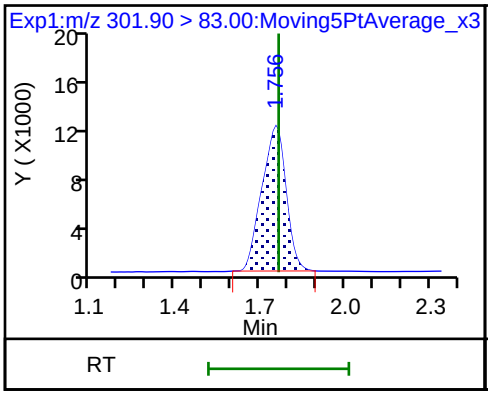
5 Perfluorobutanesulfonic acid (ND)



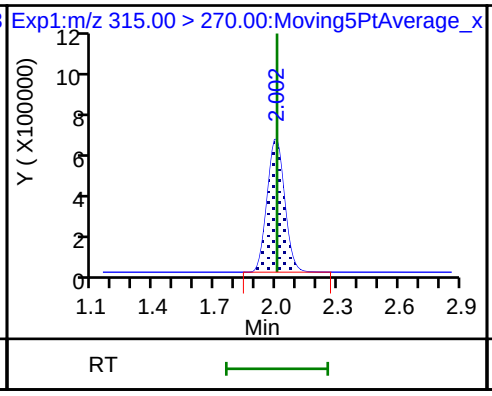
5 Perfluorobutanesulfonic acid (ND)



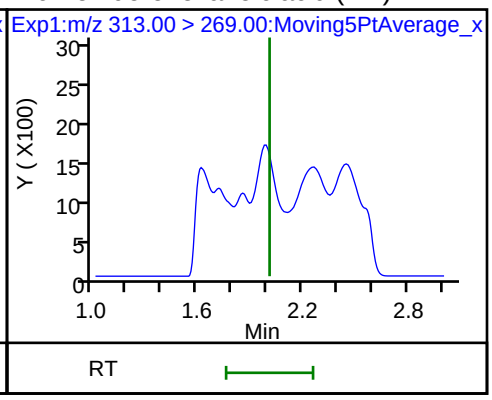
D 47 13C3-PFBS



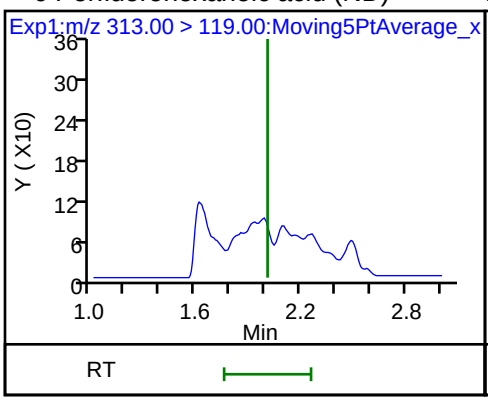
D 7 13C2 PFHxA



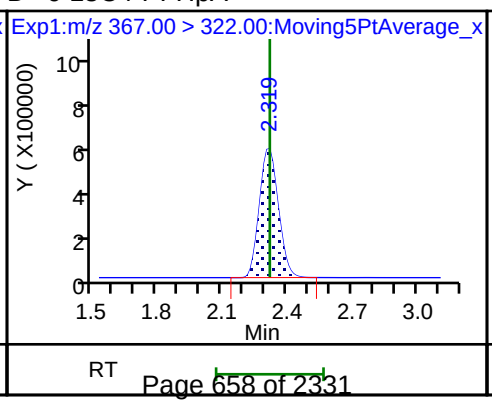
6 Perfluorohexanoic acid (ND)



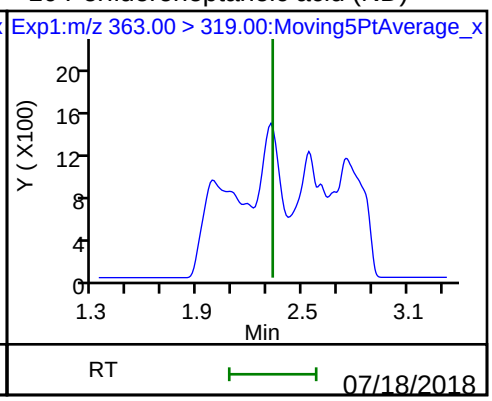
6 Perfluorohexanoic acid (ND)



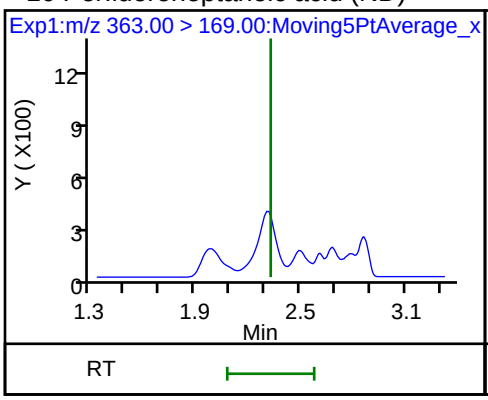
D 9 13C4-PFHpA



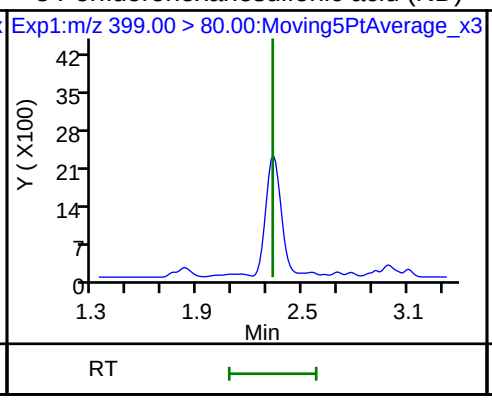
10 Perfluoroheptanoic acid (ND)



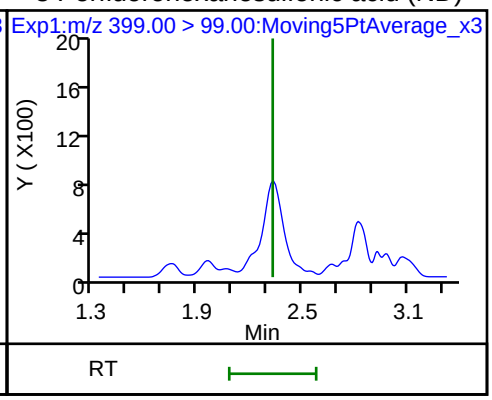
10 Perfluoroheptanoic acid (ND)



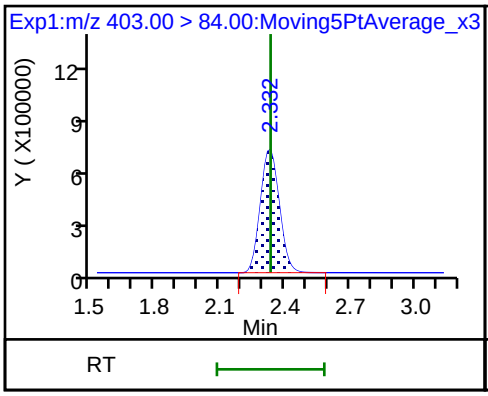
8 Perfluorohexanesulfonic acid (ND)



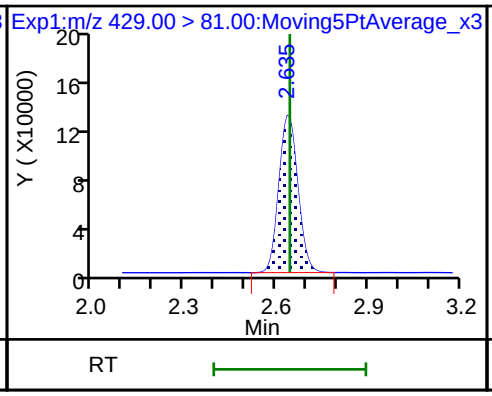
8 Perfluorohexanesulfonic acid (ND)



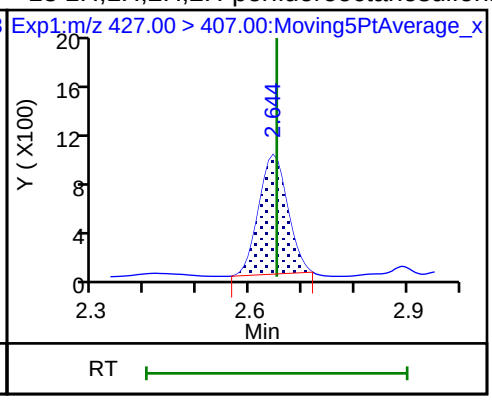
D 11 18O2 PFHxS



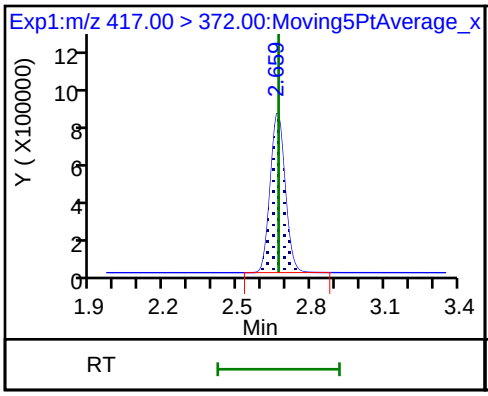
D 12 M2-6:2FTS



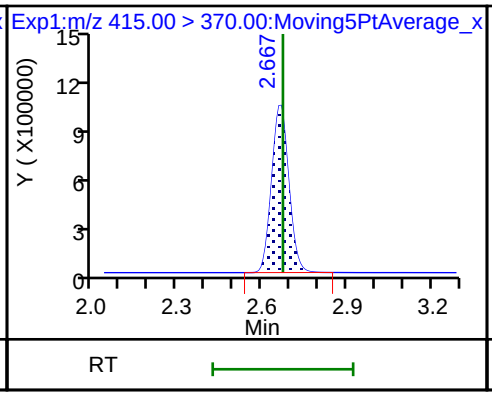
13 1H,1H,2H,2H-perfluorooctanesulfoni



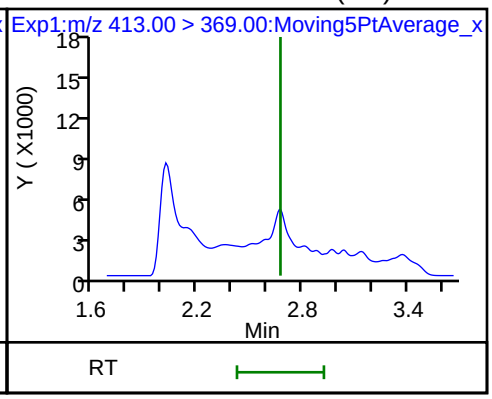
D 14 13C4 PFOA



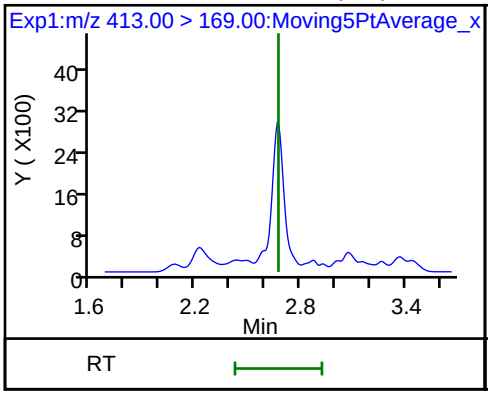
* 62 13C2-PFOA



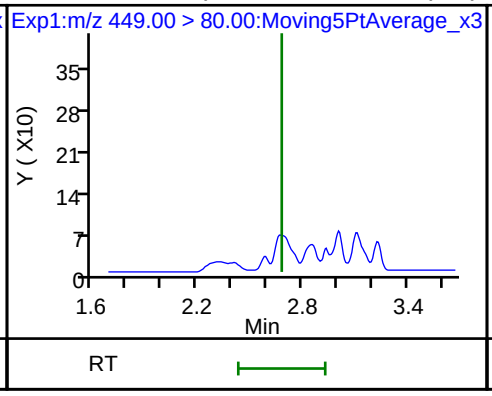
15 Perfluorooctanoic acid (ND)



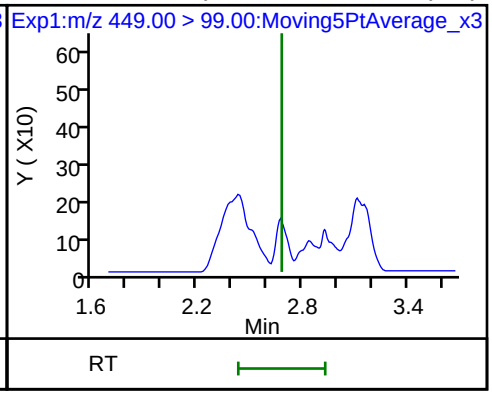
15 Perfluorooctanoic acid (ND)



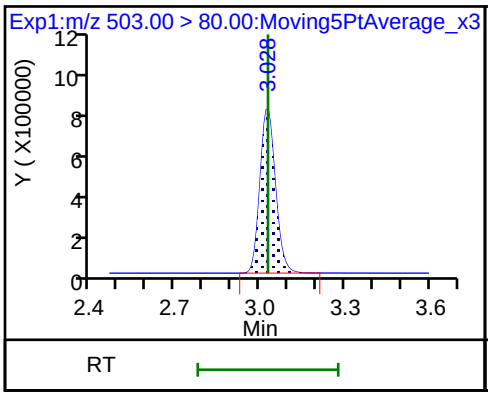
16 Perfluoroheptanesulfonic acid (ND)



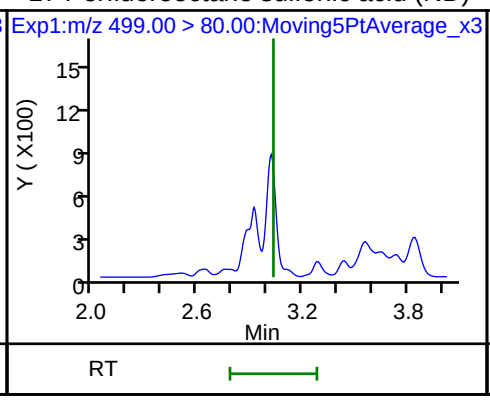
16 Perfluoroheptanesulfonic acid (ND)



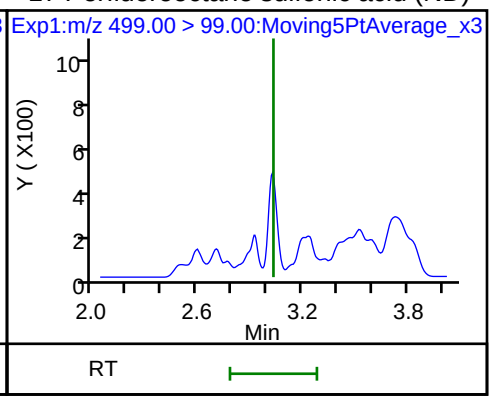
D 18 13C4 PFOS



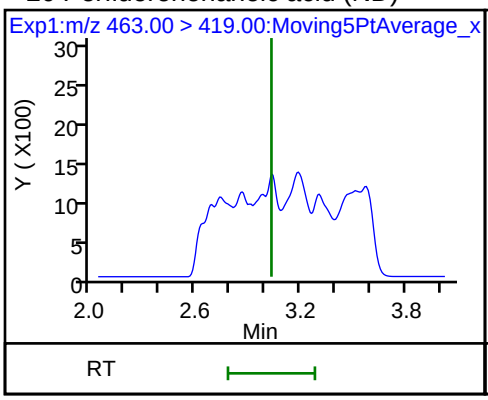
17 Perfluorooctane sulfonic acid (ND)



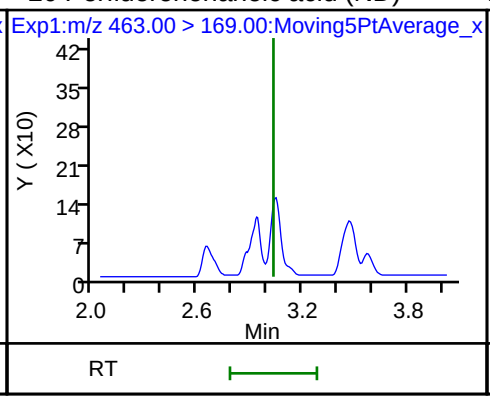
17 Perfluorooctane sulfonic acid (ND)



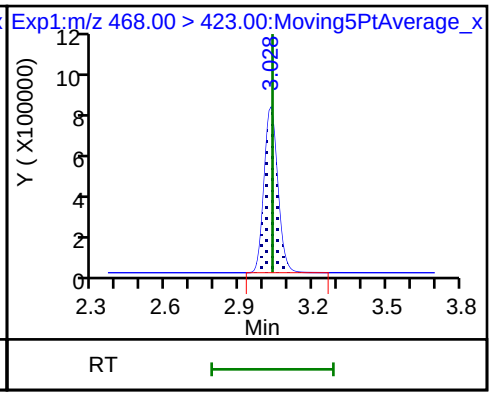
20 Perfluorononanoic acid (ND)



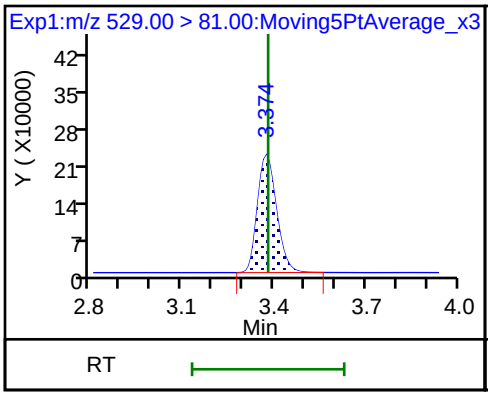
20 Perfluorononanoic acid (ND)



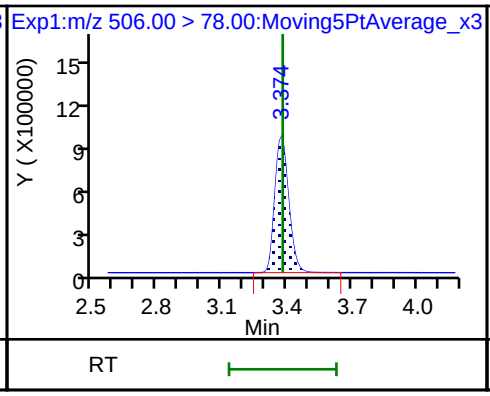
D 19 13C5 PFNA



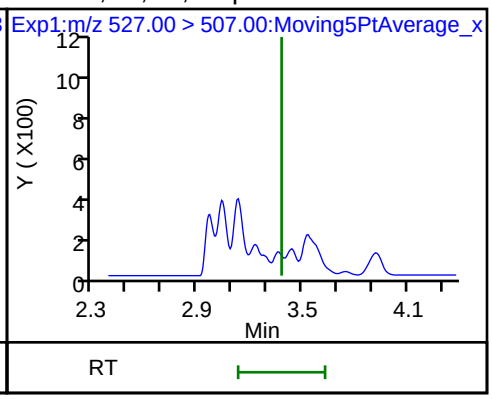
D 26 M2-8:2FTS



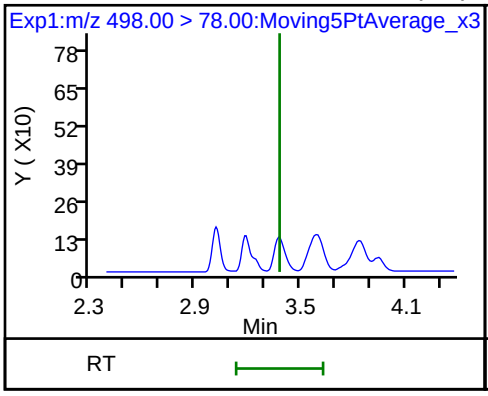
D 21 13C8 FOSA



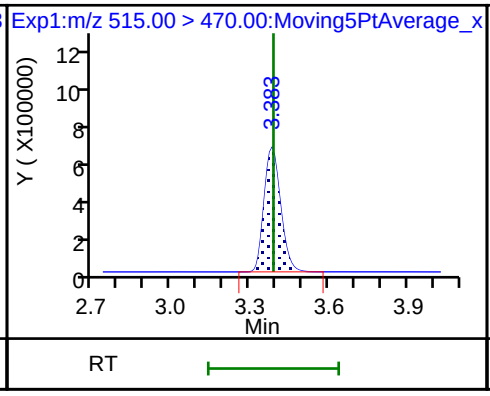
25 1H,1H,2H,2H-perfluorodecanesulfoni (ND)



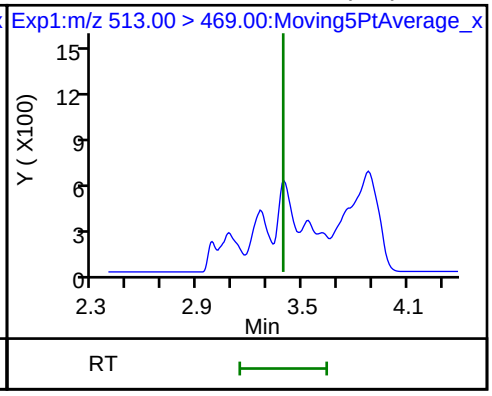
22 Perfluorooctane Sulfonamide (ND)



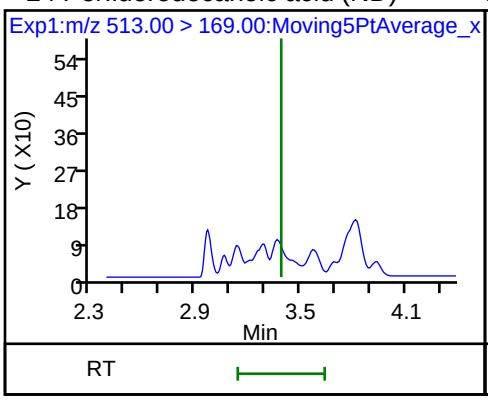
D 23 13C2 PFDA



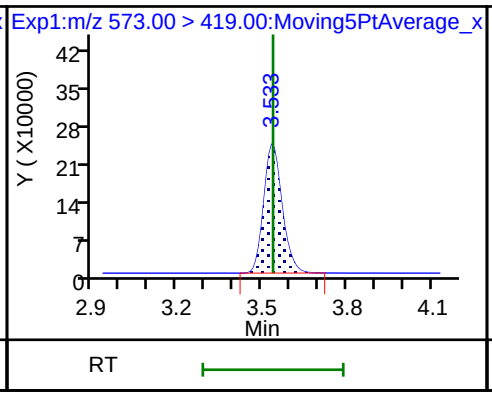
24 Perfluorodecanoic acid (ND)



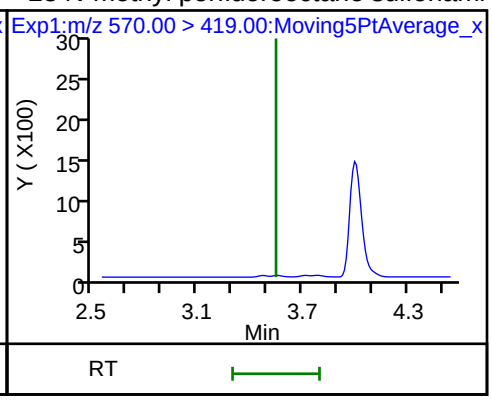
24 Perfluorodecanoic acid (ND)



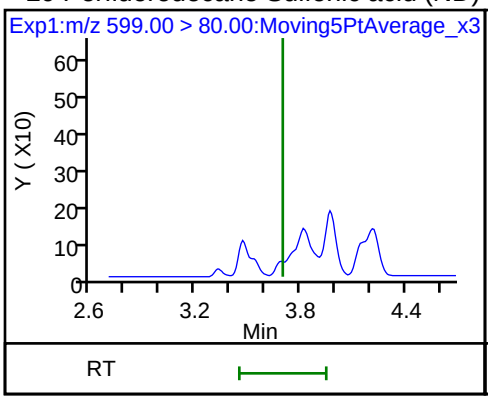
D 27 d3-NMeFOSAA



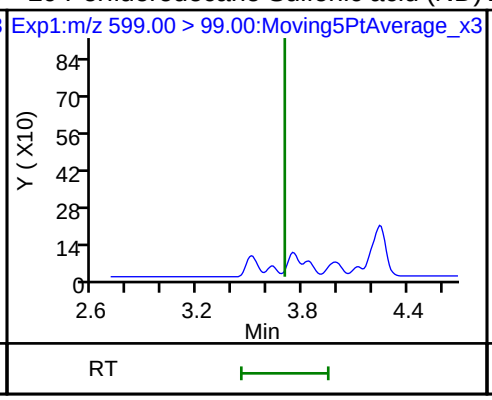
28 N-methyl perfluorooctane sulfonami (ND)



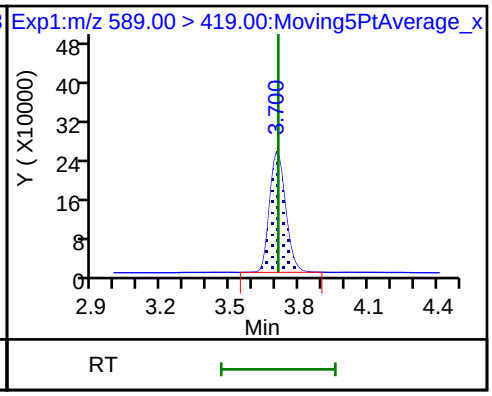
29 Perfluorodecane Sulfonic acid (ND)



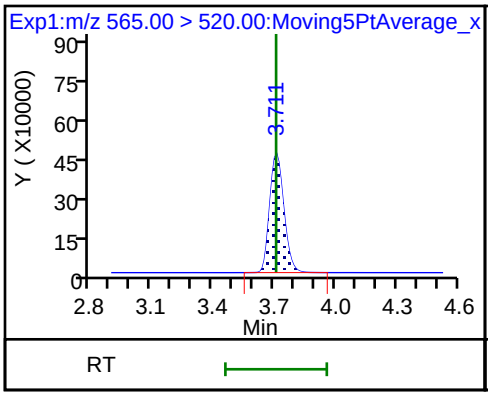
29 Perfluorodecane Sulfonic acid (ND)



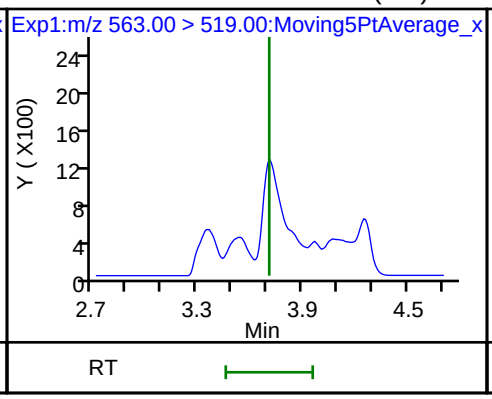
D 32 d5-NEtFOSAA



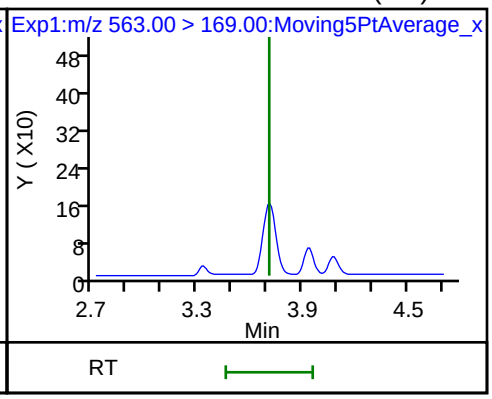
D 30 13C2 PFUnA



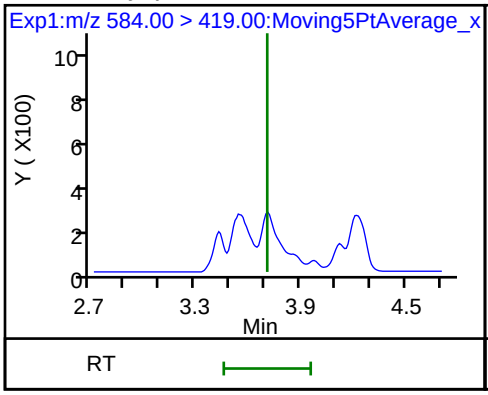
31 Perfluoroundecanoic acid (ND)



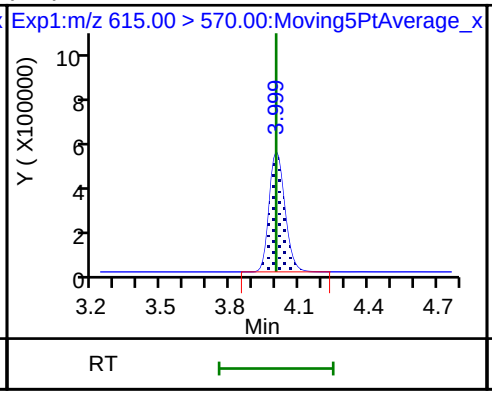
31 Perfluoroundecanoic acid (ND)



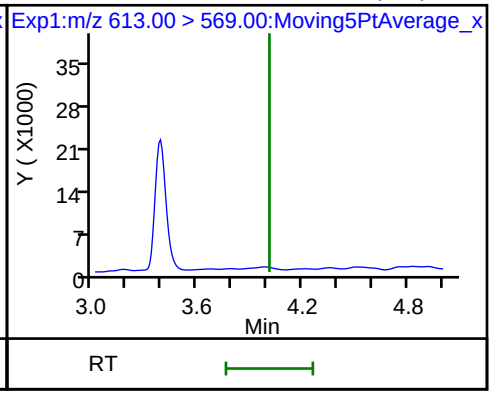
33 N-ethyl perfluorooctane sulfonamid (ND)



D 36 13C2 PFDoA

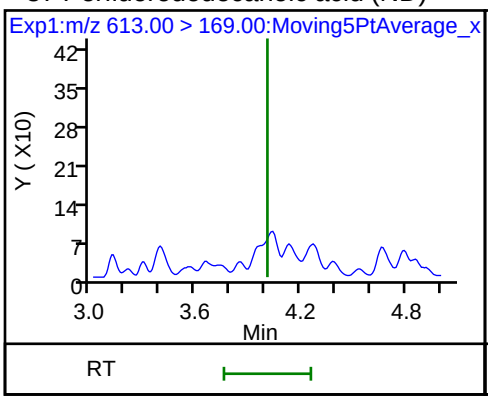


37 Perfluorododecanoic acid (ND)

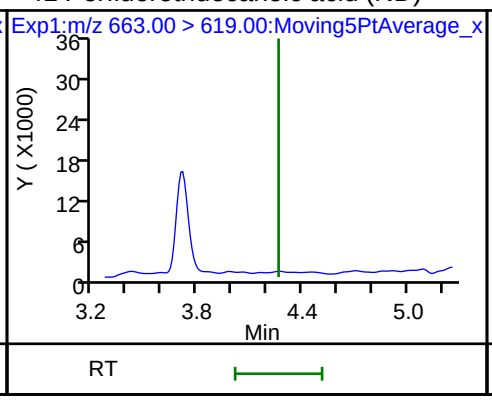


Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\2018.07.13LLB_059.d

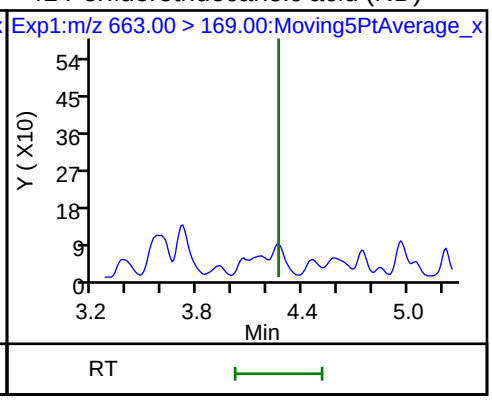
37 Perfluorododecanoic acid (ND)



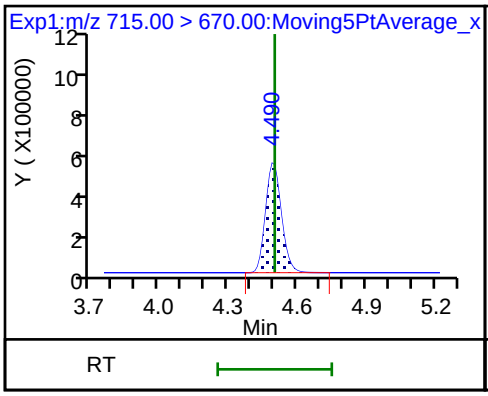
41 Perfluorotridecanoic acid (ND)



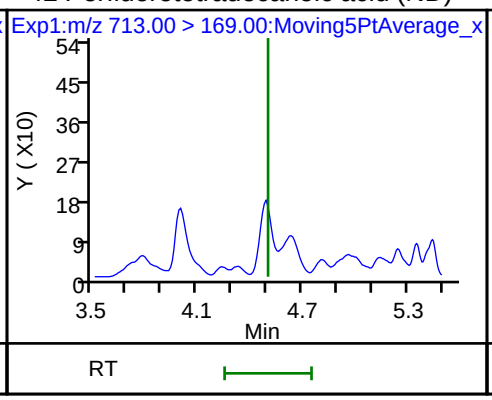
41 Perfluorotridecanoic acid (ND)



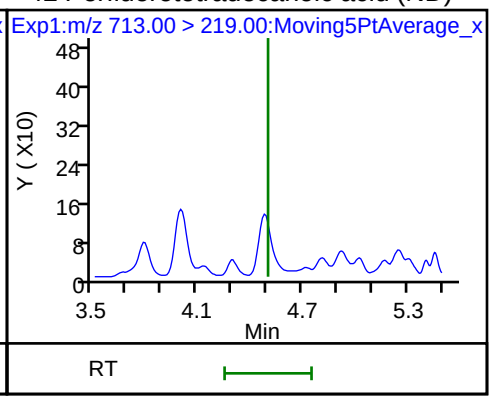
D 43 13C2-PFTeDA



42 Perfluorotetradecanoic acid (ND)



42 Perfluorotetradecanoic acid (ND)



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

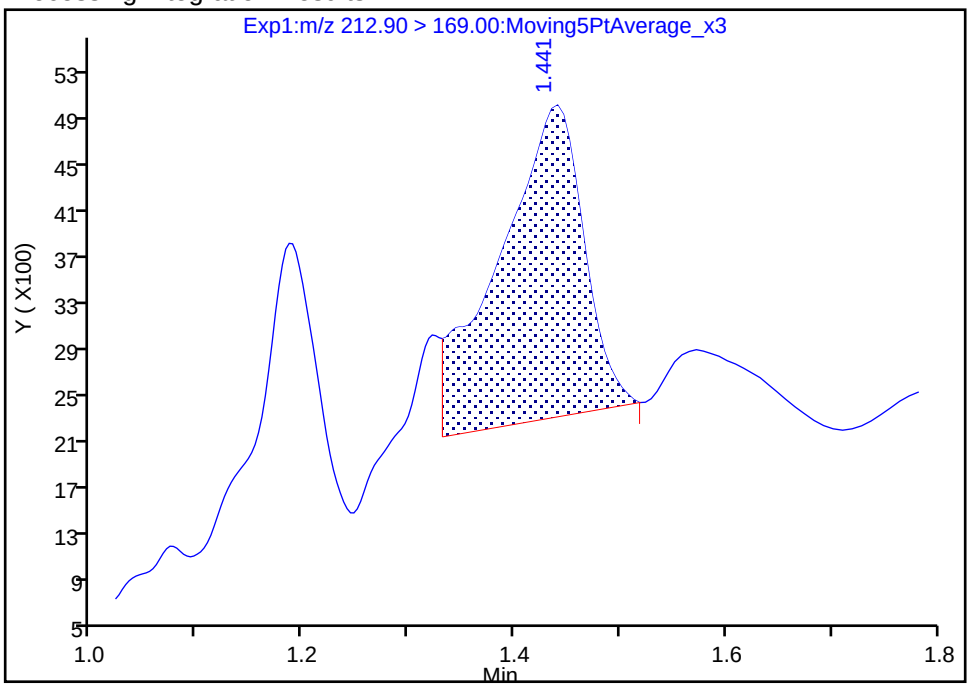
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\2018.07.13LLB_059.d				
Injection Date:	14-Jul-2018 04:28:21	Instrument ID:	A8_N		
Lims ID:	320-40571-A-8-A	Lab Sample ID:	320-40571-8		
Client ID:	NF19-SS-02				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	44	Worklist Smp#:	8
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

2 Perfluorobutyric acid, CAS: 375-22-4

Signal: 1

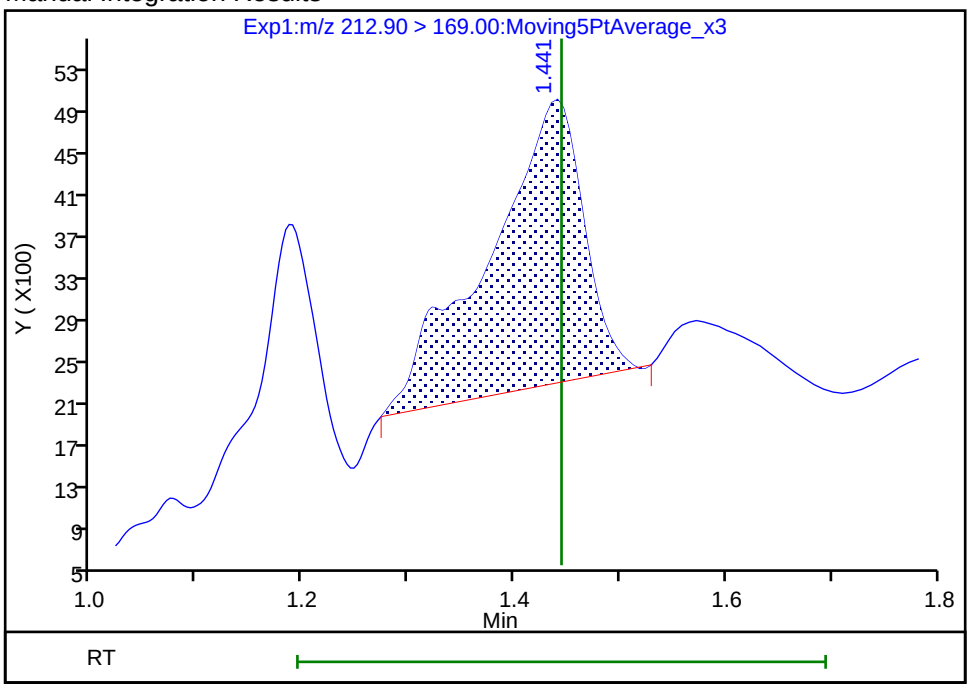
Processing Integration Results

RT: 1.44
Area: 15126
Amount: 0.008402
Amount Units: ng/ml



Manual Integration Results

RT: 1.44
Area: 17007
Amount: 0.009447
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 14:18:12

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

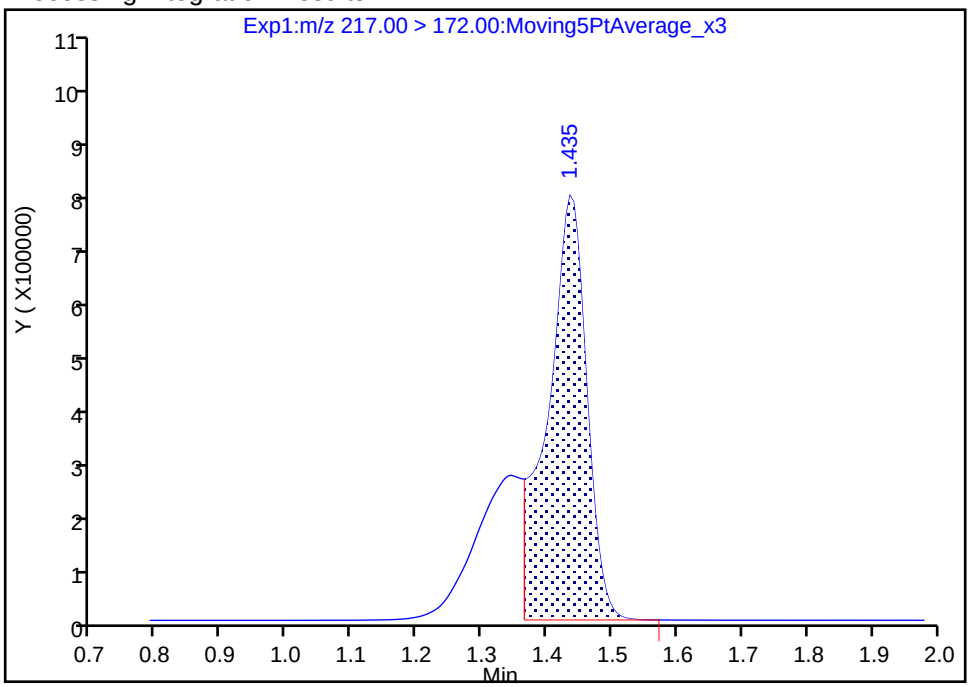
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\2018.07.13LLB_059.d				
Injection Date:	14-Jul-2018 04:28:21	Instrument ID:	A8_N		
Lims ID:	320-40571-A-8-A	Lab Sample ID:	320-40571-8		
Client ID:	NF19-SS-02				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	44	Worklist Smp#:	8
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

D 1 13C4 PFBA, CAS: STL00992

Signal: 1

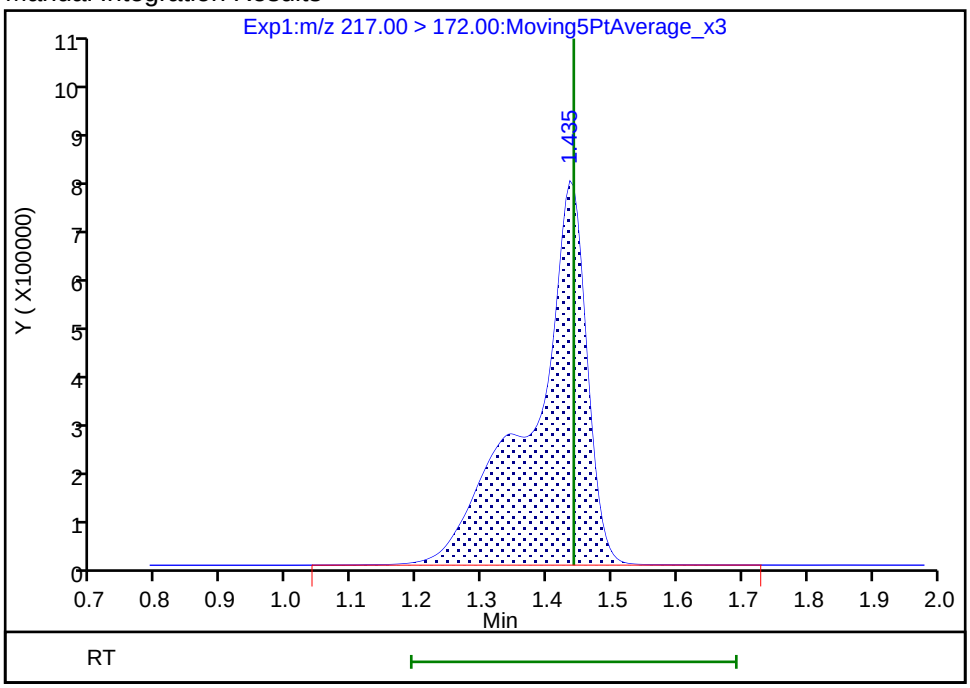
Processing Integration Results

RT: 1.44
Area: 3217561
Amount: 1.355581
Amount Units: ng/ml



Manual Integration Results

RT: 1.44
Area: 4566586
Amount: 1.923934
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 14:18:00

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF20-GW-01
Lab Sample ID: 320-40571-9
Matrix: Water
Lab File ID: 2018.07.06LLC_022.d
Analysis Method: 537 (modified)
Date Collected: 06/20/2018 13:35
Extraction Method: 3535
Date Extracted: 07/02/2018 14:58
Sample wt/vol: 158(mL)
Date Analyzed: 07/07/2018 02:06
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 232800
Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	*Perfluorobutanoic acid (PFBA)*	*0.82*	*E B*	*0.0032*	*0.00055*
2706-90-3	*Perfluoropentanoic acid (PFPeA)*	*0.65*	*E*	*0.0032*	*0.00078*
307-24-4	Perfluorohexanoic acid (PFHxA)	0.16		0.0032	0.00092
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.12		0.0032	0.00040
335-67-1	Perfluorooctanoic acid (PFOA)	0.039		0.0032	0.0013
375-95-1	Perfluorononanoic acid (PFNA)	0.032		0.0032	0.00043
335-76-2	Perfluorodecanoic acid (PFDA)	0.012		0.0032	0.00049
2058-94-8	Perfluoroundecanoic acid (PFUnA)	0.013		0.0032	0.0017
307-55-1	Perfluorododecanoic acid (PFDoA)	0.0040		0.0032	0.00087
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	0.0029	J	0.0032	0.0021
376-06-7	Perfluorotetradecanoic acid (PFTeA)	0.0021	J	0.0032	0.00046
375-73-5	Perfluorobutanesulfonic acid (PFBS)	ND		0.0032	0.00032
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	ND		0.0032	0.00047
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.00064	J B	0.0032	0.00027
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.0032	0.00030
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.0021	J	0.0032	0.00085
8789-57-2	Perfluorononanesulfonic acid (PFNS)	ND		0.0032	0.00025
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		0.0032	0.00051
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		0.0032	0.00055
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.032	0.0049
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.032	0.0030
757124-72-4	4:2 FTS	ND		0.032	0.0082
27619-97-2	6:2 FTS	0.025	J	0.032	0.0032
39108-34-4	8:2 FTS	ND		0.032	0.0032

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF20-GW-01
Lab Sample ID: 320-40571-9
Matrix: Water
Lab File ID: 2018.07.06LLC_022.d
Analysis Method: 537 (modified)
Date Collected: 06/20/2018 13:35
Extraction Method: 3535
Date Extracted: 07/02/2018 14:58
Sample wt/vol: 158(mL)
Date Analyzed: 07/07/2018 02:06
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 232800
Units: ug/L

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00992	13C4 PFBA	66		25-150
STL01893	13C5 PFPeA	81		25-150
STL00993	13C2 PFHxA	89		25-150
STL01892	13C4-PFHpA	103		25-150
STL00990	13C4 PFOA	101		25-150
STL00995	13C5 PFNA	104		25-150
STL00996	13C2 PFDA	102		25-150
STL00997	13C2 PFUnA	95		25-150
STL00998	13C2 PFDoA	87		25-150
STL02116	13C2-PFTeDA	52		25-150
STL02337	13C3-PFBS	86		25-150
STL00994	18O2 PFHxS	105		25-150
STL00991	13C4 PFOS	96		25-150
STL01056	13C8 FOSA	78		25-150
STL02118	d3-NMeFOSAA	99		25-150
STL02117	d5-NEtFOSAA	95		25-150
STL02279	M2-6:2FTS	123		25-150
STL02280	M2-8:2FTS	118		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\2018.07.06LLC_022.d
Lims ID: 320-40571-A-9-A
Client ID: NF20-GW-01
Sample Type: Client
Inject. Date: 07-Jul-2018 02:06:54 ALS Bottle#: 14 Worklist Smp#: 10
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-40571-a-9-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 09-Jul-2018 13:11:08 Calib Date: 05-Jul-2018 09:38:17
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180705-60684.b\2018.07.05LLICALAA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK010

First Level Reviewer: mongkols Date: 09-Jul-2018 13:11:08

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.430	1.428	0.002	0.538	4479682	1.65		65.8	17555	
2 Perfluorobutyric acid										E
212.90 > 169.00	1.430	1.428	0.002	1.000	23608692	12.9			10980	E
4 Perfluoropentanoic acid										E
262.90 > 219.00	1.711	1.698	0.013	1.000	19792348	10.2			8333	E
D 3 13C5-PFPeA										
267.90 > 223.00	1.711	1.707	0.004	0.643	4069057	2.02		80.8	30746	
D 47 13C3-PFBS										
301.90 > 83.00	1.747	1.743	0.004	0.657	96753	2.01		86.3	547	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.991	1.978	0.013	1.000	5053141	2.57			3323	
313.00 > 119.00	1.991	1.978	0.013	1.000	416510		12.13(5.03-15.10)		4799	
D 7 13C2 PFHxA										
315.00 > 270.00	1.991	1.988	0.003	0.749	4825824	2.24		89.5	59525	
D 9 13C4-PFHpA										
367.00 > 322.00	2.306	2.302	0.004	0.867	4939908	2.58		103	39897	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.306	2.303	0.003	1.000	4245611	1.90			3568	
363.00 > 169.00	2.306	2.303	0.003	1.000	1576459		2.69(1.13-3.40)		5031	
8 Perfluorohexanesulfonic acid										M
399.00 > 80.00	2.319	2.303	0.016	1.000	28823	0.0100			20.8	M
399.00 > 99.00	2.319	2.303	0.016	1.000	8741		3.30(1.50-4.49)		20.5	
D 11 18O2 PFHxS										
403.00 > 84.00	2.319	2.315	0.004	0.872	5875141	2.49		105	54942	
D 12 M2-6:2FTS										
429.00 > 81.00	2.628	2.626	0.002	0.988	1252055	2.91		123	7695	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.628	2.627	0.002	1.000	325130	0.3937			1604	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 14 13C4 PFOA										
417.00 > 372.00	2.652	2.650	0.002	0.997	4759699	2.54		101	67265	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.659	2.651	0.008	1.003	1401715	0.6209			572	
413.00 > 169.00	2.659	2.651	0.008	1.003	793920		1.77(0.84-2.52)		3613	
* 62 13C2-PFOA										
415.00 > 370.00	2.659	2.651	0.008		4917430	2.50			44615	
17 Perfluorooctane sulfonic acid										M
499.00 > 80.00	3.014	3.008	0.006	1.000	62222	0.0330			101	M
499.00 > 99.00	3.021	3.008	0.013	1.002	9239		6.73(2.31-6.93)		52.0	M
20 Perfluorononanoic acid										
463.00 > 419.00	3.021	3.015	0.006	1.002	911004	0.5097			485	
463.00 > 169.00	3.021	3.015	0.006	1.002	221229		4.12(1.90-5.69)		271	
D 18 13C4 PFOS										
503.00 > 80.00	3.014	3.015	-0.001	1.133	3857084	2.29		96.0	21649	
D 19 13C5 PFNA										
468.00 > 423.00	3.014	3.015	-0.001	1.133	4146389	2.60		104	66412	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.374	3.367	0.007	1.000	267840	0.1834			292	
513.00 > 169.00	3.374	3.367	0.007	1.000	39898		6.71(2.36-7.09)		106	
D 26 M2-8:2FTS										
529.00 > 81.00	3.365	3.367	-0.002	1.265	1347466	2.82		118	13012	
D 21 13C8 FOSA										
506.00 > 78.00	3.365	3.367	-0.002	1.265	4544703	1.95		77.9	31248	
D 23 13C2 PFDA										
515.00 > 470.00	3.374	3.376	-0.002	1.269	3503316	2.55		102	62594	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.524	3.525	-0.001	1.325	2014431	2.49		99.4	31942	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.701	3.694	0.007	1.003	20133	0.0293			394	
31 Perfluoroundecanoic acid										M
563.00 > 519.00	3.701	3.694	0.007	1.000	186936	0.2004			351	M
563.00 > 169.00	3.701	3.694	0.007	1.000	39457		4.74(2.12-6.36)		143	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.690	3.694	-0.004	1.388	1906141	2.38		95.2	23390	
D 30 13C2 PFUnA										
565.00 > 520.00	3.701	3.705	-0.004	1.392	2742961	2.37		95.0	57800	
37 Perfluorododecanoic acid										M
613.00 > 569.00	3.989	3.984	0.005	1.000	75415	0.0638			69.5	M
613.00 > 169.00	3.989	3.984	0.005	1.000	19871		3.80(2.13-6.40)		108	M
D 36 13C2 PFDoA										
615.00 > 570.00	3.989	3.995	-0.006	1.500	2682550	2.17		86.7	19247	
41 Perfluorotridecanoic acid										M
663.00 > 619.00	4.253	4.249	0.004	1.066	60767	0.0461			59.7	M
663.00 > 169.00	4.253	4.249	0.004	1.066	18760		3.24(1.25-3.76)		105	M
42 Perfluorotetradecanoic acid										M
713.00 > 169.00	4.491	4.489	0.002	1.000	7118	0.0332			51.5	M
713.00 > 219.00	4.480	4.489	-0.009	0.998	6088		1.17(0.71-2.13)		40.1	M

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 43 13C2-PFTeDA										
715.00 > 670.00	4.491	4.489	0.002	1.689	1976993	1.31		52.4	14031	

QC Flag Legend

Processing Flags

E - Exceeded Maximum Amount

Review Flags

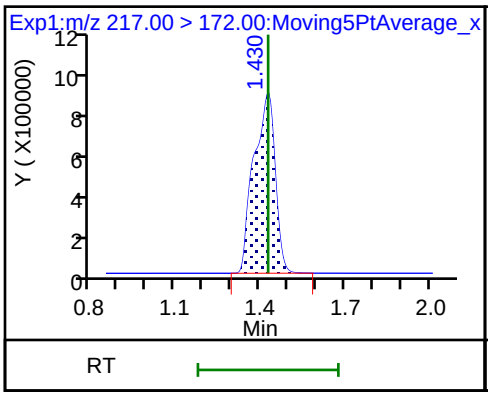
M - Manually Integrated

Report Date: 09-Jul-2018 13:11:09 Chrom Revision: 2.2 07-Jun-2018 07:41:54

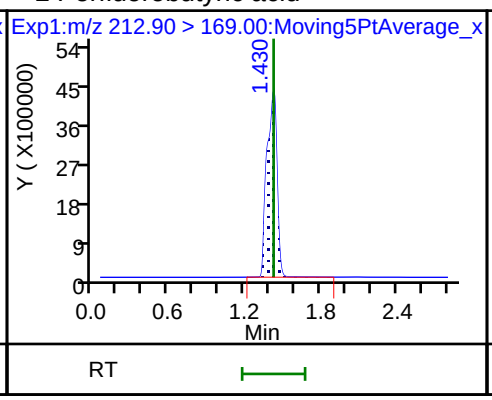
TestAmerica Sacramento

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\2018.07.06LLC_022.d				
Injection Date:	07-Jul-2018 02:06:54	Instrument ID:	A8_N		
Lims ID:	320-40571-A-9-A	Lab Sample ID:	320-40571-9		
Client ID:	NF20-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	14	Worklist Smp#:	10
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		

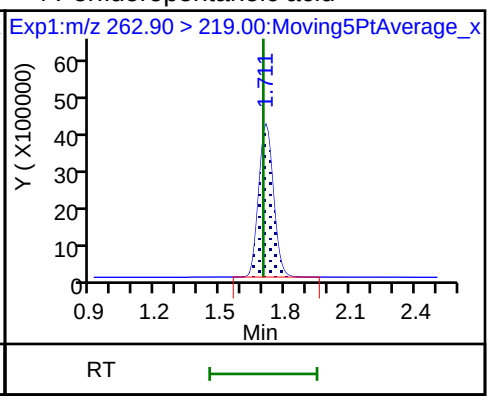
D 1 13C4 PFBA



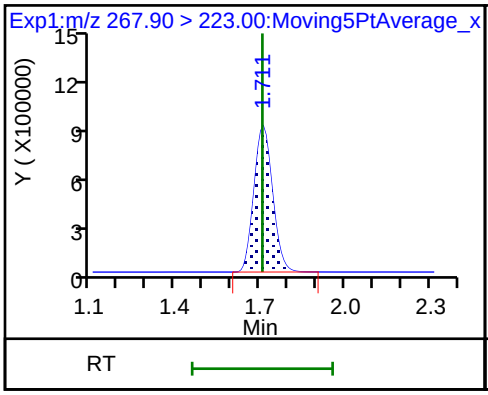
2 Perfluorobutyric acid



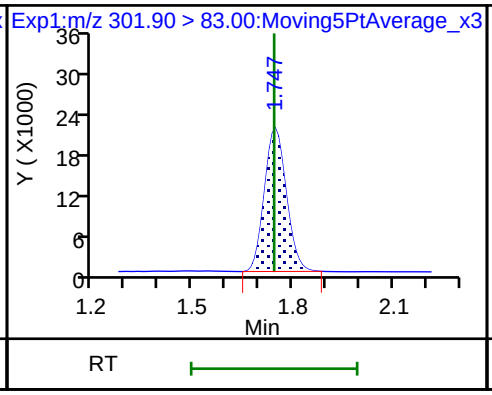
4 Perfluoropentanoic acid



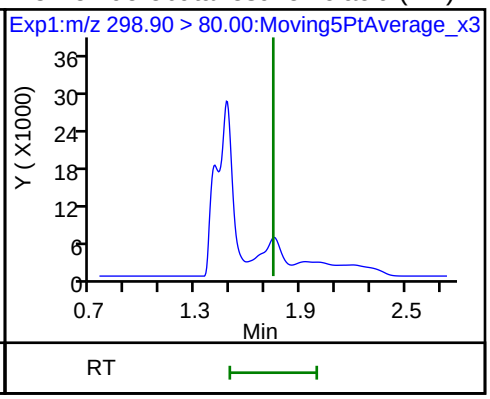
D 3 13C5-PFPeA



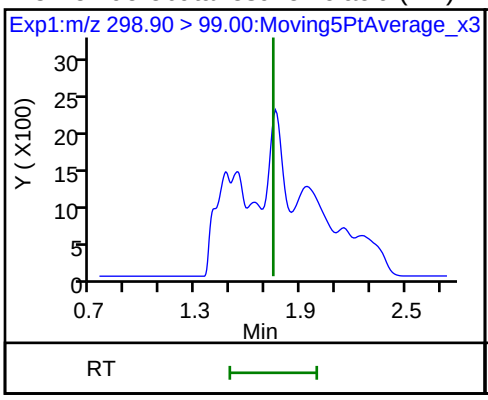
D 47 13C3-PFBS



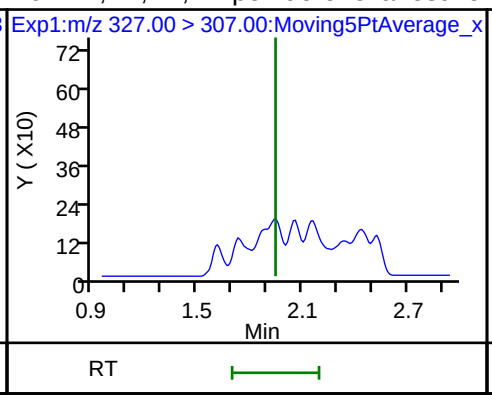
5 Perfluorobutanesulfonic acid (ND)



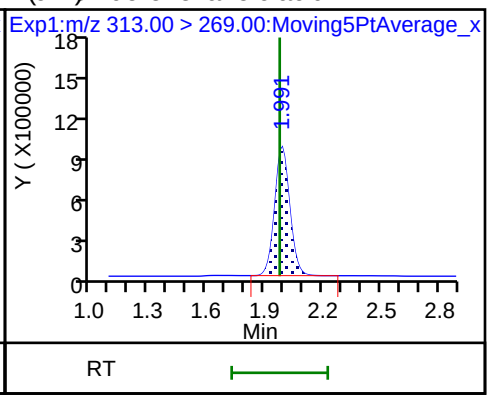
5 Perfluorobutanesulfonic acid (ND)



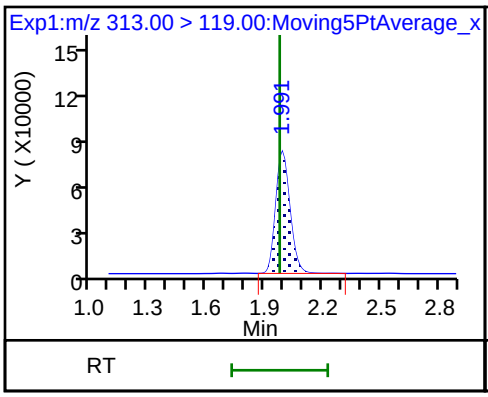
61 1H,1H,2H,2H-perfluorohexanesulfoni (ND)



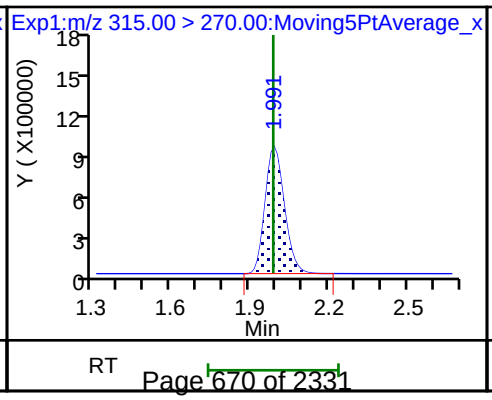
6 Perfluorohexanoic acid



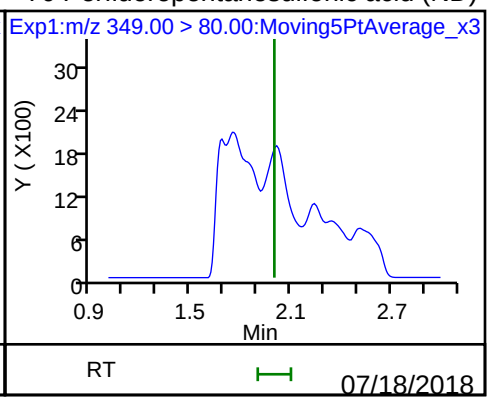
6 Perfluorohexanoic acid



D 7 13C2 PFHxA



70 Perfluoropentanesulfonic acid (ND)



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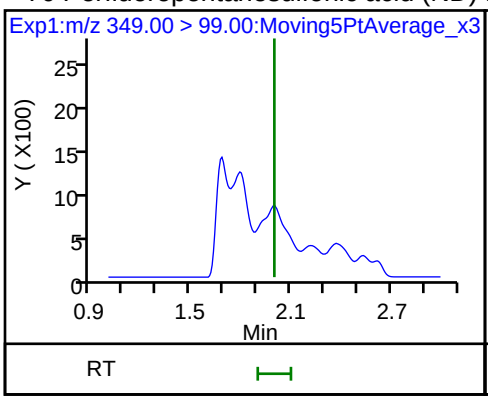
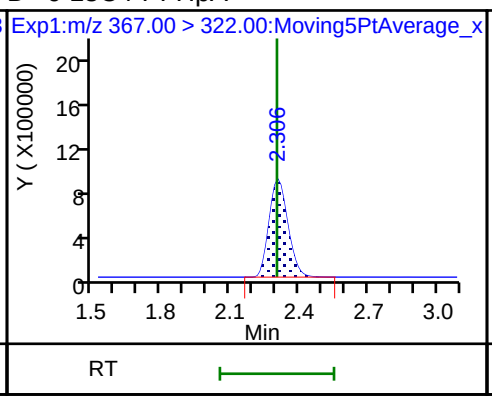
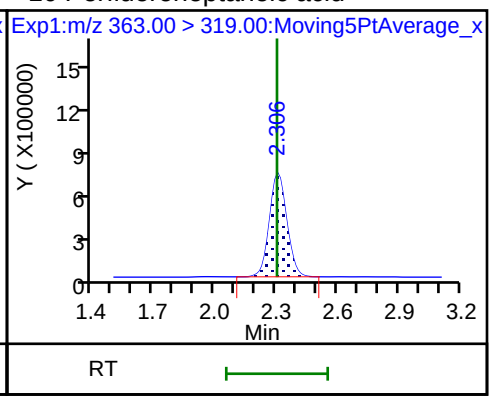


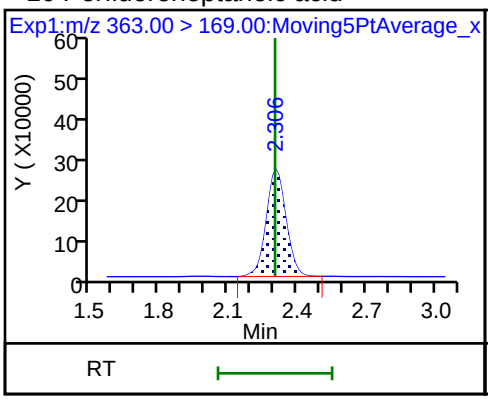
D 9 13C4-PFHpA



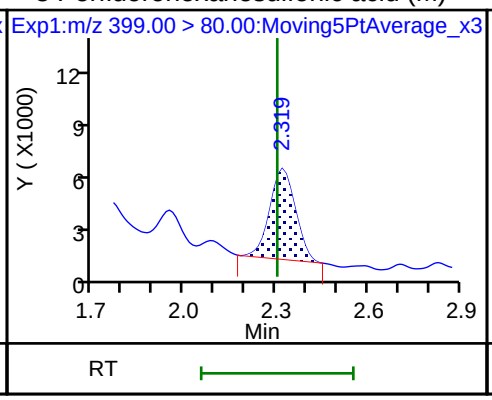
10 Perfluoroheptanoic acid



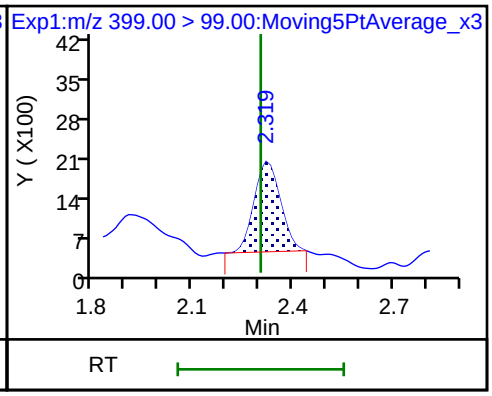
10 Perfluoroheptanoic acid



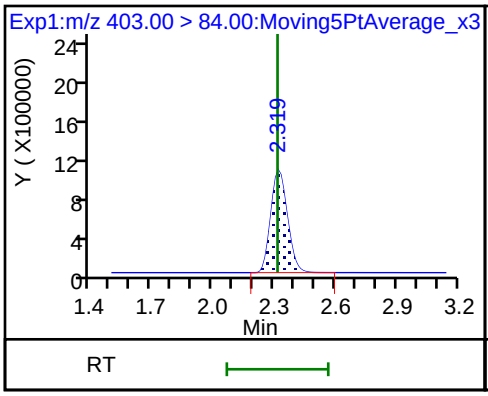
8 Perfluorohexanesulfonic acid (M)



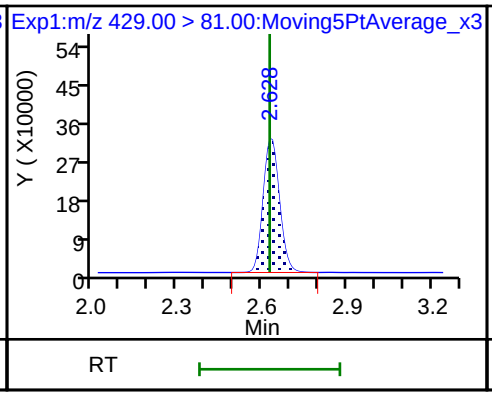
8 Perfluorohexanesulfonic acid



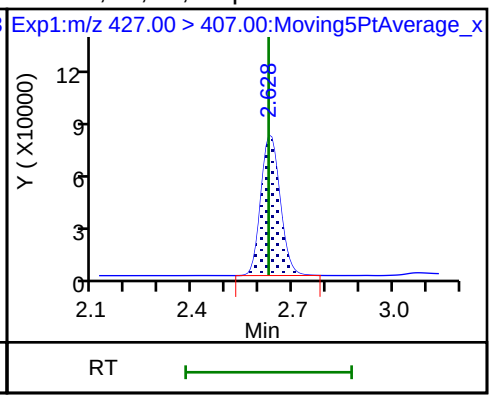
D 11 18O2 PFHxS



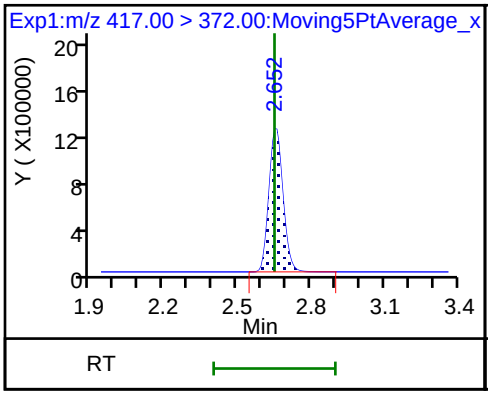
D 12 M2-6:2FTS



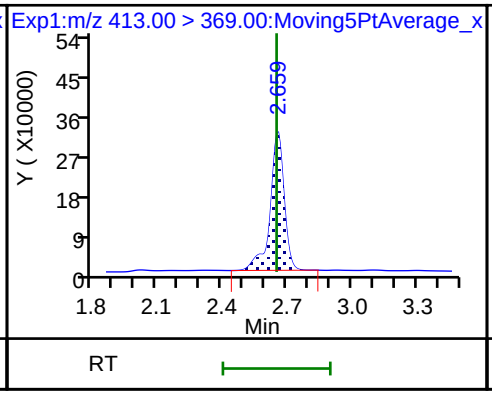
13 1H,1H,2H,2H-perfluorooctanesulfoni



D 14 13C4 PFOA



15 Perfluorooctanoic acid



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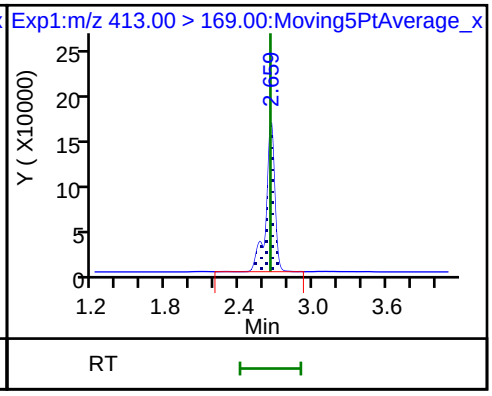
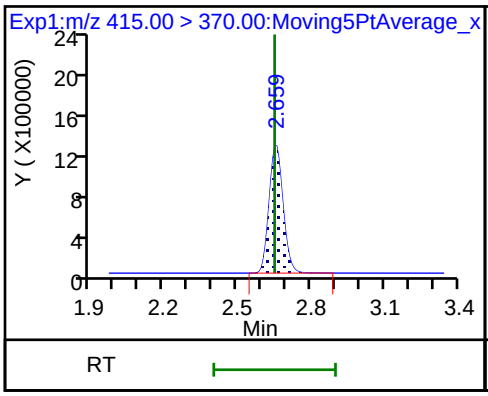
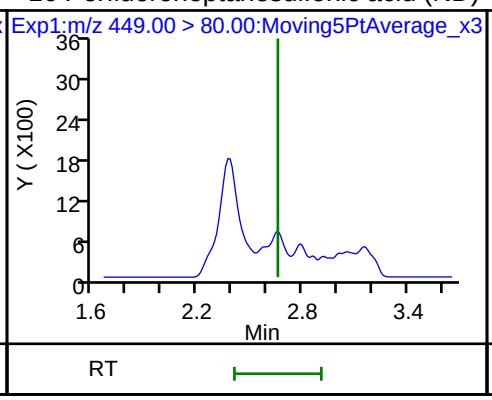


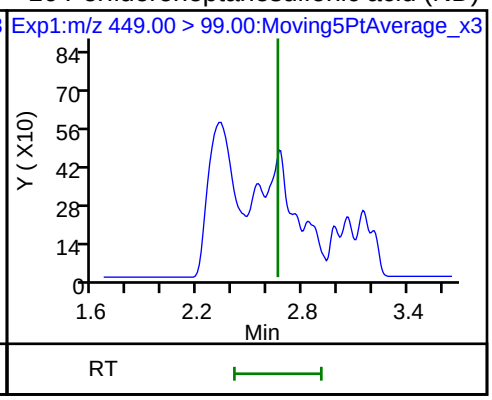
* 62 13C2-PFOA



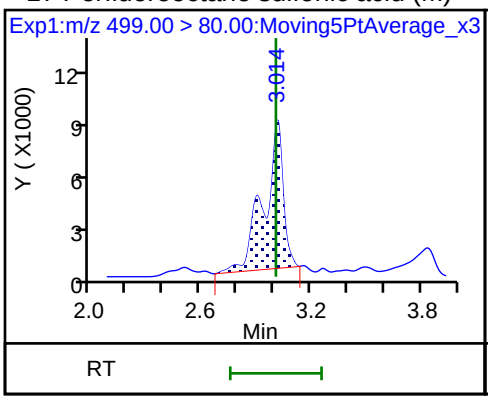
16 Perfluoroheptanesulfonic acid (ND)



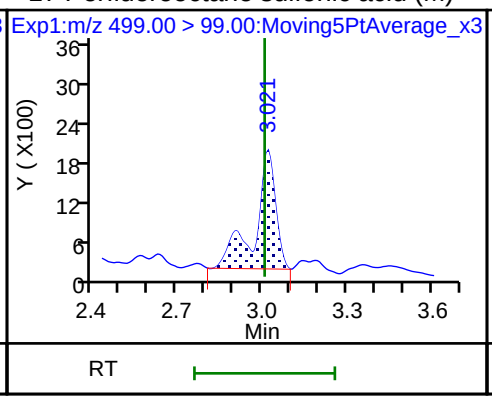
16 Perfluoroheptanesulfonic acid (ND)



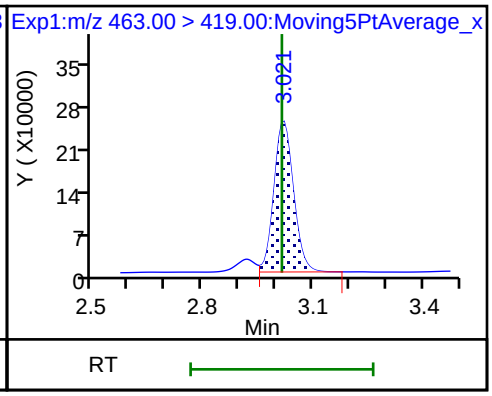
17 Perfluorooctane sulfonic acid (M)



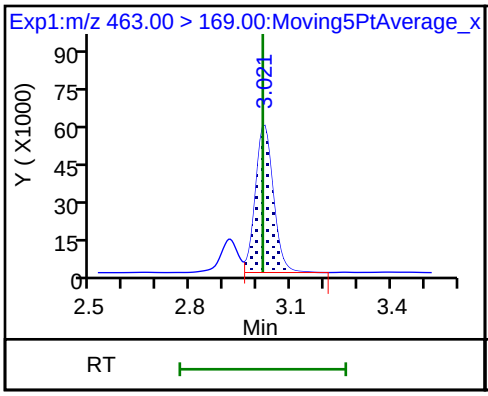
17 Perfluorooctane sulfonic acid (M)



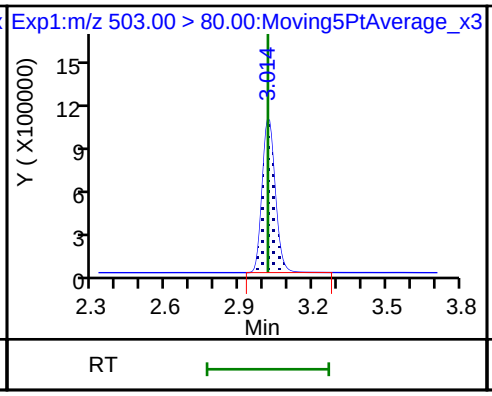
20 Perfluorononanoic acid



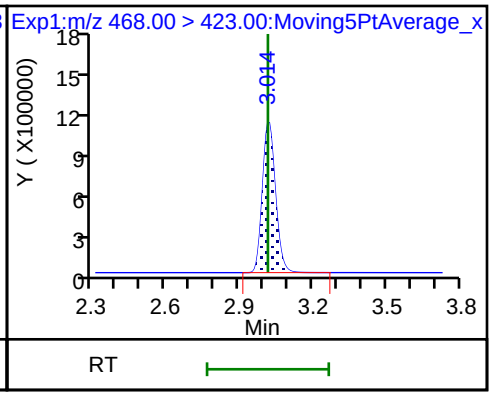
20 Perfluorononanoic acid



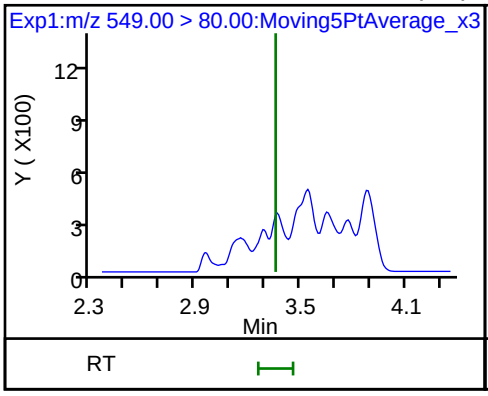
D 18 13C4 PFOS



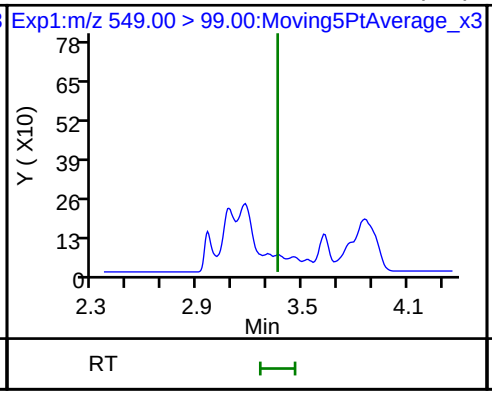
D 19 13C5 PFNA



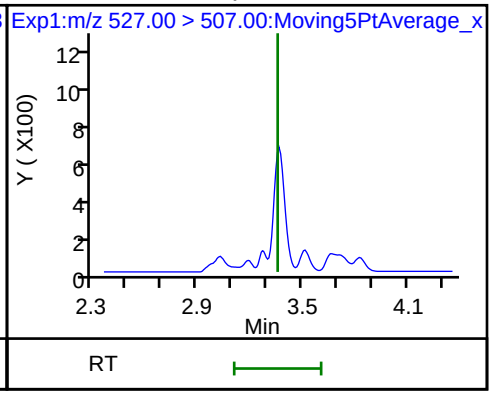
68 Perfluorononanesulfonic acid (ND)



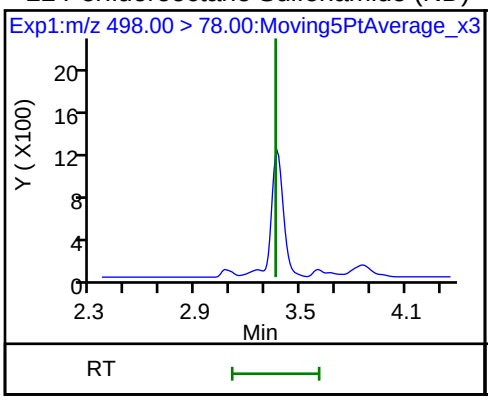
68 Perfluorononanesulfonic acid (ND)



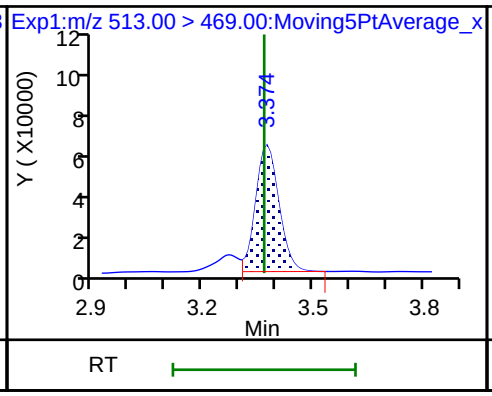
25 1H,1H,2H,2H-perfluorodecanesulfoni (ND)



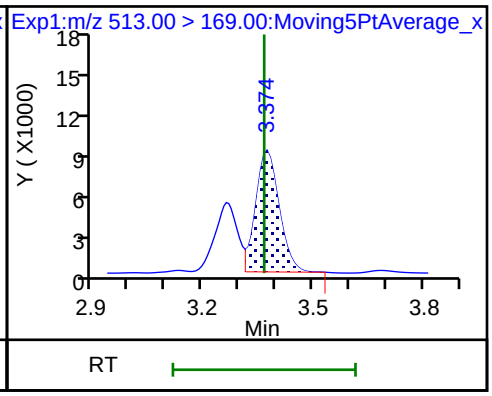
22 Perfluorooctane Sulfonamide (ND)



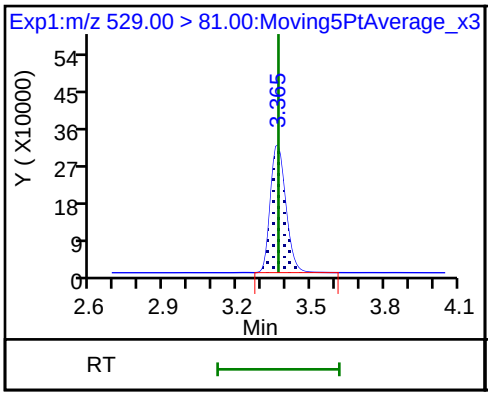
24 Perfluorodecanoic acid



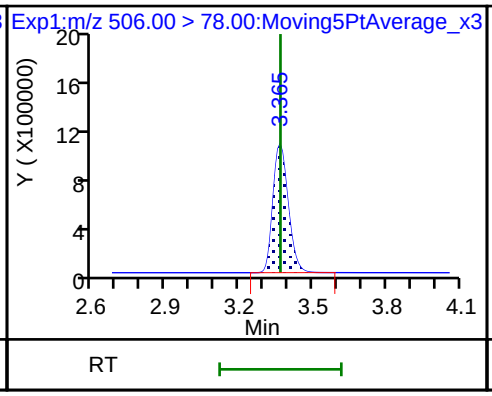
24 Perfluorodecanoic acid



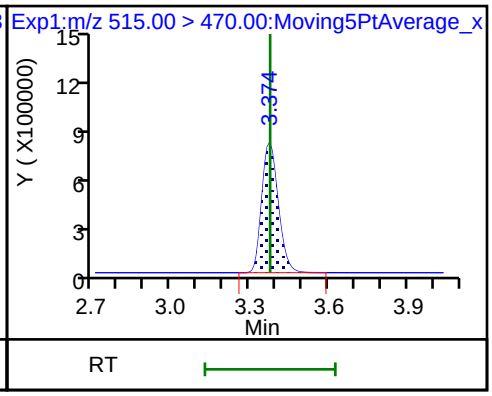
D 26 M2-8:2FTS



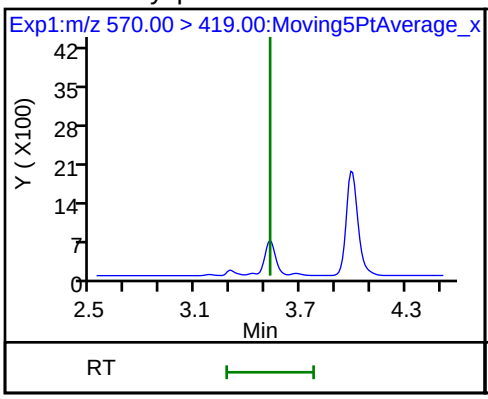
D 21 13C8 FOSA



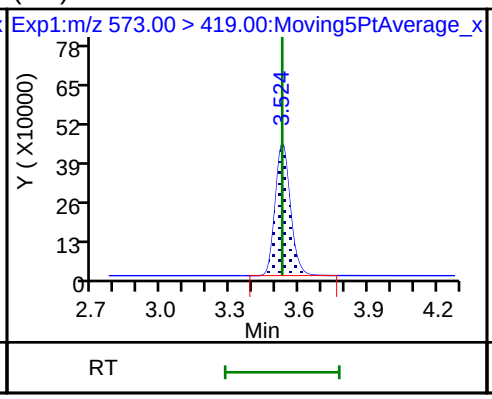
D 23 13C2 PFDA



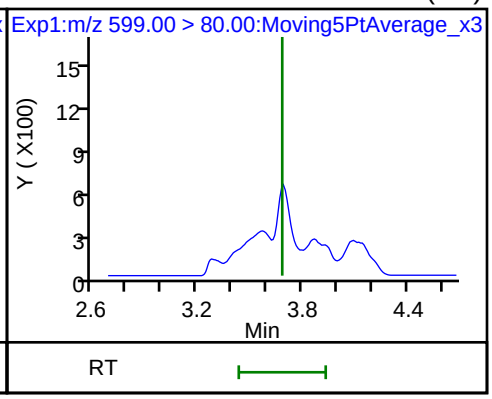
28 N-methyl perfluorooctane sulfonamid (ND)



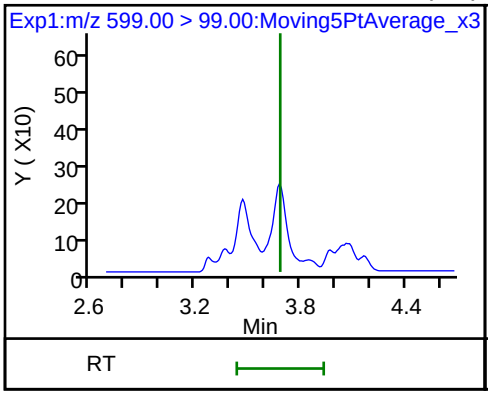
D 27 d3-NMeFOSAA



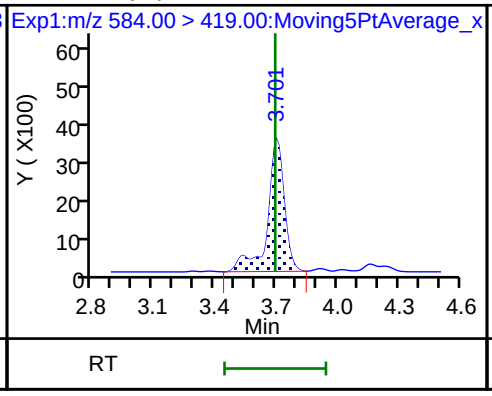
29 Perfluorodecane Sulfonic acid (ND)



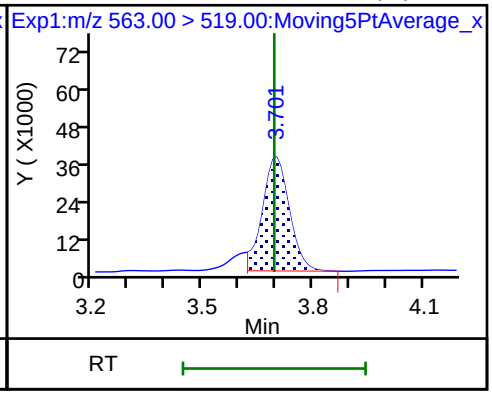
29 Perfluorodecane Sulfonic acid (ND)



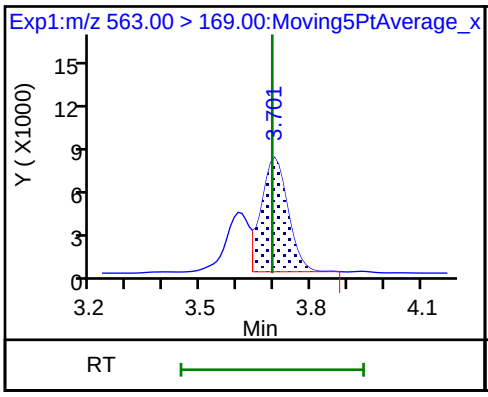
33 N-ethyl perfluorooctane sulfonamid



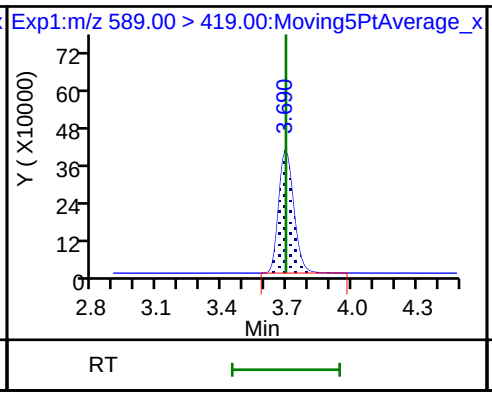
31 Perfluoroundecanoic acid (M)



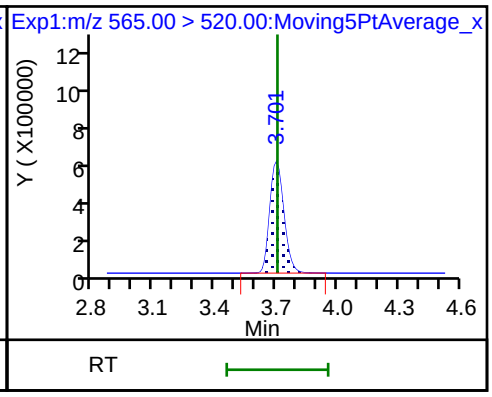
31 Perfluoroundecanoic acid



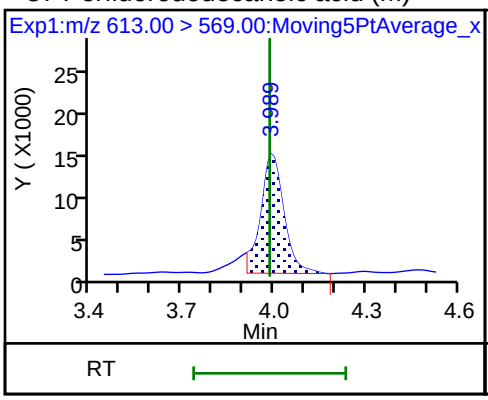
D 32 d5-NEtFOSAA



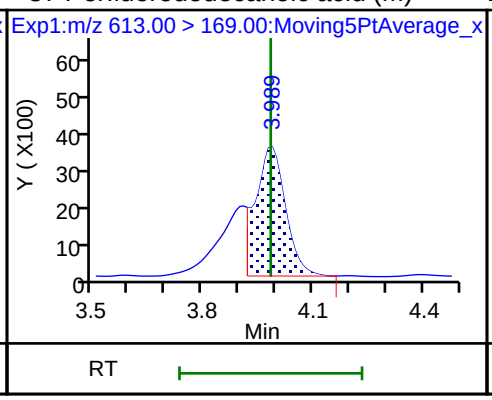
D 30 13C2 PFUnA



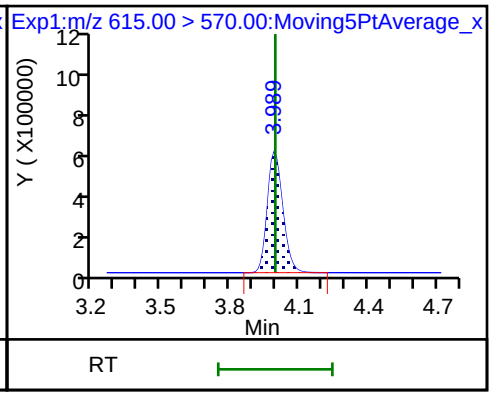
37 Perfluorododecanoic acid (M)



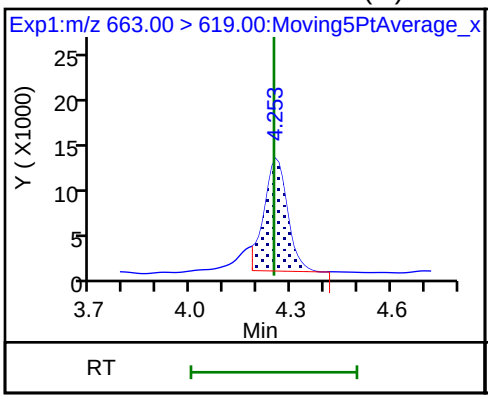
37 Perfluorododecanoic acid (M)



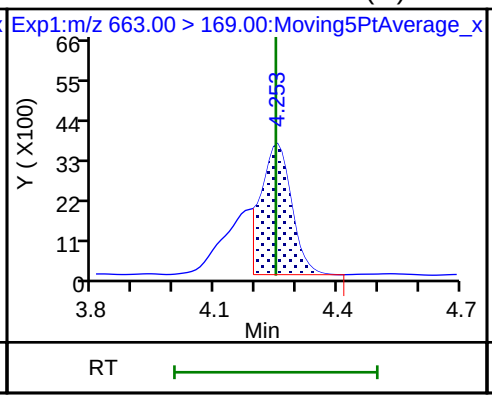
D 36 13C2 PFDoA



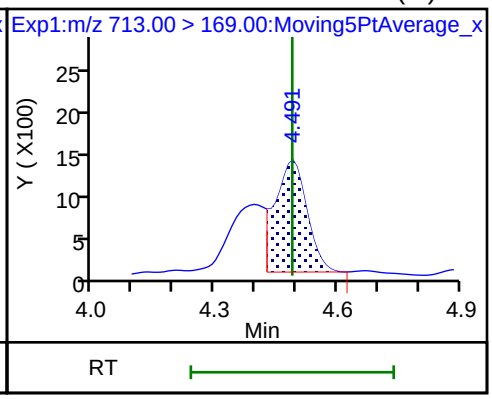
41 Perfluorotridecanoic acid (M)



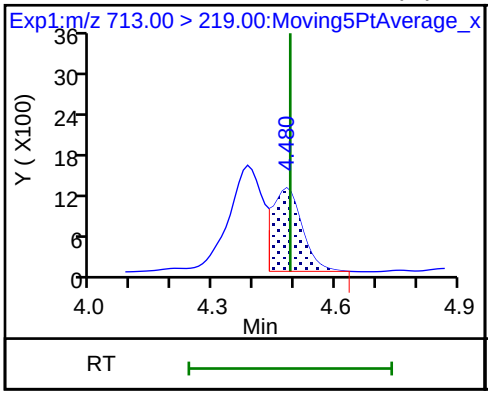
41 Perfluorotridecanoic acid (M)



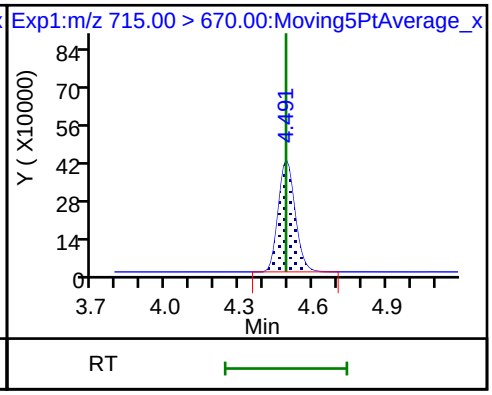
42 Perfluorotetradecanoic acid (M)



42 Perfluorotetradecanoic acid (M)



D 43 13C2-PFTeDA



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

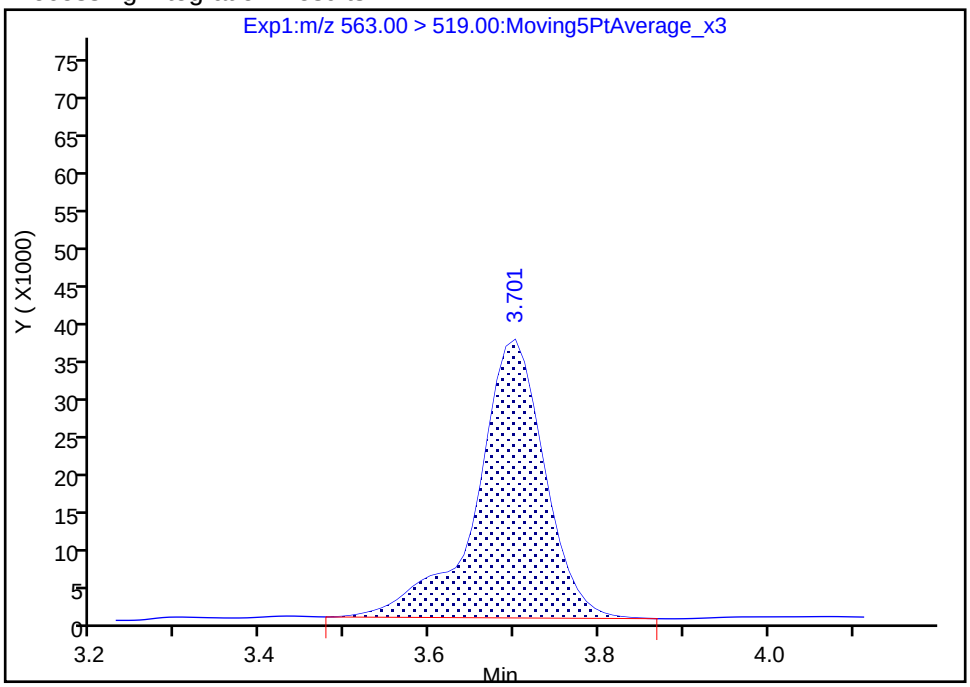
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\2018.07.06LLC_022.d				
Injection Date:	07-Jul-2018 02:06:54	Instrument ID:	A8_N		
Lims ID:	320-40571-A-9-A	Lab Sample ID:	320-40571-9		
Client ID:	NF20-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	14	Worklist Smp#:	10
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

31 Perfluoroundecanoic acid, CAS: 2058-94-8

Signal: 1

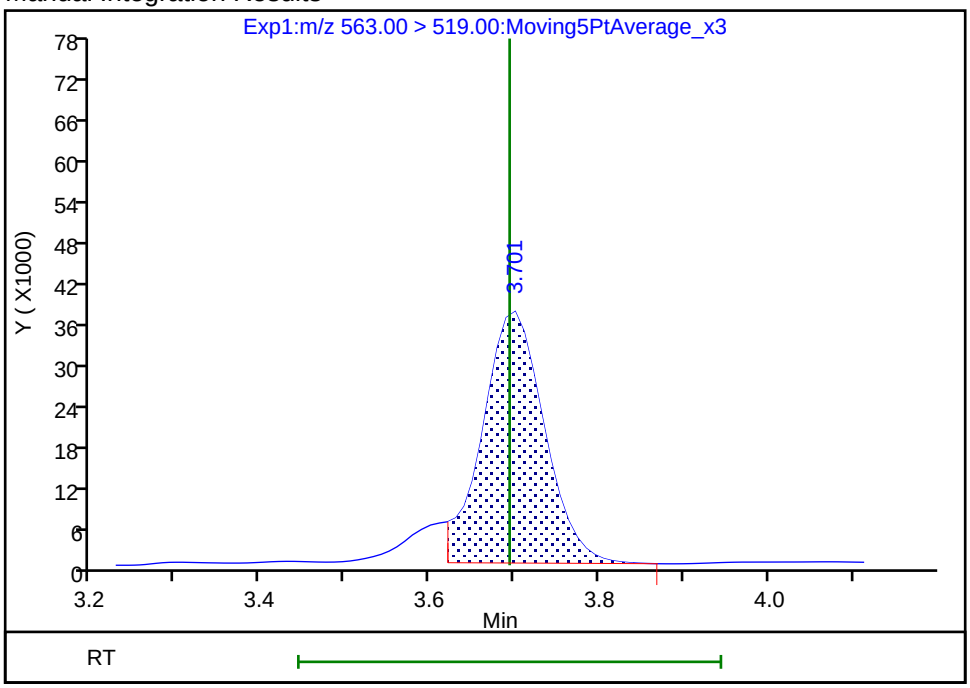
Processing Integration Results

RT: 3.70
Area: 207112
Amount: 0.222051
Amount Units: ng/ml



Manual Integration Results

RT: 3.70
Area: 186936
Amount: 0.200420
Amount Units: ng/ml



Reviewer: mongkols, 09-Jul-2018 13:10:33

Audit Action: Manually Integrated Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

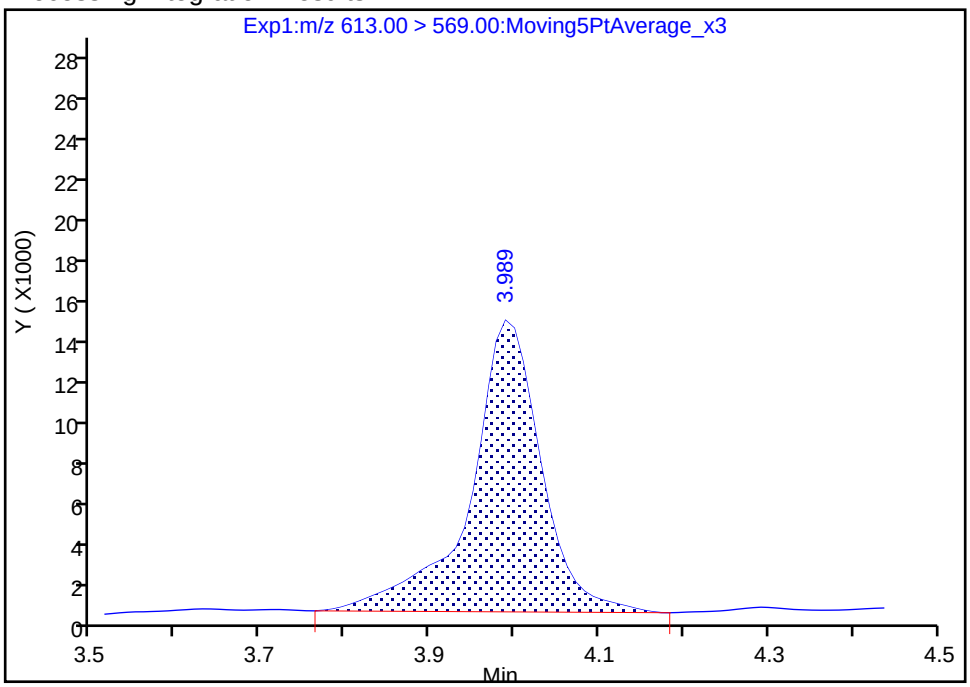
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\2018.07.06LLC_022.d				
Injection Date:	07-Jul-2018 02:06:54	Instrument ID:	A8_N		
Lims ID:	320-40571-A-9-A	Lab Sample ID:	320-40571-9		
Client ID:	NF20-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	14	Worklist Smp#:	10
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

37 Perfluorododecanoic acid, CAS: 307-55-1

Signal: 1

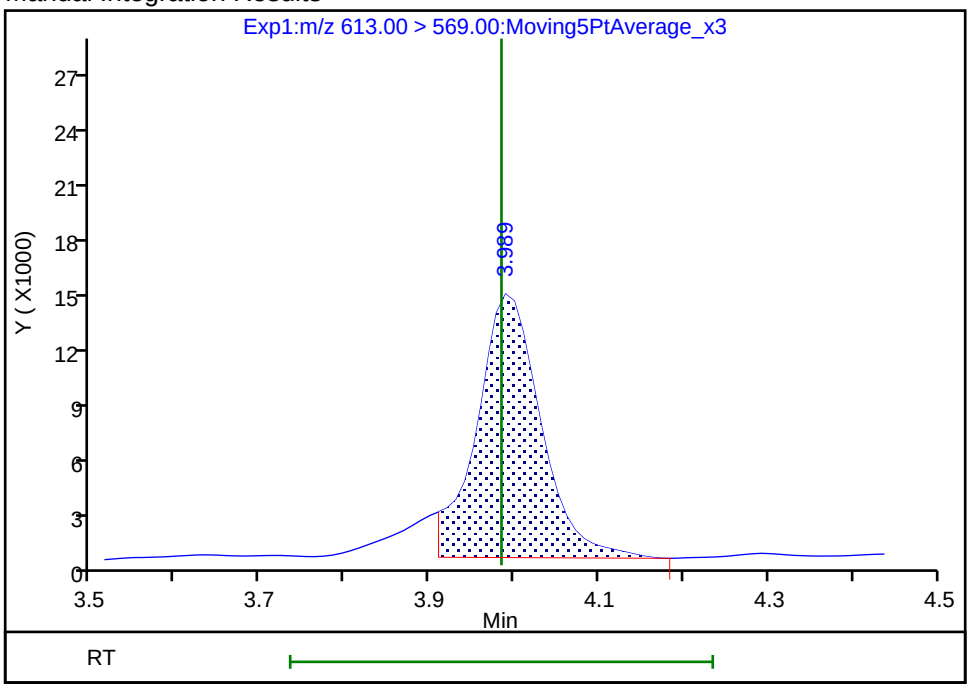
Processing Integration Results

RT: 3.99
Area: 83894
Amount: 0.070951
Amount Units: ng/ml



Manual Integration Results

RT: 3.99
Area: 75415
Amount: 0.063780
Amount Units: ng/ml



Reviewer: mongkols, 09-Jul-2018 13:10:38

Audit Action: Manually Integrated Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

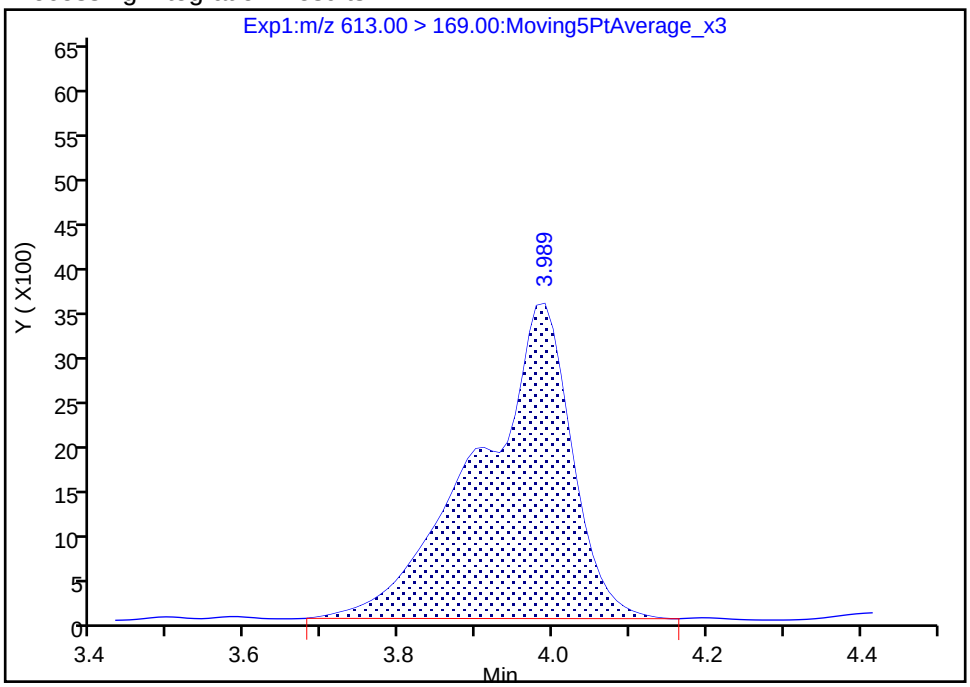
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\2018.07.06LLC_022.d				
Injection Date:	07-Jul-2018 02:06:54	Instrument ID:	A8_N		
Lims ID:	320-40571-A-9-A	Lab Sample ID:	320-40571-9		
Client ID:	NF20-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	14	Worklist Smp#:	10
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

37 Perfluorododecanoic acid, CAS: 307-55-1

Signal: 2

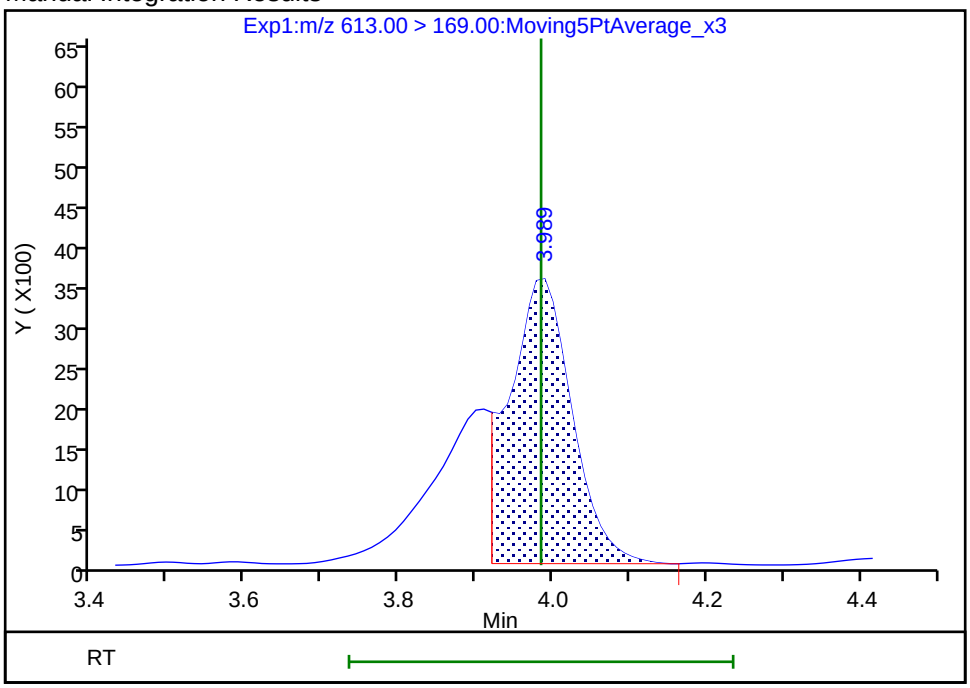
Processing Integration Results

RT: 3.99
Area: 30222
Amount: 0.070951
Amount Units: ng/ml



Manual Integration Results

RT: 3.99
Area: 19871
Amount: 0.063780
Amount Units: ng/ml



Reviewer: mongkols, 09-Jul-2018 13:10:44

Audit Action: Manually Integrated Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

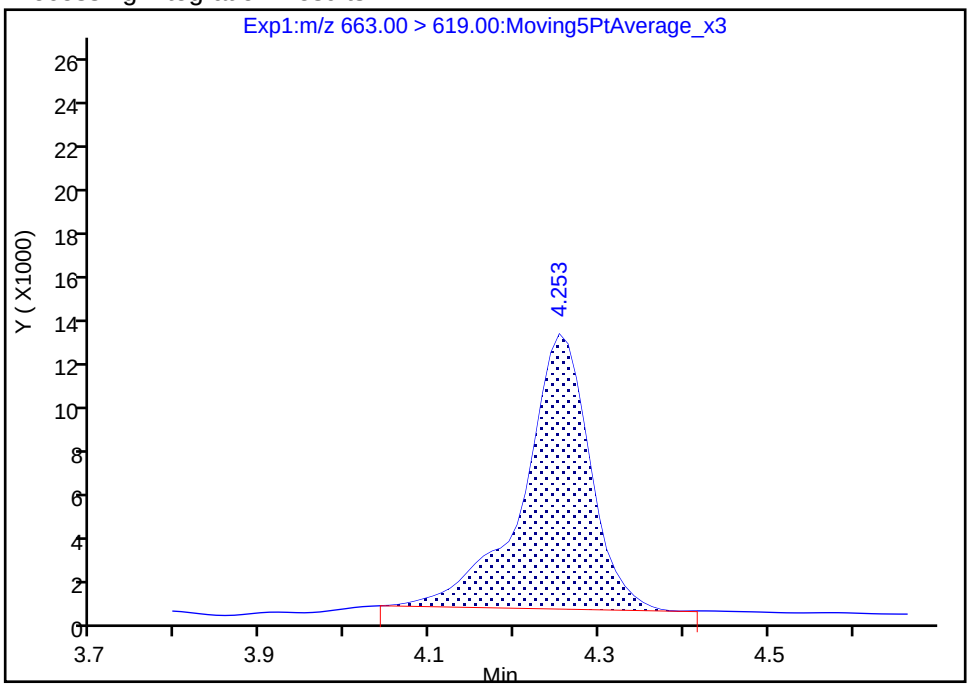
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\2018.07.06LLC_022.d				
Injection Date:	07-Jul-2018 02:06:54	Instrument ID:	A8_N		
Lims ID:	320-40571-A-9-A	Lab Sample ID:	320-40571-9		
Client ID:	NF20-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	14	Worklist Smp#:	10
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

41 Perfluorotridecanoic acid, CAS: 72629-94-8

Signal: 1

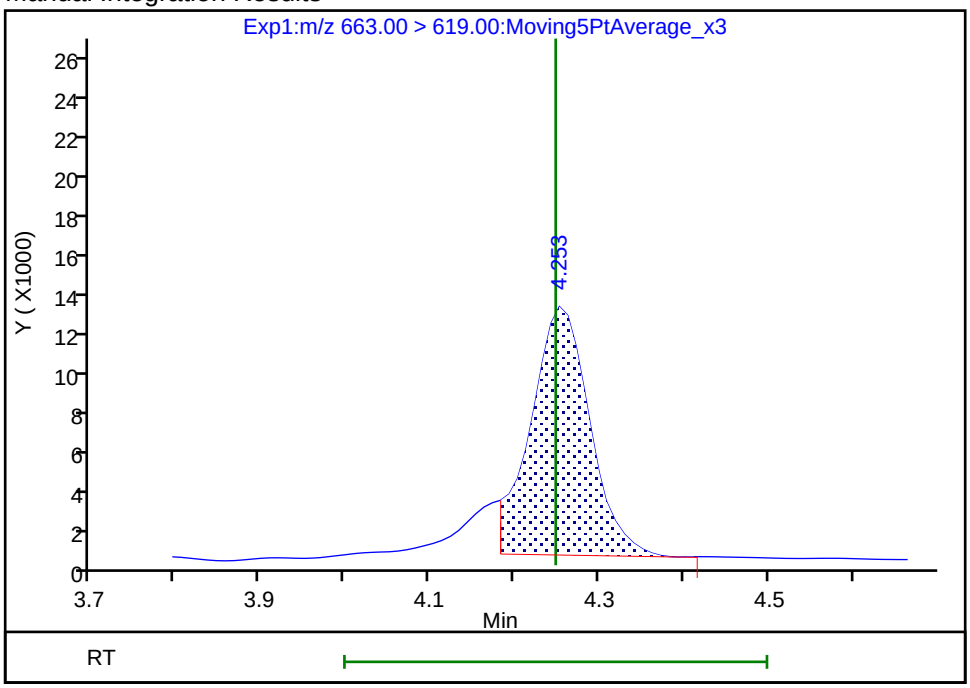
Processing Integration Results

RT: 4.25
Area: 69076
Amount: 0.052445
Amount Units: ng/ml



Manual Integration Results

RT: 4.25
Area: 60767
Amount: 0.046136
Amount Units: ng/ml



Reviewer: mongkols, 09-Jul-2018 13:10:50
Audit Action: Manually Integrated Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

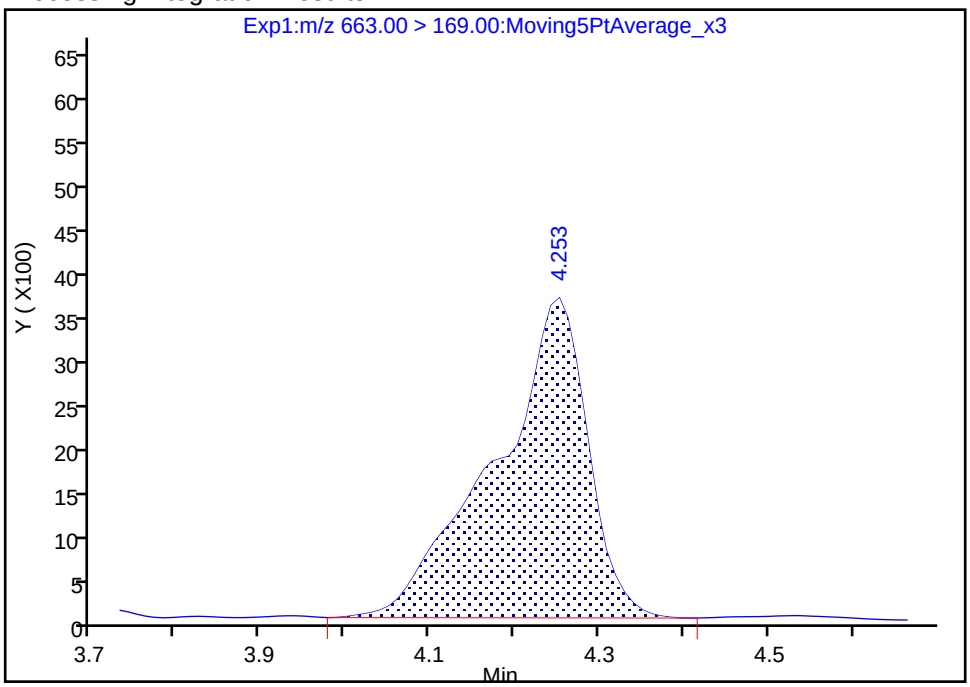
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\2018.07.06LLC_022.d				
Injection Date:	07-Jul-2018 02:06:54	Instrument ID:	A8_N		
Lims ID:	320-40571-A-9-A	Lab Sample ID:	320-40571-9		
Client ID:	NF20-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	14	Worklist Smp#:	10
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

41 Perfluorotridecanoic acid, CAS: 72629-94-8

Signal: 2

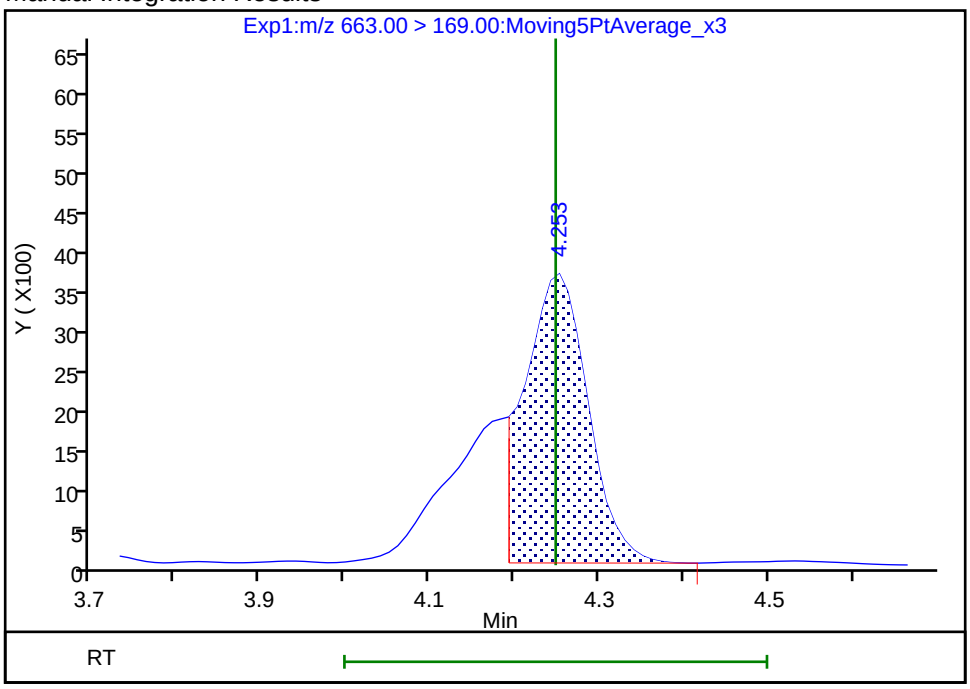
Processing Integration Results

RT: 4.25
Area: 28050
Amount: 0.052445
Amount Units: ng/ml



Manual Integration Results

RT: 4.25
Area: 18760
Amount: 0.046136
Amount Units: ng/ml



Reviewer: mongkols, 09-Jul-2018 13:10:52
Audit Action: Manually Integrated Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

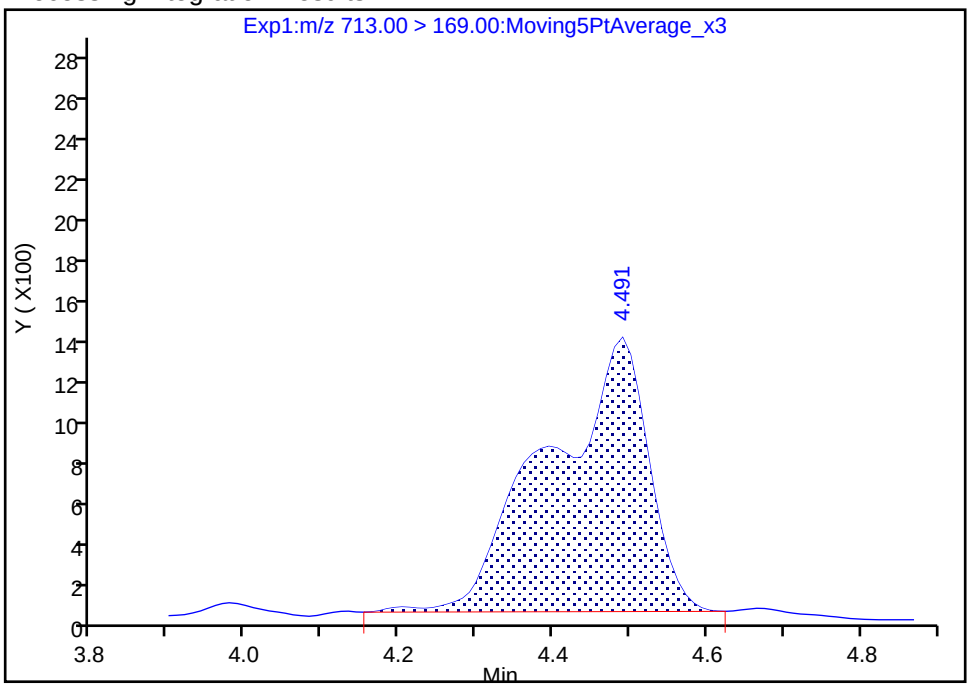
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\2018.07.06LLC_022.d				
Injection Date:	07-Jul-2018 02:06:54	Instrument ID:	A8_N		
Lims ID:	320-40571-A-9-A	Lab Sample ID:	320-40571-9		
Client ID:	NF20-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	14	Worklist Smp#:	10
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

42 Perfluorotetradecanoic acid, CAS: 376-06-7

Signal: 1

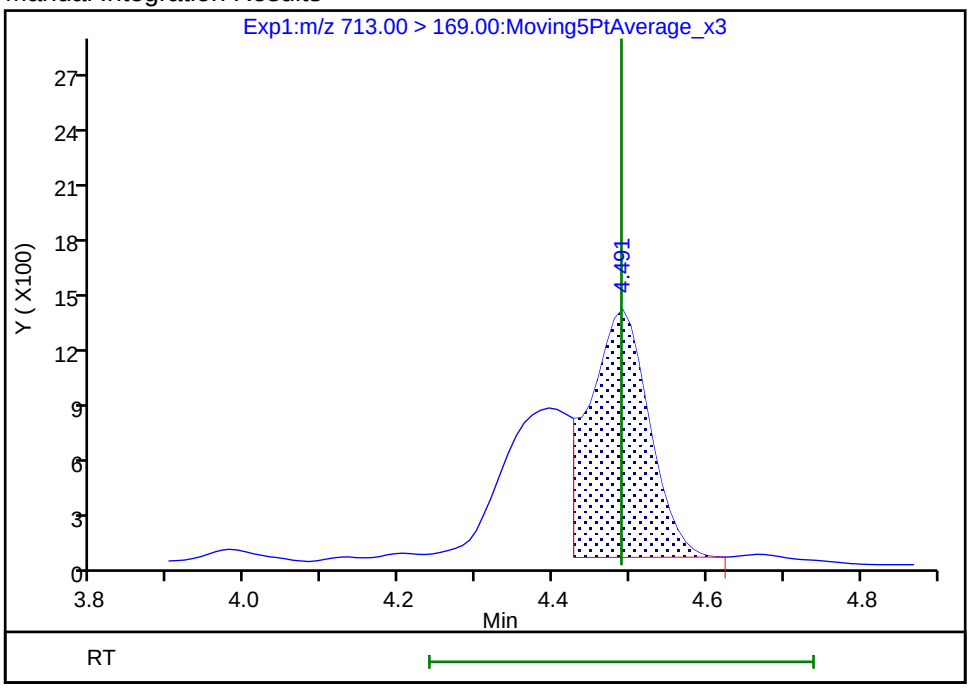
Processing Integration Results

RT: 4.49
Area: 12084
Amount: 0.056434
Amount Units: ng/ml



Manual Integration Results

RT: 4.49
Area: 7118
Amount: 0.033242
Amount Units: ng/ml



Reviewer: mongkols, 09-Jul-2018 13:10:59

Audit Action: Manually Integrated Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

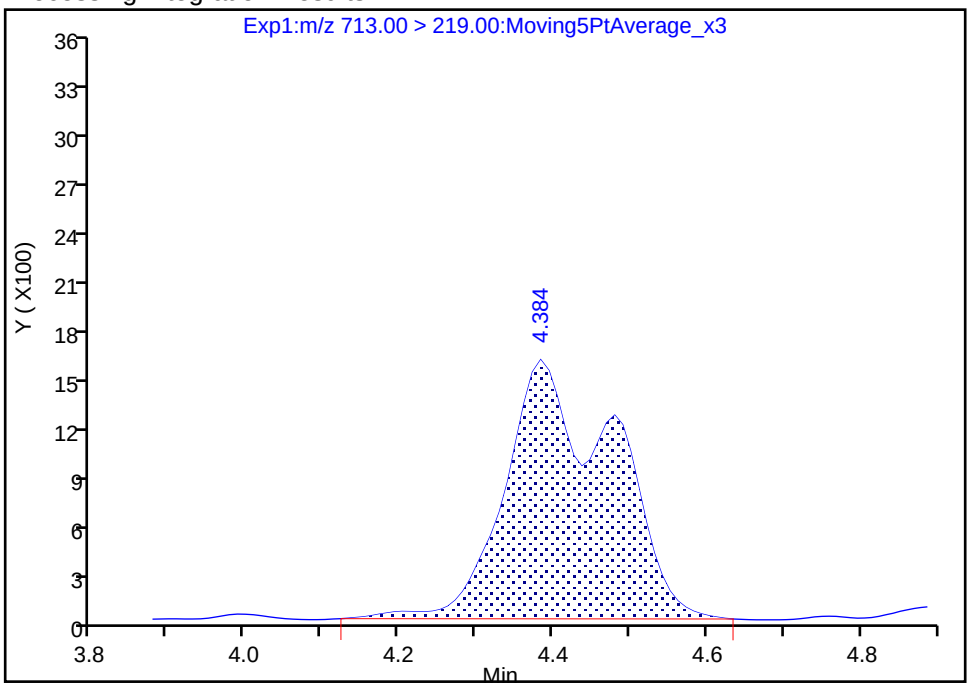
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\2018.07.06LLC_022.d				
Injection Date:	07-Jul-2018 02:06:54	Instrument ID:	A8_N		
Lims ID:	320-40571-A-9-A	Lab Sample ID:	320-40571-9		
Client ID:	NF20-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	14	Worklist Smp#:	10
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

42 Perfluorotetradecanoic acid, CAS: 376-06-7

Signal: 2

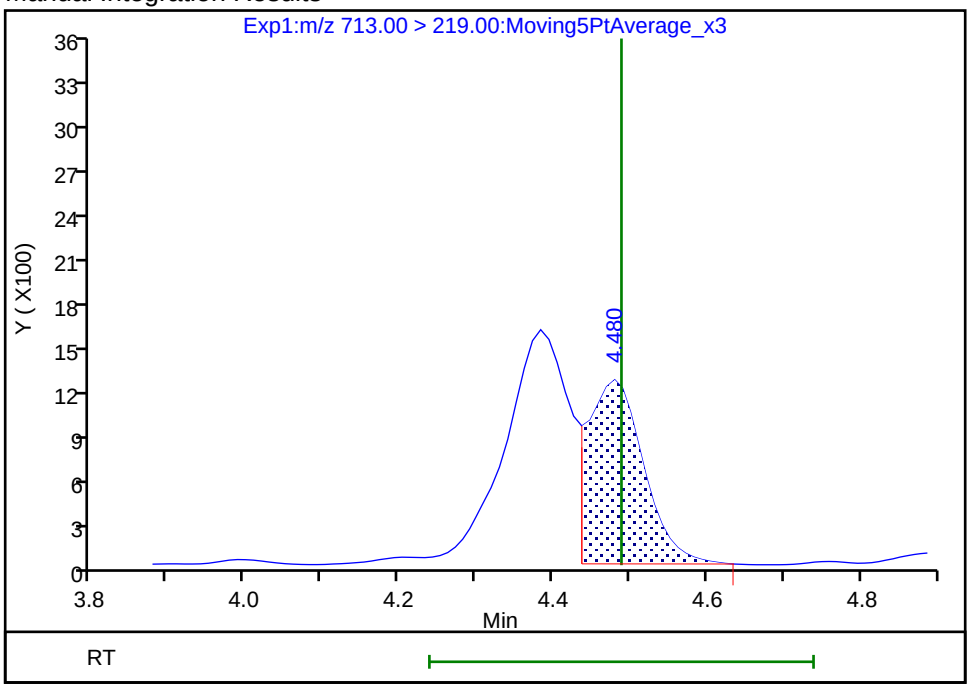
Processing Integration Results

RT: 4.38
Area: 15423
Amount: 0.056434
Amount Units: ng/ml



Manual Integration Results

RT: 4.48
Area: 6088
Amount: 0.033242
Amount Units: ng/ml



Reviewer: mongkols, 09-Jul-2018 13:11:02

Audit Action: Manually Integrated Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

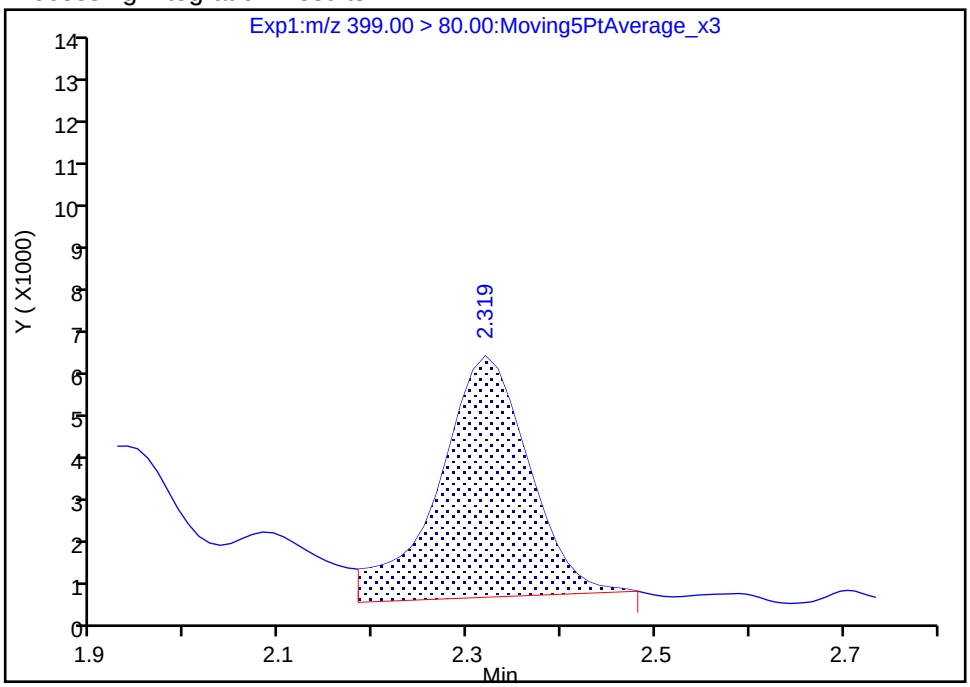
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\2018.07.06LLC_022.d				
Injection Date:	07-Jul-2018 02:06:54	Instrument ID:	A8_N		
Lims ID:	320-40571-A-9-A	Lab Sample ID:	320-40571-9		
Client ID:	NF20-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	14	Worklist Smp#:	10
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

8 Perfluorohexanesulfonic acid, CAS: 355-46-4

Signal: 1

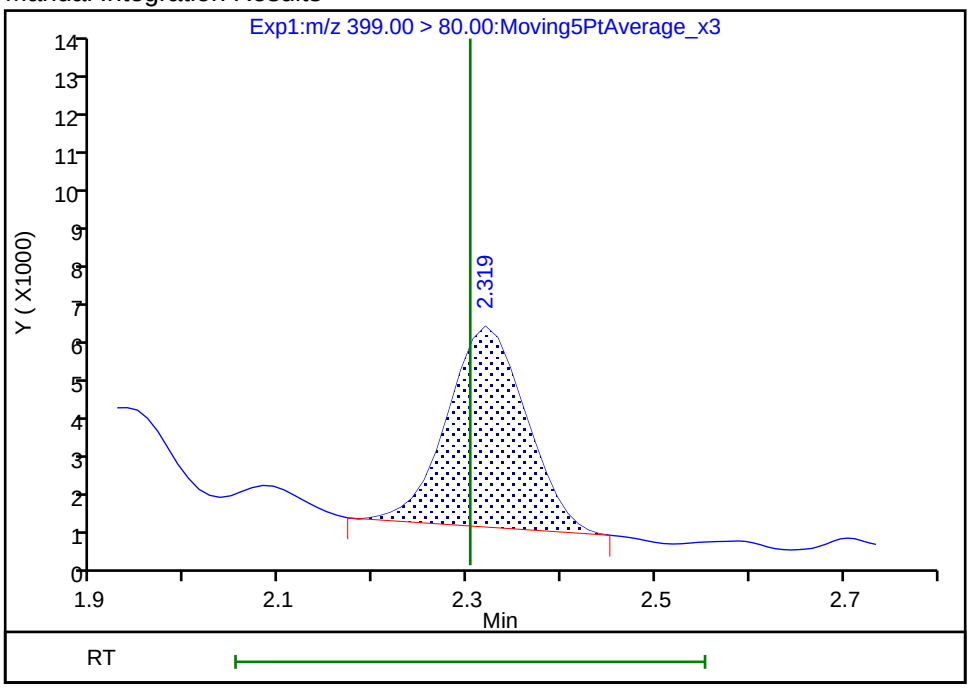
Processing Integration Results

RT: 2.32
Area: 35860
Amount: 0.012485
Amount Units: ng/ml



Manual Integration Results

RT: 2.32
Area: 28823
Amount: 0.010035
Amount Units: ng/ml



Reviewer: mongkols, 09-Jul-2018 13:09:53
Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

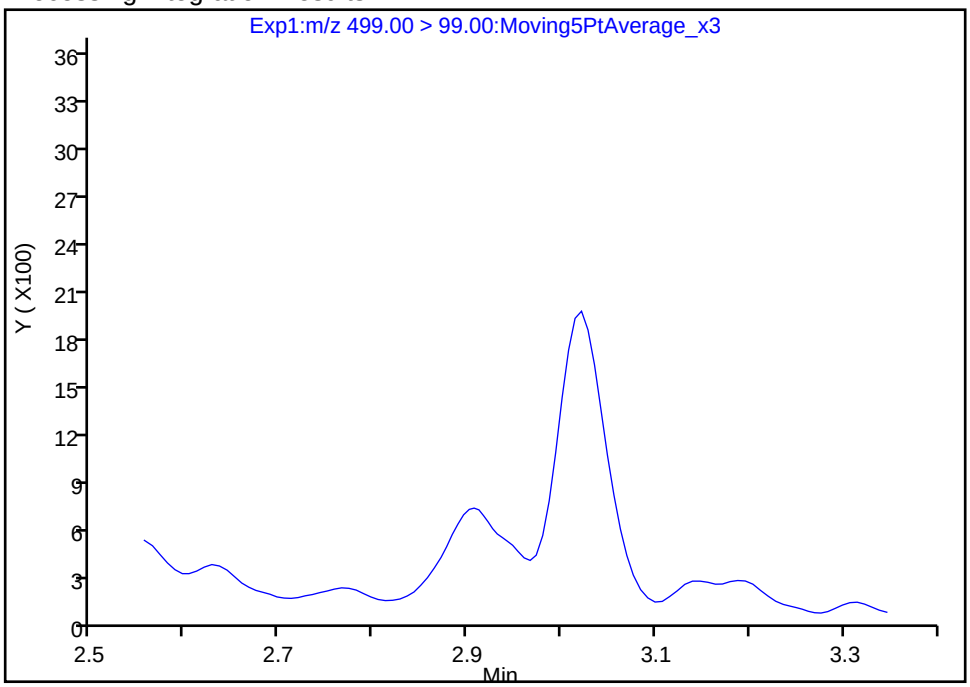
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\2018.07.06LLC_022.d				
Injection Date:	07-Jul-2018 02:06:54	Instrument ID:	A8_N		
Lims ID:	320-40571-A-9-A	Lab Sample ID:	320-40571-9		
Client ID:	NF20-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	14	Worklist Smp#:	10
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

17 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 2

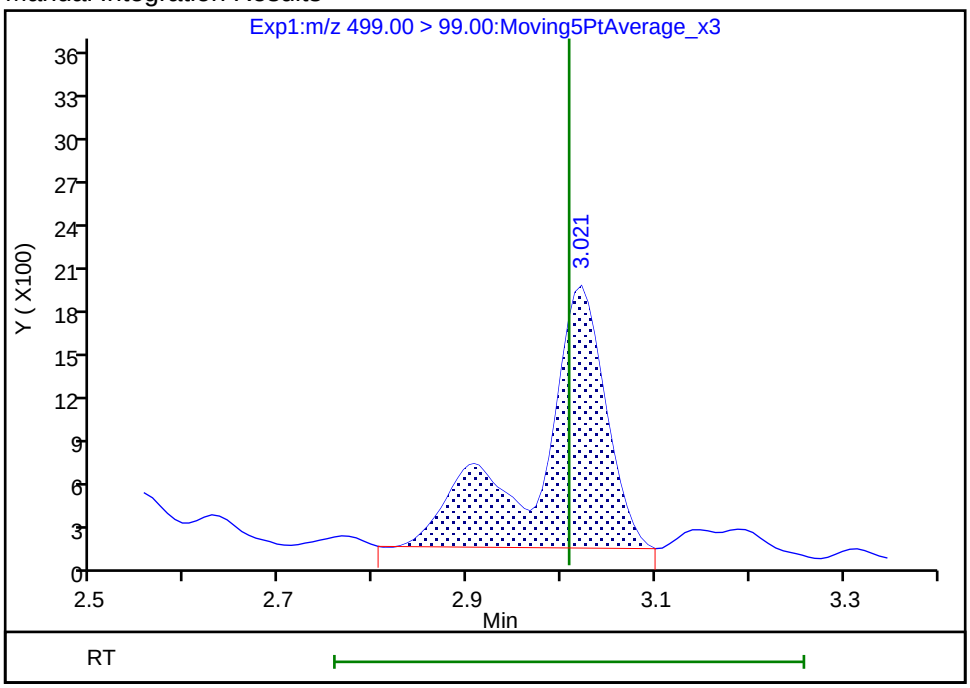
Processing Integration Results

RT: 3.02
Area: 0
Amount: 0.036551
Amount Units: ng/ml



Manual Integration Results

RT: 3.02
Area: 9239
Amount: 0.033007
Amount Units: ng/ml



Reviewer: mongkols, 09-Jul-2018 13:10:13

Audit Action: Manually Integrated Audit Reason: Assign Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

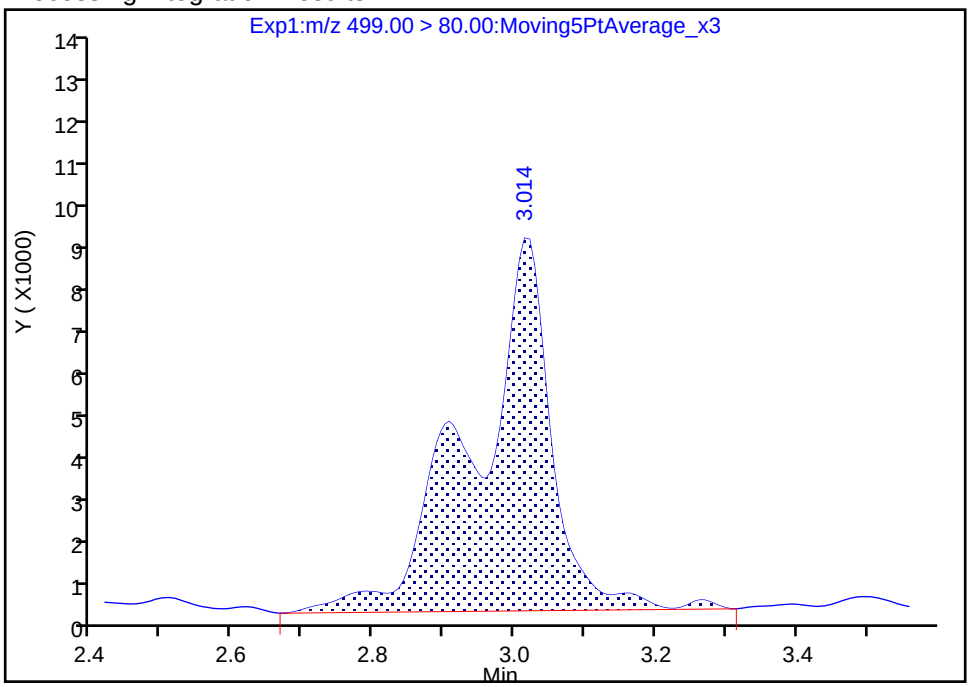
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\2018.07.06LLC_022.d				
Injection Date:	07-Jul-2018 02:06:54	Instrument ID:	A8_N		
Lims ID:	320-40571-A-9-A	Lab Sample ID:	320-40571-9		
Client ID:	NF20-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	14	Worklist Smp#:	10
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

17 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

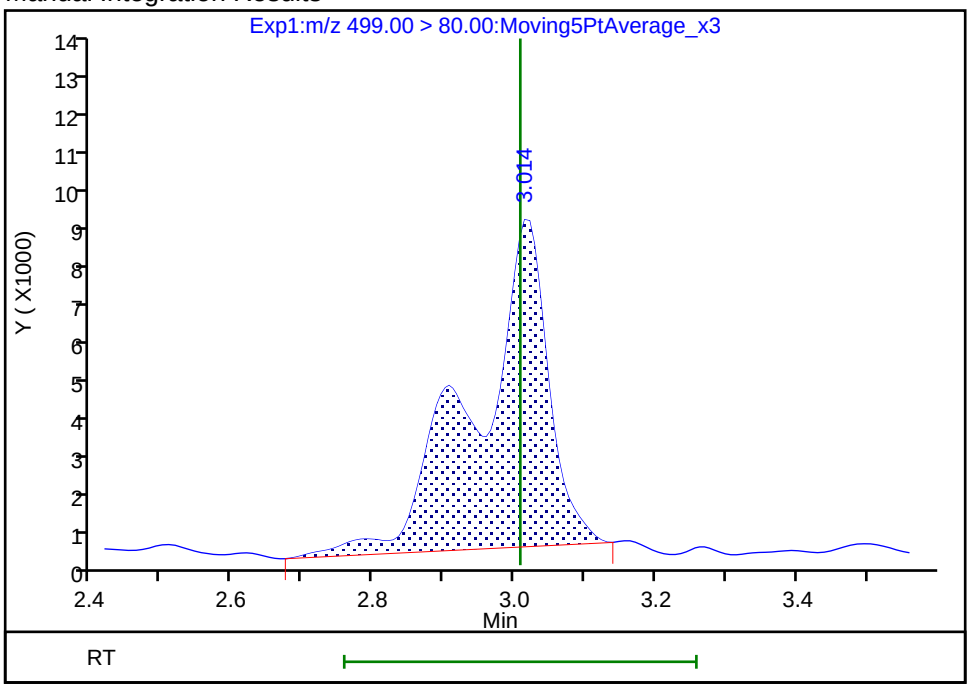
Processing Integration Results

RT: 3.01
Area: 68904
Amount: 0.036551
Amount Units: ng/ml



Manual Integration Results

RT: 3.01
Area: 62222
Amount: 0.033007
Amount Units: ng/ml



Reviewer: mongkols, 09-Jul-2018 13:10:13
Audit Action: Manually Integrated Audit Reason: Assign Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF20-GW-01 DL
Lab Sample ID: 320-40571-9 DL
Matrix: Water
Lab File ID: 2018.07.11LLB_047.d
Analysis Method: 537 (modified)
Date Collected: 06/20/2018 13:35
Extraction Method: 3535
Date Extracted: 07/02/2018 14:58
Sample wt/vol: 158(mL)
Date Analyzed: 07/11/2018 22:01
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 5
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 233511
Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	0.89	B	0.016	0.0028
2706-90-3	Perfluoropentanoic acid (PFPeA)	0.72		0.016	0.0039
307-24-4	Perfluorohexanoic acid (PFHxA)	0.16		0.016	0.0046
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.12		0.016	0.0020
335-67-1	Perfluorooctanoic acid (PFOA)	0.038		0.016	0.0067
375-95-1	Perfluorononanoic acid (PFNA)	0.031		0.016	0.0021
335-76-2	Perfluorodecanoic acid (PFDA)	0.013	J	0.016	0.0025
2058-94-8	Perfluoroundecanoic acid (PFUnA)	0.012	J	0.016	0.0087
307-55-1	Perfluorododecanoic acid (PFDoA)	0.0046	J	0.016	0.0044
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		0.016	0.010
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		0.016	0.0023
375-73-5	Perfluorobutanesulfonic acid (PFBS)	ND		0.016	0.0016
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	ND		0.016	0.0024
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	ND		0.016	0.0013
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.016	0.0015
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	ND		0.016	0.0043
8789-57-2	Perfluorononanesulfonic acid (PFNS)	ND		0.016	0.0013
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		0.016	0.0025
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		0.016	0.0028
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.16	0.025
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.16	0.015
757124-72-4	4:2 FTS	ND		0.16	0.041
27619-97-2	6:2 FTS	0.036	J	0.16	0.016
39108-34-4	8:2 FTS	ND		0.16	0.016

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF20-GW-01 DL
Lab Sample ID: 320-40571-9 DL
Matrix: Water
Lab File ID: 2018.07.11LLB_047.d
Analysis Method: 537 (modified)
Date Collected: 06/20/2018 13:35
Extraction Method: 3535
Date Extracted: 07/02/2018 14:58
Sample wt/vol: 158(mL)
Date Analyzed: 07/11/2018 22:01
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 5
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 233511
Units: ug/L

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00992	13C4 PFBA	95		25-150
STL01893	13C5 PFPeA	102		25-150
STL00993	13C2 PFHxA	102		25-150
STL01892	13C4-PFHpA	107		25-150
STL00990	13C4 PFOA	99		25-150
STL00995	13C5 PFNA	101		25-150
STL00996	13C2 PFDA	101		25-150
STL00997	13C2 PFUnA	97		25-150
STL00998	13C2 PFDoA	81		25-150
STL02116	13C2-PFTeDA	52		25-150
STL02337	13C3-PFBS	97		25-150
STL00994	18O2 PFHxS	103		25-150
STL00991	13C4 PFOS	96		25-150
STL01056	13C8 FOSA	82		25-150
STL02118	d3-NMeFOSAA	101		25-150
STL02117	d5-NEtFOSAA	102		25-150
STL02279	M2-6:2FTS	93		25-150
STL02280	M2-8:2FTS	102		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180711-60928.b\2018.07.11LLB_047.d
Lims ID: 320-40571-A-9-A
Client ID: NF20-GW-01
Sample Type: Client
Inject. Date: 11-Jul-2018 22:01:51 ALS Bottle#: 28 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 5.0000
Sample Info: 320-40571-a-9-a 5X (232121)
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180711-60928.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 13-Jul-2018 09:02:08 Calib Date: 11-Jul-2018 15:38:42
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK010

First Level Reviewer: mongkols Date: 13-Jul-2018 09:02:07

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.430	1.435	-0.005	0.536	1075827	0.4772		95.4	7485	
2 Perfluorobutyric acid										
212.90 > 169.00	1.435	1.436	-0.001	1.004	5996755	2.83			2246	
D 3 13C5-PFPeA										
267.90 > 223.00	1.720	1.719	0.001	0.645	797175	0.5087		102	10555	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.720	1.721	-0.001	1.000	4410147	2.28			1561	
D 47 13C3-PFBS										
301.90 > 83.00	1.756	1.755	0.001	0.658	17757	0.4509		97.0	129	
D 7 13C2 PFHxA										
315.00 > 270.00	2.003	2.002	0.001	0.751	864093	0.5110		102	22852	
6 Perfluorohexanoic acid										
313.00 > 269.00	2.003	2.005	-0.002	1.000	916799	0.5154			1107	
313.00 > 119.00	2.003	2.005	-0.002	1.000	75720		12.11(5.03-15.10)		1065	
D 9 13C4-PFHpA										
367.00 > 322.00	2.319	2.319	0.0	0.869	835011	0.5360		107	18063	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.319	2.321	-0.002	1.000	734902	0.3805			1005	
363.00 > 169.00	2.319	2.321	-0.002	1.000	287020		2.56(1.13-3.40)		1654	
D 11 18O2 PFHxS										
403.00 > 84.00	2.332	2.332	0.0	0.874	1072120	0.4858		103	20724	
D 12 M2-6:2FTS										
429.00 > 81.00	2.644	2.643	0.001	0.991	147891	0.4428		93.2	2598	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.644	2.646	-0.002	1.000	55890	0.1147			1298	
D 14 13C4 PFOA										
417.00 > 372.00	2.667	2.667	0.0	1.000	789500	0.4967		99.3	22126	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.667	2.669	-0.002	1.000	233601	0.1201			144	M
413.00 > 169.00	2.667	2.669	-0.002	1.000	133983		1.74(0.84-2.52)		608	
* 62 13C2-PFOA										
415.00 > 370.00	2.667	2.669	-0.002		831278	0.5000			23113	
D 18 13C4 PFOS										
503.00 > 80.00	3.028	3.022	0.006	1.135	740269	0.4571		95.6	10618	
D 19 13C5 PFNA										
468.00 > 423.00	3.028	3.029	-0.001	1.135	717190	0.5048		101	16005	
20 Perfluorononanoic acid										
463.00 > 419.00	3.028	3.032	-0.004	1.000	156513	0.0984			233	
463.00 > 169.00	3.028	3.032	-0.004	1.000	37214		4.21(1.90-5.69)		249	
D 21 13C8 FOSA										
506.00 > 78.00	3.365	3.367	-0.002	1.262	953539	0.4083		81.7	24084	
D 26 M2-8:2FTS										
529.00 > 81.00	3.375	3.367	0.008	1.265	239157	0.4895		102	4279	
D 23 13C2 PFDA										
515.00 > 470.00	3.384	3.377	0.007	1.269	629977	0.5050		101	8448	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.384	3.388	-0.004	1.000	52350	0.0396			181	
513.00 > 169.00	3.384	3.388	-0.004	1.000	9913		5.28(2.36-7.09)		134	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.542	3.535	0.007	1.328	257962	0.5046		101	11284	
D 30 13C2 PFUnA										
565.00 > 520.00	3.712	3.706	0.006	1.392	504682	0.4845		96.9	17658	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.701	3.706	-0.005	1.388	267112	0.5100		102	672	
31 Perfluoroundecanoic acid										M
563.00 > 519.00	3.712	3.719	-0.007	1.000	31367	0.0379			107	
563.00 > 169.00	3.712	3.719	-0.007	1.000	6719		4.67(2.12-6.36)		83.6	M
D 36 13C2 PFDoA										
615.00 > 570.00	4.000	3.996	0.004	1.500	435289	0.4030		80.6	5470	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.000	4.008	-0.008	1.000	13828	0.0145			15.9	
613.00 > 169.00	3.990	4.008	-0.018	0.997	3160		4.38(2.13-6.40)		63.2	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.501	4.500	0.001	1.688	292356	0.2609		52.2	2695	

QC Flag Legend

Review Flags

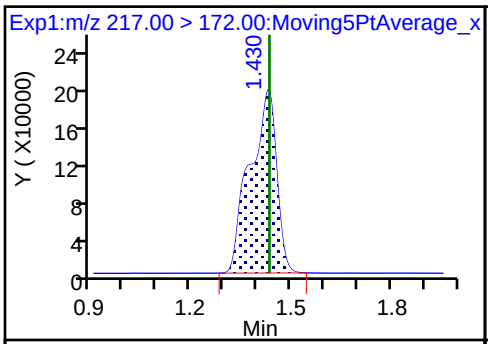
M - Manually Integrated

Report Date: 13-Jul-2018 09:02:08 Chrom Revision: 2.2 07-Jun-2018 07:41:54

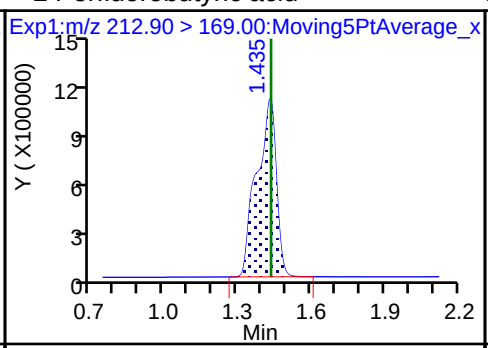
TestAmerica Sacramento

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180711-60928.b\2018.07.11LLB_047.d				
Injection Date:	11-Jul-2018 22:01:51	Instrument ID:	A8_N		
Lims ID:	320-40571-A-9-A	Lab Sample ID:	320-40571-9		
Client ID:	NF20-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	28	Worklist Smp#:	4
Injection Vol:	2.0 ul	Dil. Factor:	5.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		

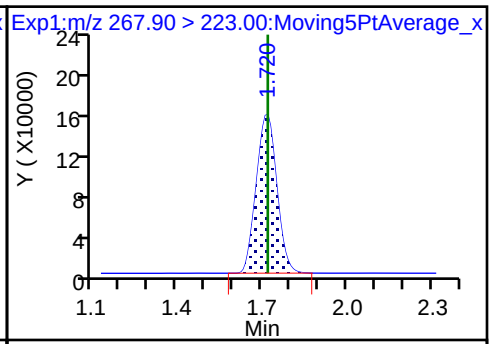
D 1 13C4 PFBA



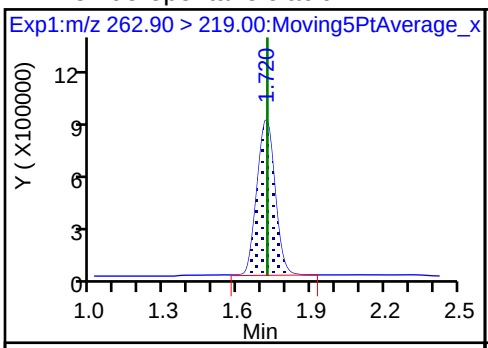
2 Perfluorobutyric acid



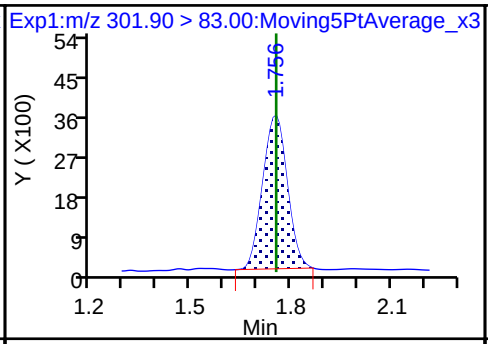
D 3 13C5-PFPeA



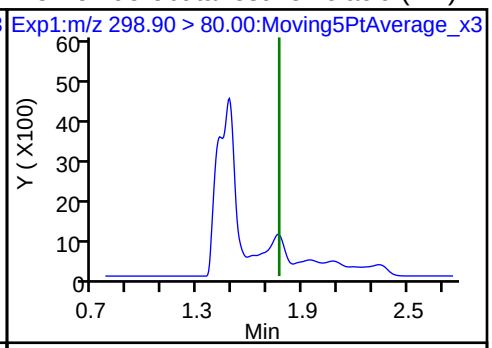
4 Perfluoropentanoic acid



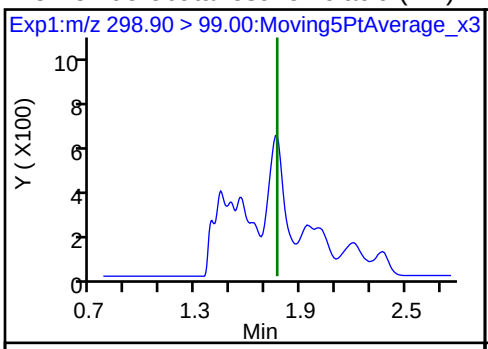
D 47 13C3-PFBS



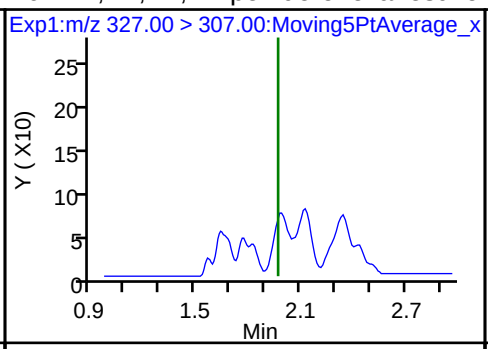
5 Perfluorobutanesulfonic acid (ND)



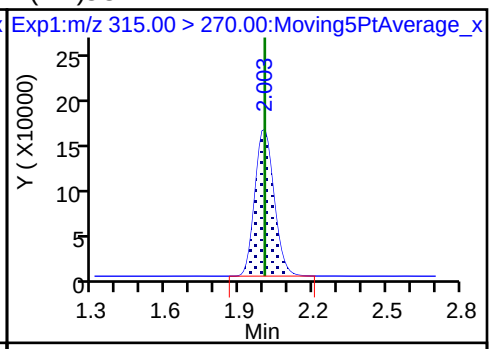
5 Perfluorobutanesulfonic acid (ND)



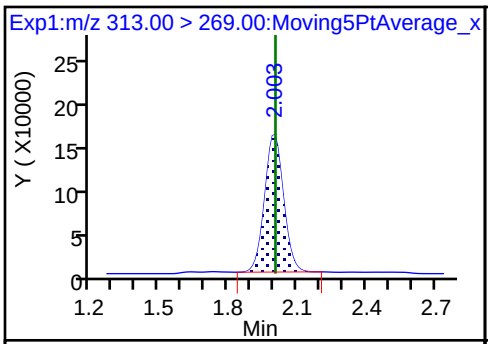
61 1H,1H,2H,2H-perfluorohexanesulfonic acid (ND)



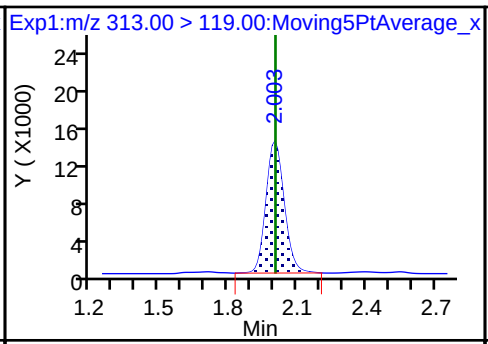
D 71 13C2 PFHxA



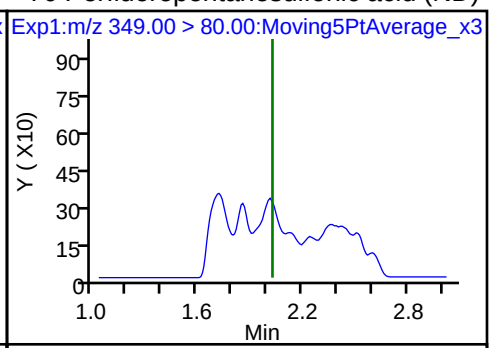
6 Perfluorohexanoic acid



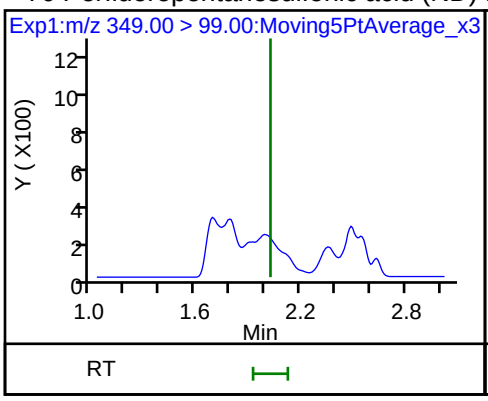
6 Perfluorohexanoic acid



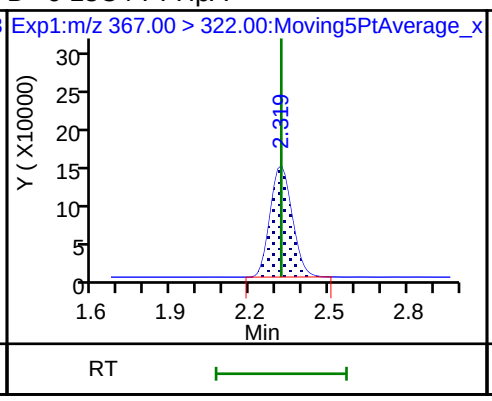
70 Perfluoropentanesulfonic acid (ND)



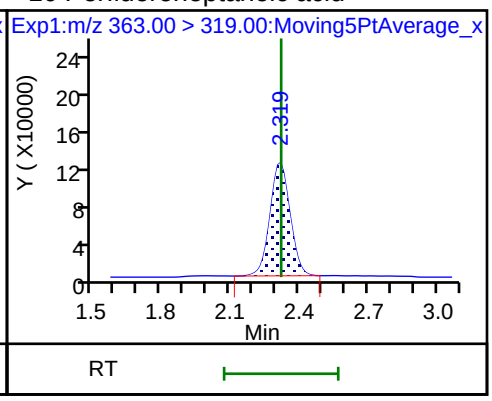
70 Perfluoropentanesulfonic acid (ND)



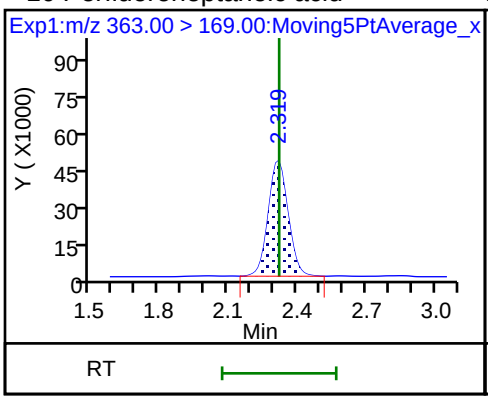
D 9 13C4-PFHpA



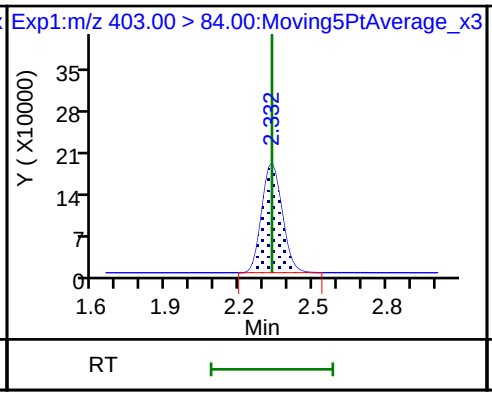
10 Perfluoroheptanoic acid



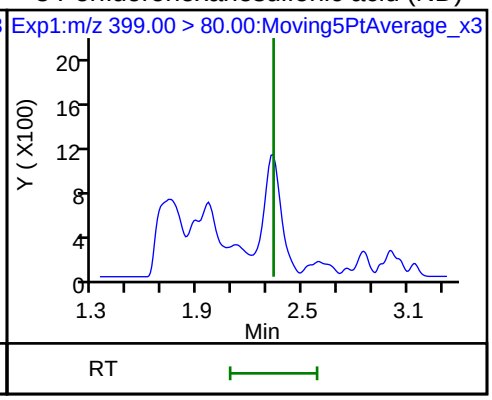
10 Perfluoroheptanoic acid



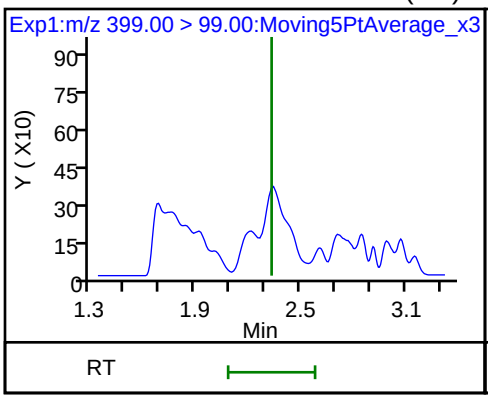
D 11 18O2 PFHxS



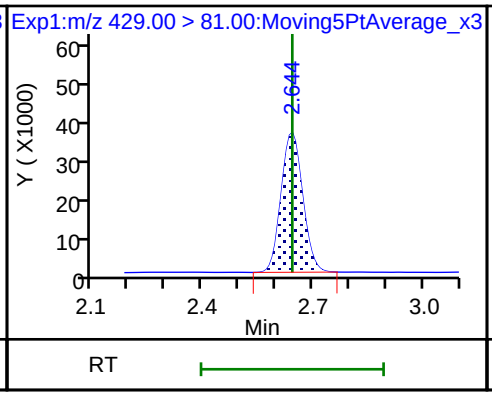
8 Perfluorohexanesulfonic acid (ND)



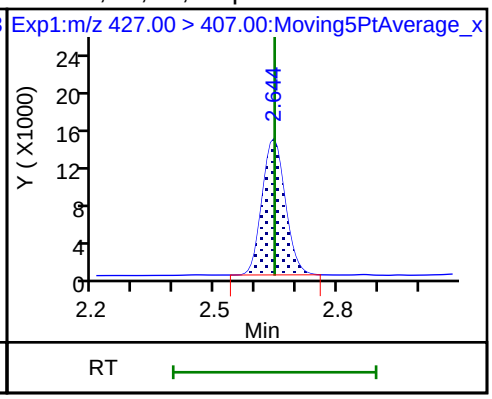
8 Perfluorohexanesulfonic acid (ND)



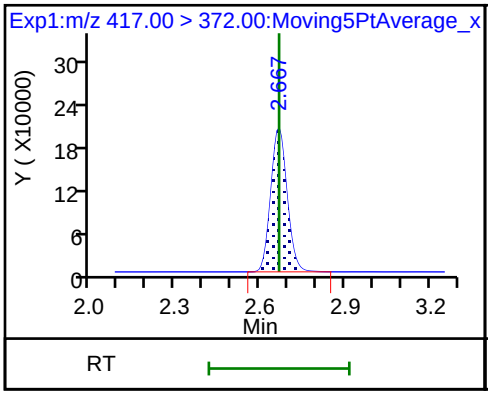
D 12 M2-6:2FTS



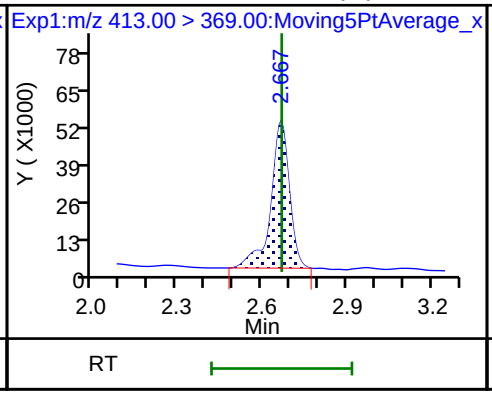
13 1H,1H,2H,2H-perfluorooctanesulfoni



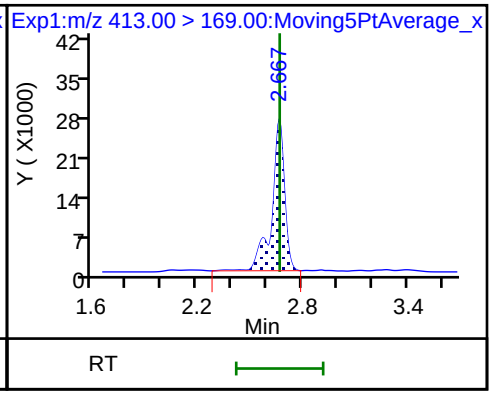
D 14 13C4 PFOA



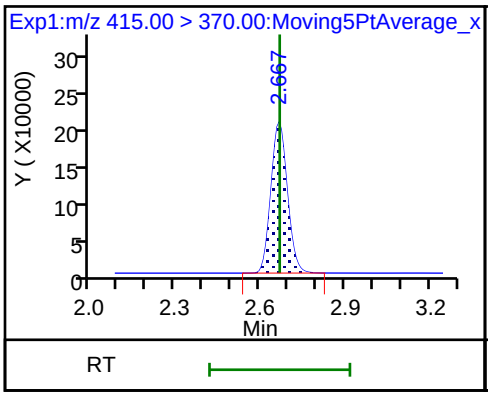
15 Perfluorooctanoic acid (M)



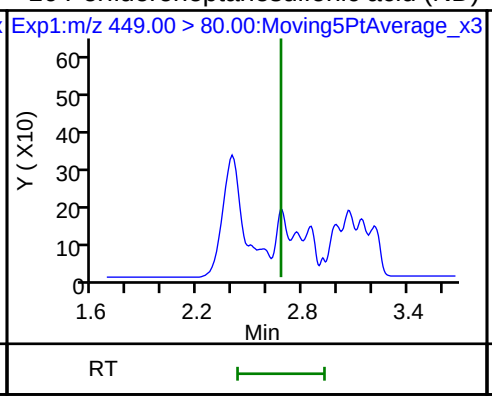
15 Perfluorooctanoic acid



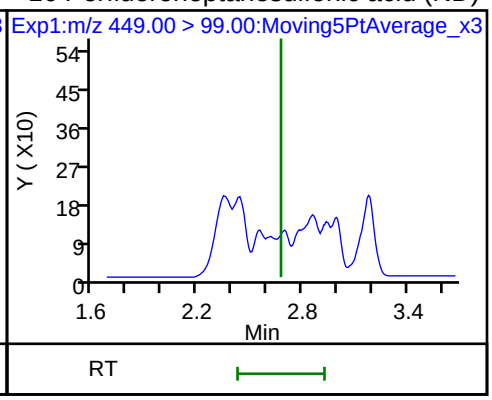
* 62 13C2-PFOA



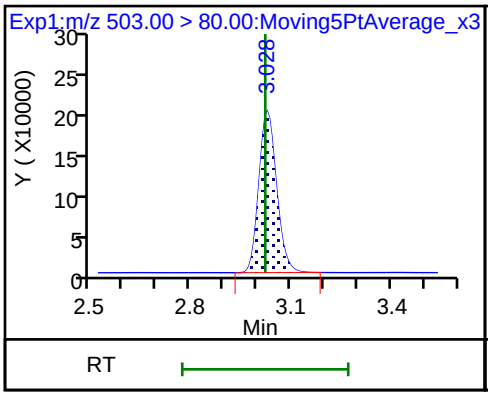
16 Perfluoroheptanesulfonic acid (ND)



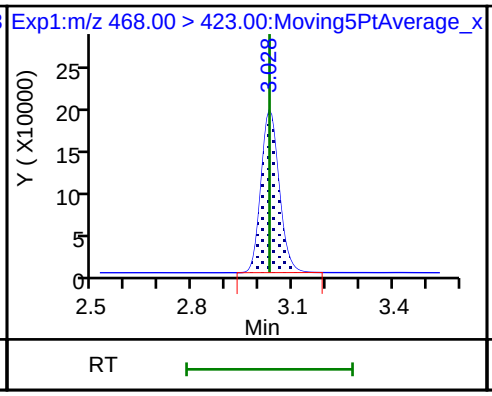
16 Perfluoroheptanesulfonic acid (ND)



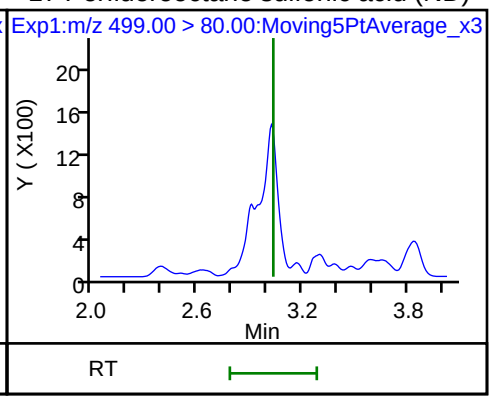
D 18 13C4 PFOS



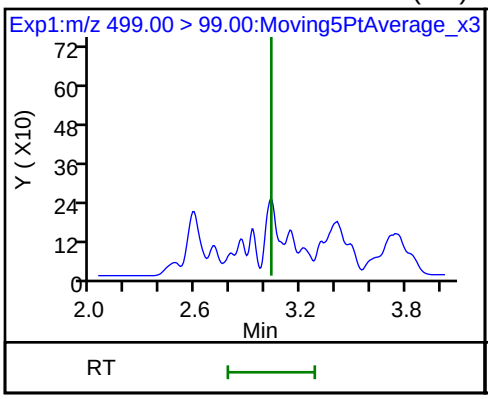
D 19 13C5 PFNA



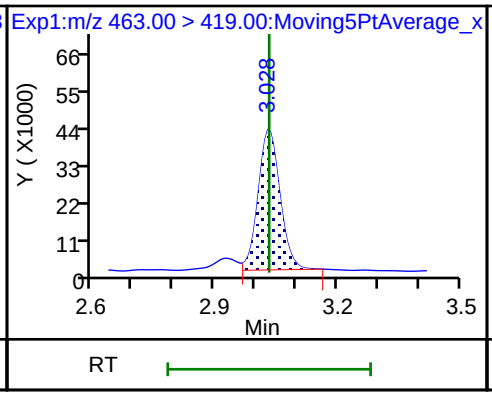
17 Perfluorooctane sulfonic acid (ND)



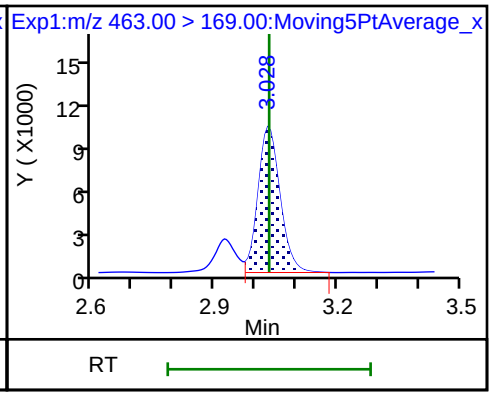
17 Perfluorooctane sulfonic acid (ND)



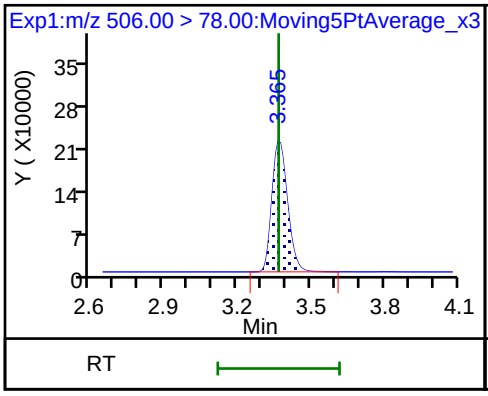
20 Perfluorononanoic acid



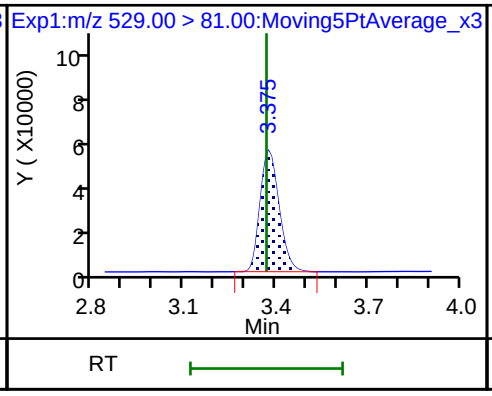
20 Perfluorononanoic acid



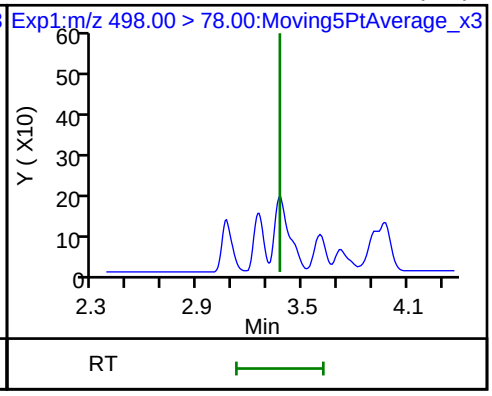
D 21 13C8 FOSA



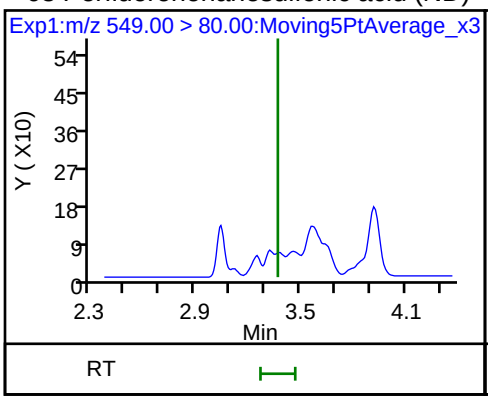
D 26 M2-8:2FTS



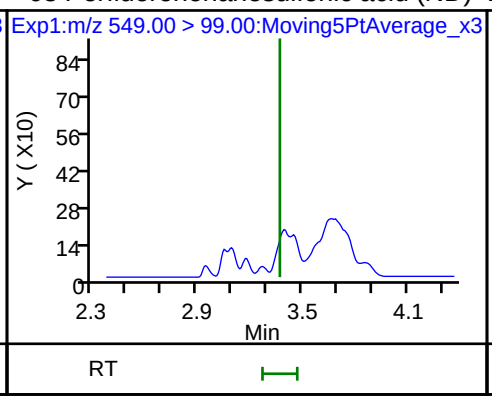
22 Perfluorooctane Sulfonamide (ND)



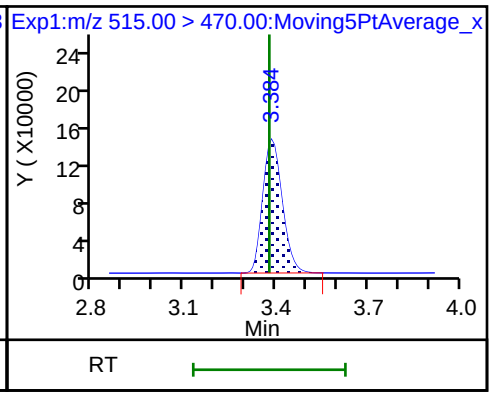
68 Perfluorononanesulfonic acid (ND)



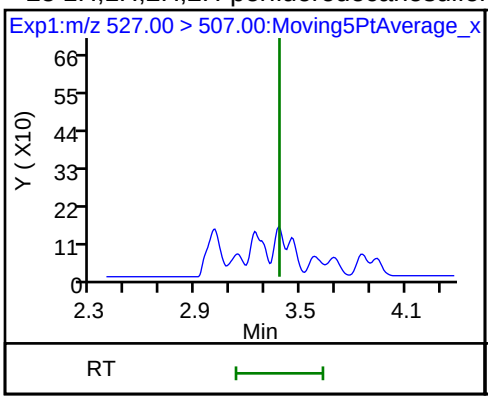
68 Perfluorononanesulfonic acid (ND)



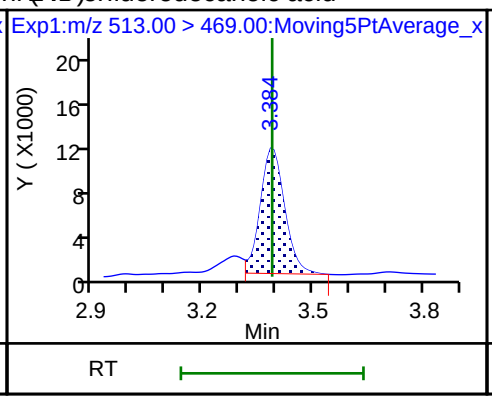
D 23 13C2 PFDA



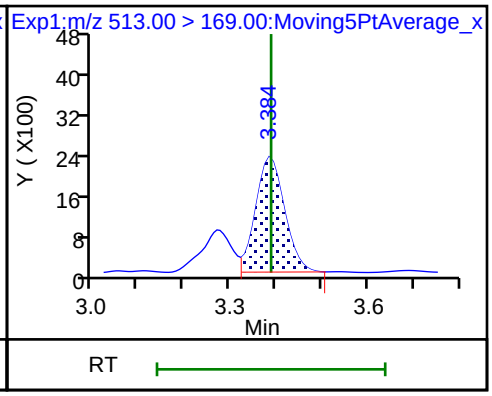
25 1H,1H,2H,2H-perfluorodecanesulfoni (ND)



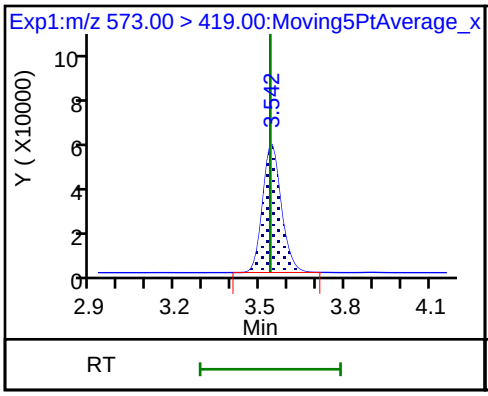
24 Perfluorodecanoic acid



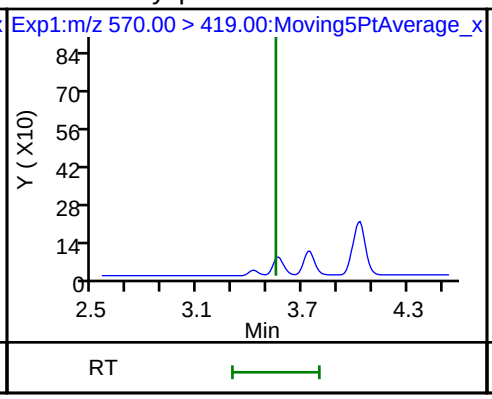
24 Perfluorodecanoic acid



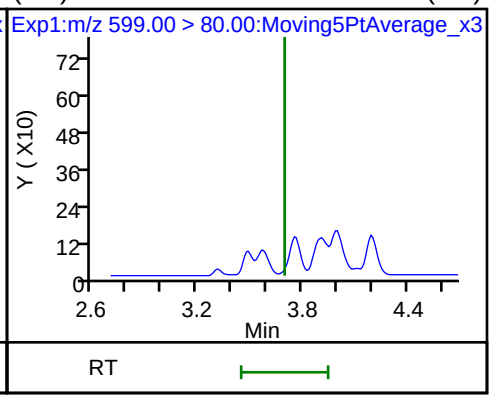
D 27 d3-NMeFOSAA



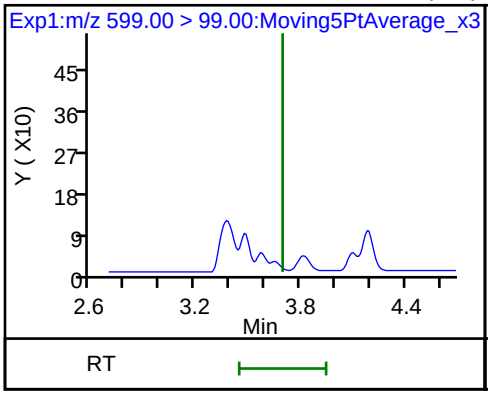
28 N-methyl perfluorooctane sulfonami (ND)



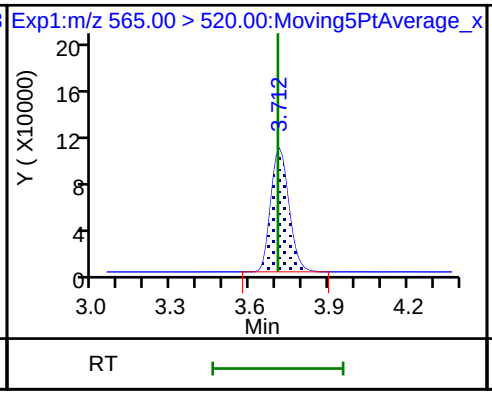
29 Perfluorodecane Sulfonic acid (ND)



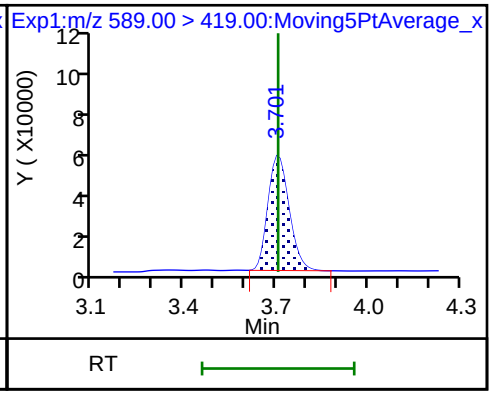
29 Perfluorodecane Sulfonic acid (ND)



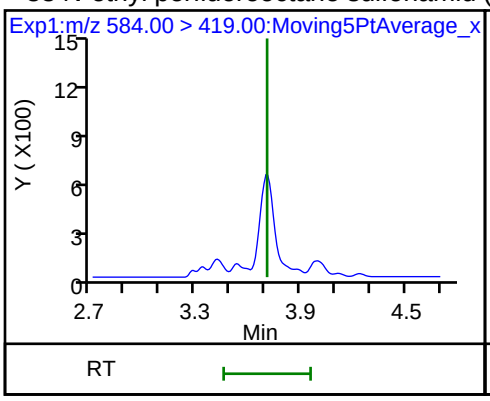
D 30 13C2 PFUnA



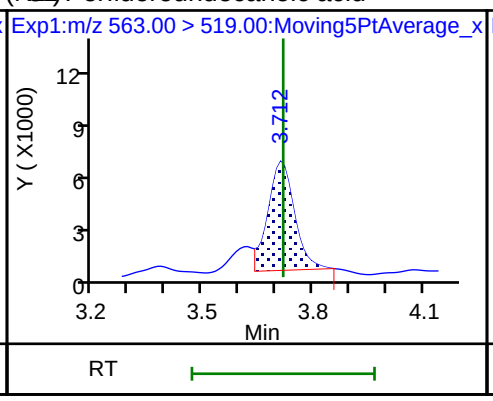
D 32 d5-NEtFOSAA



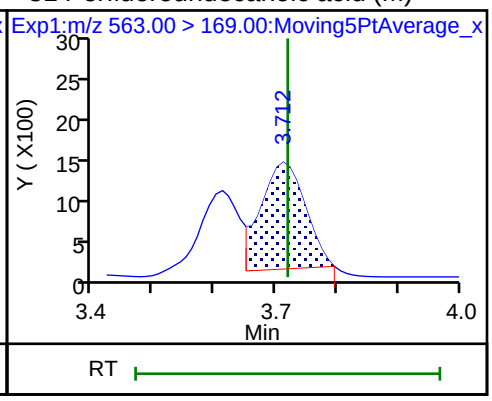
33 N-ethyl perfluorooctane sulfonamid (ND)



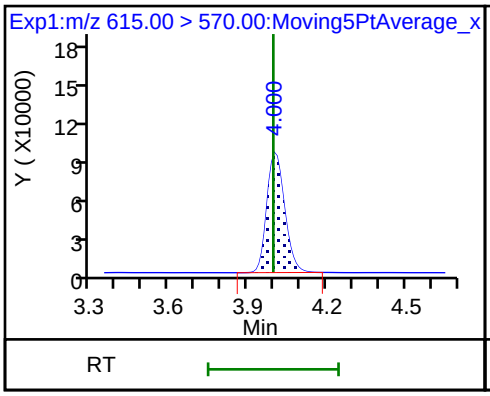
31 Perfluoroundecanoic acid



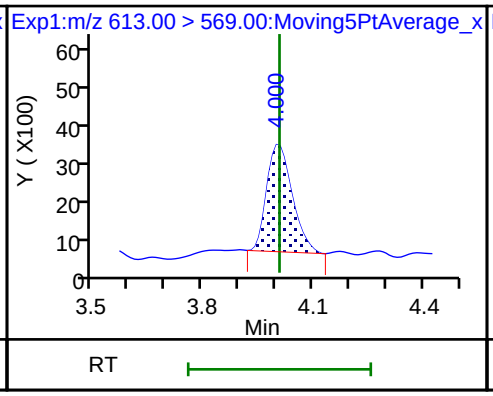
31 Perfluoroundecanoic acid (M)



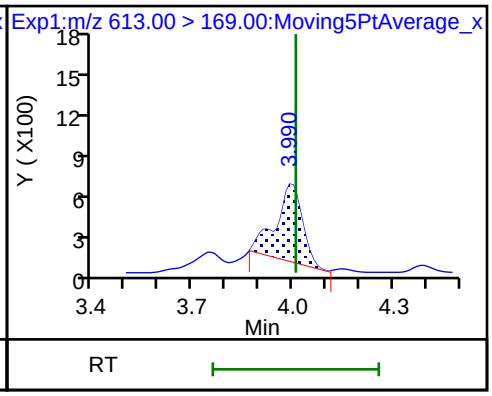
D 36 13C2 PFDoA



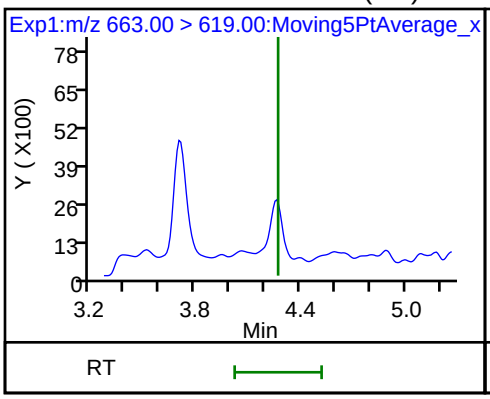
37 Perfluorododecanoic acid



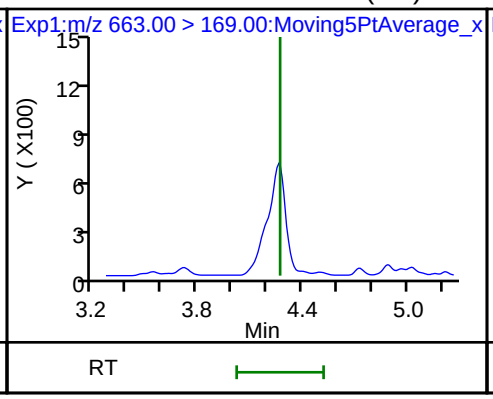
37 Perfluorododecanoic acid



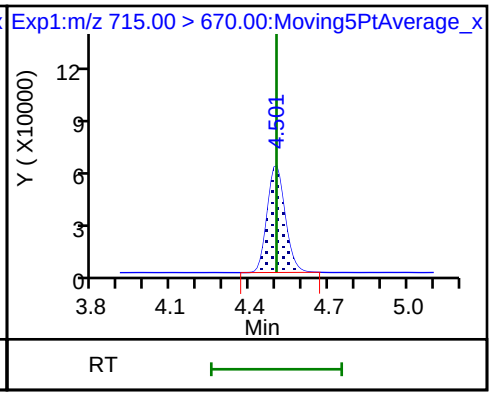
41 Perfluorotridecanoic acid (ND)



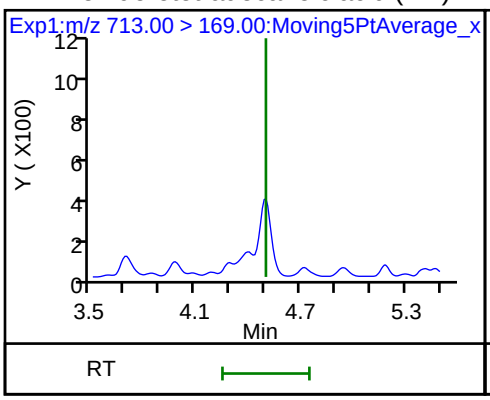
41 Perfluorotridecanoic acid (ND)



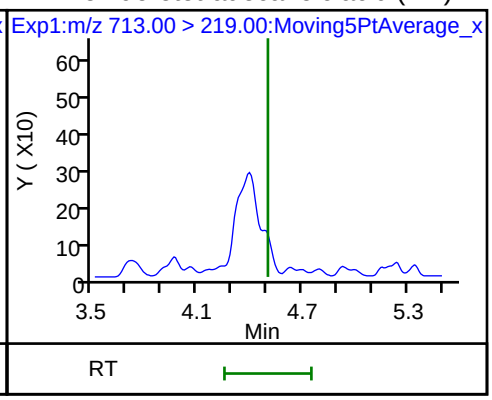
D 43 13C2-PFTeDA



42 Perfluorotetradecanoic acid (ND)



42 Perfluorotetradecanoic acid (ND)



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

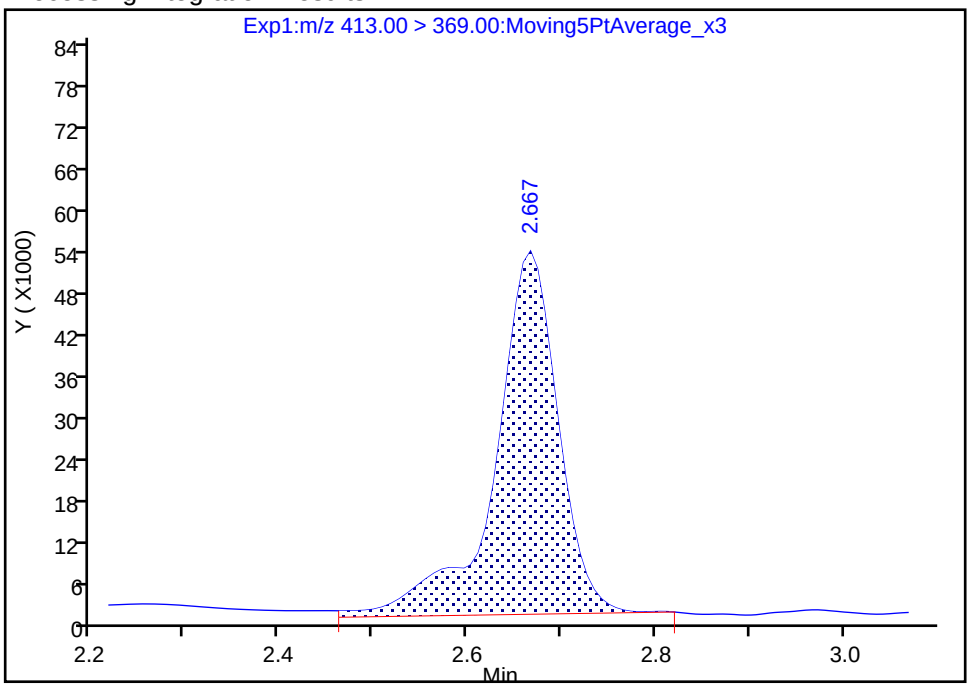
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180711-60928.b\2018.07.11LLB_047.d				
Injection Date:	11-Jul-2018 22:01:51	Instrument ID:	A8_N		
Lims ID:	320-40571-A-9-A	Lab Sample ID:	320-40571-9		
Client ID:	NF20-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	28	Worklist Smp#:	4
Injection Vol:	2.0 ul	Dil. Factor:	5.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

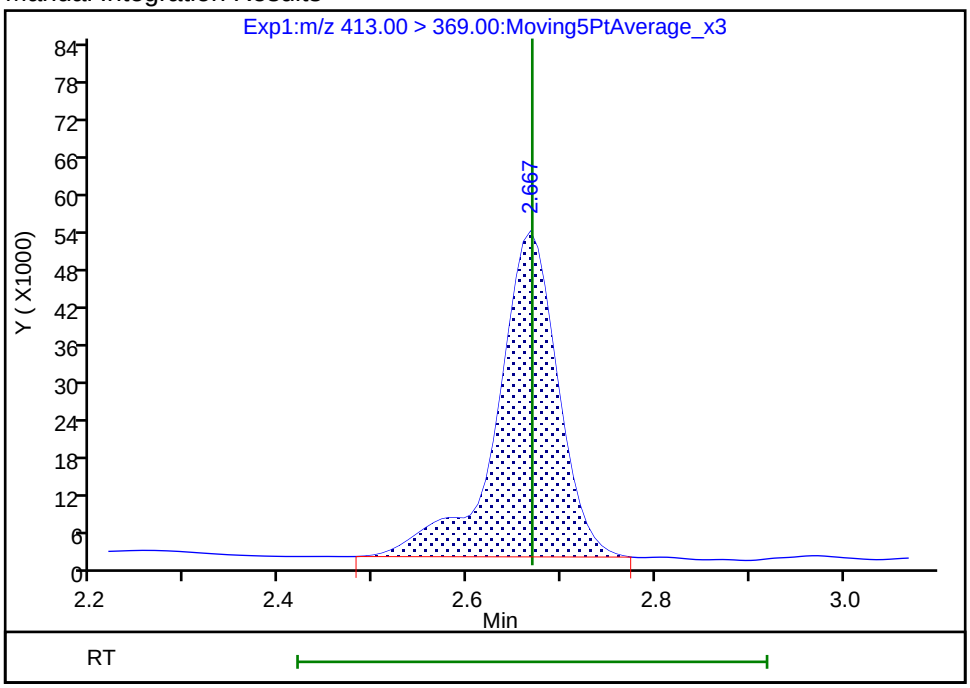
Processing Integration Results

RT: 2.67
Area: 244417
Amount: 0.125689
Amount Units: ng/ml



Manual Integration Results

RT: 2.67
Area: 233601
Amount: 0.120127
Amount Units: ng/ml



Reviewer: mongkols, 13-Jul-2018 09:01:32

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

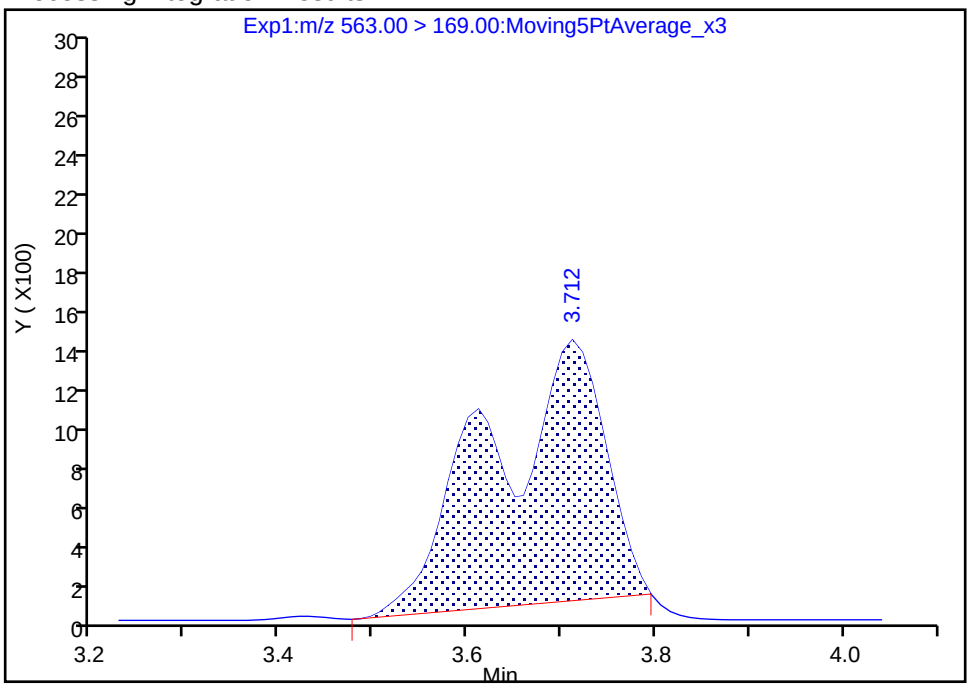
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180711-60928.b\2018.07.11LLB_047.d				
Injection Date:	11-Jul-2018 22:01:51	Instrument ID:	A8_N		
Lims ID:	320-40571-A-9-A	Lab Sample ID:	320-40571-9		
Client ID:	NF20-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	28	Worklist Smp#:	4
Injection Vol:	2.0 ul	Dil. Factor:	5.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

31 Perfluoroundecanoic acid, CAS: 2058-94-8

Signal: 2

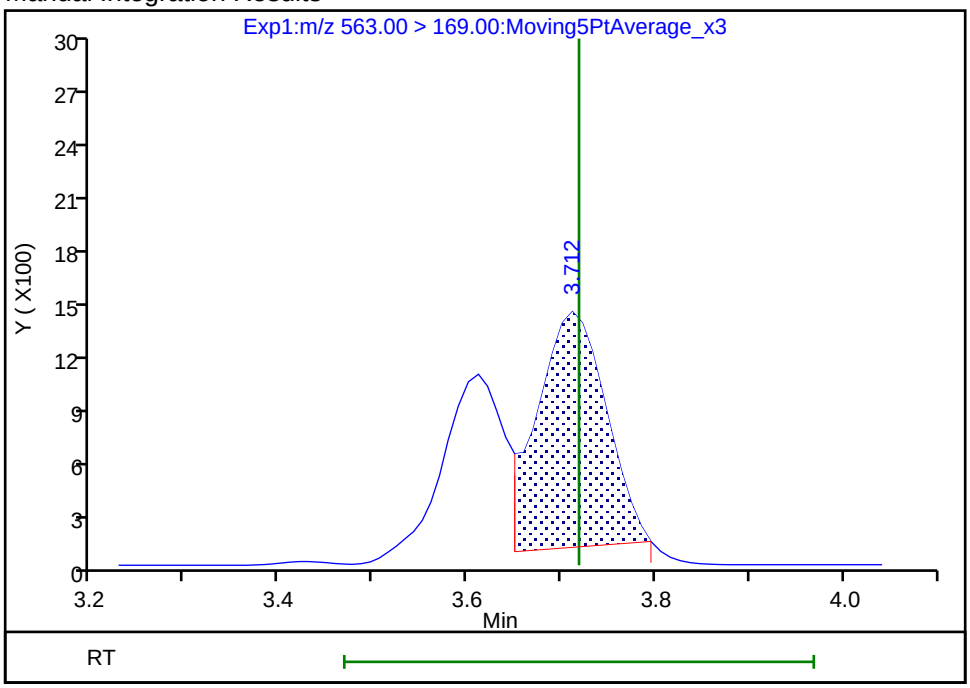
Processing Integration Results

RT: 3.71
Area: 11294
Amount: 0.037923
Amount Units: ng/ml



Manual Integration Results

RT: 3.71
Area: 6719
Amount: 0.037923
Amount Units: ng/ml



Reviewer: mongkols, 13-Jul-2018 09:01:59

Audit Action: Manually Integrated Audit Reason: Baseline

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF20-SS-02
Lab Sample ID: 320-40571-10
Matrix: Solid
Lab File ID: 2018.07.13LLB_060.d
Analysis Method: 537 (modified)
Date Collected: 06/19/2018 09:35
Extraction Method: SHAKE
Date Extracted: 06/28/2018 05:15
Sample wt/vol: 5.03(g)
Date Analyzed: 07/14/2018 04:36
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture: 18.3
GPC Cleanup:(Y/N) N
Analysis Batch No.: 233997
Units: mg/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	ND		0.00024	0.000034
2706-90-3	Perfluoropentanoic acid (PFPeA)	ND		0.00024	0.000094
307-24-4	Perfluorohexanoic acid (PFHxA)	ND		0.00024	0.000051
375-85-9	Perfluoroheptanoic acid (PFHpA)	ND		0.00024	0.000035
335-67-1	Perfluorooctanoic acid (PFOA)	ND		0.00024	0.00010
375-95-1	Perfluorononanoic acid (PFNA)	ND		0.00024	0.000044
335-76-2	Perfluorodecanoic acid (PFDA)	ND		0.00024	0.000027
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		0.00024	0.000044
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		0.00024	0.000082
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		0.00024	0.000062
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		0.00024	0.000066
375-73-5	Perfluorobutanesulfonic acid (PFBS)	ND		0.00024	0.000030
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	ND		0.00024	0.000038
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.00024	0.000043
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	ND		0.00061	0.00024
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		0.00024	0.000047
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		0.00024	0.00010
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.0024	0.00047
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.0024	0.00045
27619-97-2	6:2 FTS	ND		0.0024	0.00018
39108-34-4	8:2 FTS	ND		0.0024	0.00030

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF20-SS-02
Lab Sample ID: 320-40571-10
Matrix: Solid
Lab File ID: 2018.07.13LLB_060.d
Analysis Method: 537 (modified)
Date Collected: 06/19/2018 09:35
Extraction Method: SHAKE
Date Extracted: 06/28/2018 05:15
Sample wt/vol: 5.03(g)
Date Analyzed: 07/14/2018 04:36
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture: 18.3
GPC Cleanup:(Y/N) N
Analysis Batch No.: 233997
Units: mg/Kg

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00992	13C4 PFBA	73		25-150
STL01893	13C5 PFPeA	77		25-150
STL00993	13C2 PFHxA	81		25-150
STL01892	13C4-PFHpA	82		25-150
STL00990	13C4 PFOA	81		25-150
STL00995	13C5 PFNA	74		25-150
STL00996	13C2 PFDA	86		25-150
STL00997	13C2 PFUnA	81		25-150
STL00998	13C2 PFDoA	80		25-150
STL02116	13C2-PFTeDA	84		25-150
STL02337	13C3-PFBS	68		25-150
STL00994	18O2 PFHxS	72		25-150
STL00991	13C4 PFOS	67		25-150
STL01056	13C8 FOSA	62		25-150
STL02118	d3-NMeFOSAA	80		25-150
STL02117	d5-NEtFOSAA	85		25-150
STL02279	M2-6:2FTS	64		25-150
STL02280	M2-8:2FTS	66		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\2018.07.13LLB_060.d
Lims ID: 320-40571-A-10-A
Client ID: NF20-SS-02
Sample Type: Client
Inject. Date: 14-Jul-2018 04:36:08 ALS Bottle#: 45 Worklist Smp#: 9
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-40571-a-10-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 16-Jul-2018 14:19:30 Calib Date: 11-Jul-2018 15:38:42
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK023

First Level Reviewer: mongkols Date: 16-Jul-2018 14:19:30

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										M
217.00 > 172.00	1.439	1.441	-0.002	0.540	4590857	1.83		73.2	39793	M
2 Perfluorobutyric acid										M
212.90 > 169.00	1.439	1.444	-0.005	1.000	20920	0.0116			6.9	M
D 3 13C5-PFPeA										
267.90 > 223.00	1.716	1.720	-0.004	0.644	3360726	1.93		77.1	41277	
D 47 13C3-PFBS										
301.90 > 83.00	1.752	1.765	-0.013	0.657	69655	1.59		68.4	403	
D 7 13C2 PFHxA										
315.00 > 270.00	1.999	2.003	-0.004	0.750	3793404	2.02		80.6	50215	
D 9 13C4-PFHpA										
367.00 > 322.00	2.315	2.319	-0.004	0.869	3532590	2.04		81.5	53561	
D 11 18O2 PFHxS										
403.00 > 84.00	2.328	2.332	-0.004	0.873	4191062	1.71		72.2	50142	
D 12 M2-6:2FTS										
429.00 > 81.00	2.643	2.644	-0.001	0.991	567961	1.53		64.4	9017	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.643	2.651	-0.008	1.000	3905	0.0104			40.9	
D 14 13C4 PFOA										
417.00 > 372.00	2.666	2.667	-0.001	1.000	3600697	2.04		81.4	43908	
* 62 13C2-PFOA										
415.00 > 370.00	2.666	2.673	-0.007		4624248	2.50			46699	
D 18 13C4 PFOS										
503.00 > 80.00	3.034	3.027	0.007	1.138	2904548	1.61		67.4	39516	
D 19 13C5 PFNA										
468.00 > 423.00	3.034	3.034	0.0	1.138	2924803	1.85		74.0	44160	
D 26 M2-8:2FTS										
529.00 > 81.00	3.381	3.379	0.002	1.268	855151	1.57		65.7	11597	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 21 13C8 FOSA										
506.00 > 78.00	3.381	3.379	0.002	1.268	3999265	1.54		61.6	45091	
D 23 13C2 PFDA										
515.00 > 470.00	3.390	3.389	0.001	1.272	2988926	2.15		86.1	35912	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.540	3.538	0.002	1.328	1138108	2.00		80.0	25191	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.699	3.708	-0.009	1.388	1232927	2.12		84.6	3234	
D 30 13C2 PFUnA										
565.00 > 520.00	3.710	3.708	0.002	1.392	2348234	2.03		81.0	54609	
D 36 13C2 PFDoA										
615.00 > 570.00	3.999	3.999	0.0	1.500	2389411	1.99		79.5	19649	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.490	4.501	-0.011	1.684	2608639	2.09		83.7	14124	

QC Flag Legend

Review Flags

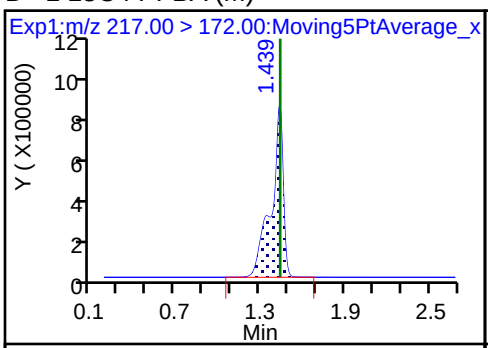
M - Manually Integrated

Report Date: 16-Jul-2018 14:19:31 Chrom Revision: 2.2 07-Jun-2018 07:41:54

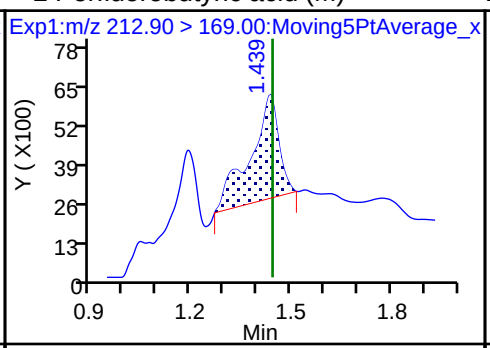
TestAmerica Sacramento

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\2018.07.13LLB_060.d				
Injection Date:	14-Jul-2018 04:36:08	Instrument ID:	A8_N		
Lims ID:	320-40571-A-10-A	Lab Sample ID:	320-40571-10		
Client ID:	NF20-SS-02				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	45	Worklist Smp#:	9
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		

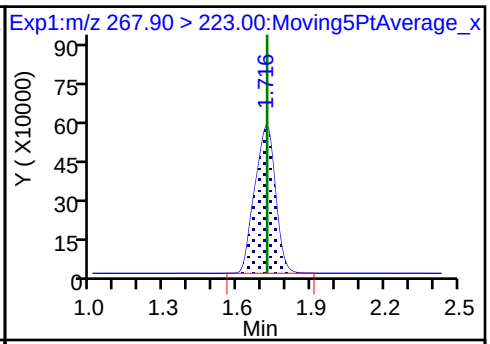
D 1 13C4 PFBA (M)



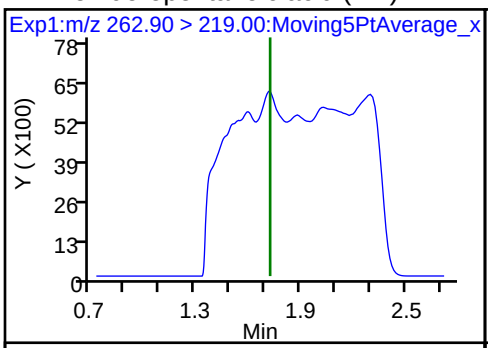
2 Perfluorobutyric acid (M)



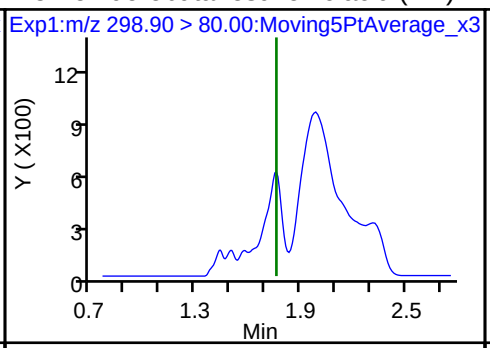
D 3 13C5-PFPeA



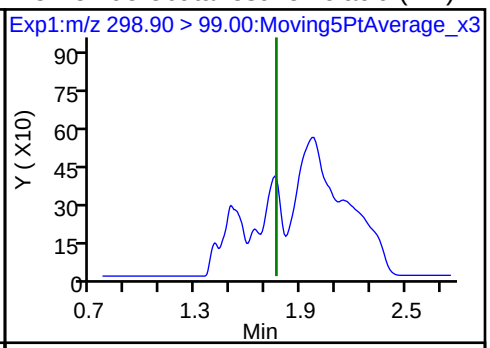
4 Perfluoropentanoic acid (ND)



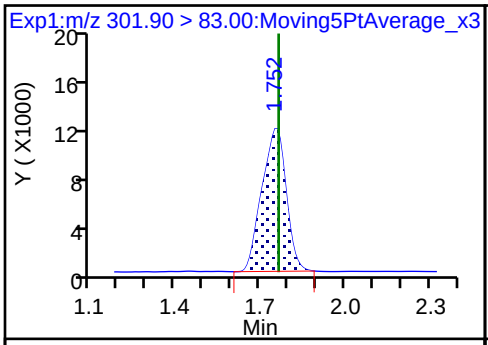
5 Perfluorobutanesulfonic acid (ND)



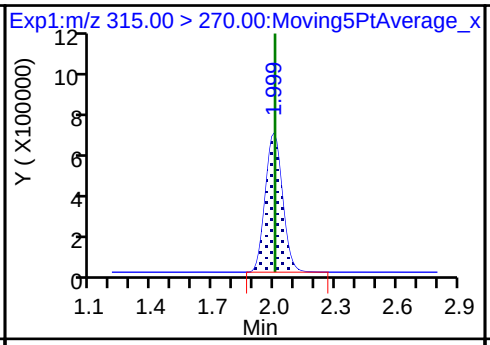
5 Perfluorobutanesulfonic acid (ND)



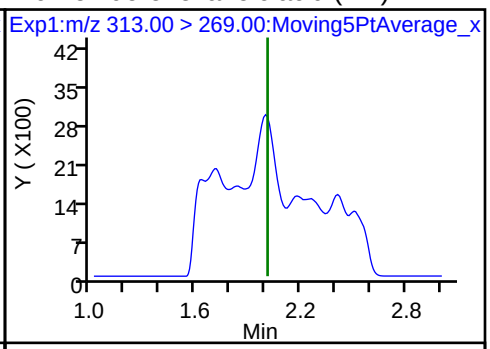
D 47 13C3-PFBS



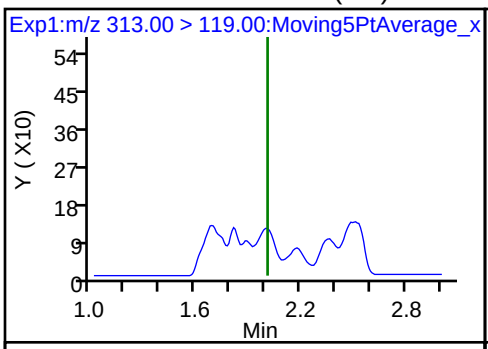
D 7 13C2 PFHxA



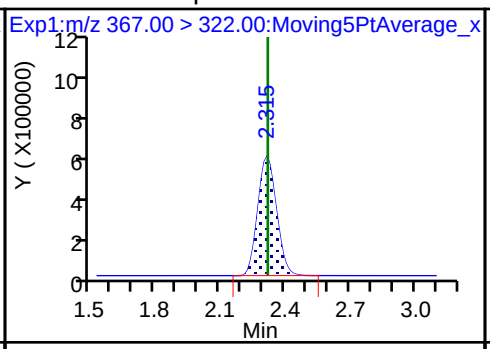
6 Perfluorohexanoic acid (ND)



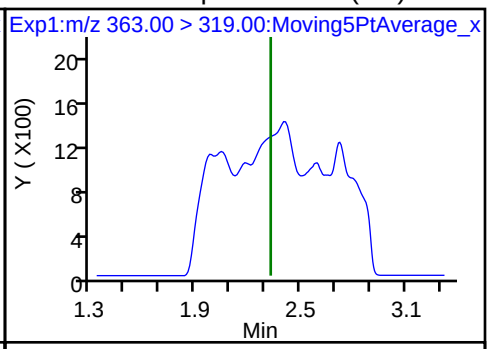
6 Perfluorohexanoic acid (ND)



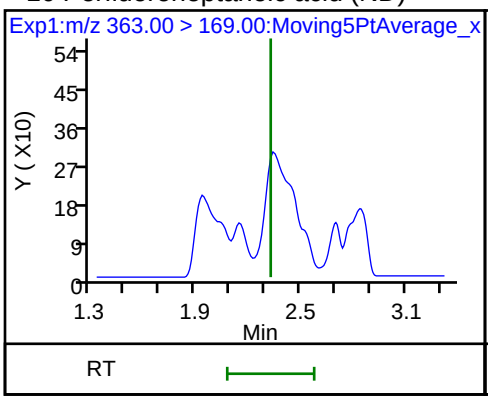
D 9 13C4-PFHpA



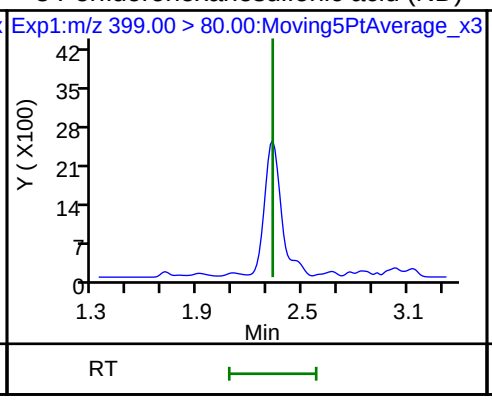
10 Perfluoroheptanoic acid (ND)



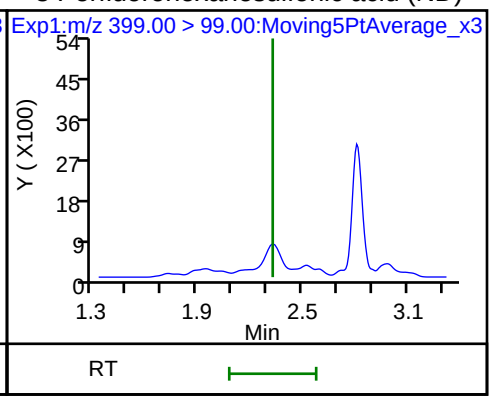
10 Perfluoroheptanoic acid (ND)



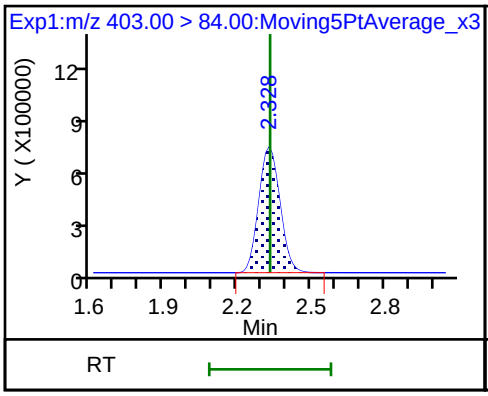
8 Perfluorohexanesulfonic acid (ND)



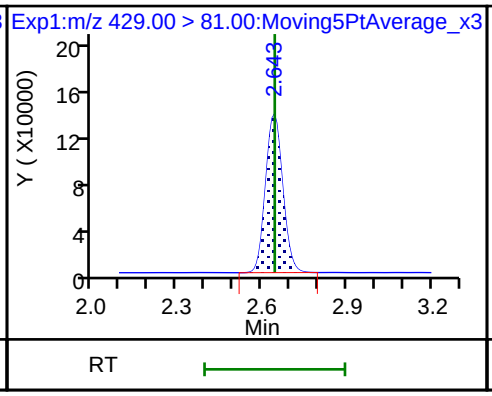
8 Perfluorohexanesulfonic acid (ND)



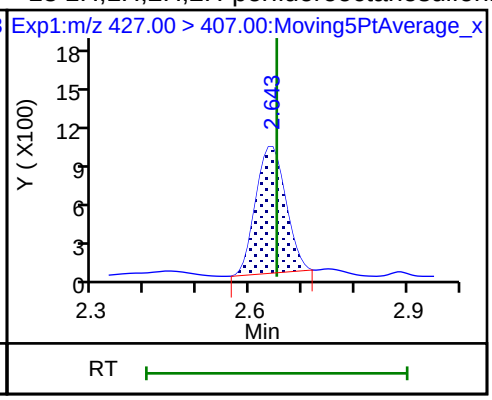
D 11 18O2 PFHxS



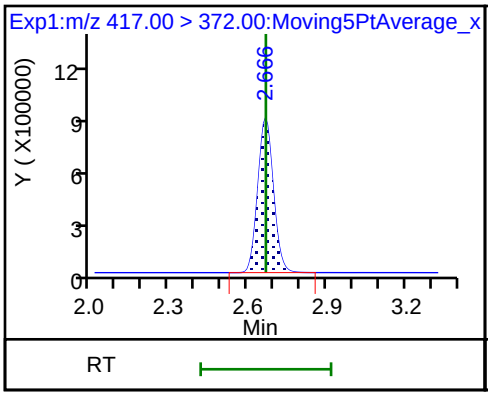
D 12 M2-6:2FTS



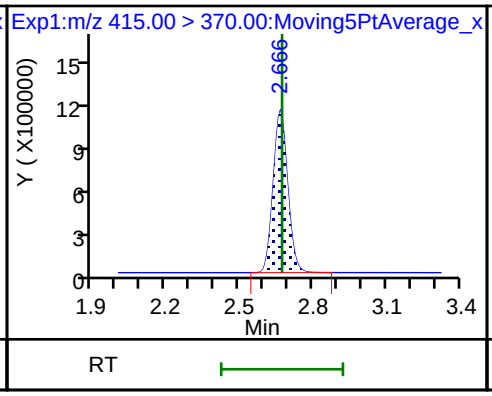
13 1H,1H,2H,2H-perfluorooctanesulfoni



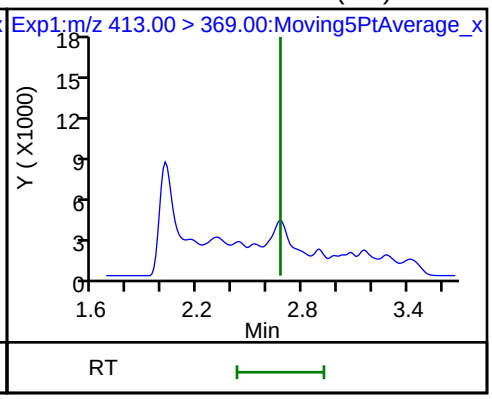
D 14 13C4 PFOA



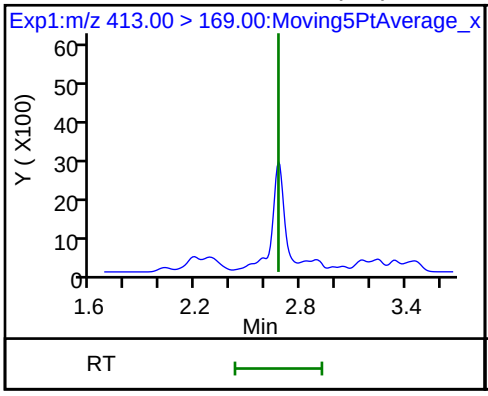
* 62 13C2-PFOA



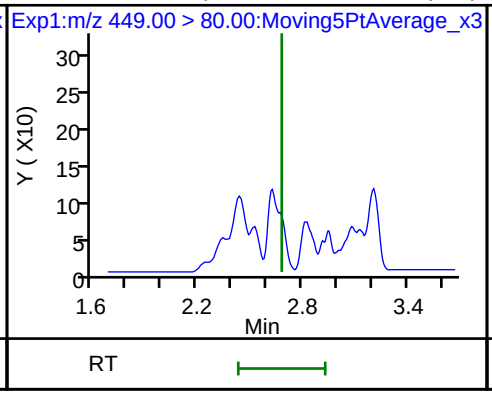
15 Perfluorooctanoic acid (ND)



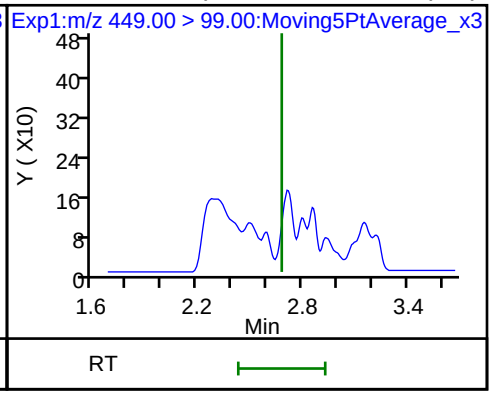
15 Perfluorooctanoic acid (ND)



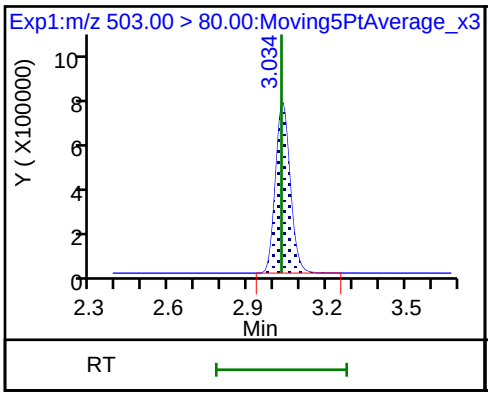
16 Perfluoroheptanesulfonic acid (ND)



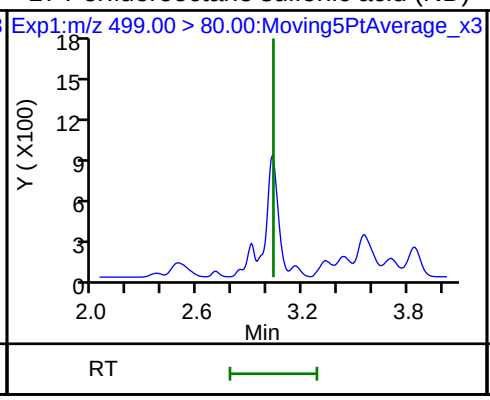
16 Perfluoroheptanesulfonic acid (ND)



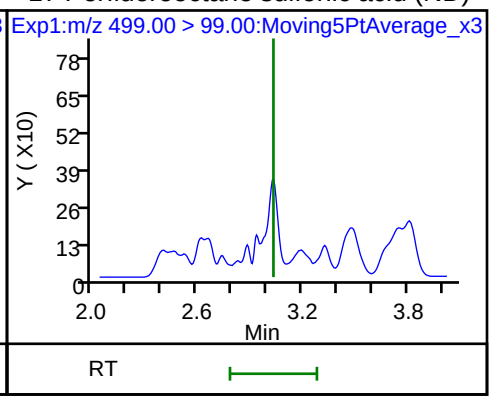
D 18 13C4 PFOS



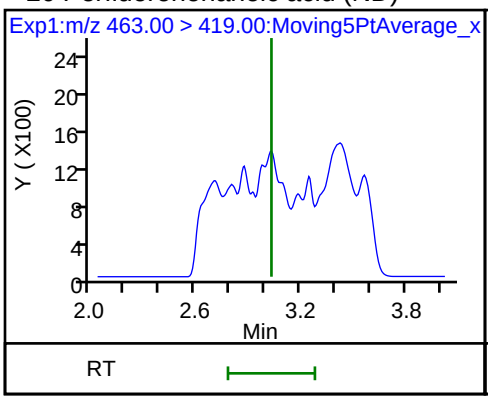
17 Perfluorooctane sulfonic acid (ND)



17 Perfluorooctane sulfonic acid (ND)



20 Perfluorononanoic acid (ND)



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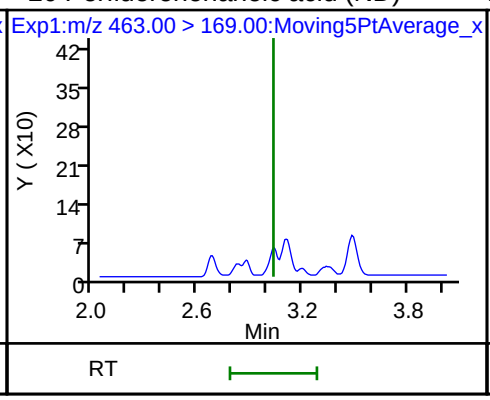
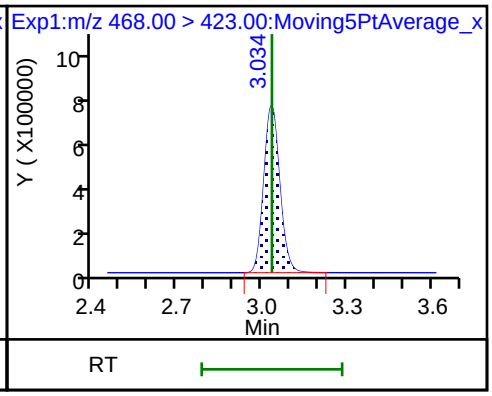
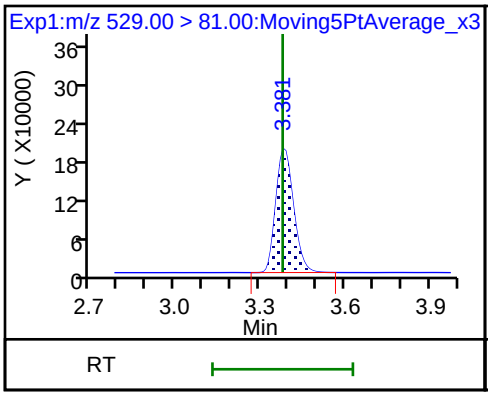


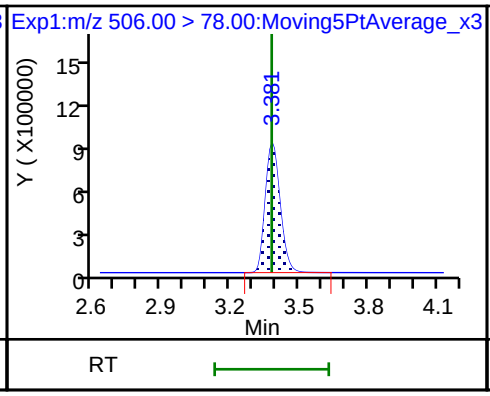
D 19 13C5 PFNA



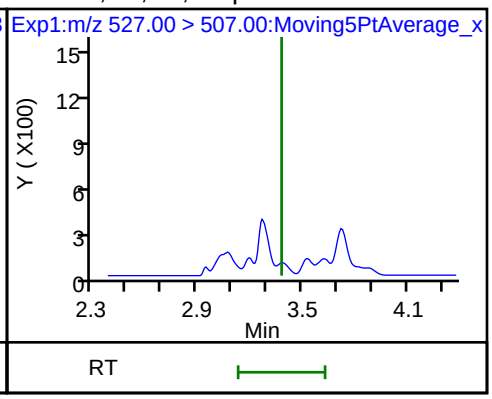
D 26 M2-8:2FTS



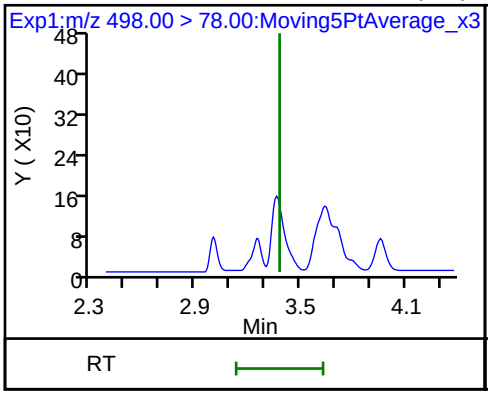
D 21 13C8 FOSA



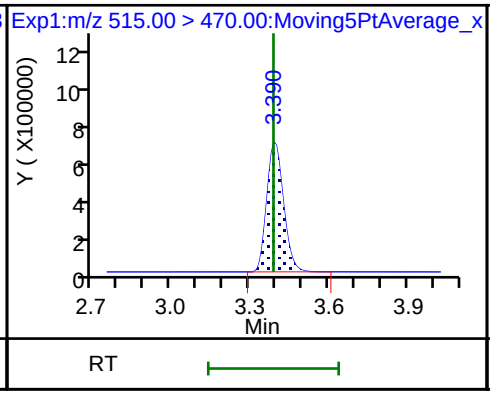
25 1H,1H,2H,2H-perfluorodecanesulfoni (ND)



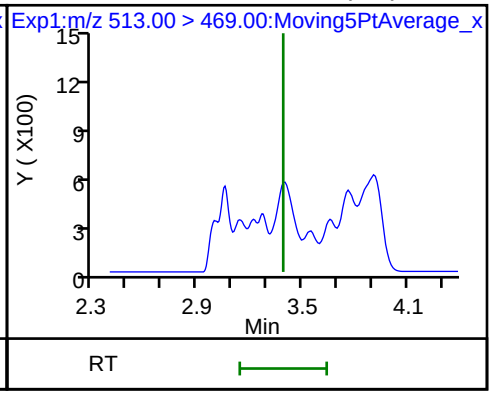
22 Perfluorooctane Sulfonamide (ND)



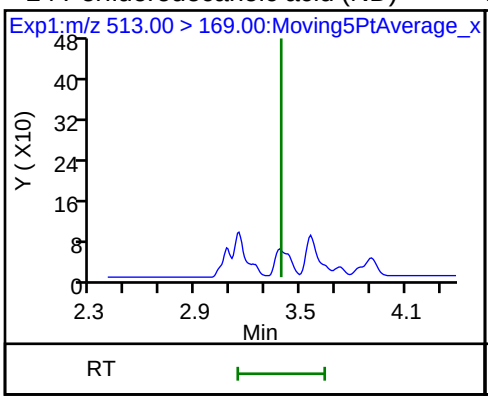
D 23 13C2 PFDA



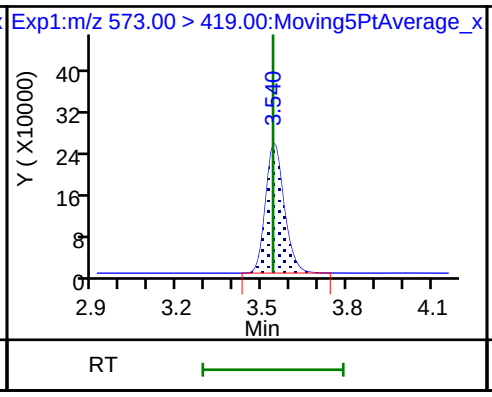
24 Perfluorodecanoic acid (ND)



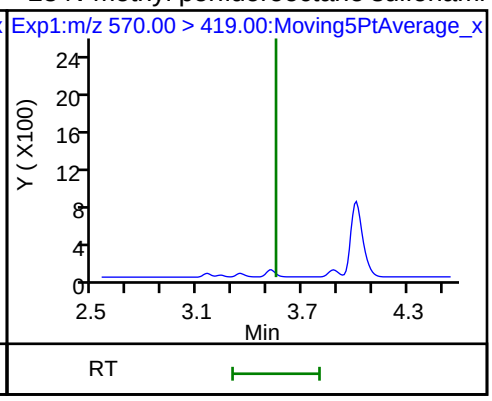
24 Perfluorodecanoic acid (ND)



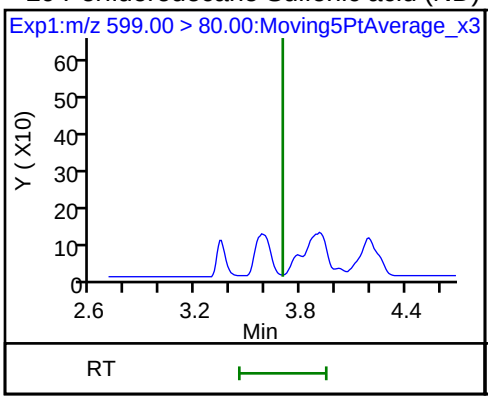
D 27 d3-NMeFOSAA



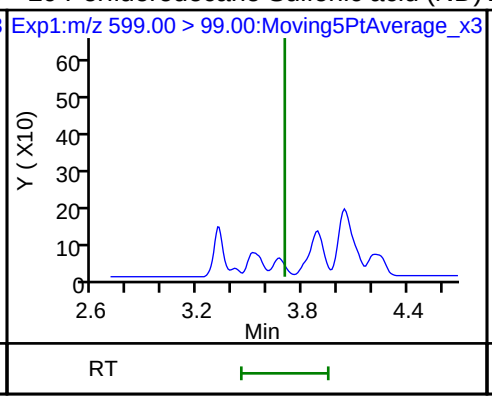
28 N-methyl perfluorooctane sulfonami (ND)



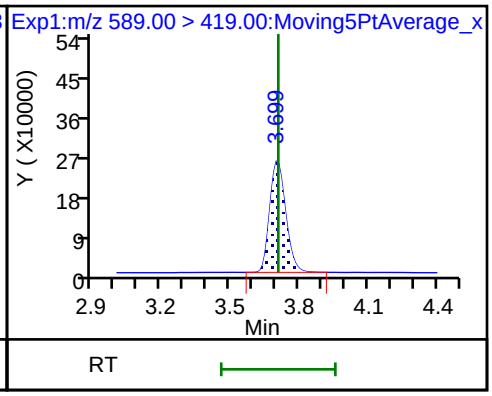
29 Perfluorodecane Sulfonic acid (ND)



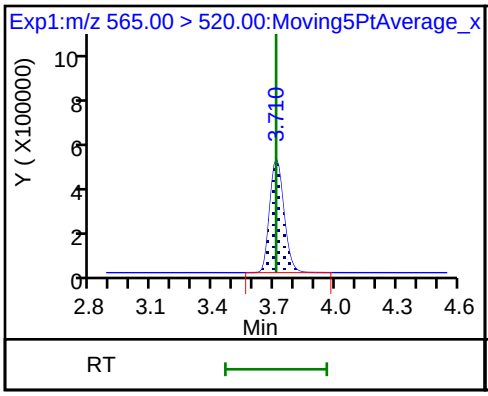
29 Perfluorodecane Sulfonic acid (ND)



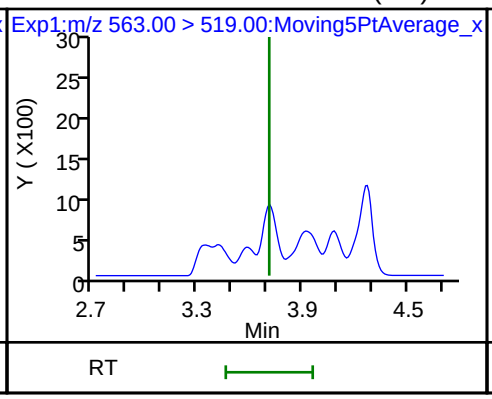
D 32 d5-NEtFOSAA



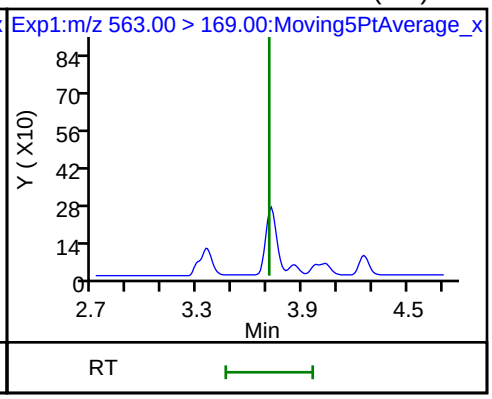
D 30 13C2 PFUnA



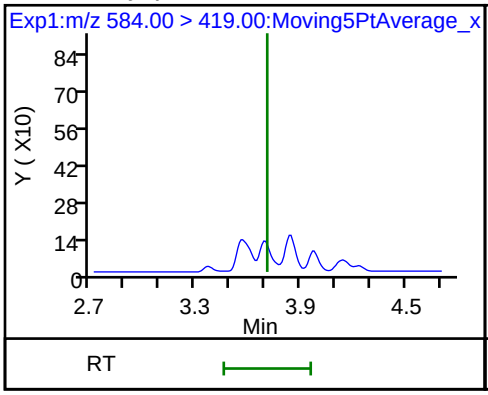
31 Perfluoroundecanoic acid (ND)



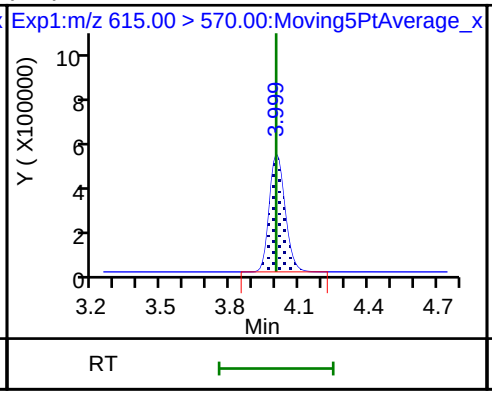
31 Perfluoroundecanoic acid (ND)



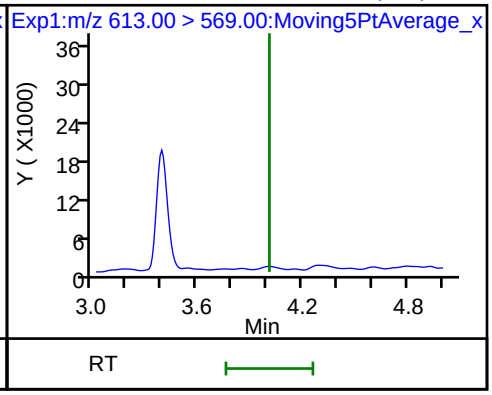
33 N-ethyl perfluorooctane sulfonamid (ND)



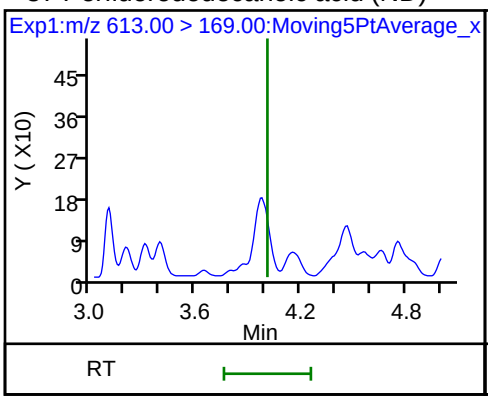
D 36 13C2 PFDoA



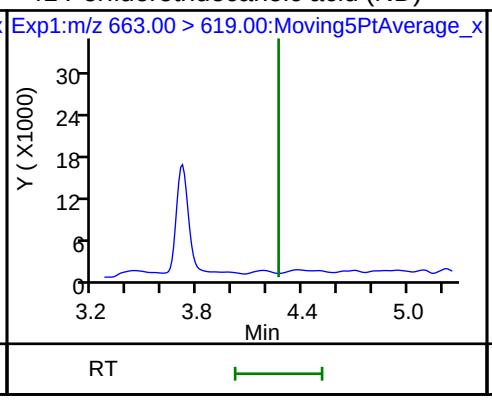
37 Perfluorododecanoic acid (ND)



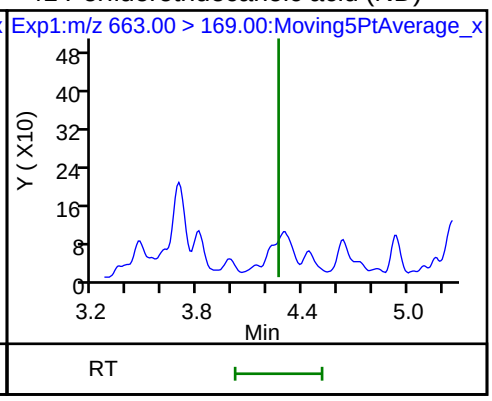
37 Perfluorododecanoic acid (ND)



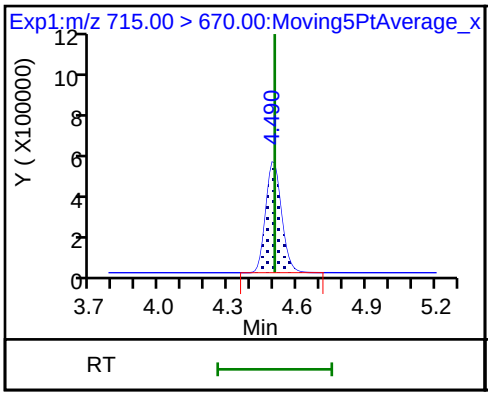
41 Perfluorotridecanoic acid (ND)



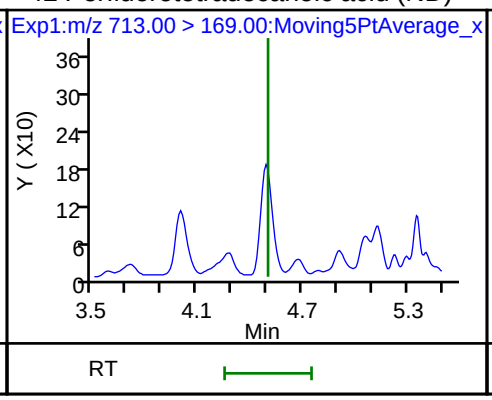
41 Perfluorotridecanoic acid (ND)



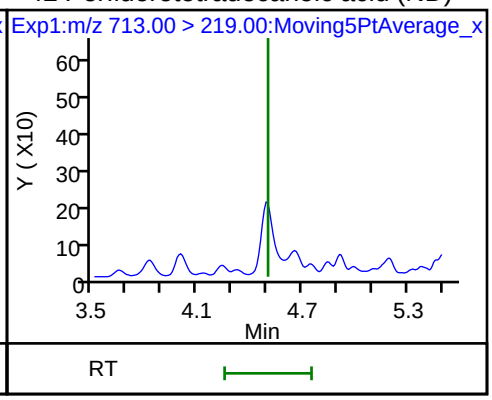
D 43 13C2-PFTeDA



42 Perfluorotetradecanoic acid (ND)



42 Perfluorotetradecanoic acid (ND)



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

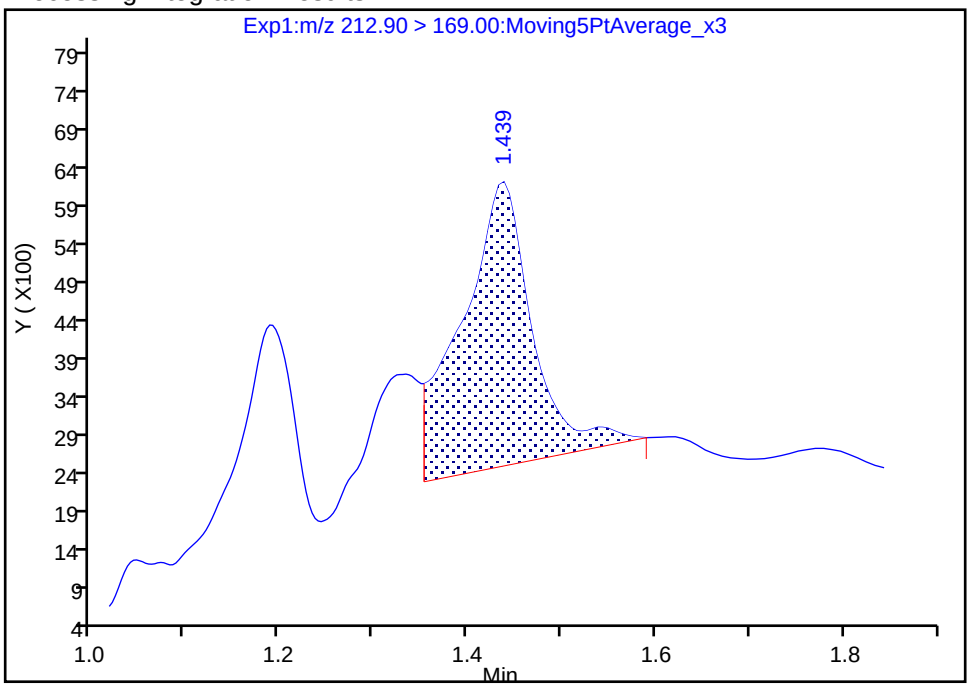
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\2018.07.13LLB_060.d				
Injection Date:	14-Jul-2018 04:36:08	Instrument ID:	A8_N		
Lims ID:	320-40571-A-10-A	Lab Sample ID:	320-40571-10		
Client ID:	NF20-SS-02				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	45	Worklist Smp#:	9
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

2 Perfluorobutyric acid, CAS: 375-22-4

Signal: 1

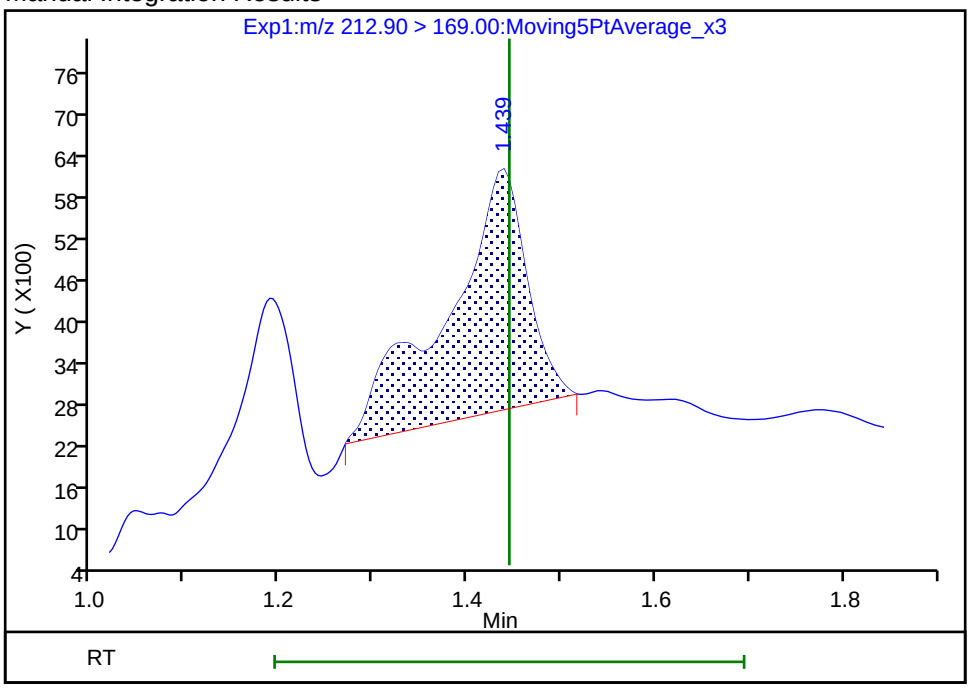
Processing Integration Results

RT: 1.44
Area: 19517
Amount: 0.010784
Amount Units: ng/ml



Manual Integration Results

RT: 1.44
Area: 20920
Amount: 0.011559
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 14:19:05

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

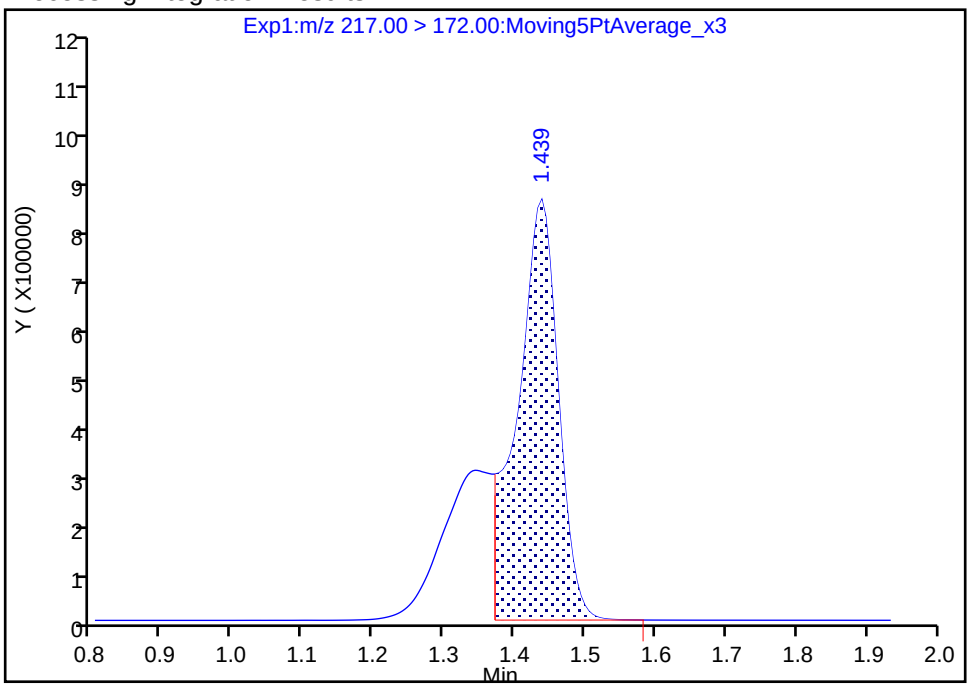
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\2018.07.13LLB_060.d				
Injection Date:	14-Jul-2018 04:36:08	Instrument ID:	A8_N		
Lims ID:	320-40571-A-10-A	Lab Sample ID:	320-40571-10		
Client ID:	NF20-SS-02				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	45	Worklist Smp#:	9
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

D 1 13C4 PFBA, CAS: STL00992

Signal: 1

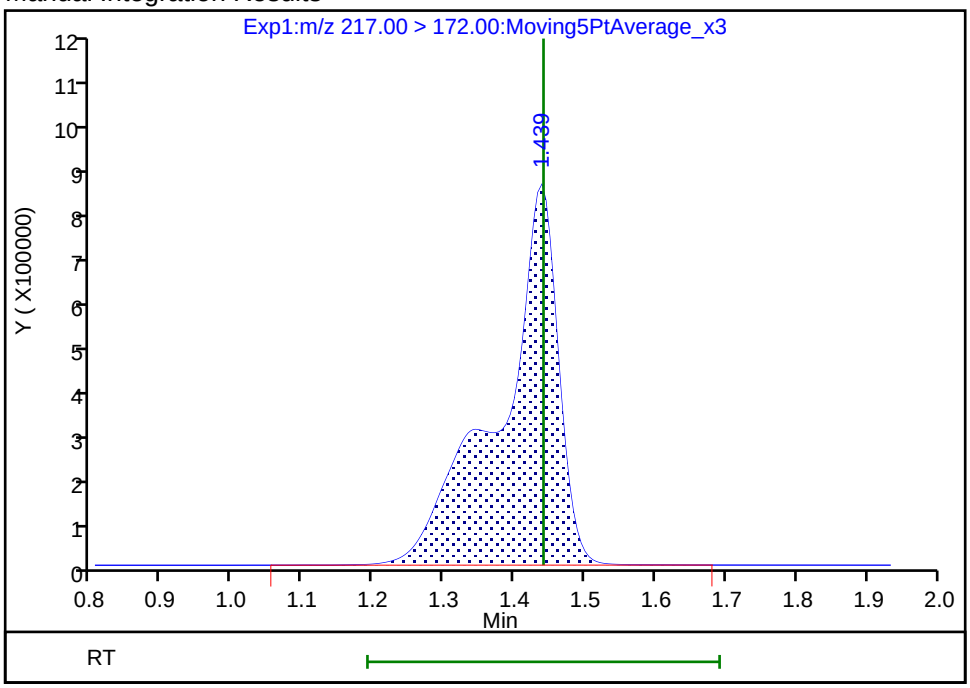
Processing Integration Results

RT: 1.44
Area: 3177800
Amount: 1.267053
Amount Units: ng/ml



Manual Integration Results

RT: 1.44
Area: 4590857
Amount: 1.830467
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 14:18:51

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF21-GW-01
Lab Sample ID: 320-40571-11
Matrix: Water
Lab File ID: 2018.07.06LLC_025.d
Analysis Method: 537 (modified)
Date Collected: 06/20/2018 11:50
Extraction Method: 3535
Date Extracted: 07/02/2018 14:58
Sample wt/vol: 271.2(mL)
Date Analyzed: 07/07/2018 02:30
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 232800
Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	0.0079	B	0.0018	0.00032
2706-90-3	Perfluoropentanoic acid (PFPeA)	0.0065		0.0018	0.00045
307-24-4	Perfluorohexanoic acid (PFHxA)	0.0028		0.0018	0.00053
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.0013	J	0.0018	0.00023
335-67-1	Perfluorooctanoic acid (PFOA)	0.0014	J	0.0018	0.00078
375-95-1	Perfluorononanoic acid (PFNA)	ND		0.0018	0.00025
335-76-2	Perfluorodecanoic acid (PFDA)	ND		0.0018	0.00029
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		0.0018	0.0010
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		0.0018	0.00051
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		0.0018	0.0012
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		0.0018	0.00027
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.00099	J	0.0018	0.00018
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	ND		0.0018	0.00028
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.0016	J B	0.0018	0.00016
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.0018	0.00018
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.0016	J	0.0018	0.00050
8789-57-2	Perfluorononanesulfonic acid (PFNS)	ND		0.0018	0.00015
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		0.0018	0.00029
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		0.0018	0.00032
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.018	0.0029
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.018	0.0018
757124-72-4	4:2 FTS	ND		0.018	0.0048
27619-97-2	6:2 FTS	0.0028	J	0.018	0.0018
39108-34-4	8:2 FTS	ND		0.018	0.0018

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF21-GW-01
Lab Sample ID: 320-40571-11
Matrix: Water
Lab File ID: 2018.07.06LLC_025.d
Analysis Method: 537 (modified)
Date Collected: 06/20/2018 11:50
Extraction Method: 3535
Date Extracted: 07/02/2018 14:58
Sample wt/vol: 271.2(mL)
Date Analyzed: 07/07/2018 02:30
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 232800
Units: ug/L

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00992	13C4 PFBA	81		25-150
STL01893	13C5 PFPeA	87		25-150
STL00993	13C2 PFHxA	92		25-150
STL01892	13C4-PFHpA	98		25-150
STL00990	13C4 PFOA	101		25-150
STL00995	13C5 PFNA	104		25-150
STL00996	13C2 PFDA	108		25-150
STL00997	13C2 PFUnA	90		25-150
STL00998	13C2 PFDoA	78		25-150
STL02116	13C2-PFTeDA	60		25-150
STL02337	13C3-PFBS	88		25-150
STL00994	18O2 PFHxS	105		25-150
STL00991	13C4 PFOS	96		25-150
STL01056	13C8 FOSA	88		25-150
STL02118	d3-NMeFOSAA	95		25-150
STL02117	d5-NEtFOSAA	82		25-150
STL02279	M2-6:2FTS	107		25-150
STL02280	M2-8:2FTS	98		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\2018.07.06LLC_025.d
Lims ID: 320-40571-A-11-A
Client ID: NF21-GW-01
Sample Type: Client
Inject. Date: 07-Jul-2018 02:30:21 ALS Bottle#: 15 Worklist Smp#: 13
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-40571-a-11-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 09-Jul-2018 14:11:11 Calib Date: 05-Jul-2018 09:38:17
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180705-60684.b\2018.07.05LLICALAA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK010

First Level Reviewer: mongkols Date: 09-Jul-2018 14:11:11

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.430	1.428	0.002	0.537	5656130	2.02		80.7	22979	
2 Perfluorobutyric acid										M
212.90 > 169.00	1.430	1.428	0.002	1.000	497926	0.2155			163	M
4 Perfluoropentanoic acid										M
262.90 > 219.00	1.711	1.698	0.013	1.000	381561	0.1774			96.8	M
D 3 13C5-PFPeA										
267.90 > 223.00	1.711	1.707	0.004	0.643	4514089	2.18		87.0	30631	
D 47 13C3-PFBS										
301.90 > 83.00	1.748	1.743	0.005	0.657	101579	2.05		88.0	407	
5 Perfluorobutanesulfonic acid										M
298.90 > 80.00	1.748	1.743	0.005	1.000	88477	0.0267			57.3	M
298.90 > 99.00	1.748	1.743	0.005	1.000	36977		2.39(1.25-3.74)		84.6	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.993	1.978	0.015	1.000	156082	0.0748			74.8	
313.00 > 119.00	1.993	1.978	0.015	1.000	11569		13.49(5.03-15.10)		90.3	
D 7 13C2 PFHxA										
315.00 > 270.00	1.993	1.988	0.005	0.749	5120102	2.31		92.2	62710	
D 9 13C4-PFHpA										
367.00 > 322.00	2.307	2.302	0.005	0.867	4838299	2.45		98.2	42191	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.307	2.303	0.004	1.000	77439	0.0354			62.4	
363.00 > 169.00	2.307	2.303	0.004	1.000	33354		2.32(1.13-3.40)		254	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.320	2.303	0.017	1.000	123892	0.0421			119	
399.00 > 99.00	2.320	2.303	0.017	1.000	42791		2.90(1.50-4.49)		155	
D 11 18O2 PFHxS										
403.00 > 84.00	2.320	2.315	0.005	0.872	6024150	2.48		105	50672	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 12 M2-6:2FTS										
429.00 > 81.00	2.637	2.626	0.011	0.991	1128993	2.55		107	6833	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.637	2.627	0.011	1.000	55923	0.0751			315	
D 14 13C4 PFOA										
417.00 > 372.00	2.661	2.650	0.011	1.000	4864235	2.52		101	59740	
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.661	2.651	0.010	1.000	88980	0.0386			30.8	M
413.00 > 169.00	2.661	2.651	0.010	1.000	63739		1.40(0.84-2.52)		263	
* 62 13C2-PFOA										
415.00 > 370.00	2.661	2.651	0.010		5062606	2.50			41799	
17 Perfluorooctane sulfonic acid										M
499.00 > 80.00	2.909	3.008	-0.099	0.962	81540	0.0421			226	
499.00 > 99.00	3.023	3.008	0.015	1.000	13013		6.27(2.31-6.93)		81.5	M
D 18 13C4 PFOS										
503.00 > 80.00	3.023	3.015	0.008	1.136	3964367	2.29		95.8	23122	
D 19 13C5 PFNA										
468.00 > 423.00	3.023	3.015	0.008	1.136	4254156	2.59		104	72461	
D 26 M2-8:2FTS										
529.00 > 81.00	3.368	3.367	0.001	1.266	1160641	2.36		98.4	10232	
D 21 13C8 FOSA										
506.00 > 78.00	3.368	3.367	0.001	1.266	5266514	2.19		87.6	37685	
D 23 13C2 PFDA										
515.00 > 470.00	3.377	3.376	0.001	1.269	3829006	2.70		108	62466	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.536	3.525	0.011	1.329	1973350	2.37		94.6	39748	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.706	3.694	0.012	1.003	18846	0.0310			398	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.706	3.694	0.012	1.000	5535	0.006092			23.2	
563.00 > 169.00	3.706	3.694	0.012	1.000	2540		2.18(2.12-6.36)		131	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.696	3.694	0.002	1.389	1686227	2.05		81.8	14974	
D 30 13C2 PFUnA										
565.00 > 520.00	3.706	3.705	0.001	1.393	2671896	2.25		89.9	35051	
D 36 13C2 PFDoA										
615.00 > 570.00	3.997	3.995	0.002	1.502	2500635	1.96		78.5	14119	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.490	4.489	0.001	1.687	2347042	1.51		60.4	13712	

QC Flag Legend

Review Flags

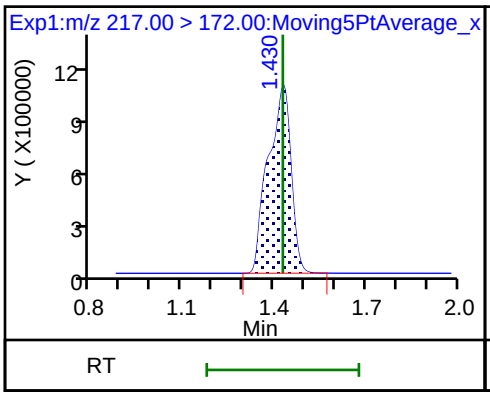
M - Manually Integrated

Report Date: 09-Jul-2018 14:11:12 Chrom Revision: 2.2 07-Jun-2018 07:41:54

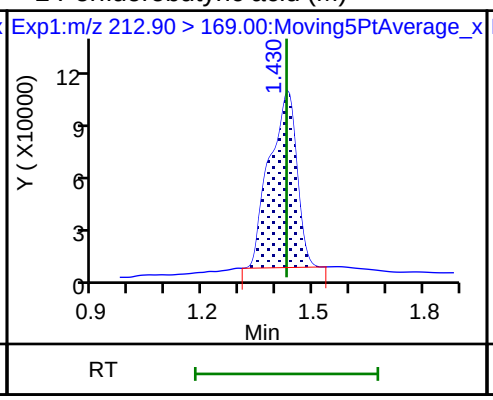
TestAmerica Sacramento

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\2018.07.06LLC_025.d				
Injection Date:	07-Jul-2018 02:30:21	Instrument ID:	A8_N		
Lims ID:	320-40571-A-11-A	Lab Sample ID:	320-40571-11		
Client ID:	NF21-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	15	Worklist Smp#:	13
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		

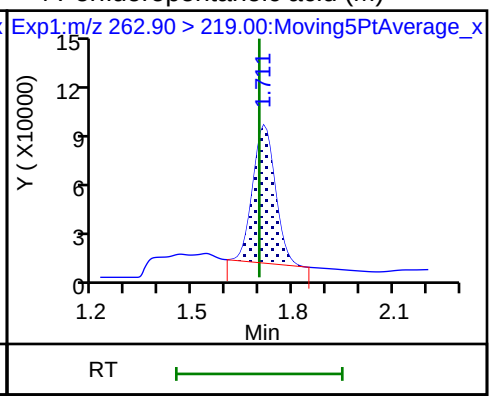
D 1 13C4 PFBA



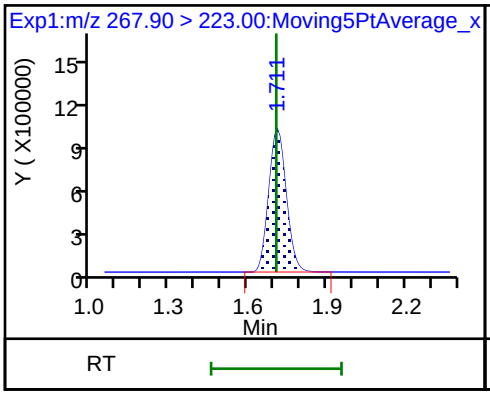
2 Perfluorobutyric acid (M)



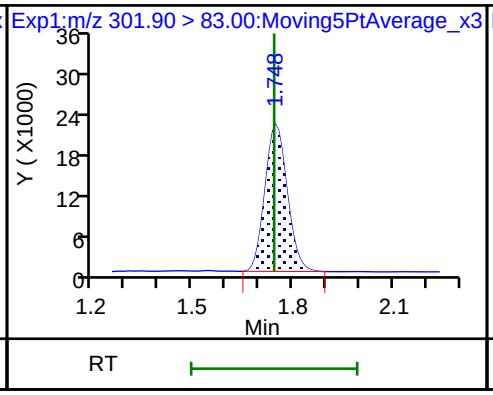
4 Perfluoropentanoic acid (M)



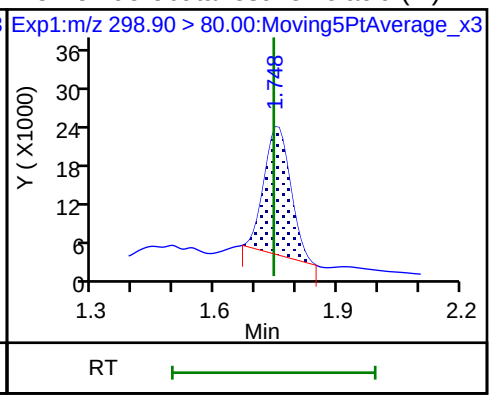
D 3 13C5-PFPeA



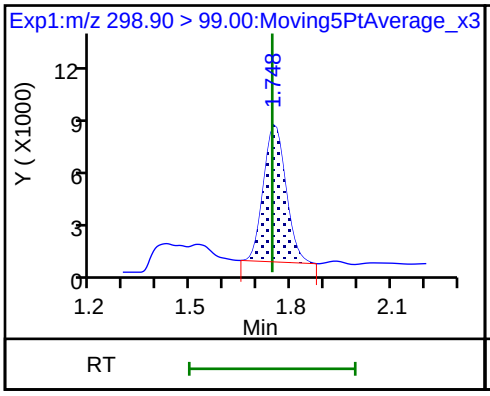
D 47 13C3-PFBS



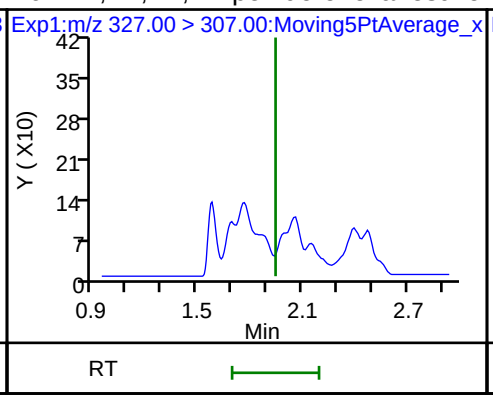
5 Perfluorobutanesulfonic acid (M)



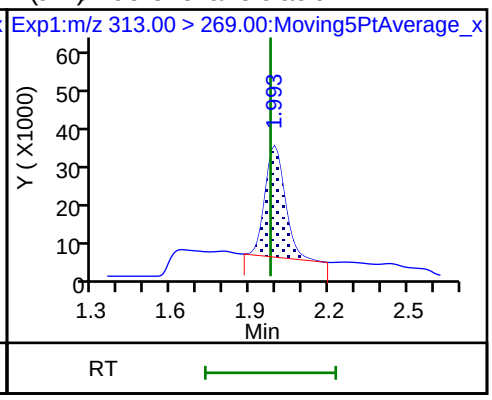
5 Perfluorobutanesulfonic acid



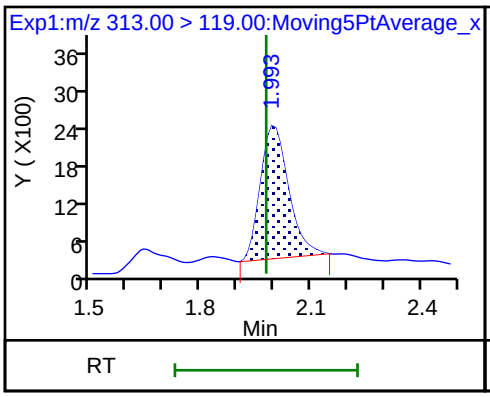
61 1H,1H,2H,2H-perfluorohexanesulfoni (ND)



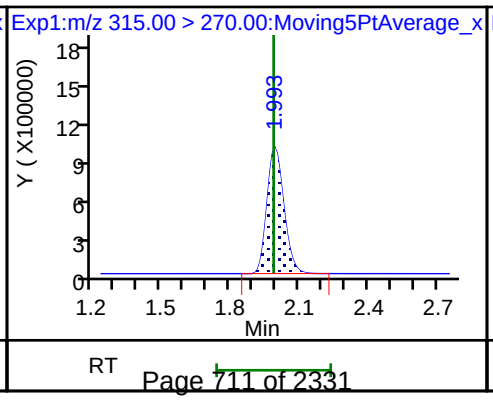
6 Perfluorohexanoic acid



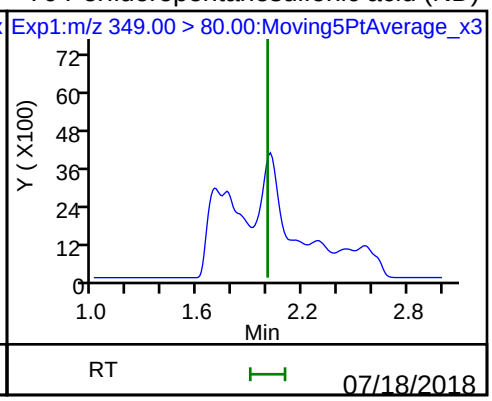
6 Perfluorohexanoic acid



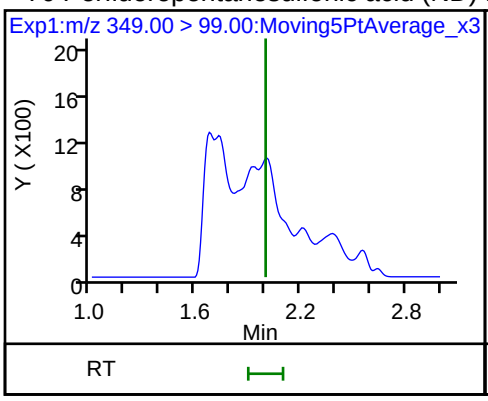
D 7 13C2 PFHxA



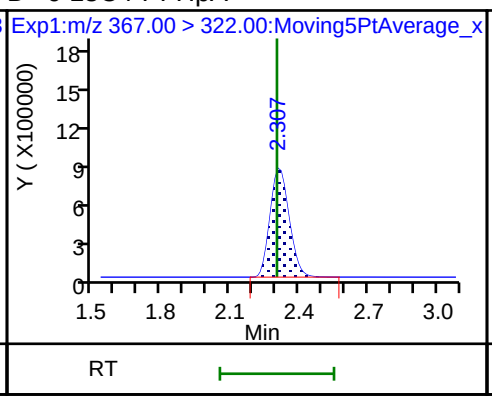
70 Perfluoropentanesulfonic acid (ND)



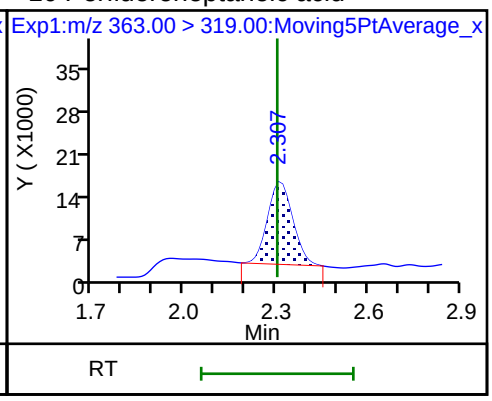
70 Perfluoropentanesulfonic acid (ND)



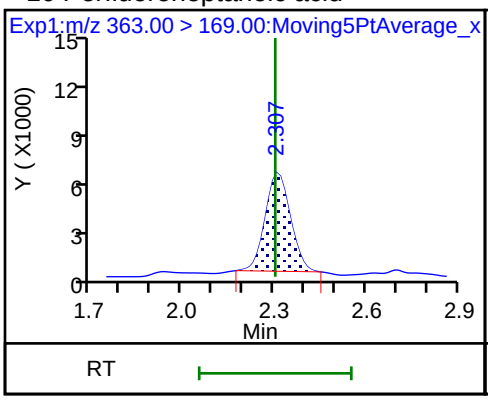
D 9 13C4-PFHpA



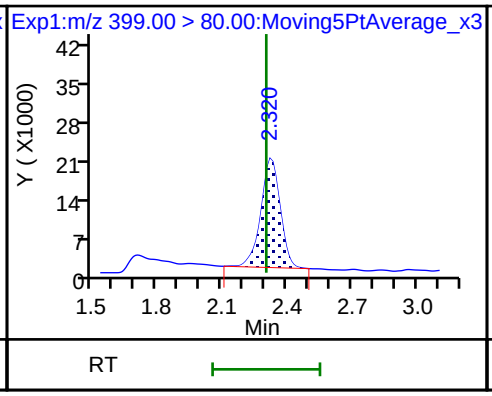
10 Perfluoroheptanoic acid



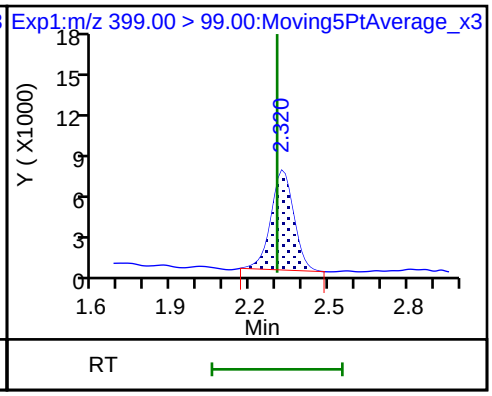
10 Perfluoroheptanoic acid



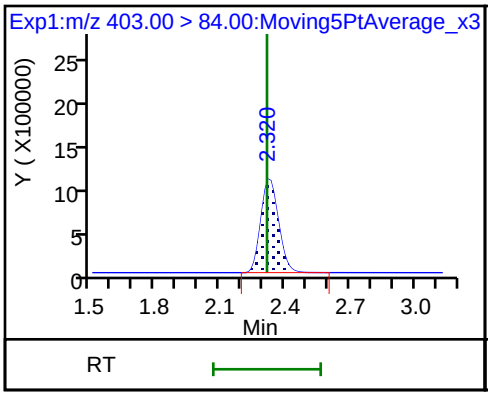
8 Perfluorohexanesulfonic acid



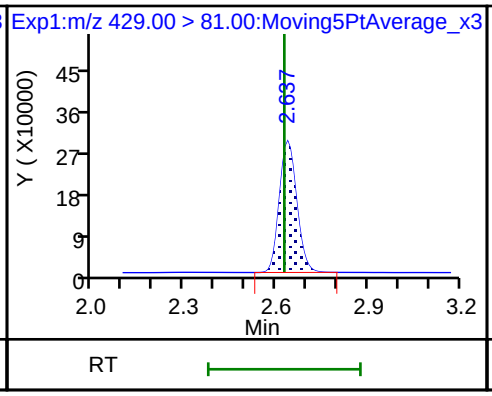
8 Perfluorohexanesulfonic acid



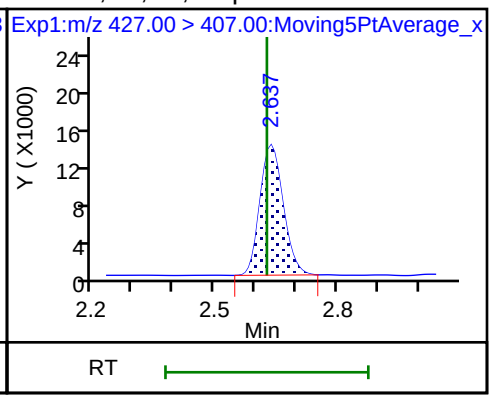
D 11 18O2 PFHxS



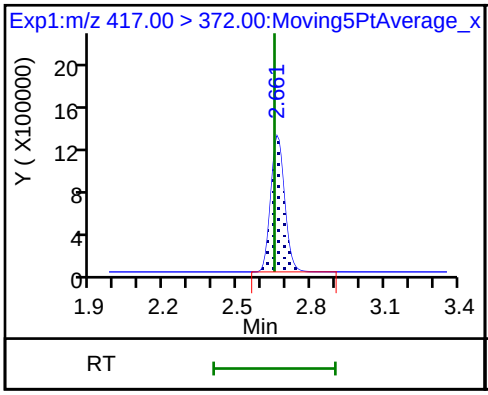
D 12 M2-6:2FTS



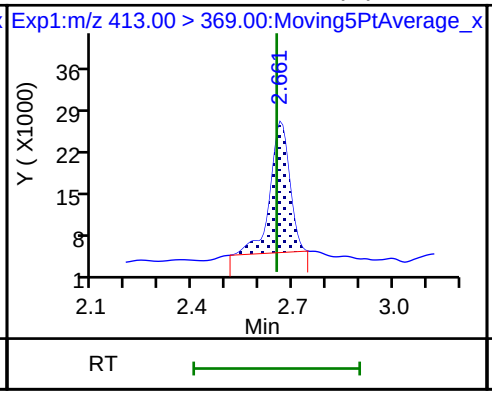
13 1H,1H,2H,2H-perfluorooctanesulfoni



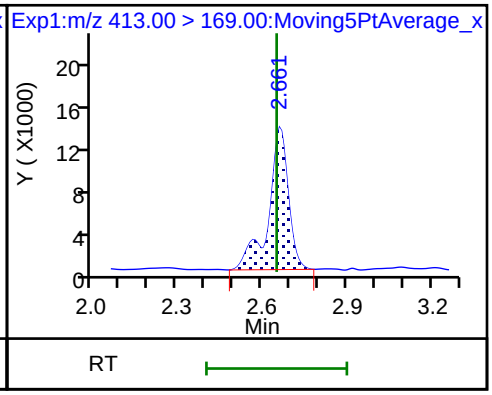
D 14 13C4 PFOA



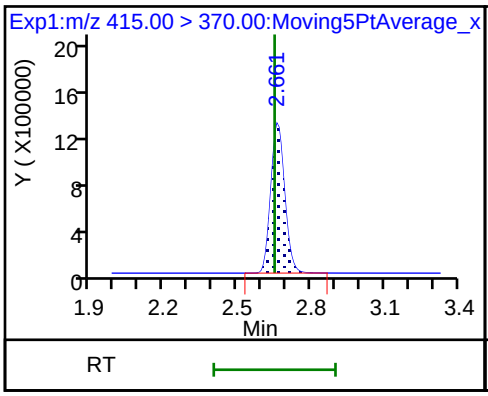
15 Perfluorooctanoic acid (M)



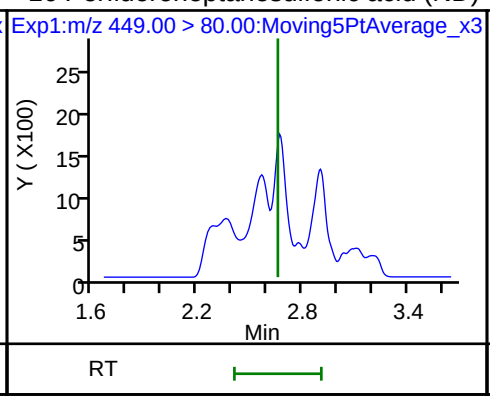
15 Perfluorooctanoic acid



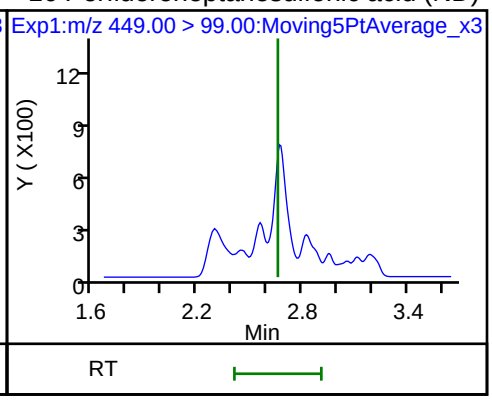
* 62 13C2-PFOA



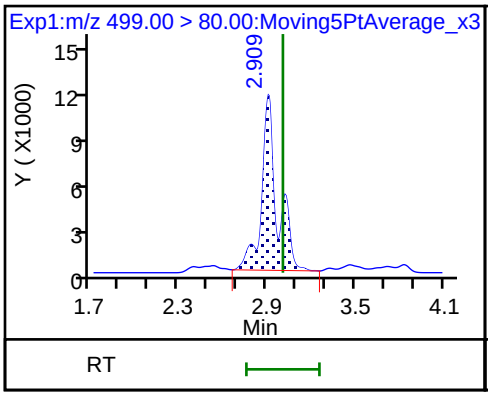
16 Perfluoroheptanesulfonic acid (ND)



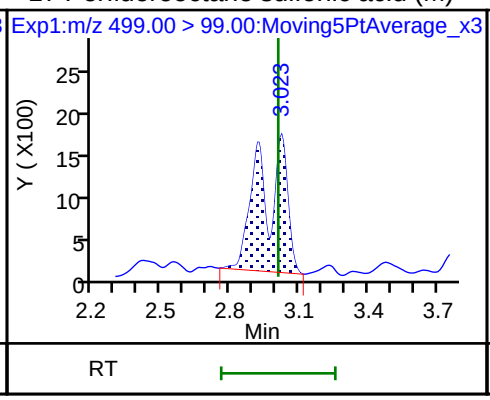
16 Perfluoroheptanesulfonic acid (ND)



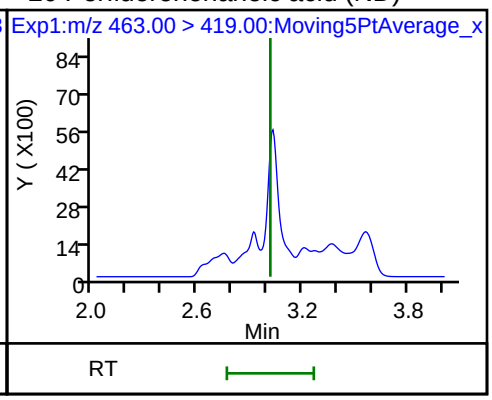
17 Perfluorooctane sulfonic acid



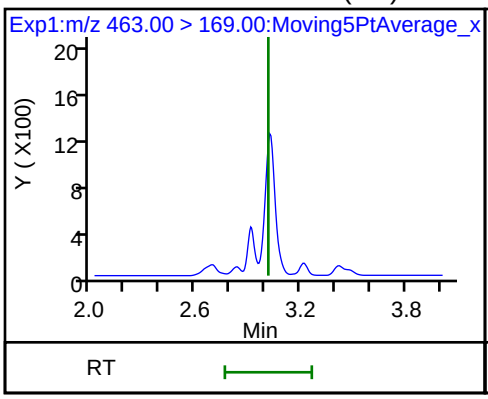
17 Perfluorooctane sulfonic acid (M)



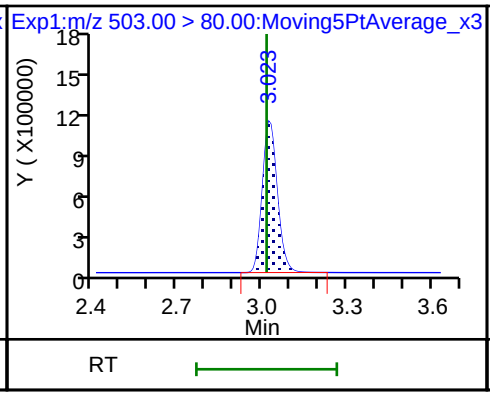
20 Perfluorononanoic acid (ND)



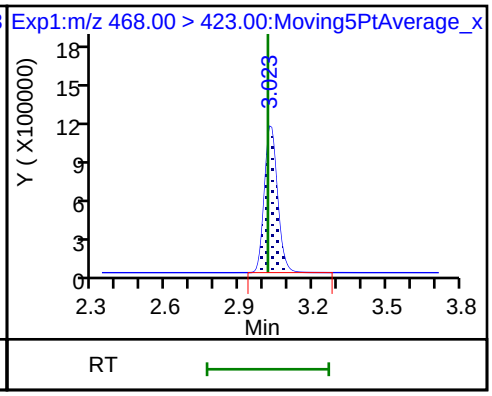
20 Perfluorononanoic acid (ND)



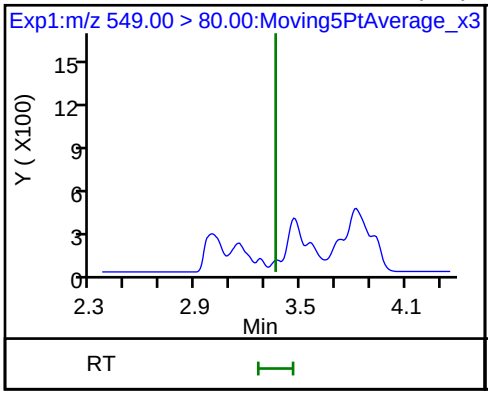
D 18 13C4 PFOS



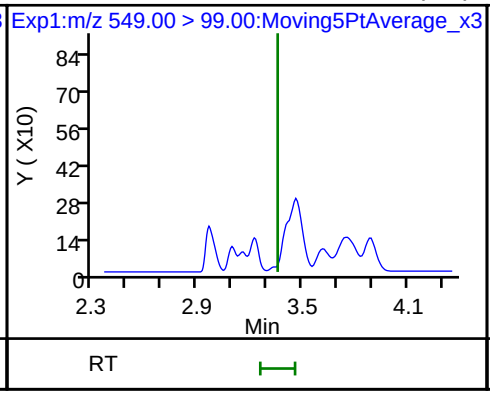
D 19 13C5 PFNA



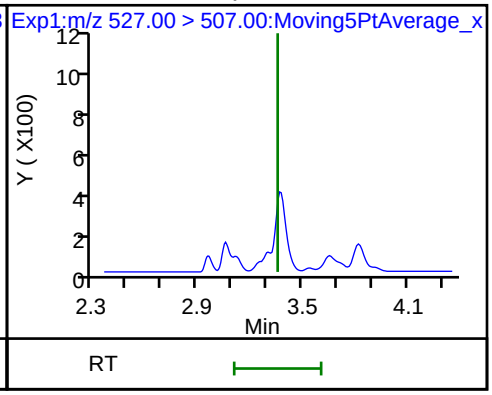
68 Perfluorononanesulfonic acid (ND)



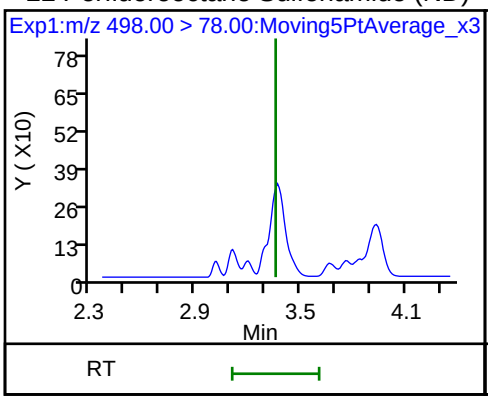
68 Perfluorononanesulfonic acid (ND)



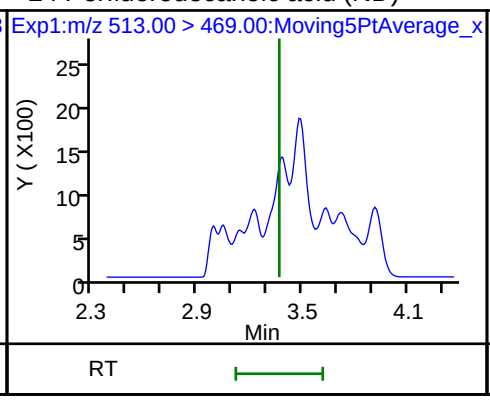
25 1H,1H,2H,2H-perfluorodecanesulfoni (ND)



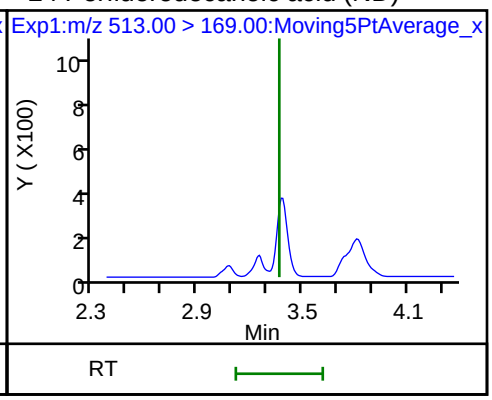
22 Perfluorooctane Sulfonamide (ND)



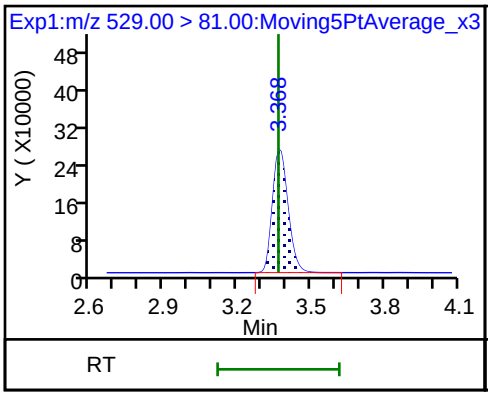
24 Perfluorodecanoic acid (ND)



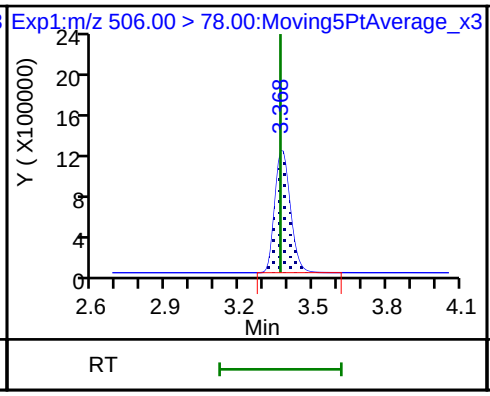
24 Perfluorodecanoic acid (ND)



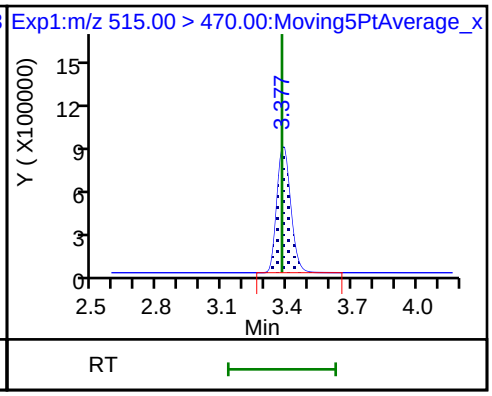
D 26 M2-8:2FTS



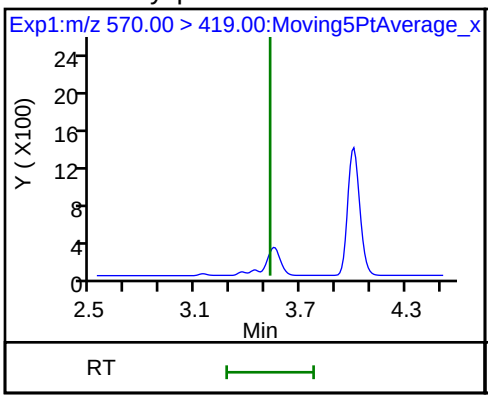
D 21 13C8 FOSA



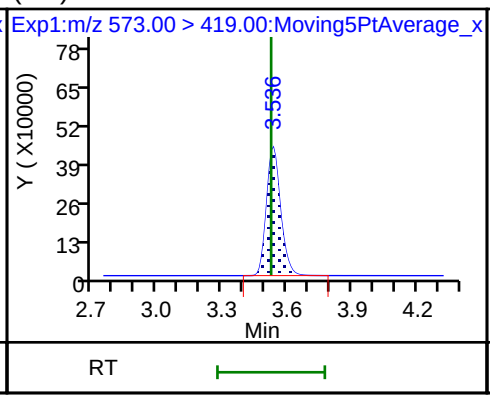
D 23 13C2 PFDA



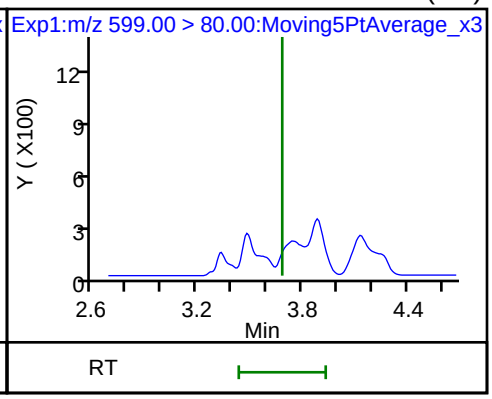
28 N-methyl perfluorooctane sulfonamid (ND)



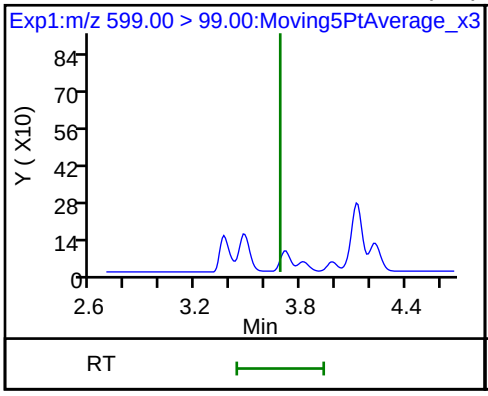
D 27 d3-NMeFOSAA



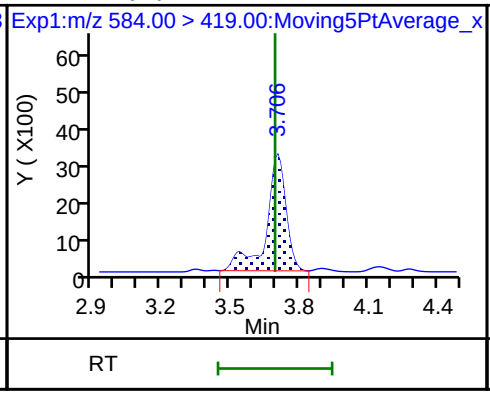
29 Perfluorodecane Sulfonic acid (ND)



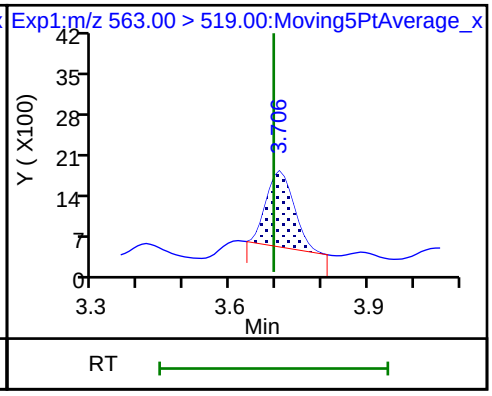
29 Perfluorodecane Sulfonic acid (ND)



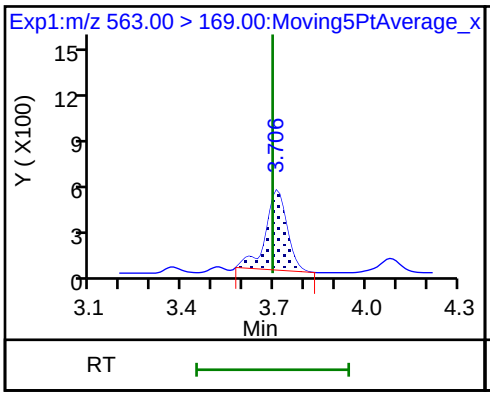
33 N-ethyl perfluorooctane sulfonamid



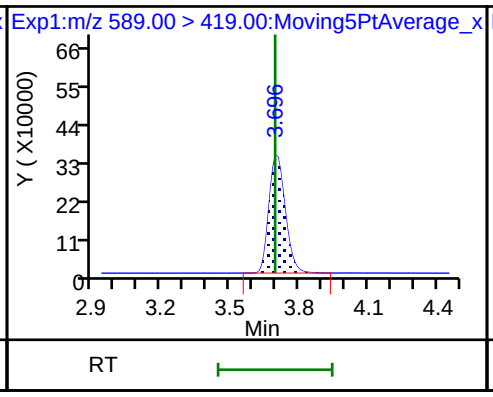
31 Perfluoroundecanoic acid



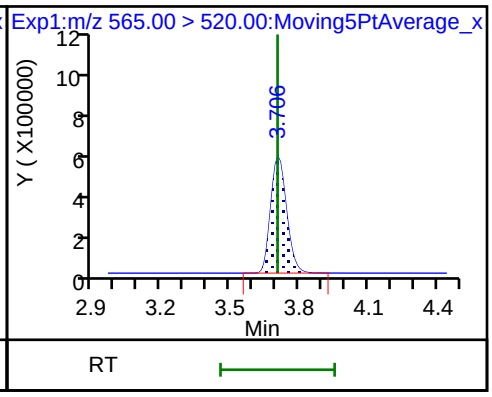
31 Perfluoroundecanoic acid



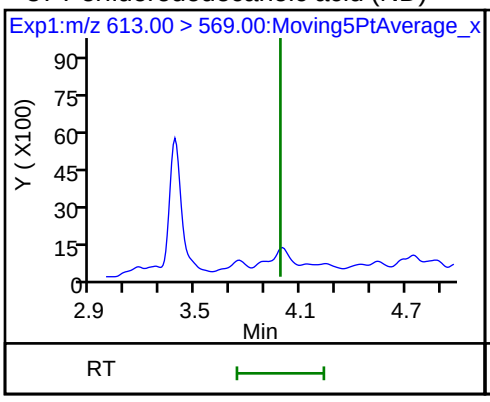
D 32 d5-NEtFOSAA



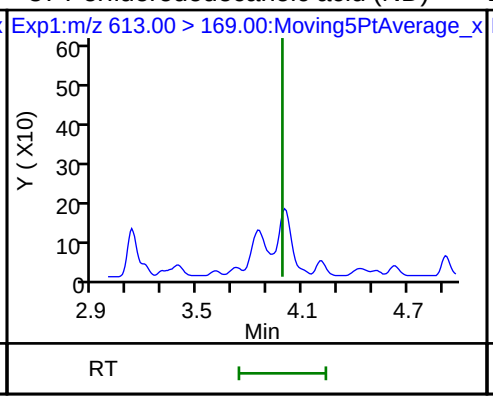
D 30 13C2 PFUnA



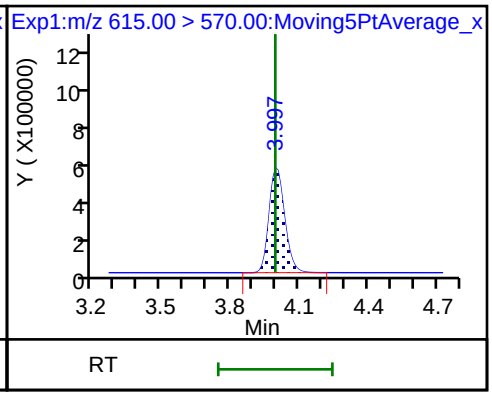
37 Perfluorododecanoic acid (ND)



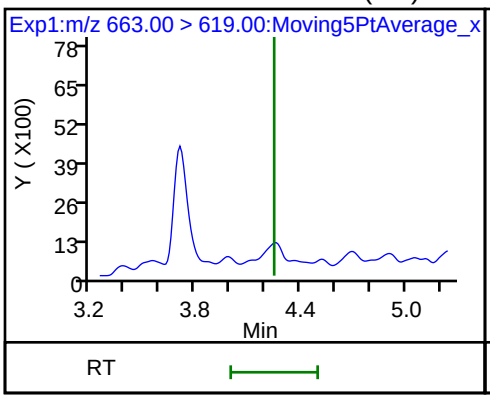
37 Perfluorododecanoic acid (ND)



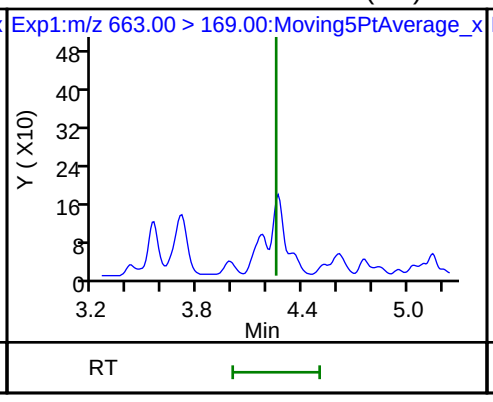
D 36 13C2 PFDoA



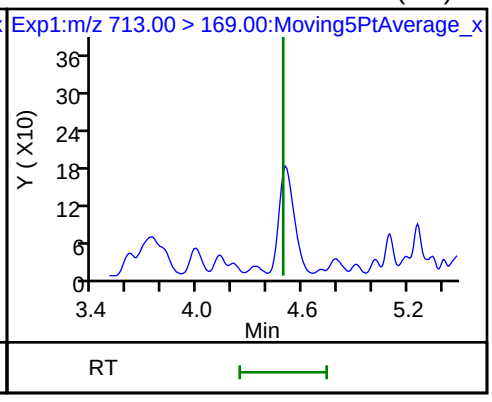
41 Perfluorotridecanoic acid (ND)



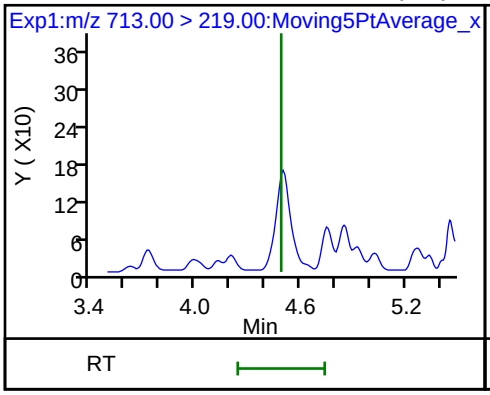
41 Perfluorotridecanoic acid (ND)



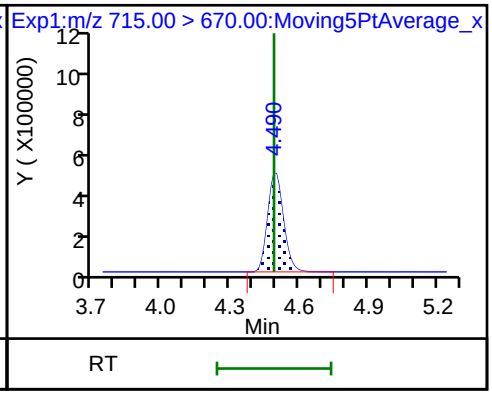
42 Perfluorotetradecanoic acid (ND)



42 Perfluorotetradecanoic acid (ND)



D 43 13C2-PFTeDA



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

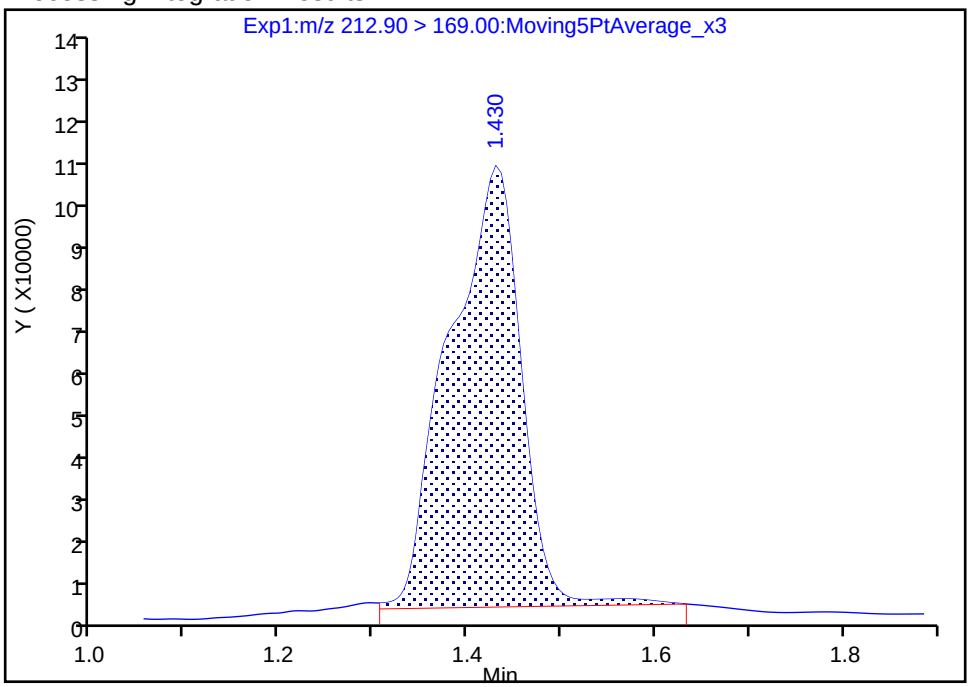
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\2018.07.06LLC_025.d				
Injection Date:	07-Jul-2018 02:30:21	Instrument ID:	A8_N		
Lims ID:	320-40571-A-11-A	Lab Sample ID:	320-40571-11		
Client ID:	NF21-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	15	Worklist Smp#:	13
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

2 Perfluorobutyric acid, CAS: 375-22-4

Signal: 1

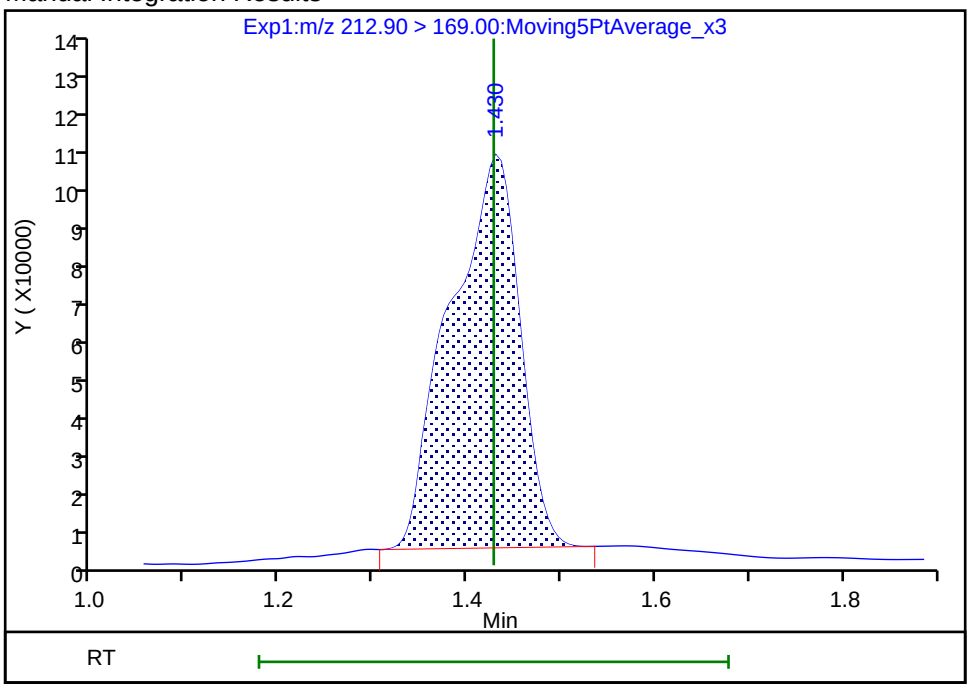
Processing Integration Results

RT: 1.43
Area: 521689
Amount: 0.225748
Amount Units: ng/ml



Manual Integration Results

RT: 1.43
Area: 497926
Amount: 0.215465
Amount Units: ng/ml



Reviewer: mongkols, 09-Jul-2018 14:09:56

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

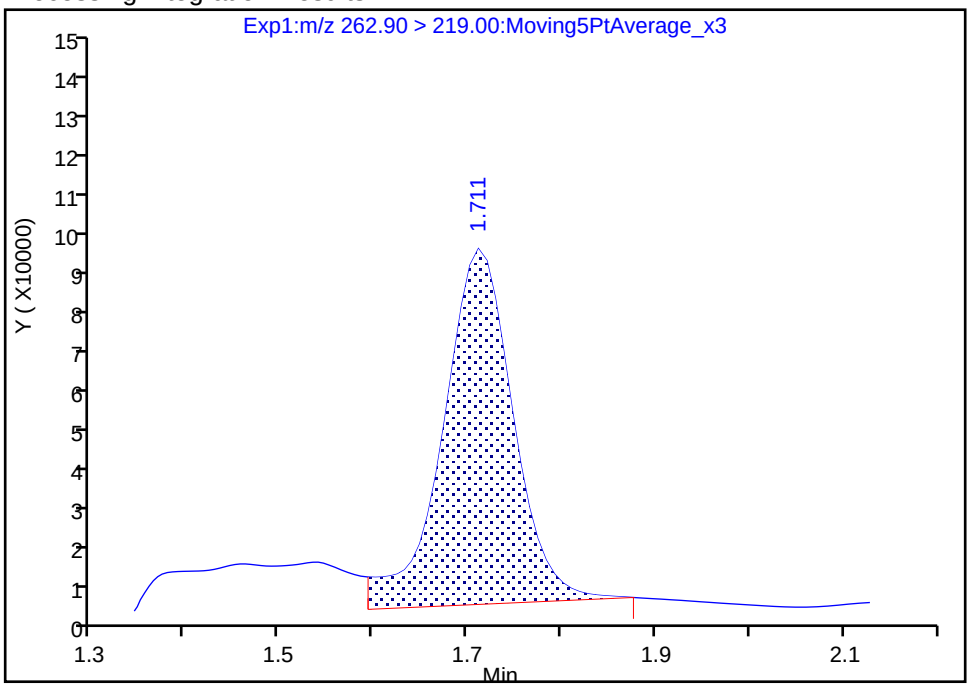
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\2018.07.06LLC_025.d				
Injection Date:	07-Jul-2018 02:30:21	Instrument ID:	A8_N		
Lims ID:	320-40571-A-11-A	Lab Sample ID:	320-40571-11		
Client ID:	NF21-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	15	Worklist Smp#:	13
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

4 Perfluoropentanoic acid, CAS: 2706-90-3

Signal: 1

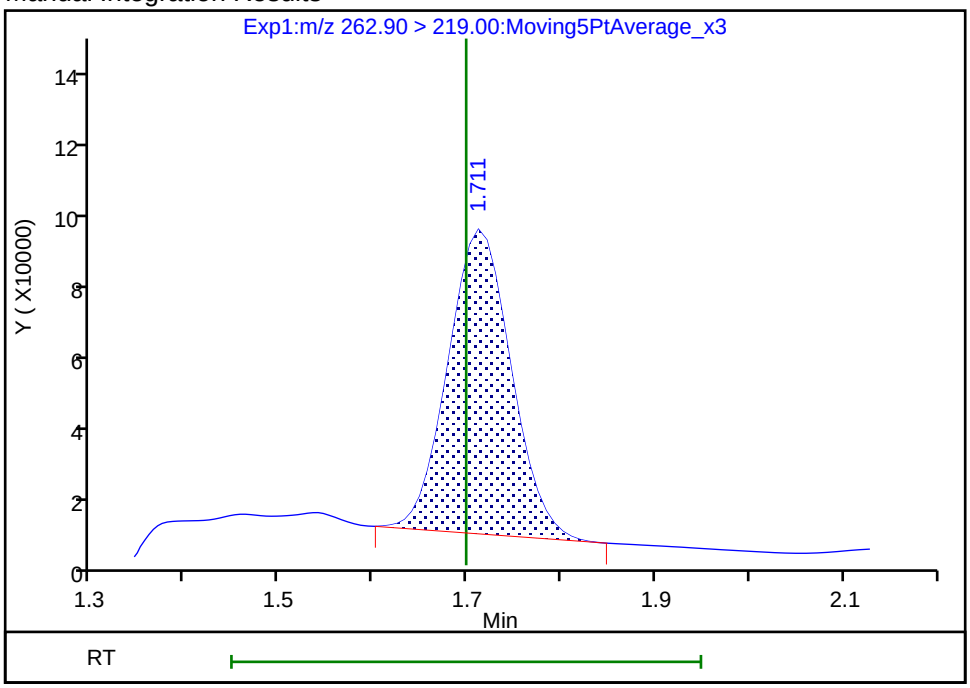
Processing Integration Results

RT: 1.71
Area: 447296
Amount: 0.208016
Amount Units: ng/ml



Manual Integration Results

RT: 1.71
Area: 381561
Amount: 0.177446
Amount Units: ng/ml



Reviewer: mongkols, 09-Jul-2018 14:10:06

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

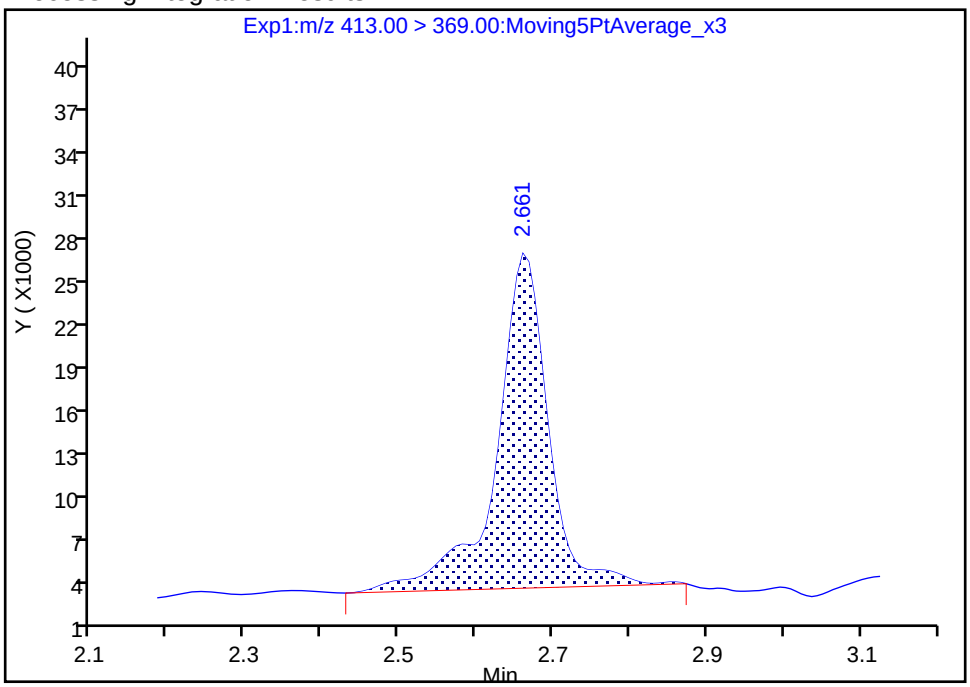
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\2018.07.06LLC_025.d				
Injection Date:	07-Jul-2018 02:30:21	Instrument ID:	A8_N		
Lims ID:	320-40571-A-11-A	Lab Sample ID:	320-40571-11		
Client ID:	NF21-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	15	Worklist Smp#:	13
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

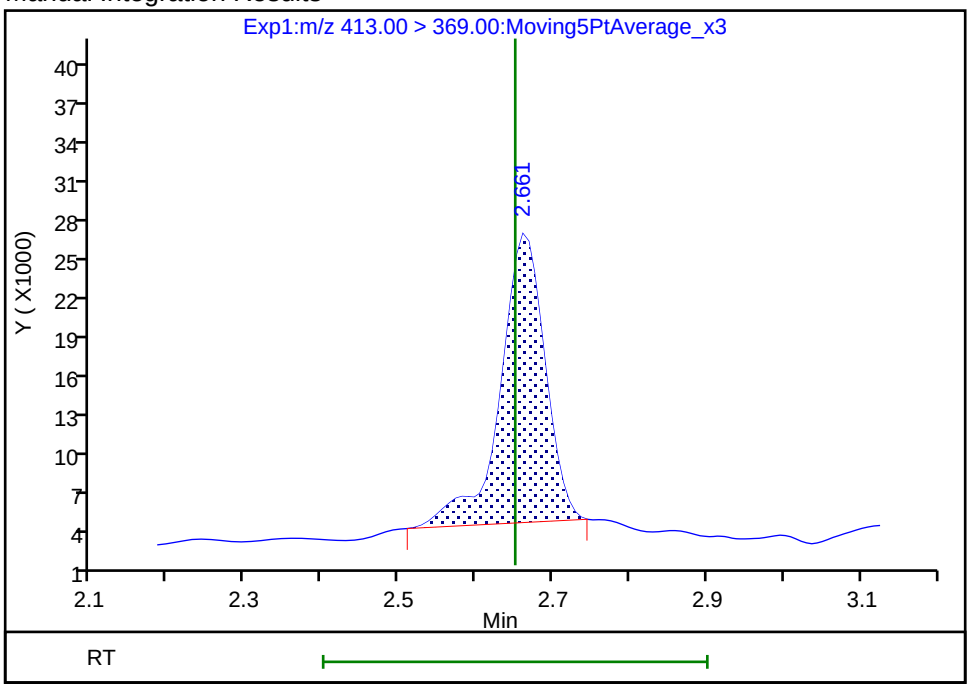
Processing Integration Results

RT: 2.66
Area: 108379
Amount: 0.046975
Amount Units: ng/ml



Manual Integration Results

RT: 2.66
Area: 88980
Amount: 0.038567
Amount Units: ng/ml



Reviewer: mongkols, 09-Jul-2018 14:10:26

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

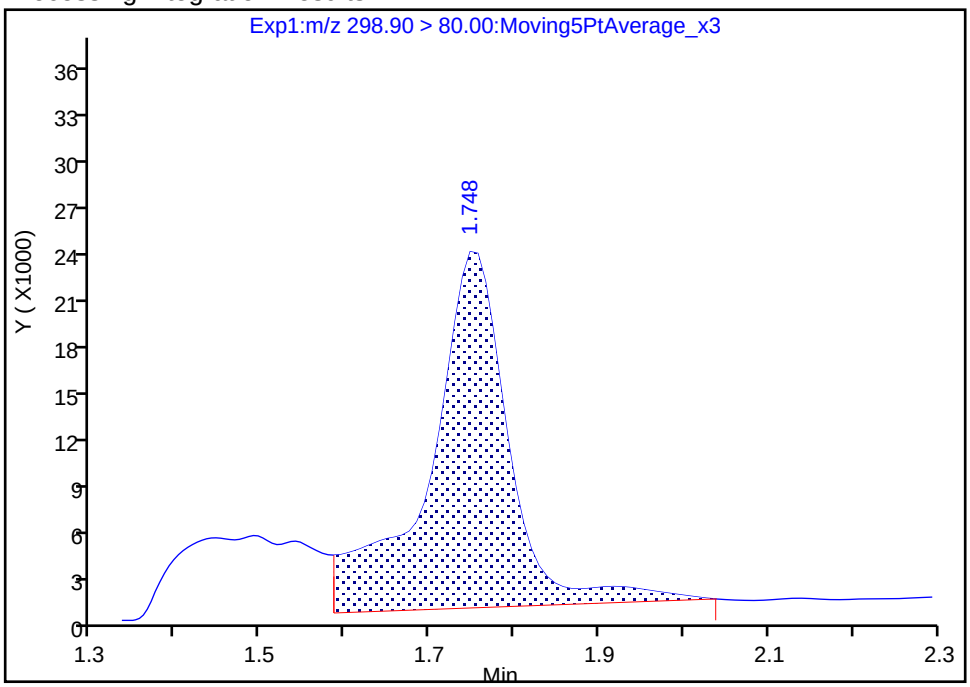
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\2018.07.06LLC_025.d				
Injection Date:	07-Jul-2018 02:30:21	Instrument ID:	A8_N		
Lims ID:	320-40571-A-11-A	Lab Sample ID:	320-40571-11		
Client ID:	NF21-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	15	Worklist Smp#:	13
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

5 Perfluorobutanesulfonic acid, CAS: 375-73-5

Signal: 1

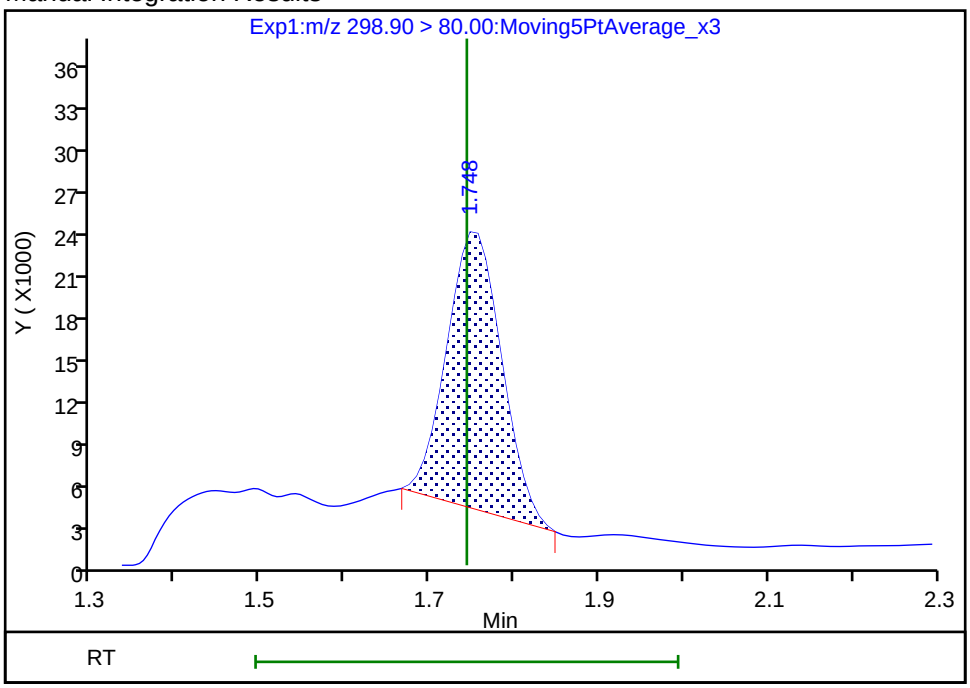
Processing Integration Results

RT: 1.75
Area: 150821
Amount: 0.045539
Amount Units: ng/ml



Manual Integration Results

RT: 1.75
Area: 88477
Amount: 0.026715
Amount Units: ng/ml



Reviewer: mongkols, 09-Jul-2018 14:10:12
Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

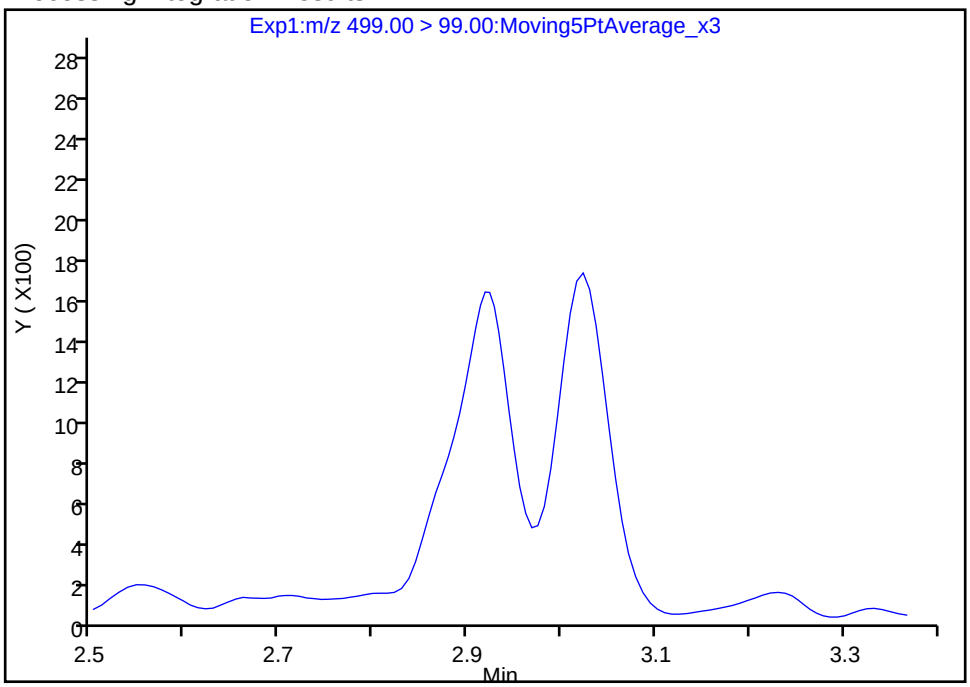
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\2018.07.06LLC_025.d				
Injection Date:	07-Jul-2018 02:30:21	Instrument ID:	A8_N		
Lims ID:	320-40571-A-11-A	Lab Sample ID:	320-40571-11		
Client ID:	NF21-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	15	Worklist Smp#:	13
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

17 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 2

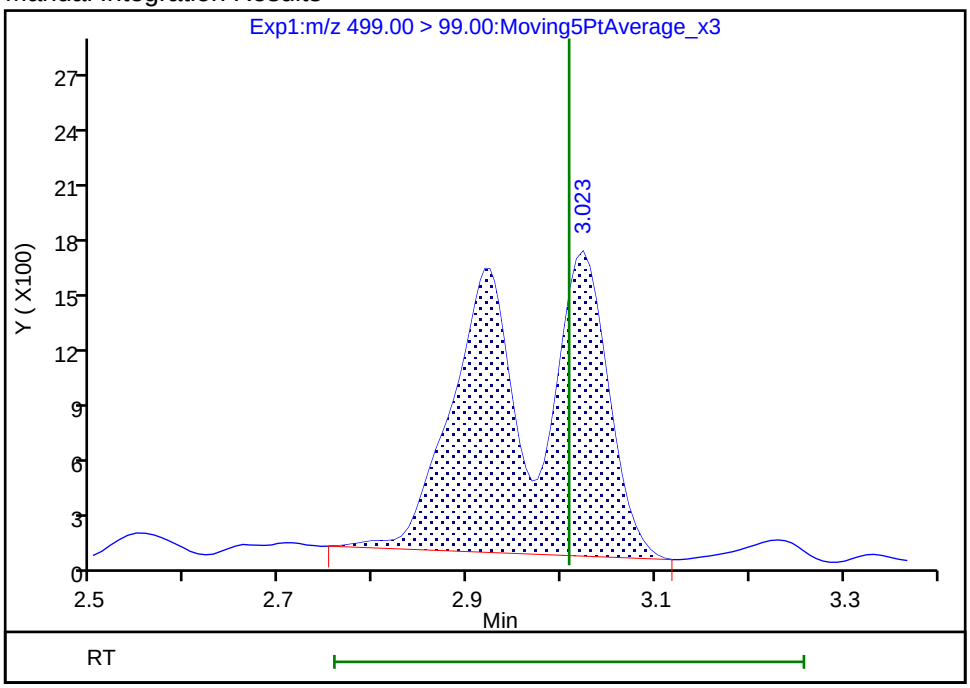
Processing Integration Results

RT: 3.01
Area: 0
Amount: 0.042084
Amount Units: ng/ml



Manual Integration Results

RT: 3.02
Area: 13013
Amount: 0.042084
Amount Units: ng/ml



Reviewer: mongkols, 09-Jul-2018 14:10:45

Audit Action: Manually Integrated Audit Reason: Assign Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF21-SS-01
Lab Sample ID: 320-40571-12
Matrix: Solid
Lab File ID: 2018.07.13LLB_061.d
Analysis Method: 537 (modified)
Date Collected: 06/20/2018 11:35
Extraction Method: SHAKE
Date Extracted: 06/28/2018 05:15
Sample wt/vol: 5.07(g)
Date Analyzed: 07/14/2018 04:43
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture: 14.3
GPC Cleanup:(Y/N) N
Analysis Batch No.: 233997
Units: mg/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	0.000036	J	0.00023	0.000032
2706-90-3	Perfluoropentanoic acid (PFPeA)	ND		0.00023	0.000089
307-24-4	Perfluorohexanoic acid (PFHxA)	ND		0.00023	0.000048
375-85-9	Perfluoroheptanoic acid (PFHpA)	ND		0.00023	0.000033
335-67-1	Perfluorooctanoic acid (PFOA)	ND		0.00023	0.000099
375-95-1	Perfluorononanoic acid (PFNA)	ND		0.00023	0.000041
335-76-2	Perfluorodecanoic acid (PFDA)	ND		0.00023	0.000025
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		0.00023	0.000041
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		0.00023	0.000077
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		0.00023	0.000059
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		0.00023	0.000062
375-73-5	Perfluorobutanesulfonic acid (PFBS)	ND		0.00023	0.000029
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.000086	J	0.00023	0.000036
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.00023	0.000040
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	ND		0.00058	0.00023
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		0.00023	0.000045
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		0.00023	0.000094
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.0023	0.00045
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.0023	0.00043
27619-97-2	6:2 FTS	ND		0.0023	0.00017
39108-34-4	8:2 FTS	ND		0.0023	0.00029

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF21-SS-01
Lab Sample ID: 320-40571-12
Matrix: Solid
Lab File ID: 2018.07.13LLB_061.d
Analysis Method: 537 (modified)
Date Collected: 06/20/2018 11:35
Extraction Method: SHAKE
Date Extracted: 06/28/2018 05:15
Sample wt/vol: 5.07(g)
Date Analyzed: 07/14/2018 04:43
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture: 14.3
GPC Cleanup:(Y/N) N
Analysis Batch No.: 233997
Units: mg/Kg

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00992	13C4 PFBA	82		25-150
STL01893	13C5 PFPeA	86		25-150
STL00993	13C2 PFHxA	88		25-150
STL01892	13C4-PFHpA	93		25-150
STL00990	13C4 PFOA	91		25-150
STL00995	13C5 PFNA	87		25-150
STL00996	13C2 PFDA	95		25-150
STL00997	13C2 PFUnA	88		25-150
STL00998	13C2 PFDoA	84		25-150
STL02116	13C2-PFTeDA	94		25-150
STL02337	13C3-PFBS	74		25-150
STL00994	18O2 PFHxS	78		25-150
STL00991	13C4 PFOS	79		25-150
STL01056	13C8 FOSA	69		25-150
STL02118	d3-NMeFOSAA	89		25-150
STL02117	d5-NEtFOSAA	95		25-150
STL02279	M2-6:2FTS	69		25-150
STL02280	M2-8:2FTS	93		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\2018.07.13LLB_061.d
Lims ID: 320-40571-A-12-A
Client ID: NF21-SS-01
Sample Type: Client
Inject. Date: 14-Jul-2018 04:43:59 ALS Bottle#: 46 Worklist Smp#: 10
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-40571-a-12-
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 16-Jul-2018 14:20:12 Calib Date: 11-Jul-2018 15:38:42
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK023

First Level Reviewer: mongkols Date: 16-Jul-2018 14:20:12

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										M
217.00 > 172.00	1.441	1.441	0.0	0.540	4806475	2.06		82.4	58511	M
2 Perfluorobutyric acid										M
212.90 > 169.00	1.441	1.444	-0.003	1.000	29824	0.0157			11.1	M
D 3 13C5-PFPeA										
267.90 > 223.00	1.719	1.720	-0.001	0.645	3501852	2.16		86.4	50040	
D 47 13C3-PFBS										
301.90 > 83.00	1.756	1.765	-0.009	0.658	69807	1.71		73.7	409	
D 7 13C2 PFHxA										
315.00 > 270.00	2.003	2.003	0.0	0.751	3865367	2.21		88.3	83156	
D 9 13C4-PFHpA										
367.00 > 322.00	2.319	2.319	0.0	0.870	3731744	2.31		92.6	47593	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.319	2.329	-0.010	0.994	76915	0.0375			591	
399.00 > 99.00	2.332	2.329	0.003	1.000	20931		3.67(1.50-4.49)		133	
D 11 18O2 PFHxS										
403.00 > 84.00	2.332	2.332	0.0	0.874	4226669	1.85		78.2	58721	
D 12 M2-6:2FTS										
429.00 > 81.00	2.636	2.644	-0.008	0.988	566342	1.64		69.0	9684	
D 14 13C4 PFOA										
417.00 > 372.00	2.659	2.667	-0.008	0.997	3724471	2.26		90.5	38629	
* 62 13C2-PFOA										
415.00 > 370.00	2.667	2.673	-0.006		4302506	2.50			51471	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.659	2.673	-0.014	1.000	19241	0.0105			9.8	
413.00 > 169.00	2.667	2.673	-0.006	1.003	16629		1.16(0.84-2.52)		94.5	
D 18 13C4 PFOS										
503.00 > 80.00	3.021	3.027	-0.006	1.133	3146193	1.88		78.5	59928	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 19 13C5 PFNA										
468.00 > 423.00	3.028	3.034	-0.006	1.135	3183464	2.16		86.6	49073	
D 26 M2-8:2FTS										
529.00 > 81.00	3.374	3.379	-0.005	1.265	1120565	2.22		92.5	15067	
D 21 13C8 FOSA										
506.00 > 78.00	3.365	3.379	-0.014	1.262	4188734	1.73		69.3	35716	
D 23 13C2 PFDA										
515.00 > 470.00	3.384	3.389	-0.005	1.269	3069258	2.38		95.1	30044	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.533	3.538	-0.005	1.325	1173949	2.22		88.7	32622	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.701	3.708	-0.007	1.388	1283616	2.37		94.7	3615	
D 30 13C2 PFUnA										
565.00 > 520.00	3.701	3.708	-0.007	1.388	2370085	2.20		87.9	37695	
D 36 13C2 PFDoA										
615.00 > 570.00	4.000	3.999	0.001	1.500	2342373	2.10		83.8	22785	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.491	4.501	-0.010	1.684	2732523	2.36		94.2	16166	

QC Flag Legend

Review Flags

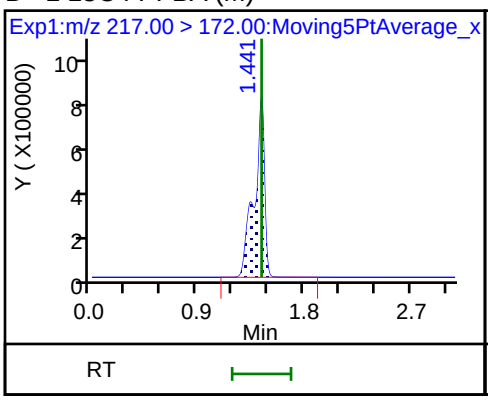
M - Manually Integrated

Report Date: 16-Jul-2018 14:20:12 Chrom Revision: 2.2 07-Jun-2018 07:41:54

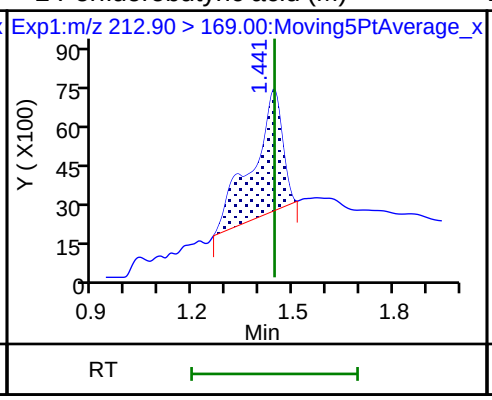
TestAmerica Sacramento

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\2018.07.13LLB_061.d				
Injection Date:	14-Jul-2018 04:43:59	Instrument ID:	A8_N		
Lims ID:	320-40571-A-12-A	Lab Sample ID:	320-40571-12		
Client ID:	NF21-SS-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	46	Worklist Smp#:	10
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		

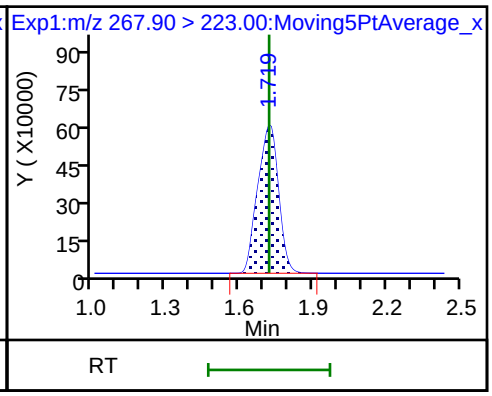
D 1 13C4 PFBA (M)



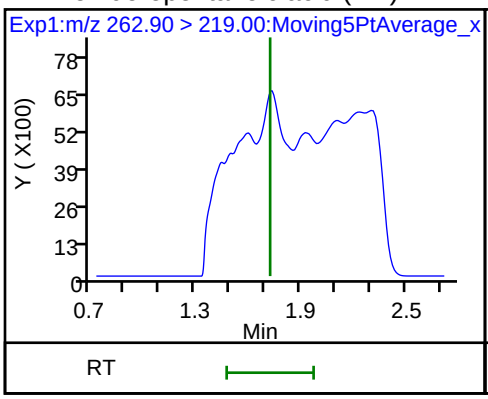
2 Perfluorobutyric acid (M)



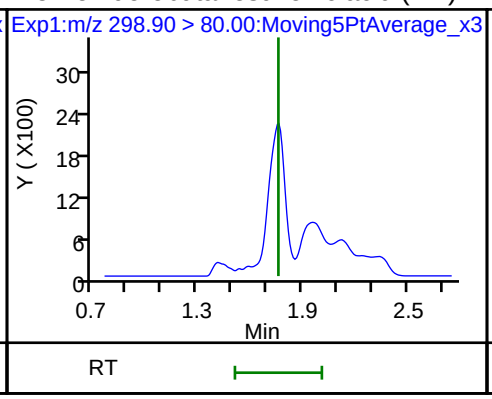
D 3 13C5-PFPeA



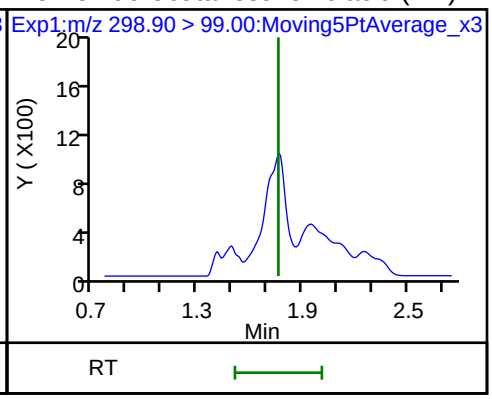
4 Perfluoropentanoic acid (ND)



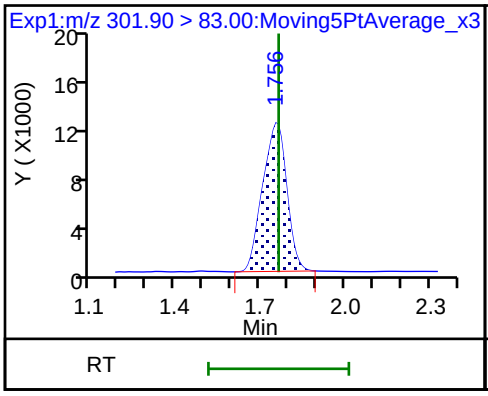
5 Perfluorobutanesulfonic acid (ND)



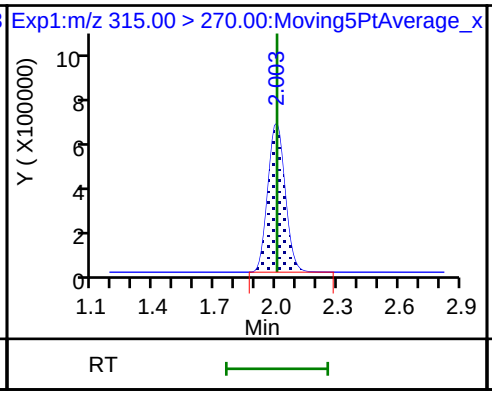
5 Perfluorobutanesulfonic acid (ND)



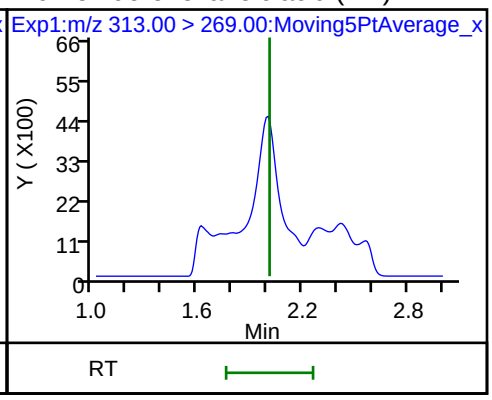
D 47 13C3-PFBS



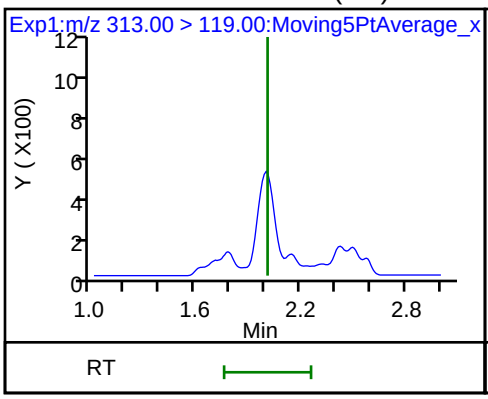
D 7 13C2 PFHxA



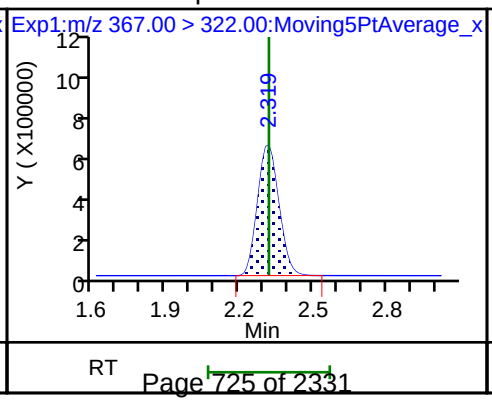
6 Perfluorohexanoic acid (ND)



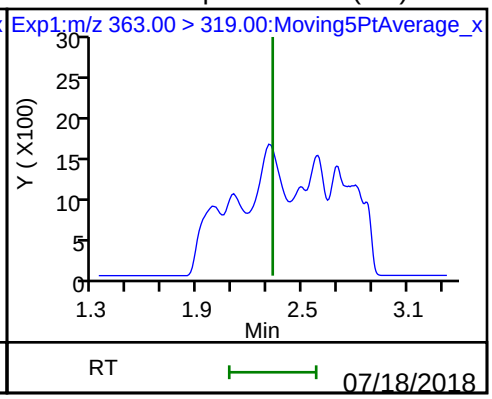
6 Perfluorohexanoic acid (ND)



D 9 13C4-PFHpA



10 Perfluoroheptanoic acid (ND)



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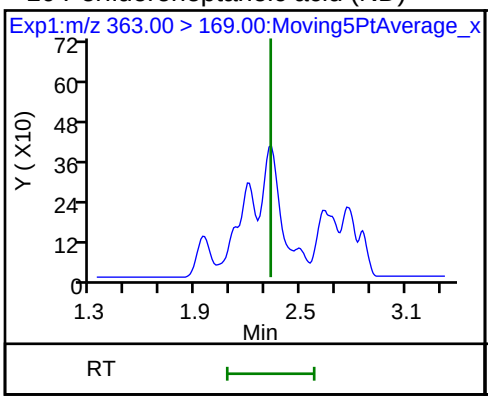
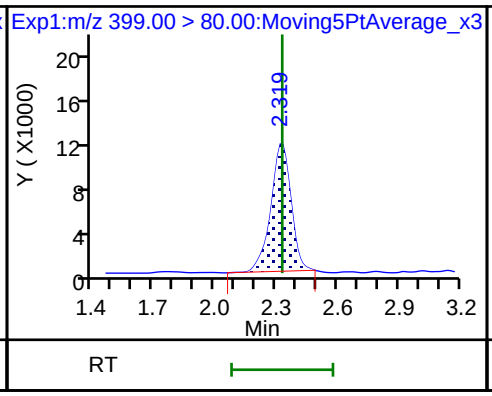
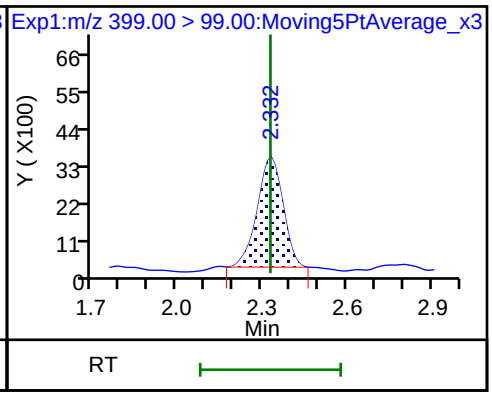


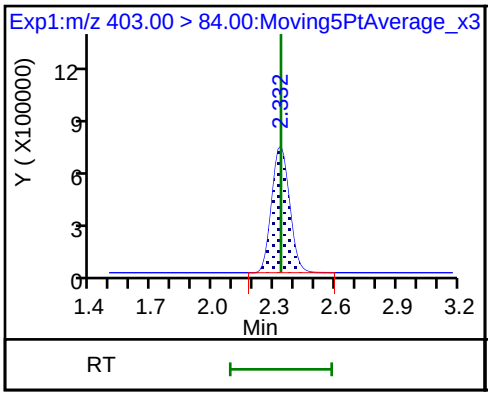
8 Perfluorohexanesulfonic acid



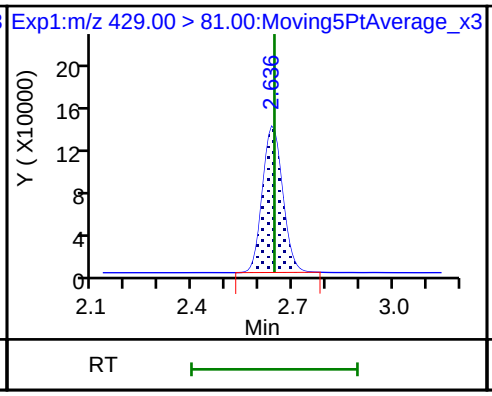
8 Perfluorohexanesulfonic acid



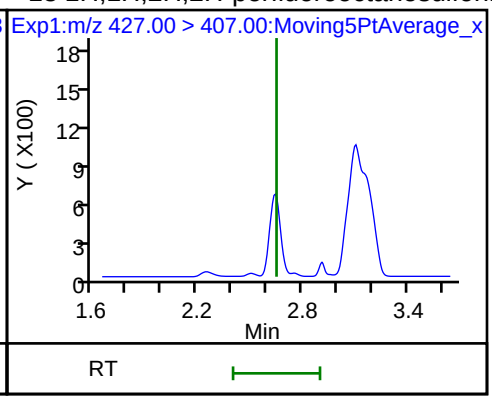
D 11 18O2 PFHxS



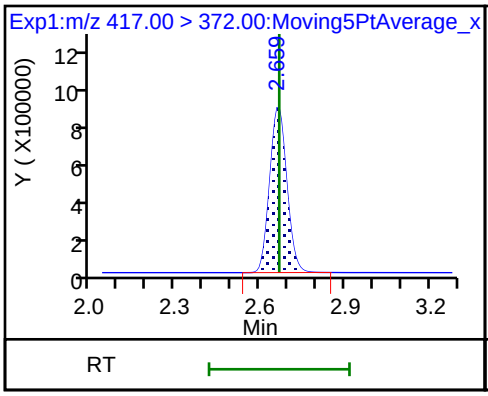
D 12 M2-6:2FTS



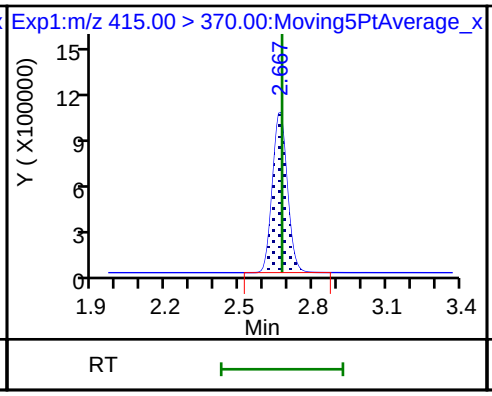
13 1H,1H,2H,2H-perfluorooctanesulfoni (ND)



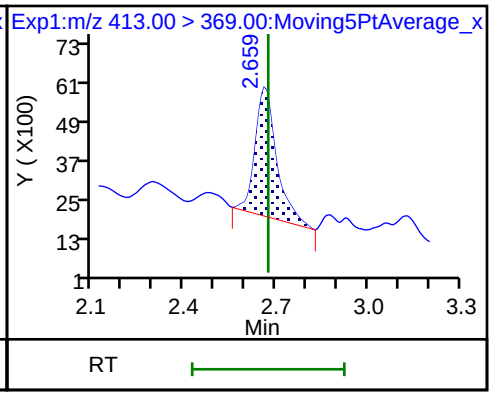
D 14 13C4 PFOA



* 62 13C2-PFOA



15 Perfluorooctanoic acid



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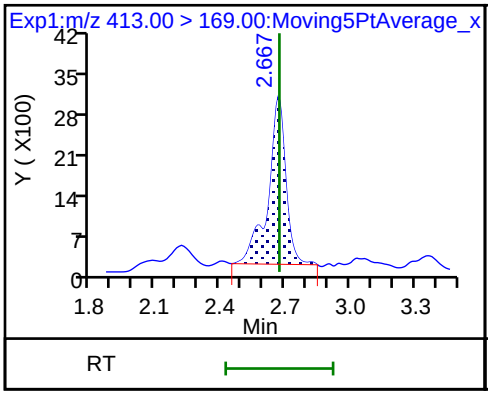
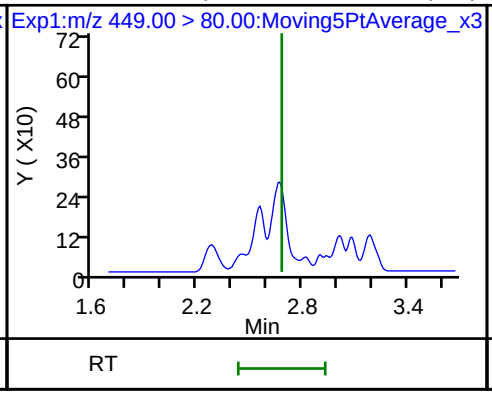
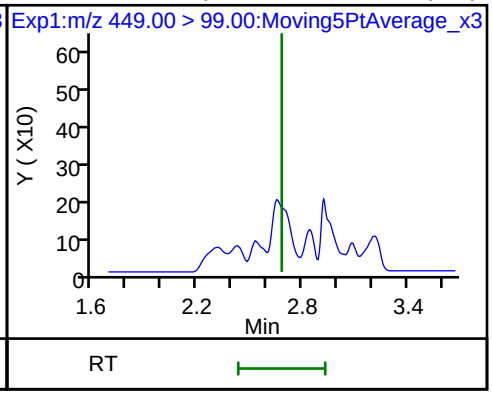


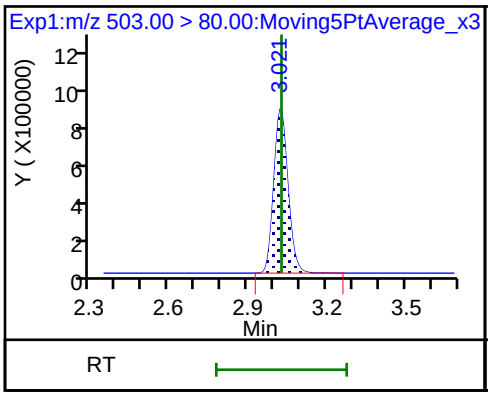
16 Perfluoroheptanesulfonic acid (ND)



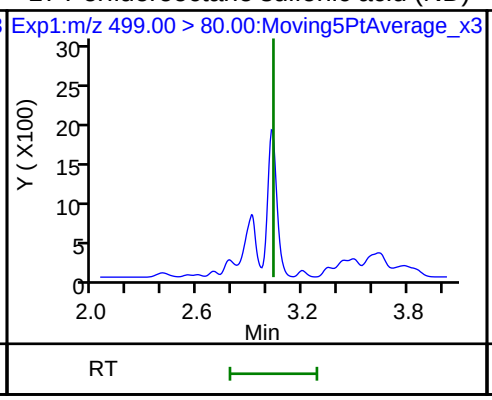
16 Perfluoroheptanesulfonic acid (ND)



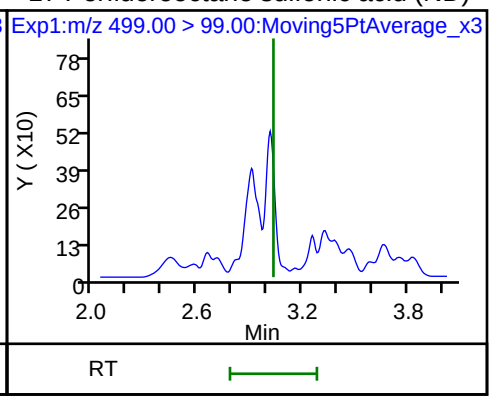
D 18 13C4 PFOS



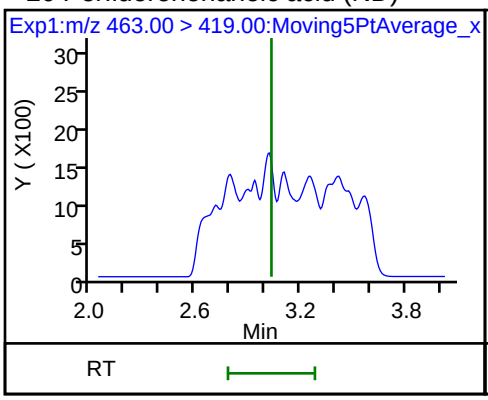
17 Perfluorooctane sulfonic acid (ND)



17 Perfluorooctane sulfonic acid (ND)



20 Perfluorononanoic acid (ND)



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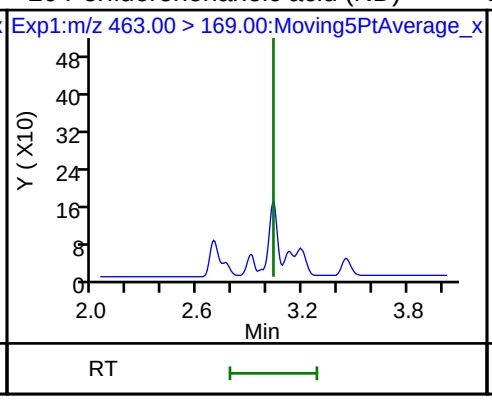
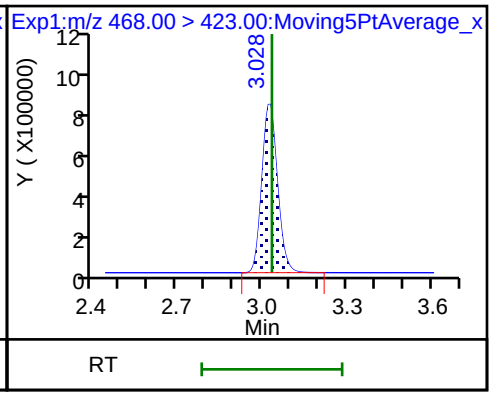
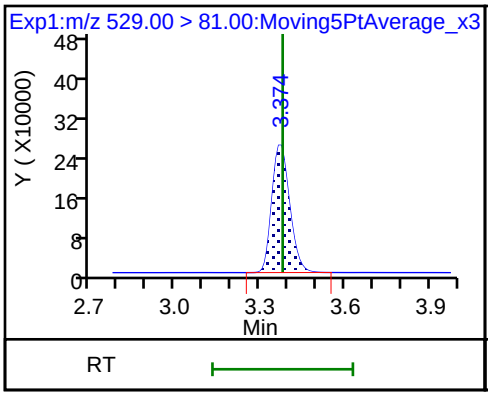


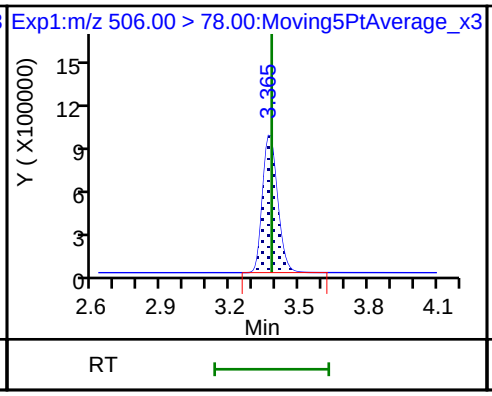
D 19 13C5 PFNA



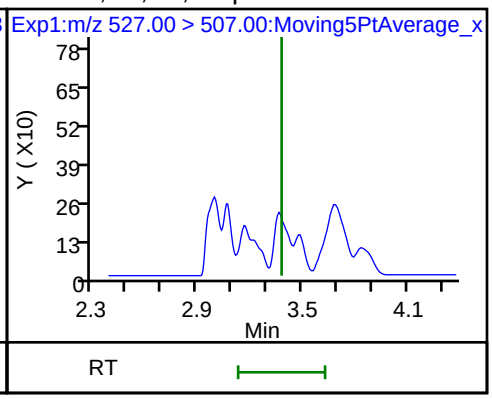
D 26 M2-8:2FTS



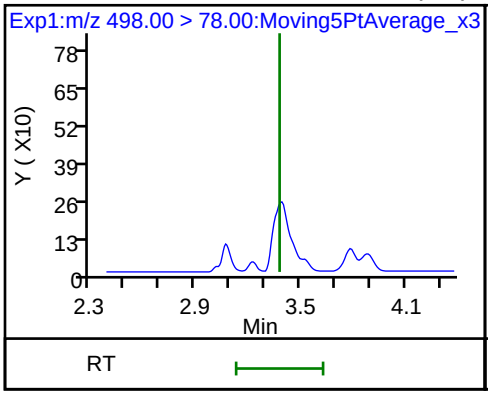
D 21 13C8 FOSA



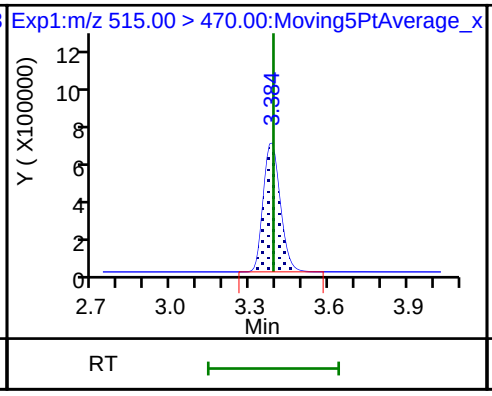
25 1H,1H,2H,2H-perfluorodecanesulfoni (ND)



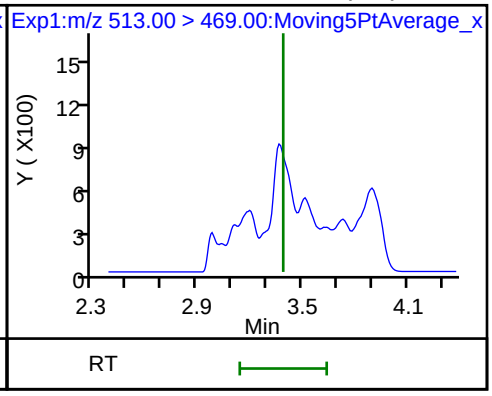
22 Perfluorooctane Sulfonamide (ND)



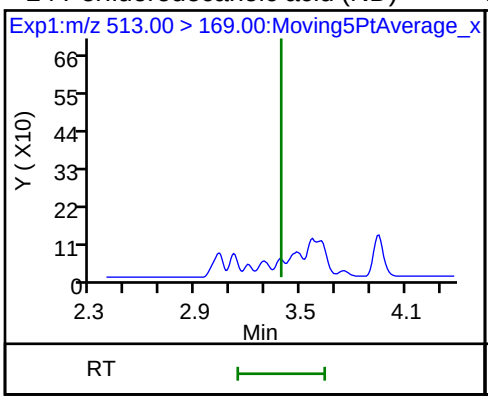
D 23 13C2 PFDA



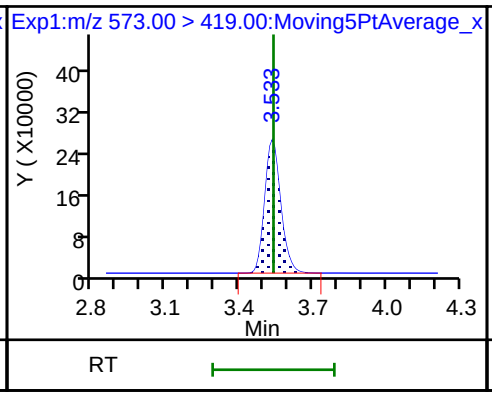
24 Perfluorodecanoic acid (ND)



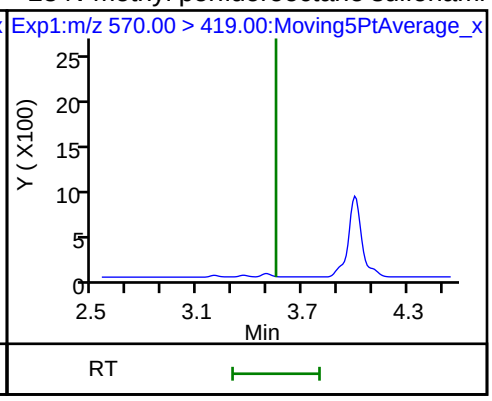
24 Perfluorodecanoic acid (ND)



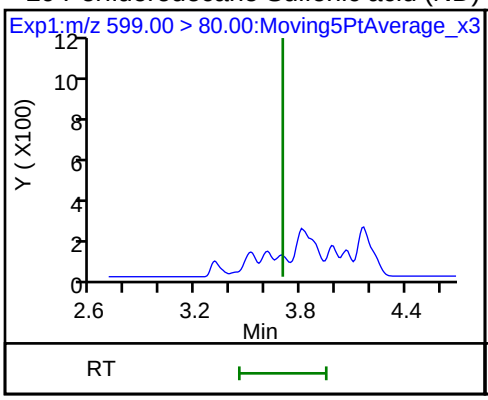
D 27 d3-NMeFOSAA



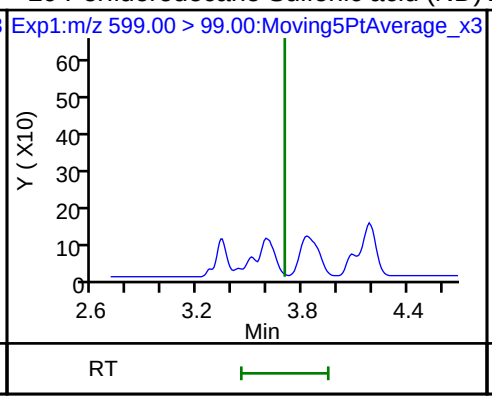
28 N-methyl perfluorooctane sulfonami (ND)



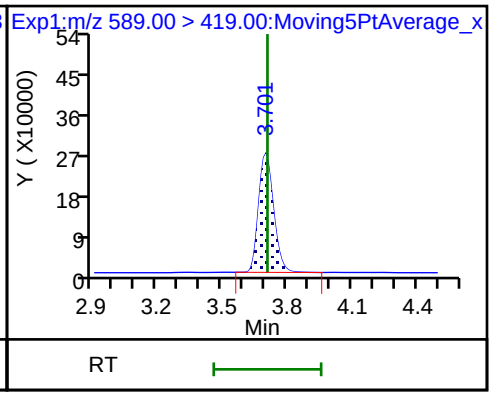
29 Perfluorodecane Sulfonic acid (ND)



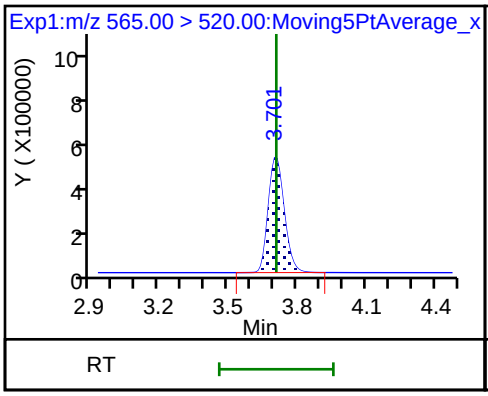
29 Perfluorodecane Sulfonic acid (ND)



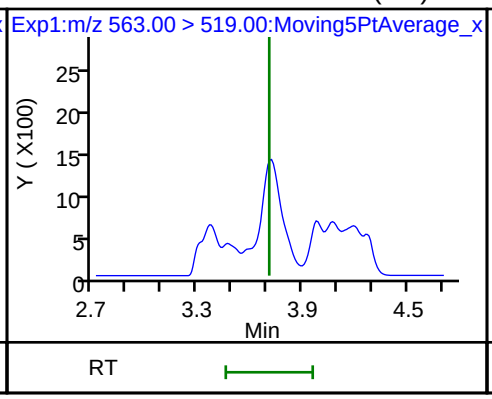
D 32 d5-NEtFOSAA



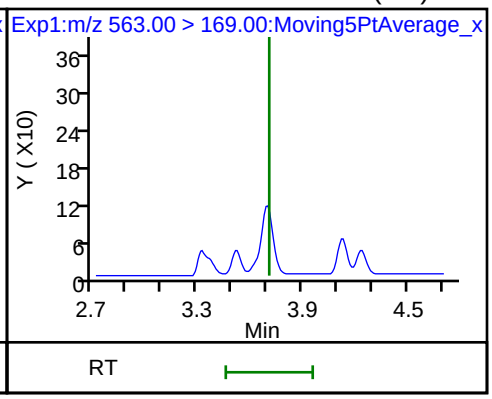
D 30 13C2 PFUnA



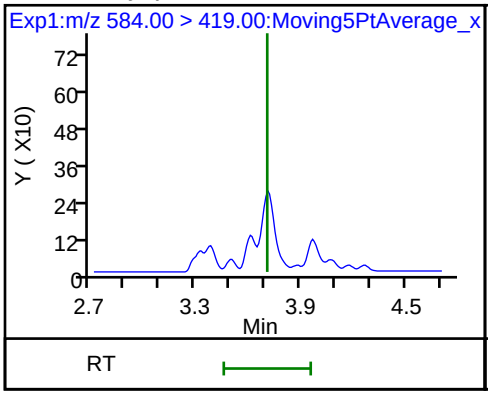
31 Perfluoroundecanoic acid (ND)



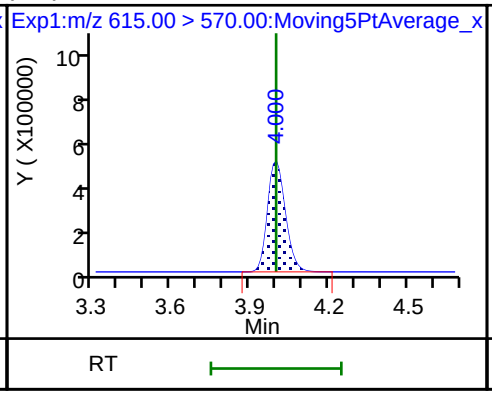
31 Perfluoroundecanoic acid (ND)



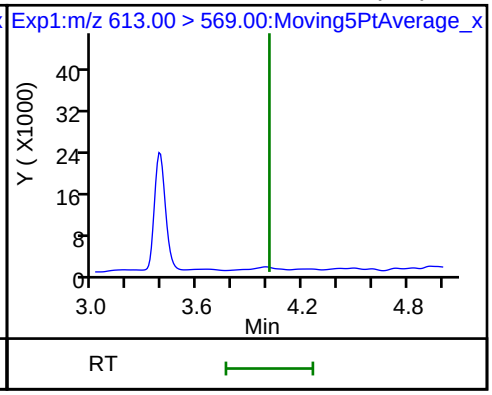
33 N-ethyl perfluorooctane sulfonamid (ND)



D 36 13C2 PFDoA



37 Perfluorododecanoic acid (ND)



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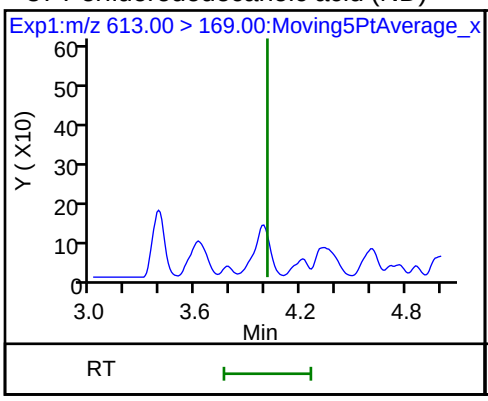
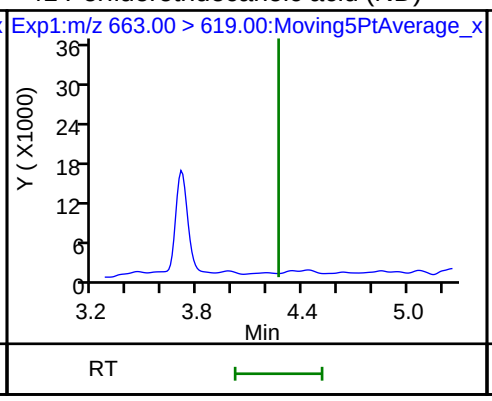
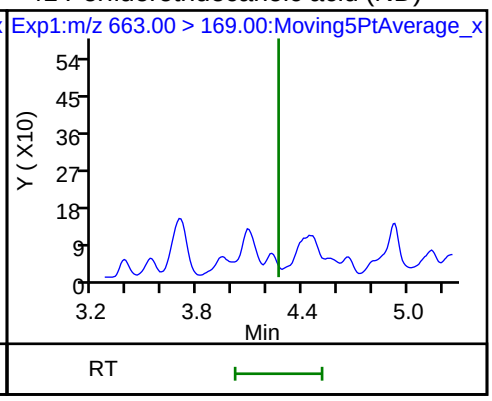
37 Perfluorododecanoic acid (ND)



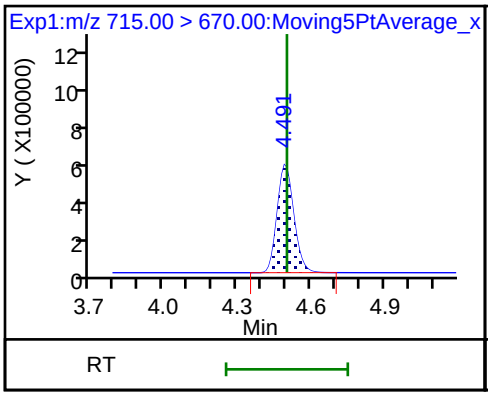
41 Perfluorotridecanoic acid (ND)



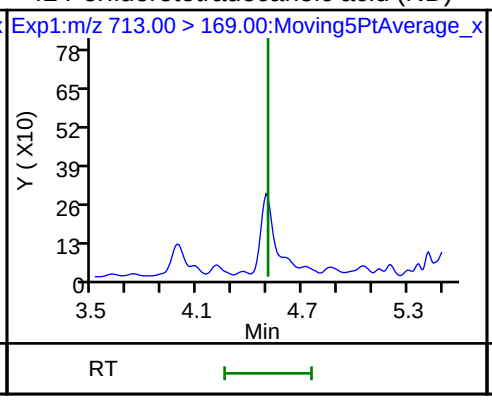
41 Perfluorotridecanoic acid (ND)



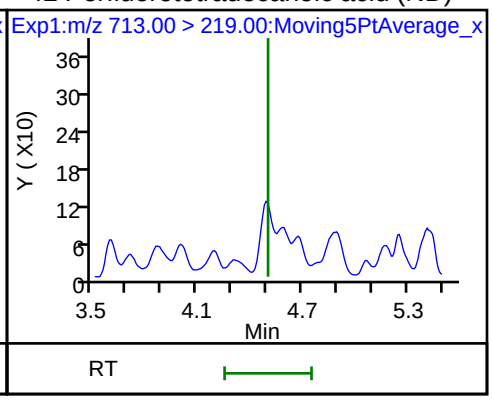
D 43 13C2-PFTeDA



42 Perfluorotetradecanoic acid (ND)



42 Perfluorotetradecanoic acid (ND)



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

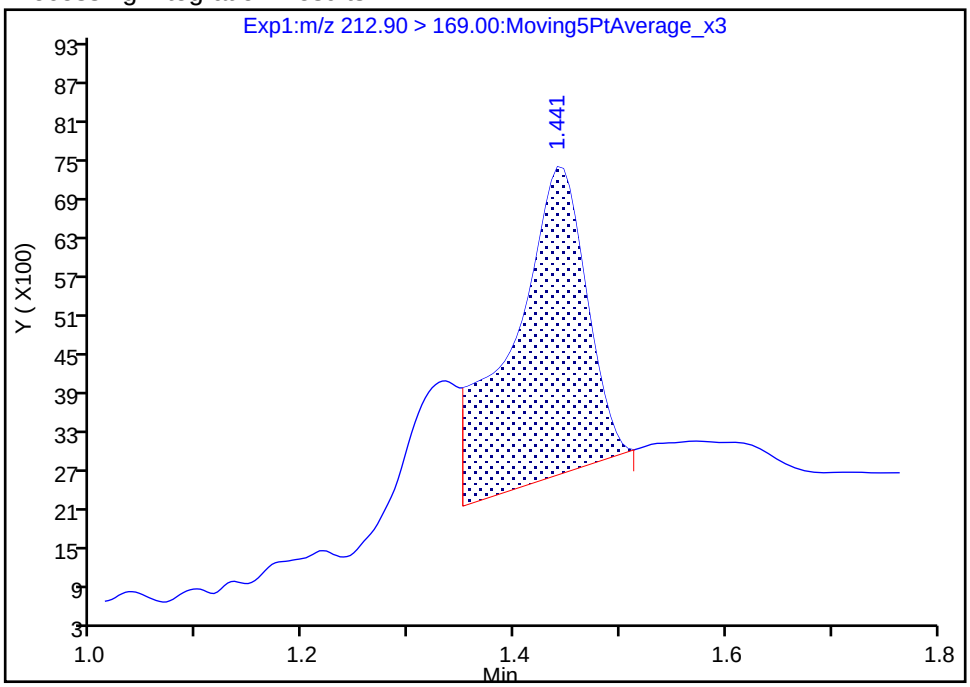
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\2018.07.13LLB_061.d				
Injection Date:	14-Jul-2018 04:43:59	Instrument ID:	A8_N		
Lims ID:	320-40571-A-12-A	Lab Sample ID:	320-40571-12		
Client ID:	NF21-SS-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	46	Worklist Smp#:	10
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

2 Perfluorobutyric acid, CAS: 375-22-4

Signal: 1

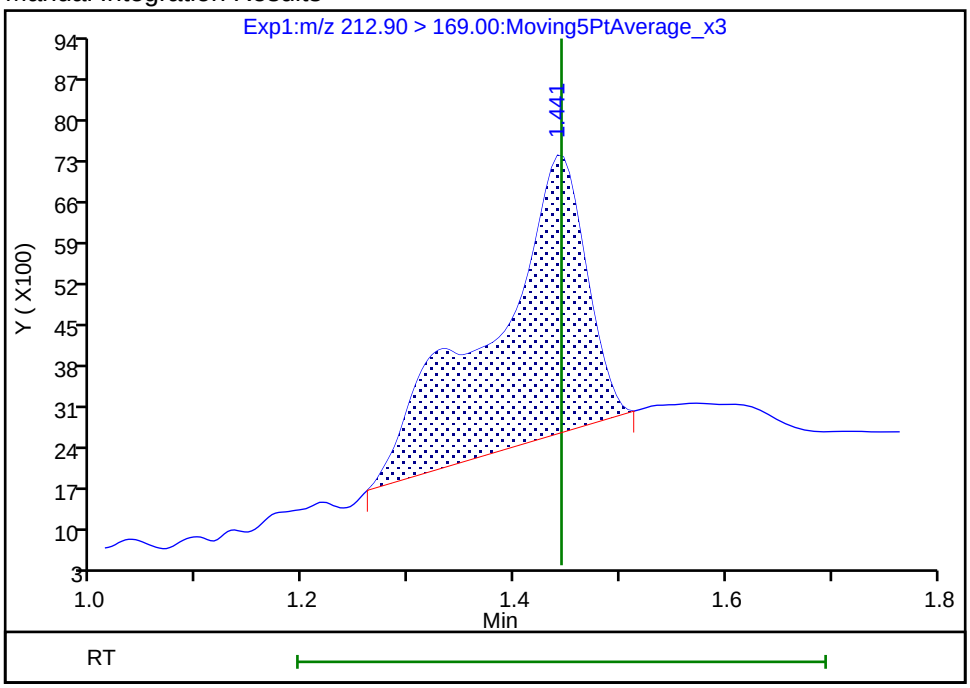
Processing Integration Results

RT: 1.44
Area: 23015
Amount: 0.012146
Amount Units: ng/ml



Manual Integration Results

RT: 1.44
Area: 29824
Amount: 0.015739
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 14:19:53

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

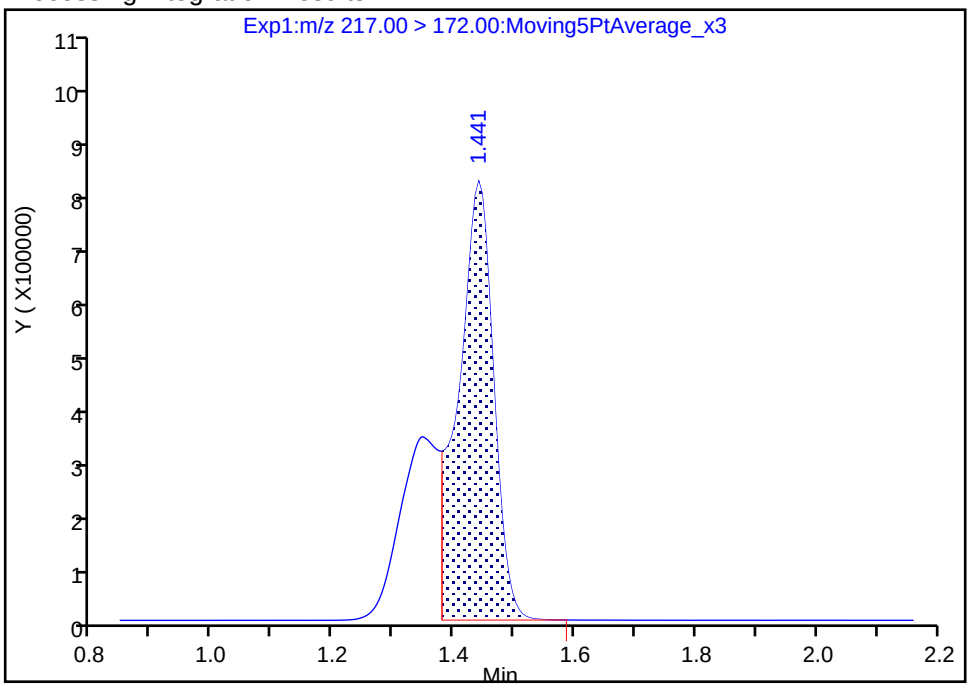
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\2018.07.13LLB_061.d				
Injection Date:	14-Jul-2018 04:43:59	Instrument ID:	A8_N		
Lims ID:	320-40571-A-12-A	Lab Sample ID:	320-40571-12		
Client ID:	NF21-SS-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	46	Worklist Smp#:	10
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

D 1 13C4 PFBA, CAS: STL00992

Signal: 1

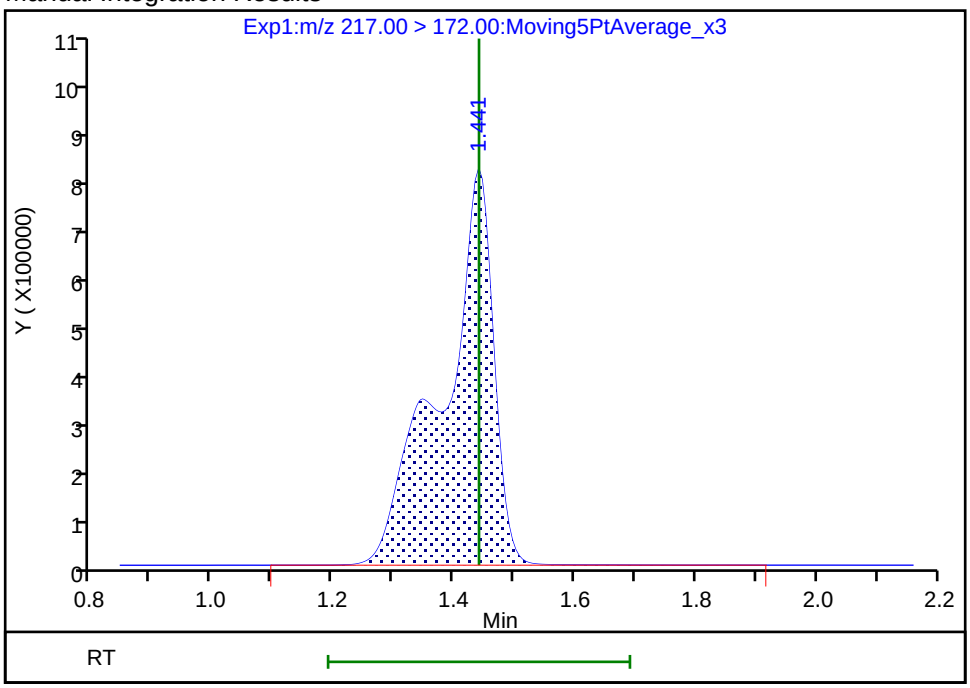
Processing Integration Results

RT: 1.44
Area: 3263307
Amount: 1.398446
Amount Units: ng/ml



Manual Integration Results

RT: 1.44
Area: 4806475
Amount: 2.059750
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 14:19:40

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF22-GW-01
Lab Sample ID: 320-40571-13
Matrix: Water
Lab File ID: 2018.07.06LLC_027.d
Analysis Method: 537 (modified)
Date Collected: 06/19/2018 18:10
Extraction Method: 3535
Date Extracted: 07/02/2018 14:58
Sample wt/vol: 270.3(mL)
Date Analyzed: 07/07/2018 02:46
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 232800
Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	0.0028	B	0.0018	0.00032
2706-90-3	Perfluoropentanoic acid (PFPeA)	0.00077	J	0.0018	0.00045
307-24-4	Perfluorohexanoic acid (PFHxA)	ND		0.0018	0.00054
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.00050	J	0.0018	0.00023
335-67-1	Perfluorooctanoic acid (PFOA)	0.0018		0.0018	0.00079
375-95-1	Perfluorononanoic acid (PFNA)	ND		0.0018	0.00025
335-76-2	Perfluorodecanoic acid (PFDA)	ND		0.0018	0.00029
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		0.0018	0.0010
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		0.0018	0.00051
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		0.0018	0.0012
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		0.0018	0.00027
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.0026		0.0018	0.00018
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	0.00073	J	0.0018	0.00028
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.0012	J B	0.0018	0.00016
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.0018	0.00018
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.0015	J	0.0018	0.00050
8789-57-2	Perfluorononanesulfonic acid (PFNS)	ND		0.0018	0.00015
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		0.0018	0.00030
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		0.0018	0.00032
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.018	0.0029
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.018	0.0018
757124-72-4	4:2 FTS	ND		0.018	0.0048
27619-97-2	6:2 FTS	ND		0.018	0.0018
39108-34-4	8:2 FTS	ND		0.018	0.0018

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF22-GW-01
Lab Sample ID: 320-40571-13
Matrix: Water
Lab File ID: 2018.07.06LLC_027.d
Analysis Method: 537 (modified)
Date Collected: 06/19/2018 18:10
Extraction Method: 3535
Date Extracted: 07/02/2018 14:58
Sample wt/vol: 270.3(mL)
Date Analyzed: 07/07/2018 02:46
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 232800
Units: ug/L

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00992	13C4 PFBA	68		25-150
STL01893	13C5 PFPeA	82		25-150
STL00993	13C2 PFHxA	89		25-150
STL01892	13C4-PFHpA	100		25-150
STL00990	13C4 PFOA	102		25-150
STL00995	13C5 PFNA	106		25-150
STL00996	13C2 PFDA	105		25-150
STL00997	13C2 PFUnA	95		25-150
STL00998	13C2 PFDoA	99		25-150
STL02116	13C2-PFTeDA	78		25-150
STL02337	13C3-PFBS	87		25-150
STL00994	18O2 PFHxS	110		25-150
STL00991	13C4 PFOS	104		25-150
STL01056	13C8 FOSA	88		25-150
STL02118	d3-NMeFOSAA	110		25-150
STL02117	d5-NEtFOSAA	102		25-150
STL02279	M2-6:2FTS	140		25-150
STL02280	M2-8:2FTS	119		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\2018.07.06LLC_027.d
Lims ID: 320-40571-A-13-A
Client ID: NF22-GW-01
Sample Type: Client
Inject. Date: 07-Jul-2018 02:46:00 ALS Bottle#: 16 Worklist Smp#: 15
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-40571-a-13-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 09-Jul-2018 14:13:39 Calib Date: 05-Jul-2018 09:38:17
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180705-60684.b\2018.07.05LLICALAA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK010

First Level Reviewer: mongkols Date: 09-Jul-2018 14:13:39

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.422	1.428	-0.006	0.537	4810139	1.70		68.0	18358	
2 Perfluorobutyric acid										M
212.90 > 169.00	1.428	1.428	0.0	1.004	150800	0.0767			23.8	M
4 Perfluoropentanoic acid										M
262.90 > 219.00	1.698	1.698	0.0	1.000	42414	0.0207			6.6	M
D 3 13C5-PFPeA										
267.90 > 223.00	1.698	1.707	-0.009	0.641	4300182	2.05		82.1	28629	
D 47 13C3-PFBS										
301.90 > 83.00	1.743	1.743	0.0	0.658	101867	2.03		87.5	295	
5 Perfluorobutanesulfonic acid										M
298.90 > 80.00	1.743	1.743	0.0	1.000	232233	0.0699			45.5	M
298.90 > 99.00	1.743	1.743	0.0	1.000	101236		2.29(1.25-3.74)		154	
D 7 13C2 PFHxA										
315.00 > 270.00	1.988	1.988	0.0	0.750	4978023	2.22		88.8	87520	
70 Perfluoropentanesulfonic acid										R
349.00 > 80.00	2.011	2.000	0.011	1.153	56385	0.0198			25.8	R
349.00 > 99.00	1.999	2.000	-0.001	1.147	5589		10.09(1.36-4.07)		12.0	
D 9 13C4-PFHpA										
367.00 > 322.00	2.303	2.302	0.001	0.869	4981430	2.50		100	54824	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.303	2.303	0.0	1.000	30415	0.0135			12.6	
363.00 > 169.00	2.303	2.303	0.0	1.000	13199		2.30(1.13-3.40)		90.4	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.316	2.303	0.013	1.000	105243	0.0338			42.4	
399.00 > 99.00	2.316	2.303	0.013	1.000	40371		2.61(1.50-4.49)		101	
D 11 18O2 PFHxS										
403.00 > 84.00	2.316	2.315	0.001	0.874	6373829	2.60		110	66509	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 12 M2-6:2FTS										
429.00 > 81.00	2.626	2.626	0.0	0.991	1489243	3.33		140	6342	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.626	2.627	0.0	1.000	36144	0.0368			180	
D 14 13C4 PFOA										
417.00 > 372.00	2.651	2.650	0.001	1.000	4970354	2.55		102	38309	
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.651	2.651	0.0	1.000	117005	0.0496			32.1	M
413.00 > 169.00	2.651	2.651	0.0	1.000	70679		1.66(0.84-2.52)		279	
* 62 13C2-PFOA										
415.00 > 370.00	2.651	2.651	0.0		5109934	2.50			50124	
17 Perfluorooctane sulfonic acid										M
499.00 > 80.00	2.900	3.008	-0.108	0.963	87974	0.0414			121	
499.00 > 99.00	3.019	3.008	0.011	1.002	13905		6.33(2.31-6.93)		80.5	M
D 18 13C4 PFOS										
503.00 > 80.00	3.012	3.015	-0.003	1.136	4344308	2.49		104	12594	
D 19 13C5 PFNA										
468.00 > 423.00	3.019	3.015	0.004	1.139	4385886	2.65		106	48054	
D 26 M2-8:2FTS										
529.00 > 81.00	3.361	3.367	-0.006	1.268	1410794	2.84		119	11675	
D 21 13C8 FOSA										
506.00 > 78.00	3.361	3.367	-0.006	1.268	5366185	2.21		88.5	33852	
D 23 13C2 PFDA										
515.00 > 470.00	3.370	3.376	-0.006	1.271	3762198	2.63		105	54483	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.520	3.525	-0.005	1.328	2307433	2.74		110	39494	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.687	3.694	-0.007	1.391	2119294	2.55		102	16868	
D 30 13C2 PFUnA										
565.00 > 520.00	3.698	3.705	-0.007	1.395	2865146	2.39		95.5	42829	
D 36 13C2 PFDoA										
615.00 > 570.00	3.988	3.995	-0.007	1.505	3187917	2.48		99.1	20762	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.490	4.489	0.001	1.694	3066103	1.96		78.2	15085	

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Review Flags

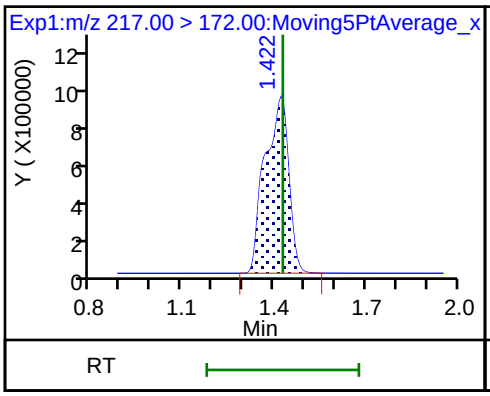
M - Manually Integrated

Report Date: 09-Jul-2018 14:13:40 Chrom Revision: 2.2 07-Jun-2018 07:41:54

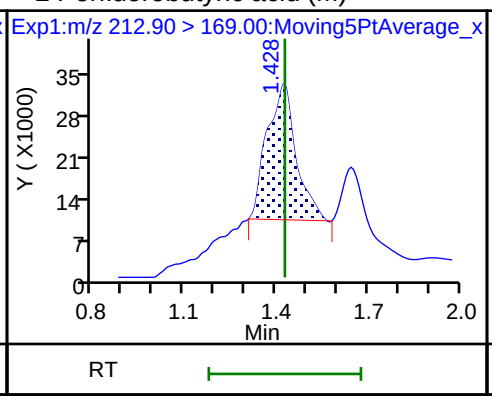
TestAmerica Sacramento

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\2018.07.06LLC_027.d				
Injection Date:	07-Jul-2018 02:46:00	Instrument ID:	A8_N		
Lims ID:	320-40571-A-13-A	Lab Sample ID:	320-40571-13		
Client ID:	NF22-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	16	Worklist Smp#:	15
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		

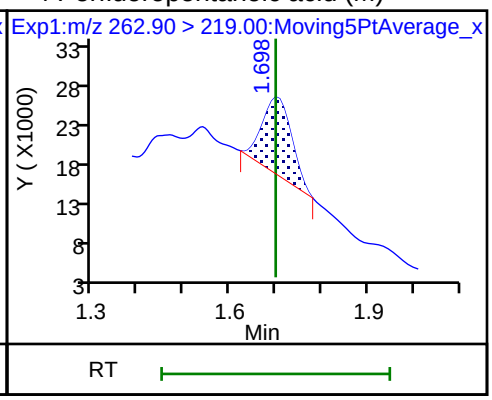
D 1 13C4 PFBA



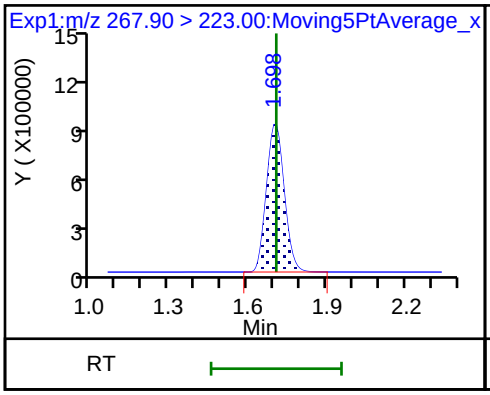
2 Perfluorobutyric acid (M)



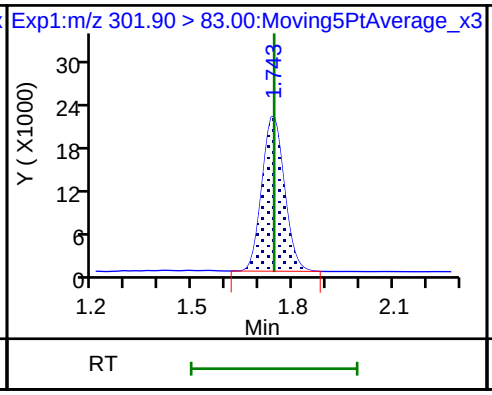
4 Perfluoropentanoic acid (M)



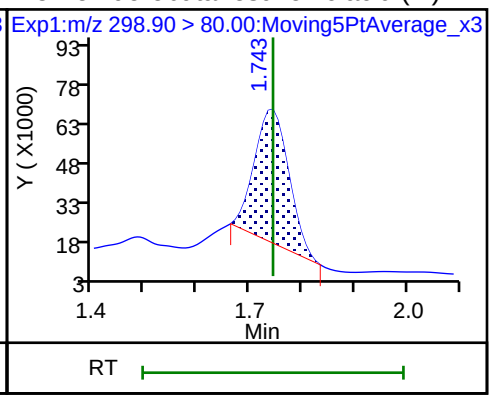
D 3 13C5-PFPeA



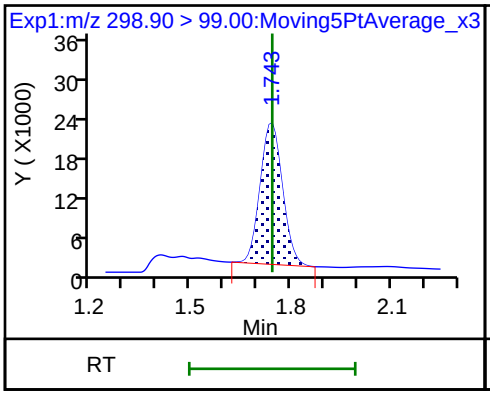
D 47 13C3-PFBS



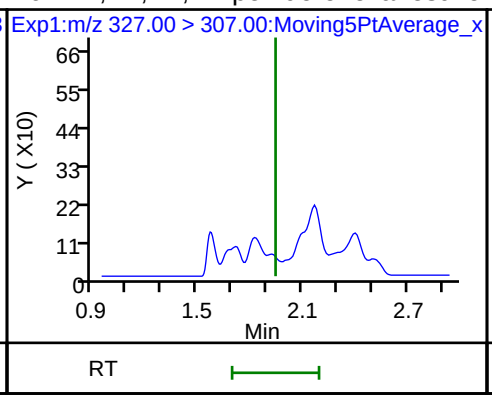
5 Perfluorobutanesulfonic acid (M)



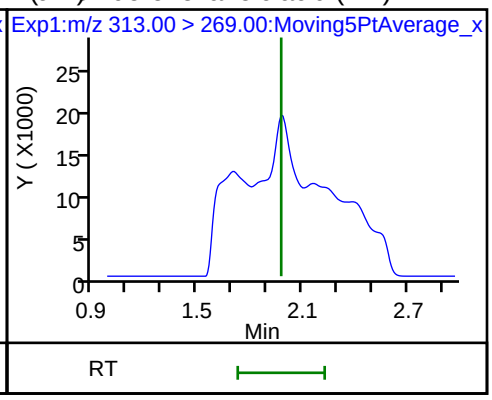
5 Perfluorobutanesulfonic acid



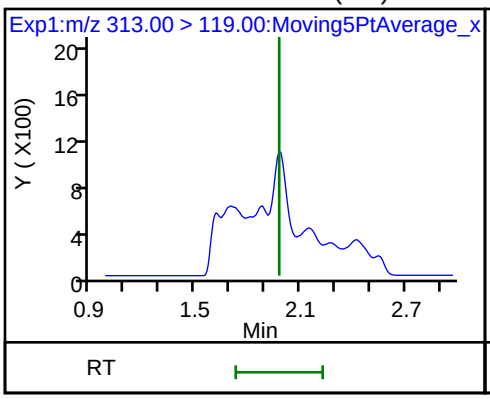
61 1H,1H,2H,2H-perfluorohexanesulfoni (ND)



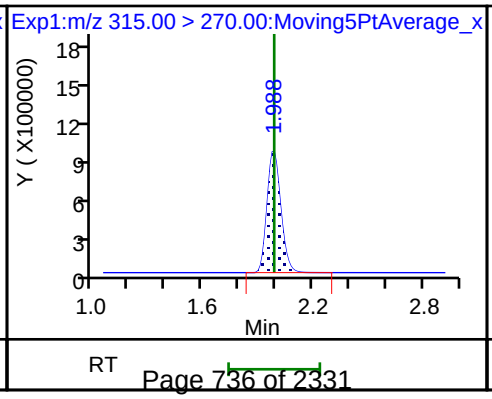
6 Perfluorohexanoic acid (ND)



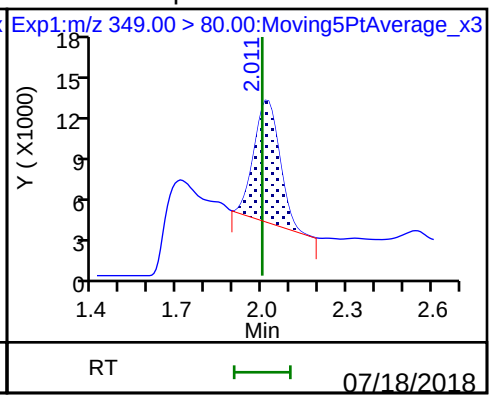
6 Perfluorohexanoic acid (ND)



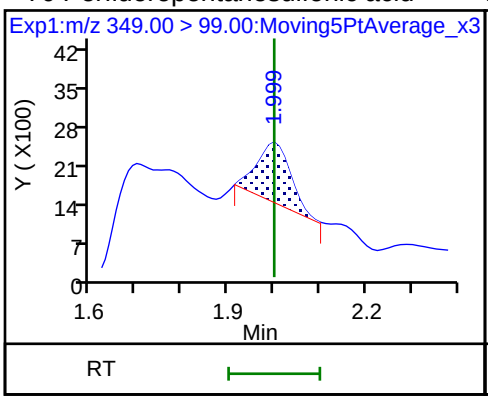
D 7 13C2 PFHxA



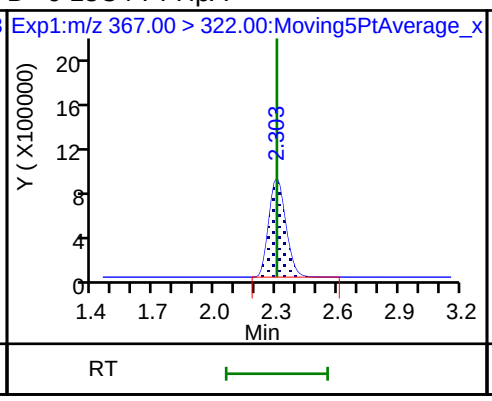
70 Perfluoropentanesulfonic acid



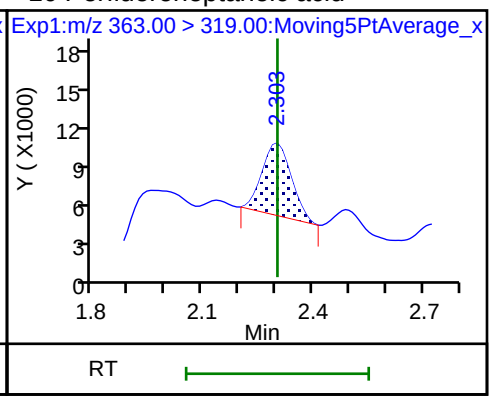
70 Perfluoropentanesulfonic acid



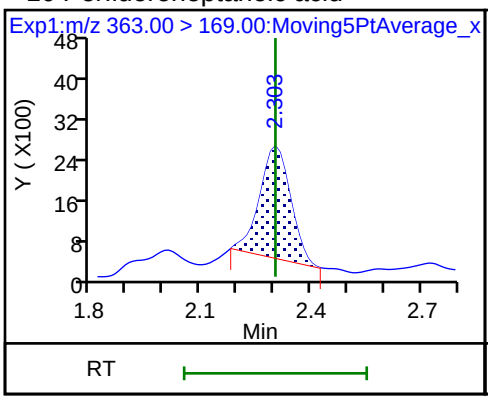
D 9 13C4-PFHpA



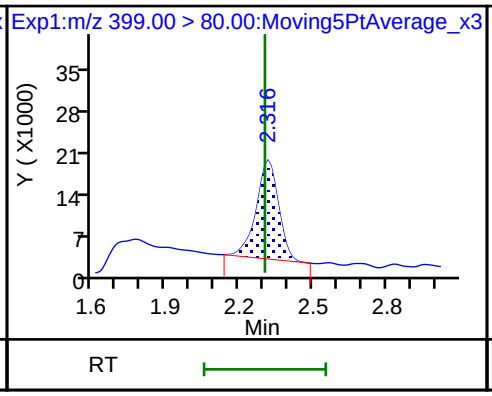
10 Perfluoroheptanoic acid



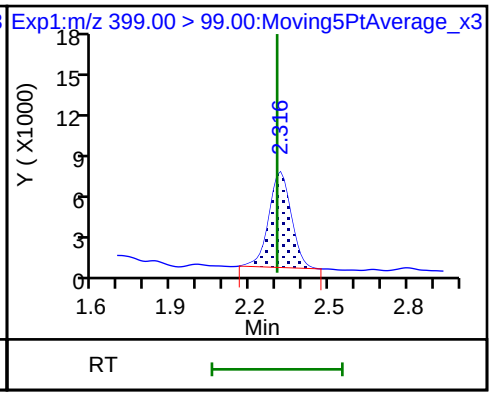
10 Perfluoroheptanoic acid



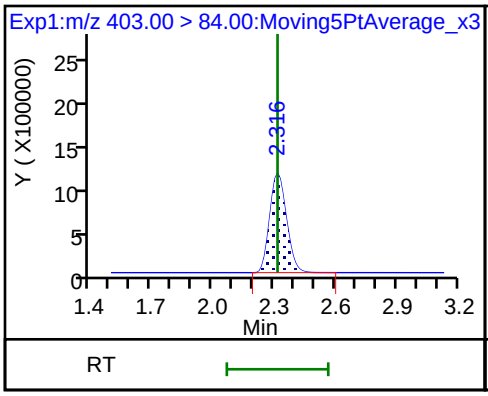
8 Perfluorohexanesulfonic acid



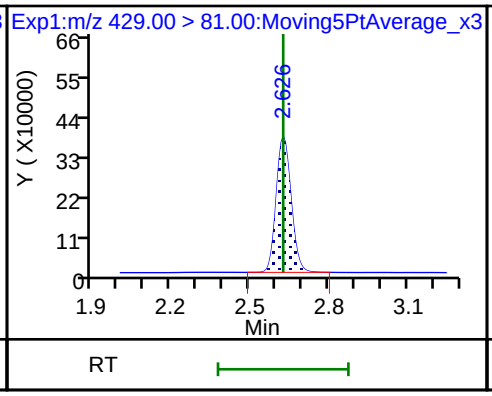
8 Perfluorohexanesulfonic acid



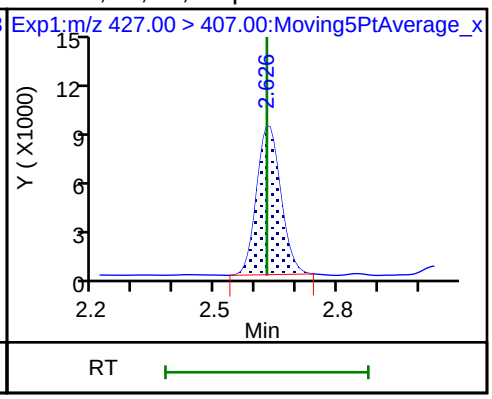
D 11 18O2 PFHxS



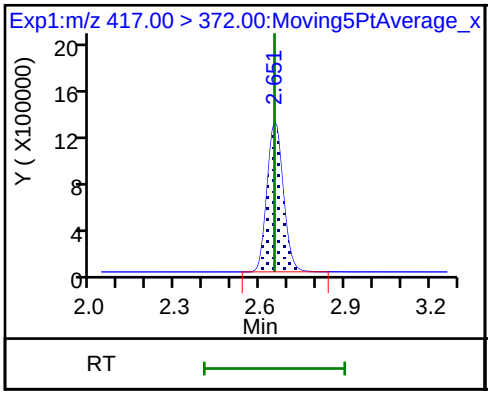
D 12 M2-6:2FTS



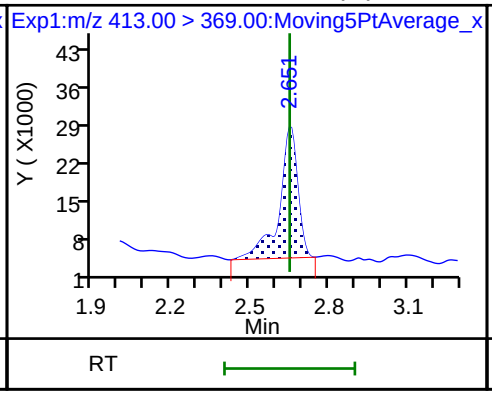
13 1H,1H,2H,2H-perfluorooctanesulfoni



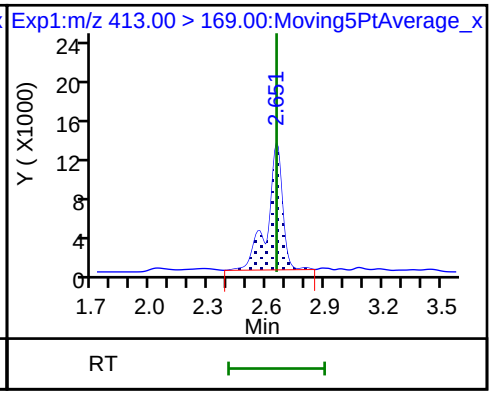
D 14 13C4 PFOA



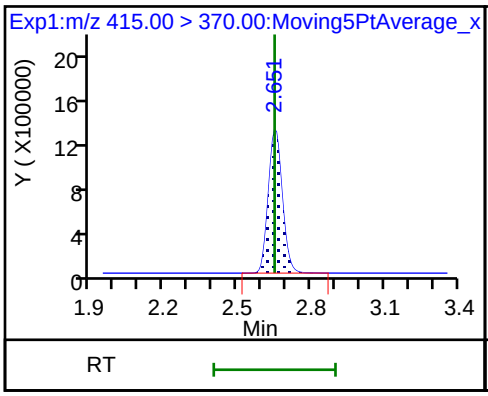
15 Perfluorooctanoic acid (M)



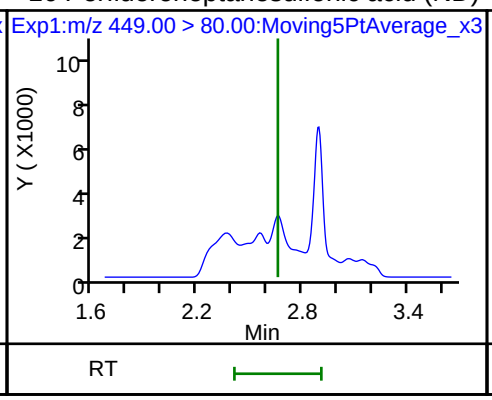
15 Perfluorooctanoic acid



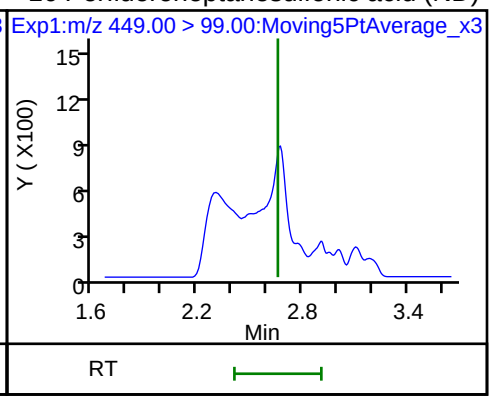
* 62 13C2-PFOA



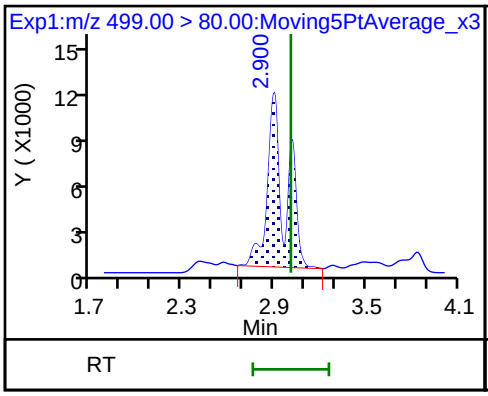
16 Perfluoroheptanesulfonic acid (ND)



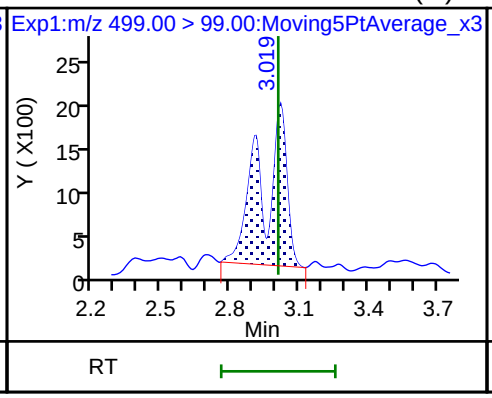
16 Perfluoroheptanesulfonic acid (ND)



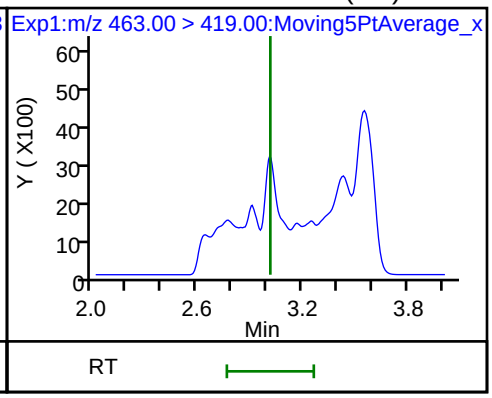
17 Perfluorooctane sulfonic acid



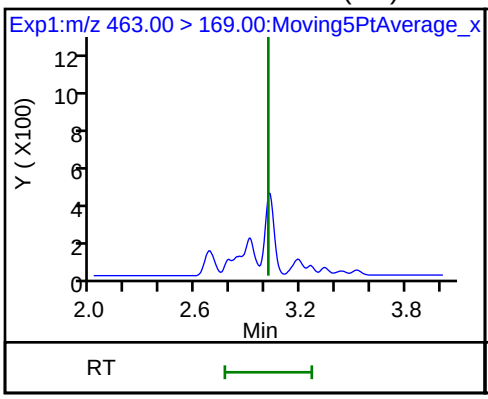
17 Perfluorooctane sulfonic acid (M)



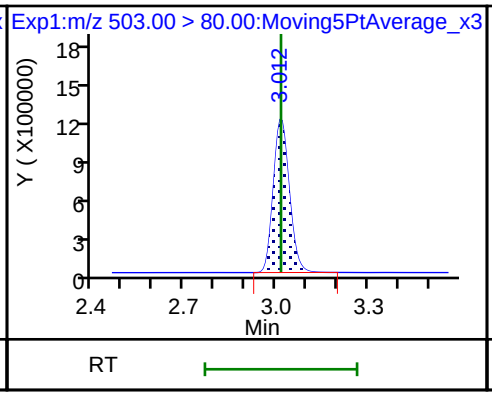
20 Perfluorononanoic acid (ND)



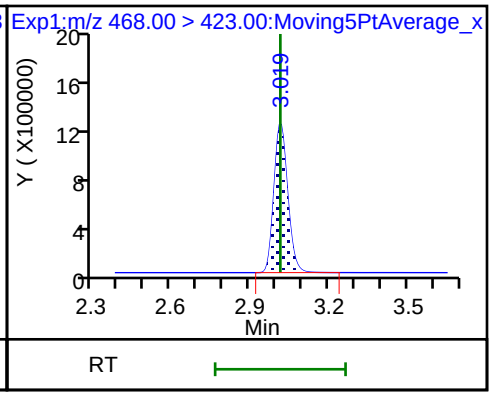
20 Perfluorononanoic acid (ND)



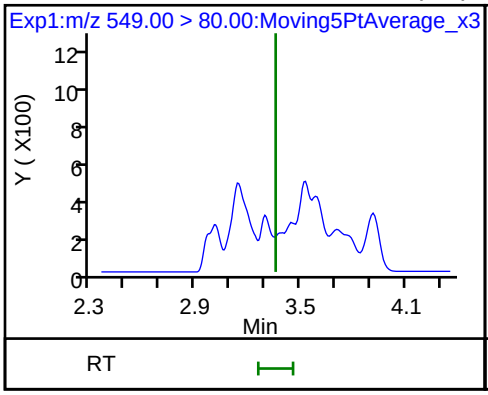
D 18 13C4 PFOS



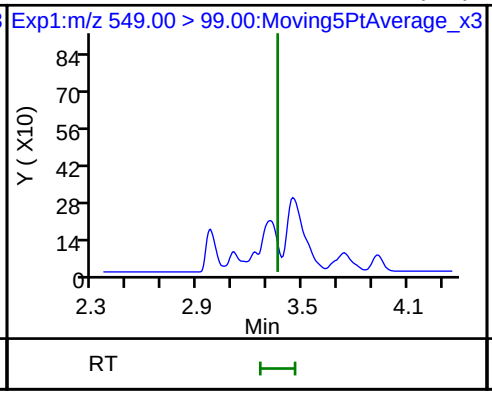
D 19 13C5 PFNA



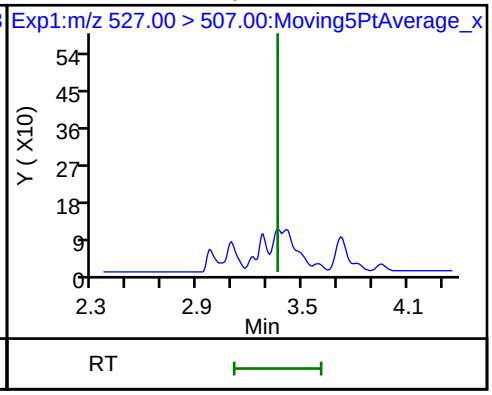
68 Perfluorononanesulfonic acid (ND)



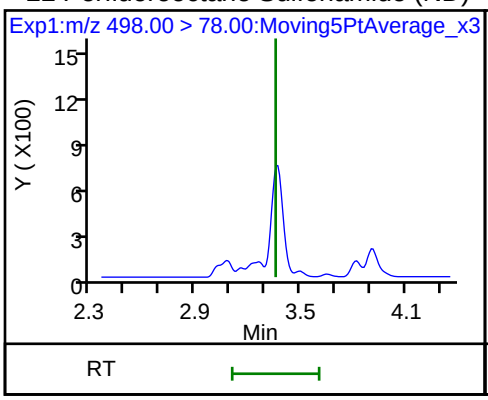
68 Perfluorononanesulfonic acid (ND)



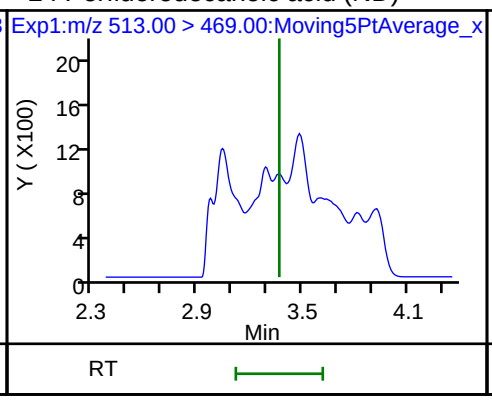
25 1H,1H,2H,2H-perfluorodecanesulfoni (ND)



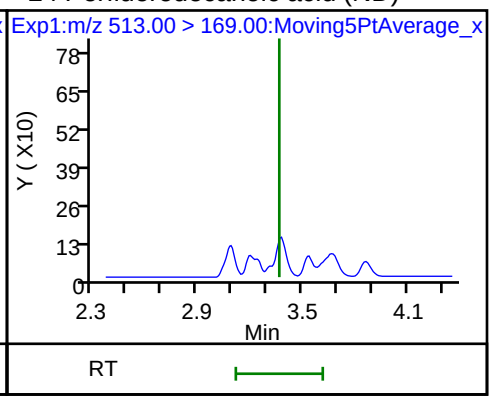
22 Perfluorooctane Sulfonamide (ND)



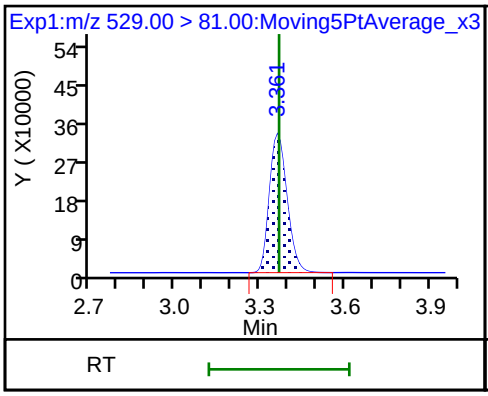
24 Perfluorodecanoic acid (ND)



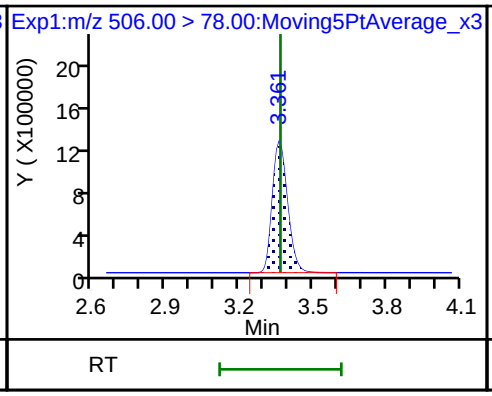
24 Perfluorodecanoic acid (ND)



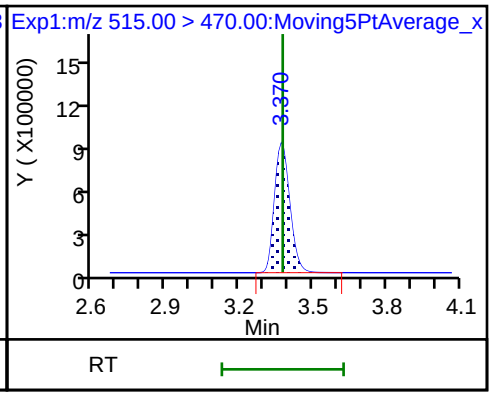
D 26 M2-8:2FTS



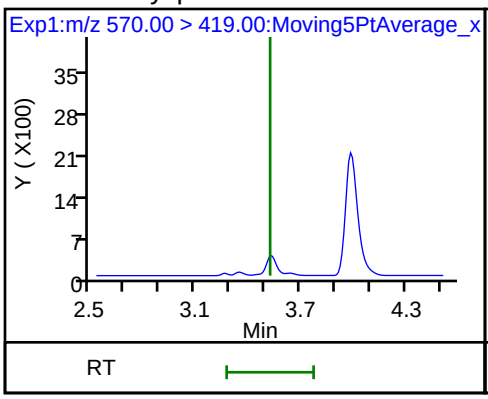
D 21 13C8 FOSA



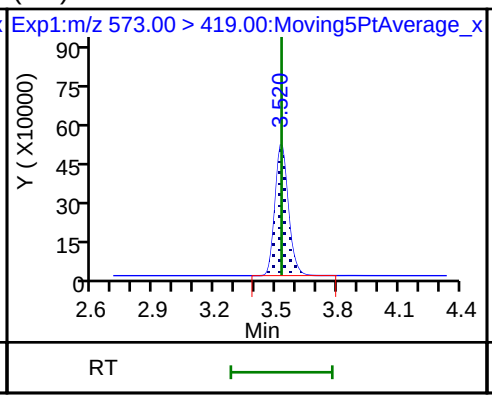
D 23 13C2 PFDA



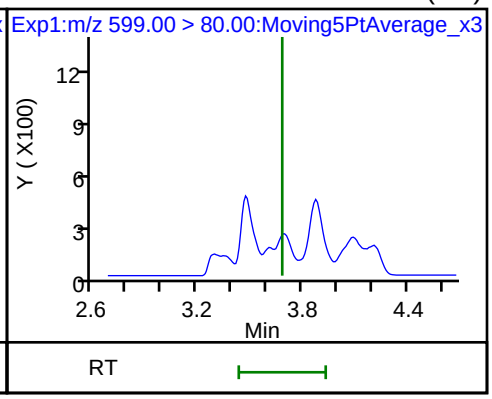
28 N-methyl perfluorooctane sulfonamid (ND)



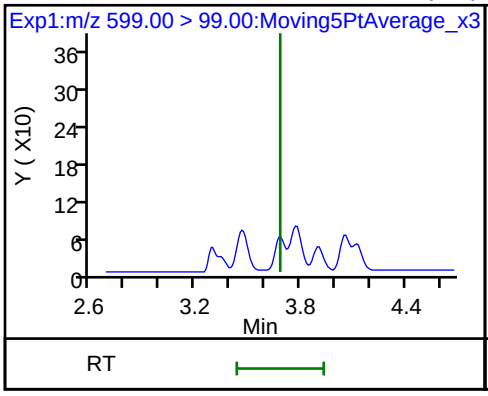
D 27 d3-NMeFOSAA



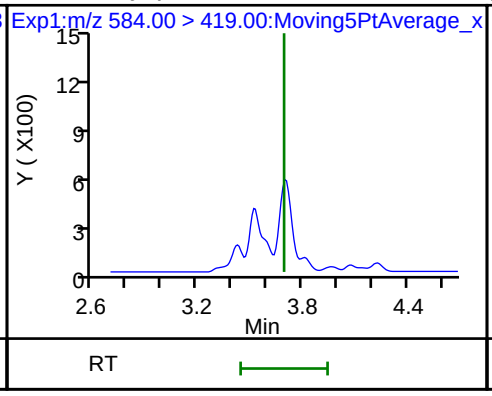
29 Perfluorodecane Sulfonic acid (ND)



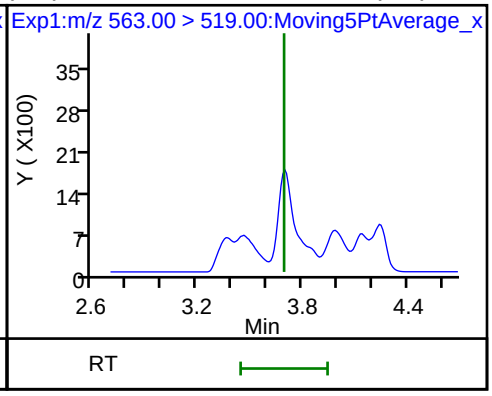
29 Perfluorodecane Sulfonic acid (ND)



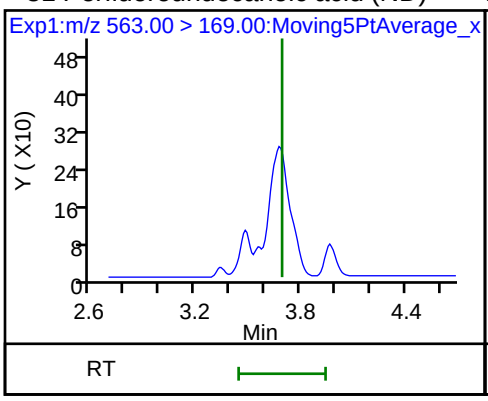
33 N-ethyl perfluorooctane sulfonamid (ND)



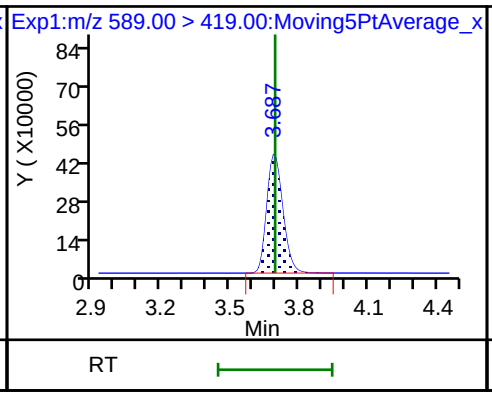
31 Perfluoroundecanoic acid (ND)



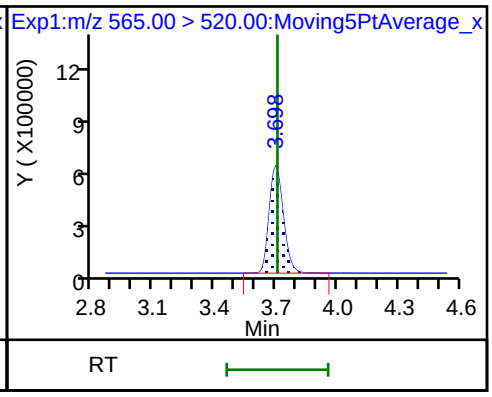
31 Perfluoroundecanoic acid (ND)



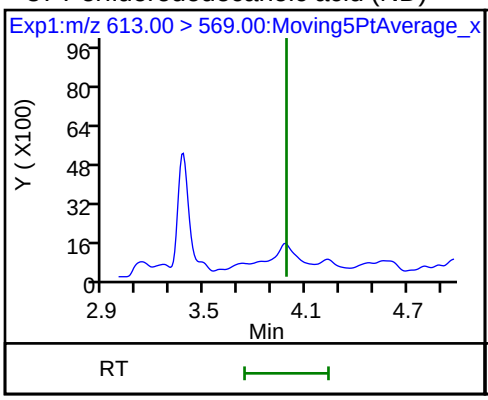
D 32 d5-NEtFOSAA



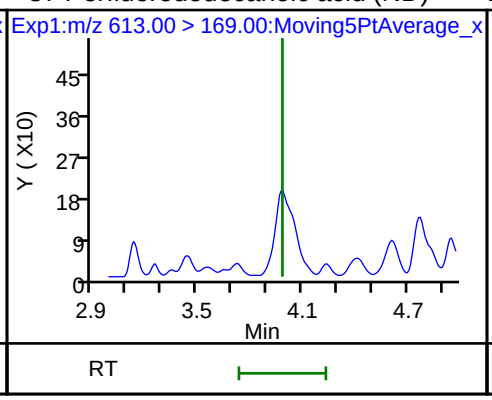
D 30 13C2 PFUnA



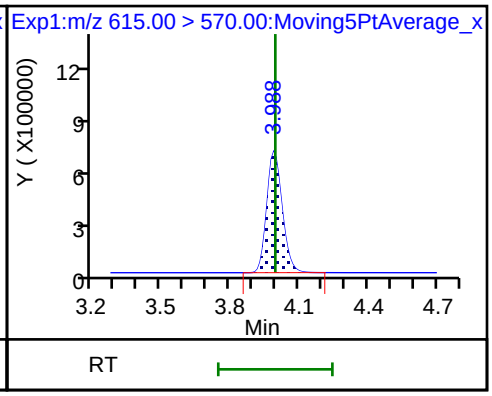
37 Perfluorododecanoic acid (ND)



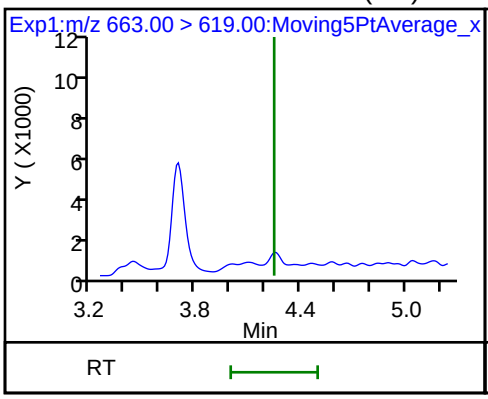
37 Perfluorododecanoic acid (ND)



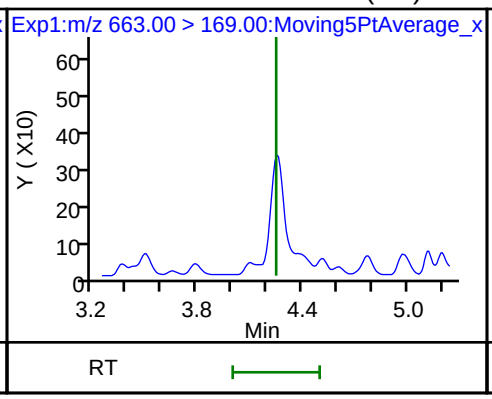
D 36 13C2 PFDoA



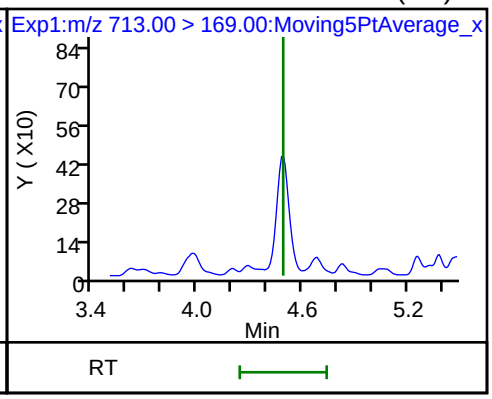
41 Perfluorotridecanoic acid (ND)



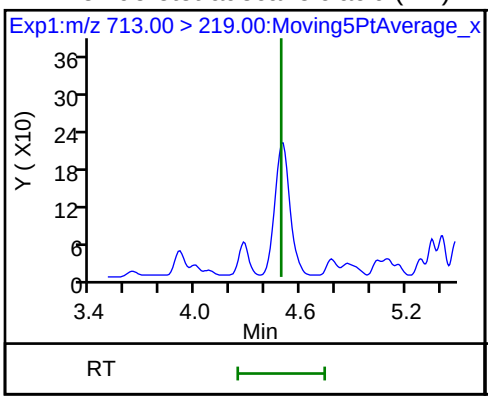
41 Perfluorotridecanoic acid (ND)



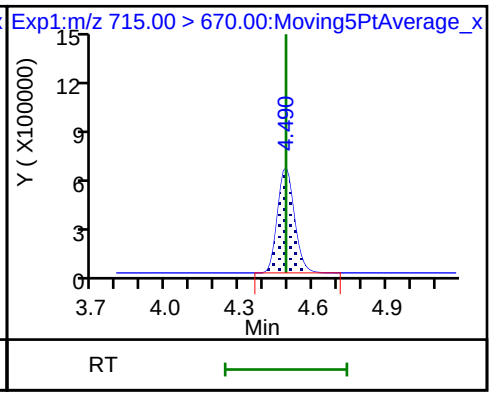
42 Perfluorotetradecanoic acid (ND)



42 Perfluorotetradecanoic acid (ND)



D 43 13C2-PFTeDA



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

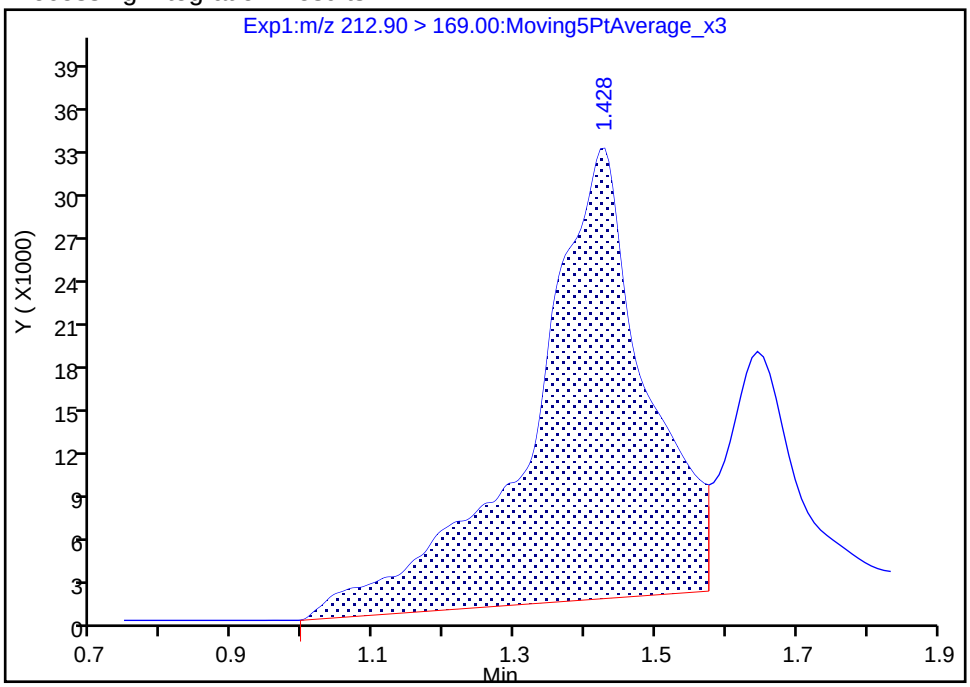
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\2018.07.06LLC_027.d				
Injection Date:	07-Jul-2018 02:46:00	Instrument ID:	A8_N		
Lims ID:	320-40571-A-13-A	Lab Sample ID:	320-40571-13		
Client ID:	NF22-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	16	Worklist Smp#:	15
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

2 Perfluorobutyric acid, CAS: 375-22-4

Signal: 1

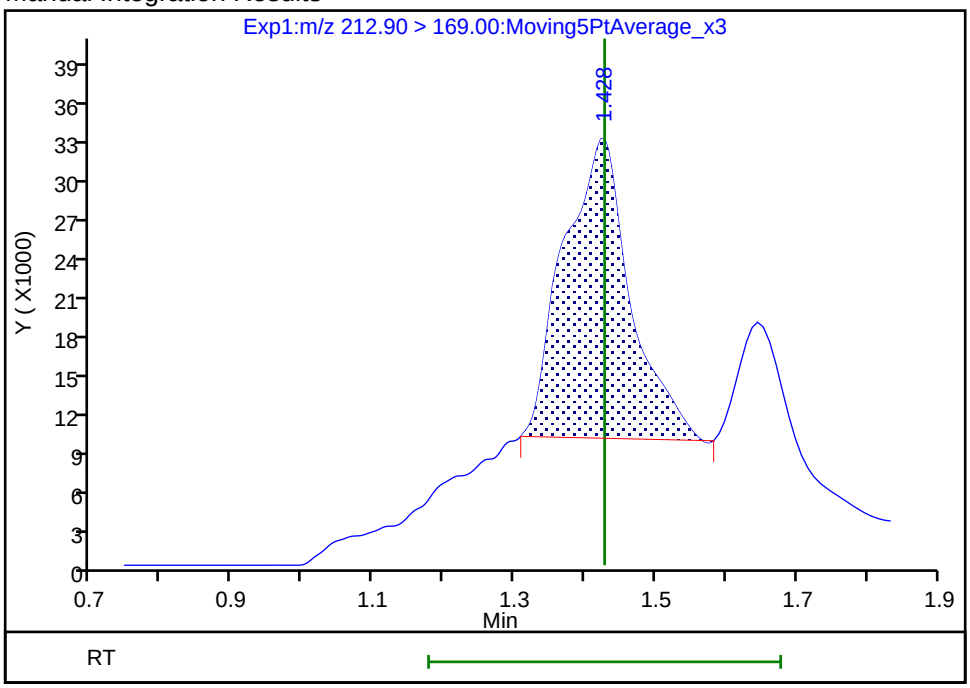
Processing Integration Results

RT: 1.43
Area: 357134
Amount: 0.181721
Amount Units: ng/ml



Manual Integration Results

RT: 1.43
Area: 150800
Amount: 0.076732
Amount Units: ng/ml



Reviewer: mongkols, 09-Jul-2018 14:12:09

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\2018.07.06LLC_027.d				
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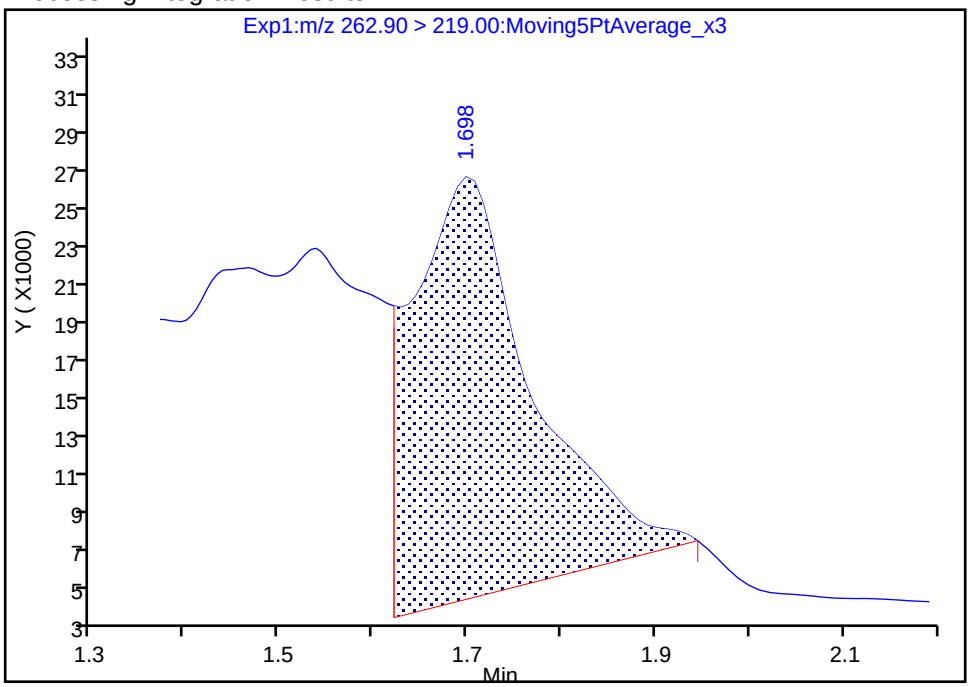
Lims ID:	320-40571-A-13-A	Lab Sample ID:	320-40571-13		
Client ID:	NF22-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	16	Worklist Smp#:	15
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

4 Perfluoropentanoic acid, CAS: 2706-90-3

Signal: 1

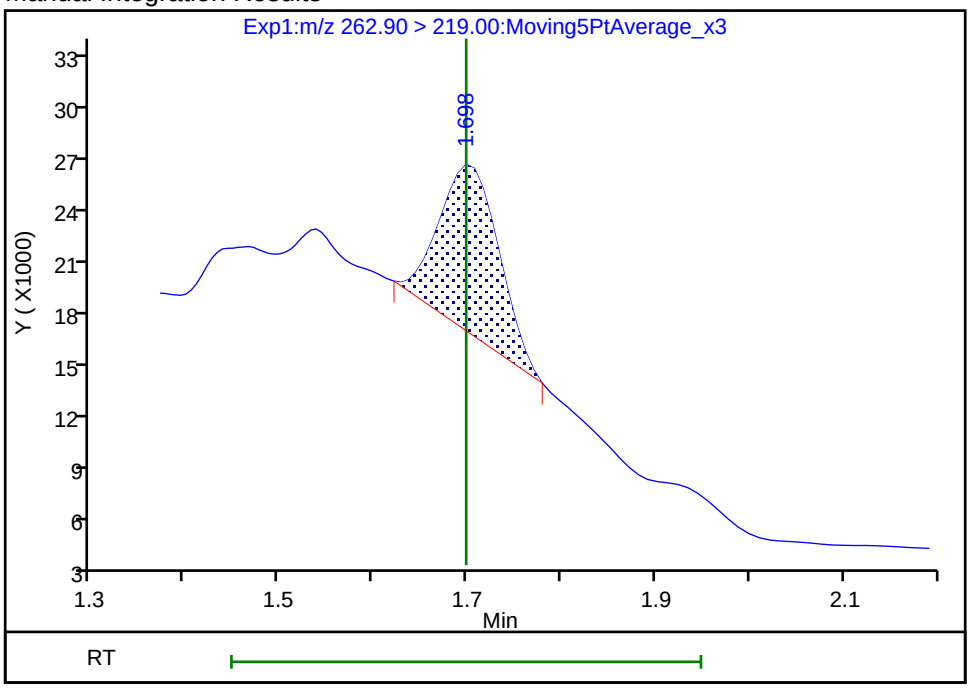
Processing Integration Results

RT: 1.70
Area: 193214
Amount: 0.094324
Amount Units: ng/ml



Manual Integration Results

RT: 1.70
Area: 42414
Amount: 0.020706
Amount Units: ng/ml



Reviewer: mongkols, 09-Jul-2018 14:12:16

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

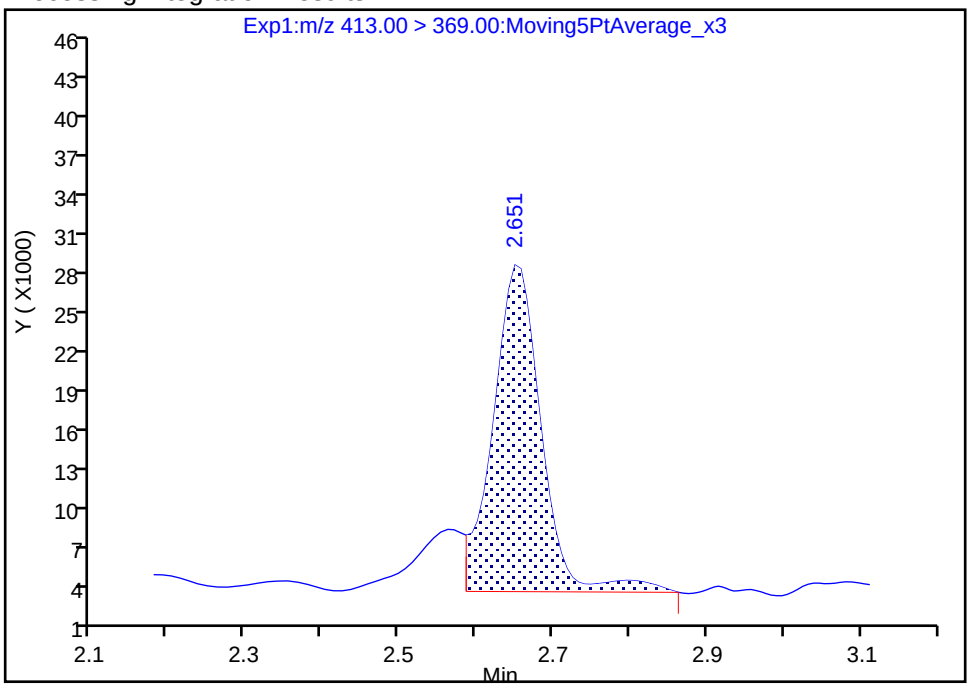
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\2018.07.06LLC_027.d				
Injection Date:	07-Jul-2018 02:46:00	Instrument ID:	A8_N		
Lims ID:	320-40571-A-13-A	Lab Sample ID:	320-40571-13		
Client ID:	NF22-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	16	Worklist Smp#:	15
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

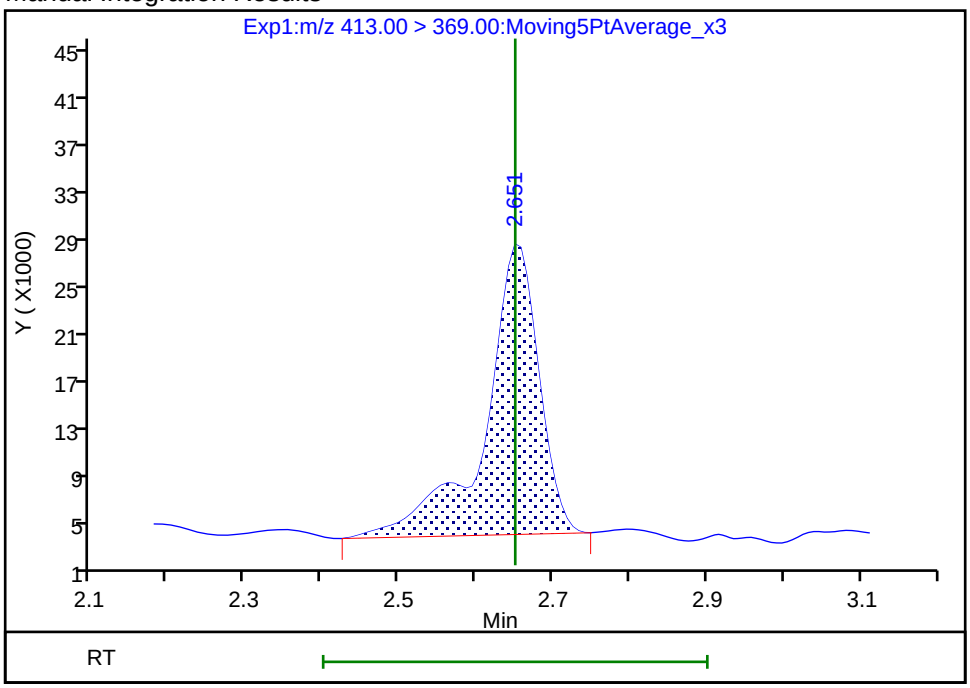
Processing Integration Results

RT: 2.65
Area: 105831
Amount: 0.044891
Amount Units: ng/ml



Manual Integration Results

RT: 2.65
Area: 117005
Amount: 0.049631
Amount Units: ng/ml



Reviewer: mongkols, 09-Jul-2018 14:12:47

Audit Action: Manually Integrated Audit Reason: Isomers

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

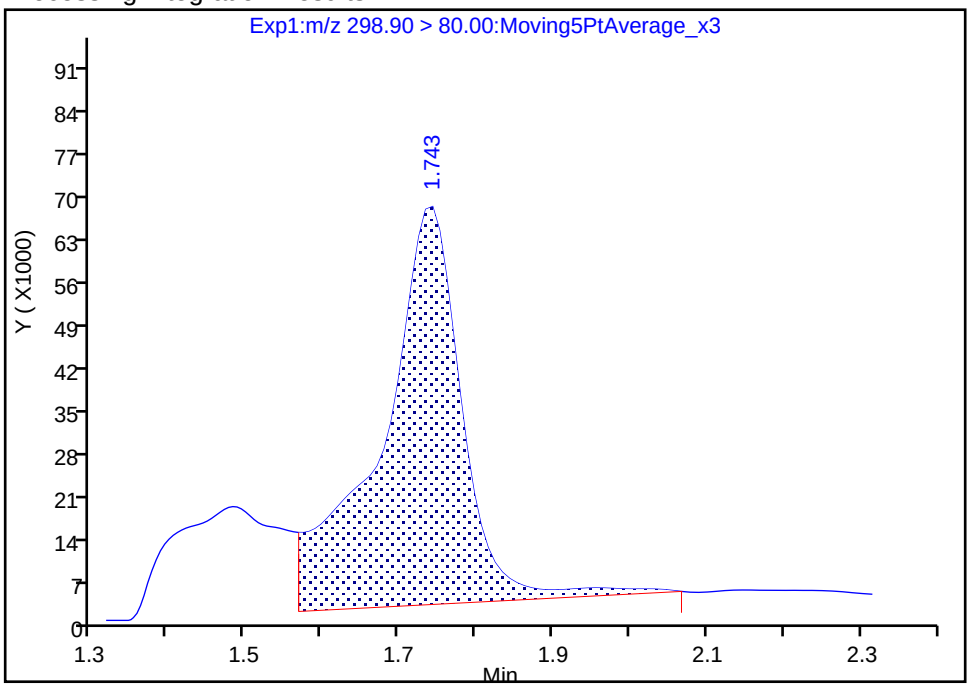
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\2018.07.06LLC_027.d				
Injection Date:	07-Jul-2018 02:46:00	Instrument ID:	A8_N		
Lims ID:	320-40571-A-13-A	Lab Sample ID:	320-40571-13		
Client ID:	NF22-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	16	Worklist Smp#:	15
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

5 Perfluorobutanesulfonic acid, CAS: 375-73-5

Signal: 1

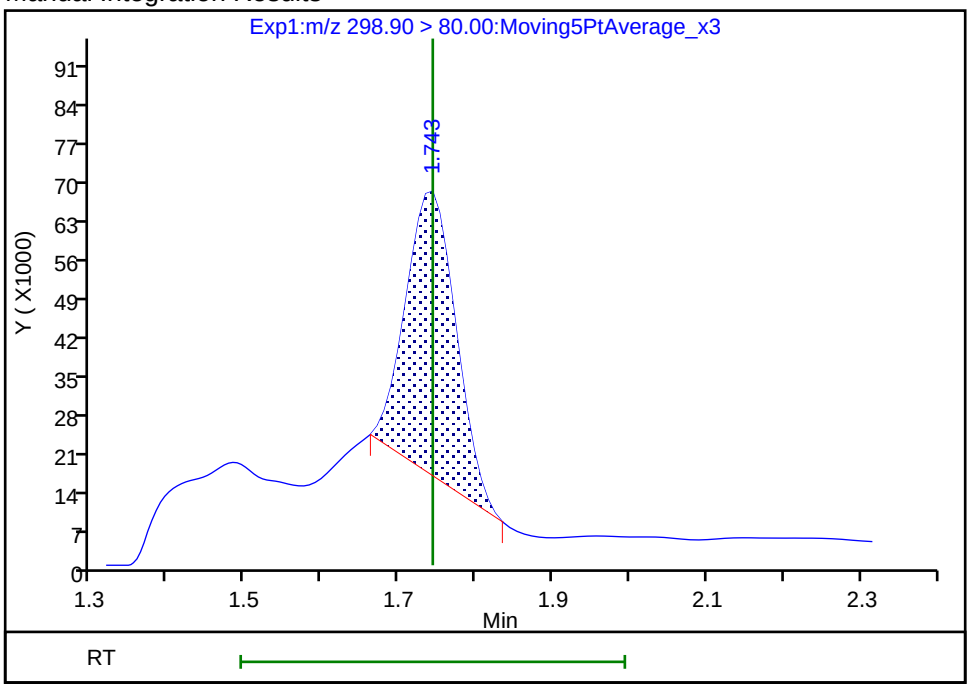
Processing Integration Results

RT: 1.74
Area: 478619
Amount: 0.144107
Amount Units: ng/ml



Manual Integration Results

RT: 1.74
Area: 232233
Amount: 0.069923
Amount Units: ng/ml



Reviewer: mongkols, 09-Jul-2018 14:12:25

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

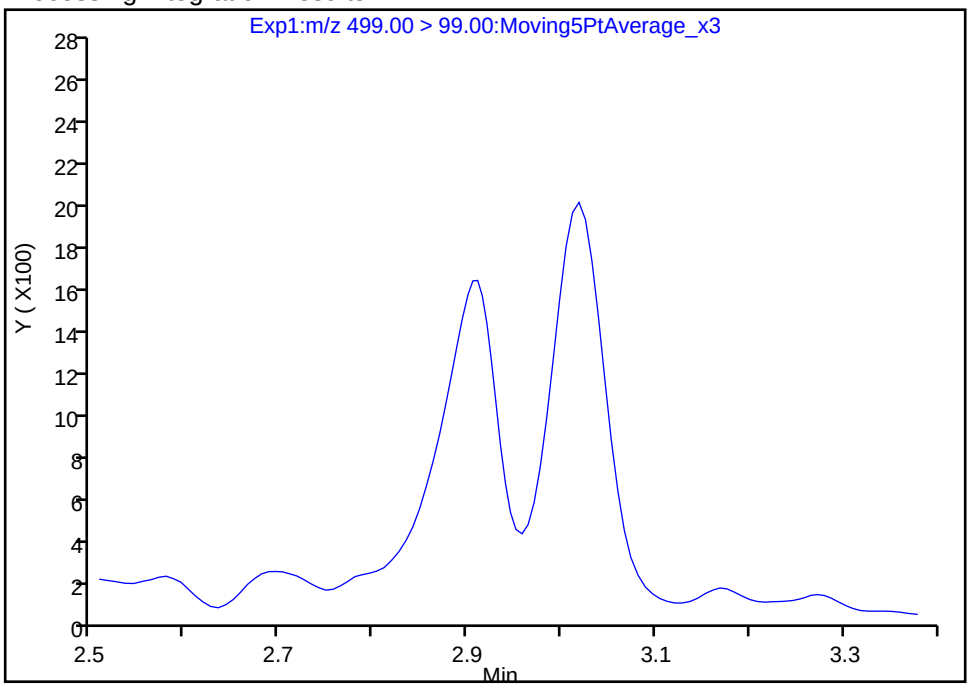
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\2018.07.06LLC_027.d				
Injection Date:	07-Jul-2018 02:46:00	Instrument ID:	A8_N		
Lims ID:	320-40571-A-13-A	Lab Sample ID:	320-40571-13		
Client ID:	NF22-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	16	Worklist Smp#:	15
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

17 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 2

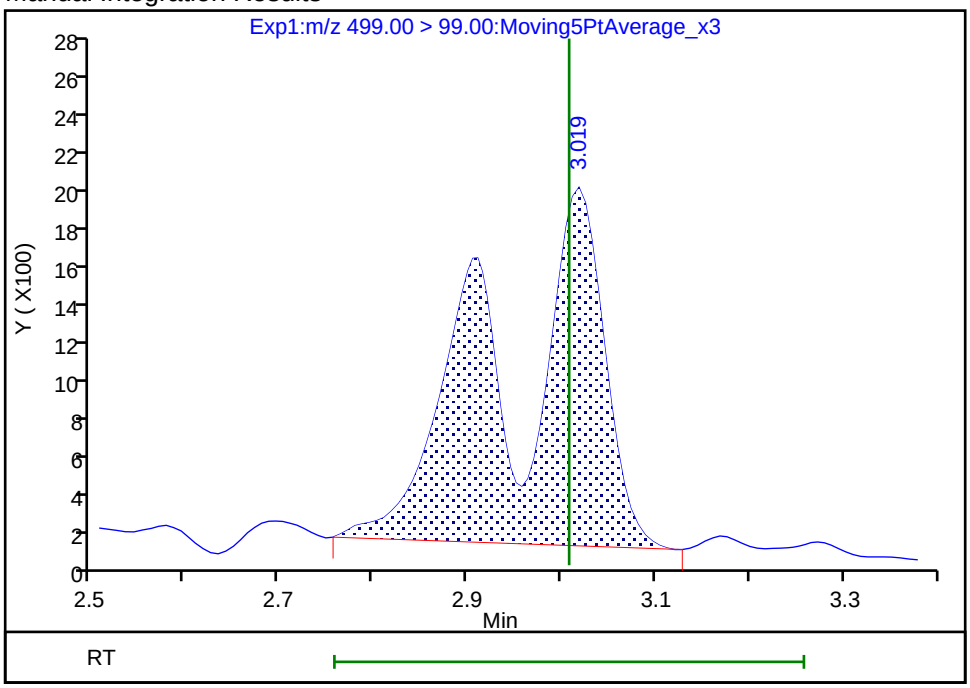
Processing Integration Results

RT: 3.01
Area: 0
Amount: 0.041433
Amount Units: ng/ml



Manual Integration Results

RT: 3.02
Area: 13905
Amount: 0.041433
Amount Units: ng/ml



Reviewer: mongkols, 09-Jul-2018 14:13:00

Audit Action: Manually Integrated Audit Reason: Assign Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF22-SS-01
Lab Sample ID: 320-40571-14
Matrix: Solid
Lab File ID: 2018.07.13LLB_063.d
Analysis Method: 537 (modified)
Date Collected: 06/19/2018 17:05
Extraction Method: SHAKE
Date Extracted: 06/28/2018 05:15
Sample wt/vol: 5.04(g)
Date Analyzed: 07/14/2018 04:59
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture: 17.4
GPC Cleanup:(Y/N) N
Analysis Batch No.: 233997
Units: mg/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	ND		0.00024	0.000034
2706-90-3	Perfluoropentanoic acid (PFPeA)	ND		0.00024	0.000093
307-24-4	Perfluorohexanoic acid (PFHxA)	ND		0.00024	0.000050
375-85-9	Perfluoroheptanoic acid (PFHpA)	ND		0.00024	0.000035
335-67-1	Perfluorooctanoic acid (PFOA)	ND		0.00024	0.00010
375-95-1	Perfluorononanoic acid (PFNA)	ND		0.00024	0.000043
335-76-2	Perfluorodecanoic acid (PFDA)	ND		0.00024	0.000026
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		0.00024	0.000043
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		0.00024	0.000081
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		0.00024	0.000061
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		0.00024	0.000065
375-73-5	Perfluorobutanesulfonic acid (PFBS)	ND		0.00024	0.000030
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	ND		0.00024	0.000037
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.00024	0.000042
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	ND		0.00060	0.00024
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		0.00024	0.000047
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		0.00024	0.000099
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.0024	0.00047
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.0024	0.00044
27619-97-2	6:2 FTS	ND		0.0024	0.00018
39108-34-4	8:2 FTS	ND		0.0024	0.00030

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF22-SS-01
Lab Sample ID: 320-40571-14
Matrix: Solid
Lab File ID: 2018.07.13LLB_063.d
Analysis Method: 537 (modified)
Date Collected: 06/19/2018 17:05
Extraction Method: SHAKE
Date Extracted: 06/28/2018 05:15
Sample wt/vol: 5.04(g)
Date Analyzed: 07/14/2018 04:59
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture: 17.4
GPC Cleanup:(Y/N) N
Analysis Batch No.: 233997
Units: mg/Kg

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00992	13C4 PFBA	82		25-150
STL01893	13C5 PFPeA	87		25-150
STL00993	13C2 PFHxA	86		25-150
STL01892	13C4-PFHpA	91		25-150
STL00990	13C4 PFOA	90		25-150
STL00995	13C5 PFNA	80		25-150
STL00996	13C2 PFDA	91		25-150
STL00997	13C2 PFUnA	89		25-150
STL00998	13C2 PFDoA	89		25-150
STL02116	13C2-PFTeDA	90		25-150
STL02337	13C3-PFBS	81		25-150
STL00994	18O2 PFHxS	85		25-150
STL00991	13C4 PFOS	78		25-150
STL01056	13C8 FOSA	75		25-150
STL02118	d3-NMeFOSAA	86		25-150
STL02117	d5-NEtFOSAA	93		25-150
STL02279	M2-6:2FTS	71		25-150
STL02280	M2-8:2FTS	71		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\2018.07.13LLB_063.d
Lims ID: 320-40571-A-14-A
Client ID: NF22-SS-01
Sample Type: Client
Inject. Date: 14-Jul-2018 04:59:43 ALS Bottle#: 47 Worklist Smp#: 12
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-40571-a-14-
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 16-Jul-2018 14:21:30 Calib Date: 11-Jul-2018 15:38:42
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK023

First Level Reviewer: mongkols Date: 16-Jul-2018 14:21:30

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										M
217.00 > 172.00	1.436	1.441	-0.005	0.540	4831779	2.05		81.9	51491	M
D 3 13C5-PFPeA										
267.90 > 223.00	1.721	1.720	0.001	0.647	3570251	2.18		87.0	41491	
D 47 13C3-PFBS										
301.90 > 83.00	1.757	1.765	-0.008	0.660	77725	1.88		81.1	481	
D 7 13C2 PFHxA										
315.00 > 270.00	1.993	2.003	-0.010	0.749	3816503	2.15		86.2	47219	
D 9 13C4-PFHpA										
367.00 > 322.00	2.308	2.319	-0.011	0.867	3713154	2.28		91.0	41032	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.334	2.329	0.005	1.006	15953	0.007072			184	
399.00 > 99.00	2.334	2.329	0.005	1.006	4106		3.89(1.50-4.49)		31.7	
D 11 18O2 PFHxS										
403.00 > 84.00	2.321	2.332	-0.011	0.872	4647316	2.01		85.0	64379	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.645	2.643	0.002	1.003	4140	0.0106			41.3	
D 12 M2-6:2FTS										
429.00 > 81.00	2.637	2.644	-0.007	0.991	592628	1.69		71.3	14142	
* 62 13C2-PFOA										
415.00 > 370.00	2.661	2.666	-0.005		4352753	2.50			49909	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.661	2.666	-0.005	1.000	12391	0.006752			6.9	
413.00 > 169.00	2.669	2.666	0.003	1.003	11562		1.07(0.84-2.52)		67.1	
D 14 13C4 PFOA										
417.00 > 372.00	2.661	2.667	-0.006	1.000	3725167	2.24		89.5	63761	
D 18 13C4 PFOS										
503.00 > 80.00	3.023	3.027	-0.004	1.136	3144173	1.85		77.6	34815	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 19 13C5 PFNA										
468.00 > 423.00	3.023	3.034	-0.011	1.136	2968263	1.99		79.8	41458	
D 21 13C8 FOSA										
506.00 > 78.00	3.368	3.379	-0.011	1.266	4594179	1.88		75.1	41357	
D 26 M2-8:2FTS										
529.00 > 81.00	3.368	3.379	-0.011	1.266	865203	1.69		70.6	15230	
D 23 13C2 PFDA										
515.00 > 470.00	3.378	3.389	-0.011	1.269	2980544	2.28		91.3	34066	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.536	3.538	-0.002	1.329	1148830	2.15		85.8	41818	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.696	3.708	-0.012	1.389	1279236	2.33		93.3	3550	
D 30 13C2 PFUnA										
565.00 > 520.00	3.707	3.708	-0.001	1.393	2429097	2.23		89.1	51051	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.717	3.716	0.001	1.003	4923	0.006183			20.8	
563.00 > 169.00	3.717	3.716	0.001	1.003	1521		3.24(2.12-6.36)		80.5	
D 36 13C2 PFDoA										
615.00 > 570.00	3.997	3.999	-0.002	1.502	2517720	2.23		89.0	19921	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.500	4.501	-0.001	1.691	2648108	2.26		90.3	16506	

QC Flag Legend

Review Flags

M - Manually Integrated

Report Date: 16-Jul-2018 14:21:30 Chrom Revision: 2.2 07-Jun-2018 07:41:54

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\2018.07.13LLB_063.d

Injection Date: 14-Jul-2018 04:59:43 Instrument ID: A8_N

Lims ID: 320-40571-A-14-A Lab Sample ID: 320-40571-14

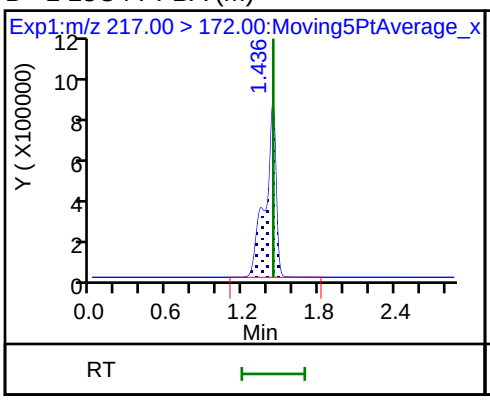
Client ID: NF22-SS-01

Operator ID: SACINSTLCMS01 ALS Bottle#: 47 Worklist Smp#: 12

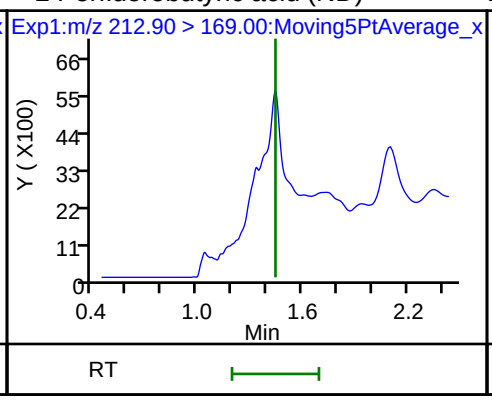
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC ICAL

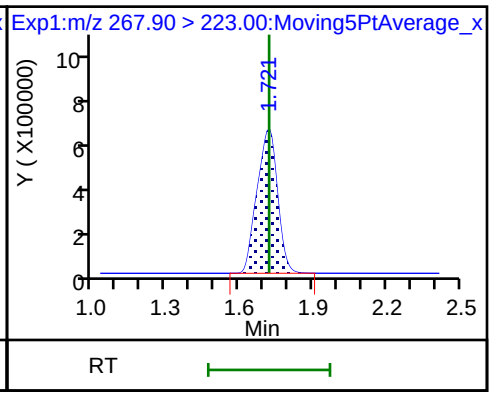
D 1 13C4 PFBA (M)



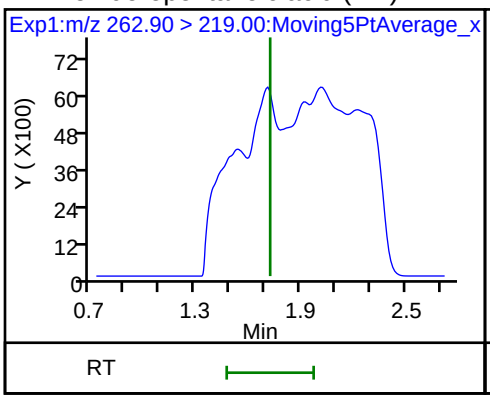
2 Perfluorobutyric acid (ND)



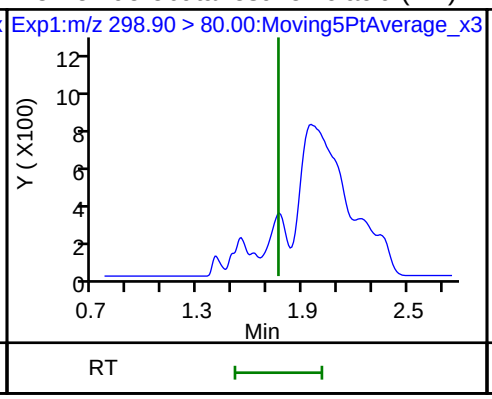
D 3 13C5-PFPeA



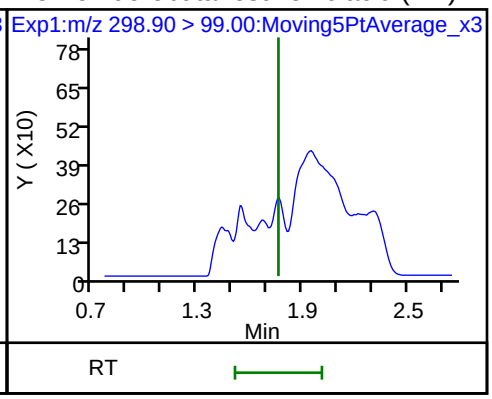
4 Perfluoropentanoic acid (ND)



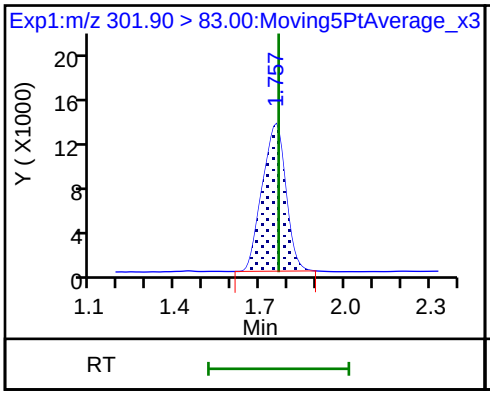
5 Perfluorobutanesulfonic acid (ND)



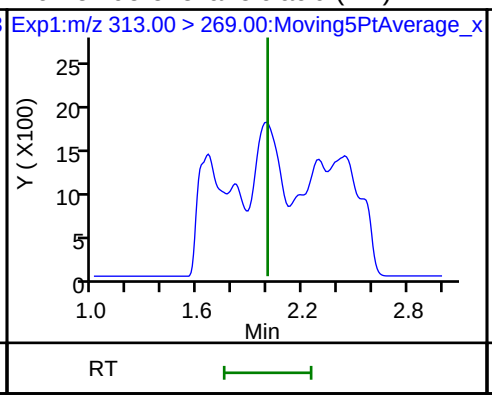
5 Perfluorobutanesulfonic acid (ND)



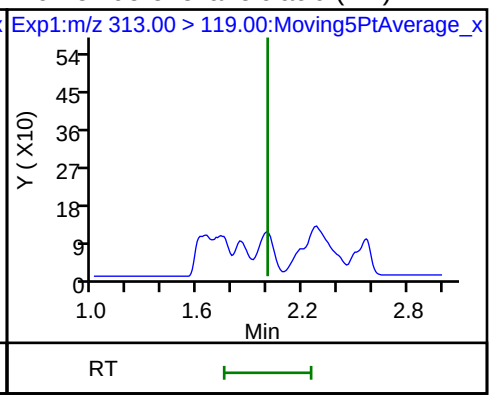
D 47 13C3-PFBS



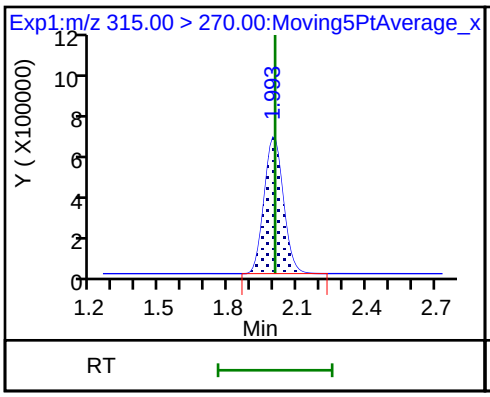
6 Perfluorohexanoic acid (ND)



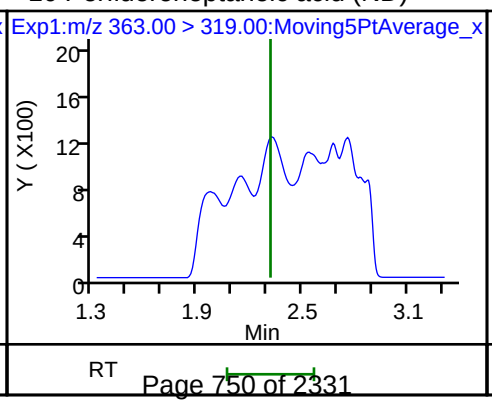
6 Perfluorohexanoic acid (ND)



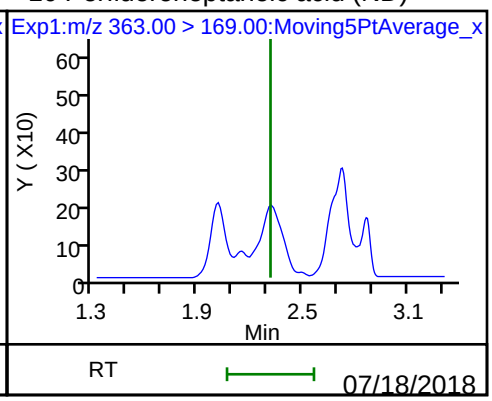
D 7 13C2 PFHxA



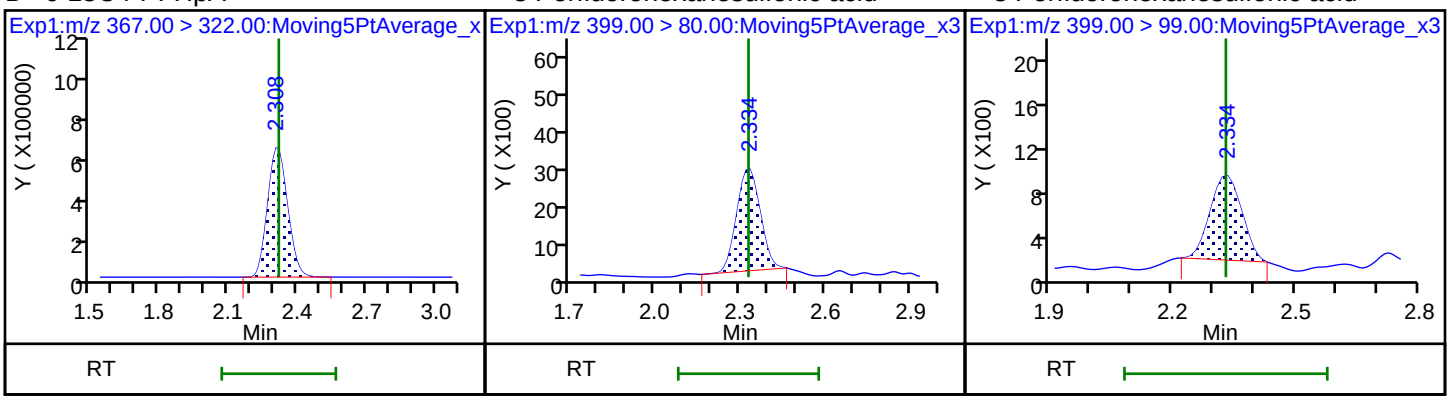
10 Perfluoroheptanoic acid (ND)



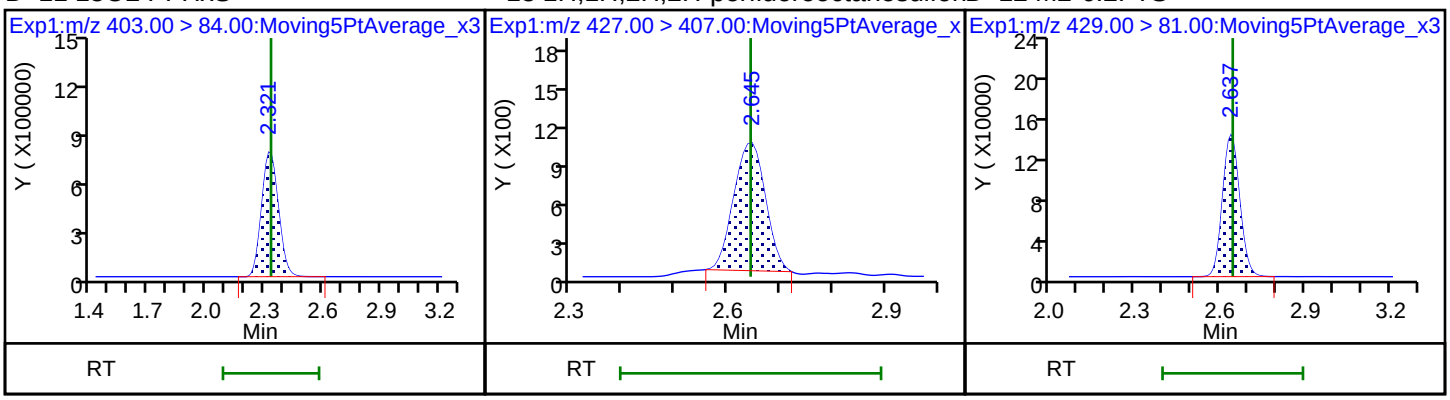
10 Perfluoroheptanoic acid (ND)



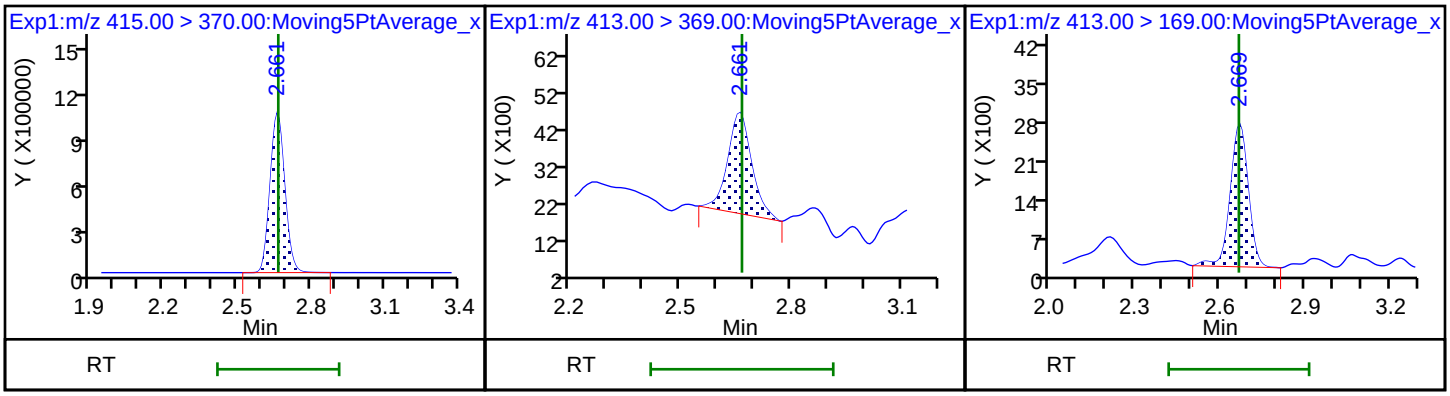
D 9 13C4-PFHpA | 8 Perfluorohexanesulfonic acid | 8 Perfluorohexanesulfonic acid



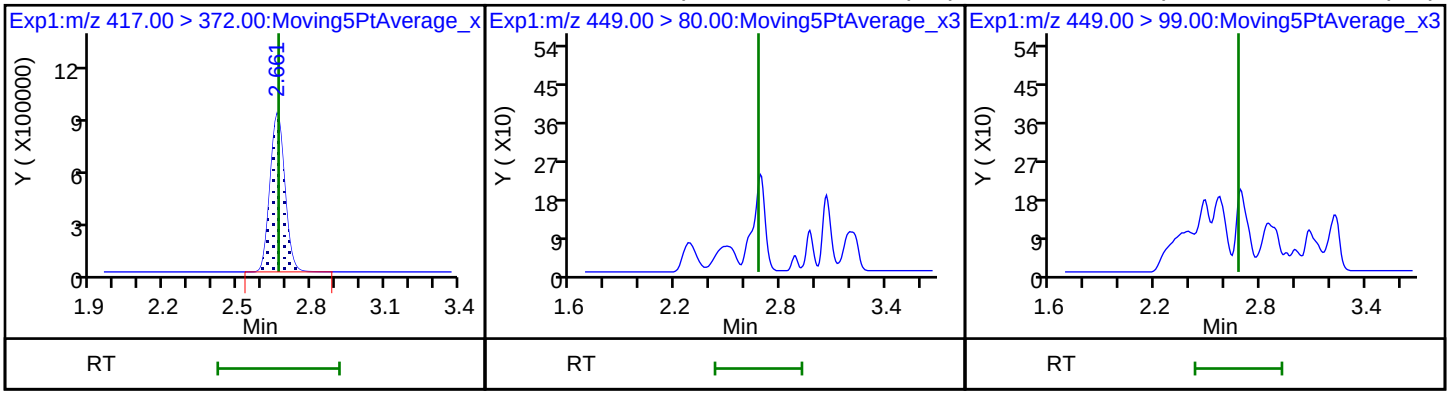
D 11 18O2 PFHxS | 13 1H,1H,2H,2H-perfluorooctanesulfon | D 12 M2-6:2FTS



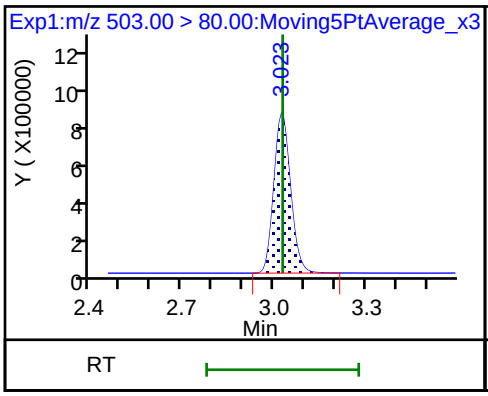
* 62 13C2-PFOA | 15 Perfluorooctanoic acid | 15 Perfluorooctanoic acid



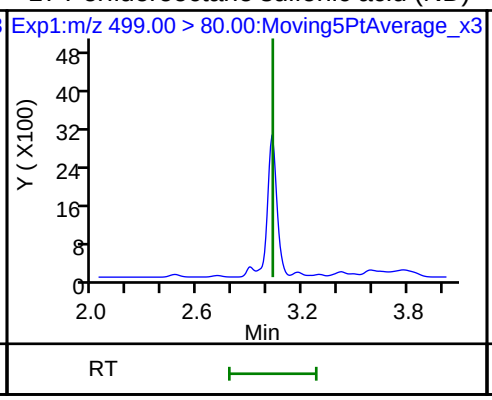
D 14 13C4 PFOA | 16 Perfluoroheptanesulfonic acid (ND) | 16 Perfluoroheptanesulfonic acid (ND)



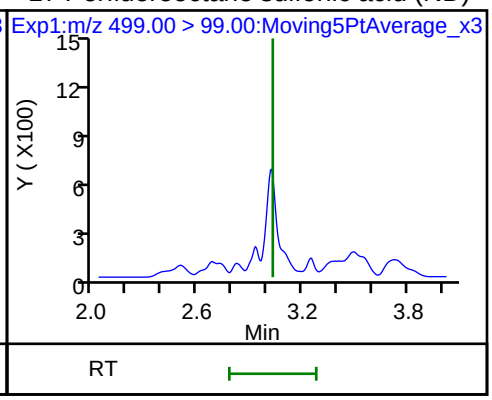
D 18 13C4 PFOS



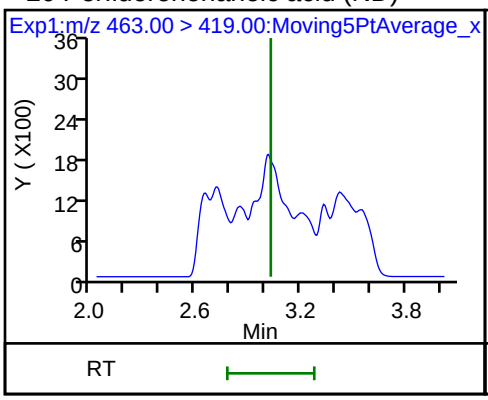
17 Perfluorooctane sulfonic acid (ND)



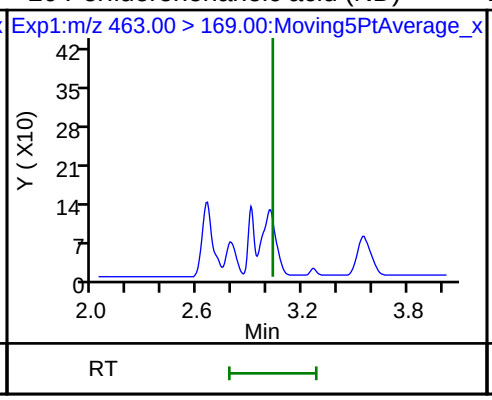
17 Perfluorooctane sulfonic acid (ND)



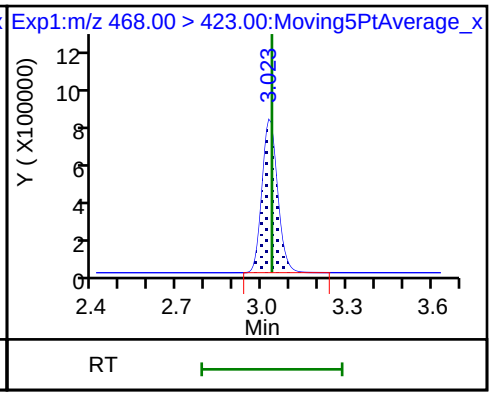
20 Perfluorononanoic acid (ND)



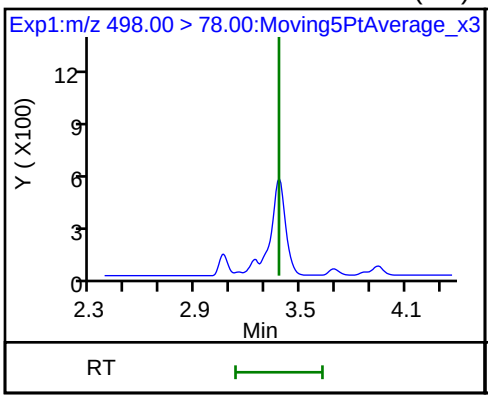
20 Perfluorononanoic acid (ND)



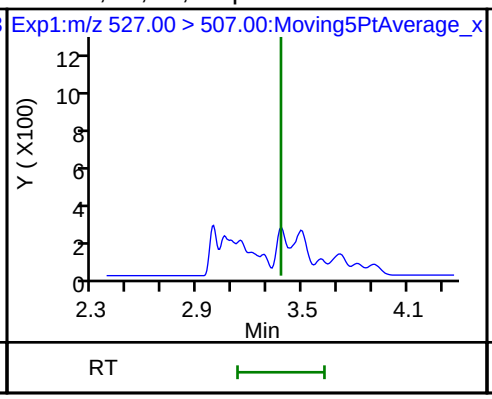
D 19 13C5 PFNA



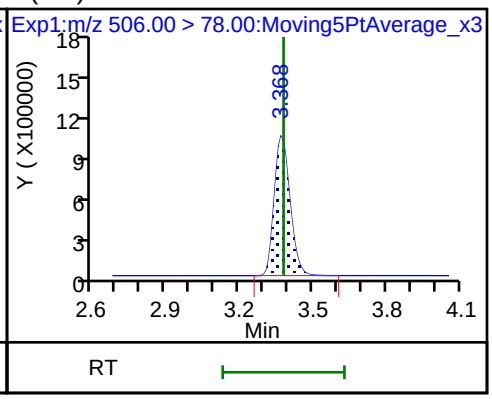
22 Perfluorooctane Sulfonamide (ND)



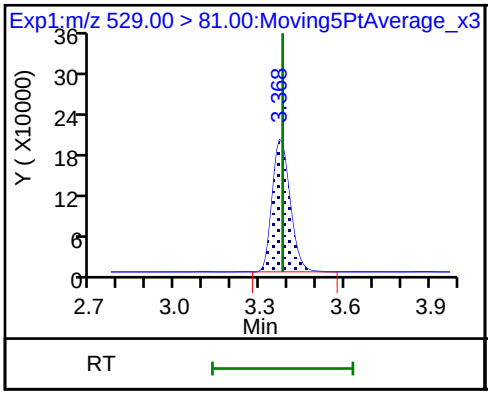
25 1H,1H,2H,2H-perfluorodecanesulfonic acid (ND)



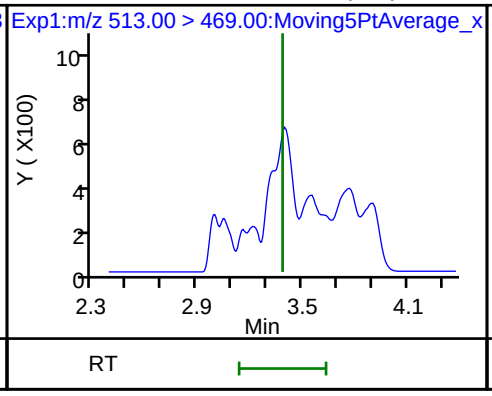
D 21 13C8 FOSA



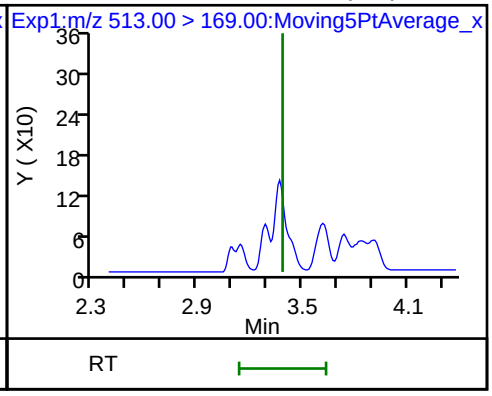
D 26 M2-8:2FTS



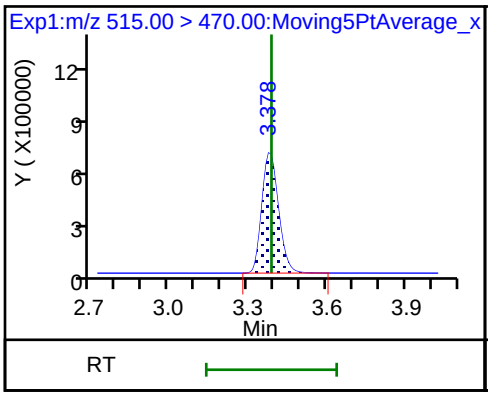
24 Perfluorodecanoic acid (ND)



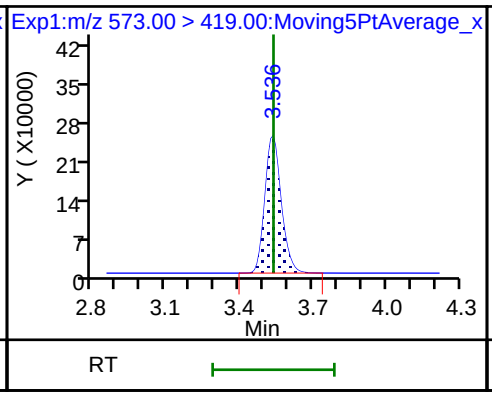
24 Perfluorodecanoic acid (ND)



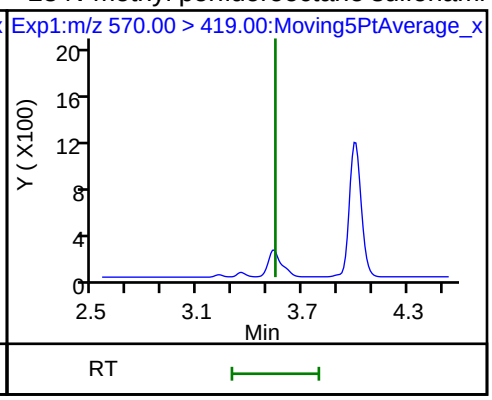
D 23 13C2 PFDA



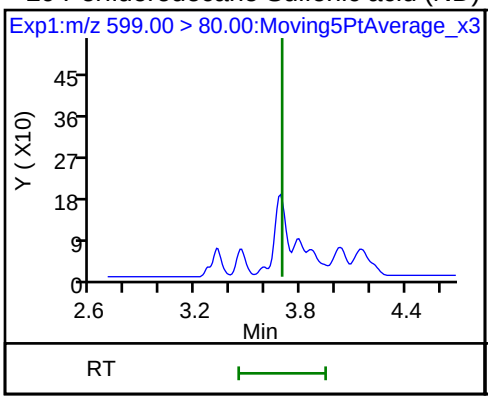
D 27 d3-NMeFOSAA



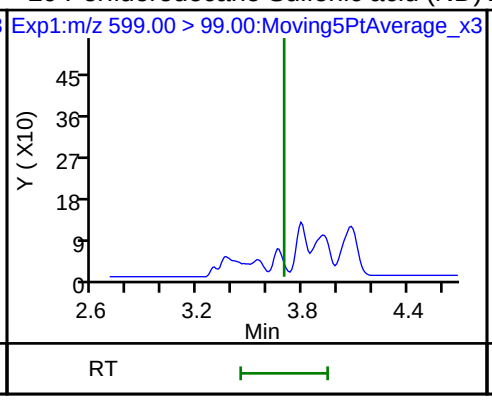
28 N-methyl perfluorooctane sulfonami (ND)



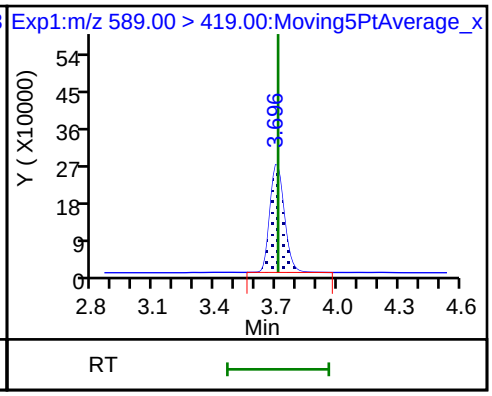
29 Perfluorodecane Sulfonic acid (ND)



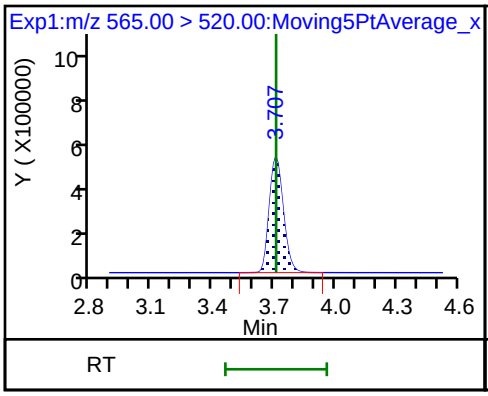
29 Perfluorodecane Sulfonic acid (ND)



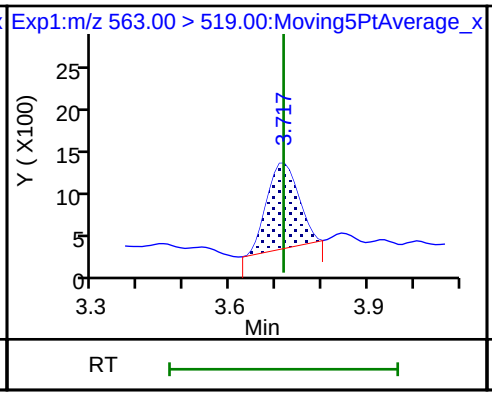
D 32 d5-NEtFOSAA



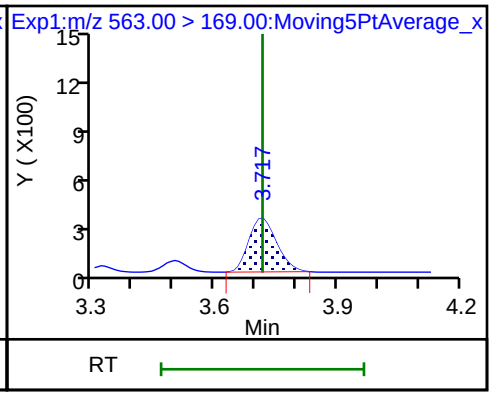
D 30 13C2 PFUnA



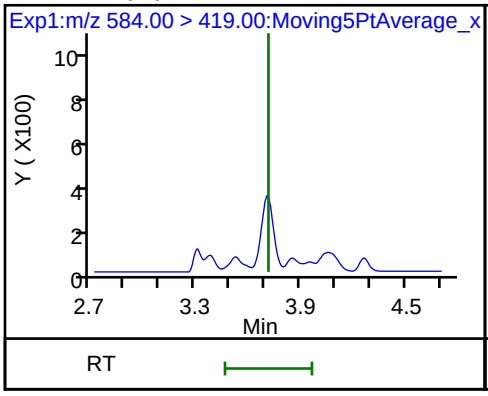
31 Perfluoroundecanoic acid



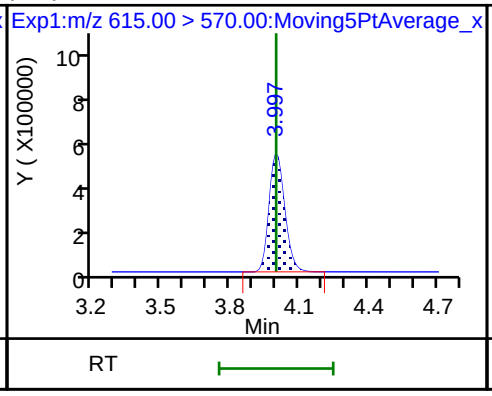
31 Perfluoroundecanoic acid



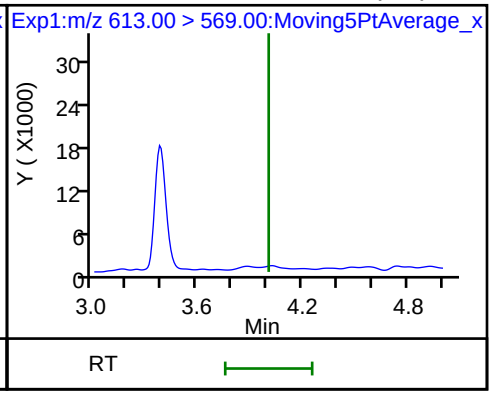
33 N-ethyl perfluorooctane sulfonamid (ND)



D 36 13C2 PFDoA

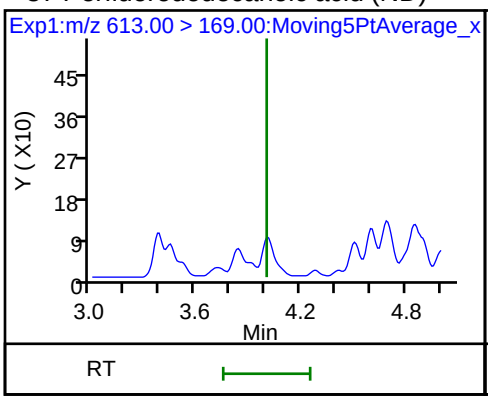


37 Perfluorododecanoic acid (ND)

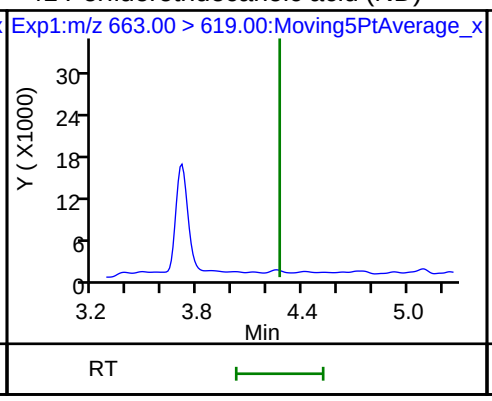


Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\2018.07.13LLB_063.d

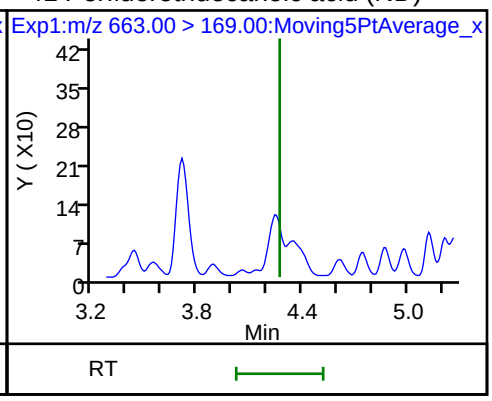
37 Perfluorododecanoic acid (ND)



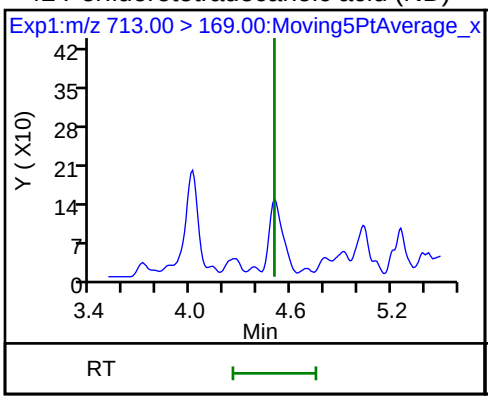
41 Perfluorotridecanoic acid (ND)



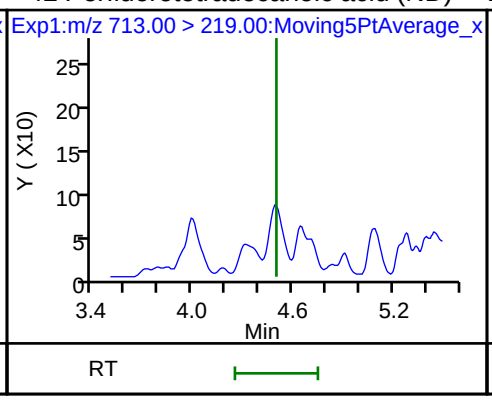
41 Perfluorotridecanoic acid (ND)



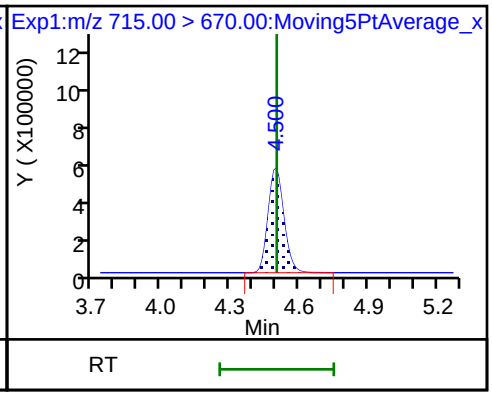
42 Perfluorotetradecanoic acid (ND)



42 Perfluorotetradecanoic acid (ND)



D 43 13C2-PFTeDA



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

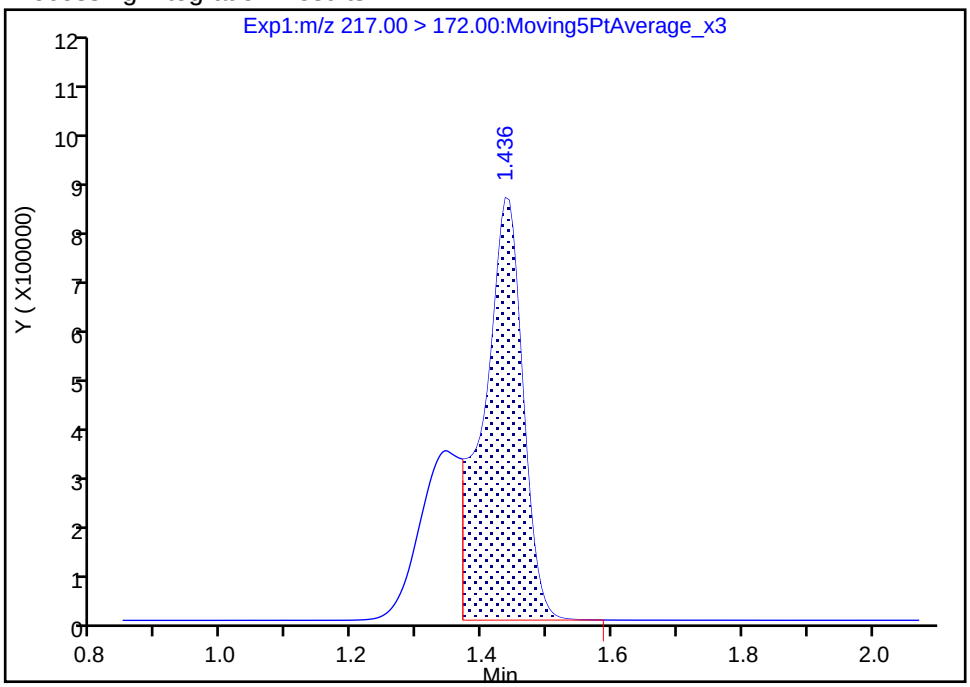
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\2018.07.13LLB_063.d				
Injection Date:	14-Jul-2018 04:59:43	Instrument ID:	A8_N		
Lims ID:	320-40571-A-14-A	Lab Sample ID:	320-40571-14		
Client ID:	NF22-SS-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	47	Worklist Smp#:	12
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

D 1 13C4 PFBA, CAS: STL00992

Signal: 1

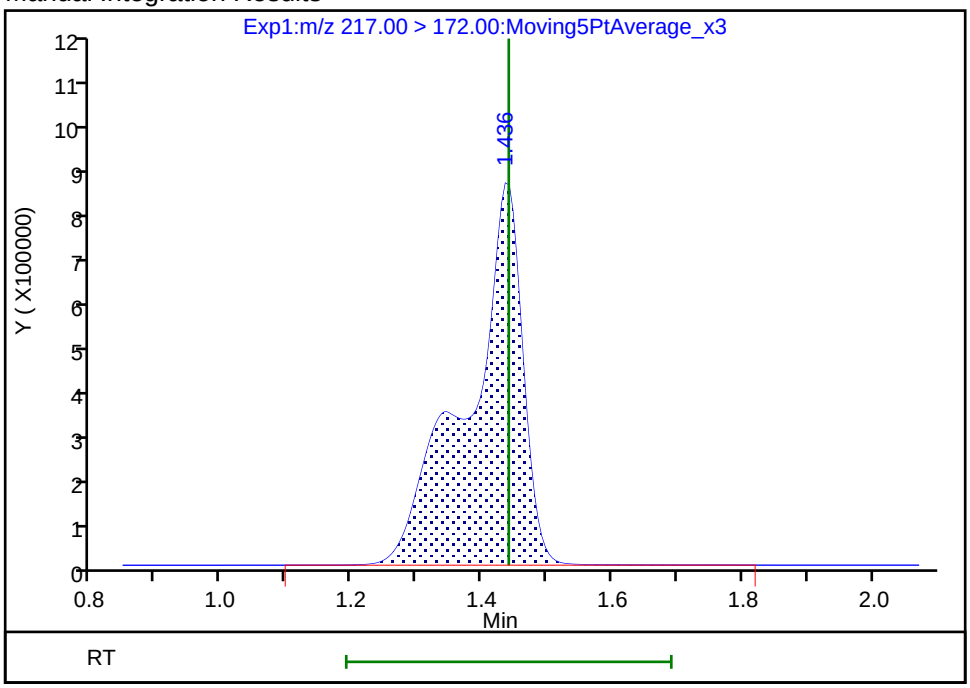
Processing Integration Results

RT: 1.44
Area: 3399476
Amount: 1.439983
Amount Units: ng/ml



Manual Integration Results

RT: 1.44
Area: 4831779
Amount: 2.046691
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 14:20:52

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF23-GW-01
Lab Sample ID: 320-40571-15
Matrix: Water
Lab File ID: 2018.07.06LLC_028.d
Analysis Method: 537 (modified)
Date Collected: 06/19/2018 14:40
Extraction Method: 3535
Date Extracted: 07/02/2018 14:58
Sample wt/vol: 281.7(mL)
Date Analyzed: 07/07/2018 02:53
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 232800
Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	0.0030	B	0.0018	0.00031
2706-90-3	Perfluoropentanoic acid (PFPeA)	0.0014	J	0.0018	0.00043
307-24-4	Perfluorohexanoic acid (PFHxA)	ND		0.0018	0.00051
375-85-9	Perfluoroheptanoic acid (PFHpA)	ND		0.0018	0.00022
335-67-1	Perfluorooctanoic acid (PFOA)	ND		0.0018	0.00075
375-95-1	Perfluorononanoic acid (PFNA)	ND		0.0018	0.00024
335-76-2	Perfluorodecanoic acid (PFDA)	ND		0.0018	0.00028
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		0.0018	0.00098
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		0.0018	0.00049
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		0.0018	0.0012
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		0.0018	0.00026
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.0017	J	0.0018	0.00018
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	0.00041	J	0.0018	0.00027
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.0013	J B	0.0018	0.00015
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.0018	0.00017
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.0016	J	0.0018	0.00048
8789-57-2	Perfluorononanesulfonic acid (PFNS)	ND		0.0018	0.00014
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		0.0018	0.00028
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		0.0018	0.00031
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.018	0.0028
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.018	0.0017
757124-72-4	4:2 FTS	ND		0.018	0.0046
27619-97-2	6:2 FTS	0.0035	J	0.018	0.0018
39108-34-4	8:2 FTS	ND		0.018	0.0018

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF23-GW-01
Lab Sample ID: 320-40571-15
Matrix: Water
Lab File ID: 2018.07.06LLC_028.d
Analysis Method: 537 (modified)
Date Collected: 06/19/2018 14:40
Extraction Method: 3535
Date Extracted: 07/02/2018 14:58
Sample wt/vol: 281.7(mL)
Date Analyzed: 07/07/2018 02:53
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 232800
Units: ug/L

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00992	13C4 PFBA	59		25-150
STL01893	13C5 PFPeA	76		25-150
STL00993	13C2 PFHxA	91		25-150
STL01892	13C4-PFHpA	101		25-150
STL00990	13C4 PFOA	104		25-150
STL00995	13C5 PFNA	99		25-150
STL00996	13C2 PFDA	110		25-150
STL00997	13C2 PFUnA	104		25-150
STL00998	13C2 PFDoA	92		25-150
STL02116	13C2-PFTeDA	78		25-150
STL02337	13C3-PFBS	86		25-150
STL00994	18O2 PFHxS	112		25-150
STL00991	13C4 PFOS	102		25-150
STL01056	13C8 FOSA	90		25-150
STL02118	d3-NMeFOSAA	112		25-150
STL02117	d5-NEtFOSAA	105		25-150
STL02279	M2-6:2FTS	138		25-150
STL02280	M2-8:2FTS	134		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\2018.07.06LLC_028.d
Lims ID: 320-40571-A-15-A
Client ID: NF23-GW-01
Sample Type: Client
Inject. Date: 07-Jul-2018 02:53:51 ALS Bottle#: 17 Worklist Smp#: 16
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-40571-a-15-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 13-Jul-2018 11:00:09 Calib Date: 05-Jul-2018 09:38:17
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180705-60684.b\2018.07.05LLICALAA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK013

First Level Reviewer: barnettj Date: 13-Jul-2018 10:58:43

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.424	1.428	-0.004	0.537	4210416	1.47		58.7	16090	
2 Perfluorobutyric acid										
212.90 > 169.00	1.430	1.428	0.002	1.004	143716	0.0835			60.9	
D 3 13C5-PFPeA										
267.90 > 223.00	1.711	1.707	0.004	0.645	4057925	1.91		76.5	26848	
4 Perfluoropentanoic acid										M
262.90 > 219.00	1.702	1.708	-0.006	0.995	74747	0.0387			14.4	M
D 47 13C3-PFBS										
301.90 > 83.00	1.747	1.743	0.004	0.659	102074	2.01		86.5	179	
5 Perfluorobutanesulfonic acid										M
298.90 > 80.00	1.738	1.744	-0.006	0.995	156036	0.0469			9.2	M
298.90 > 99.00	1.747	1.744	0.003	1.000	87945		1.77(1.25-3.74)		131	
D 7 13C2 PFHxA										
315.00 > 270.00	1.992	1.988	0.004	0.751	5190322	2.28		91.4	62982	
70 Perfluoropentanesulfonic acid										M
349.00 > 80.00	2.014	2.011	0.003	1.153	32755	0.0115			9.0	M
349.00 > 99.00	2.003	2.011	-0.008	1.147	12047		2.72(1.36-4.07)		22.6	M
D 9 13C4-PFHpA										
367.00 > 322.00	2.306	2.302	0.004	0.870	5072230	2.52		101	42643	
D 11 18O2 PFHxS										
403.00 > 84.00	2.319	2.315	0.004	0.874	6578938	2.65		112	55619	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.319	2.316	0.003	1.000	113599	0.0353			20.0	
399.00 > 99.00	2.319	2.316	0.003	1.000	34467		3.30(1.50-4.49)		61.8	
D 12 M2-6:2FTS										
429.00 > 81.00	2.628	2.626	0.002	0.991	1480301	3.27		138	2885	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.628	2.626	0.002	1.000	95953	0.0983			400	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 14 13C4 PFOA										
417.00 > 372.00	2.652	2.650	0.002	1.000	5134352	2.60		104	46893	
* 62 13C2-PFOA										
415.00 > 370.00	2.652	2.651	0.001		5179040	2.50			45617	
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.652	2.658	-0.006	1.000	38217	0.0157			8.4	M
413.00 > 169.00	2.652	2.658	-0.006	1.000	21767		1.76(0.84-2.52)		83.0	M
D 19 13C5 PFNA										
468.00 > 423.00	3.014	3.015	-0.001	1.137	4177209	2.49		99.5	39370	
D 18 13C4 PFOS										
503.00 > 80.00	3.014	3.015	-0.001	1.137	4304486	2.43		102	10916	
17 Perfluorooctane sulfonic acid										M
499.00 > 80.00	2.896	3.016	-0.120	0.961	97199	0.0462			67.7	M
499.00 > 99.00	3.014	3.016	-0.002	1.000	18132		5.36(2.31-6.93)		110	M
D 21 13C8 FOSA										
506.00 > 78.00	3.365	3.367	-0.002	1.269	5539629	2.25		90.1	47815	
D 26 M2-8:2FTS										
529.00 > 81.00	3.356	3.367	-0.011	1.265	1613453	3.20		134	9605	
D 23 13C2 PFDA										
515.00 > 470.00	3.365	3.376	-0.011	1.269	3971224	2.74		110	36556	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.524	3.525	-0.001	1.329	2397373	2.81		112	48686	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.690	3.694	-0.004	1.391	2204741	2.61		105	17760	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.701	3.695	0.006	1.003	18882	0.0237			386	
D 30 13C2 PFUnA										
565.00 > 520.00	3.690	3.705	-0.015	1.391	3165264	2.60		104	41742	
D 36 13C2 PFDoA										
615.00 > 570.00	3.989	3.995	-0.006	1.504	2982458	2.29		91.5	17798	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.491	4.489	0.002	1.693	3115542	1.96		78.4	13946	

QC Flag Legend

Review Flags

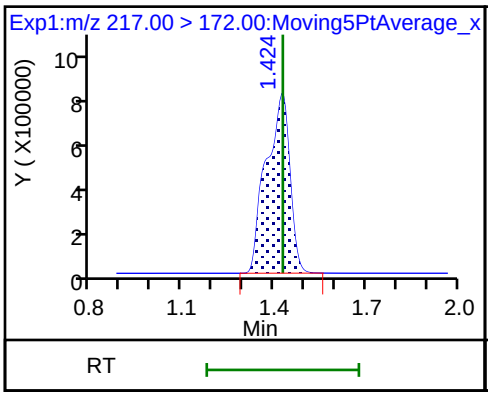
M - Manually Integrated

Report Date: 13-Jul-2018 11:00:17 Chrom Revision: 2.2 07-Jun-2018 07:41:54

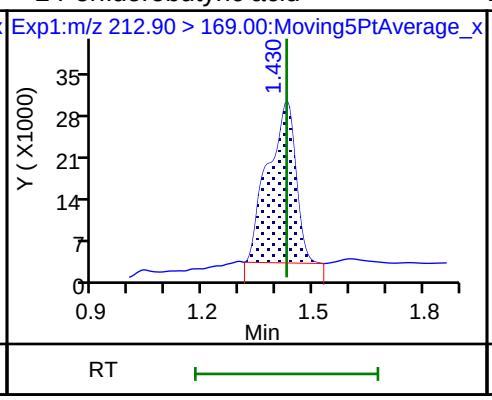
TestAmerica Sacramento

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\2018.07.06LLC_028.d				
Injection Date:	07-Jul-2018 02:53:51	Instrument ID:	A8_N		
Lims ID:	320-40571-A-15-A	Lab Sample ID:	320-40571-15		
Client ID:	NF23-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	17	Worklist Smp#:	16
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		

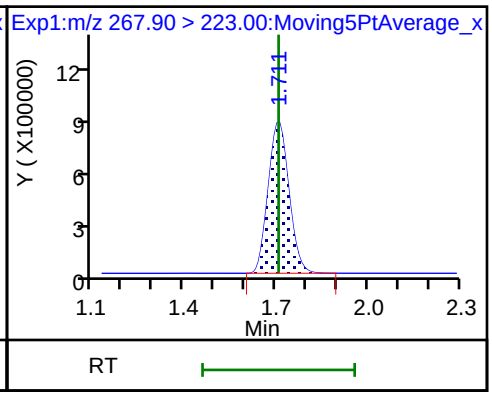
D 1 13C4 PFBA



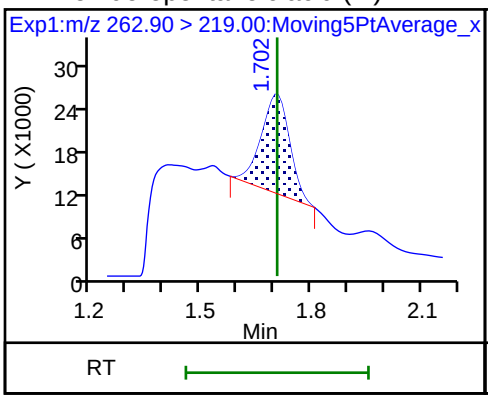
2 Perfluorobutyric acid



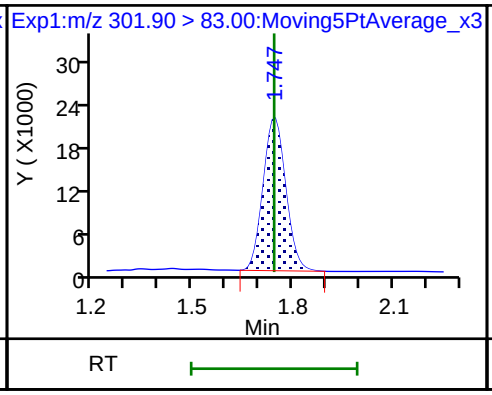
D 3 13C5-PFPeA



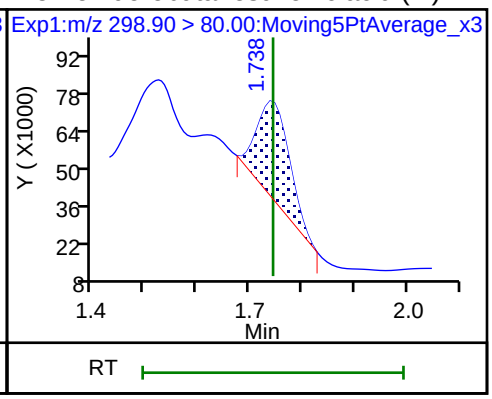
4 Perfluoropentanoic acid (M)



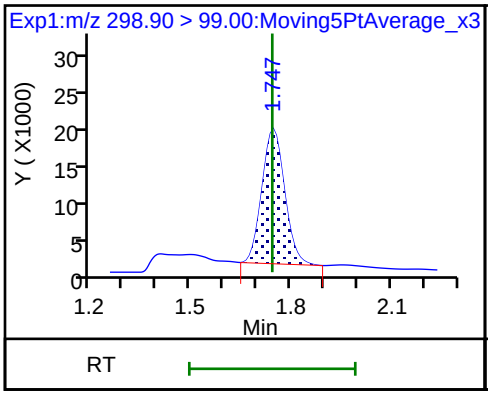
D 47 13C3-PFBS



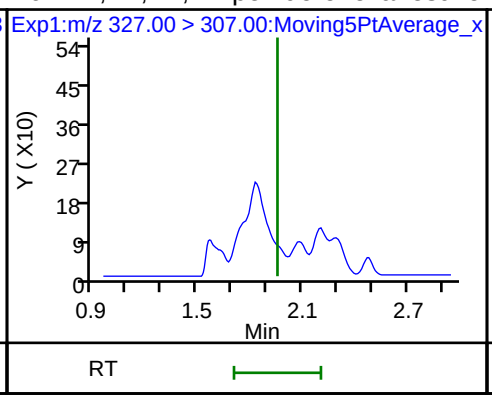
5 Perfluorobutanesulfonic acid (M)



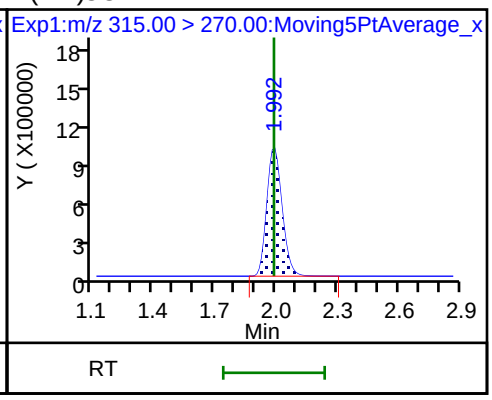
5 Perfluorobutanesulfonic acid



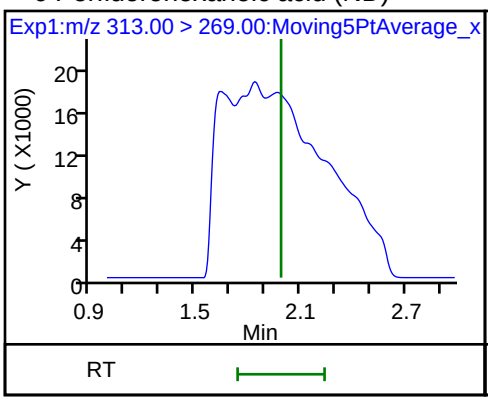
61 1H,1H,2H,2H-perfluorohexanesulfonic acid (ND)



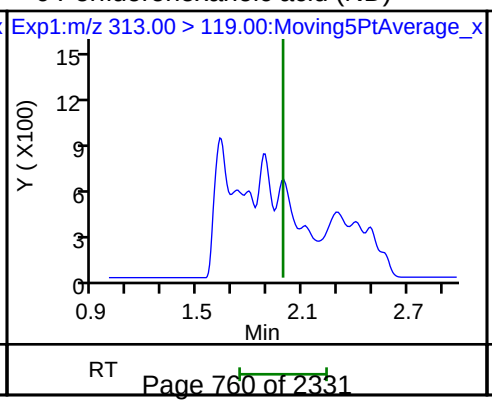
D 70 13C2 PFHxA



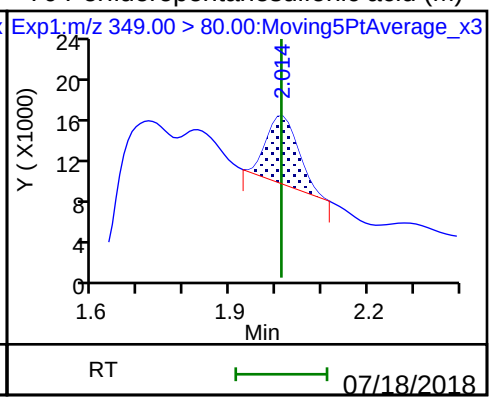
6 Perfluorohexanoic acid (ND)



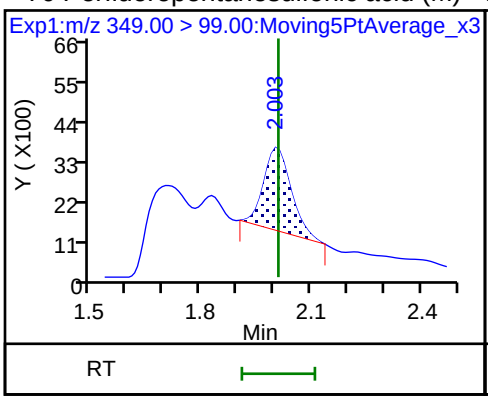
6 Perfluorohexanoic acid (ND)



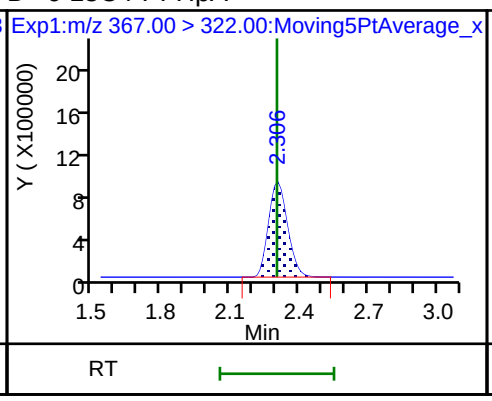
70 Perfluoropentanesulfonic acid (M)



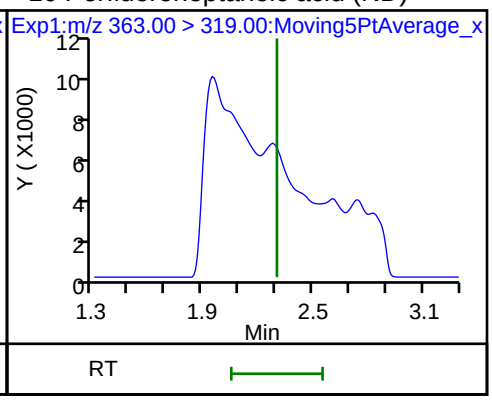
70 Perfluoropentanesulfonic acid (M)



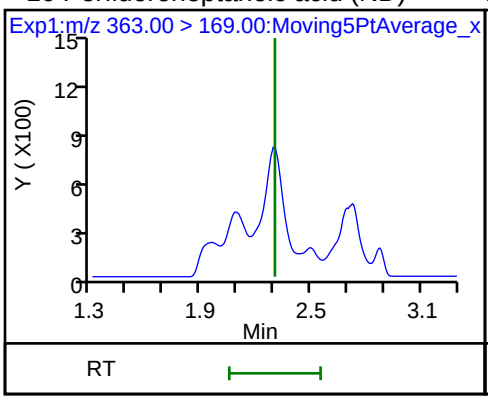
D 9 13C4-PFHpA



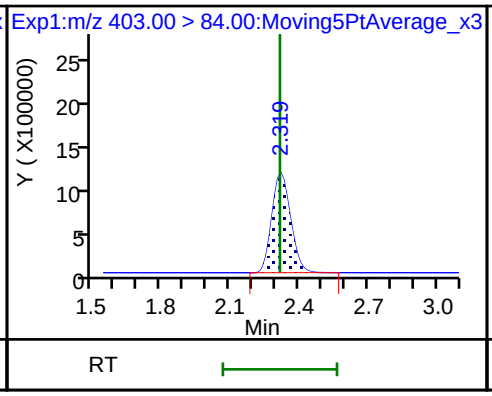
10 Perfluoroheptanoic acid (ND)



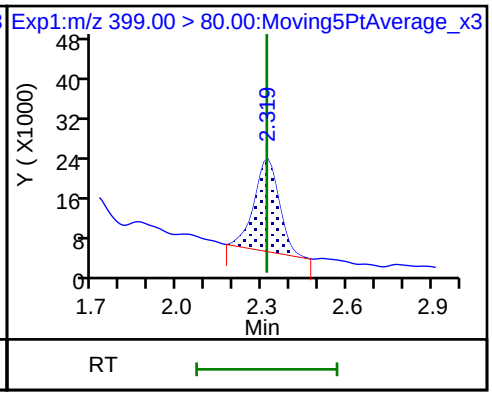
10 Perfluoroheptanoic acid (ND)



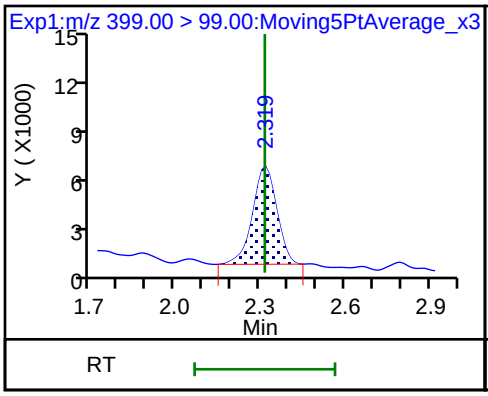
D 11 18O2 PFHxS



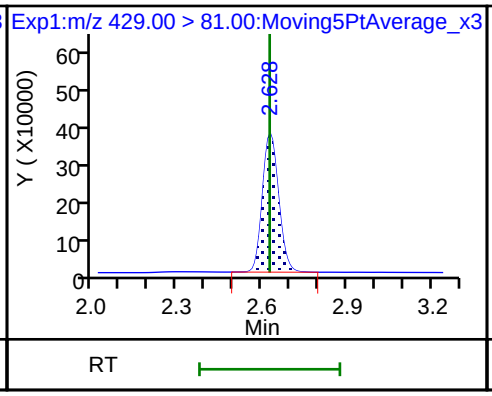
8 Perfluorohexanesulfonic acid



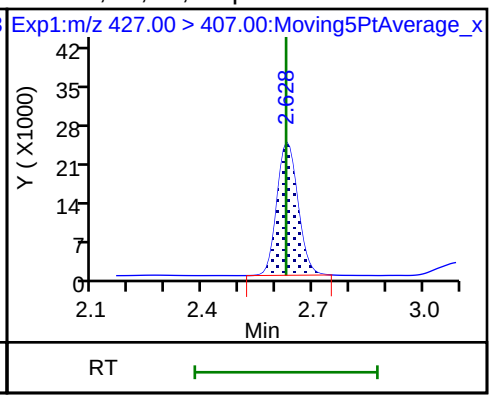
8 Perfluorohexanesulfonic acid



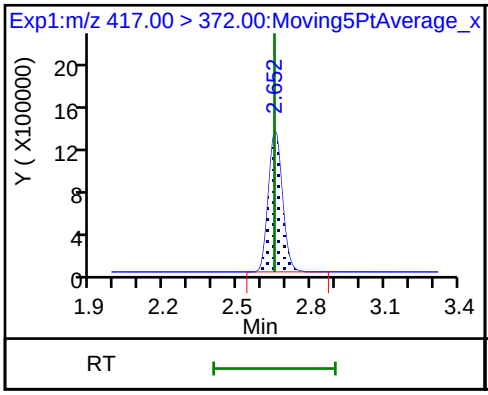
D 12 M2-6:2FTS



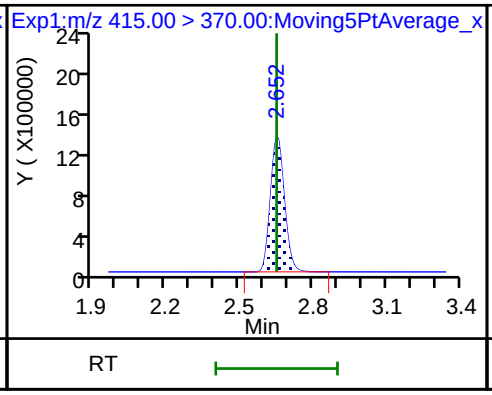
13 1H,1H,2H,2H-perfluorooctanesulfoni



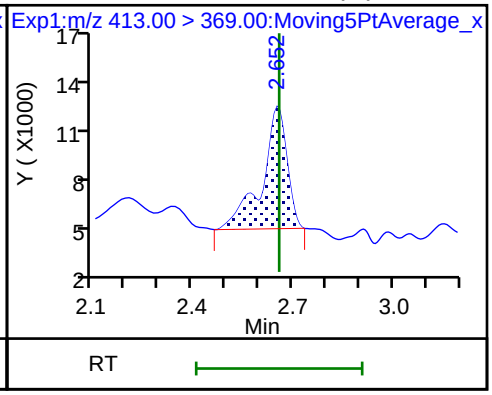
D 14 13C4 PFOA



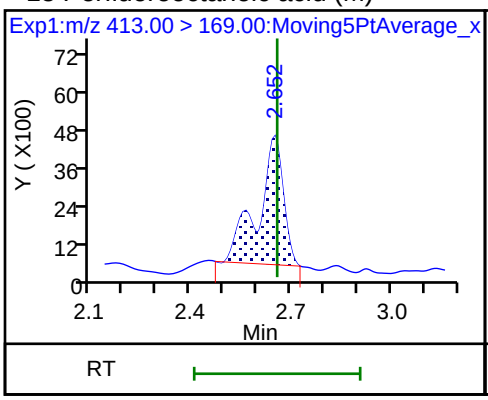
* 62 13C2-PFOA



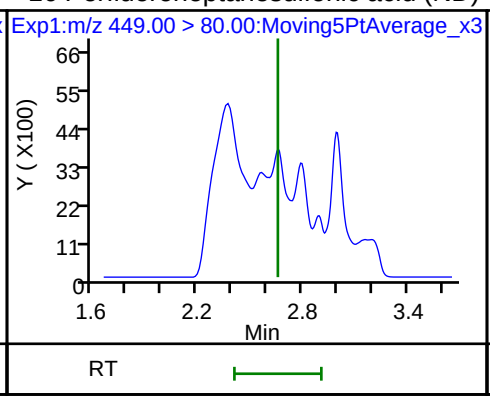
15 Perfluorooctanoic acid (M)



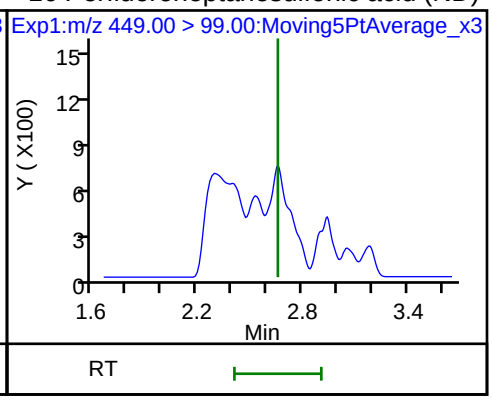
15 Perfluorooctanoic acid (M)



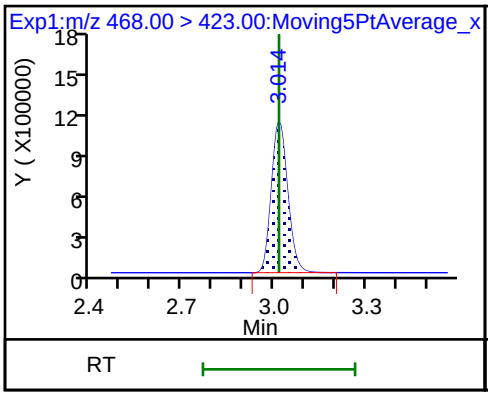
16 Perfluoroheptanesulfonic acid (ND)



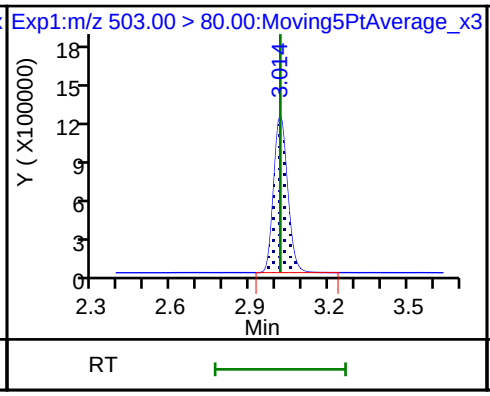
16 Perfluoroheptanesulfonic acid (ND)



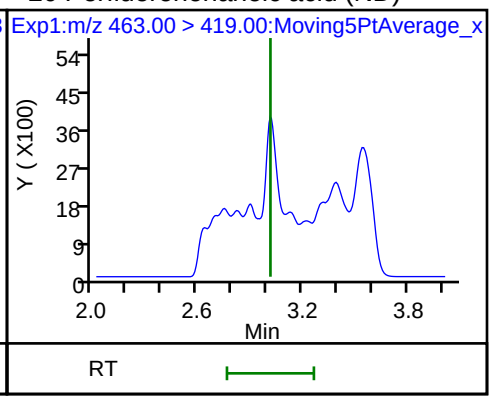
D 19 13C5 PFNA



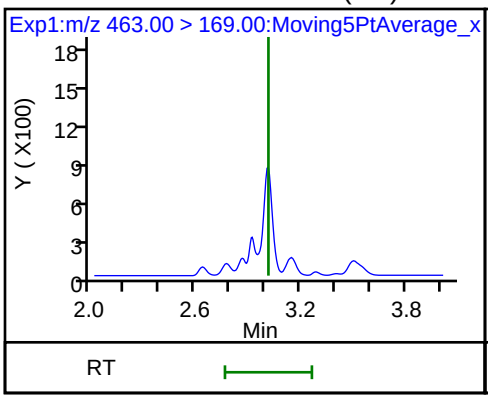
D 18 13C4 PFOS



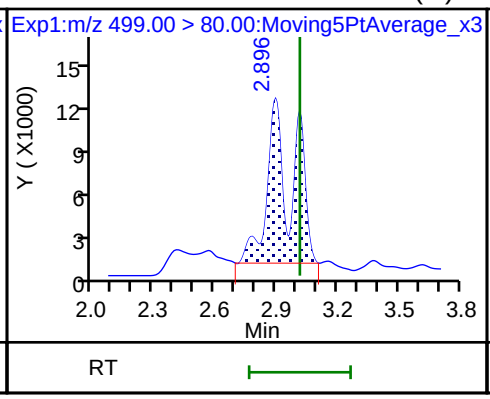
20 Perfluorononanoic acid (ND)



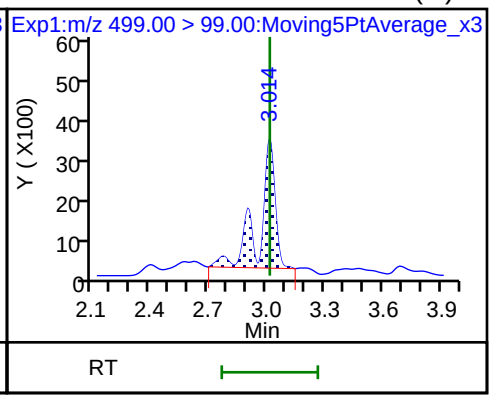
20 Perfluorononanoic acid (ND)



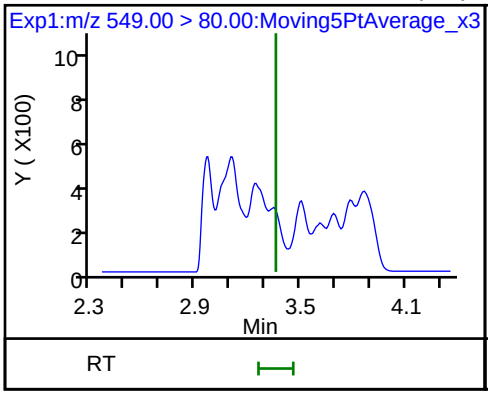
17 Perfluorooctane sulfonic acid (M)



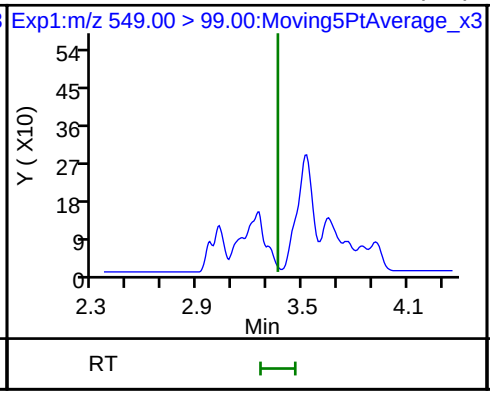
17 Perfluorooctane sulfonic acid (M)



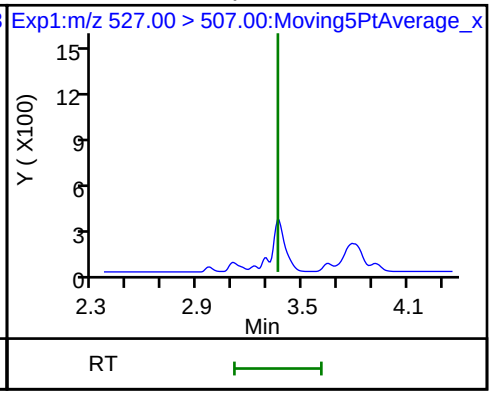
68 Perfluorononanesulfonic acid (ND)



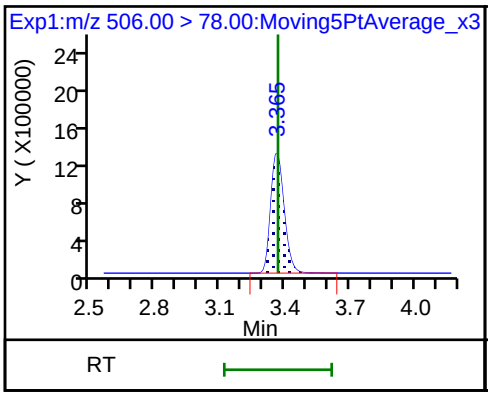
68 Perfluorononanesulfonic acid (ND)



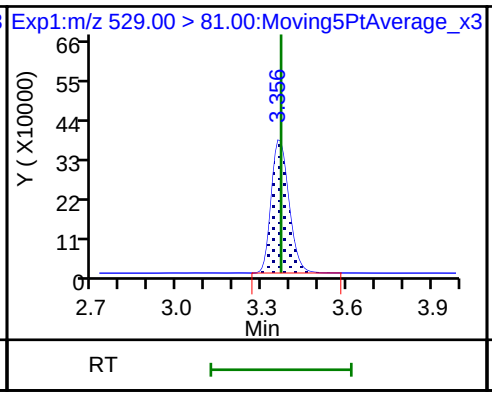
25 1H,1H,2H,2H-perfluorodecanesulfoni (ND)



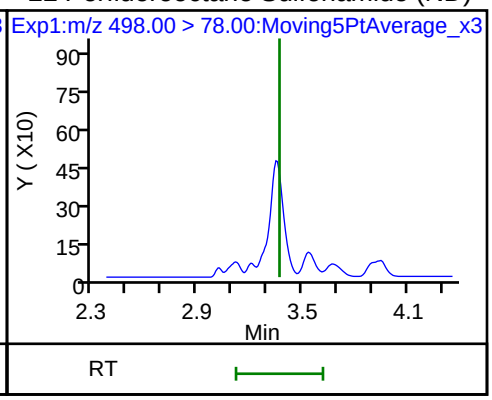
D 21 13C8 FOSA



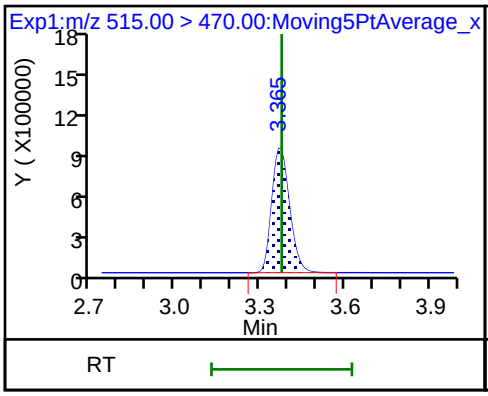
D 26 M2-8:2FTS



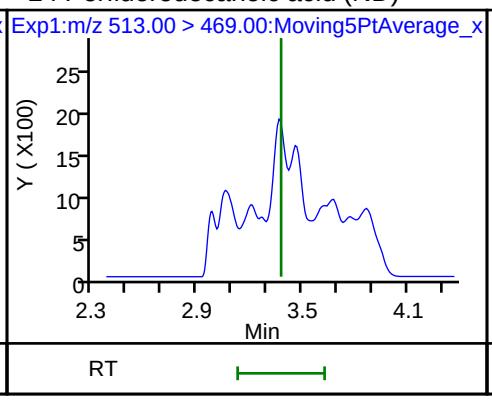
22 Perfluorooctane Sulfonamide (ND)



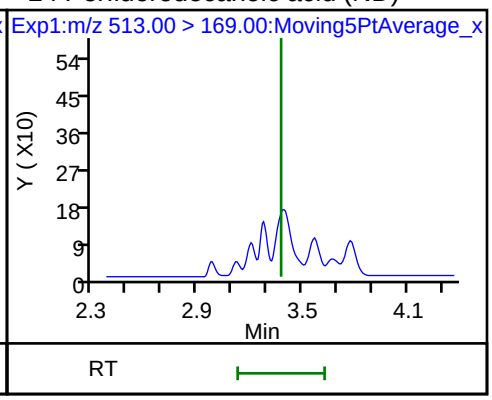
D 23 13C2 PFDA



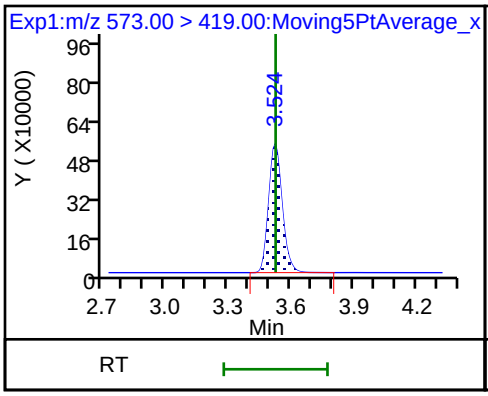
24 Perfluorodecanoic acid (ND)



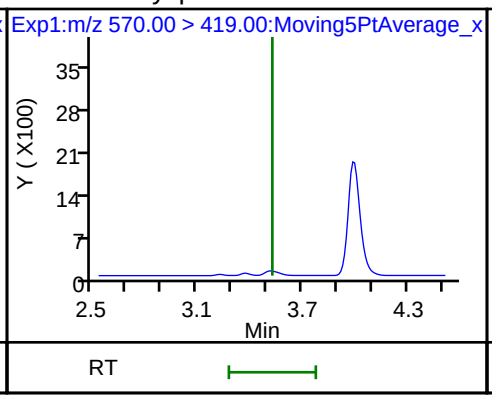
24 Perfluorodecanoic acid (ND)



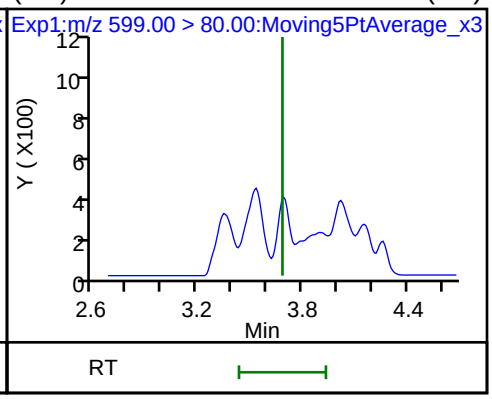
D 27 d3-NMeFOSAA



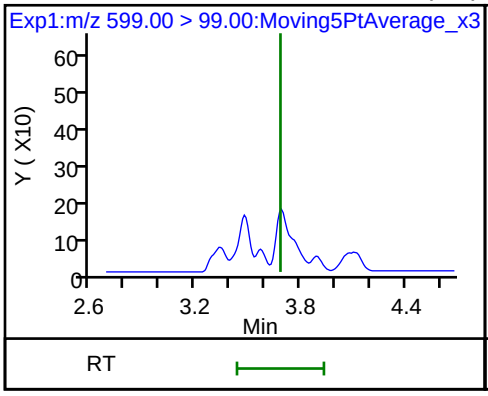
28 N-methyl perfluorooctane sulfonami (ND)



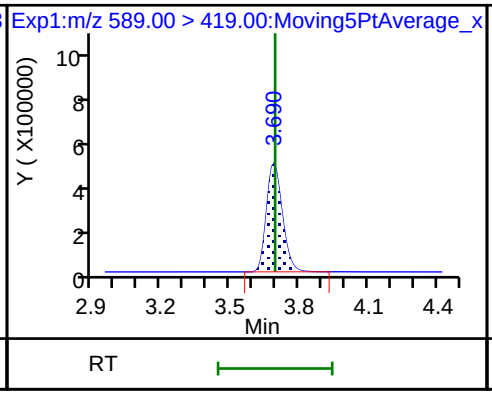
29 Perfluorodecane Sulfonic acid (ND)



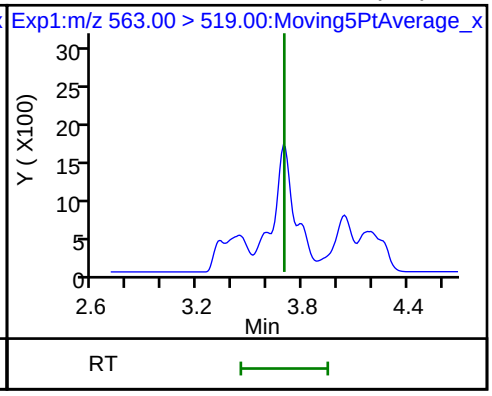
29 Perfluorodecane Sulfonic acid (ND)



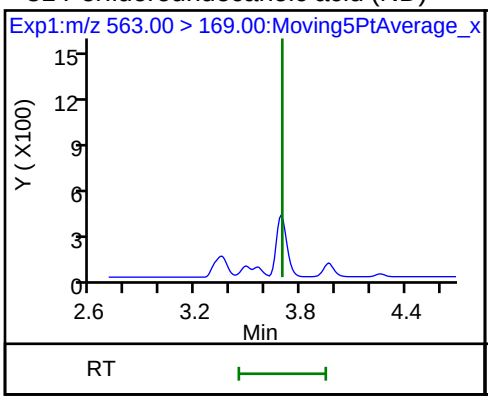
D 32 d5-NEtFOSAA



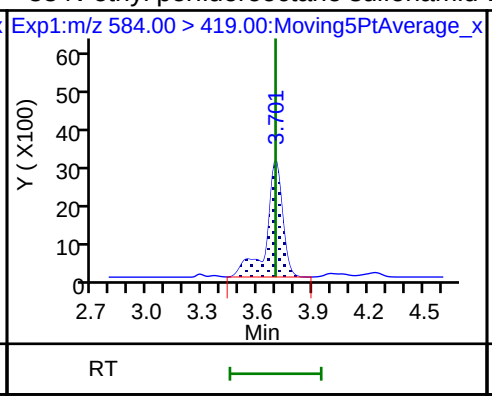
31 Perfluoroundecanoic acid (ND)



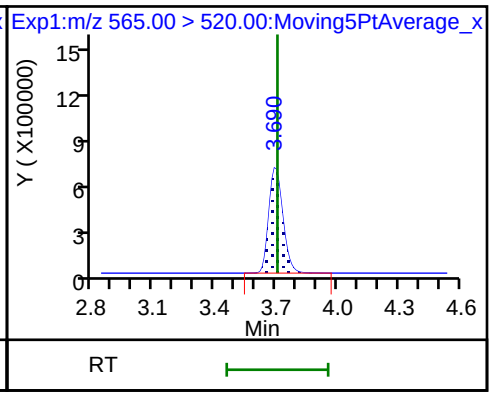
31 Perfluoroundecanoic acid (ND)



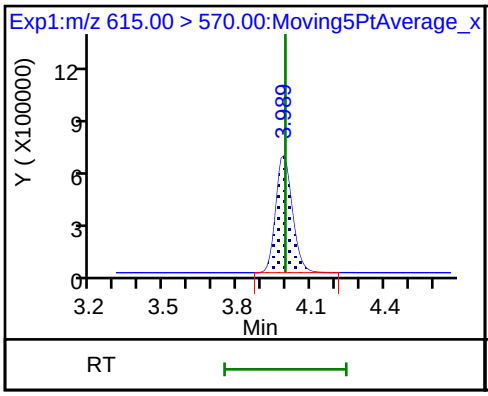
33 N-ethyl perfluorooctane sulfonamid



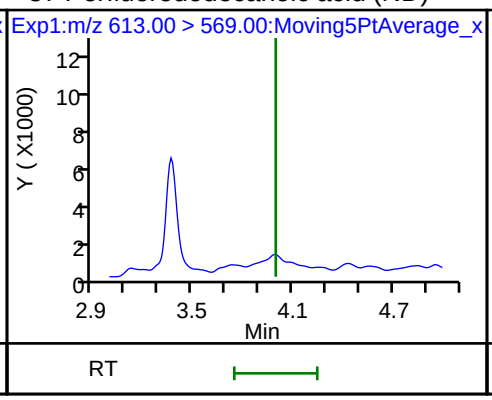
D 30 13C2 PFUnA



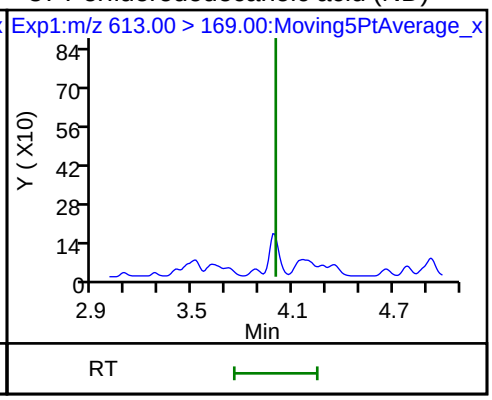
D 36 13C2 PFDoA



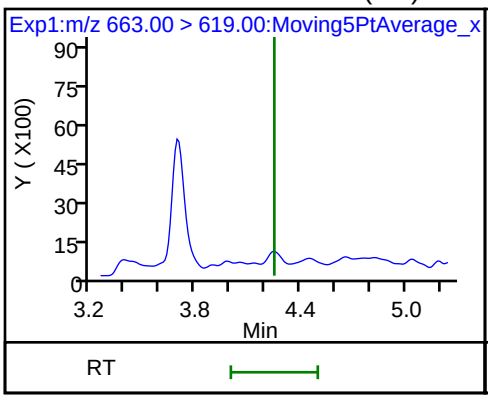
37 Perfluorododecanoic acid (ND)



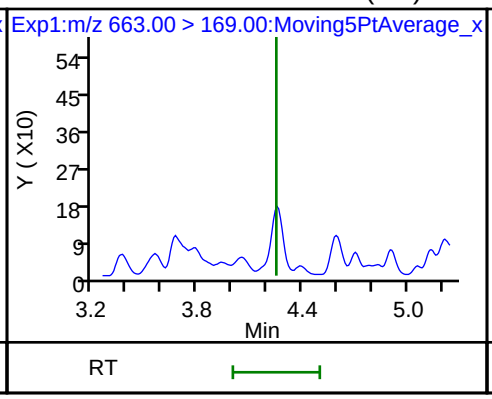
37 Perfluorododecanoic acid (ND)



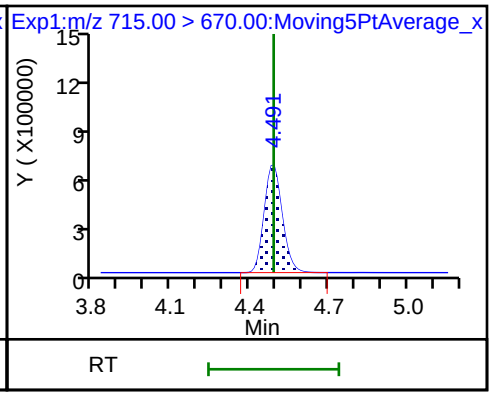
41 Perfluorotridecanoic acid (ND)



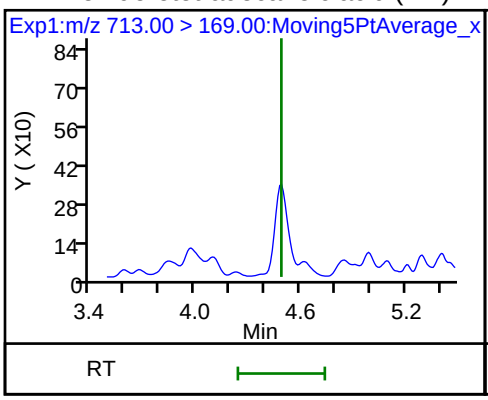
41 Perfluorotridecanoic acid (ND)



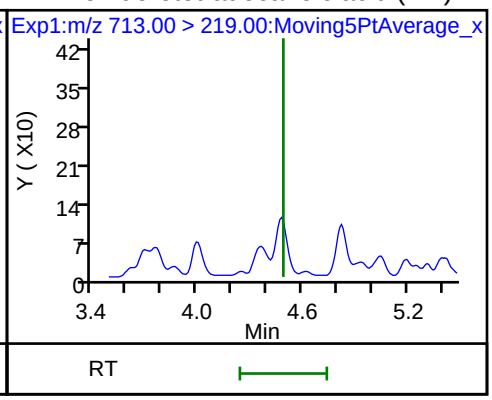
D 43 13C2-PFTeDA



42 Perfluorotetradecanoic acid (ND)



42 Perfluorotetradecanoic acid (ND)



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

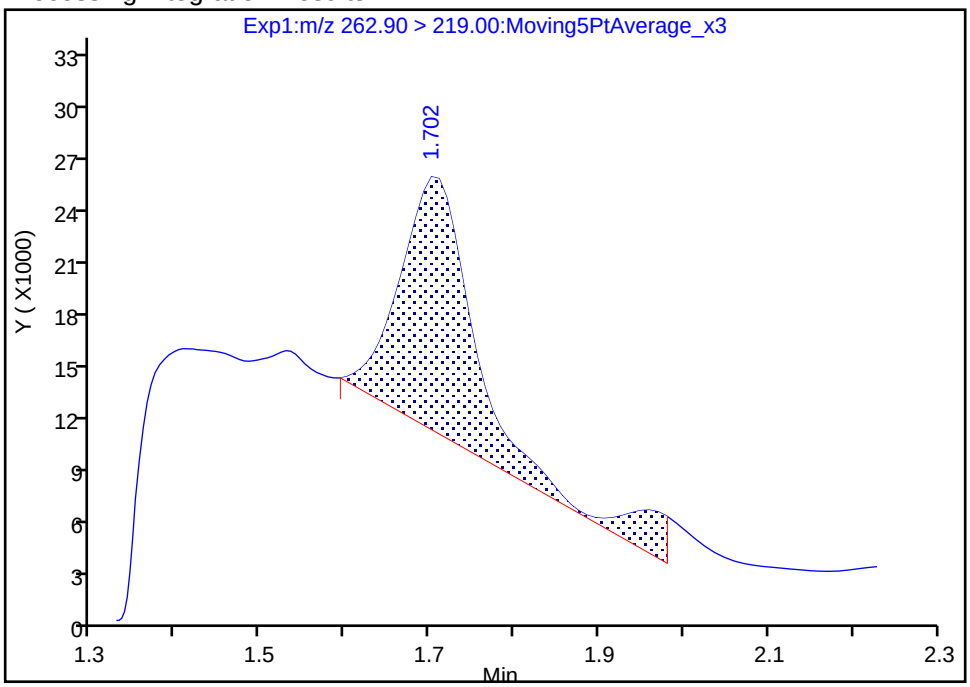
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\2018.07.06LLC_028.d				
Injection Date:	07-Jul-2018 02:53:51	Instrument ID:	A8_N		
Lims ID:	320-40571-A-15-A	Lab Sample ID:	320-40571-15		
Client ID:	NF23-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	17	Worklist Smp#:	16
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

4 Perfluoropentanoic acid, CAS: 2706-90-3

Signal: 1

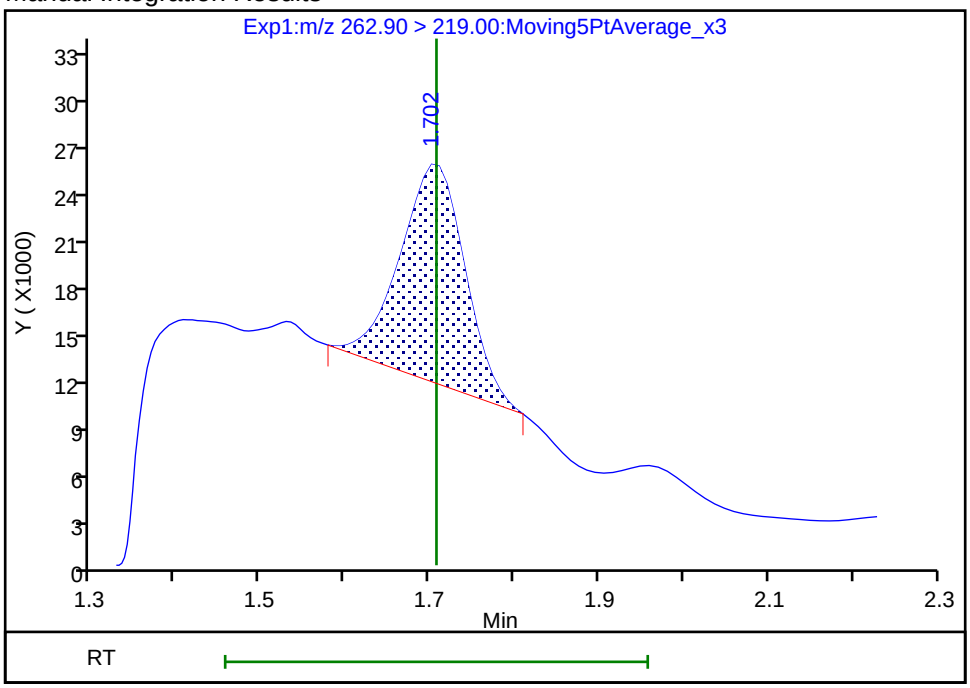
Processing Integration Results

RT: 1.70
Area: 96231
Amount: 0.049783
Amount Units: ng/ml



Manual Integration Results

RT: 1.70
Area: 74747
Amount: 0.038669
Amount Units: ng/ml



Reviewer: mongkols, 09-Jul-2018 14:14:15

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

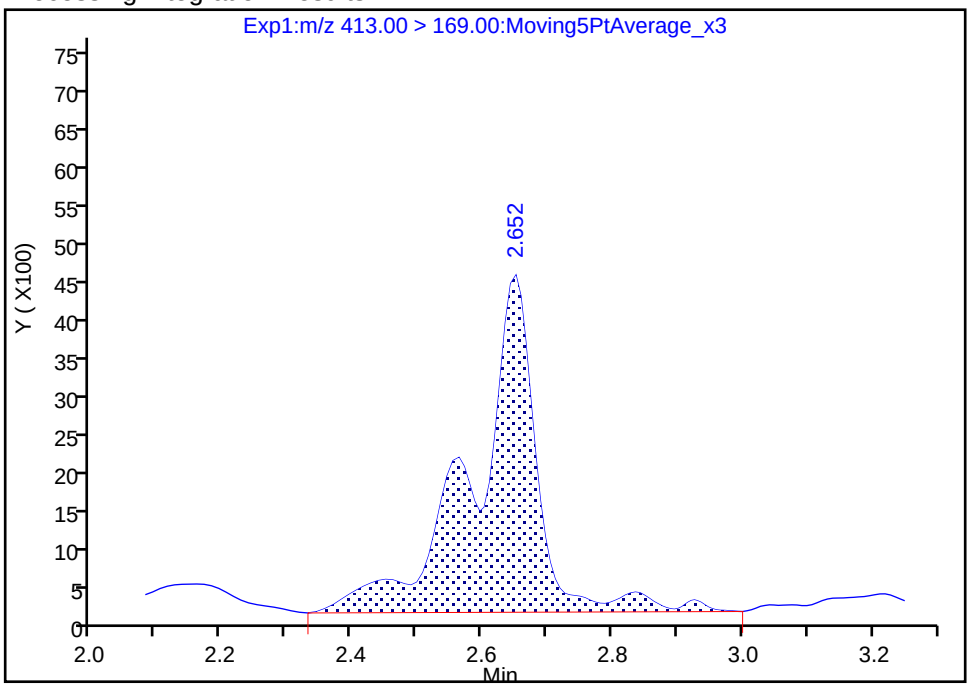
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\2018.07.06LLC_028.d				
Injection Date:	07-Jul-2018 02:53:51	Instrument ID:	A8_N		
Lims ID:	320-40571-A-15-A	Lab Sample ID:	320-40571-15		
Client ID:	NF23-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	17	Worklist Smp#:	16
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 2

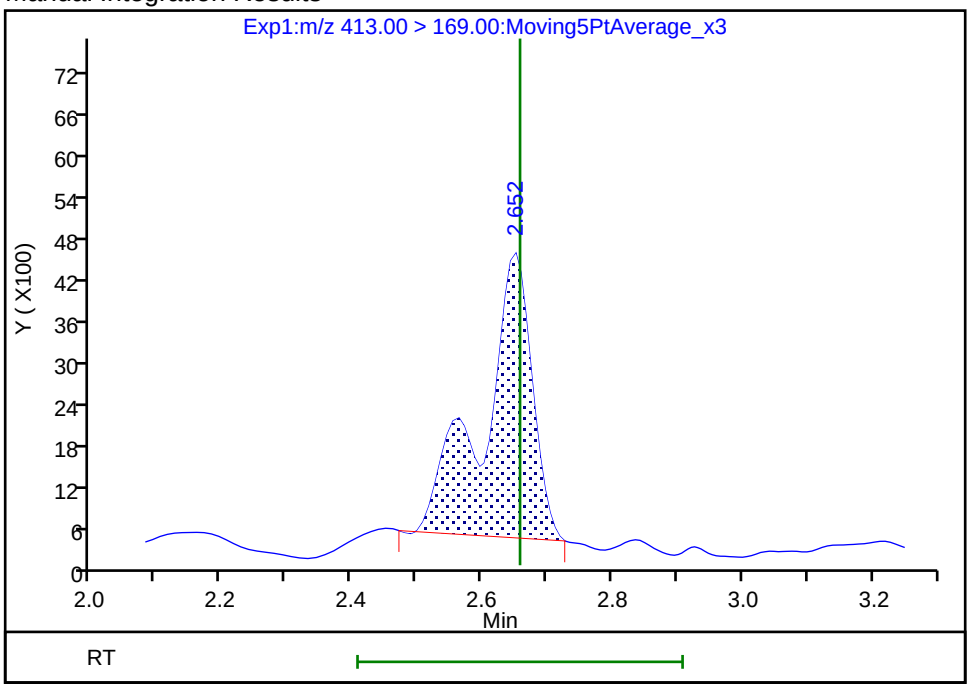
Processing Integration Results

RT: 2.65
Area: 30863
Amount: 0.012265
Amount Units: ng/ml



Manual Integration Results

RT: 2.65
Area: 21767
Amount: 0.015693
Amount Units: ng/ml



Reviewer: mongkols, 09-Jul-2018 14:15:16

Audit Action: Manually Integrated Audit Reason: Isomers

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

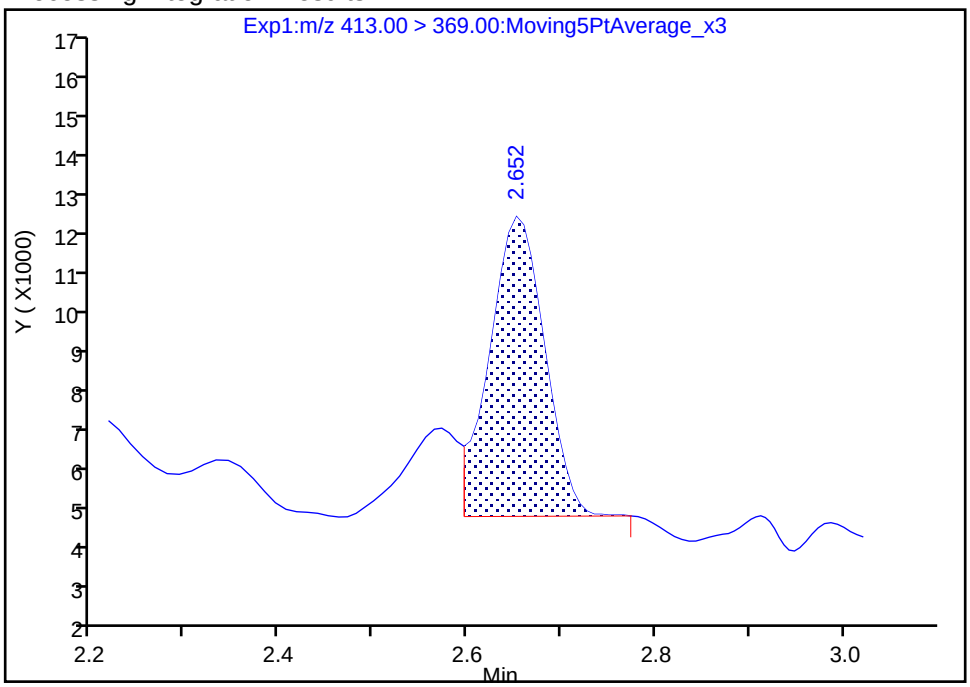
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\2018.07.06LLC_028.d				
Injection Date:	07-Jul-2018 02:53:51	Instrument ID:	A8_N		
Lims ID:	320-40571-A-15-A	Lab Sample ID:	320-40571-15		
Client ID:	NF23-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	17	Worklist Smp#:	16
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

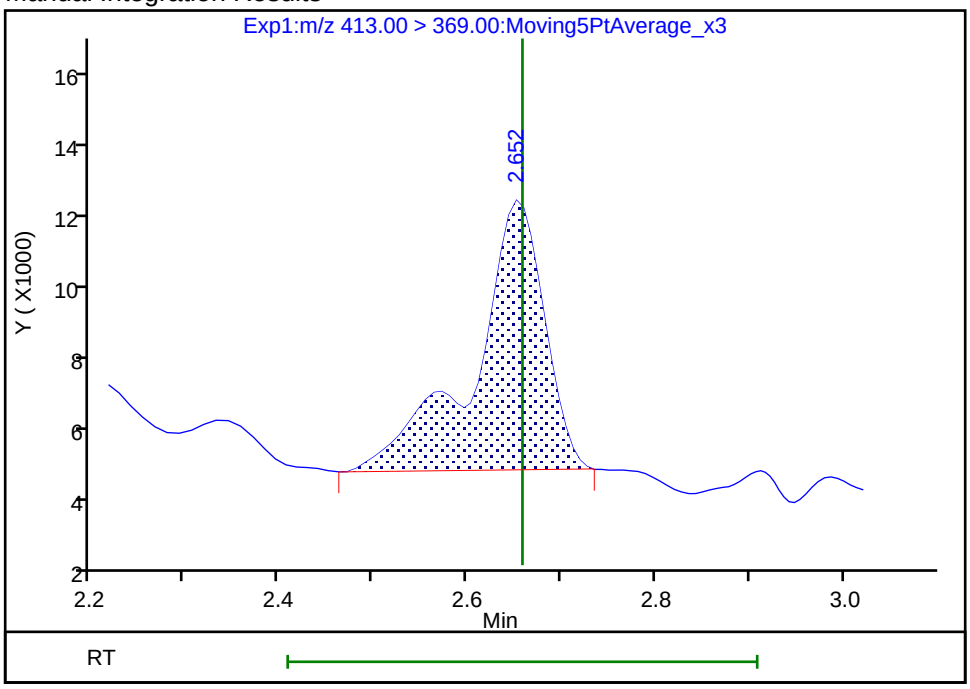
Processing Integration Results

RT: 2.65
Area: 29868
Amount: 0.012265
Amount Units: ng/ml



Manual Integration Results

RT: 2.65
Area: 38217
Amount: 0.015693
Amount Units: ng/ml



Reviewer: barnettj, 13-Jul-2018 10:58:06
Audit Action: Manually Integrated Audit Reason: Isomers

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

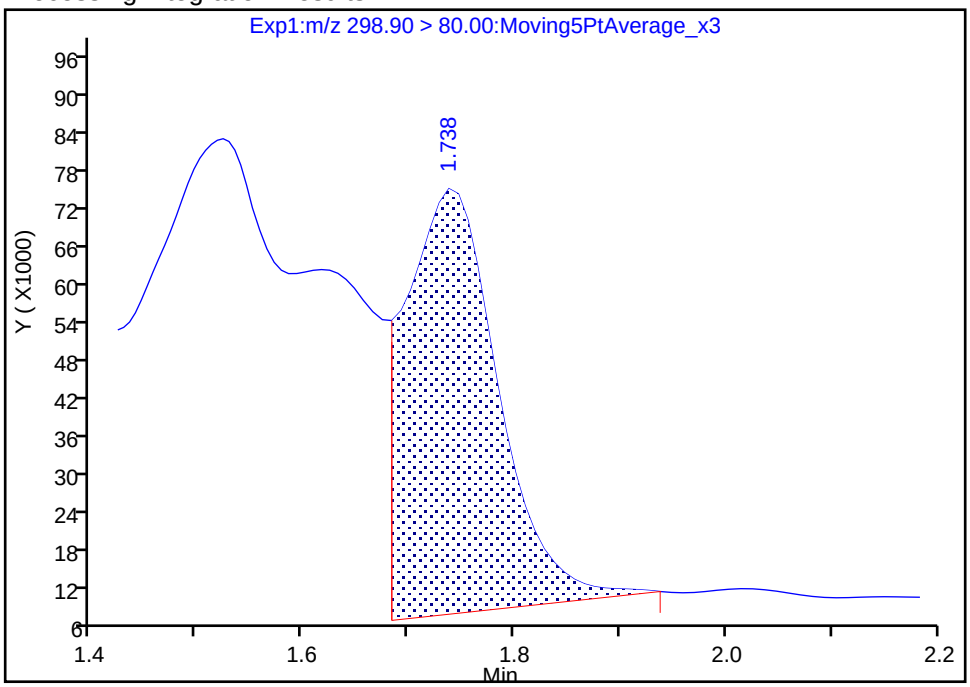
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\2018.07.06LLC_028.d				
Injection Date:	07-Jul-2018 02:53:51	Instrument ID:	A8_N		
Lims ID:	320-40571-A-15-A	Lab Sample ID:	320-40571-15		
Client ID:	NF23-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	17	Worklist Smp#:	16
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

5 Perfluorobutanesulfonic acid, CAS: 375-73-5

Signal: 1

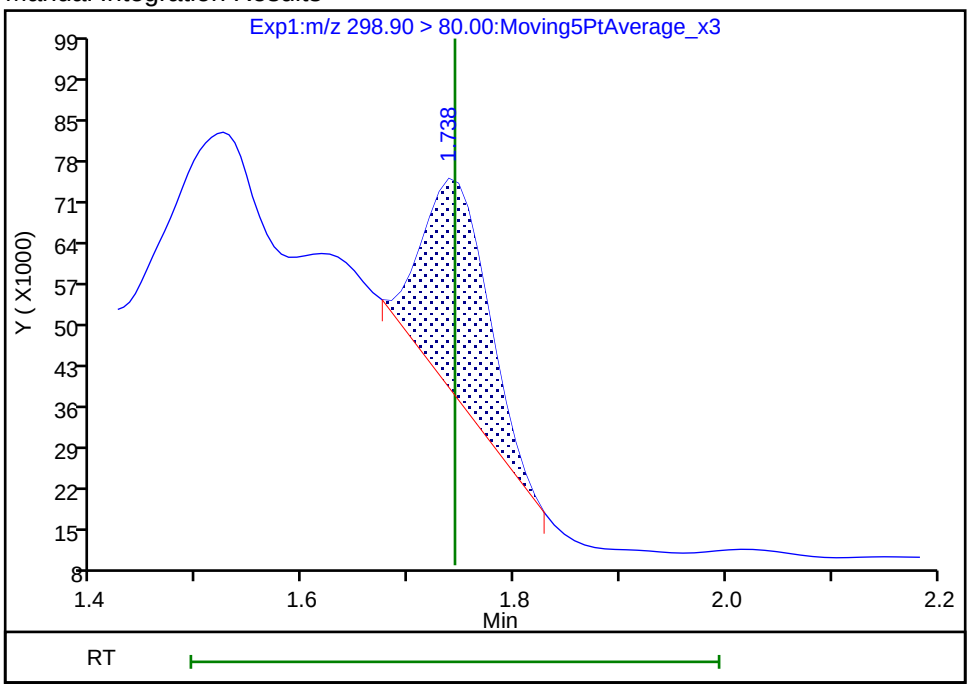
Processing Integration Results

RT: 1.74
Area: 405605
Amount: 0.121876
Amount Units: ng/ml



Manual Integration Results

RT: 1.74
Area: 156036
Amount: 0.046886
Amount Units: ng/ml



Reviewer: mongkols, 09-Jul-2018 14:14:28

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

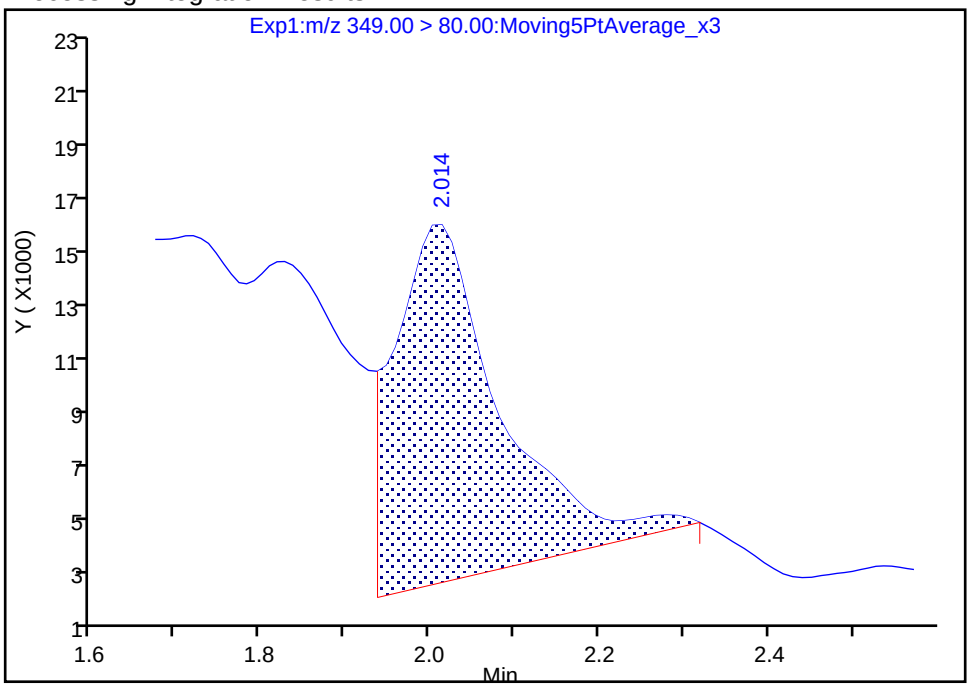
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\2018.07.06LLC_028.d				
Injection Date:	07-Jul-2018 02:53:51	Instrument ID:	A8_N		
Lims ID:	320-40571-A-15-A	Lab Sample ID:	320-40571-15		
Client ID:	NF23-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	17	Worklist Smp#:	16
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

70 Perfluoropentanesulfonic acid, CAS: 2706-91-4

Signal: 1

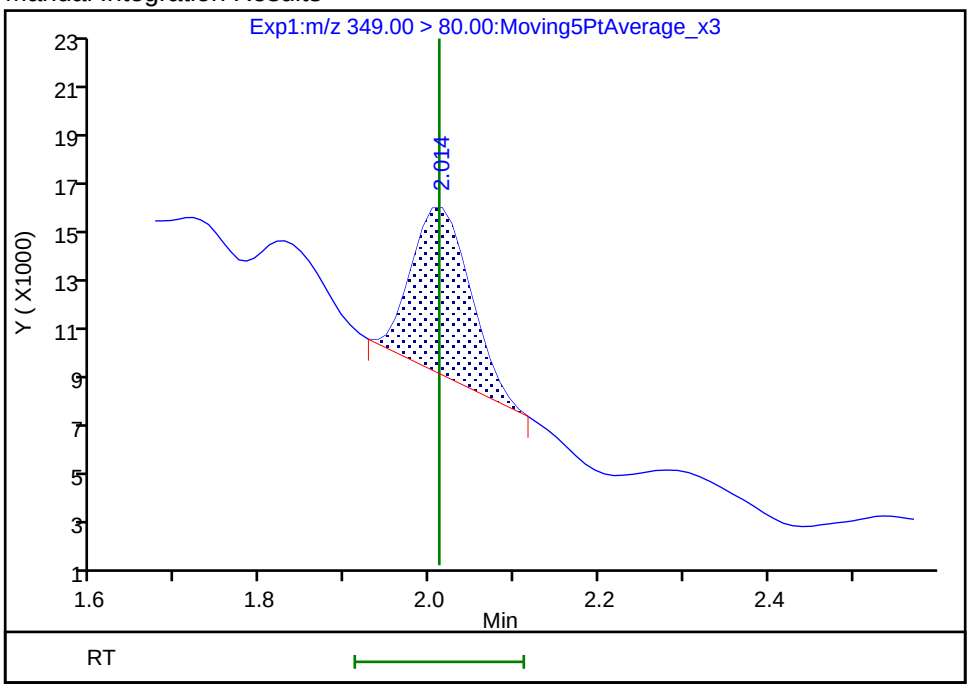
Processing Integration Results

RT: 2.01
Area: 113678
Amount: 0.039929
Amount Units: ng/ml



Manual Integration Results

RT: 2.01
Area: 32755
Amount: 0.011505
Amount Units: ng/ml



Reviewer: mongkols, 09-Jul-2018 14:14:56

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

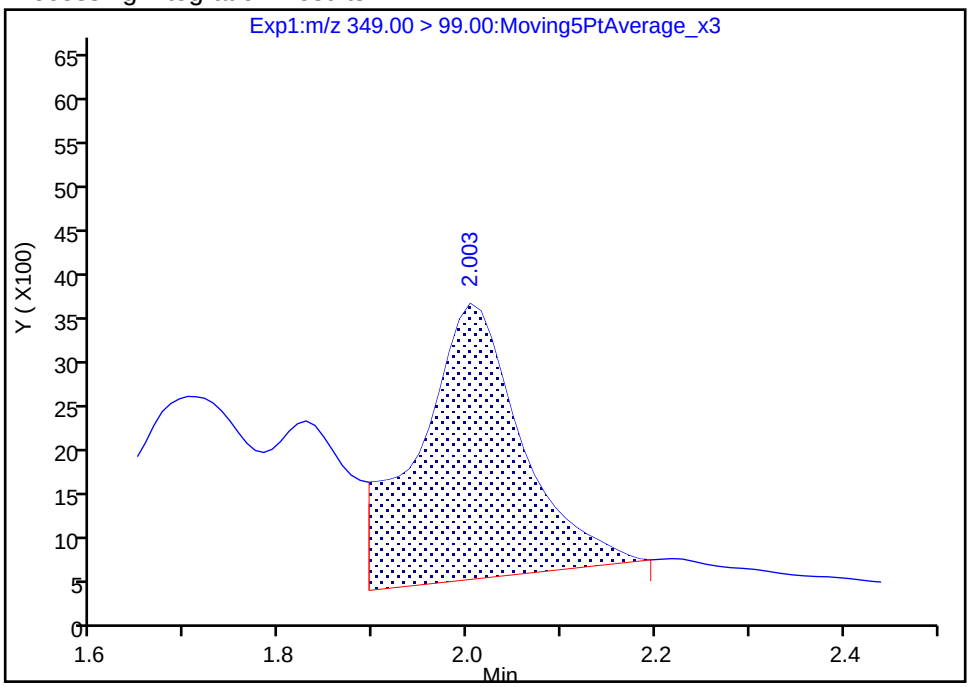
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\2018.07.06LLC_028.d				
Injection Date:	07-Jul-2018 02:53:51	Instrument ID:	A8_N		
Lims ID:	320-40571-A-15-A	Lab Sample ID:	320-40571-15		
Client ID:	NF23-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	17	Worklist Smp#:	16
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

70 Perfluoropentanesulfonic acid, CAS: 2706-91-4

Signal: 2

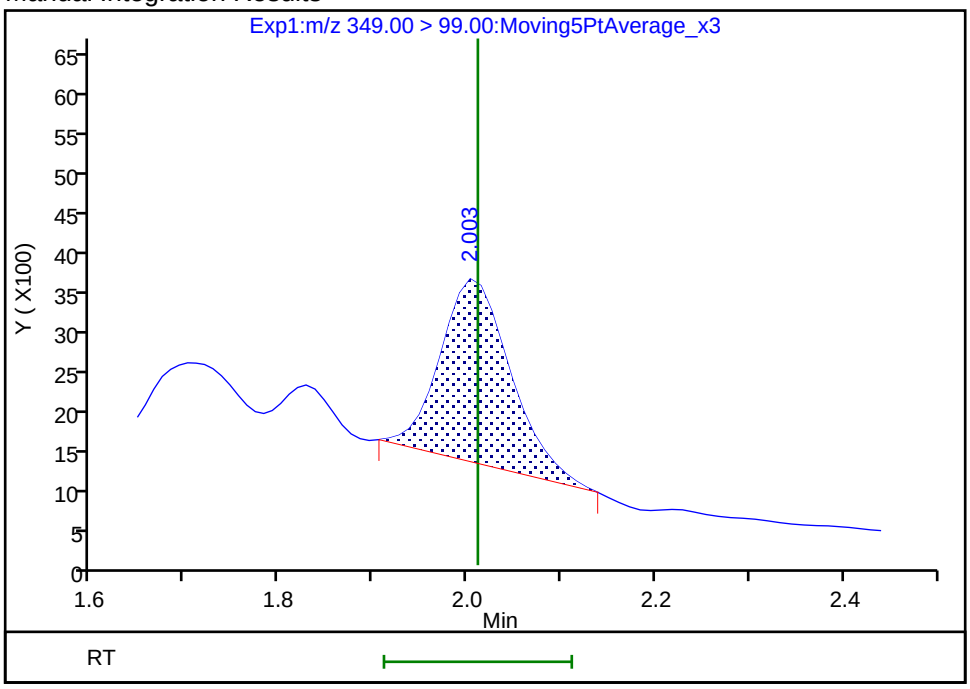
Processing Integration Results

RT: 2.00
Area: 23863
Amount: 0.039929
Amount Units: ng/ml



Manual Integration Results

RT: 2.00
Area: 12047
Amount: 0.011505
Amount Units: ng/ml



Reviewer: mongkols, 09-Jul-2018 14:14:59
Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

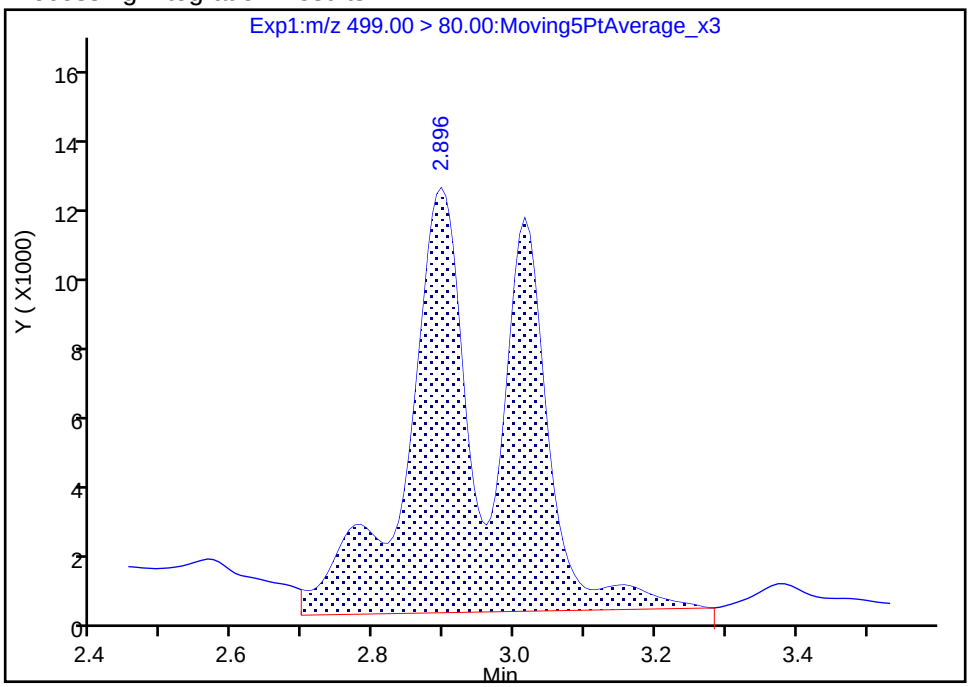
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\2018.07.06LLC_028.d				
Injection Date:	07-Jul-2018 02:53:51	Instrument ID:	A8_N		
Lims ID:	320-40571-A-15-A	Lab Sample ID:	320-40571-15		
Client ID:	NF23-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	17	Worklist Smp#:	16
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

17 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

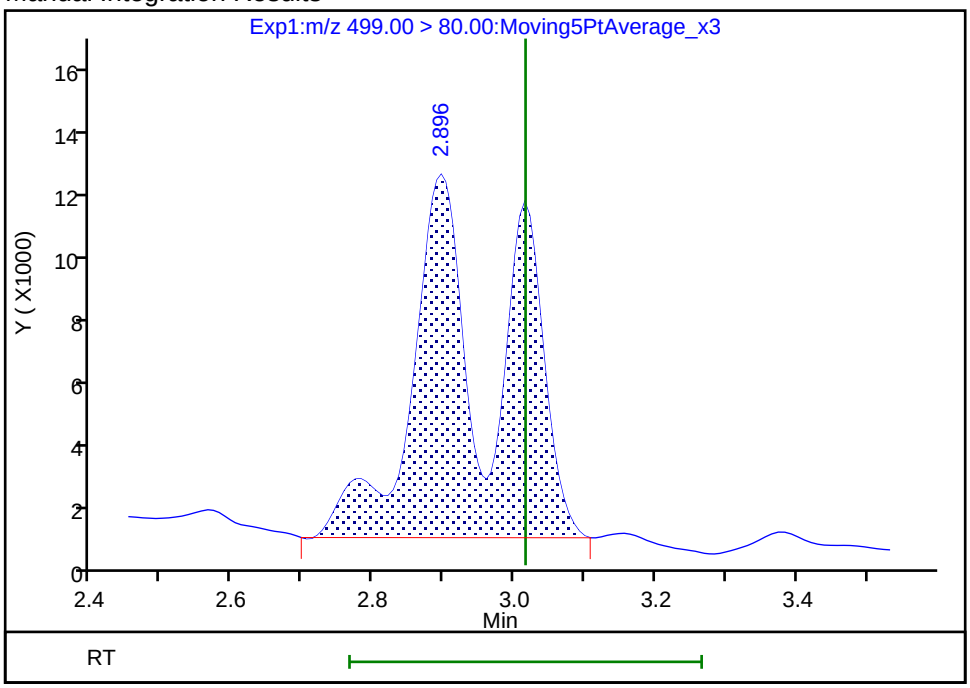
Processing Integration Results

RT: 2.90
Area: 117138
Amount: 0.055679
Amount Units: ng/ml



Manual Integration Results

RT: 2.90
Area: 97199
Amount: 0.046201
Amount Units: ng/ml



Reviewer: mongkols, 09-Jul-2018 14:15:28

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

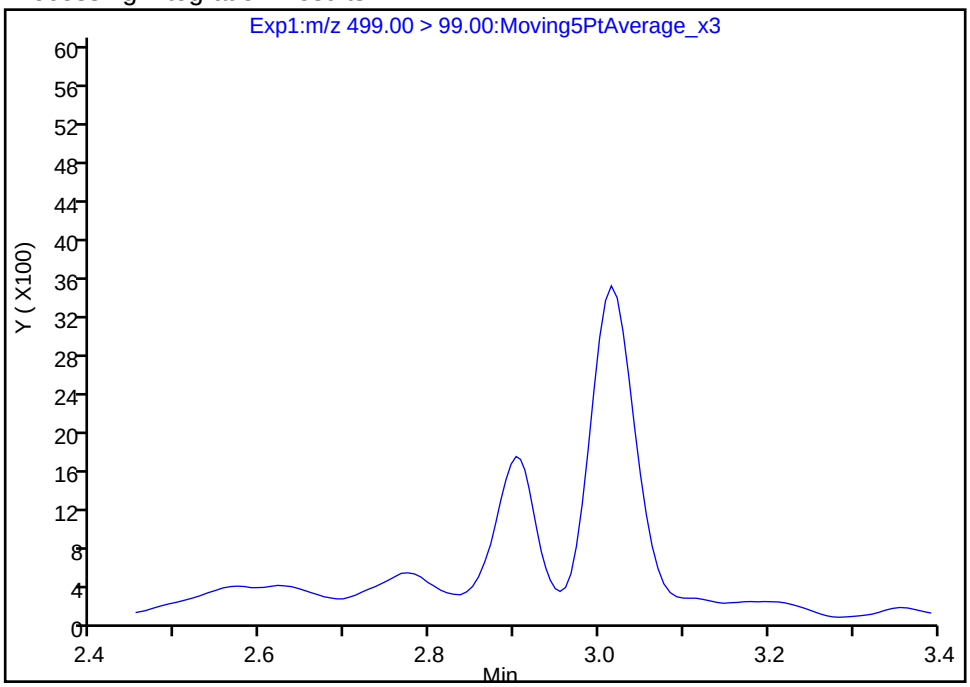
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\2018.07.06LLC_028.d				
Injection Date:	07-Jul-2018 02:53:51	Instrument ID:	A8_N		
Lims ID:	320-40571-A-15-A	Lab Sample ID:	320-40571-15		
Client ID:	NF23-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	17	Worklist Smp#:	16
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

17 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 2

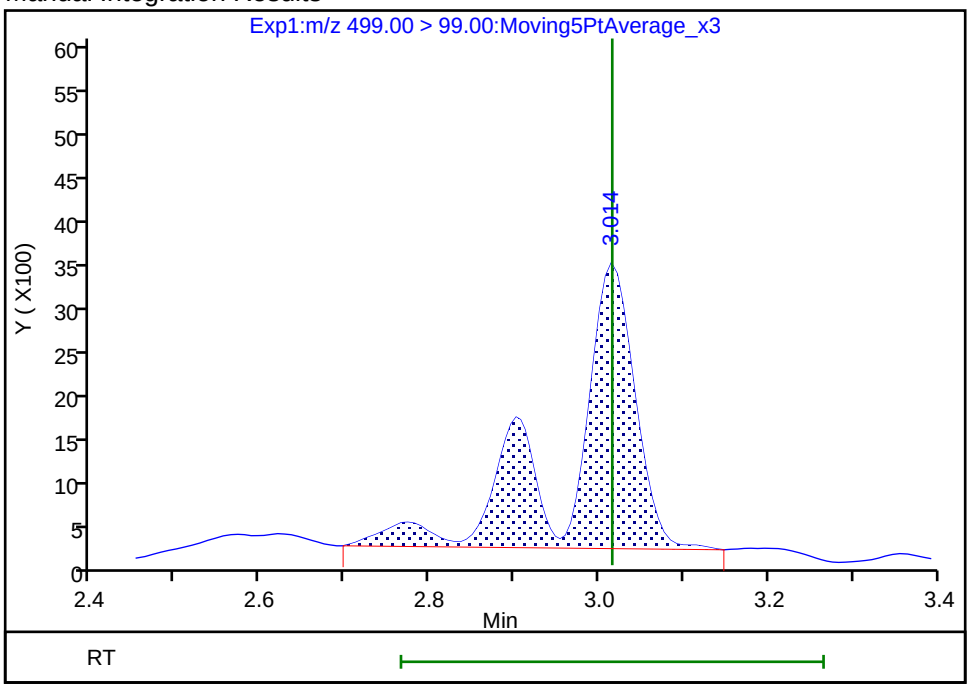
Processing Integration Results

RT: 3.01
Area: 0
Amount: 0.055679
Amount Units: ng/ml



Manual Integration Results

RT: 3.01
Area: 18132
Amount: 0.046201
Amount Units: ng/ml



Reviewer: mongkols, 09-Jul-2018 14:15:35
Audit Action: Manually Integrated Audit Reason: Assign Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF23-SS-01
Lab Sample ID: 320-40571-16
Matrix: Solid
Lab File ID: 2018.07.13LLB_064.d
Analysis Method: 537 (modified)
Date Collected: 06/19/2018 13:40
Extraction Method: SHAKE
Date Extracted: 06/28/2018 05:15
Sample wt/vol: 5.09(g)
Date Analyzed: 07/14/2018 05:07
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture: 18.1
GPC Cleanup:(Y/N) N
Analysis Batch No.: 233997
Units: mg/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	0.000049	J	0.00024	0.000034
2706-90-3	Perfluoropentanoic acid (PFPeA)	ND		0.00024	0.000092
307-24-4	Perfluorohexanoic acid (PFHxA)	ND		0.00024	0.000050
375-85-9	Perfluoroheptanoic acid (PFHpA)	ND		0.00024	0.000035
335-67-1	Perfluorooctanoic acid (PFOA)	ND		0.00024	0.00010
375-95-1	Perfluorononanoic acid (PFNA)	ND		0.00024	0.000043
335-76-2	Perfluorodecanoic acid (PFDA)	ND		0.00024	0.000026
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		0.00024	0.000043
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		0.00024	0.000080
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		0.00024	0.000061
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		0.00024	0.000065
375-73-5	Perfluorobutanesulfonic acid (PFBS)	ND		0.00024	0.000030
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	ND		0.00024	0.000037
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.00024	0.000042
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	ND		0.00060	0.00024
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		0.00024	0.000047
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		0.00024	0.000098
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.0024	0.00047
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.0024	0.00044
27619-97-2	6:2 FTS	ND		0.0024	0.00018
39108-34-4	8:2 FTS	ND		0.0024	0.00030

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF23-SS-01
Lab Sample ID: 320-40571-16
Matrix: Solid
Lab File ID: 2018.07.13LLB_064.d
Analysis Method: 537 (modified)
Date Collected: 06/19/2018 13:40
Extraction Method: SHAKE
Date Extracted: 06/28/2018 05:15
Sample wt/vol: 5.09(g)
Date Analyzed: 07/14/2018 05:07
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture: 18.1
GPC Cleanup:(Y/N) N
Analysis Batch No.: 233997
Units: mg/Kg

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00992	13C4 PFBA	78		25-150
STL01893	13C5 PFPeA	83		25-150
STL00993	13C2 PFHxA	87		25-150
STL01892	13C4-PFHpA	89		25-150
STL00990	13C4 PFOA	86		25-150
STL00995	13C5 PFNA	86		25-150
STL00996	13C2 PFDA	95		25-150
STL00997	13C2 PFUnA	88		25-150
STL00998	13C2 PFDoA	87		25-150
STL02116	13C2-PFTeDA	79		25-150
STL02337	13C3-PFBS	76		25-150
STL00994	18O2 PFHxS	81		25-150
STL00991	13C4 PFOS	75		25-150
STL01056	13C8 FOSA	76		25-150
STL02118	d3-NMeFOSAA	110		25-150
STL02117	d5-NEtFOSAA	101		25-150
STL02279	M2-6:2FTS	80		25-150
STL02280	M2-8:2FTS	89		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\2018.07.13LLB_064.d
Lims ID: 320-40571-A-16-A
Client ID: NF23-SS-01
Sample Type: Client
Inject. Date: 14-Jul-2018 05:07:34 ALS Bottle#: 48 Worklist Smp#: 13
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-40571-a-16-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 16-Jul-2018 14:23:01 Calib Date: 11-Jul-2018 15:38:42
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK023

First Level Reviewer: mongkols Date: 16-Jul-2018 14:23:01

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										M
217.00 > 172.00	1.441	1.441	0.0	0.540	4973449	1.94		77.7	35883	M
2 Perfluorobutyric acid										M
212.90 > 169.00	1.441	1.445	-0.004	1.000	40253	0.0205			8.8	M
D 3 13C5-PFPeA										
267.90 > 223.00	1.721	1.720	0.001	0.645	3689119	2.07		82.9	43220	
D 47 13C3-PFBS										
301.90 > 83.00	1.757	1.765	-0.008	0.659	78829	1.76		75.8	374	
D 7 13C2 PFHxA										
315.00 > 270.00	2.005	2.003	0.002	0.751	4152325	2.16		86.5	48465	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.321	2.316	0.005	1.000	9548	0.005215			13.6	
363.00 > 169.00	2.334	2.316	0.018	1.006	6889		1.39(1.13-3.40)		49.9	
D 9 13C4-PFHpA										
367.00 > 322.00	2.321	2.319	0.002	0.870	3957284	2.24		89.5	44497	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.334	2.329	0.005	1.000	16390	0.007059			85.5	
399.00 > 99.00	2.334	2.329	0.005	1.000	4151		3.95(1.50-4.49)		15.7	
D 11 18O2 PFHxS										
403.00 > 84.00	2.334	2.332	0.002	0.875	4783537	1.91		80.7	62717	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.636	2.643	-0.007	0.997	4049	0.008584			15.9	
D 12 M2-6:2FTS										
429.00 > 81.00	2.644	2.644	0.0	0.991	716068	1.89		79.5	6492	
* 62 13C2-PFOA										
415.00 > 370.00	2.667	2.666	0.001		4719119	2.50			42978	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										
413.00 > 369.00	2.667	2.666	0.001	1.000	39493	0.0207			19.2	
413.00 > 169.00	2.667	2.666	0.001	1.000	27064		1.46(0.84-2.52)		118	
D 14 13C4 PFOA										
417.00 > 372.00	2.667	2.667	0.0	1.000	3880602	2.15		86.0	44904	
D 18 13C4 PFOS										
503.00 > 80.00	3.029	3.027	0.002	1.135	3274207	1.78		74.5	48737	
17 Perfluorooctane sulfonic acid										M
499.00 > 80.00	3.029	3.029	0.0	1.000	28172	0.0181			226	M
499.00 > 99.00	3.029	3.029	0.0	1.000	5906		4.77(2.31-6.93)		36.5	M
20 Perfluorononanoic acid										
463.00 > 419.00	3.029	3.029	0.0	1.000	19739	0.0128			27.4	
463.00 > 169.00	3.022	3.029	-0.007	0.998	3833		5.15(1.90-5.69)		41.7	
D 19 13C5 PFNA										
468.00 > 423.00	3.029	3.034	-0.005	1.135	3469199	2.15		86.0	53566	
D 21 13C8 FOSA										
506.00 > 78.00	3.366	3.379	-0.013	1.262	5070844	1.91		76.5	54261	
D 26 M2-8:2FTS										
529.00 > 81.00	3.366	3.379	-0.013	1.262	1177476	2.12		88.6	9183	
D 23 13C2 PFDA										
515.00 > 470.00	3.385	3.389	-0.004	1.269	3360544	2.37		94.9	47676	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.534	3.538	-0.004	1.325	1597053	2.75		110	31975	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.694	3.708	-0.014	1.385	1495257	2.51		101	5683	
D 30 13C2 PFUnA										
565.00 > 520.00	3.705	3.708	-0.003	1.389	2612000	2.21		88.3	45495	
31 Perfluoroundecanoic acid										R
563.00 > 519.00	3.705	3.716	-0.011	1.000	8576	0.0100			19.5	R
563.00 > 169.00	3.705	3.716	-0.011	1.000	1196		7.17(2.12-6.36)		43.2	
D 36 13C2 PFDoA										
615.00 > 570.00	3.995	3.999	-0.004	1.498	2675354	2.18		87.3	20492	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.488	4.501	-0.013	1.683	2496958	1.96		78.5	12845	

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Review Flags

M - Manually Integrated

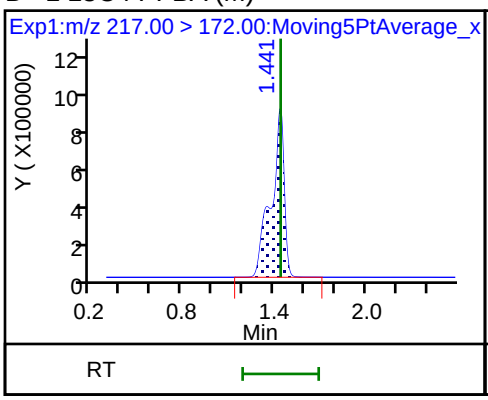
Report Date: 16-Jul-2018 14:23:01 Chrom Revision: 2.2 07-Jun-2018 07:41:54

TestAmerica Sacramento

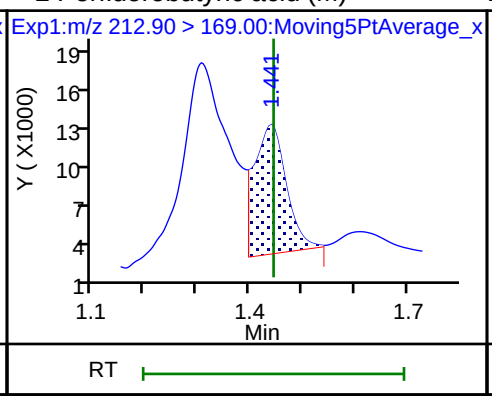
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\2018.07.13LLB_064.d

Injection Date:	14-Jul-2018 05:07:34	Instrument ID:	A8_N		
Lims ID:	320-40571-A-16-A	Lab Sample ID:	320-40571-16		
Client ID:	NF23-SS-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	48	Worklist Smp#:	13
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		

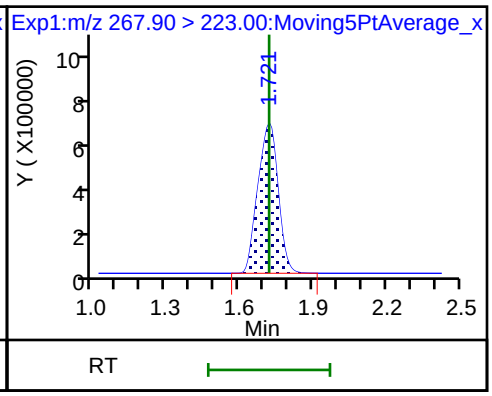
D 1 13C4 PFBA (M)



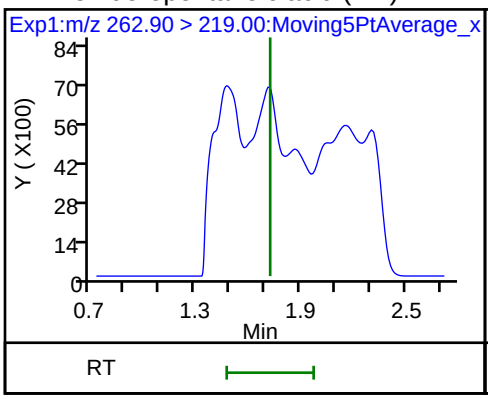
2 Perfluorobutyric acid (M)



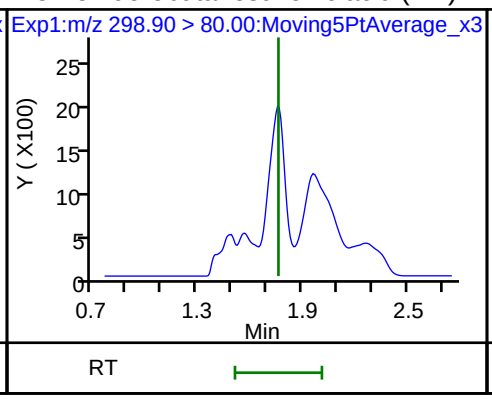
D 3 13C5-PFPeA



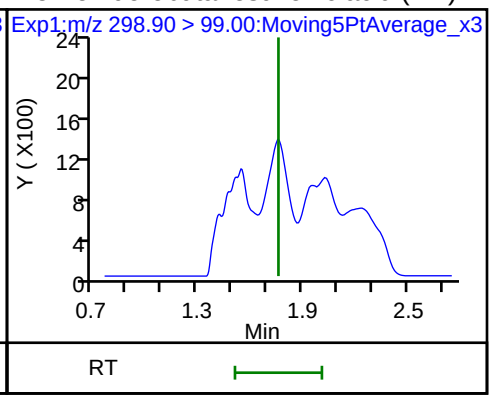
4 Perfluoropentanoic acid (ND)



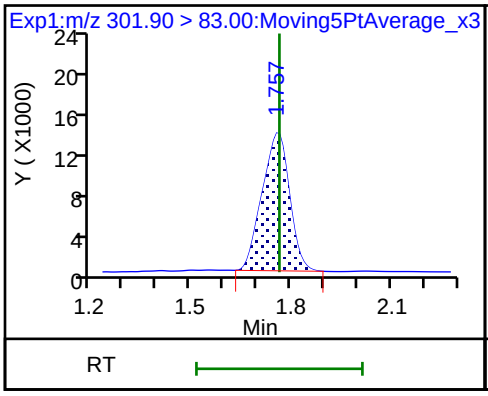
5 Perfluorobutanesulfonic acid (ND)



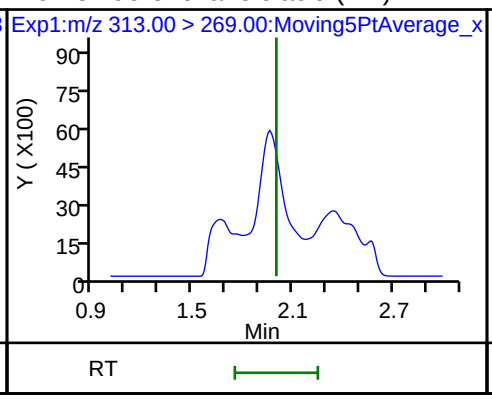
5 Perfluorobutanesulfonic acid (ND)



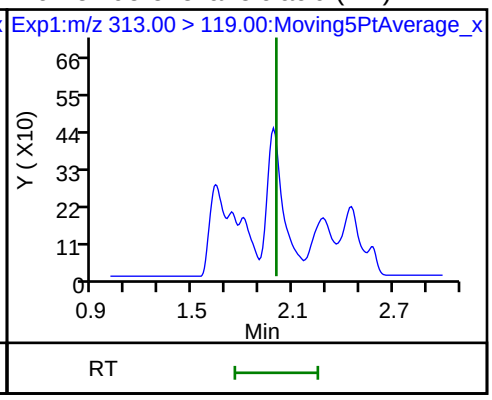
D 47 13C3-PFBS



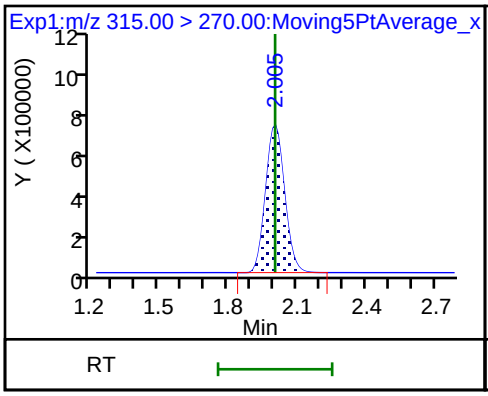
6 Perfluorohexanoic acid (ND)



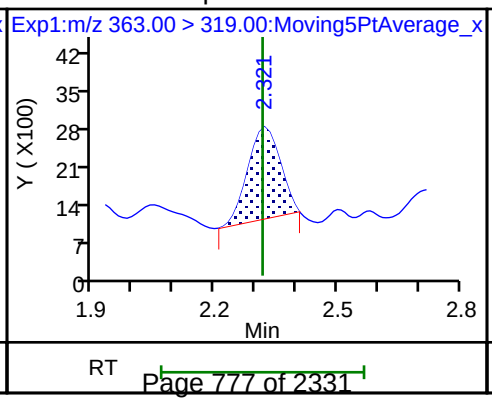
6 Perfluorohexanoic acid (ND)



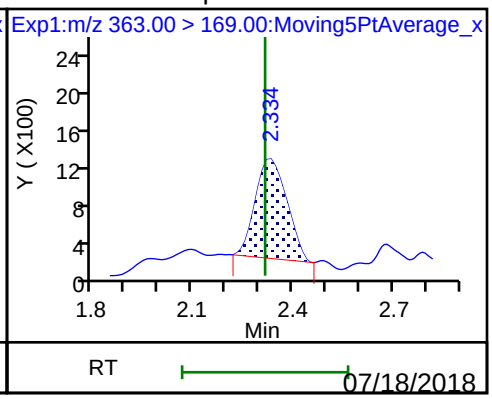
D 7 13C2 PFHxA



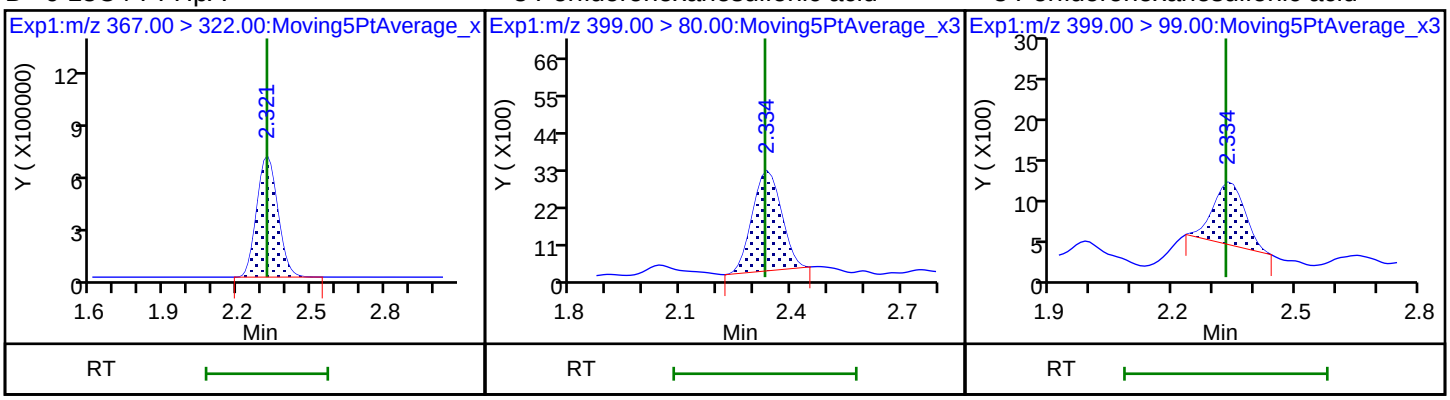
10 Perfluoroheptanoic acid



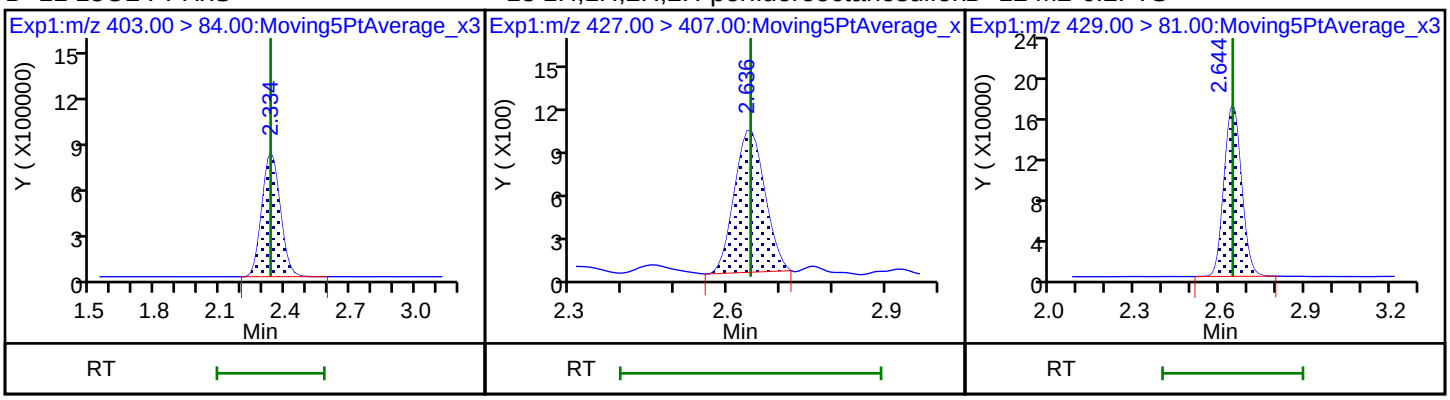
10 Perfluoroheptanoic acid



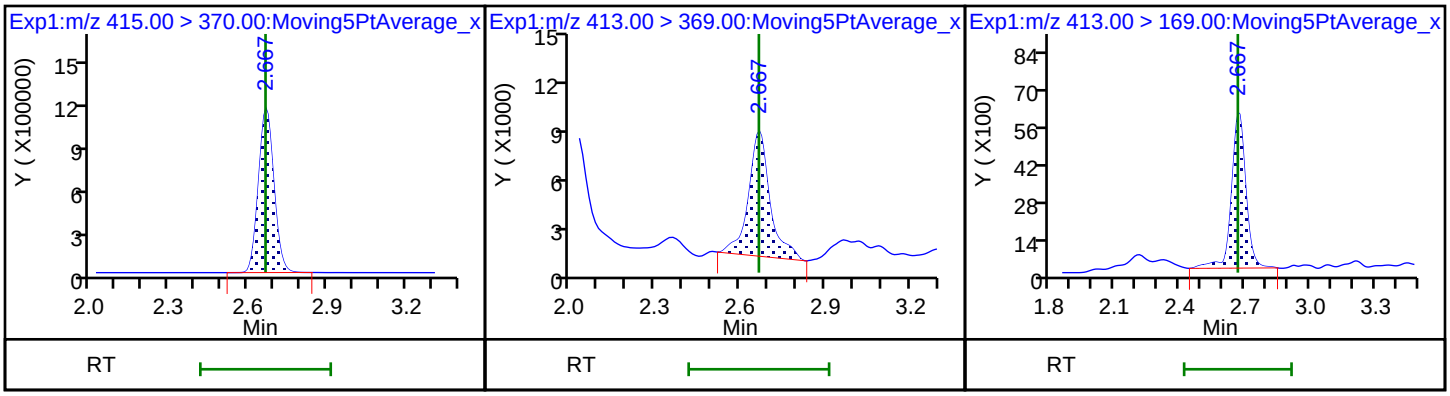
D 9 13C4-PFHpA | 8 Perfluorohexanesulfonic acid | 8 Perfluorohexanesulfonic acid



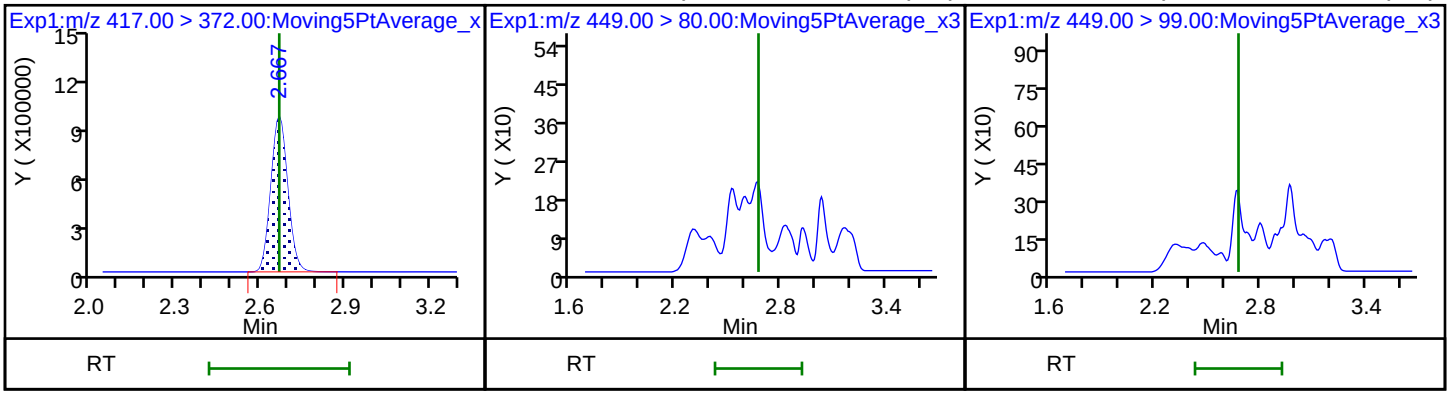
D 11 18O2 PFHxS | 13 1H,1H,2H,2H-perfluorooctanesulfon | D 12 M2-6:2FTS



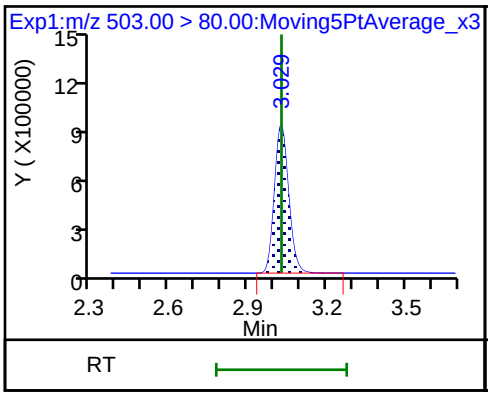
* 62 13C2-PFOA | 15 Perfluorooctanoic acid | 15 Perfluorooctanoic acid



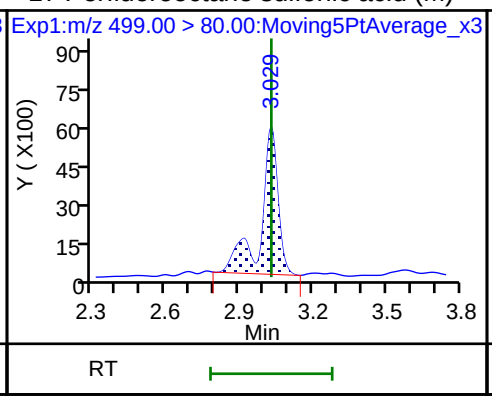
D 14 13C4 PFOA | 16 Perfluoroheptanesulfonic acid (ND) | 16 Perfluoroheptanesulfonic acid (ND)



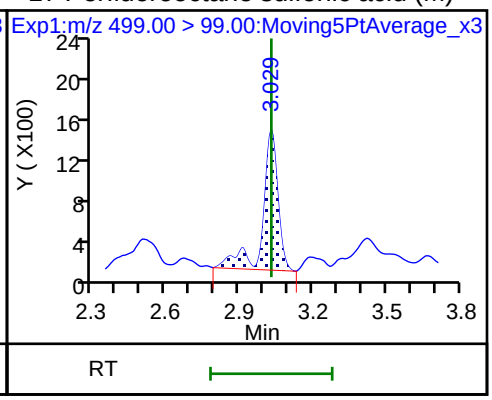
D 18 13C4 PFOS



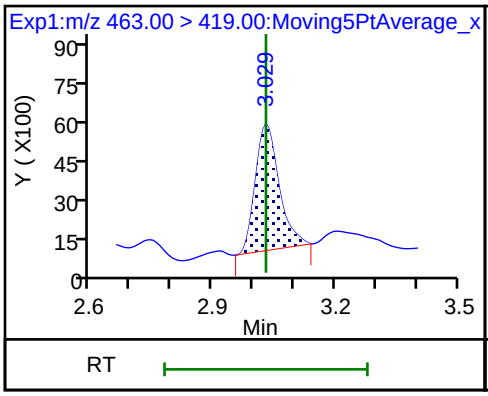
17 Perfluorooctane sulfonic acid (M)



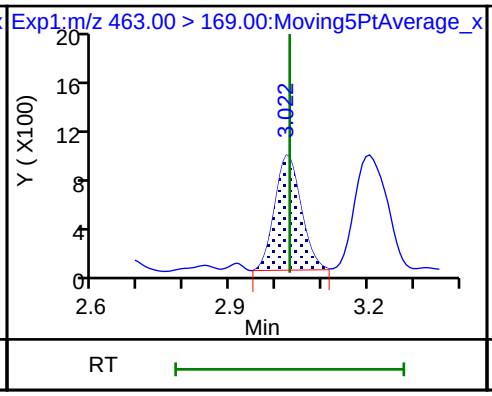
17 Perfluorooctane sulfonic acid (M)



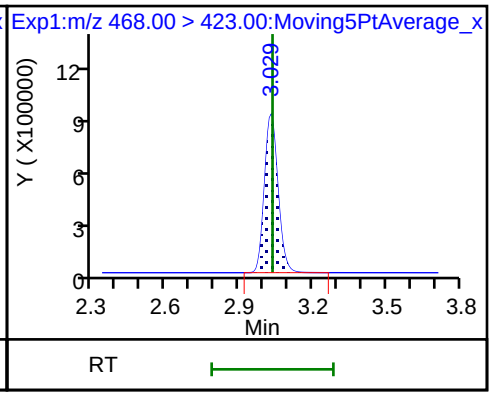
20 Perfluorononanoic acid



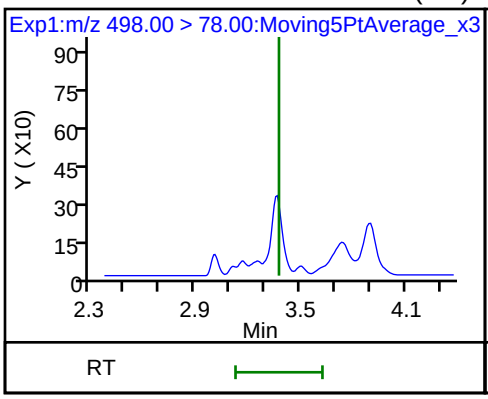
20 Perfluorononanoic acid



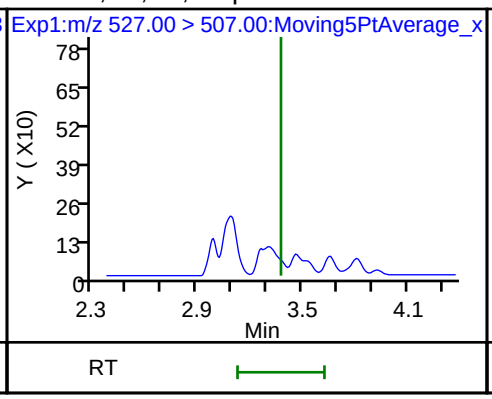
D 19 13C5 PFNA



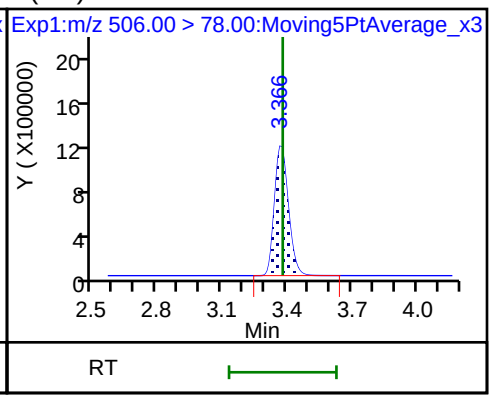
22 Perfluorooctane Sulfonamide (ND)



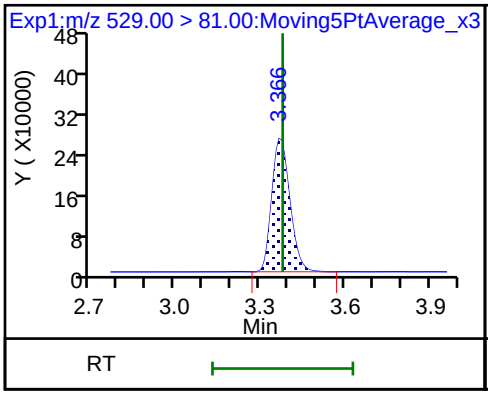
25 1H,1H,2H,2H-perfluorodecanesulfonic acid (ND)



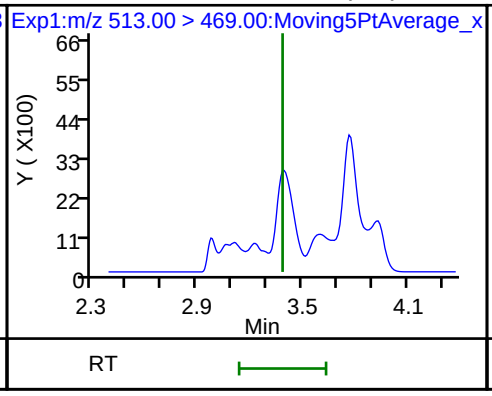
D 21 13C8 FOSA



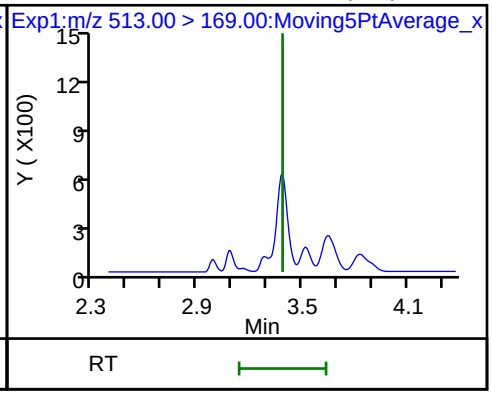
D 26 M2-8:2FTS



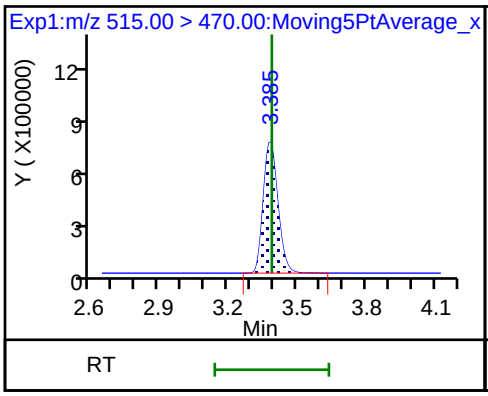
24 Perfluorodecanoic acid (ND)



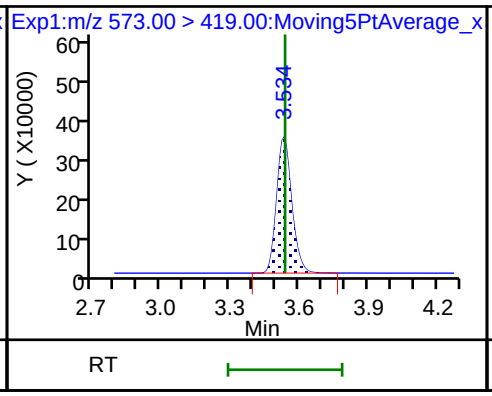
24 Perfluorodecanoic acid (ND)



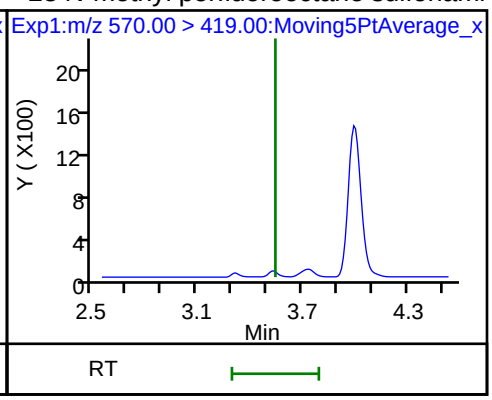
D 23 13C2 PFDA



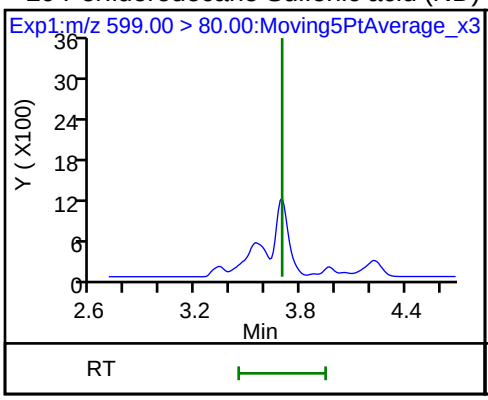
D 27 d3-NMeFOSAA



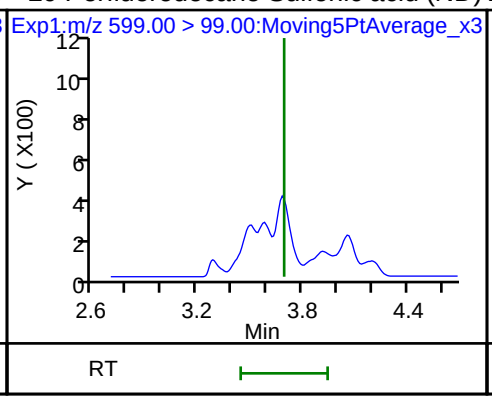
28 N-methyl perfluorooctane sulfonami (ND)



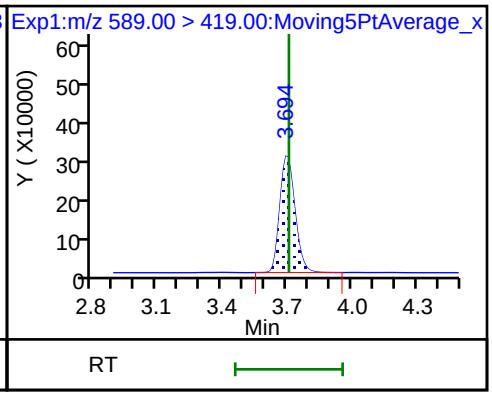
29 Perfluorodecane Sulfonic acid (ND)



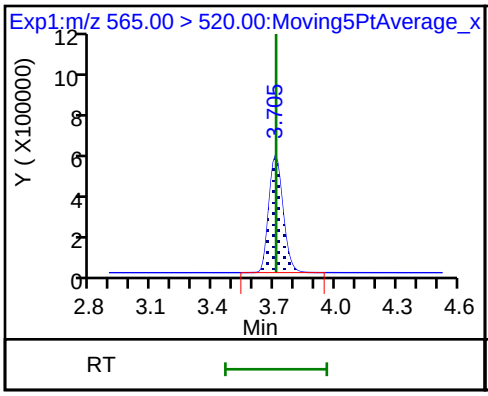
29 Perfluorodecane Sulfonic acid (ND)



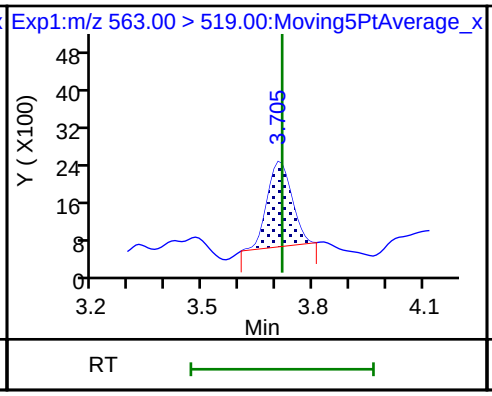
D 32 d5-NEtFOSAA



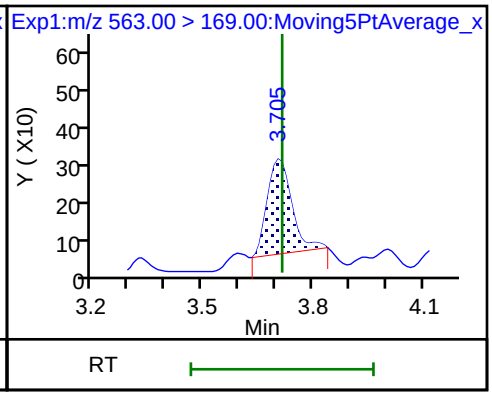
D 30 13C2 PFUnA



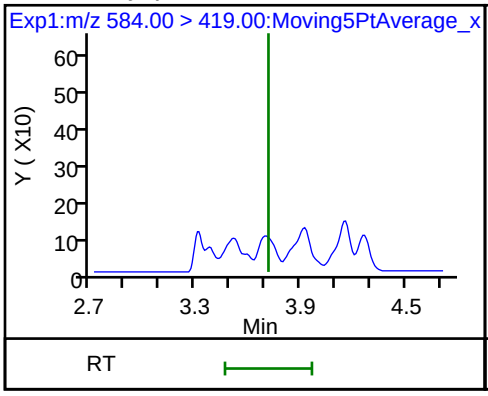
31 Perfluoroundecanoic acid



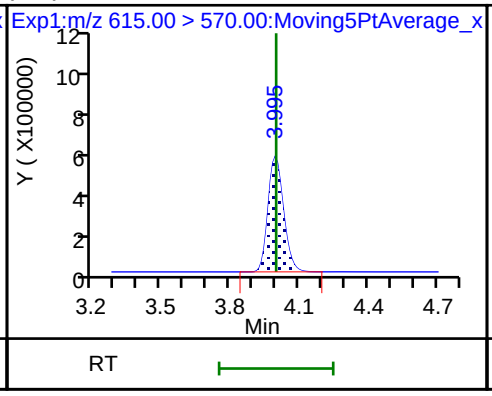
31 Perfluoroundecanoic acid



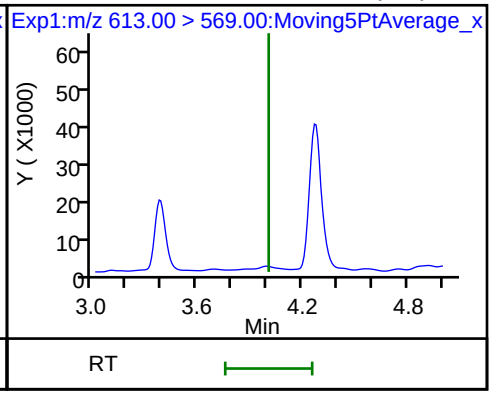
33 N-ethyl perfluorooctane sulfonamid (ND)



D 36 13C2 PFDoA

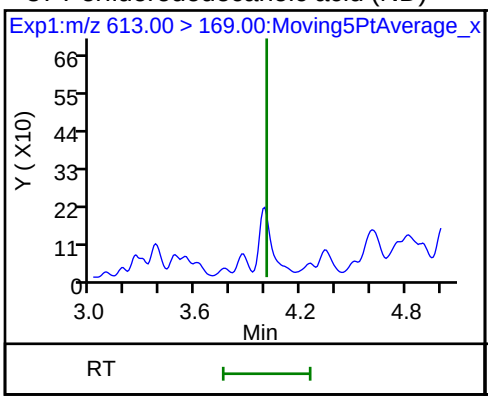


37 Perfluorododecanoic acid (ND)

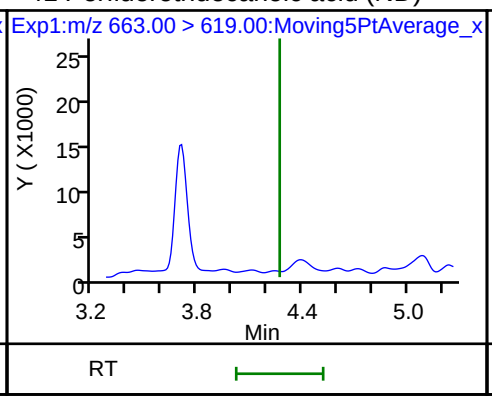


Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\2018.07.13LLB_064.d

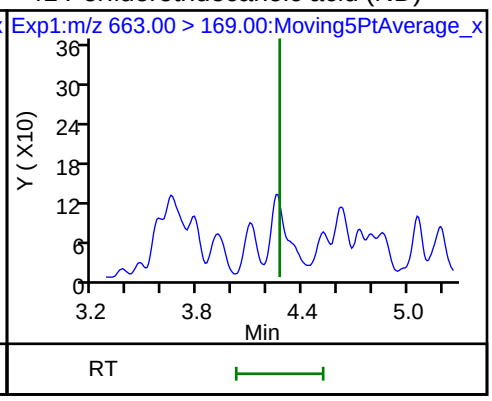
37 Perfluorododecanoic acid (ND)



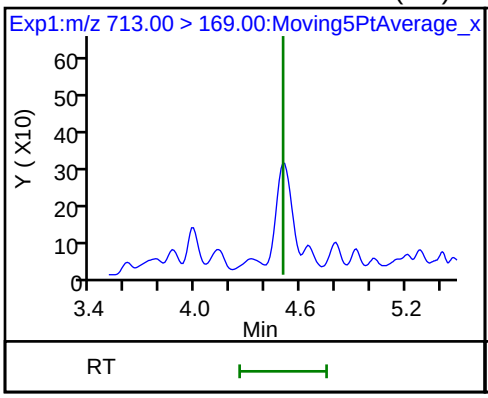
41 Perfluorotridecanoic acid (ND)



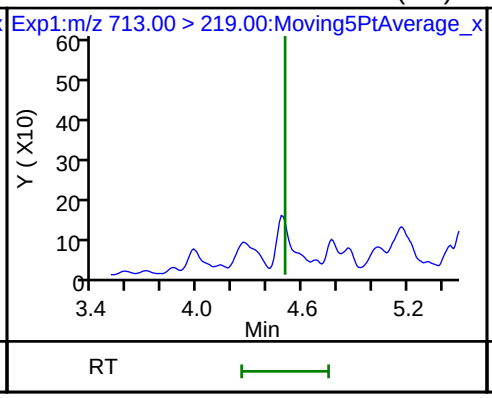
41 Perfluorotridecanoic acid (ND)



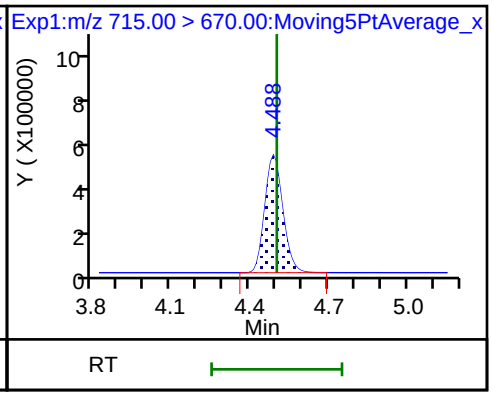
42 Perfluorotetradecanoic acid (ND)



42 Perfluorotetradecanoic acid (ND)



D 43 13C2-PFTeDA



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

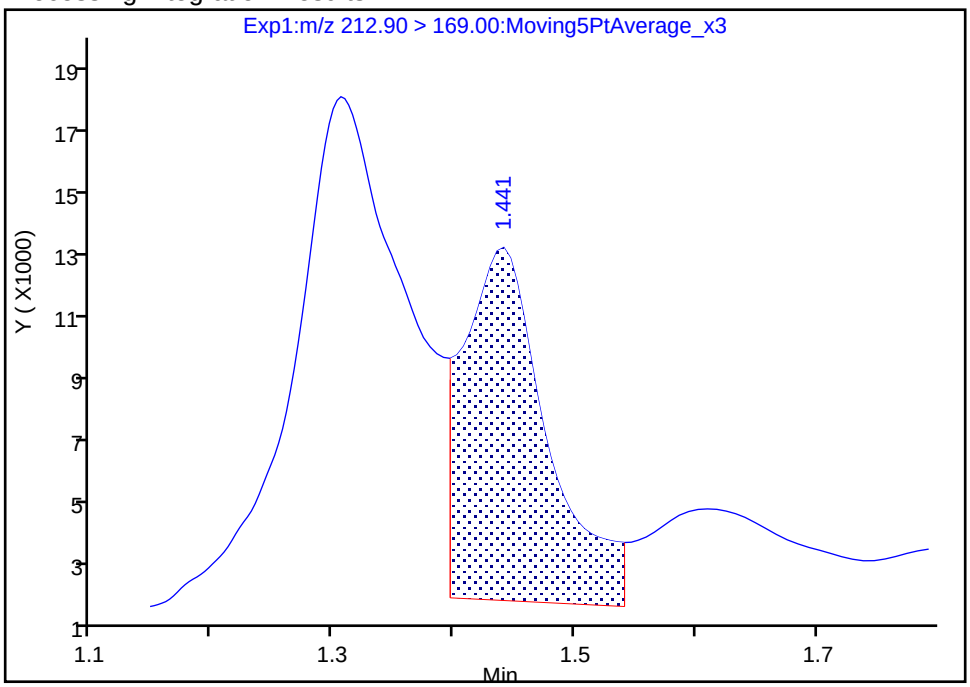
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\2018.07.13LLB_064.d				
Injection Date:	14-Jul-2018 05:07:34	Instrument ID:	A8_N		
Lims ID:	320-40571-A-16-A	Lab Sample ID:	320-40571-16		
Client ID:	NF23-SS-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	48	Worklist Smp#:	13
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

2 Perfluorobutyric acid, CAS: 375-22-4

Signal: 1

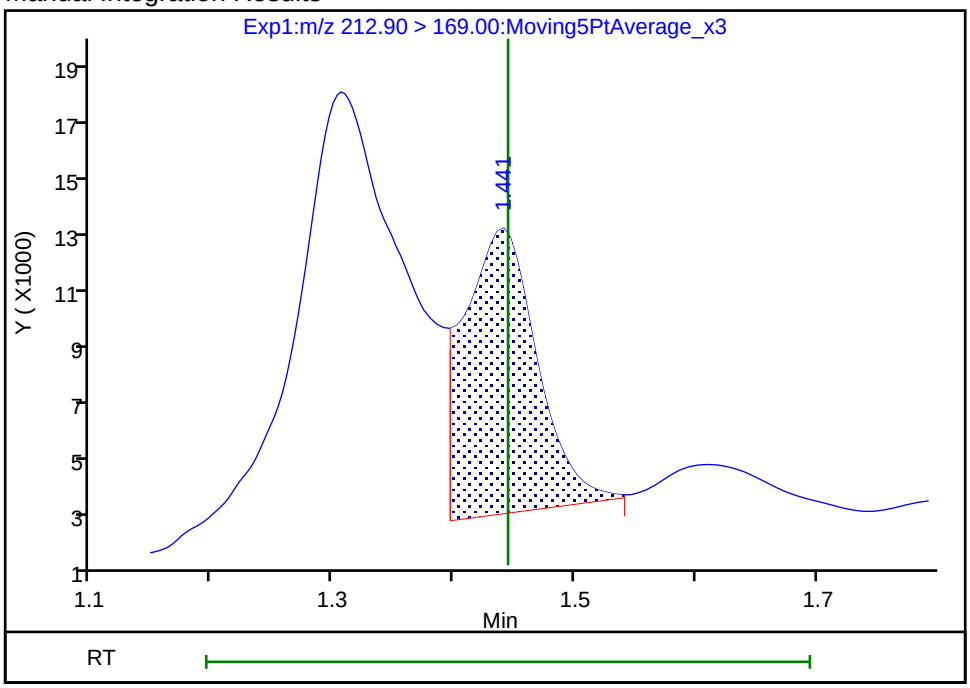
Processing Integration Results

RT: 1.44
Area: 51845
Amount: 0.026442
Amount Units: ng/ml



Manual Integration Results

RT: 1.44
Area: 40253
Amount: 0.020530
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 14:22:03

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

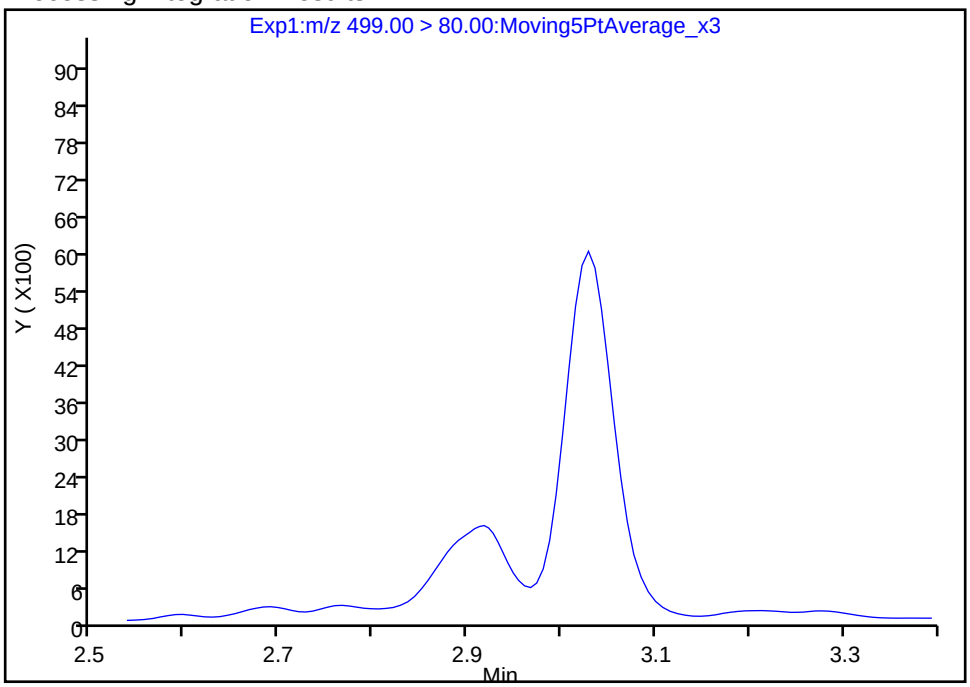
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\2018.07.13LLB_064.d				
Injection Date:	14-Jul-2018 05:07:34	Instrument ID:	A8_N		
Lims ID:	320-40571-A-16-A	Lab Sample ID:	320-40571-16		
Client ID:	NF23-SS-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	48	Worklist Smp#:	13
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

17 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

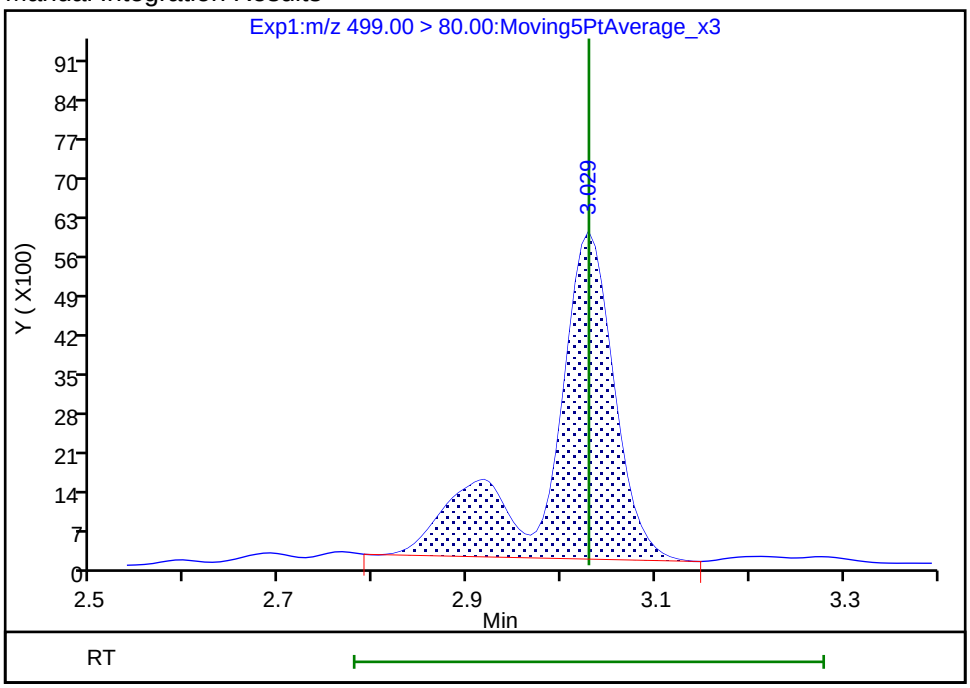
Processing Integration Results

Not Detected
Expected RT: 3.03



Manual Integration Results

RT: 3.03
Area: 28172
Amount: 0.018148
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 14:22:29
Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

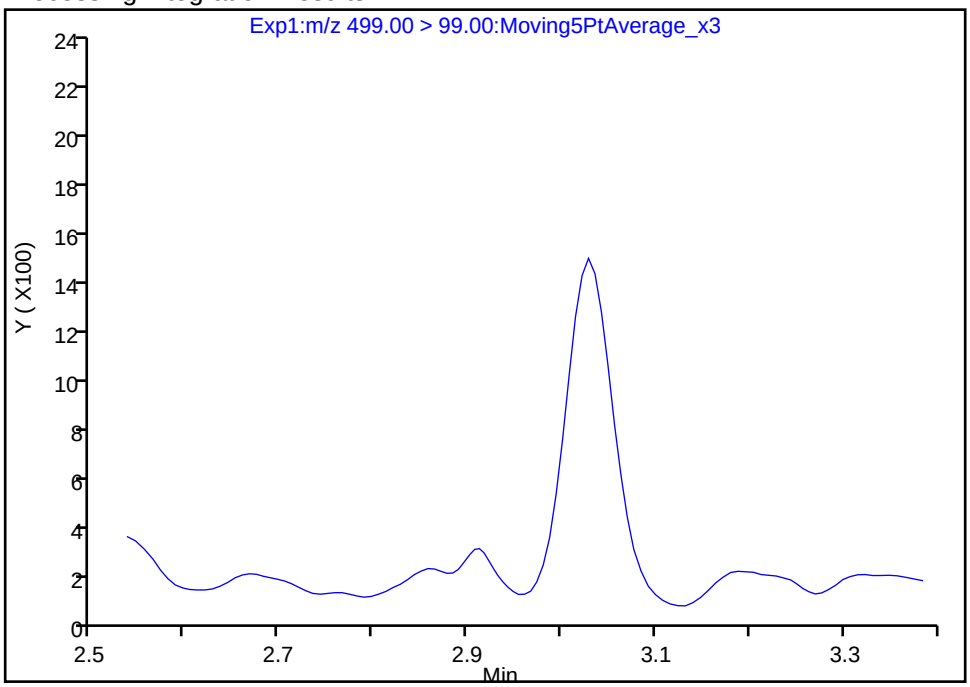
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\2018.07.13LLB_064.d				
Injection Date:	14-Jul-2018 05:07:34	Instrument ID:	A8_N		
Lims ID:	320-40571-A-16-A	Lab Sample ID:	320-40571-16		
Client ID:	NF23-SS-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	48	Worklist Smp#:	13
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

17 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 2

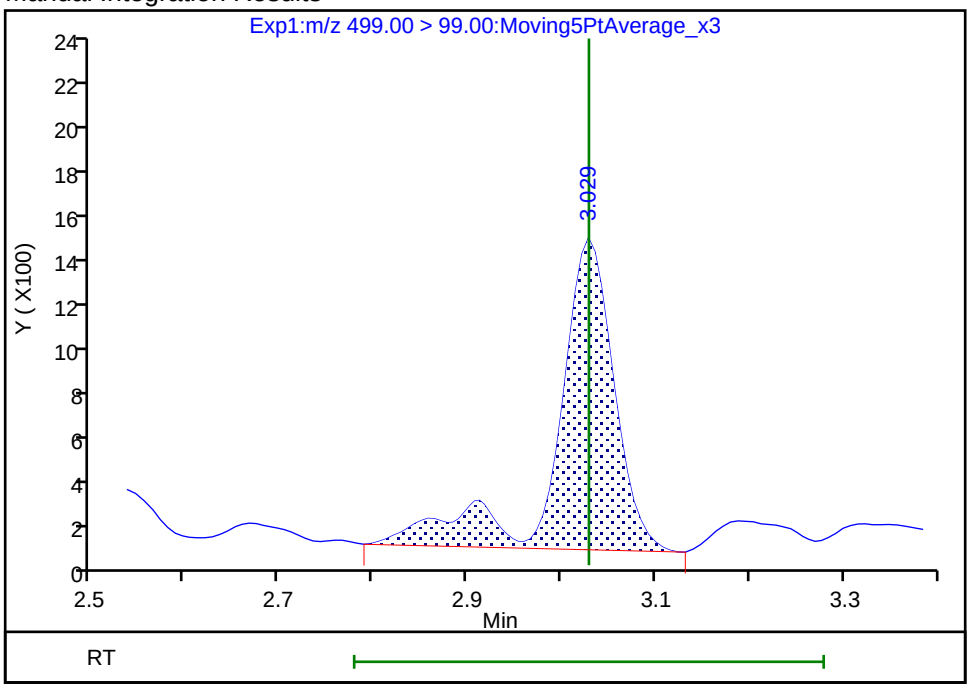
Not Detected
Expected RT: 3.03

Processing Integration Results



RT: 3.03
Area: 5906
Amount: 0.018148
Amount Units: ng/ml

Manual Integration Results



Reviewer: mongkols, 16-Jul-2018 14:22:40
Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

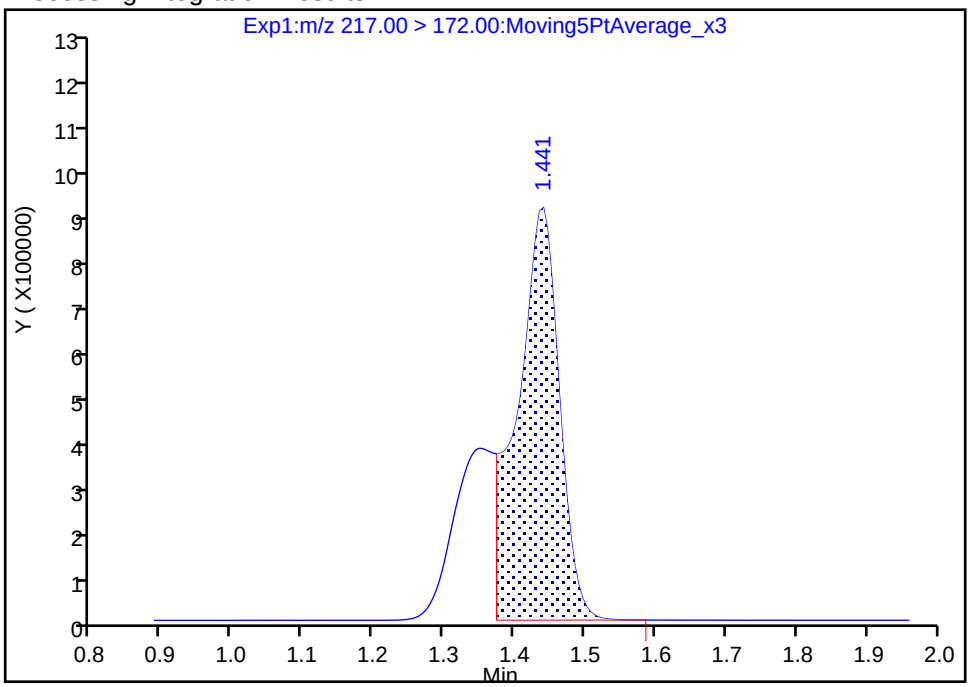
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\2018.07.13LLB_064.d				
Injection Date:	14-Jul-2018 05:07:34	Instrument ID:	A8_N		
Lims ID:	320-40571-A-16-A	Lab Sample ID:	320-40571-16		
Client ID:	NF23-SS-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	48	Worklist Smp#:	13
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

D 1 13C4 PFBA, CAS: STL00992

Signal: 1

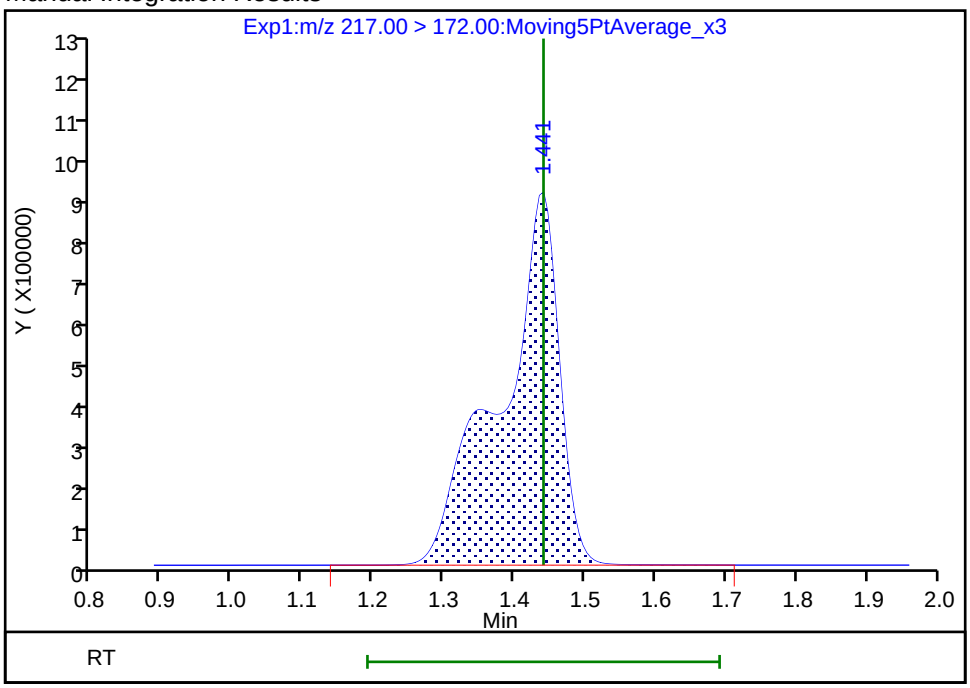
Processing Integration Results

RT: 1.44
Area: 3524086
Amount: 1.376876
Amount Units: ng/ml



Manual Integration Results

RT: 1.44
Area: 4973449
Amount: 1.943149
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 14:21:41

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF24-GW-01
Lab Sample ID: 320-40571-17
Matrix: Water
Lab File ID: 2018.07.13LLC_009.d
Analysis Method: 537 (modified)
Date Collected: 06/20/2018 10:10
Extraction Method: 3535
Date Extracted: 07/02/2018 14:58
Sample wt/vol: 268.8(mL)
Date Analyzed: 07/13/2018 21:09
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 233989
Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	0.0036	B	0.0019	0.00033
2706-90-3	Perfluoropentanoic acid (PFPeA)	ND		0.0019	0.00046
307-24-4	Perfluorohexanoic acid (PFHxA)	ND		0.0019	0.00054
375-85-9	Perfluoroheptanoic acid (PFHpA)	ND		0.0019	0.00023
335-67-1	Perfluorooctanoic acid (PFOA)	0.0012	J	0.0019	0.00079
375-95-1	Perfluorononanoic acid (PFNA)	0.00074	J	0.0019	0.00025
335-76-2	Perfluorodecanoic acid (PFDA)	ND		0.0019	0.00029
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		0.0019	0.0010
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		0.0019	0.00051
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		0.0019	0.0012
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		0.0019	0.00027
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.0040		0.0019	0.00019
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	ND		0.0019	0.00028
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.00081	J B	0.0019	0.00016
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.0019	0.00018
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.011		0.0019	0.00050
8789-57-2	Perfluorononanesulfonic acid (PFNS)	ND		0.0019	0.00015
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		0.0019	0.00030
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		0.0019	0.00033
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.019	0.0029
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.019	0.0018
757124-72-4	4:2 FTS	ND		0.019	0.0048
27619-97-2	6:2 FTS	0.0028	J	0.019	0.0019
39108-34-4	8:2 FTS	ND		0.019	0.0019

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF24-GW-01
Lab Sample ID: 320-40571-17
Matrix: Water
Lab File ID: 2018.07.13LLC_009.d
Analysis Method: 537 (modified)
Date Collected: 06/20/2018 10:10
Extraction Method: 3535
Date Extracted: 07/02/2018 14:58
Sample wt/vol: 268.8(mL)
Date Analyzed: 07/13/2018 21:09
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 233989
Units: ug/L

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00992	13C4 PFBA	60		25-150
STL01893	13C5 PFPeA	78		25-150
STL00993	13C2 PFHxA	87		25-150
STL01892	13C4-PFHpA	97		25-150
STL00990	13C4 PFOA	99		25-150
STL00995	13C5 PFNA	95		25-150
STL00996	13C2 PFDA	94		25-150
STL00997	13C2 PFUnA	89		25-150
STL00998	13C2 PFDoA	81		25-150
STL02116	13C2-PFTeDA	52		25-150
STL02337	13C3-PFBS	84		25-150
STL00994	18O2 PFHxS	91		25-150
STL00991	13C4 PFOS	90		25-150
STL01056	13C8 FOSA	79		25-150
STL02118	d3-NMeFOSAA	89		25-150
STL02117	d5-NEtFOSAA	87		25-150
STL02279	M2-6:2FTS	134		25-150
STL02280	M2-8:2FTS	89		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\2018.07.13LLC_009.d
Lims ID: 320-40571-A-17-A
Client ID: NF24-GW-01
Sample Type: Client
Inject. Date: 13-Jul-2018 21:09:43 ALS Bottle#: 3 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-40571-a-17-a
Misc. Info.: Plate: 1 Rack: 4
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 16-Jul-2018 12:31:09 Calib Date: 11-Jul-2018 15:38:42
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK023

First Level Reviewer: mongkols Date: 16-Jul-2018 12:31:09

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										M
212.90 > 169.00	1.435	1.433	0.002	1.000	155465	0.0977			23.5	M
D 1 13C4 PFBA										
217.00 > 172.00	1.435	1.445	-0.010	0.538	4035918	1.50		59.9	20539	
D 3 13C5-PFPeA										
267.90 > 223.00	1.719	1.725	-0.006	0.645	3662449	1.95		78.2	20691	
5 Perfluorobutanesulfonic acid										M
298.90 > 80.00	1.764	1.761	0.003	1.000	320182	0.1063			97.3	M
298.90 > 99.00	1.764	1.761	0.003	1.000	132834		2.41(1.25-3.74)		124	
D 47 13C3-PFBS										
301.90 > 83.00	1.764	1.762	0.002	0.662	91544	1.94		83.6	158	
D 7 13C2 PFHxA										
315.00 > 270.00	2.002	2.011	-0.009	0.751	4412987	2.18		87.3	51372	
D 9 13C4-PFHpA										
367.00 > 322.00	2.319	2.329	-0.010	0.870	4514209	2.42		96.9	40135	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.332	2.329	0.003	1.000	59917	0.0217			20.3	
399.00 > 99.00	2.332	2.329	0.003	1.000	16162		3.71(1.50-4.49)		18.8	
D 11 18O2 PFHxS										
403.00 > 84.00	2.332	2.342	-0.010	0.874	5693043	2.16		91.2	42509	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.643	2.634	0.009	1.000	61965	0.0741			372	
D 12 M2-6:2FTS										
429.00 > 81.00	2.643	2.651	-0.008	0.991	1269685	3.18		134	3737	
* 62 13C2-PFOA										
415.00 > 370.00	2.667	2.658	0.009		4970689	2.50			41593	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.667	2.658	0.009	1.000	74691	0.0321			15.5	M
413.00 > 169.00	2.667	2.658	0.009	1.000	54730		1.36(0.84-2.52)		199	
D 14 13C4 PFOA										
417.00 > 372.00	2.667	2.673	-0.006	1.000	4718535	2.48		99.3	72354	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.028	3.018	0.010	1.000	563486	0.2860			780	
499.00 > 99.00	3.028	3.018	0.010	1.000	112509		5.01(2.31-6.93)		597	
20 Perfluorononanoic acid										M
463.00 > 419.00	3.028	3.025	0.003	1.000	35972	0.0200			29.2	M
463.00 > 169.00	3.028	3.025	0.003	1.000	7597		4.74(1.90-5.69)		120	
D 18 13C4 PFOS										
503.00 > 80.00	3.028	3.036	-0.008	1.135	4155728	2.15		89.8	13727	
D 19 13C5 PFNA										
468.00 > 423.00	3.028	3.036	-0.008	1.135	4055483	2.39		95.5	42593	
D 21 13C8 FOSA										
506.00 > 78.00	3.374	3.376	-0.002	1.265	5523756	1.98		79.1	42450	
D 26 M2-8:2FTS										
529.00 > 81.00	3.374	3.376	-0.002	1.265	1247017	2.13		89.1	5667	
D 23 13C2 PFDA										
515.00 > 470.00	3.383	3.385	-0.002	1.269	3513664	2.36		94.2	44962	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.533	3.544	-0.011	1.325	1361320	2.23		89.1	25500	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.711	3.698	0.013	1.003	5918	0.0123			114	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.700	3.705	-0.005	1.388	1366137	2.18		87.2	4573	
D 30 13C2 PFUnA										
565.00 > 520.00	3.700	3.715	-0.015	1.388	2779675	2.23		89.3	57428	
D 36 13C2 PFDoA										
615.00 > 570.00	3.999	4.005	-0.006	1.500	2601125	2.01		80.6	22270	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.490	4.500	-0.010	1.684	1740170	1.30		51.9	13145	

QC Flag Legend

Review Flags

M - Manually Integrated

Report Date: 16-Jul-2018 12:31:09 Chrom Revision: 2.2 07-Jun-2018 07:41:54

TestAmerica Sacramento

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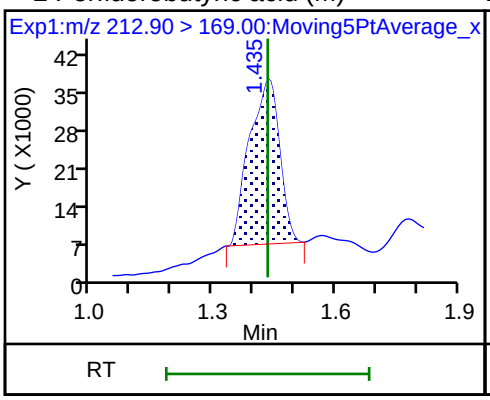
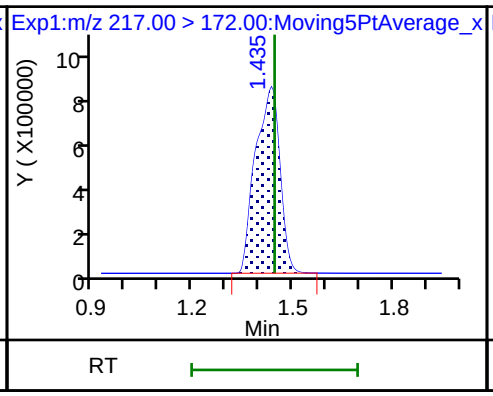
Lims ID:	320-40571-A-17-A	Lab Sample ID:	320-40571-17		
Client ID:	NF24-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	3	Worklist Smp#:	4
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		

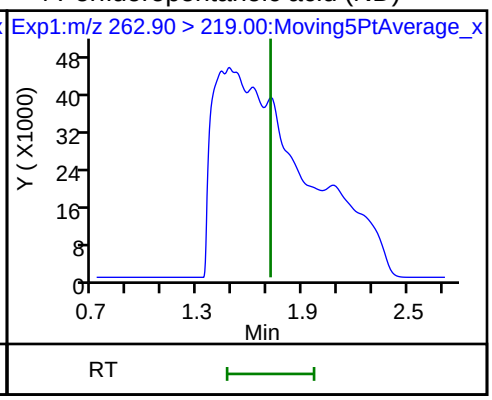
2 Perfluorobutyric acid (M)



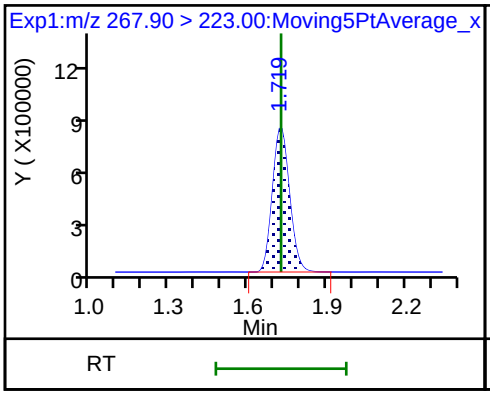
D 1 13C4 PFBA



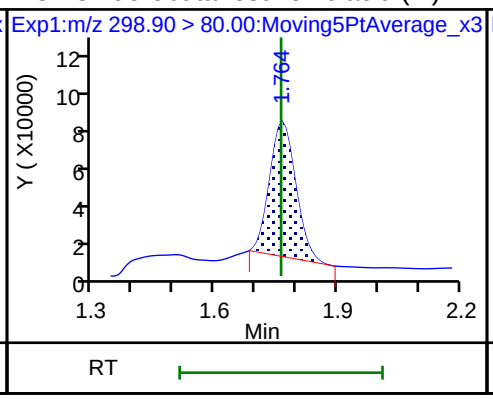
4 Perfluoropentanoic acid (ND)



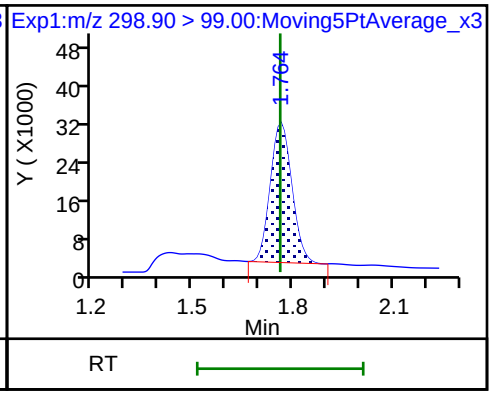
D 3 13C5-PFPeA



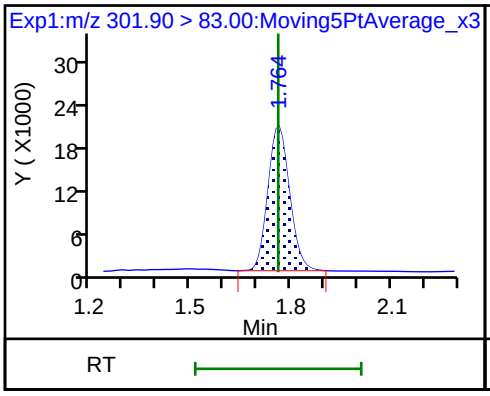
5 Perfluorobutanesulfonic acid (M)



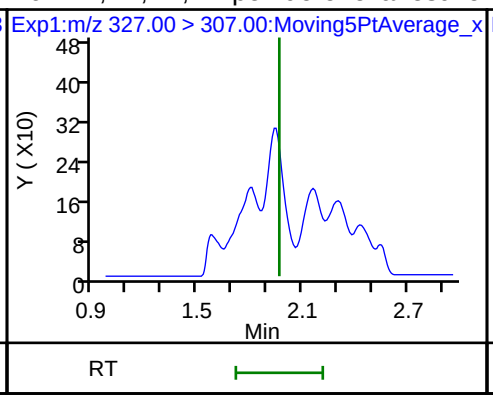
5 Perfluorobutanesulfonic acid



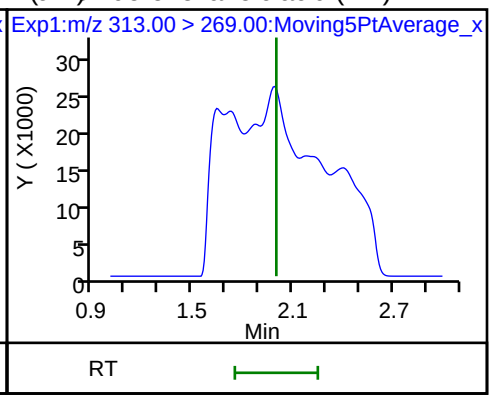
D 47 13C3-PFBS



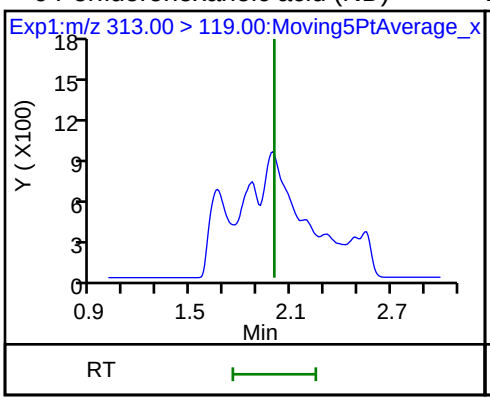
61 1H,1H,2H,2H-perfluorohexanesulfoni (ND)



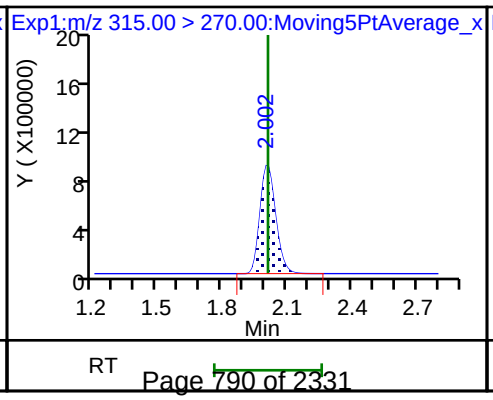
6 Perfluorohexanoic acid (ND)



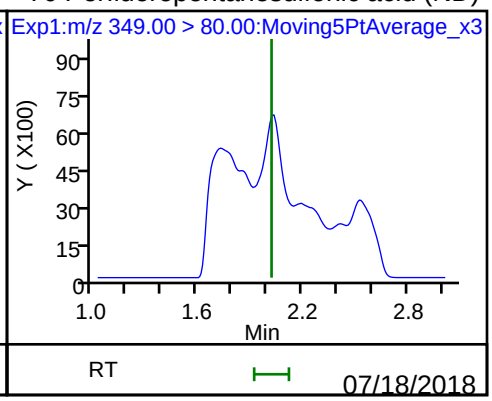
6 Perfluorohexanoic acid (ND)



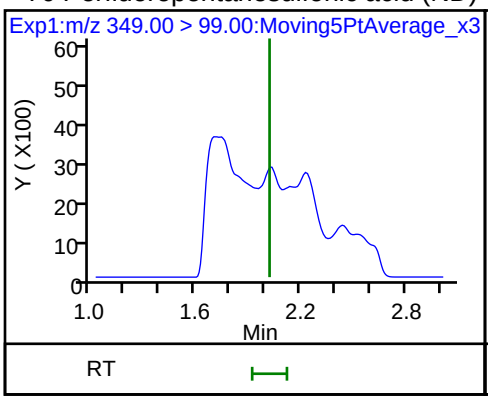
D 7 13C2 PFHxA



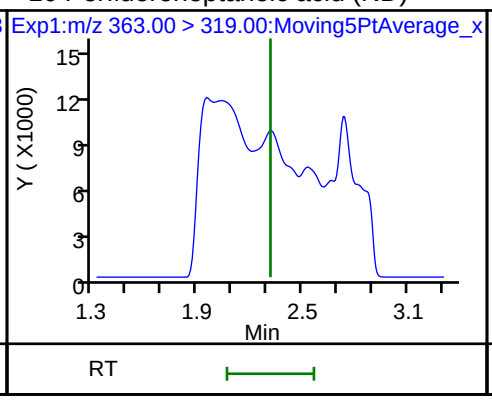
70 Perfluoropentanesulfonic acid (ND)



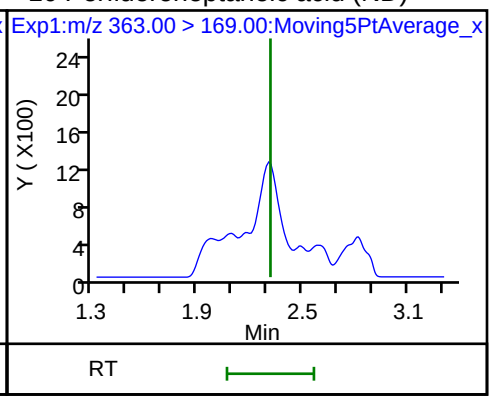
70 Perfluoropentanesulfonic acid (ND)



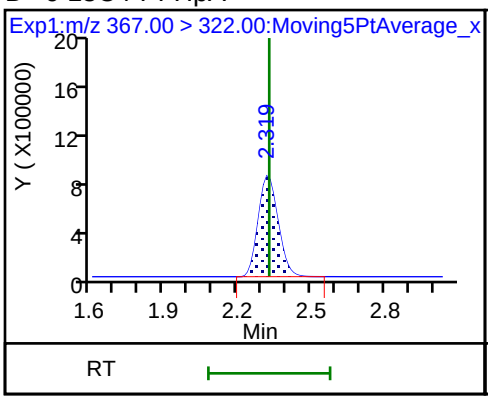
10 Perfluoroheptanoic acid (ND)



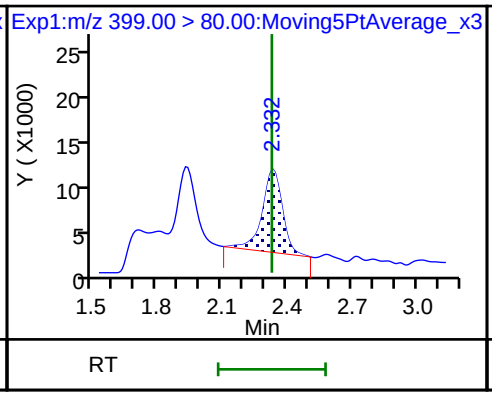
10 Perfluoroheptanoic acid (ND)



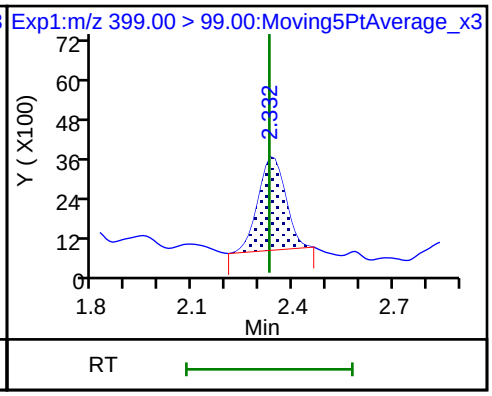
D 9 13C4-PFHpA



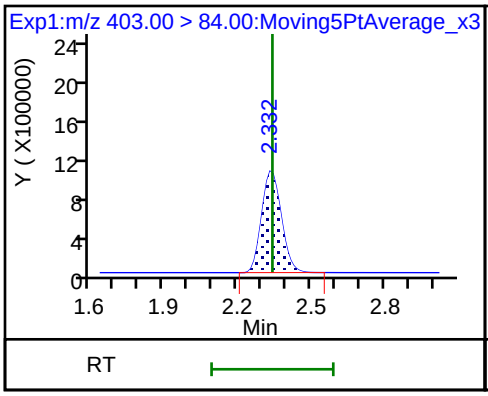
8 Perfluorohexanesulfonic acid



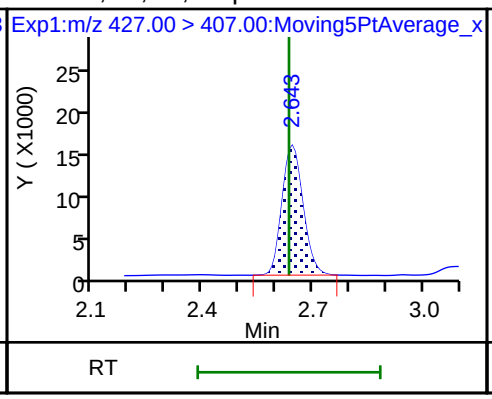
8 Perfluorohexanesulfonic acid



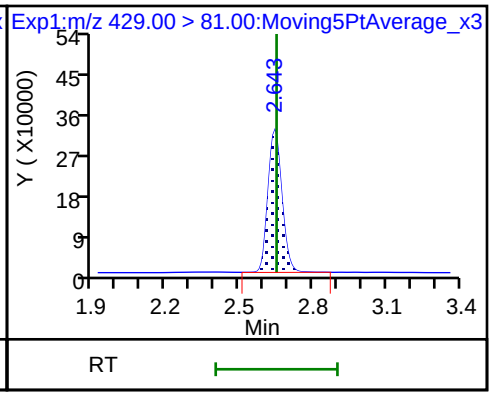
D 11 18O2 PFHxS



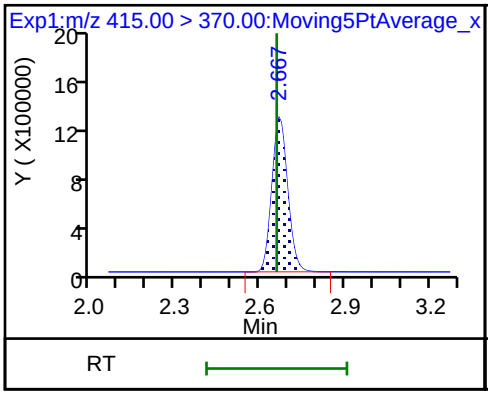
13 1H,1H,2H,2H-perfluorooctanesulfon



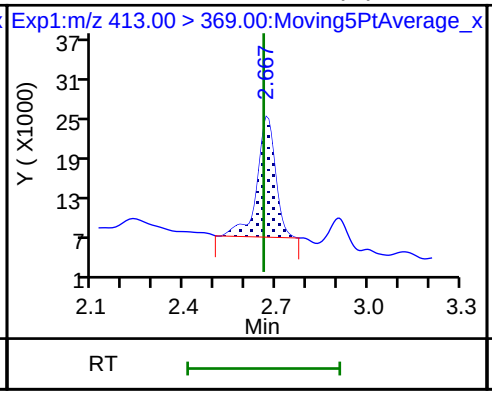
D 12 M2-6:2FTS



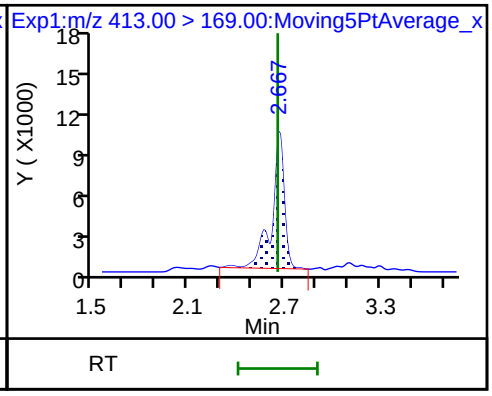
* 62 13C2-PFOA



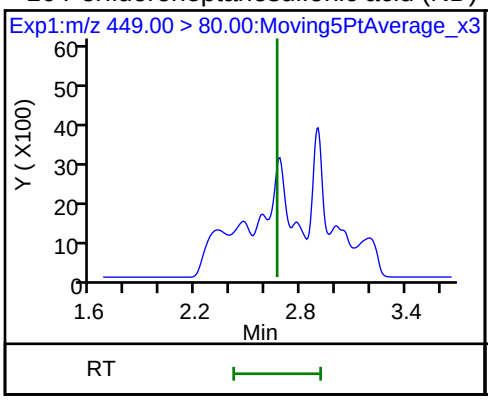
15 Perfluorooctanoic acid (M)



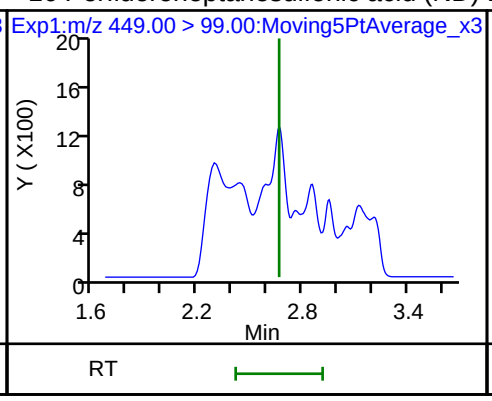
15 Perfluorooctanoic acid



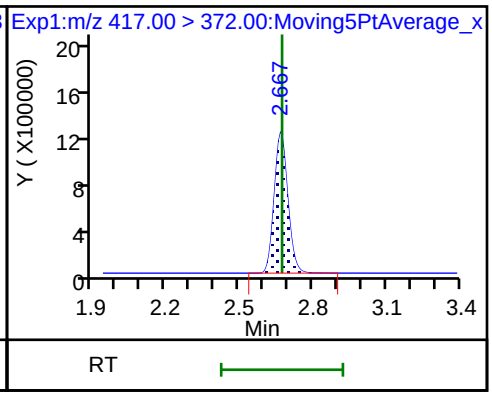
16 Perfluoroheptanesulfonic acid (ND)



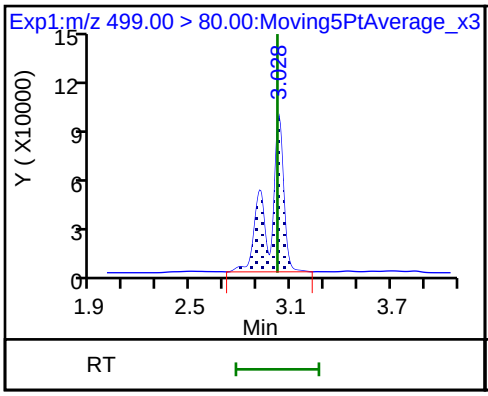
16 Perfluoroheptanesulfonic acid (ND)



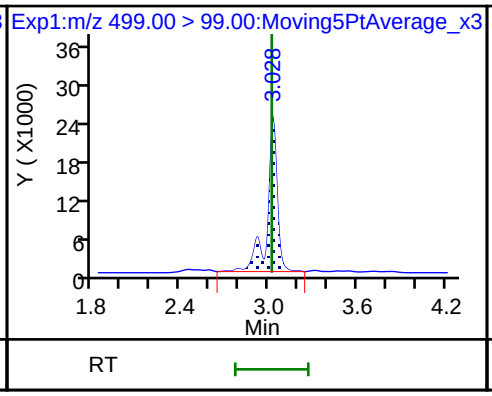
D 14 13C4 PFOA



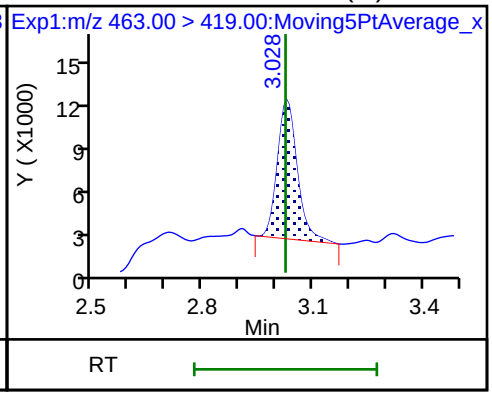
17 Perfluorooctane sulfonic acid



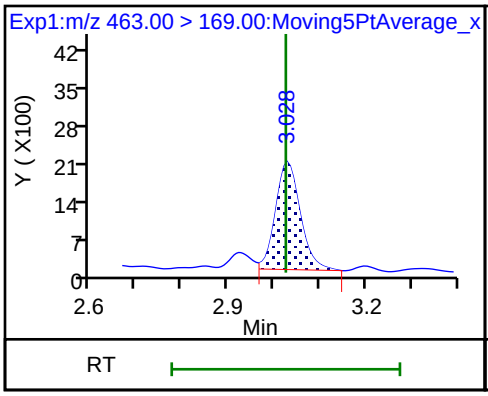
17 Perfluorooctane sulfonic acid



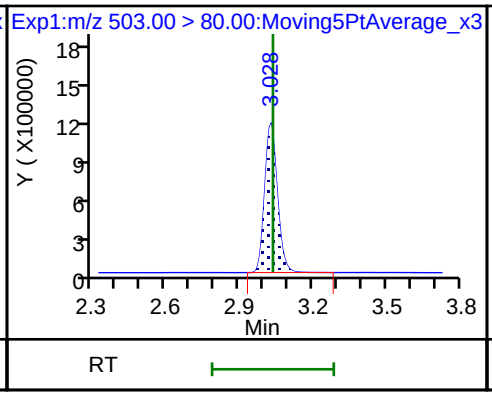
20 Perfluorononanoic acid (M)



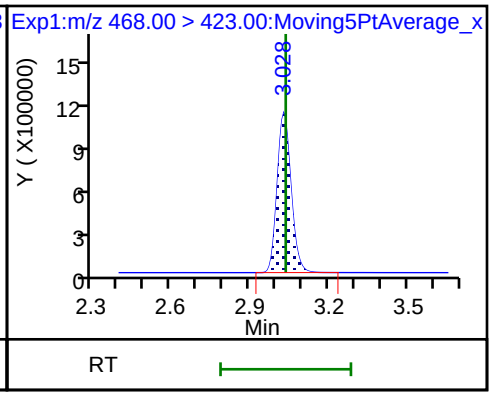
20 Perfluorononanoic acid



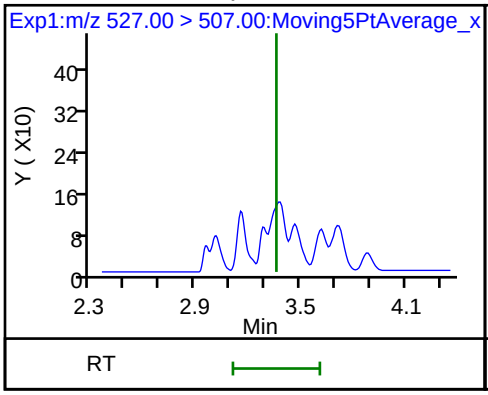
D 18 13C4 PFOS



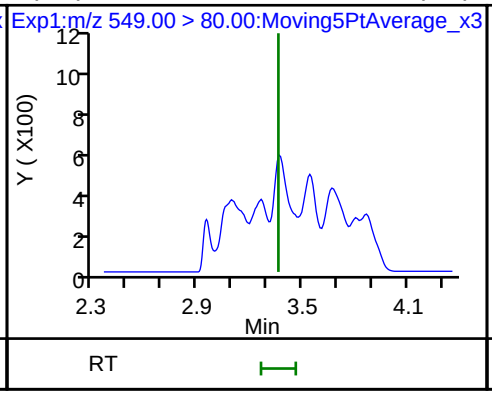
D 19 13C5 PFNA



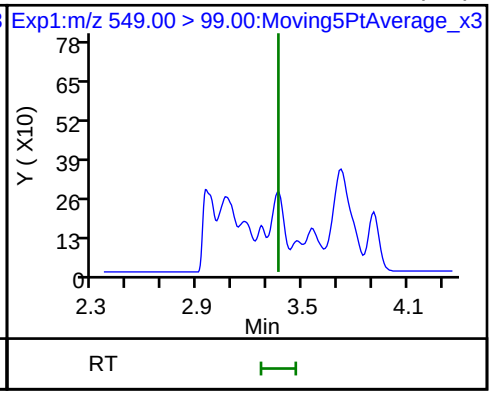
25 1H,1H,2H,2H-perfluorodecanesulfoni (ND)



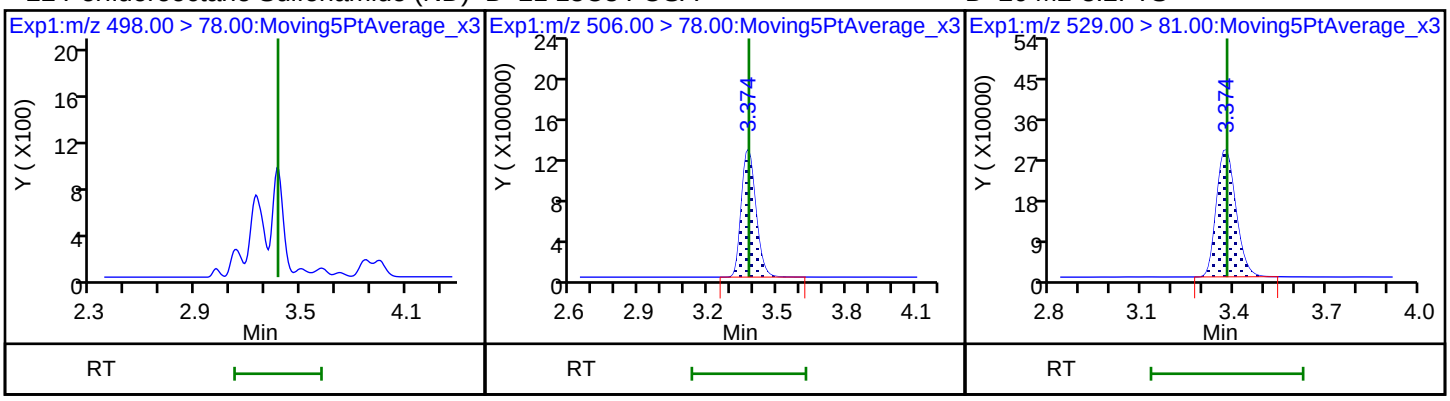
68 Perfluorononanesulfonic acid (ND)



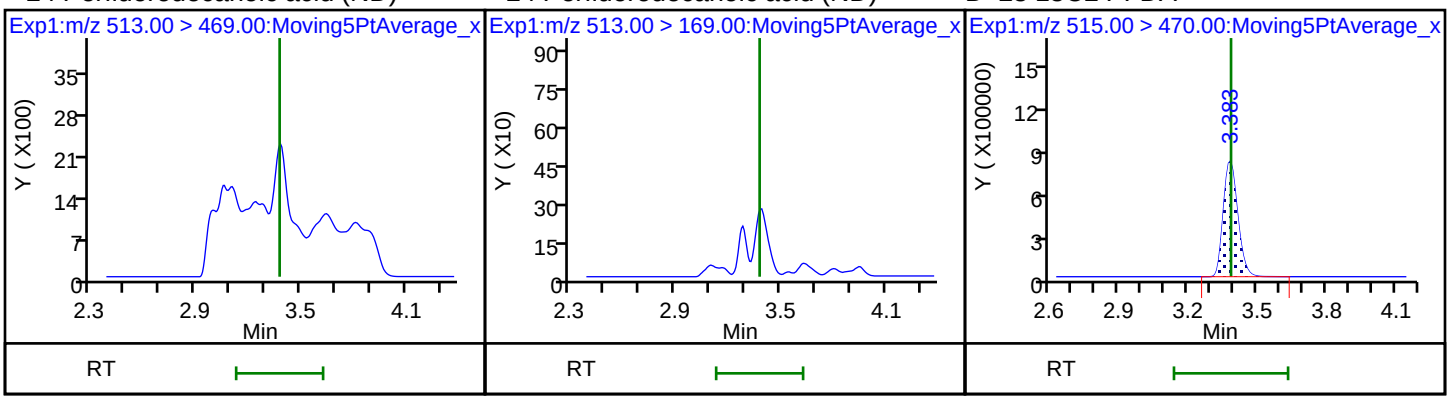
68 Perfluorononanesulfonic acid (ND)



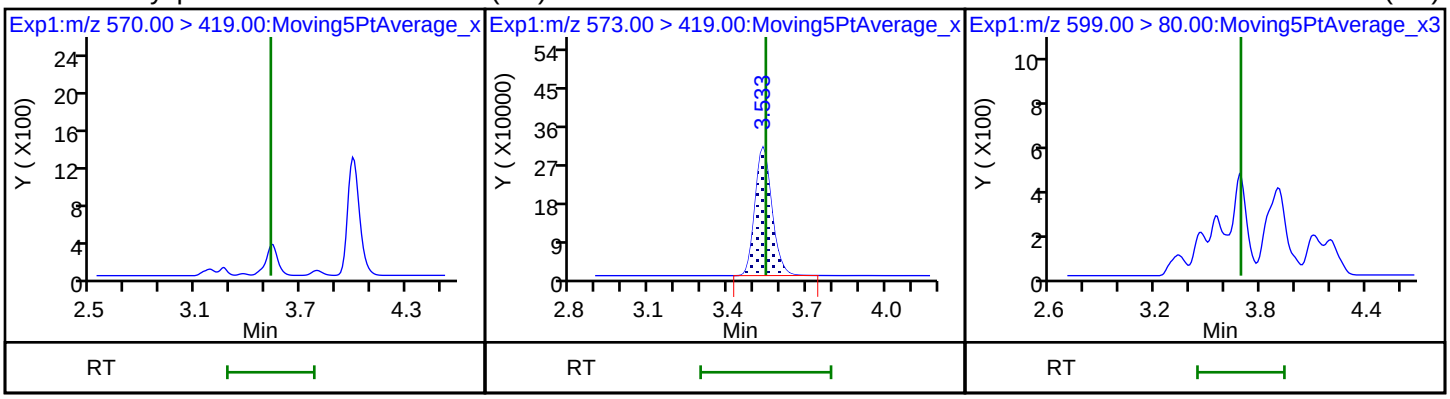
22 Perfluorooctane Sulfonamide (ND) D 21 13C8 FOSA D 26 M2-8:2FTS



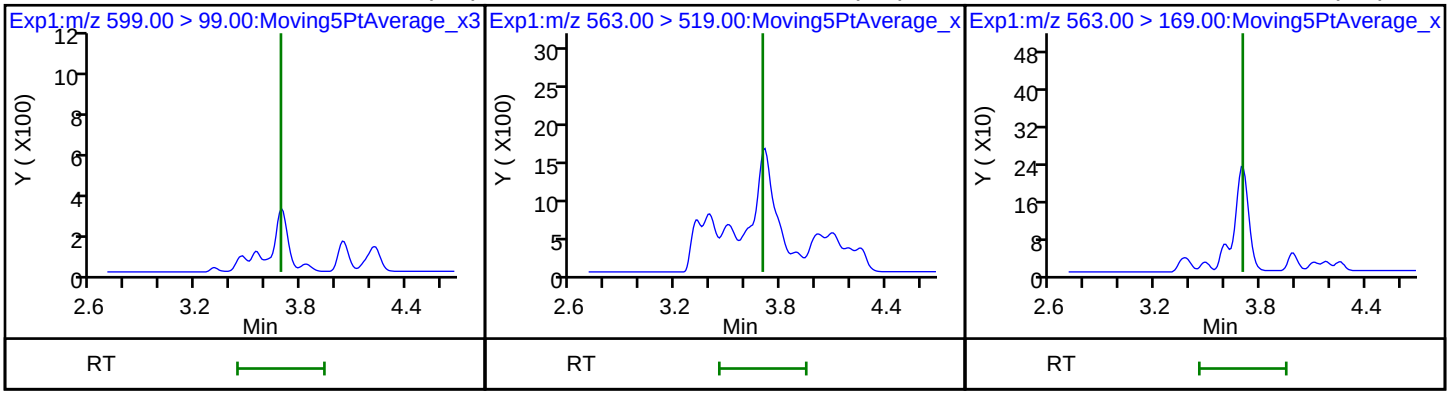
24 Perfluorodecanoic acid (ND) 24 Perfluorodecanoic acid (ND) D 23 13C2 PFDA



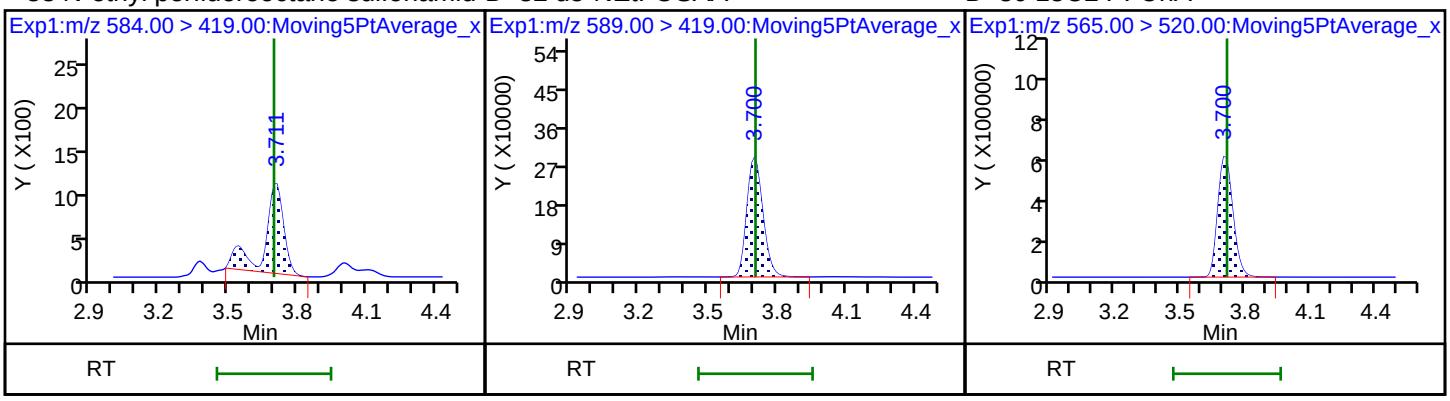
28 N-methyl perfluorooctane sulfonamid (ND) D 27 d3-NMeFOSAA 29 Perfluorodecane Sulfonic acid (ND)



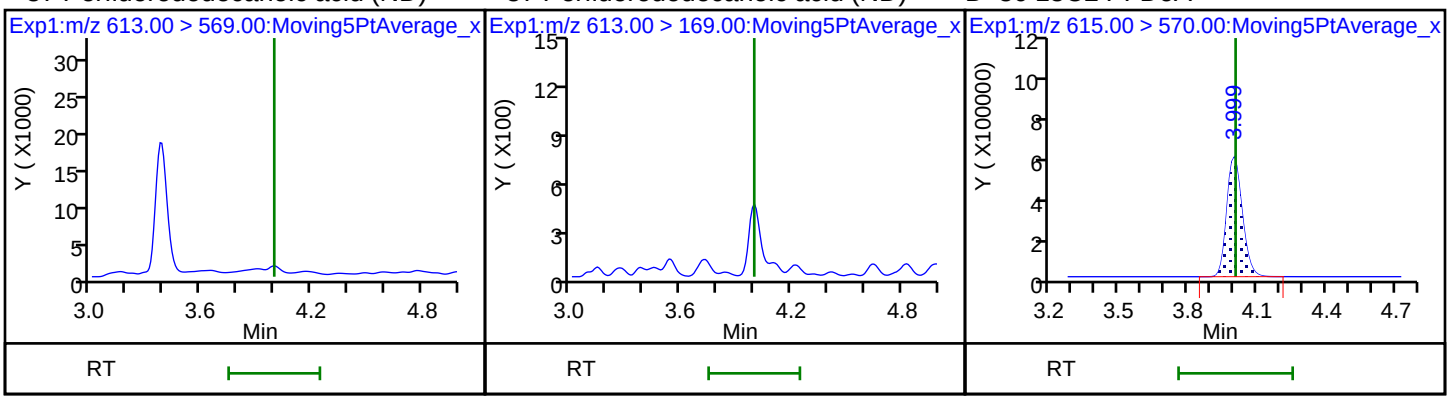
29 Perfluorodecane Sulfonic acid (ND) 31 Perfluoroundecanoic acid (ND) 31 Perfluoroundecanoic acid (ND)



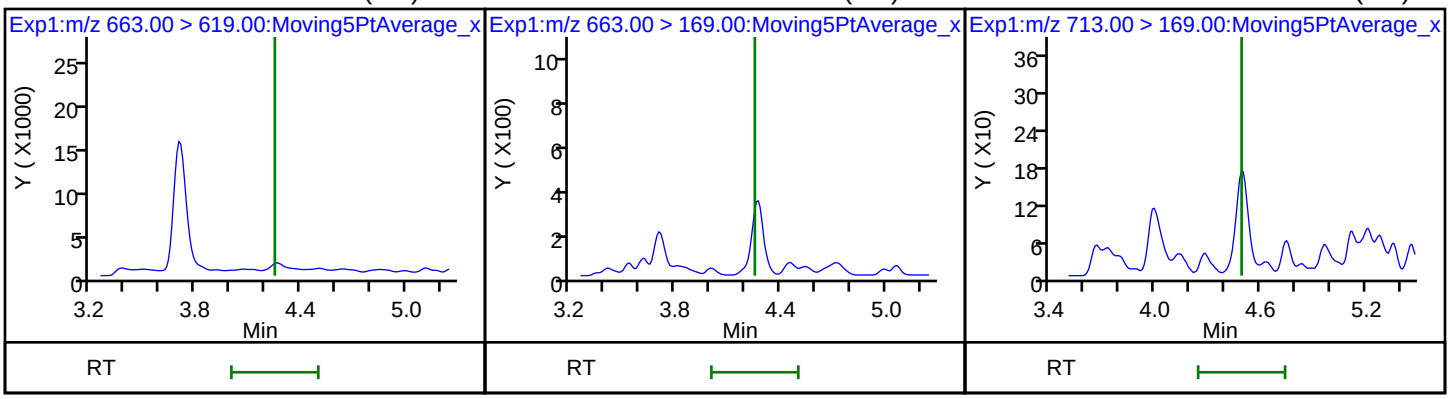
33 N-ethyl perfluorooctane sulfonamid D 32 d5-NEtFOSAA D 30 13C2 PFUnA



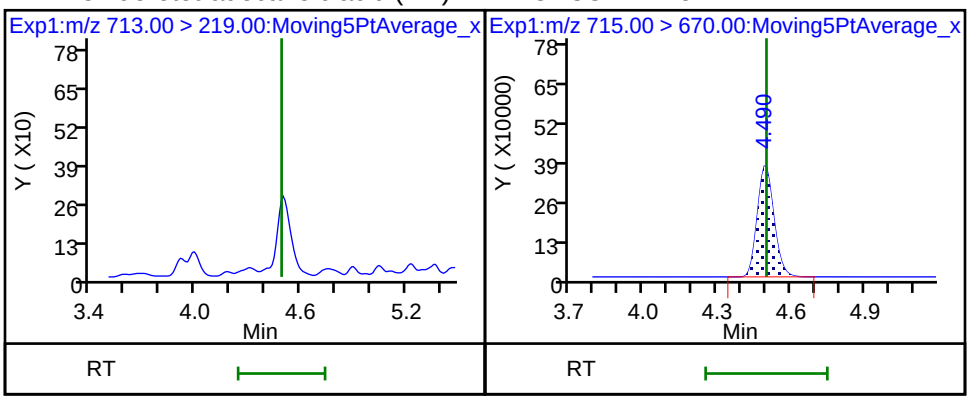
37 Perfluorododecanoic acid (ND) 37 Perfluorododecanoic acid (ND) D 36 13C2 PFDoA



41 Perfluorotridecanoic acid (ND) 41 Perfluorotridecanoic acid (ND) 42 Perfluorotetradecanoic acid (ND)



42 Perfluorotetradecanoic acid (ND) D 43 13C2-PFTeDA



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

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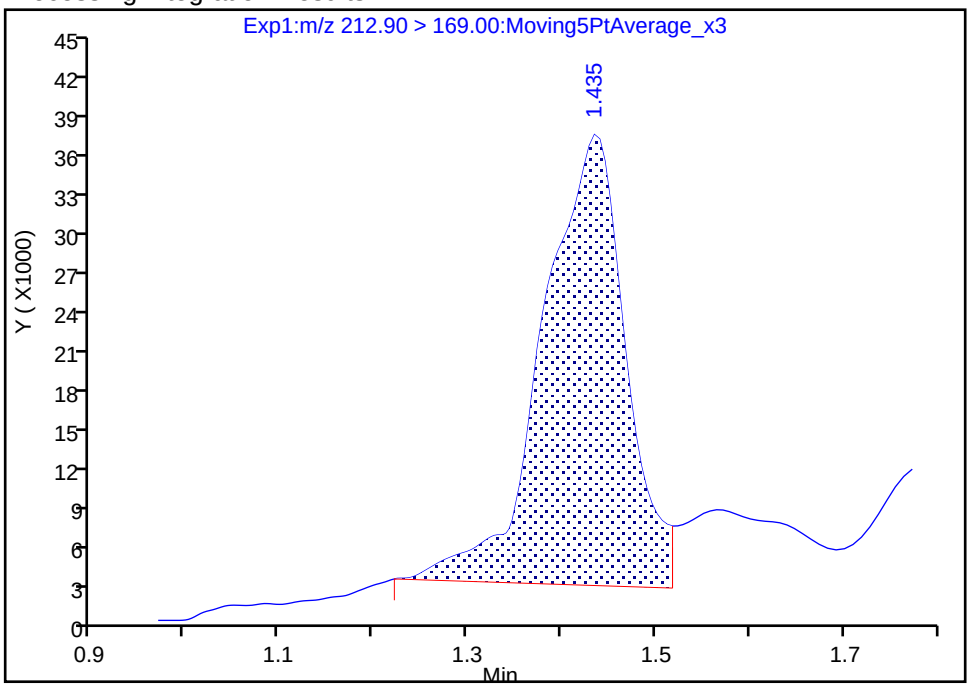
Lims ID:	320-40571-A-17-A	Lab Sample ID:	320-40571-17		
Client ID:	NF24-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	3	Worklist Smp#:	4
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

2 Perfluorobutyric acid, CAS: 375-22-4

Signal: 1

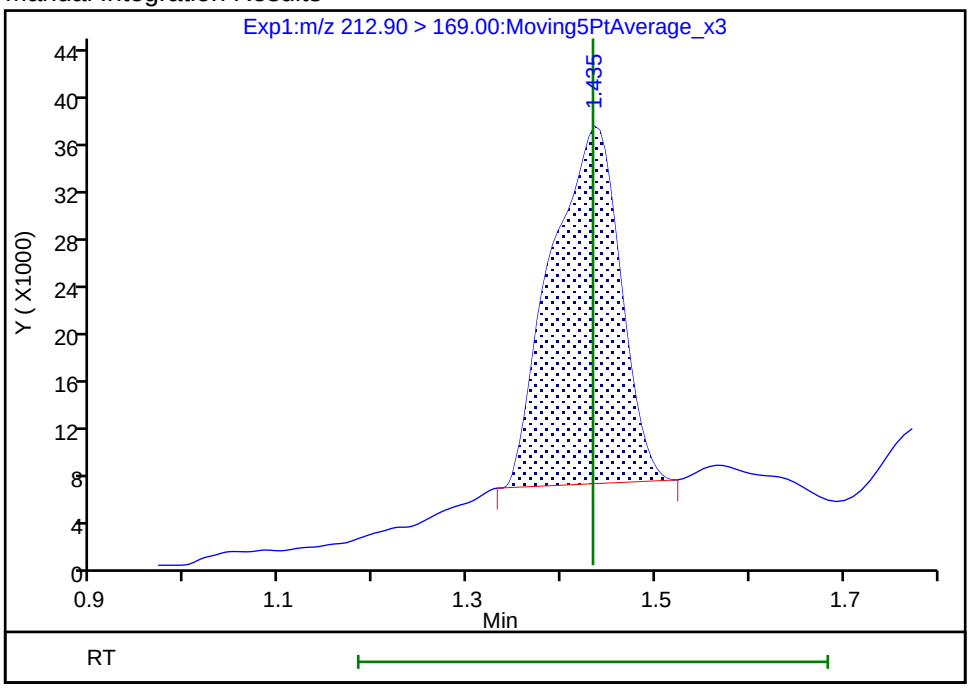
Processing Integration Results

RT: 1.44
Area: 213000
Amount: 0.133871
Amount Units: ng/ml



Manual Integration Results

RT: 1.44
Area: 155465
Amount: 0.097710
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 12:29:56

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

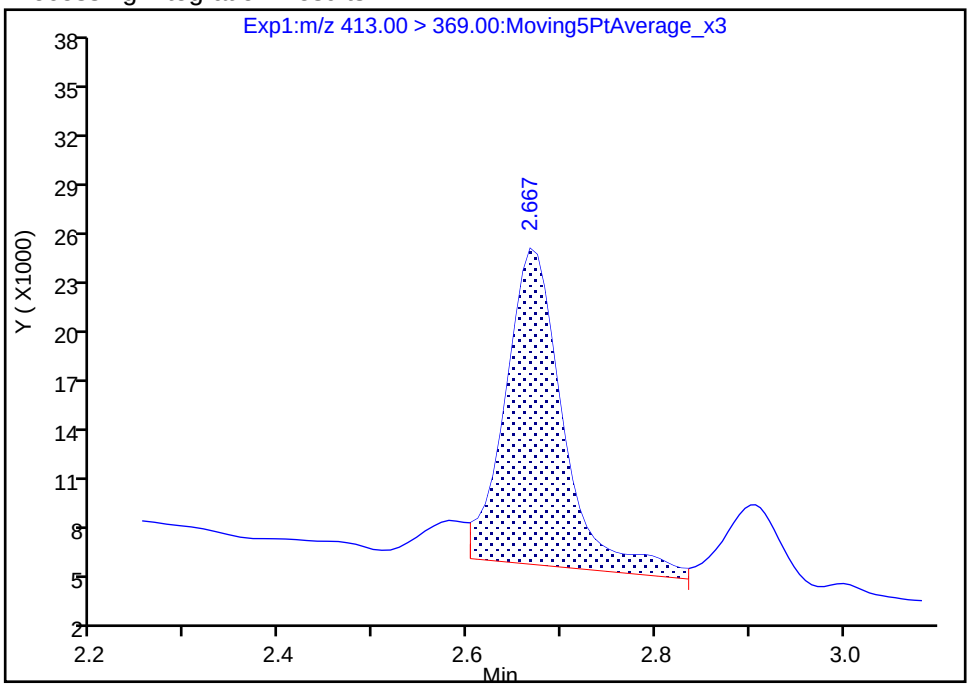
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\2018.07.13LLC_009.d				
Injection Date:	13-Jul-2018 21:09:43	Instrument ID:	A8_N		
Lims ID:	320-40571-A-17-A	Lab Sample ID:	320-40571-17		
Client ID:	NF24-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	3	Worklist Smp#:	4
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

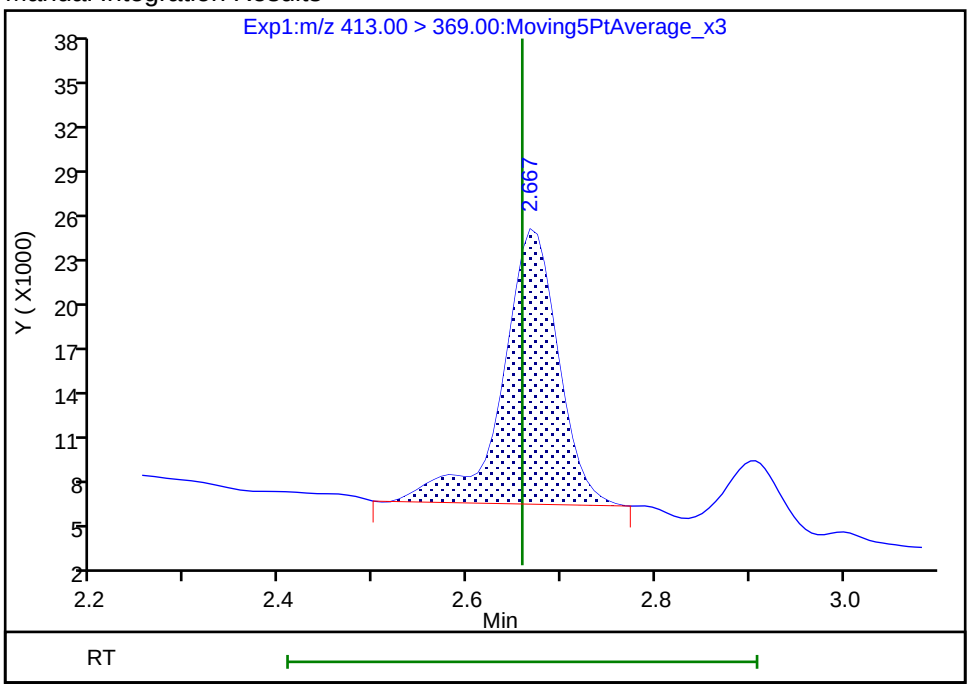
Processing Integration Results

RT: 2.67
Area: 80159
Amount: 0.034485
Amount Units: ng/ml



Manual Integration Results

RT: 2.67
Area: 74691
Amount: 0.032133
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 12:30:27

Audit Action: Manually Integrated Audit Reason: Isomers

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

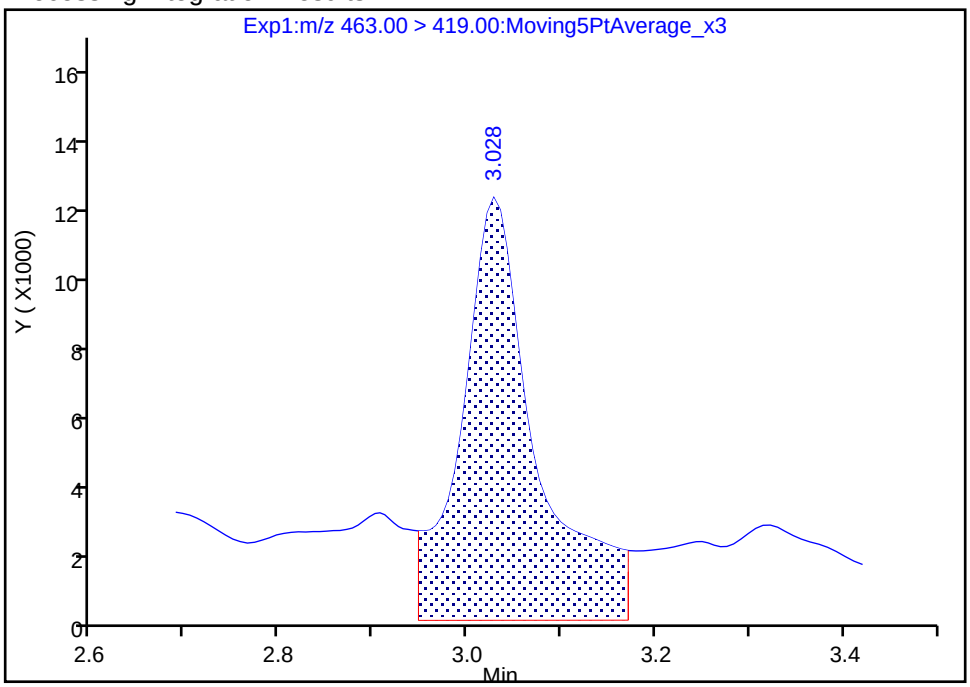
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\2018.07.13LLC_009.d				
Injection Date:	13-Jul-2018 21:09:43	Instrument ID:	A8_N		
Lims ID:	320-40571-A-17-A	Lab Sample ID:	320-40571-17		
Client ID:	NF24-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	3	Worklist Smp#:	4
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

20 Perfluorononanoic acid, CAS: 375-95-1

Signal: 1

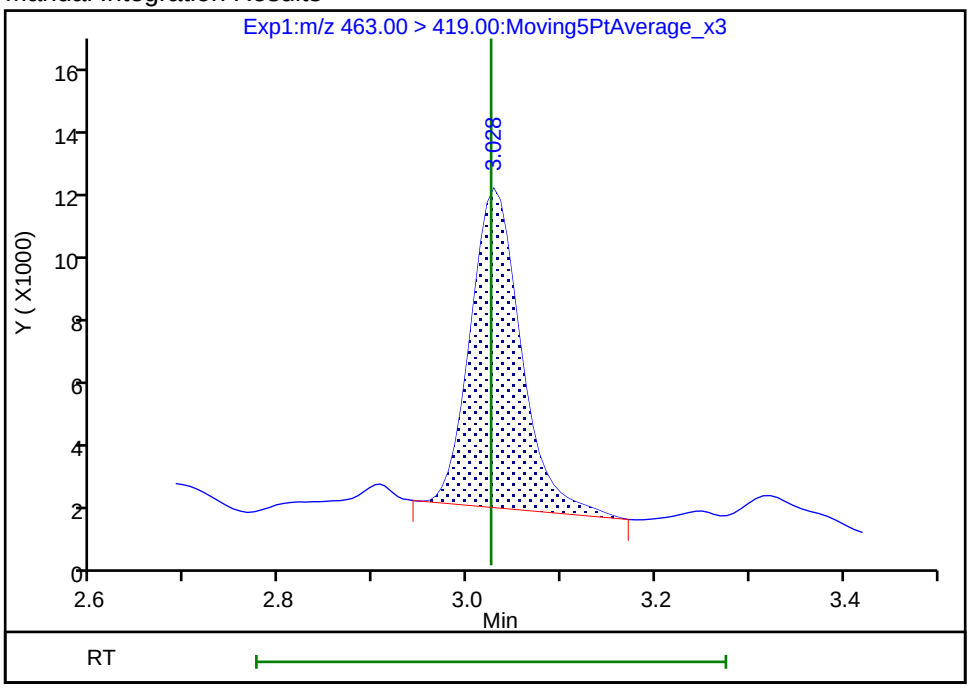
Processing Integration Results

RT: 3.03
Area: 66189
Amount: 0.036780
Amount Units: ng/ml



Manual Integration Results

RT: 3.03
Area: 35972
Amount: 0.019989
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 12:30:53
Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

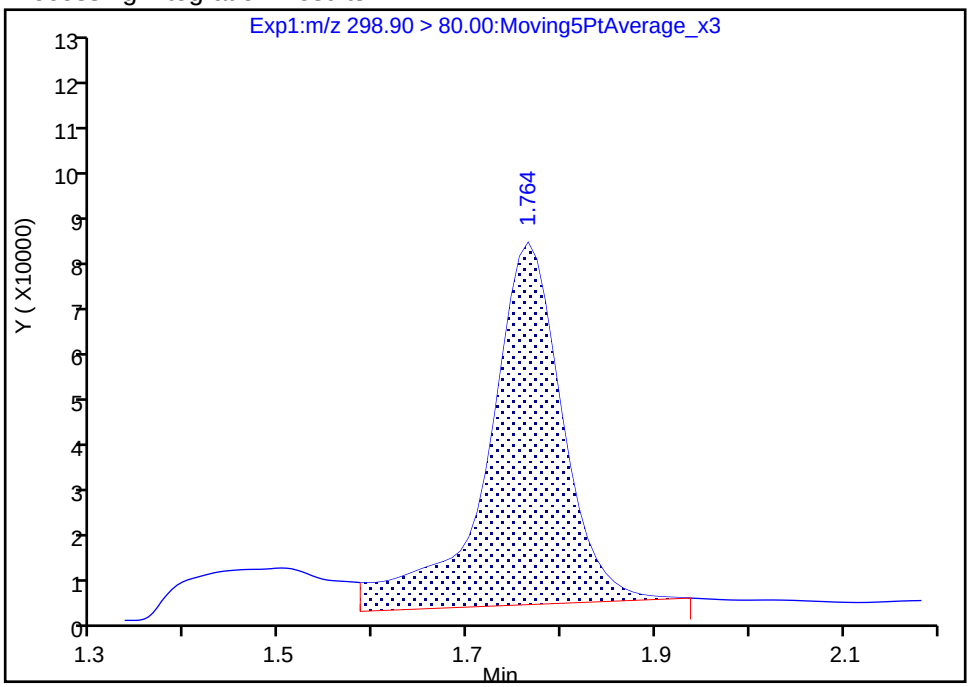
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\2018.07.13LLC_009.d				
Injection Date:	13-Jul-2018 21:09:43	Instrument ID:	A8_N		
Lims ID:	320-40571-A-17-A	Lab Sample ID:	320-40571-17		
Client ID:	NF24-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	3	Worklist Smp#:	4
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

5 Perfluorobutanesulfonic acid, CAS: 375-73-5

Signal: 1

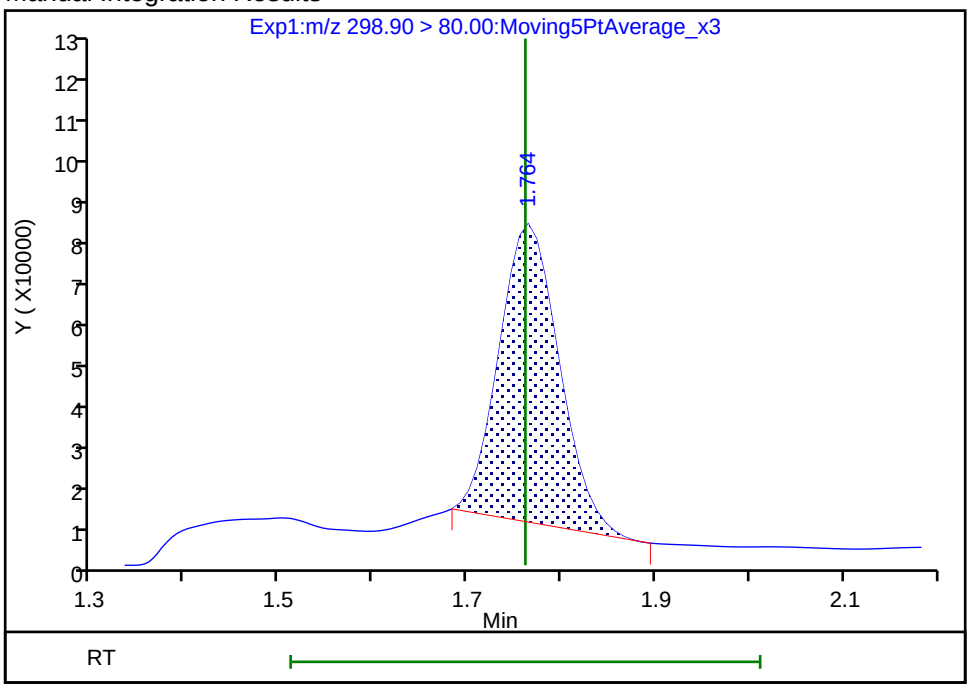
Processing Integration Results

RT: 1.76
Area: 440870
Amount: 0.146375
Amount Units: ng/ml



Manual Integration Results

RT: 1.76
Area: 320182
Amount: 0.106305
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 12:30:10
Audit Action: Manually Integrated Audit Reason: Baseline

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF24-SS-02
Lab Sample ID: 320-40571-18
Matrix: Solid
Lab File ID: 2018.07.13LLB_065.d
Analysis Method: 537 (modified)
Date Collected: 06/20/2018 09:15
Extraction Method: SHAKE
Date Extracted: 06/28/2018 05:15
Sample wt/vol: 5.02(g)
Date Analyzed: 07/14/2018 05:15
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture: 16.4
GPC Cleanup:(Y/N) N
Analysis Batch No.: 233997
Units: mg/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	0.000039	J	0.00024	0.000033
2706-90-3	Perfluoropentanoic acid (PFPeA)	ND		0.00024	0.000092
307-24-4	Perfluorohexanoic acid (PFHxA)	ND		0.00024	0.000050
375-85-9	Perfluoroheptanoic acid (PFHpA)	ND		0.00024	0.000035
335-67-1	Perfluorooctanoic acid (PFOA)	ND		0.00024	0.00010
375-95-1	Perfluorononanoic acid (PFNA)	ND		0.00024	0.000043
335-76-2	Perfluorodecanoic acid (PFDA)	ND		0.00024	0.000026
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		0.00024	0.000043
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		0.00024	0.000080
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		0.00024	0.000061
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		0.00024	0.000064
375-73-5	Perfluorobutanesulfonic acid (PFBS)	ND		0.00024	0.000030
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	ND		0.00024	0.000037
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.00024	0.000042
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	ND		0.00060	0.00024
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		0.00024	0.000046
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		0.00024	0.000098
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.0024	0.00046
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.0024	0.00044
27619-97-2	6:2 FTS	ND		0.0024	0.00018
39108-34-4	8:2 FTS	ND		0.0024	0.00030

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF24-SS-02
Lab Sample ID: 320-40571-18
Matrix: Solid
Lab File ID: 2018.07.13LLB_065.d
Analysis Method: 537 (modified)
Date Collected: 06/20/2018 09:15
Extraction Method: SHAKE
Date Extracted: 06/28/2018 05:15
Sample wt/vol: 5.02(g)
Date Analyzed: 07/14/2018 05:15
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture: 16.4
GPC Cleanup:(Y/N) N
Analysis Batch No.: 233997
Units: mg/Kg

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00992	13C4 PFBA	83		25-150
STL01893	13C5 PFPeA	87		25-150
STL00993	13C2 PFHxA	89		25-150
STL01892	13C4-PFHpA	94		25-150
STL00990	13C4 PFOA	91		25-150
STL00995	13C5 PFNA	84		25-150
STL00996	13C2 PFDA	95		25-150
STL00997	13C2 PFUnA	87		25-150
STL00998	13C2 PFDoA	89		25-150
STL02116	13C2-PFTeDA	92		25-150
STL02337	13C3-PFBS	84		25-150
STL00994	18O2 PFHxS	86		25-150
STL00991	13C4 PFOS	83		25-150
STL01056	13C8 FOSA	77		25-150
STL02118	d3-NMeFOSAA	83		25-150
STL02117	d5-NEtFOSAA	94		25-150
STL02279	M2-6:2FTS	74		25-150
STL02280	M2-8:2FTS	85		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\2018.07.13LLB_065.d
Lims ID: 320-40571-A-18-A
Client ID: NF24-SS-02
Sample Type: Client
Inject. Date: 14-Jul-2018 05:15:23 ALS Bottle#: 49 Worklist Smp#: 14
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-40571-a-18-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 16-Jul-2018 14:23:54 Calib Date: 11-Jul-2018 15:38:42
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK023

First Level Reviewer: mongkols Date: 16-Jul-2018 14:23:54

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										M
217.00 > 172.00	1.430	1.441	-0.011	0.538	4737614	2.07		82.9	48096	M
2 Perfluorobutyric acid										
212.90 > 169.00	1.435	1.445	-0.010	1.004	30944	0.0166			12.5	
D 3 13C5-PFPeA										
267.90 > 223.00	1.711	1.720	-0.009	0.643	3463318	2.18		87.2	41788	
D 47 13C3-PFBS										
301.90 > 83.00	1.747	1.765	-0.018	0.657	78165	1.96		84.2	454	
D 7 13C2 PFHxA										
315.00 > 270.00	1.991	2.003	-0.012	0.749	3808502	2.22		88.8	64777	
D 9 13C4-PFHpA										
367.00 > 322.00	2.306	2.319	-0.013	0.867	3712180	2.35		94.0	51281	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.319	2.329	-0.010	1.000	14097	0.006404			165	
399.00 > 99.00	2.332	2.329	0.003	1.006	5662		2.49(1.50-4.49)		38.8	
D 11 18O2 PFHxS										
403.00 > 84.00	2.319	2.332	-0.013	0.872	4535365	2.03		85.7	46867	
D 12 M2-6:2FTS										
429.00 > 81.00	2.636	2.644	-0.008	0.991	595778	1.76		74.1	10678	
* 62 13C2-PFOA										
415.00 > 370.00	2.659	2.666	-0.007		4215396	2.50			48369	
D 14 13C4 PFOA										
417.00 > 372.00	2.659	2.667	-0.008	1.000	3681618	2.28		91.4	52011	
D 18 13C4 PFOS										
503.00 > 80.00	3.021	3.027	-0.006	1.136	3249934	1.98		82.8	42978	
D 19 13C5 PFNA										
468.00 > 423.00	3.021	3.034	-0.013	1.136	3011645	2.09		83.6	53077	
D 21 13C8 FOSA										
506.00 > 78.00	3.365	3.379	-0.014	1.265	4556484	1.92		76.9	51299	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 26 M2-8:2FTS										
529.00 > 81.00	3.365	3.379	-0.014	1.265	1007318	2.03		84.9	17704	
D 23 13C2 PFDA										
515.00 > 470.00	3.374	3.389	-0.015	1.269	3006858	2.38		95.1	29888	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.533	3.538	-0.005	1.329	1071926	2.07		82.7	29885	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.701	3.708	-0.007	1.392	1250342	2.35		94.2	3312	
D 30 13C2 PFUnA										
565.00 > 520.00	3.701	3.708	-0.007	1.392	2293344	2.17		86.8	31951	
D 36 13C2 PFDoA										
615.00 > 570.00	3.989	3.999	-0.010	1.500	2450165	2.24		89.5	22740	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.491	4.501	-0.010	1.689	2623014	2.31		92.3	16402	

QC Flag Legend

Review Flags

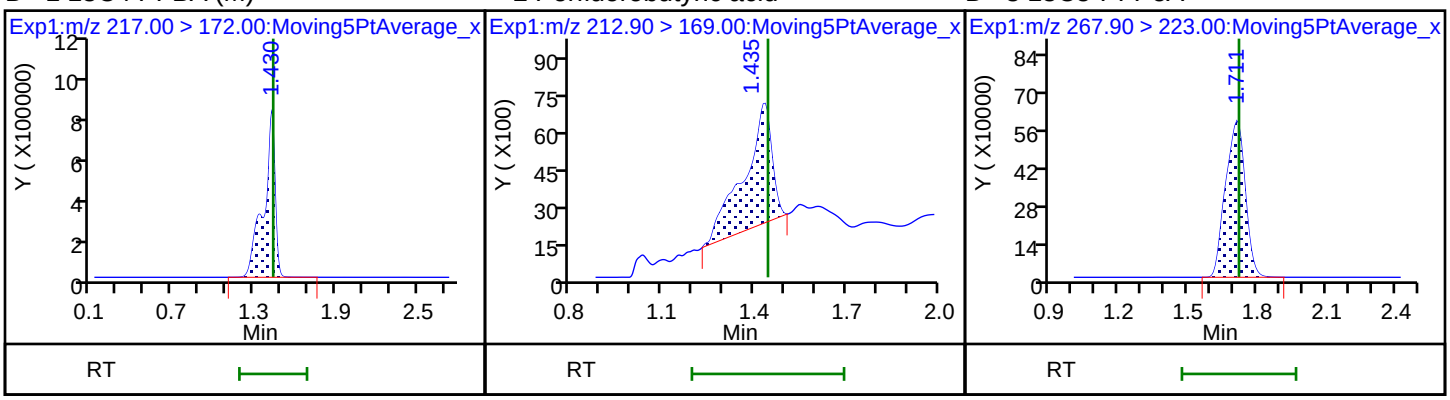
M - Manually Integrated

Report Date: 16-Jul-2018 14:23:54 Chrom Revision: 2.2 07-Jun-2018 07:41:54

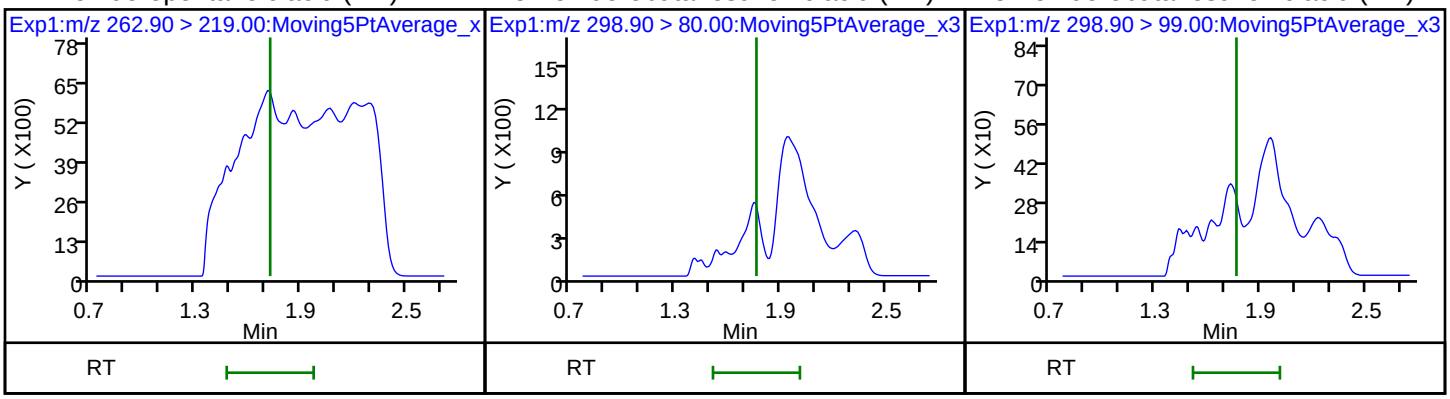
TestAmerica Sacramento

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\2018.07.13LLB_065.d				
Injection Date:	14-Jul-2018 05:15:23	Instrument ID:	A8_N		
Lims ID:	320-40571-A-18-A	Lab Sample ID:	320-40571-18		
Client ID:	NF24-SS-02				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	49	Worklist Smp#:	14
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		

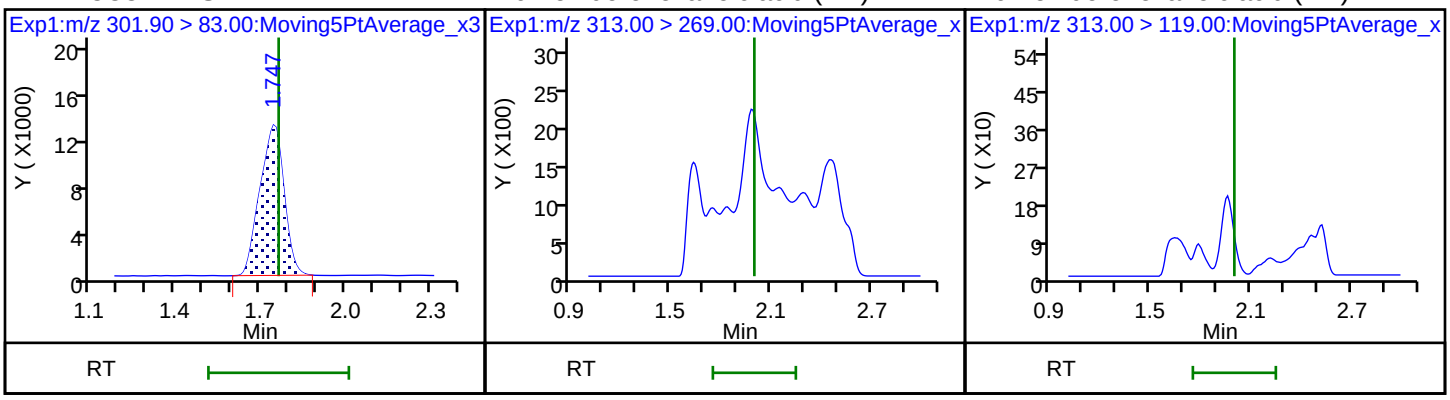
D 1 13C4 PFBA (M) | 2 Perfluorobutyric acid | D 3 13C5-PFPeA



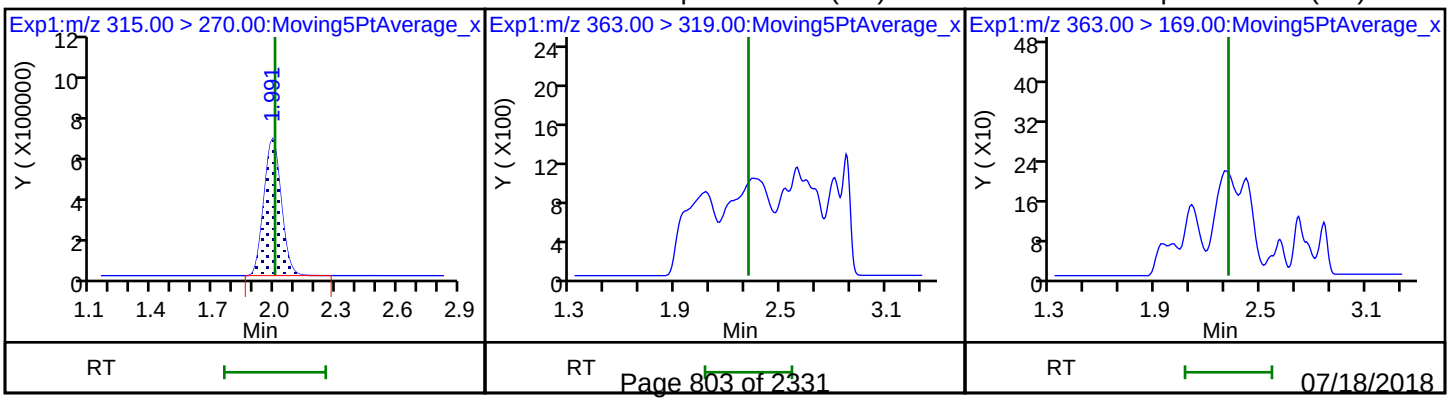
4 Perfluoropentanoic acid (ND) | 5 Perfluorobutanesulfonic acid (ND) | 5 Perfluorobutanesulfonic acid (ND)



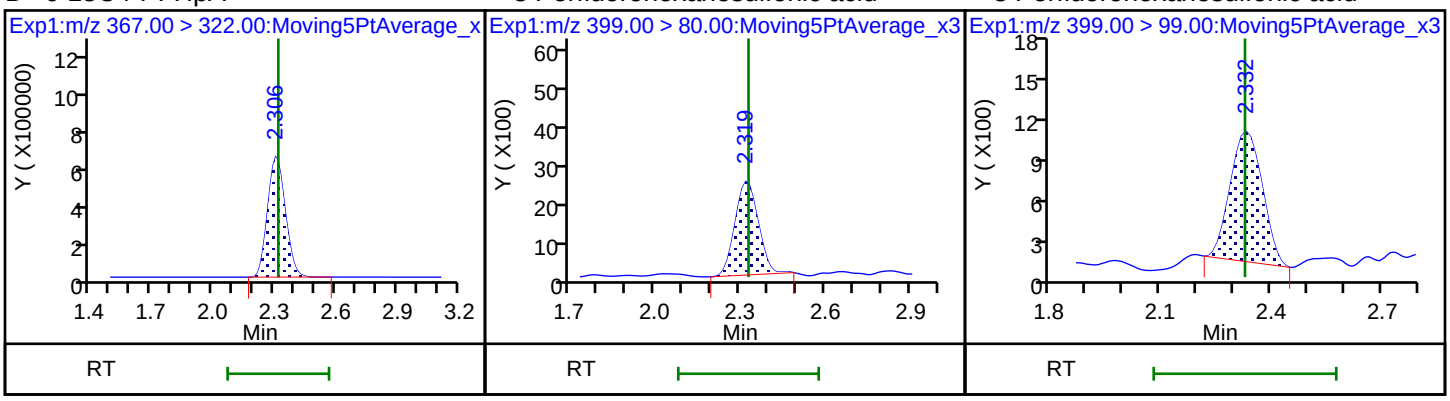
D 47 13C3-PFBS | 6 Perfluorohexanoic acid (ND) | 6 Perfluorohexanoic acid (ND)



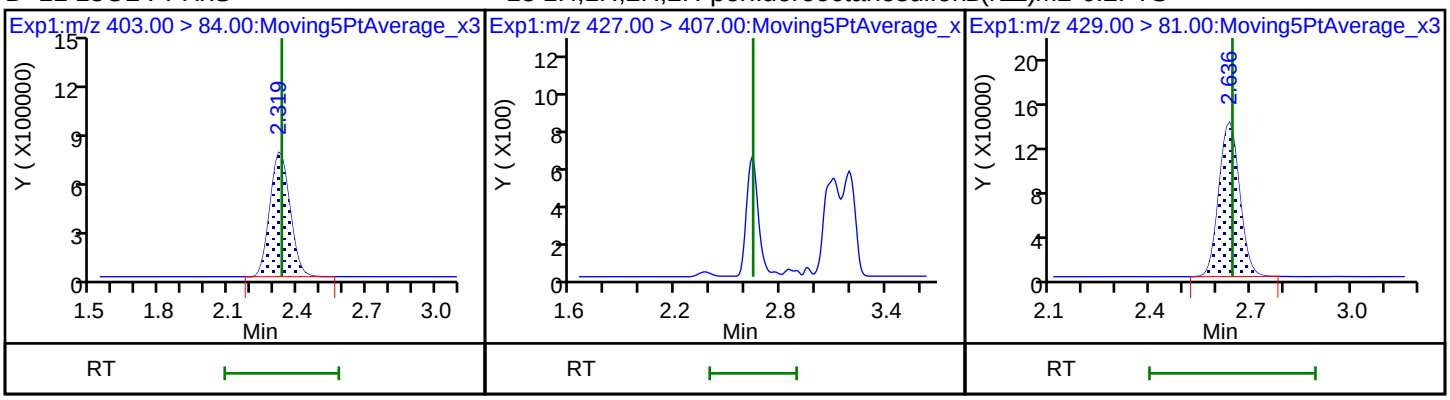
D 7 13C2 PFHxA | 10 Perfluoroheptanoic acid (ND) | 10 Perfluoroheptanoic acid (ND)



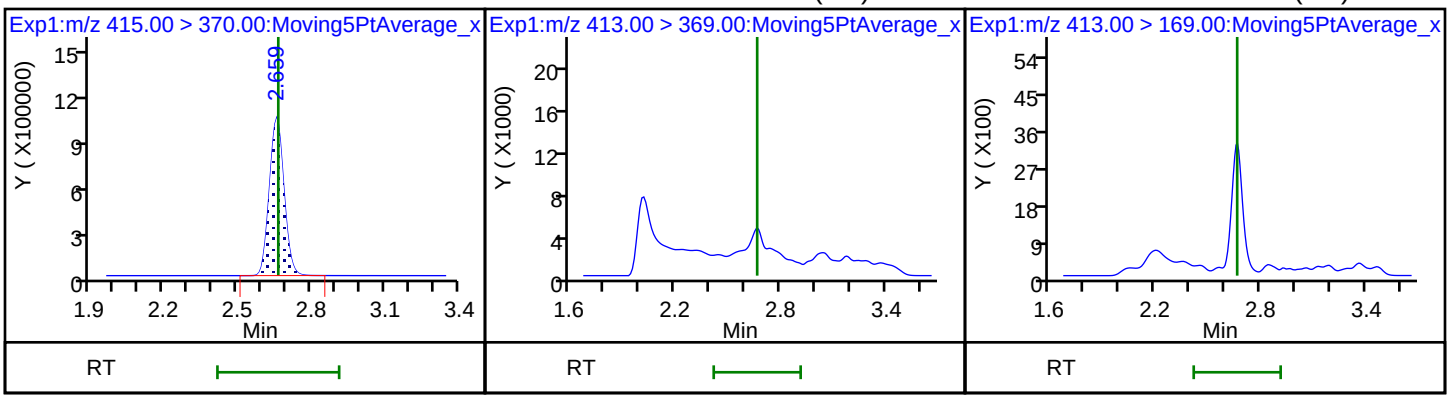
D 9 13C4-PFHpA | 8 Perfluorohexanesulfonic acid | 8 Perfluorohexanesulfonic acid



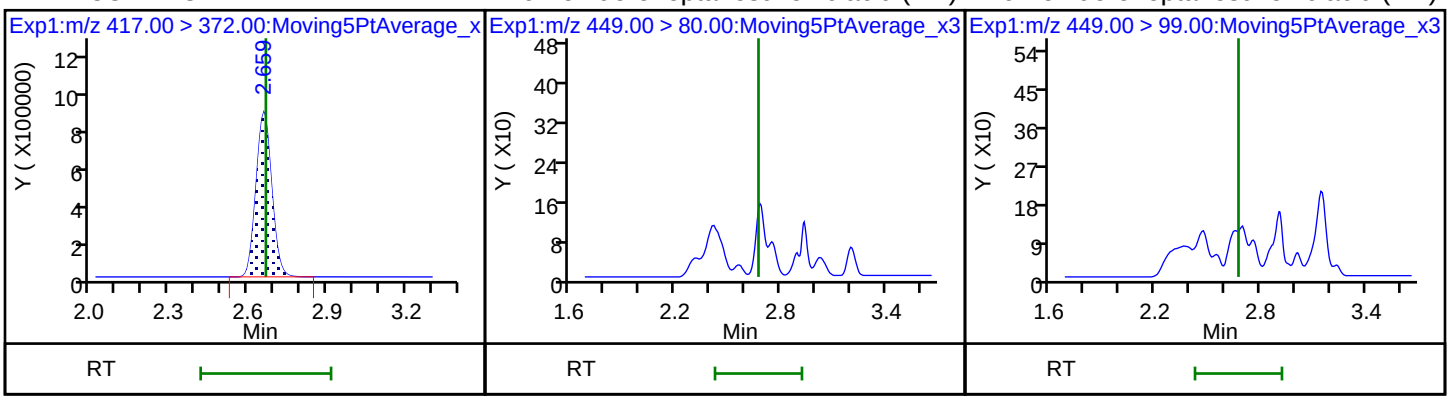
D 11 18O2 PFHxS | 13 1H,1H,2H,2H-perfluorooctanesulfon | D(ND) 12 M2-6:2FTS



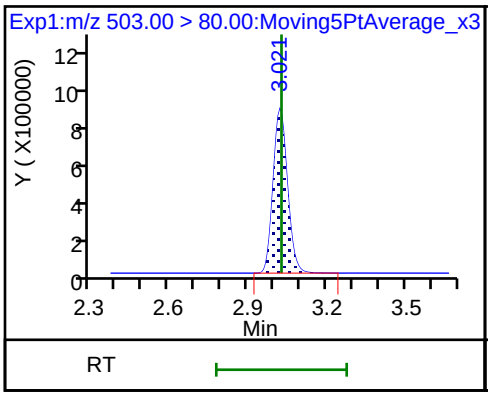
* 62 13C2-PFOA | 15 Perfluorooctanoic acid (ND) | 15 Perfluorooctanoic acid (ND)



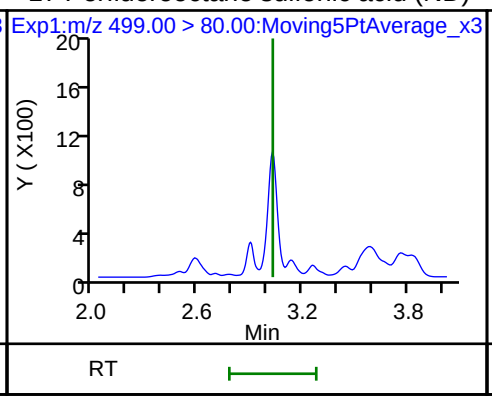
D 14 13C4 PFOA | 16 Perfluoroheptanesulfonic acid (ND) | 16 Perfluoroheptanesulfonic acid (ND)



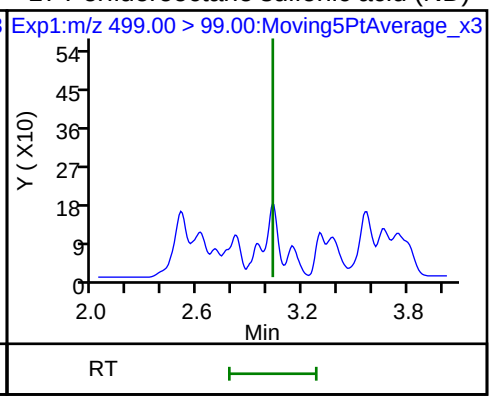
D 18 13C4 PFOS



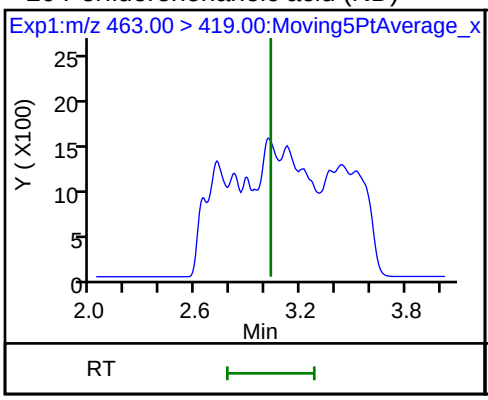
17 Perfluorooctane sulfonic acid (ND)



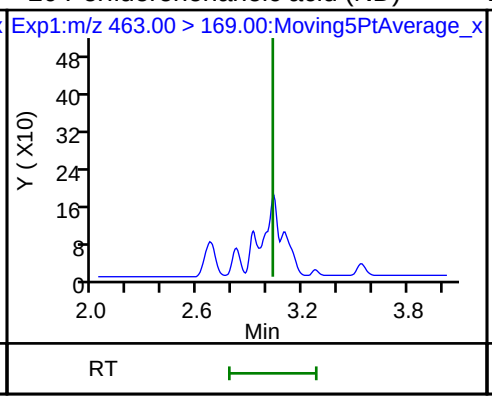
17 Perfluorooctane sulfonic acid (ND)



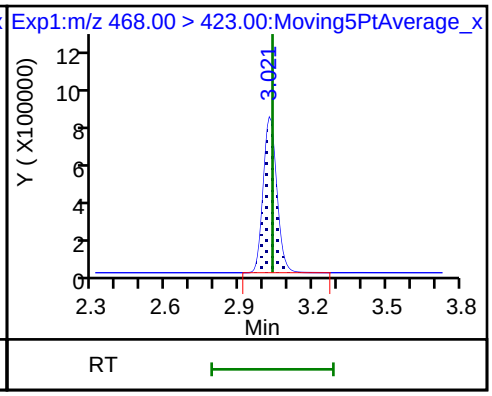
20 Perfluorononanoic acid (ND)



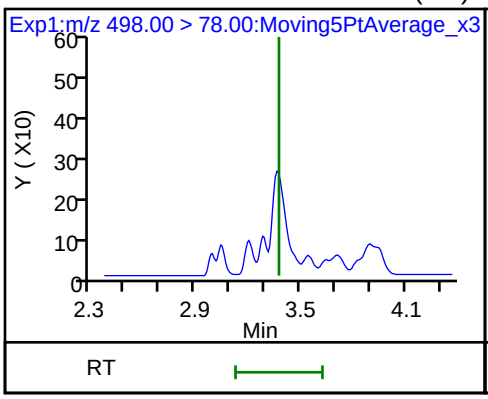
20 Perfluorononanoic acid (ND)



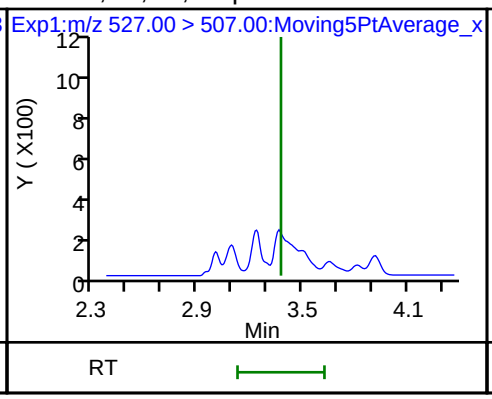
D 19 13C5 PFNA



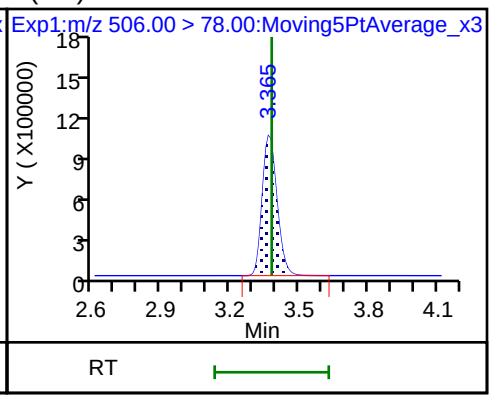
22 Perfluorooctane Sulfonamide (ND)



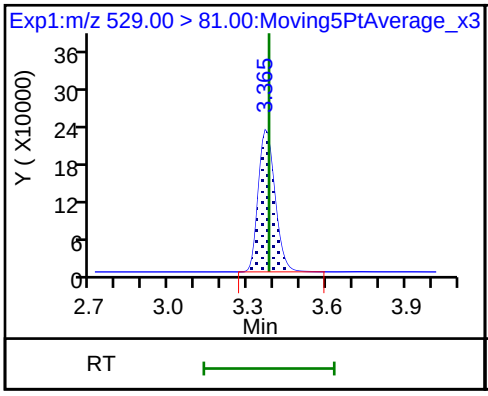
25 1H,1H,2H,2H-perfluorodecanesulfonic (ND)



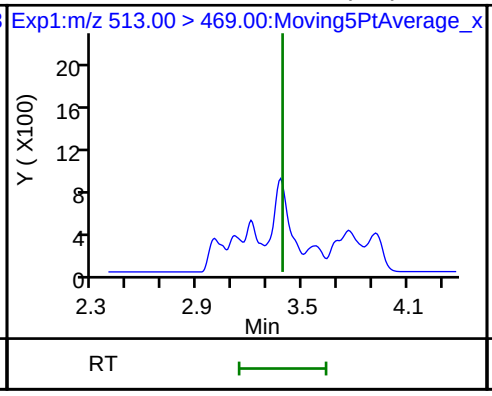
D 21 13C8 FOSA



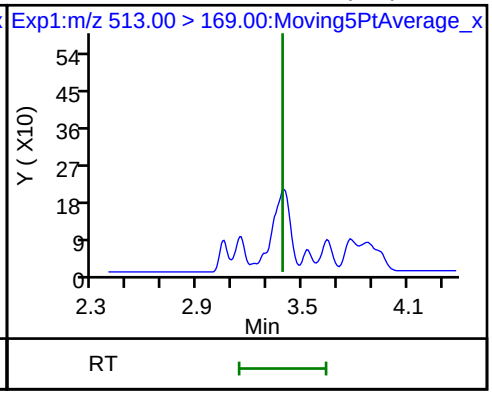
D 26 M2-8:2FTS



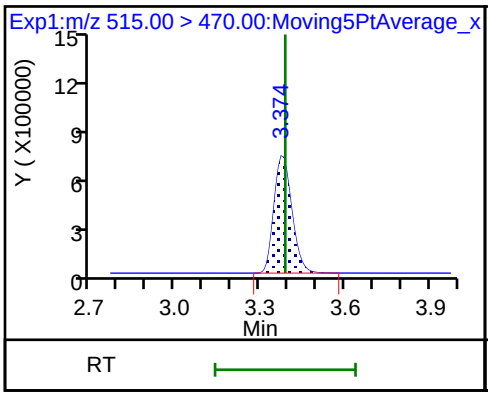
24 Perfluorodecanoic acid (ND)



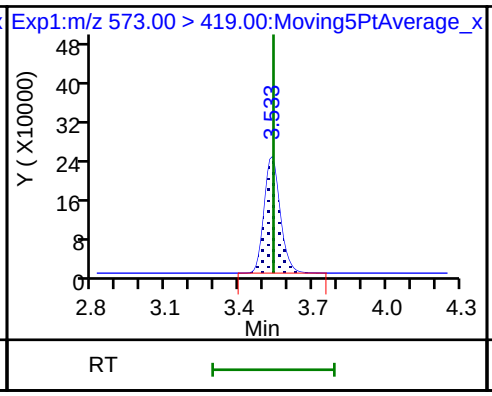
24 Perfluorodecanoic acid (ND)



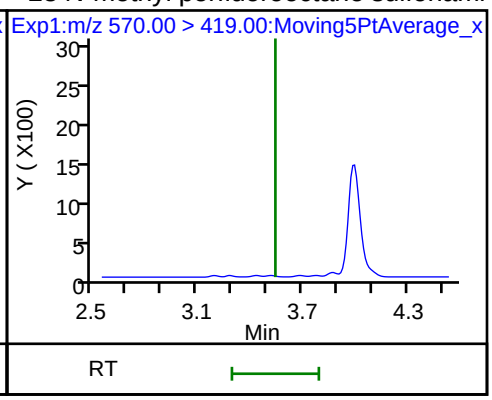
D 23 13C2 PFDA



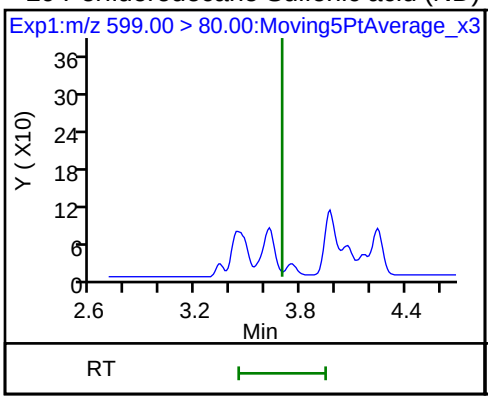
D 27 d3-NMeFOSAA



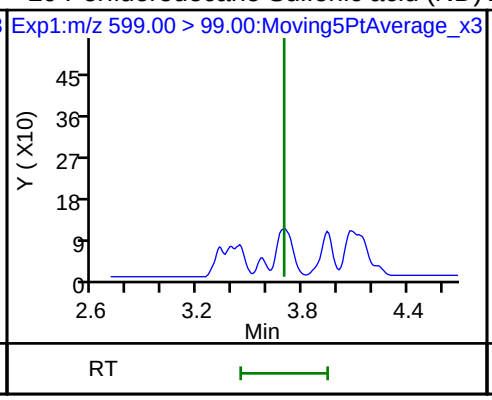
28 N-methyl perfluorooctane sulfonami (ND)



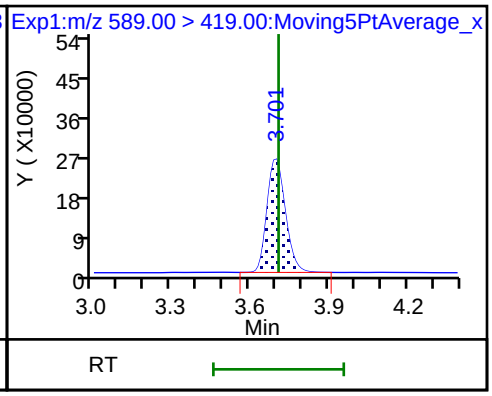
29 Perfluorodecane Sulfonic acid (ND)



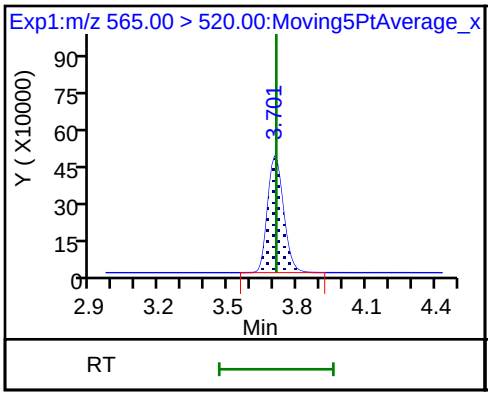
29 Perfluorodecane Sulfonic acid (ND)



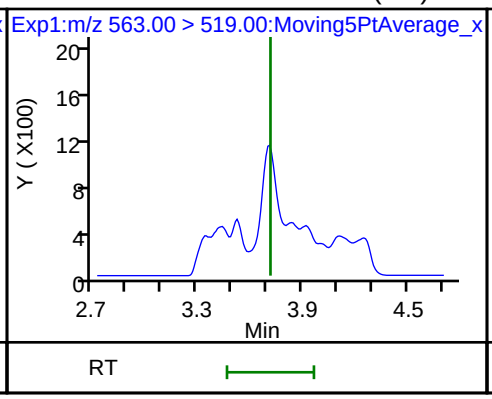
D 32 d5-NEtFOSAA



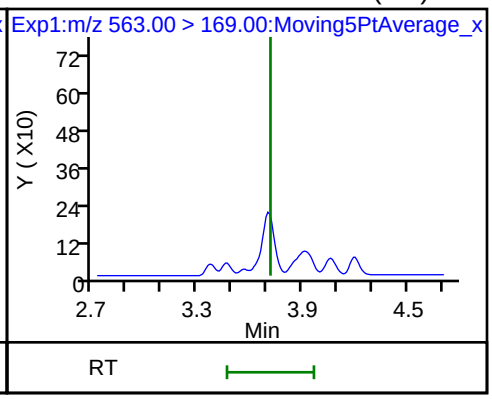
D 30 13C2 PFUnA



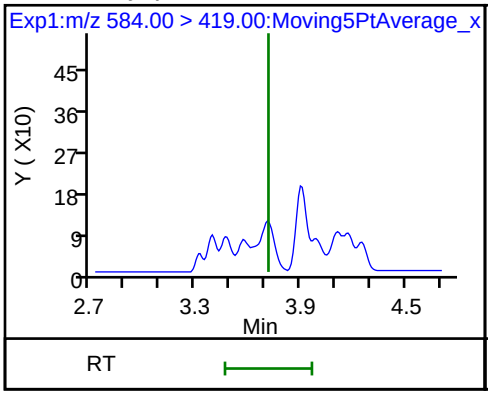
31 Perfluoroundecanoic acid (ND)



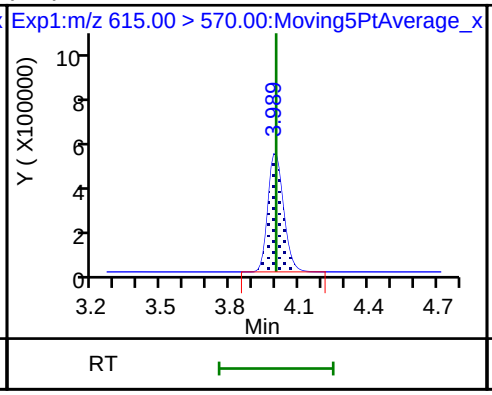
31 Perfluoroundecanoic acid (ND)



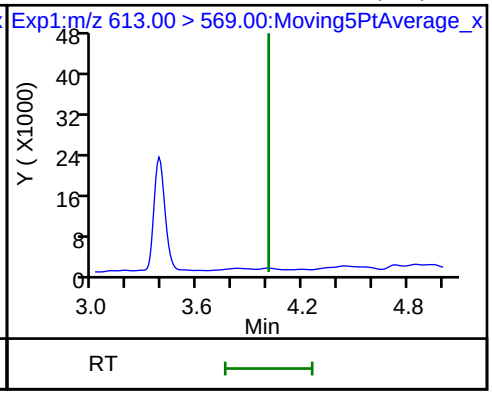
33 N-ethyl perfluorooctane sulfonamid (ND)



D 36 13C2 PFDoA

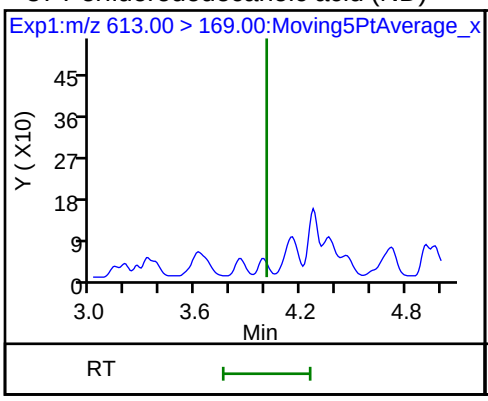


37 Perfluorododecanoic acid (ND)

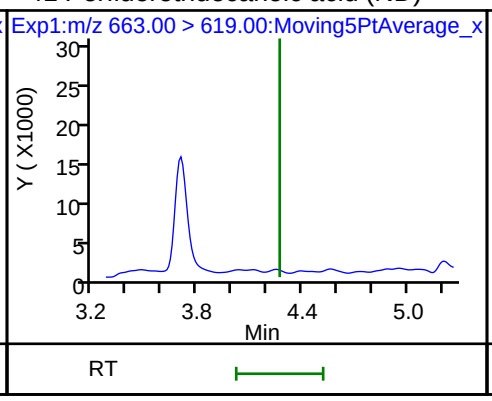


Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\2018.07.13LLB_065.d

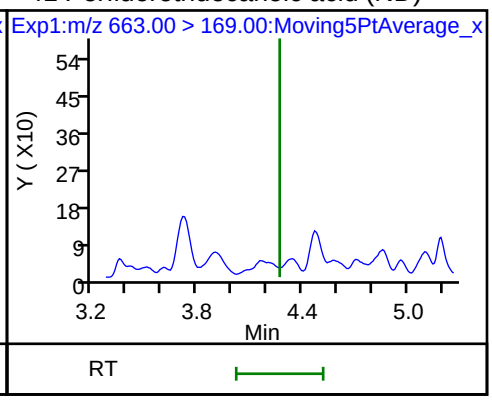
37 Perfluorododecanoic acid (ND)



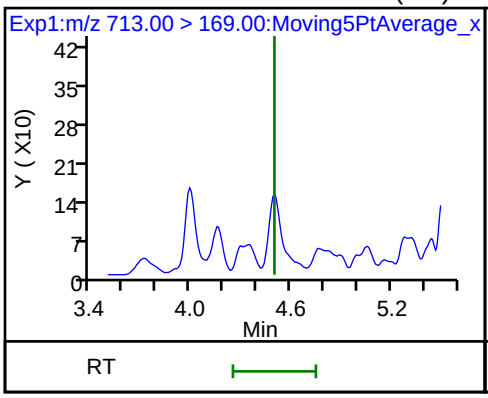
41 Perfluorotridecanoic acid (ND)



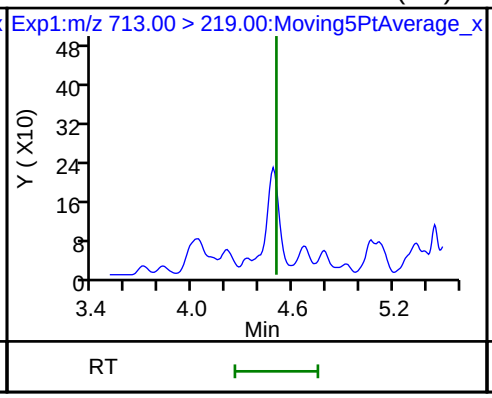
41 Perfluorotridecanoic acid (ND)



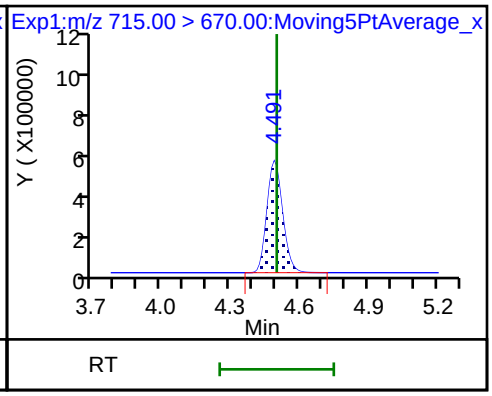
42 Perfluorotetradecanoic acid (ND)



42 Perfluorotetradecanoic acid (ND)



D 43 13C2-PFTeDA



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

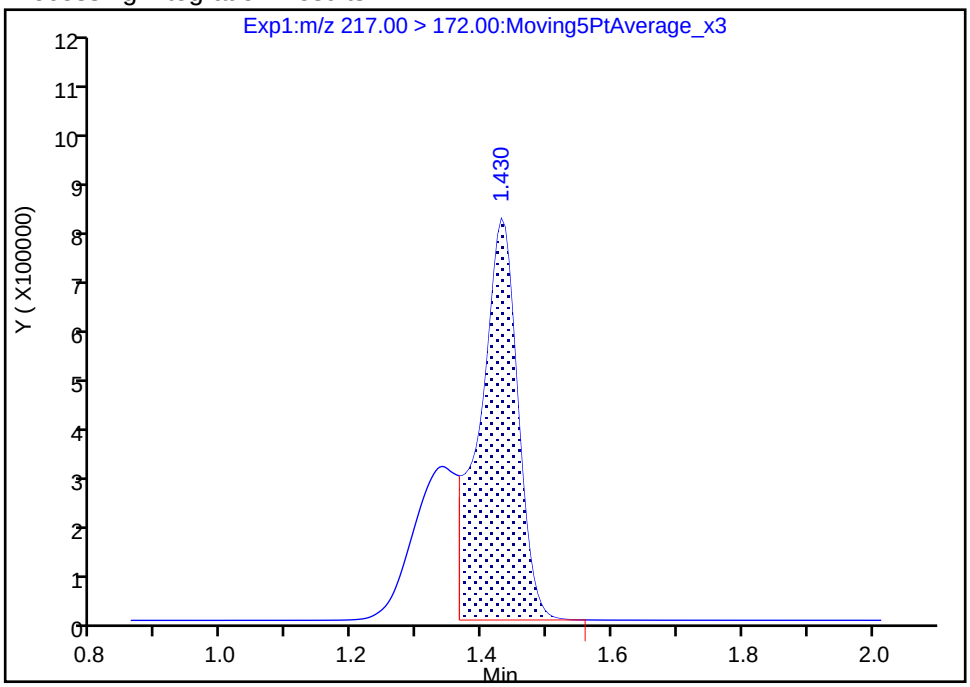
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\2018.07.13LLB_065.d				
Injection Date:	14-Jul-2018 05:15:23	Instrument ID:	A8_N		
Lims ID:	320-40571-A-18-A	Lab Sample ID:	320-40571-18		
Client ID:	NF24-SS-02				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	49	Worklist Smp#:	14
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

D 1 13C4 PFBA, CAS: STL00992

Signal: 1

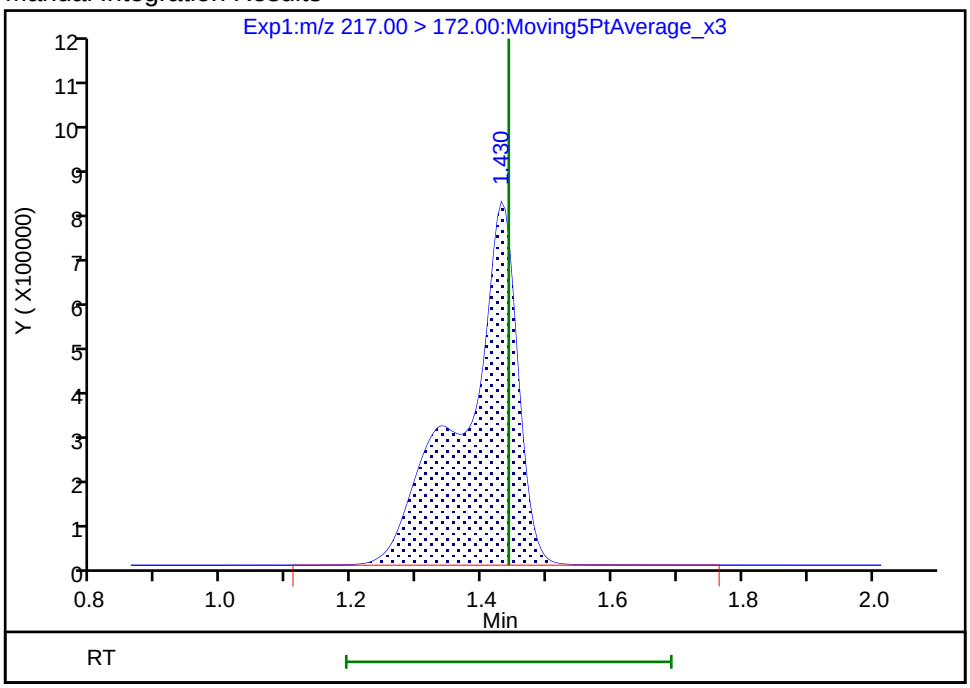
Processing Integration Results

RT: 1.43
Area: 3274658
Amount: 1.432309
Amount Units: ng/ml



Manual Integration Results

RT: 1.43
Area: 4737614
Amount: 2.072195
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 14:23:27

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF25-GW-01
Lab Sample ID: 320-40571-19
Matrix: Water
Lab File ID: 2018.07.13LLC_010.d
Analysis Method: 537 (modified)
Date Collected: 06/19/2018 11:37
Extraction Method: 3535
Date Extracted: 07/02/2018 14:58
Sample wt/vol: 283.1(mL)
Date Analyzed: 07/13/2018 21:17
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 233989
Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	0.017	B	0.0018	0.00031
2706-90-3	Perfluoropentanoic acid (PFPeA)	0.0086		0.0018	0.00043
307-24-4	Perfluorohexanoic acid (PFHxA)	0.0060		0.0018	0.00051
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.0038		0.0018	0.00022
335-67-1	Perfluorooctanoic acid (PFOA)	0.011		0.0018	0.00075
375-95-1	Perfluorononanoic acid (PFNA)	0.00089	J	0.0018	0.00024
335-76-2	Perfluorodecanoic acid (PFDA)	ND		0.0018	0.00027
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		0.0018	0.00097
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		0.0018	0.00049
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		0.0018	0.0011
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		0.0018	0.00026
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.0074		0.0018	0.00018
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	ND		0.0018	0.00026
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.0026	B	0.0018	0.00015
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.0018	0.00017
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.0026		0.0018	0.00048
8789-57-2	Perfluorononanesulfonic acid (PFNS)	ND		0.0018	0.00014
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		0.0018	0.00028
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		0.0018	0.00031
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.018	0.0027
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.018	0.0017
757124-72-4	4:2 FTS	ND		0.018	0.0046
27619-97-2	6:2 FTS	ND		0.018	0.0018
39108-34-4	8:2 FTS	ND		0.018	0.0018

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF25-GW-01
Lab Sample ID: 320-40571-19
Matrix: Water
Lab File ID: 2018.07.13LLC_010.d
Analysis Method: 537 (modified)
Date Collected: 06/19/2018 11:37
Extraction Method: 3535
Date Extracted: 07/02/2018 14:58
Sample wt/vol: 283.1(mL)
Date Analyzed: 07/13/2018 21:17
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 233989
Units: ug/L

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00992	13C4 PFBA	43		25-150
STL01893	13C5 PFPeA	68		25-150
STL00993	13C2 PFHxA	68		25-150
STL01892	13C4-PFHpA	97		25-150
STL00990	13C4 PFOA	102		25-150
STL00995	13C5 PFNA	97		25-150
STL00996	13C2 PFDA	96		25-150
STL00997	13C2 PFUnA	95		25-150
STL00998	13C2 PFDoA	86		25-150
STL02116	13C2-PFTeDA	59		25-150
STL02337	13C3-PFBS	81		25-150
STL00994	18O2 PFHxS	97		25-150
STL00991	13C4 PFOS	95		25-150
STL01056	13C8 FOSA	79		25-150
STL02118	d3-NMeFOSAA	92		25-150
STL02117	d5-NEtFOSAA	92		25-150
STL02279	M2-6:2FTS	137		25-150
STL02280	M2-8:2FTS	87		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\2018.07.13LLC_010.d
Lims ID: 320-40571-A-19-A
Client ID: NF25-GW-01
Sample Type: Client
Inject. Date: 13-Jul-2018 21:17:32 ALS Bottle#: 4 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-40571-a-19-a
Misc. Info.: Plate: 1 Rack: 4
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 16-Jul-2018 12:33:14 Calib Date: 11-Jul-2018 15:38:42
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK023

First Level Reviewer: mongkols Date: 16-Jul-2018 12:33:14

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										M
212.90 > 169.00	1.433	1.433	0.0	1.000	525357	0.4719			31.8	M
D 1 13C4 PFBA										
217.00 > 172.00	1.433	1.445	-0.012	0.538	2823724	1.09		43.4	15270	
4 Perfluoropentanoic acid										M
262.90 > 219.00	1.725	1.716	0.009	1.000	360796	0.2430			17.7	M
D 3 13C5-PFPeA										
267.90 > 223.00	1.725	1.725	0.0	0.647	3059846	1.69		67.7	9726	
5 Perfluorobutanesulfonic acid										M
298.90 > 80.00	1.761	1.761	0.0	1.000	586937	0.2082			53.0	M
298.90 > 99.00	1.761	1.761	0.0	1.000	227460		2.58(1.25-3.74)		153	
D 47 13C3-PFBS										
301.90 > 83.00	1.761	1.762	-0.001	0.661	85669	1.89		81.1	105	
6 Perfluorohexanoic acid										M
313.00 > 269.00	2.010	1.999	0.011	1.000	230600	0.1689			22.0	M
313.00 > 119.00	2.010	1.999	0.011	1.000	22166		10.40(5.03-15.10)		80.5	
D 7 13C2 PFHxA										
315.00 > 270.00	2.010	2.011	-0.001	0.754	3316708	1.70		68.0	36234	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.328	2.316	0.012	1.000	217526	0.1080			40.1	
363.00 > 169.00	2.328	2.316	0.012	1.000	88658		2.45(1.13-3.40)		455	
D 9 13C4-PFHpA										
367.00 > 322.00	2.328	2.329	-0.001	0.874	4353689	2.42		96.9	40280	
8 Perfluorohexanesulfonic acid										M
399.00 > 80.00	2.328	2.329	-0.001	0.994	209471	0.0738			34.0	M
399.00 > 99.00	2.341	2.329	0.012	1.000	72157		2.90(1.50-4.49)		85.0	
D 11 18O2 PFHxS										
403.00 > 84.00	2.341	2.342	-0.001	0.878	5848361	2.30		97.1	45648	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.642	2.634	0.008	1.000	32846	0.0398			249	
D 12 M2-6:2FTS										
429.00 > 81.00	2.642	2.651	-0.009	0.991	1251838	3.25		137	2230	
* 62 13C2-PFOA										
415.00 > 370.00	2.665	2.658	0.007		4795990	2.50			40159	
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.673	2.658	0.015	1.003	681869	0.2974			140	M
413.00 > 169.00	2.665	2.658	0.007	1.000	384841		1.77(0.84-2.52)		1555	
D 14 13C4 PFOA										
417.00 > 372.00	2.665	2.673	-0.008	1.000	4654288	2.54		102	50088	
17 Perfluorooctane sulfonic acid										M
499.00 > 80.00	2.906	3.018	-0.112	0.960	147211	0.0735			141	M
499.00 > 99.00	2.916	3.018	-0.102	0.963	18474		7.97(2.31-6.93)		58.5	M
20 Perfluorononanoic acid										
463.00 > 419.00	3.027	3.025	0.002	1.000	44456	0.0252			27.2	
463.00 > 169.00	3.027	3.025	0.002	1.000	8595		5.17(1.90-5.69)		39.8	
D 18 13C4 PFOS										
503.00 > 80.00	3.027	3.036	-0.009	1.136	4222167	2.26		94.5	9261	
D 19 13C5 PFNA										
468.00 > 423.00	3.027	3.036	-0.009	1.136	3980048	2.43		97.1	42479	
D 21 13C8 FOSA										
506.00 > 78.00	3.373	3.376	-0.003	1.265	5304303	1.97		78.7	47269	
D 26 M2-8:2FTS										
529.00 > 81.00	3.373	3.376	-0.003	1.265	1176003	2.09		87.1	5019	
D 23 13C2 PFDA										
515.00 > 470.00	3.382	3.385	-0.003	1.269	3447857	2.40		95.8	41674	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.532	3.544	-0.012	1.325	1354257	2.30		91.8	33893	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.700	3.705	-0.005	1.388	1386481	2.29		91.8	4697	
D 30 13C2 PFUnA										
565.00 > 520.00	3.700	3.715	-0.015	1.388	2848968	2.37		94.8	54019	
D 36 13C2 PFDoA										
615.00 > 570.00	3.999	4.005	-0.006	1.500	2670627	2.14		85.7	24851	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.490	4.500	-0.010	1.685	1905048	1.47		58.9	15590	

QC Flag Legend

Review Flags

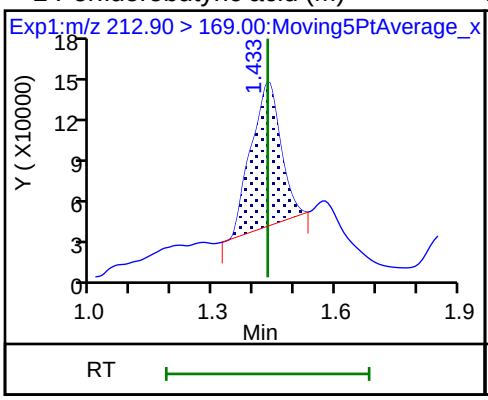
M - Manually Integrated

Report Date: 16-Jul-2018 12:33:14 Chrom Revision: 2.2 07-Jun-2018 07:41:54

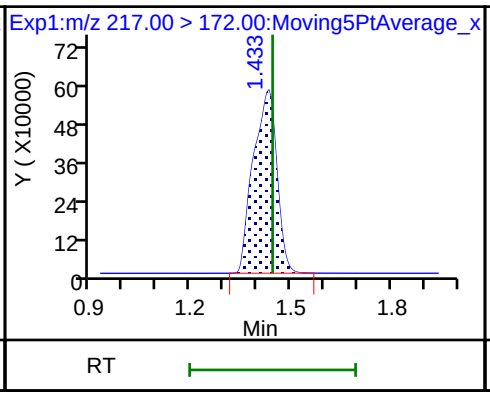
TestAmerica Sacramento

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\2018.07.13LLC_010.d				
Injection Date:	13-Jul-2018 21:17:32	Instrument ID:	A8_N		
Lims ID:	320-40571-A-19-A	Lab Sample ID:	320-40571-19		
Client ID:	NF25-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	4	Worklist Smp#:	5
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		

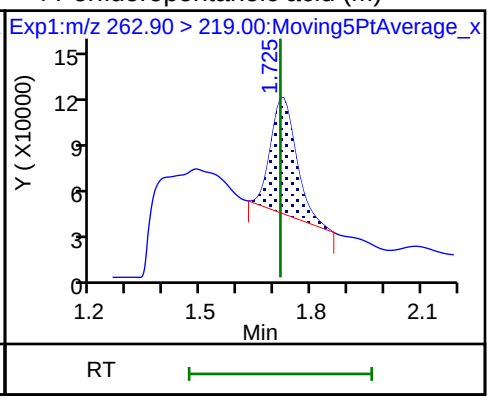
2 Perfluorobutyric acid (M)



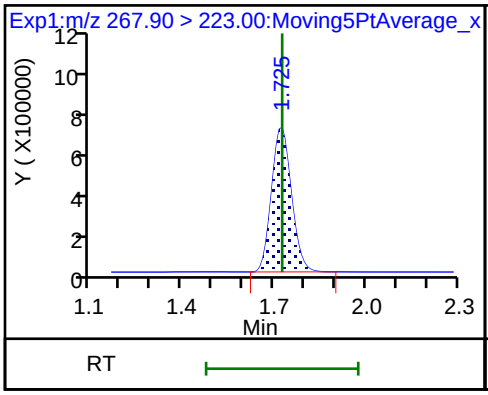
D 1 13C4 PFBA



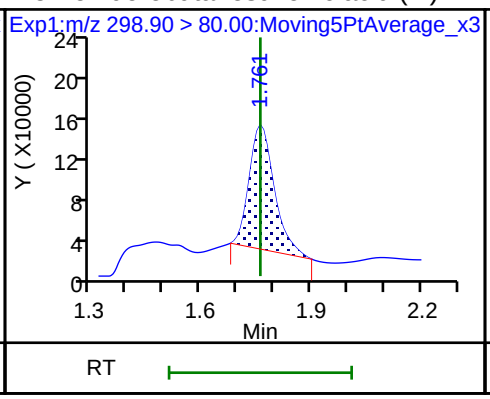
4 Perfluoropentanoic acid (M)



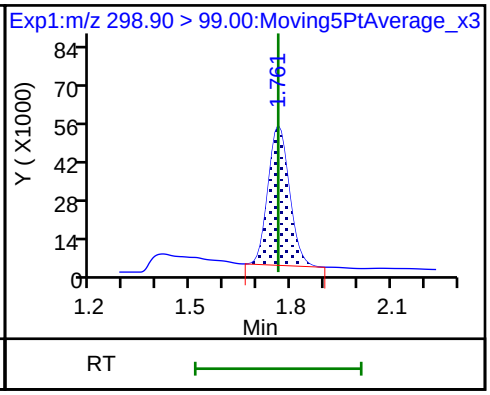
D 3 13C5-PFPeA



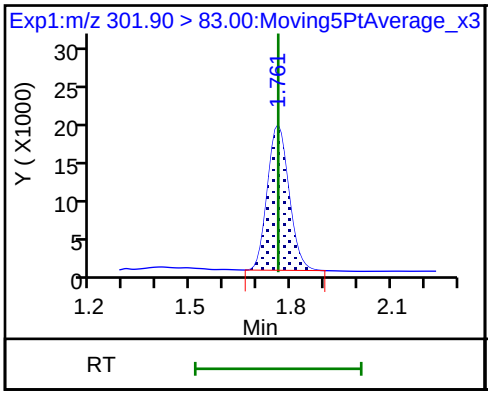
5 Perfluorobutanesulfonic acid (M)



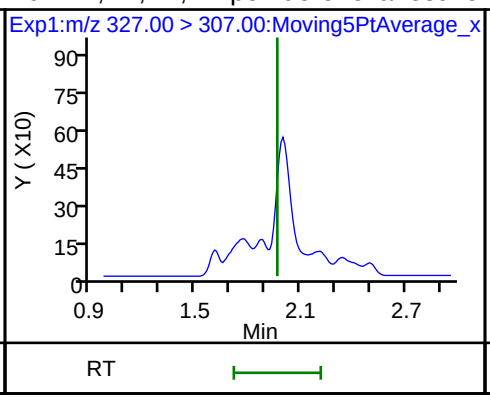
5 Perfluorobutanesulfonic acid



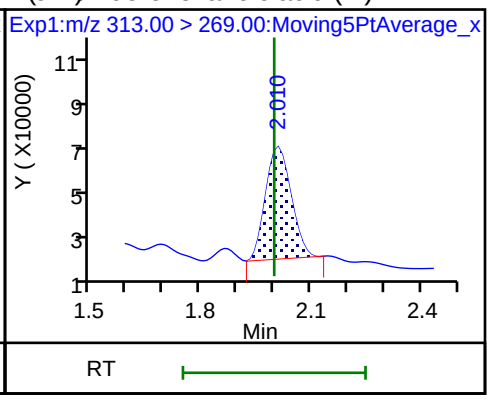
D 47 13C3-PFBS



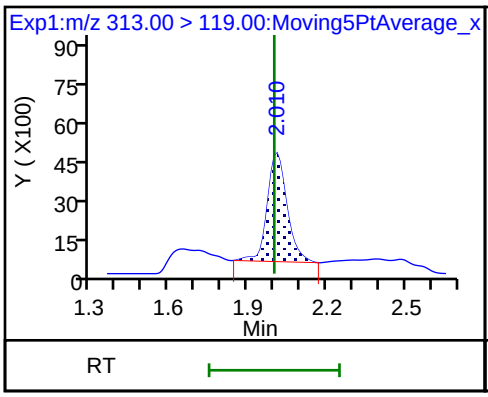
61 1H,1H,2H,2H-perfluorohexanesulfoni (ND)



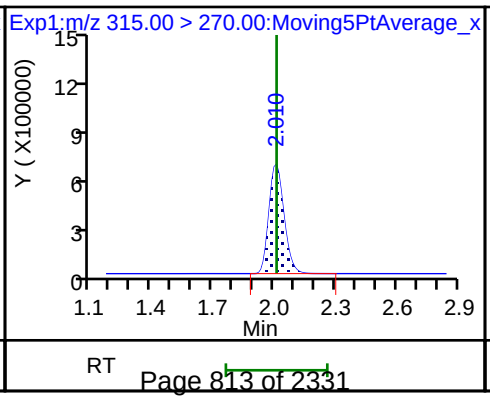
6 Perfluorohexanoic acid (M)



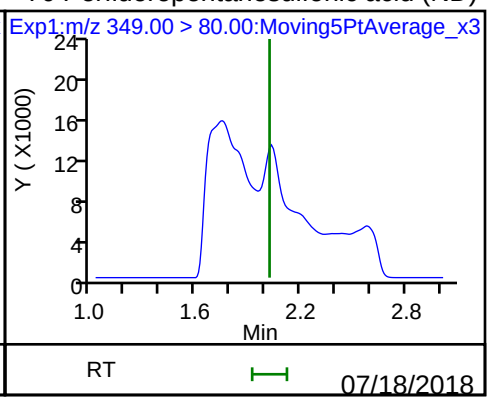
6 Perfluorohexanoic acid



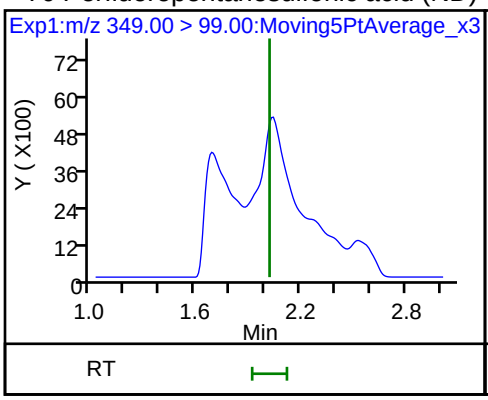
D 7 13C2 PFHxA



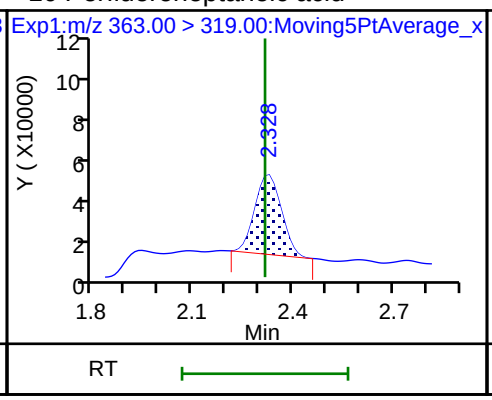
70 Perfluoropentanesulfonic acid (ND)



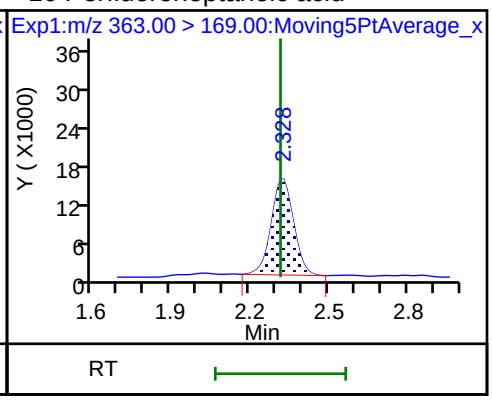
70 Perfluoropentanesulfonic acid (ND)



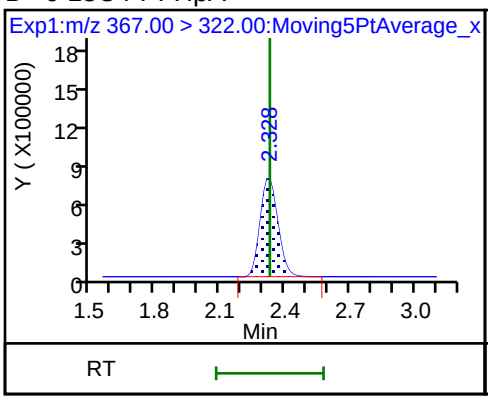
10 Perfluoroheptanoic acid



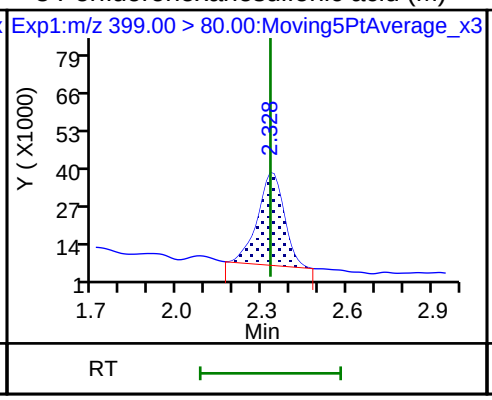
10 Perfluoroheptanoic acid



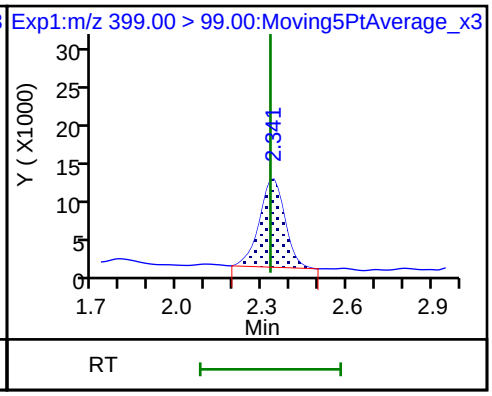
D 9 13C4-PFHpA



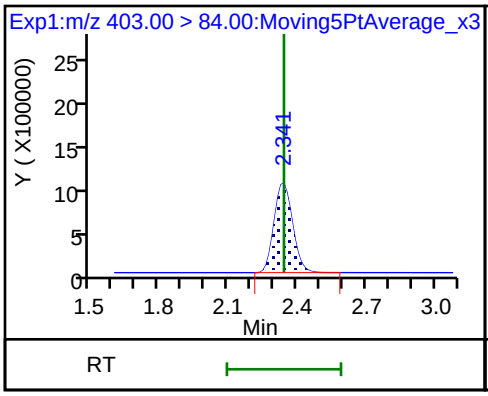
8 Perfluorohexanesulfonic acid (M)



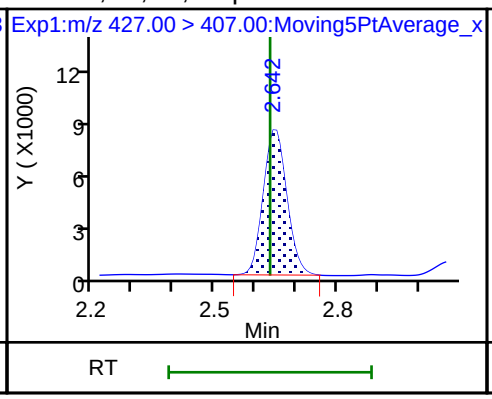
8 Perfluorohexanesulfonic acid



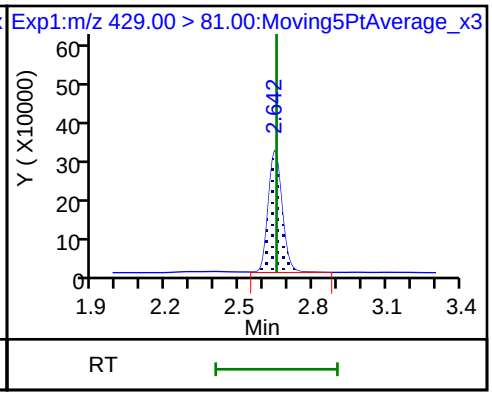
D 11 18O2 PFHxS



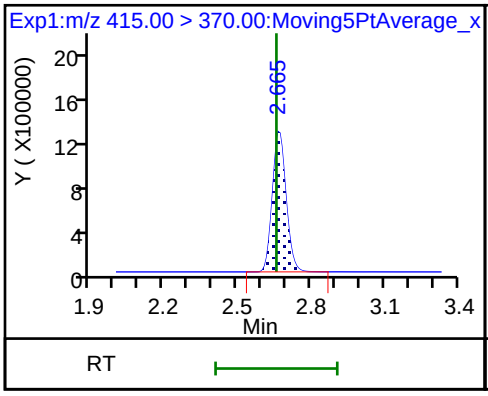
13 1H,1H,2H,2H-perfluorooctanesulfon



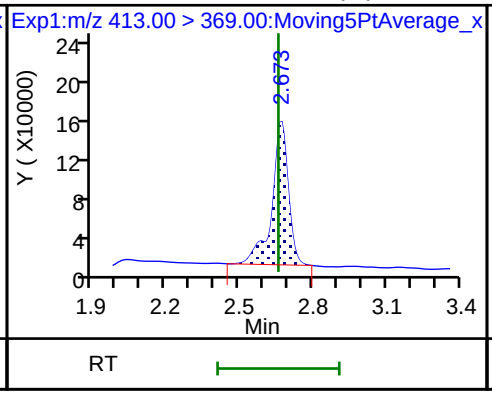
D 12 M2-6:2FTS



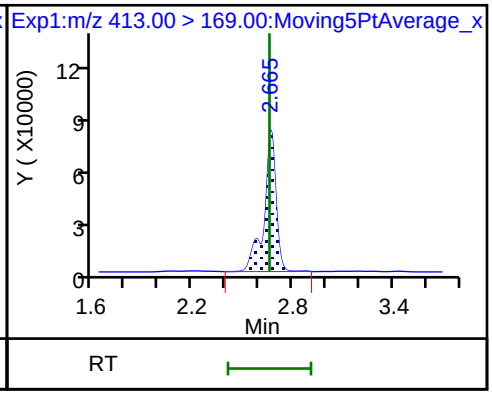
* 62 13C2-PFOA



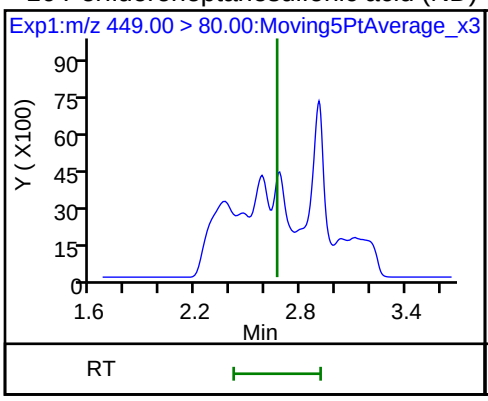
15 Perfluorooctanoic acid (M)



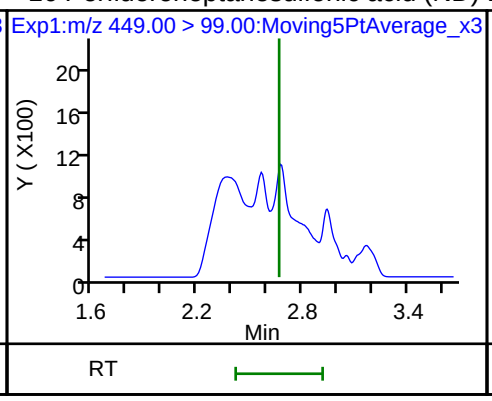
15 Perfluorooctanoic acid



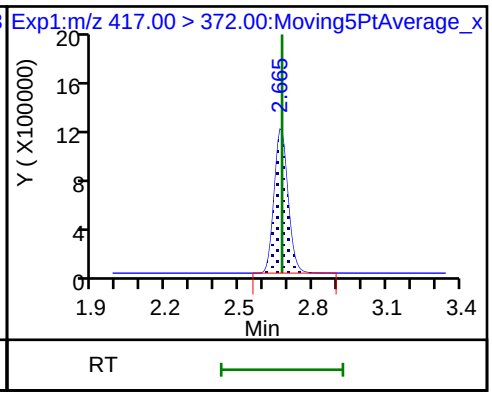
16 Perfluoroheptanesulfonic acid (ND)



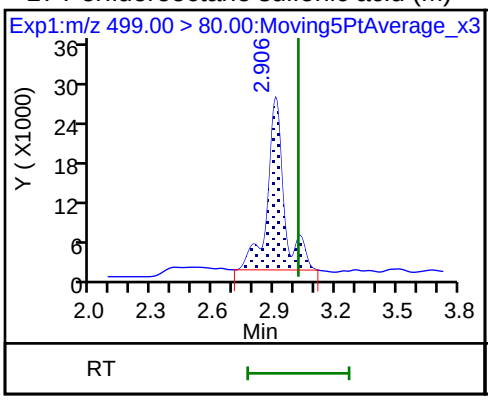
16 Perfluoroheptanesulfonic acid (ND)



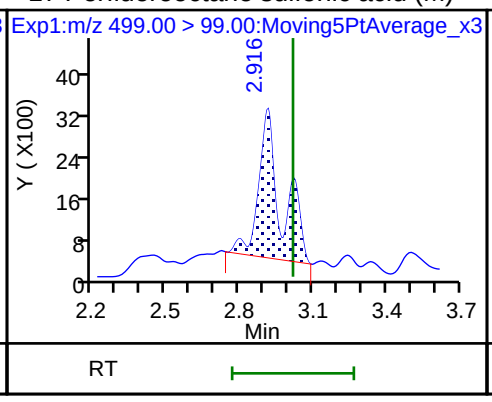
D 14 13C4 PFOA



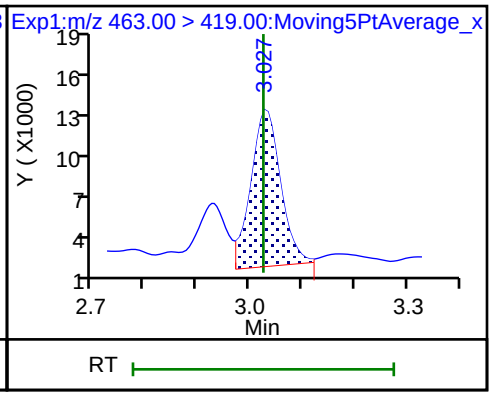
17 Perfluorooctane sulfonic acid (M)



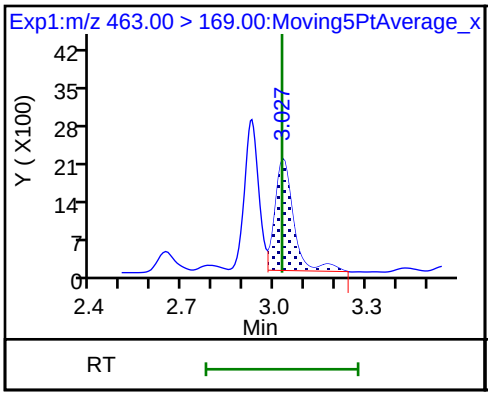
17 Perfluorooctane sulfonic acid (M)



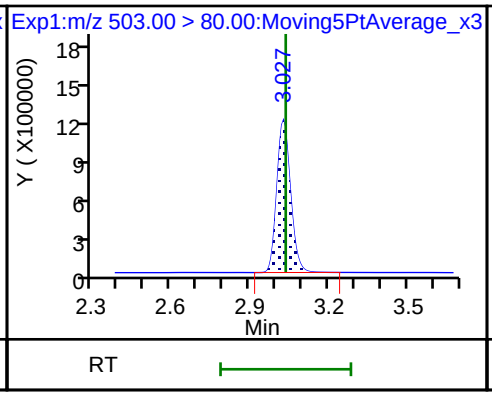
20 Perfluorononanoic acid



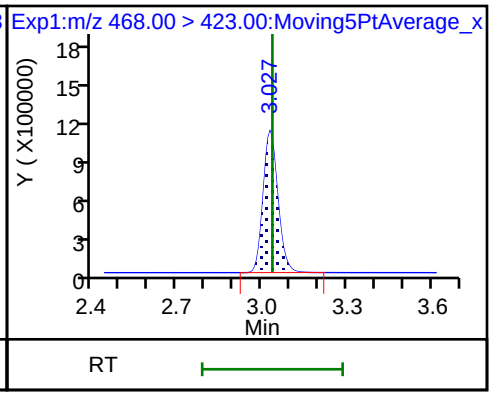
20 Perfluorononanoic acid



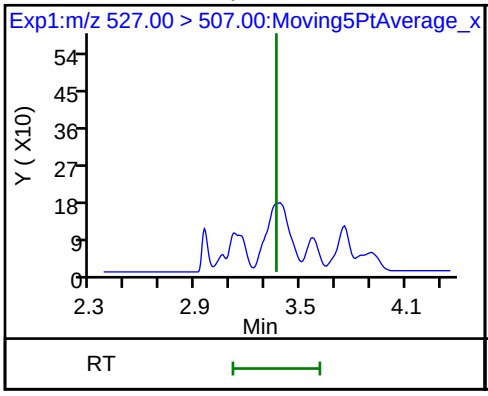
D 18 13C4 PFOS



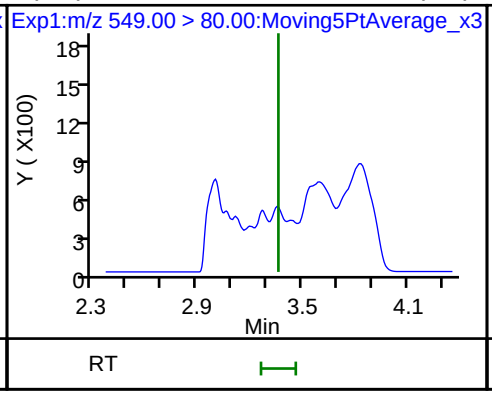
D 19 13C5 PFNA



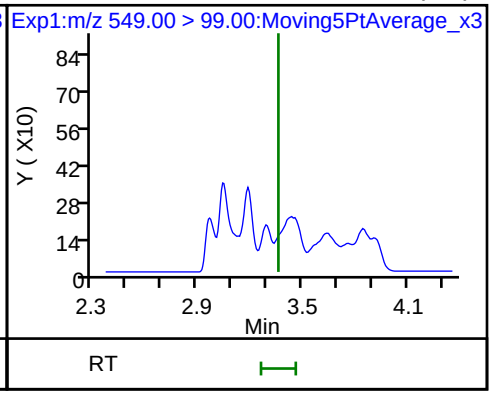
25 1H,1H,2H-perfluorodecanesulfoni (ND)



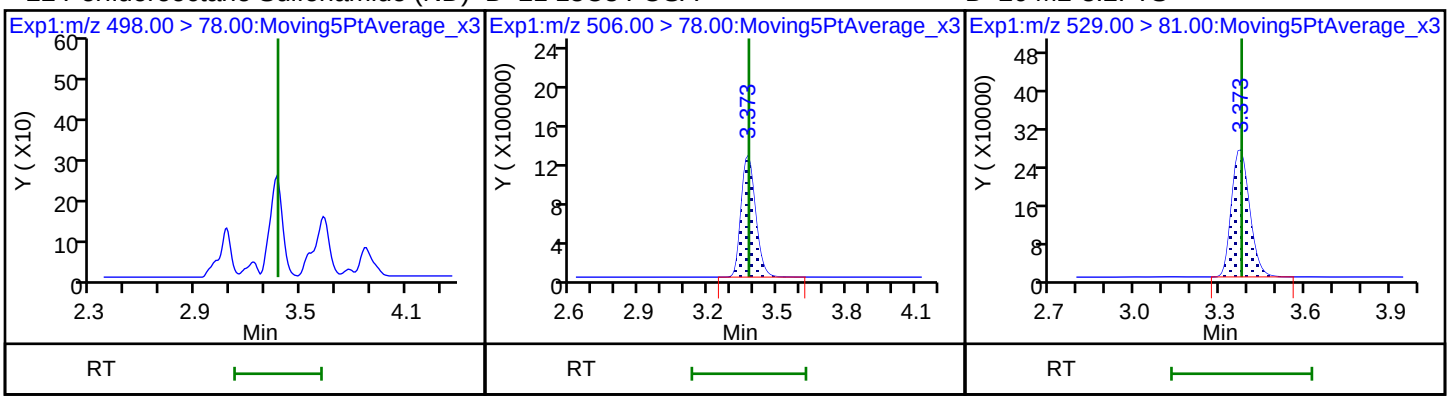
68 Perfluorononanesulfonic acid (ND)



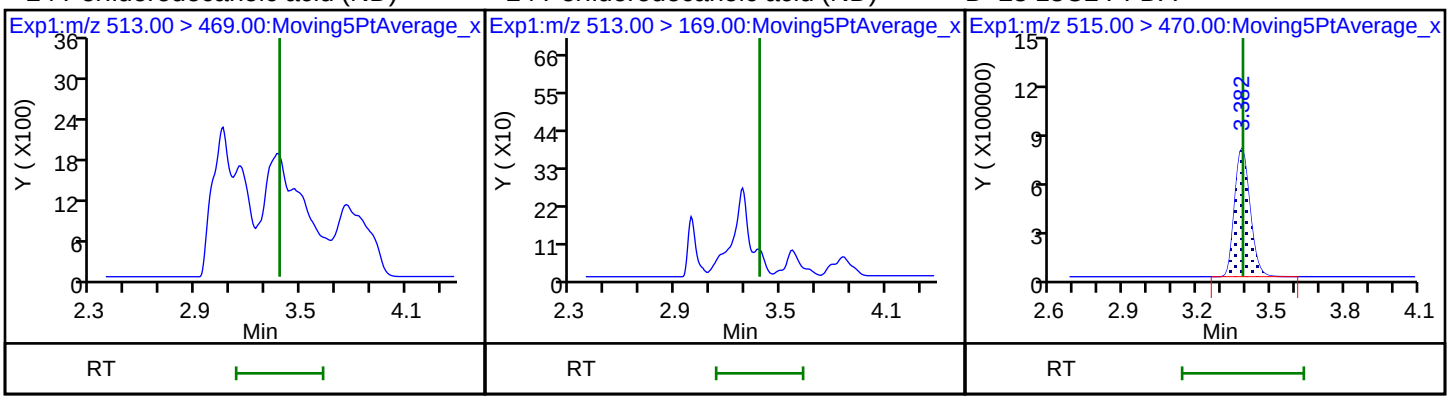
68 Perfluorononanesulfonic acid (ND)



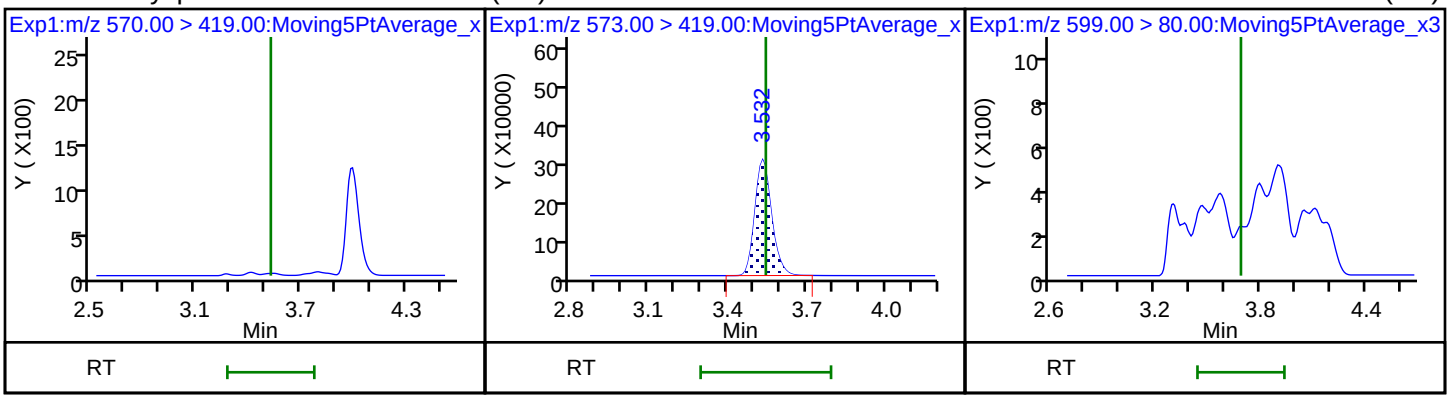
22 Perfluorooctane Sulfonamide (ND) D 21 13C8 FOSA D 26 M2-8:2FTS



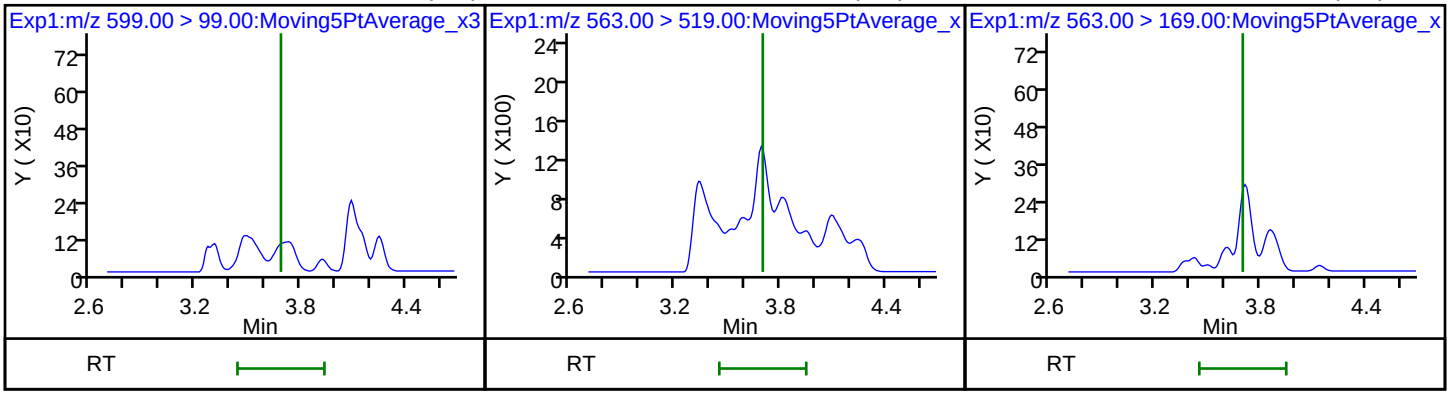
24 Perfluorodecanoic acid (ND) 24 Perfluorodecanoic acid (ND) D 23 13C2 PFDA



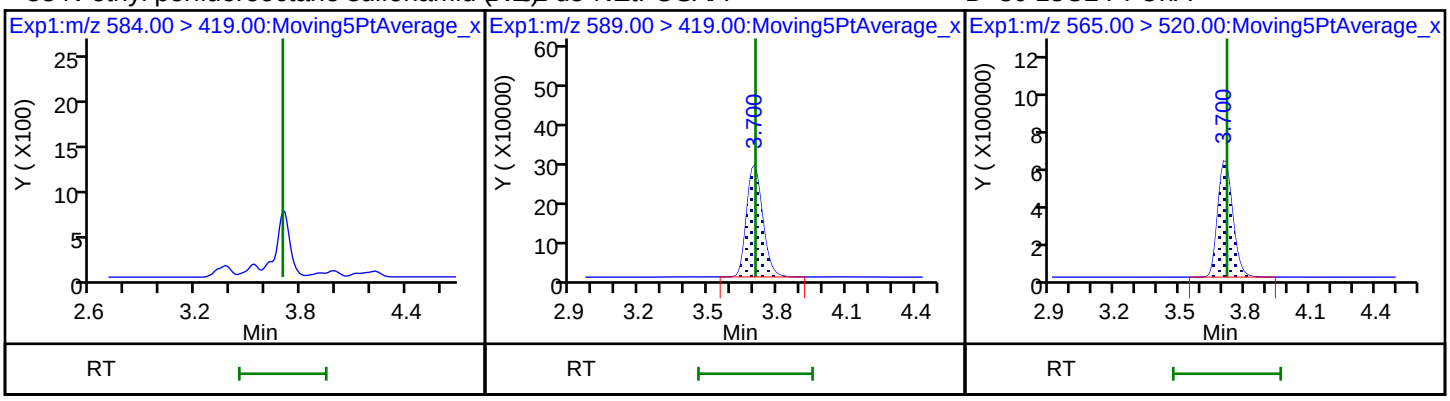
28 N-methyl perfluorooctane sulfonamid (ND) D 27 d3-NMeFOSAA 29 Perfluorodecane Sulfonic acid (ND)



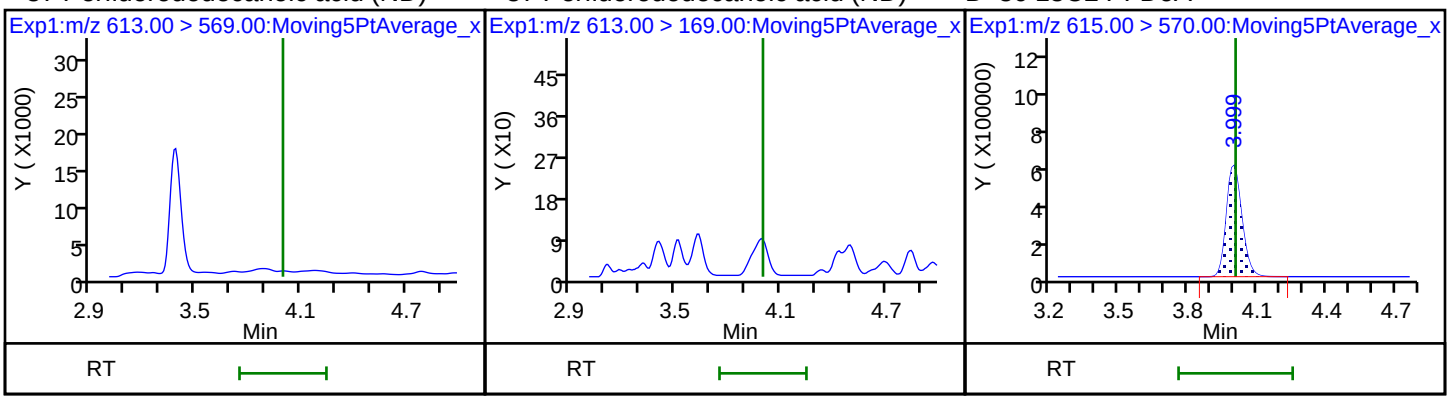
29 Perfluorodecane Sulfonic acid (ND) 31 Perfluoroundecanoic acid (ND) 31 Perfluoroundecanoic acid (ND)



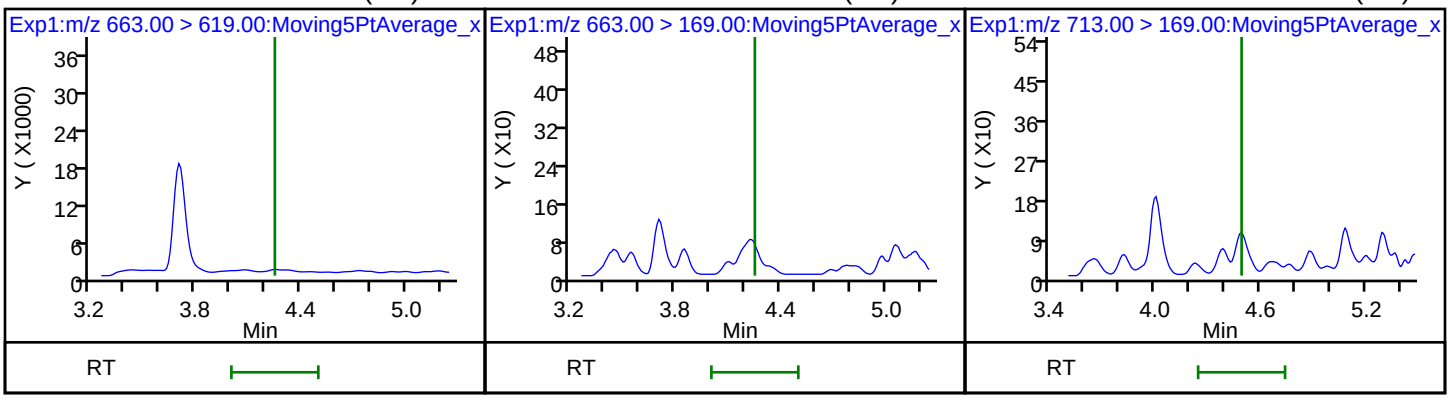
33 N-ethyl perfluorooctane sulfonamid (ND) D 32 d5-NEtFOSAA D 30 13C2 PFUnA



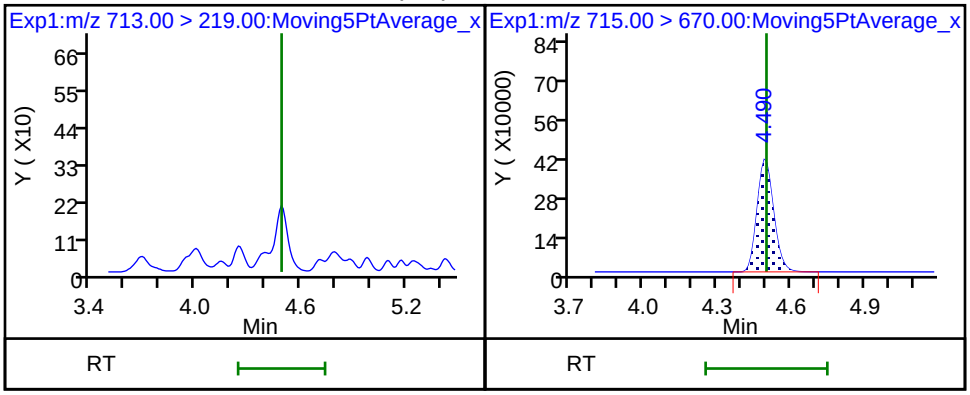
37 Perfluorododecanoic acid (ND) 37 Perfluorododecanoic acid (ND) D 36 13C2 PFDoA



41 Perfluorotridecanoic acid (ND) 41 Perfluorotridecanoic acid (ND) 42 Perfluorotetradecanoic acid (ND)



42 Perfluorotetradecanoic acid (ND) D 43 13C2-PFTeDA



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

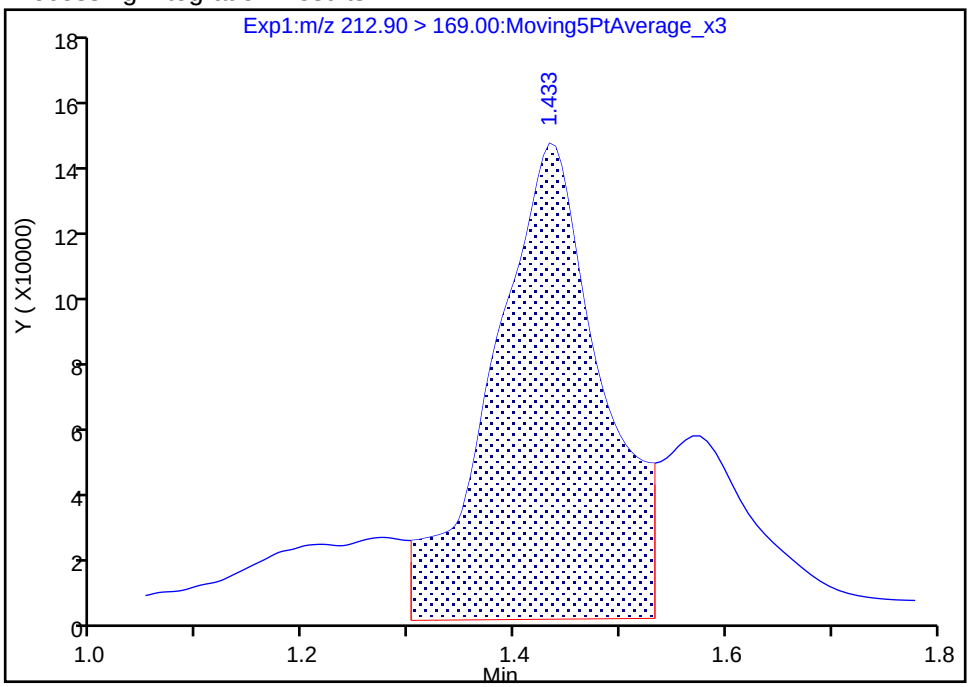
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\2018.07.13LLC_010.d				
Injection Date:	13-Jul-2018 21:17:32	Instrument ID:	A8_N		
Lims ID:	320-40571-A-19-A	Lab Sample ID:	320-40571-19		
Client ID:	NF25-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	4	Worklist Smp#:	5
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

2 Perfluorobutyric acid, CAS: 375-22-4

Signal: 1

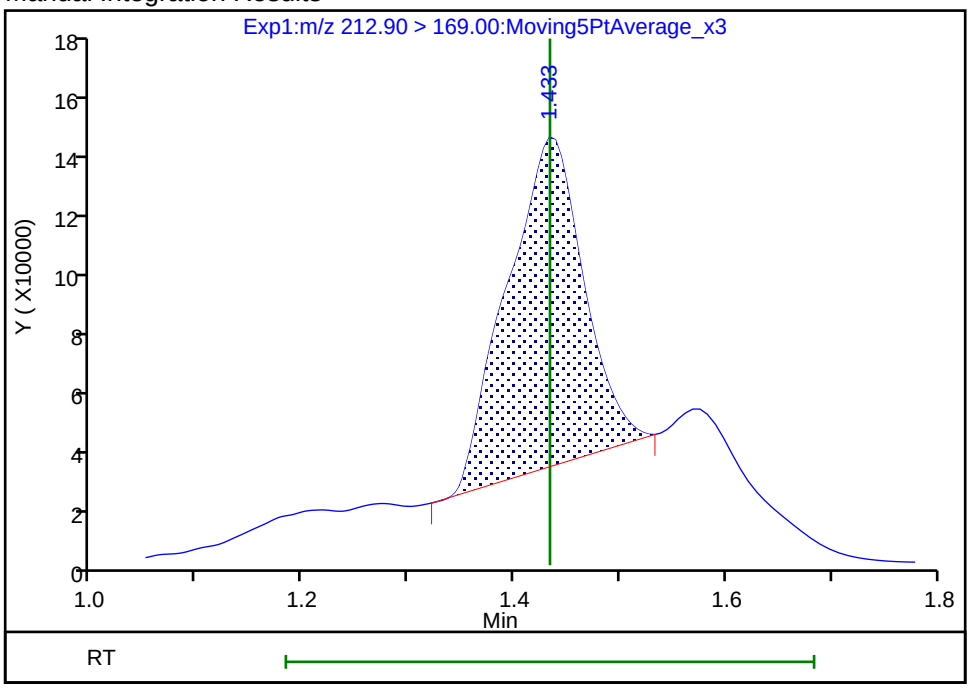
Processing Integration Results

RT: 1.43
Area: 998995
Amount: 0.897410
Amount Units: ng/ml



Manual Integration Results

RT: 1.43
Area: 525357
Amount: 0.471935
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 12:31:32

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

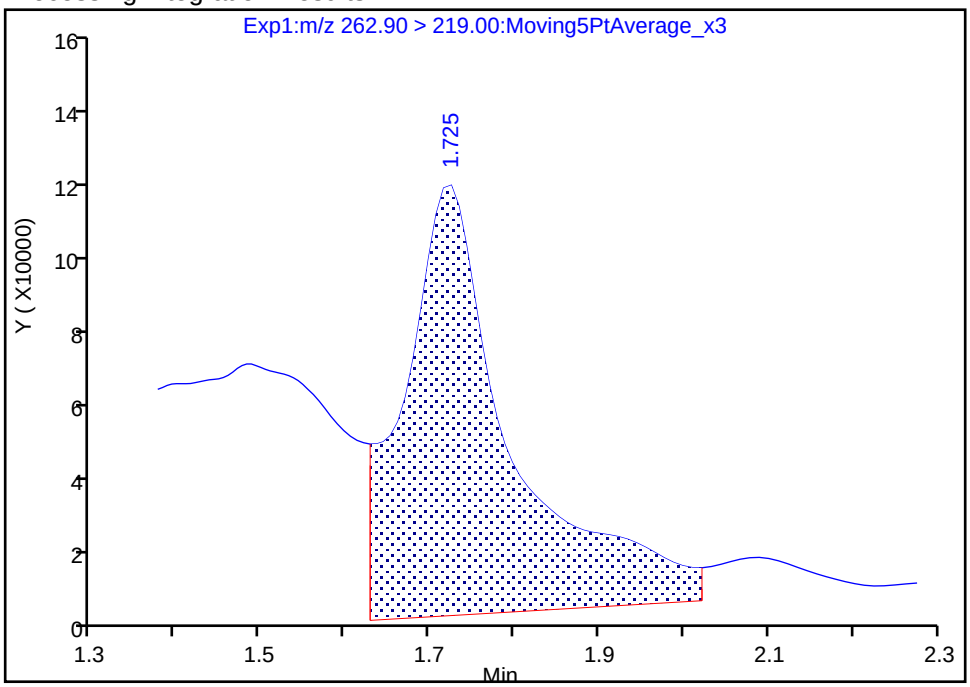
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\2018.07.13LLC_010.d				
Injection Date:	13-Jul-2018 21:17:32	Instrument ID:	A8_N		
Lims ID:	320-40571-A-19-A	Lab Sample ID:	320-40571-19		
Client ID:	NF25-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	4	Worklist Smp#:	5
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

4 Perfluoropentanoic acid, CAS: 2706-90-3

Signal: 1

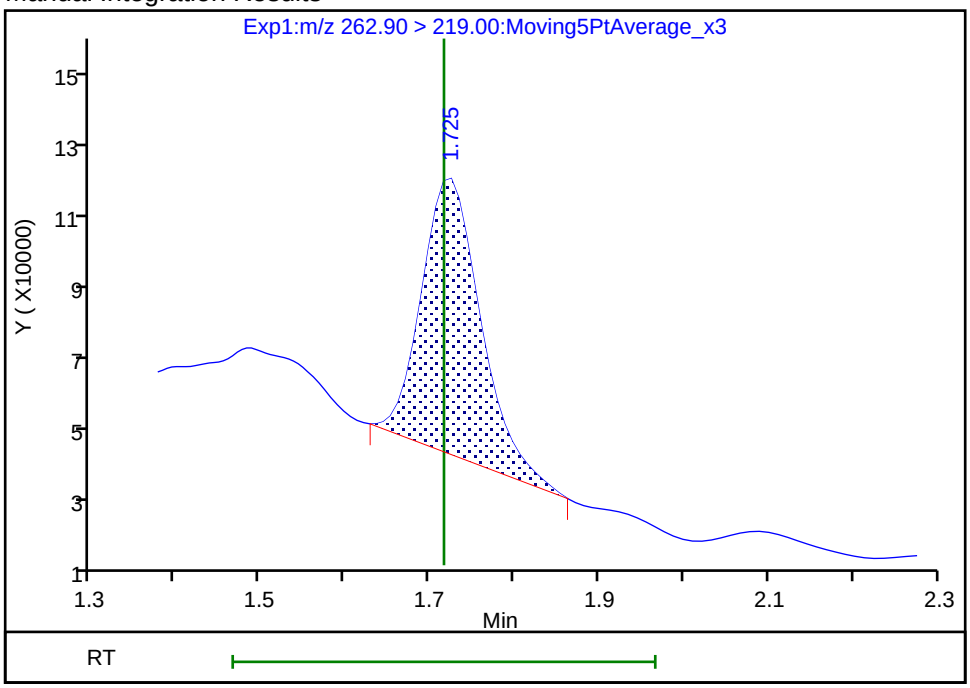
Processing Integration Results

RT: 1.73
Area: 971256
Amount: 0.654129
Amount Units: ng/ml



Manual Integration Results

RT: 1.73
Area: 360796
Amount: 0.242992
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 12:31:38

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

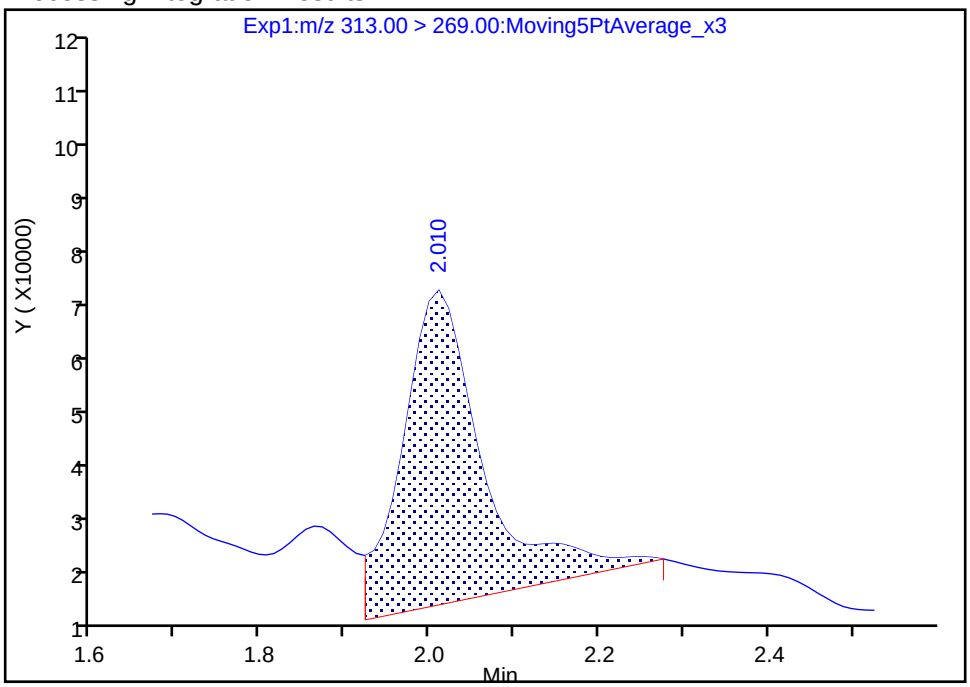
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\2018.07.13LLC_010.d				
Injection Date:	13-Jul-2018 21:17:32	Instrument ID:	A8_N		
Lims ID:	320-40571-A-19-A	Lab Sample ID:	320-40571-19		
Client ID:	NF25-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	4	Worklist Smp#:	5
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

6 Perfluorohexanoic acid, CAS: 307-24-4

Signal: 1

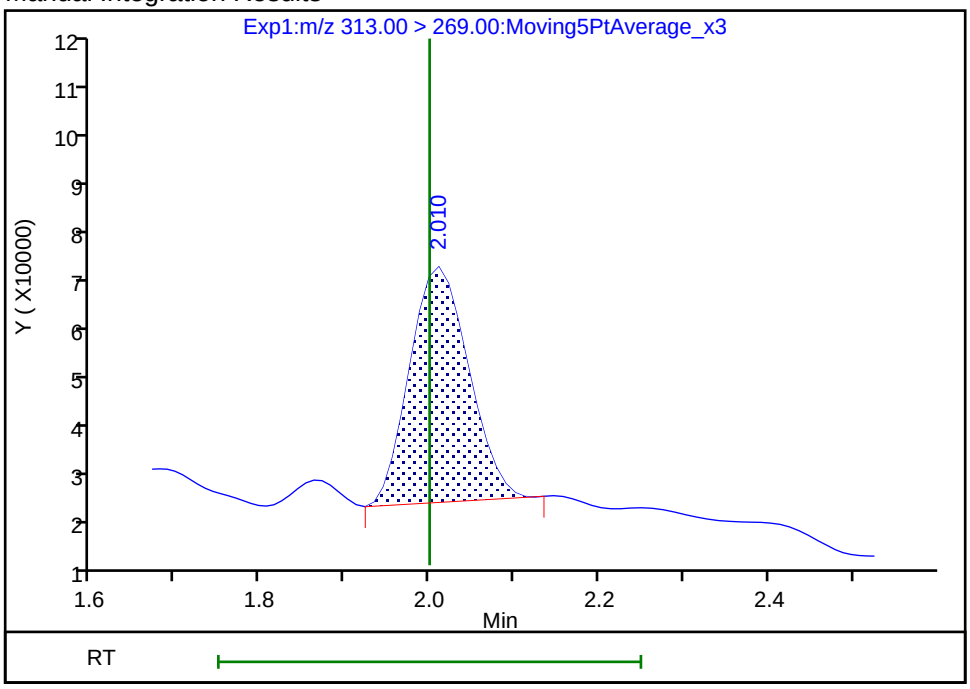
Processing Integration Results

RT: 2.01
Area: 378857
Amount: 0.277437
Amount Units: ng/ml



Manual Integration Results

RT: 2.01
Area: 230600
Amount: 0.168868
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 12:31:59
Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

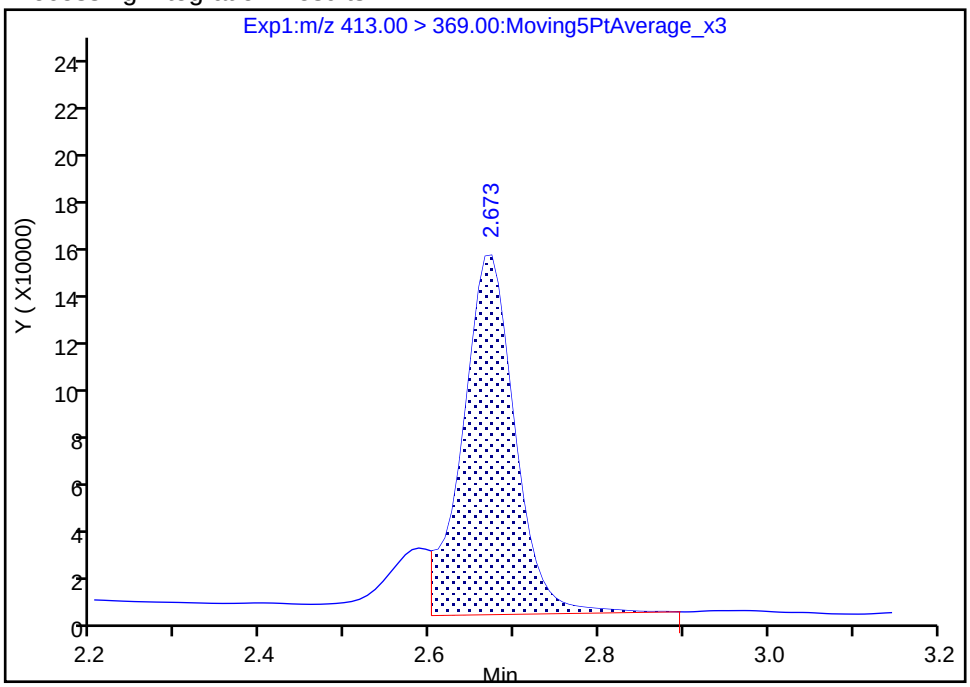
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\2018.07.13LLC_010.d				
Injection Date:	13-Jul-2018 21:17:32	Instrument ID:	A8_N		
Lims ID:	320-40571-A-19-A	Lab Sample ID:	320-40571-19		
Client ID:	NF25-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	4	Worklist Smp#:	5
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

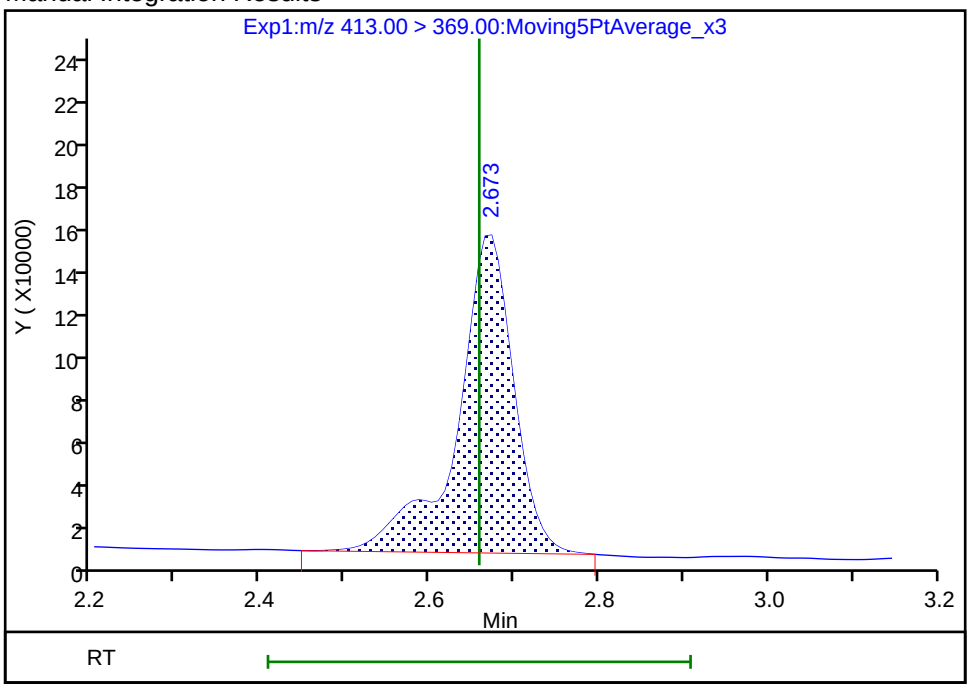
Processing Integration Results

RT: 2.67
Area: 640464
Amount: 0.279338
Amount Units: ng/ml



Manual Integration Results

RT: 2.67
Area: 681869
Amount: 0.297396
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 12:32:30

Audit Action: Manually Integrated Audit Reason: Isomers

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

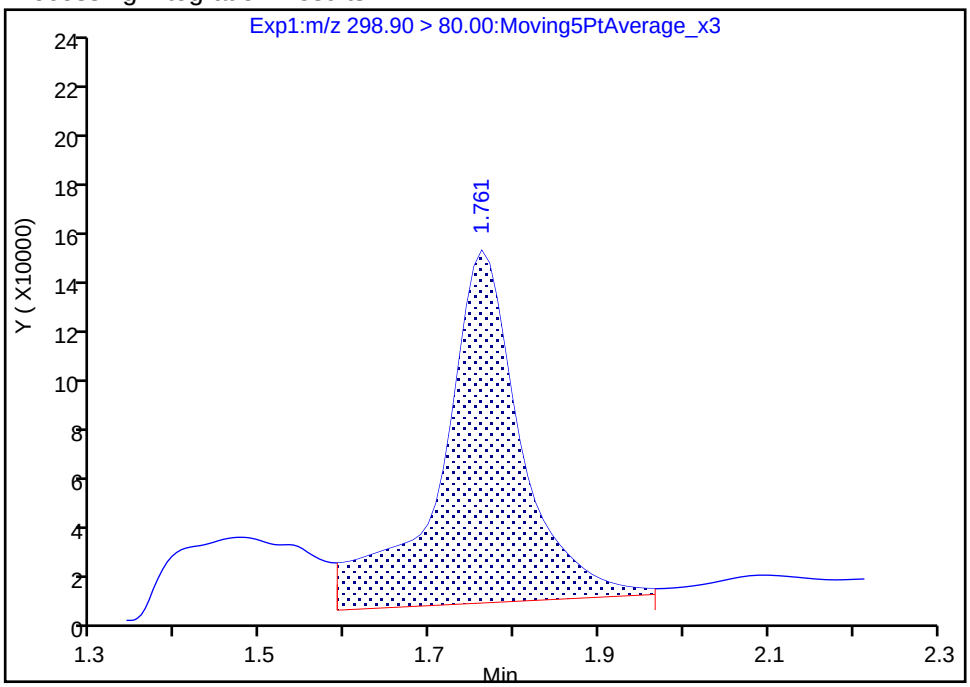
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\2018.07.13LLC_010.d				
Injection Date:	13-Jul-2018 21:17:32	Instrument ID:	A8_N		
Lims ID:	320-40571-A-19-A	Lab Sample ID:	320-40571-19		
Client ID:	NF25-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	4	Worklist Smp#:	5
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

5 Perfluorobutanesulfonic acid, CAS: 375-73-5

Signal: 1

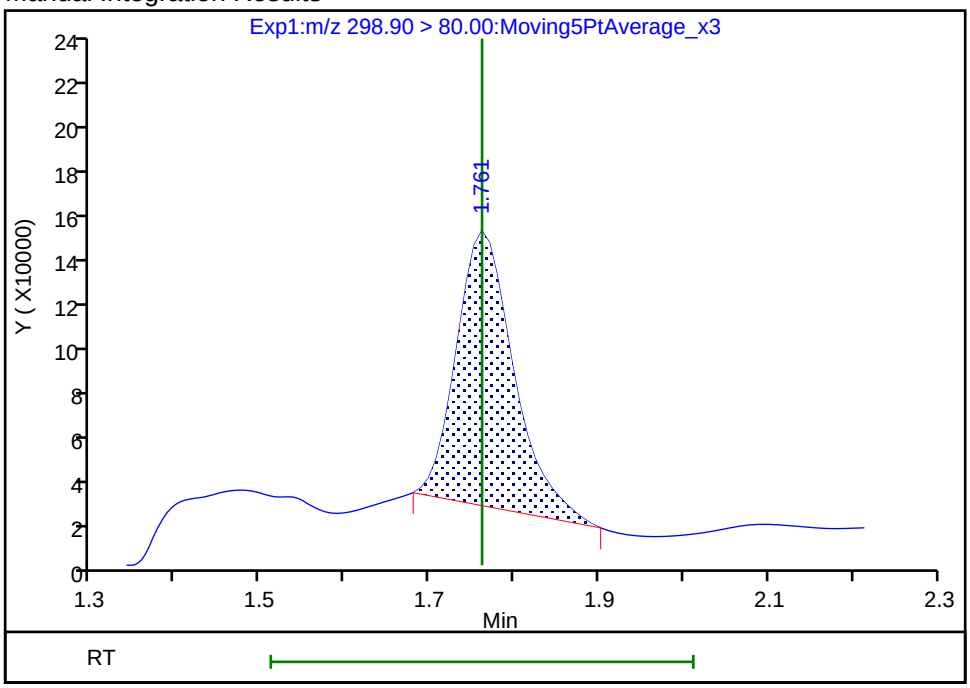
Processing Integration Results

RT: 1.76
Area: 954239
Amount: 0.338548
Amount Units: ng/ml



Manual Integration Results

RT: 1.76
Area: 586937
Amount: 0.208236
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 12:31:45

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

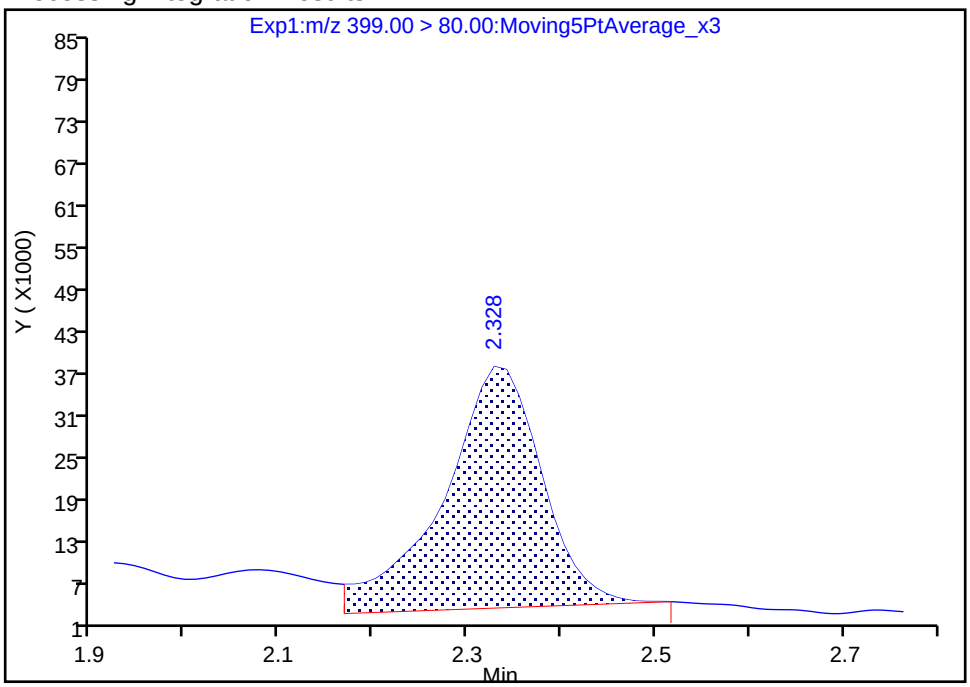
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\2018.07.13LLC_010.d				
Injection Date:	13-Jul-2018 21:17:32	Instrument ID:	A8_N		
Lims ID:	320-40571-A-19-A	Lab Sample ID:	320-40571-19		
Client ID:	NF25-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	4	Worklist Smp#:	5
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

8 Perfluorohexanesulfonic acid, CAS: 355-46-4

Signal: 1

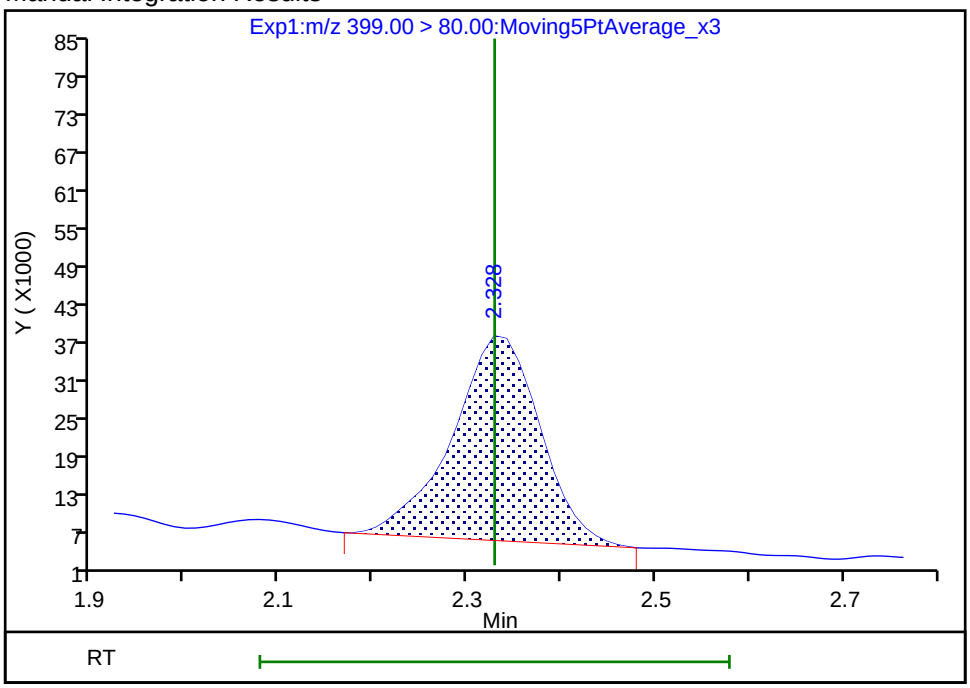
Processing Integration Results

RT: 2.33
Area: 250938
Amount: 0.088400
Amount Units: ng/ml



Manual Integration Results

RT: 2.33
Area: 209471
Amount: 0.073792
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 12:32:19

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

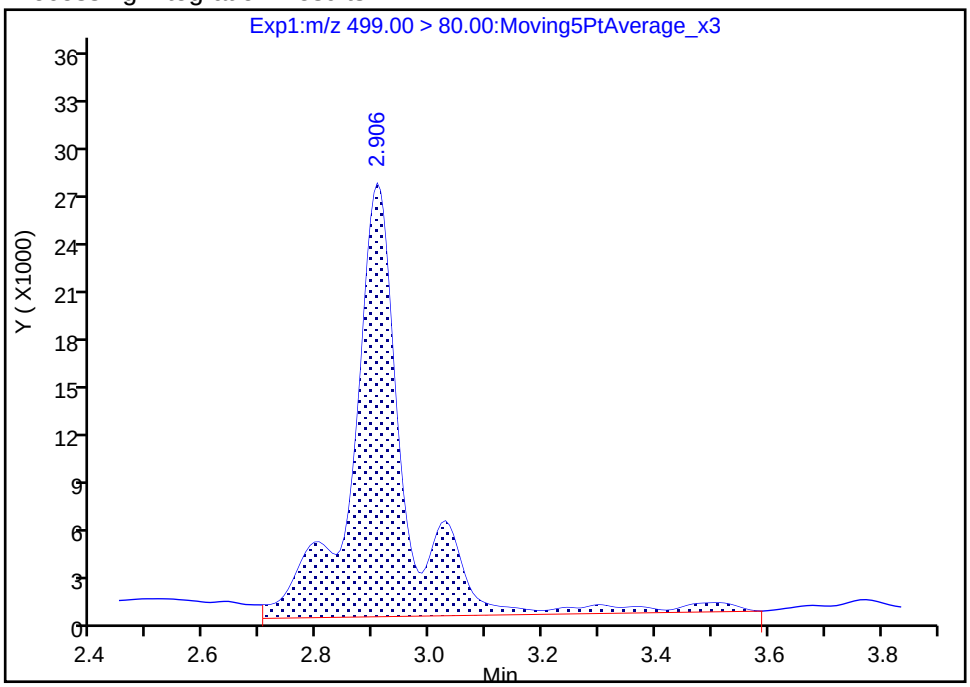
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\2018.07.13LLC_010.d				
Injection Date:	13-Jul-2018 21:17:32	Instrument ID:	A8_N		
Lims ID:	320-40571-A-19-A	Lab Sample ID:	320-40571-19		
Client ID:	NF25-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	4	Worklist Smp#:	5
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

17 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

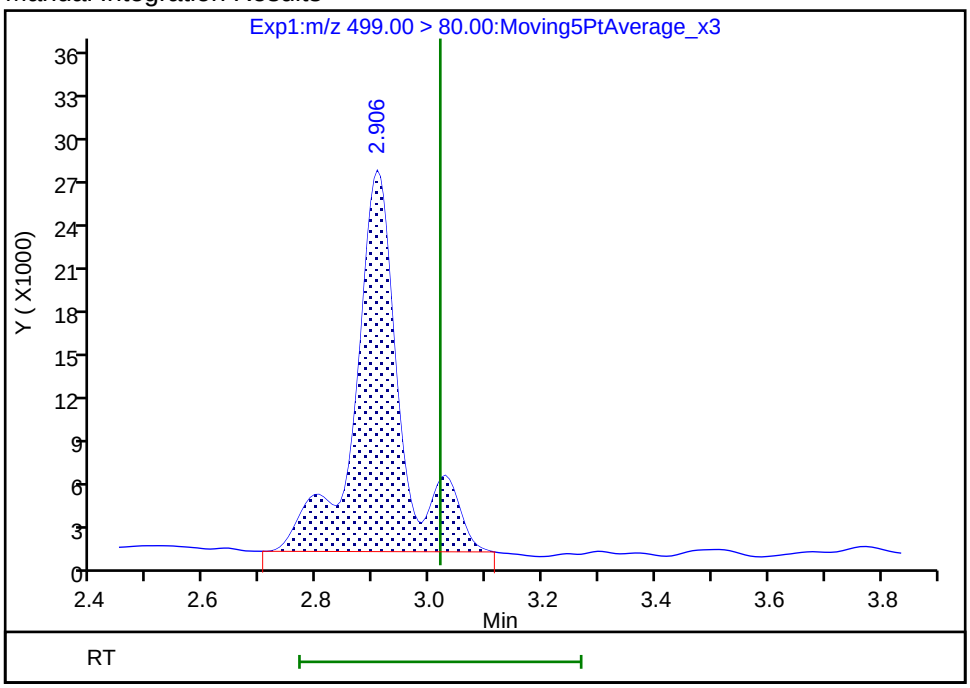
Processing Integration Results

RT: 2.91
Area: 174635
Amount: 0.087237
Amount Units: ng/ml



Manual Integration Results

RT: 2.91
Area: 147211
Amount: 0.073538
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 12:32:49

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

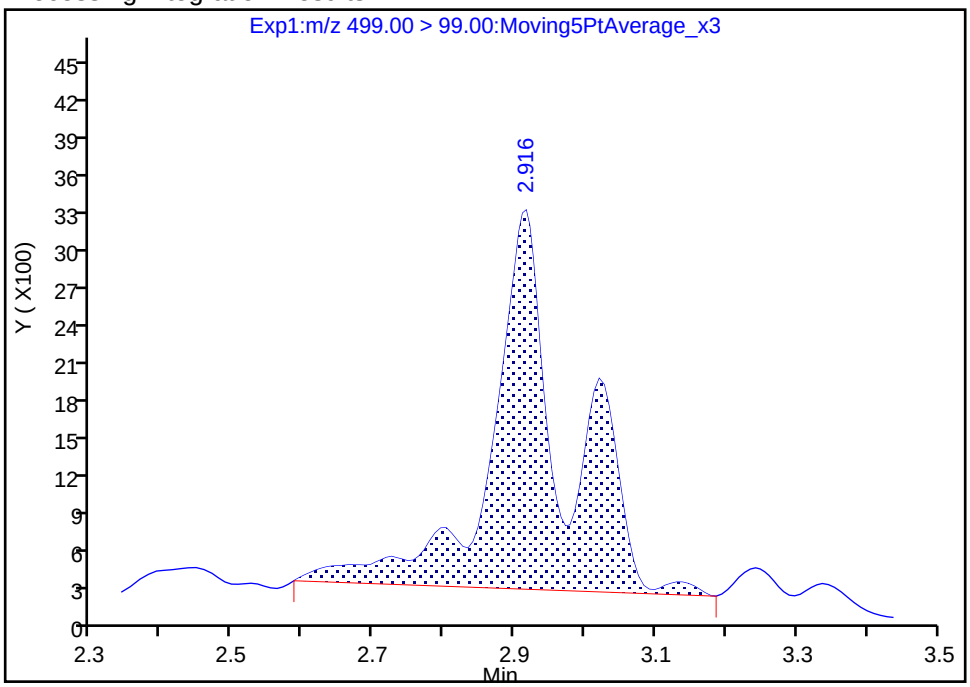
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\2018.07.13LLC_010.d				
Injection Date:	13-Jul-2018 21:17:32	Instrument ID:	A8_N		
Lims ID:	320-40571-A-19-A	Lab Sample ID:	320-40571-19		
Client ID:	NF25-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	4	Worklist Smp#:	5
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

17 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 2

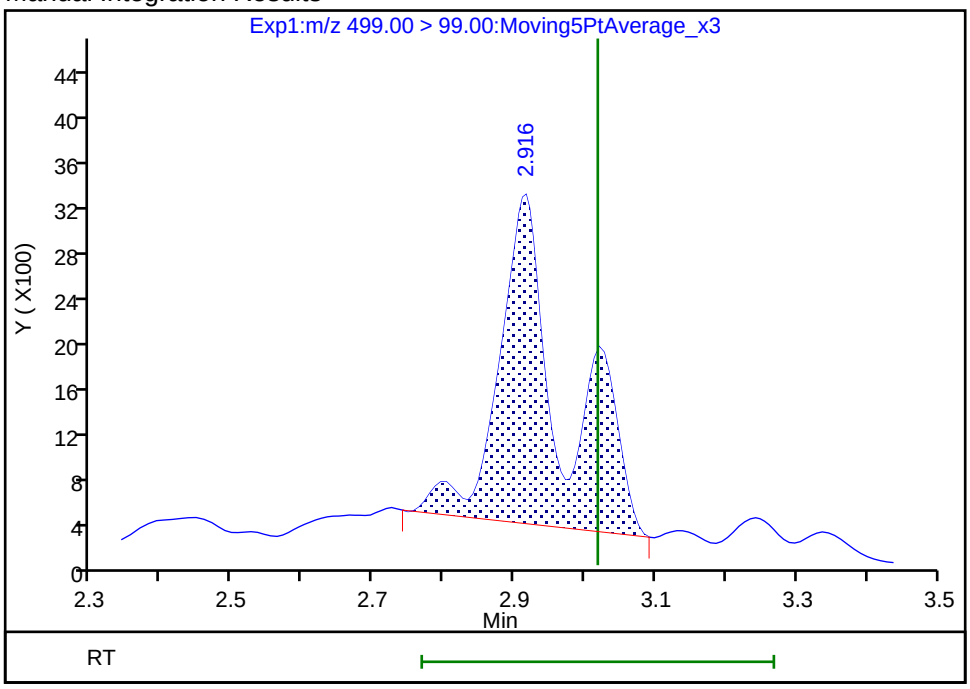
Processing Integration Results

RT: 2.92
Area: 22574
Amount: 0.087237
Amount Units: ng/ml



Manual Integration Results

RT: 2.92
Area: 18474
Amount: 0.073538
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 12:32:52

Audit Action: Manually Integrated Audit Reason: Baseline

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF25-SS-02
Lab Sample ID: 320-40571-20
Matrix: Solid
Lab File ID: 2018.07.13LLB_066.d
Analysis Method: 537 (modified)
Date Collected: 06/19/2018 09:35
Extraction Method: SHAKE
Date Extracted: 06/28/2018 05:15
Sample wt/vol: 5.00(g)
Date Analyzed: 07/14/2018 05:23
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture: 18.4
GPC Cleanup:(Y/N) N
Analysis Batch No.: 233997
Units: mg/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	0.000034	J	0.00025	0.000034
2706-90-3	Perfluoropentanoic acid (PFPeA)	ND		0.00025	0.000094
307-24-4	Perfluorohexanoic acid (PFHxA)	ND		0.00025	0.000051
375-85-9	Perfluoroheptanoic acid (PFHpA)	ND		0.00025	0.000036
335-67-1	Perfluorooctanoic acid (PFOA)	ND		0.00025	0.00011
375-95-1	Perfluorononanoic acid (PFNA)	ND		0.00025	0.000044
335-76-2	Perfluorodecanoic acid (PFDA)	ND		0.00025	0.000027
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		0.00025	0.000044
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		0.00025	0.000082
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		0.00025	0.000063
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		0.00025	0.000066
375-73-5	Perfluorobutanesulfonic acid (PFBS)	ND		0.00025	0.000031
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	ND		0.00025	0.000038
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.00025	0.000043
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	ND		0.00061	0.00025
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		0.00025	0.000048
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		0.00025	0.00010
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.0025	0.00048
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.0025	0.00045
27619-97-2	6:2 FTS	ND		0.0025	0.00018
39108-34-4	8:2 FTS	ND		0.0025	0.00031

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF25-SS-02
Lab Sample ID: 320-40571-20
Matrix: Solid
Lab File ID: 2018.07.13LLB_066.d
Analysis Method: 537 (modified)
Date Collected: 06/19/2018 09:35
Extraction Method: SHAKE
Date Extracted: 06/28/2018 05:15
Sample wt/vol: 5.00(g)
Date Analyzed: 07/14/2018 05:23
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture: 18.4
GPC Cleanup:(Y/N) N
Analysis Batch No.: 233997
Units: mg/Kg

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00992	13C4 PFBA	54		25-150
STL01893	13C5 PFPeA	56		25-150
STL00993	13C2 PFHxA	56		25-150
STL01892	13C4-PFHpA	60		25-150
STL00990	13C4 PFOA	58		25-150
STL00995	13C5 PFNA	54		25-150
STL00996	13C2 PFDA	61		25-150
STL00997	13C2 PFUnA	64		25-150
STL00998	13C2 PFDoA	66		25-150
STL02116	13C2-PFTeDA	69		25-150
STL02337	13C3-PFBS	51		25-150
STL00994	18O2 PFHxS	51		25-150
STL00991	13C4 PFOS	49		25-150
STL01056	13C8 FOSA	51		25-150
STL02118	d3-NMeFOSAA	60		25-150
STL02117	d5-NEtFOSAA	68		25-150
STL02279	M2-6:2FTS	42		25-150
STL02280	M2-8:2FTS	49		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\2018.07.13LLB_066.d
Lims ID: 320-40571-A-20-A
Client ID: NF25-SS-02
Sample Type: Client
Inject. Date: 14-Jul-2018 05:23:11 ALS Bottle#: 50 Worklist Smp#: 15
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-40571-a-20-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 16-Jul-2018 14:24:45 Calib Date: 11-Jul-2018 15:38:42
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK023

First Level Reviewer: mongkols Date: 16-Jul-2018 14:24:45

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										M
217.00 > 172.00	1.435	1.441	-0.006	0.540	3498027	1.35		53.8	24249	M
2 Perfluorobutyric acid										
212.90 > 169.00	1.441	1.445	-0.004	1.004	19167	0.0139			8.3	
D 3 13C5-PFPeA										
267.90 > 223.00	1.719	1.720	-0.001	0.647	2520658	1.39		55.8	32002	
D 47 13C3-PFBS										
301.90 > 83.00	1.755	1.765	-0.010	0.660	53584	1.18		50.8	367	
D 7 13C2 PFHxA										
315.00 > 270.00	1.991	2.003	-0.012	0.749	2745282	1.41		56.3	53930	
D 9 13C4-PFHpA										
367.00 > 322.00	2.319	2.319	0.0	0.872	2707644	1.51		60.3	41241	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.332	2.329	0.003	1.000	11424	0.007735			121	
399.00 > 99.00	2.319	2.329	-0.010	0.994	4161		2.75(1.50-4.49)		15.3	
D 11 18O2 PFHxS										
403.00 > 84.00	2.332	2.332	0.0	0.877	3042644	1.20		50.5	46659	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.643	2.643	0.0	1.003	3154	0.0124			37.3	
D 12 M2-6:2FTS										
429.00 > 81.00	2.635	2.644	-0.009	0.991	387553	1.01		42.4	8377	
* 62 13C2-PFOA										
415.00 > 370.00	2.659	2.666	-0.007		4792946	2.50			48703	
D 14 13C4 PFOA										
417.00 > 372.00	2.659	2.667	-0.008	1.000	2644817	1.44		57.7	37627	
D 18 13C4 PFOS										
503.00 > 80.00	3.021	3.027	-0.006	1.136	2192324	1.17		49.1	27437	
D 19 13C5 PFNA										
468.00 > 423.00	3.028	3.034	-0.006	1.139	2231218	1.36		54.5	36083	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 21 13C8 FOSA										
506.00 > 78.00	3.374	3.379	-0.005	1.269	3431476	1.27		51.0	29958	
D 26 M2-8:2FTS										
529.00 > 81.00	3.374	3.379	-0.005	1.269	659341	1.17		48.9	12826	
D 23 13C2 PFDA										
515.00 > 470.00	3.383	3.389	-0.006	1.272	2202475	1.53		61.2	26495	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.533	3.538	-0.005	1.329	877815	1.49		59.6	27922	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.700	3.708	-0.008	1.392	1033710	1.71		68.5	2911	
D 30 13C2 PFUnA										
565.00 > 520.00	3.700	3.708	-0.008	1.392	1927489	1.60		64.2	27016	
D 36 13C2 PFDoA										
615.00 > 570.00	3.999	3.999	0.0	1.504	2068622	1.66		66.4	20981	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.490	4.501	-0.011	1.689	2242381	1.74		69.4	15880	

QC Flag Legend

Review Flags

M - Manually Integrated

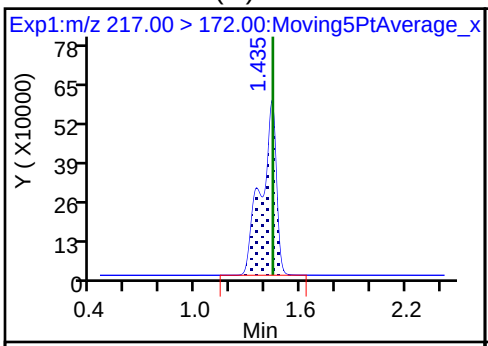
Report Date: 16-Jul-2018 14:24:46 Chrom Revision: 2.2 07-Jun-2018 07:41:54

TestAmerica Sacramento

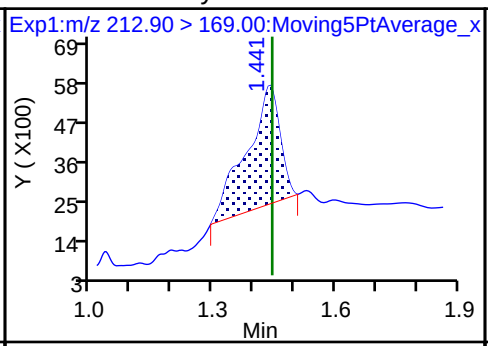
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\2018.07.13LLB_066.d

Injection Date:	14-Jul-2018 05:23:11	Instrument ID:	A8_N		
Lims ID:	320-40571-A-20-A	Lab Sample ID:	320-40571-20		
Client ID:	NF25-SS-02				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	50	Worklist Smp#:	15
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		

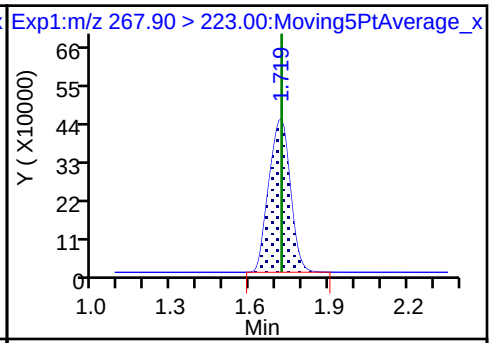
D 1 13C4 PFBA (M)



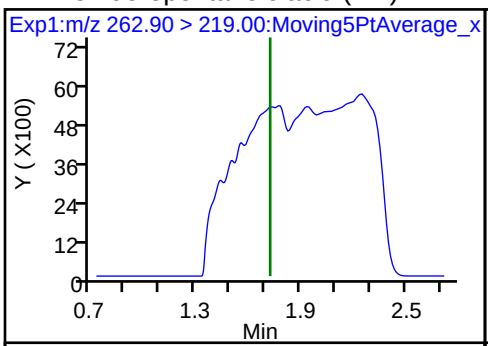
2 Perfluorobutyric acid



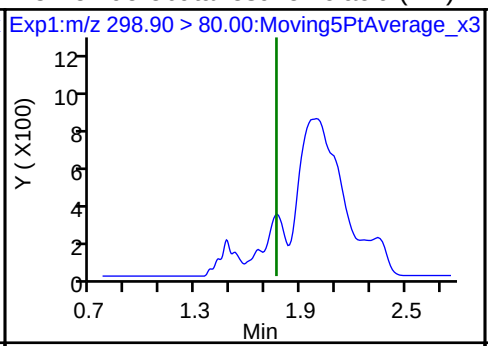
D 3 13C5-PFPeA



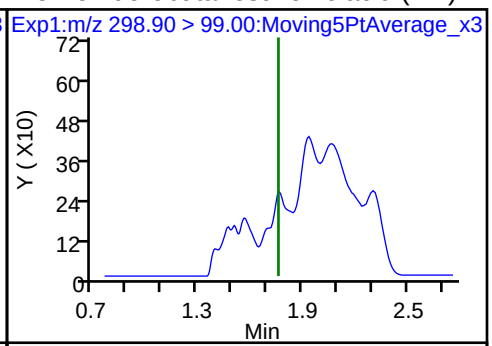
4 Perfluoropentanoic acid (ND)



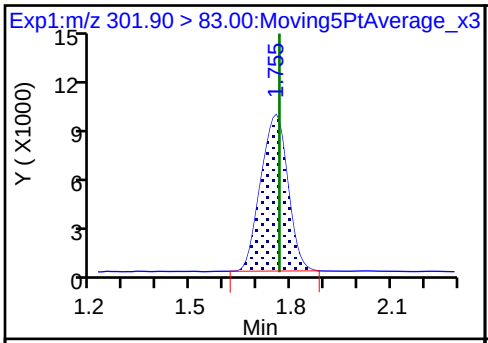
5 Perfluorobutanesulfonic acid (ND)



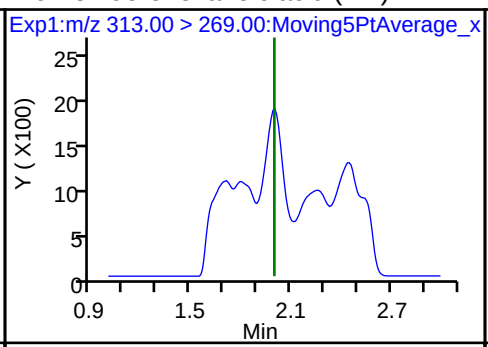
5 Perfluorobutanesulfonic acid (ND)



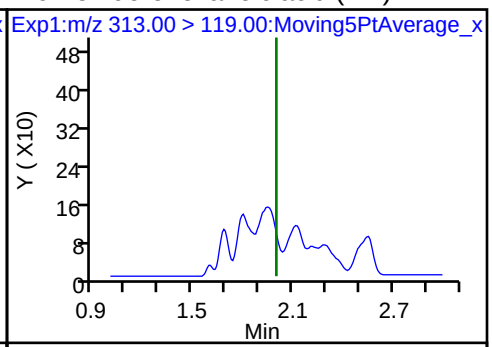
D 47 13C3-PFBS



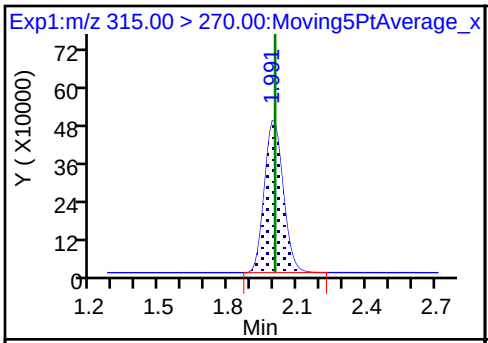
6 Perfluorohexanoic acid (ND)



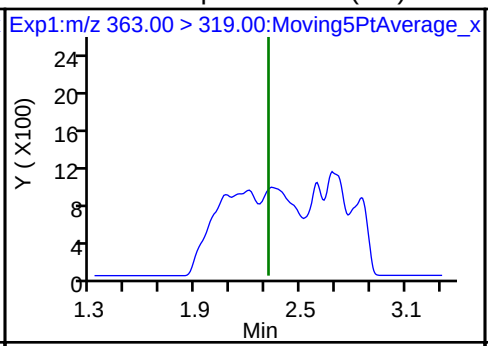
6 Perfluorohexanoic acid (ND)



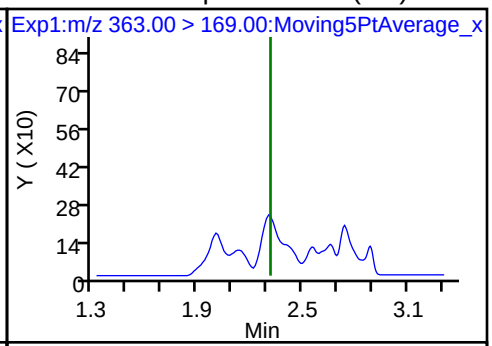
D 7 13C2 PFHxA



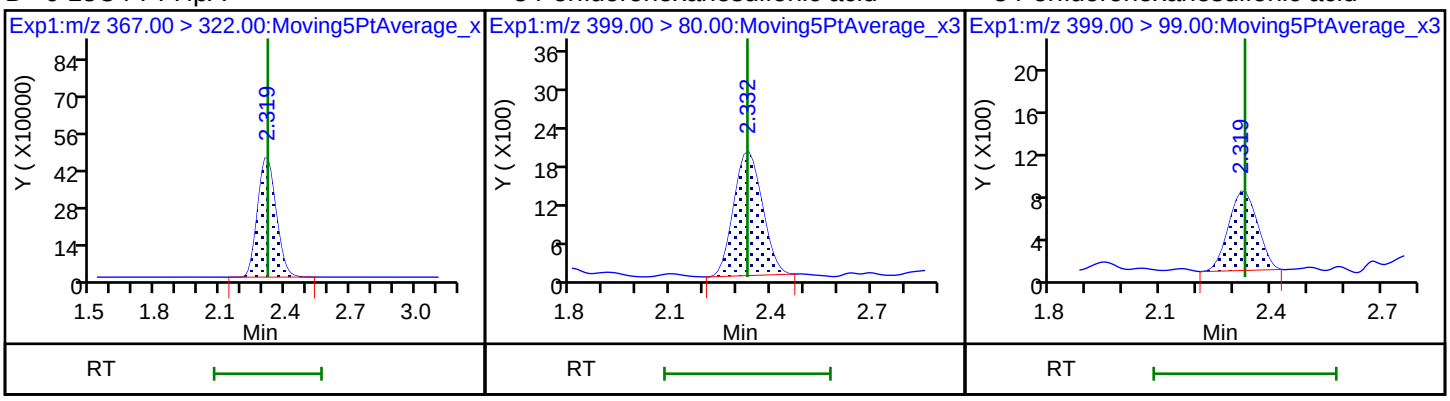
10 Perfluoroheptanoic acid (ND)



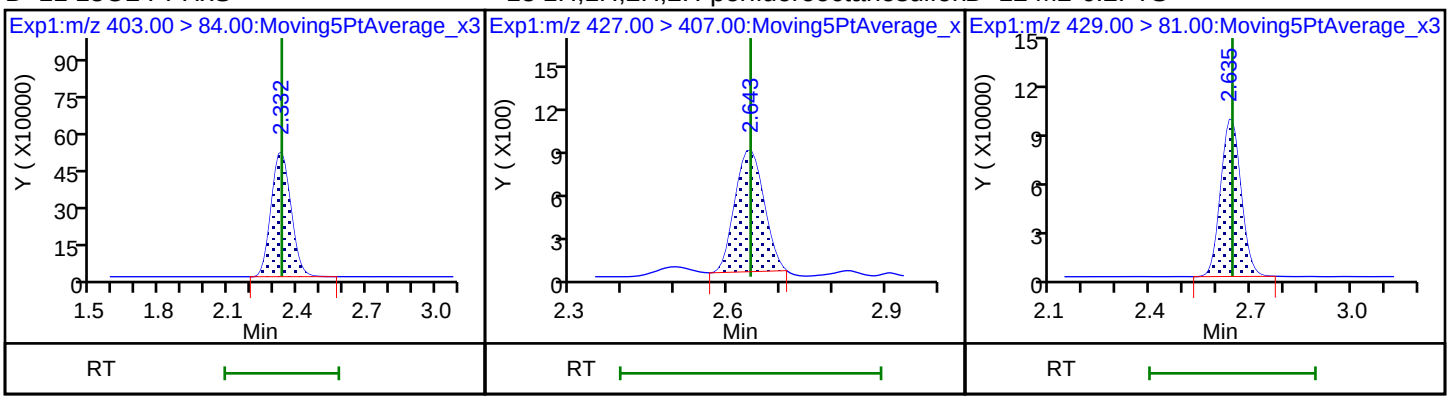
10 Perfluoroheptanoic acid (ND)



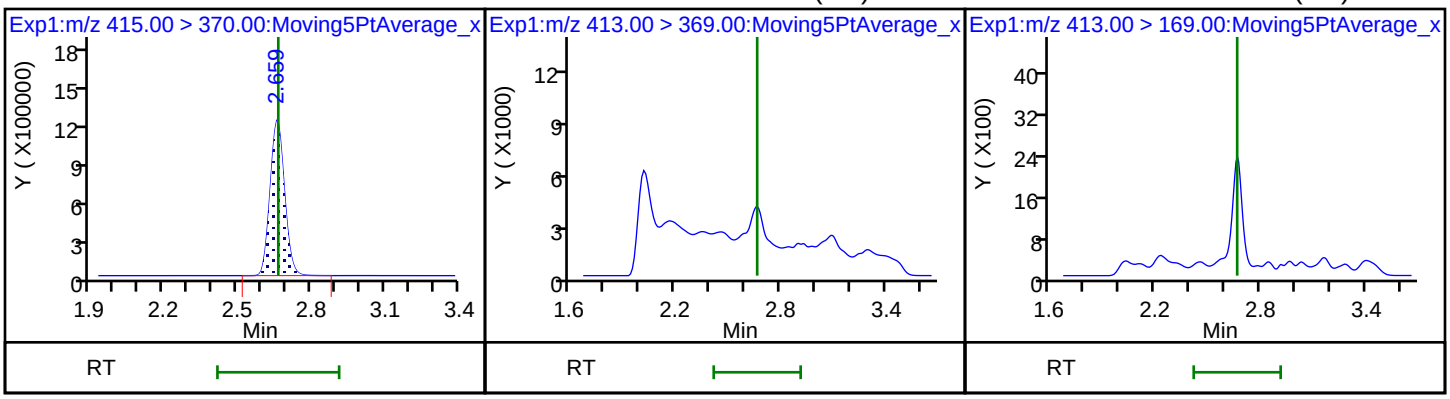
D 9 13C4-PFHpA | 8 Perfluorohexanesulfonic acid | 8 Perfluorohexanesulfonic acid



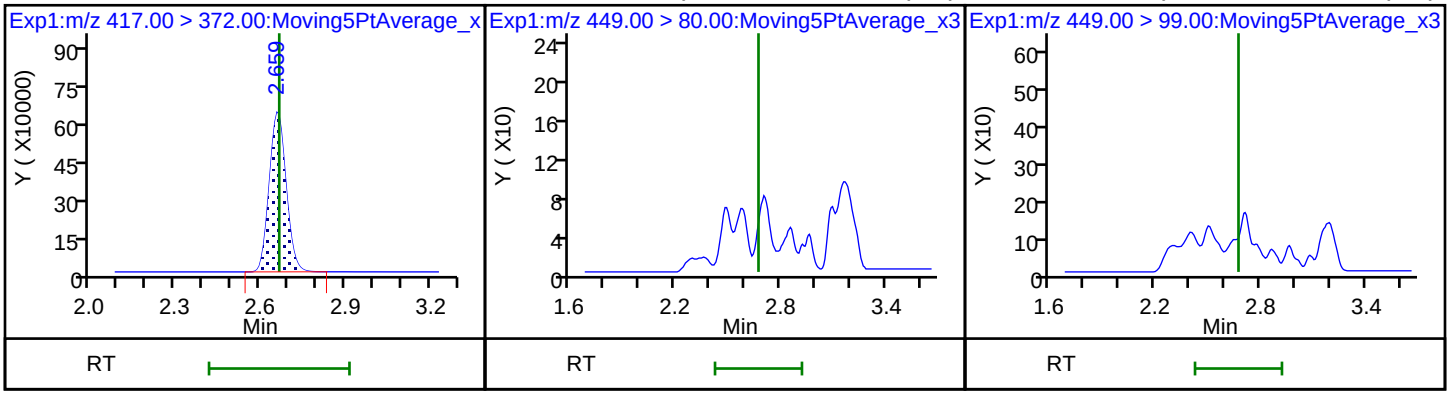
D 11 18O2 PFHxS | 13 1H,1H,2H,2H-perfluorooctanesulfon | D 12 M2-6:2FTS



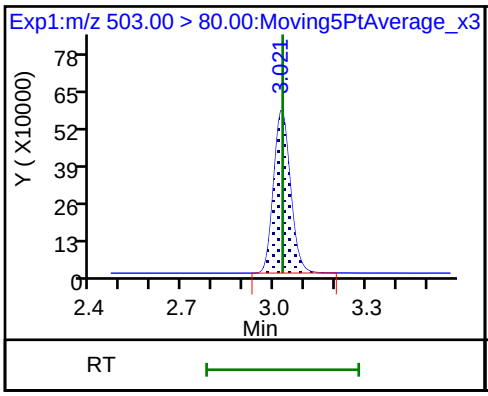
* 62 13C2-PFOA | 15 Perfluorooctanoic acid (ND) | 15 Perfluorooctanoic acid (ND)



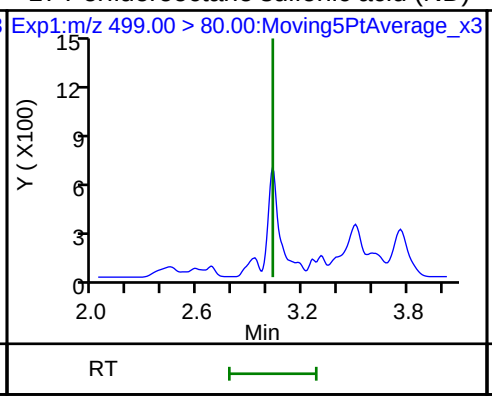
D 14 13C4 PFOA | 16 Perfluoroheptanesulfonic acid (ND) | 16 Perfluoroheptanesulfonic acid (ND)



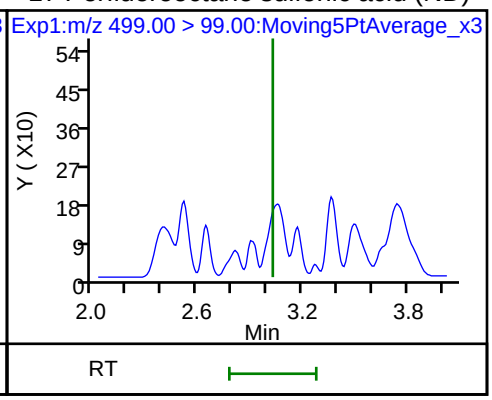
D 18 13C4 PFOS



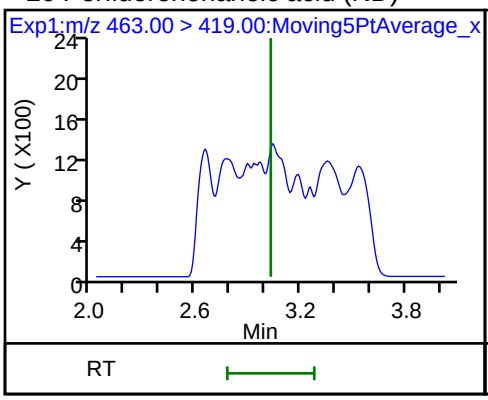
17 Perfluorooctane sulfonic acid (ND)



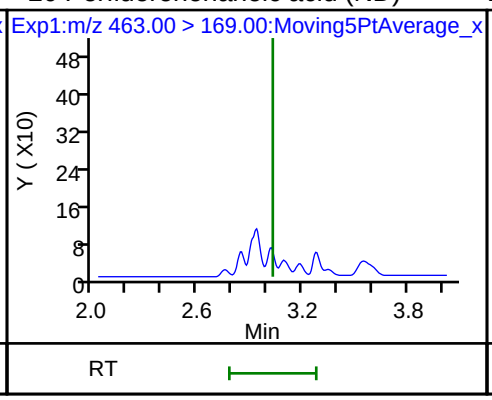
17 Perfluorooctane sulfonic acid (ND)



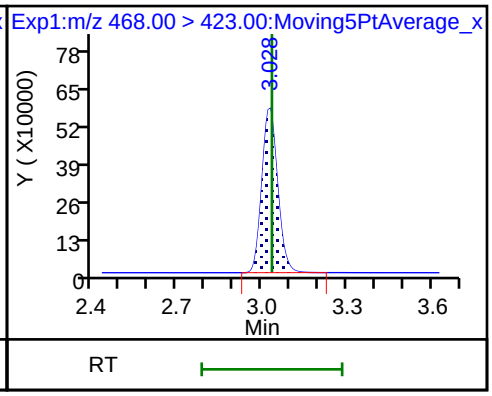
20 Perfluorononanoic acid (ND)



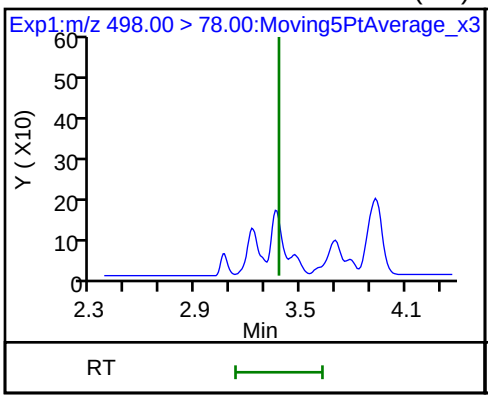
20 Perfluorononanoic acid (ND)



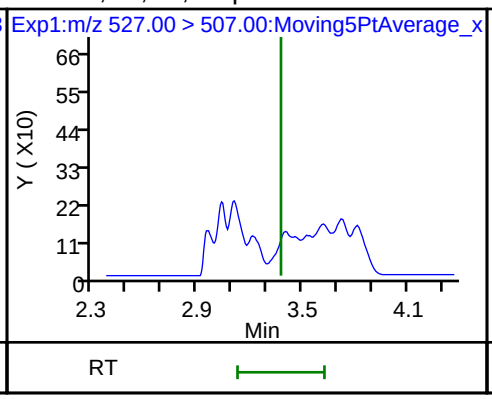
D 19 13C5 PFNA



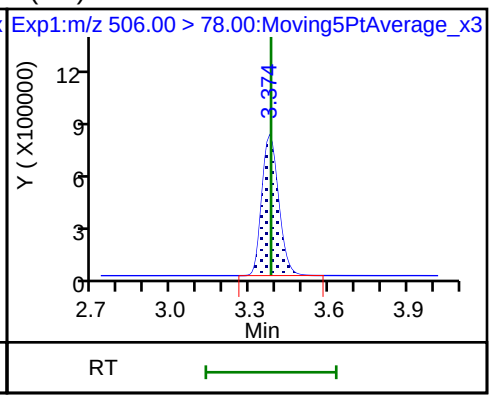
22 Perfluorooctane Sulfonamide (ND)



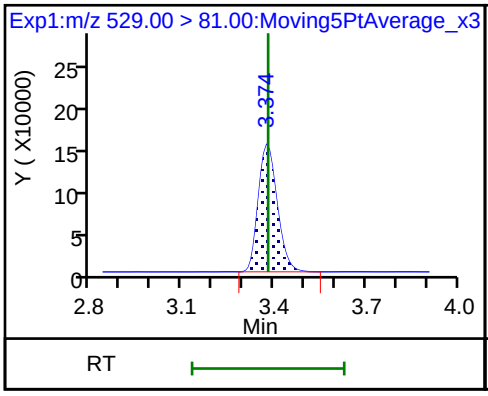
25 1H,1H,2H,2H-perfluorodecanesulfonic (ND)



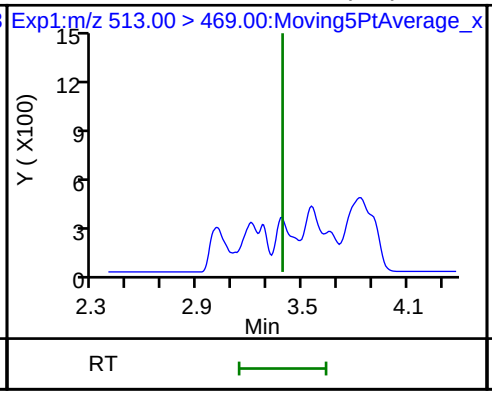
D 21 13C8 FOSA



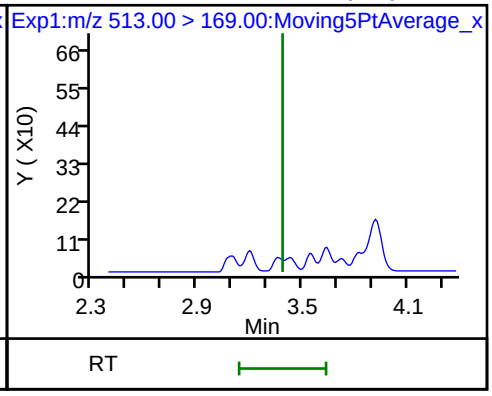
D 26 M2-8:2FTS



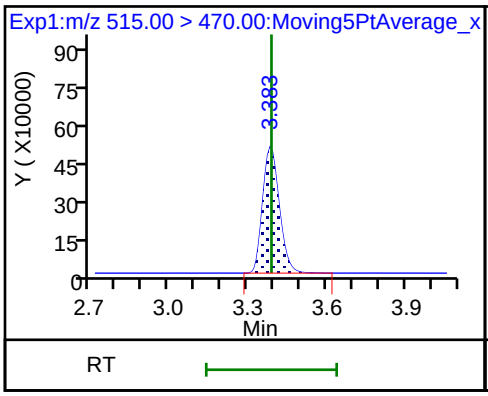
24 Perfluorodecanoic acid (ND)



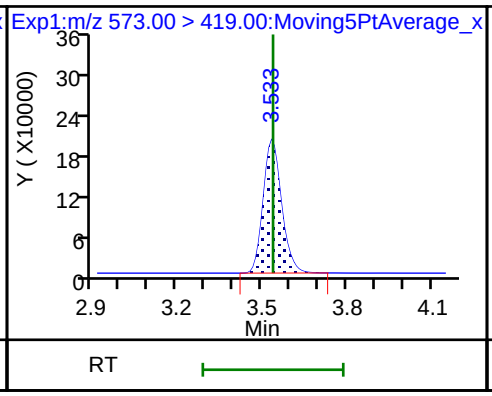
24 Perfluorodecanoic acid (ND)



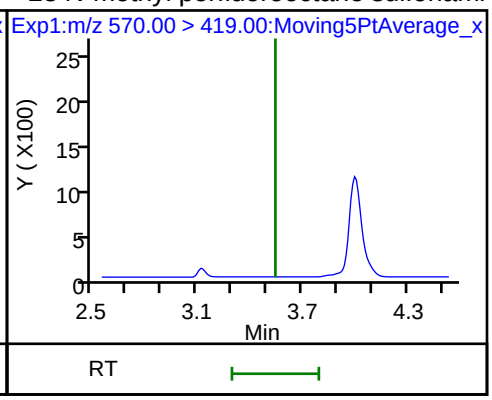
D 23 13C2 PFDA



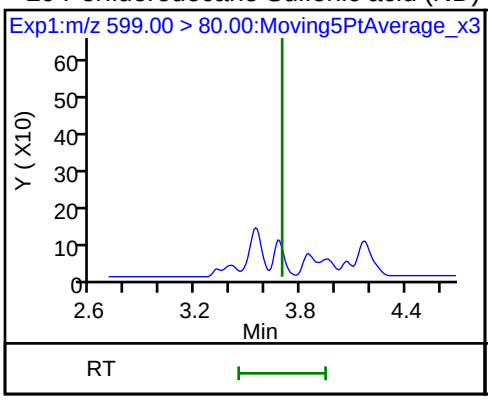
D 27 d3-NMeFOSAA



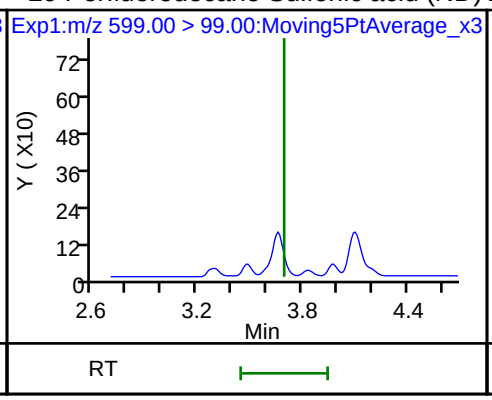
28 N-methyl perfluorooctane sulfonami (ND)



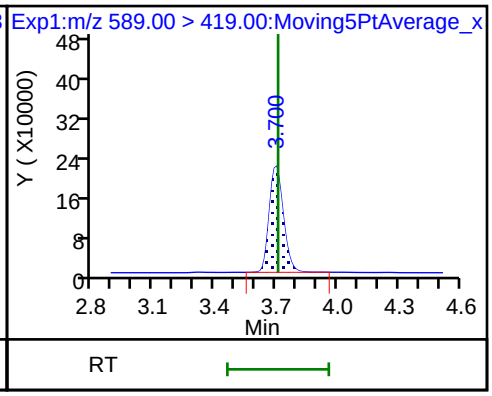
29 Perfluorodecane Sulfonic acid (ND)



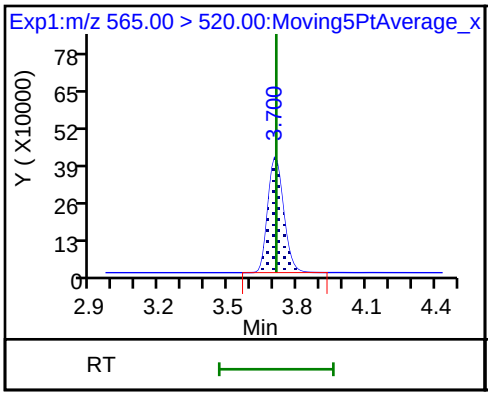
29 Perfluorodecane Sulfonic acid (ND)



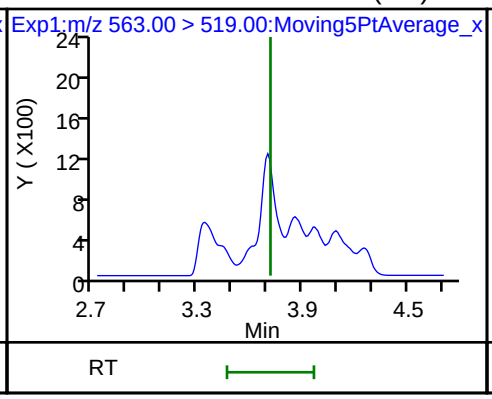
D 32 d5-NEtFOSAA



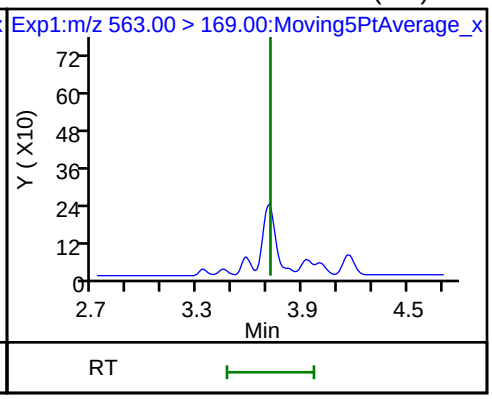
D 30 13C2 PFUnA



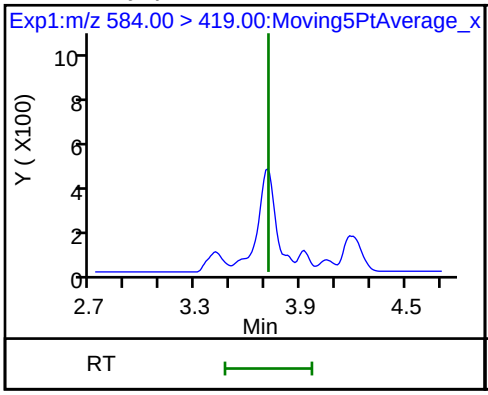
31 Perfluoroundecanoic acid (ND)



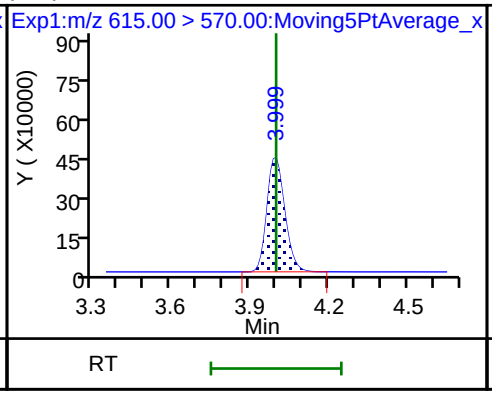
31 Perfluoroundecanoic acid (ND)



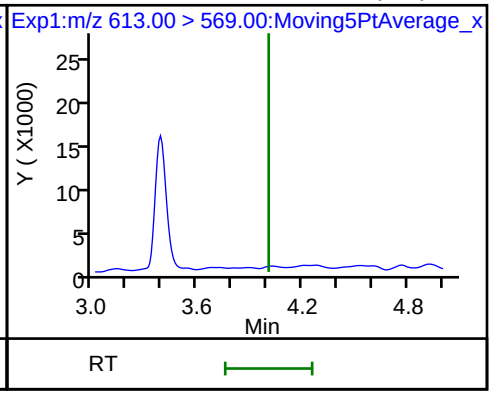
33 N-ethyl perfluorooctane sulfonamid (ND)



D 36 13C2 PFDoA

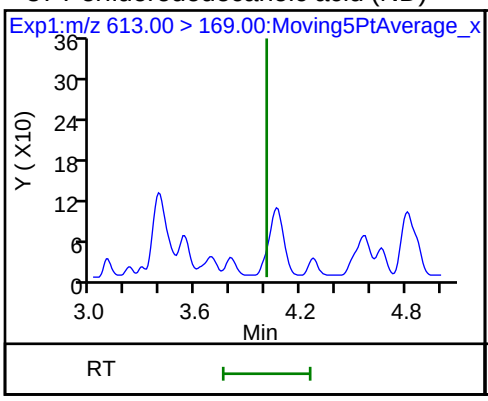


37 Perfluorododecanoic acid (ND)

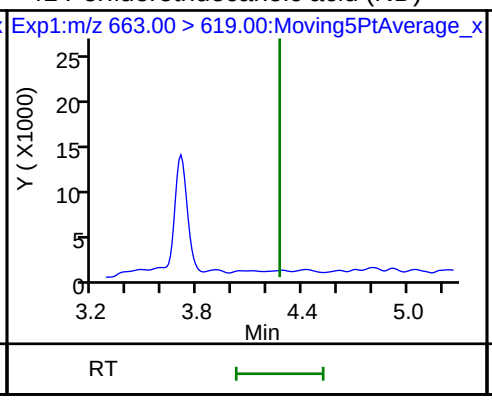


Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\2018.07.13LLB_066.d

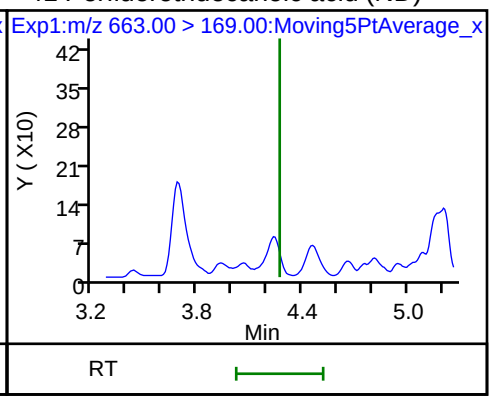
37 Perfluorododecanoic acid (ND)



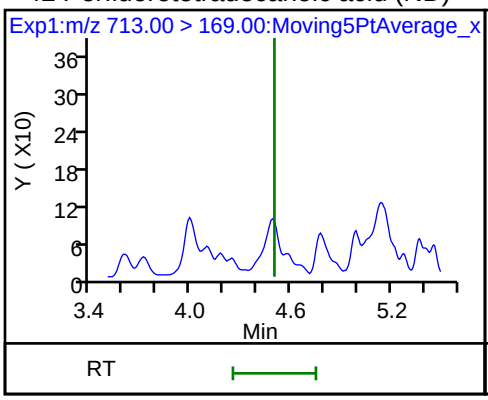
41 Perfluorotridecanoic acid (ND)



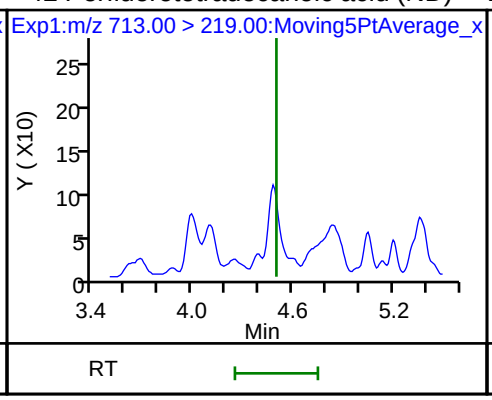
41 Perfluorotridecanoic acid (ND)



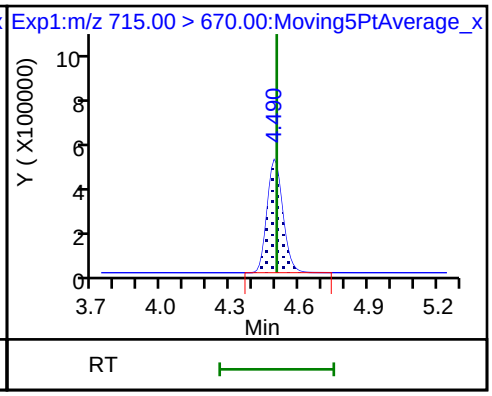
42 Perfluorotetradecanoic acid (ND)



42 Perfluorotetradecanoic acid (ND)



D 43 13C2-PFTeDA



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

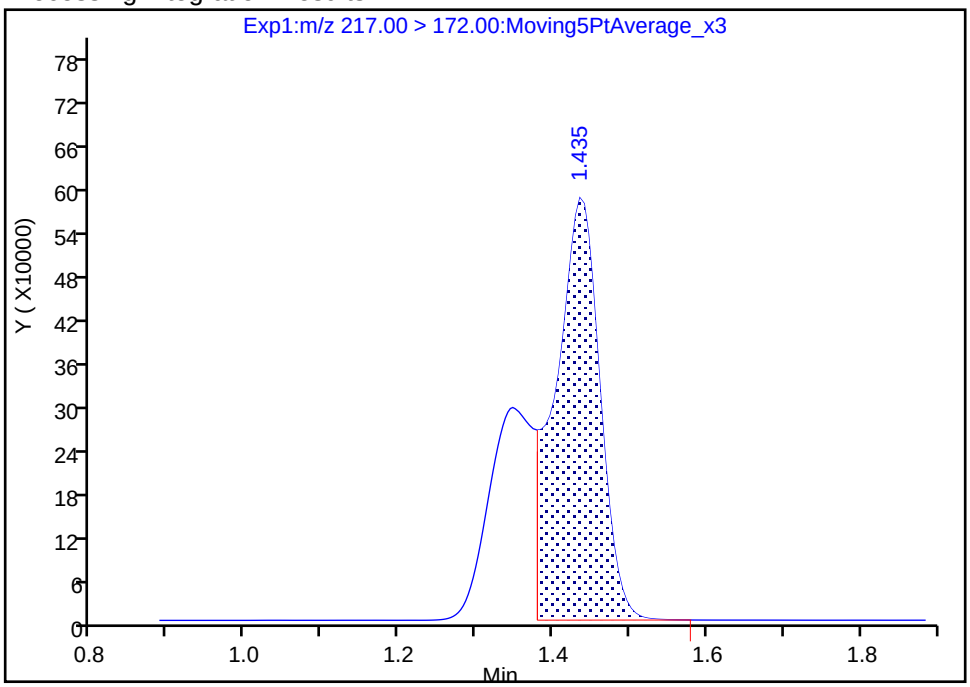
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\2018.07.13LLB_066.d				
Injection Date:	14-Jul-2018 05:23:11	Instrument ID:	A8_N		
Lims ID:	320-40571-A-20-A	Lab Sample ID:	320-40571-20		
Client ID:	NF25-SS-02				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	50	Worklist Smp#:	15
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

D 1 13C4 PFBA, CAS: STL00992

Signal: 1

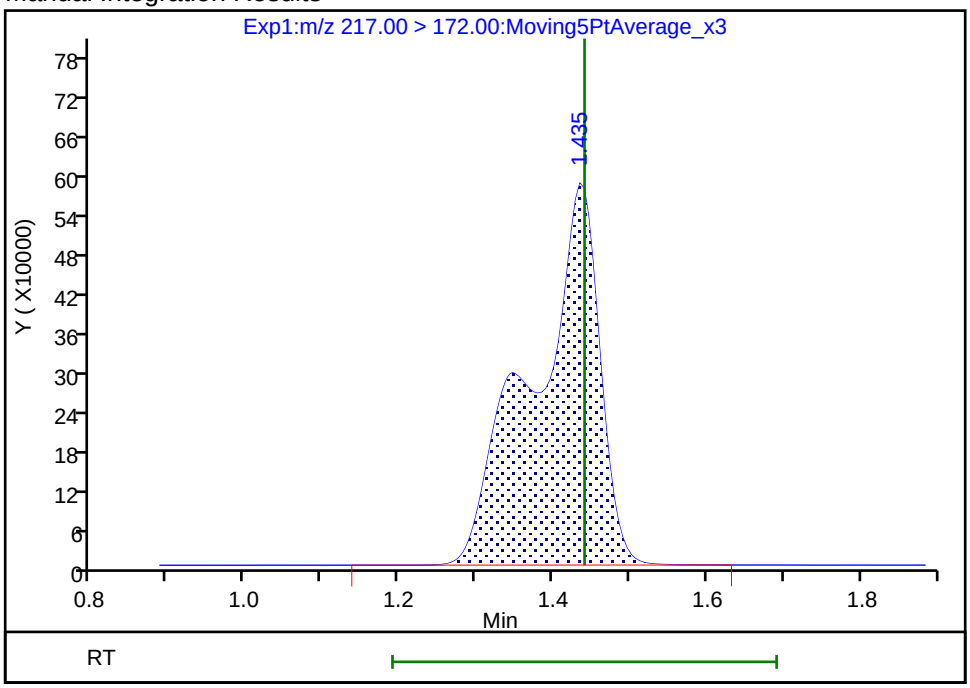
Processing Integration Results

RT: 1.44
Area: 2323245
Amount: 0.893721
Amount Units: ng/ml



Manual Integration Results

RT: 1.44
Area: 3498027
Amount: 1.345643
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 14:24:14

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF26-GW-01
Lab Sample ID: 320-40571-21
Matrix: Water
Lab File ID: 2018.07.13LLC_011.d
Analysis Method: 537 (modified)
Date Collected: 06/20/2018 16:30
Extraction Method: 3535
Date Extracted: 07/02/2018 14:58
Sample wt/vol: 211.4(mL)
Date Analyzed: 07/13/2018 21:25
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 233989
Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	0.44	B	0.0024	0.00041
2706-90-3	Perfluoropentanoic acid (PFPeA)	0.28		0.0024	0.00058
307-24-4	Perfluorohexanoic acid (PFHxA)	0.16		0.0024	0.00069
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.068		0.0024	0.00030
335-67-1	Perfluorooctanoic acid (PFOA)	0.061		0.0024	0.0010
375-95-1	Perfluorononanoic acid (PFNA)	0.0032		0.0024	0.00032
335-76-2	Perfluorodecanoic acid (PFDA)	0.0075		0.0024	0.00037
2058-94-8	Perfluoroundecanoic acid (PFUnA)	0.0019	J	0.0024	0.0013
307-55-1	Perfluorododecanoic acid (PFDoA)	0.0021	J	0.0024	0.00065
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		0.0024	0.0015
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		0.0024	0.00034
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.40		0.0024	0.00024
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	0.0028		0.0024	0.00035
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.039	B	0.0024	0.00020
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	0.00078	J	0.0024	0.00022
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.023		0.0024	0.00064
8789-57-2	Perfluorononanesulfonic acid (PFNS)	ND		0.0024	0.00019
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		0.0024	0.00038
754-91-6	Perfluorooctane Sulfonamide (FOSA)	0.00060	J	0.0024	0.00041
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.024	0.0037
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.024	0.0022
757124-72-4	4:2 FTS	ND		0.024	0.0061
27619-97-2	6:2 FTS	0.0090	J	0.024	0.0024
39108-34-4	8:2 FTS	ND		0.024	0.0024

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF26-GW-01
Lab Sample ID: 320-40571-21
Matrix: Water
Lab File ID: 2018.07.13LLC_011.d
Analysis Method: 537 (modified)
Date Collected: 06/20/2018 16:30
Extraction Method: 3535
Date Extracted: 07/02/2018 14:58
Sample wt/vol: 211.4(mL)
Date Analyzed: 07/13/2018 21:25
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 233989
Units: ug/L

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00992	13C4 PFBA	54		25-150
STL01893	13C5 PFPeA	78		25-150
STL00993	13C2 PFHxA	86		25-150
STL01892	13C4-PFHpA	110		25-150
STL00990	13C4 PFOA	105		25-150
STL00995	13C5 PFNA	108		25-150
STL00996	13C2 PFDA	118		25-150
STL00997	13C2 PFUnA	113		25-150
STL00998	13C2 PFDoA	110		25-150
STL02116	13C2-PFTeDA	108		25-150
STL02337	13C3-PFBS	99		25-150
STL00994	18O2 PFHxS	112		25-150
STL00991	13C4 PFOS	108		25-150
STL01056	13C8 FOSA	99		25-150
STL02118	d3-NMeFOSAA	116		25-150
STL02117	d5-NEtFOSAA	116		25-150
STL02279	M2-6:2FTS	175	*	25-150
STL02280	M2-8:2FTS	112		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\2018.07.13LLC_011.d
Lims ID: 320-40571-A-21-A
Client ID: NF26-GW-01
Sample Type: Client
Inject. Date: 13-Jul-2018 21:25:22 ALS Bottle#: 5 Worklist Smp#: 6
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-40571-a-21-a
Misc. Info.: Plate: 1 Rack: 4
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 16-Jul-2018 12:34:54 Calib Date: 11-Jul-2018 15:38:42
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK023

First Level Reviewer: mongkols Date: 16-Jul-2018 12:34:54

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										M
212.90 > 169.00	1.435	1.433	0.002	1.004	10772847	9.21			191	M
D 1 13C4 PFBA										
217.00 > 172.00	1.430	1.445	-0.015	0.536	2968391	1.35		53.8	13139	
4 Perfluoropentanoic acid										M
262.90 > 219.00	1.720	1.716	0.004	1.000	8740143	5.99			358	M
D 3 13C5-PFPeA										
267.90 > 223.00	1.720	1.725	-0.005	0.645	3005819	1.96		78.4	6616	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.765	1.761	0.004	1.005	24647216	8.46			2235	
298.90 > 99.00	1.756	1.761	-0.005	1.000	11410056		2.16(1.25-3.74)		6684	
D 47 13C3-PFBS										
301.90 > 83.00	1.756	1.762	-0.006	0.658	88567	2.30		98.9	92.1	
61 1H,1H,2H,2H-perfluorohexanesulfoni										
327.00 > 307.00	1.970	1.967	0.003	1.122	16544	0.0334			130	
6 Perfluorohexanoic acid										M
313.00 > 269.00	2.003	1.999	0.004	1.000	5030280	3.44			455	M
313.00 > 119.00	2.003	1.999	0.004	1.000	423461		11.88(5.03-15.10)		1461	
D 7 13C2 PFHxA										
315.00 > 270.00	2.003	2.011	-0.008	0.751	3549393	2.15		85.8	31678	
70 Perfluoropentanesulfonic acid										M
349.00 > 80.00	2.025	2.022	0.003	1.154	159544	0.0600			31.1	M
349.00 > 99.00	2.025	2.022	0.003	1.154	54381		2.93(1.36-4.07)		36.8	M
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.319	2.316	0.003	1.000	2804142	1.44			313	
363.00 > 169.00	2.319	2.316	0.003	1.000	1141512		2.46(1.13-3.40)		5635	
D 9 13C4-PFHpA										
367.00 > 322.00	2.319	2.329	-0.010	0.870	4195966	2.75		110	52950	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.332	2.329	0.003	1.000	2310519	0.8312			380	
399.00 > 99.00	2.332	2.329	0.003	1.000	783120		2.95(1.50-4.49)		828	
D 11 18O2 PFHxS										
403.00 > 84.00	2.332	2.342	-0.010	0.874	5726663	2.65		112	48552	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.644	2.634	0.010	1.000	170196	0.1897			1257	
D 12 M2-6:2FTS										
429.00 > 81.00	2.644	2.651	-0.007	0.991	1361882	4.17		175	2439	
* 62 13C2-PFOA										
415.00 > 370.00	2.667	2.658	0.009		4066808	2.50			37514	
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.667	2.658	0.009	1.000	2590415	1.29			637	M
413.00 > 169.00	2.667	2.658	0.009	1.000	1552034		1.67(0.84-2.52)		5730	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.674	2.666	0.008	0.883	36899	0.0164			22.3	
449.00 > 99.00	2.682	2.666	0.016	0.886	7300		5.05(1.94-5.82)		16.7	
D 14 13C4 PFOA										
417.00 > 372.00	2.667	2.673	-0.006	1.000	4080301	2.62		105	49256	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.028	3.018	0.010	1.000	928279	0.4808			1544	
499.00 > 99.00	3.028	3.018	0.010	1.000	205302		4.52(2.31-6.93)		1163	
20 Perfluorononanoic acid										
463.00 > 419.00	3.035	3.025	0.010	1.000	113281	0.0682			96.2	
463.00 > 169.00	3.035	3.025	0.010	1.000	28623		3.96(1.90-5.69)		325	
D 18 13C4 PFOS										
503.00 > 80.00	3.028	3.036	-0.008	1.135	4072047	2.57		108	11802	
D 19 13C5 PFNA										
468.00 > 423.00	3.035	3.036	-0.001	1.138	3740960	2.69		108	37634	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.374	3.371	0.003	1.000	28337	0.0128			86.8	
D 21 13C8 FOSA										
506.00 > 78.00	3.374	3.376	-0.002	1.265	5635025	2.47		98.6	46507	
D 26 M2-8:2FTS										
529.00 > 81.00	3.374	3.376	-0.002	1.265	1283010	2.68		112	5644	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.384	3.380	0.004	1.000	239143	0.1577			523	
513.00 > 169.00	3.384	3.380	0.004	1.000	42338		5.65(2.36-7.09)		750	
D 23 13C2 PFDA										
515.00 > 470.00	3.384	3.385	-0.001	1.269	3612053	2.96		118	48753	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.542	3.544	-0.002	1.328	1445223	2.89		116	22758	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.711	3.698	0.013	1.000	37678	0.0398			108	
563.00 > 169.00	3.711	3.698	0.013	1.000	10936		3.45(2.12-6.36)		364	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.711	3.698	0.013	1.003	21929	0.0417			425	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.701	3.705	-0.004	1.388	1485904	2.90		116	4110	
D 30 13C2 PFUnA										
565.00 > 520.00	3.711	3.715	-0.004	1.392	2891163	2.84		113	30459	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.000	3.999	0.001	1.000	56985	0.0450			30.9	
613.00 > 169.00	4.000	3.999	0.001	1.000	15586		3.66(2.13-6.40)		241	
D 36 13C2 PFDoA										
615.00 > 570.00	4.000	4.005	-0.005	1.500	2898366	2.74		110	23859	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.501	4.500	0.001	1.688	2950161	2.69		108	16961	

QC Flag Legend

Review Flags

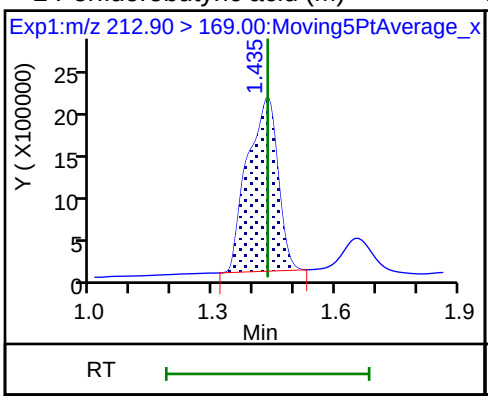
M - Manually Integrated

Report Date: 16-Jul-2018 12:34:54 Chrom Revision: 2.2 07-Jun-2018 07:41:54

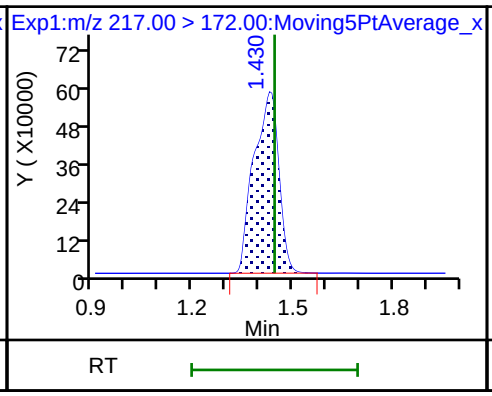
TestAmerica Sacramento

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\2018.07.13LLC_011.d				
Injection Date:	13-Jul-2018 21:25:22	Instrument ID:	A8_N		
Lims ID:	320-40571-A-21-A	Lab Sample ID:	320-40571-21		
Client ID:	NF26-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	5	Worklist Smp#:	6
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		

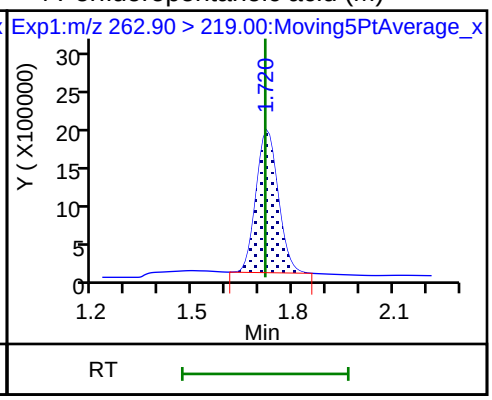
2 Perfluorobutyric acid (M)



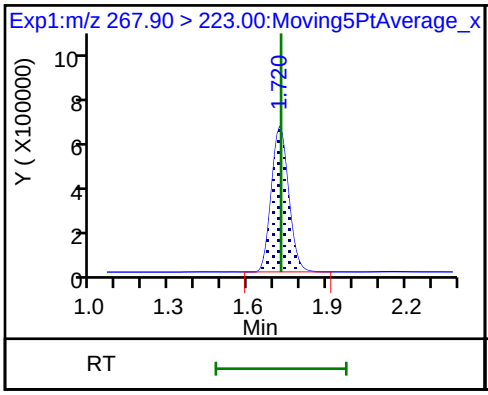
D 1 13C4 PFBA



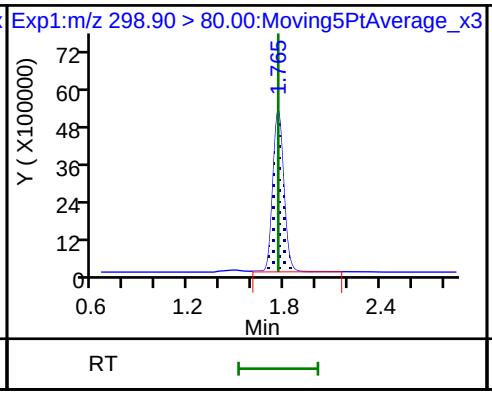
4 Perfluoropentanoic acid (M)



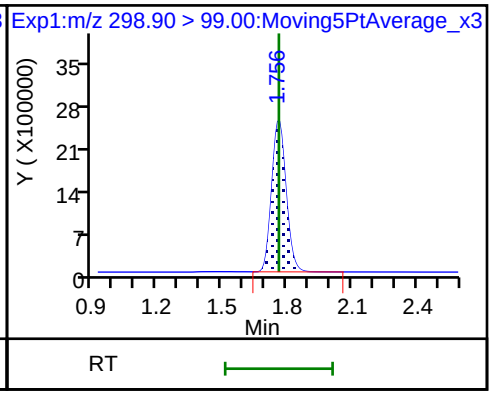
D 3 13C5-PFPeA



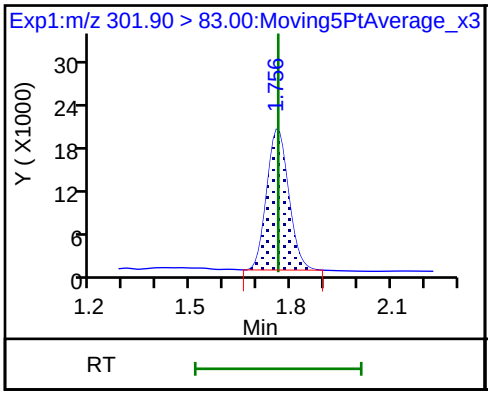
5 Perfluorobutanesulfonic acid



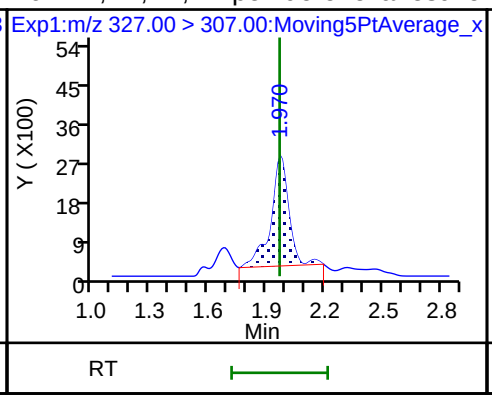
5 Perfluorobutanesulfonic acid



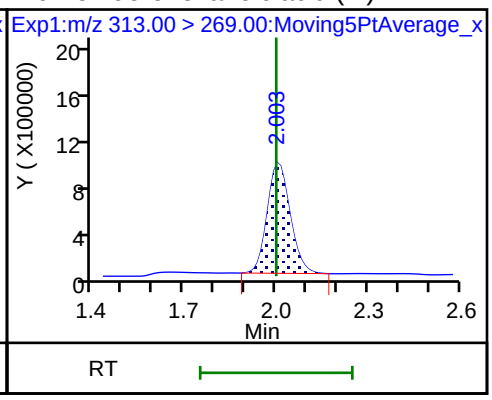
D 47 13C3-PFBS



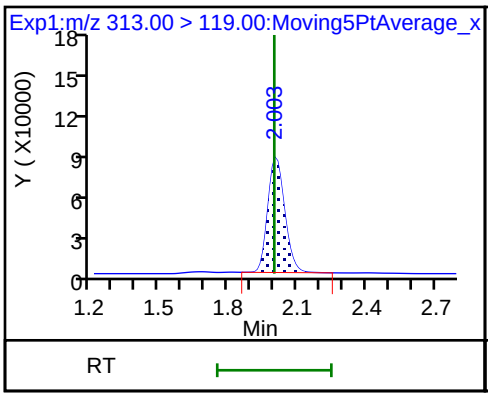
61 1H,1H,2H,2H-perfluorohexanesulfoni



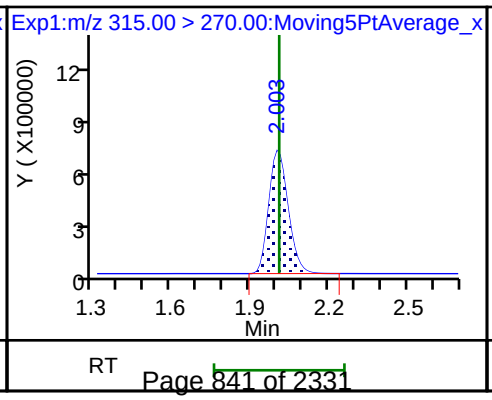
6 Perfluorohexanoic acid (M)



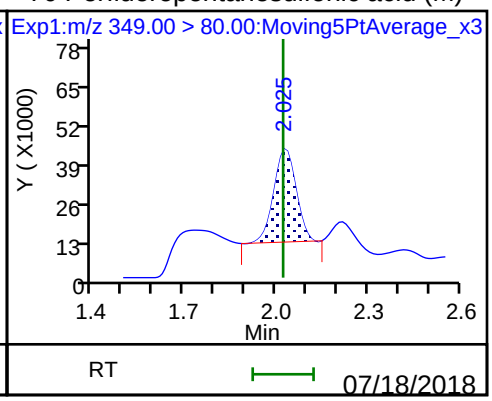
6 Perfluorohexanoic acid



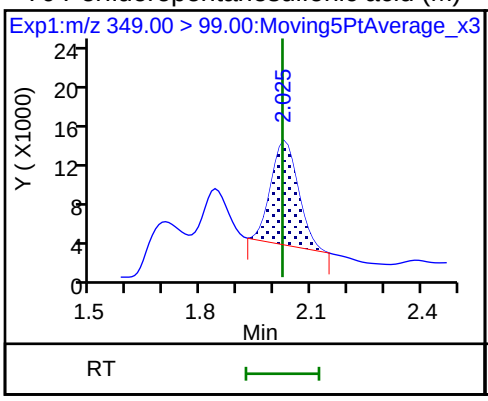
D 7 13C2 PFHxA



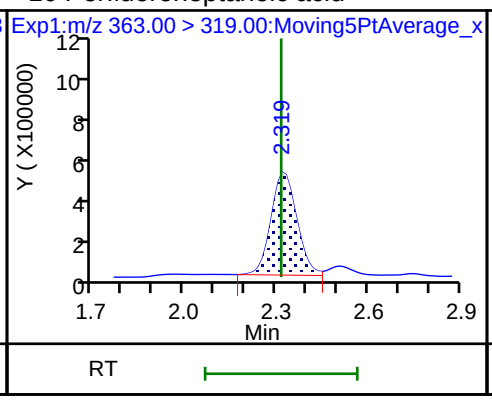
70 Perfluoropentanesulfonic acid (M)



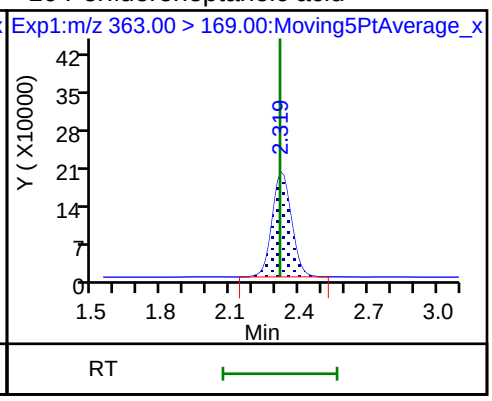
70 Perfluoropentanesulfonic acid (M)



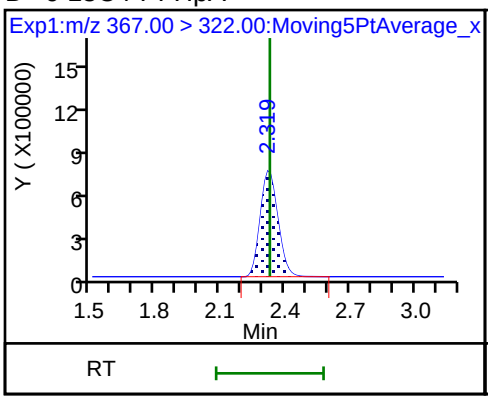
10 Perfluoroheptanoic acid



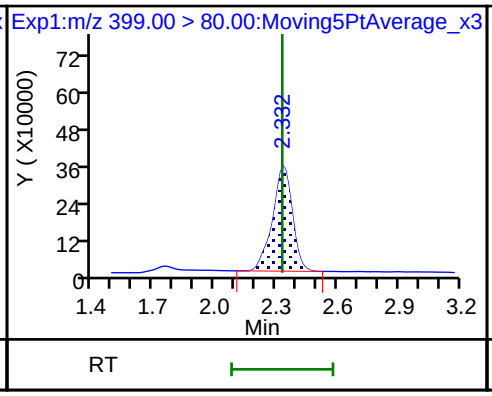
10 Perfluoroheptanoic acid



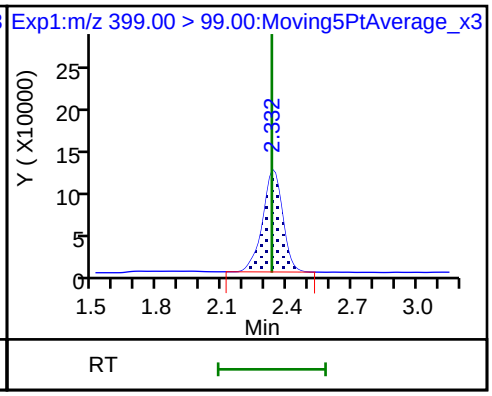
D 9 13C4-PFHpA



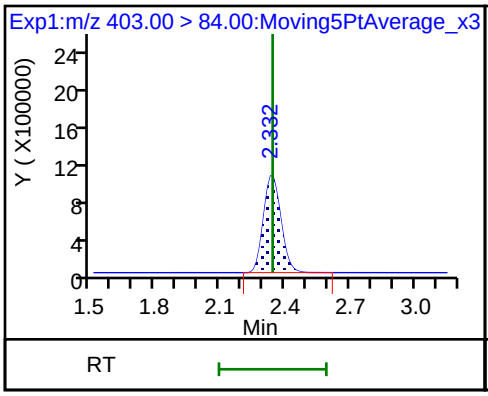
8 Perfluorohexanesulfonic acid



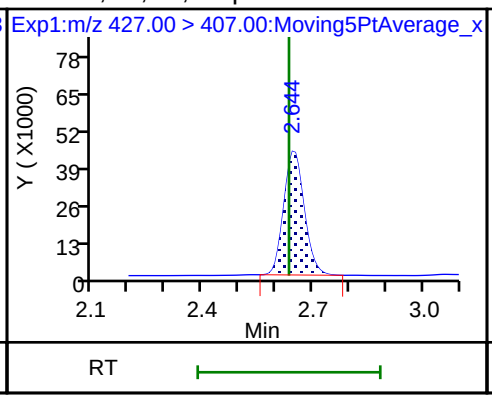
8 Perfluorohexanesulfonic acid



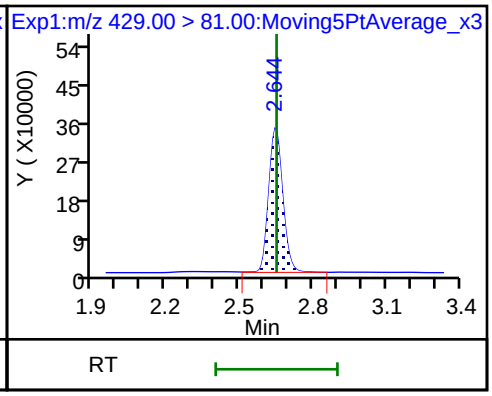
D 11 18O2 PFHxS



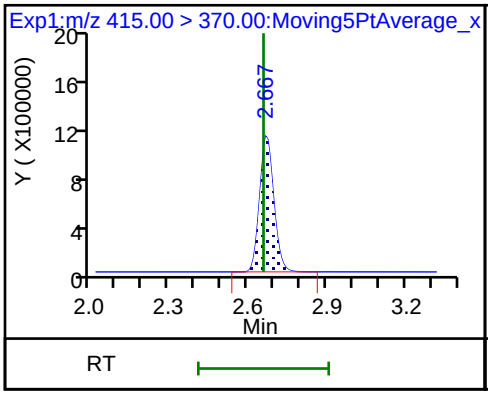
13 1H,1H,2H,2H-perfluorooctanesulfon



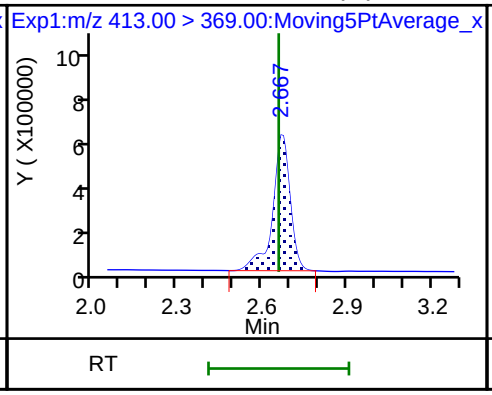
D 12 M2-6:2FTS



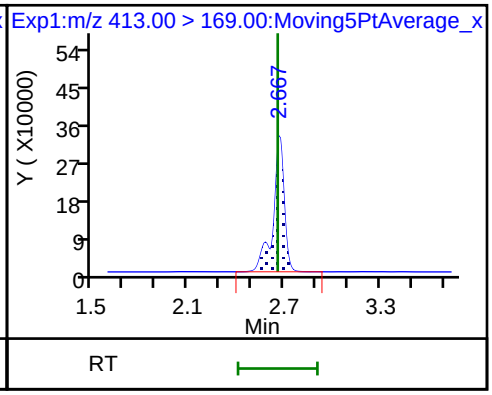
* 62 13C2-PFOA



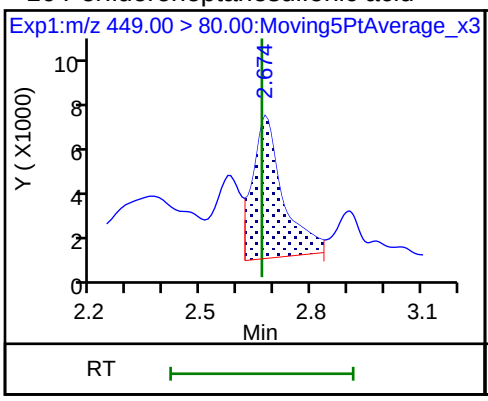
15 Perfluorooctanoic acid (M)



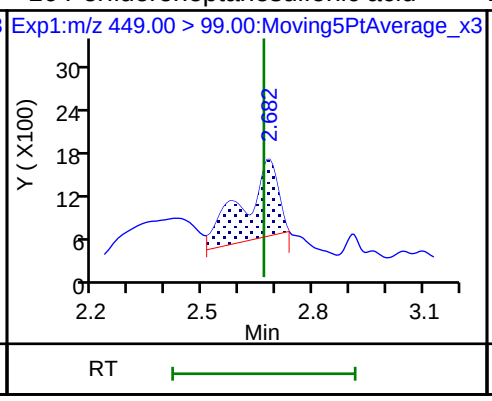
15 Perfluorooctanoic acid



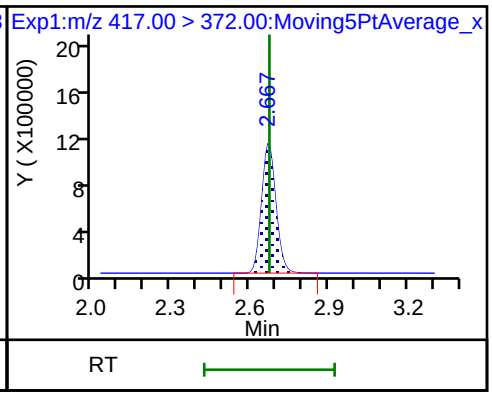
16 Perfluoroheptanesulfonic acid



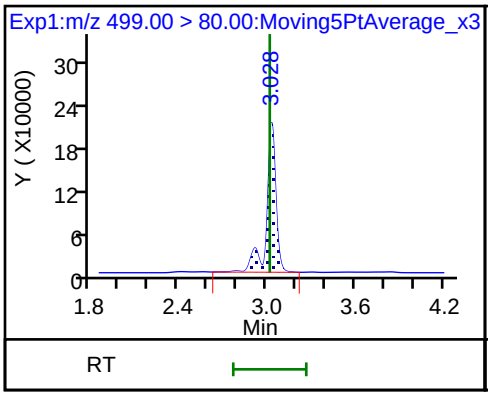
16 Perfluoroheptanesulfonic acid



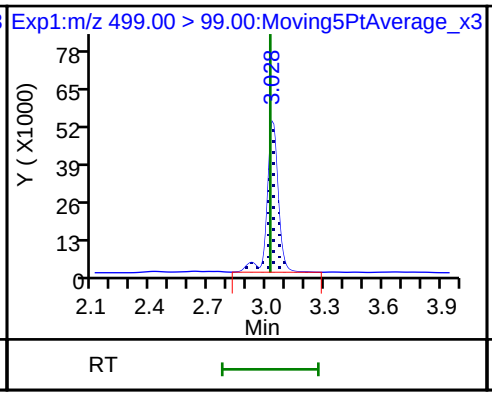
D 14 13C4 PFOA



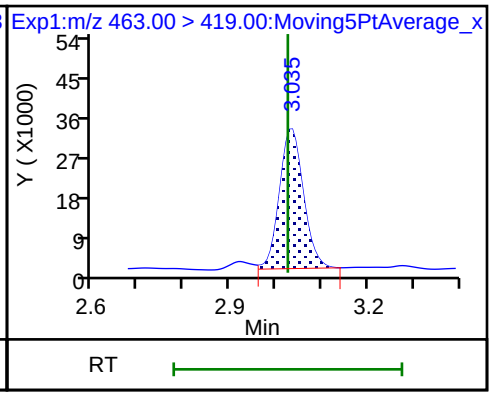
17 Perfluorooctane sulfonic acid



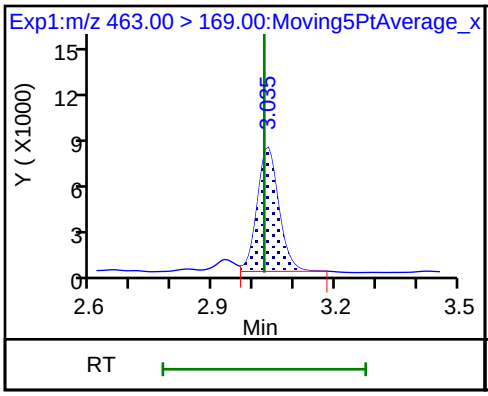
17 Perfluorooctane sulfonic acid



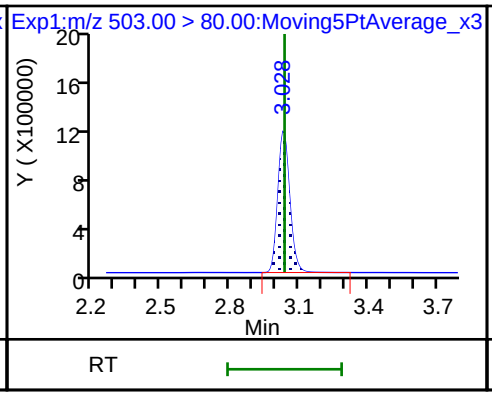
20 Perfluorononanoic acid



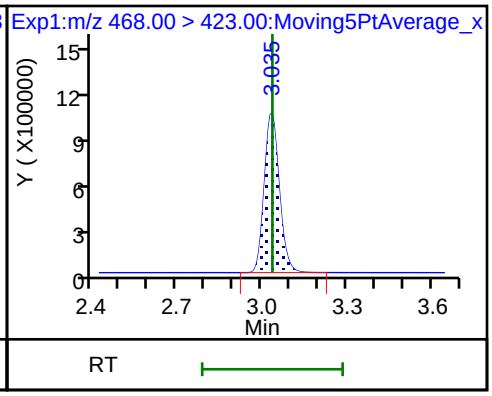
20 Perfluorononanoic acid



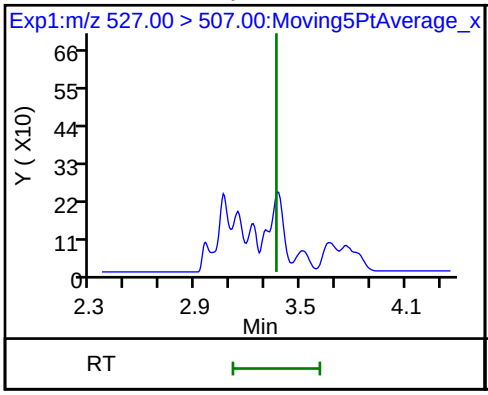
D 18 13C4 PFOS



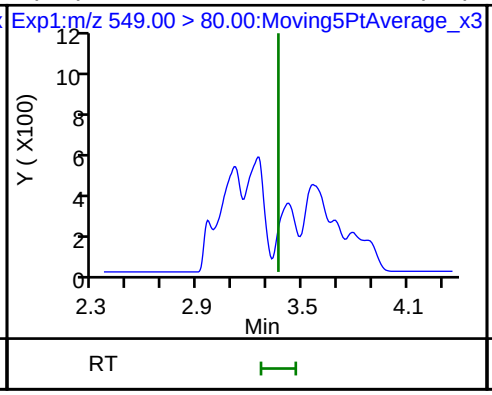
D 19 13C5 PFNA



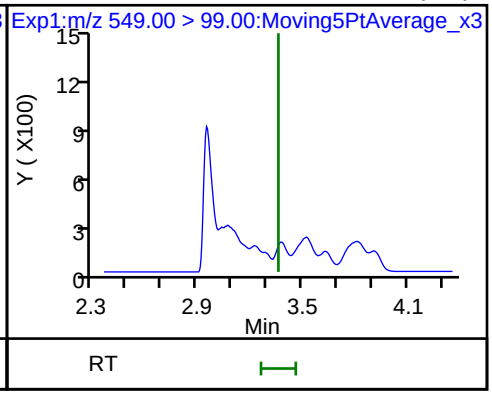
25 1H,1H,2H,2H-perfluorodecanesulfoni (ND)



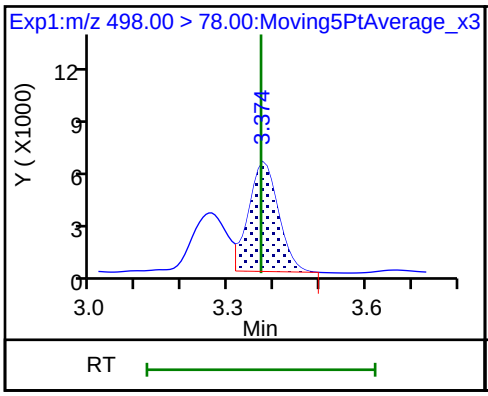
68 Perfluorononanesulfonic acid (ND)



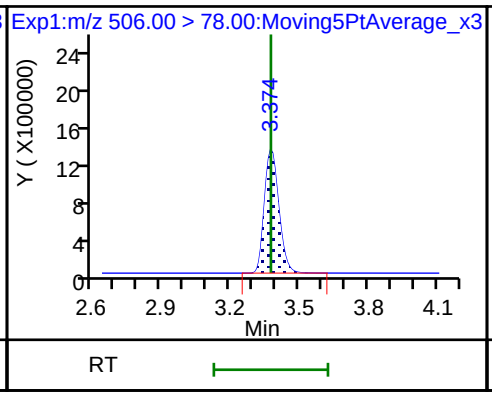
68 Perfluorononanesulfonic acid (ND)



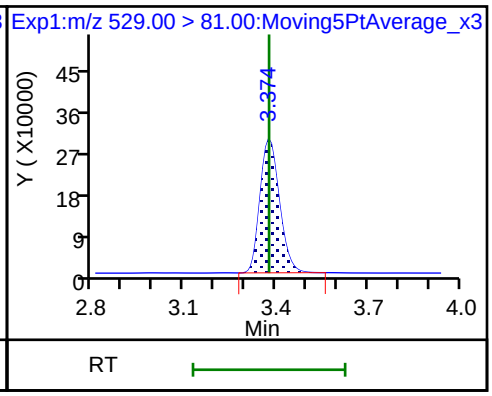
22 Perfluorooctane Sulfonamide



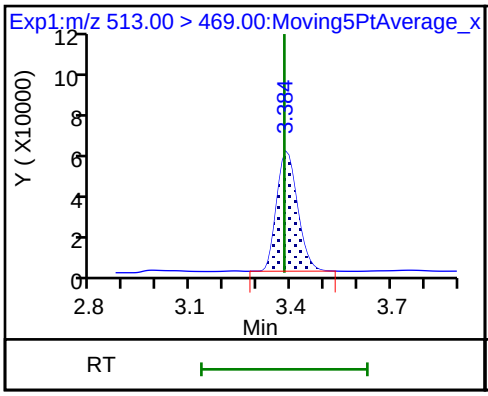
D 21 13C8 FOSA



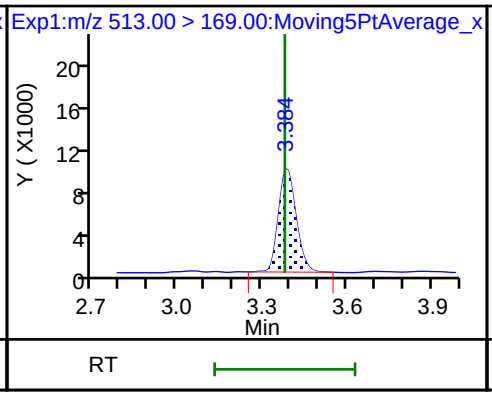
D 26 M2-8:2FTS



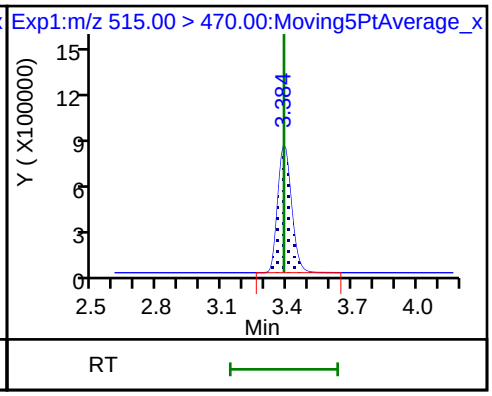
24 Perfluorodecanoic acid



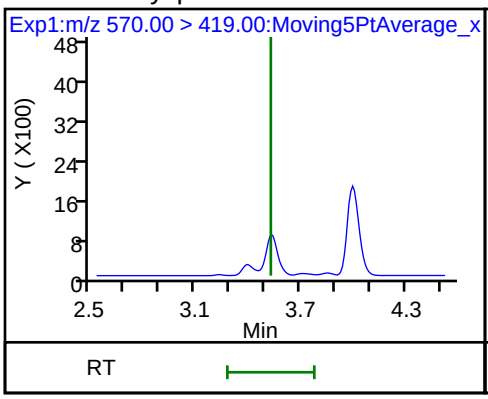
24 Perfluorodecanoic acid



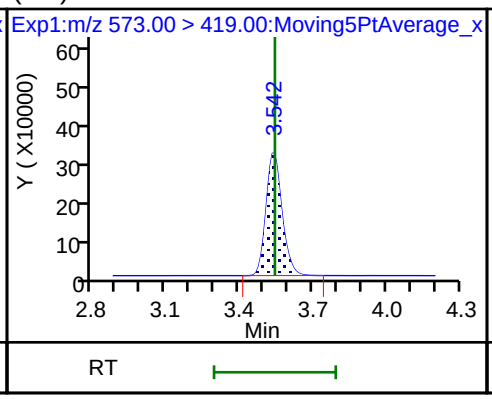
D 23 13C2 PFDA



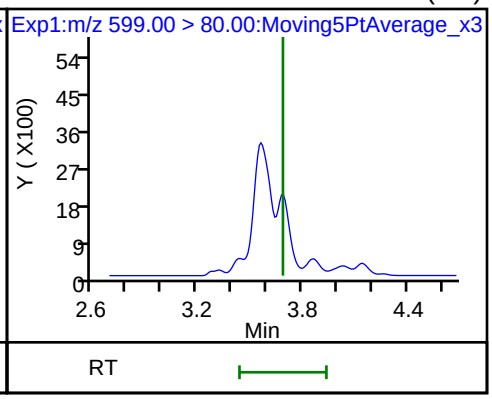
28 N-methyl perfluorooctane sulfonamid (ND)



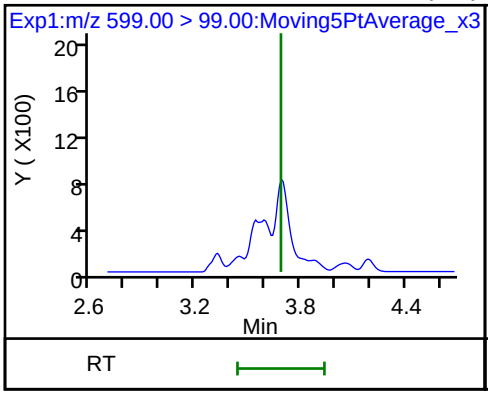
D 27 d3-NMeFOSAA



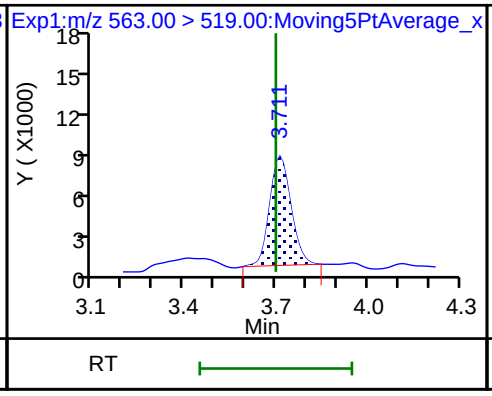
29 Perfluorodecane Sulfonic acid (ND)



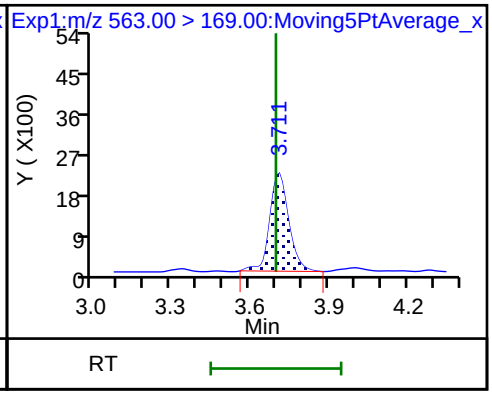
29 Perfluorodecane Sulfonic acid (ND)



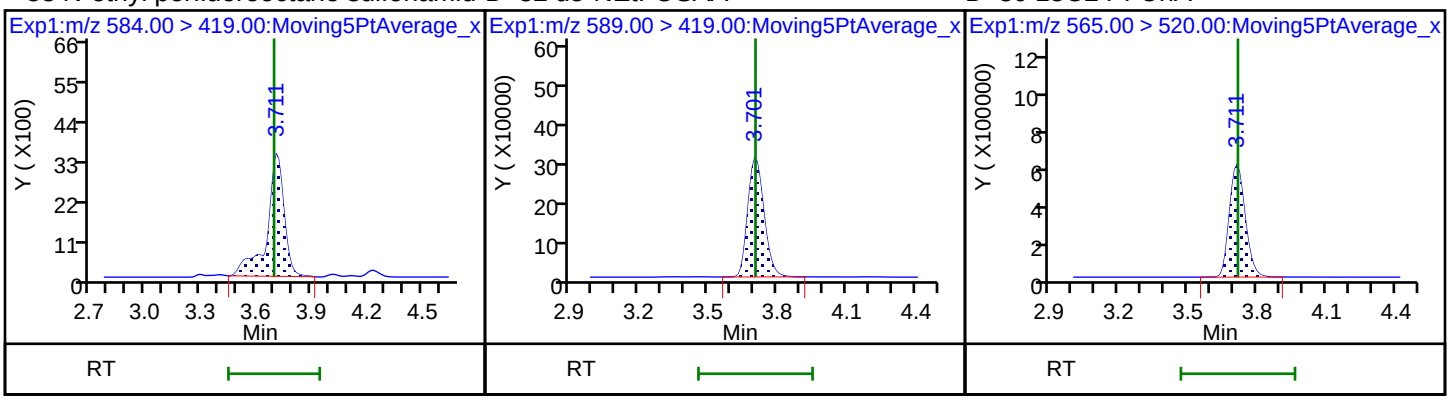
31 Perfluoroundecanoic acid



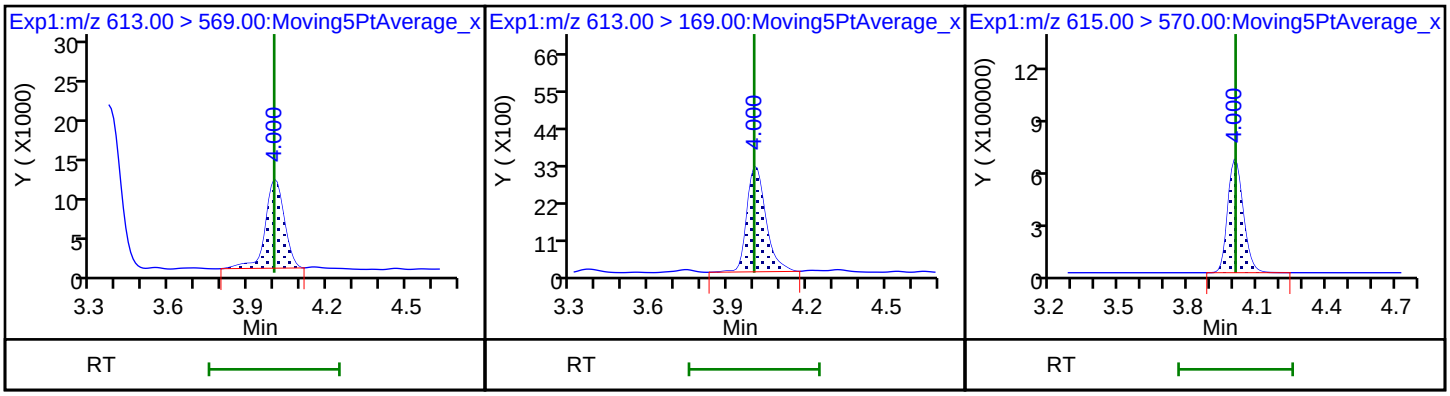
31 Perfluoroundecanoic acid



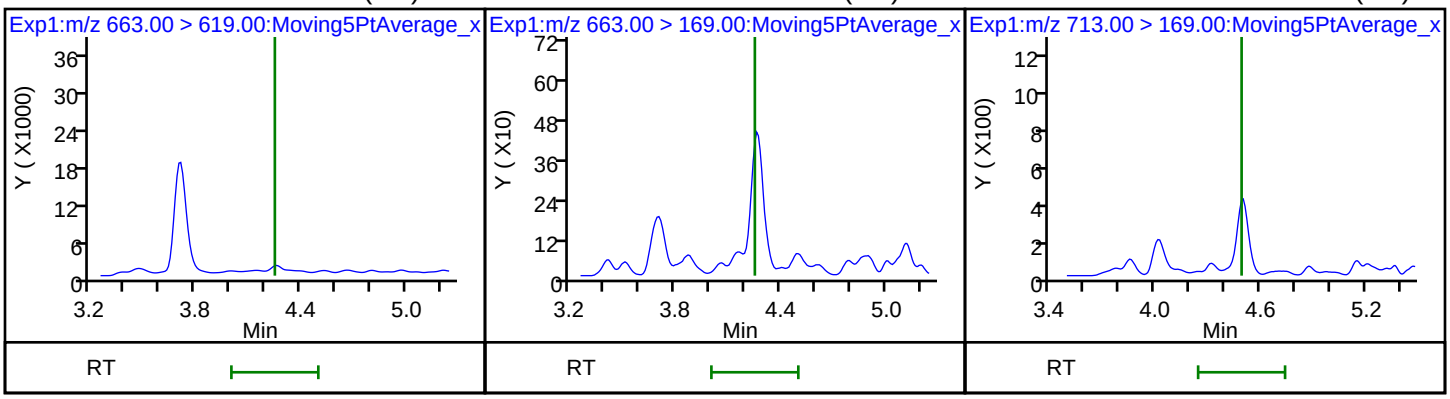
33 N-ethyl perfluorooctane sulfonamid D 32 d5-NEtFOSAA D 30 13C2 PFUnA



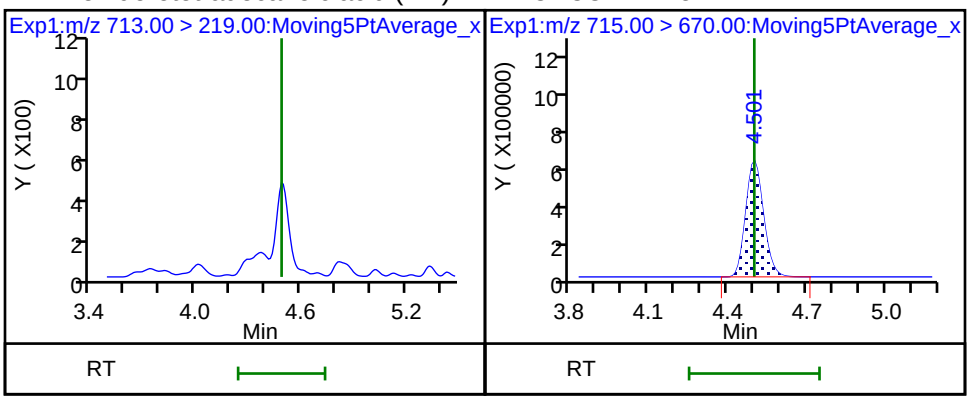
37 Perfluorododecanoic acid 37 Perfluorododecanoic acid D 36 13C2 PFDoA



41 Perfluorotridecanoic acid (ND) 41 Perfluorotridecanoic acid (ND) 42 Perfluorotetradecanoic acid (ND)



42 Perfluorotetradecanoic acid (ND) D 43 13C2-PFTeDA



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

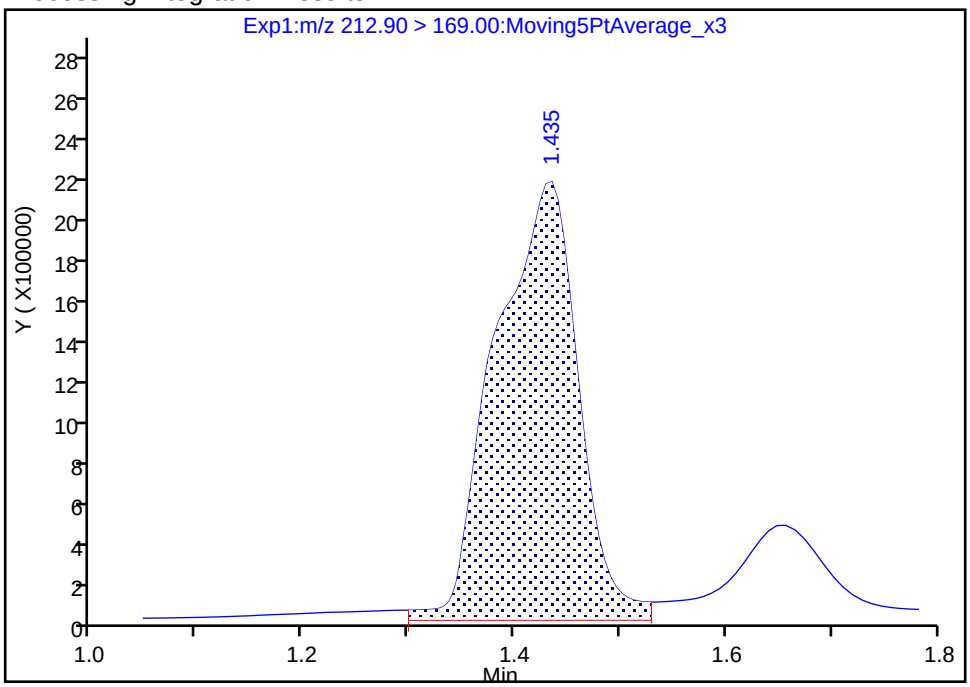
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\2018.07.13LLC_011.d				
Injection Date:	13-Jul-2018 21:25:22	Instrument ID:	A8_N		
Lims ID:	320-40571-A-21-A	Lab Sample ID:	320-40571-21		
Client ID:	NF26-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	5	Worklist Smp#:	6
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

2 Perfluorobutyric acid, CAS: 375-22-4

Signal: 1

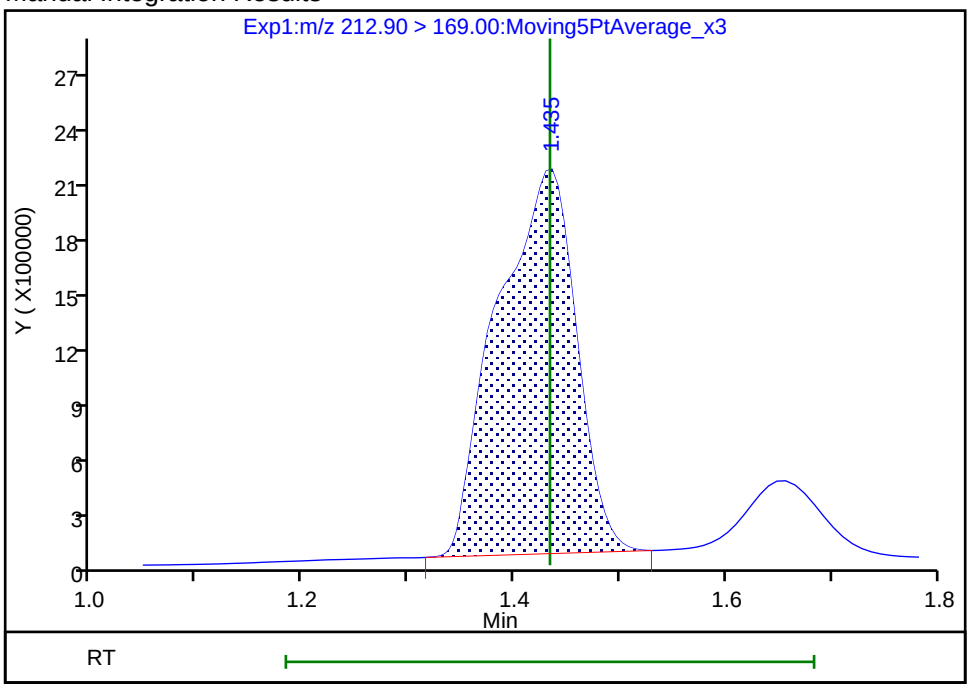
Processing Integration Results

RT: 1.44
Area: 11727233
Amount: 10.021302
Amount Units: ng/ml



Manual Integration Results

RT: 1.44
Area: 10772847
Amount: 9.205748
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 12:33:36

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\2018.07.13LLC_011.d				
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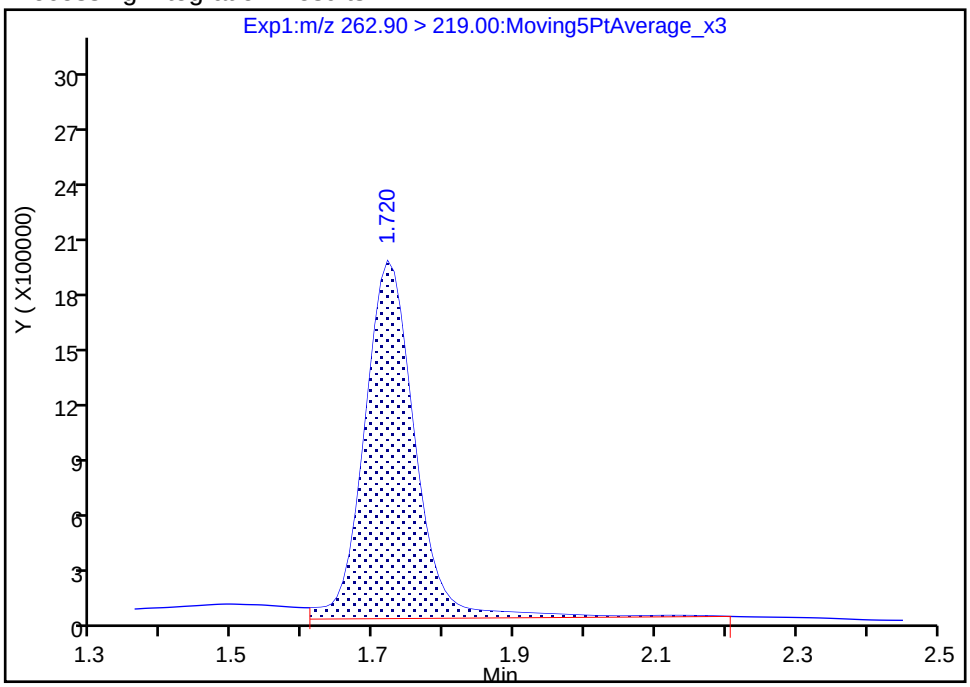
Lims ID:	320-40571-A-21-A	Lab Sample ID:	320-40571-21		
Client ID:	NF26-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	5	Worklist Smp#:	6
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

4 Perfluoropentanoic acid, CAS: 2706-90-3

Signal: 1

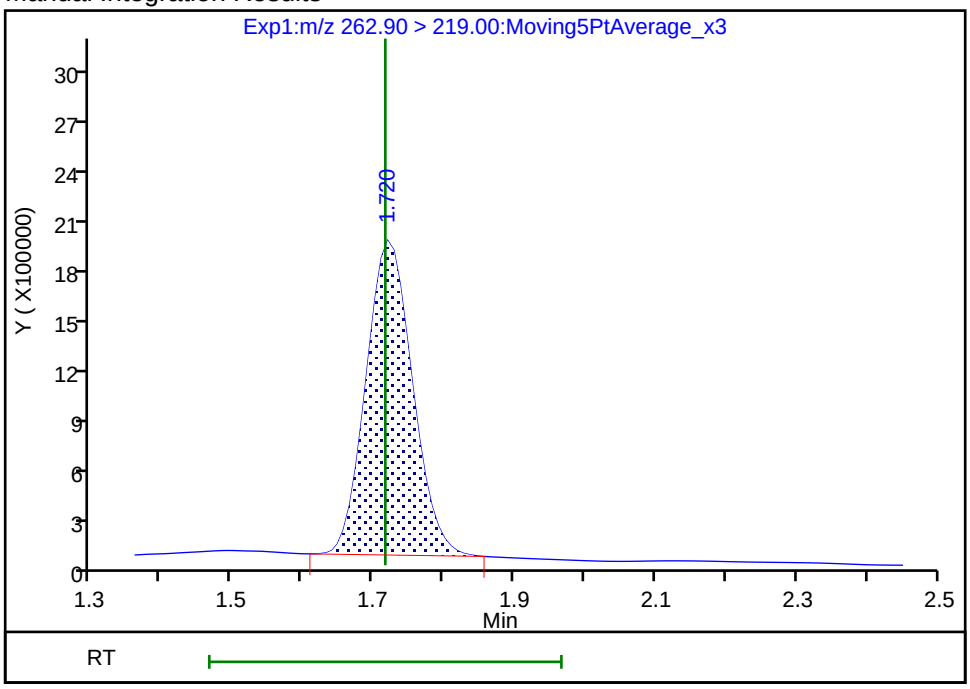
Processing Integration Results

RT: 1.72
Area: 9791831
Amount: 6.713209
Amount Units: ng/ml



Manual Integration Results

RT: 1.72
Area: 8740143
Amount: 5.992180
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 12:33:43

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

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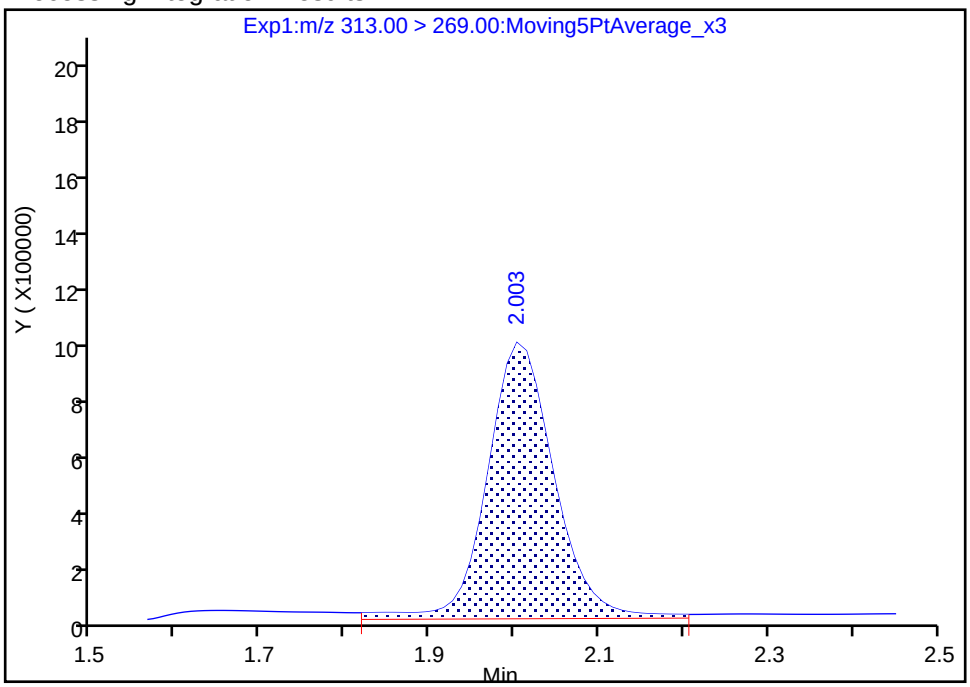
Injection Date:	13-Jul-2018 21:25:22	Instrument ID:	A8_N		
Lims ID:	320-40571-A-21-A	Lab Sample ID:	320-40571-21		
Client ID:	NF26-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	5	Worklist Smp#:	6
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

6 Perfluorohexanoic acid, CAS: 307-24-4

Signal: 1

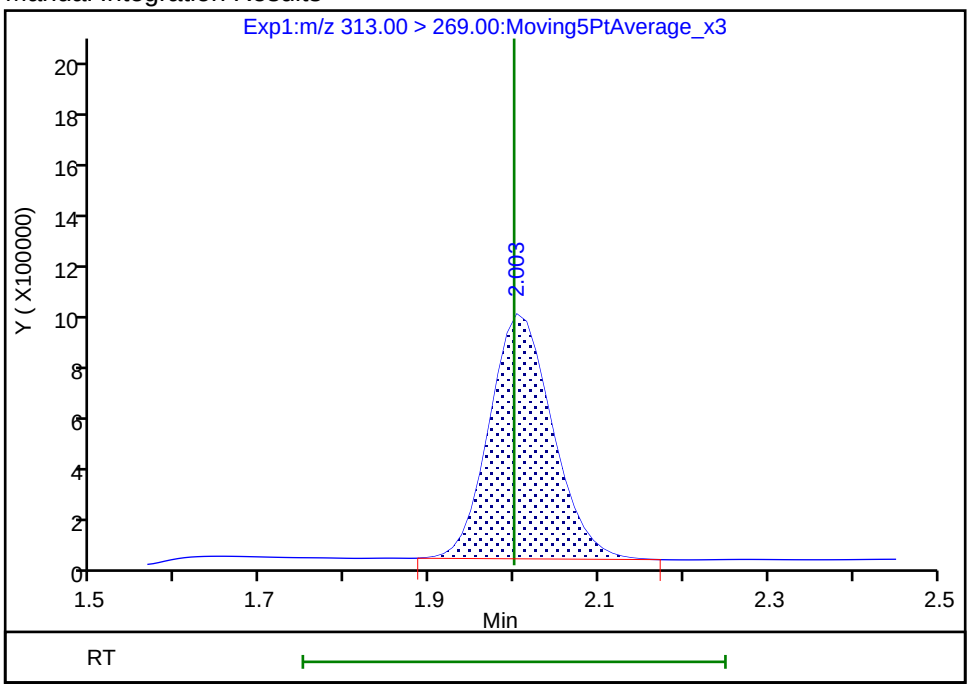
Processing Integration Results

RT: 2.00
Area: 5482270
Amount: 3.751481
Amount Units: ng/ml



Manual Integration Results

RT: 2.00
Area: 5030280
Amount: 3.442188
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 12:33:53

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

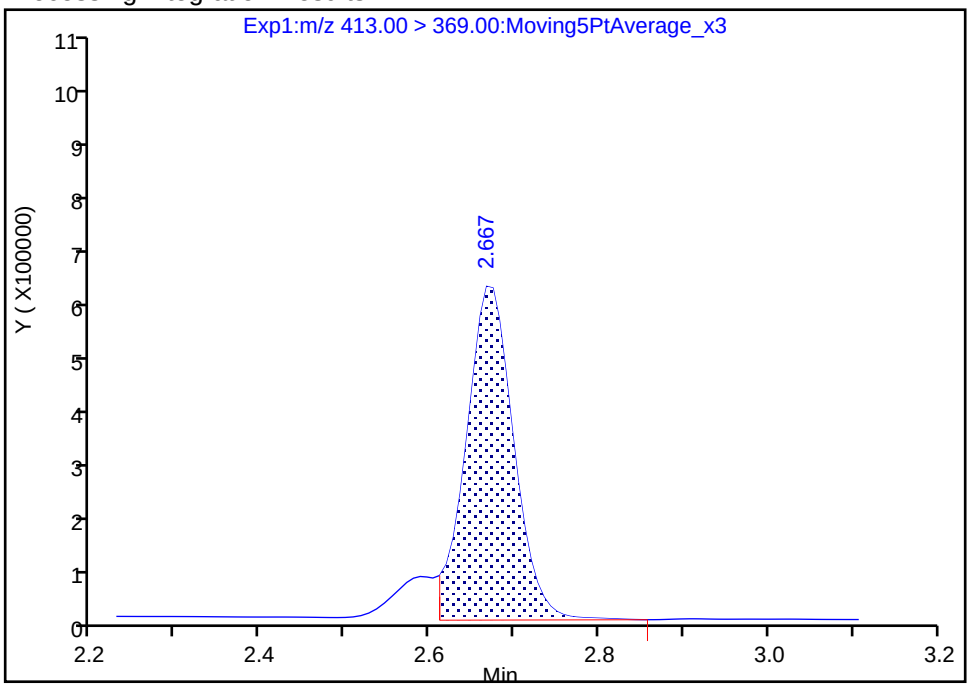
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\2018.07.13LLC_011.d				
Injection Date:	13-Jul-2018 21:25:22	Instrument ID:	A8_N		
Lims ID:	320-40571-A-21-A	Lab Sample ID:	320-40571-21		
Client ID:	NF26-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	5	Worklist Smp#:	6
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

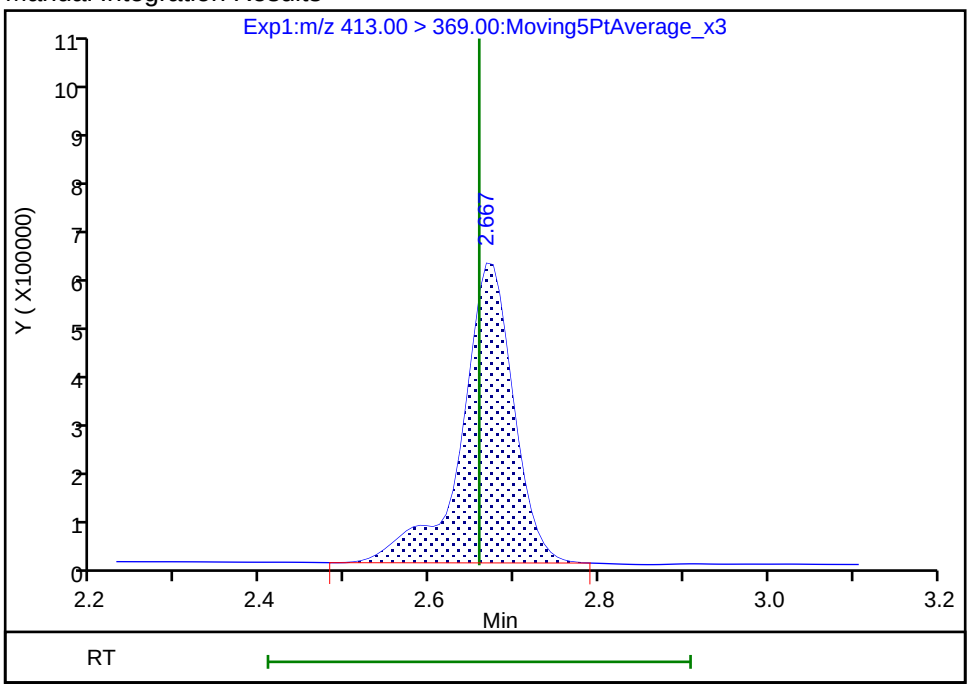
Processing Integration Results

RT: 2.67
Area: 2373556
Amount: 1.180852
Amount Units: ng/ml



Manual Integration Results

RT: 2.67
Area: 2590415
Amount: 1.288740
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 12:34:14

Audit Action: Manually Integrated Audit Reason: Isomers

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\2018.07.13LLC_011.d				
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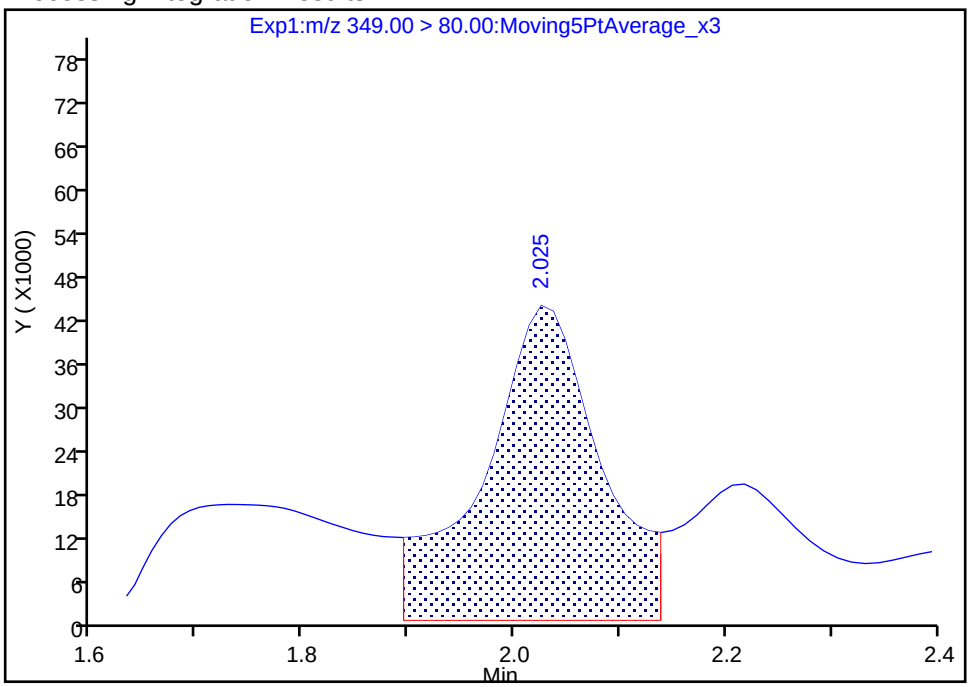
Lims ID:	320-40571-A-21-A	Lab Sample ID:	320-40571-21		
Client ID:	NF26-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	5	Worklist Smp#:	6
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

70 Perfluoropentanesulfonic acid, CAS: 2706-91-4

Signal: 1

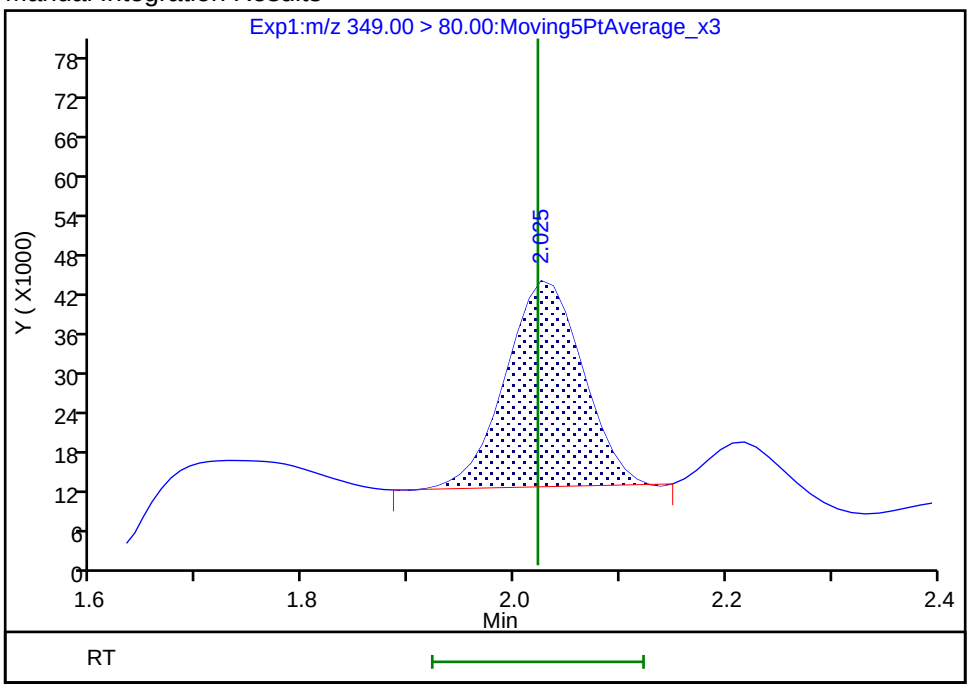
Processing Integration Results

RT: 2.03
Area: 334896
Amount: 0.125986
Amount Units: ng/ml



Manual Integration Results

RT: 2.03
Area: 159544
Amount: 0.060019
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 12:33:59
Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

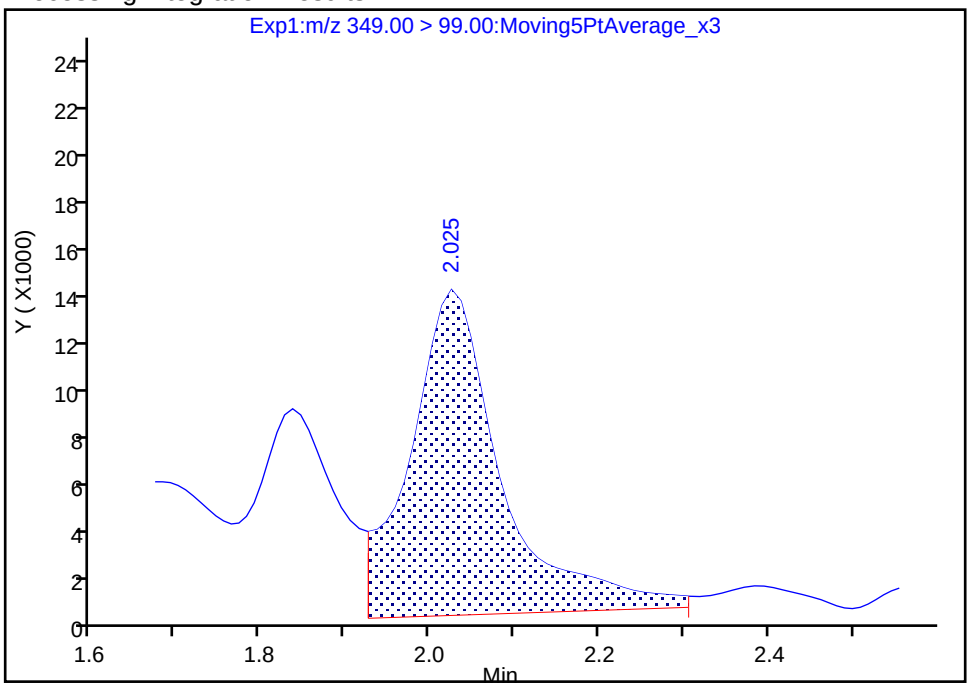
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\2018.07.13LLC_011.d				
Injection Date:	13-Jul-2018 21:25:22	Instrument ID:	A8_N		
Lims ID:	320-40571-A-21-A	Lab Sample ID:	320-40571-21		
Client ID:	NF26-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	5	Worklist Smp#:	6
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

70 Perfluoropentanesulfonic acid, CAS: 2706-91-4

Signal: 2

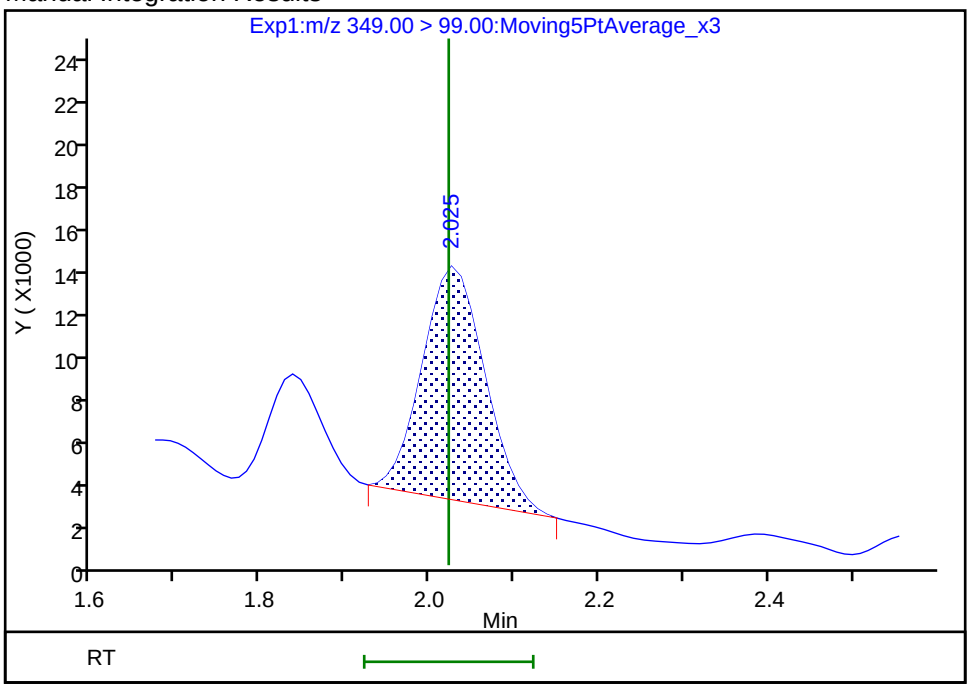
Processing Integration Results

RT: 2.03
Area: 99250
Amount: 0.125986
Amount Units: ng/ml



Manual Integration Results

RT: 2.03
Area: 54381
Amount: 0.060019
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 12:34:03
Audit Action: Manually Integrated Audit Reason: Baseline

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF26-SS-02
Lab Sample ID: 320-40571-22
Matrix: Solid
Lab File ID: 2018.07.13LLB_067.d
Analysis Method: 537 (modified)
Date Collected: 06/19/2018 10:50
Extraction Method: SHAKE
Date Extracted: 06/28/2018 05:15
Sample wt/vol: 5.05(g)
Date Analyzed: 07/14/2018 05:31
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture: 20.0
GPC Cleanup:(Y/N) N
Analysis Batch No.: 233997
Units: mg/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	0.000072	J	0.00025	0.000035
2706-90-3	Perfluoropentanoic acid (PFPeA)	ND		0.00025	0.000095
307-24-4	Perfluorohexanoic acid (PFHxA)	0.000064	J	0.00025	0.000052
375-85-9	Perfluoroheptanoic acid (PFHpA)	ND		0.00025	0.000036
335-67-1	Perfluorooctanoic acid (PFOA)	ND		0.00025	0.00011
375-95-1	Perfluorononanoic acid (PFNA)	ND		0.00025	0.000045
335-76-2	Perfluorodecanoic acid (PFDA)	ND		0.00025	0.000027
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		0.00025	0.000045
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		0.00025	0.000083
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		0.00025	0.000063
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		0.00025	0.000067
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.00015	J	0.00025	0.000031
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	ND		0.00025	0.000038
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.00025	0.000043
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	ND		0.00062	0.00025
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		0.00025	0.000048
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		0.00025	0.00010
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.0025	0.00048
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.0025	0.00046
27619-97-2	6:2 FTS	ND		0.0025	0.00019
39108-34-4	8:2 FTS	ND		0.0025	0.00031

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF26-SS-02
Lab Sample ID: 320-40571-22
Matrix: Solid
Lab File ID: 2018.07.13LLB_067.d
Analysis Method: 537 (modified)
Date Collected: 06/19/2018 10:50
Extraction Method: SHAKE
Date Extracted: 06/28/2018 05:15
Sample wt/vol: 5.05(g)
Date Analyzed: 07/14/2018 05:31
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture: 20.0
GPC Cleanup:(Y/N) N
Analysis Batch No.: 233997
Units: mg/Kg

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00992	13C4 PFBA	99		25-150
STL01893	13C5 PFPeA	105		25-150
STL00993	13C2 PFHxA	109		25-150
STL01892	13C4-PFHpA	109		25-150
STL00990	13C4 PFOA	103		25-150
STL00995	13C5 PFNA	102		25-150
STL00996	13C2 PFDA	113		25-150
STL00997	13C2 PFUnA	104		25-150
STL00998	13C2 PFDoA	96		25-150
STL02116	13C2-PFTeDA	102		25-150
STL02337	13C3-PFBS	92		25-150
STL00994	18O2 PFHxS	95		25-150
STL00991	13C4 PFOS	88		25-150
STL01056	13C8 FOSA	82		25-150
STL02118	d3-NMeFOSAA	98		25-150
STL02117	d5-NEtFOSAA	107		25-150
STL02279	M2-6:2FTS	80		25-150
STL02280	M2-8:2FTS	94		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\2018.07.13LLB_067.d
Lims ID: 320-40571-A-22-A
Client ID: NF26-SS-02
Sample Type: Client
Inject. Date: 14-Jul-2018 05:31:00 ALS Bottle#: 51 Worklist Smp#: 16
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-40571-a-22-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 16-Jul-2018 14:25:43 Calib Date: 11-Jul-2018 15:38:42
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK023

First Level Reviewer: mongkols Date: 16-Jul-2018 14:25:43

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										M
217.00 > 172.00	1.436	1.441	-0.005	0.540	5992095	2.49		99.5	47488	M
2 Perfluorobutyric acid										M
212.90 > 169.00	1.436	1.445	-0.009	1.000	68934	0.0292			25.8	M
D 3 13C5-PFPeA										
267.90 > 223.00	1.721	1.720	0.001	0.647	4397040	2.62		105	49715	
4 Perfluoropentanoic acid										M
262.90 > 219.00	1.712	1.726	-0.014	0.995	66368	0.0311			25.7	M
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.757	1.762	-0.005	1.000	183908	0.0620			1520	
298.90 > 99.00	1.757	1.762	-0.005	1.000	70933		2.59(1.25-3.74)		409	
D 47 13C3-PFBS										
301.90 > 83.00	1.757	1.765	-0.008	0.661	90214	2.14		92.2	497	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.998	2.000	-0.002	1.000	52658	0.0259			98.9	
313.00 > 119.00	2.009	2.000	0.009	1.006	4936		10.67(5.03-15.10)		89.4	
D 7 13C2 PFHxA										
315.00 > 270.00	1.998	2.003	-0.005	0.752	4936932	2.73		109	84219	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.314	2.316	-0.002	1.000	25495	0.0121			38.3	
363.00 > 169.00	2.314	2.316	-0.002	1.000	12131		2.10(1.13-3.40)		113	
D 9 13C4-PFHpA										
367.00 > 322.00	2.314	2.319	-0.005	0.871	4553906	2.73		109	74830	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.327	2.329	-0.002	1.000	36922	0.0144			339	
399.00 > 99.00	2.327	2.329	-0.002	1.000	11789		3.13(1.50-4.49)		54.4	
D 11 18O2 PFHxS										
403.00 > 84.00	2.327	2.332	-0.005	0.876	5293473	2.24		94.9	48700	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.634	2.643	-0.009	1.000	5237	0.0118			52.1	
D 12 M2-6:2FTS										
429.00 > 81.00	2.634	2.644	-0.010	0.991	675998	1.89		79.7	11274	
* 62 13C2-PFOA										
415.00 > 370.00	2.658	2.666	-0.008		4443005	2.50			58156	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.658	2.666	-0.008	1.000	52746	0.0245			27.9	
413.00 > 169.00	2.666	2.666	0.0	1.003	39322		1.34(0.84-2.52)		229	
D 14 13C4 PFOA										
417.00 > 372.00	2.658	2.667	-0.009	1.000	4369543	2.57		103	48959	
D 18 13C4 PFOS										
503.00 > 80.00	3.026	3.027	-0.001	1.138	3631172	2.10		87.8	51963	
D 19 13C5 PFNA										
468.00 > 423.00	3.026	3.034	-0.008	1.138	3872813	2.55		102	44798	
D 21 13C8 FOSA										
506.00 > 78.00	3.370	3.379	-0.009	1.268	5112283	2.05		81.9	47721	
D 26 M2-8:2FTS										
529.00 > 81.00	3.379	3.379	0.0	1.271	1181025	2.26		94.4	20964	
D 23 13C2 PFDA										
515.00 > 470.00	3.379	3.389	-0.010	1.271	3774649	2.83		113	61037	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.529	3.538	-0.009	1.328	1334578	2.44		97.7	29119	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.698	3.708	-0.010	1.391	1503988	2.69		107	3925	
D 30 13C2 PFUnA										
565.00 > 520.00	3.698	3.708	-0.010	1.391	2896117	2.60		104	43205	
D 36 13C2 PFDoA										
615.00 > 570.00	3.998	3.999	-0.001	1.504	2773027	2.40		96.1	20928	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.490	4.501	-0.011	1.689	3056072	2.55		102	19658	

QC Flag Legend

Review Flags

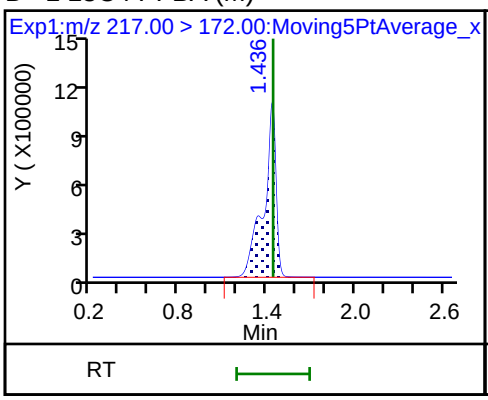
M - Manually Integrated

Report Date: 16-Jul-2018 14:25:43 Chrom Revision: 2.2 07-Jun-2018 07:41:54

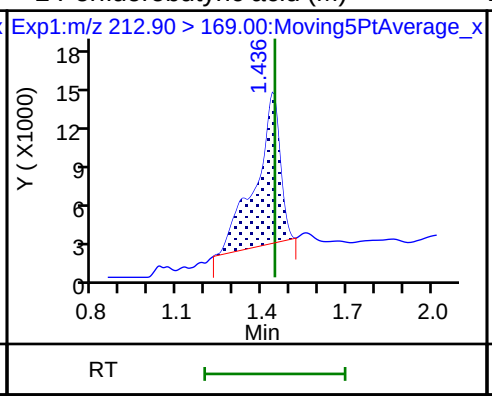
TestAmerica Sacramento

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\2018.07.13LLB_067.d				
Injection Date:	14-Jul-2018 05:31:00	Instrument ID:	A8_N		
Lims ID:	320-40571-A-22-A	Lab Sample ID:	320-40571-22		
Client ID:	NF26-SS-02				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	51	Worklist Smp#:	16
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		

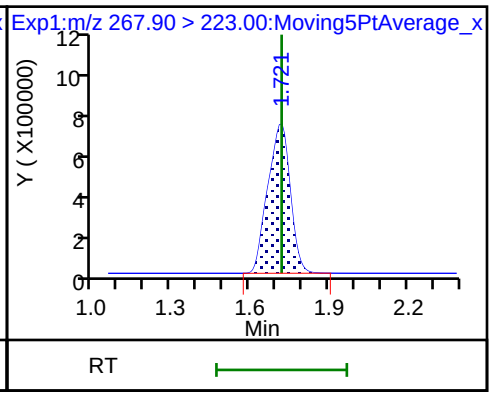
D 1 13C4 PFBA (M)



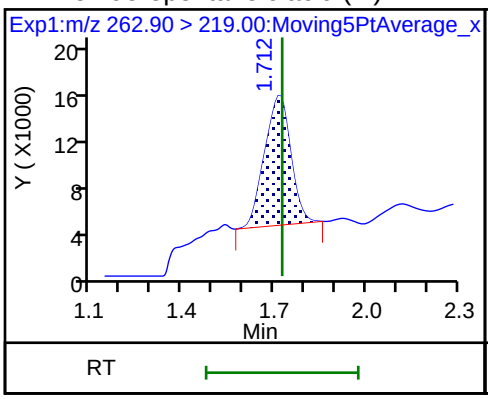
2 Perfluorobutyric acid (M)



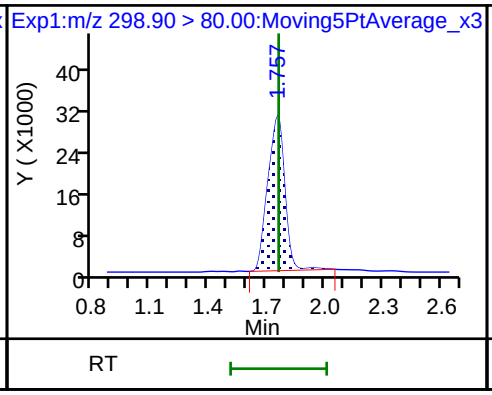
D 3 13C5-PFPeA



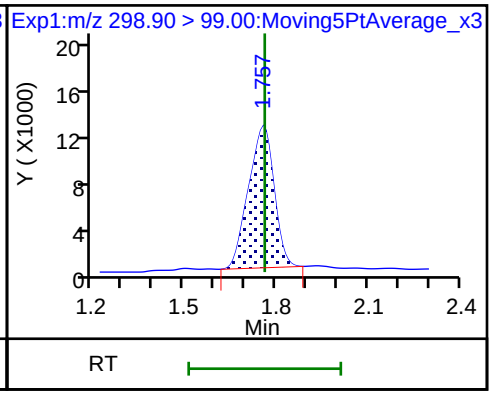
4 Perfluoropentanoic acid (M)



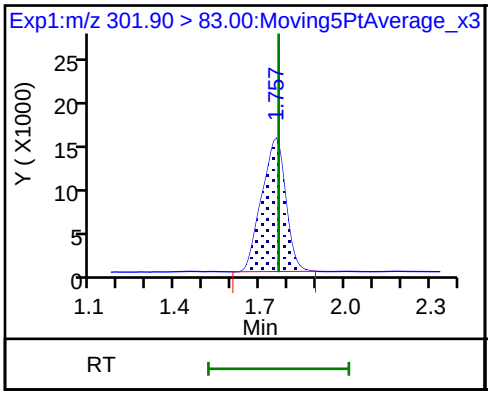
5 Perfluorobutanesulfonic acid



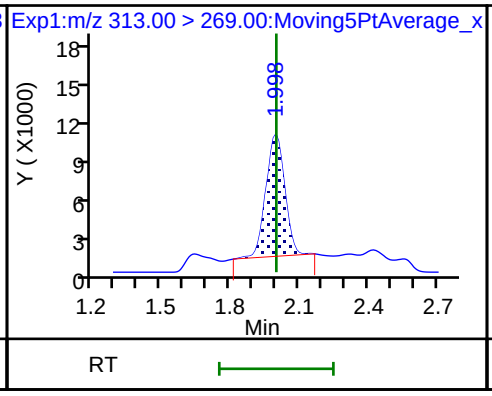
5 Perfluorobutanesulfonic acid



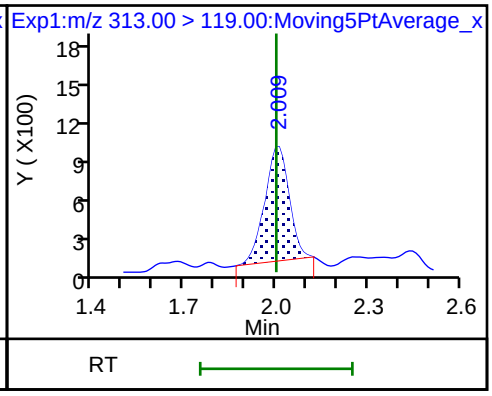
D 47 13C3-PFBS



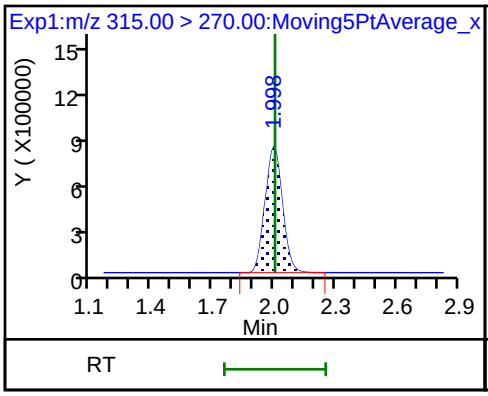
6 Perfluorohexanoic acid



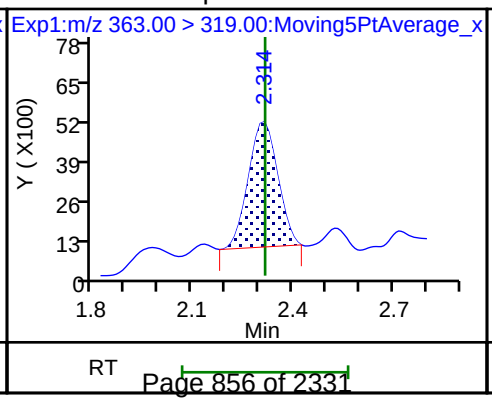
6 Perfluorohexanoic acid



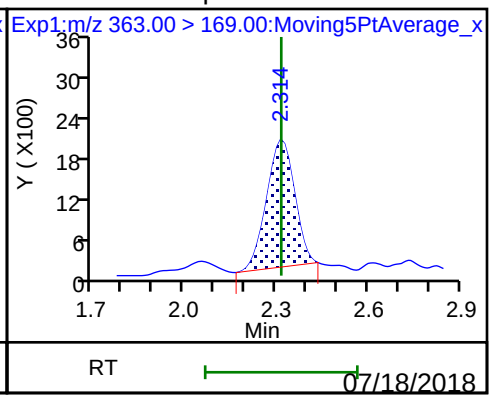
D 7 13C2 PFHxA



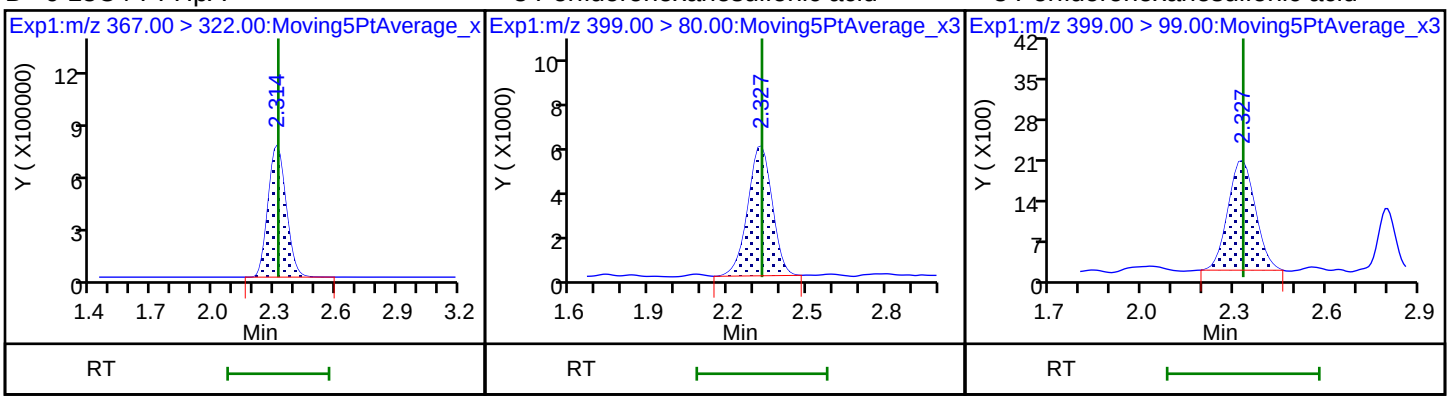
10 Perfluoroheptanoic acid



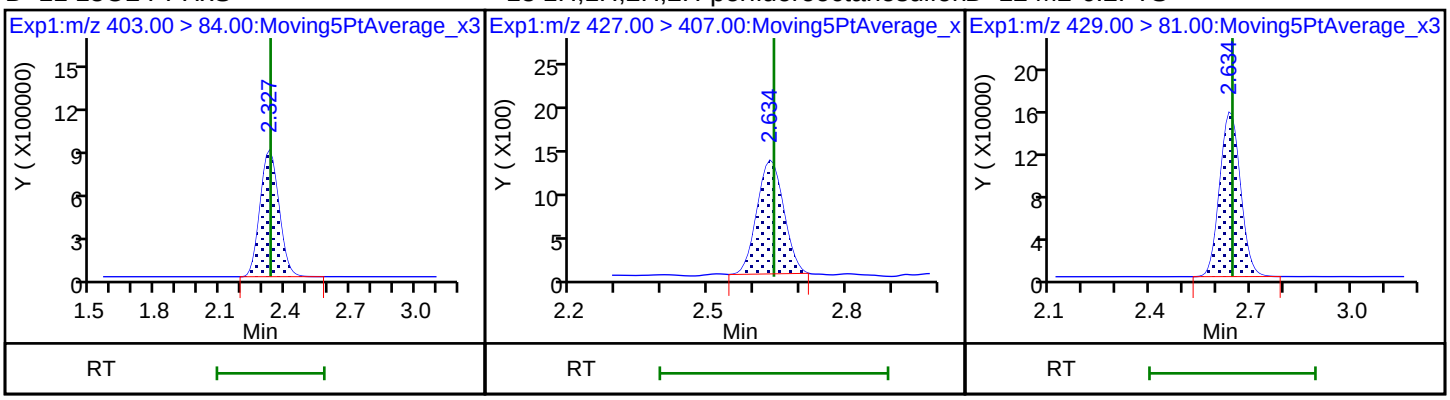
10 Perfluoroheptanoic acid



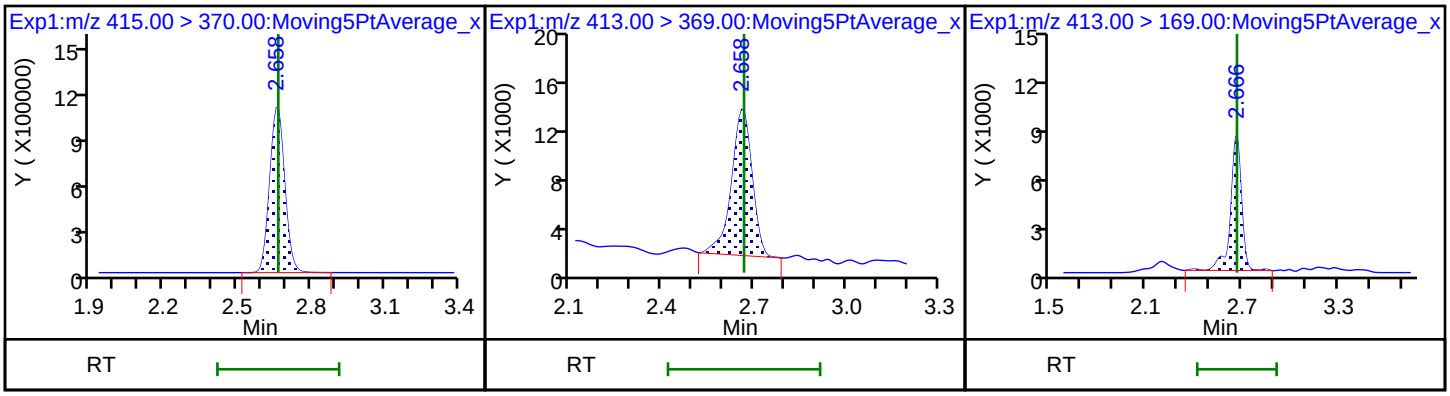
D 9 13C4-PFHpA | 8 Perfluorohexanesulfonic acid | 8 Perfluorohexanesulfonic acid



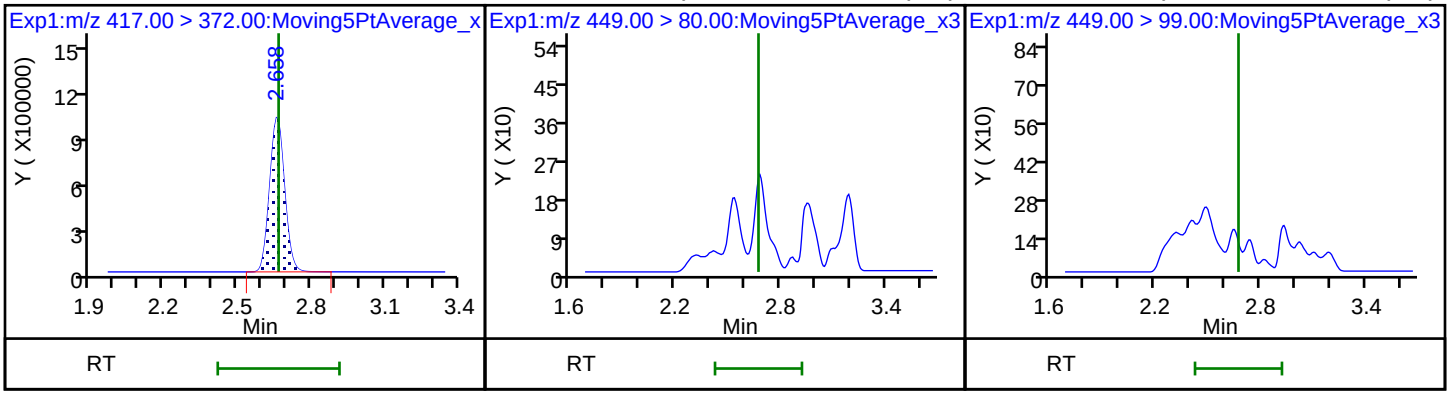
D 11 18O2 PFHxS | 13 1H,1H,2H,2H-perfluorooctanesulfon | D 12 M2-6:2FTS



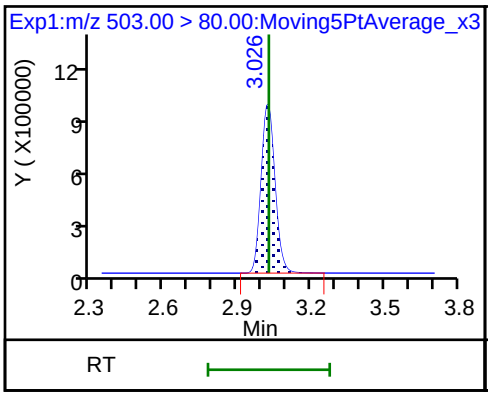
* 62 13C2-PFOA | 15 Perfluorooctanoic acid | 15 Perfluorooctanoic acid



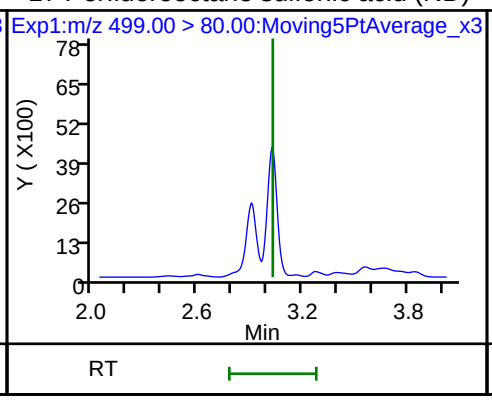
D 14 13C4 PFOA | 16 Perfluoroheptanesulfonic acid (ND) | 16 Perfluoroheptanesulfonic acid (ND)



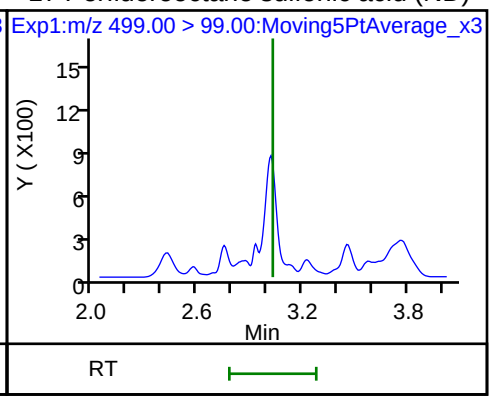
D 18 13C4 PFOS



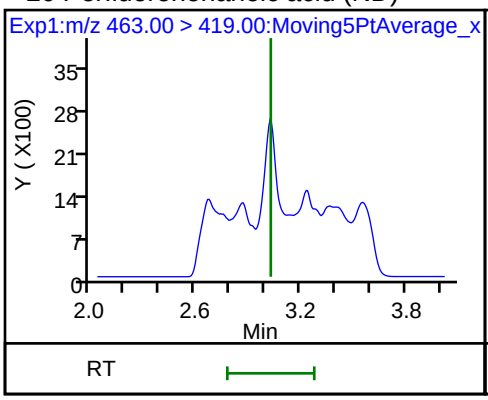
17 Perfluorooctane sulfonic acid (ND)



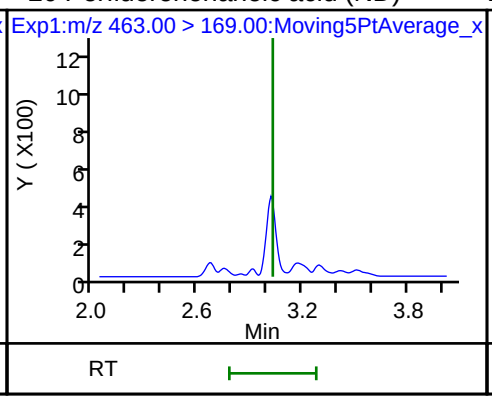
17 Perfluorooctane sulfonic acid (ND)



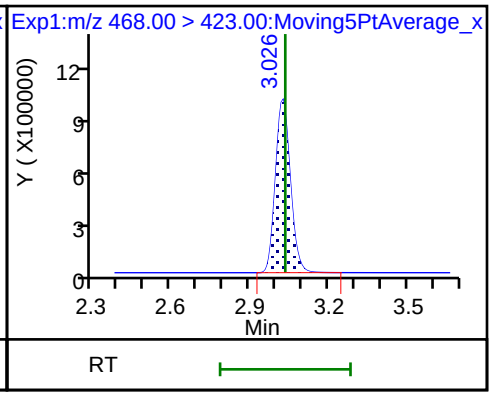
20 Perfluorononanoic acid (ND)



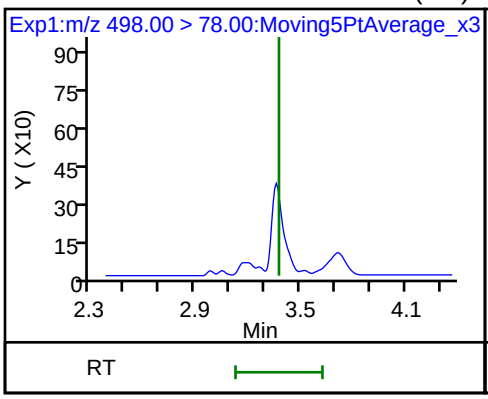
20 Perfluorononanoic acid (ND)



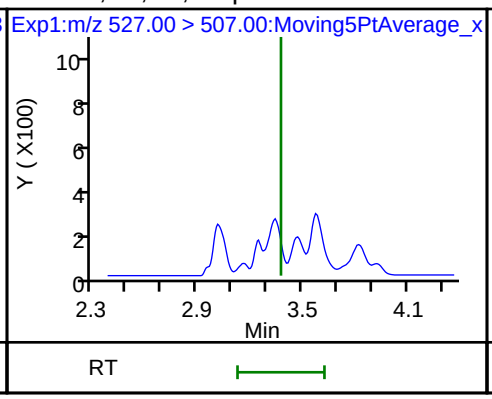
D 19 13C5 PFNA



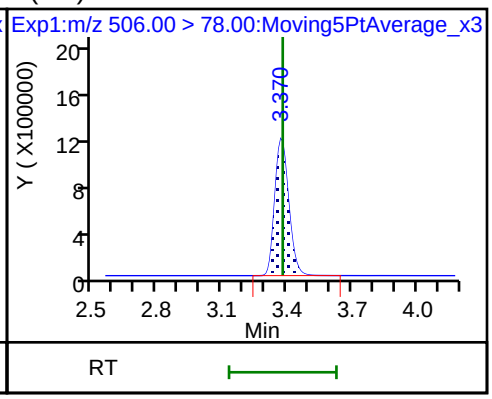
22 Perfluorooctane Sulfonamide (ND)



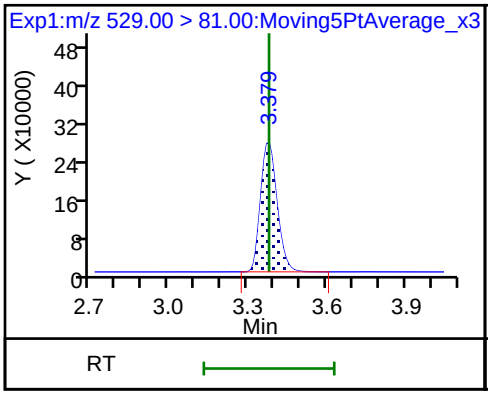
25 1H,1H,2H,2H-perfluorodecanesulfonic acid (ND)



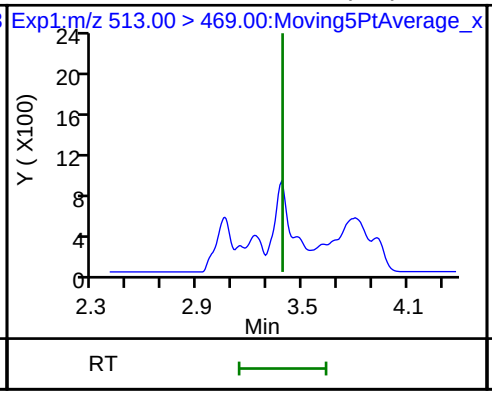
D 21 13C8 FOSA



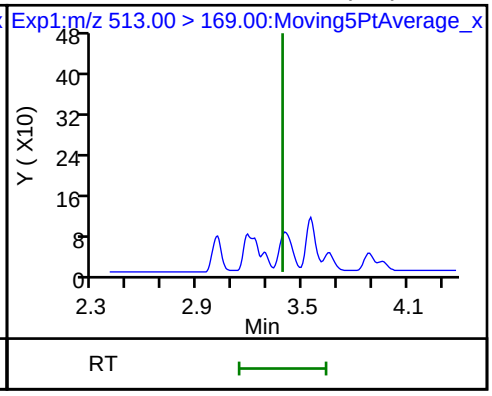
D 26 M2-8:2FTS



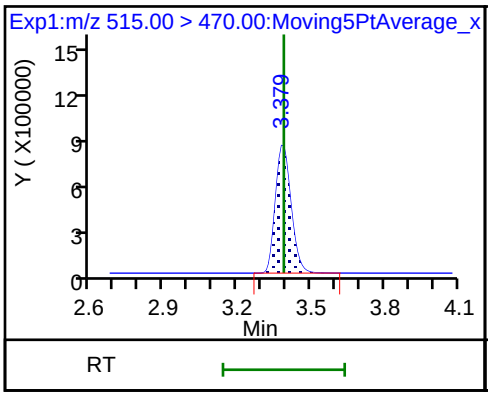
24 Perfluorodecanoic acid (ND)



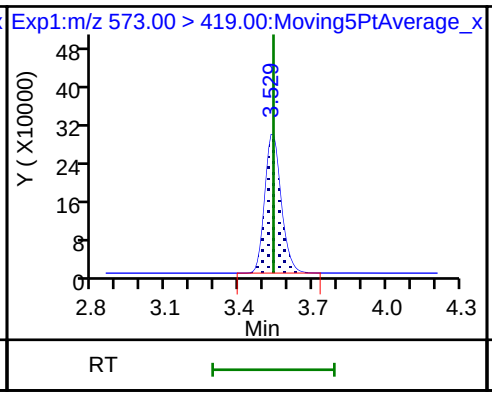
24 Perfluorodecanoic acid (ND)



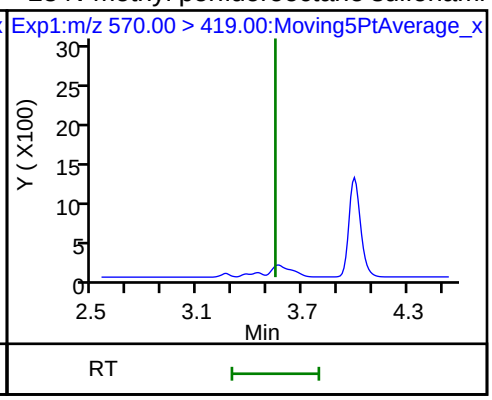
D 23 13C2 PFDA



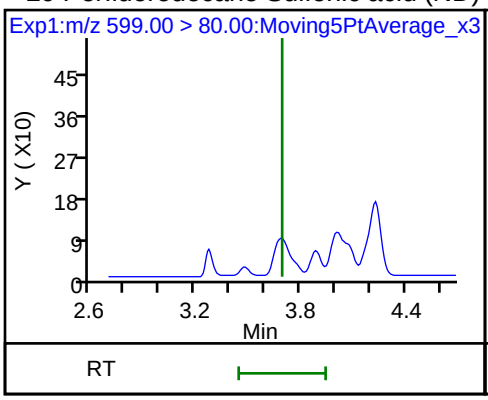
D 27 d3-NMeFOSAA



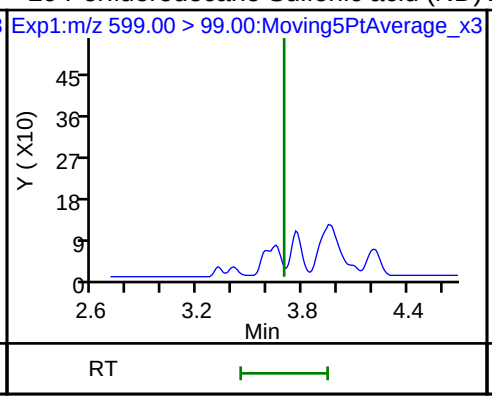
28 N-methyl perfluorooctane sulfonami (ND)



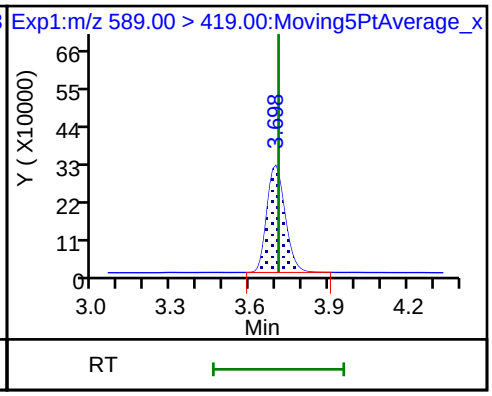
29 Perfluorodecane Sulfonic acid (ND)



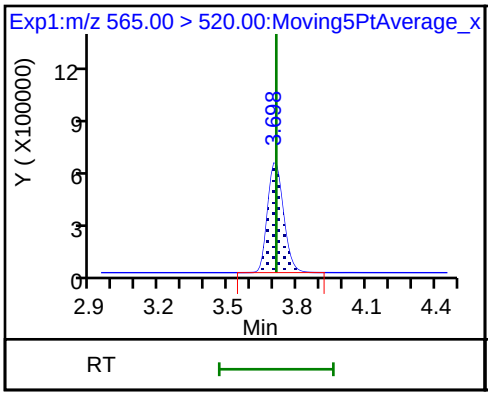
29 Perfluorodecane Sulfonic acid (ND)



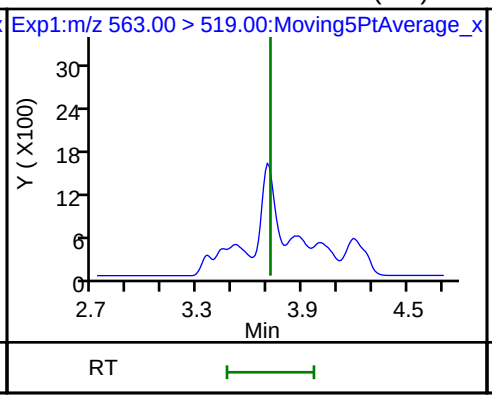
D 32 d5-NEtFOSAA



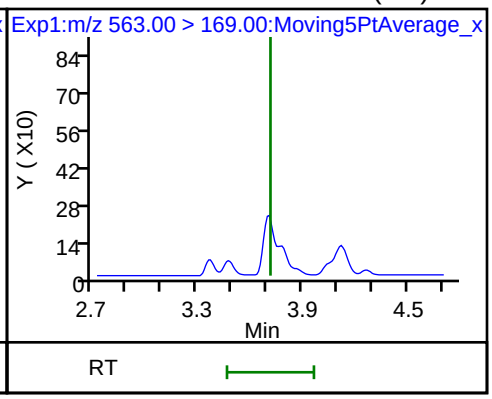
D 30 13C2 PFUnA



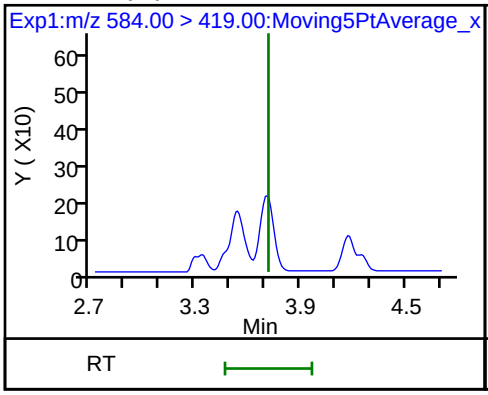
31 Perfluoroundecanoic acid (ND)



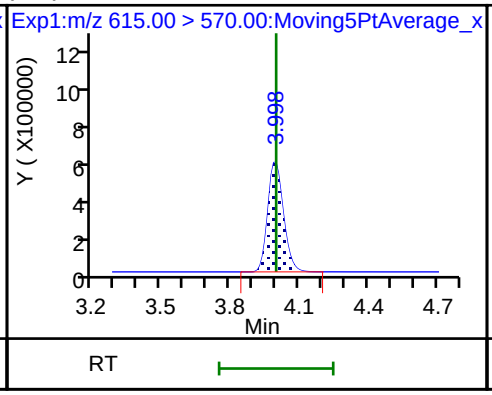
31 Perfluoroundecanoic acid (ND)



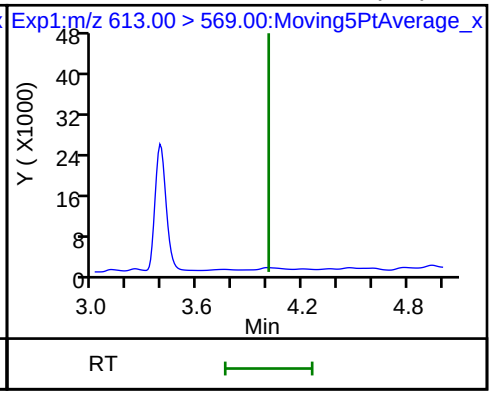
33 N-ethyl perfluorooctane sulfonamid (ND)



D 36 13C2 PFDoA

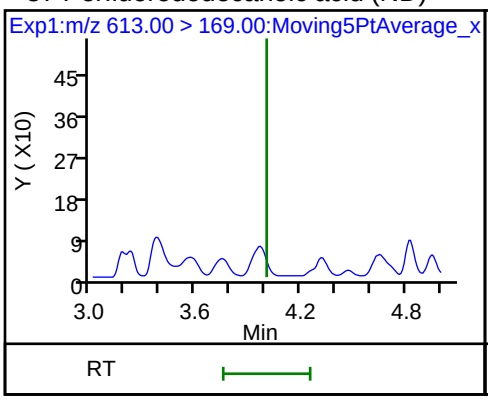


37 Perfluorododecanoic acid (ND)

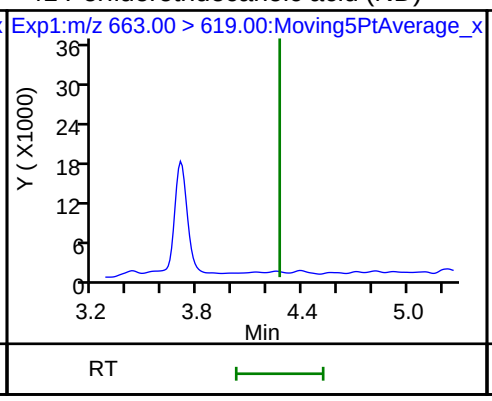


Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\2018.07.13LLB_067.d

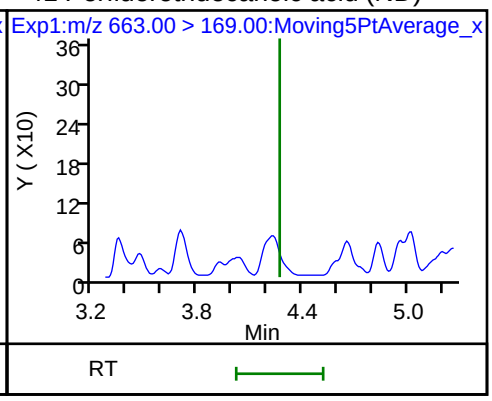
37 Perfluorododecanoic acid (ND)



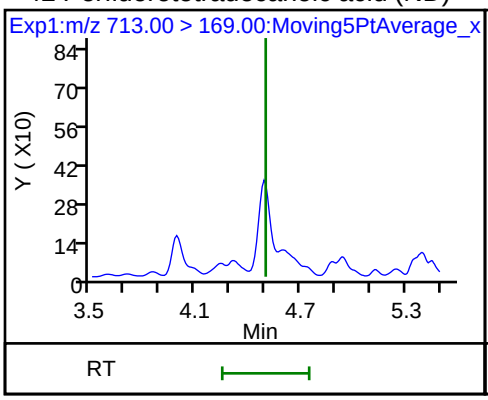
41 Perfluorotridecanoic acid (ND)



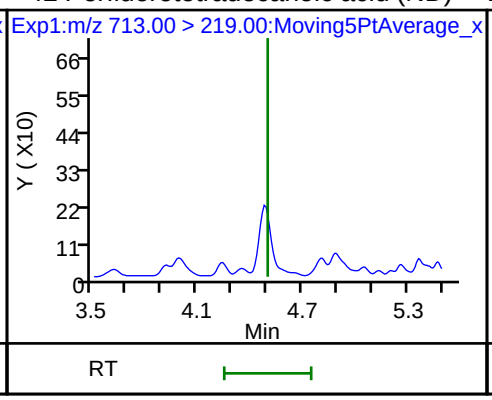
41 Perfluorotridecanoic acid (ND)



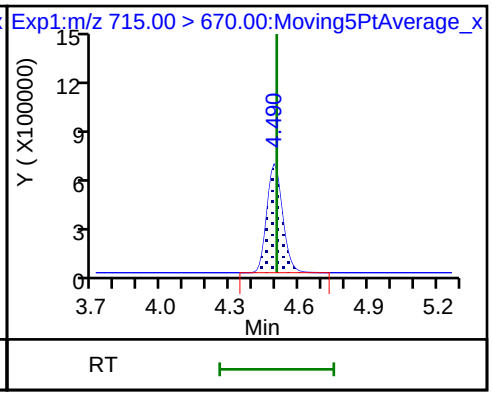
42 Perfluorotetradecanoic acid (ND)



42 Perfluorotetradecanoic acid (ND)



D 43 13C2-PFTeDA



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

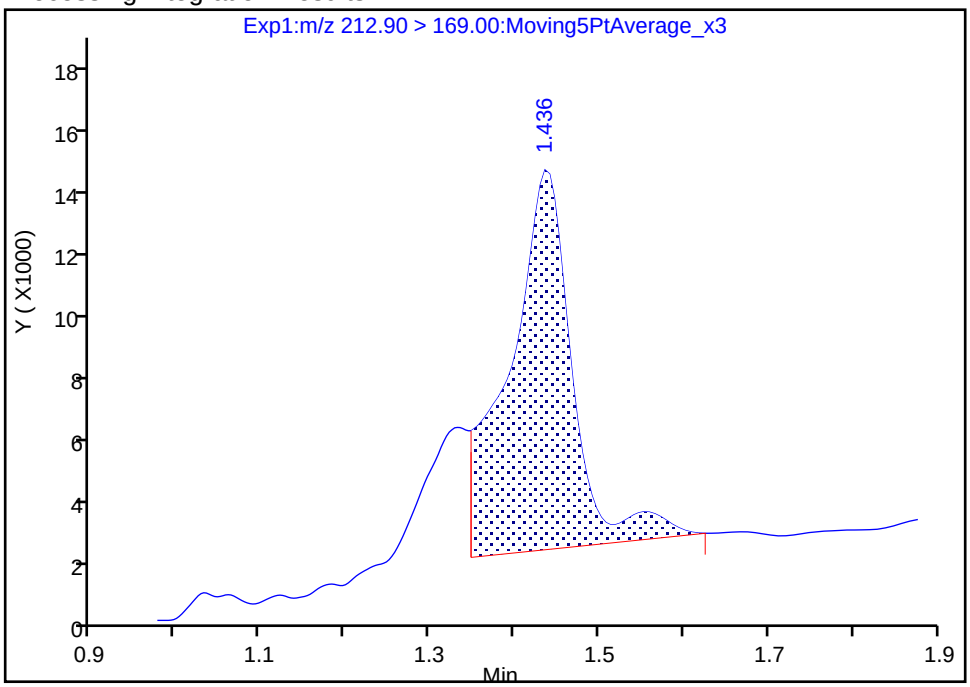
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\2018.07.13LLB_067.d				
Injection Date:	14-Jul-2018 05:31:00	Instrument ID:	A8_N		
Lims ID:	320-40571-A-22-A	Lab Sample ID:	320-40571-22		
Client ID:	NF26-SS-02				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	51	Worklist Smp#:	16
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

2 Perfluorobutyric acid, CAS: 375-22-4

Signal: 1

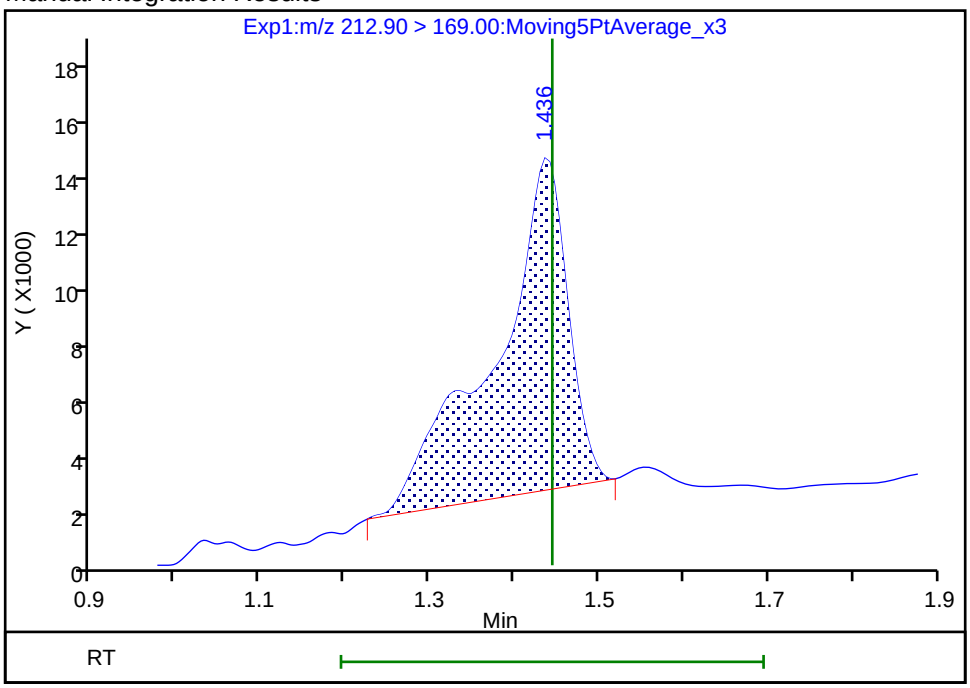
Processing Integration Results

RT: 1.44
Area: 61552
Amount: 0.026056
Amount Units: ng/ml



Manual Integration Results

RT: 1.44
Area: 68934
Amount: 0.029181
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 14:25:08

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

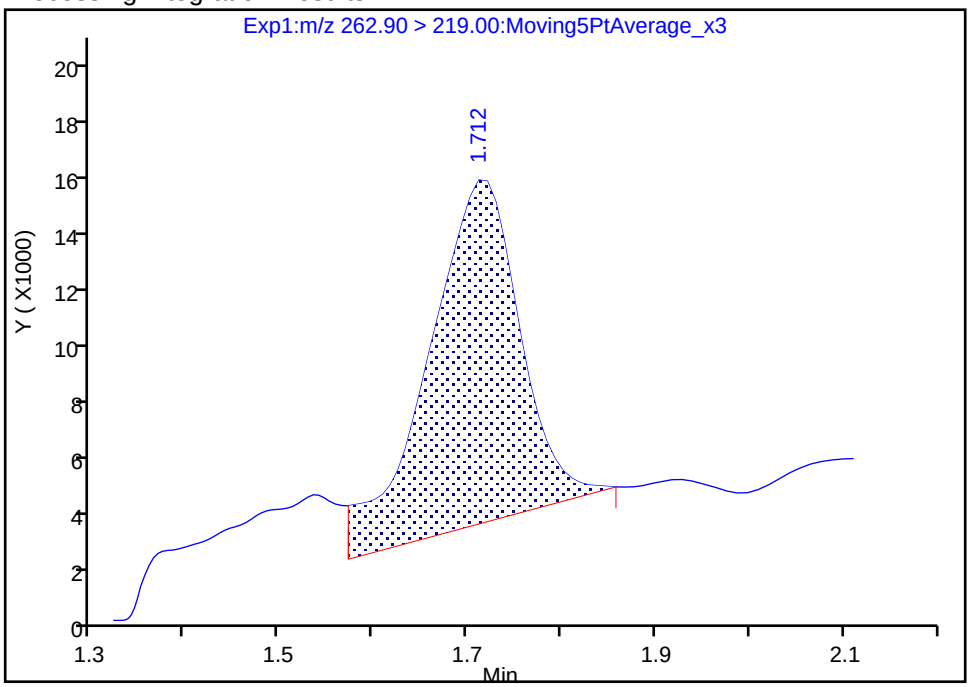
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\2018.07.13LLB_067.d				
Injection Date:	14-Jul-2018 05:31:00	Instrument ID:	A8_N		
Lims ID:	320-40571-A-22-A	Lab Sample ID:	320-40571-22		
Client ID:	NF26-SS-02				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	51	Worklist Smp#:	16
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

4 Perfluoropentanoic acid, CAS: 2706-90-3

Signal: 1

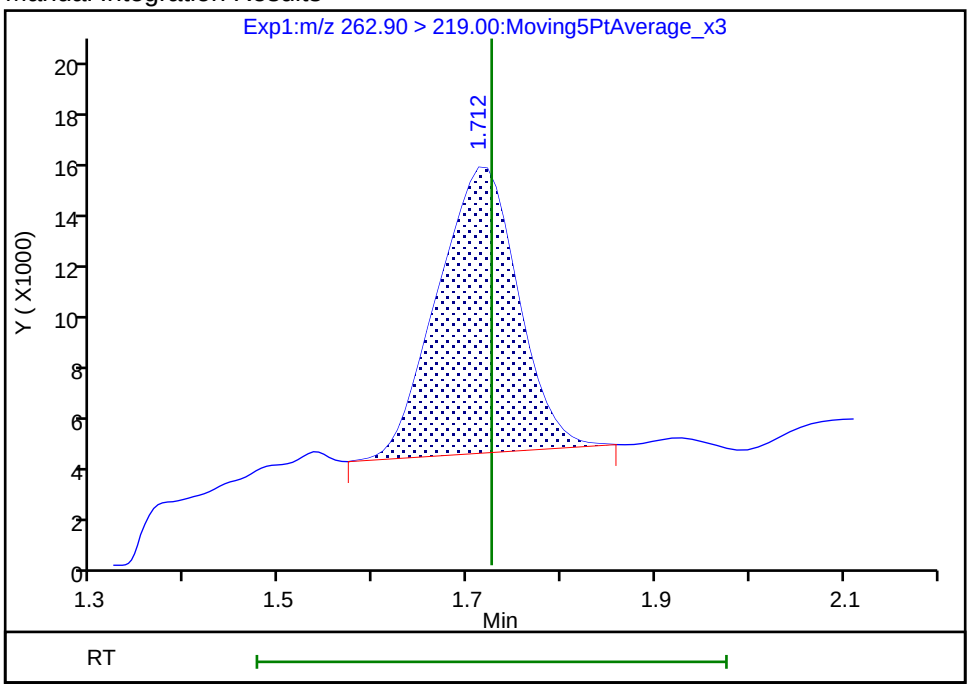
Processing Integration Results

RT: 1.71
Area: 82502
Amount: 0.038666
Amount Units: ng/ml



Manual Integration Results

RT: 1.71
Area: 66368
Amount: 0.031105
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 14:25:19

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

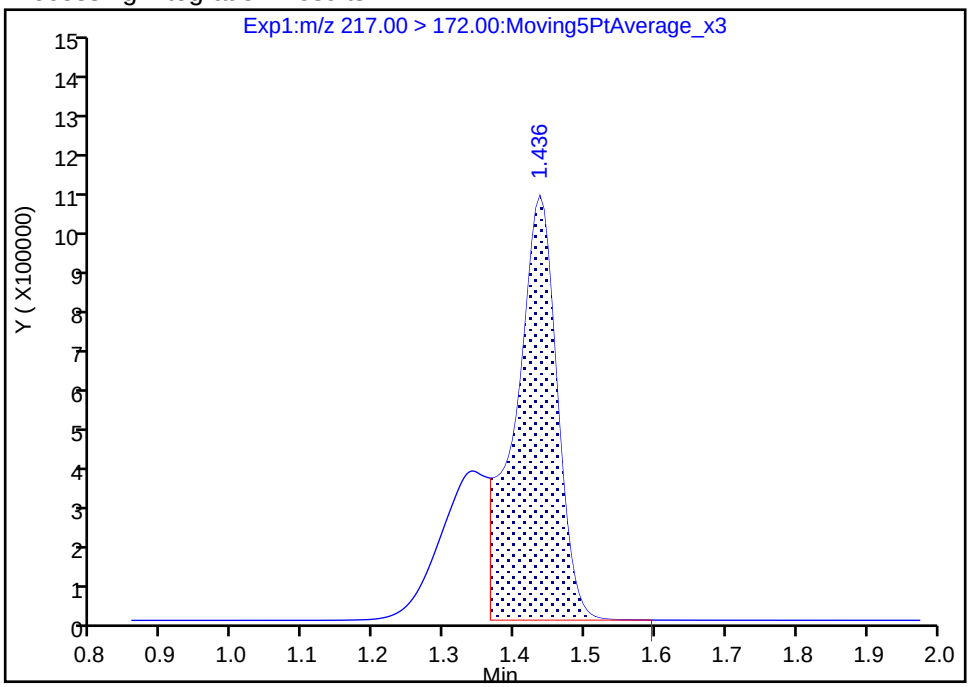
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\2018.07.13LLB_067.d				
Injection Date:	14-Jul-2018 05:31:00	Instrument ID:	A8_N		
Lims ID:	320-40571-A-22-A	Lab Sample ID:	320-40571-22		
Client ID:	NF26-SS-02				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	51	Worklist Smp#:	16
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

D 1 13C4 PFBA, CAS: STL00992

Signal: 1

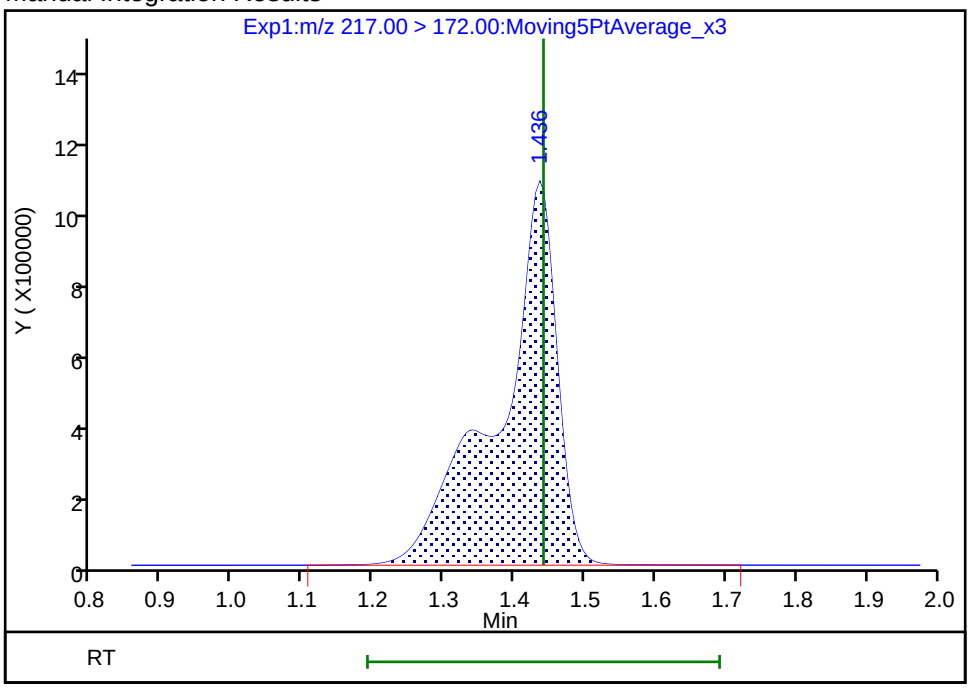
Processing Integration Results

RT: 1.44
Area: 4259684
Amount: 1.767705
Amount Units: ng/ml



Manual Integration Results

RT: 1.44
Area: 5992095
Amount: 2.486630
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 14:24:56

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF27-GW-01
Lab Sample ID: 320-40571-23
Matrix: Water
Lab File ID: 2018.07.13LLC_012.d
Analysis Method: 537 (modified)
Date Collected: 06/21/2018 09:25
Extraction Method: 3535
Date Extracted: 07/02/2018 14:58
Sample wt/vol: 254.7(mL)
Date Analyzed: 07/13/2018 21:33
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 233989
Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	0.017	B	0.0020	0.00034
2706-90-3	Perfluoropentanoic acid (PFPeA)	0.012		0.0020	0.00048
307-24-4	Perfluorohexanoic acid (PFHxA)	0.0049		0.0020	0.00057
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.0031		0.0020	0.00025
335-67-1	Perfluorooctanoic acid (PFOA)	0.0037		0.0020	0.00083
375-95-1	Perfluorononanoic acid (PFNA)	0.0015	J	0.0020	0.00027
335-76-2	Perfluorodecanoic acid (PFDA)	0.00051	J	0.0020	0.00030
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		0.0020	0.0011
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		0.0020	0.00054
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		0.0020	0.0013
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		0.0020	0.00028
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.0012	J	0.0020	0.00020
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	ND		0.0020	0.00029
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.0012	J B	0.0020	0.00017
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.0020	0.00019
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.0017	J	0.0020	0.00053
8789-57-2	Perfluorononanesulfonic acid (PFNS)	ND		0.0020	0.00016
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		0.0020	0.00031
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		0.0020	0.00034
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.020	0.0030
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.020	0.0019
757124-72-4	4:2 FTS	ND	F1	0.020	0.0051
27619-97-2	6:2 FTS	0.0034	J	0.020	0.0020
39108-34-4	8:2 FTS	ND		0.020	0.0020

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF27-GW-01
Lab Sample ID: 320-40571-23
Matrix: Water
Lab File ID: 2018.07.13LLC_012.d
Analysis Method: 537 (modified)
Date Collected: 06/21/2018 09:25
Extraction Method: 3535
Date Extracted: 07/02/2018 14:58
Sample wt/vol: 254.7(mL)
Date Analyzed: 07/13/2018 21:33
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 233989
Units: ug/L

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00992	13C4 PFBA	60		25-150
STL01893	13C5 PFPeA	84		25-150
STL00993	13C2 PFHxA	87		25-150
STL01892	13C4-PFHpA	99		25-150
STL00990	13C4 PFOA	105		25-150
STL00995	13C5 PFNA	96		25-150
STL00996	13C2 PFDA	96		25-150
STL00997	13C2 PFUnA	96		25-150
STL00998	13C2 PFDoA	91		25-150
STL02116	13C2-PFTeDA	91		25-150
STL02337	13C3-PFBS	89		25-150
STL00994	18O2 PFHxS	102		25-150
STL00991	13C4 PFOS	91		25-150
STL01056	13C8 FOSA	88		25-150
STL02118	d3-NMeFOSAA	97		25-150
STL02117	d5-NEtFOSAA	102		25-150
STL02279	M2-6:2FTS	122		25-150
STL02280	M2-8:2FTS	94		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\2018.07.13LLC_012.d
Lims ID: 320-40571-A-23-A
Client ID: NF27-GW-01
Sample Type: Client
Inject. Date: 13-Jul-2018 21:33:11 ALS Bottle#: 6 Worklist Smp#: 7
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-40571-a-23-a
Misc. Info.: Plate: 1 Rack: 4
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 16-Jul-2018 12:36:30 Calib Date: 11-Jul-2018 15:38:42
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK023

First Level Reviewer: mongkols Date: 16-Jul-2018 12:36:30

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										M
212.90 > 169.00	1.436	1.433	0.003	1.000	659705	0.4304			40.7	M
D 1 13C4 PFBA										
217.00 > 172.00	1.436	1.445	-0.009	0.537	3887842	1.50		59.8	19416	
4 Perfluoropentanoic acid										M
262.90 > 219.00	1.730	1.716	0.014	1.000	573236	0.3099			45.2	M
D 3 13C5-PFPeA										
267.90 > 223.00	1.730	1.725	0.005	0.647	3812016	2.11		84.4	10025	
5 Perfluorobutanesulfonic acid										M
298.90 > 80.00	1.766	1.761	0.005	1.000	94962	0.0307			14.9	M
298.90 > 99.00	1.766	1.761	0.005	1.000	47748		1.99(1.25-3.74)		40.3	
D 47 13C3-PFBS										
301.90 > 83.00	1.766	1.762	0.004	0.660	94092	2.07		89.1	166	
6 Perfluorohexanoic acid										M
313.00 > 269.00	2.005	1.999	0.006	0.994	217606	0.1242			41.0	M
313.00 > 119.00	2.016	1.999	0.017	1.000	22018		9.88(5.03-15.10)		121	
D 7 13C2 PFHxA										
315.00 > 270.00	2.016	2.011	0.005	0.754	4256431	2.18		87.3	60088	
67 Perfluoro(2-propoxypropanoic) acid										
329.10 > 285.00	2.095	2.090	0.005	0.995	4137	0.0129			3.1	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.106	2.101	0.005	0.787	302875	2.18		87.3	3494	
10 Perfluoroheptanoic acid										M
363.00 > 319.00	2.321	2.316	0.005	0.994	162897	0.0792			50.0	M
363.00 > 169.00	2.321	2.316	0.005	0.994	69866		2.33(1.13-3.40)		318	
D 9 13C4-PFHpA										
367.00 > 322.00	2.334	2.329	0.005	0.872	4443996	2.47		99.0	56448	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.334	2.329	0.005	0.994	92355	0.0309			34.8	
399.00 > 99.00	2.347	2.329	0.018	1.000	28054		3.29(1.50-4.49)		36.3	
D 11 18O2 PFHxS										
403.00 > 84.00	2.347	2.342	0.005	0.877	6164680	2.42		102	48602	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.653	2.634	0.018	1.000	62636	0.0855			455	
D 12 M2-6:2FTS										
429.00 > 81.00	2.653	2.651	0.001	0.992	1112720	2.89		122	3261	
* 62 13C2-PFOA										
415.00 > 370.00	2.675	2.658	0.017		4792517	2.50			52057	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.675	2.658	0.017	1.000	225337	0.0951			65.6	
413.00 > 169.00	2.675	2.658	0.017	1.000	128630		1.75(0.84-2.52)		676	
D 14 13C4 PFOA										
417.00 > 372.00	2.675	2.673	0.002	1.000	4812272	2.63		105	60062	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.036	3.018	0.018	1.002	83981	0.0435			144	
499.00 > 99.00	3.036	3.018	0.018	1.002	19406		4.33(2.31-6.93)		86.0	
20 Perfluorononanoic acid										
463.00 > 419.00	3.036	3.025	0.011	1.000	65878	0.0379			73.9	
463.00 > 169.00	3.036	3.025	0.011	1.000	17922		3.68(1.90-5.69)		242	
D 18 13C4 PFOS										
503.00 > 80.00	3.029	3.036	-0.007	1.132	4068186	2.18		91.1	19011	
D 19 13C5 PFNA										
468.00 > 423.00	3.036	3.036	0.0	1.135	3917002	2.39		95.6	44637	
D 21 13C8 FOSA										
506.00 > 78.00	3.376	3.376	0.0	1.262	5929531	2.20		88.1	40339	
D 26 M2-8:2FTS										
529.00 > 81.00	3.376	3.376	0.0	1.262	1273141	2.26		94.4	6207	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.385	3.380	0.005	1.000	19019	0.0131			47.8	
513.00 > 169.00	3.385	3.380	0.005	1.000	5765		3.30(2.36-7.09)		121	
D 23 13C2 PFDA										
515.00 > 470.00	3.385	3.385	0.0	1.265	3463064	2.41		96.3	49500	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.534	3.544	-0.010	1.321	1425683	2.42		96.7	28707	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.705	3.705	0.0	1.385	1541452	2.55		102	5321	
D 30 13C2 PFUnA										
565.00 > 520.00	3.705	3.715	-0.010	1.385	2882616	2.40		96.0	75037	
D 36 13C2 PFDoA										
615.00 > 570.00	4.005	4.005	0.0	1.497	2832621	2.27		91.0	24025	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.498	4.500	-0.002	1.682	2941912	2.28		91.1	20141	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.902	4.912	-0.010	1.833	4829698	2.35		93.9	16499	

QC Flag Legend

Review Flags

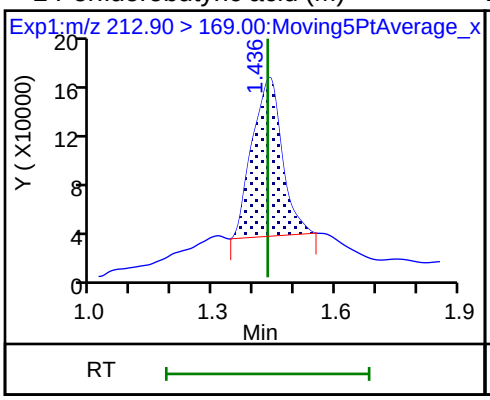
M - Manually Integrated

Report Date: 16-Jul-2018 12:36:30 Chrom Revision: 2.2 07-Jun-2018 07:41:54

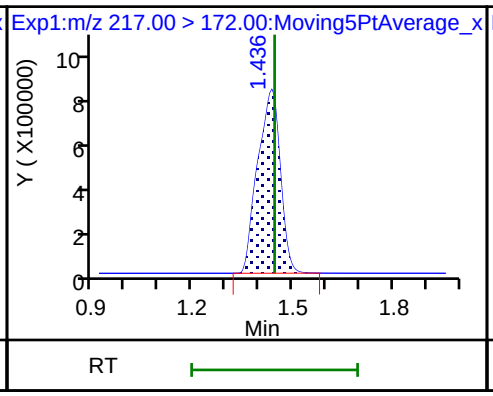
TestAmerica Sacramento

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\2018.07.13LLC_012.d				
Injection Date:	13-Jul-2018 21:33:11	Instrument ID:	A8_N		
Lims ID:	320-40571-A-23-A	Lab Sample ID:	320-40571-23		
Client ID:	NF27-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	6	Worklist Smp#:	7
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		

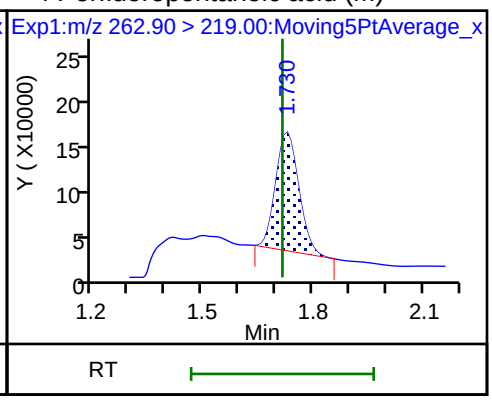
2 Perfluorobutyric acid (M)



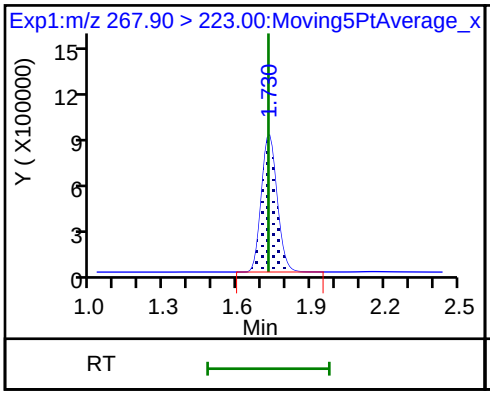
D 1 13C4 PFBA



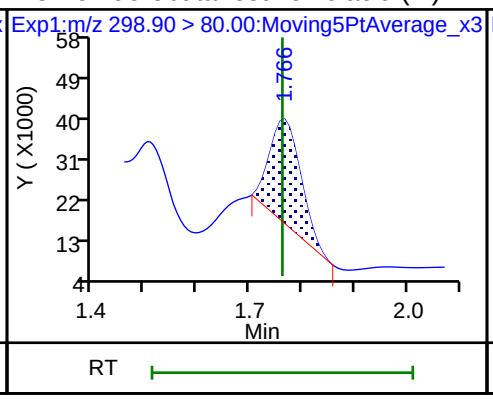
4 Perfluoropentanoic acid (M)



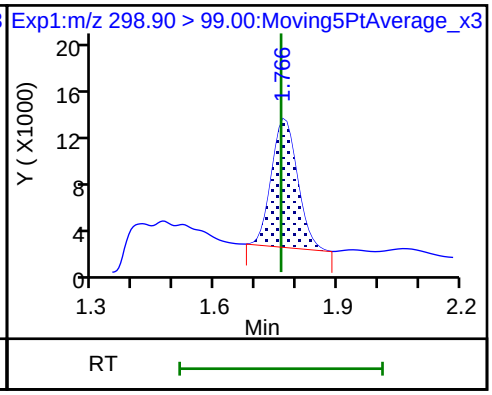
D 3 13C5-PFPeA



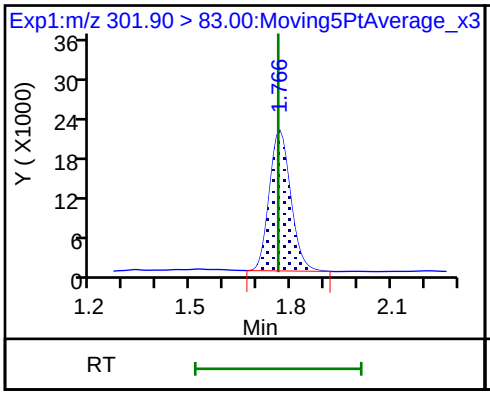
5 Perfluorobutanesulfonic acid (M)



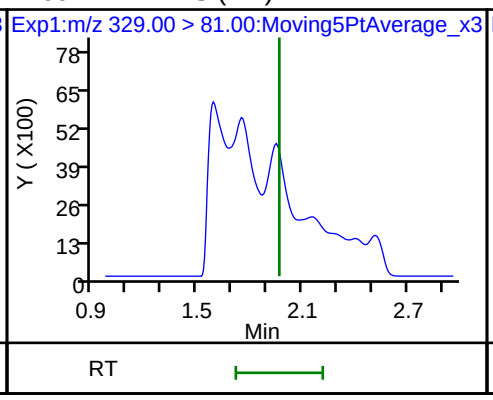
5 Perfluorobutanesulfonic acid



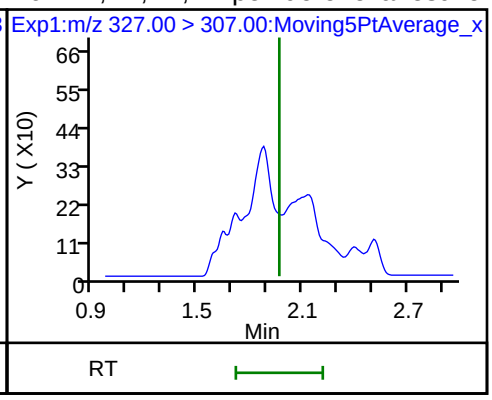
D 47 13C3-PFBS



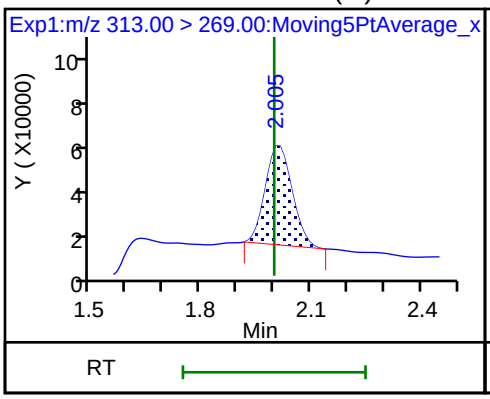
D 60 M2-4:2FTS (ND)



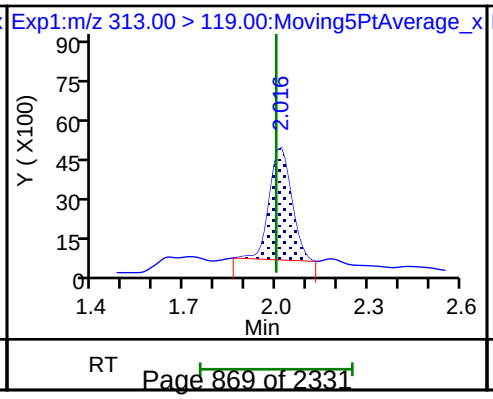
61 1H,1H,2H,2H-perfluorohexanesulfoni (ND)



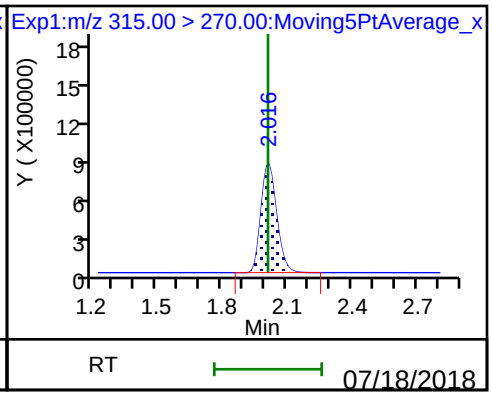
6 Perfluorohexanoic acid (M)



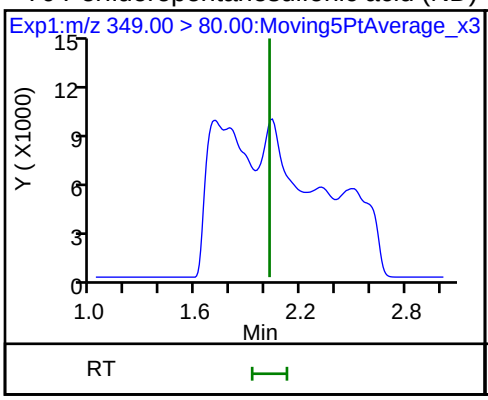
6 Perfluorohexanoic acid



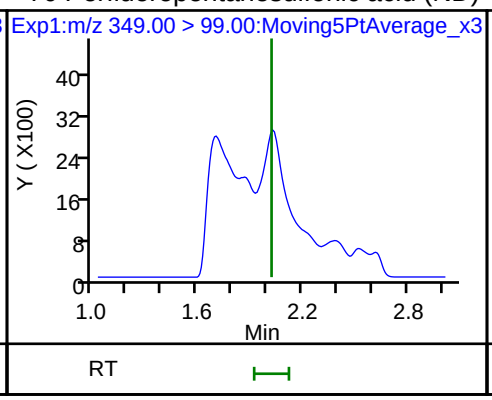
D 7 13C2 PFHxA



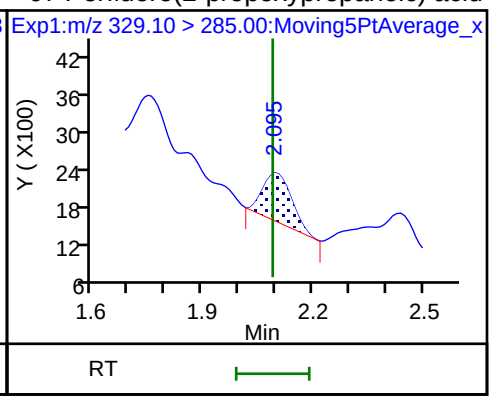
70 Perfluoropentanesulfonic acid (ND)



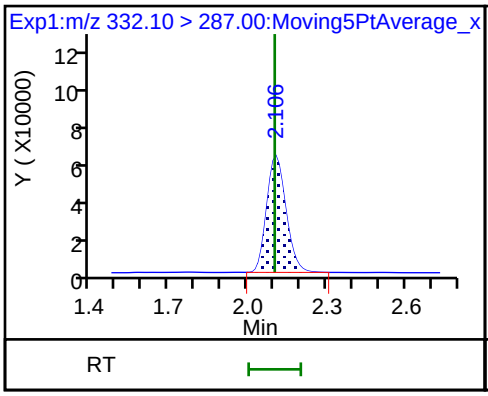
70 Perfluoropentanesulfonic acid (ND)



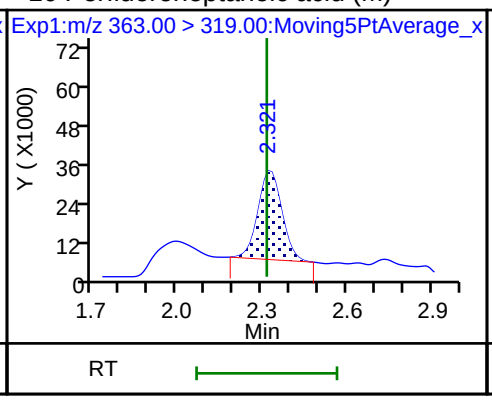
67 Perfluoro(2-propoxypropanoic) acid



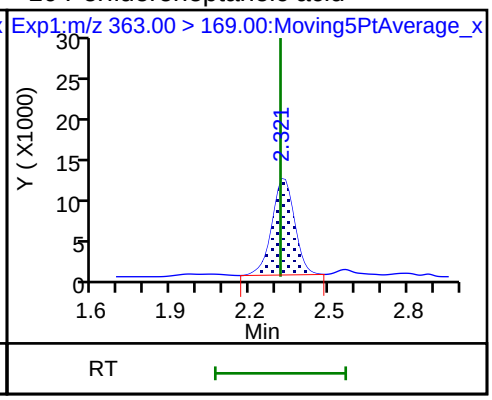
D 64 13C3 HFPO-DA



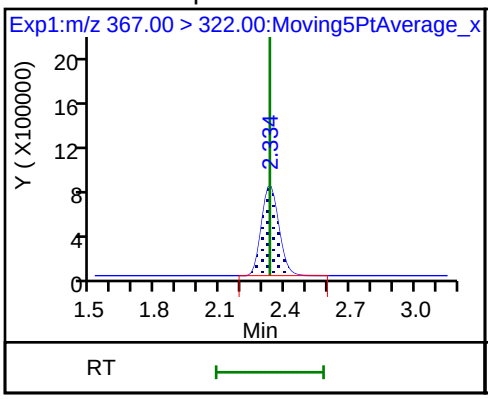
10 Perfluoroheptanoic acid (M)



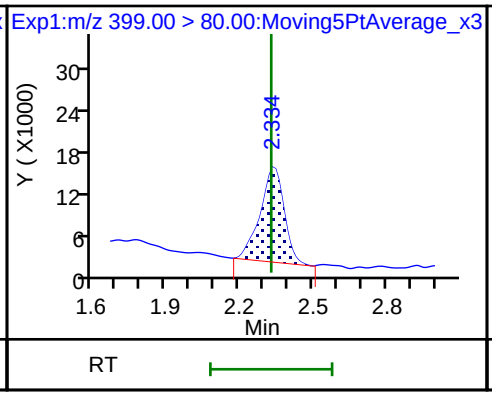
10 Perfluoroheptanoic acid



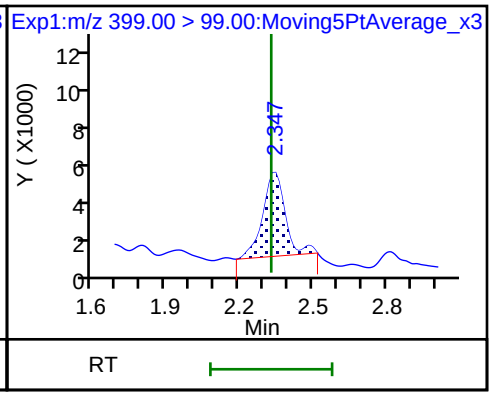
D 9 13C4-PFHpA



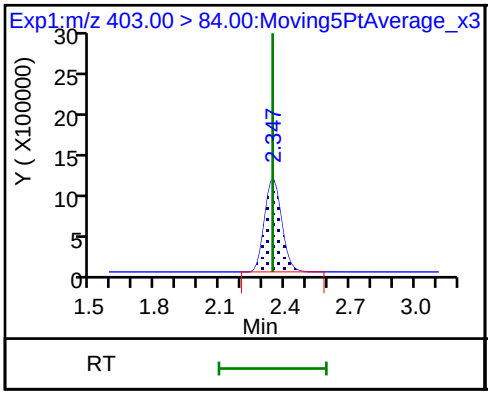
8 Perfluorohexanesulfonic acid



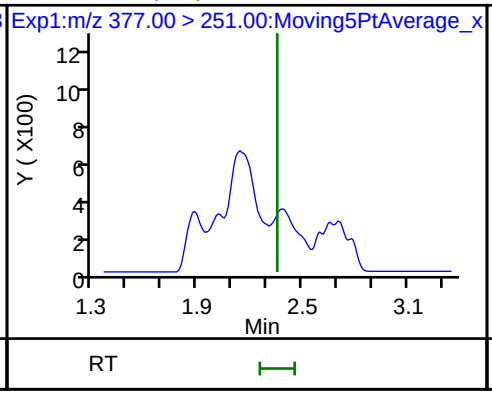
8 Perfluorohexanesulfonic acid



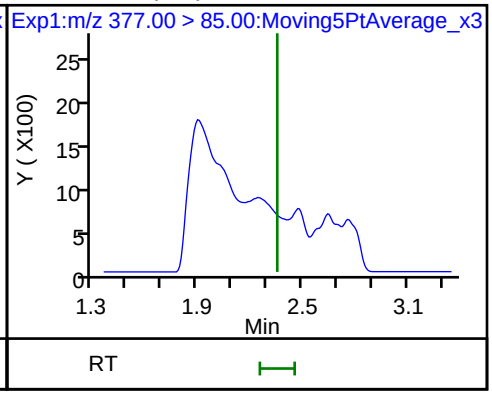
D 11 18O2 PFHxS



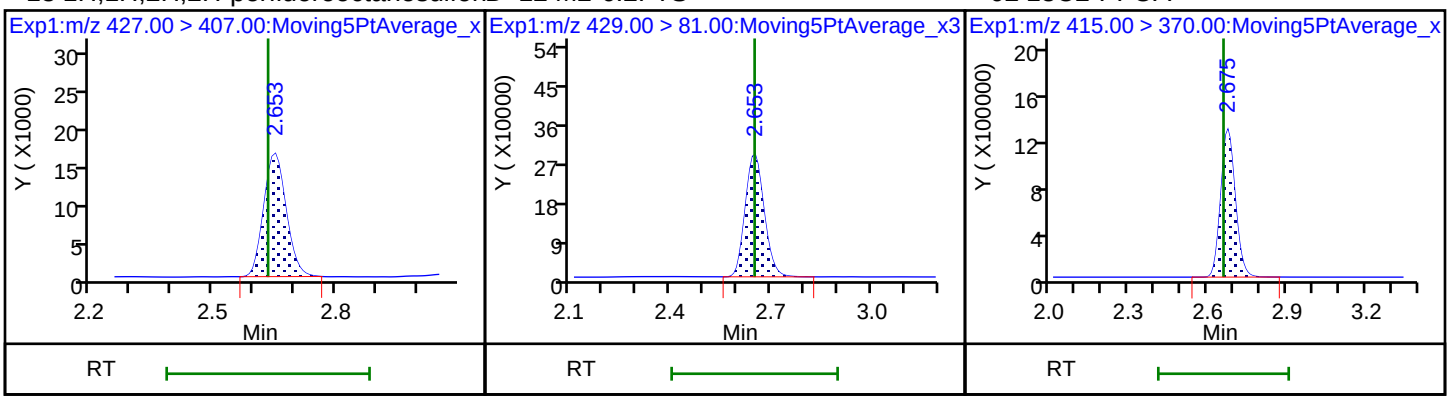
65 Adona (ND)



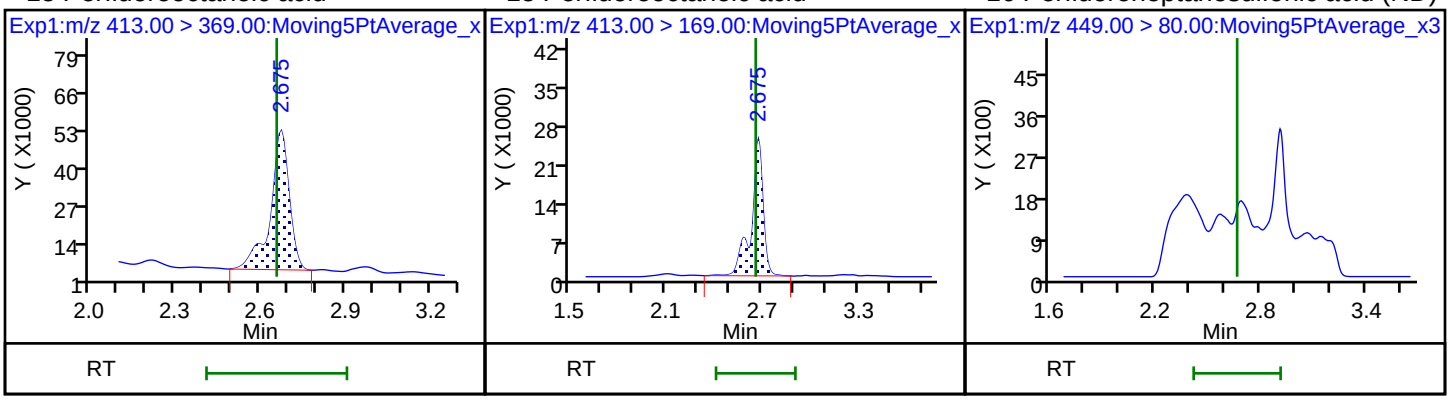
65 Adona (ND)



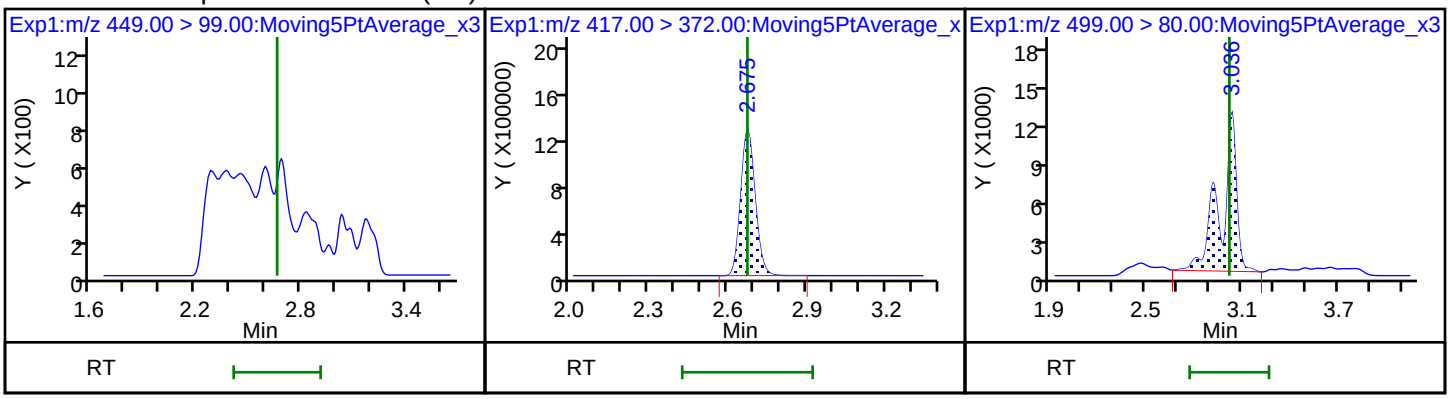
13 1H,1H,2H,2H-perfluorooctanesulfonD 12 M2-6:2FTS * 62 13C2-PFOA



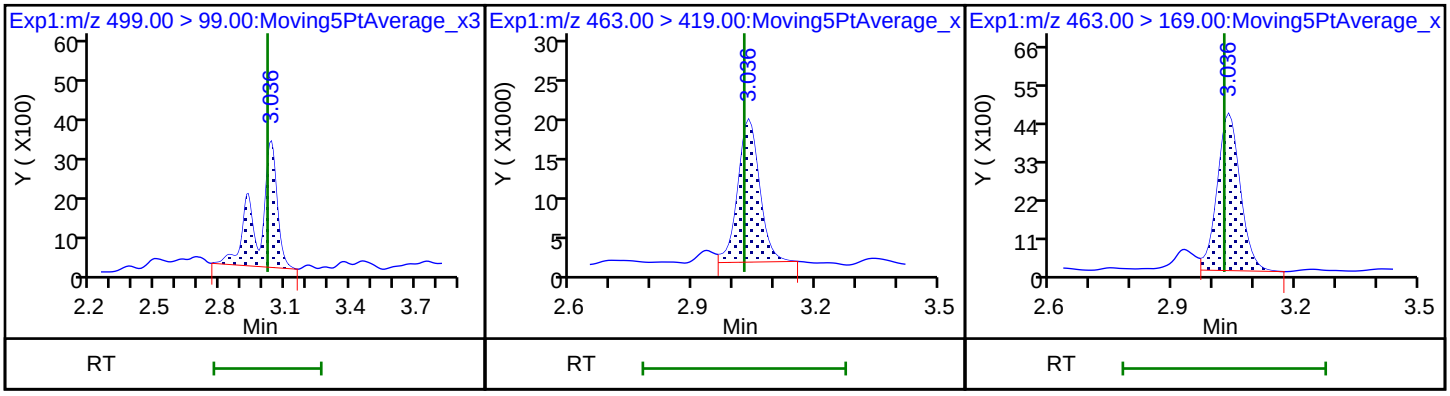
15 Perfluorooctanoic acid 15 Perfluorooctanoic acid 16 Perfluoroheptanesulfonic acid (ND)



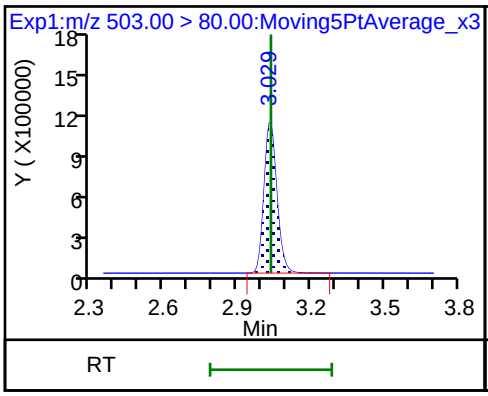
16 Perfluoroheptanesulfonic acid (ND) D 14 13C4 PFOA 17 Perfluorooctane sulfonic acid



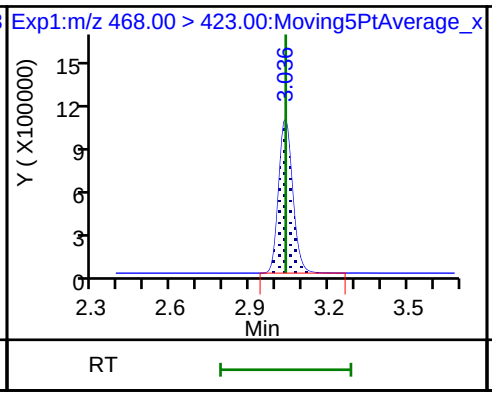
17 Perfluorooctane sulfonic acid 20 Perfluorononanoic acid 20 Perfluorononanoic acid



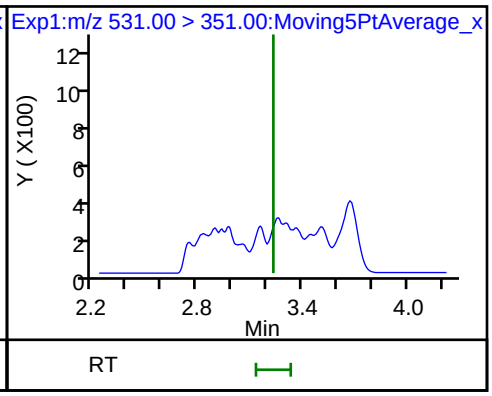
D 18 13C4 PFOS



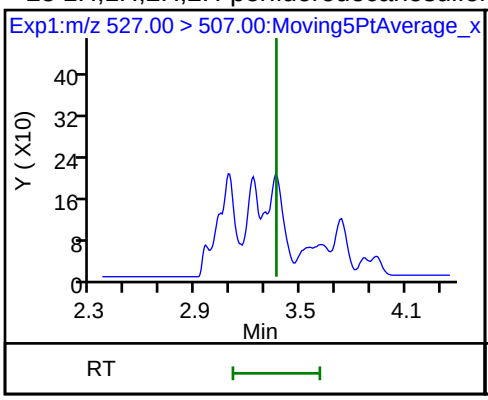
D 19 13C5 PFNA



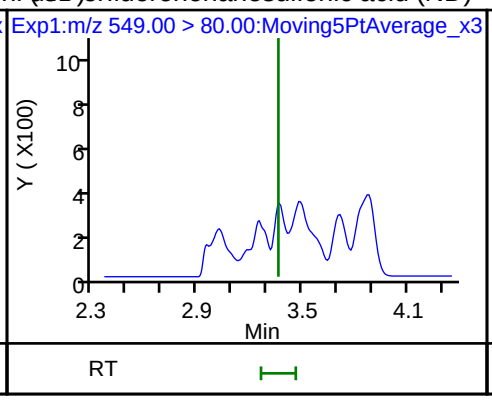
69 9-Chlorohexadecafluoro-3-oxanonane (ND)



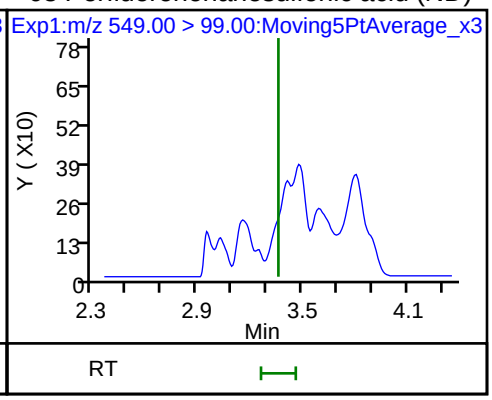
25 1H,1H,2H,2H-perfluorodecanesulfoni (ND)



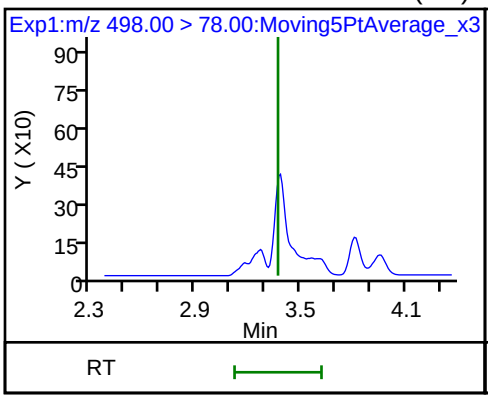
68 Perfluorononanesulfonic acid (ND)



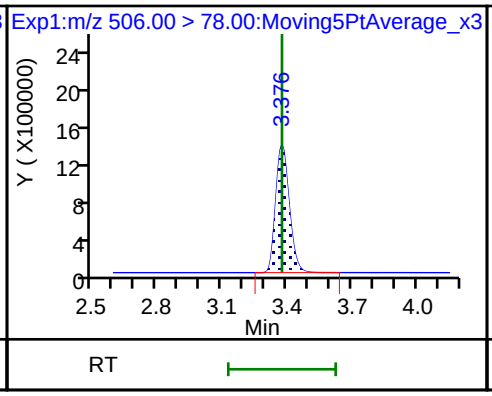
68 Perfluorononanesulfonic acid (ND)



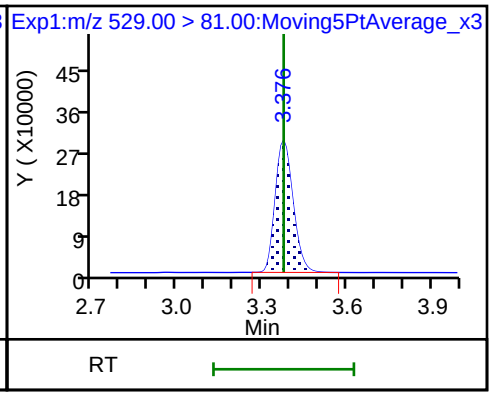
22 Perfluorooctane Sulfonamide (ND)



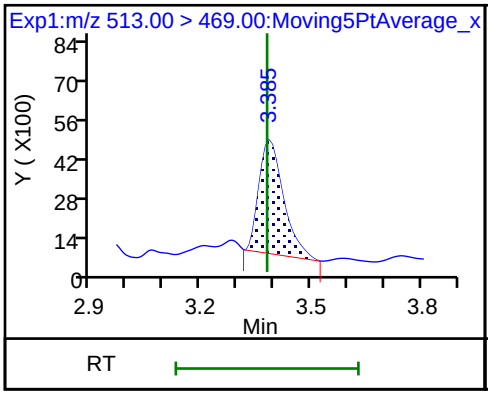
D 21 13C8 FOSA



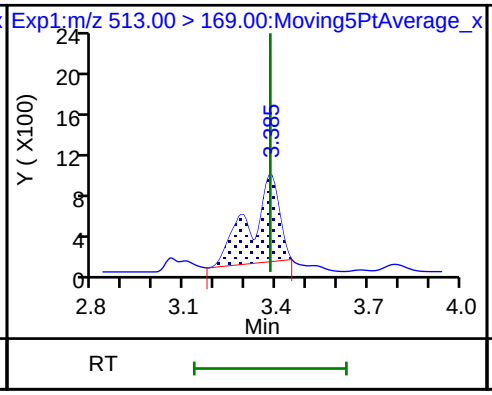
D 26 M2-8:2FTS



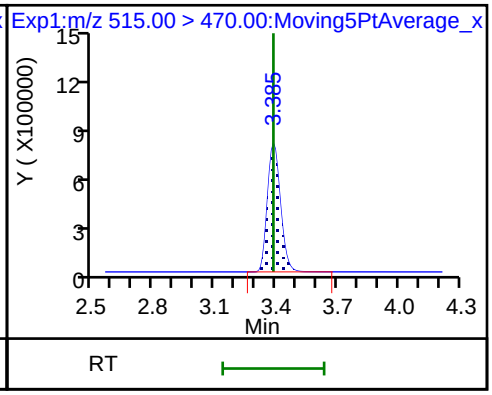
24 Perfluorodecanoic acid



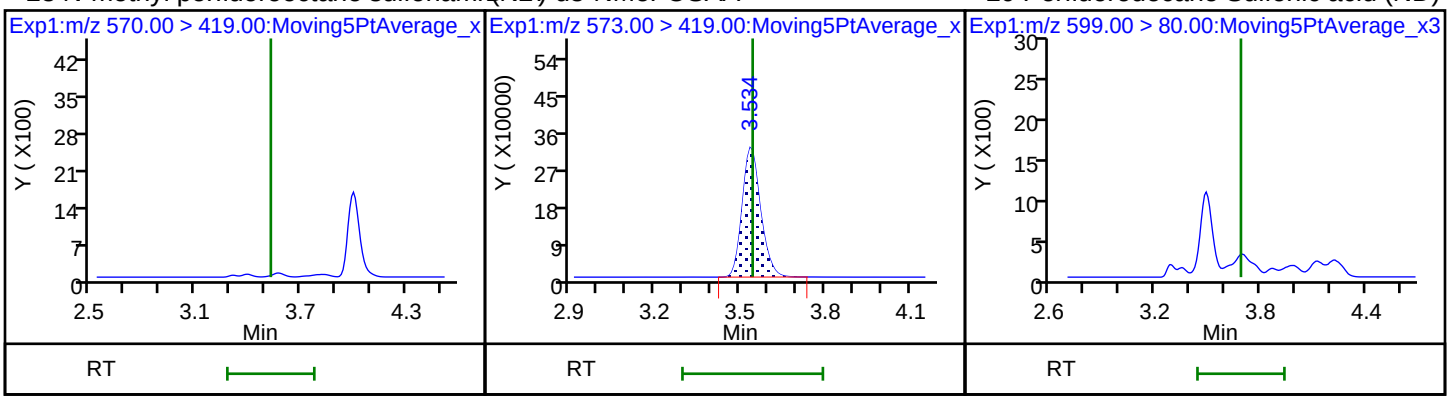
24 Perfluorodecanoic acid



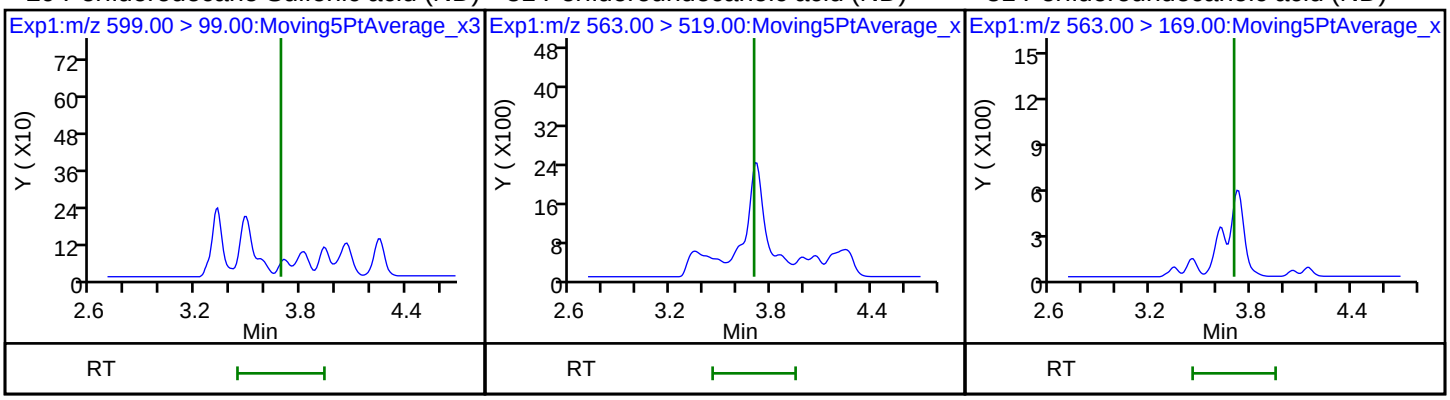
D 23 13C2 PFDA



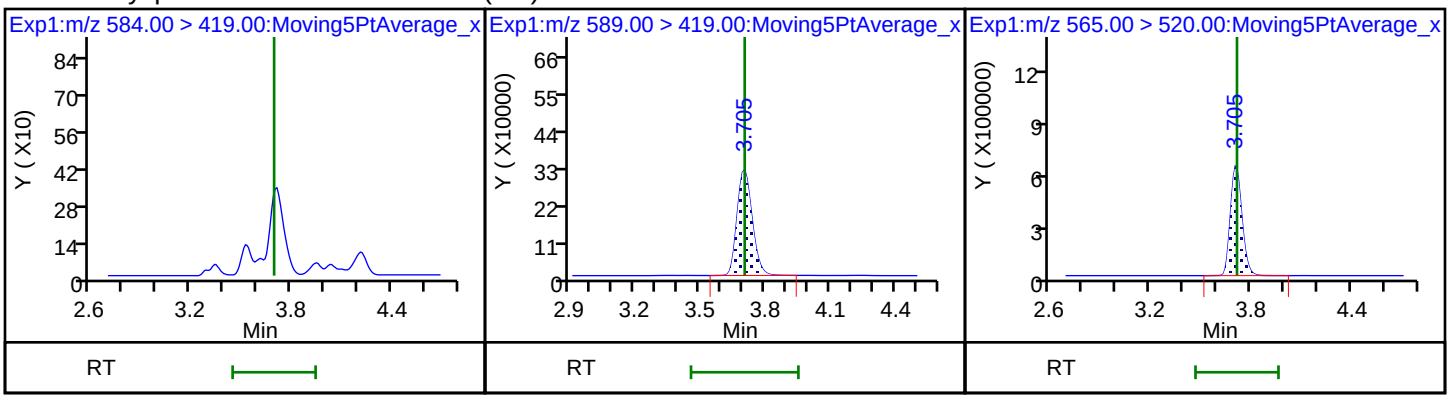
28 N-methyl perfluorooctane sulfonamid (ND) D 27 d3-NMeFOSAA 29 Perfluorodecane Sulfonic acid (ND)



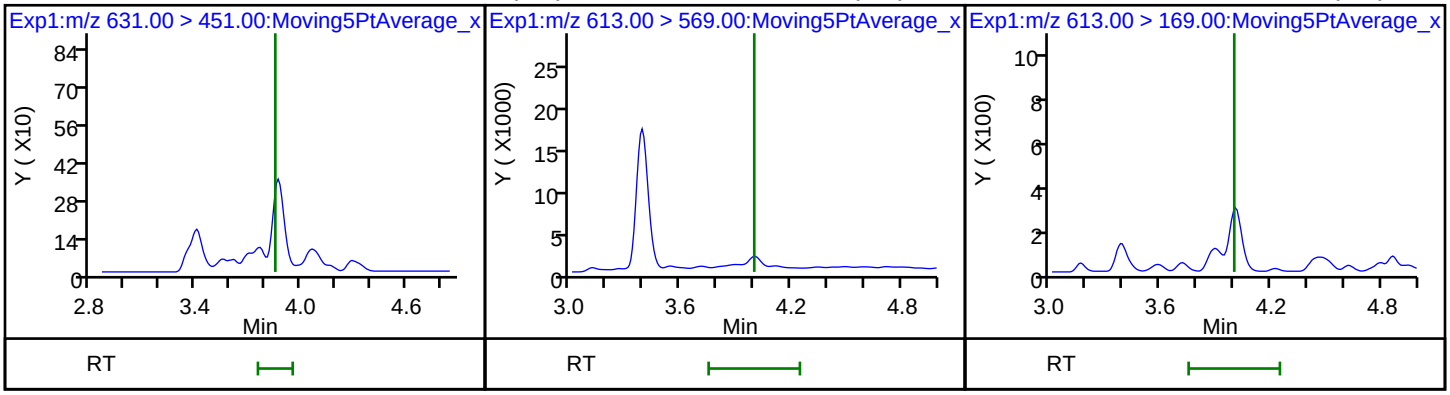
29 Perfluorodecane Sulfonic acid (ND) 31 Perfluoroundecanoic acid (ND) 31 Perfluoroundecanoic acid (ND)



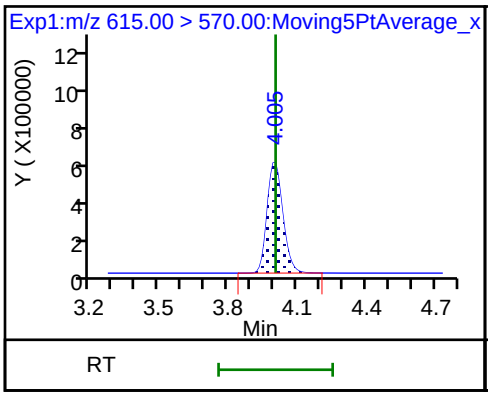
33 N-ethyl perfluorooctane sulfonamid (ND) D 32 d5-NEtFOSAA D 30 13C2 PFUnA



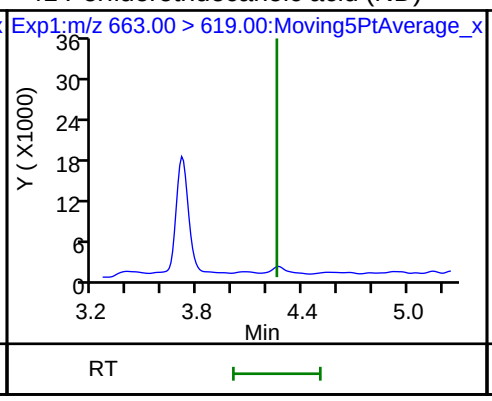
66 11-Chloroeicosafluoro-3-oxaundecan (ND) 36 Perfluorododecanoic acid (ND) 37 Perfluorododecanoic acid (ND)



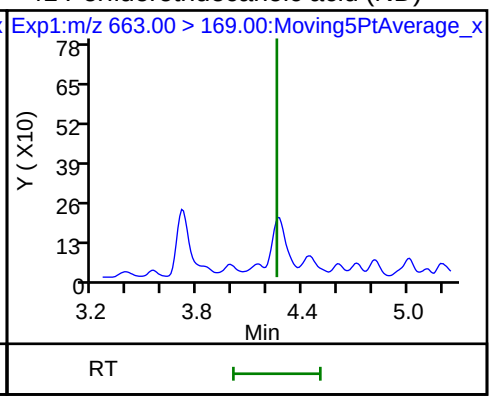
D 36 13C2 PFDoA



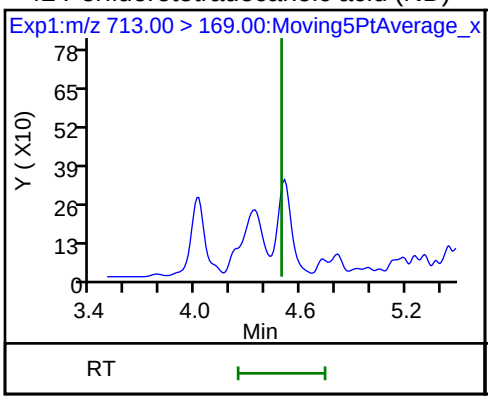
41 Perfluorotridecanoic acid (ND)



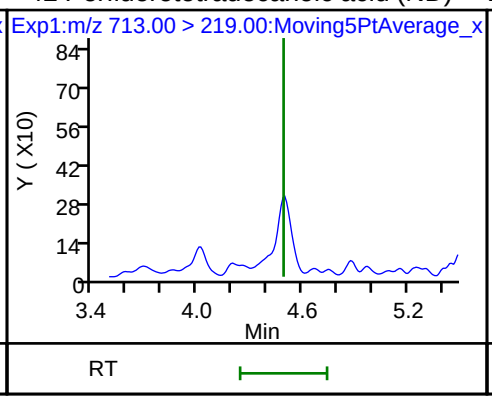
41 Perfluorotridecanoic acid (ND)



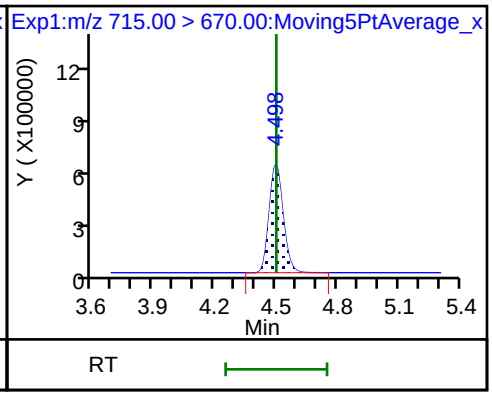
42 Perfluorotetradecanoic acid (ND)



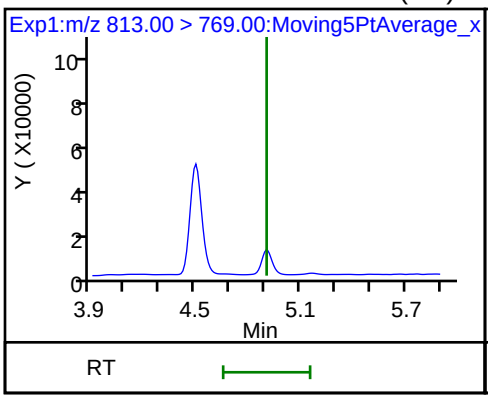
42 Perfluorotetradecanoic acid (ND)



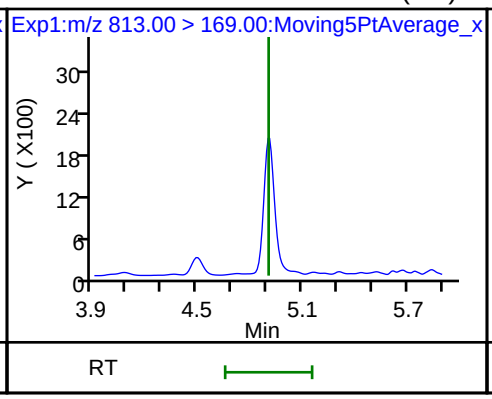
D 43 13C2-PFTeDA



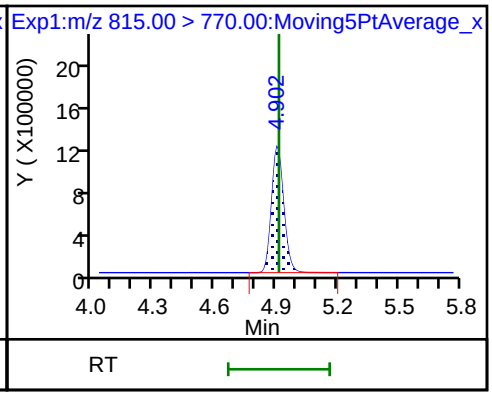
45 Perfluorohexadecanoic acid (ND)



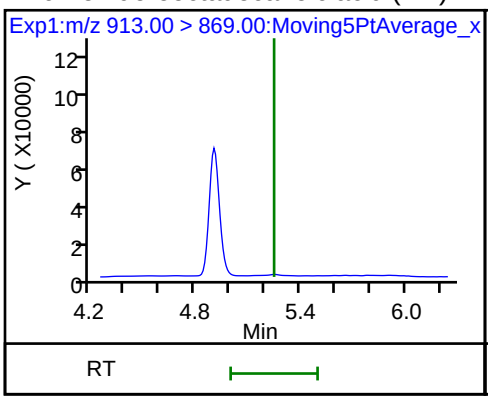
45 Perfluorohexadecanoic acid (ND)



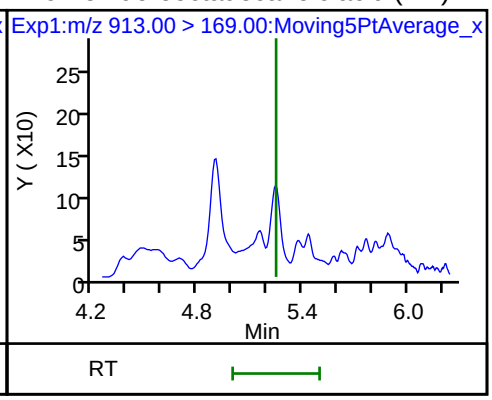
D 44 13C2-PFHxDA



46 Perfluorooctadecanoic acid (ND)



46 Perfluorooctadecanoic acid (ND)



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

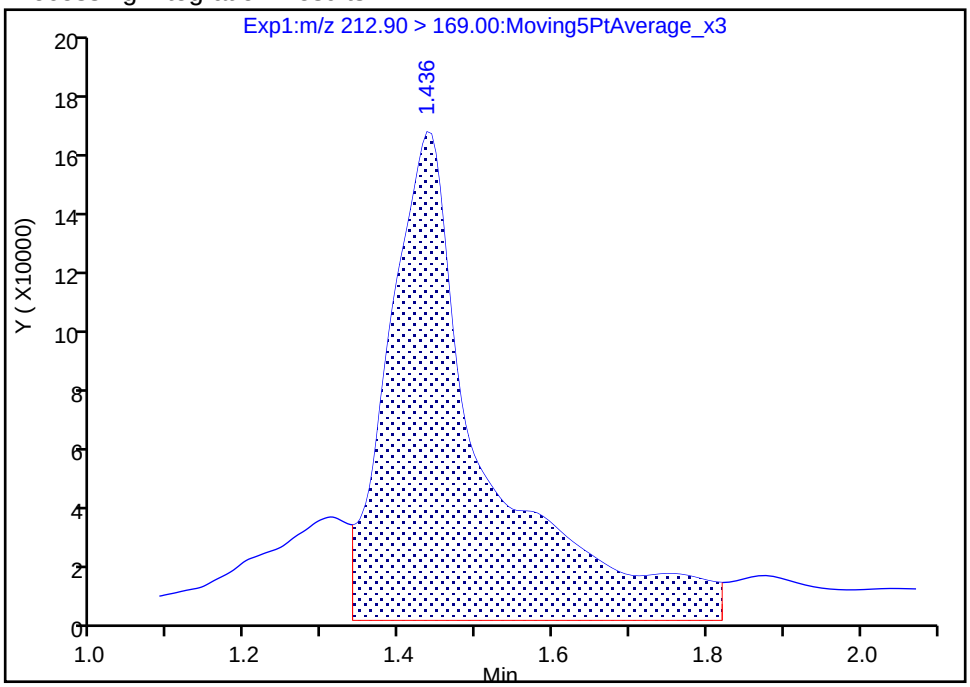
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\2018.07.13LLC_012.d				
Injection Date:	13-Jul-2018 21:33:11	Instrument ID:	A8_N		
Lims ID:	320-40571-A-23-A	Lab Sample ID:	320-40571-23		
Client ID:	NF27-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	6	Worklist Smp#:	7
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

2 Perfluorobutyric acid, CAS: 375-22-4

Signal: 1

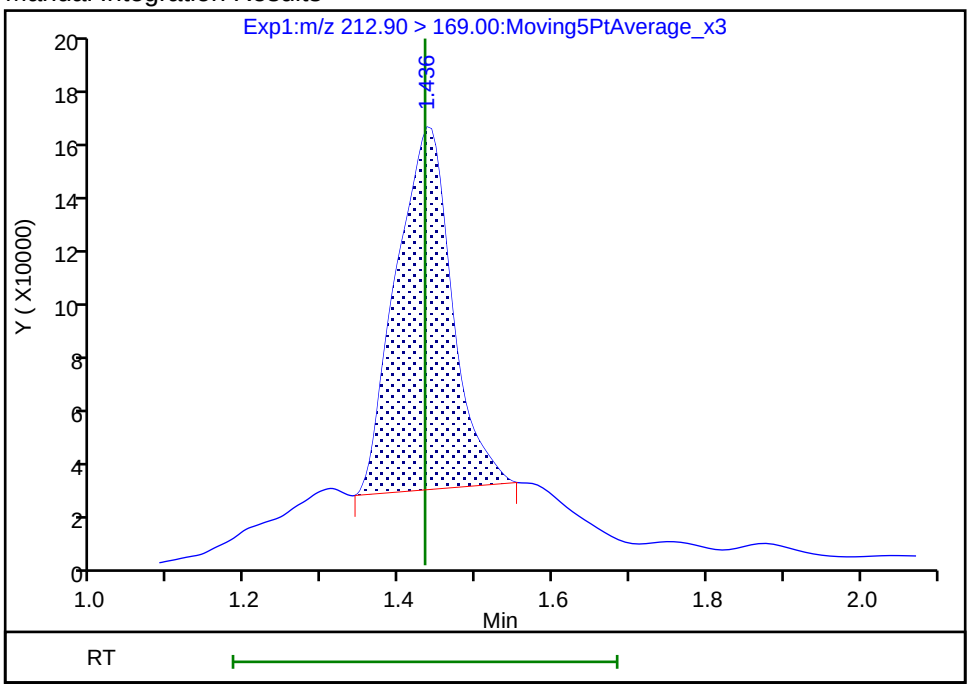
Processing Integration Results

RT: 1.44
Area: 1447828
Amount: 0.944622
Amount Units: ng/ml



Manual Integration Results

RT: 1.44
Area: 659705
Amount: 0.430418
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 12:35:23

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

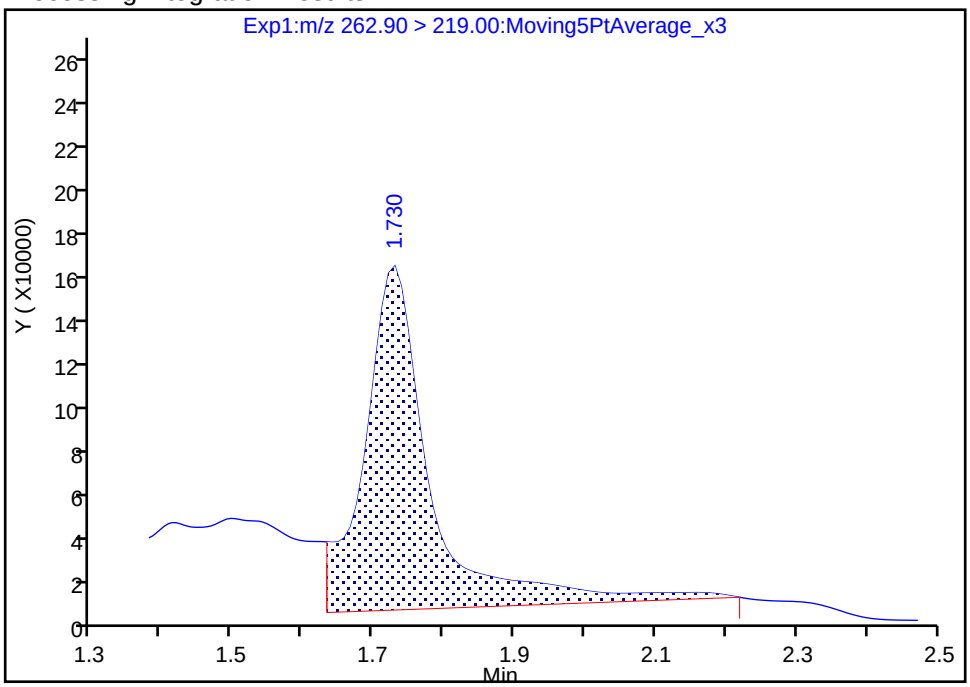
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\2018.07.13LLC_012.d				
Injection Date:	13-Jul-2018 21:33:11	Instrument ID:	A8_N		
Lims ID:	320-40571-A-23-A	Lab Sample ID:	320-40571-23		
Client ID:	NF27-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	6	Worklist Smp#:	7
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

4 Perfluoropentanoic acid, CAS: 2706-90-3

Signal: 1

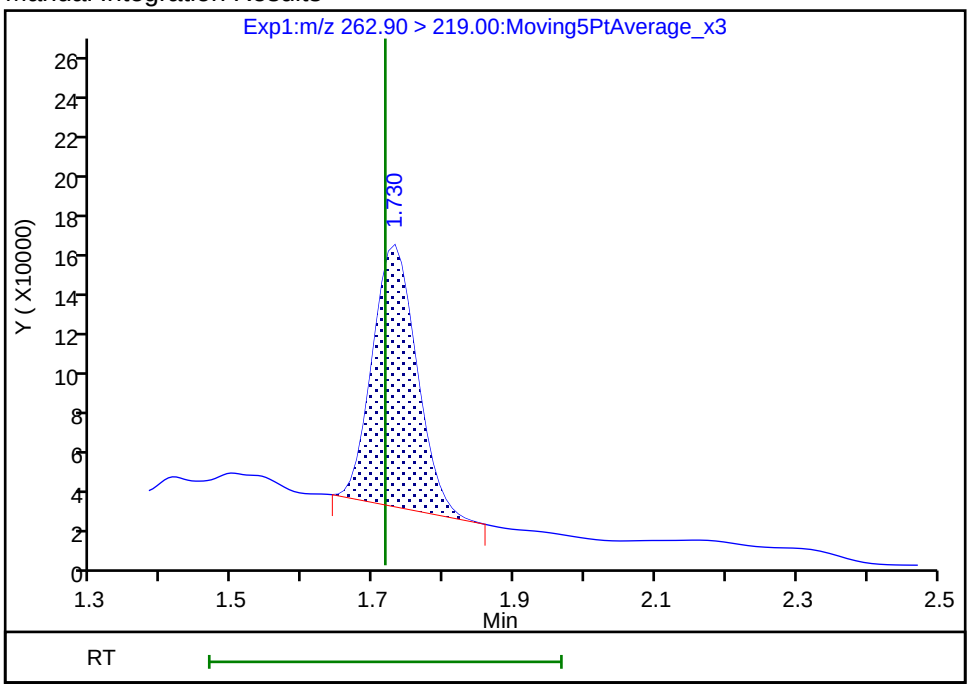
Processing Integration Results

RT: 1.73
Area: 1013679
Amount: 0.547993
Amount Units: ng/ml



Manual Integration Results

RT: 1.73
Area: 573236
Amount: 0.309890
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 12:35:31

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

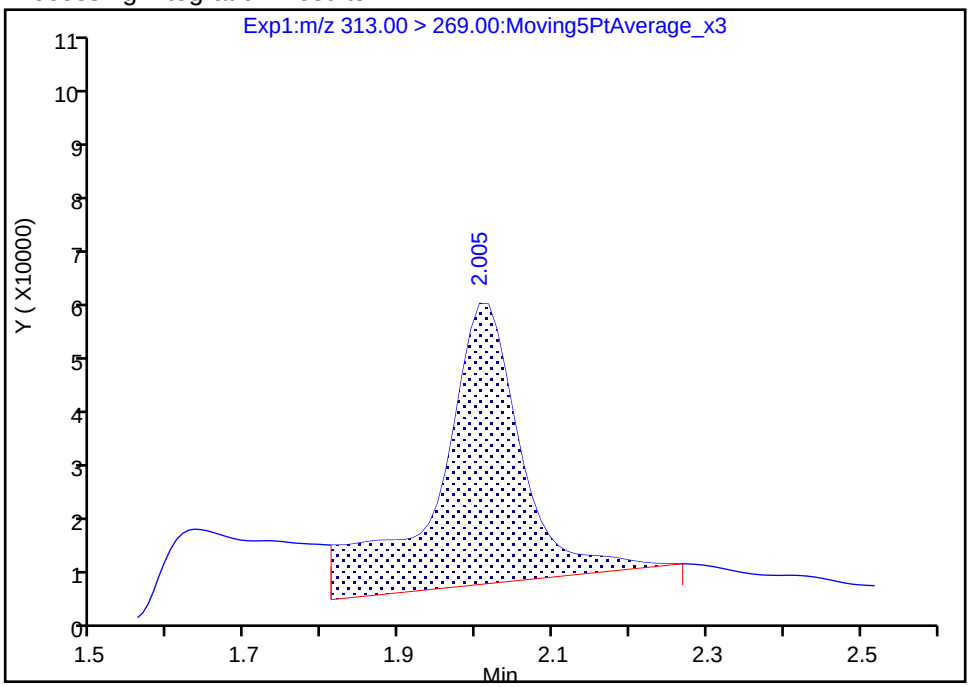
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\2018.07.13LLC_012.d				
Injection Date:	13-Jul-2018 21:33:11	Instrument ID:	A8_N		
Lims ID:	320-40571-A-23-A	Lab Sample ID:	320-40571-23		
Client ID:	NF27-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	6	Worklist Smp#:	7
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

6 Perfluorohexanoic acid, CAS: 307-24-4

Signal: 1

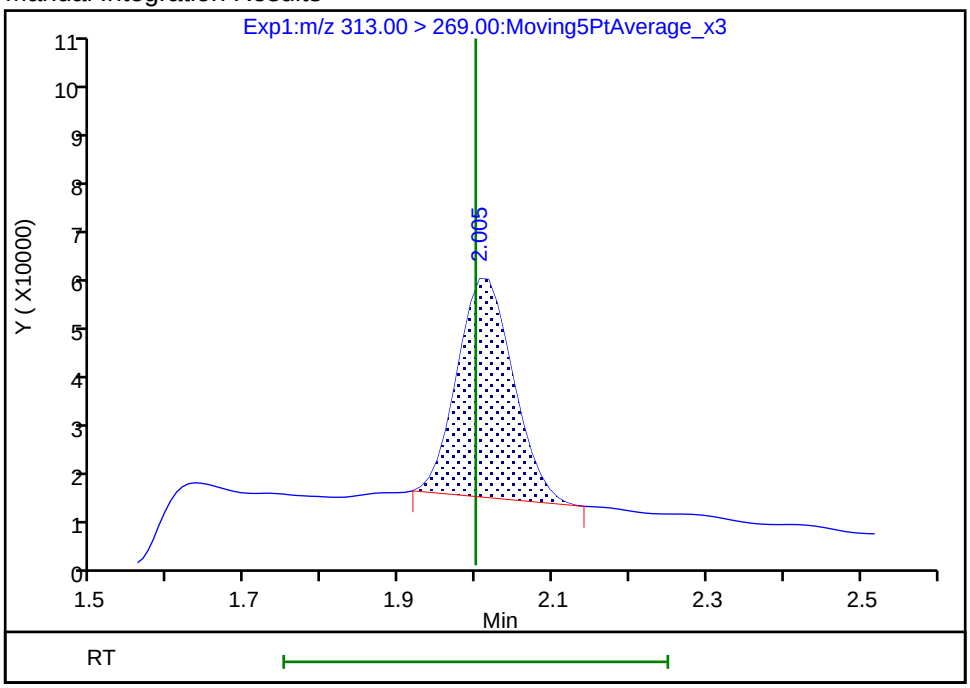
Processing Integration Results

RT: 2.00
Area: 374964
Amount: 0.213964
Amount Units: ng/ml



Manual Integration Results

RT: 2.00
Area: 217606
Amount: 0.124171
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 12:35:50
Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

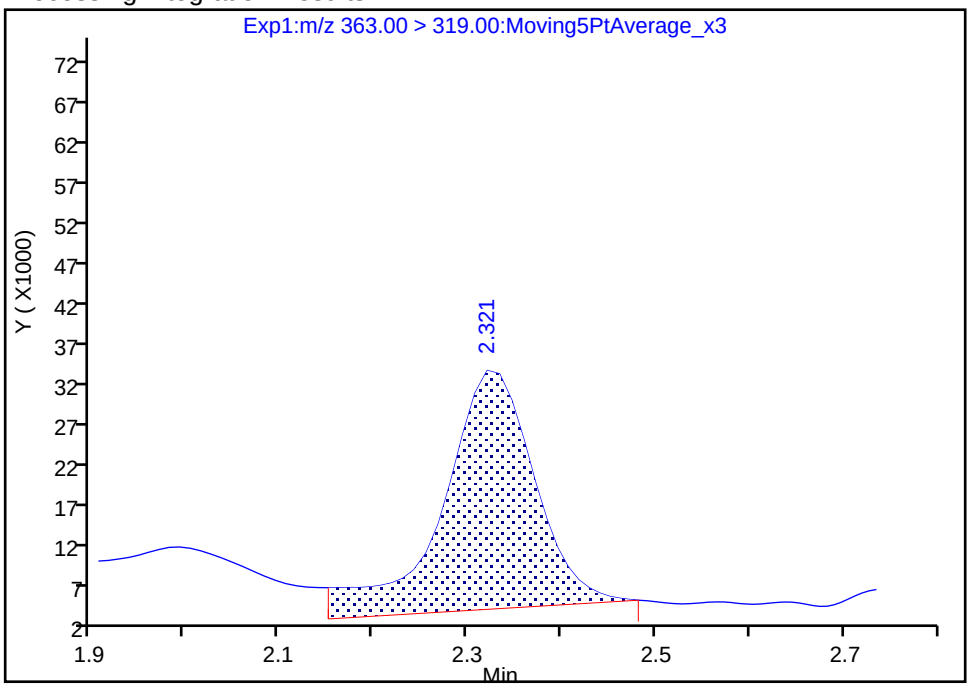
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\2018.07.13LLC_012.d				
Injection Date:	13-Jul-2018 21:33:11	Instrument ID:	A8_N		
Lims ID:	320-40571-A-23-A	Lab Sample ID:	320-40571-23		
Client ID:	NF27-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	6	Worklist Smp#:	7
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

10 Perfluoroheptanoic acid, CAS: 375-85-9

Signal: 1

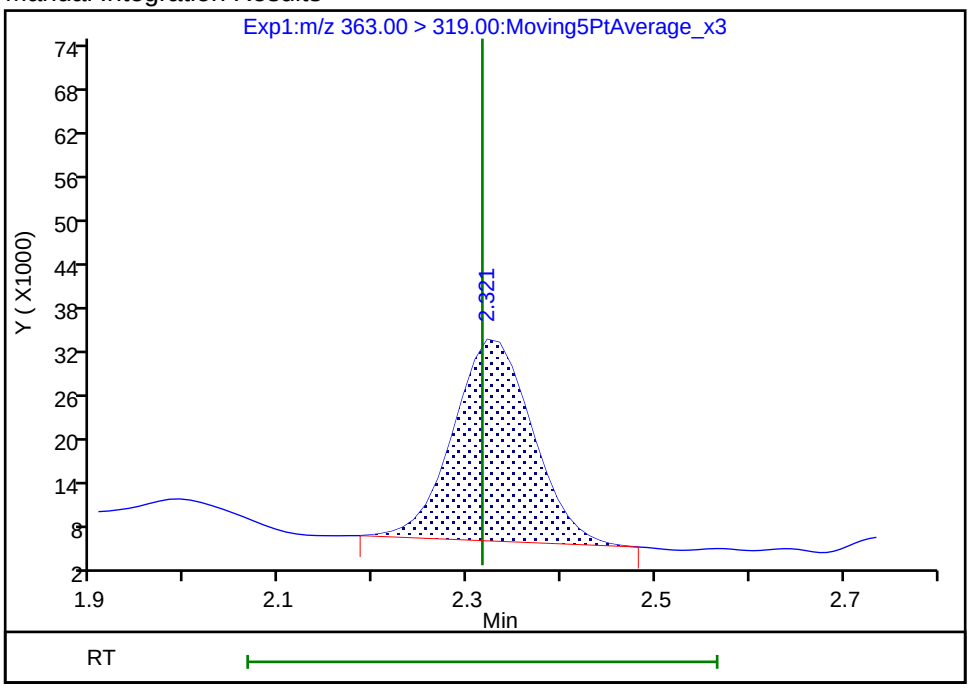
Processing Integration Results

RT: 2.32
Area: 203092
Amount: 0.098782
Amount Units: ng/ml



Manual Integration Results

RT: 2.32
Area: 162897
Amount: 0.079231
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 12:36:01

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

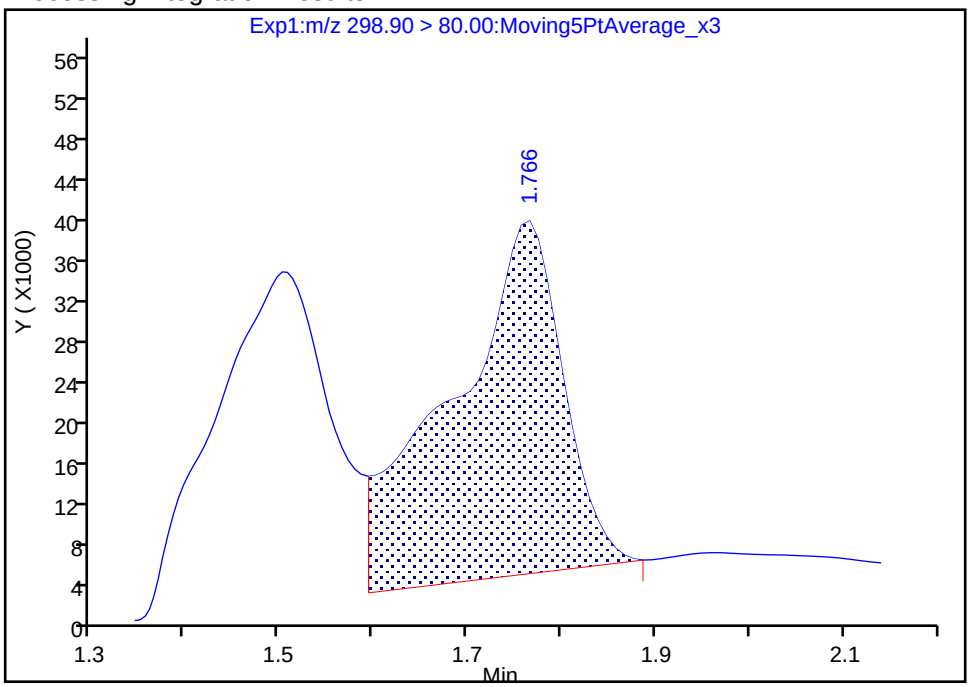
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\2018.07.13LLC_012.d				
Injection Date:	13-Jul-2018 21:33:11	Instrument ID:	A8_N		
Lims ID:	320-40571-A-23-A	Lab Sample ID:	320-40571-23		
Client ID:	NF27-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	6	Worklist Smp#:	7
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

5 Perfluorobutanesulfonic acid, CAS: 375-73-5

Signal: 1

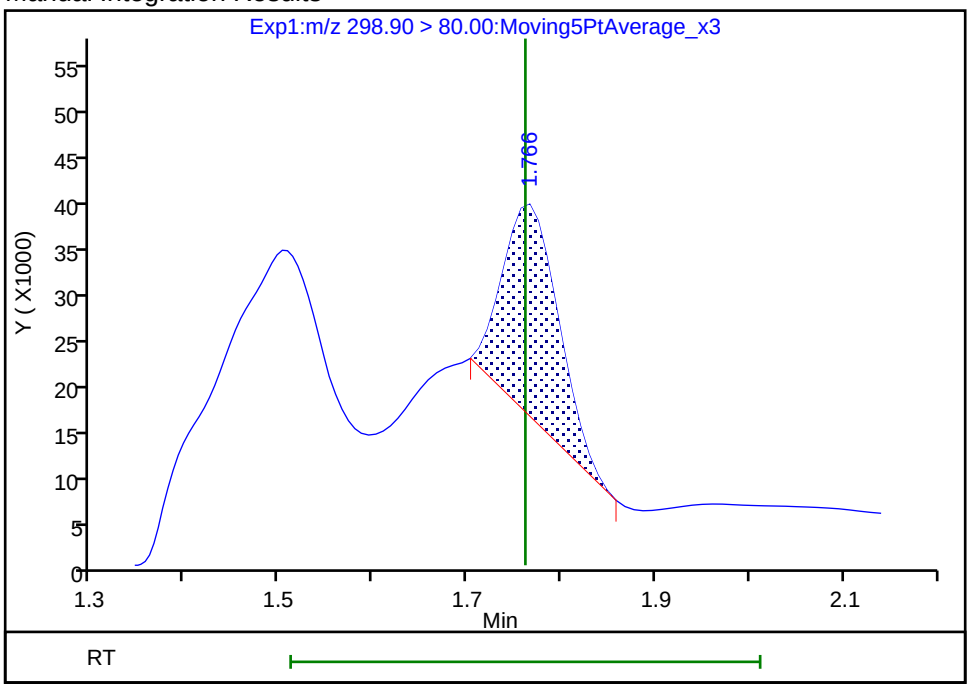
Processing Integration Results

RT: 1.77
Area: 288768
Amount: 0.093279
Amount Units: ng/ml



Manual Integration Results

RT: 1.77
Area: 94962
Amount: 0.030675
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 12:35:40

Audit Action: Manually Integrated Audit Reason: Baseline

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF27-SS-01
Lab Sample ID: 320-40571-24
Matrix: Solid
Lab File ID: 2018.07.14LLA_022.d
Analysis Method: 537 (modified)
Date Collected: 06/20/2018 10:25
Extraction Method: SHAKE
Date Extracted: 06/28/2018 06:06
Sample wt/vol: 5.08(g)
Date Analyzed: 07/14/2018 13:29
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture: 16.3
GPC Cleanup:(Y/N) N
Analysis Batch No.: 234231
Units: mg/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	0.000061	J	0.00024	0.000033
2706-90-3	Perfluoropentanoic acid (PFPeA)	ND		0.00024	0.000091
307-24-4	Perfluorohexanoic acid (PFHxA)	ND		0.00024	0.000049
375-85-9	Perfluoroheptanoic acid (PFHpA)	ND		0.00024	0.000034
335-67-1	Perfluorooctanoic acid (PFOA)	ND		0.00024	0.00010
375-95-1	Perfluorononanoic acid (PFNA)	ND		0.00024	0.000042
335-76-2	Perfluorodecanoic acid (PFDA)	ND		0.00024	0.000026
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		0.00024	0.000042
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		0.00024	0.000079
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		0.00024	0.000060
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		0.00024	0.000063
375-73-5	Perfluorobutanesulfonic acid (PFBS)	ND		0.00024	0.000029
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	ND		0.00024	0.000036
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.00024	0.000041
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	ND		0.00059	0.00024
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		0.00024	0.000046
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		0.00024	0.000096
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.0024	0.00046
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.0024	0.00044
27619-97-2	6:2 FTS	ND		0.0024	0.00018
39108-34-4	8:2 FTS	ND		0.0024	0.00029

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF27-SS-01
Lab Sample ID: 320-40571-24
Matrix: Solid
Lab File ID: 2018.07.14LLA_022.d
Analysis Method: 537 (modified)
Date Collected: 06/20/2018 10:25
Extraction Method: SHAKE
Date Extracted: 06/28/2018 06:06
Sample wt/vol: 5.08(g)
Date Analyzed: 07/14/2018 13:29
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture: 16.3
GPC Cleanup:(Y/N) N
Analysis Batch No.: 234231
Units: mg/Kg

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00992	13C4 PFBA	79		25-150
STL01893	13C5 PFPeA	81		25-150
STL00993	13C2 PFHxA	87		25-150
STL01892	13C4-PFHpA	89		25-150
STL00990	13C4 PFOA	87		25-150
STL00995	13C5 PFNA	84		25-150
STL00996	13C2 PFDA	94		25-150
STL00997	13C2 PFUnA	78		25-150
STL00998	13C2 PFDoA	82		25-150
STL02116	13C2-PFTeDA	87		25-150
STL02337	13C3-PFBS	72		25-150
STL00994	18O2 PFHxS	76		25-150
STL00991	13C4 PFOS	71		25-150
STL01056	13C8 FOSA	64		25-150
STL02118	d3-NMeFOSAA	70		25-150
STL02117	d5-NEtFOSAA	79		25-150
STL02279	M2-6:2FTS	69		25-150
STL02280	M2-8:2FTS	87		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180716-61105.b\2018.07.14LLA_022.d
Lims ID: 320-40571-A-24-A
Client ID: NF27-SS-01
Sample Type: Client
Inject. Date: 14-Jul-2018 13:29:59 ALS Bottle#: 14 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-40571-a-24-a
Misc. Info.: Plate: 1 Rack: 5
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180716-61105.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 17-Jul-2018 08:15:23 Calib Date: 11-Jul-2018 15:38:42
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK016

First Level Reviewer: mongkols Date: 17-Jul-2018 08:15:23

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										M
212.90 > 169.00	1.441	1.435	0.006	1.000	51266	0.0258			7.4	M
D 1 13C4 PFBA										M
217.00 > 172.00	1.441	1.436	0.005	0.540	5036978	1.98		79.4	40462	M
D 3 13C5-PFPeA										
267.90 > 223.00	1.719	1.720	-0.001	0.645	3577344	2.03		81.1	38277	
D 47 13C3-PFBS										
301.90 > 83.00	1.755	1.756	-0.001	0.658	73745	1.66		71.5	357	
D 7 13C2 PFHxA										
315.00 > 270.00	2.002	1.992	0.010	0.751	4146696	2.18		87.1	65219	
D 9 13C4-PFHpA										
367.00 > 322.00	2.319	2.306	0.013	0.870	3916524	2.23		89.3	54534	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.332	2.319	0.013	1.000	21295	0.009777			106	
399.00 > 99.00	2.332	2.319	0.013	1.000	6364		3.35(1.50-4.49)		27.2	
D 11 18O2 PFHxS										
403.00 > 84.00	2.332	2.319	0.013	0.874	4487197	1.81		76.4	50442	
D 12 M2-6:2FTS										
429.00 > 81.00	2.644	2.628	0.016	0.991	619494	1.65		69.4	5311	
D 14 13C4 PFOA										
417.00 > 372.00	2.667	2.652	0.015	1.000	3887871	2.17		86.9	45087	
* 62 13C2-PFOA										
415.00 > 370.00	2.667	2.659	0.008		4679406	2.50			56703	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.667	2.659	0.008	1.000	20897	0.0109			11.0	
413.00 > 169.00	2.667	2.659	0.008	1.000	17208		1.21(0.84-2.52)		76.0	
D 19 13C5 PFNA										
468.00 > 423.00	3.028	3.018	0.010	1.135	3351483	2.10		83.8	42447	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 18 13C4 PFOS										
503.00 > 80.00	3.028	3.018	0.010	1.135	3112224	1.71		71.4	22372	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.028	3.019	0.010	1.000	50245	0.0341			462	
499.00 > 99.00	3.028	3.019	0.010	1.000	12970		3.87(2.31-6.93)		124	
D 26 M2-8:2FTS										
529.00 > 81.00	3.374	3.361	0.013	1.265	1139567	2.07		86.5	12588	
D 21 13C8 FOSA										
506.00 > 78.00	3.374	3.370	0.004	1.265	4198611	1.60		63.9	38773	
D 23 13C2 PFDA										
515.00 > 470.00	3.383	3.370	0.013	1.269	3289197	2.34		93.7	35695	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.533	3.520	0.013	1.325	1012821	1.76		70.4	27969	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.700	3.687	0.013	1.388	1167131	1.98		79.2	3435	
D 30 13C2 PFUnA										
565.00 > 520.00	3.711	3.698	0.013	1.392	2292273	1.95		78.2	36707	
D 36 13C2 PFDoA										
615.00 > 570.00	3.999	3.988	0.011	1.500	2486060	2.04		81.8	31426	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.490	4.480	0.010	1.684	2733377	2.17		86.7	17632	

QC Flag Legend

Review Flags

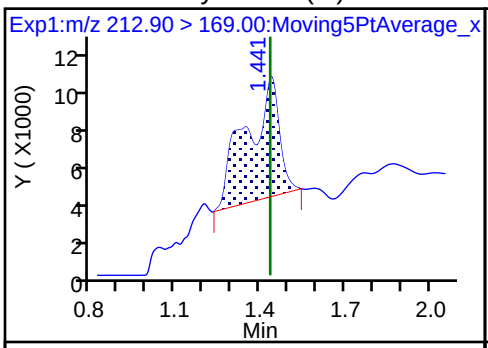
M - Manually Integrated

Report Date: 17-Jul-2018 08:15:25 Chrom Revision: 2.2 07-Jun-2018 07:41:54

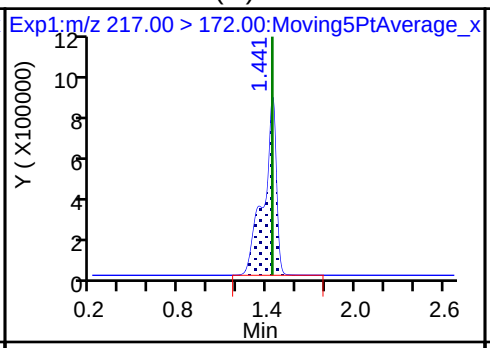
TestAmerica Sacramento

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180716-61105.b\2018.07.14LLA_022.d				
Injection Date:	14-Jul-2018 13:29:59	Instrument ID:	A8_N		
Lims ID:	320-40571-A-24-A	Lab Sample ID:	320-40571-24		
Client ID:	NF27-SS-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	14	Worklist Smp#:	5
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		

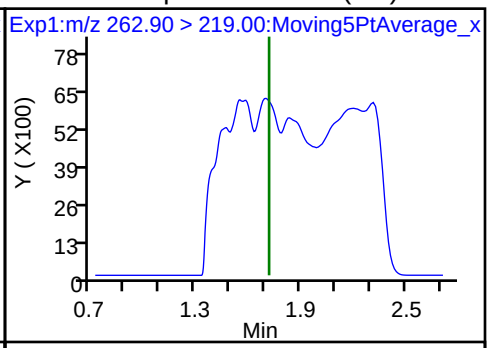
2 Perfluorobutyric acid (M)



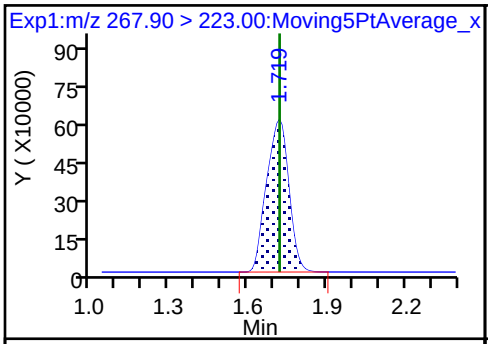
D 1 13C4 PFBA (M)



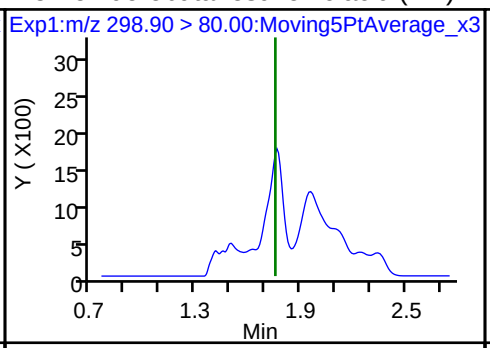
4 Perfluoropentanoic acid (ND)



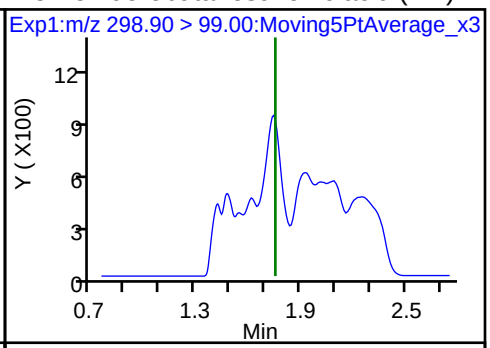
D 3 13C5-PFPeA



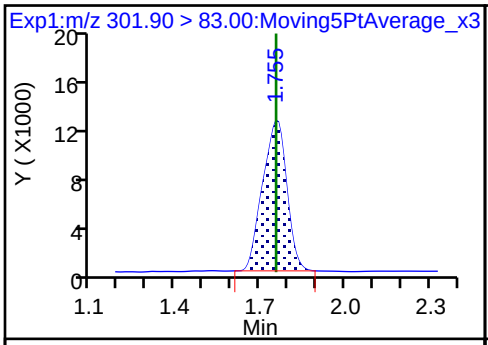
5 Perfluorobutanesulfonic acid (ND)



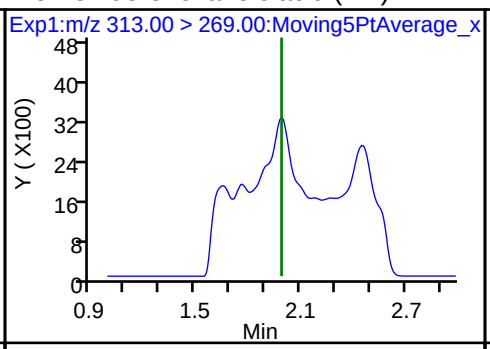
5 Perfluorobutanesulfonic acid (ND)



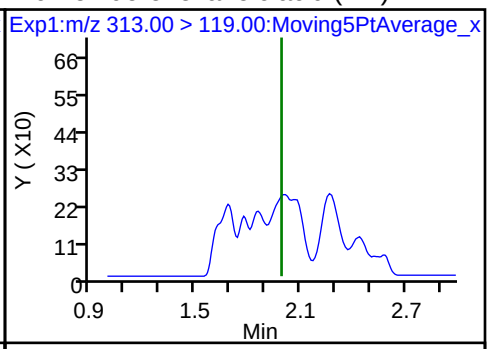
D 47 13C3-PFBS



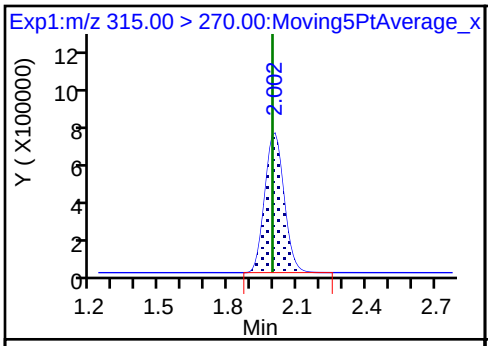
6 Perfluorohexanoic acid (ND)



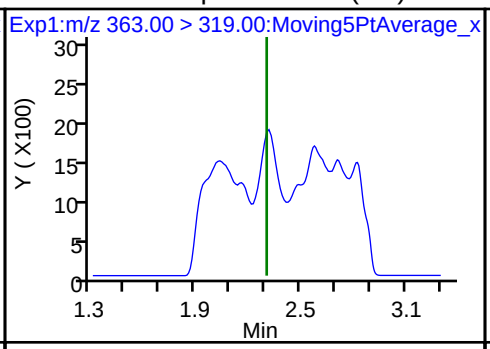
6 Perfluorohexanoic acid (ND)



D 7 13C2 PFHxA



10 Perfluoroheptanoic acid (ND)



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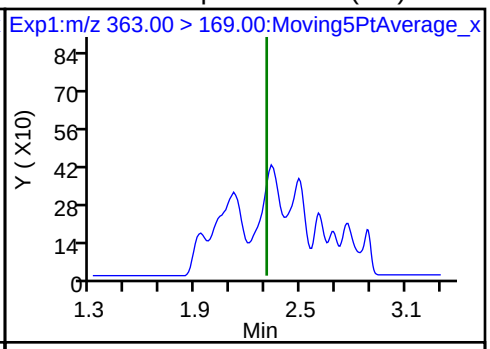
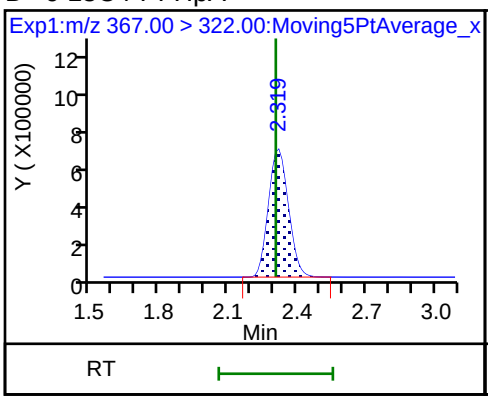
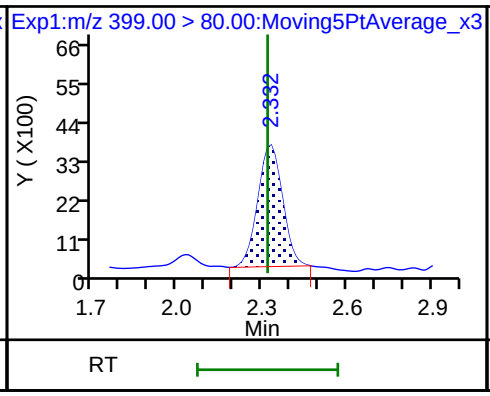


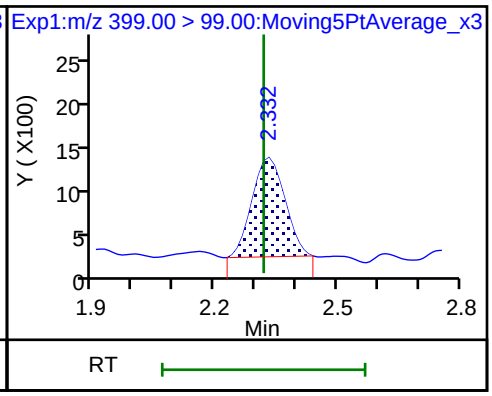
D 9 13C4-PFHpA



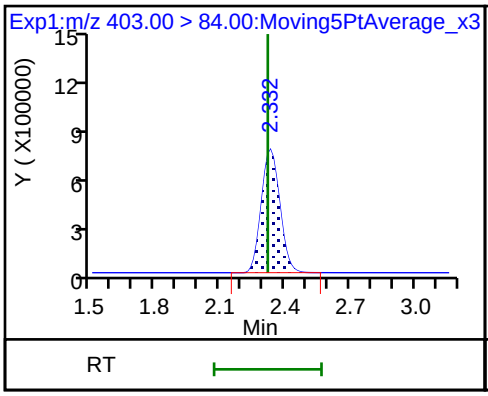
8 Perfluorohexanesulfonic acid



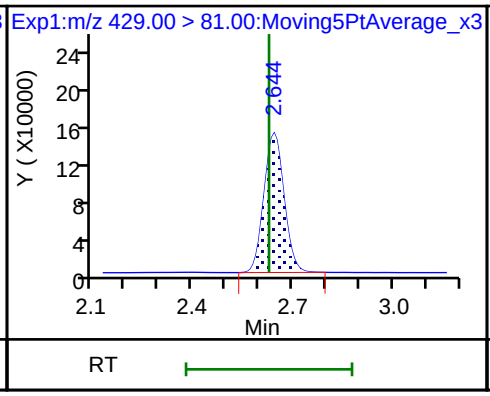
8 Perfluorohexanesulfonic acid



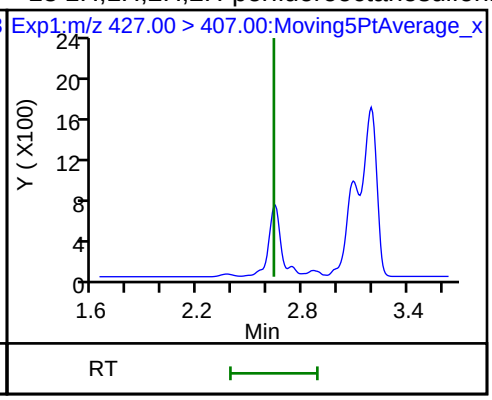
D 11 18O2 PFHxS



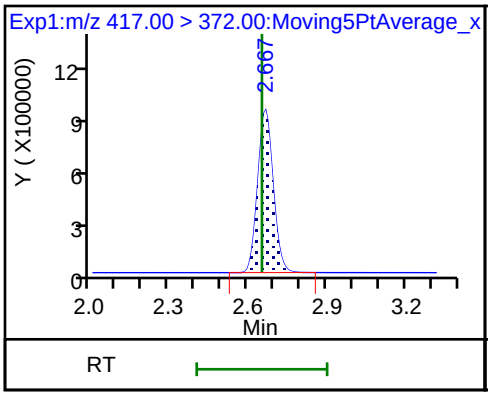
D 12 M2-6:2FTS



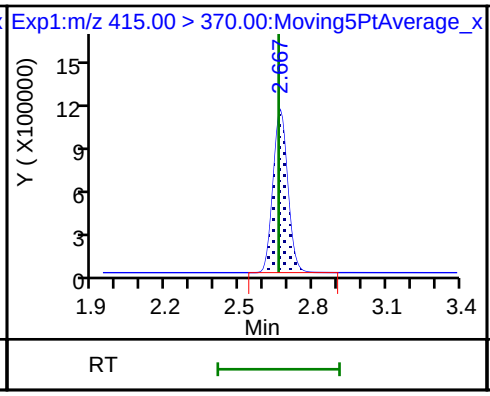
13 1H,1H,2H,2H-perfluorooctanesulfoni (ND)



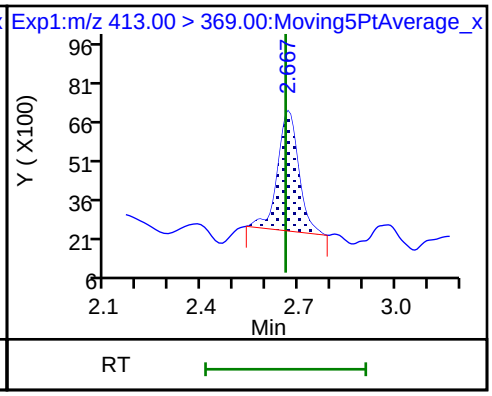
D 14 13C4 PFOA



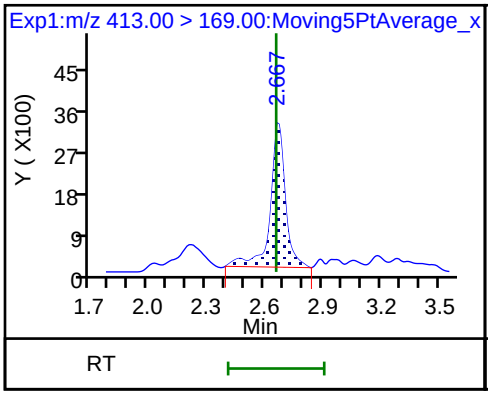
* 62 13C2-PFOA



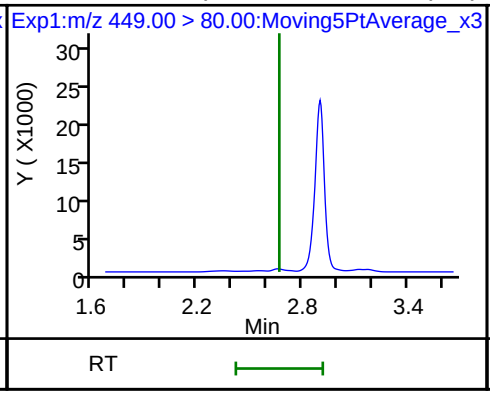
15 Perfluorooctanoic acid



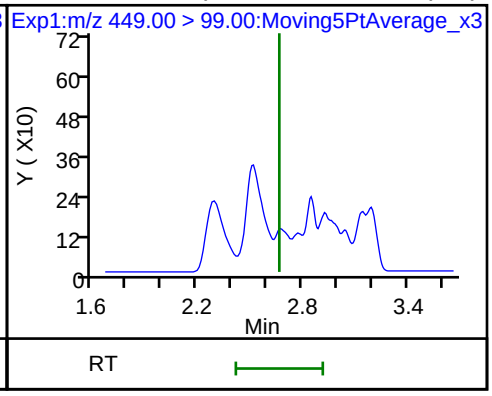
15 Perfluorooctanoic acid



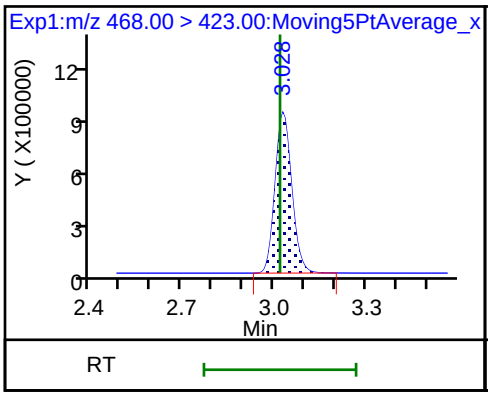
16 Perfluoroheptanesulfonic acid (ND)



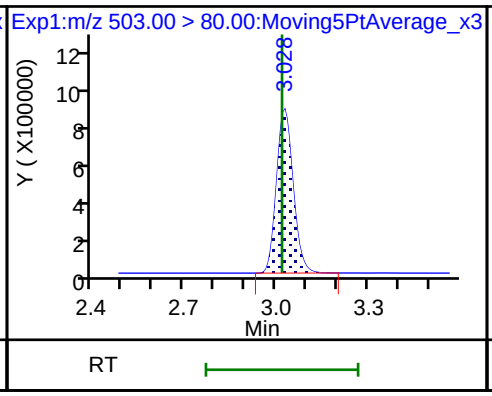
16 Perfluoroheptanesulfonic acid (ND)



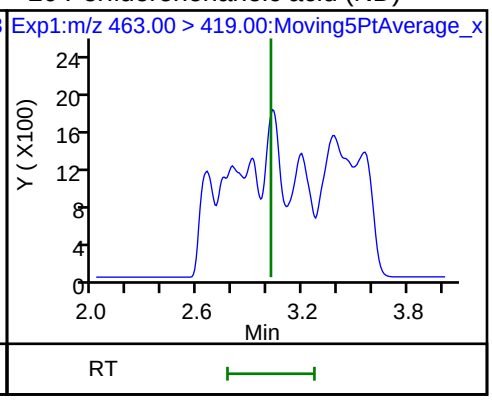
D 19 13C5 PFNA



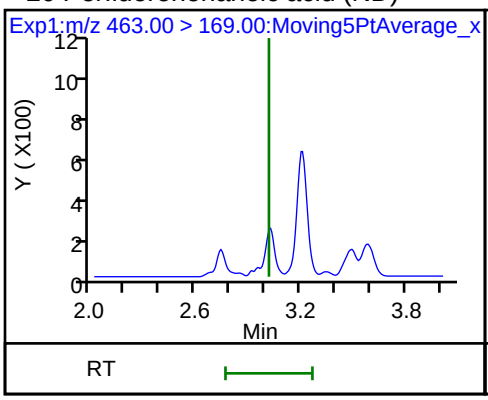
D 18 13C4 PFOS



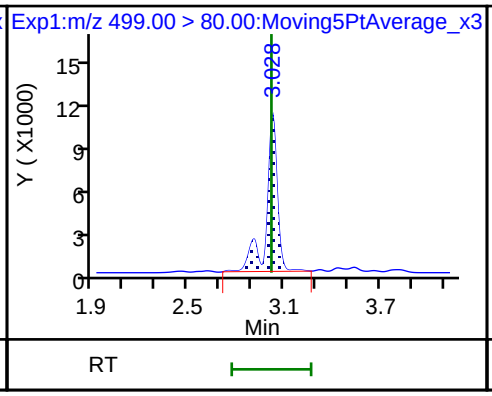
20 Perfluorononanoic acid (ND)



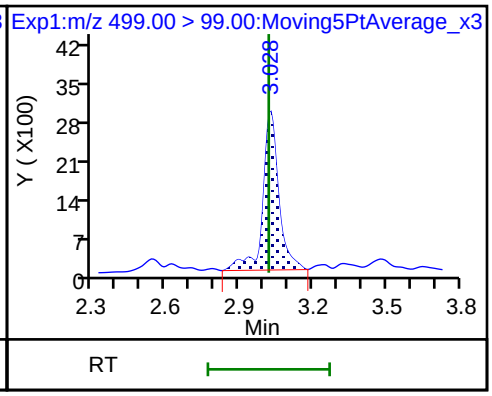
20 Perfluorononanoic acid (ND)



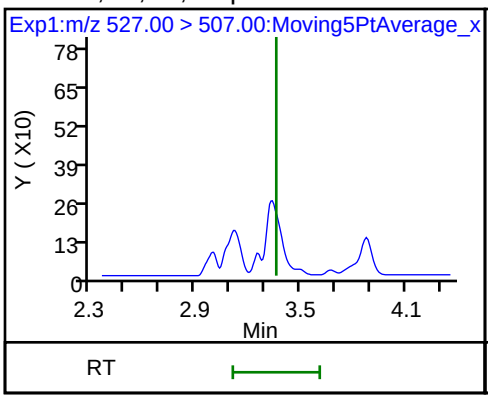
17 Perfluorooctane sulfonic acid



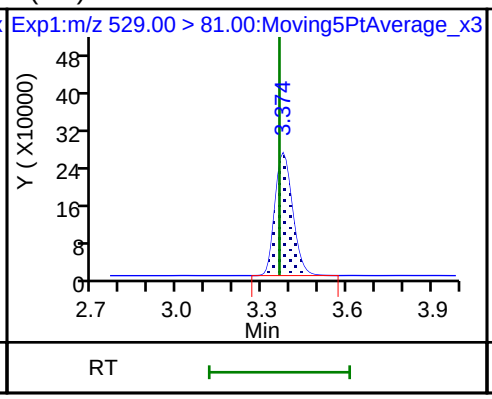
17 Perfluorooctane sulfonic acid



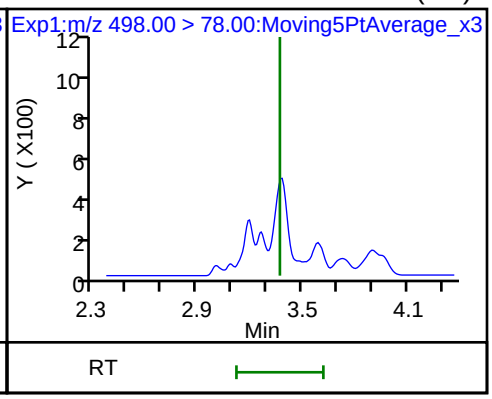
25 1H,1H,2H,2H-perfluorodecanesulfonic acid (ND)



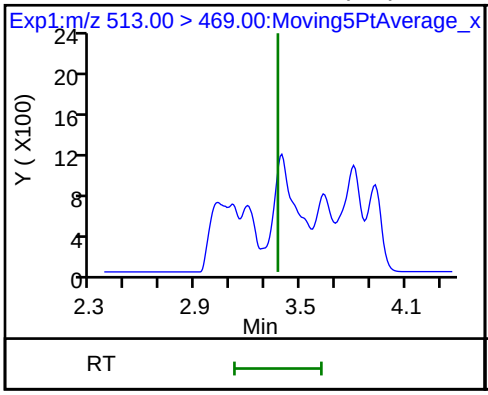
D 26 M2-8:2FTS



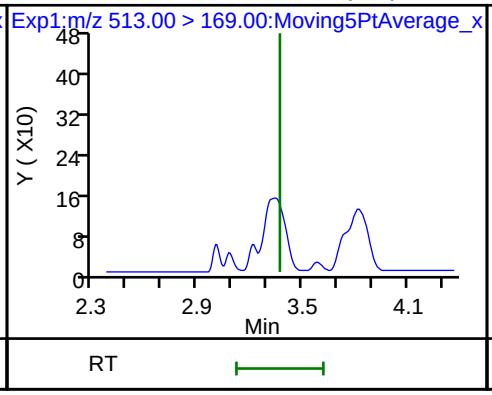
22 Perfluorooctane Sulfonamide (ND)



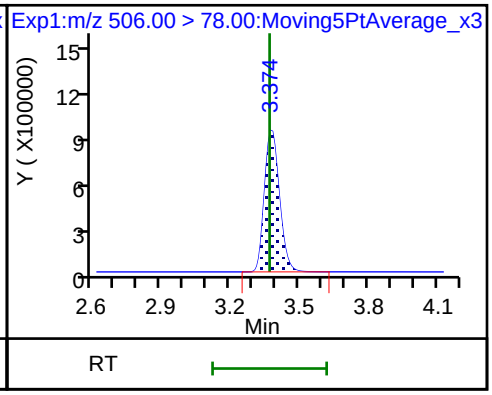
24 Perfluorodecanoic acid (ND)



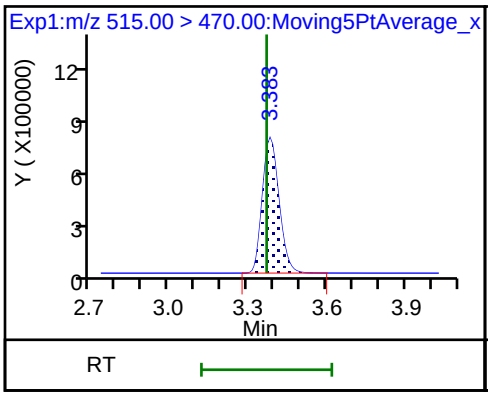
24 Perfluorodecanoic acid (ND)



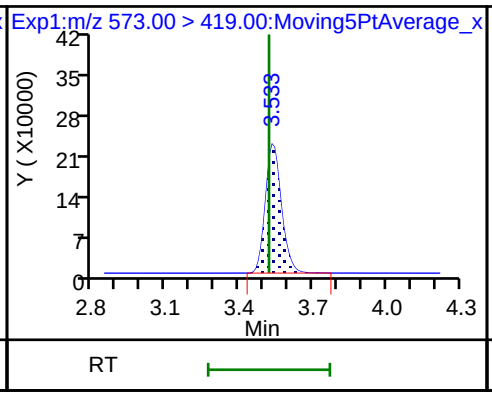
D 21 13C8 FOSA



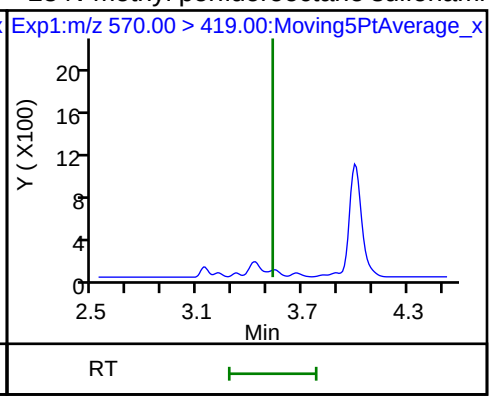
D 23 13C2 PFDA



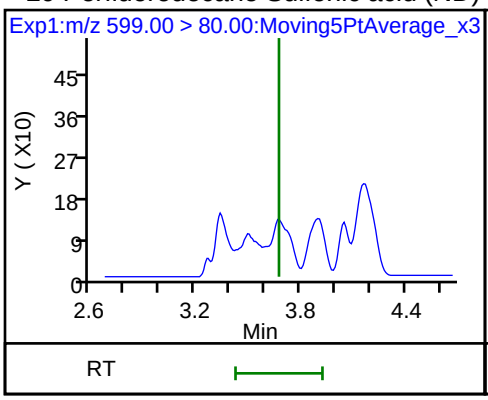
D 27 d3-NMeFOSAA



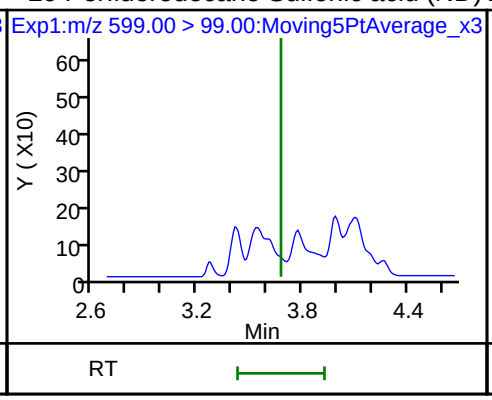
28 N-methyl perfluorooctane sulfonami (ND)



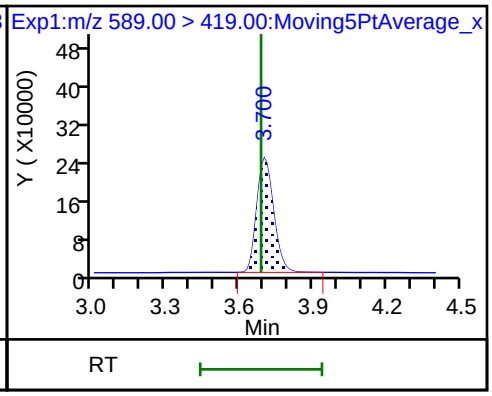
29 Perfluorodecane Sulfonic acid (ND)



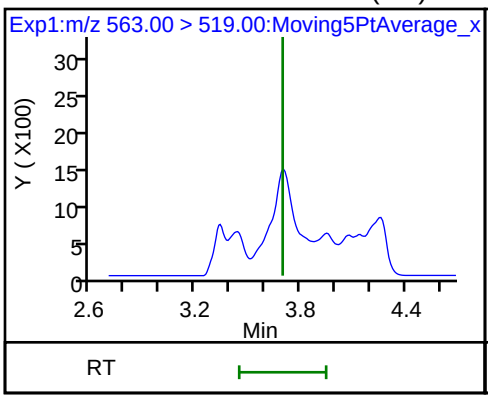
29 Perfluorodecane Sulfonic acid (ND)



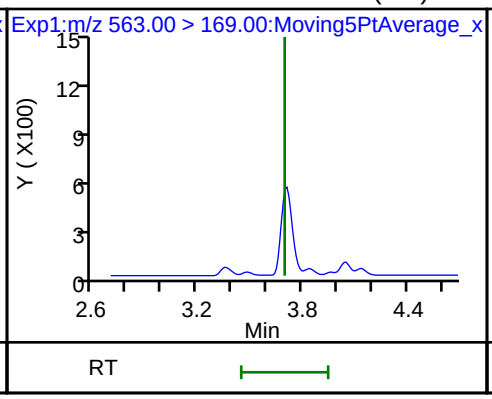
D 32 d5-NEtFOSAA



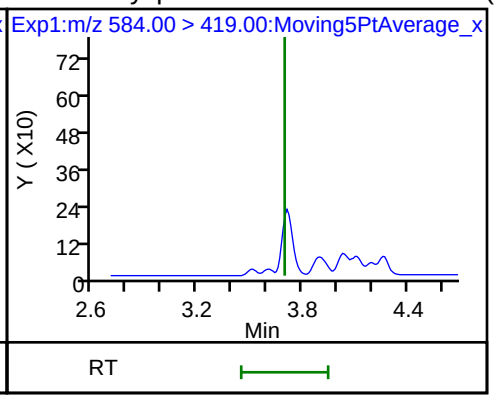
31 Perfluoroundecanoic acid (ND)



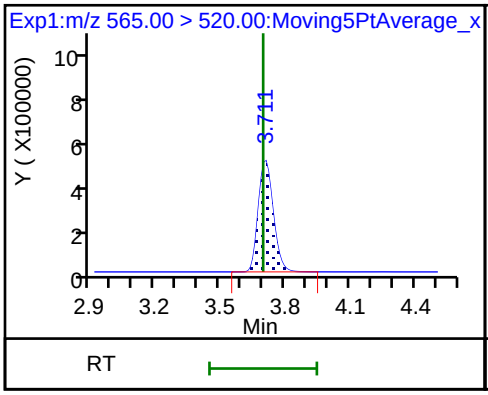
31 Perfluoroundecanoic acid (ND)



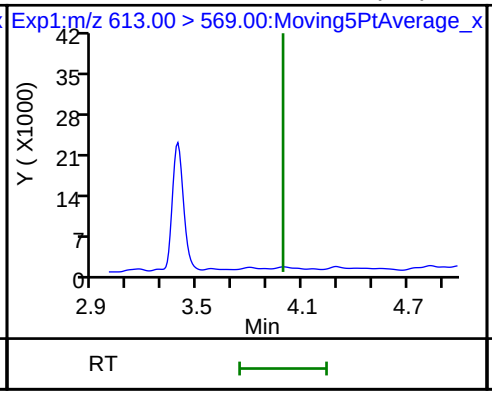
33 N-ethyl perfluorooctane sulfonamid (ND)



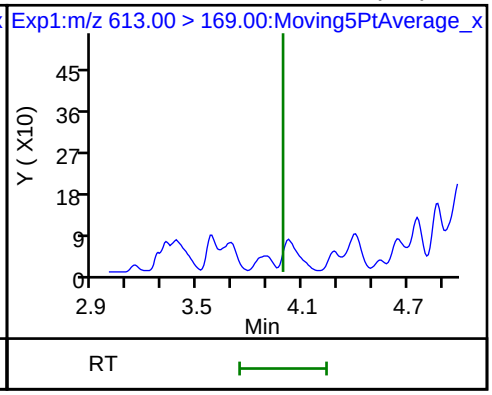
D 30 13C2 PFUnA



37 Perfluorododecanoic acid (ND)

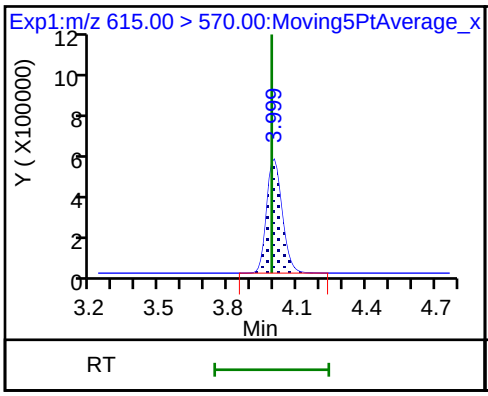


37 Perfluorododecanoic acid (ND)

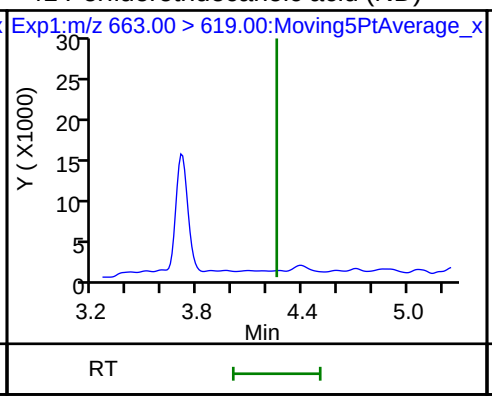


Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180716-61105.b\2018.07.14LLA_022.d

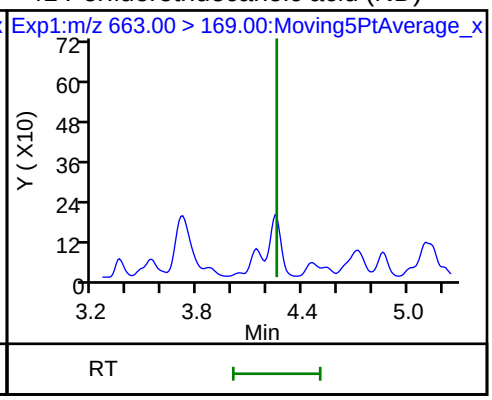
D 36 13C2 PFDoA



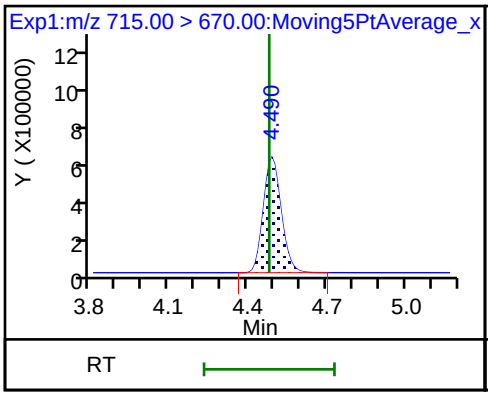
41 Perfluorotridecanoic acid (ND)



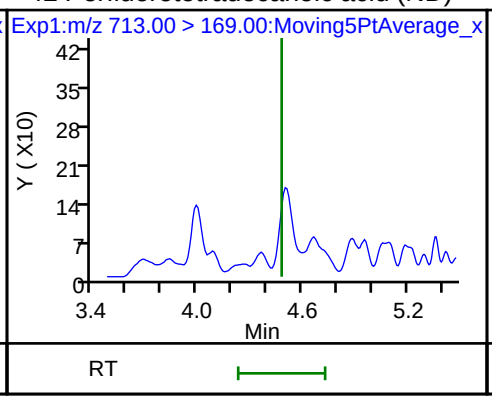
41 Perfluorotridecanoic acid (ND)



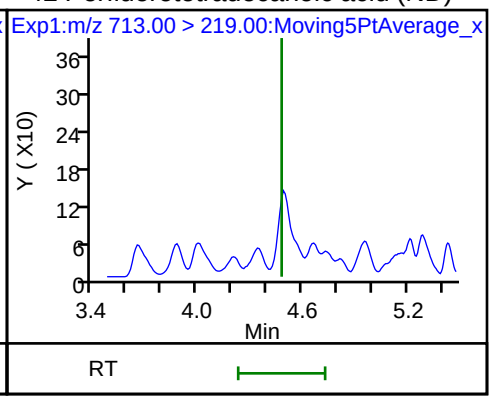
D 43 13C2-PFTeDA



42 Perfluorotetradecanoic acid (ND)



42 Perfluorotetradecanoic acid (ND)



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

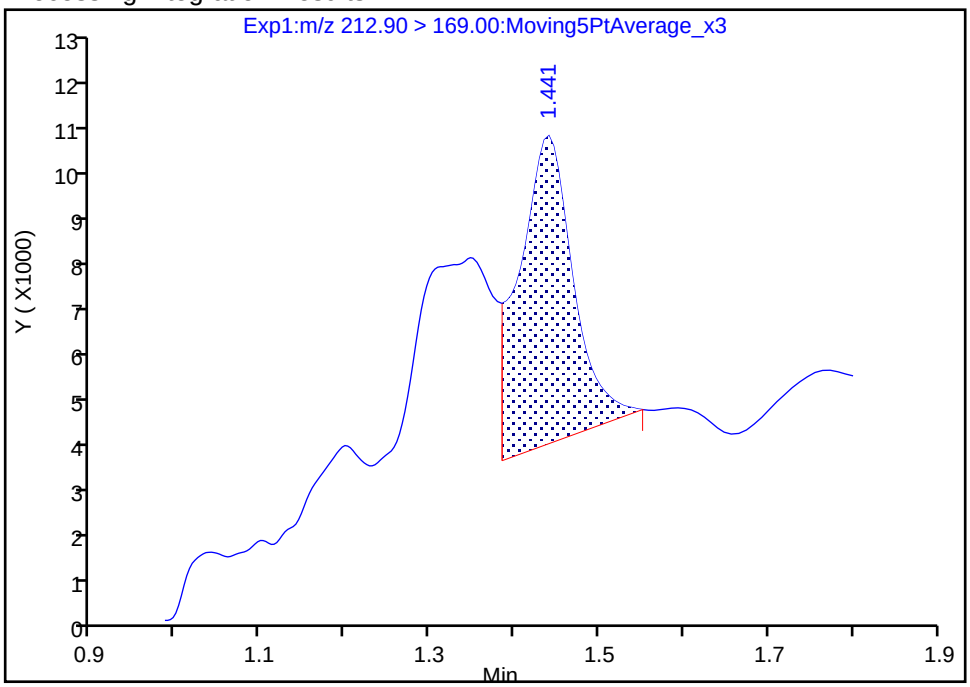
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180716-61105.b\2018.07.14LLA_022.d				
Injection Date:	14-Jul-2018 13:29:59	Instrument ID:	A8_N		
Lims ID:	320-40571-A-24-A	Lab Sample ID:	320-40571-24		
Client ID:	NF27-SS-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	14	Worklist Smp#:	5
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

2 Perfluorobutyric acid, CAS: 375-22-4

Signal: 1

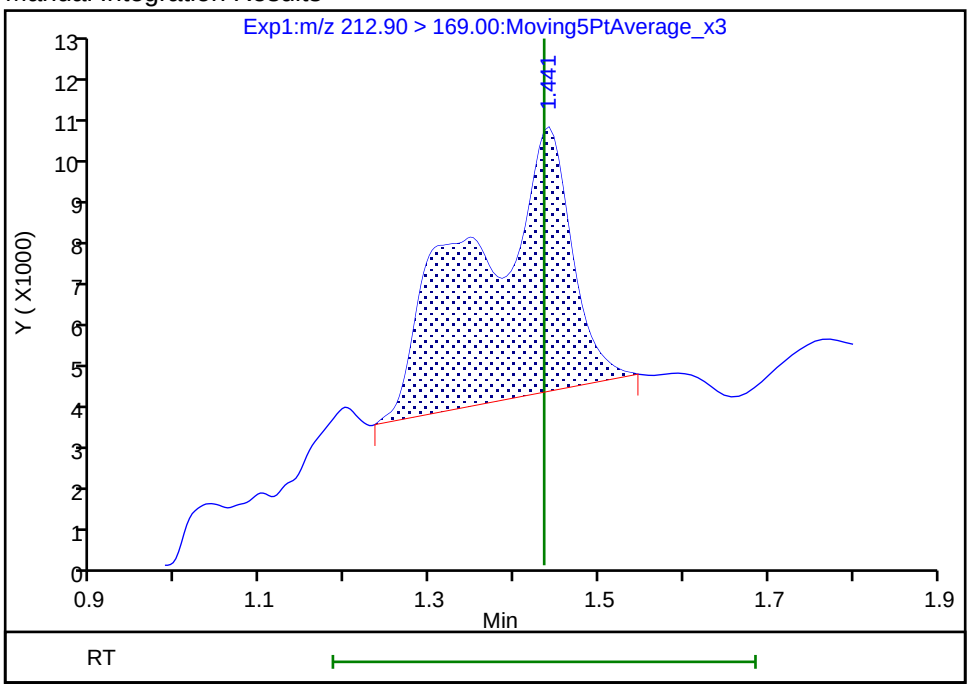
Processing Integration Results

RT: 1.44
Area: 29481
Amount: 0.014846
Amount Units: ng/ml



Manual Integration Results

RT: 1.44
Area: 51266
Amount: 0.025817
Amount Units: ng/ml



Reviewer: mongkols, 17-Jul-2018 08:14:58

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

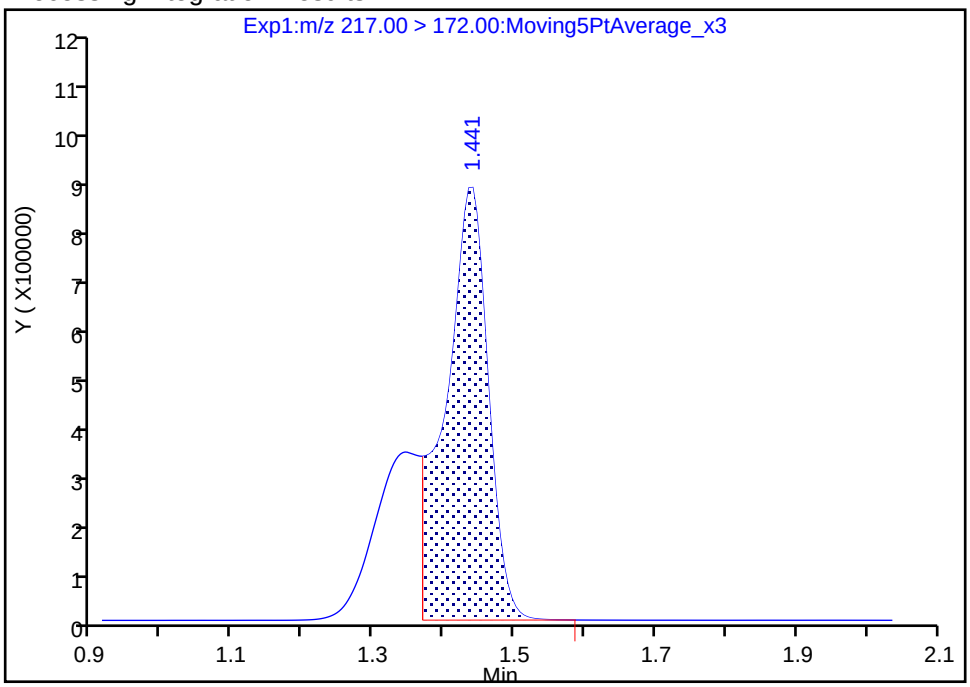
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180716-61105.b\2018.07.14LLA_022.d				
Injection Date:	14-Jul-2018 13:29:59	Instrument ID:	A8_N		
Lims ID:	320-40571-A-24-A	Lab Sample ID:	320-40571-24		
Client ID:	NF27-SS-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	14	Worklist Smp#:	5
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

D 1 13C4 PFBA, CAS: STL00992

Signal: 1

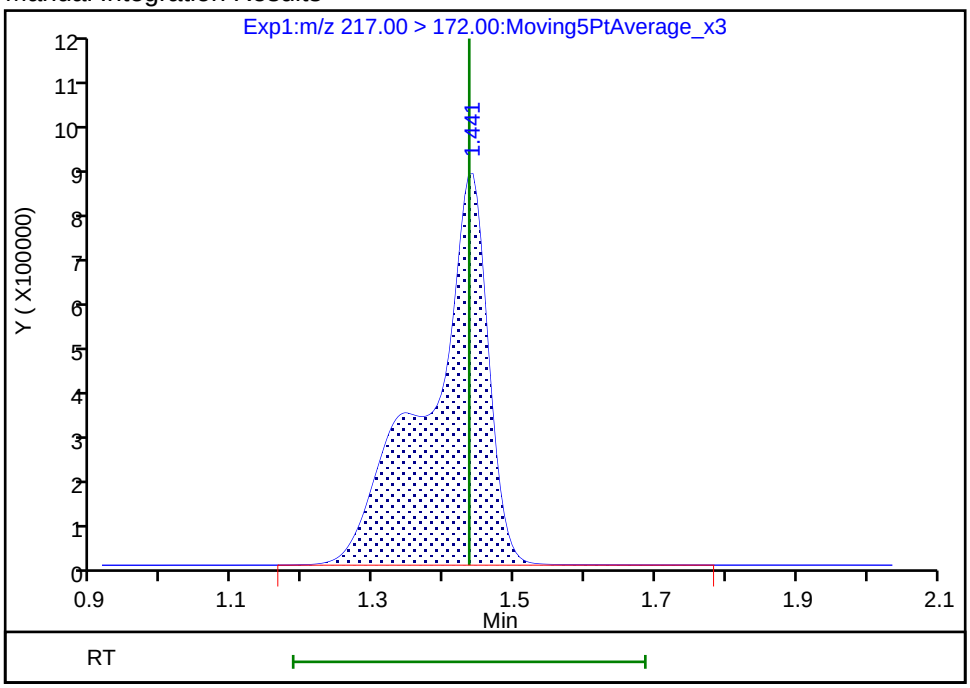
Processing Integration Results

RT: 1.44
Area: 3546271
Amount: 1.397303
Amount Units: ng/ml



Manual Integration Results

RT: 1.44
Area: 5036978
Amount: 1.984671
Amount Units: ng/ml



Reviewer: mongkols, 17-Jul-2018 08:14:41

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF28-GW-01
Lab Sample ID: 320-40571-25
Matrix: Water
Lab File ID: 2018.07.13LLC_015.d
Analysis Method: 537 (modified)
Date Collected: 06/20/2018 16:00
Extraction Method: 3535
Date Extracted: 07/02/2018 14:58
Sample wt/vol: 257(mL)
Date Analyzed: 07/13/2018 21:56
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 233989
Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	0.011	B	0.0019	0.00034
2706-90-3	Perfluoropentanoic acid (PFPeA)	0.0063		0.0019	0.00048
307-24-4	Perfluorohexanoic acid (PFHxA)	0.0012	J	0.0019	0.00056
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.00067	J	0.0019	0.00024
335-67-1	Perfluorooctanoic acid (PFOA)	ND		0.0019	0.00083
375-95-1	Perfluorononanoic acid (PFNA)	ND		0.0019	0.00026
335-76-2	Perfluorodecanoic acid (PFDA)	ND		0.0019	0.00030
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		0.0019	0.0011
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		0.0019	0.00054
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		0.0019	0.0013
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		0.0019	0.00028
375-73-5	Perfluorobutanesulfonic acid (PFBS)	ND		0.0019	0.00019
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	ND		0.0019	0.00029
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.00050	J B	0.0019	0.00017
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.0019	0.00018
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.0042		0.0019	0.00053
8789-57-2	Perfluorononanesulfonic acid (PFNS)	ND		0.0019	0.00016
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		0.0019	0.00031
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		0.0019	0.00034
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.019	0.0030
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.019	0.0018
757124-72-4	4:2 FTS	ND		0.019	0.0051
27619-97-2	6:2 FTS	0.010	J	0.019	0.0019
39108-34-4	8:2 FTS	ND		0.019	0.0019

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF28-GW-01
Lab Sample ID: 320-40571-25
Matrix: Water
Lab File ID: 2018.07.13LLC_015.d
Analysis Method: 537 (modified)
Date Collected: 06/20/2018 16:00
Extraction Method: 3535
Date Extracted: 07/02/2018 14:58
Sample wt/vol: 257(mL)
Date Analyzed: 07/13/2018 21:56
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 233989
Units: ug/L

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00992	13C4 PFBA	79		25-150
STL01893	13C5 PFPeA	87		25-150
STL00993	13C2 PFHxA	97		25-150
STL01892	13C4-PFHpA	104		25-150
STL00990	13C4 PFOA	101		25-150
STL00995	13C5 PFNA	96		25-150
STL00996	13C2 PFDA	94		25-150
STL00997	13C2 PFUnA	88		25-150
STL00998	13C2 PFDoA	71		25-150
STL02116	13C2-PFTeDA	12	*	25-150
STL02337	13C3-PFBS	91		25-150
STL00994	18O2 PFHxS	98		25-150
STL00991	13C4 PFOS	91		25-150
STL01056	13C8 FOSA	72		25-150
STL02118	d3-NMeFOSAA	75		25-150
STL02117	d5-NEtFOSAA	87		25-150
STL02279	M2-6:2FTS	129		25-150
STL02280	M2-8:2FTS	97		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\2018.07.13LLC_015.d
Lims ID: 320-40571-A-25-A
Client ID: NF28-GW-01
Sample Type: Client
Inject. Date: 13-Jul-2018 21:56:37 ALS Bottle#: 9 Worklist Smp#: 10
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-40571-a-25-a
Misc. Info.: Plate: 1 Rack: 4
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 16-Jul-2018 12:41:28 Calib Date: 11-Jul-2018 15:38:42
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK023

First Level Reviewer: mongkols Date: 16-Jul-2018 12:41:28

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.90 > 169.00	1.436	1.433	0.003	1.000	551754	0.2854			153	
D 1 13C4 PFBA										
217.00 > 172.00	1.436	1.445	-0.009	0.538	4904712	1.99		79.5	23908	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.720	1.716	0.004	1.000	295311	0.1623			103	
D 3 13C5-PFPeA										
267.90 > 223.00	1.720	1.725	-0.005	0.645	3750688	2.19		87.4	36351	
D 47 13C3-PFBS										
301.90 > 83.00	1.756	1.762	-0.006	0.658	91130	2.11		90.9	311	
6 Perfluorohexanoic acid										
313.00 > 269.00	2.004	1.999	0.005	1.000	57336	0.0310			58.6	
313.00 > 119.00	2.004	1.999	0.005	1.000	6552		8.75(5.03-15.10)		69.4	
D 7 13C2 PFHxA										
315.00 > 270.00	2.004	2.011	-0.007	0.751	4498736	2.43		97.2	85546	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.320	2.316	0.004	1.000	35417	0.0173			40.6	
363.00 > 169.00	2.320	2.316	0.004	1.000	15223		2.33(1.13-3.40)		146	
D 9 13C4-PFHpA										
367.00 > 322.00	2.320	2.329	-0.009	0.870	4436216	2.60		104	51948	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.333	2.329	0.004	1.000	34842	0.0128			32.6	
399.00 > 99.00	2.333	2.329	0.004	1.000	8020		4.34(1.50-4.49)		25.4	
D 11 18O2 PFHxS										
403.00 > 84.00	2.333	2.342	-0.009	0.874	5603556	2.32		98.0	55135	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.645	2.634	0.011	1.003	198619	0.2689			1278	
D 12 M2-6:2FTS										
429.00 > 81.00	2.637	2.651	-0.014	0.988	1121326	3.07		129	6620	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
* 62 13C2-PFOA										
415.00 > 370.00	2.668	2.658	0.010		4551311	2.50			60984	
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.668	2.658	0.010	1.000	31104	0.0144			18.3	M
413.00 > 169.00	2.668	2.658	0.010	1.000	17283		1.80(0.84-2.52)		73.8	
D 14 13C4 PFOA										
417.00 > 372.00	2.668	2.673	-0.005	1.000	4391052	2.52		101	48870	
17 Perfluorooctane sulfonic acid										M
499.00 > 80.00	2.961	3.018	-0.057	0.978	197463	0.1079			188	
499.00 > 99.00	3.022	3.018	0.004	0.998	2348		84.10(2.31-6.93)		35.1	M
D 18 13C4 PFOS										
503.00 > 80.00	3.029	3.036	-0.007	1.135	3860026	2.18		91.1	18995	
D 19 13C5 PFNA										
468.00 > 423.00	3.029	3.036	-0.007	1.135	3724102	2.39		95.7	66706	
D 21 13C8 FOSA										
506.00 > 78.00	3.367	3.376	-0.009	1.262	4631528	1.81		72.4	50465	
D 26 M2-8:2FTS										
529.00 > 81.00	3.367	3.376	-0.009	1.262	1248158	2.33		97.4	13562	
D 23 13C2 PFDA										
515.00 > 470.00	3.376	3.385	-0.009	1.265	3209580	2.35		94.0	61310	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.526	3.544	-0.018	1.322	1047557	1.87		74.8	29138	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.694	3.705	-0.011	1.385	1242044	2.17		86.6	7387	
D 30 13C2 PFUnA										
565.00 > 520.00	3.705	3.715	-0.010	1.389	2515448	2.21		88.2	43671	
D 36 13C2 PFDoA										
615.00 > 570.00	3.995	4.005	-0.010	1.497	2111172	1.79		71.4	21456	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.499	4.500	-0.001	1.686	365831	0.2981		11.9	4039	

QC Flag Legend

Review Flags

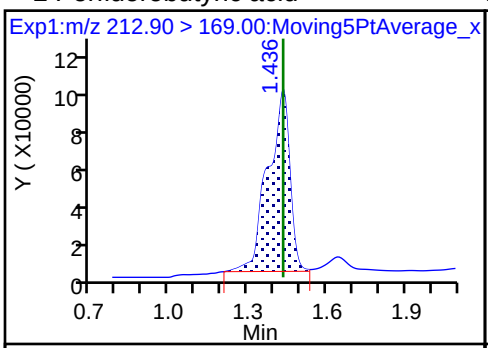
M - Manually Integrated

Report Date: 16-Jul-2018 12:41:28 Chrom Revision: 2.2 07-Jun-2018 07:41:54

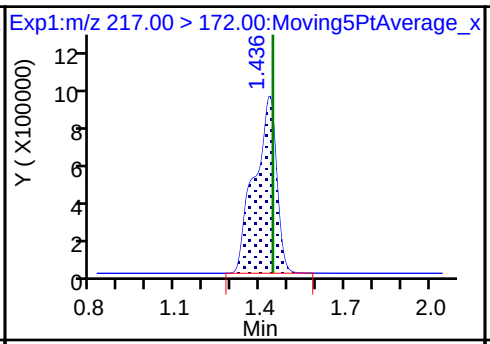
TestAmerica Sacramento

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\2018.07.13LLC_015.d				
Injection Date:	13-Jul-2018 21:56:37	Instrument ID:	A8_N		
Lims ID:	320-40571-A-25-A	Lab Sample ID:	320-40571-25		
Client ID:	NF28-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	9	Worklist Smp#:	10
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		

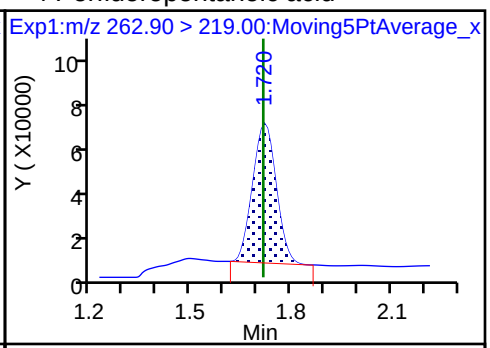
2 Perfluorobutyric acid



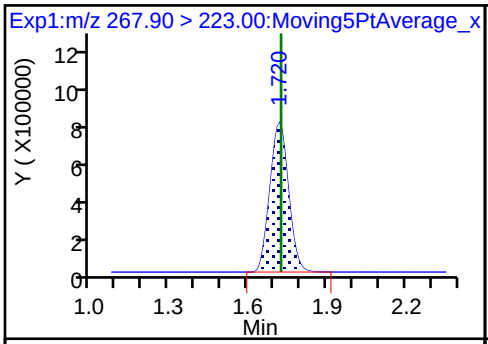
D 1 13C4 PFBA



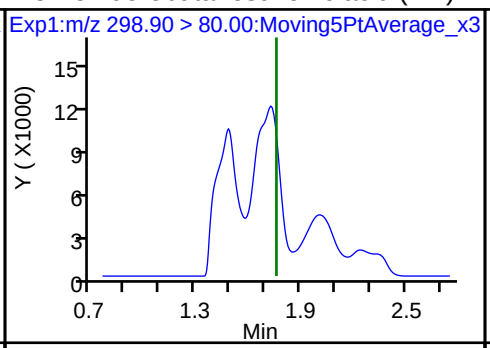
4 Perfluoropentanoic acid



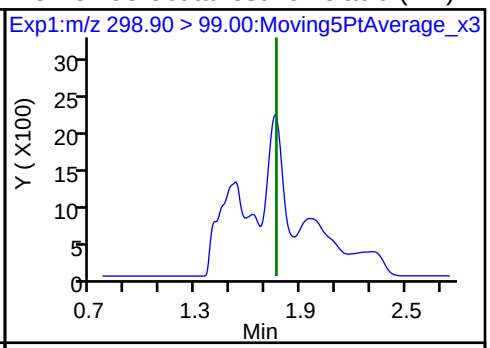
D 3 13C5-PFPeA



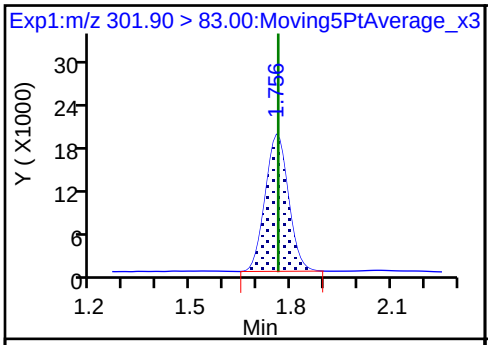
5 Perfluorobutanesulfonic acid (ND)



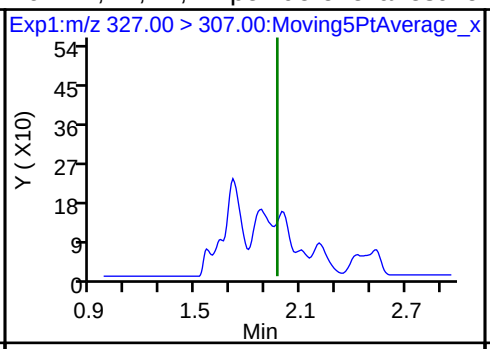
5 Perfluorobutanesulfonic acid (ND)



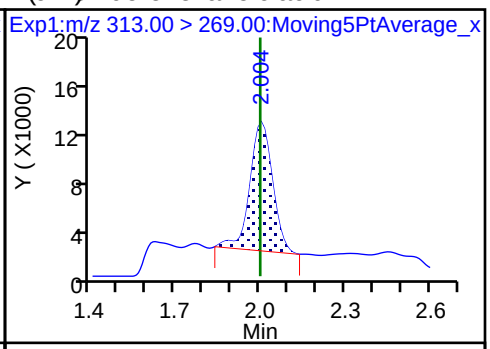
D 47 13C3-PFBS



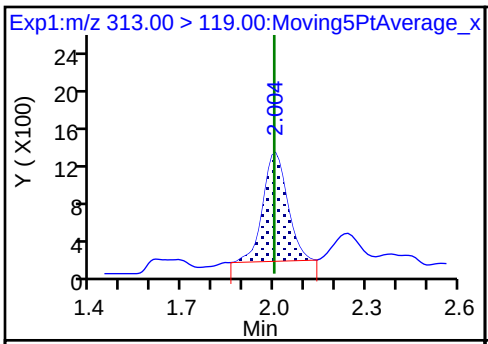
61 1H,1H,2H,2H-perfluorohexanesulfoni (ND)



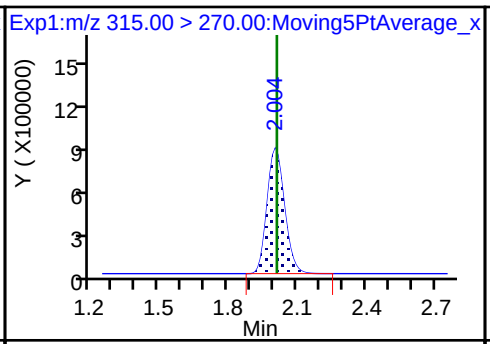
6 Perfluorohexanoic acid



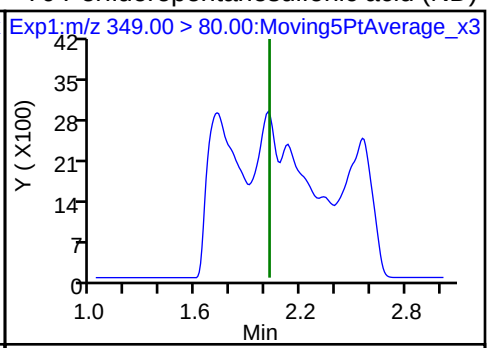
6 Perfluorohexanoic acid



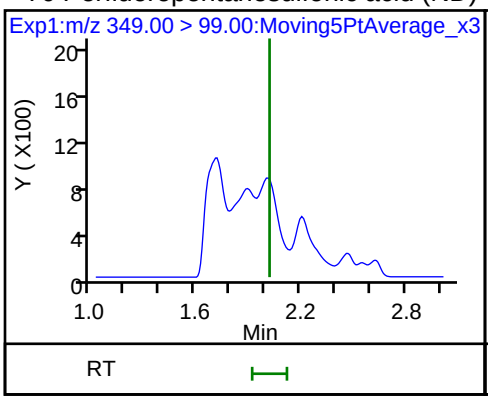
D 7 13C2 PFHxA



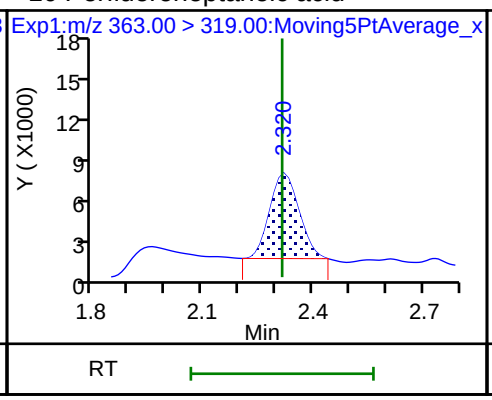
70 Perfluoropentanesulfonic acid (ND)



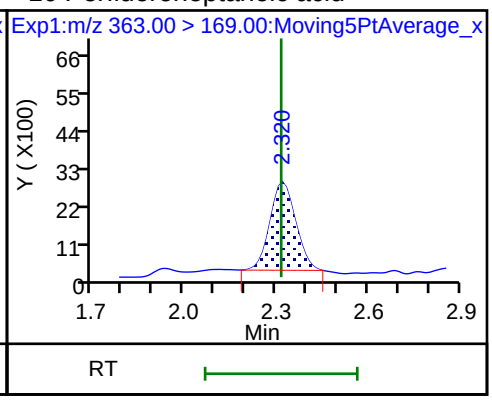
70 Perfluoropentanesulfonic acid (ND)



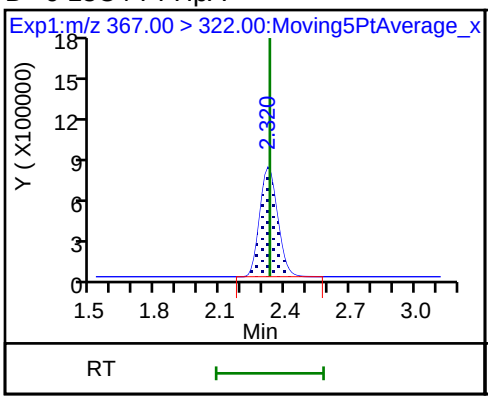
10 Perfluoroheptanoic acid



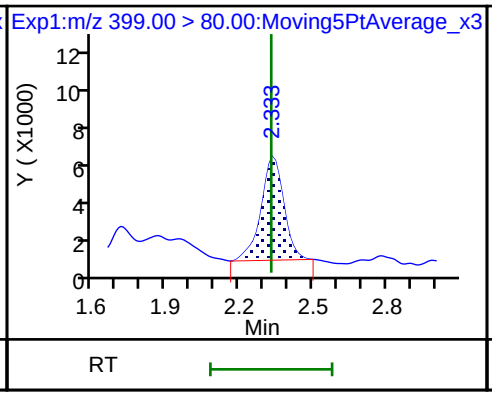
10 Perfluoroheptanoic acid



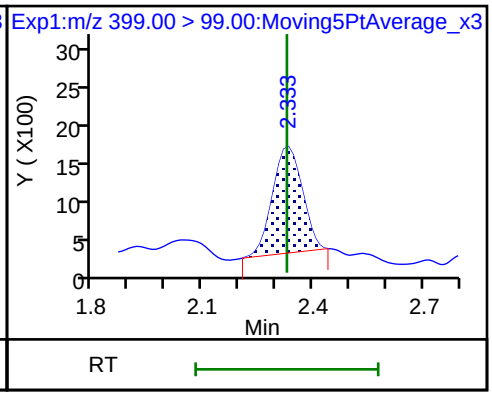
D 9 13C4-PFHpA



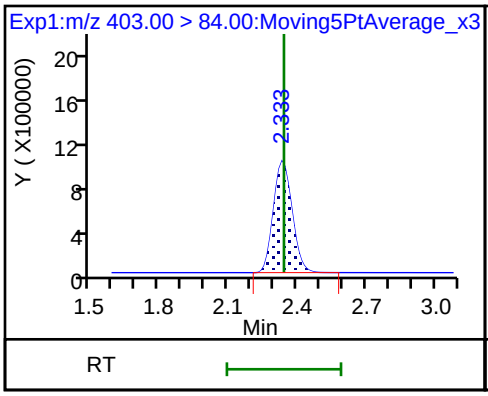
8 Perfluorohexanesulfonic acid



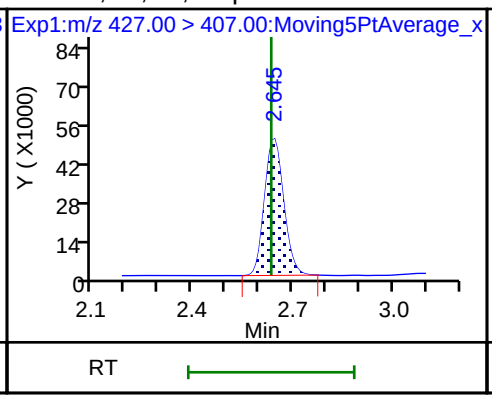
8 Perfluorohexanesulfonic acid



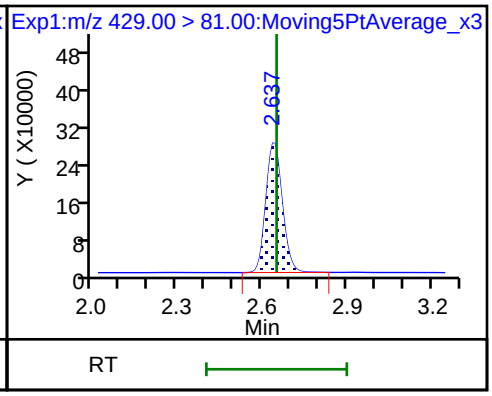
D 11 18O2 PFHxS



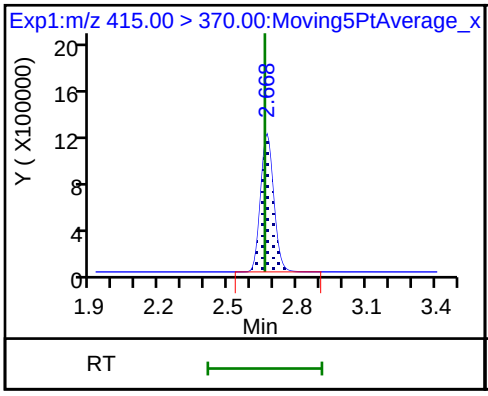
13 1H,1H,2H,2H-perfluorooctanesulfon



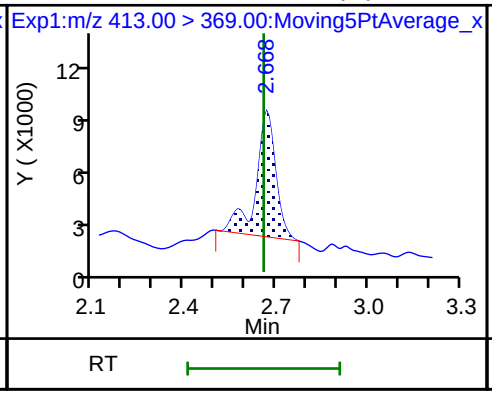
D 12 M2-6:2FTS



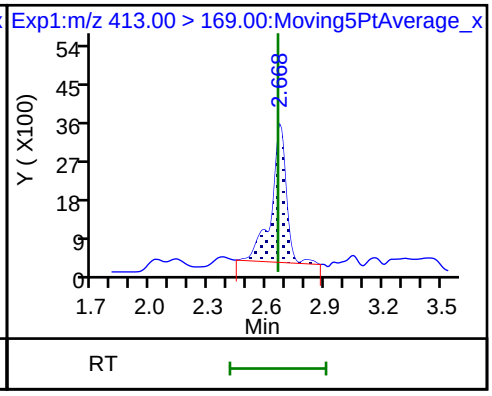
* 62 13C2-PFOA



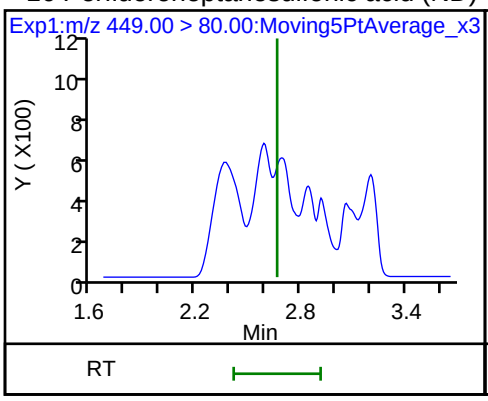
15 Perfluorooctanoic acid (M)



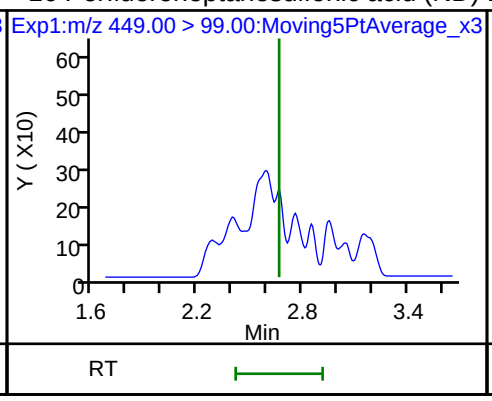
15 Perfluorooctanoic acid



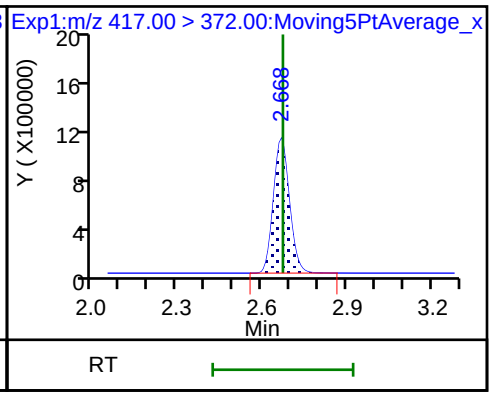
16 Perfluoroheptanesulfonic acid (ND)



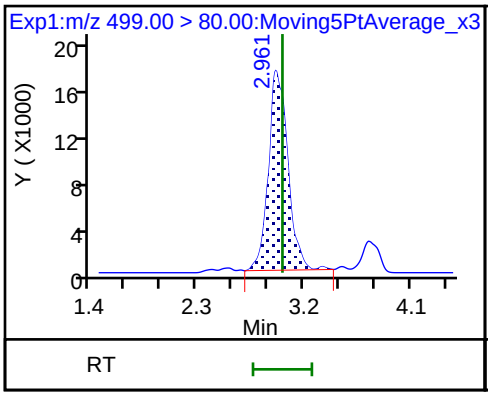
16 Perfluoroheptanesulfonic acid (ND)



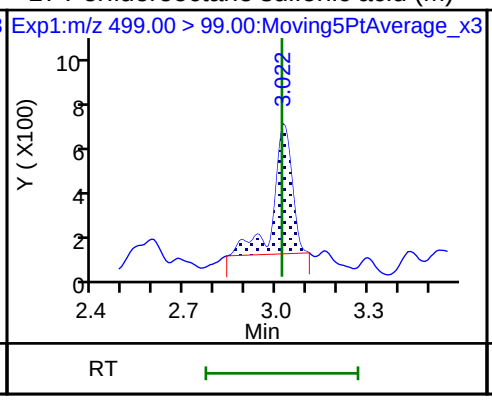
D 14 13C4 PFOA



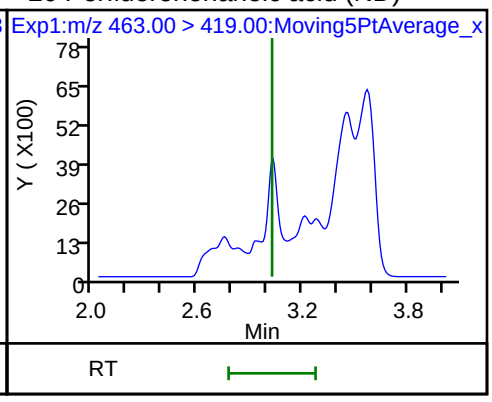
17 Perfluorooctane sulfonic acid



17 Perfluorooctane sulfonic acid (M)



20 Perfluorononanoic acid (ND)



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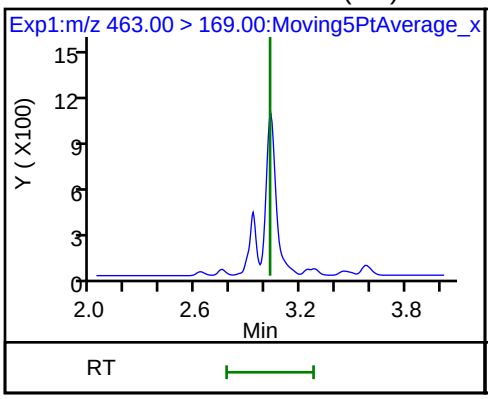
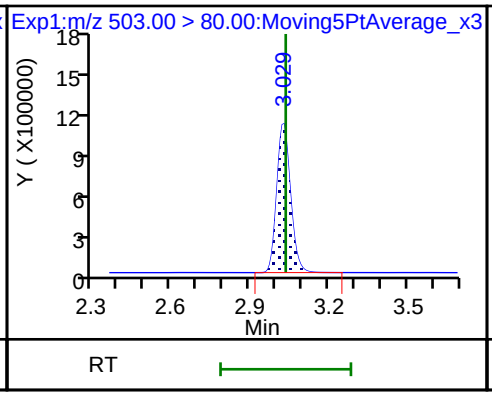
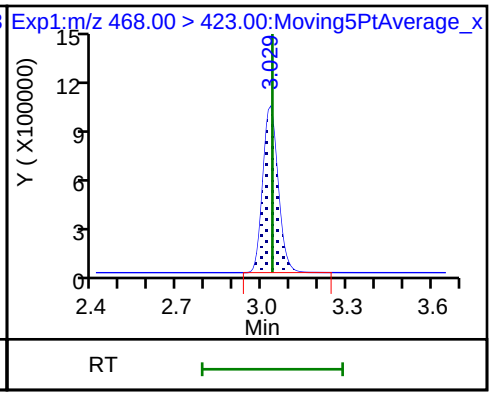


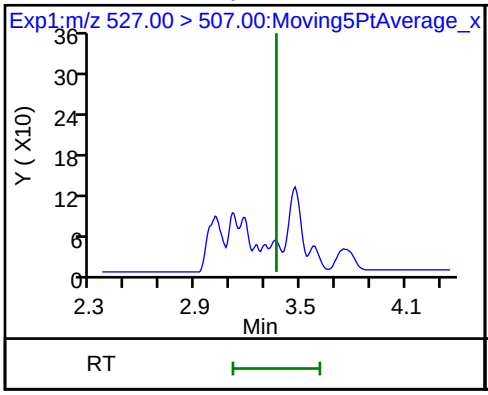
D 18 13C4 PFOS



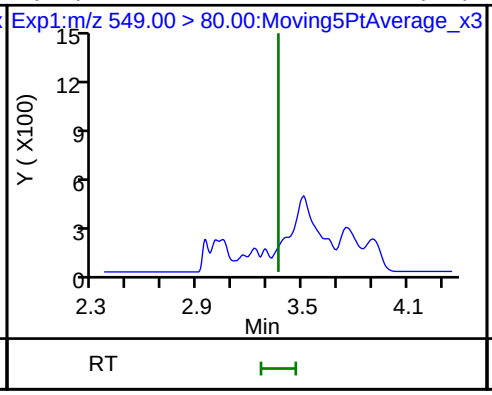
D 19 13C5 PFNA



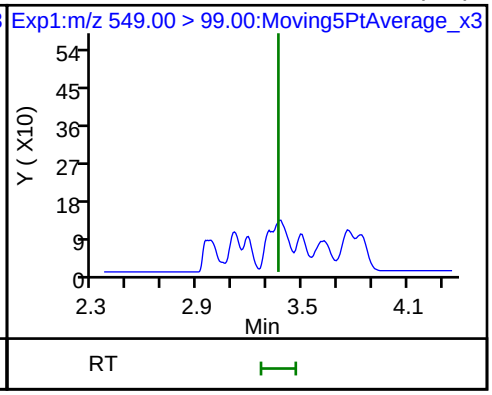
25 1H,1H,2H,2H-perfluorodecanesulfoni (ND)



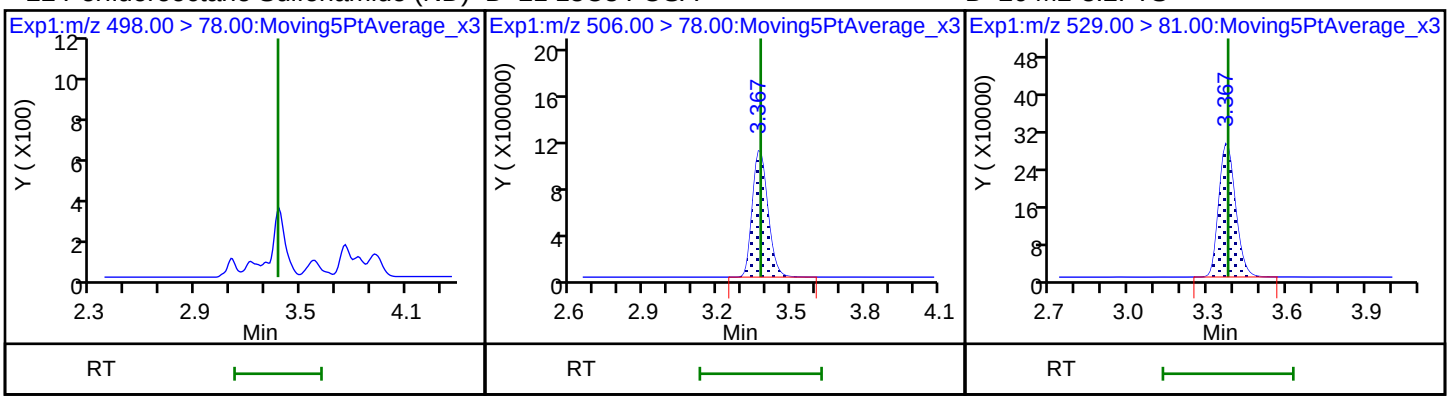
68 Perfluorononanesulfonic acid (ND)



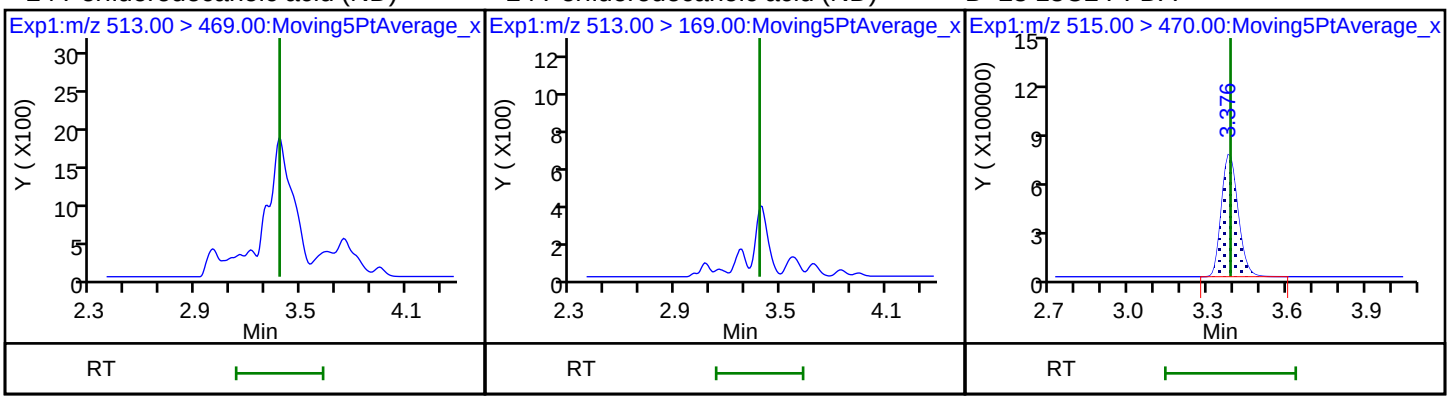
68 Perfluorononanesulfonic acid (ND)



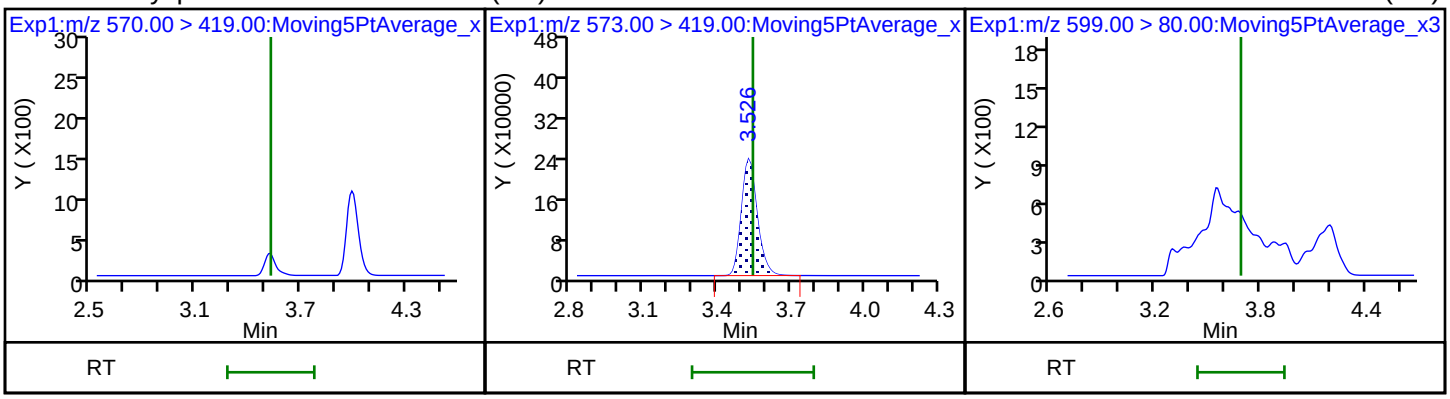
22 Perfluorooctane Sulfonamide (ND) D 21 13C8 FOSA D 26 M2-8:2FTS



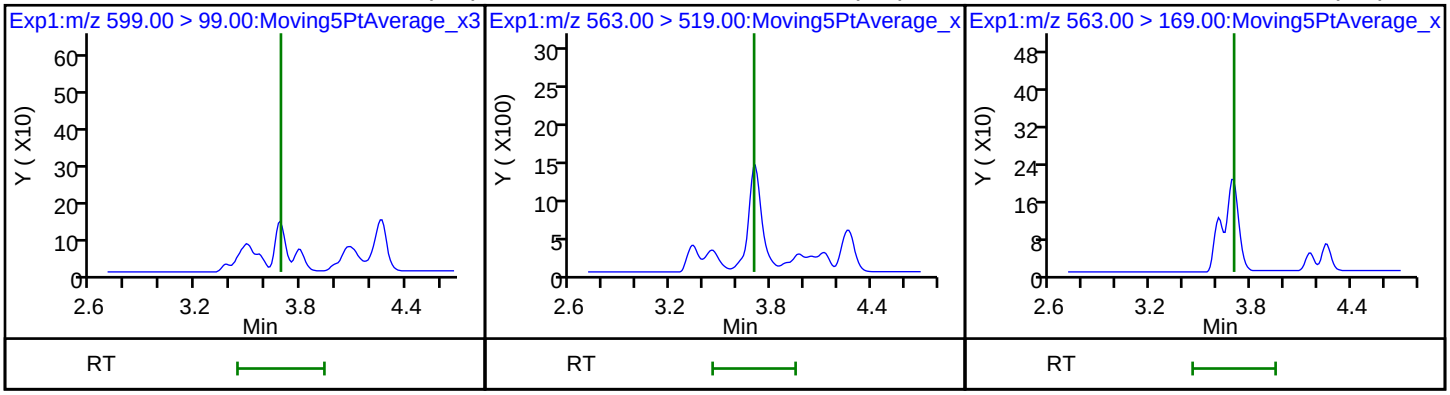
24 Perfluorodecanoic acid (ND) 24 Perfluorodecanoic acid (ND) D 23 13C2 PFDA



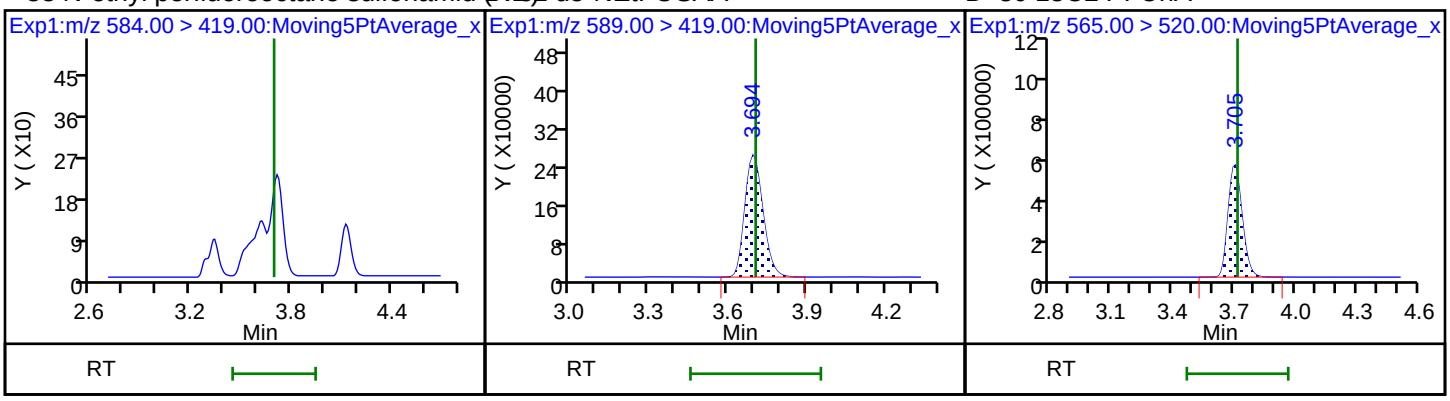
28 N-methyl perfluorooctane sulfonamid (ND) D 27 d3-NMeFOSAA 29 Perfluorodecane Sulfonic acid (ND)



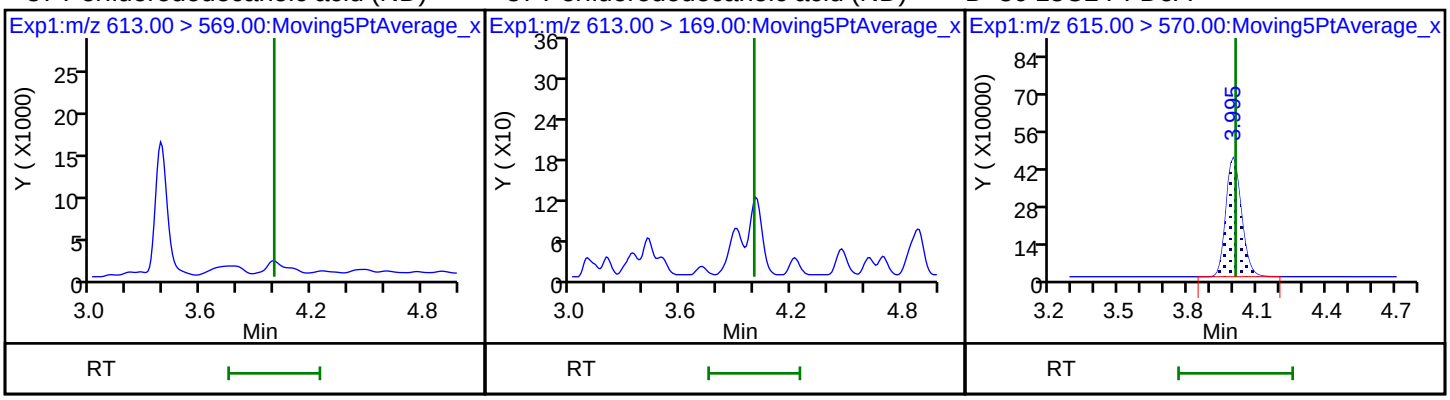
29 Perfluorodecane Sulfonic acid (ND) 31 Perfluoroundecanoic acid (ND) 31 Perfluoroundecanoic acid (ND)



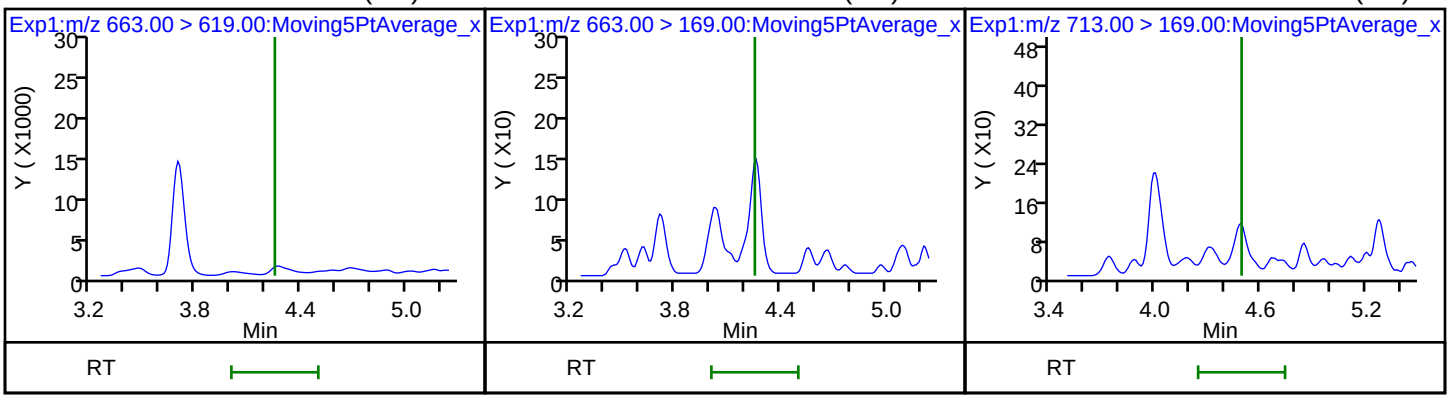
33 N-ethyl perfluorooctane sulfonamid (ND) D 32 d5-NEtFOSAA D 30 13C2 PFUnA



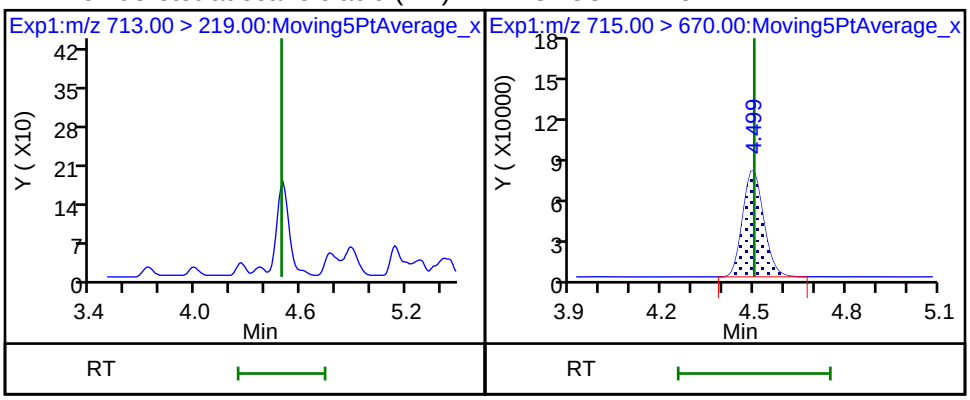
37 Perfluorododecanoic acid (ND) 37 Perfluorododecanoic acid (ND) D 36 13C2 PFDoA



41 Perfluorotridecanoic acid (ND) 41 Perfluorotridecanoic acid (ND) 42 Perfluorotetradecanoic acid (ND)



42 Perfluorotetradecanoic acid (ND) D 43 13C2-PFTeDA



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

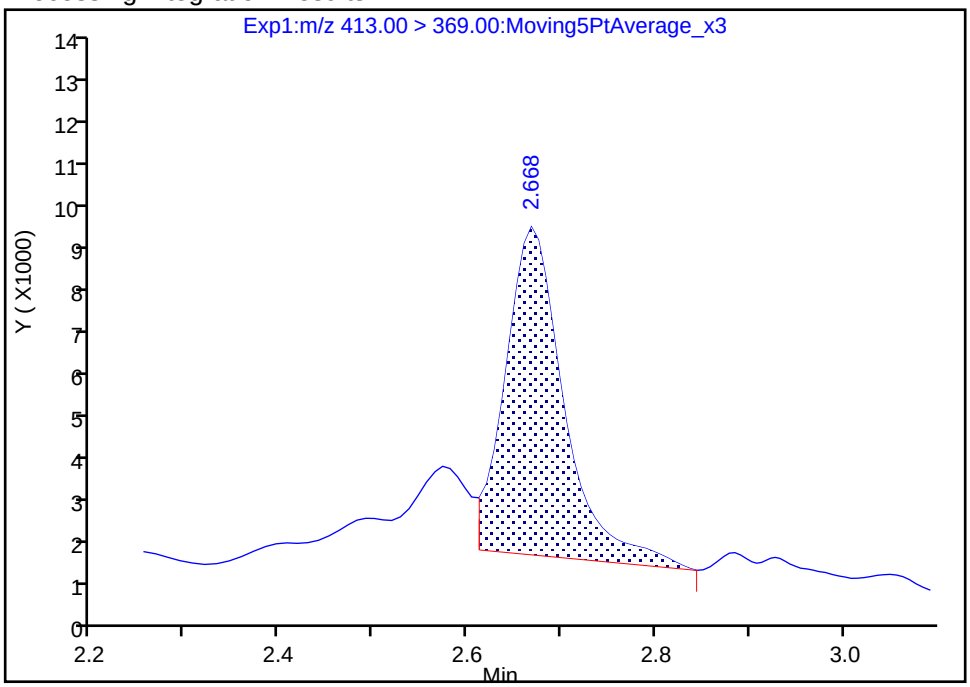
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\2018.07.13LLC_015.d				
Injection Date:	13-Jul-2018 21:56:37	Instrument ID:	A8_N		
Lims ID:	320-40571-A-25-A	Lab Sample ID:	320-40571-25		
Client ID:	NF28-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	9	Worklist Smp#:	10
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

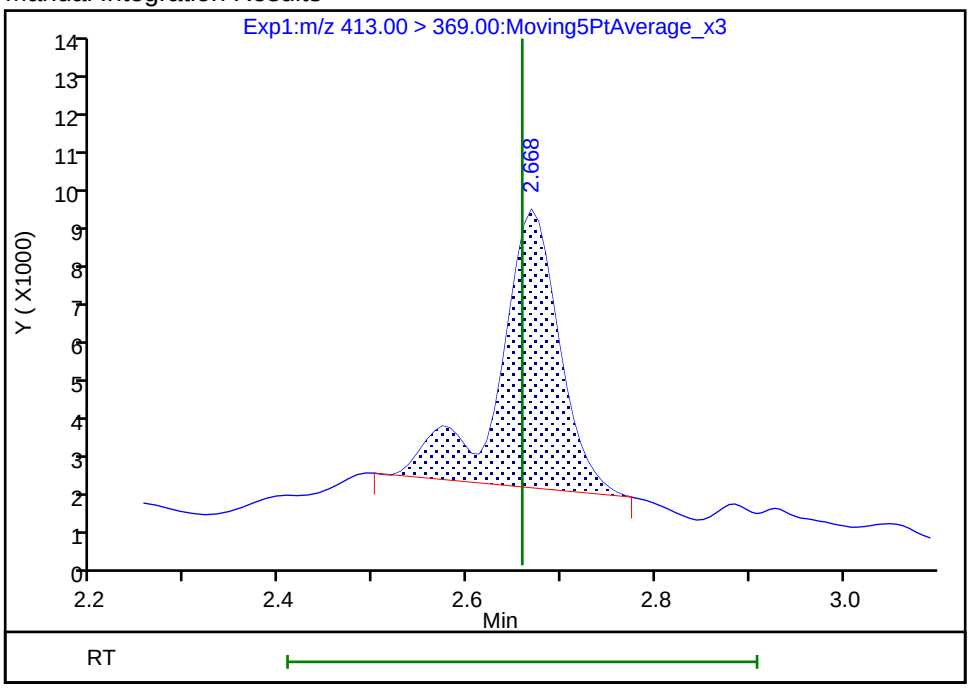
Processing Integration Results

RT: 2.67
Area: 32074
Amount: 0.014828
Amount Units: ng/ml



Manual Integration Results

RT: 2.67
Area: 31104
Amount: 0.014379
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 12:40:50
Audit Action: Manually Integrated Audit Reason: Isomers

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

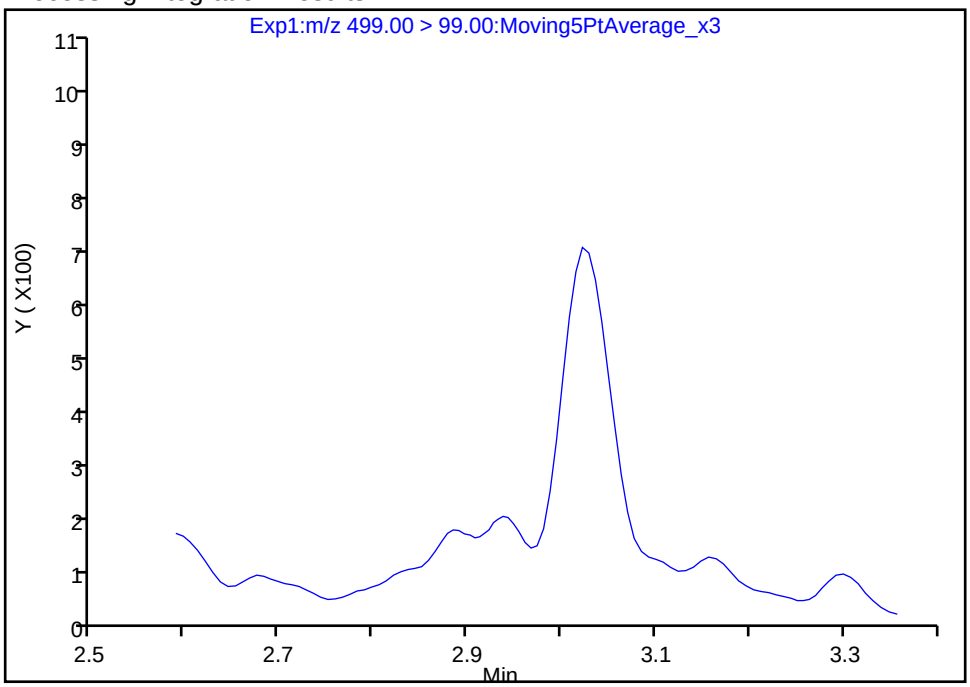
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\2018.07.13LLC_015.d				
Injection Date:	13-Jul-2018 21:56:37	Instrument ID:	A8_N		
Lims ID:	320-40571-A-25-A	Lab Sample ID:	320-40571-25		
Client ID:	NF28-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	9	Worklist Smp#:	10
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

17 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 2

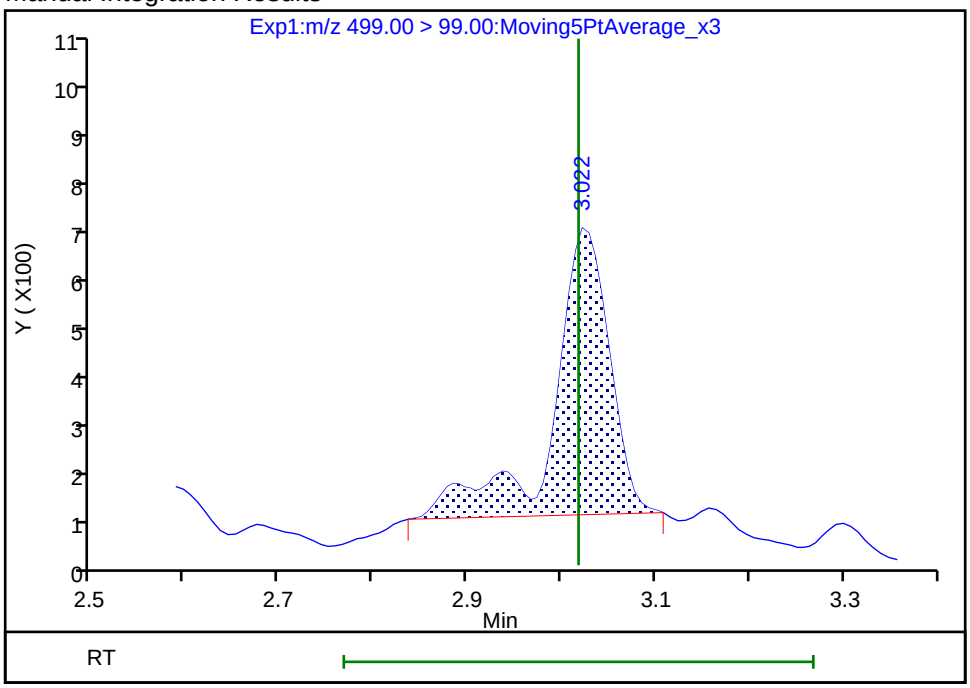
Processing Integration Results

RT: 3.04
Area: 0
Amount: 0.107895
Amount Units: ng/ml



Manual Integration Results

RT: 3.02
Area: 2348
Amount: 0.107895
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 12:41:06

Audit Action: Manually Integrated Audit Reason: Assign Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF28-SS-01
Lab Sample ID: 320-40571-26
Matrix: Solid
Lab File ID: 2018.07.14LLA_023.d
Analysis Method: 537 (modified)
Date Collected: 06/19/2018 14:50
Extraction Method: SHAKE
Date Extracted: 06/28/2018 06:06
Sample wt/vol: 5.08(g)
Date Analyzed: 07/14/2018 13:37
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture: 18.7
GPC Cleanup:(Y/N) N
Analysis Batch No.: 234231
Units: mg/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	ND		0.00024	0.000034
2706-90-3	Perfluoropentanoic acid (PFPeA)	ND		0.00024	0.000093
307-24-4	Perfluorohexanoic acid (PFHxA)	ND		0.00024	0.000051
375-85-9	Perfluoroheptanoic acid (PFHpA)	ND		0.00024	0.000035
335-67-1	Perfluorooctanoic acid (PFOA)	ND		0.00024	0.00010
375-95-1	Perfluorononanoic acid (PFNA)	ND		0.00024	0.000044
335-76-2	Perfluorodecanoic acid (PFDA)	ND		0.00024	0.000027
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		0.00024	0.000044
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		0.00024	0.000081
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		0.00024	0.000062
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		0.00024	0.000065
375-73-5	Perfluorobutanesulfonic acid (PFBS)	ND		0.00024	0.000030
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	ND		0.00024	0.000038
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.00024	0.000042
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	ND		0.00061	0.00024
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		0.00024	0.000047
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		0.00024	0.000099
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.0024	0.00047
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.0024	0.00045
27619-97-2	6:2 FTS	ND		0.0024	0.00018
39108-34-4	8:2 FTS	ND		0.0024	0.00030

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF28-SS-01
Lab Sample ID: 320-40571-26
Matrix: Solid
Lab File ID: 2018.07.14LLA_023.d
Analysis Method: 537 (modified)
Date Collected: 06/19/2018 14:50
Extraction Method: SHAKE
Date Extracted: 06/28/2018 06:06
Sample wt/vol: 5.08(g)
Date Analyzed: 07/14/2018 13:37
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture: 18.7
GPC Cleanup:(Y/N) N
Analysis Batch No.: 234231
Units: mg/Kg

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00992	13C4 PFBA	79		25-150
STL01893	13C5 PFPeA	81		25-150
STL00993	13C2 PFHxA	85		25-150
STL01892	13C4-PFHpA	88		25-150
STL00990	13C4 PFOA	81		25-150
STL00995	13C5 PFNA	80		25-150
STL00996	13C2 PFDA	92		25-150
STL00997	13C2 PFUnA	80		25-150
STL00998	13C2 PFDoA	87		25-150
STL02116	13C2-PFTeDA	89		25-150
STL02337	13C3-PFBS	72		25-150
STL00994	18O2 PFHxS	77		25-150
STL00991	13C4 PFOS	70		25-150
STL01056	13C8 FOSA	67		25-150
STL02118	d3-NMeFOSAA	74		25-150
STL02117	d5-NEtFOSAA	87		25-150
STL02279	M2-6:2FTS	67		25-150
STL02280	M2-8:2FTS	78		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180716-61105.b\2018.07.14LLA_023.d
Lims ID: 320-40571-A-26-A
Client ID: NF28-SS-01
Sample Type: Client
Inject. Date: 14-Jul-2018 13:37:51 ALS Bottle#: 15 Worklist Smp#: 6
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-40571-a-26-a
Misc. Info.: Plate: 1 Rack: 5
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180716-61105.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 17-Jul-2018 08:19:10 Calib Date: 11-Jul-2018 15:38:42
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK016

First Level Reviewer: mongkols Date: 17-Jul-2018 08:19:10

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.90 > 169.00	1.439	1.435	0.004	1.004	24369	0.0128			5.8	
D 1 13C4 PFBA										M
217.00 > 172.00	1.434	1.436	-0.002	0.539	4822943	1.98		79.1	26282	M
D 3 13C5-PFPeA										
267.90 > 223.00	1.717	1.720	-0.003	0.646	3436242	2.03		81.0	42719	
D 47 13C3-PFBS										
301.90 > 83.00	1.753	1.756	-0.003	0.659	71326	1.67		72.0	448	
D 7 13C2 PFHxA										
315.00 > 270.00	1.988	1.992	-0.004	0.748	3886668	2.12		84.9	66844	
D 9 13C4-PFHpA										
367.00 > 322.00	2.303	2.306	-0.003	0.866	3707040	2.20		87.9	44029	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.329	2.319	0.010	1.000	12483	0.005902			115	
399.00 > 99.00	2.316	2.319	-0.003	0.994	4623		2.70(1.50-4.49)		26.4	
D 11 18O2 PFHxS										
403.00 > 84.00	2.329	2.319	0.010	0.876	4357266	1.82		77.1	60666	
D 12 M2-6:2FTS										
429.00 > 81.00	2.635	2.628	0.007	0.991	578230	1.60		67.3	9870	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.627	2.635	-0.008	0.997	3527	0.009260			33.3	
D 14 13C4 PFOA										
417.00 > 372.00	2.658	2.652	0.006	1.000	3476545	2.02		80.8	48807	
* 62 13C2-PFOA										
415.00 > 370.00	2.658	2.659	-0.001		4499053	2.50			51869	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.658	2.659	-0.001	1.000	18759	0.0110			9.4	
413.00 > 169.00	2.666	2.659	0.007	1.003	9481		1.98(0.84-2.52)		40.7	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 19 13C5 PFNA										
468.00 > 423.00	3.019	3.018	0.001	1.136	3076755	2.00		80.0	45270	
D 18 13C4 PFOS										
503.00 > 80.00	3.013	3.018	-0.006	1.133	2948441	1.68		70.4	46303	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.013	3.019	-0.006	1.000	33721	0.0241			555	
499.00 > 99.00	3.013	3.019	-0.006	1.000	9990		3.38(2.31-6.93)		102	
D 26 M2-8:2FTS										
529.00 > 81.00	3.362	3.361	0.001	1.264	982886	1.86		77.6	16457	
D 21 13C8 FOSA										
506.00 > 78.00	3.371	3.370	0.001	1.268	4215843	1.67		66.7	39317	
D 23 13C2 PFDA										
515.00 > 470.00	3.371	3.370	0.001	1.268	3098543	2.29		91.8	32394	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.520	3.520	0.0	1.324	1026807	1.86		74.2	25003	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.688	3.687	0.001	1.387	1228346	2.17		86.7	3001	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.698	3.698	0.0	1.003	9570	0.0220			233	
D 30 13C2 PFUnA										
565.00 > 520.00	3.698	3.698	0.0	1.391	2245224	1.99		79.6	58921	
D 36 13C2 PFDoA										
615.00 > 570.00	3.989	3.988	0.001	1.500	2535909	2.17		86.8	21674	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.480	4.480	0.0	1.685	2690265	2.22		88.7	18717	

QC Flag Legend

Review Flags

M - Manually Integrated

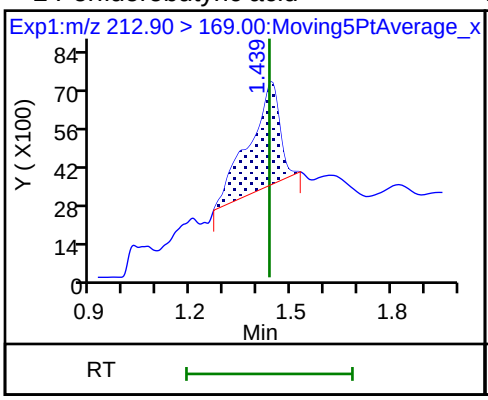
Report Date: 17-Jul-2018 08:19:11 Chrom Revision: 2.2 07-Jun-2018 07:41:54

TestAmerica Sacramento

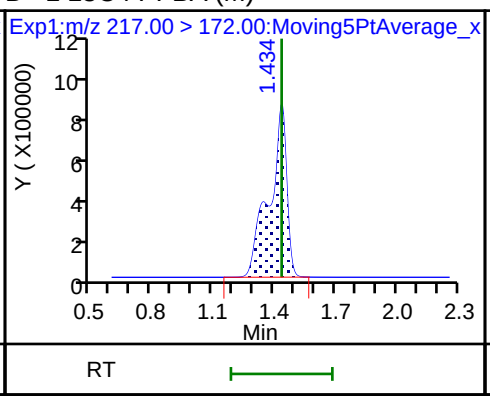
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180716-61105.b\2018.07.14LLA_023.d

Injection Date:	14-Jul-2018 13:37:51	Instrument ID:	A8_N		
Lims ID:	320-40571-A-26-A	Lab Sample ID:	320-40571-26		
Client ID:	NF28-SS-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	15	Worklist Smp#:	6
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		

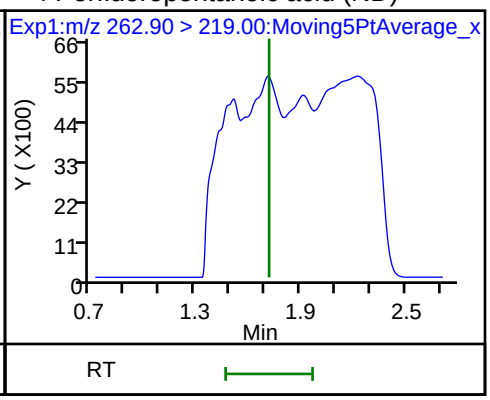
2 Perfluorobutyric acid



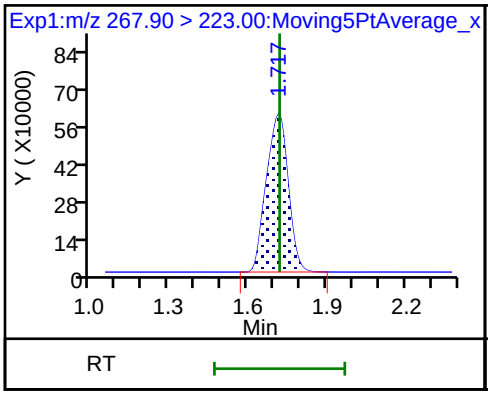
D 1 13C4 PFBA (M)



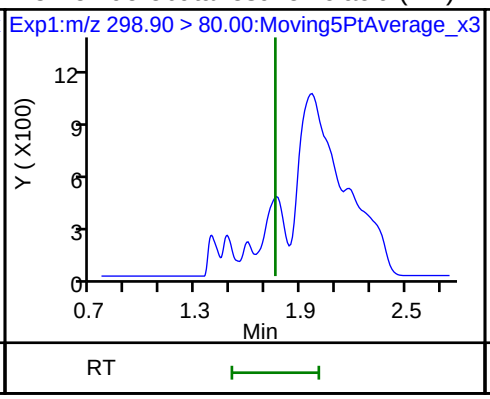
4 Perfluoropentanoic acid (ND)



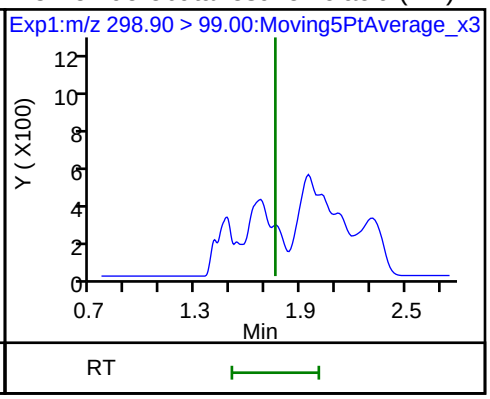
D 3 13C5-PFPeA



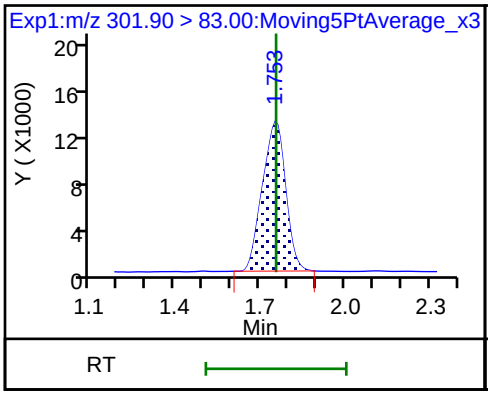
5 Perfluorobutanesulfonic acid (ND)



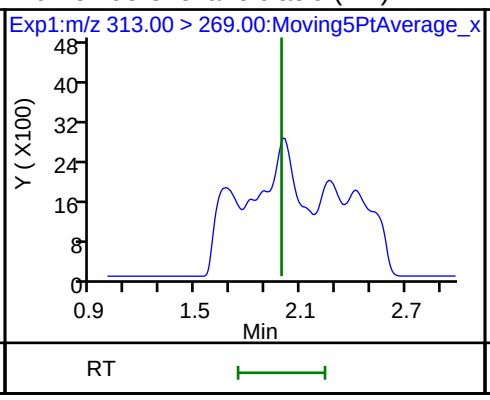
5 Perfluorobutanesulfonic acid (ND)



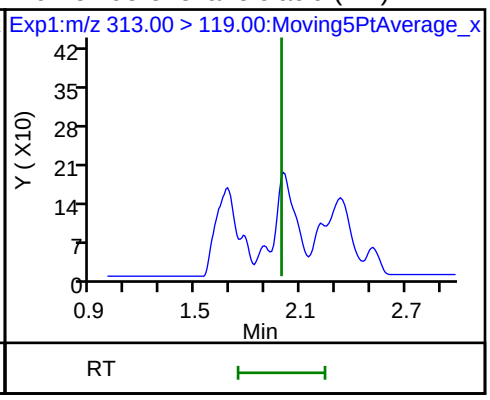
D 47 13C3-PFBS



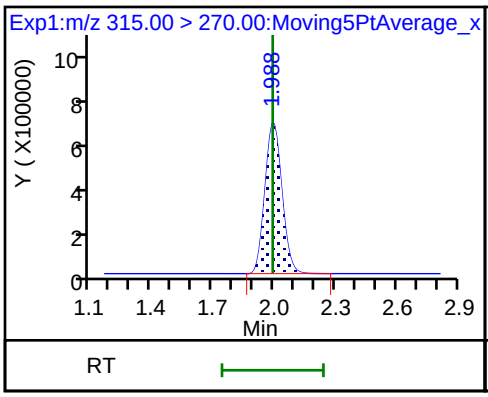
6 Perfluorohexanoic acid (ND)



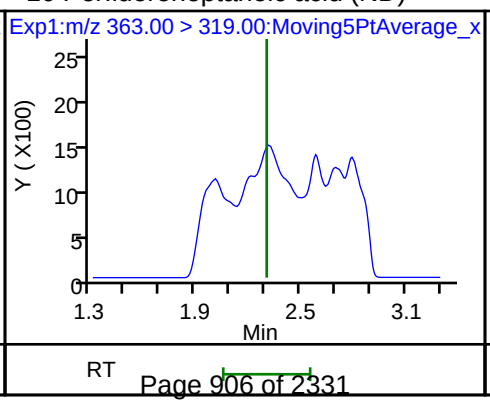
6 Perfluorohexanoic acid (ND)



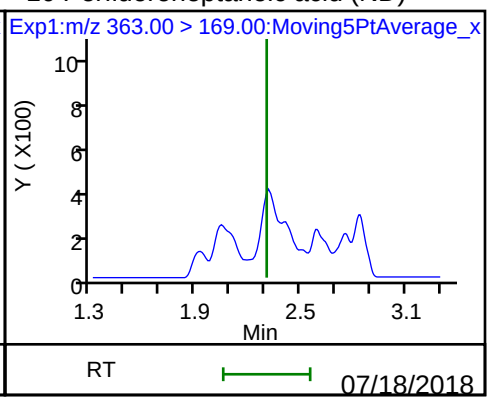
D 7 13C2 PFHxA



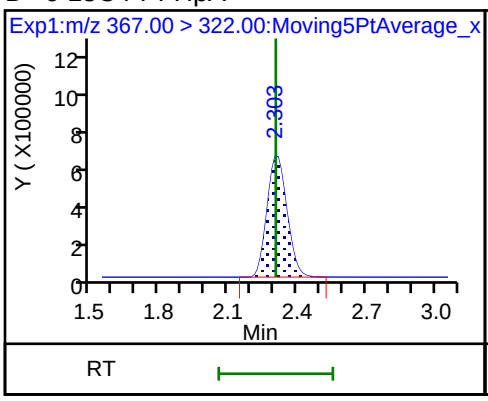
10 Perfluoroheptanoic acid (ND)



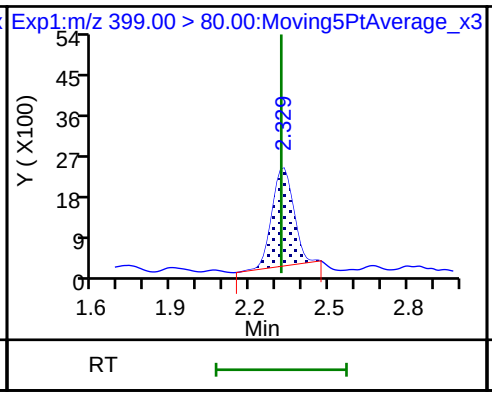
10 Perfluoroheptanoic acid (ND)



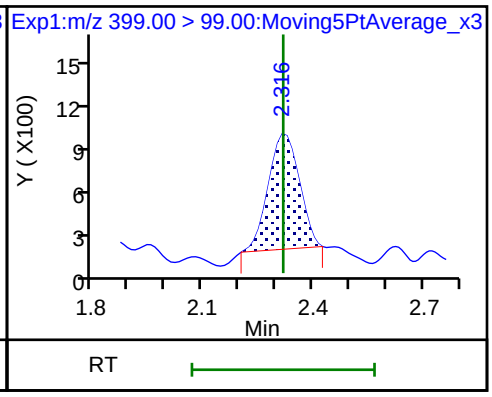
D 9 13C4-PFHpA



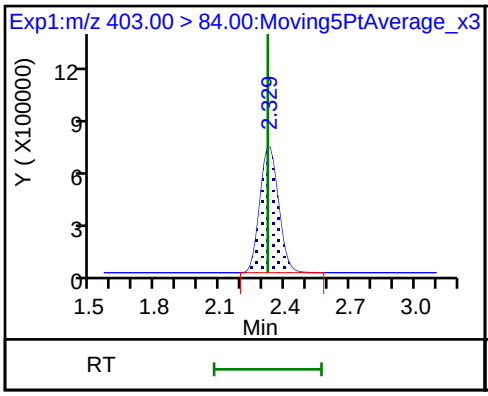
8 Perfluorohexanesulfonic acid



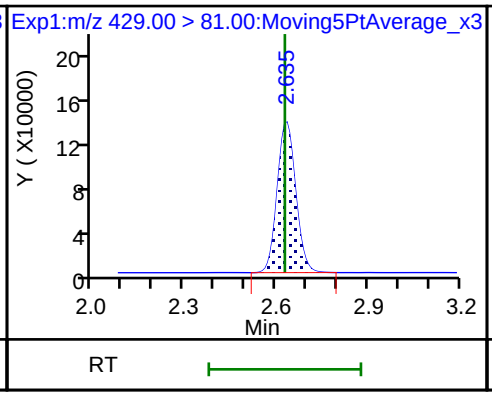
8 Perfluorohexanesulfonic acid



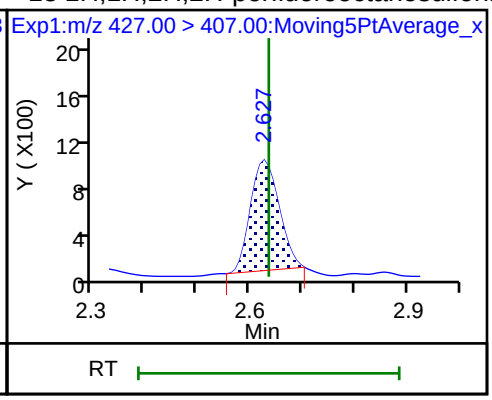
D 11 18O2 PFHxS



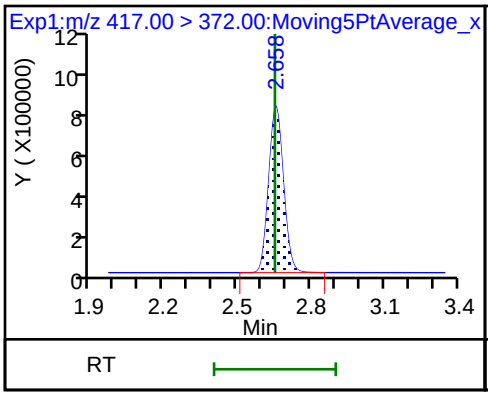
D 12 M2-6:2FTS



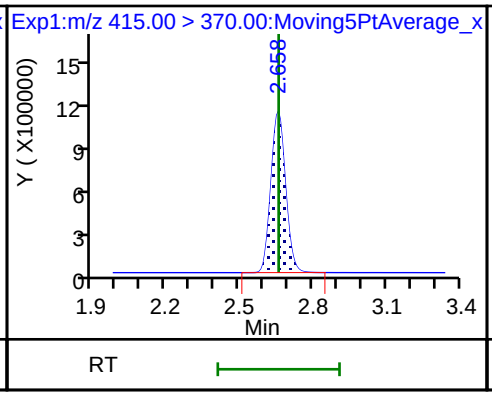
13 1H,1H,2H,2H-perfluorooctanesulfoni



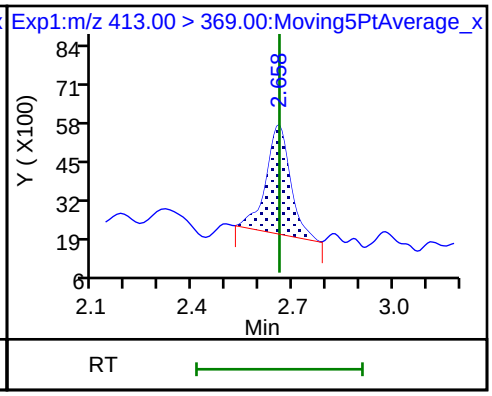
D 14 13C4 PFOA



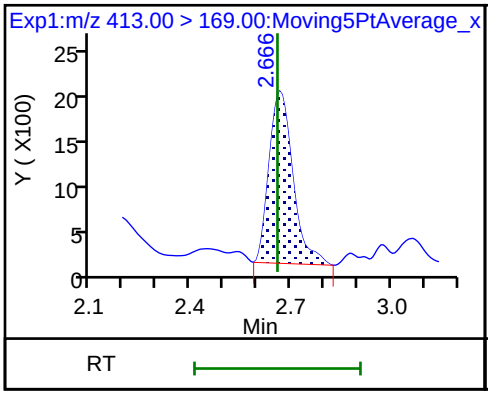
* 62 13C2-PFOA



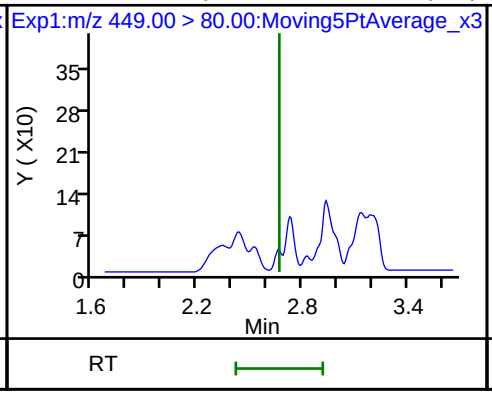
15 Perfluorooctanoic acid



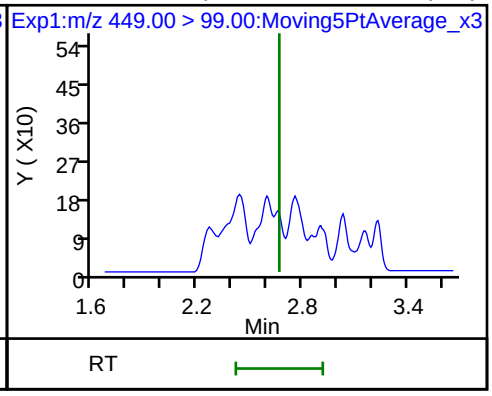
15 Perfluorooctanoic acid



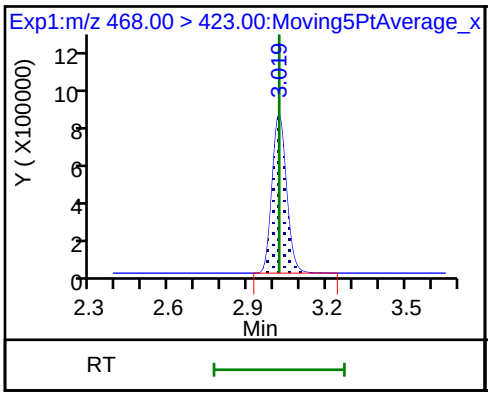
16 Perfluoroheptanesulfonic acid (ND)



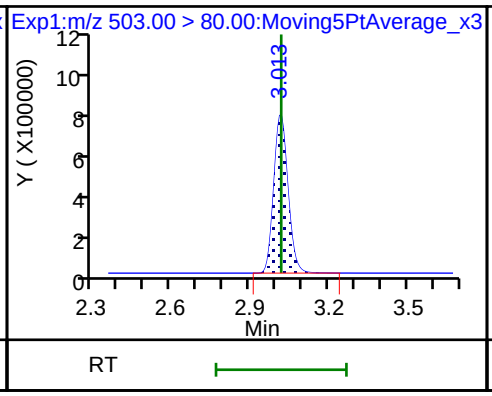
16 Perfluoroheptanesulfonic acid (ND)



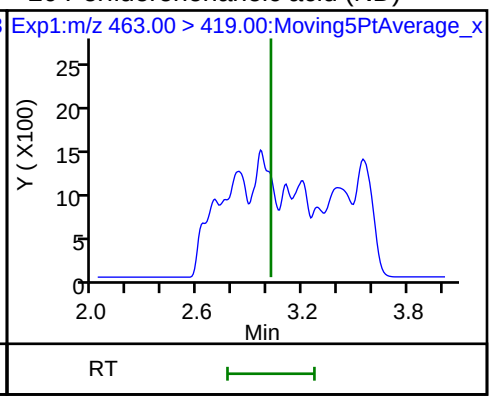
D 19 13C5 PFNA



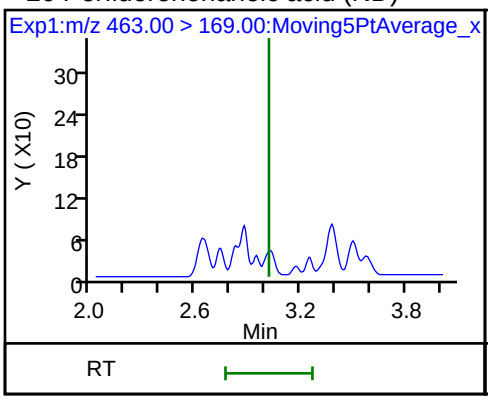
D 18 13C4 PFOS



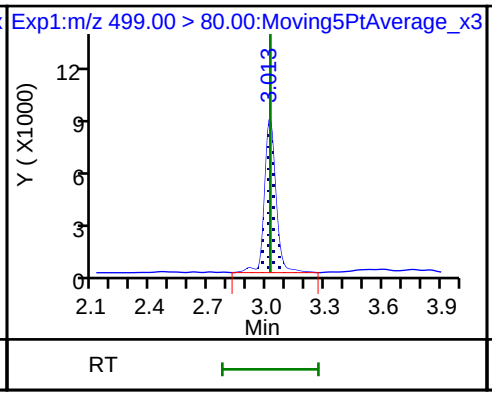
20 Perfluorononanoic acid (ND)



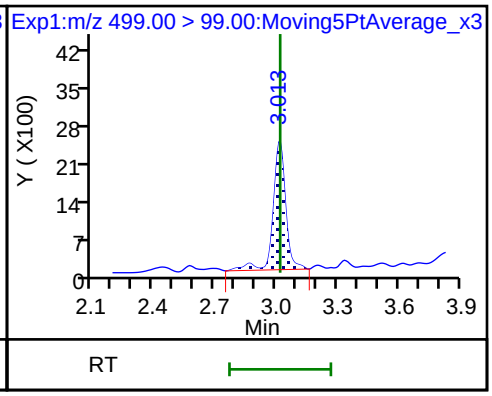
20 Perfluorononanoic acid (ND)



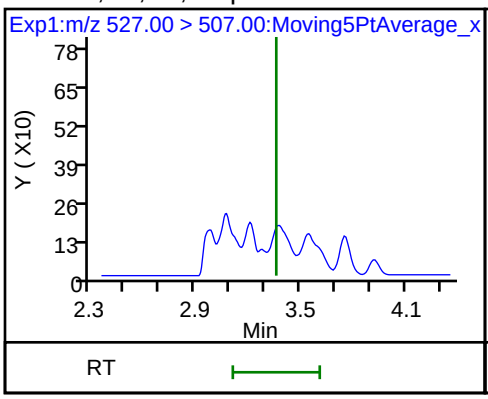
17 Perfluorooctane sulfonic acid



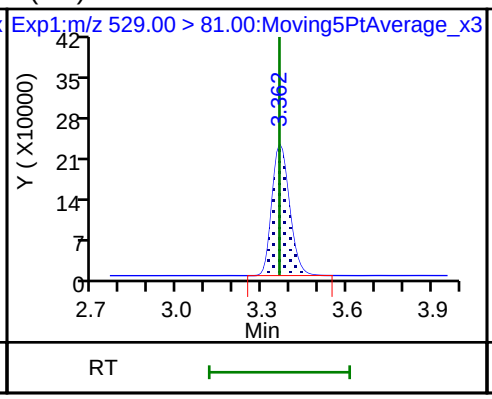
17 Perfluorooctane sulfonic acid



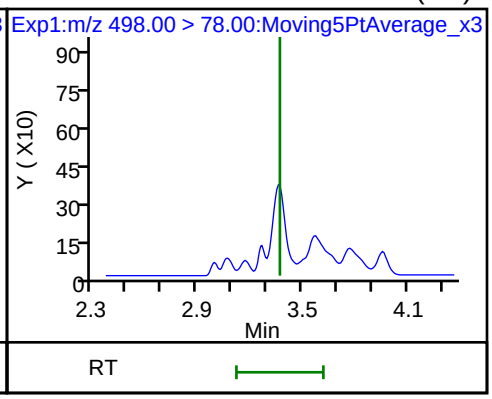
25 1H,1H,2H,2H-perfluorodecanesulfonic acid (ND)



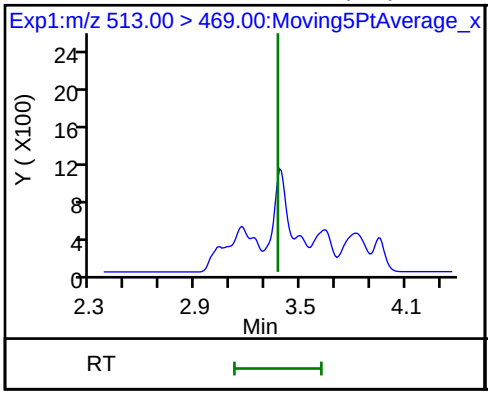
D 26 M2-8:2FTS



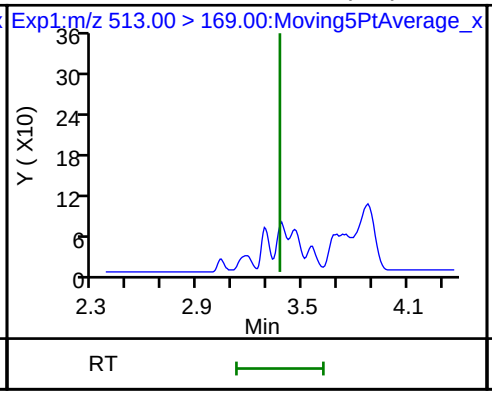
22 Perfluorooctane Sulfonamide (ND)



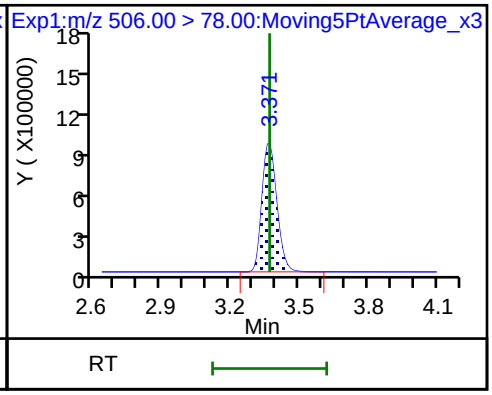
24 Perfluorodecanoic acid (ND)



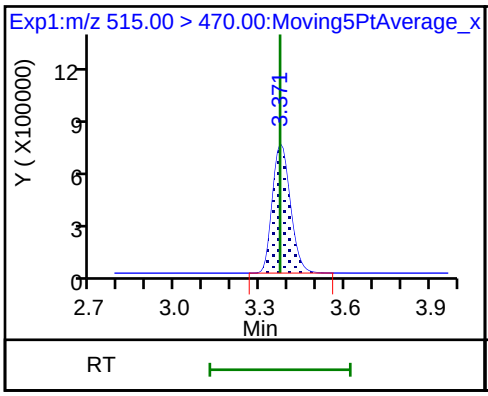
24 Perfluorodecanoic acid (ND)



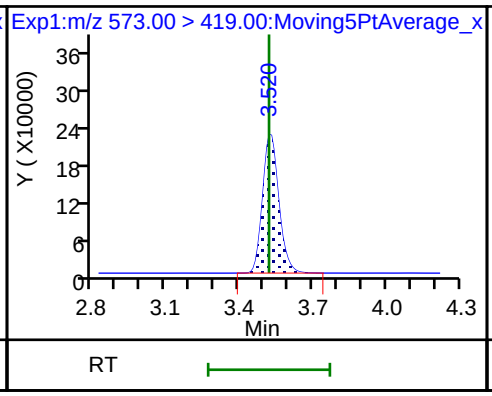
D 21 13C8 FOSA



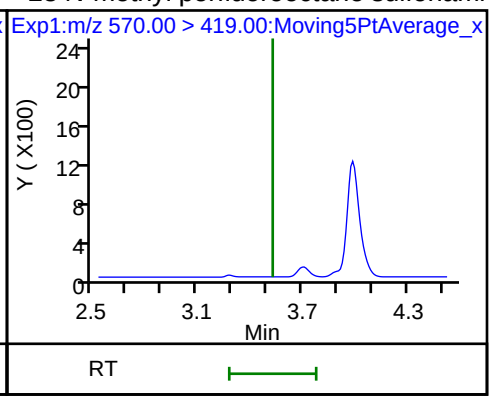
D 23 13C2 PFDA



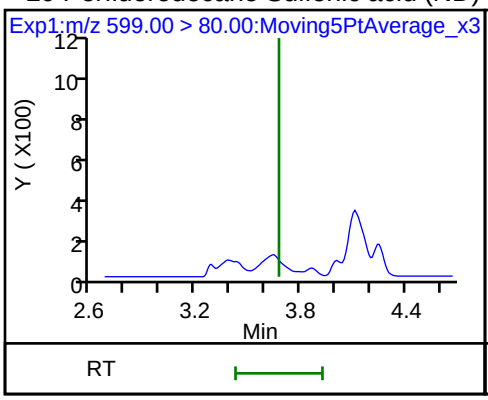
D 27 d3-NMeFOSAA



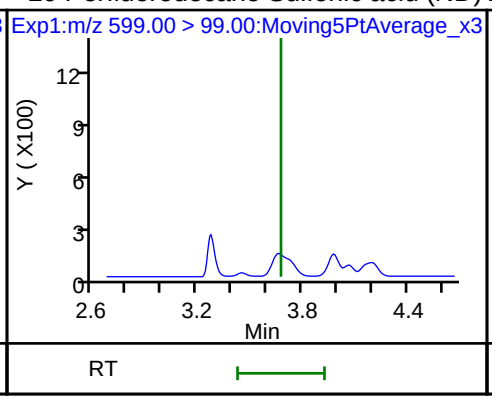
28 N-methyl perfluorooctane sulfonami (ND)



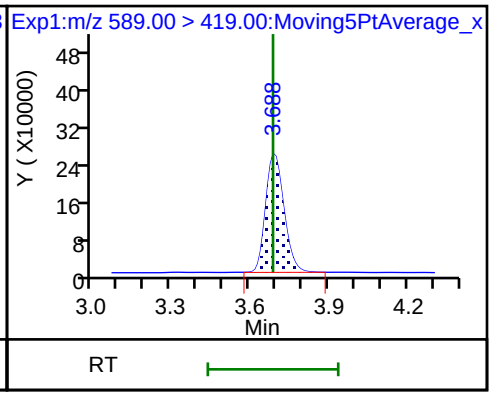
29 Perfluorodecane Sulfonic acid (ND)



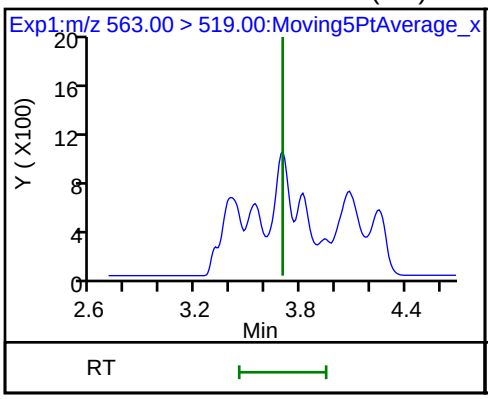
29 Perfluorodecane Sulfonic acid (ND)



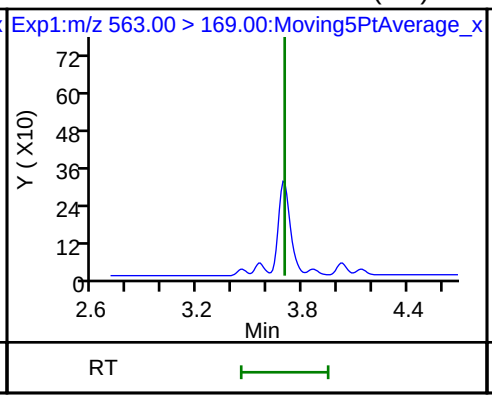
D 32 d5-NEtFOSAA



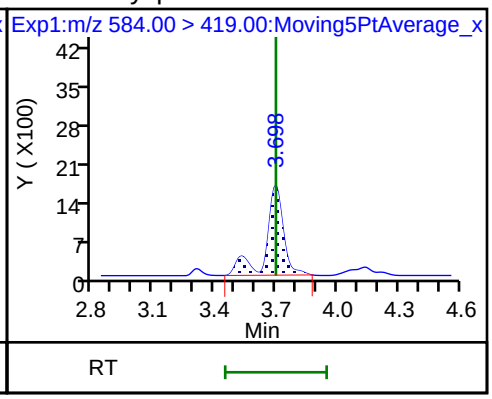
31 Perfluoroundecanoic acid (ND)



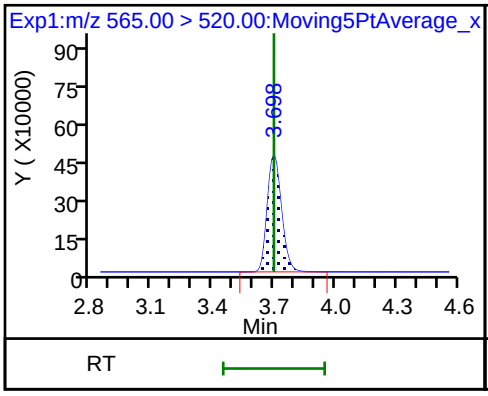
31 Perfluoroundecanoic acid (ND)



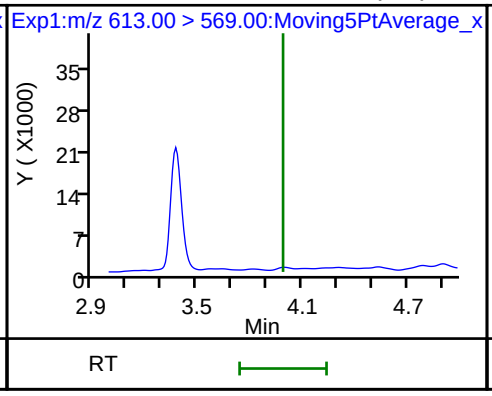
33 N-ethyl perfluorooctane sulfonamid



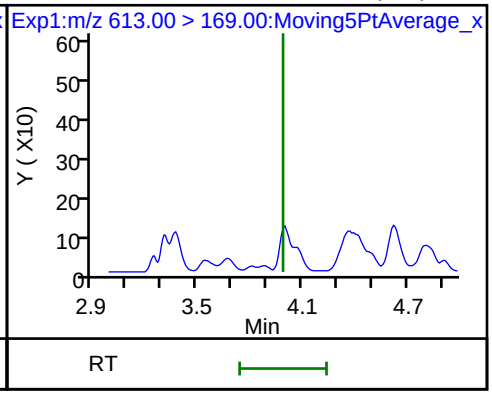
D 30 13C2 PFUnA



37 Perfluorododecanoic acid (ND)

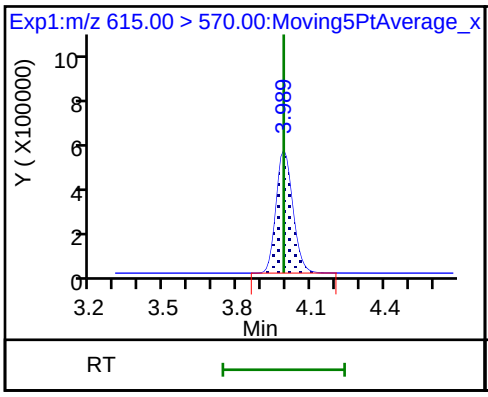


37 Perfluorododecanoic acid (ND)

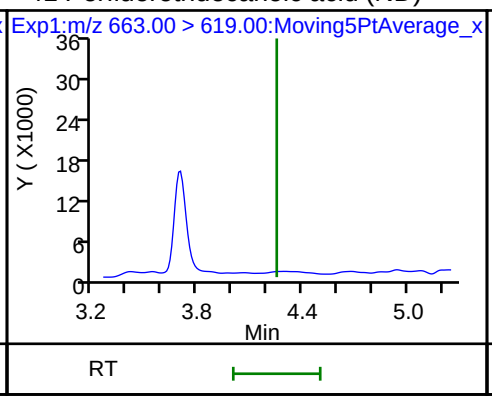


Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180716-61105.b\2018.07.14LLA_023.d

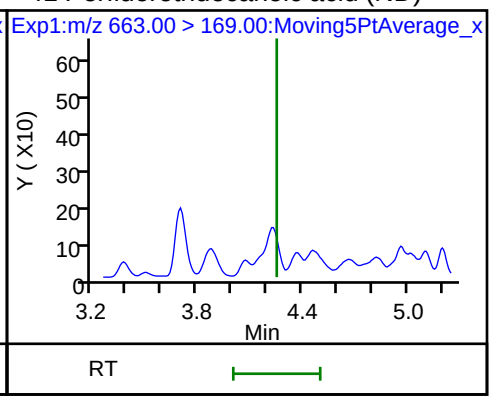
D 36 13C2 PFDoA



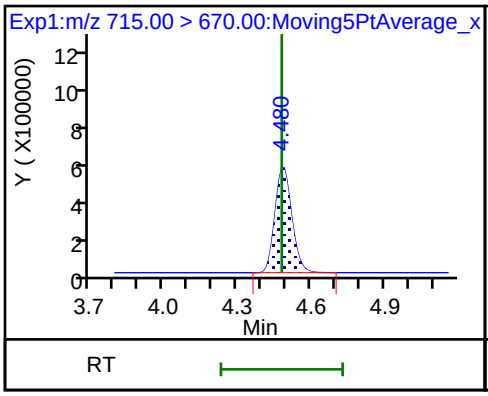
41 Perfluorotridecanoic acid (ND)



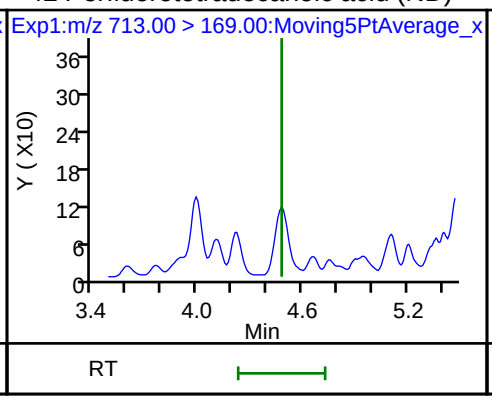
41 Perfluorotridecanoic acid (ND)



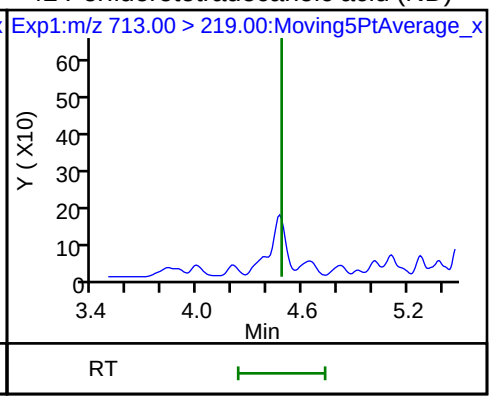
D 43 13C2-PFTeDA



42 Perfluorotetradecanoic acid (ND)



42 Perfluorotetradecanoic acid (ND)



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

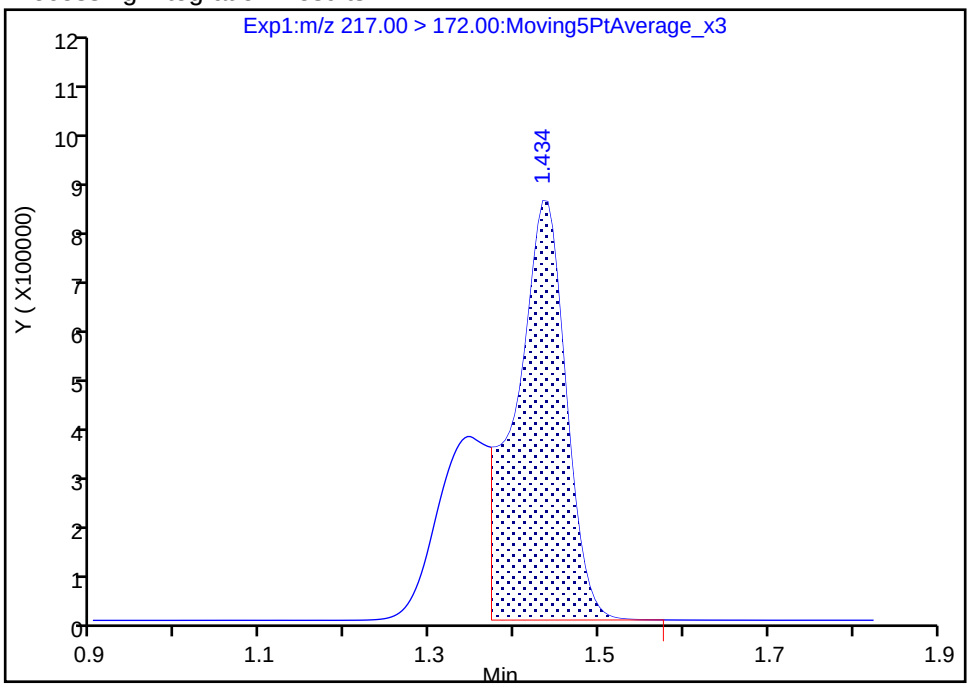
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180716-61105.b\2018.07.14LLA_023.d				
Injection Date:	14-Jul-2018 13:37:51	Instrument ID:	A8_N		
Lims ID:	320-40571-A-26-A	Lab Sample ID:	320-40571-26		
Client ID:	NF28-SS-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	15	Worklist Smp#:	6
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

D 1 13C4 PFBA, CAS: STL00992

Signal: 1

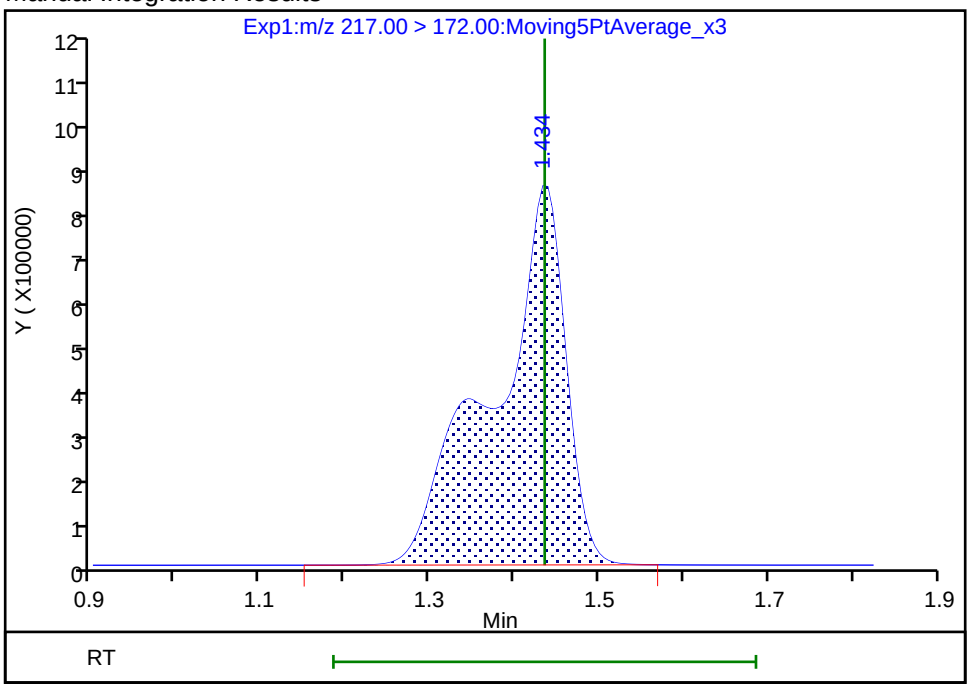
Processing Integration Results

RT: 1.43
Area: 3331944
Amount: 1.365482
Amount Units: ng/ml



Manual Integration Results

RT: 1.43
Area: 4822943
Amount: 1.976516
Amount Units: ng/ml



Reviewer: mongkols, 17-Jul-2018 08:18:43

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF29-GW-01
Lab Sample ID: 320-40571-27
Matrix: Water
Lab File ID: 2018.07.06LLC_039.d
Analysis Method: 537 (modified)
Date Collected: 06/19/2018 14:50
Extraction Method: 3535
Date Extracted: 07/02/2018 14:58
Sample wt/vol: 284.3(mL)
Date Analyzed: 07/07/2018 04:19
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 232800
Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	0.0034	B	0.0018	0.00031
2706-90-3	Perfluoropentanoic acid (PFPeA)	0.0022		0.0018	0.00043
307-24-4	Perfluorohexanoic acid (PFHxA)	ND		0.0018	0.00051
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.00046	J	0.0018	0.00022
335-67-1	Perfluorooctanoic acid (PFOA)	0.0011	J	0.0018	0.00075
375-95-1	Perfluorononanoic acid (PFNA)	0.00050	J	0.0018	0.00024
335-76-2	Perfluorodecanoic acid (PFDA)	ND		0.0018	0.00027
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		0.0018	0.00097
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		0.0018	0.00048
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		0.0018	0.0011
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		0.0018	0.00026
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.00058	J	0.0018	0.00018
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	ND		0.0018	0.00026
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.00053	J B	0.0018	0.00015
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.0018	0.00017
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.0025		0.0018	0.00047
8789-57-2	Perfluorononanesulfonic acid (PFNS)	ND		0.0018	0.00014
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		0.0018	0.00028
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		0.0018	0.00031
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.018	0.0027
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.018	0.0017
757124-72-4	4:2 FTS	ND		0.018	0.0046
27619-97-2	6:2 FTS	0.0032	J	0.018	0.0018
39108-34-4	8:2 FTS	ND		0.018	0.0018

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF29-GW-01
Lab Sample ID: 320-40571-27
Matrix: Water
Lab File ID: 2018.07.06LLC_039.d
Analysis Method: 537 (modified)
Date Collected: 06/19/2018 14:50
Extraction Method: 3535
Date Extracted: 07/02/2018 14:58
Sample wt/vol: 284.3(mL)
Date Analyzed: 07/07/2018 04:19
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 232800
Units: ug/L

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00992	13C4 PFBA	91		25-150
STL01893	13C5 PFPeA	93		25-150
STL00993	13C2 PFHxA	100		25-150
STL01892	13C4-PFHpA	103		25-150
STL00990	13C4 PFOA	103		25-150
STL00995	13C5 PFNA	103		25-150
STL00996	13C2 PFDA	110		25-150
STL00997	13C2 PFUnA	107		25-150
STL00998	13C2 PFDoA	105		25-150
STL02116	13C2-PFTeDA	83		25-150
STL02337	13C3-PFBS	94		25-150
STL00994	18O2 PFHxS	107		25-150
STL00991	13C4 PFOS	99		25-150
STL01056	13C8 FOSA	89		25-150
STL02118	d3-NMeFOSAA	111		25-150
STL02117	d5-NEtFOSAA	111		25-150
STL02279	M2-6:2FTS	126		25-150
STL02280	M2-8:2FTS	125		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\2018.07.06LLC_039.d
Lims ID: 320-40571-A-27-A
Client ID: NF29-GW-01
Sample Type: Client
Inject. Date: 07-Jul-2018 04:19:58 ALS Bottle#: 25 Worklist Smp#: 27
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-40571-a-27-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 09-Jul-2018 14:39:34 Calib Date: 05-Jul-2018 09:38:17
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180705-60684.b\2018.07.05LLICALAA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK010

First Level Reviewer: mongkols Date: 09-Jul-2018 14:39:34

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.428	1.428	0.0	0.537	6378018	2.28		91.1	24346	
2 Perfluorobutyric acid										M
212.90 > 169.00	1.428	1.428	0.0	1.000	250013	0.0959			87.7	M
4 Perfluoropentanoic acid										
262.90 > 219.00	1.708	1.698	0.010	1.000	144023	0.0625			100	
D 3 13C5-PFPeA										
267.90 > 223.00	1.708	1.707	0.001	0.642	4834838	2.33		93.3	49744	
D 47 13C3-PFBS										
301.90 > 83.00	1.744	1.743	0.001	0.656	108361	2.19		94.0	637	
5 Perfluorobutanesulfonic acid										M
298.90 > 80.00	1.744	1.743	0.001	1.000	58350	0.0165			39.7	M
298.90 > 99.00	1.753	1.743	0.010	1.005	24723		2.36(1.25-3.74)		82.5	
D 7 13C2 PFHxA										
315.00 > 270.00	1.988	1.988	0.0	0.748	5526364	2.49		99.7	72107	
D 9 13C4-PFHpA										
367.00 > 322.00	2.303	2.302	0.001	0.866	5068371	2.57		103	55182	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.316	2.303	0.013	1.006	29919	0.0131			24.9	
363.00 > 169.00	2.316	2.303	0.013	1.006	13220		2.26(1.13-3.40)		84.3	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.316	2.303	0.013	1.000	44879	0.0150			43.8	
399.00 > 99.00	2.316	2.303	0.013	1.000	10938		4.10(1.50-4.49)		32.6	
D 11 18O2 PFHxS										
403.00 > 84.00	2.316	2.315	0.001	0.871	6134587	2.53		107	67214	
D 12 M2-6:2FTS										
429.00 > 81.00	2.626	2.626	0.0	0.988	1319502	2.98		126	8746	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.635	2.627	0.009	1.003	78742	0.0905			387	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 14 13C4 PFOA										
417.00 > 372.00	2.658	2.650	0.008	1.000	4980013	2.58		103	48652	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.658	2.651	0.007	1.000	74871	0.0317			27.6	
413.00 > 169.00	2.658	2.651	0.007	1.000	37778		1.98(0.84-2.52)		142	
* 62 13C2-PFOA										
415.00 > 370.00	2.658	2.651	0.007		5056393	2.50			51739	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.019	3.008	0.011	1.000	144158	0.0718			234	
499.00 > 99.00	3.019	3.008	0.011	1.000	26073		5.53(2.31-6.93)		219	
20 Perfluorononanoic acid										
463.00 > 419.00	3.019	3.015	0.004	1.000	25602	0.0141			23.6	
463.00 > 169.00	3.019	3.015	0.004	1.000	5851		4.38(1.90-5.69)		225	
D 18 13C4 PFOS										
503.00 > 80.00	3.019	3.015	0.004	1.136	4110532	2.38		99.4	19004	
D 19 13C5 PFNA										
468.00 > 423.00	3.019	3.015	0.004	1.136	4211824	2.57		103	47736	
D 26 M2-8:2FTS										
529.00 > 81.00	3.361	3.367	-0.006	1.264	1468126	2.99		125	11205	
D 21 13C8 FOSA										
506.00 > 78.00	3.361	3.367	-0.006	1.264	5336614	2.22		88.9	36069	
D 23 13C2 PFDA										
515.00 > 470.00	3.371	3.376	-0.005	1.268	3883364	2.75		110	55828	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.529	3.525	0.004	1.328	2308122	2.77		111	32125	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.698	3.694	0.004	1.003	7486	0.009124			190	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.688	3.694	-0.006	1.387	2274841	2.76		111	21292	
D 30 13C2 PFUnA										
565.00 > 520.00	3.698	3.705	-0.007	1.391	3191371	2.69		107	35516	
D 36 13C2 PFDoA										
615.00 > 570.00	3.988	3.995	-0.007	1.500	3328906	2.62		105	24409	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.490	4.489	0.001	1.689	3203305	2.06		82.6	19983	

QC Flag Legend

Review Flags

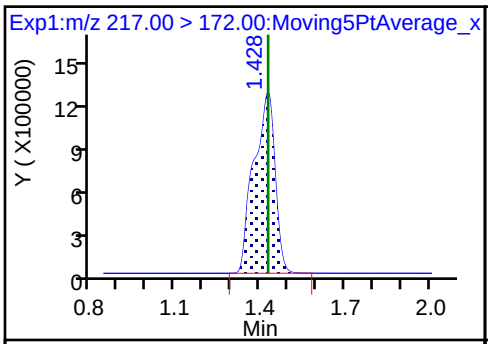
M - Manually Integrated

Report Date: 09-Jul-2018 14:39:34 Chrom Revision: 2.2 07-Jun-2018 07:41:54

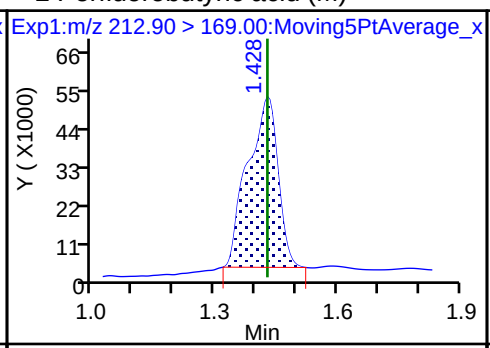
TestAmerica Sacramento

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\2018.07.06LLC_039.d				
Injection Date:	07-Jul-2018 04:19:58	Instrument ID:	A8_N		
Lims ID:	320-40571-A-27-A	Lab Sample ID:	320-40571-27		
Client ID:	NF29-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	25	Worklist Smp#:	27
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		

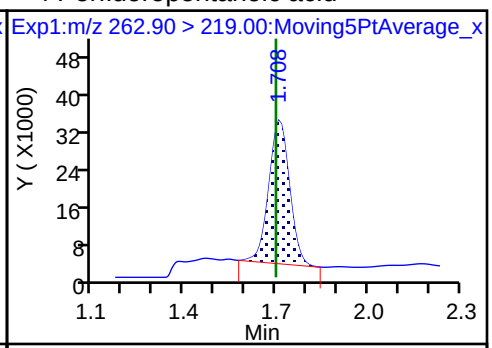
D 1 13C4 PFBA



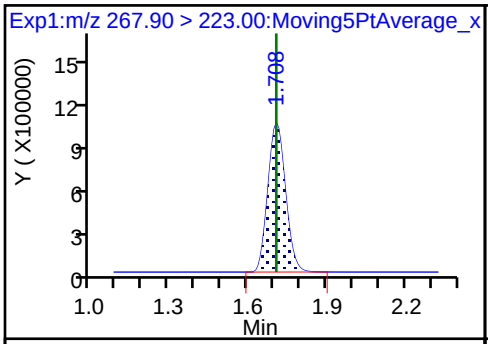
2 Perfluorobutyric acid (M)



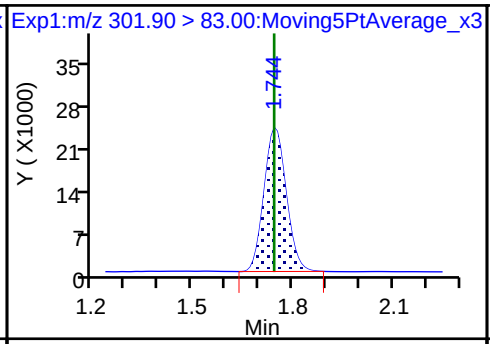
4 Perfluoropentanoic acid



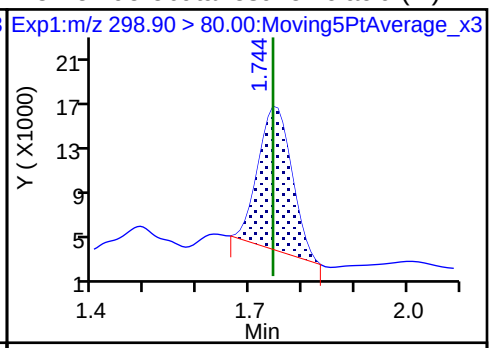
D 3 13C5-PFPeA



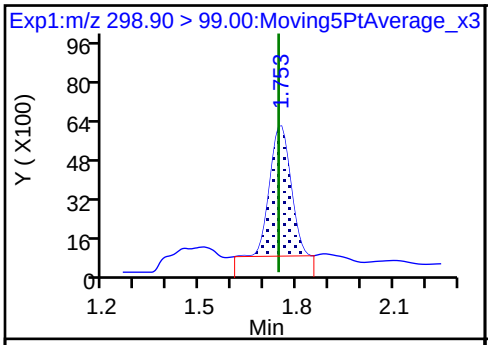
D 47 13C3-PFBS



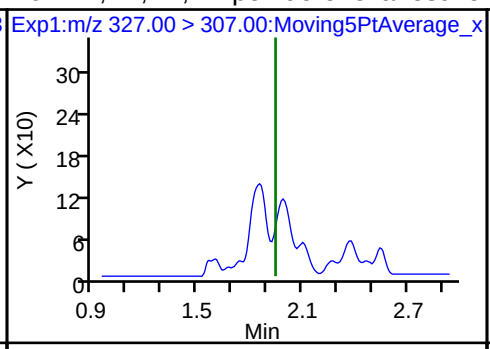
5 Perfluorobutanesulfonic acid (M)



5 Perfluorobutanesulfonic acid



61 1H,1H,2H,2H-perfluorohexanesulfoni (ND)



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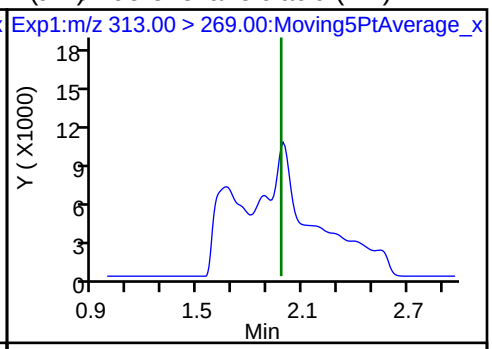

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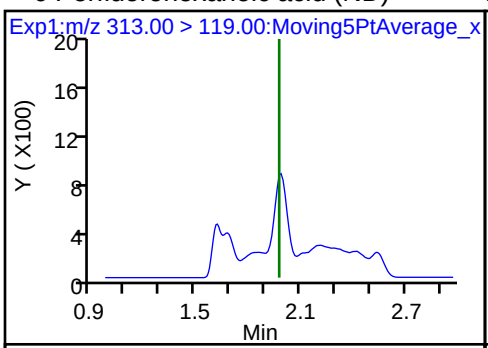
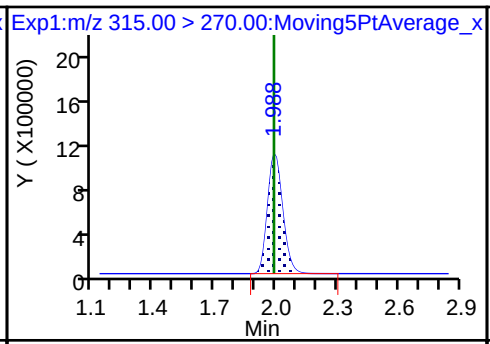
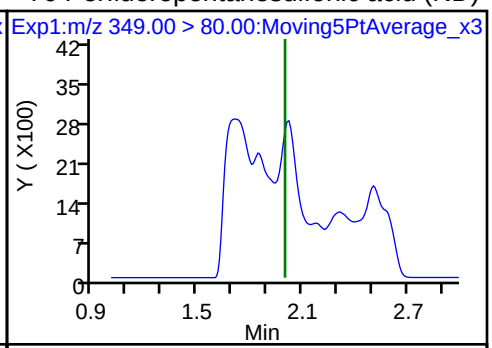


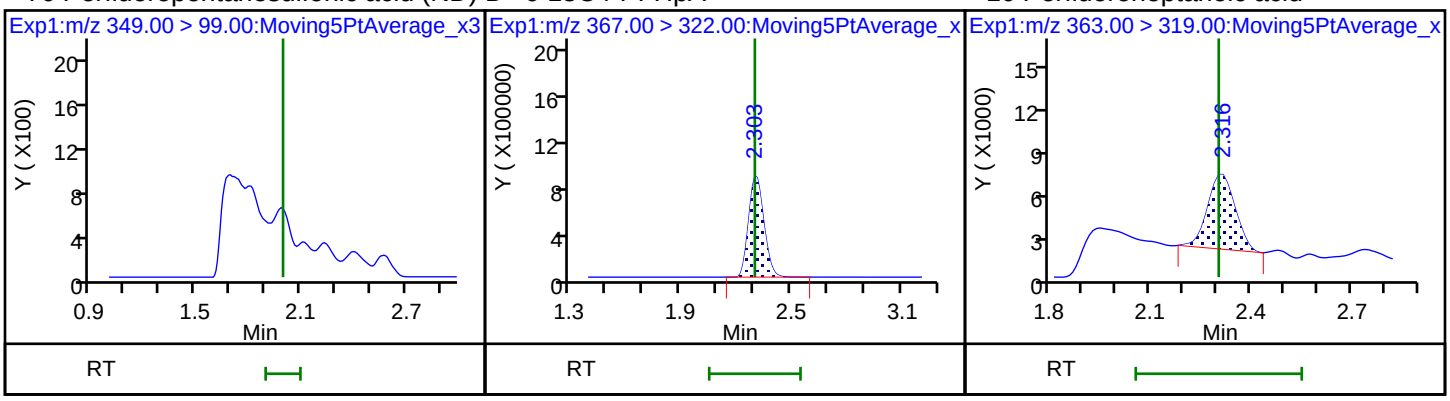
D 7 13C2 PFHxA



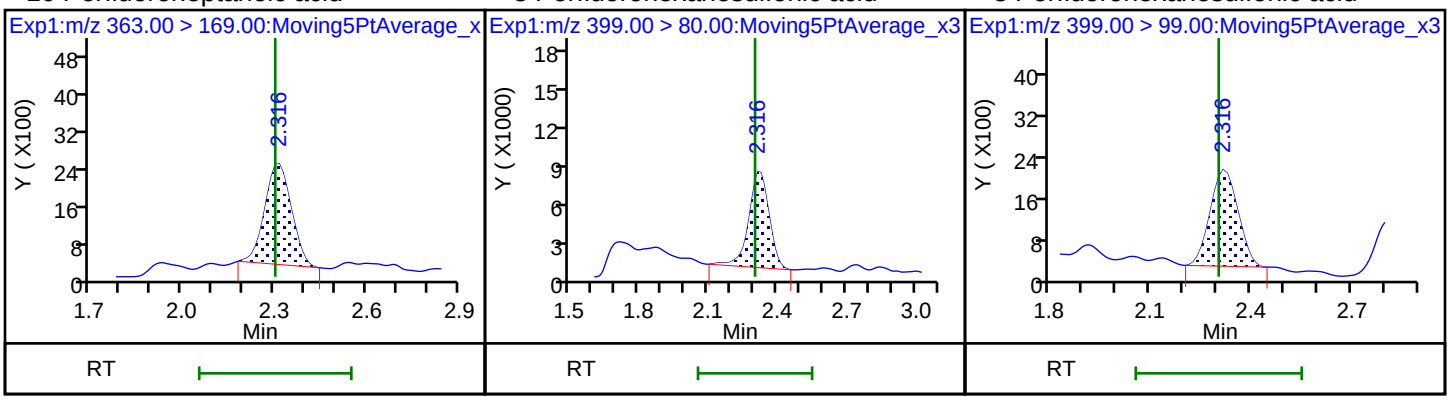
70 Perfluoropentanesulfonic acid (ND)



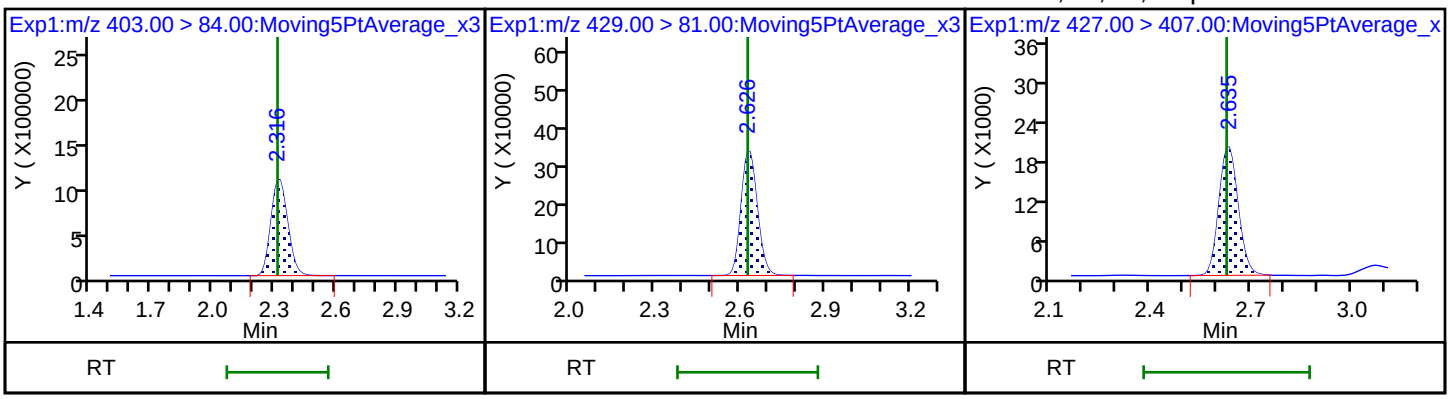
70 Perfluoropentanesulfonic acid (ND) D 9 13C4-PFHpA 10 Perfluoroheptanoic acid



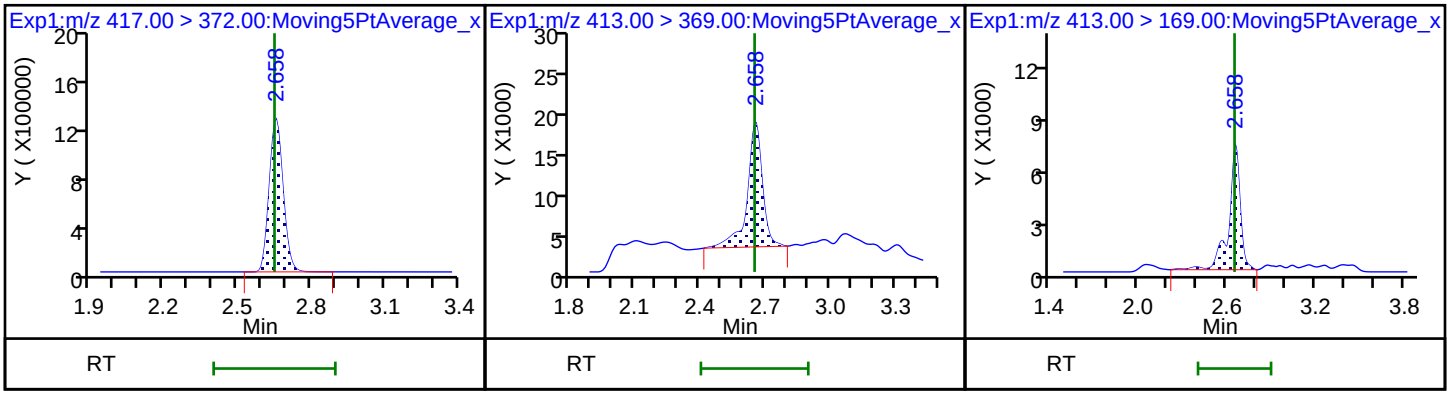
10 Perfluoroheptanoic acid 8 Perfluorohexanesulfonic acid 8 Perfluorohexanesulfonic acid



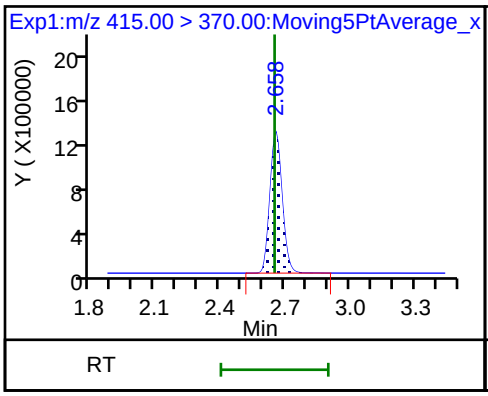
D 11 18O2 PFHxS D 12 M2-6:2FTS 13 1H,1H,2H,2H-perfluorooctanesulfoni



D 14 13C4 PFOA 15 Perfluorooctanoic acid 15 Perfluorooctanoic acid



* 62 13C2-PFOA



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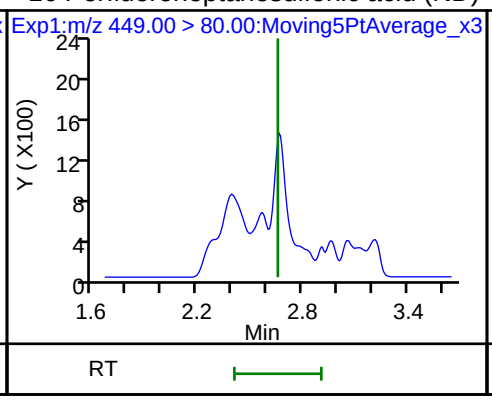

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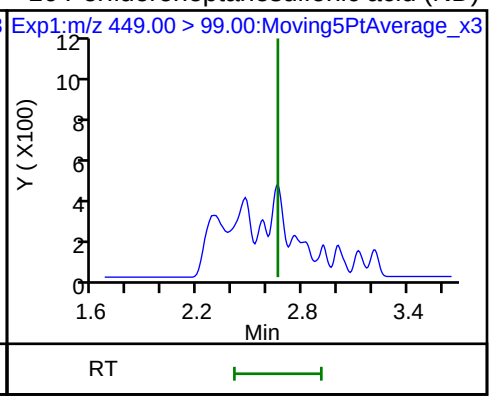
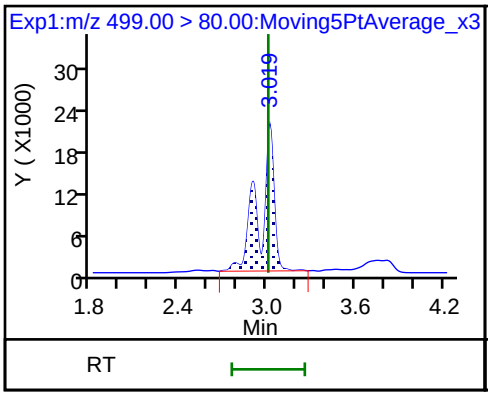
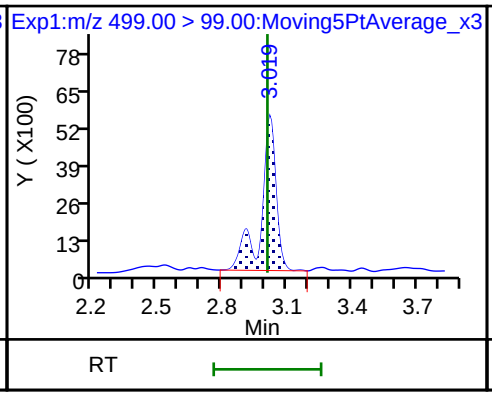


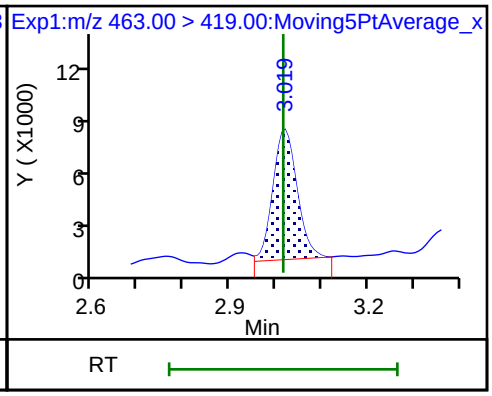
17 Perfluorooctane sulfonic acid



17 Perfluorooctane sulfonic acid



20 Perfluorononanoic acid



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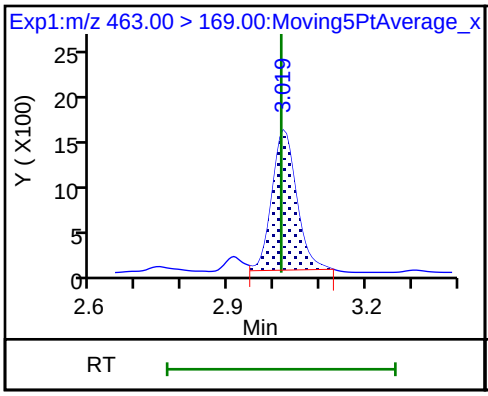
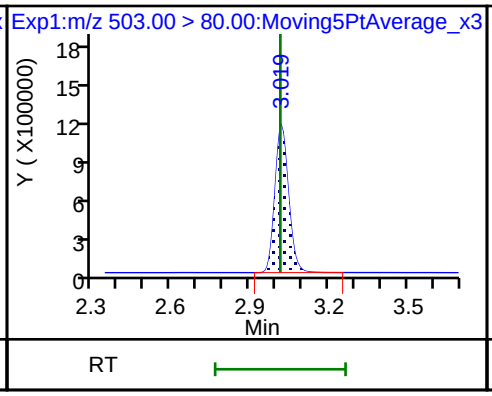
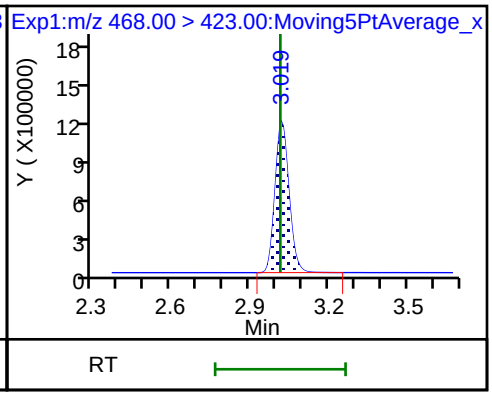


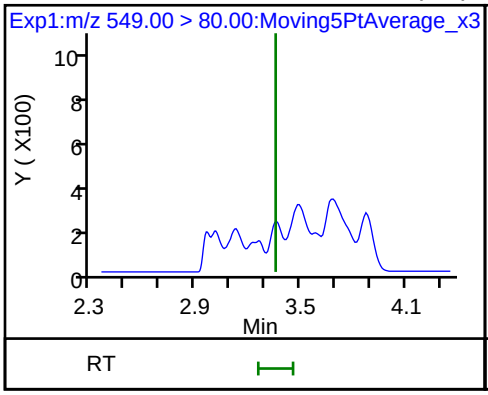
D 18 13C4 PFOS



D 19 13C5 PFNA



68 Perfluorononanesulfonic acid (ND)



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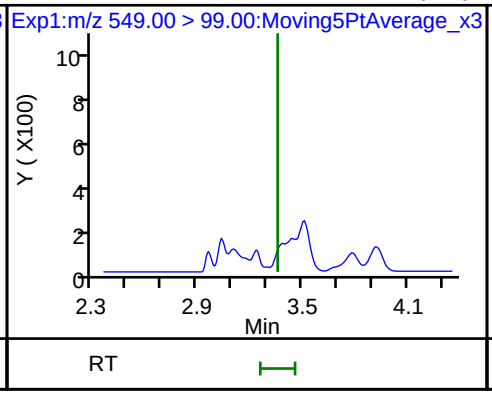
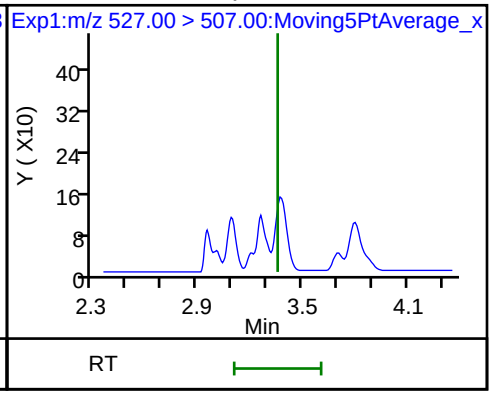
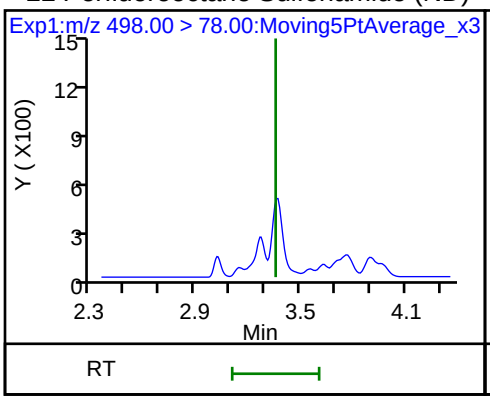


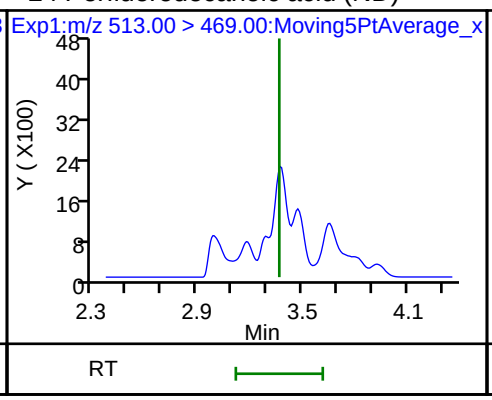
25 1H,1H,2H,2H-perfluorodecanesulfoni (ND)



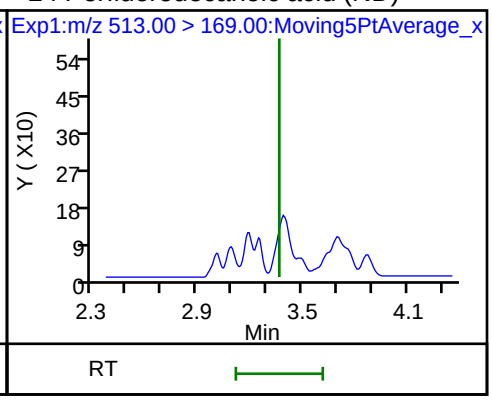
22 Perfluorooctane Sulfonamide (ND)



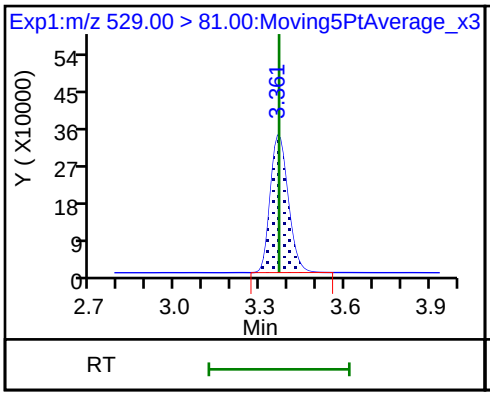
24 Perfluorodecanoic acid (ND)



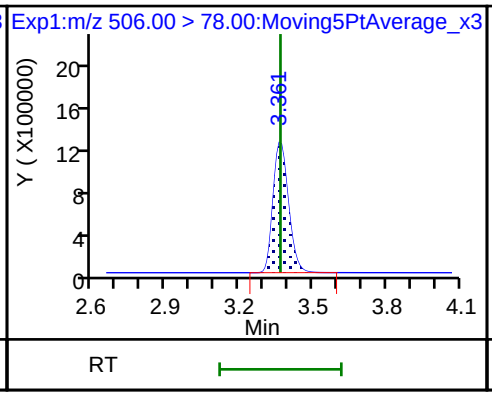
24 Perfluorodecanoic acid (ND)



D 26 M2-8:2FTS



D 21 13C8 FOSA



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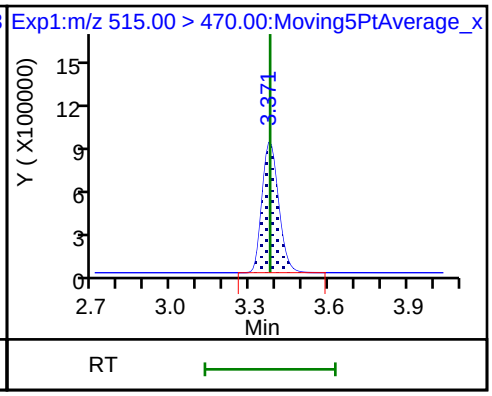
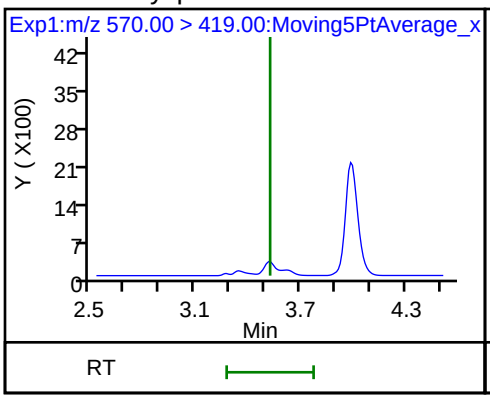
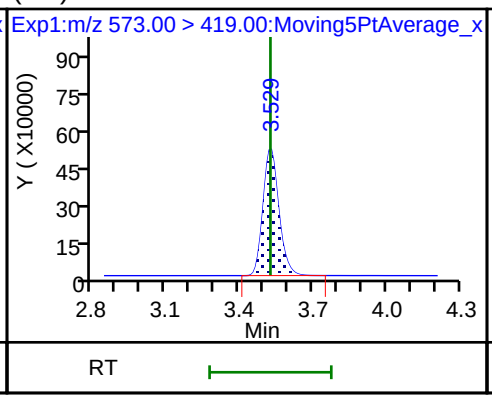


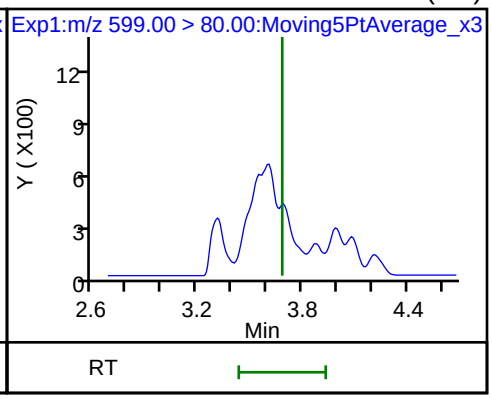
28 N-methyl perfluorooctane sulfonamid (ND)



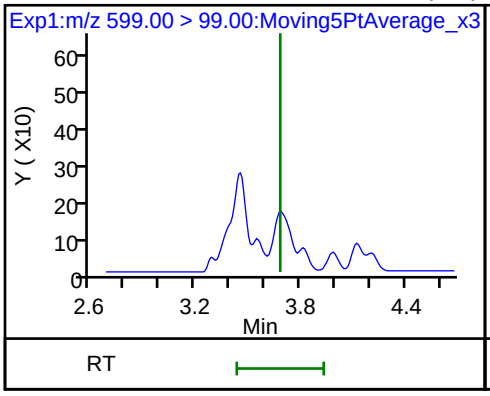
D 27 d3-NMeFOSAA



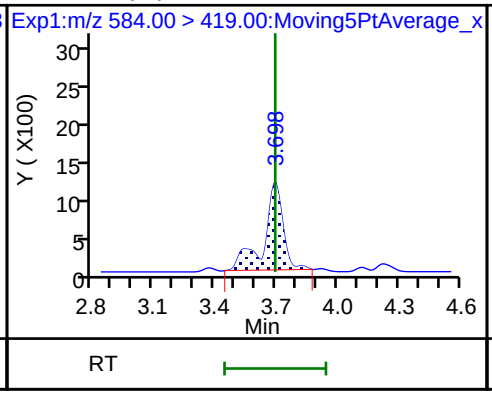
29 Perfluorodecane Sulfonic acid (ND)



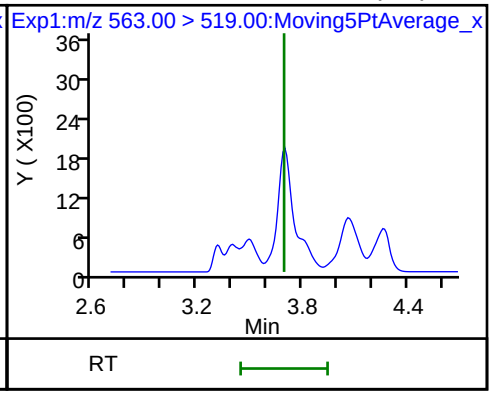
29 Perfluorodecane Sulfonic acid (ND)



33 N-ethyl perfluorooctane sulfonamid



31 Perfluoroundecanoic acid (ND)



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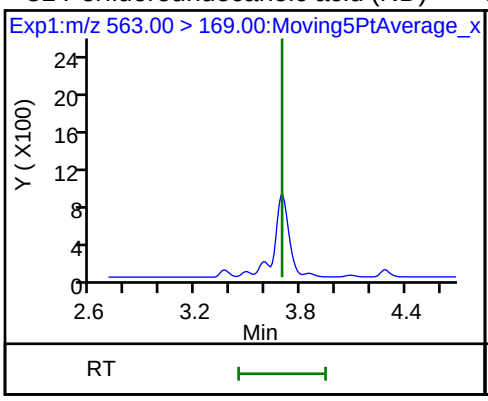
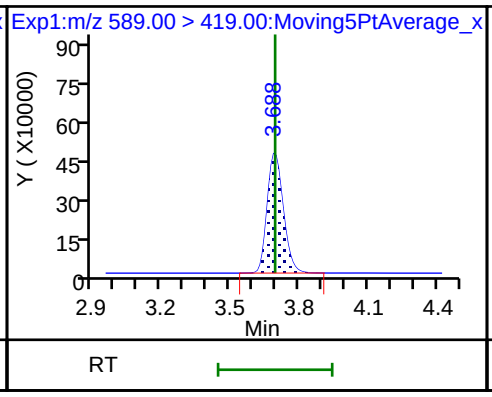
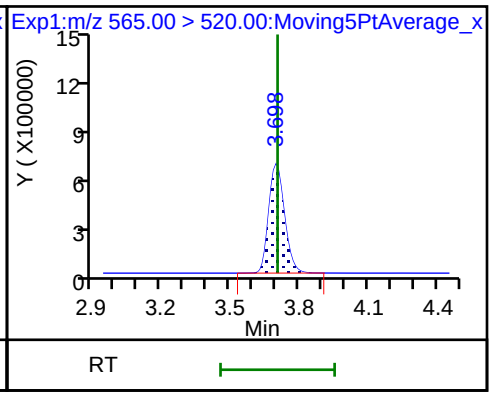


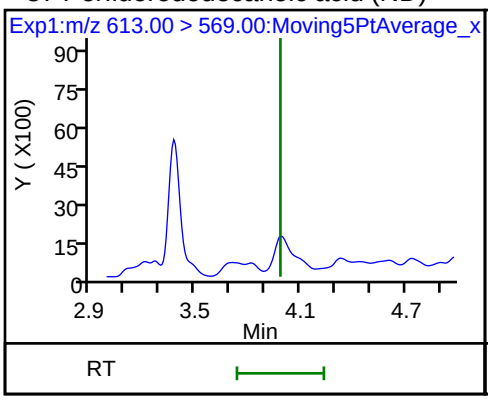
D 32 d5-NEtFOSAA



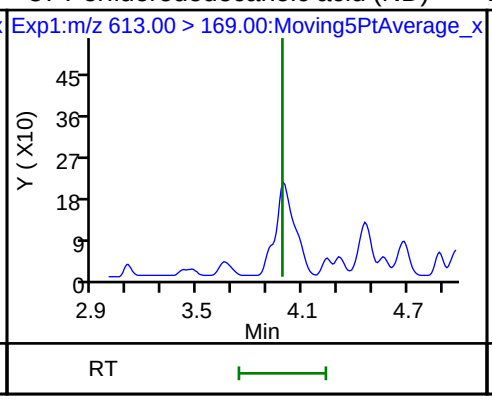
D 30 13C2 PFUnA



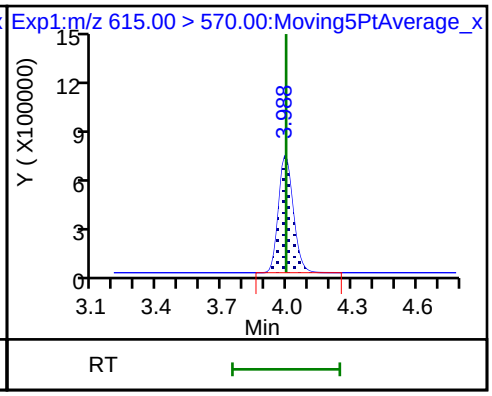
37 Perfluorododecanoic acid (ND)



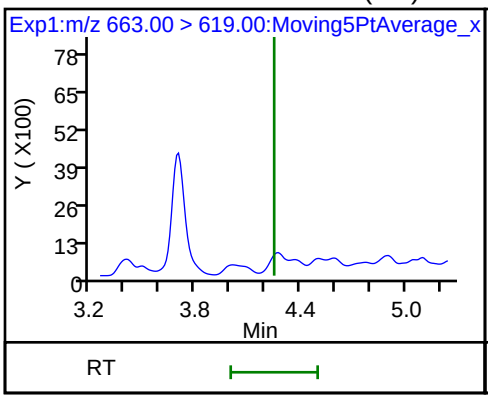
37 Perfluorododecanoic acid (ND)



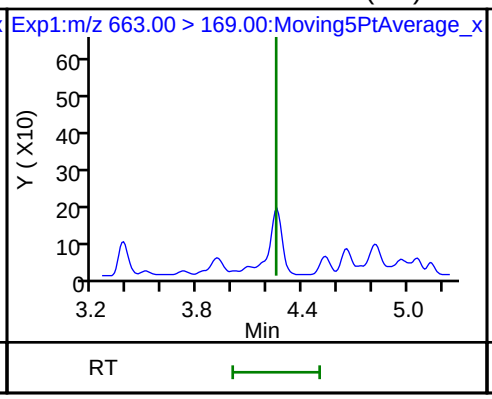
D 36 13C2 PFDoA



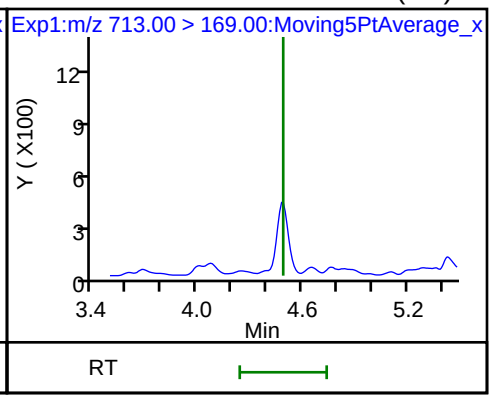
41 Perfluorotridecanoic acid (ND)



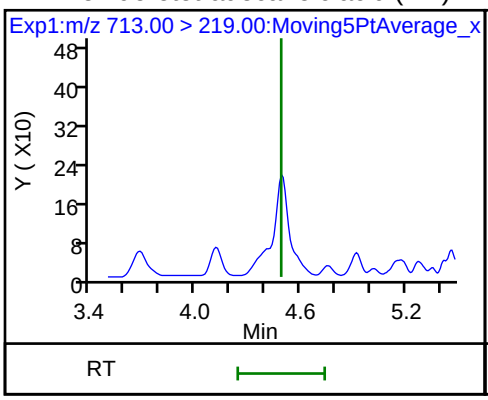
41 Perfluorotridecanoic acid (ND)



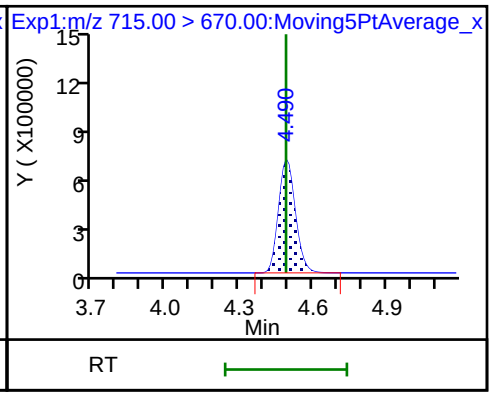
42 Perfluorotetradecanoic acid (ND)



42 Perfluorotetradecanoic acid (ND)



D 43 13C2-PFTeDA



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

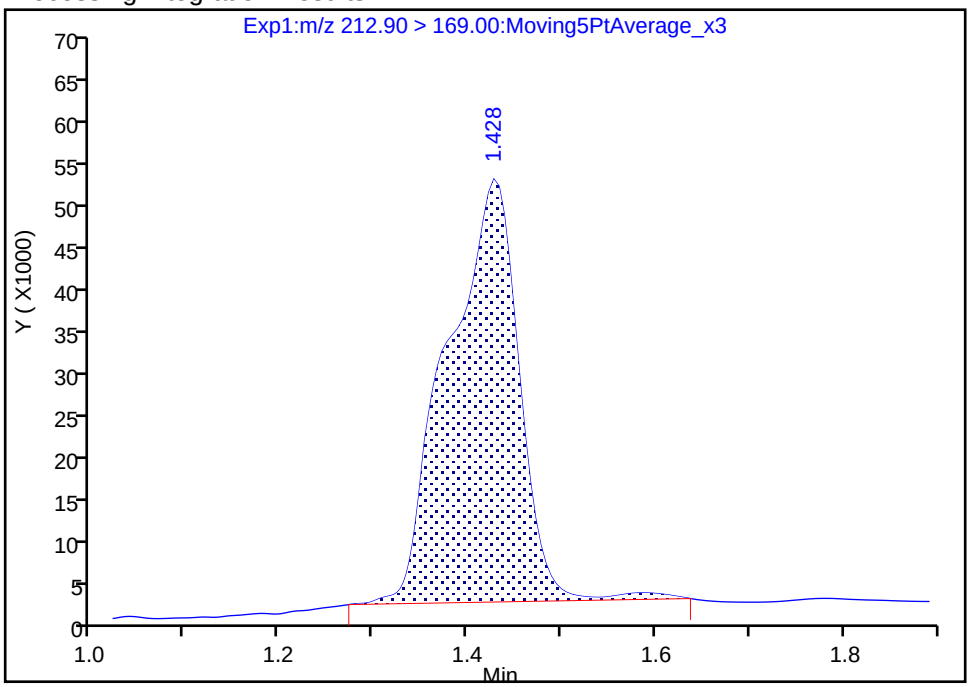
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\2018.07.06LLC_039.d				
Injection Date:	07-Jul-2018 04:19:58	Instrument ID:	A8_N		
Lims ID:	320-40571-A-27-A	Lab Sample ID:	320-40571-27		
Client ID:	NF29-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	25	Worklist Smp#:	27
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

2 Perfluorobutyric acid, CAS: 375-22-4

Signal: 1

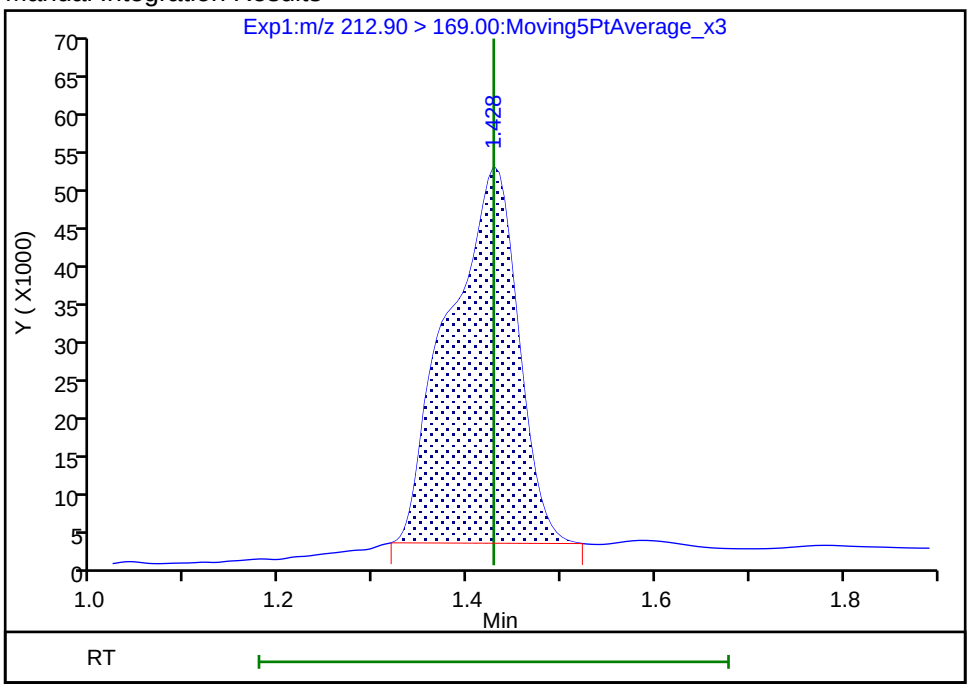
Processing Integration Results

RT: 1.43
Area: 263208
Amount: 0.101005
Amount Units: ng/ml



Manual Integration Results

RT: 1.43
Area: 250013
Amount: 0.095942
Amount Units: ng/ml



Reviewer: mongkols, 09-Jul-2018 14:38:39

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

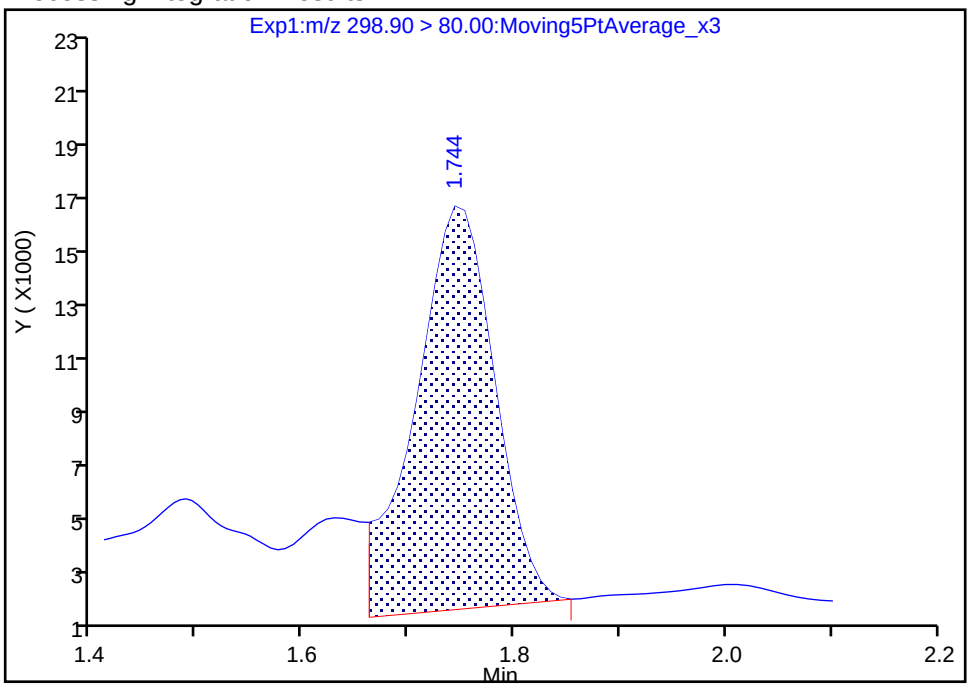
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\2018.07.06LLC_039.d				
Injection Date:	07-Jul-2018 04:19:58	Instrument ID:	A8_N		
Lims ID:	320-40571-A-27-A	Lab Sample ID:	320-40571-27		
Client ID:	NF29-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	25	Worklist Smp#:	27
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

5 Perfluorobutanesulfonic acid, CAS: 375-73-5

Signal: 1

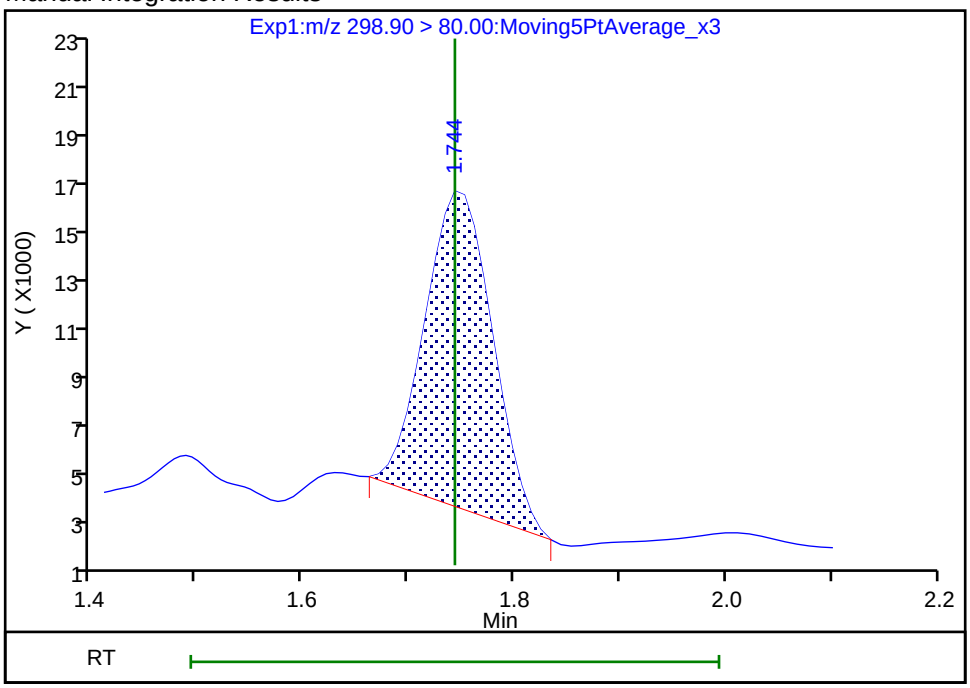
Processing Integration Results

RT: 1.74
Area: 78550
Amount: 0.022233
Amount Units: ng/ml



Manual Integration Results

RT: 1.74
Area: 58350
Amount: 0.016516
Amount Units: ng/ml



Reviewer: mongkols, 09-Jul-2018 14:38:48

Audit Action: Manually Integrated Audit Reason: Baseline

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF29-SS-01
Lab Sample ID: 320-40571-28
Matrix: Solid
Lab File ID: 2018.07.14LLA_024.d
Analysis Method: 537 (modified)
Date Collected: 06/19/2018 13:55
Extraction Method: SHAKE
Date Extracted: 06/28/2018 06:06
Sample wt/vol: 5.08(g)
Date Analyzed: 07/14/2018 13:45
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture: 19.5
GPC Cleanup:(Y/N) N
Analysis Batch No.: 234231
Units: mg/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	ND		0.00024	0.000034
2706-90-3	Perfluoropentanoic acid (PFPeA)	ND		0.00024	0.000094
307-24-4	Perfluorohexanoic acid (PFHxA)	ND		0.00024	0.000051
375-85-9	Perfluoroheptanoic acid (PFHpA)	ND		0.00024	0.000035
335-67-1	Perfluorooctanoic acid (PFOA)	ND		0.00024	0.00011
375-95-1	Perfluorononanoic acid (PFNA)	ND		0.00024	0.000044
335-76-2	Perfluorodecanoic acid (PFDA)	ND		0.00024	0.000027
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		0.00024	0.000044
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		0.00024	0.000082
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		0.00024	0.000062
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		0.00024	0.000066
375-73-5	Perfluorobutanesulfonic acid (PFBS)	ND		0.00024	0.000031
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	ND		0.00024	0.000038
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.00024	0.000043
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	ND		0.00061	0.00024
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		0.00024	0.000048
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		0.00024	0.00010
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.0024	0.00048
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.0024	0.00045
27619-97-2	6:2 FTS	ND		0.0024	0.00018
39108-34-4	8:2 FTS	ND		0.0024	0.00031

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF29-SS-01
Lab Sample ID: 320-40571-28
Matrix: Solid
Lab File ID: 2018.07.14LLA_024.d
Analysis Method: 537 (modified)
Date Collected: 06/19/2018 13:55
Extraction Method: SHAKE
Date Extracted: 06/28/2018 06:06
Sample wt/vol: 5.08(g)
Date Analyzed: 07/14/2018 13:45
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture: 19.5
GPC Cleanup:(Y/N) N
Analysis Batch No.: 234231
Units: mg/Kg

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00992	13C4 PFBA	82		25-150
STL01893	13C5 PFPeA	84		25-150
STL00993	13C2 PFHxA	89		25-150
STL01892	13C4-PFHpA	93		25-150
STL00990	13C4 PFOA	89		25-150
STL00995	13C5 PFNA	85		25-150
STL00996	13C2 PFDA	97		25-150
STL00997	13C2 PFUnA	88		25-150
STL00998	13C2 PFDoA	87		25-150
STL02116	13C2-PFTeDA	91		25-150
STL02337	13C3-PFBS	78		25-150
STL00994	18O2 PFHxS	76		25-150
STL00991	13C4 PFOS	76		25-150
STL01056	13C8 FOSA	74		25-150
STL02118	d3-NMeFOSAA	83		25-150
STL02117	d5-NEtFOSAA	86		25-150
STL02279	M2-6:2FTS	73		25-150
STL02280	M2-8:2FTS	87		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180716-61105.b\2018.07.14LLA_024.d
Lims ID: 320-40571-A-28-A
Client ID: NF29-SS-01
Sample Type: Client
Inject. Date: 14-Jul-2018 13:45:40 ALS Bottle#: 16 Worklist Smp#: 7
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-40571-a-28-a
Misc. Info.: Plate: 1 Rack: 5
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180716-61105.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 17-Jul-2018 08:20:46 Calib Date: 11-Jul-2018 15:38:42
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK016

First Level Reviewer: mongkols Date: 17-Jul-2018 08:20:46

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										M
212.90 > 169.00	1.435	1.435	0.0	1.000	25240	0.0127			6.0	M
D 1 13C4 PFBA										M
217.00 > 172.00	1.435	1.436	-0.001	0.540	5051062	2.06		82.4	56831	M
D 3 13C5-PFPeA										
267.90 > 223.00	1.711	1.720	-0.009	0.643	3576191	2.10		84.0	44063	
D 47 13C3-PFBS										
301.90 > 83.00	1.756	1.756	0.0	0.660	77231	1.80		77.6	438	
D 7 13C2 PFHxA										
315.00 > 270.00	1.991	1.992	-0.001	0.749	4106476	2.23		89.3	65657	
D 9 13C4-PFHpA										
367.00 > 322.00	2.306	2.306	0.0	0.867	3940279	2.33		93.1	44009	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.319	2.319	0.0	1.000	14741	0.007010			110	
399.00 > 99.00	2.319	2.319	0.0	1.000	4663		3.16(1.50-4.49)		24.2	
D 11 18O2 PFHxS										
403.00 > 84.00	2.319	2.319	0.0	0.872	4332699	1.81		76.4	65924	
D 12 M2-6:2FTS										
429.00 > 81.00	2.636	2.628	0.008	0.991	629959	1.73		73.1	10779	
D 14 13C4 PFOA										
417.00 > 372.00	2.659	2.652	0.007	1.000	3863443	2.24		89.4	42767	
* 62 13C2-PFOA										
415.00 > 370.00	2.659	2.659	0.0		4518445	2.50			40855	
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.659	2.659	0.0	1.000	17123	0.008997			7.4	M
413.00 > 169.00	2.667	2.659	0.008	1.003	12769		1.34(0.84-2.52)		58.7	M
D 19 13C5 PFNA										
468.00 > 423.00	3.022	3.018	0.004	1.136	3276714	2.12		84.9	62071	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 18 13C4 PFOS										
503.00 > 80.00	3.022	3.018	0.004	1.136	3197415	1.82		76.0	34188	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.022	3.019	0.004	1.000	42139	0.0278			474	
499.00 > 99.00	3.022	3.019	0.004	1.000	10094		4.17(2.31-6.93)		112	
D 26 M2-8:2FTS										
529.00 > 81.00	3.366	3.361	0.005	1.266	1105372	2.08		86.9	12307	
D 21 13C8 FOSA										
506.00 > 78.00	3.366	3.370	-0.004	1.266	4705919	1.85		74.1	42442	
D 23 13C2 PFDA										
515.00 > 470.00	3.376	3.370	0.006	1.269	3278155	2.42		96.7	53855	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.525	3.520	0.005	1.326	1152885	2.07		83.0	36497	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.694	3.687	0.007	1.389	1225691	2.15		86.1	3530	
D 30 13C2 PFUnA										
565.00 > 520.00	3.705	3.698	0.007	1.393	2477321	2.19		87.5	36583	
D 36 13C2 PFDoA										
615.00 > 570.00	3.995	3.988	0.007	1.502	2567019	2.19		87.5	23575	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.488	4.480	0.008	1.688	2785269	2.29		91.5	21016	

QC Flag Legend

Review Flags

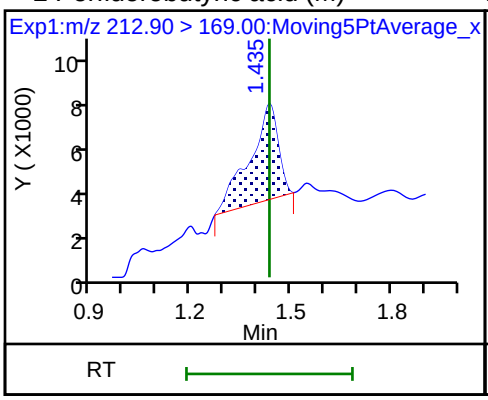
M - Manually Integrated

Report Date: 17-Jul-2018 08:20:47 Chrom Revision: 2.2 07-Jun-2018 07:41:54

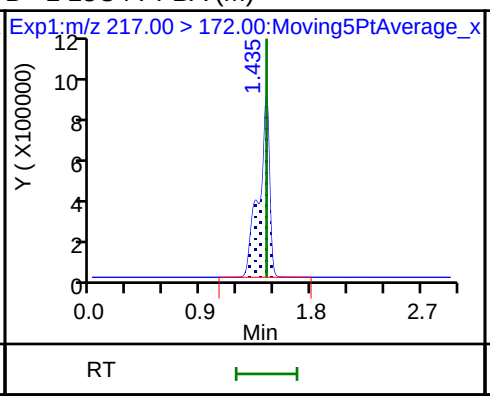
TestAmerica Sacramento

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180716-61105.b\2018.07.14LLA_024.d				
Injection Date:	14-Jul-2018 13:45:40	Instrument ID:	A8_N		
Lims ID:	320-40571-A-28-A	Lab Sample ID:	320-40571-28		
Client ID:	NF29-SS-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	16	Worklist Smp#:	7
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		

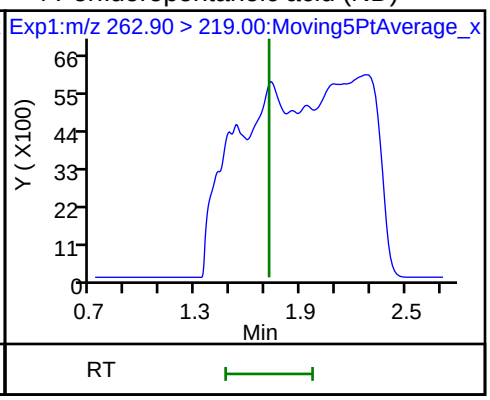
2 Perfluorobutyric acid (M)



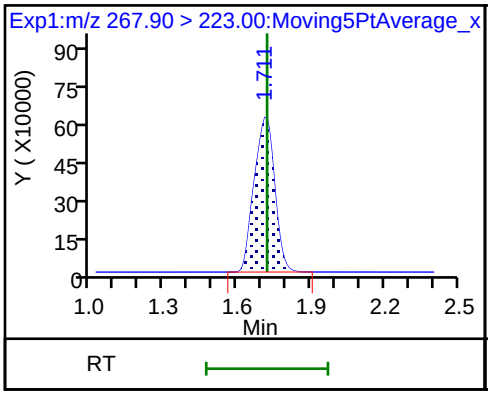
D 1 13C4 PFBA (M)



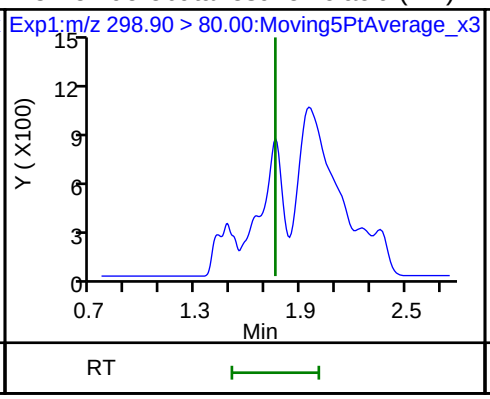
4 Perfluoropentanoic acid (ND)



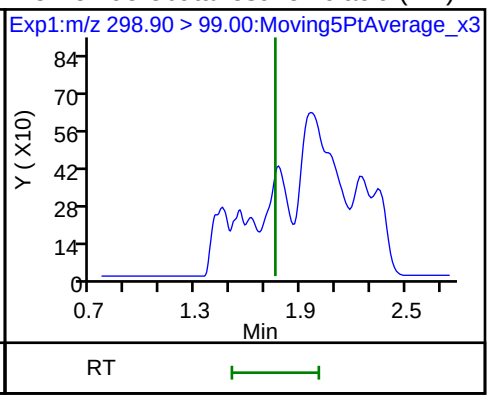
D 3 13C5-PFPeA



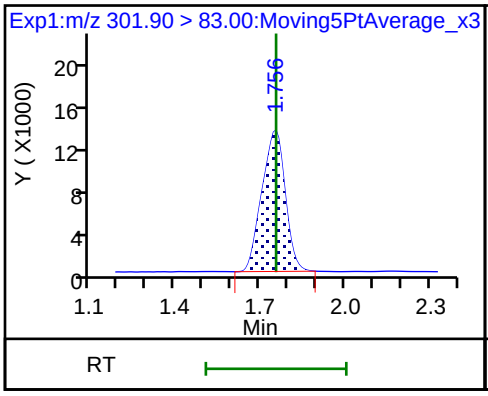
5 Perfluorobutanesulfonic acid (ND)



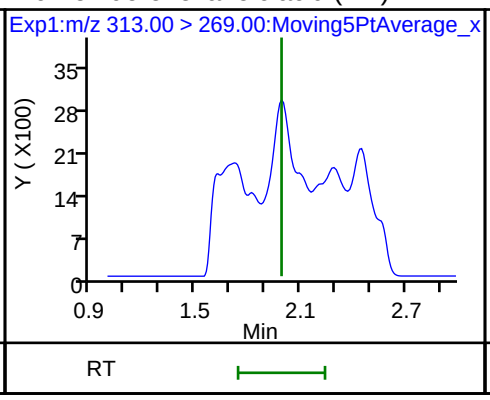
5 Perfluorobutanesulfonic acid (ND)



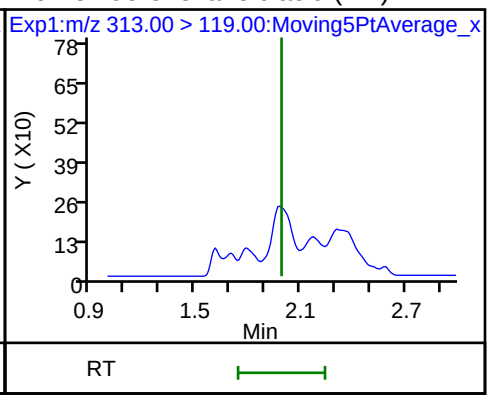
D 47 13C3-PFBS



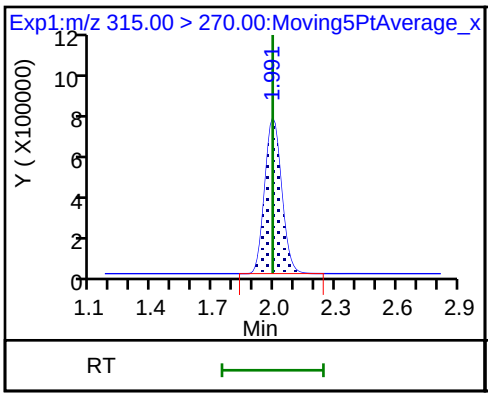
6 Perfluorohexanoic acid (ND)



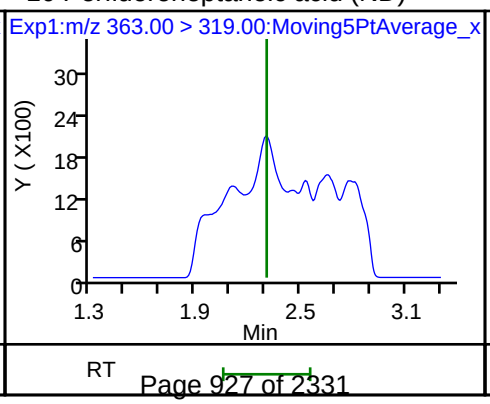
6 Perfluorohexanoic acid (ND)



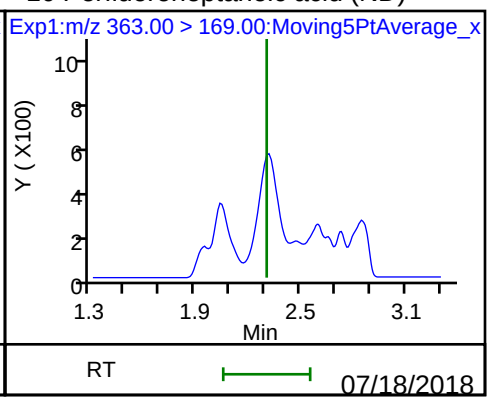
D 7 13C2 PFHxA



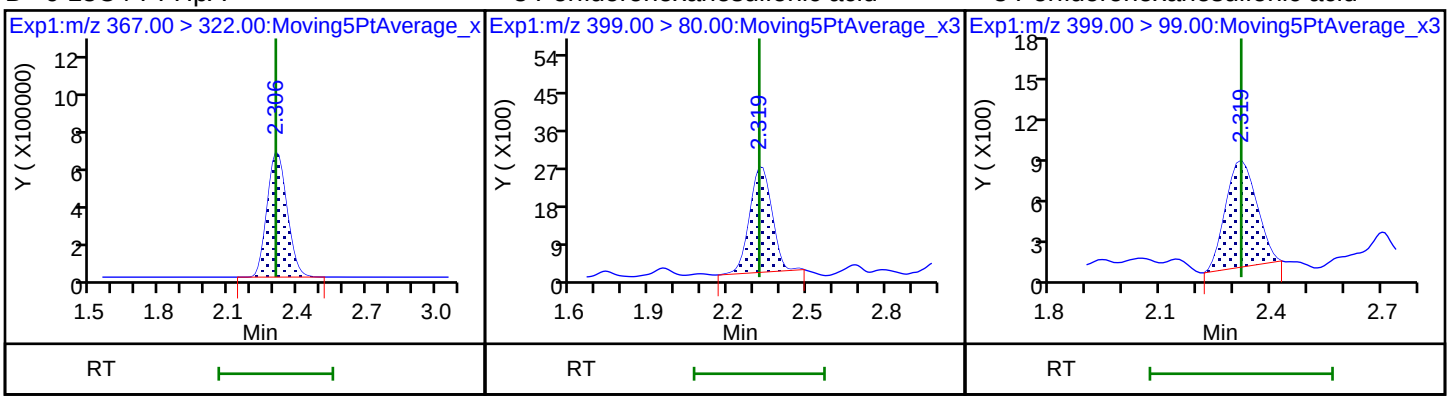
10 Perfluoroheptanoic acid (ND)



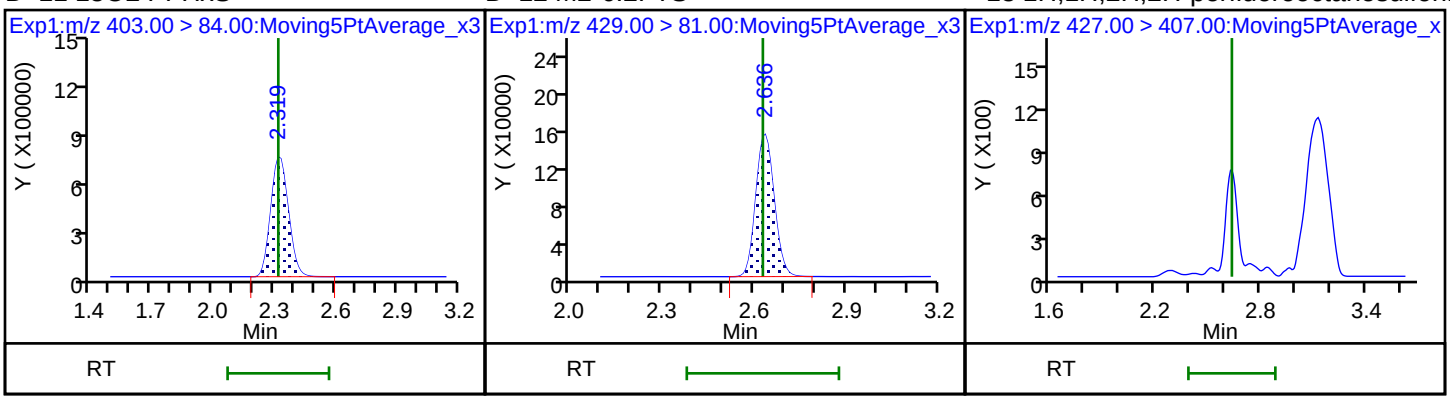
10 Perfluoroheptanoic acid (ND)



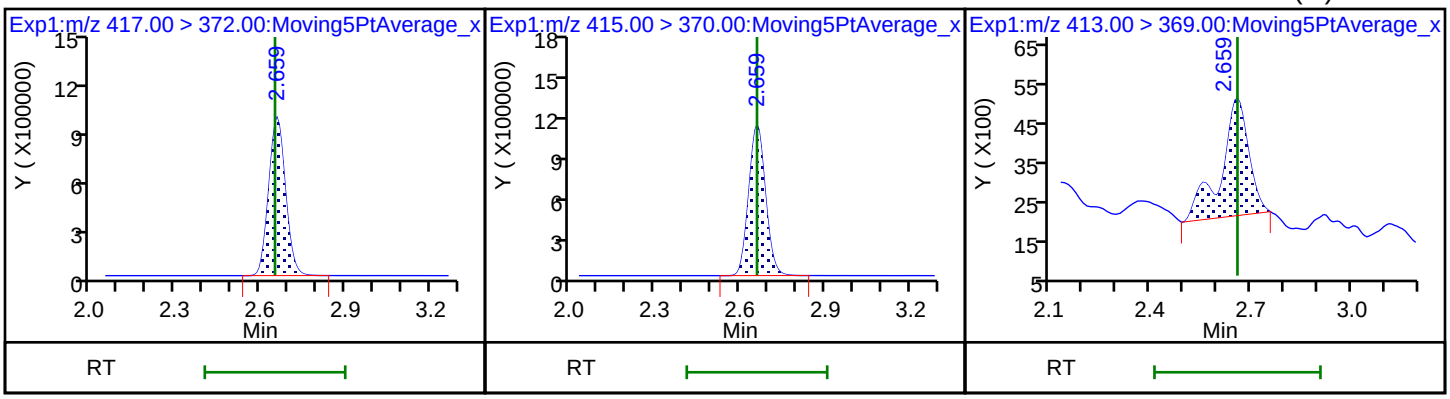
D 9 13C4-PFHpA | 8 Perfluorohexanesulfonic acid | 8 Perfluorohexanesulfonic acid



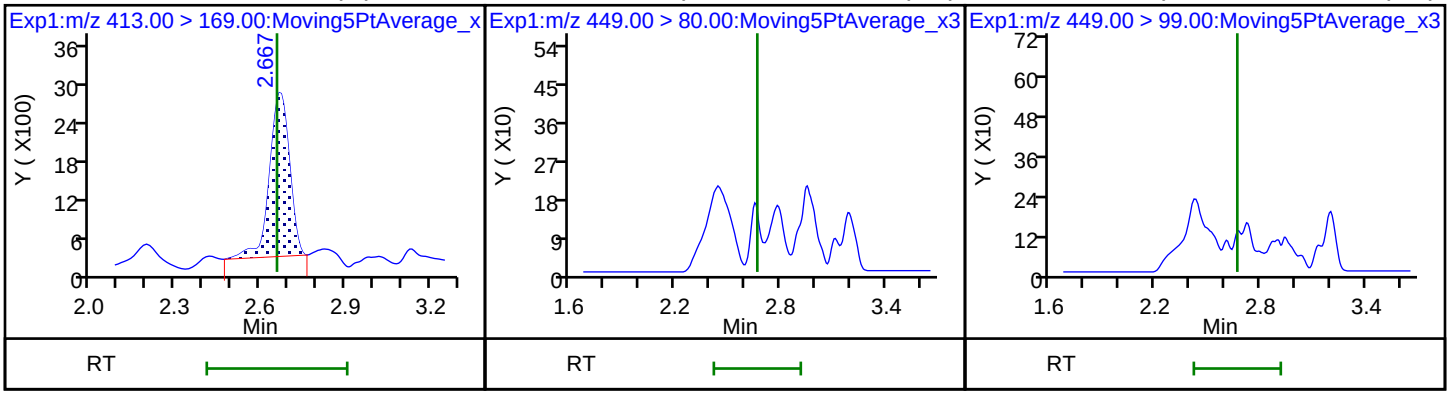
D 11 18O2 PFHxS | D 12 M2-6:2FTS | 13 1H,1H,2H,2H-perfluorooctanesulfoni (ND)



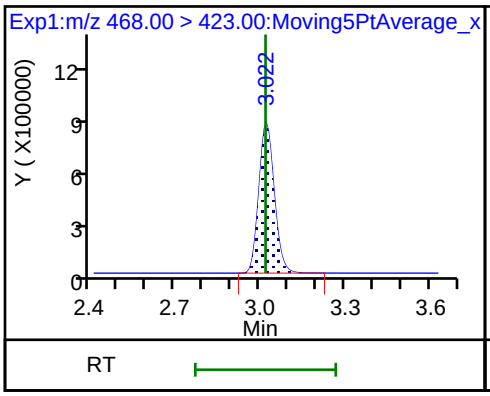
D 14 13C4 PFOA | * 62 13C2-PFOA | 15 Perfluorooctanoic acid (M)



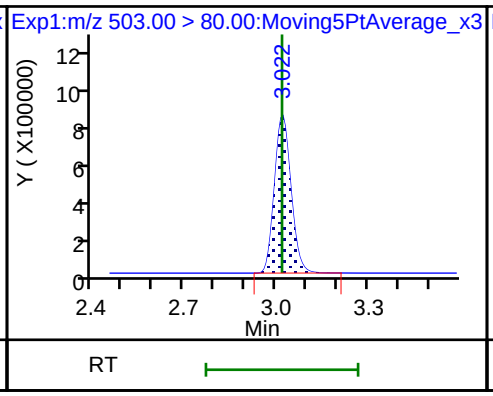
15 Perfluorooctanoic acid (M) | 16 Perfluoroheptanesulfonic acid (ND) | 16 Perfluoroheptanesulfonic acid (ND)



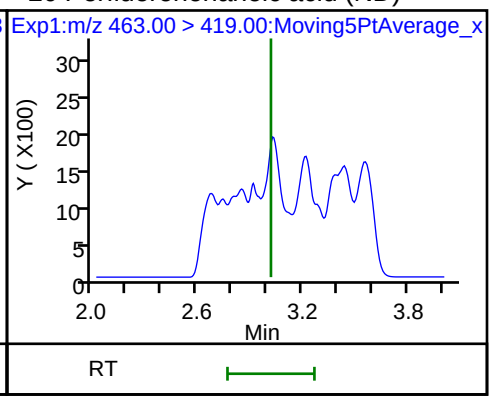
D 19 13C5 PFNA



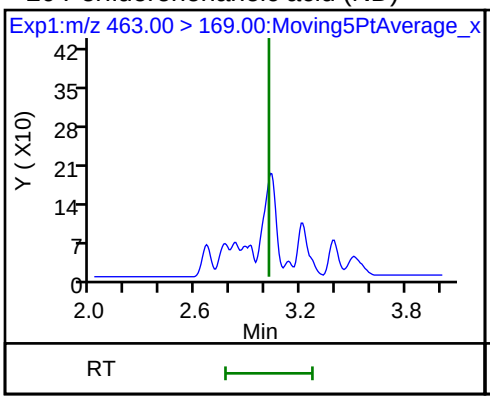
D 18 13C4 PFOS



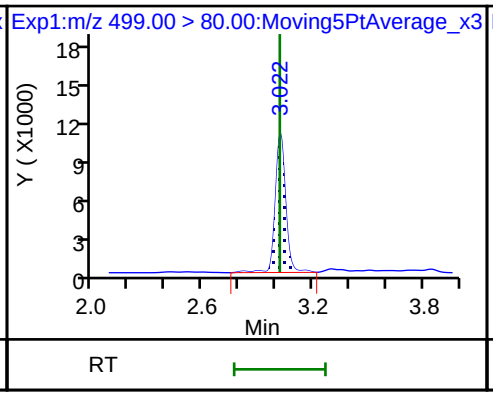
20 Perfluorononanoic acid (ND)



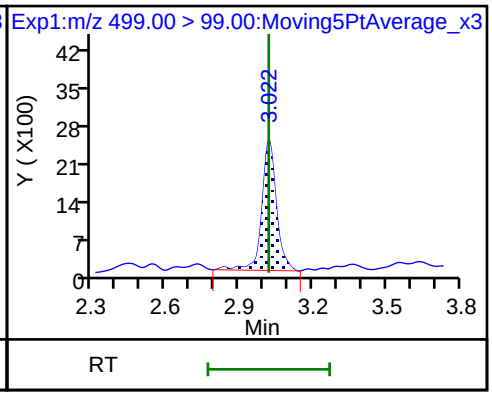
20 Perfluorononanoic acid (ND)



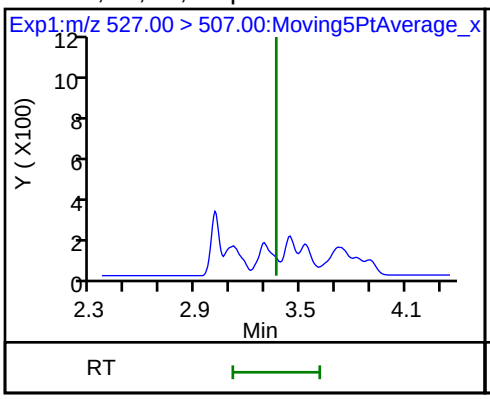
17 Perfluorooctane sulfonic acid



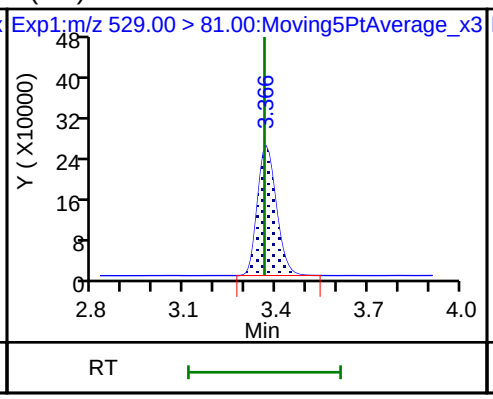
17 Perfluorooctane sulfonic acid



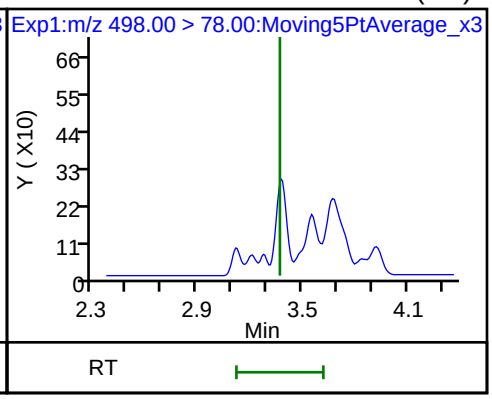
25 1H,1H,2H,2H-perfluorodecanesulfonic acid (ND)



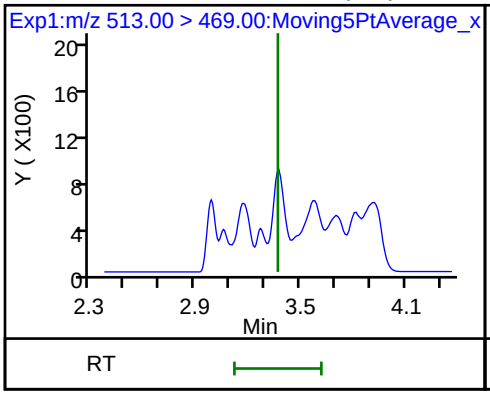
D 26 M2-8:2FTS



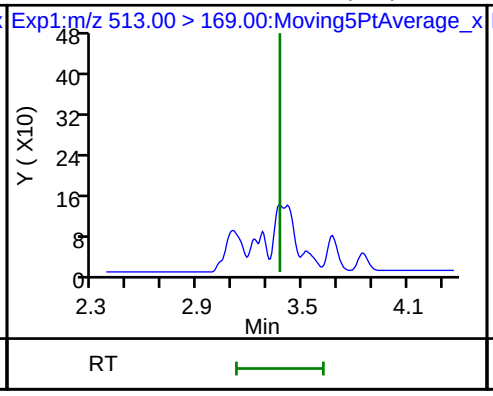
22 Perfluorooctane Sulfonamide (ND)



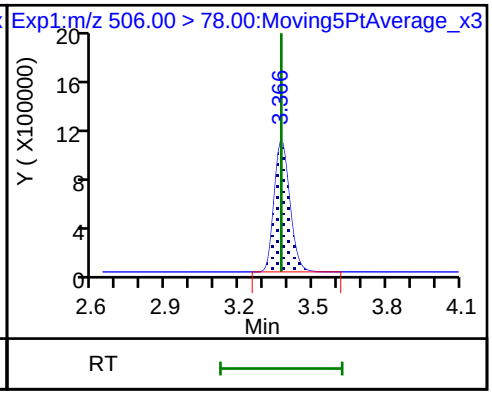
24 Perfluorodecanoic acid (ND)



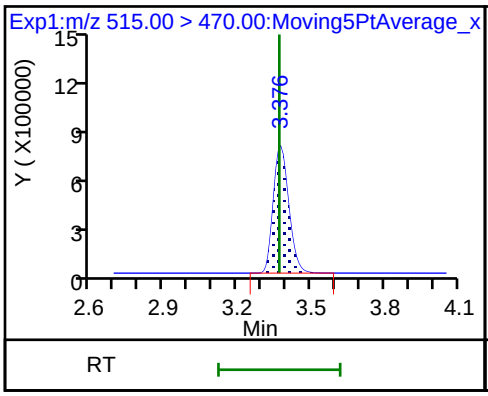
24 Perfluorodecanoic acid (ND)



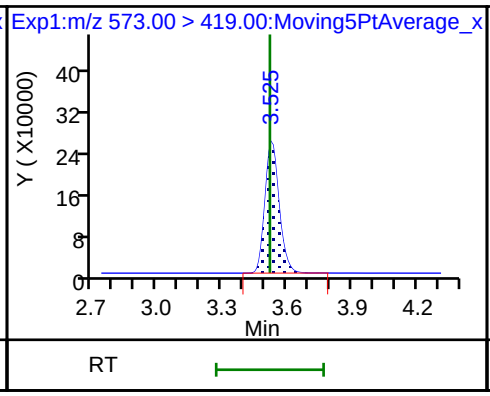
D 21 13C8 FOSA



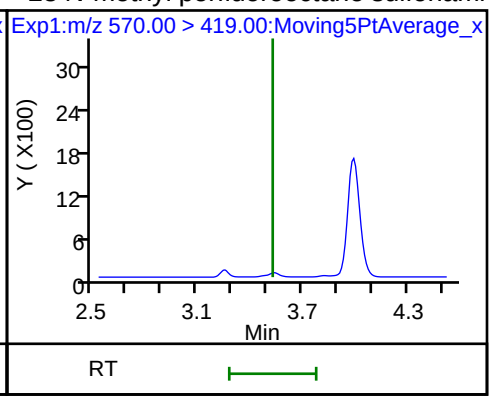
D 23 13C2 PFDA



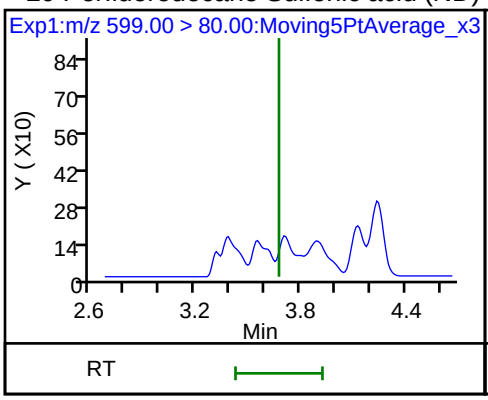
D 27 d3-NMeFOSAA



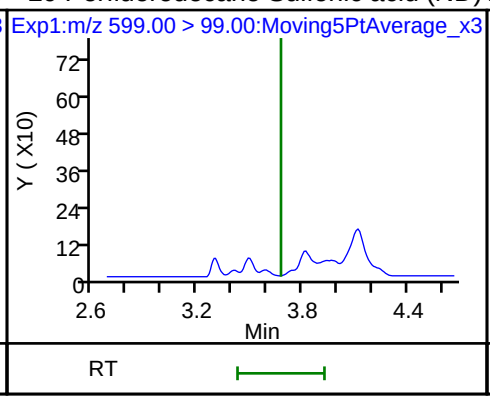
28 N-methyl perfluorooctane sulfonami (ND)



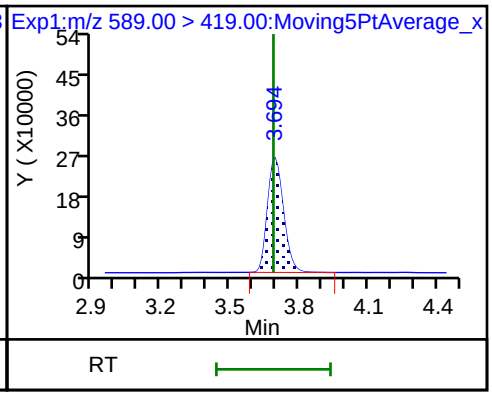
29 Perfluorodecane Sulfonic acid (ND)



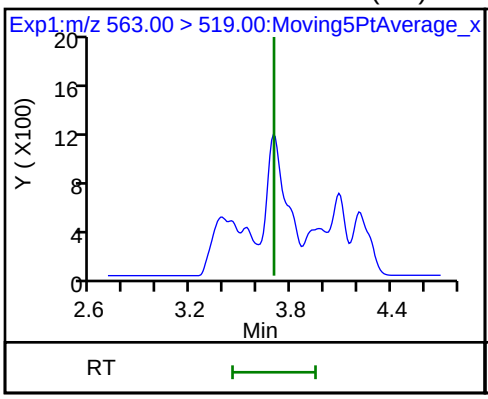
29 Perfluorodecane Sulfonic acid (ND)



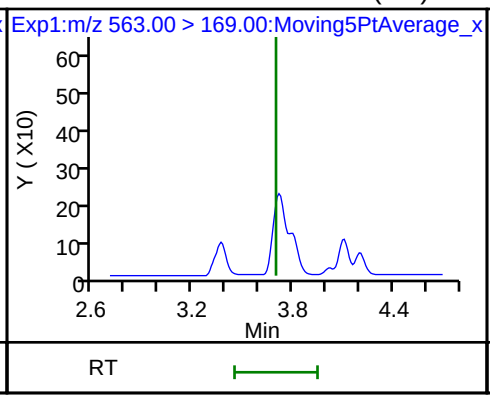
D 32 d5-NEtFOSAA



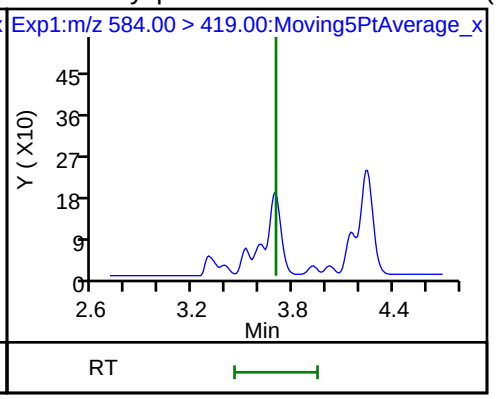
31 Perfluoroundecanoic acid (ND)



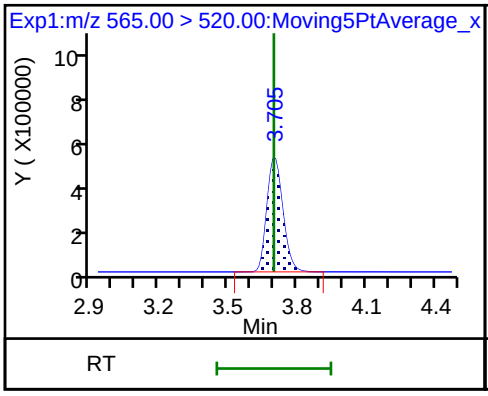
31 Perfluoroundecanoic acid (ND)



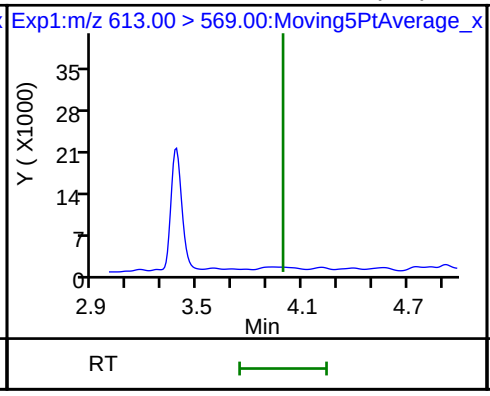
33 N-ethyl perfluorooctane sulfonamid (ND)



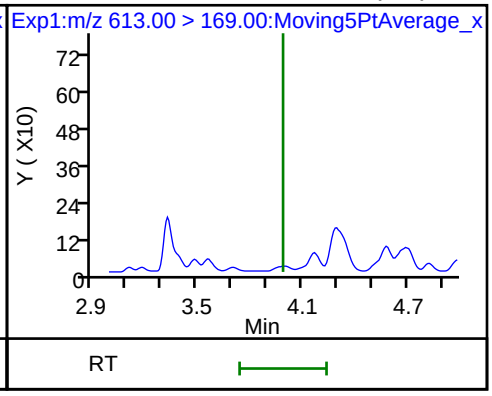
D 30 13C2 PFUnA



37 Perfluorododecanoic acid (ND)

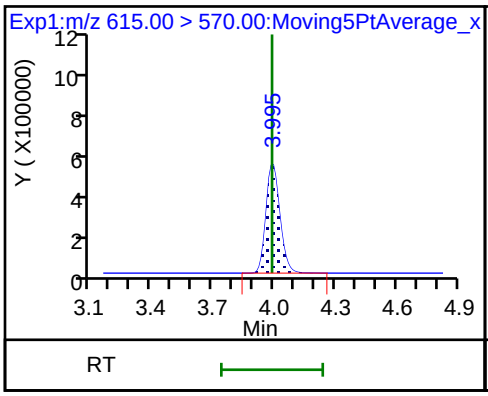


37 Perfluorododecanoic acid (ND)

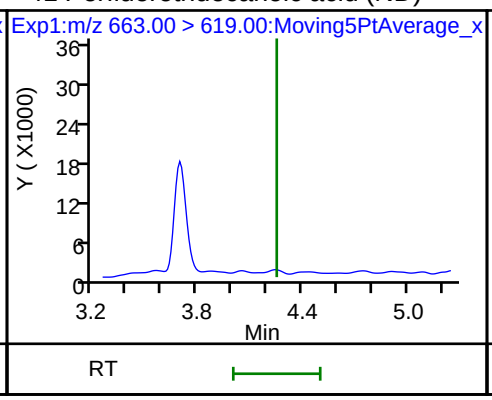


Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180716-61105.b\2018.07.14LLA_024.d

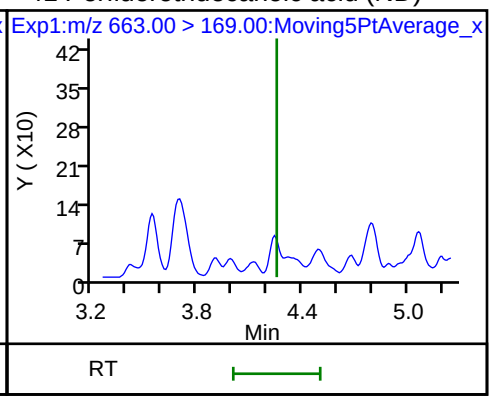
D 36 13C2 PFDoA



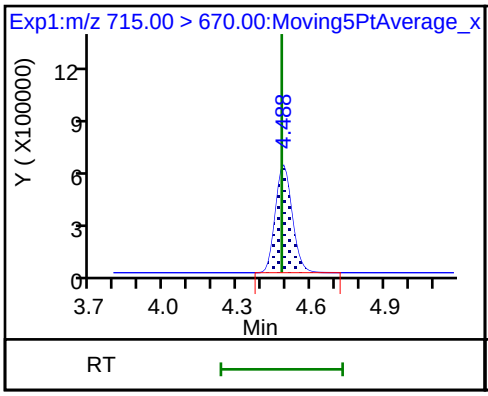
41 Perfluorotridecanoic acid (ND)



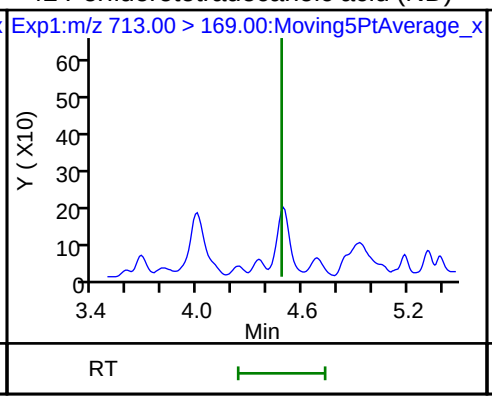
41 Perfluorotridecanoic acid (ND)



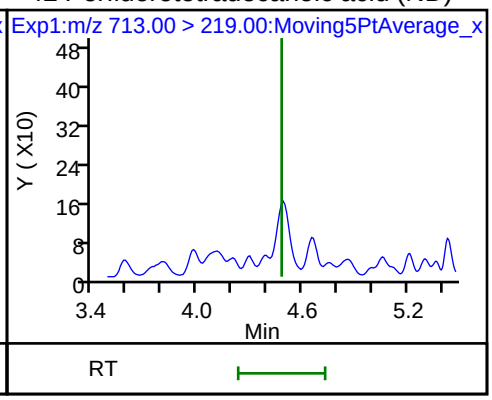
D 43 13C2-PFTeDA



42 Perfluorotetradecanoic acid (ND)



42 Perfluorotetradecanoic acid (ND)



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

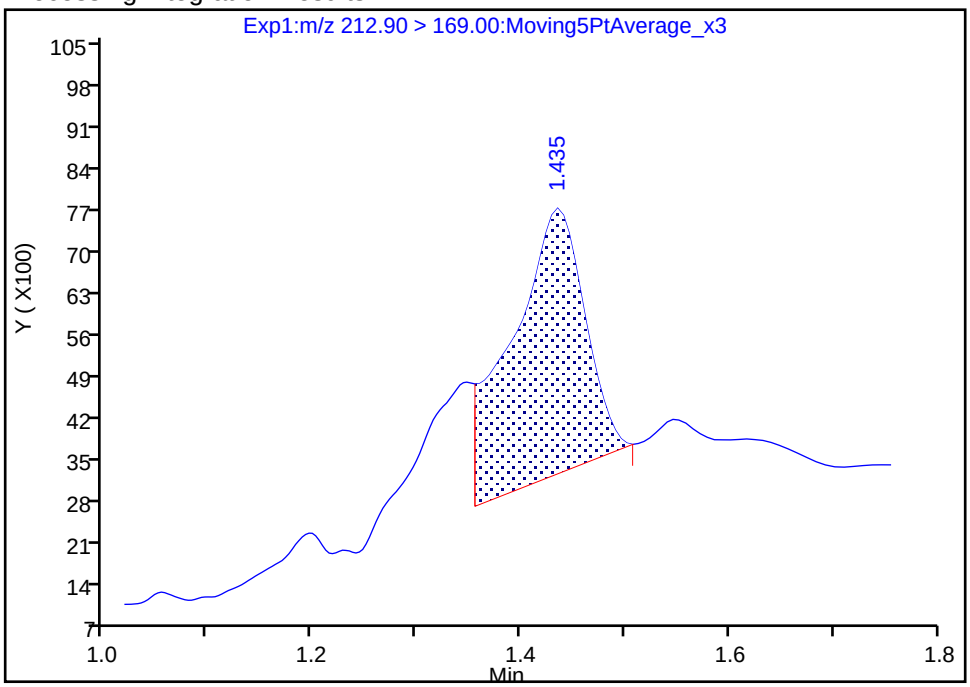
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180716-61105.b\2018.07.14LLA_024.d				
Injection Date:	14-Jul-2018 13:45:40	Instrument ID:	A8_N		
Lims ID:	320-40571-A-28-A	Lab Sample ID:	320-40571-28		
Client ID:	NF29-SS-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	16	Worklist Smp#:	7
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

2 Perfluorobutyric acid, CAS: 375-22-4

Signal: 1

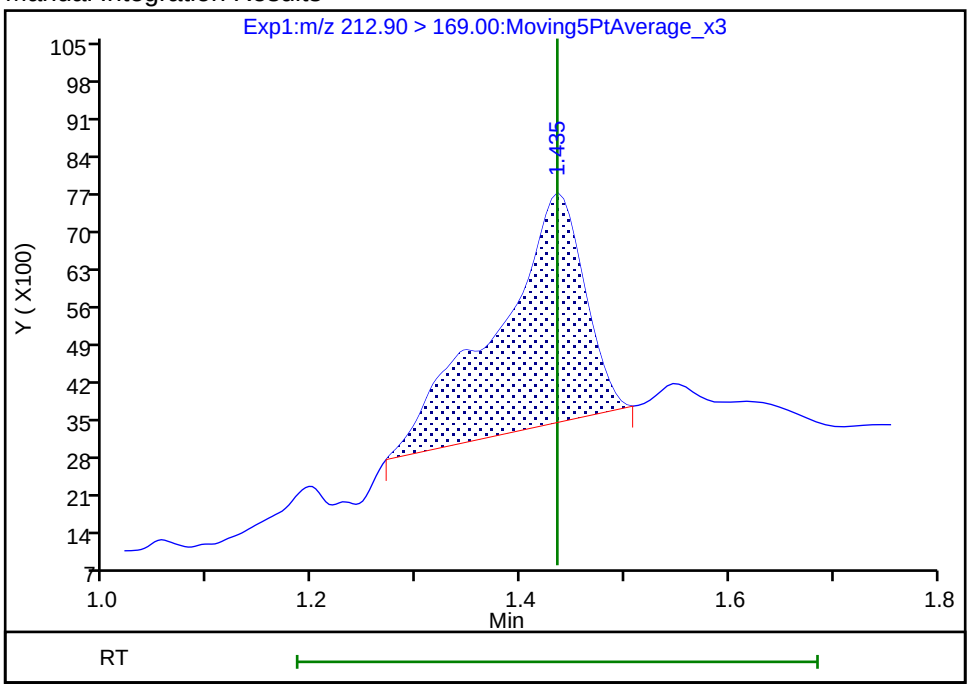
Processing Integration Results

RT: 1.44
Area: 22032
Amount: 0.011064
Amount Units: ng/ml



Manual Integration Results

RT: 1.44
Area: 25240
Amount: 0.012675
Amount Units: ng/ml



Reviewer: mongkols, 17-Jul-2018 08:19:45

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

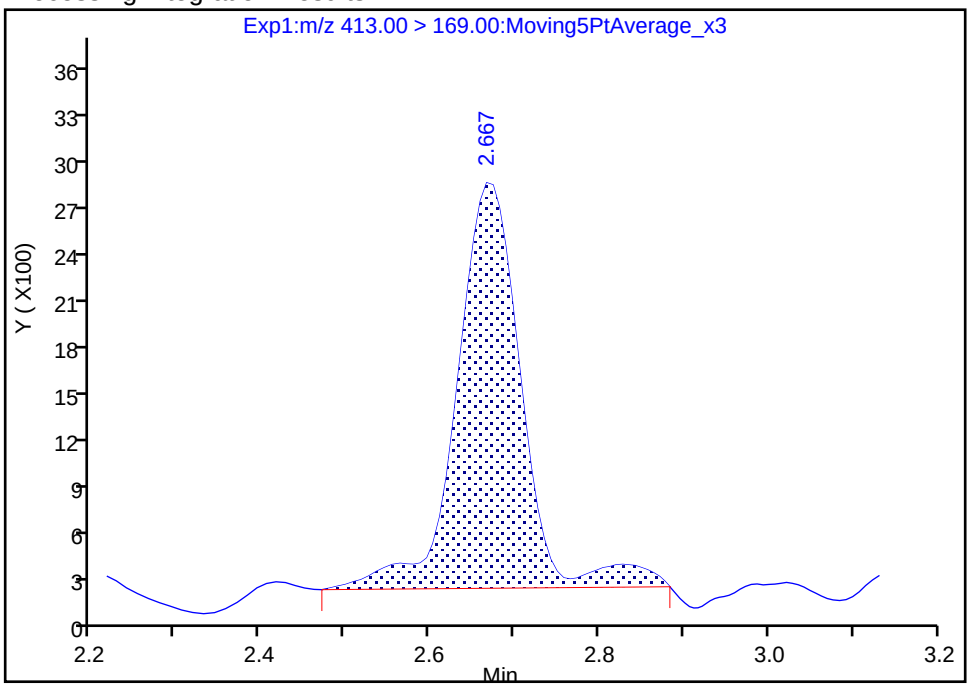
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180716-61105.b\2018.07.14LLA_024.d				
Injection Date:	14-Jul-2018 13:45:40	Instrument ID:	A8_N		
Lims ID:	320-40571-A-28-A	Lab Sample ID:	320-40571-28		
Client ID:	NF29-SS-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	16	Worklist Smp#:	7
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 2

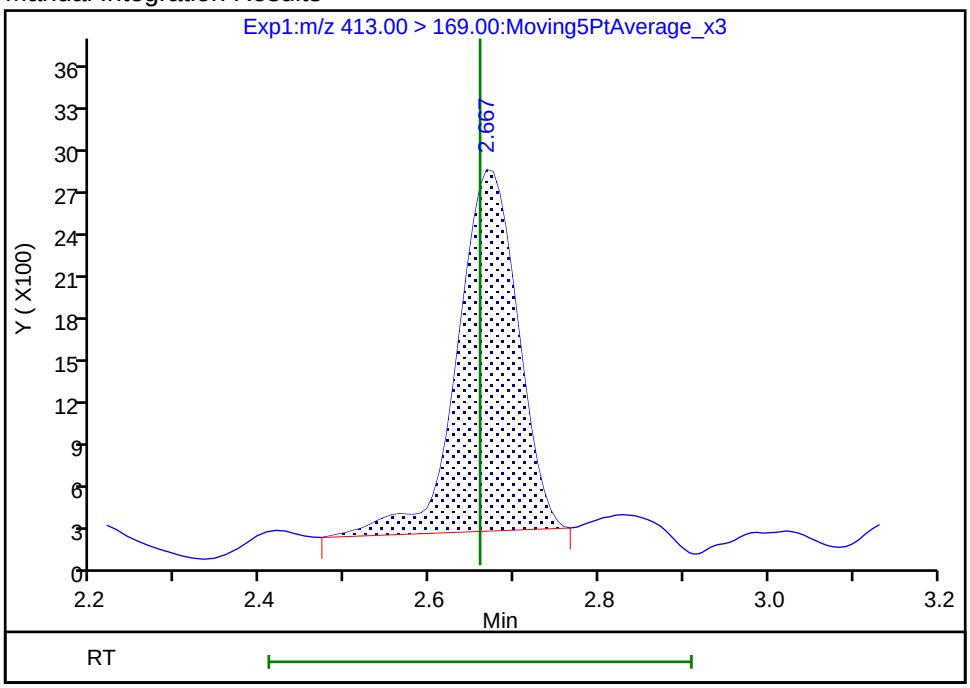
Processing Integration Results

RT: 2.67
Area: 13980
Amount: 0.007728
Amount Units: ng/ml



Manual Integration Results

RT: 2.67
Area: 12769
Amount: 0.008997
Amount Units: ng/ml



Reviewer: mongkols, 17-Jul-2018 08:20:16

Audit Action: Manually Integrated Audit Reason: Isomers

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

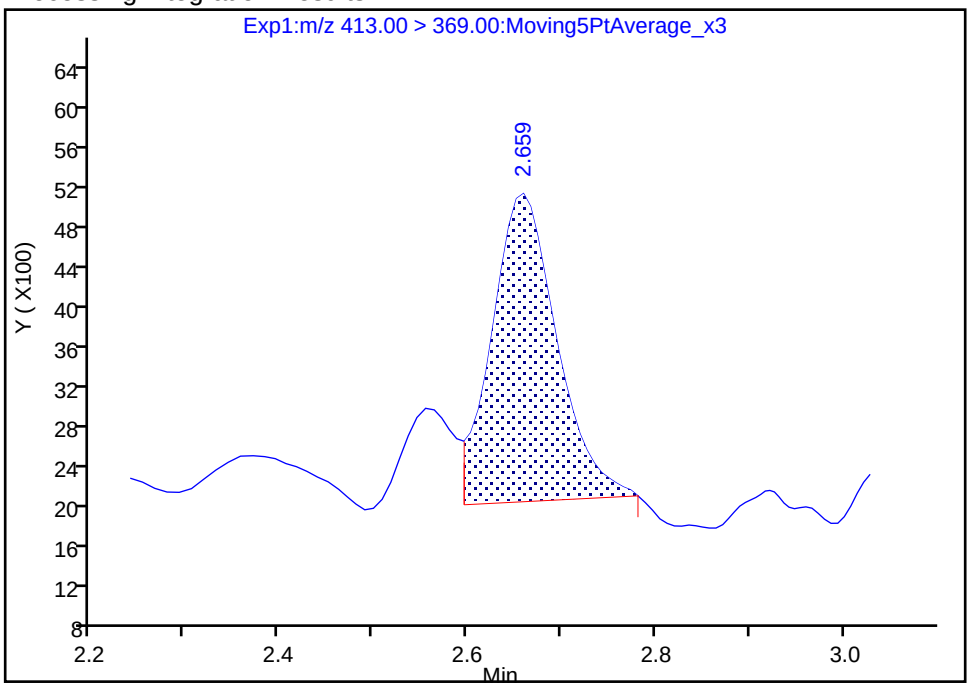
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180716-61105.b\2018.07.14LLA_024.d				
Injection Date:	14-Jul-2018 13:45:40	Instrument ID:	A8_N		
Lims ID:	320-40571-A-28-A	Lab Sample ID:	320-40571-28		
Client ID:	NF29-SS-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	16	Worklist Smp#:	7
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

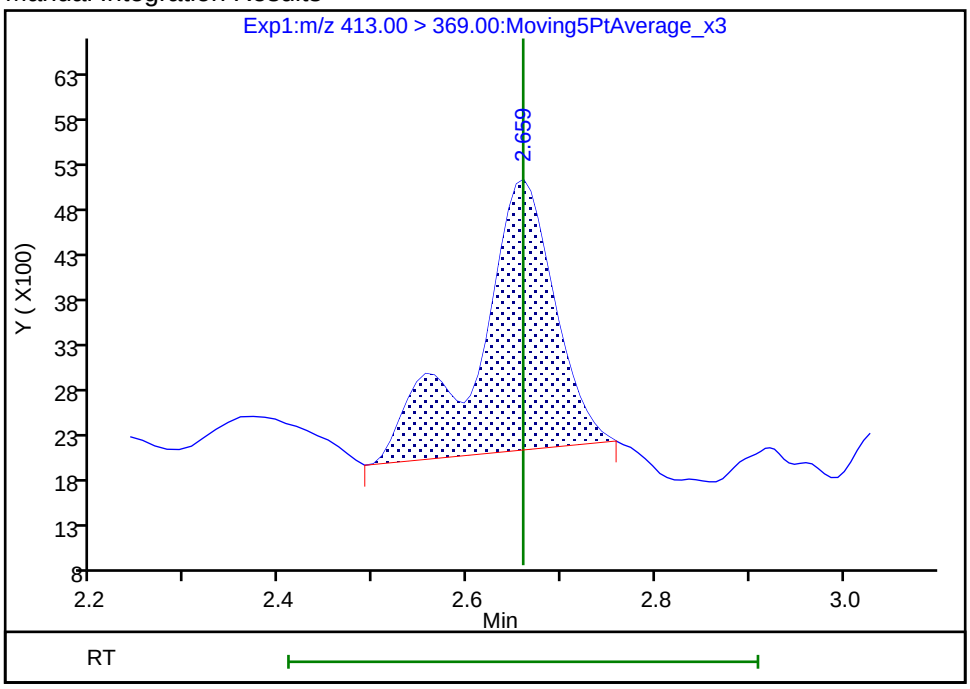
Processing Integration Results

RT: 2.66
Area: 14708
Amount: 0.007728
Amount Units: ng/ml



Manual Integration Results

RT: 2.66
Area: 17123
Amount: 0.008997
Amount Units: ng/ml



Reviewer: mongkols, 17-Jul-2018 08:20:19
Audit Action: Manually Integrated Audit Reason: Isomers

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

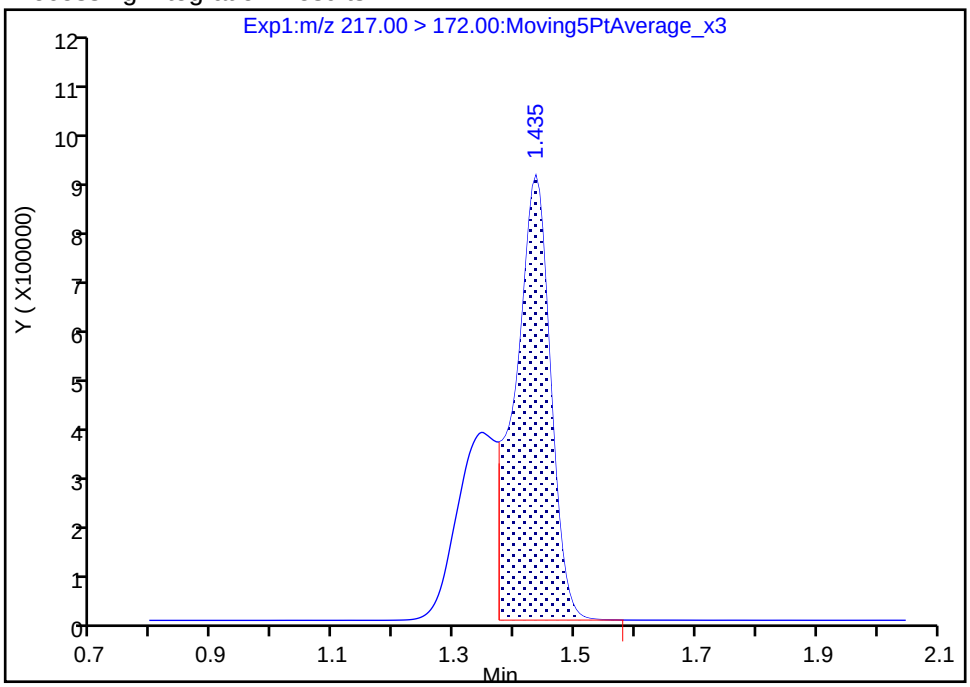
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180716-61105.b\2018.07.14LLA_024.d				
Injection Date:	14-Jul-2018 13:45:40	Instrument ID:	A8_N		
Lims ID:	320-40571-A-28-A	Lab Sample ID:	320-40571-28		
Client ID:	NF29-SS-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	16	Worklist Smp#:	7
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

D 1 13C4 PFBA, CAS: STL00992

Signal: 1

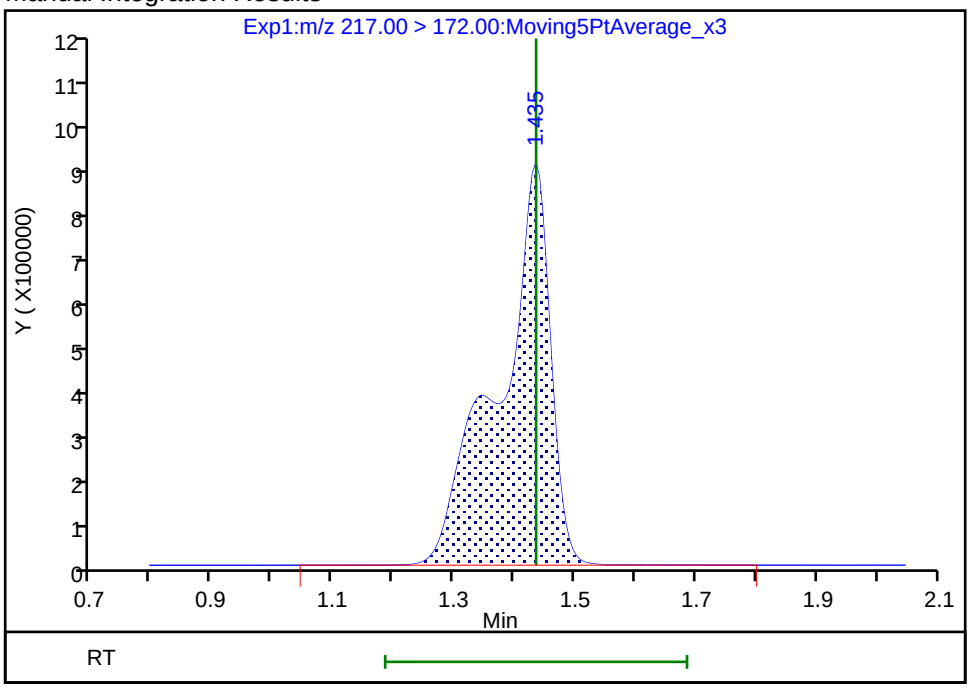
Processing Integration Results

RT: 1.44
Area: 3415905
Amount: 1.393882
Amount Units: ng/ml



Manual Integration Results

RT: 1.44
Area: 5051062
Amount: 2.061119
Amount Units: ng/ml



Reviewer: mongkols, 17-Jul-2018 08:19:30

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF30-GW-01
Lab Sample ID: 320-40571-29
Matrix: Water
Lab File ID: 2018.07.13LLC_016.d
Analysis Method: 537 (modified)
Date Collected: 06/20/2018 13:05
Extraction Method: 3535
Date Extracted: 07/02/2018 14:58
Sample wt/vol: 267.8(mL)
Date Analyzed: 07/13/2018 22:04
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 233989
Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	0.018	B	0.0019	0.00033
2706-90-3	Perfluoropentanoic acid (PFPeA)	0.0096		0.0019	0.00046
307-24-4	Perfluorohexanoic acid (PFHxA)	0.0026		0.0019	0.00054
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.0015	J	0.0019	0.00023
335-67-1	Perfluorooctanoic acid (PFOA)	0.0063		0.0019	0.00079
375-95-1	Perfluorononanoic acid (PFNA)	0.0016	J	0.0019	0.00025
335-76-2	Perfluorodecanoic acid (PFDA)	0.00056	J	0.0019	0.00029
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		0.0019	0.0010
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		0.0019	0.00051
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		0.0019	0.0012
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		0.0019	0.00027
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.0052		0.0019	0.00019
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	0.00087	J	0.0019	0.00028
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.0030	B	0.0019	0.00016
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.0019	0.00018
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.0054		0.0019	0.00050
8789-57-2	Perfluorononanesulfonic acid (PFNS)	ND		0.0019	0.00015
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		0.0019	0.00030
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		0.0019	0.00033
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.019	0.0029
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.019	0.0018
757124-72-4	4:2 FTS	ND		0.019	0.0049
27619-97-2	6:2 FTS	0.0049	J	0.019	0.0019
39108-34-4	8:2 FTS	ND		0.019	0.0019

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF30-GW-01
Lab Sample ID: 320-40571-29
Matrix: Water
Lab File ID: 2018.07.13LLC_016.d
Analysis Method: 537 (modified)
Date Collected: 06/20/2018 13:05
Extraction Method: 3535
Date Extracted: 07/02/2018 14:58
Sample wt/vol: 267.8(mL)
Date Analyzed: 07/13/2018 22:04
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 233989
Units: ug/L

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00992	13C4 PFBA	52		25-150
STL01893	13C5 PFPeA	74		25-150
STL00993	13C2 PFHxA	87		25-150
STL01892	13C4-PFHpA	103		25-150
STL00990	13C4 PFOA	105		25-150
STL00995	13C5 PFNA	103		25-150
STL00996	13C2 PFDA	96		25-150
STL00997	13C2 PFUnA	100		25-150
STL00998	13C2 PFDoA	86		25-150
STL02116	13C2-PFTeDA	70		25-150
STL02337	13C3-PFBS	89		25-150
STL00994	18O2 PFHxS	97		25-150
STL00991	13C4 PFOS	94		25-150
STL01056	13C8 FOSA	87		25-150
STL02118	d3-NMeFOSAA	102		25-150
STL02117	d5-NEtFOSAA	102		25-150
STL02279	M2-6:2FTS	143		25-150
STL02280	M2-8:2FTS	97		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\2018.07.13LLC_016.d
Lims ID: 320-40571-A-29-A
Client ID: NF30-GW-01
Sample Type: Client
Inject. Date: 13-Jul-2018 22:04:27 ALS Bottle#: 10 Worklist Smp#: 11
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-40571-a-29-a
Misc. Info.: Plate: 1 Rack: 4
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 16-Jul-2018 12:43:07 Calib Date: 11-Jul-2018 15:38:42
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK023

First Level Reviewer: mongkols Date: 16-Jul-2018 12:43:07

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.90 > 169.00	1.439	1.433	0.006	1.000	594130	0.4691			163	
D 1 13C4 PFBA										
217.00 > 172.00	1.439	1.445	-0.006	0.540	3212420	1.29		51.8	16440	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.726	1.716	0.010	1.000	402563	0.2583			57.1	
D 3 13C5-PFPeA										
267.90 > 223.00	1.726	1.725	0.001	0.647	3212239	1.86		74.5	23579	
5 Perfluorobutanesulfonic acid										M
298.90 > 80.00	1.762	1.761	0.001	1.000	412639	0.1393			36.4	M
298.90 > 99.00	1.762	1.761	0.001	1.000	185074		2.23(1.25-3.74)		204	
D 47 13C3-PFBS										
301.90 > 83.00	1.762	1.762	0.0	0.661	90016	2.08		89.3	139	
6 Perfluorohexanoic acid										M
313.00 > 269.00	2.000	1.999	0.001	1.000	114351	0.0684			15.1	M
313.00 > 119.00	2.011	1.999	0.012	1.006	7577		15.09(5.03-15.10)		30.5	
D 7 13C2 PFHxA										
315.00 > 270.00	2.000	2.011	-0.011	0.750	4057865	2.18		87.2	43396	
70 Perfluoropentanesulfonic acid										M
349.00 > 80.00	2.022	2.022	0.0	1.148	63199	0.0234			13.6	M
349.00 > 99.00	2.022	2.022	0.0	1.148	26750		2.36(1.36-4.07)		38.4	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.316	2.316	0.0	1.000	82997	0.0406			19.3	
363.00 > 169.00	2.316	2.316	0.0	1.000	40587		2.04(1.13-3.40)		291	
D 9 13C4-PFHpA										
367.00 > 322.00	2.316	2.329	-0.013	0.869	4422684	2.58		103	43277	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.329	2.329	0.0	1.000	219624	0.0814			16.3	
399.00 > 99.00	2.329	2.329	0.0	1.000	75099		2.92(1.50-4.49)		96.4	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 11 18O2 PFHxS										
403.00 > 84.00	2.329	2.342	-0.013	0.874	5560773	2.29		96.8	44811	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.643	2.634	0.009	1.000	108553	0.1316			705	
D 12 M2-6:2FTS										
429.00 > 81.00	2.643	2.651	-0.008	0.991	1251818	3.40		143	2052	
* 62 13C2-PFOA										
415.00 > 370.00	2.666	2.658	0.008		4575968	2.50			51347	
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.666	2.658	0.008	1.000	381293	0.1686			83.9	M
413.00 > 169.00	2.666	2.658	0.008	1.000	225121		1.69(0.84-2.52)		1012	M
D 14 13C4 PFOA										
417.00 > 372.00	2.666	2.673	-0.007	1.000	4589946	2.62		105	42209	
17 Perfluorooctane sulfonic acid										M
499.00 > 80.00	2.906	3.018	-0.112	0.960	274310	0.1441			171	M
499.00 > 99.00	3.026	3.018	0.008	1.000	52781		5.20(2.31-6.93)		301	
20 Perfluorononanoic acid										
463.00 > 419.00	3.026	3.025	0.001	1.000	78599	0.0441			53.3	
463.00 > 169.00	3.026	3.025	0.001	1.000	17458		4.50(1.90-5.69)		322	
D 18 13C4 PFOS										
503.00 > 80.00	3.026	3.036	-0.010	1.135	4015737	2.25		94.2	7757	
D 19 13C5 PFNA										
468.00 > 423.00	3.026	3.036	-0.010	1.135	4012738	2.57		103	51899	
D 21 13C8 FOSA										
506.00 > 78.00	3.371	3.376	-0.005	1.264	5612964	2.18		87.3	56105	
D 26 M2-8:2FTS										
529.00 > 81.00	3.371	3.376	-0.005	1.264	1245884	2.32		96.7	3592	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.380	3.380	0.0	1.000	20762	0.0150			34.4	
513.00 > 169.00	3.380	3.380	0.0	1.000	3775		5.50(2.36-7.09)		96.6	
D 23 13C2 PFDA										
515.00 > 470.00	3.380	3.385	-0.005	1.268	3303937	2.41		96.2	28784	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.539	3.544	-0.005	1.327	1440133	2.56		102	24566	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.698	3.705	-0.007	1.387	1468027	2.55		102	5057	
D 30 13C2 PFUnA										
565.00 > 520.00	3.709	3.715	-0.006	1.391	2876326	2.51		100	60806	
D 36 13C2 PFDoA										
615.00 > 570.00	3.999	4.005	-0.006	1.500	2558893	2.15		86.1	24752	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.500	4.500	0.0	1.688	2167915	1.76		70.3	13560	

QC Flag Legend

Review Flags

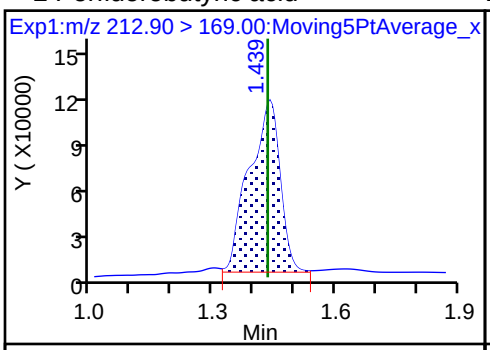
M - Manually Integrated

Report Date: 16-Jul-2018 12:43:08 Chrom Revision: 2.2 07-Jun-2018 07:41:54

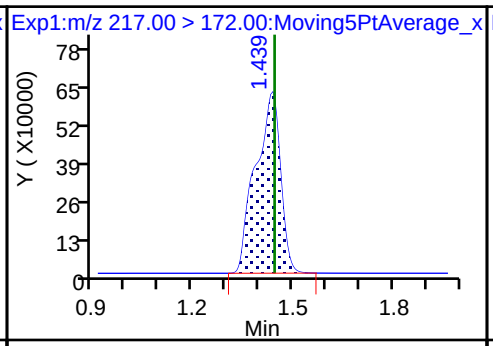
TestAmerica Sacramento

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\2018.07.13LLC_016.d				
Injection Date:	13-Jul-2018 22:04:27	Instrument ID:	A8_N		
Lims ID:	320-40571-A-29-A	Lab Sample ID:	320-40571-29		
Client ID:	NF30-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	10	Worklist Smp#:	11
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		

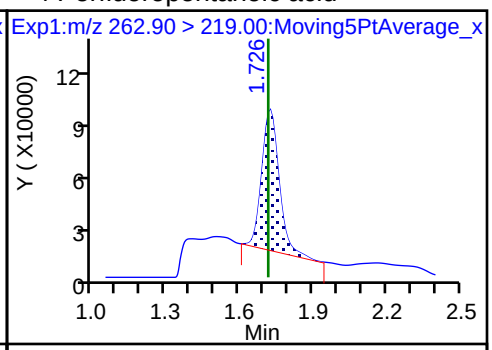
2 Perfluorobutyric acid



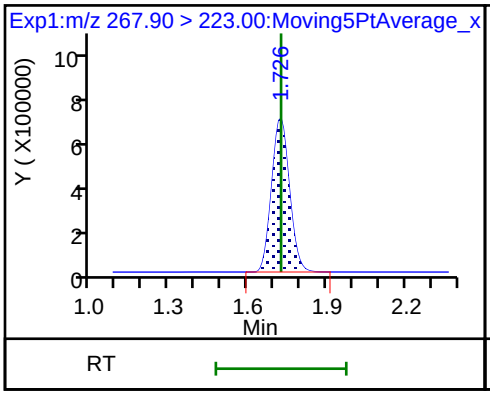
D 1 13C4 PFBA



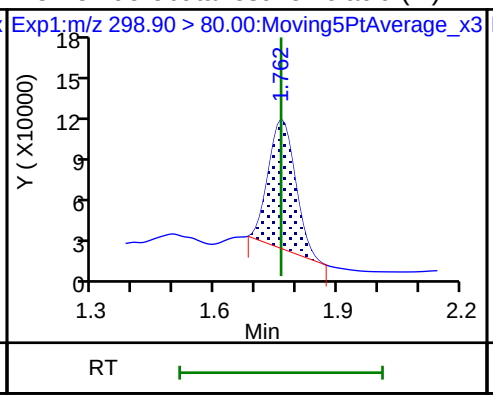
4 Perfluoropentanoic acid



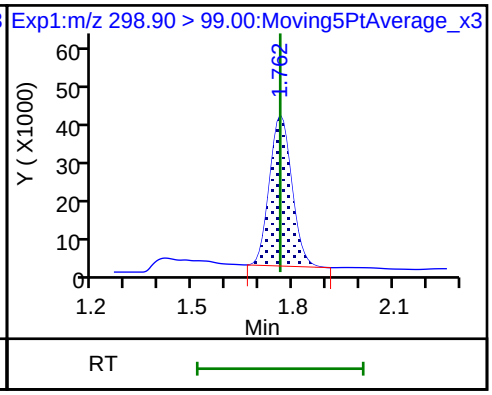
D 3 13C5-PFPeA



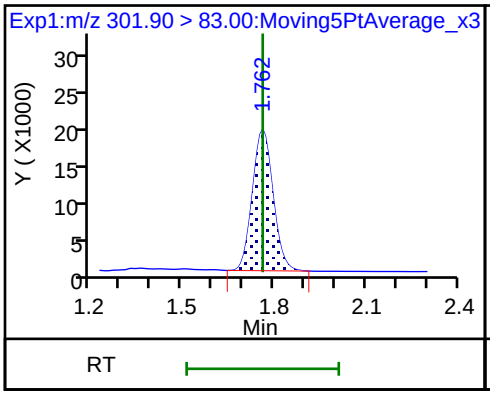
5 Perfluorobutanesulfonic acid (M)



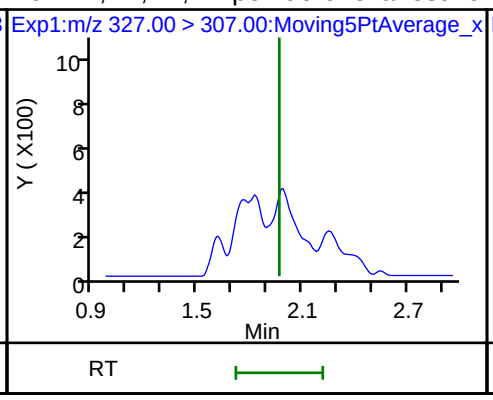
5 Perfluorobutanesulfonic acid



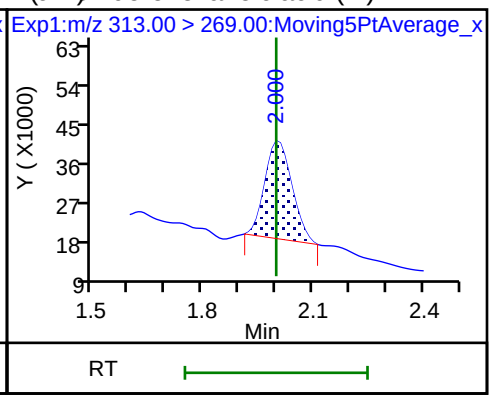
D 47 13C3-PFBS



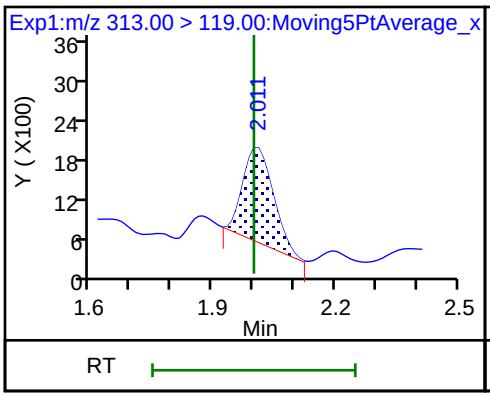
61 1H,1H,2H,2H-perfluorohexanesulfoni (ND)



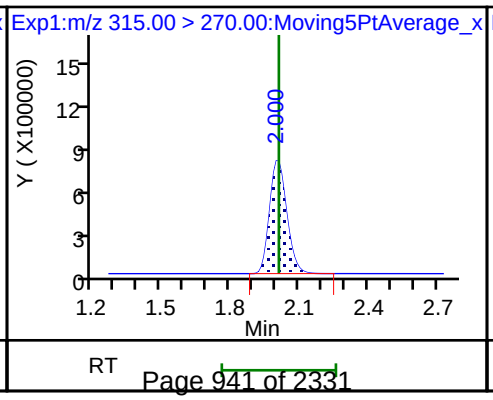
6 Perfluorohexanoic acid (M)



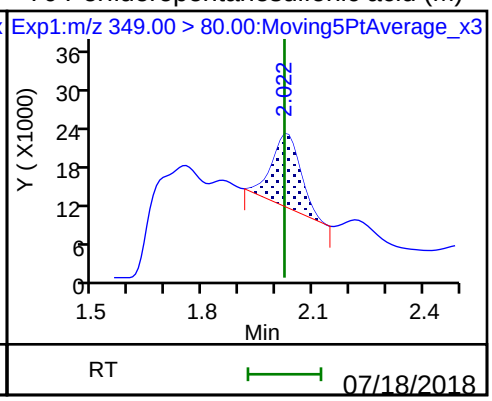
6 Perfluorohexanoic acid



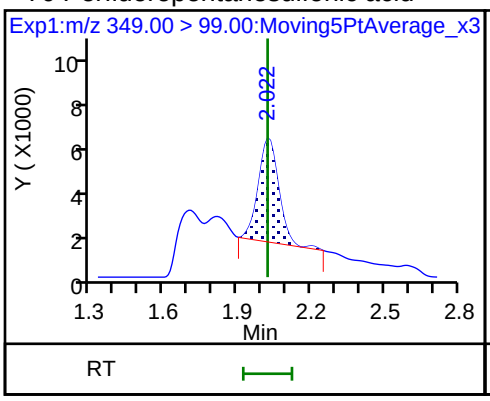
D 7 13C2 PFHxA



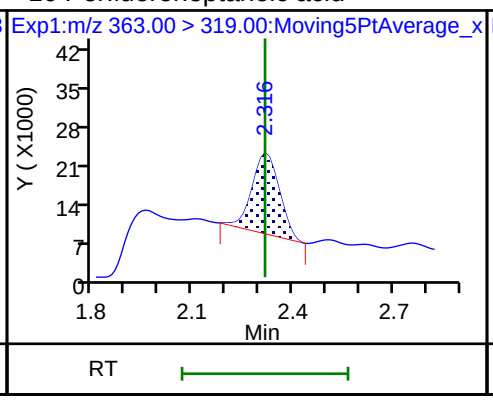
70 Perfluoropentanesulfonic acid (M)



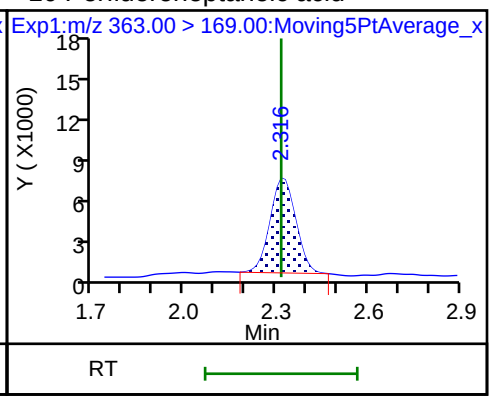
70 Perfluoropentanesulfonic acid



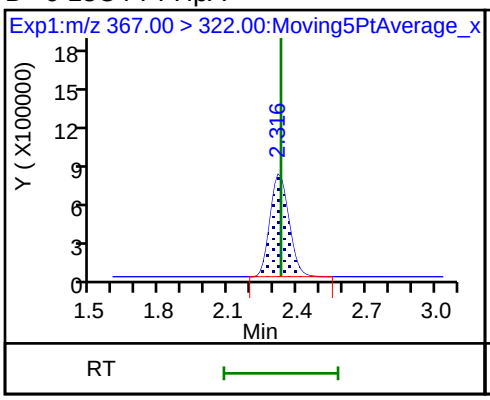
10 Perfluoroheptanoic acid



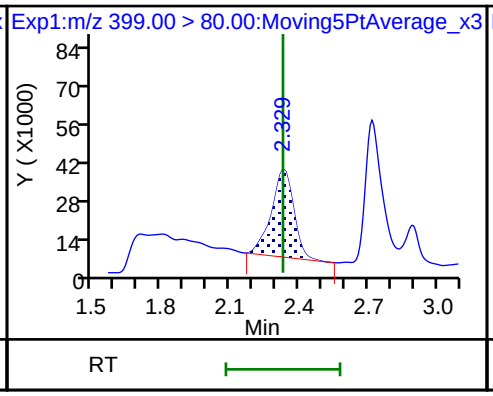
10 Perfluoroheptanoic acid



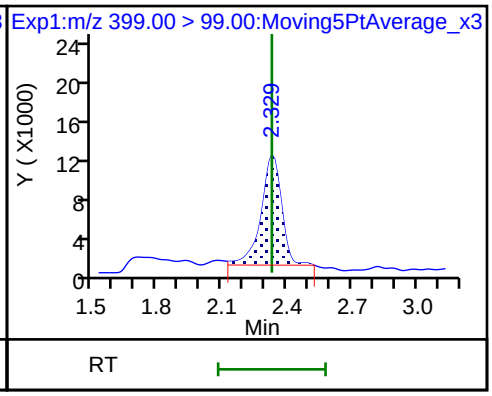
D 9 13C4-PFHpA



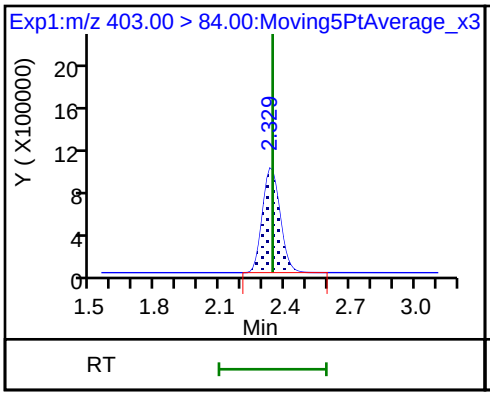
8 Perfluorohexanesulfonic acid



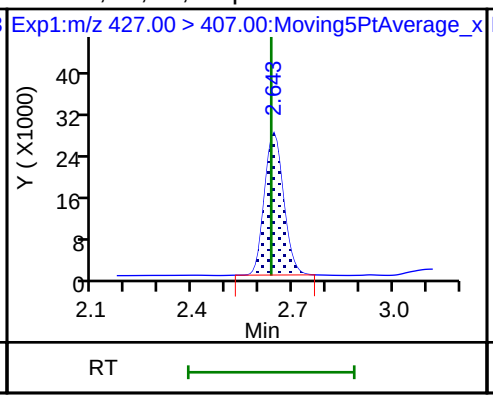
8 Perfluorohexanesulfonic acid



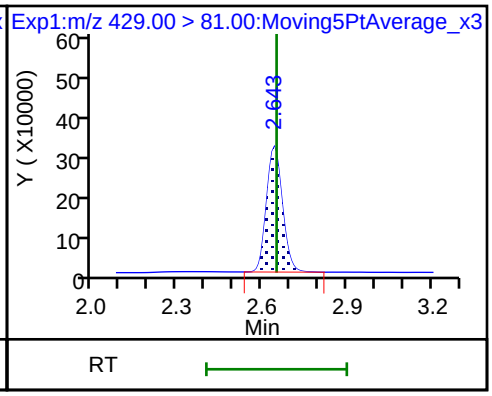
D 11 18O2 PFHxS



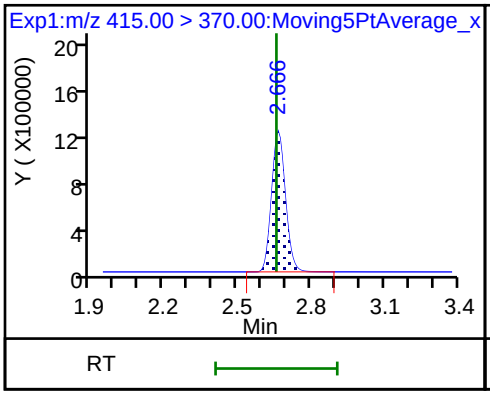
13 1H,1H,2H,2H-perfluorooctanesulfon



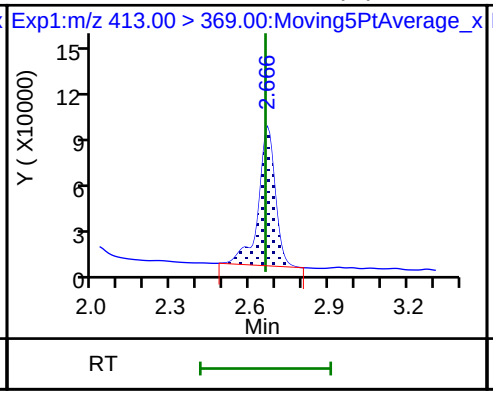
D 12 M2-6:2FTS



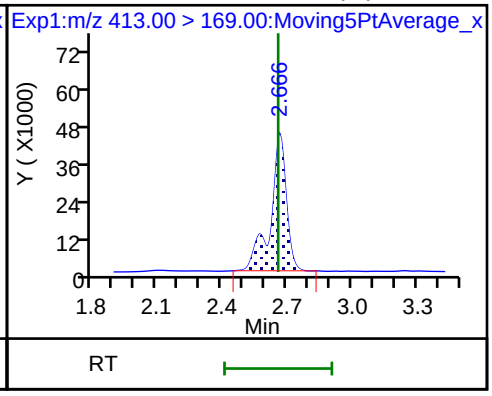
* 62 13C2-PFOA



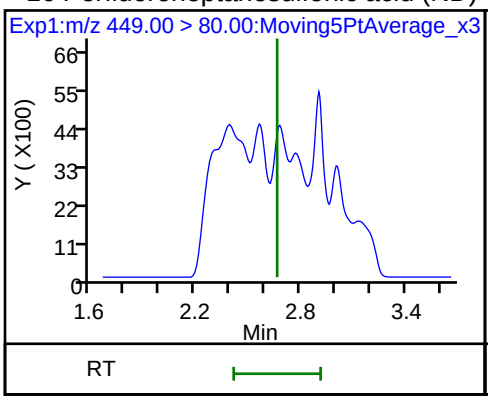
15 Perfluorooctanoic acid (M)



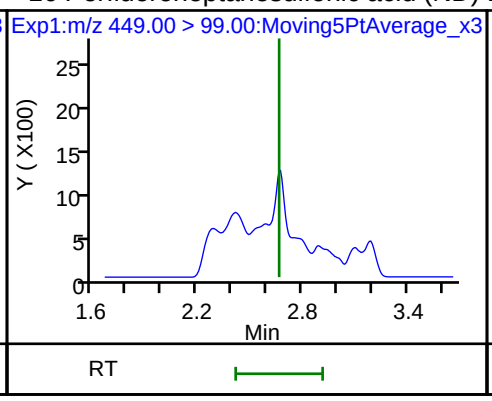
15 Perfluorooctanoic acid (M)



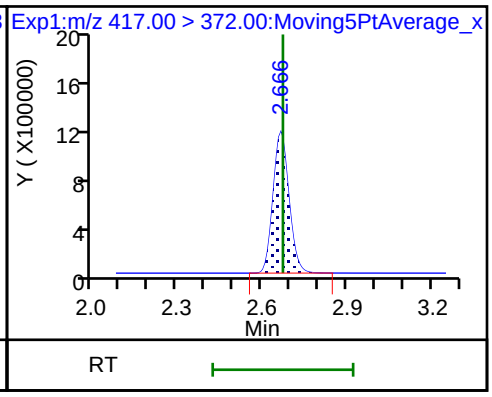
16 Perfluoroheptanesulfonic acid (ND)



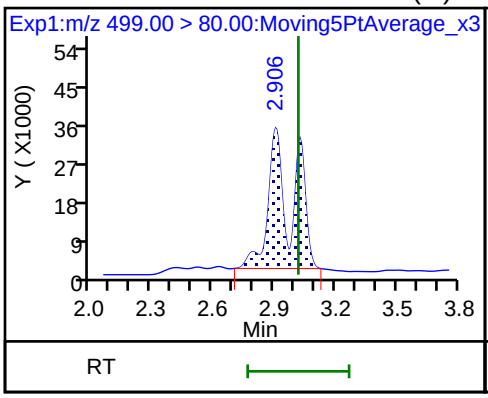
16 Perfluoroheptanesulfonic acid (ND)



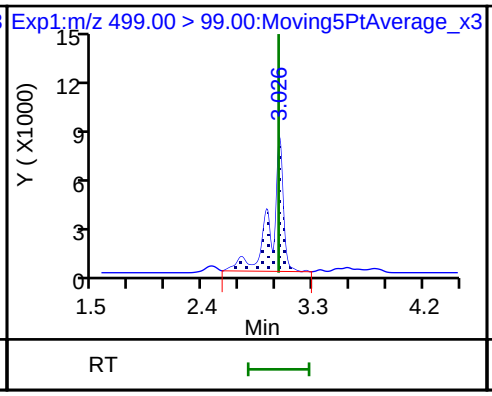
D 14 13C4 PFOA



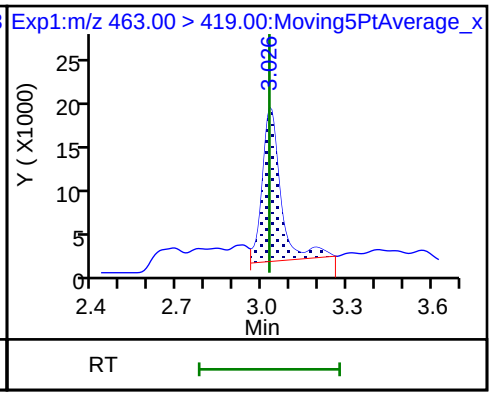
17 Perfluorooctane sulfonic acid (M)



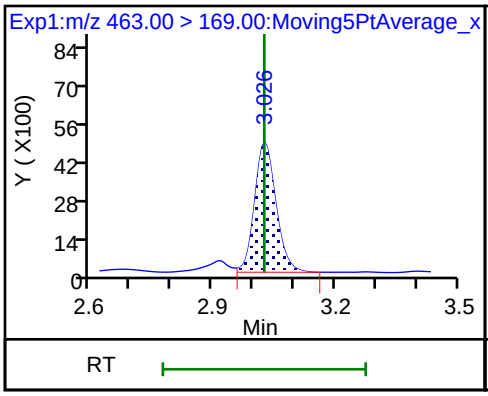
17 Perfluorooctane sulfonic acid



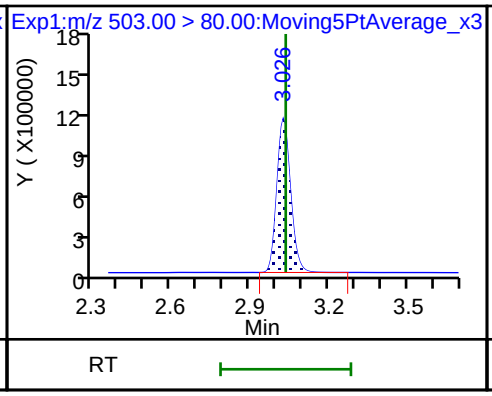
20 Perfluorononanoic acid



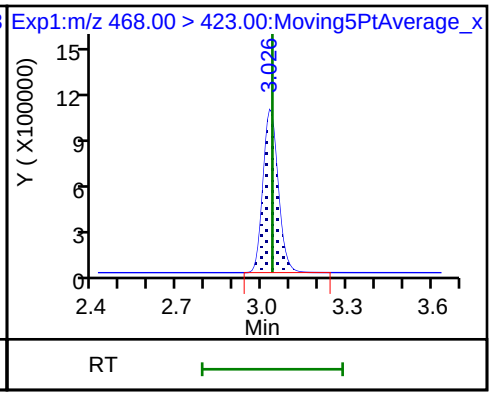
20 Perfluorononanoic acid



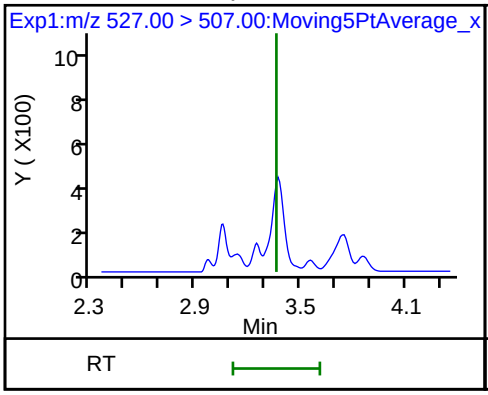
D 18 13C4 PFOS



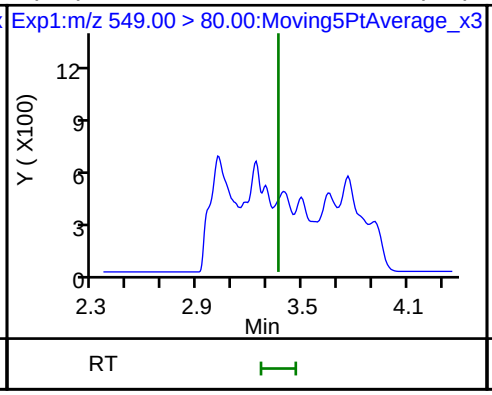
D 19 13C5 PFNA



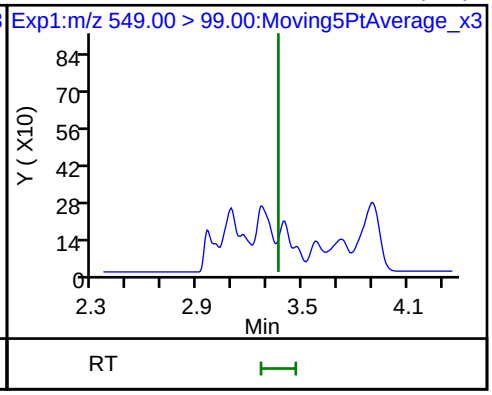
25 1H,1H,2H,2H-perfluorodecanesulfoni (ND)



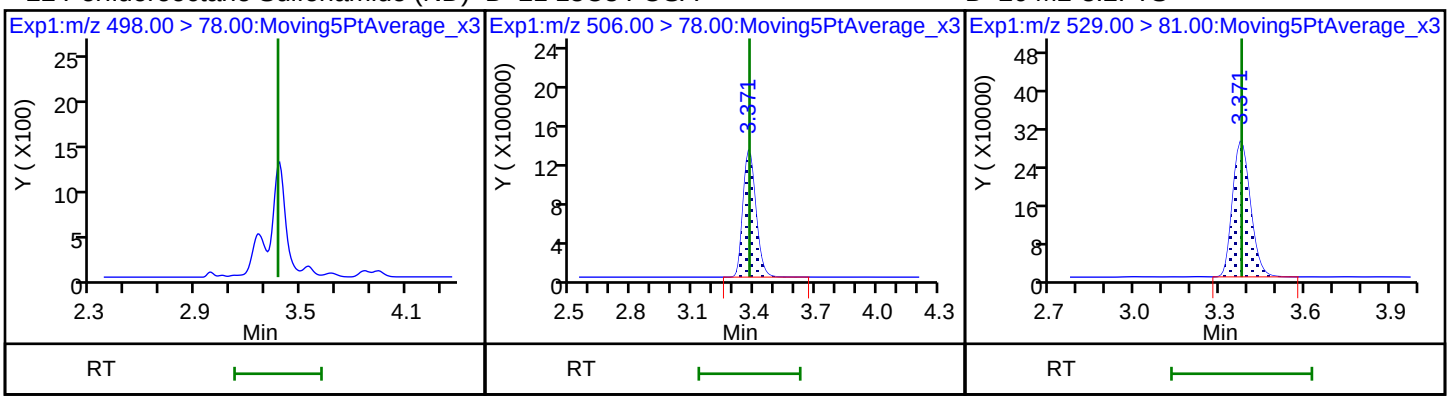
68 Perfluorononanesulfonic acid (ND)



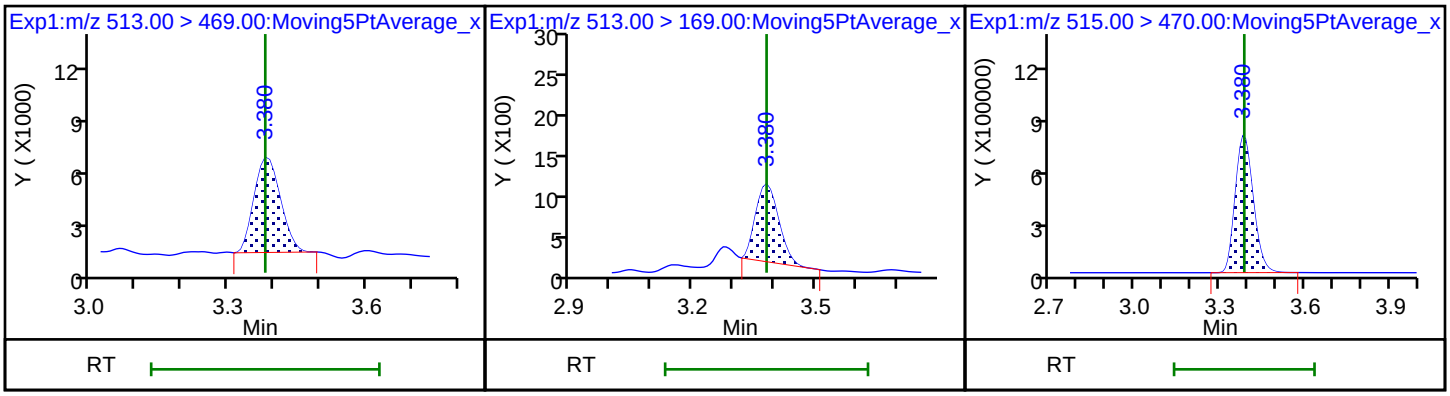
68 Perfluorononanesulfonic acid (ND)



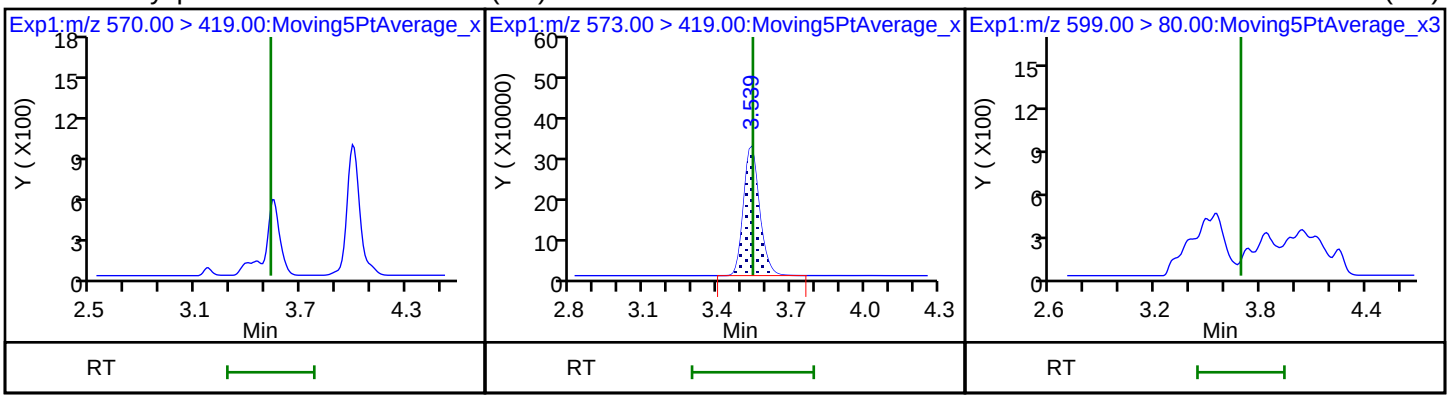
22 Perfluorooctane Sulfonamide (ND) D 21 13C8 FOSA D 26 M2-8:2FTS



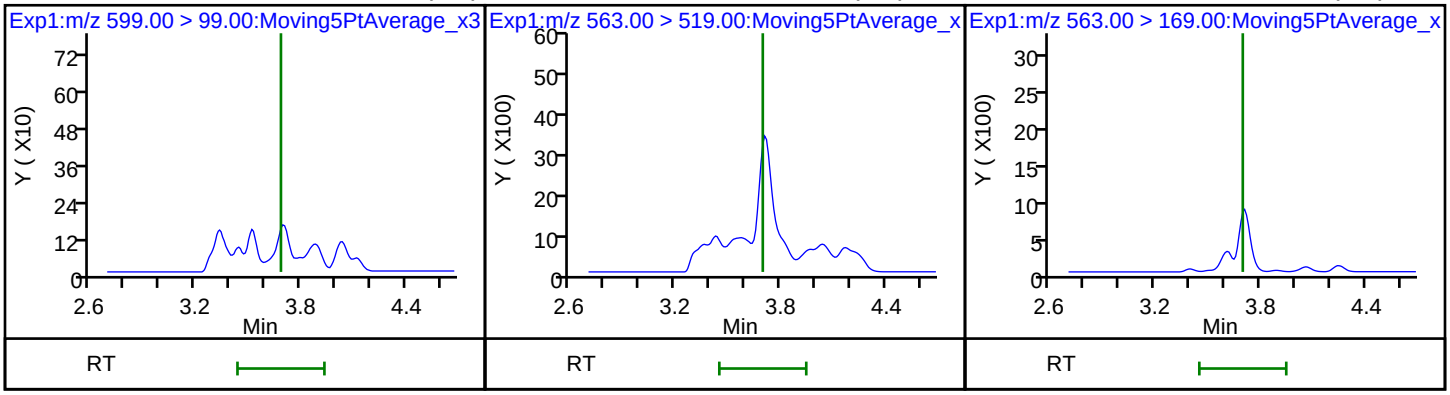
24 Perfluorodecanoic acid 24 Perfluorodecanoic acid D 23 13C2 PFDA



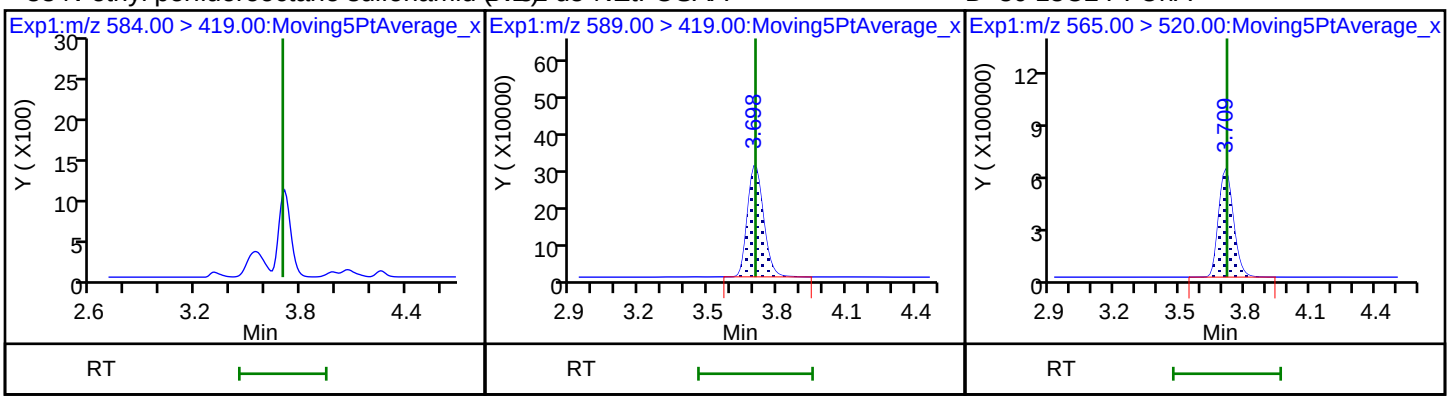
28 N-methyl perfluorooctane sulfonamid (ND) D 27 d3-NMeFOSAA 29 Perfluorodecane Sulfonic acid (ND)



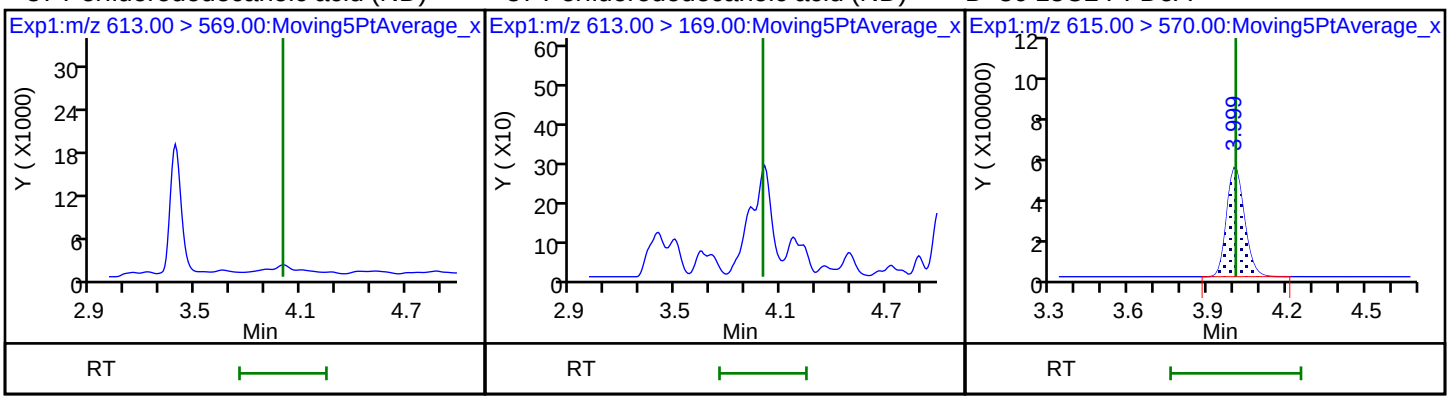
29 Perfluorodecane Sulfonic acid (ND) 31 Perfluoroundecanoic acid (ND) 31 Perfluoroundecanoic acid (ND)



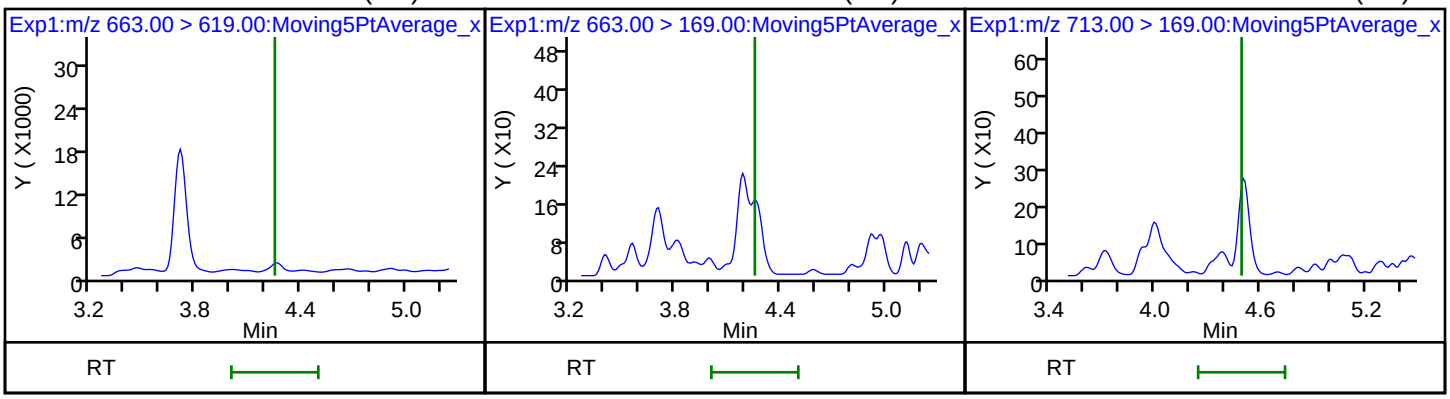
33 N-ethyl perfluorooctane sulfonamid (ND) D 32 d5-NEtFOSAA D 30 13C2 PFUnA



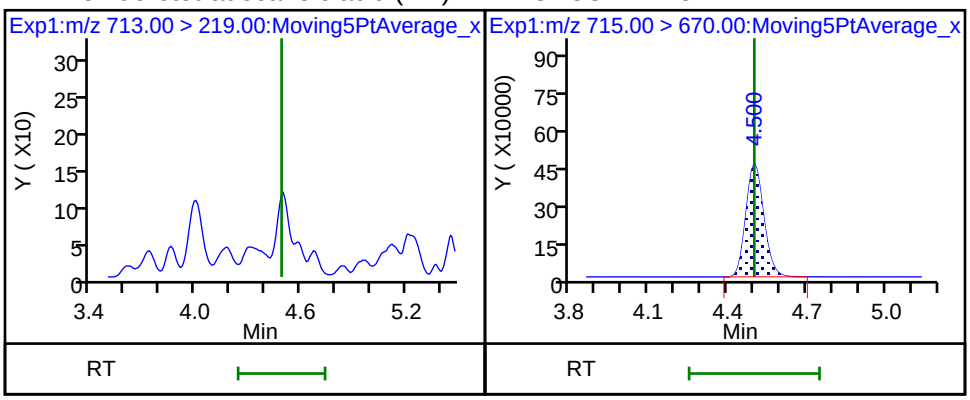
37 Perfluorododecanoic acid (ND) 37 Perfluorododecanoic acid (ND) D 36 13C2 PFDoA



41 Perfluorotridecanoic acid (ND) 41 Perfluorotridecanoic acid (ND) 42 Perfluorotetradecanoic acid (ND)



42 Perfluorotetradecanoic acid (ND) D 43 13C2-PFTeDA



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

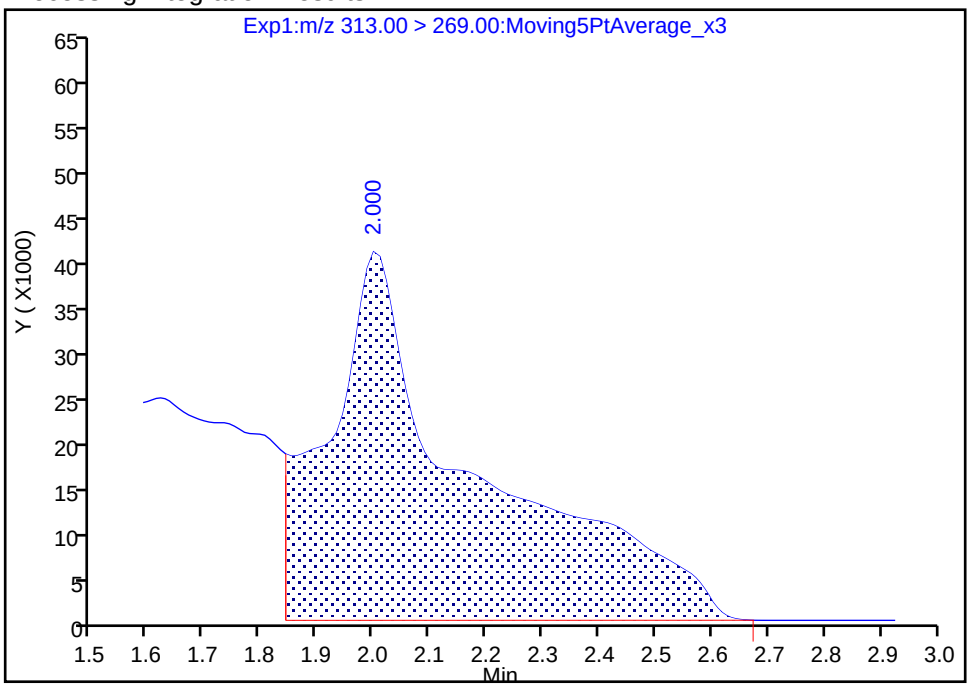
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\2018.07.13LLC_016.d				
Injection Date:	13-Jul-2018 22:04:27	Instrument ID:	A8_N		
Lims ID:	320-40571-A-29-A	Lab Sample ID:	320-40571-29		
Client ID:	NF30-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	10	Worklist Smp#:	11
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

6 Perfluorohexanoic acid, CAS: 307-24-4

Signal: 1

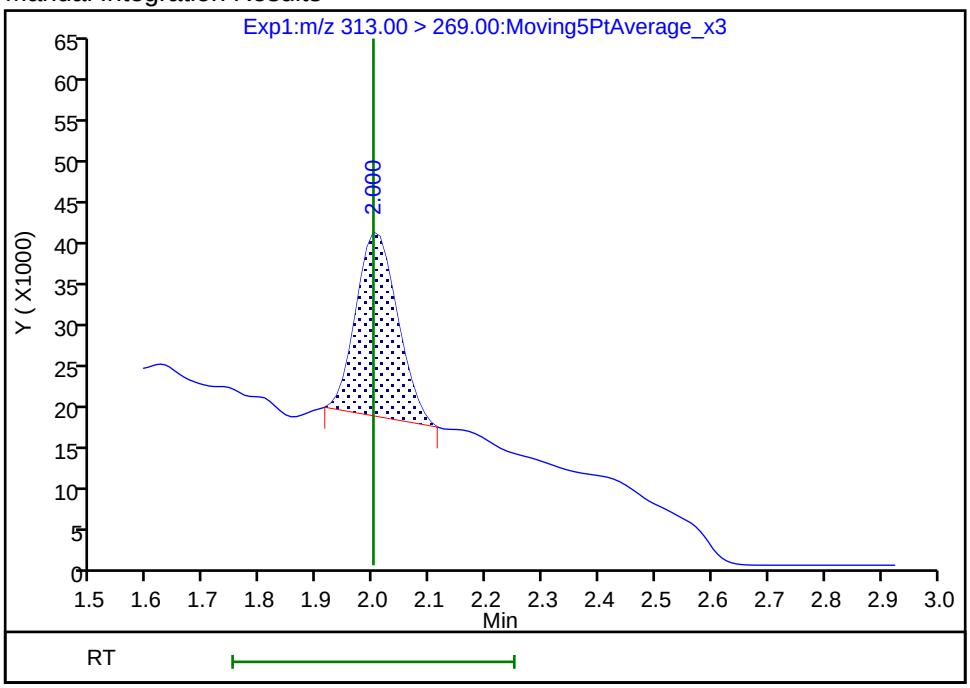
Processing Integration Results

RT: 2.00
Area: 734932
Amount: 0.439892
Amount Units: ng/ml



Manual Integration Results

RT: 2.00
Area: 114351
Amount: 0.068445
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 12:41:57
Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

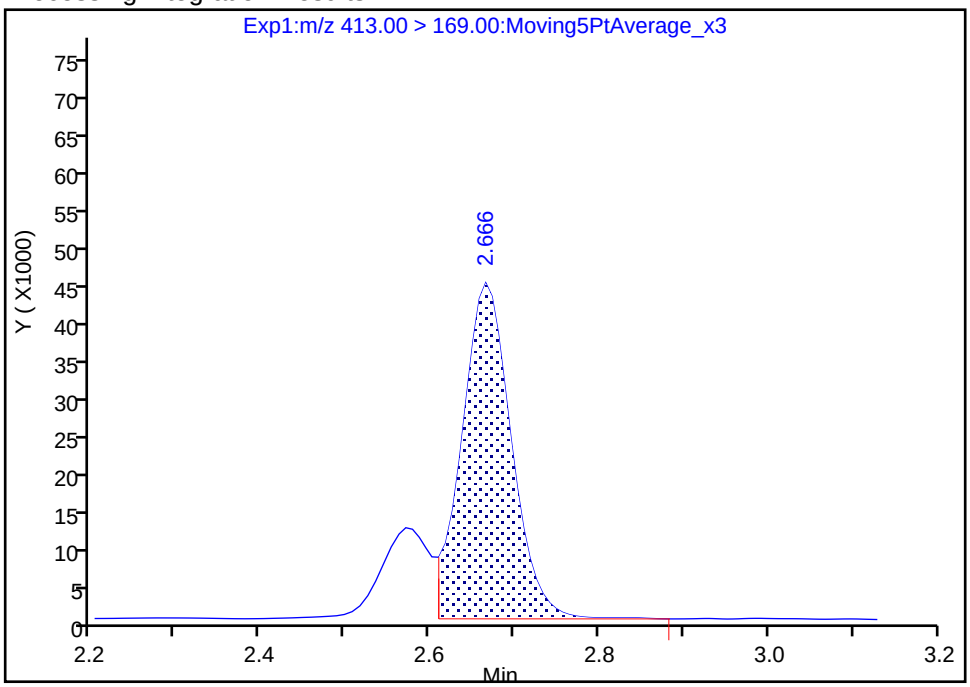
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\2018.07.13LLC_016.d				
Injection Date:	13-Jul-2018 22:04:27	Instrument ID:	A8_N		
Lims ID:	320-40571-A-29-A	Lab Sample ID:	320-40571-29		
Client ID:	NF30-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	10	Worklist Smp#:	11
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 2

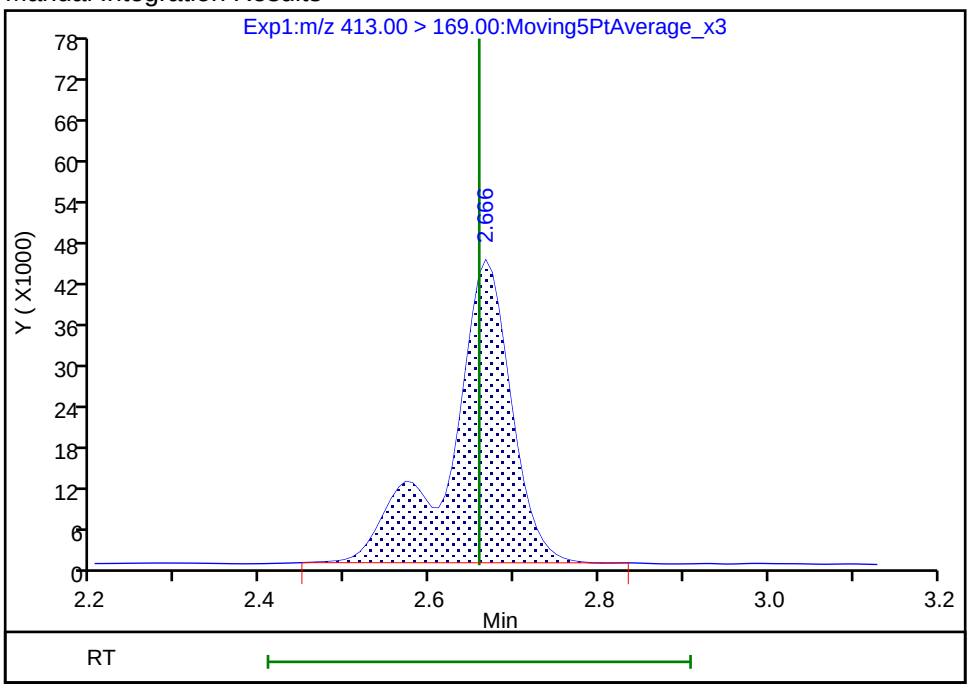
Processing Integration Results

RT: 2.67
Area: 180274
Amount: 0.166230
Amount Units: ng/ml



Manual Integration Results

RT: 2.67
Area: 225121
Amount: 0.168632
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 12:42:19
Audit Action: Manually Integrated Audit Reason: Isomers

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

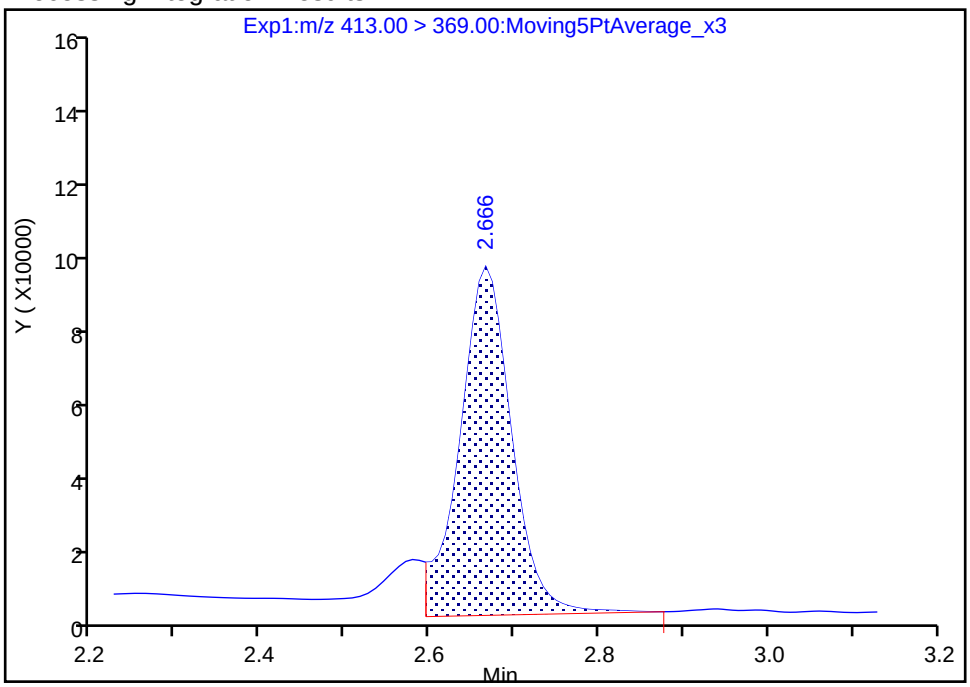
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\2018.07.13LLC_016.d				
Injection Date:	13-Jul-2018 22:04:27	Instrument ID:	A8_N		
Lims ID:	320-40571-A-29-A	Lab Sample ID:	320-40571-29		
Client ID:	NF30-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	10	Worklist Smp#:	11
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

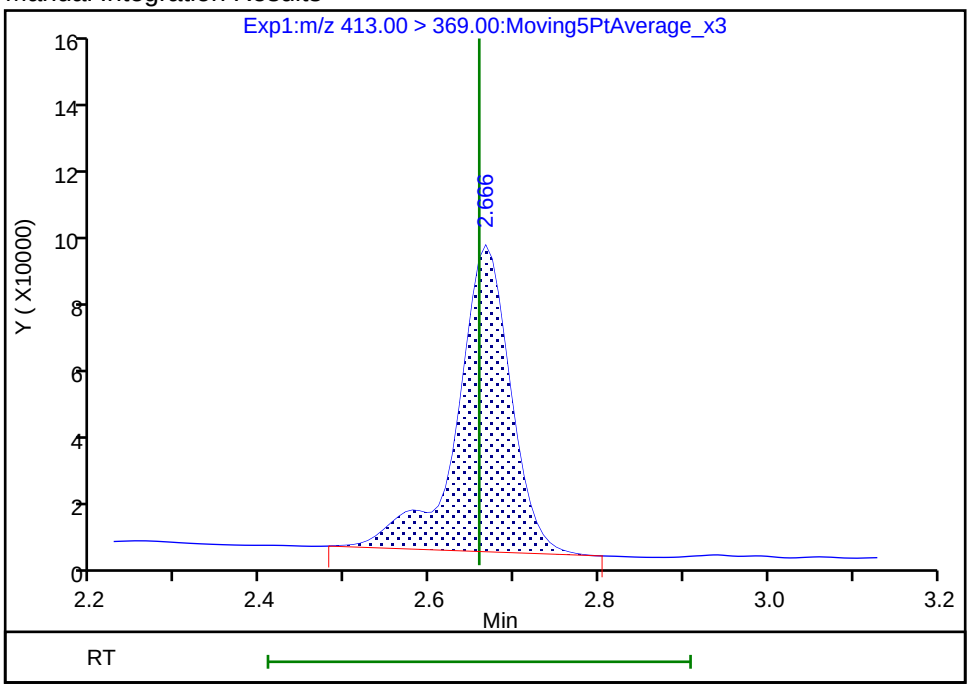
Processing Integration Results

RT: 2.67
Area: 375862
Amount: 0.166230
Amount Units: ng/ml



Manual Integration Results

RT: 2.67
Area: 381293
Amount: 0.168632
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 12:42:22
Audit Action: Manually Integrated Audit Reason: Isomers

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

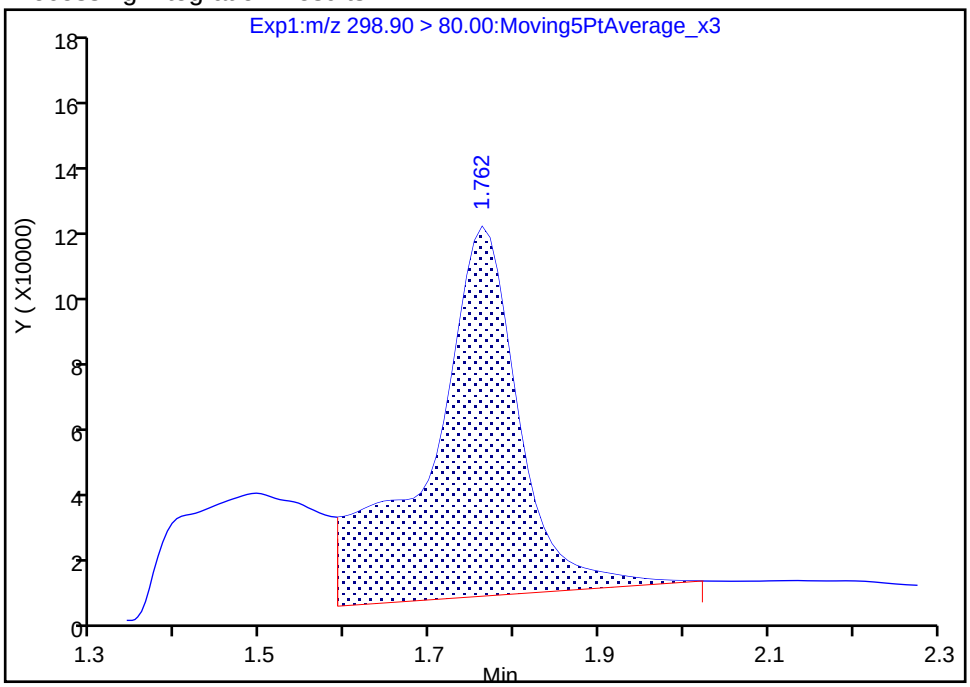
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\2018.07.13LLC_016.d				
Injection Date:	13-Jul-2018 22:04:27	Instrument ID:	A8_N		
Lims ID:	320-40571-A-29-A	Lab Sample ID:	320-40571-29		
Client ID:	NF30-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	10	Worklist Smp#:	11
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

5 Perfluorobutanesulfonic acid, CAS: 375-73-5

Signal: 1

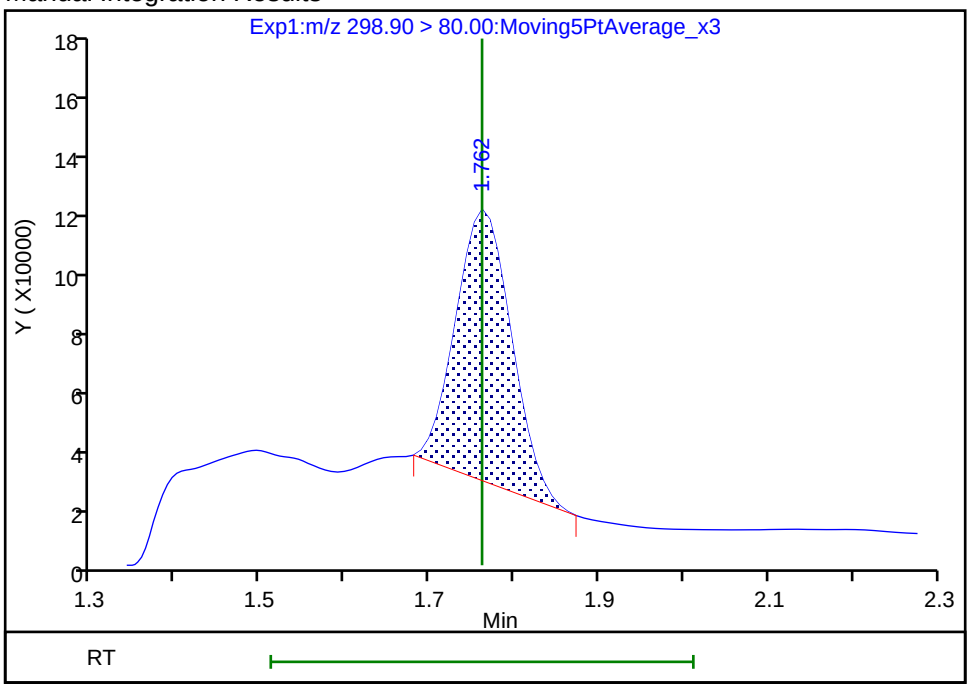
Processing Integration Results

RT: 1.76
Area: 812843
Amount: 0.274457
Amount Units: ng/ml



Manual Integration Results

RT: 1.76
Area: 412639
Amount: 0.139328
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 12:41:48

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

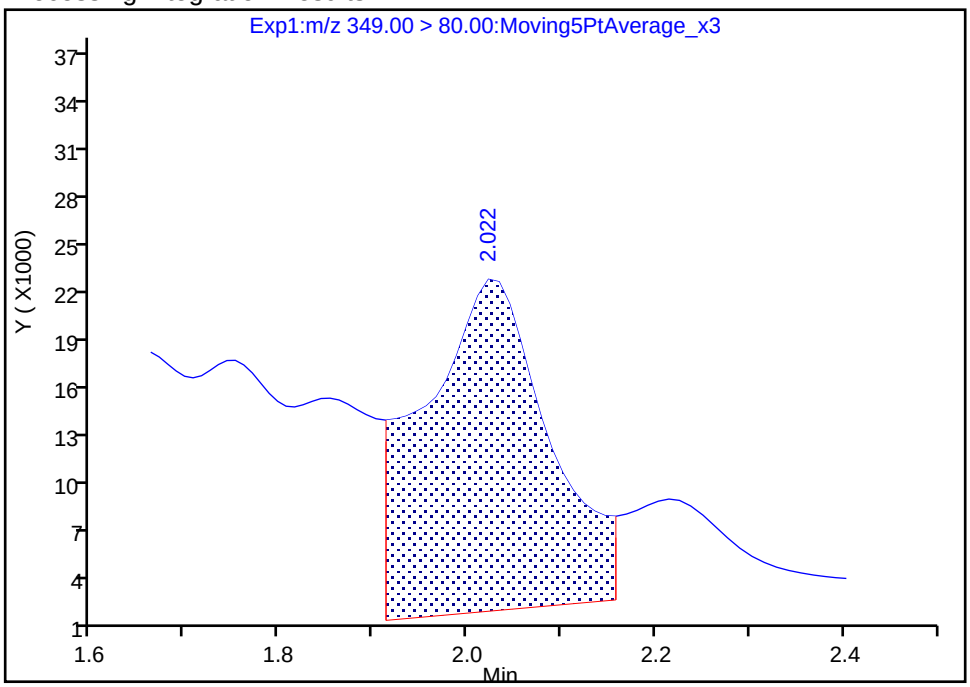
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\2018.07.13LLC_016.d				
Injection Date:	13-Jul-2018 22:04:27	Instrument ID:	A8_N		
Lims ID:	320-40571-A-29-A	Lab Sample ID:	320-40571-29		
Client ID:	NF30-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	10	Worklist Smp#:	11
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

70 Perfluoropentanesulfonic acid, CAS: 2706-91-4

Signal: 1

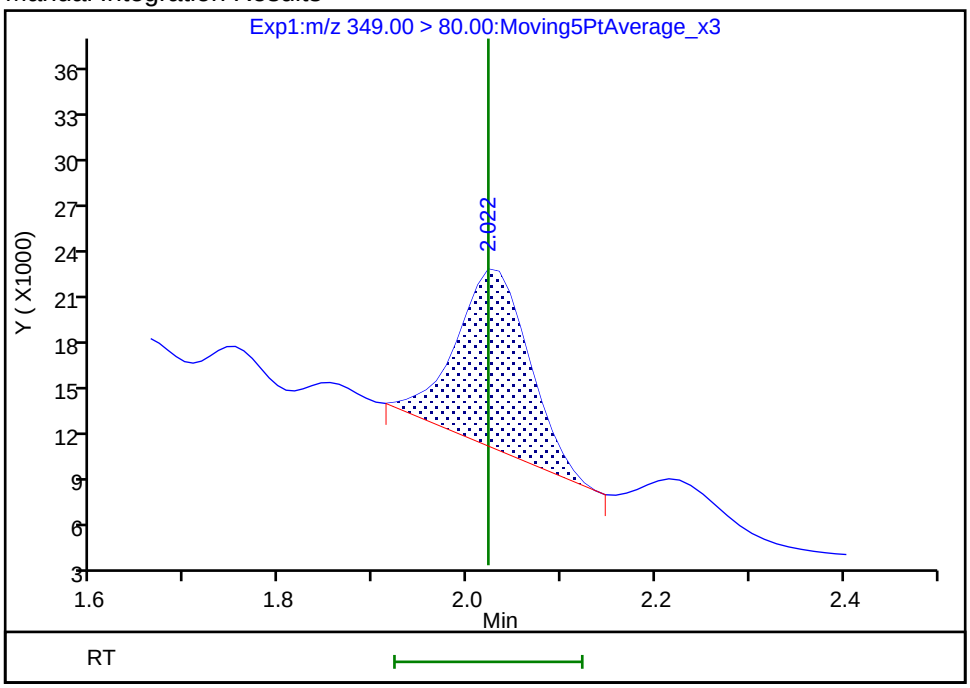
Processing Integration Results

RT: 2.02
Area: 190875
Amount: 0.070650
Amount Units: ng/ml



Manual Integration Results

RT: 2.02
Area: 63199
Amount: 0.023392
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 12:42:04
Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

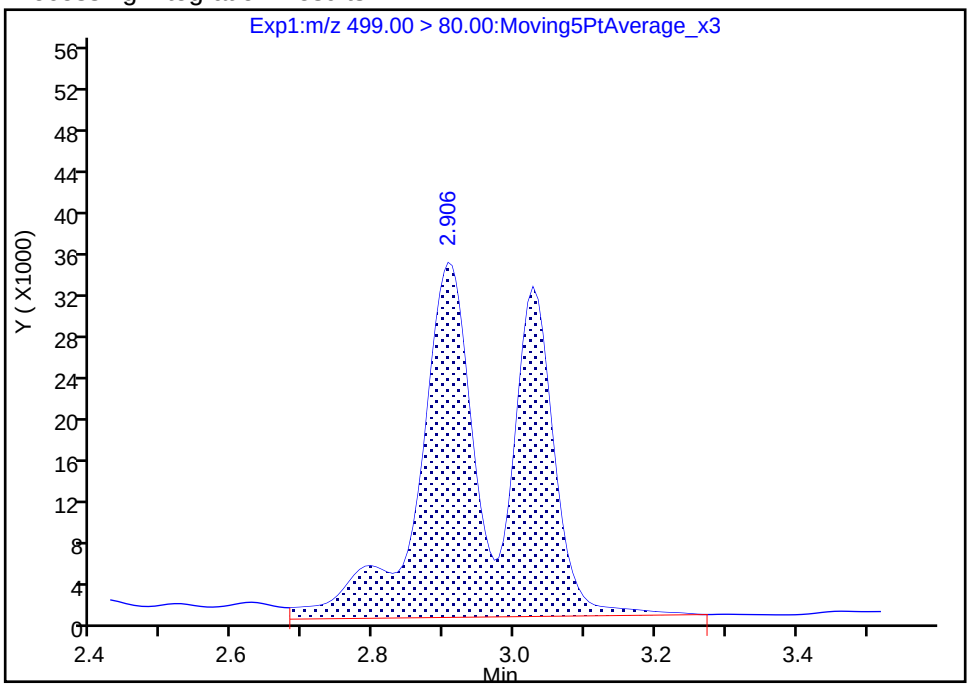
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\2018.07.13LLC_016.d				
Injection Date:	13-Jul-2018 22:04:27	Instrument ID:	A8_N		
Lims ID:	320-40571-A-29-A	Lab Sample ID:	320-40571-29		
Client ID:	NF30-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	10	Worklist Smp#:	11
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

17 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

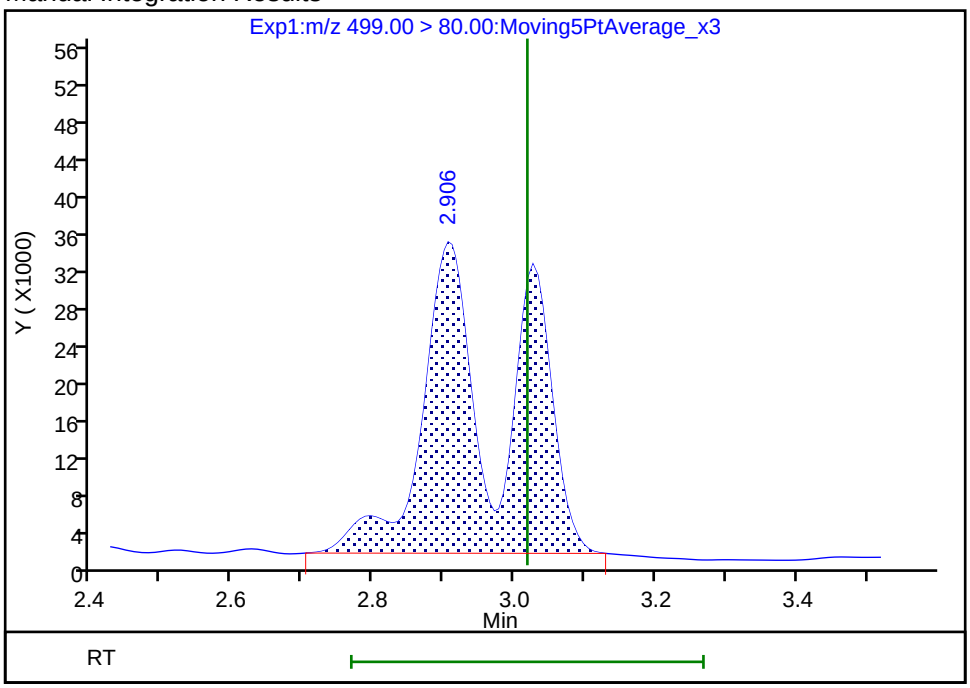
Processing Integration Results

RT: 2.91
Area: 304265
Amount: 0.159806
Amount Units: ng/ml



Manual Integration Results

RT: 2.91
Area: 274310
Amount: 0.144073
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 12:42:42

Audit Action: Manually Integrated Audit Reason: Baseline

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF30-SS-02
Lab Sample ID: 320-40571-30
Matrix: Solid
Lab File ID: 2018.07.14LLA_027.d
Analysis Method: 537 (modified)
Date Collected: 06/20/2018 12:30
Extraction Method: SHAKE
Date Extracted: 06/28/2018 06:06
Sample wt/vol: 5.09(g)
Date Analyzed: 07/14/2018 14:09
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture: 16.0
GPC Cleanup:(Y/N) N
Analysis Batch No.: 234231
Units: mg/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	ND		0.00023	0.000033
2706-90-3	Perfluoropentanoic acid (PFPeA)	ND		0.00023	0.000090
307-24-4	Perfluorohexanoic acid (PFHxA)	ND		0.00023	0.000049
375-85-9	Perfluoroheptanoic acid (PFHpA)	ND		0.00023	0.000034
335-67-1	Perfluorooctanoic acid (PFOA)	ND		0.00023	0.00010
375-95-1	Perfluorononanoic acid (PFNA)	ND		0.00023	0.000042
335-76-2	Perfluorodecanoic acid (PFDA)	ND		0.00023	0.000026
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		0.00023	0.000042
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		0.00023	0.000078
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		0.00023	0.000060
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		0.00023	0.000063
375-73-5	Perfluorobutanesulfonic acid (PFBS)	ND		0.00023	0.000029
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	ND		0.00023	0.000036
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.00023	0.000041
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	ND		0.00058	0.00023
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		0.00023	0.000046
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		0.00023	0.000096
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.0023	0.00046
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.0023	0.00043
27619-97-2	6:2 FTS	ND		0.0023	0.00018
39108-34-4	8:2 FTS	ND		0.0023	0.00029

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF30-SS-02
Lab Sample ID: 320-40571-30
Matrix: Solid
Lab File ID: 2018.07.14LLA_027.d
Analysis Method: 537 (modified)
Date Collected: 06/20/2018 12:30
Extraction Method: SHAKE
Date Extracted: 06/28/2018 06:06
Sample wt/vol: 5.09(g)
Date Analyzed: 07/14/2018 14:09
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture: 16.0
GPC Cleanup:(Y/N) N
Analysis Batch No.: 234231
Units: mg/Kg

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00992	13C4 PFBA	72		25-150
STL01893	13C5 PFPeA	76		25-150
STL00993	13C2 PFHxA	80		25-150
STL01892	13C4-PFHpA	80		25-150
STL00990	13C4 PFOA	79		25-150
STL00995	13C5 PFNA	74		25-150
STL00996	13C2 PFDA	79		25-150
STL00997	13C2 PFUnA	79		25-150
STL00998	13C2 PFDoA	76		25-150
STL02116	13C2-PFTeDA	81		25-150
STL02337	13C3-PFBS	75		25-150
STL00994	18O2 PFHxS	76		25-150
STL00991	13C4 PFOS	71		25-150
STL01056	13C8 FOSA	68		25-150
STL02118	d3-NMeFOSAA	50		25-150
STL02117	d5-NEtFOSAA	55		25-150
STL02279	M2-6:2FTS	59		25-150
STL02280	M2-8:2FTS	55		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180716-61105.b\2018.07.14LLA_027.d
Lims ID: 320-40571-A-30-A
Client ID: NF30-SS-02
Sample Type: Client
Inject. Date: 14-Jul-2018 14:09:05 ALS Bottle#: 17 Worklist Smp#: 10
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-40571-a-30-a
Misc. Info.: Plate: 1 Rack: 5
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180716-61105.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 17-Jul-2018 08:22:30 Calib Date: 11-Jul-2018 15:38:42
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK016

First Level Reviewer: mongkols Date: 17-Jul-2018 08:22:30

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										M
217.00 > 172.00	1.435	1.436	-0.001	0.538	4197318	1.79		71.7	34104	M
2 Perfluorobutyric acid										M
212.90 > 169.00	1.441	1.441	0.0	1.004	22391	0.0135			6.1	M
D 3 13C5-PFPeA										
267.90 > 223.00	1.719	1.720	-0.001	0.645	3089115	1.90		75.9	48176	
D 47 13C3-PFBS										
301.90 > 83.00	1.755	1.756	-0.001	0.658	71272	1.74		75.0	405	
D 7 13C2 PFHxA										
315.00 > 270.00	1.991	1.992	-0.001	0.747	3530207	2.01		80.4	60111	
D 9 13C4-PFHpA										
367.00 > 322.00	2.319	2.306	0.013	0.869	3234931	2.00		80.0	48624	
D 11 18O2 PFHxS										
403.00 > 84.00	2.332	2.319	0.013	0.874	4109136	1.79		75.8	45423	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.332	2.332	0.0	1.000	17643	0.008846			183	
399.00 > 99.00	2.332	2.332	0.0	1.000	7645		2.31(1.50-4.49)		45.9	
D 12 M2-6:2FTS										
429.00 > 81.00	2.643	2.628	0.015	0.991	489786	1.41		59.5	10537	
D 14 13C4 PFOA										
417.00 > 372.00	2.667	2.652	0.015	1.000	3249477	1.97		78.8	45286	
* 62 13C2-PFOA										
415.00 > 370.00	2.667	2.667	0.0		4315412	2.50			63215	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.667	2.667	0.0	1.000	18893	0.0118			9.1	
413.00 > 169.00	2.667	2.667	0.0	1.000	11607		1.63(0.84-2.52)		56.7	
D 19 13C5 PFNA										
468.00 > 423.00	3.028	3.018	0.010	1.135	2738515	1.86		74.3	59915	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 18 13C4 PFOS										
503.00 > 80.00	3.021	3.018	0.003	1.133	2853604	1.70		71.0	57495	
D 26 M2-8:2FTS										
529.00 > 81.00	3.374	3.361	0.013	1.265	669473	1.32		55.1	13871	
D 23 13C2 PFDA										
515.00 > 470.00	3.383	3.370	0.013	1.269	2561003	1.98		79.1	39211	
D 21 13C8 FOSA										
506.00 > 78.00	3.374	3.370	0.004	1.265	4123136	1.70		68.0	38688	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.374	3.377	-0.003	1.000	5235	0.003221			91.2	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.533	3.520	0.013	1.325	657934	1.24		49.6	18285	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.700	3.687	0.013	1.388	745323	1.37		54.8	2248	
D 30 13C2 PFUnA										
565.00 > 520.00	3.711	3.698	0.013	1.392	2134439	1.97		78.9	44427	
D 36 13C2 PFDoA										
615.00 > 570.00	3.999	3.988	0.011	1.500	2141269	1.91		76.4	19965	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.490	4.480	0.010	1.684	2367604	2.03		81.4	17369	

QC Flag Legend

Review Flags

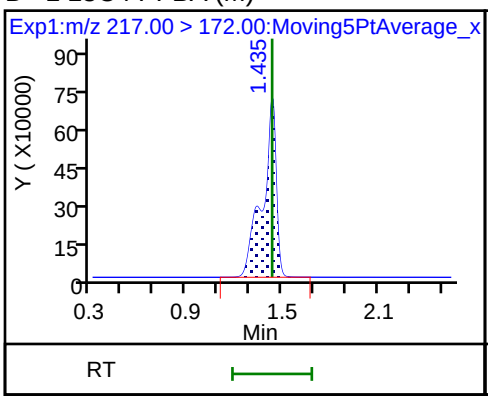
M - Manually Integrated

Report Date: 17-Jul-2018 08:22:31 Chrom Revision: 2.2 07-Jun-2018 07:41:54

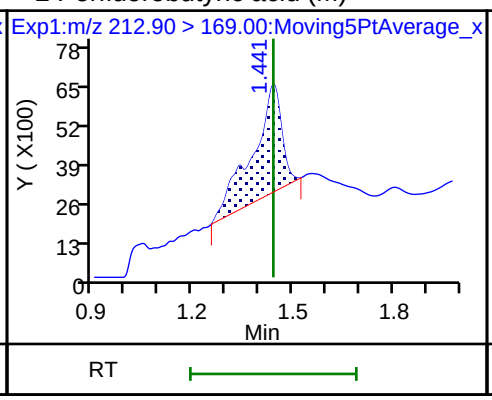
TestAmerica Sacramento

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180716-61105.b\2018.07.14LLA_027.d				
Injection Date:	14-Jul-2018 14:09:05	Instrument ID:	A8_N		
Lims ID:	320-40571-A-30-A	Lab Sample ID:	320-40571-30		
Client ID:	NF30-SS-02				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	17	Worklist Smp#:	10
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		

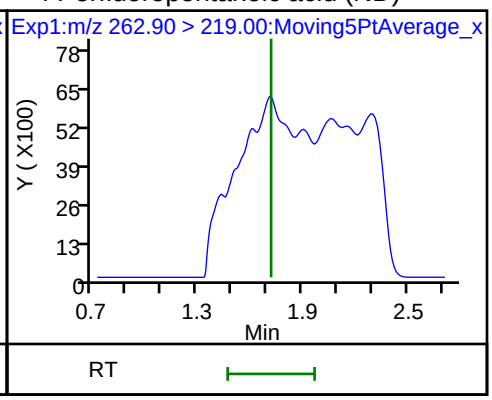
D 1 13C4 PFBA (M)



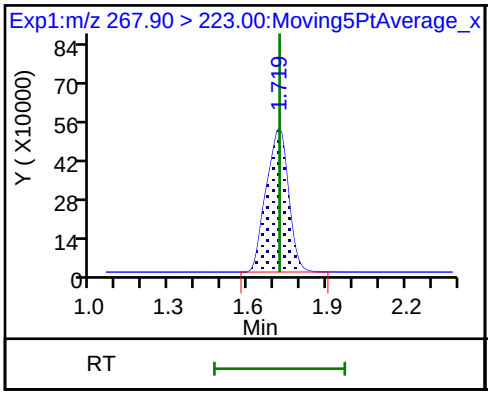
2 Perfluorobutyric acid (M)



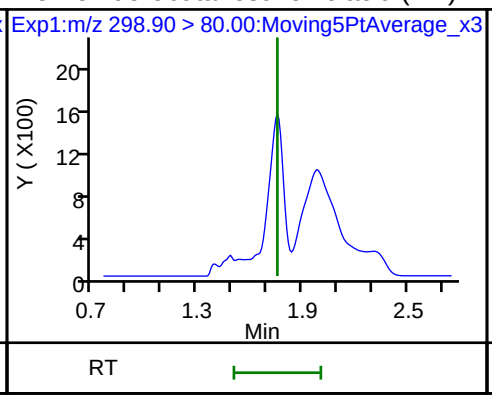
4 Perfluoropentanoic acid (ND)



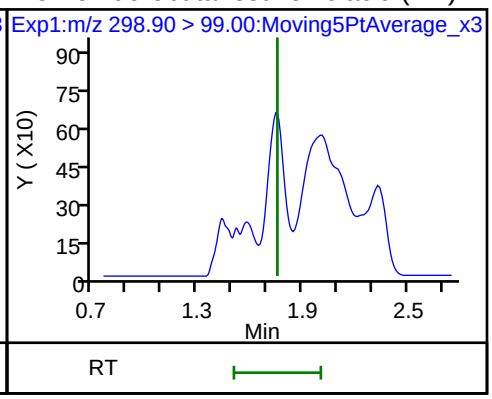
D 3 13C5-PFPeA



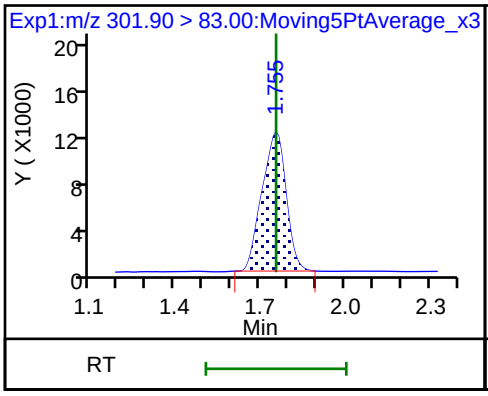
5 Perfluorobutanesulfonic acid (ND)



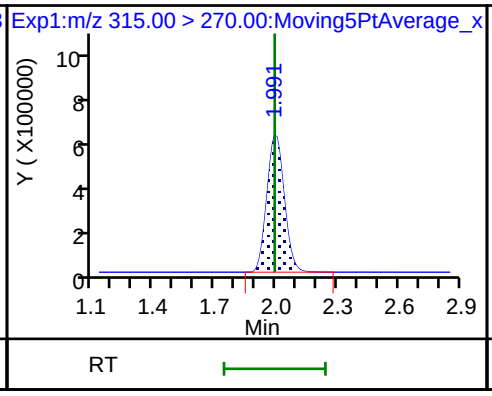
5 Perfluorobutanesulfonic acid (ND)



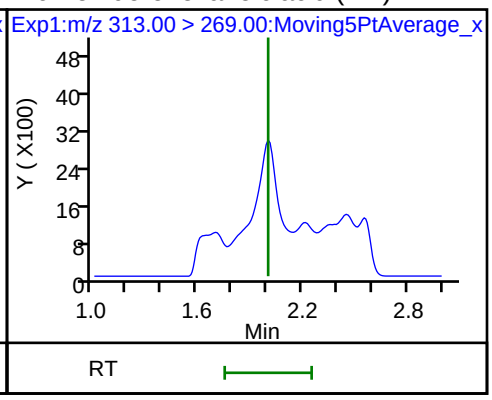
D 47 13C3-PFBS



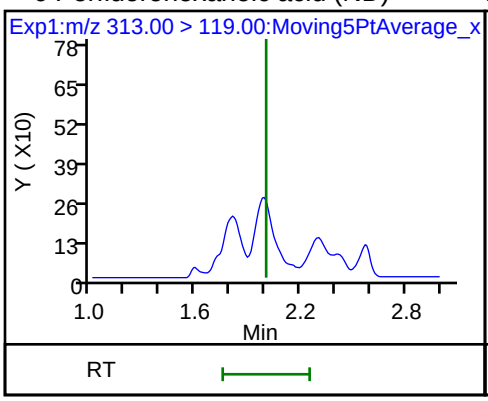
D 7 13C2 PFHxA



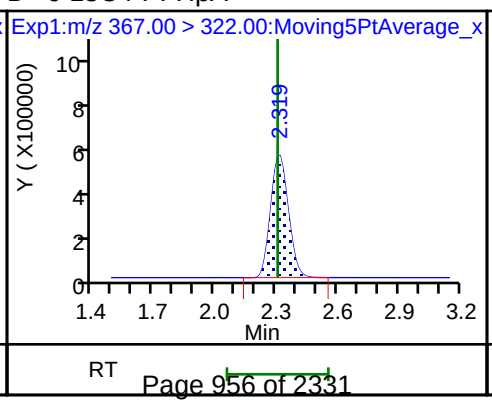
6 Perfluorohexanoic acid (ND)



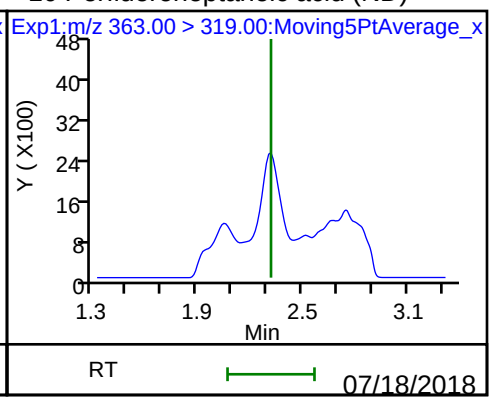
6 Perfluorohexanoic acid (ND)



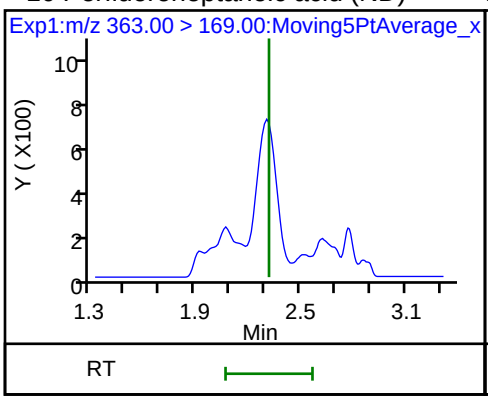
D 9 13C4-PFHpA



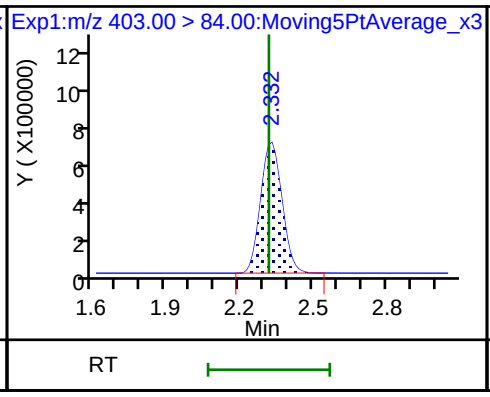
10 Perfluoroheptanoic acid (ND)



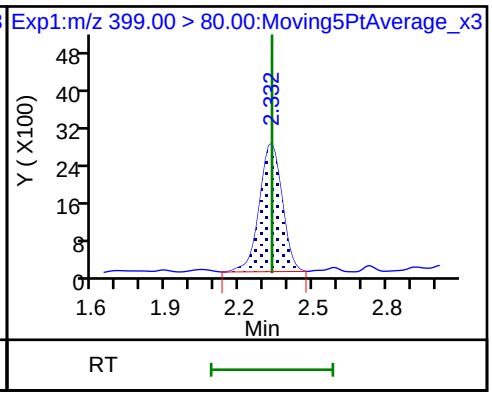
10 Perfluoroheptanoic acid (ND)



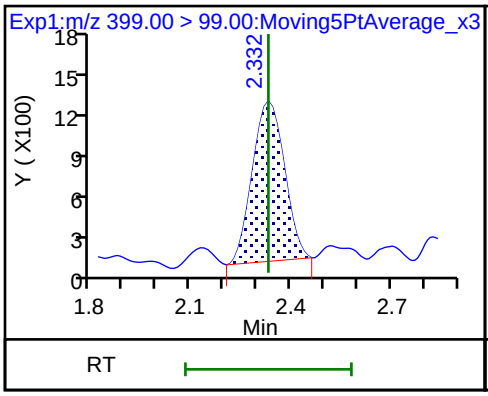
D 11 18O2 PFHxS



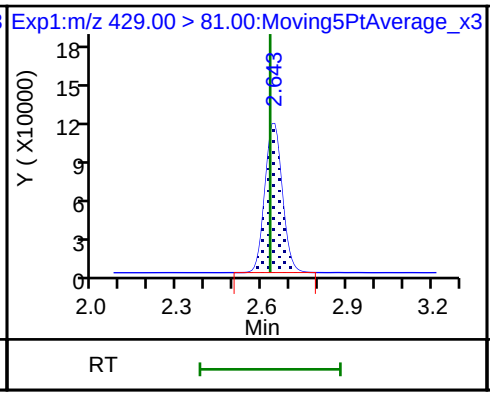
8 Perfluorohexanesulfonic acid



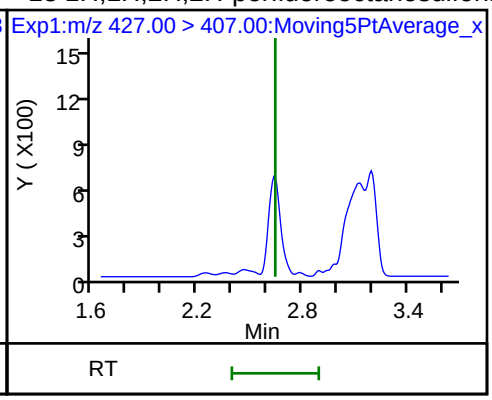
8 Perfluorohexanesulfonic acid



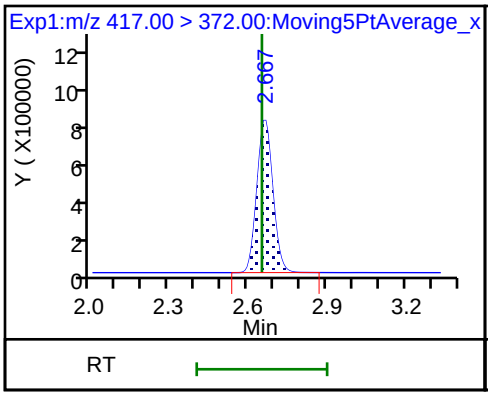
D 12 M2-6:2FTS



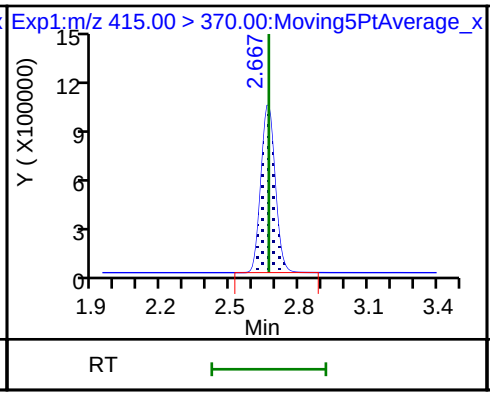
13 1H,1H,2H,2H-perfluorooctanesulfoni (ND)



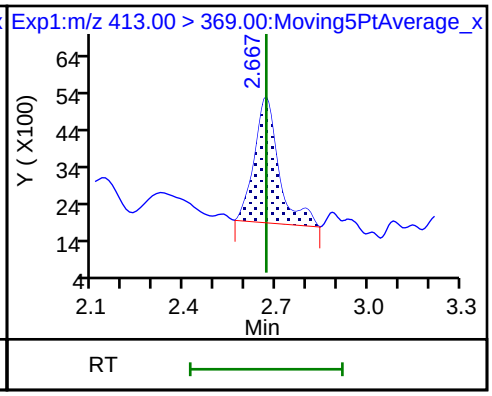
D 14 13C4 PFOA



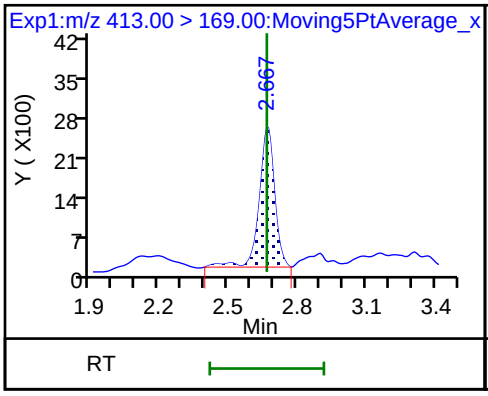
* 62 13C2-PFOA



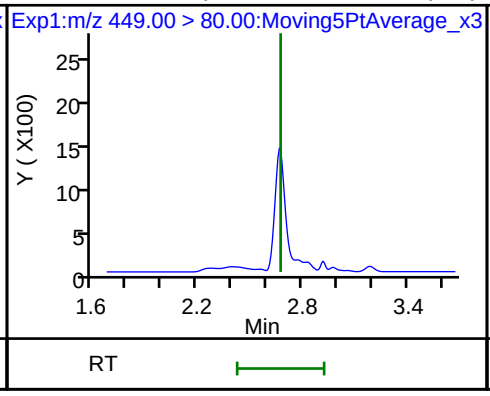
15 Perfluorooctanoic acid



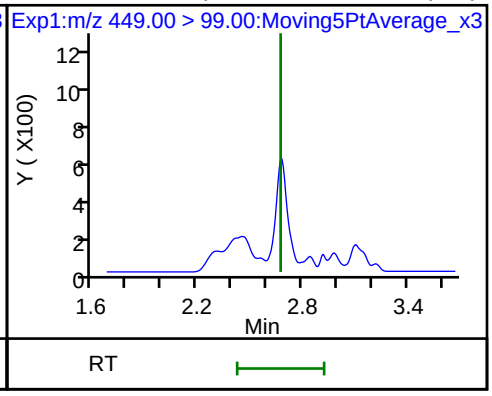
15 Perfluorooctanoic acid



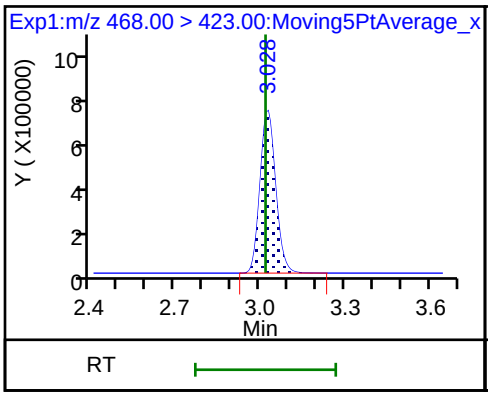
16 Perfluoroheptanesulfonic acid (ND)



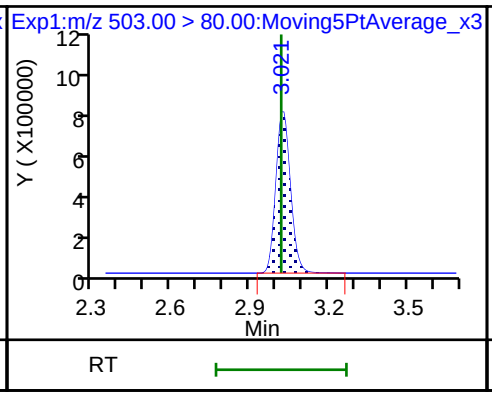
16 Perfluoroheptanesulfonic acid (ND)



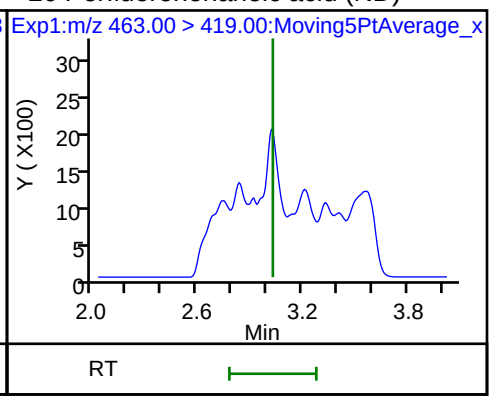
D 19 13C5 PFNA



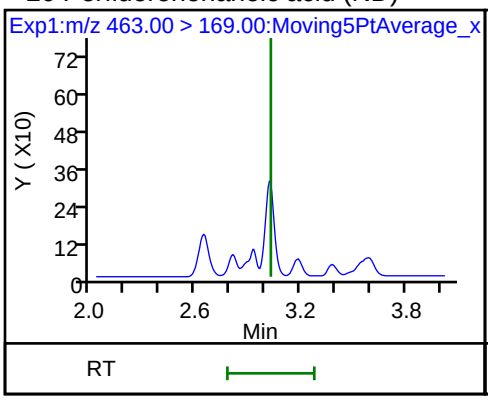
D 18 13C4 PFOS



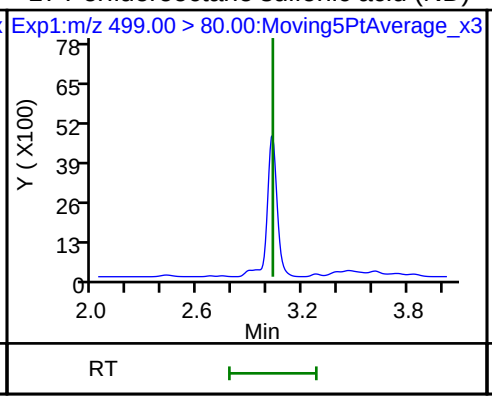
20 Perfluorononanoic acid (ND)



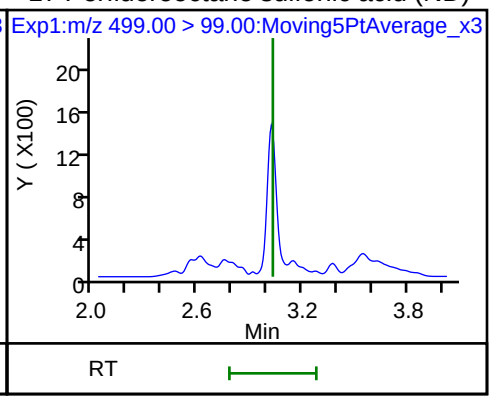
20 Perfluorononanoic acid (ND)



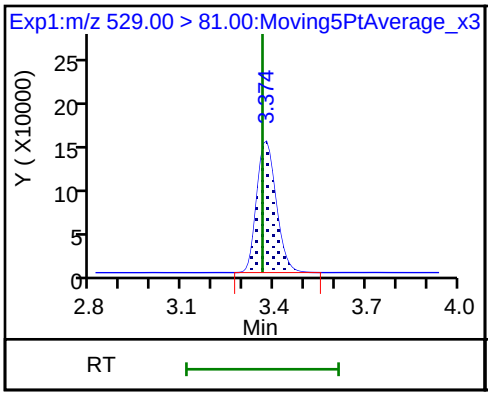
17 Perfluorooctane sulfonic acid (ND)



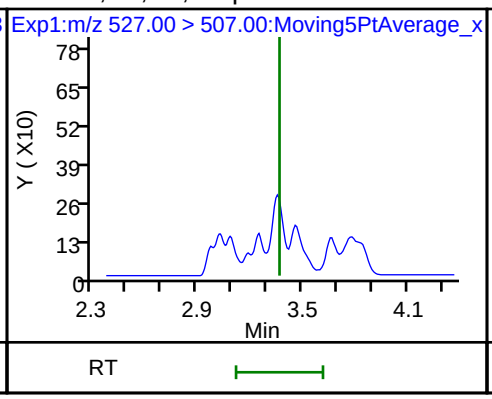
17 Perfluorooctane sulfonic acid (ND)



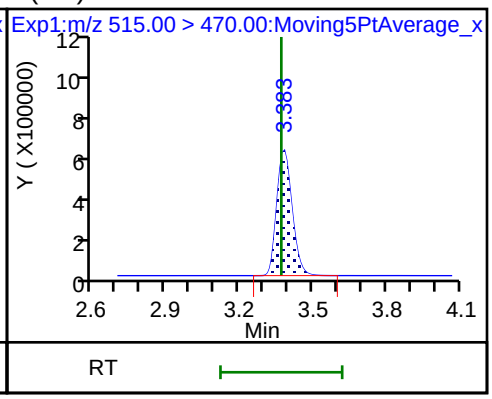
D 26 M2-8:2FTS



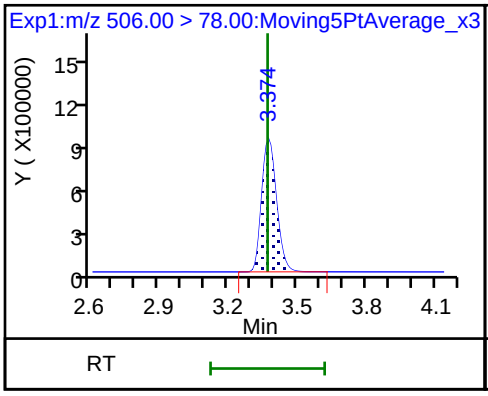
25 1H,1H,2H,2H-perfluorodecanesulfonic acid (ND)



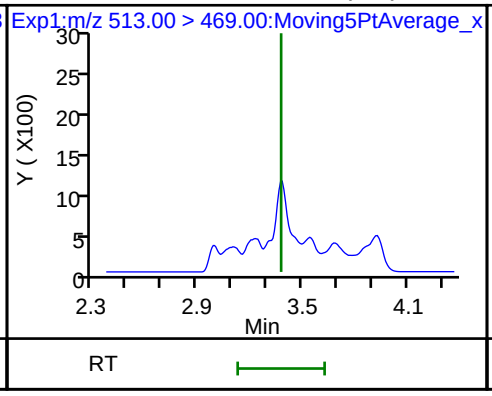
D 28 13C2 PFDA



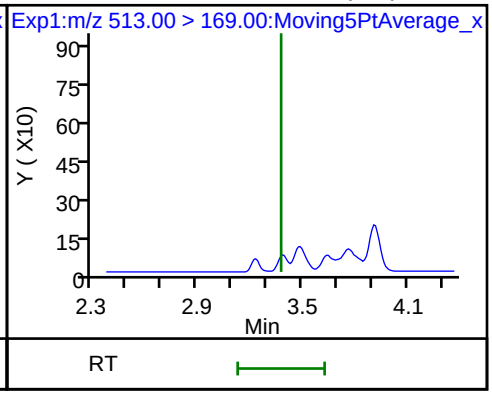
D 21 13C8 FOSA



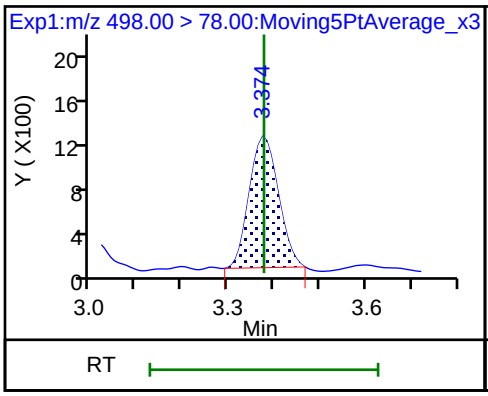
24 Perfluorodecanoic acid (ND)



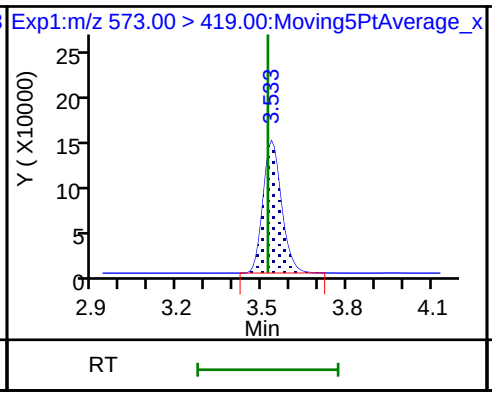
24 Perfluorodecanoic acid (ND)



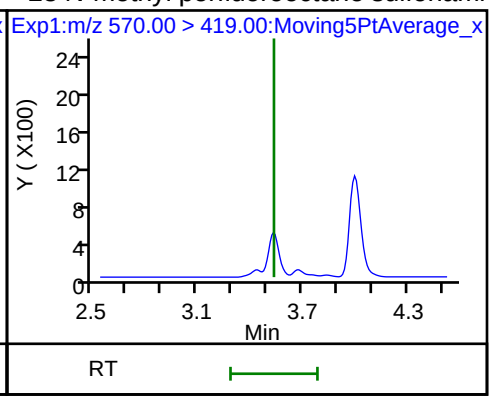
22 Perfluorooctane Sulfonamide



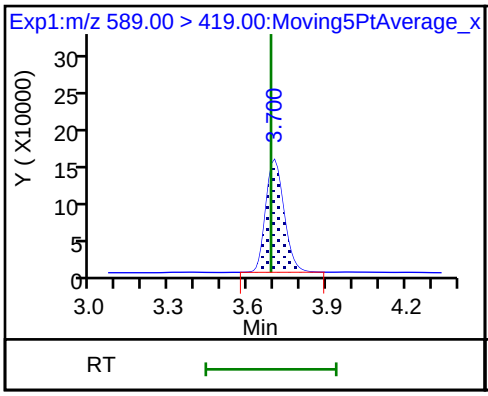
D 27 d3-NMeFOSAA



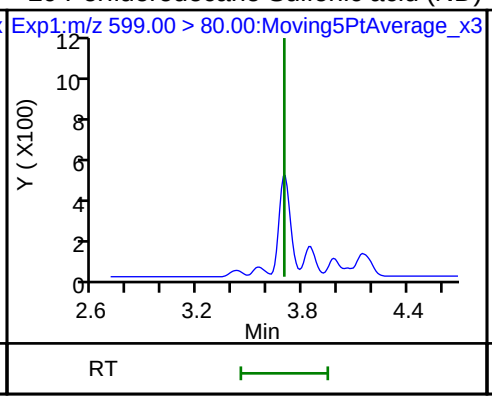
28 N-methyl perfluorooctane sulfonami (ND)



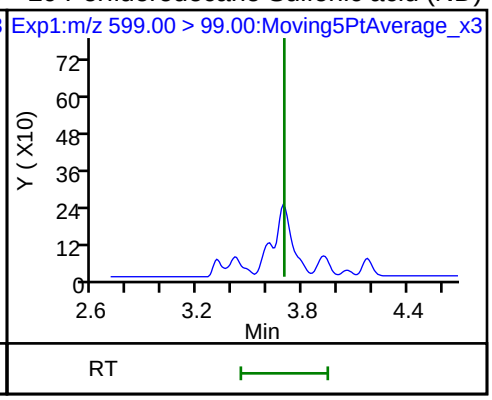
D 32 d5-NEtFOSAA



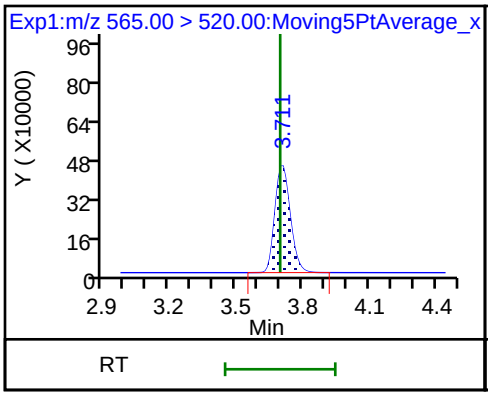
29 Perfluorodecane Sulfonic acid (ND)



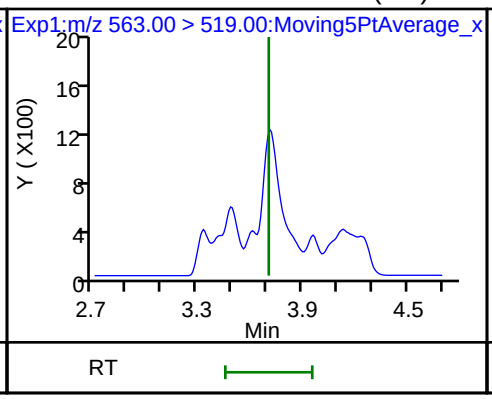
29 Perfluorodecane Sulfonic acid (ND)



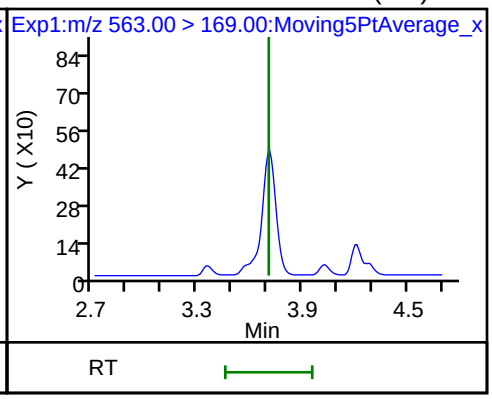
D 30 13C2 PFUnA



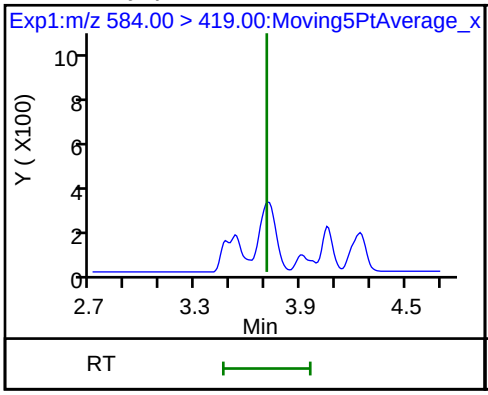
31 Perfluoroundecanoic acid (ND)



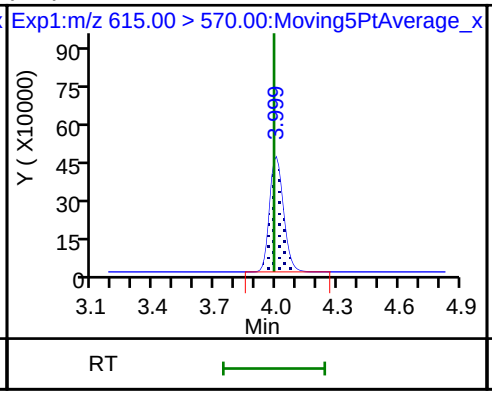
31 Perfluoroundecanoic acid (ND)



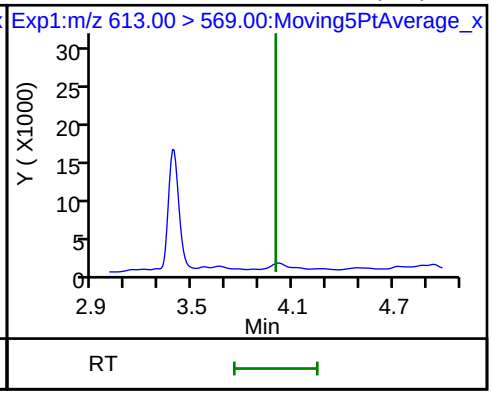
33 N-ethyl perfluorooctane sulfonamid (ND)



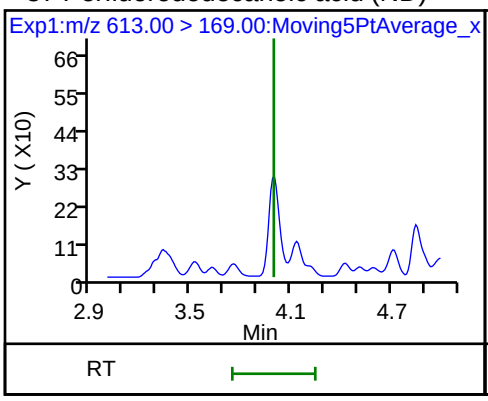
D 36 13C2 PFDoA



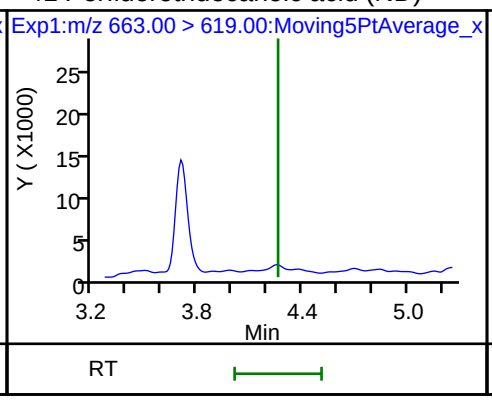
37 Perfluorododecanoic acid (ND)



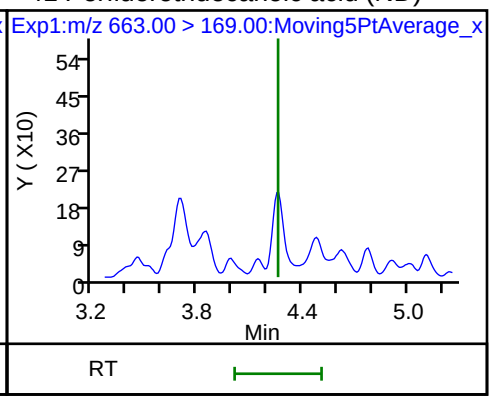
37 Perfluorododecanoic acid (ND)



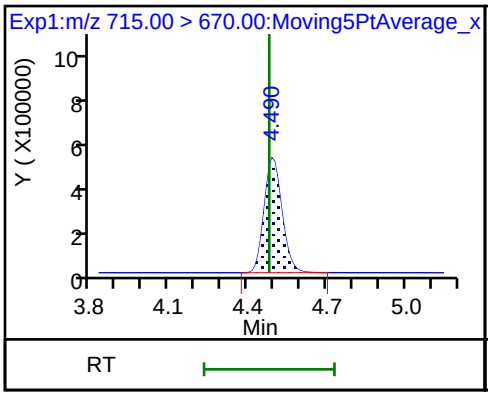
41 Perfluorotridecanoic acid (ND)



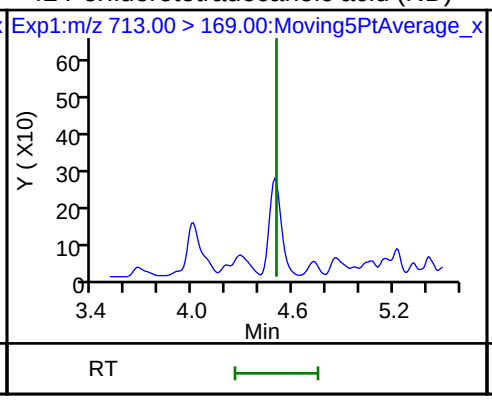
41 Perfluorotridecanoic acid (ND)



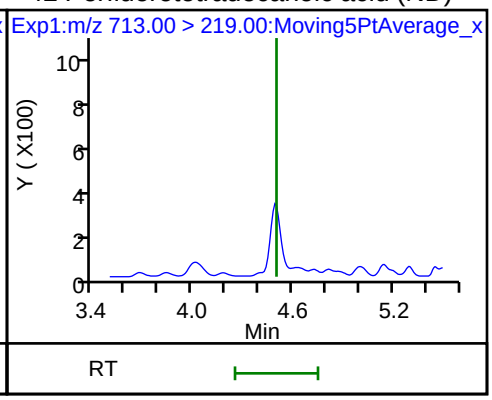
D 43 13C2-PFTeDA



42 Perfluorotetradecanoic acid (ND)



42 Perfluorotetradecanoic acid (ND)



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

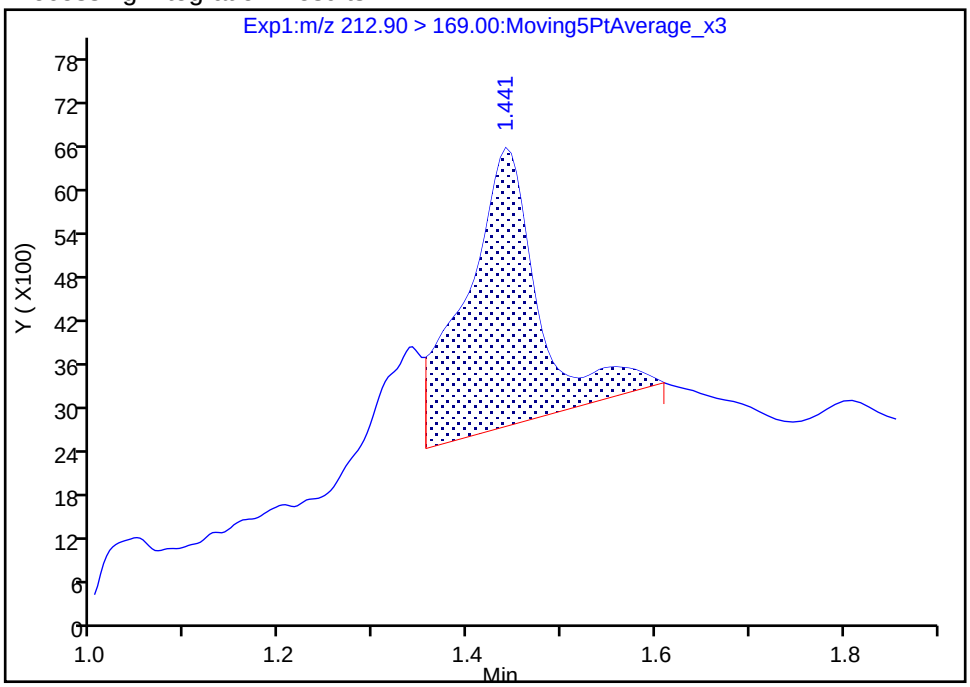
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180716-61105.b\2018.07.14LLA_027.d				
Injection Date:	14-Jul-2018 14:09:05	Instrument ID:	A8_N		
Lims ID:	320-40571-A-30-A	Lab Sample ID:	320-40571-30		
Client ID:	NF30-SS-02				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	17	Worklist Smp#:	10
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

2 Perfluorobutyric acid, CAS: 375-22-4

Signal: 1

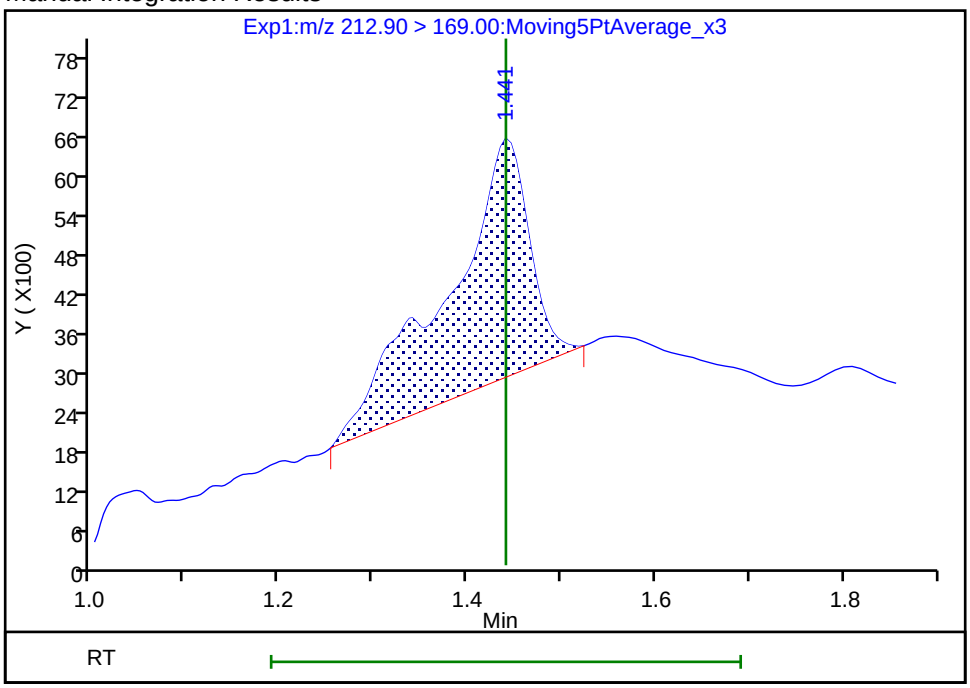
Processing Integration Results

RT: 1.44
Area: 20740
Amount: 0.012534
Amount Units: ng/ml



Manual Integration Results

RT: 1.44
Area: 22391
Amount: 0.013532
Amount Units: ng/ml



Reviewer: mongkols, 17-Jul-2018 08:21:58

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

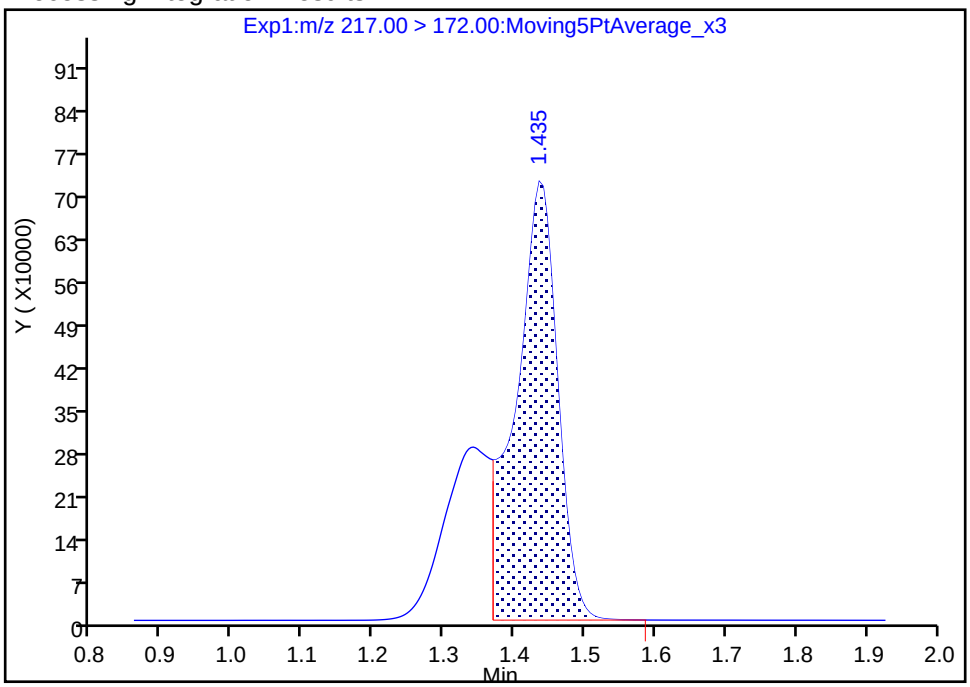
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180716-61105.b\2018.07.14LLA_027.d				
Injection Date:	14-Jul-2018 14:09:05	Instrument ID:	A8_N		
Lims ID:	320-40571-A-30-A	Lab Sample ID:	320-40571-30		
Client ID:	NF30-SS-02				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	17	Worklist Smp#:	10
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

D 1 13C4 PFBA, CAS: STL00992

Signal: 1

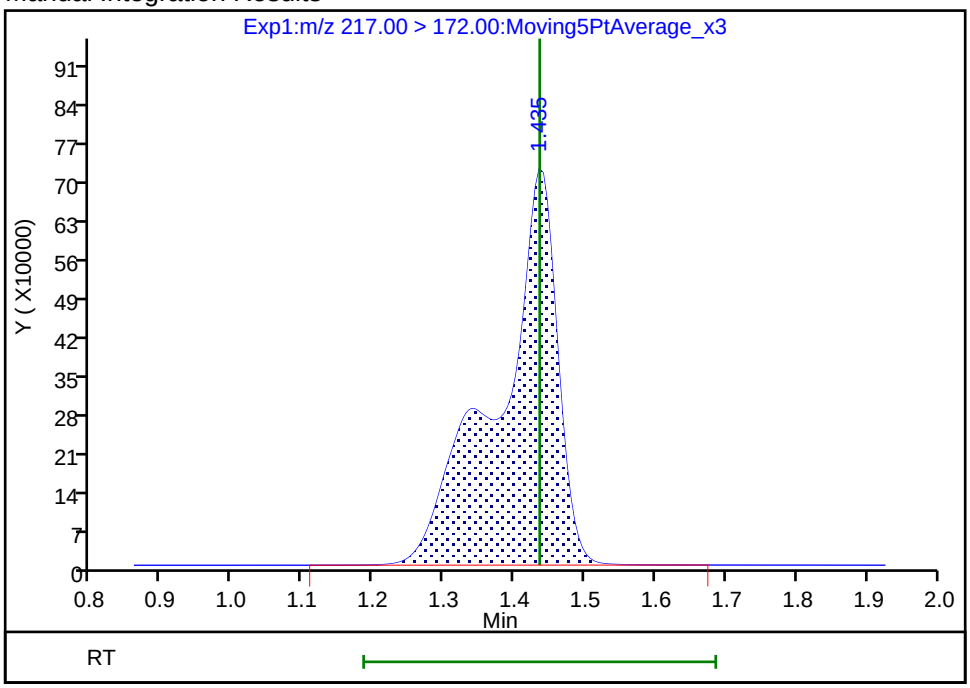
Processing Integration Results

RT: 1.44
Area: 2922307
Amount: 1.248570
Amount Units: ng/ml



Manual Integration Results

RT: 1.44
Area: 4197318
Amount: 1.793325
Amount Units: ng/ml



Reviewer: mongkols, 17-Jul-2018 08:21:43

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF31-GW-01
Lab Sample ID: 320-40571-31
Matrix: Water
Lab File ID: 2018.07.06LLC_041.d
Analysis Method: 537 (modified)
Date Collected: 06/21/2018 09:15
Extraction Method: 3535
Date Extracted: 07/02/2018 14:58
Sample wt/vol: 287.6(mL)
Date Analyzed: 07/07/2018 04:35
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 232800
Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	0.051	B	0.0017	0.00030
2706-90-3	Perfluoropentanoic acid (PFPeA)	0.11		0.0017	0.00043
307-24-4	Perfluorohexanoic acid (PFHxA)	0.13		0.0017	0.00050
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.070		0.0017	0.00022
335-67-1	Perfluorooctanoic acid (PFOA)	0.11		0.0017	0.00074
375-95-1	Perfluorononanoic acid (PFNA)	0.00042	J	0.0017	0.00023
335-76-2	Perfluorodecanoic acid (PFDA)	ND		0.0017	0.00027
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		0.0017	0.00096
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		0.0017	0.00048
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		0.0017	0.0011
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		0.0017	0.00025
375-73-5	*Perfluorobutanesulfonic acid (PFBS)*	*0.54*	*E*	*0.0017*	*0.00017*
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	0.018		0.0017	0.00026
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.053	B	0.0017	0.00015
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.0017	0.00017
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.0011	J	0.0017	0.00047
8789-57-2	Perfluorononanesulfonic acid (PFNS)	ND		0.0017	0.00014
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		0.0017	0.00028
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		0.0017	0.00030
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.017	0.0027
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.017	0.0017
757124-72-4	4:2 FTS	ND		0.017	0.0045
27619-97-2	6:2 FTS	0.0030	J	0.017	0.0017
39108-34-4	8:2 FTS	ND		0.017	0.0017

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF31-GW-01
Lab Sample ID: 320-40571-31
Matrix: Water
Lab File ID: 2018.07.06LLC_041.d
Analysis Method: 537 (modified)
Date Collected: 06/21/2018 09:15
Extraction Method: 3535
Date Extracted: 07/02/2018 14:58
Sample wt/vol: 287.6(mL)
Date Analyzed: 07/07/2018 04:35
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 232800
Units: ug/L

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00992	13C4 PFBA	55		25-150
STL01893	13C5 PFPeA	75		25-150
STL00993	13C2 PFHxA	89		25-150
STL01892	13C4-PFHpA	103		25-150
STL00990	13C4 PFOA	108		25-150
STL00995	13C5 PFNA	109		25-150
STL00996	13C2 PFDA	112		25-150
STL00997	13C2 PFUnA	105		25-150
STL00998	13C2 PFDoA	99		25-150
STL02116	13C2-PFTeDA	95		25-150
STL02337	13C3-PFBS	86		25-150
STL00994	18O2 PFHxS	110		25-150
STL00991	13C4 PFOS	106		25-150
STL01056	13C8 FOSA	85		25-150
STL02118	d3-NMeFOSAA	116		25-150
STL02117	d5-NEtFOSAA	111		25-150
STL02279	M2-6:2FTS	149		25-150
STL02280	M2-8:2FTS	130		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\2018.07.06LLC_041.d
Lims ID: 320-40571-A-31-A
Client ID: NF31-GW-01
Sample Type: Client
Inject. Date: 07-Jul-2018 04:35:41 ALS Bottle#: 27 Worklist Smp#: 29
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-40571-a-31-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 09-Jul-2018 14:42:55 Calib Date: 05-Jul-2018 09:38:17
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180705-60684.b\2018.07.05LLICALAA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK010

First Level Reviewer: mongkols Date: 09-Jul-2018 14:42:55

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.425	1.428	-0.003	0.537	3805636	1.36		54.6	14153	
2 Perfluorobutyric acid										M
212.90 > 169.00	1.425	1.428	-0.003	1.000	2261184	1.45			126	M
4 Perfluoropentanoic acid										
262.90 > 219.00	1.703	1.698	0.005	1.000	5815441	3.14			552	
D 3 13C5-PFPeA										
267.90 > 223.00	1.703	1.707	-0.004	0.642	3883437	1.88		75.3	11912	
D 47 13C3-PFBS										
301.90 > 83.00	1.739	1.743	-0.004	0.656	98273	1.99		85.6	129	
5 Perfluorobutanesulfonic acid										E
298.90 > 80.00	1.748	1.743	0.005	1.005	49671998	15.5			13257	E
298.90 > 99.00	1.748	1.743	0.005	1.005	27630567		1.80(1.25-3.74)		19543	
6 Perfluorohexanoic acid										M
313.00 > 269.00	1.994	1.978	0.016	1.000	7648339	3.80			2240	M
313.00 > 119.00	1.994	1.978	0.016	1.000	688689		11.11(5.03-15.10)		5881	
D 7 13C2 PFHxA										
315.00 > 270.00	1.994	1.988	0.006	0.752	4937018	2.24		89.4	60308	
70 Perfluoropentanesulfonic acid										M
349.00 > 80.00	2.005	2.000	0.005	1.153	1408373	0.5138			229	M
349.00 > 99.00	2.005	2.000	0.005	1.153	526916		2.67(1.36-4.07)		705	
D 9 13C4-PFHpA										
367.00 > 322.00	2.308	2.302	0.006	0.870	5028907	2.56		103	37111	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.308	2.303	0.005	1.000	4551018	2.00			2300	
363.00 > 169.00	2.308	2.303	0.005	1.000	1678246		2.71(1.13-3.40)		8240	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.321	2.303	0.018	1.000	4736569	1.54			1696	
399.00 > 99.00	2.321	2.303	0.018	1.000	1424563		3.32(1.50-4.49)		1852	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 11 18O2 PFHxS										
403.00 > 84.00	2.321	2.315	0.006	0.875	6297852	2.61		110	62189	
D 12 M2-6:2FTS										
429.00 > 81.00	2.628	2.626	0.002	0.991	1561376	3.55		149	4452	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.628	2.627	0.002	1.000	89649	0.0870			392	
D 14 13C4 PFOA										
417.00 > 372.00	2.653	2.650	0.003	1.000	5192180	2.70		108	51251	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.653	2.651	0.002	1.000	7570718	3.07			2785	
413.00 > 169.00	2.653	2.651	0.002	1.000	4416550		1.71(0.84-2.52)		10274	
* 62 13C2-PFOA										
415.00 > 370.00	2.653	2.651	0.002		5035528	2.50			42901	
17 Perfluorooctane sulfonic acid										M
499.00 > 80.00	2.897	3.008	-0.111	0.961	67645	0.0318			56.4	M
499.00 > 99.00	3.015	3.008	0.007	1.000	9094		7.44(2.31-6.93)		53.9	M
20 Perfluorononanoic acid										
463.00 > 419.00	3.015	3.015	0.0	1.000	23200	0.0121			22.3	
463.00 > 169.00	3.015	3.015	0.0	1.000	4876		4.76(1.90-5.69)		55.3	
D 18 13C4 PFOS										
503.00 > 80.00	3.015	3.015	0.0	1.137	4352326	2.53		106	14596	
D 19 13C5 PFNA										
468.00 > 423.00	3.015	3.015	0.0	1.137	4438466	2.72		109	60384	
D 26 M2-8:2FTS										
529.00 > 81.00	3.358	3.367	-0.009	1.266	1525278	3.12		130	8755	
D 21 13C8 FOSA										
506.00 > 78.00	3.367	3.367	0.0	1.269	5073870	2.12		84.9	31555	
D 23 13C2 PFDA										
515.00 > 470.00	3.376	3.376	0.0	1.273	3955496	2.81		112	91081	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.526	3.525	0.001	1.329	2414910	2.91		116	28453	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.695	3.694	0.001	1.393	2264955	2.76		111	21301	
D 30 13C2 PFUnA										
565.00 > 520.00	3.695	3.705	-0.010	1.393	3101651	2.62		105	40110	
D 36 13C2 PFDoA										
615.00 > 570.00	3.985	3.995	-0.010	1.502	3132093	2.47		98.8	21930	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.489	4.489	0.0	1.692	3654445	2.36		94.6	20896	

QC Flag Legend

Processing Flags

E - Exceeded Maximum Amount

Review Flags

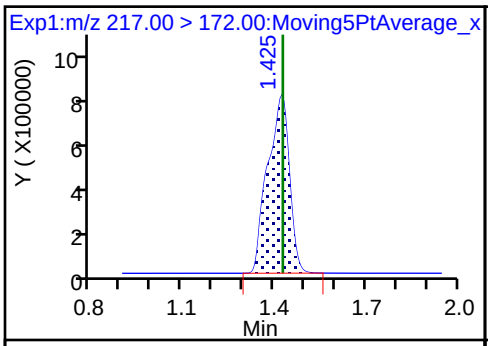
M - Manually Integrated

Report Date: 09-Jul-2018 14:42:56 Chrom Revision: 2.2 07-Jun-2018 07:41:54

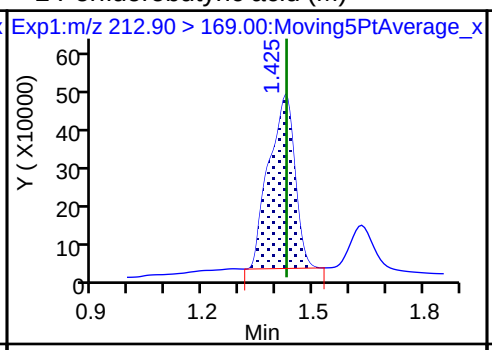
TestAmerica Sacramento

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\2018.07.06LLC_041.d				
Injection Date:	07-Jul-2018 04:35:41	Instrument ID:	A8_N		
Lims ID:	320-40571-A-31-A	Lab Sample ID:	320-40571-31		
Client ID:	NF31-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	27	Worklist Smp#:	29
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		

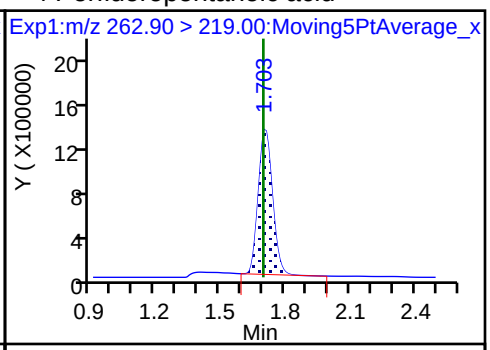
D 1 13C4 PFBA



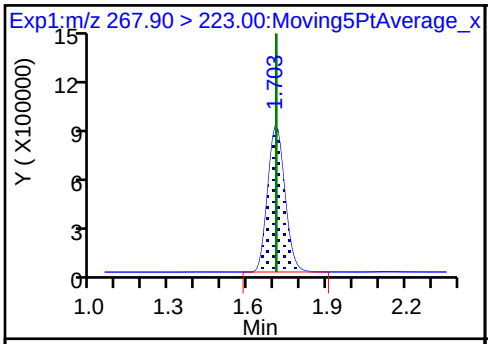
2 Perfluorobutyric acid (M)



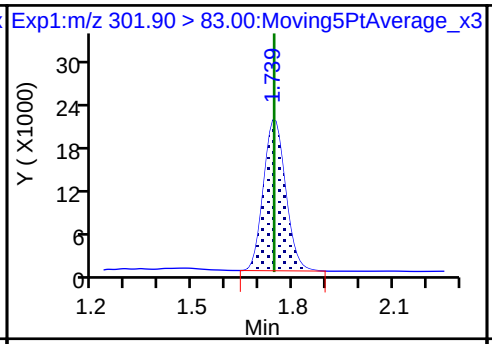
4 Perfluoropentanoic acid



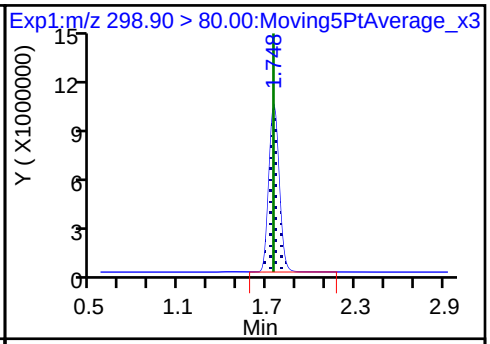
D 3 13C5-PFPeA



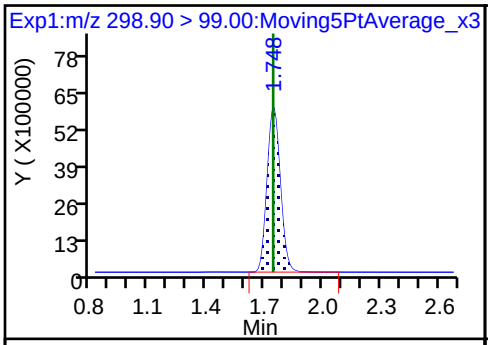
D 47 13C3-PFBS



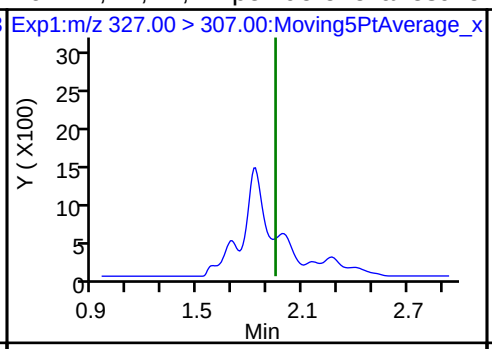
5 Perfluorobutanesulfonic acid



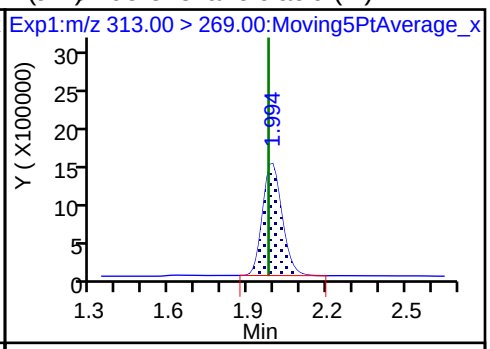
5 Perfluorobutanesulfonic acid



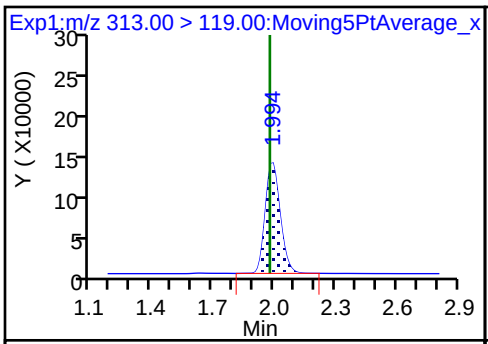
61 1H,1H,2H,2H-perfluorohexanesulfoni (ND)



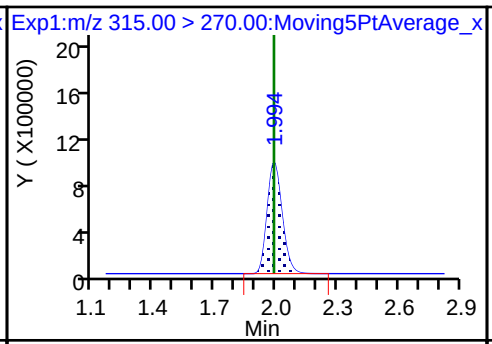
6 Perfluorohexanoic acid (M)



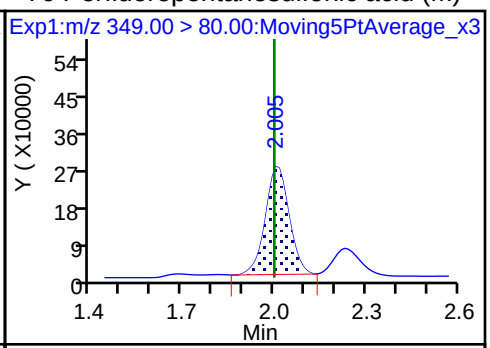
6 Perfluorohexanoic acid



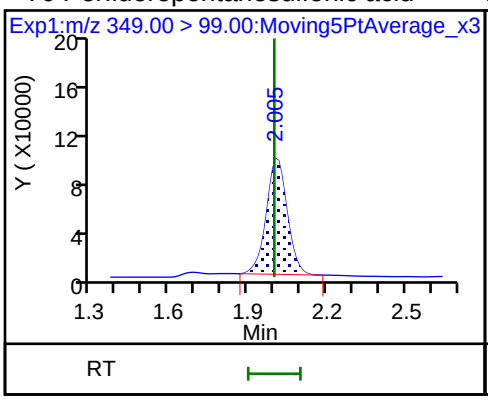
D 7 13C2 PFHxA



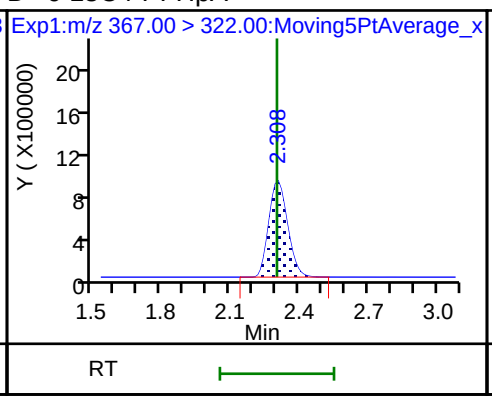
70 Perfluoropentanesulfonic acid (M)



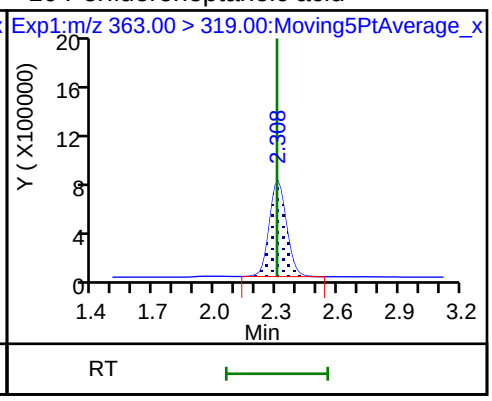
70 Perfluoropentanesulfonic acid



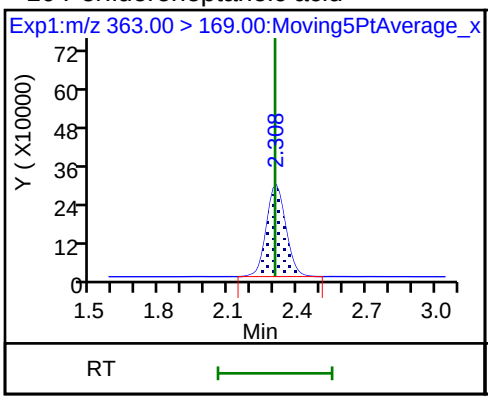
D 9 13C4-PFHpA



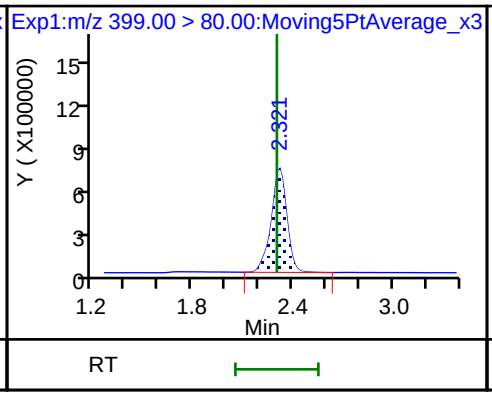
10 Perfluoroheptanoic acid



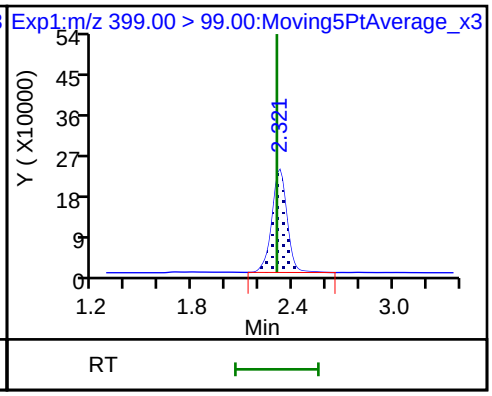
10 Perfluoroheptanoic acid



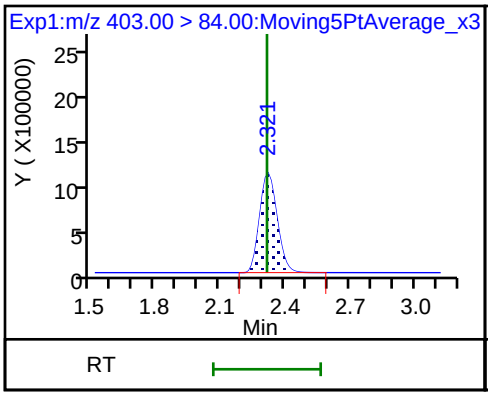
8 Perfluorohexanesulfonic acid



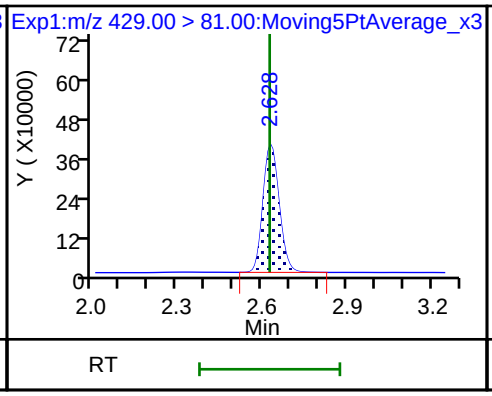
8 Perfluorohexanesulfonic acid



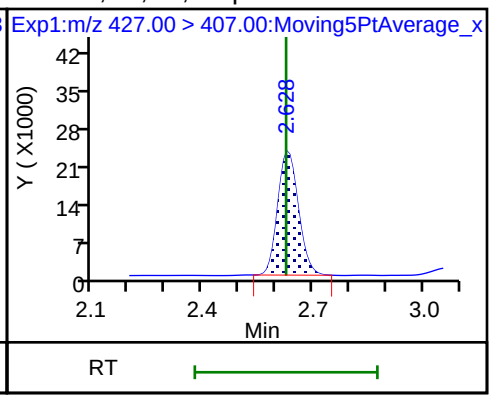
D 11 18O2 PFHxS



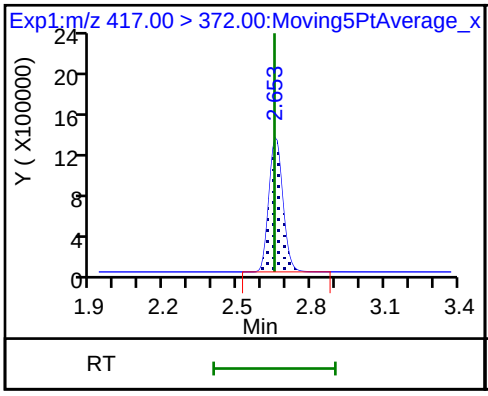
D 12 M2-6:2FTS



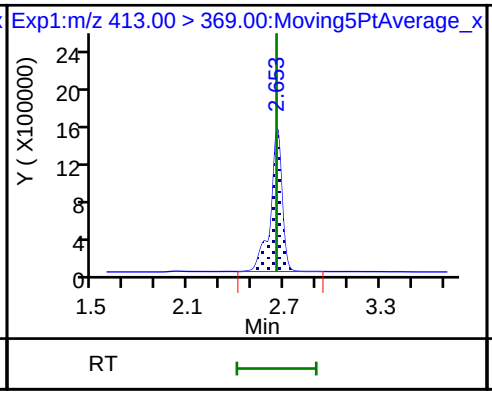
13 1H,1H,2H,2H-perfluorooctanesulfoni



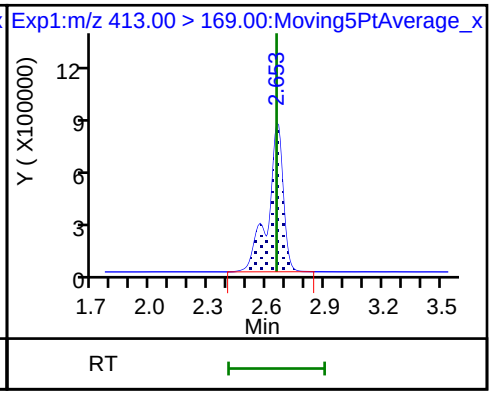
D 14 13C4 PFOA



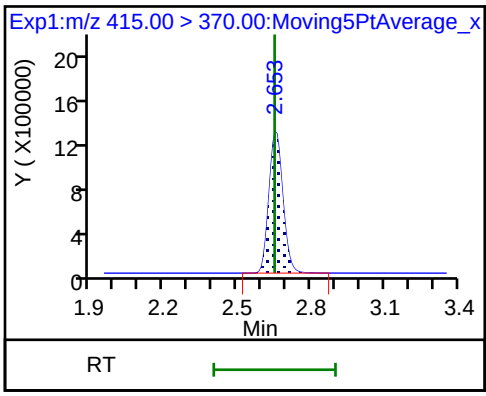
15 Perfluorooctanoic acid



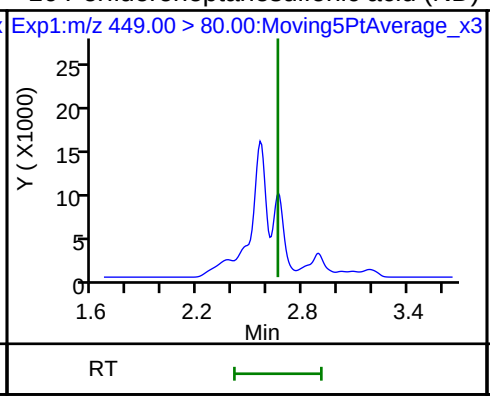
15 Perfluorooctanoic acid



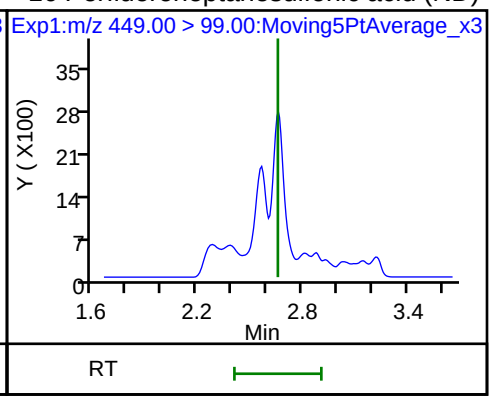
* 62 13C2-PFOA



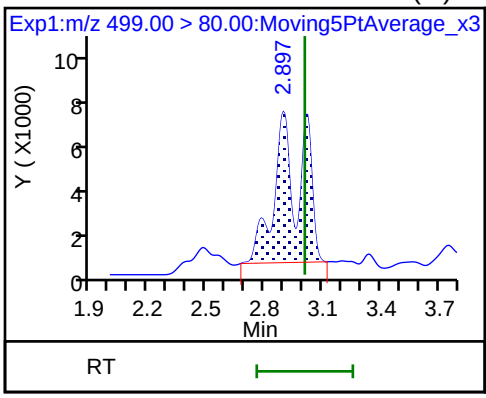
16 Perfluoroheptanesulfonic acid (ND)



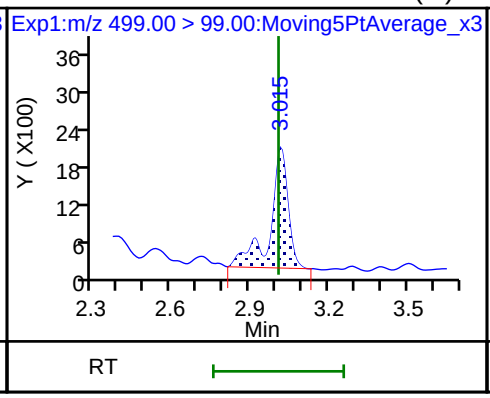
16 Perfluoroheptanesulfonic acid (ND)



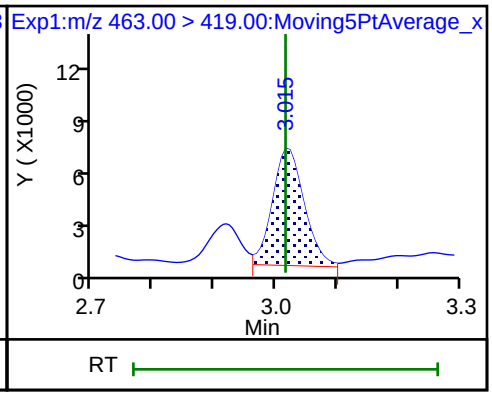
17 Perfluorooctane sulfonic acid (M)



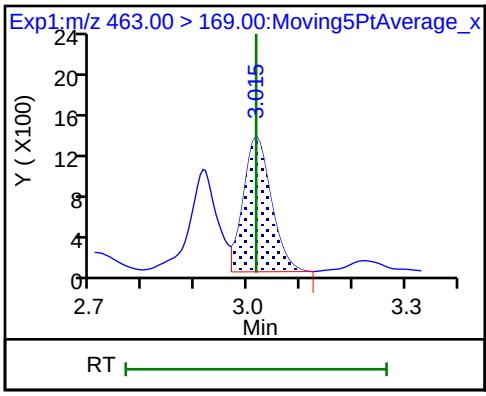
17 Perfluorooctane sulfonic acid (M)



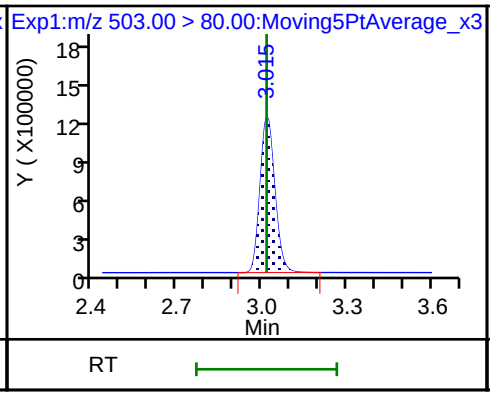
20 Perfluorononanoic acid



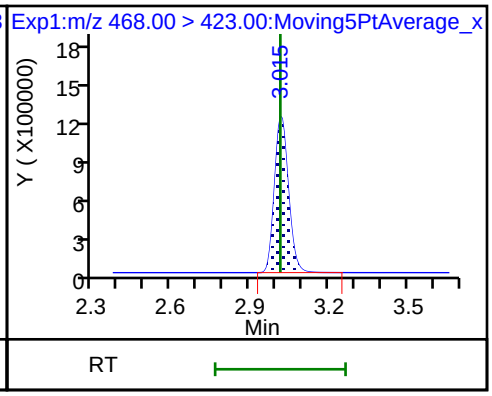
20 Perfluorononanoic acid



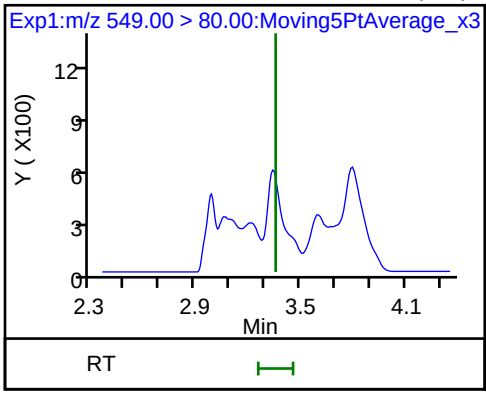
D 18 13C4 PFOS



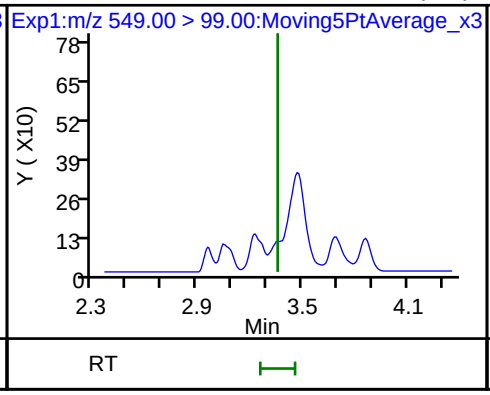
D 19 13C5 PFNA



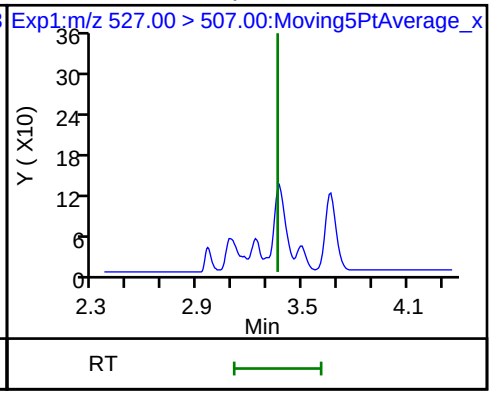
68 Perfluorononanesulfonic acid (ND)



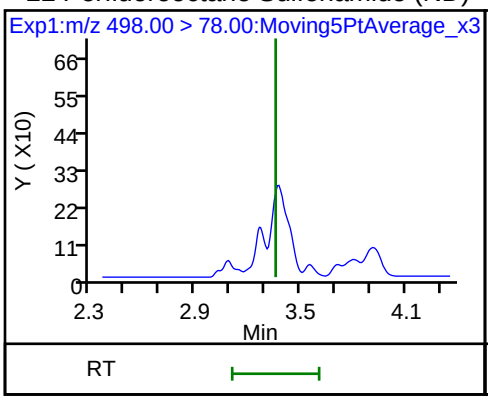
68 Perfluorononanesulfonic acid (ND)



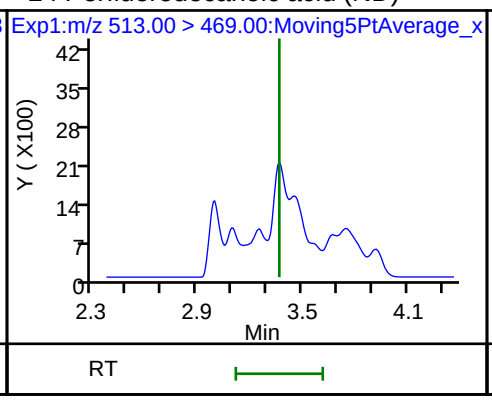
25 1H,1H,2H,2H-perfluorodecanesulfoni (ND)



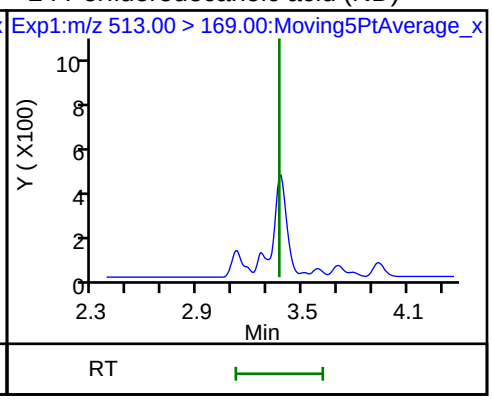
22 Perfluorooctane Sulfonamide (ND)



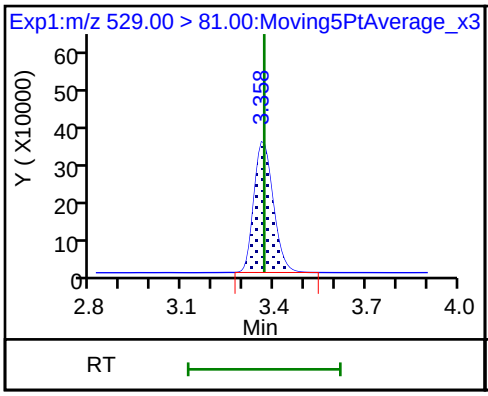
24 Perfluorodecanoic acid (ND)



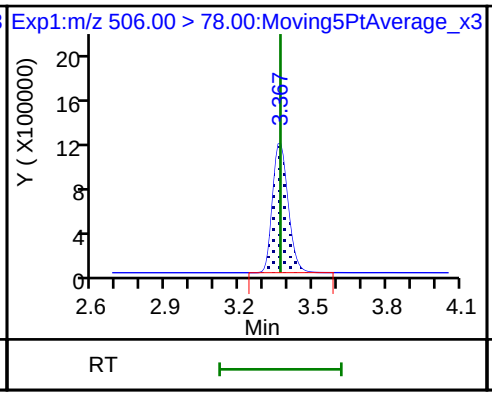
24 Perfluorodecanoic acid (ND)



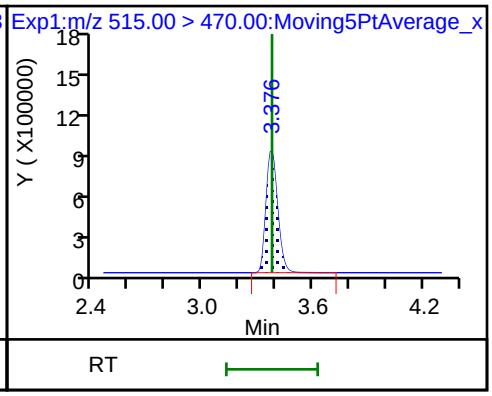
D 26 M2-8:2FTS



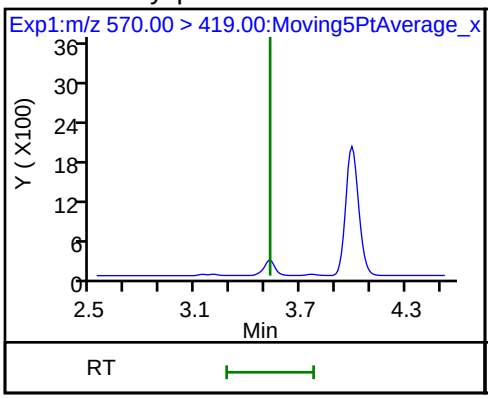
D 21 13C8 FOSA



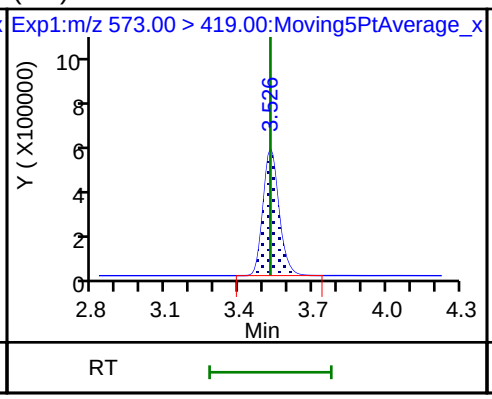
D 23 13C2 PFDA



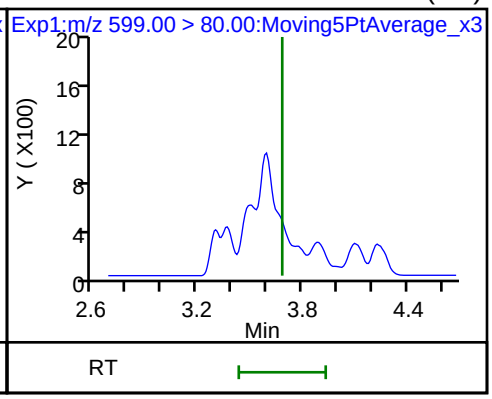
28 N-methyl perfluorooctane sulfonamid (ND)



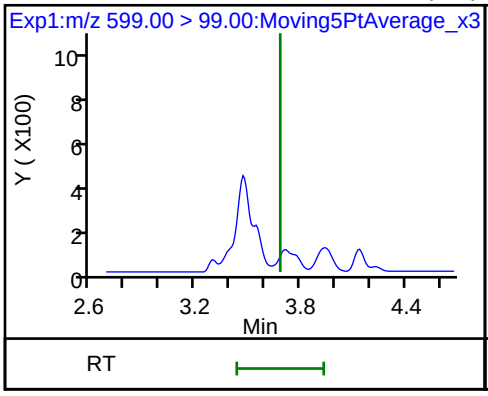
D 27 d3-NMeFOSAA



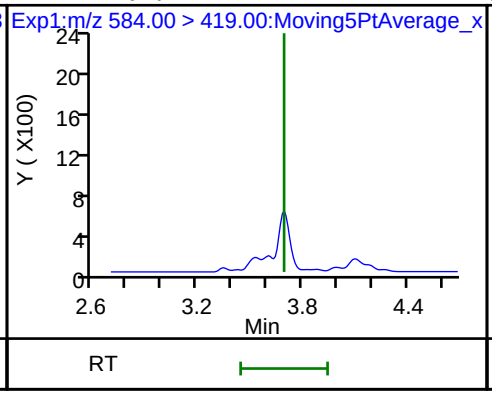
29 Perfluorodecane Sulfonic acid (ND)



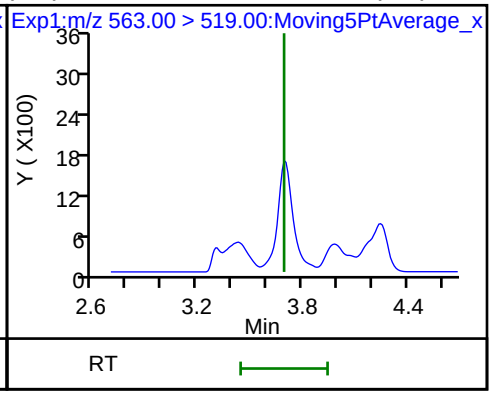
29 Perfluorodecane Sulfonic acid (ND)



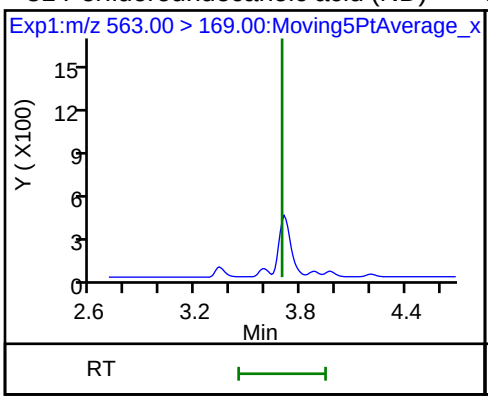
33 N-ethyl perfluorooctane sulfonamid (ND)



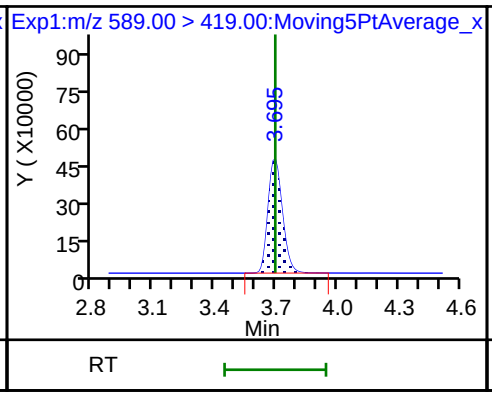
31 Perfluoroundecanoic acid (ND)



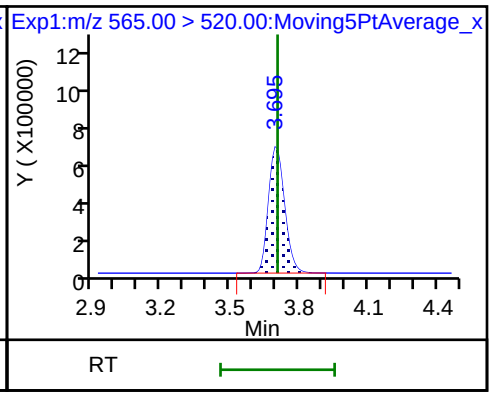
31 Perfluoroundecanoic acid (ND)



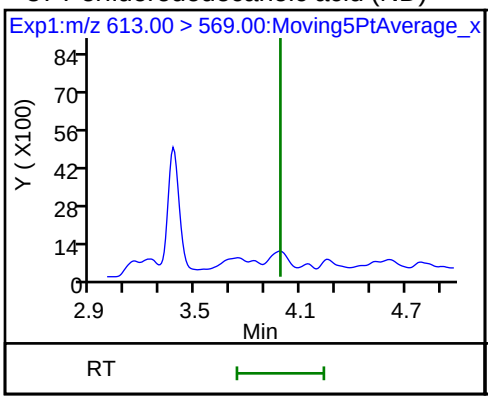
D 32 d5-NEtFOSAA



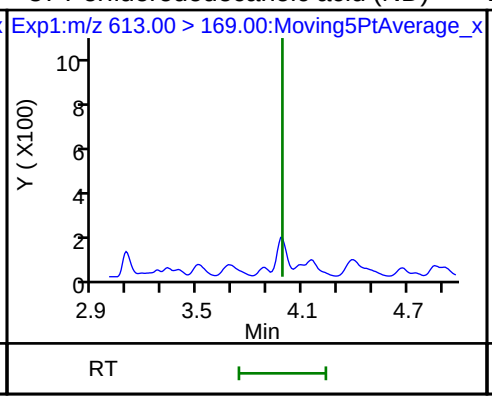
D 30 13C2 PFUnA



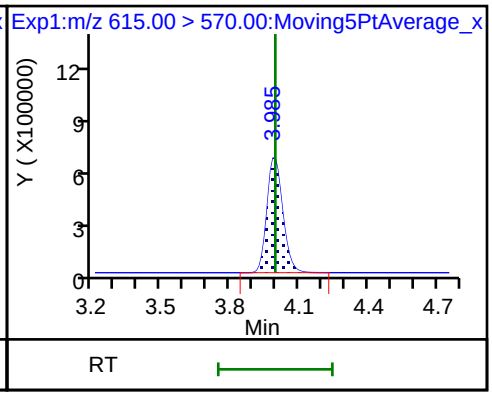
37 Perfluorododecanoic acid (ND)



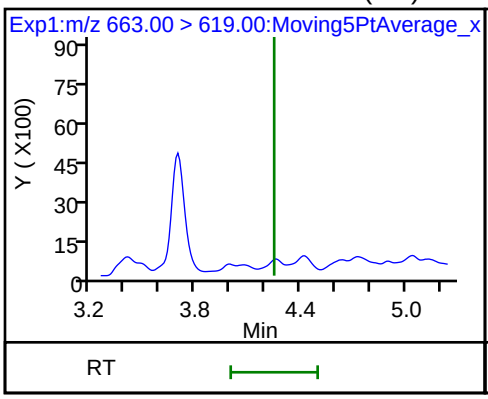
37 Perfluorododecanoic acid (ND)



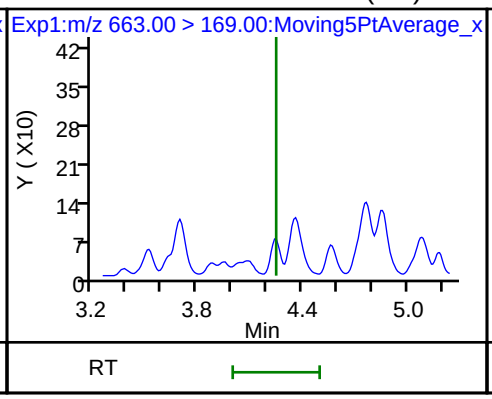
D 36 13C2 PFDoA



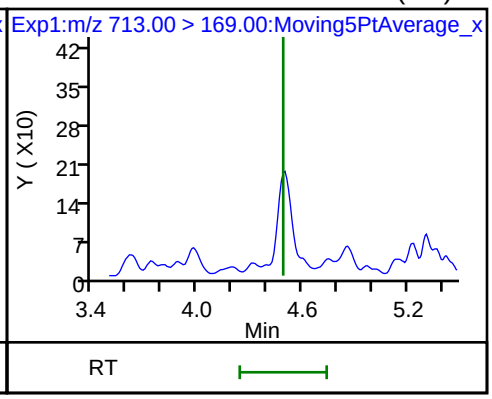
41 Perfluorotridecanoic acid (ND)



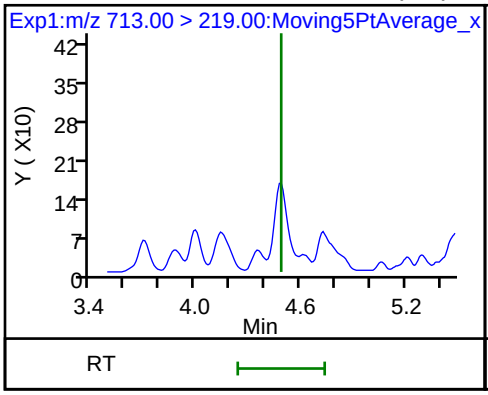
41 Perfluorotridecanoic acid (ND)



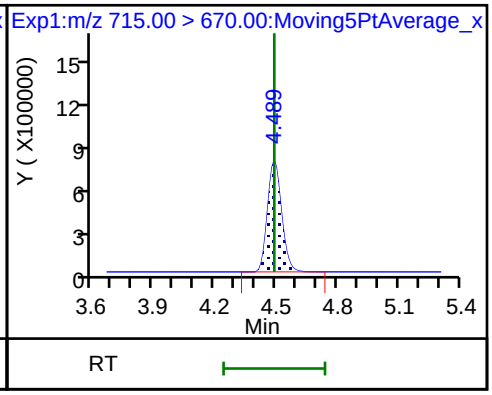
42 Perfluorotetradecanoic acid (ND)



42 Perfluorotetradecanoic acid (ND)



D 43 13C2-PFTeDA



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

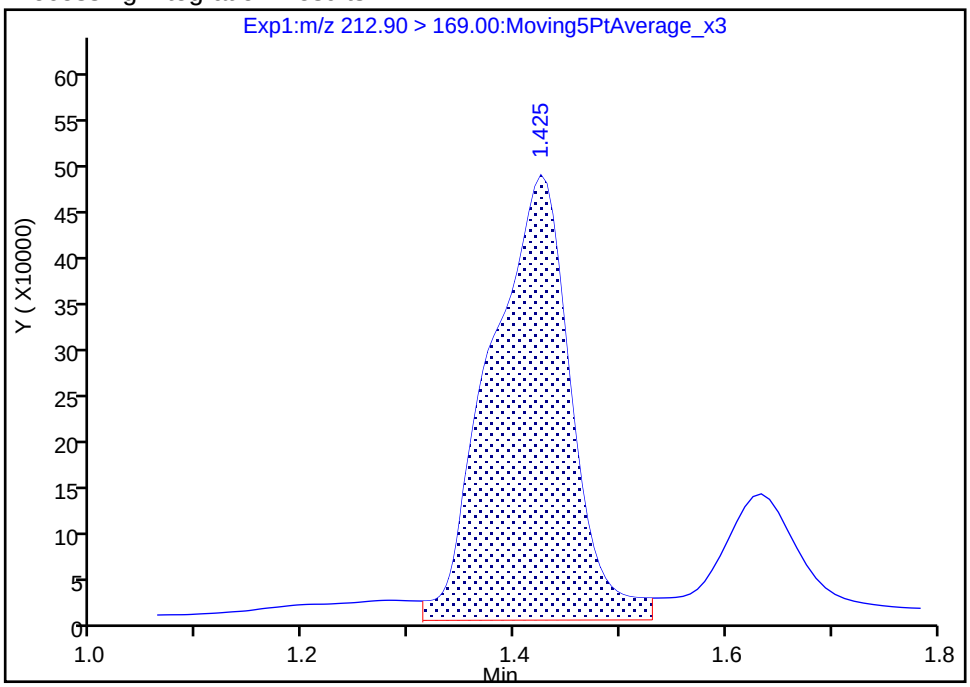
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\2018.07.06LLC_041.d				
Injection Date:	07-Jul-2018 04:35:41	Instrument ID:	A8_N		
Lims ID:	320-40571-A-31-A	Lab Sample ID:	320-40571-31		
Client ID:	NF31-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	27	Worklist Smp#:	29
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

2 Perfluorobutyric acid, CAS: 375-22-4

Signal: 1

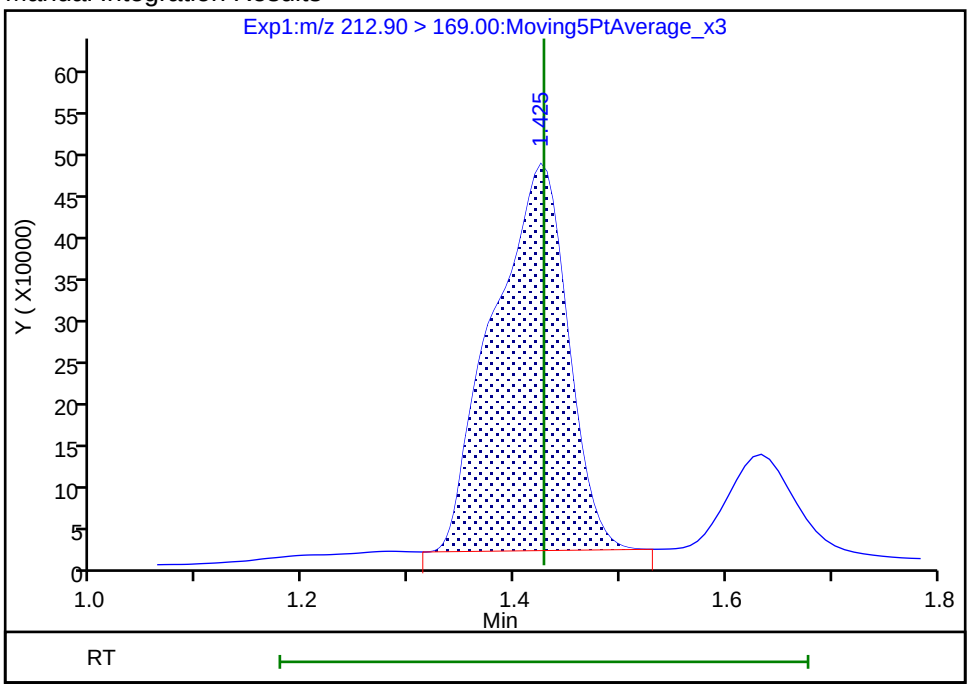
Processing Integration Results

RT: 1.42
Area: 2552660
Amount: 1.641713
Amount Units: ng/ml



Manual Integration Results

RT: 1.42
Area: 2261184
Amount: 1.454253
Amount Units: ng/ml



Reviewer: mongkols, 09-Jul-2018 14:41:59

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

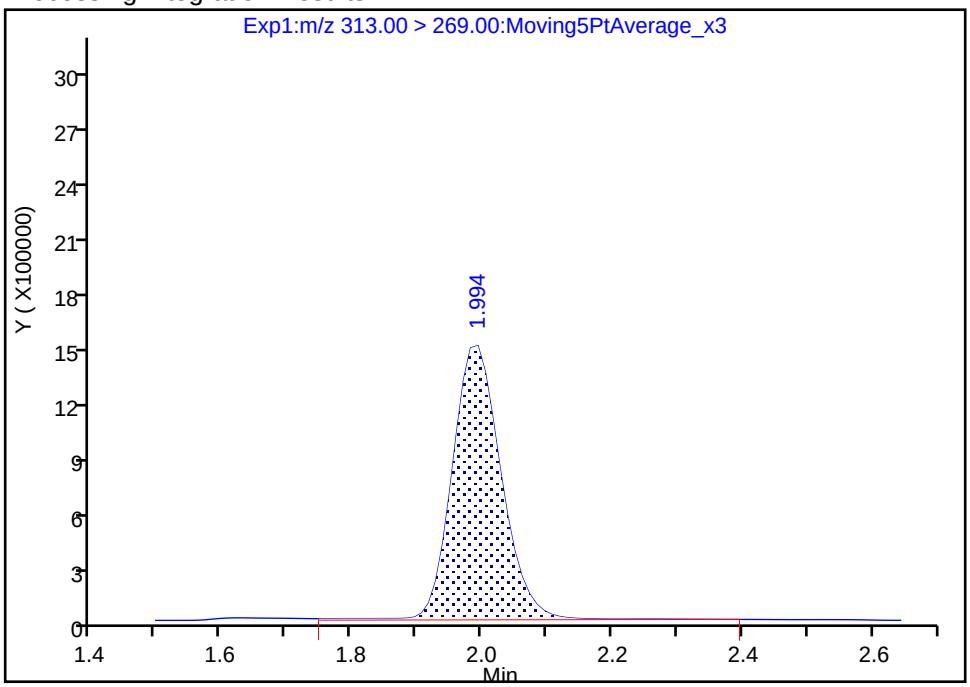
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\2018.07.06LLC_041.d				
Injection Date:	07-Jul-2018 04:35:41	Instrument ID:	A8_N		
Lims ID:	320-40571-A-31-A	Lab Sample ID:	320-40571-31		
Client ID:	NF31-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	27	Worklist Smp#:	29
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

6 Perfluorohexanoic acid, CAS: 307-24-4

Signal: 1

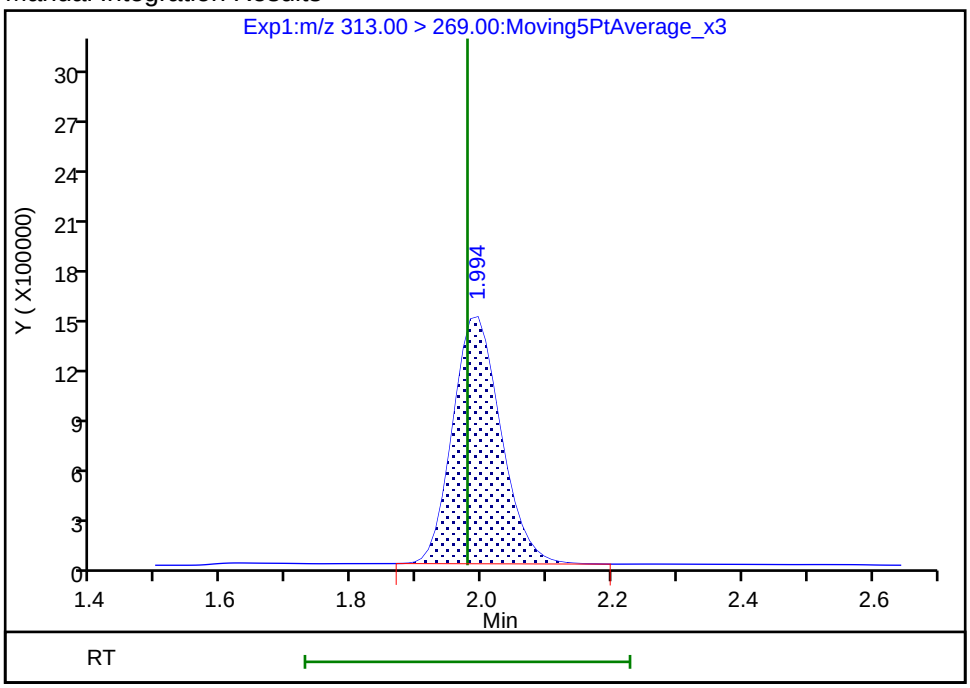
Processing Integration Results

RT: 1.99
Area: 7834359
Amount: 3.896045
Amount Units: ng/ml



Manual Integration Results

RT: 1.99
Area: 7648339
Amount: 3.803537
Amount Units: ng/ml



Reviewer: mongkols, 09-Jul-2018 14:42:09

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

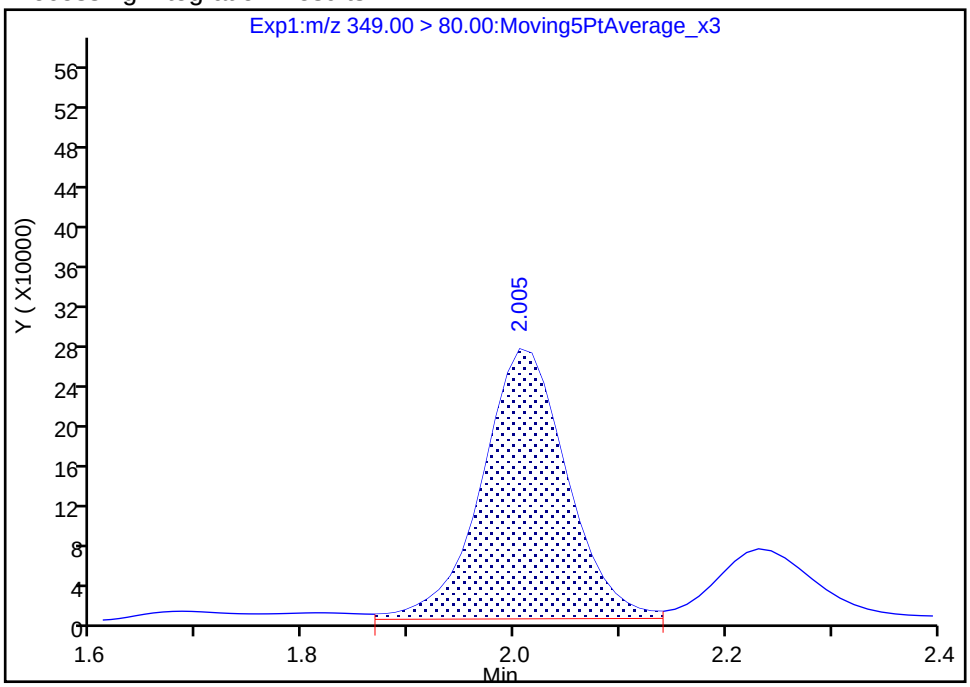
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\2018.07.06LLC_041.d				
Injection Date:	07-Jul-2018 04:35:41	Instrument ID:	A8_N		
Lims ID:	320-40571-A-31-A	Lab Sample ID:	320-40571-31		
Client ID:	NF31-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	27	Worklist Smp#:	29
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

70 Perfluoropentanesulfonic acid, CAS: 2706-91-4

Signal: 1

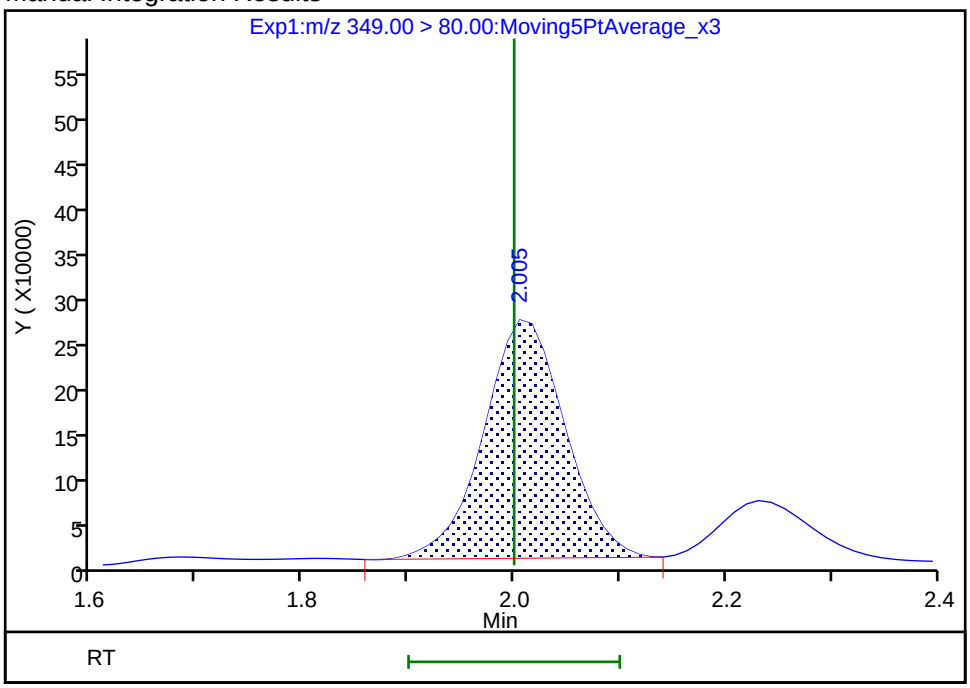
Processing Integration Results

RT: 2.00
Area: 1509691
Amount: 0.550779
Amount Units: ng/ml



Manual Integration Results

RT: 2.00
Area: 1408373
Amount: 0.513816
Amount Units: ng/ml



Reviewer: mongkols, 09-Jul-2018 14:42:15

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

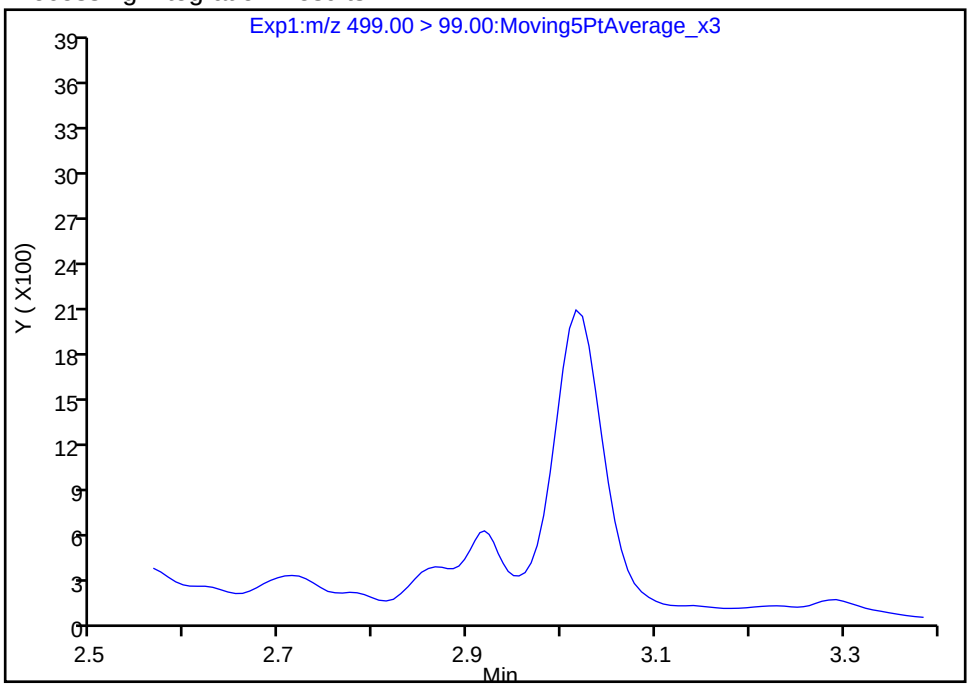
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\2018.07.06LLC_041.d				
Injection Date:	07-Jul-2018 04:35:41	Instrument ID:	A8_N		
Lims ID:	320-40571-A-31-A	Lab Sample ID:	320-40571-31		
Client ID:	NF31-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	27	Worklist Smp#:	29
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

17 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 2

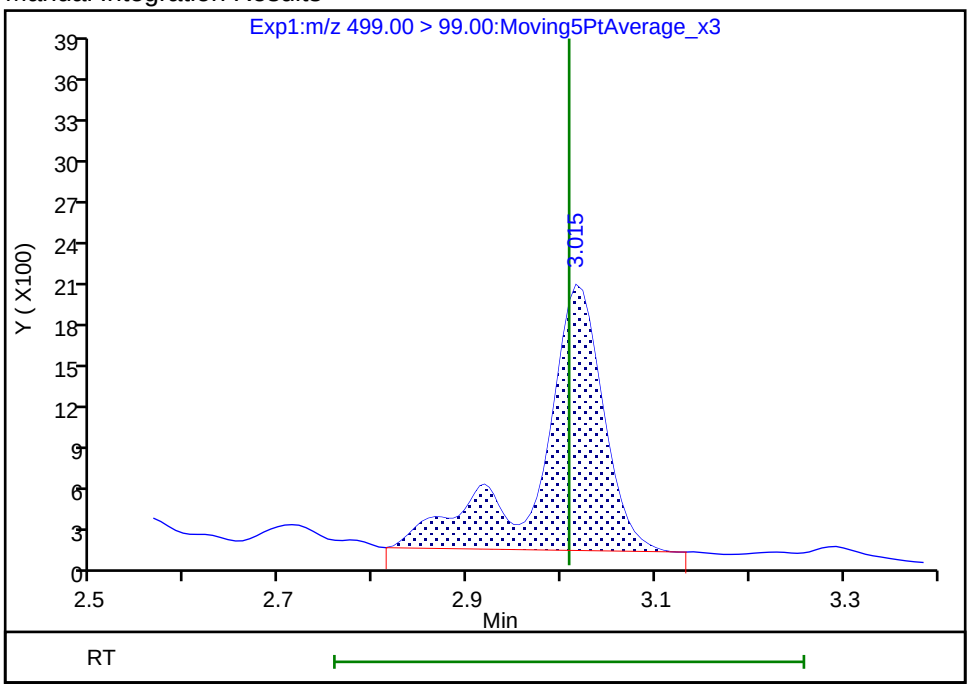
Processing Integration Results

RT: 3.01
Area: 0
Amount: 0.033477
Amount Units: ng/ml



Manual Integration Results

RT: 3.02
Area: 9094
Amount: 0.031800
Amount Units: ng/ml



Reviewer: mongkols, 09-Jul-2018 14:42:34

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

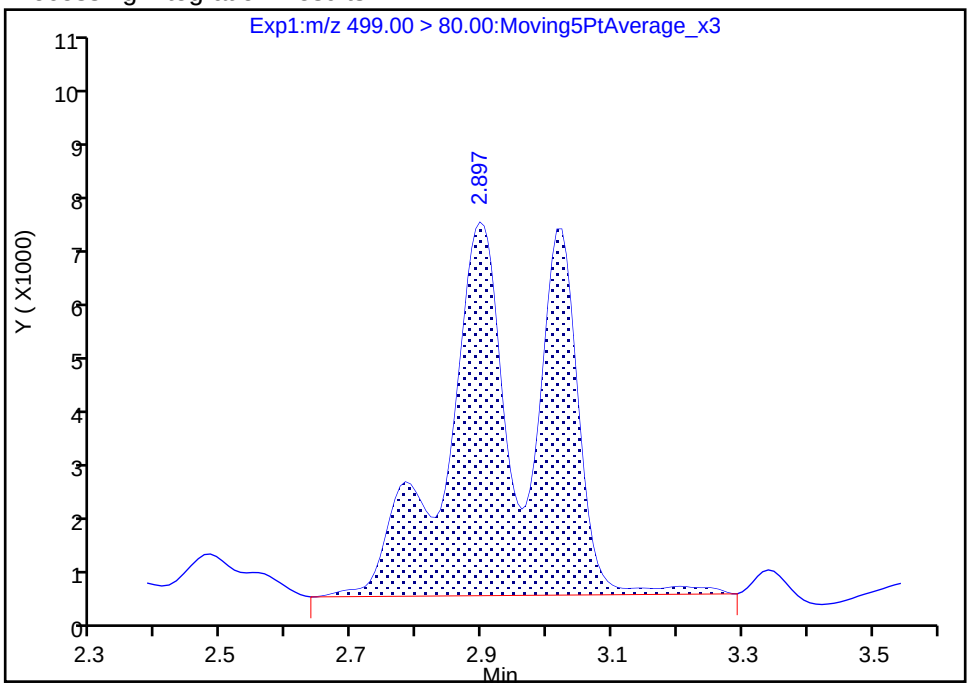
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\2018.07.06LLC_041.d				
Injection Date:	07-Jul-2018 04:35:41	Instrument ID:	A8_N		
Lims ID:	320-40571-A-31-A	Lab Sample ID:	320-40571-31		
Client ID:	NF31-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	27	Worklist Smp#:	29
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

17 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

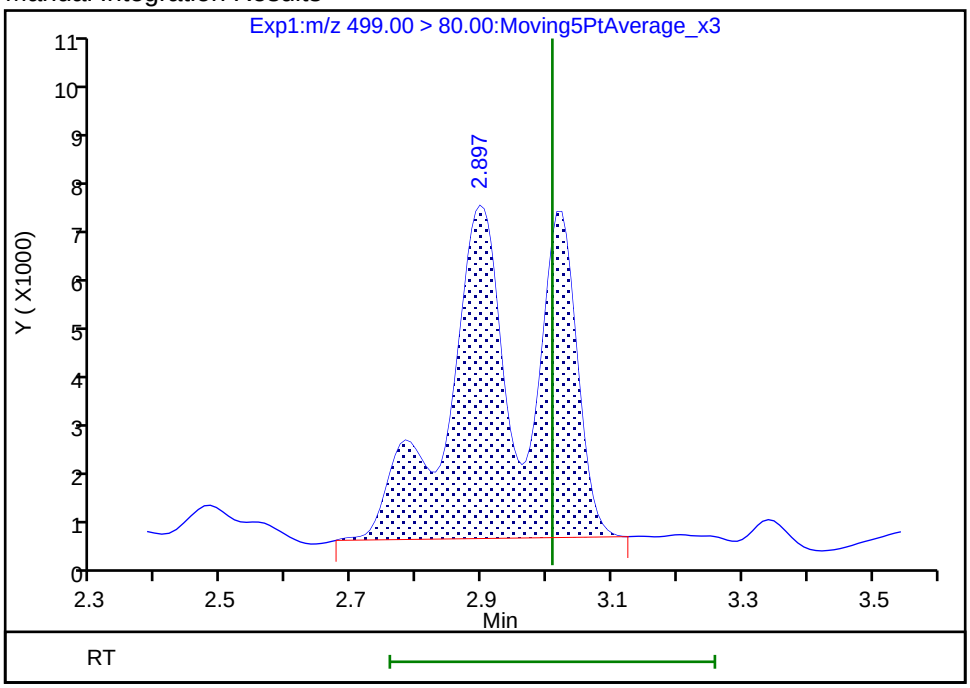
Processing Integration Results

RT: 2.90
Area: 71211
Amount: 0.033477
Amount Units: ng/ml



Manual Integration Results

RT: 2.90
Area: 67645
Amount: 0.031800
Amount Units: ng/ml



Reviewer: mongkols, 09-Jul-2018 14:42:34
Audit Action: Manually Integrated Audit Reason: Baseline

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF31-GW-01 DL
Lab Sample ID: 320-40571-31 DL
Matrix: Water
Lab File ID: 2018.07.11LLB_048.d
Analysis Method: 537 (modified)
Date Collected: 06/21/2018 09:15
Extraction Method: 3535
Date Extracted: 07/02/2018 14:58
Sample wt/vol: 287.6(mL)
Date Analyzed: 07/11/2018 22:09
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 5
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 233511
Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	0.051	B	0.0087	0.0015
2706-90-3	Perfluoropentanoic acid (PFPeA)	0.11		0.0087	0.0021
307-24-4	Perfluorohexanoic acid (PFHxA)	0.13		0.0087	0.0025
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.070		0.0087	0.0011
335-67-1	Perfluorooctanoic acid (PFOA)	0.11		0.0087	0.0037
375-95-1	Perfluorononanoic acid (PFNA)	ND		0.0087	0.0012
335-76-2	Perfluorodecanoic acid (PFDA)	ND		0.0087	0.0013
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		0.0087	0.0048
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		0.0087	0.0024
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		0.0087	0.0057
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		0.0087	0.0013
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.78		0.0087	0.00087
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	0.015		0.0087	0.0013
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.053	B	0.0087	0.00074
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.0087	0.00083
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	ND		0.0087	0.0023
8789-57-2	Perfluorononanesulfonic acid (PFNS)	ND		0.0087	0.00070
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		0.0087	0.0014
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		0.0087	0.0015
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.087	0.013
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.087	0.0083
757124-72-4	4:2 FTS	ND		0.087	0.023
27619-97-2	6:2 FTS	ND		0.087	0.0087
39108-34-4	8:2 FTS	ND		0.087	0.0087

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF31-GW-01 DL
Lab Sample ID: 320-40571-31 DL
Matrix: Water
Lab File ID: 2018.07.11LLB_048.d
Analysis Method: 537 (modified)
Date Collected: 06/21/2018 09:15
Extraction Method: 3535
Date Extracted: 07/02/2018 14:58
Sample wt/vol: 287.6(mL)
Date Analyzed: 07/11/2018 22:09
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 5
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 233511
Units: ug/L

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00992	13C4 PFBA	88		25-150
STL01893	13C5 PFPeA	98		25-150
STL00993	13C2 PFHxA	109		25-150
STL01892	13C4-PFHpA	107		25-150
STL00990	13C4 PFOA	101		25-150
STL00995	13C5 PFNA	100		25-150
STL00996	13C2 PFDA	102		25-150
STL00997	13C2 PFUnA	109		25-150
STL00998	13C2 PFDoA	99		25-150
STL02116	13C2-PFTeDA	89		25-150
STL02337	13C3-PFBS	112		25-150
STL00994	18O2 PFHxS	99		25-150
STL00991	13C4 PFOS	97		25-150
STL01056	13C8 FOSA	91		25-150
STL02118	d3-NMeFOSAA	101		25-150
STL02117	d5-NEtFOSAA	111		25-150
STL02279	M2-6:2FTS	104		25-150
STL02280	M2-8:2FTS	94		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180711-60928.b\2018.07.11LLB_048.d
Lims ID: 320-40571-A-31-A
Client ID: NF31-GW-01
Sample Type: Client
Inject. Date: 11-Jul-2018 22:09:43 ALS Bottle#: 29 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 5.0000
Sample Info: 320-40571-a-31-a 5X
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180711-60928.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 13-Jul-2018 09:03:10 Calib Date: 11-Jul-2018 15:38:42
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK010

First Level Reviewer: mongkols Date: 13-Jul-2018 09:03:10

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.435	1.435	0.0	0.538	1068369	0.4418		88.4	7156	
2 Perfluorobutyric acid										M
212.90 > 169.00	1.435	1.436	-0.001	1.000	616468	0.2927			84.8	M
D 3 13C5-PFPeA										
267.90 > 223.00	1.719	1.719	0.0	0.645	825438	0.4911		98.2	6553	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.719	1.721	-0.002	1.000	1242094	0.6202			205	
D 47 13C3-PFBS										
301.90 > 83.00	1.755	1.755	0.0	0.658	22061	0.5222		112	76.6	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.755	1.766	-0.011	1.000	16314292	4.50			18620	
298.90 > 99.00	1.755	1.766	-0.011	1.000	7074376		2.31(1.25-3.74)		14690	
D 7 13C2 PFHxA										
315.00 > 270.00	2.002	2.002	0.0	0.751	984891	0.5429		109	20516	
6 Perfluorohexanoic acid										M
313.00 > 269.00	2.002	2.005	-0.003	1.000	1467634	0.7239			1063	M
313.00 > 119.00	2.002	2.005	-0.003	1.000	128446		11.43(5.03-15.10)		1089	
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.025	2.027	-0.002	1.154	286801	0.0866			377	
349.00 > 99.00	2.025	2.027	-0.002	1.154	109783		2.61(1.36-4.07)		625	
D 9 13C4-PFHpA										
367.00 > 322.00	2.319	2.319	0.0	0.869	893621	0.5347		107	17195	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.319	2.321	-0.002	1.000	836201	0.4045			853	
363.00 > 169.00	2.319	2.321	-0.002	1.000	340805		2.45(1.13-3.40)		2498	
D 11 18O2 PFHxS										
403.00 > 84.00	2.332	2.332	0.0	0.874	1106870	0.4675		98.8	19324	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.332	2.334	-0.002	1.000	822987	0.3064			1560	
399.00 > 99.00	2.332	2.334	-0.002	1.000	245924		3.35(1.50-4.49)		842	
D 12 M2-6:2FTS										
429.00 > 81.00	2.644	2.643	0.001	0.991	176984	0.4940		104	1951	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.652	2.646	0.006	1.003	18665	0.0320			519	
D 14 13C4 PFOA										
417.00 > 372.00	2.667	2.667	0.0	1.000	860150	0.5045		101	16586	
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.667	2.669	-0.002	1.000	1328249	0.6269			746	M
413.00 > 169.00	2.667	2.669	-0.002	1.000	734393		1.81(0.84-2.52)		2199	M
* 62 13C2-PFOA										
415.00 > 370.00	2.667	2.669	-0.002		891727	0.5000			25098	
D 18 13C4 PFOS										
503.00 > 80.00	3.028	3.022	0.006	1.135	809031	0.4657		97.4	11098	
D 19 13C5 PFNA										
468.00 > 423.00	3.028	3.029	-0.001	1.135	761327	0.4995		99.9	20459	
D 21 13C8 FOSA										
506.00 > 78.00	3.365	3.367	-0.002	1.262	1134801	0.4530		90.6	21634	
D 26 M2-8:2FTS										
529.00 > 81.00	3.374	3.367	0.007	1.265	234765	0.4479		93.5	4873	
D 23 13C2 PFDA										
515.00 > 470.00	3.383	3.377	0.006	1.269	680389	0.5084		102	10368	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.533	3.535	-0.002	1.325	277011	0.5051		101	10273	
D 30 13C2 PFUnA										
565.00 > 520.00	3.711	3.706	0.005	1.392	606778	0.5430		109	31973	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.701	3.706	-0.005	1.388	311446	0.5543		111	840	
D 36 13C2 PFDoA										
615.00 > 570.00	4.003	3.996	0.007	1.501	570707	0.4926		98.5	6413	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.497	4.500	-0.003	1.686	535660	0.4456		89.1	5427	

QC Flag Legend

Review Flags

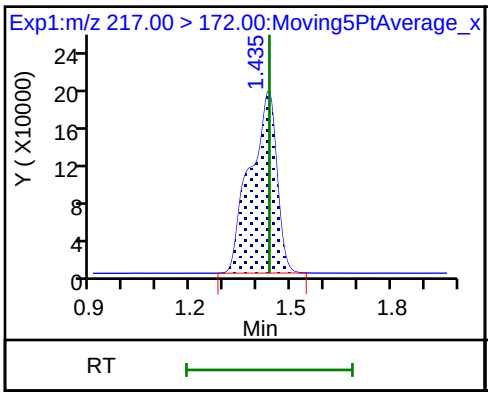
M - Manually Integrated

Report Date: 13-Jul-2018 09:03:11 Chrom Revision: 2.2 07-Jun-2018 07:41:54

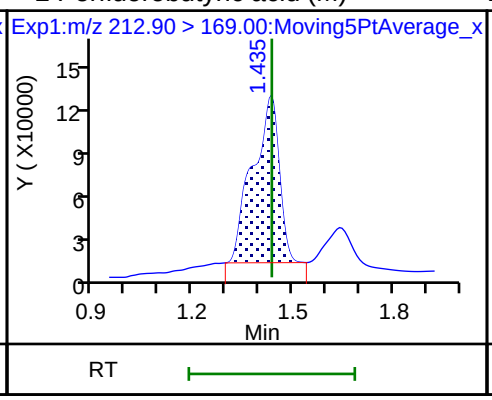
TestAmerica Sacramento

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180711-60928.b\2018.07.11LLB_048.d				
Injection Date:	11-Jul-2018 22:09:43	Instrument ID:	A8_N		
Lims ID:	320-40571-A-31-A	Lab Sample ID:	320-40571-31		
Client ID:	NF31-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	29	Worklist Smp#:	5
Injection Vol:	2.0 ul	Dil. Factor:	5.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		

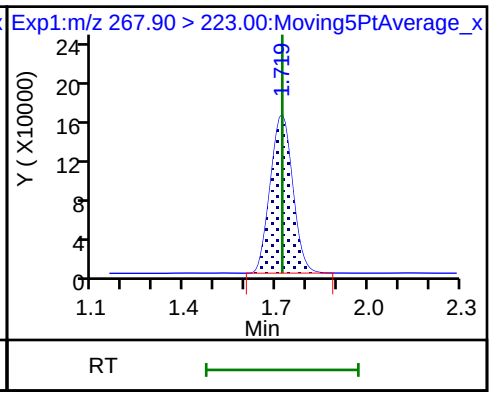
D 1 13C4 PFBA



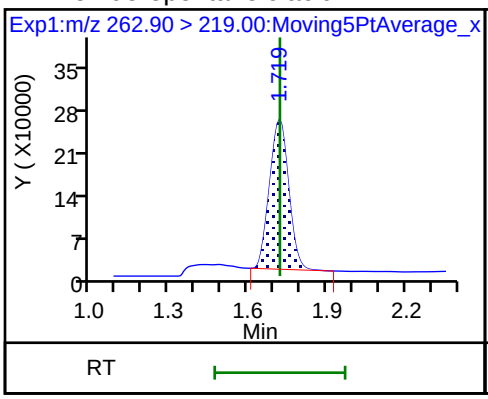
2 Perfluorobutyric acid (M)



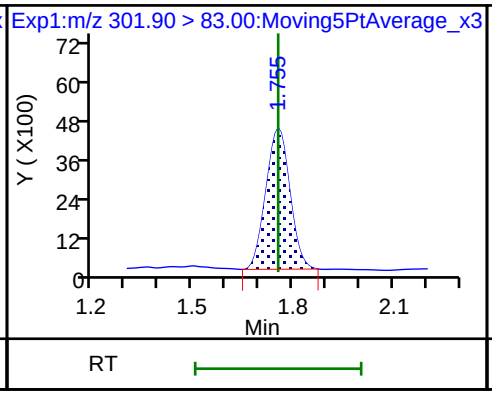
D 3 13C5-PFPeA



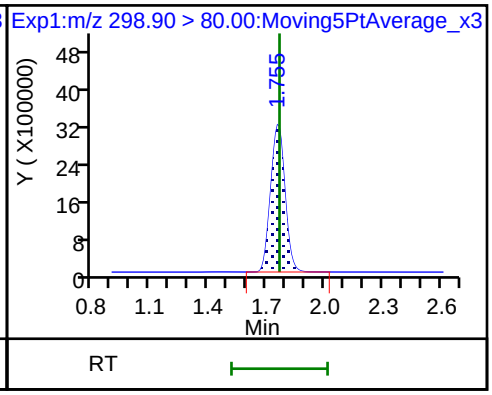
4 Perfluoropentanoic acid



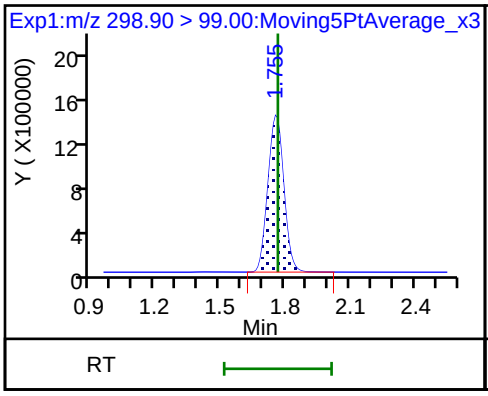
D 47 13C3-PFBS



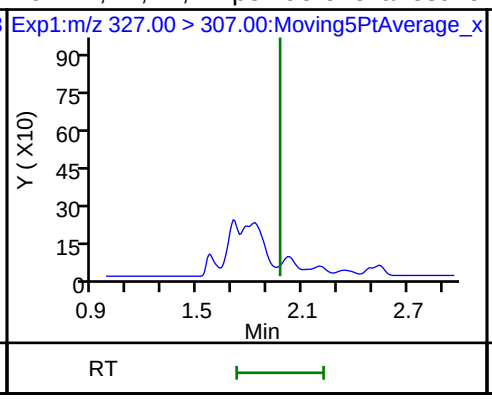
5 Perfluorobutanesulfonic acid



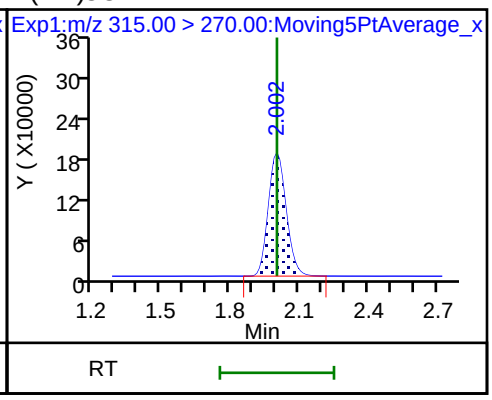
5 Perfluorobutanesulfonic acid



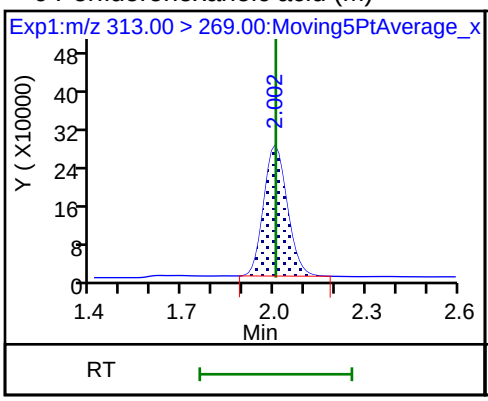
61 1H,1H,2H,2H-perfluorohexanesulfonic acid (NT)



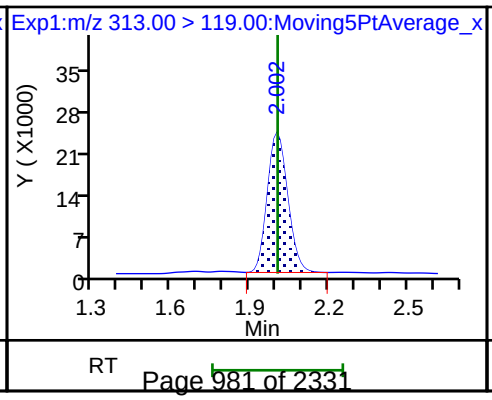
D 71 13C2 PFHxA



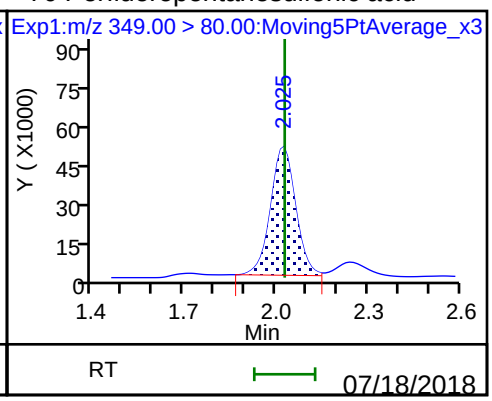
6 Perfluorohexanoic acid (M)



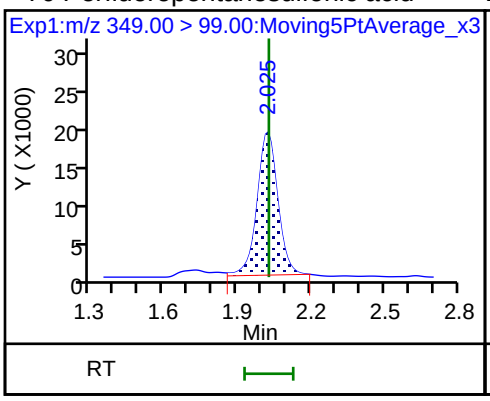
6 Perfluorohexanoic acid



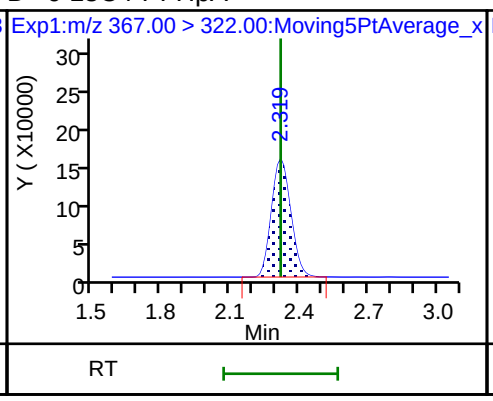
70 Perfluoropentanesulfonic acid



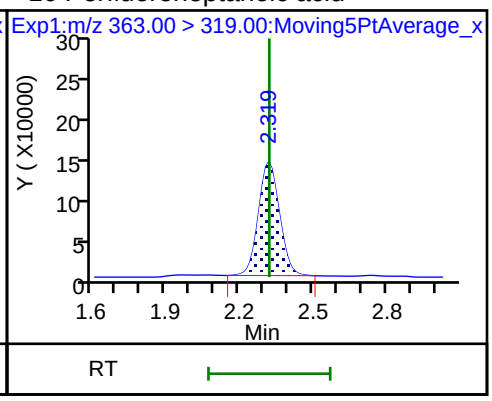
70 Perfluoropentanesulfonic acid



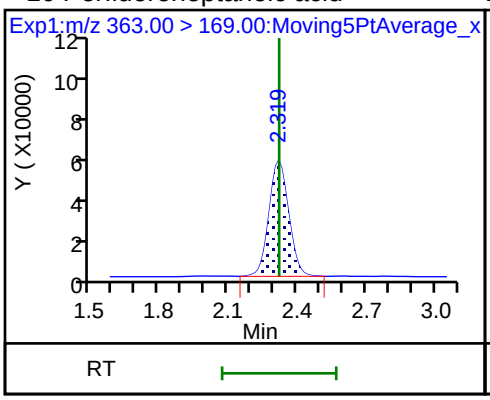
D 9 13C4-PFHpA



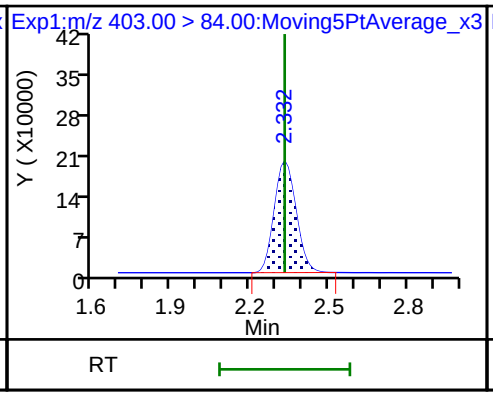
10 Perfluoroheptanoic acid



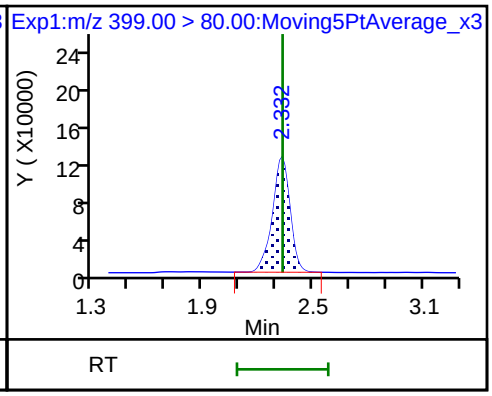
10 Perfluoroheptanoic acid



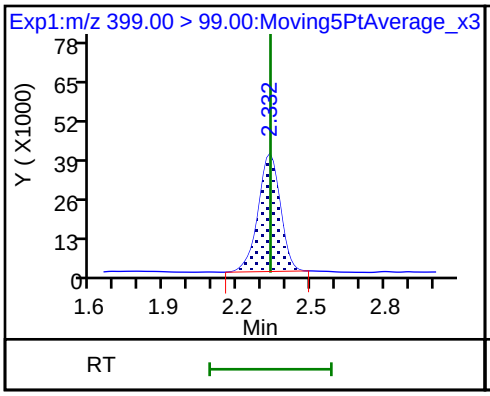
D 11 18O2 PFHxS



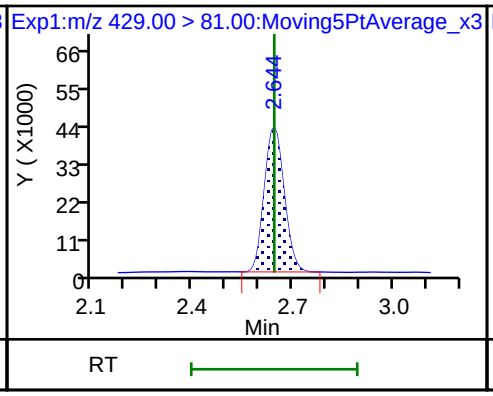
8 Perfluorohexanesulfonic acid



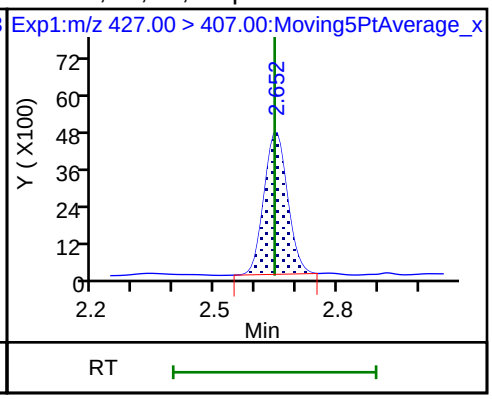
8 Perfluorohexanesulfonic acid



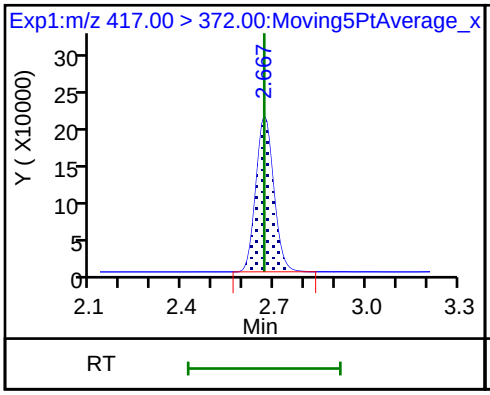
D 12 M2-6:2FTS



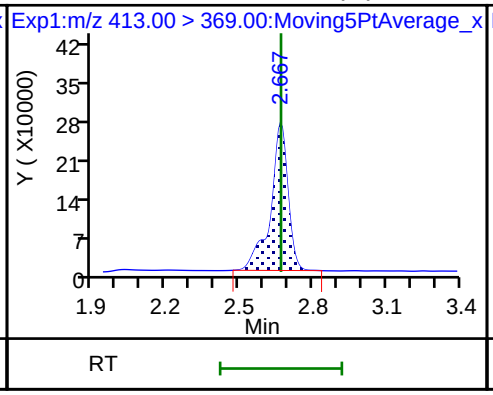
13 1H,1H,2H,2H-perfluorooctanesulfoni



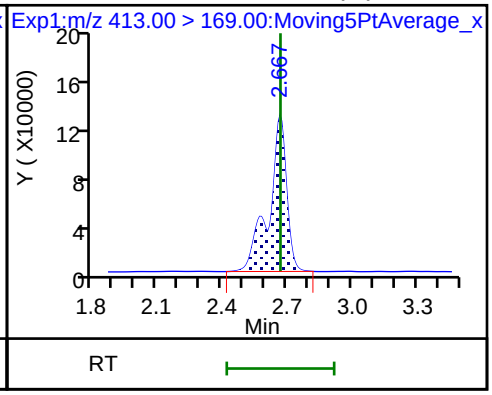
D 14 13C4 PFOA



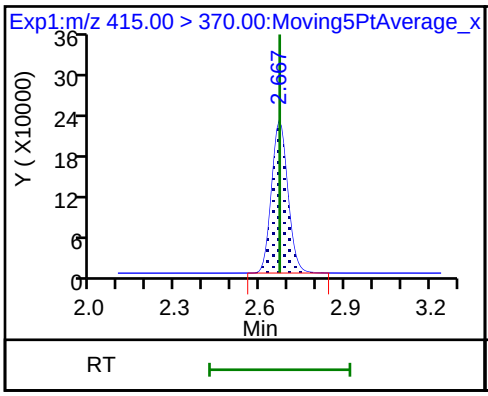
15 Perfluorooctanoic acid (M)



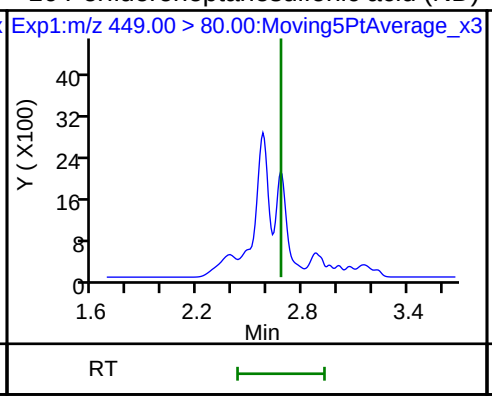
15 Perfluorooctanoic acid (M)



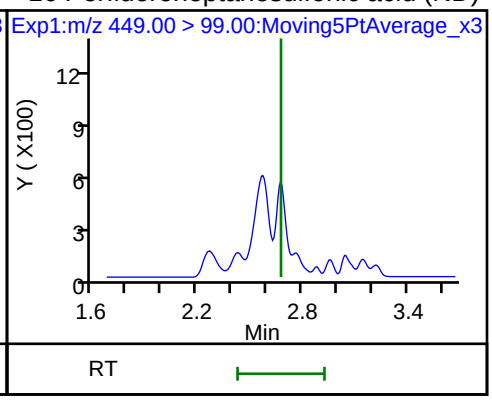
* 62 13C2-PFOA



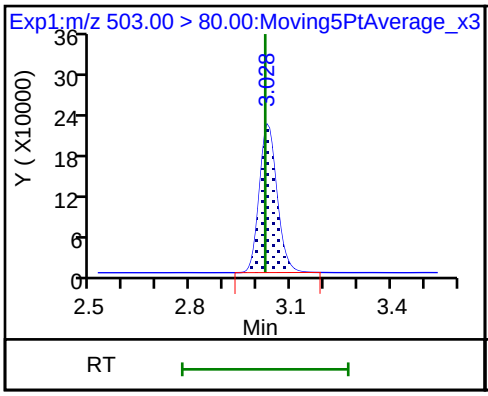
16 Perfluoroheptanesulfonic acid (ND)



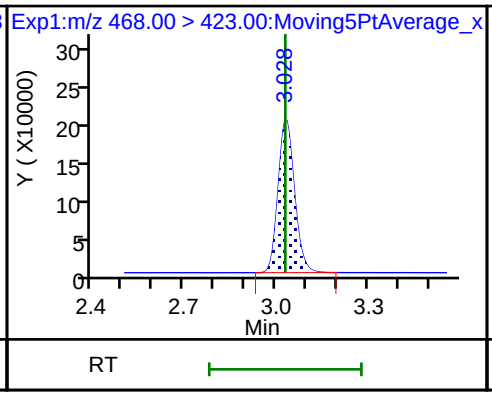
16 Perfluoroheptanesulfonic acid (ND)



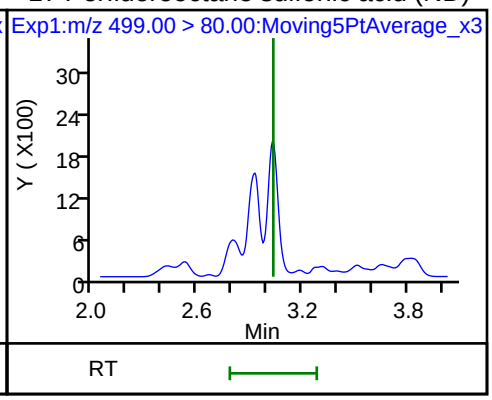
D 18 13C4 PFOS



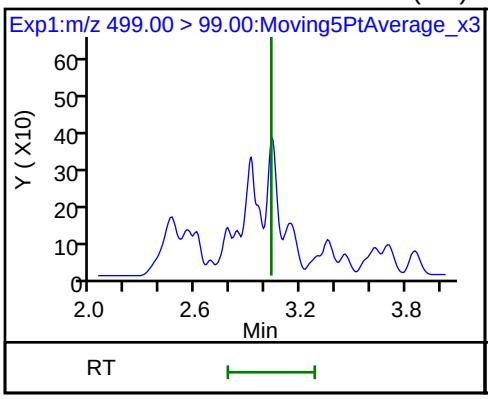
D 19 13C5 PFNA



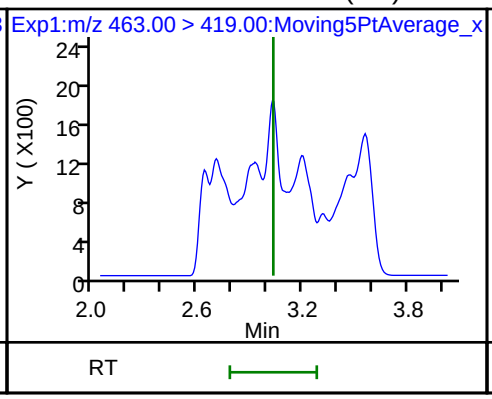
17 Perfluorooctane sulfonic acid (ND)



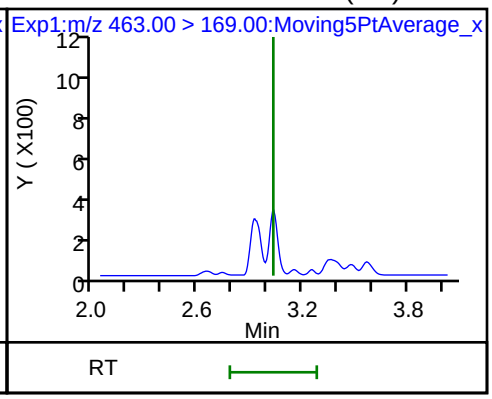
17 Perfluorooctane sulfonic acid (ND)



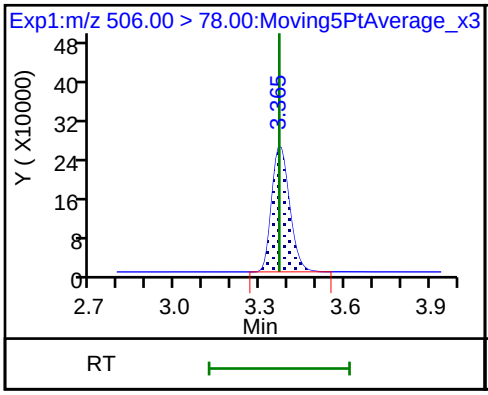
20 Perfluorononanoic acid (ND)



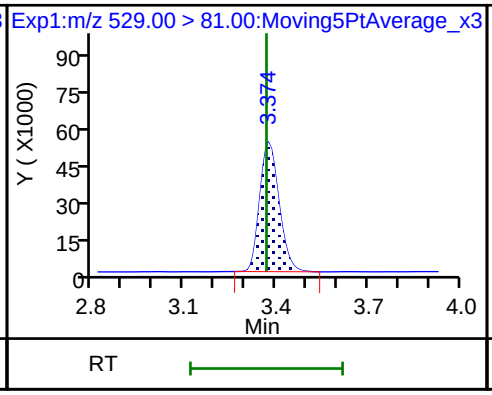
20 Perfluorononanoic acid (ND)



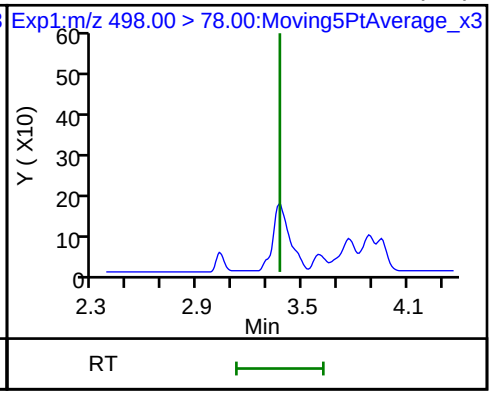
D 21 13C8 FOSA



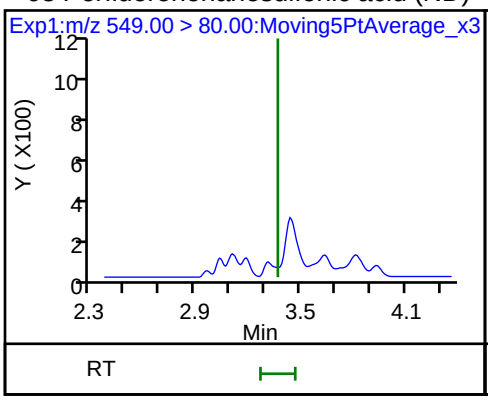
D 26 M2-8:2FTS



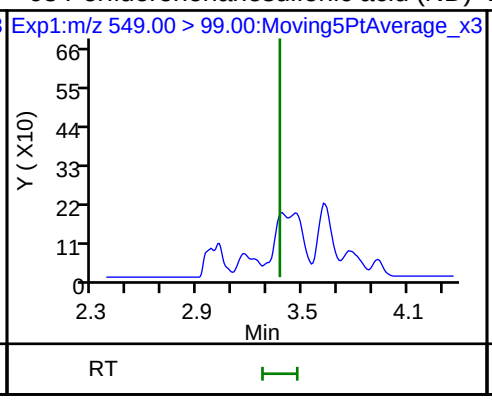
22 Perfluorooctane Sulfonamide (ND)



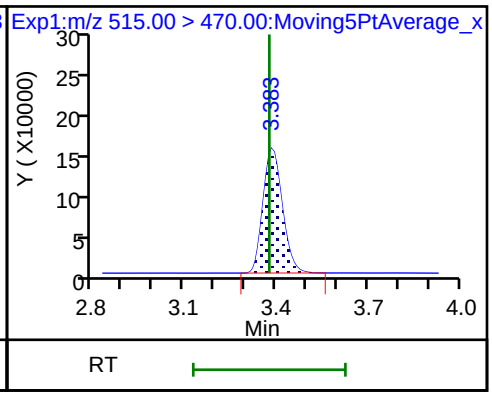
68 Perfluorononanesulfonic acid (ND)



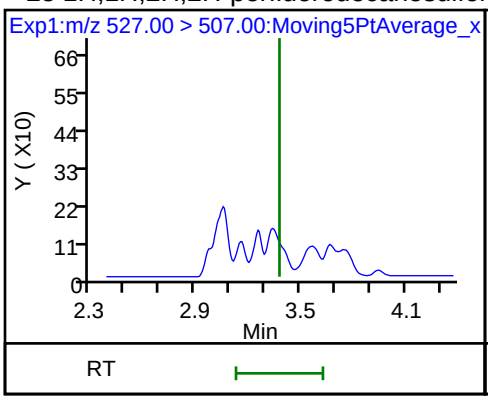
68 Perfluorononanesulfonic acid (ND)



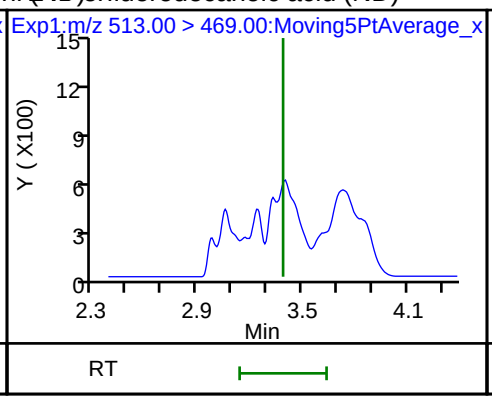
D 23 13C2 PFDA



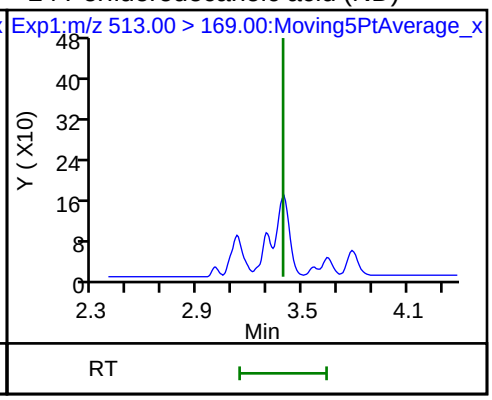
25 1H,1H,2H,2H-perfluorodecanesulfoni (ND)



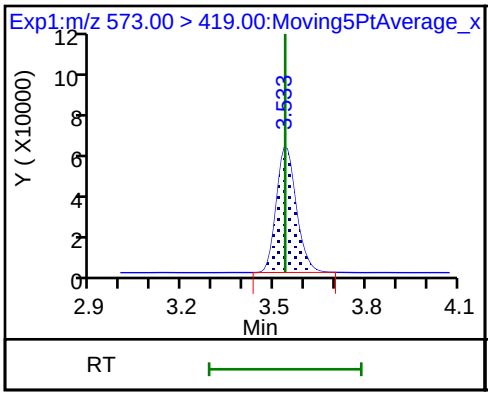
24 Perfluorodecanoic acid (ND)



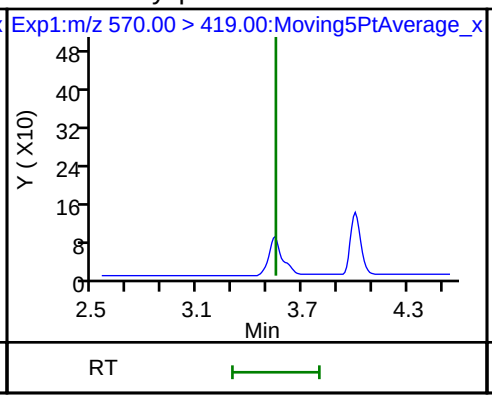
24 Perfluorodecanoic acid (ND)



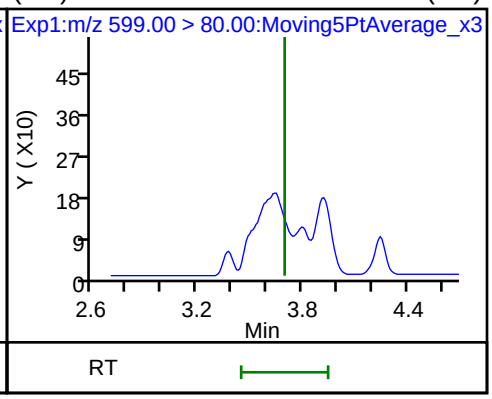
D 27 d3-NMeFOSAA



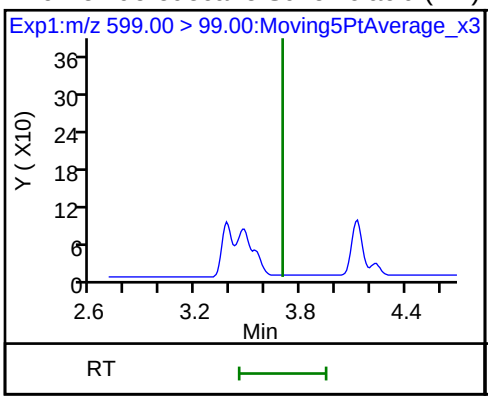
28 N-methyl perfluorooctane sulfonami (ND)



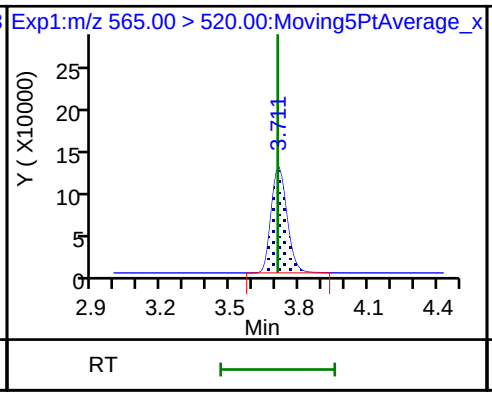
29 Perfluorodecane Sulfonic acid (ND)



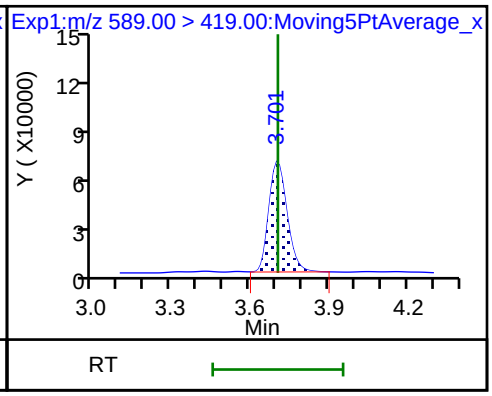
29 Perfluorodecane Sulfonic acid (ND)



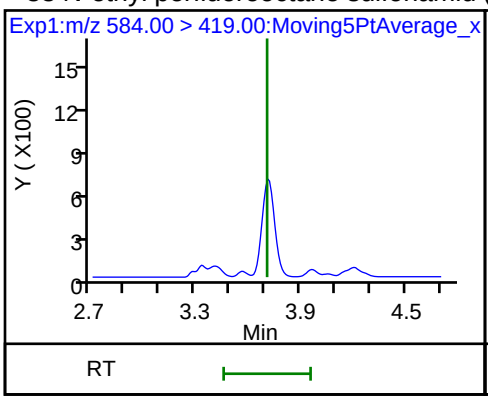
D 30 13C2 PFUnA



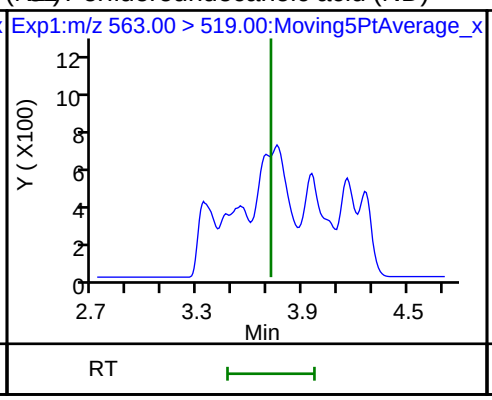
D 32 d5-NEtFOSAA



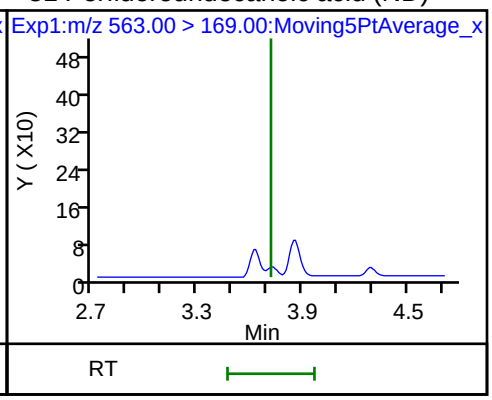
33 N-ethyl perfluorooctane sulfonamid (ND)



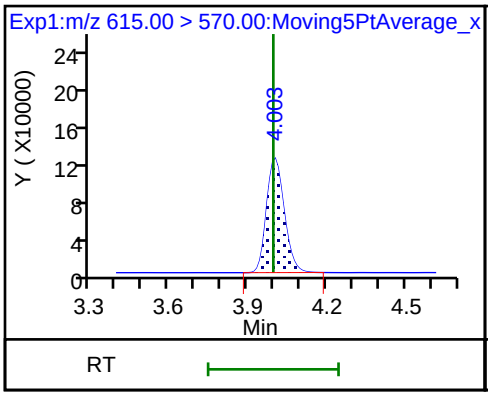
31 Perfluoroundecanoic acid (ND)



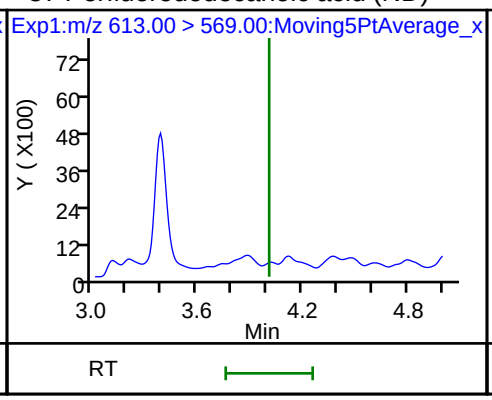
31 Perfluoroundecanoic acid (ND)



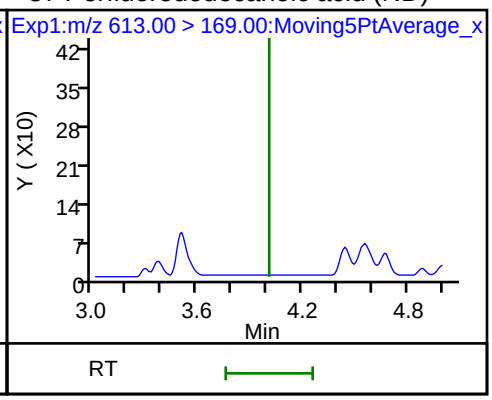
D 36 13C2 PFDoA



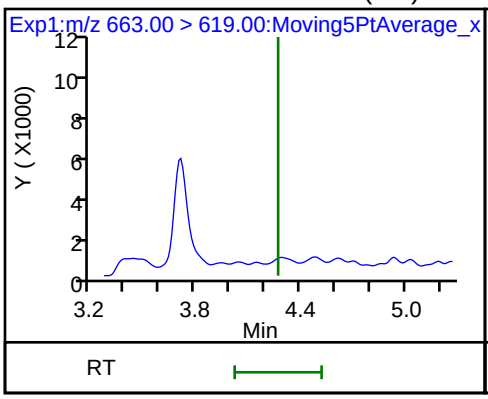
37 Perfluorododecanoic acid (ND)



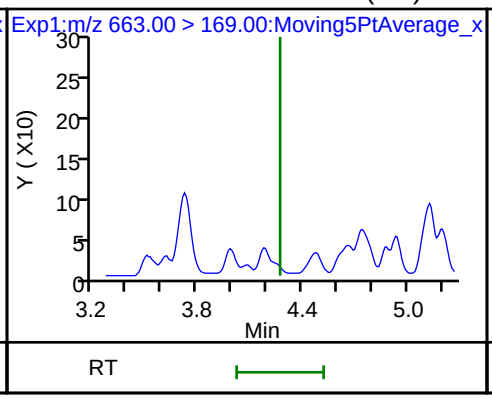
37 Perfluorododecanoic acid (ND)



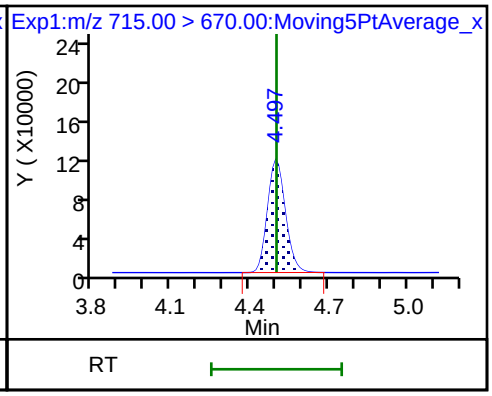
41 Perfluorotridecanoic acid (ND)



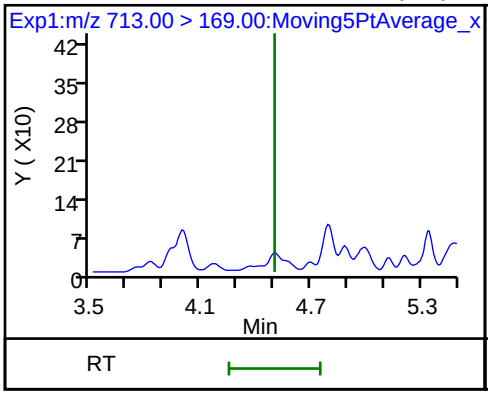
41 Perfluorotridecanoic acid (ND)



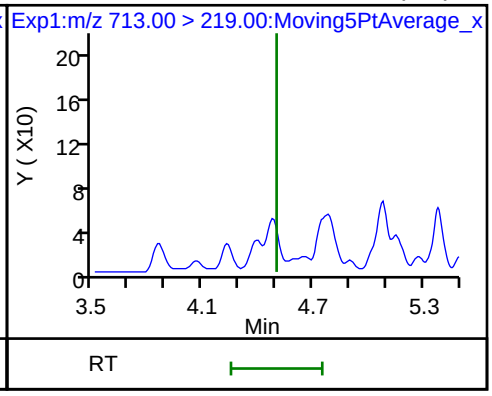
D 43 13C2-PFTeDA



42 Perfluorotetradecanoic acid (ND)



42 Perfluorotetradecanoic acid (ND)



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

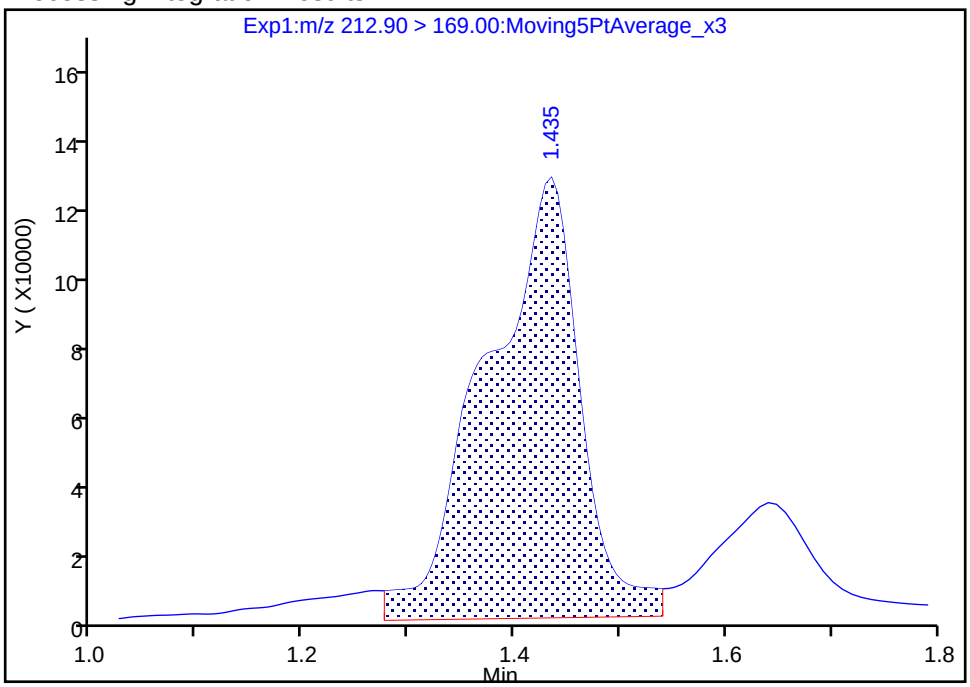
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180711-60928.b\2018.07.11LLB_048.d				
Injection Date:	11-Jul-2018 22:09:43	Instrument ID:	A8_N		
Lims ID:	320-40571-A-31-A	Lab Sample ID:	320-40571-31		
Client ID:	NF31-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	29	Worklist Smp#:	5
Injection Vol:	2.0 ul	Dil. Factor:	5.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

2 Perfluorobutyric acid, CAS: 375-22-4

Signal: 1

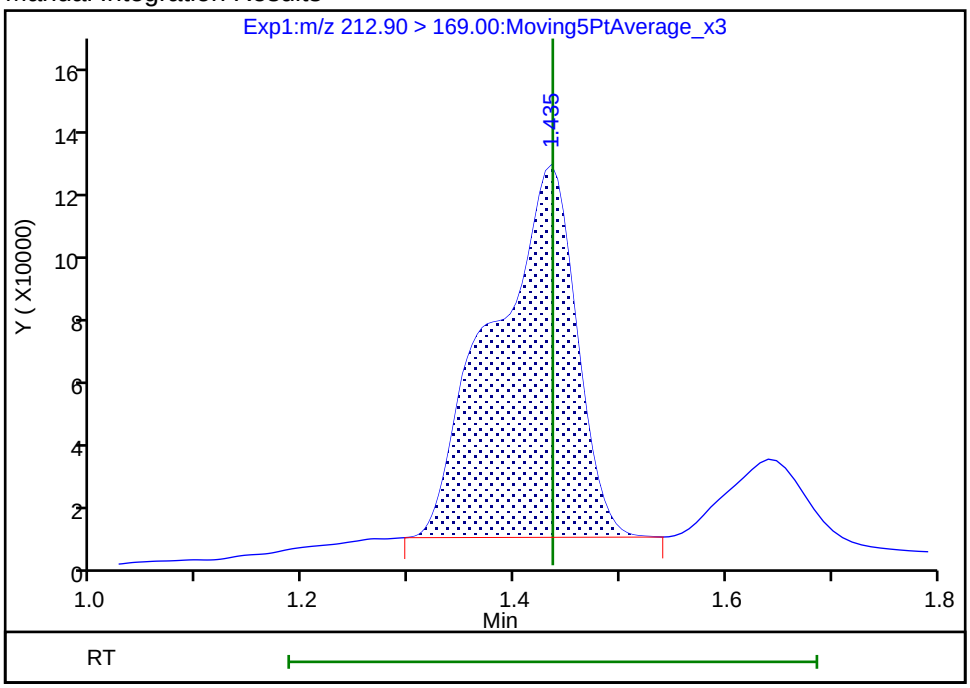
Processing Integration Results

RT: 1.43
Area: 742173
Amount: 0.352422
Amount Units: ng/ml



Manual Integration Results

RT: 1.43
Area: 616468
Amount: 0.292731
Amount Units: ng/ml



Reviewer: mongkols, 13-Jul-2018 09:02:28

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

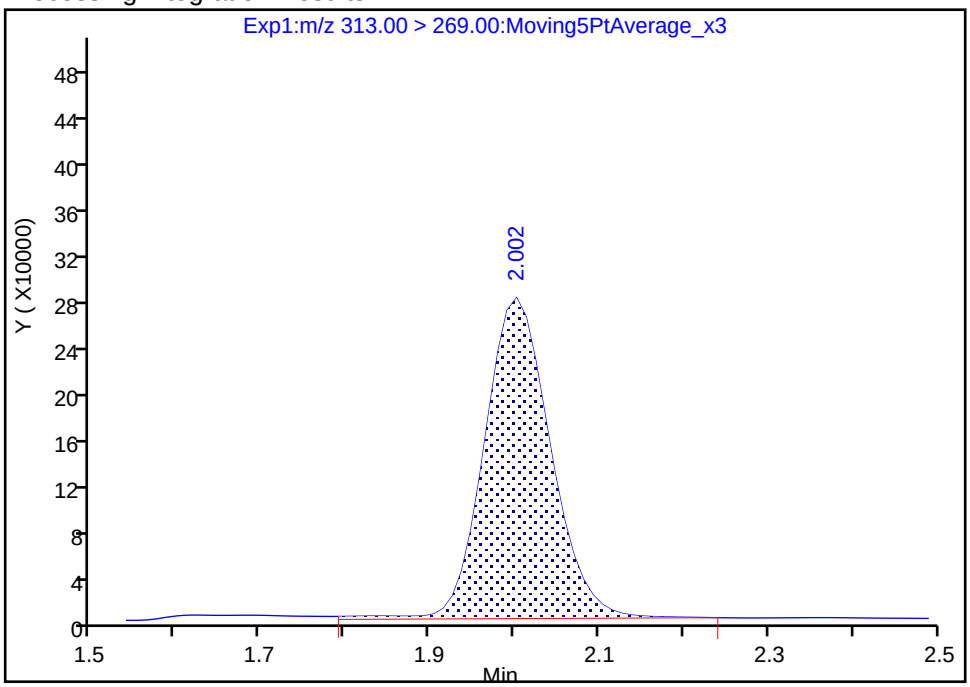
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180711-60928.b\2018.07.11LLB_048.d				
Injection Date:	11-Jul-2018 22:09:43	Instrument ID:	A8_N		
Lims ID:	320-40571-A-31-A	Lab Sample ID:	320-40571-31		
Client ID:	NF31-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	29	Worklist Smp#:	5
Injection Vol:	2.0 ul	Dil. Factor:	5.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

6 Perfluorohexanoic acid, CAS: 307-24-4

Signal: 1

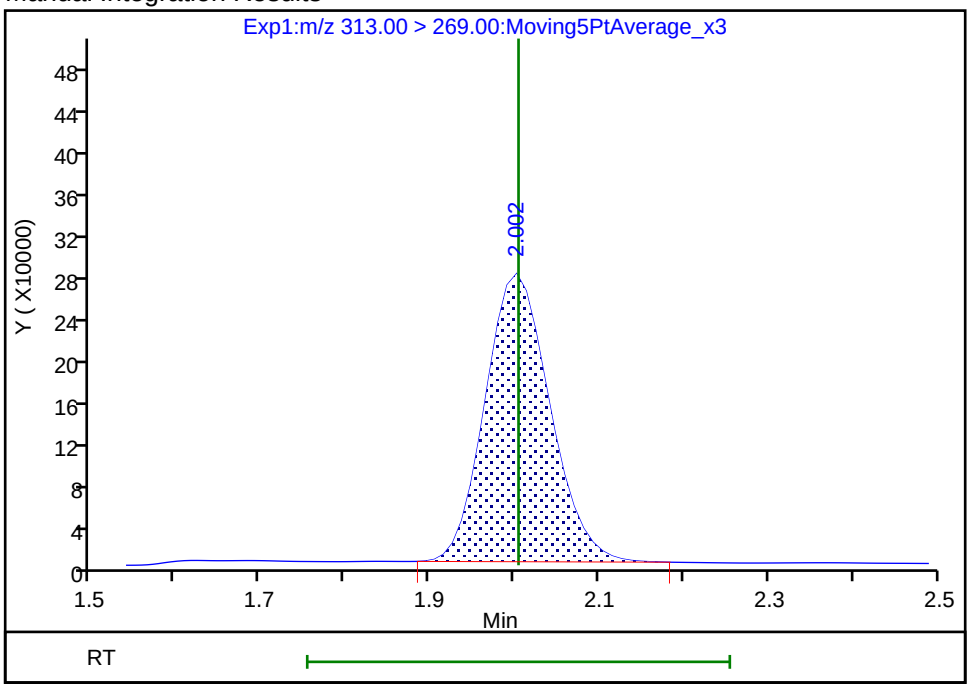
Processing Integration Results

RT: 2.00
Area: 1513470
Amount: 0.746470
Amount Units: ng/ml



Manual Integration Results

RT: 2.00
Area: 1467634
Amount: 0.723862
Amount Units: ng/ml



Reviewer: mongkols, 13-Jul-2018 09:02:37

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

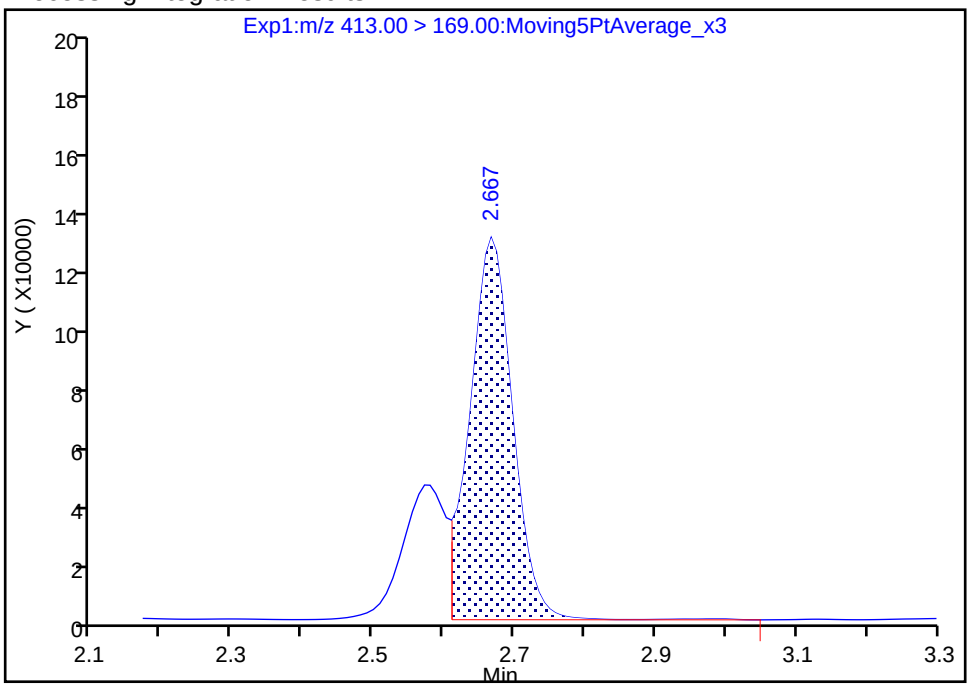
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180711-60928.b\2018.07.11LLB_048.d				
Injection Date:	11-Jul-2018 22:09:43	Instrument ID:	A8_N		
Lims ID:	320-40571-A-31-A	Lab Sample ID:	320-40571-31		
Client ID:	NF31-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	29	Worklist Smp#:	5
Injection Vol:	2.0 ul	Dil. Factor:	5.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 2

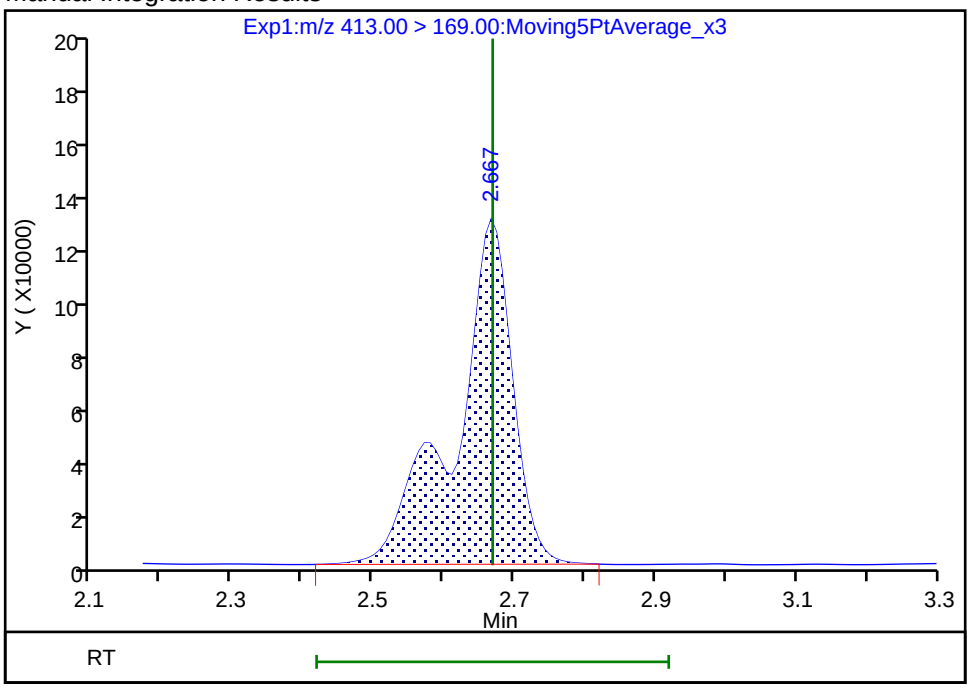
Processing Integration Results

RT: 2.67
Area: 542774
Amount: 0.643234
Amount Units: ng/ml



Manual Integration Results

RT: 2.67
Area: 734393
Amount: 0.626936
Amount Units: ng/ml



Reviewer: mongkols, 13-Jul-2018 09:02:51

Audit Action: Manually Integrated Audit Reason: Isomers

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

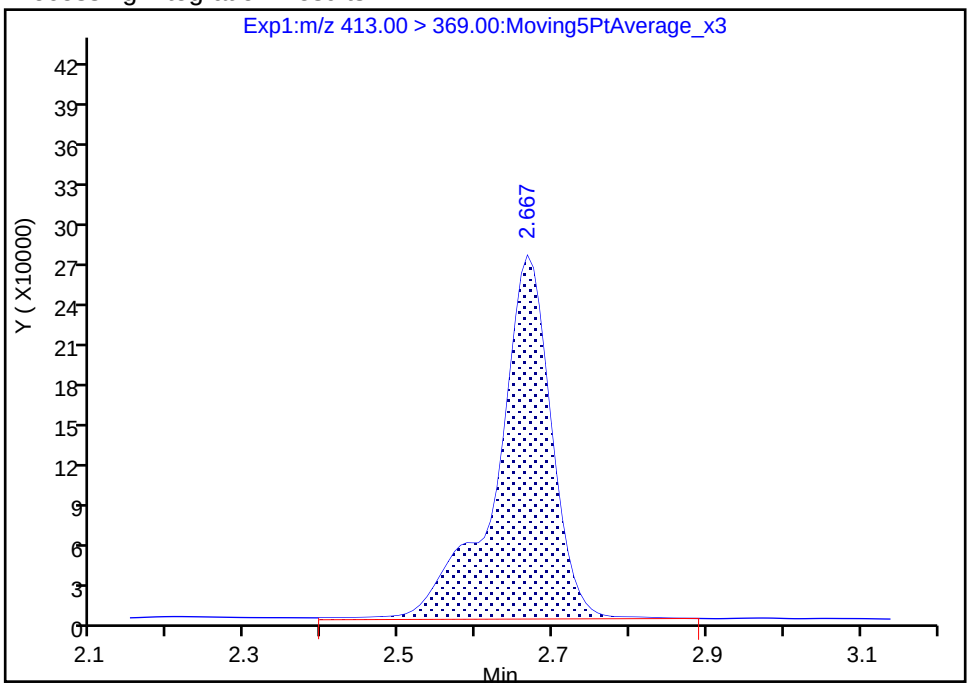
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180711-60928.b\2018.07.11LLB_048.d				
Injection Date:	11-Jul-2018 22:09:43	Instrument ID:	A8_N		
Lims ID:	320-40571-A-31-A	Lab Sample ID:	320-40571-31		
Client ID:	NF31-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	29	Worklist Smp#:	5
Injection Vol:	2.0 ul	Dil. Factor:	5.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

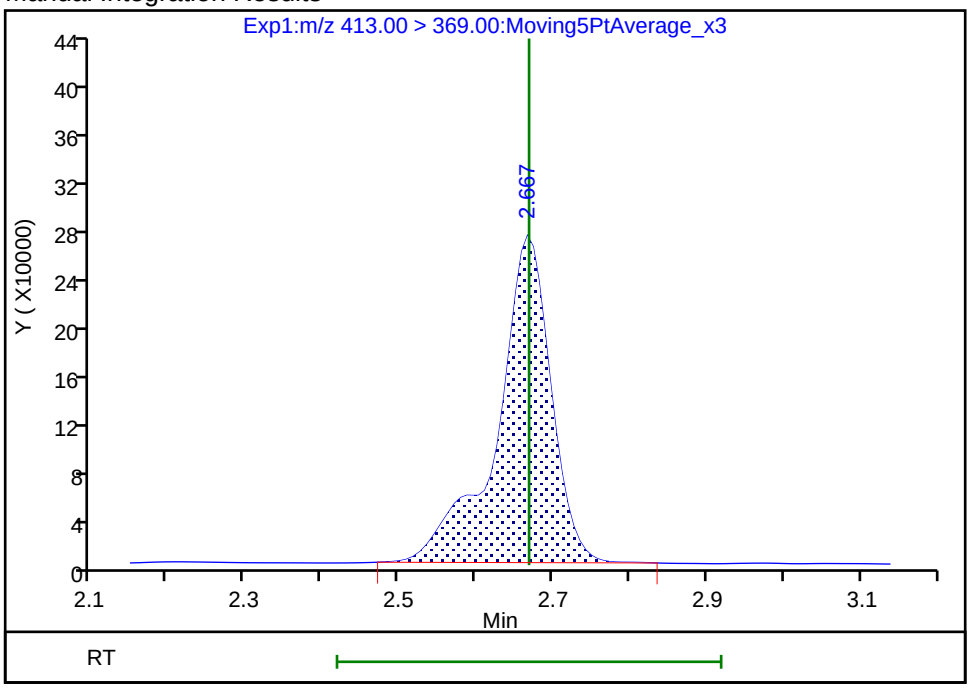
Processing Integration Results

RT: 2.67
Area: 1362779
Amount: 0.643234
Amount Units: ng/ml



Manual Integration Results

RT: 2.67
Area: 1328249
Amount: 0.626936
Amount Units: ng/ml



Reviewer: mongkols, 13-Jul-2018 09:02:54
Audit Action: Manually Integrated Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF31-SS-02
Lab Sample ID: 320-40571-32
Matrix: Solid
Lab File ID: 2018.07.14LLA_028.d
Analysis Method: 537 (modified)
Date Collected: 06/19/2018 10:25
Extraction Method: SHAKE
Date Extracted: 06/28/2018 06:06
Sample wt/vol: 5.04(g)
Date Analyzed: 07/14/2018 14:16
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture: 18.0
GPC Cleanup:(Y/N) N
Analysis Batch No.: 234231
Units: mg/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	0.000047	J	0.00024	0.000034
2706-90-3	Perfluoropentanoic acid (PFPeA)	ND		0.00024	0.000093
307-24-4	Perfluorohexanoic acid (PFHxA)	0.000060	J	0.00024	0.000051
375-85-9	Perfluoroheptanoic acid (PFHpA)	ND		0.00024	0.000035
335-67-1	Perfluorooctanoic acid (PFOA)	ND		0.00024	0.00010
375-95-1	Perfluorononanoic acid (PFNA)	ND		0.00024	0.000044
335-76-2	Perfluorodecanoic acid (PFDA)	ND		0.00024	0.000027
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		0.00024	0.000044
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		0.00024	0.000081
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		0.00024	0.000062
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		0.00024	0.000065
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.00025		0.00024	0.000030
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	ND		0.00024	0.000038
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.00024	0.000042
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	ND		0.00061	0.00024
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		0.00024	0.000047
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		0.00024	0.000099
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.0024	0.00047
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.0024	0.00045
27619-97-2	6:2 FTS	ND		0.0024	0.00018
39108-34-4	8:2 FTS	ND		0.0024	0.00030

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF31-SS-02
Lab Sample ID: 320-40571-32
Matrix: Solid
Lab File ID: 2018.07.14LLA_028.d
Analysis Method: 537 (modified)
Date Collected: 06/19/2018 10:25
Extraction Method: SHAKE
Date Extracted: 06/28/2018 06:06
Sample wt/vol: 5.04(g)
Date Analyzed: 07/14/2018 14:16
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture: 18.0
GPC Cleanup:(Y/N) N
Analysis Batch No.: 234231
Units: mg/Kg

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00992	13C4 PFBA	79		25-150
STL01893	13C5 PFPeA	83		25-150
STL00993	13C2 PFHxA	84		25-150
STL01892	13C4-PFHpA	91		25-150
STL00990	13C4 PFOA	87		25-150
STL00995	13C5 PFNA	87		25-150
STL00996	13C2 PFDA	90		25-150
STL00997	13C2 PFUnA	82		25-150
STL00998	13C2 PFDoA	85		25-150
STL02116	13C2-PFTeDA	86		25-150
STL02337	13C3-PFBS	73		25-150
STL00994	18O2 PFHxS	78		25-150
STL00991	13C4 PFOS	73		25-150
STL01056	13C8 FOSA	65		25-150
STL02118	d3-NMeFOSAA	86		25-150
STL02117	d5-NEtFOSAA	81		25-150
STL02279	M2-6:2FTS	64		25-150
STL02280	M2-8:2FTS	91		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180716-61105.b\2018.07.14LLA_028.d
Lims ID: 320-40571-A-32-A
Client ID: NF31-SS-02
Sample Type: Client
Inject. Date: 14-Jul-2018 14:16:52 ALS Bottle#: 18 Worklist Smp#: 11
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-40571-a-32-a
Misc. Info.: Plate: 1 Rack: 5
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180716-61105.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 17-Jul-2018 08:24:01 Calib Date: 11-Jul-2018 15:38:42
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK016

First Level Reviewer: mongkols Date: 17-Jul-2018 08:24:01

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										M
217.00 > 172.00	1.435	1.436	-0.001	0.540	4844222	1.98		79.3	54771	M
2 Perfluorobutyric acid										
212.90 > 169.00	1.435	1.441	-0.006	1.000	37259	0.0195			9.7	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.719	1.719	0.0	1.000	39012	0.0228			15.5	
D 3 13C5-PFPeA										
267.90 > 223.00	1.719	1.720	-0.001	0.647	3530884	2.08		83.1	47018	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.756	1.756	0.0	1.000	247558	0.1035			2226	
298.90 > 99.00	1.756	1.756	0.0	1.000	102818		2.41(1.25-3.74)		676	
D 47 13C3-PFBS										
301.90 > 83.00	1.756	1.756	0.0	0.660	72723	1.70		73.3	420	
D 7 13C2 PFHxA										
315.00 > 270.00	2.003	1.992	0.011	0.753	3871735	2.11		84.5	66489	
6 Perfluorohexanoic acid										
313.00 > 269.00	2.003	2.003	0.001	1.000	39613	0.0249			57.2	
313.00 > 119.00	1.991	2.003	-0.011	0.994	4319		9.17(5.03-15.10)		59.5	
D 9 13C4-PFHpA										
367.00 > 322.00	2.319	2.306	0.013	0.872	3833575	2.27		90.8	49021	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.319	2.319	0.0	1.000	24165	0.0136			38.0	
363.00 > 169.00	2.319	2.319	0.0	1.000	7807		3.10(1.13-3.40)		71.6	
D 11 18O2 PFHxS										
403.00 > 84.00	2.332	2.319	0.013	0.877	4408858	1.84		77.9	56695	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.319	2.332	-0.013	0.994	28694	0.0134			244	
399.00 > 99.00	2.319	2.332	-0.013	0.994	10400		2.76(1.50-4.49)		67.6	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 12 M2-6:2FTS										
429.00 > 81.00	2.635	2.628	0.007	0.991	546306	1.51		63.5	10001	
D 14 13C4 PFOA										
417.00 > 372.00	2.659	2.652	0.007	1.000	3734140	2.17		86.7	52584	
* 62 13C2-PFOA										
415.00 > 370.00	2.659	2.667	-0.008		4506542	2.50			56495	
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.659	2.667	-0.008	1.000	31671	0.0172			17.4	M
413.00 > 169.00	2.667	2.667	0.0	1.003	26078		1.21(0.84-2.52)		94.1	
D 19 13C5 PFNA										
468.00 > 423.00	3.021	3.018	0.003	1.136	3351745	2.18		87.0	51518	
D 18 13C4 PFOS										
503.00 > 80.00	3.021	3.018	0.003	1.136	3059989	1.74		72.9	51270	
17 Perfluorooctane sulfonic acid										M
499.00 > 80.00	3.021	3.029	-0.008	1.000	40941	0.0282			537	
499.00 > 99.00	3.028	3.029	-0.001	1.002	8478		4.83(2.31-6.93)		125	M
D 26 M2-8:2FTS										
529.00 > 81.00	3.365	3.361	0.004	1.265	1156257	2.18		91.1	24310	
D 23 13C2 PFDA										
515.00 > 470.00	3.374	3.370	0.004	1.269	3044615	2.25		90.0	46096	
D 21 13C8 FOSA										
506.00 > 78.00	3.374	3.370	0.004	1.269	4116594	1.63		65.0	43486	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.524	3.520	0.004	1.325	1186634	2.14		85.6	32520	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.690	3.687	0.003	1.388	1151179	2.03		81.1	4915	
D 30 13C2 PFUnA										
565.00 > 520.00	3.700	3.698	0.002	1.392	2307972	2.04		81.7	40563	
D 36 13C2 PFDoA										
615.00 > 570.00	3.989	3.988	0.001	1.500	2498401	2.13		85.3	26815	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.491	4.480	0.011	1.689	2599882	2.14		85.6	18299	

QC Flag Legend

Review Flags

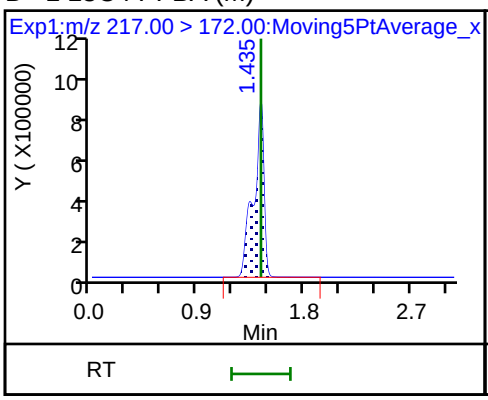
M - Manually Integrated

Report Date: 17-Jul-2018 08:24:02 Chrom Revision: 2.2 07-Jun-2018 07:41:54

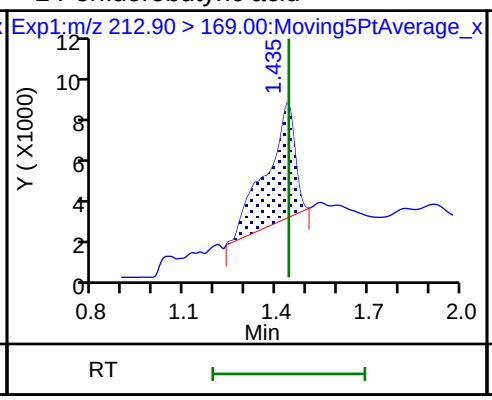
TestAmerica Sacramento

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180716-61105.b\2018.07.14LLA_028.d				
Injection Date:	14-Jul-2018 14:16:52	Instrument ID:	A8_N		
Lims ID:	320-40571-A-32-A	Lab Sample ID:	320-40571-32		
Client ID:	NF31-SS-02				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	18	Worklist Smp#:	11
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		

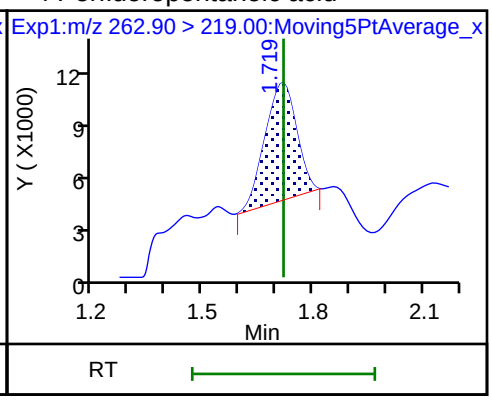
D 1 13C4 PFBA (M)



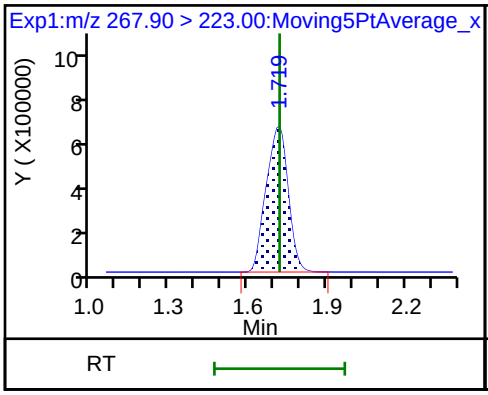
2 Perfluorobutyric acid



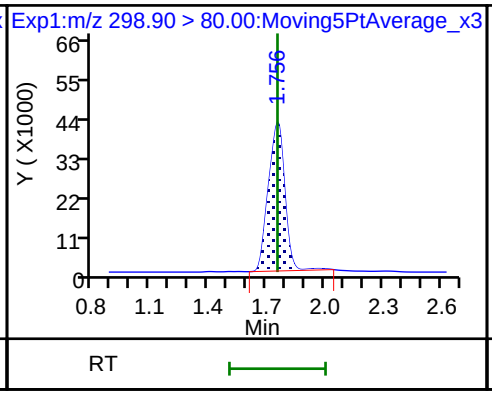
4 Perfluoropentanoic acid



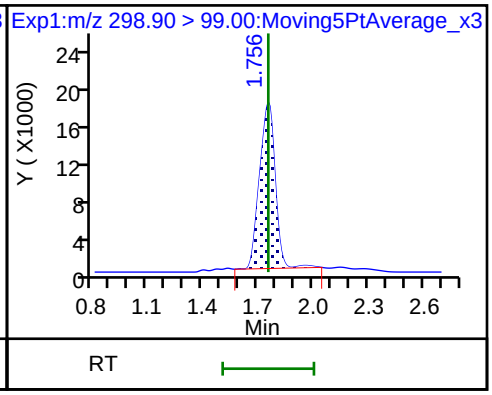
D 3 13C5-PFPeA



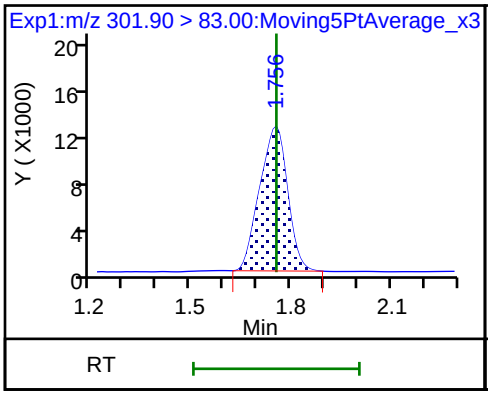
5 Perfluorobutanesulfonic acid



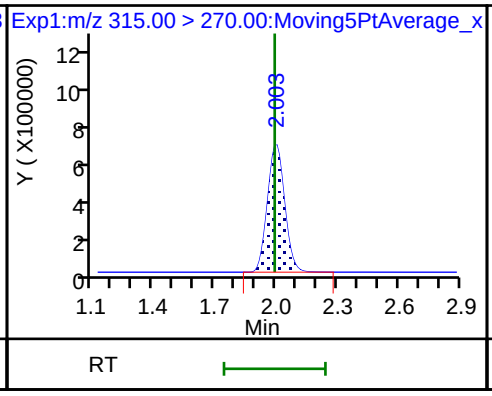
5 Perfluorobutanesulfonic acid



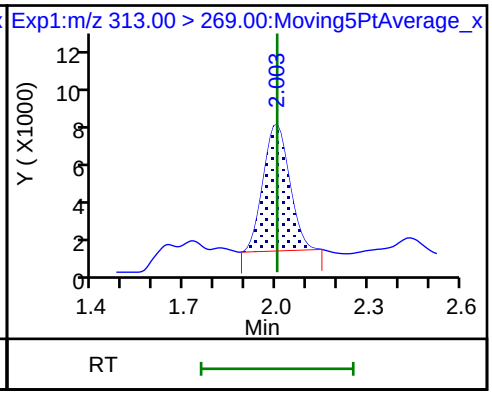
D 47 13C3-PFBS



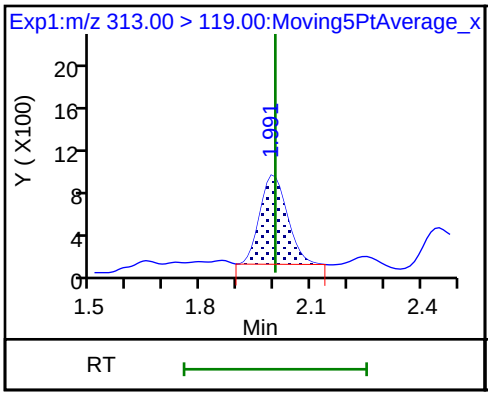
D 7 13C2 PFHxA



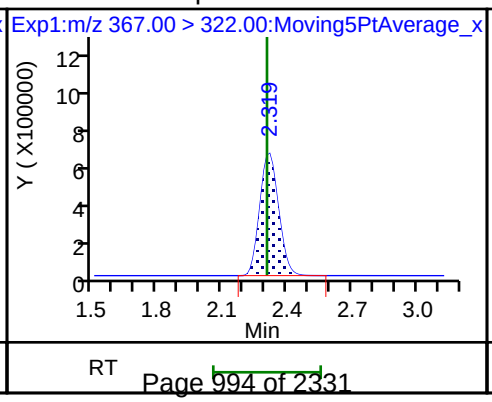
6 Perfluorohexanoic acid



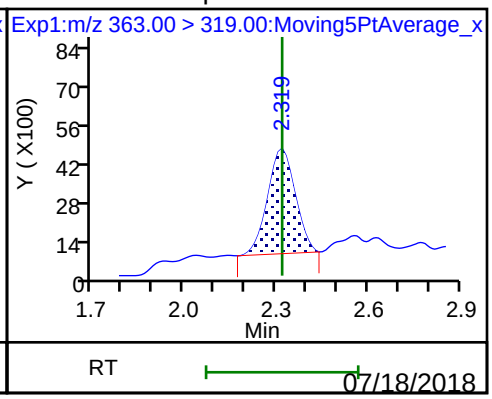
6 Perfluorohexanoic acid



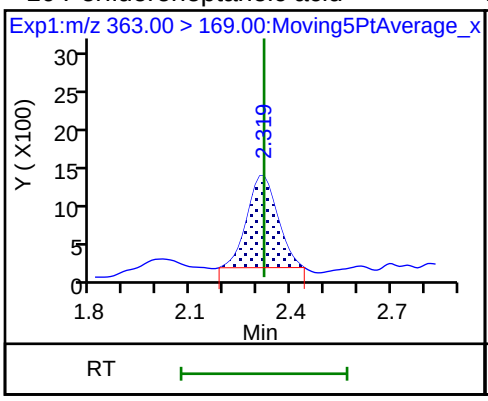
D 9 13C4-PFHpA



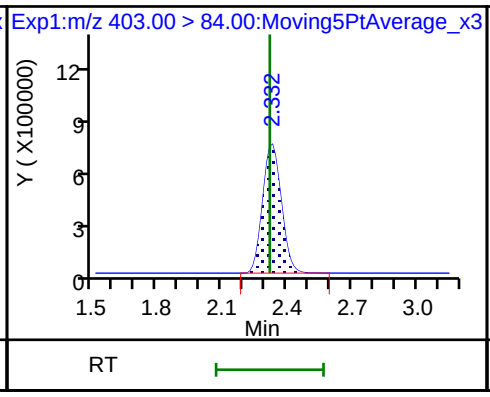
10 Perfluoroheptanoic acid



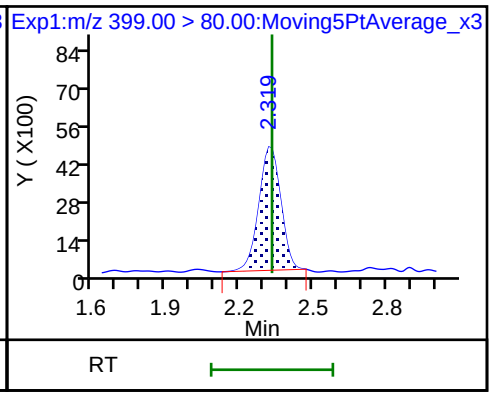
10 Perfluoroheptanoic acid



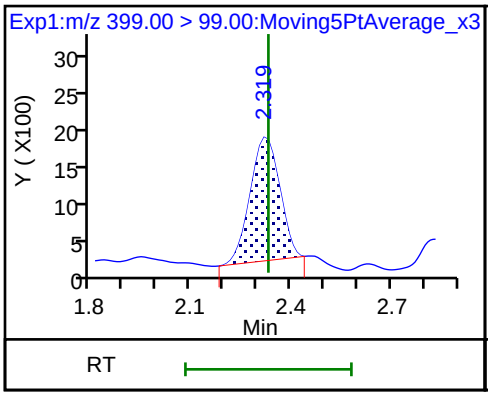
D 11 18O2 PFHxS



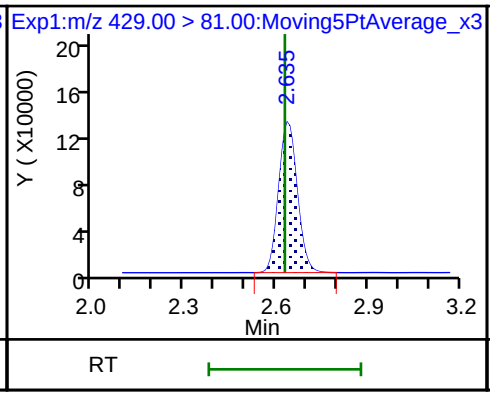
8 Perfluorohexanesulfonic acid



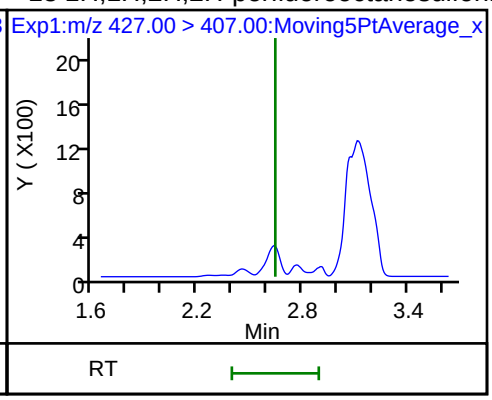
8 Perfluorohexanesulfonic acid



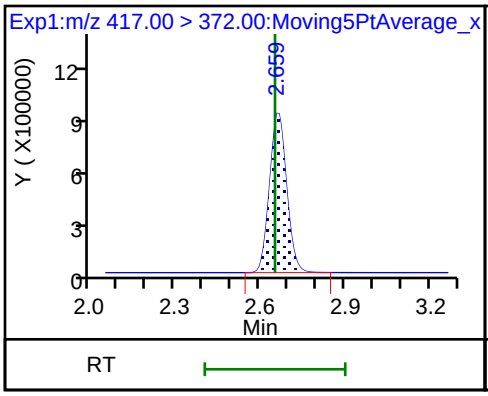
D 12 M2-6:2FTS



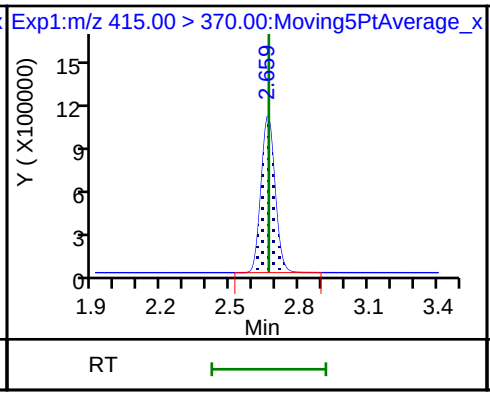
13 1H,1H,2H,2H-perfluorooctanesulfoni (ND)



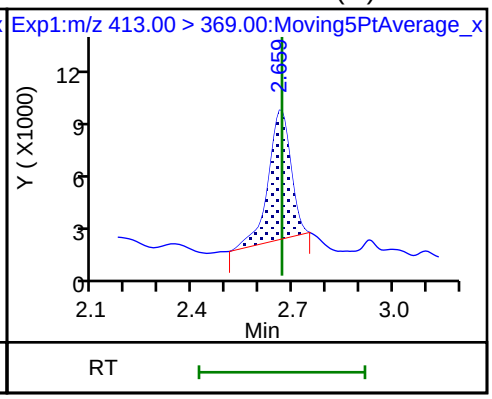
D 14 13C4 PFOA



* 62 13C2-PFOA



15 Perfluorooctanoic acid (M)



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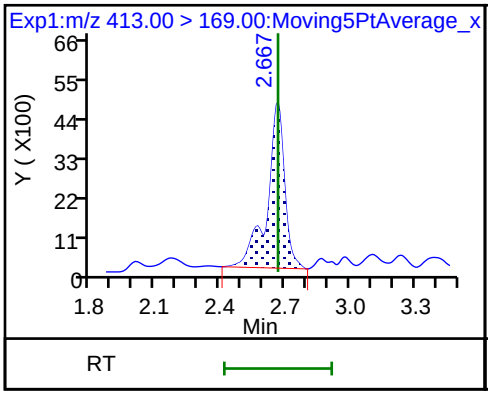
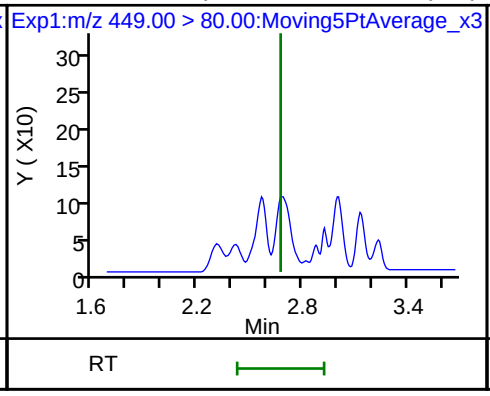
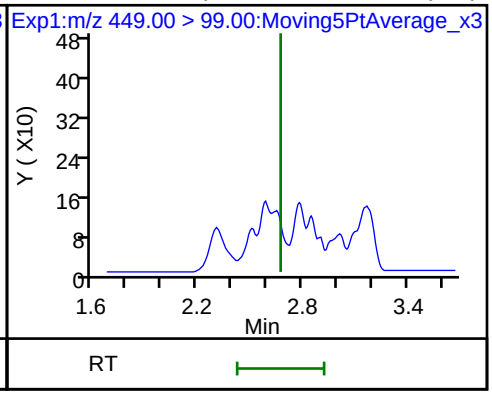


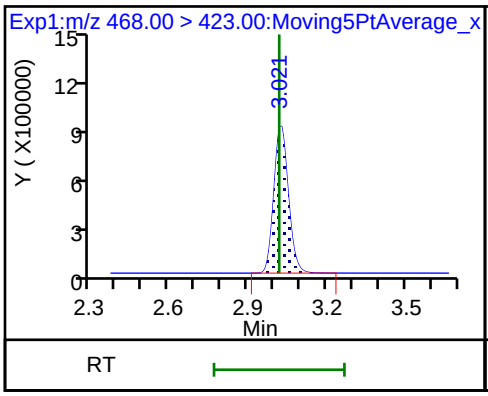
16 Perfluoroheptanesulfonic acid (ND)



16 Perfluoroheptanesulfonic acid (ND)



D 19 13C5 PFNA



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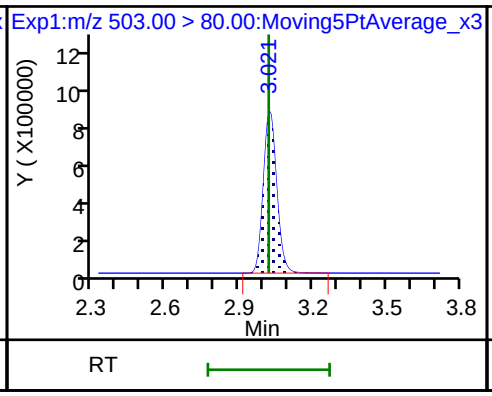
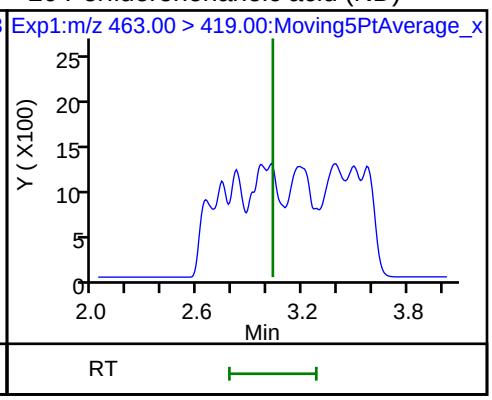


20 Perfluorononanoic acid (ND)



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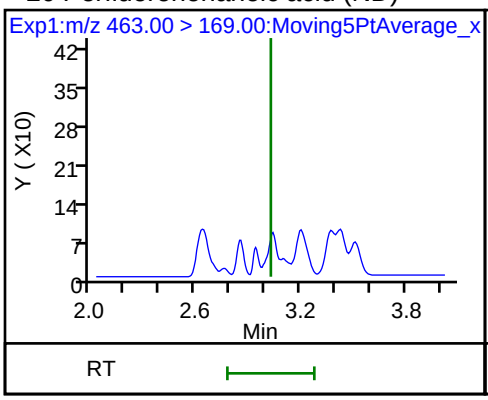
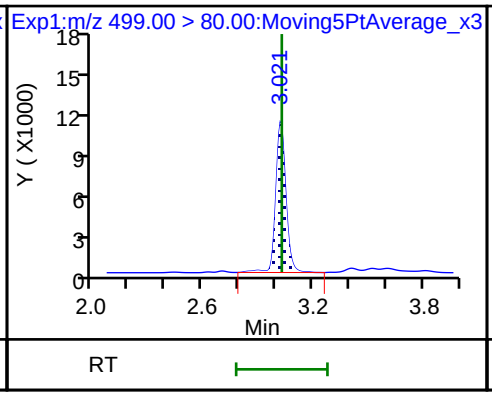
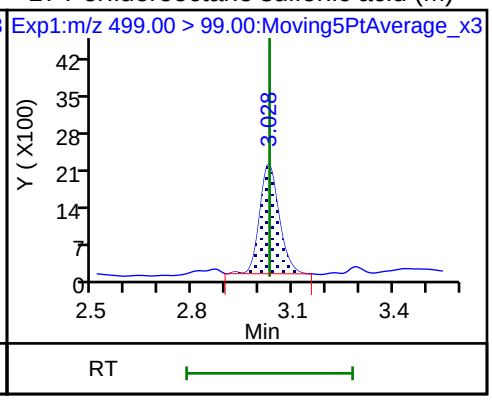


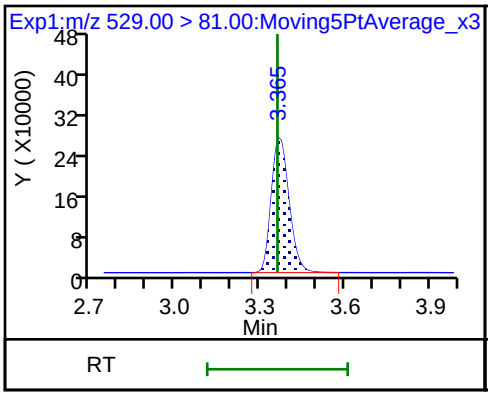
17 Perfluorooctane sulfonic acid



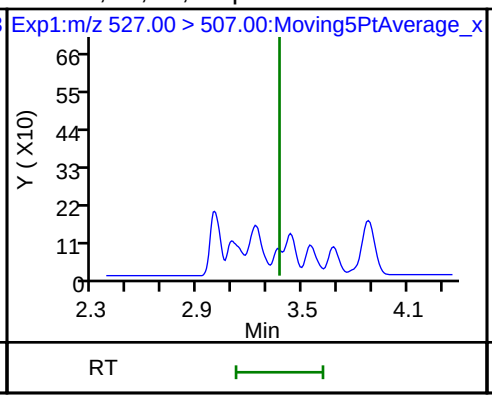
17 Perfluorooctane sulfonic acid (M)



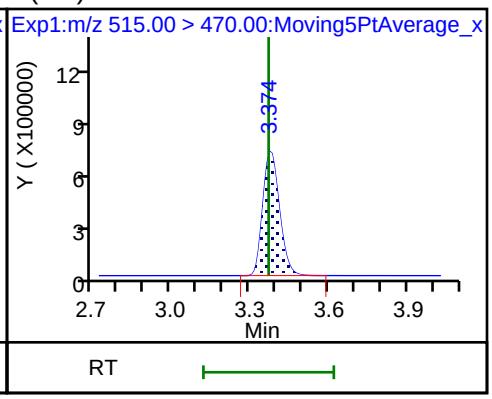
D 26 M2-8:2FTS



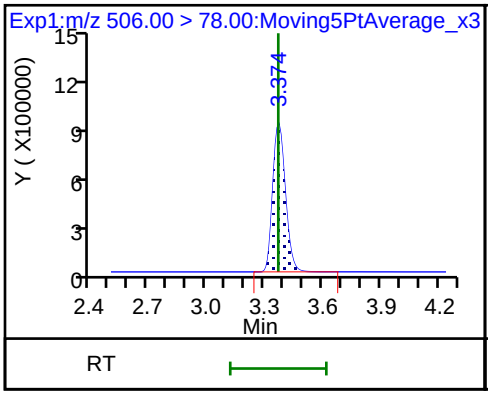
25 1H,1H,2H,2H-perfluorodecanesulfonic acid (ND)



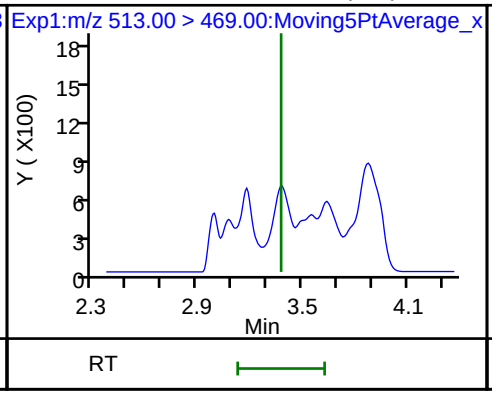
D 28 13C2 PFDA



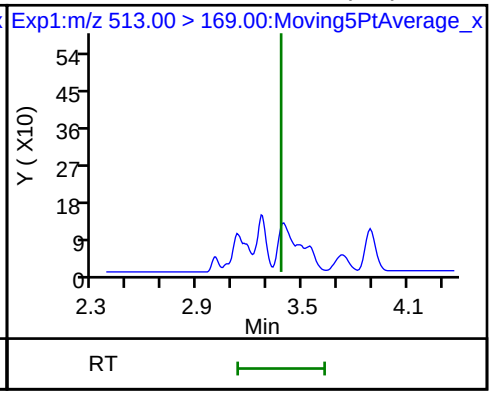
D 21 13C8 FOSA



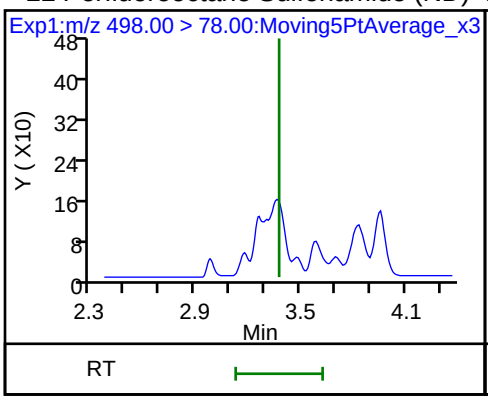
24 Perfluorodecanoic acid (ND)



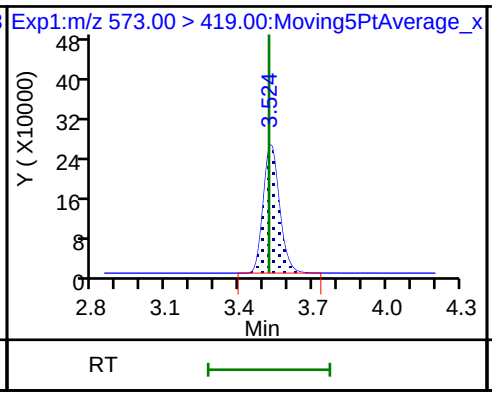
24 Perfluorodecanoic acid (ND)



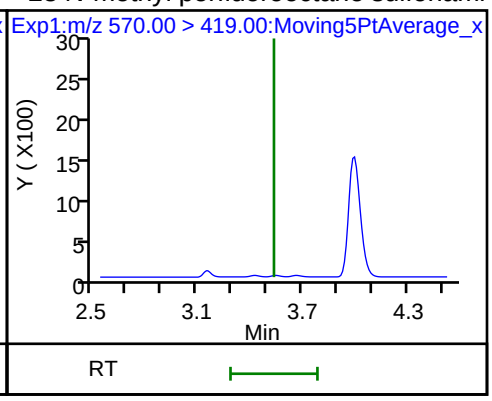
22 Perfluorooctane Sulfonamide (ND)



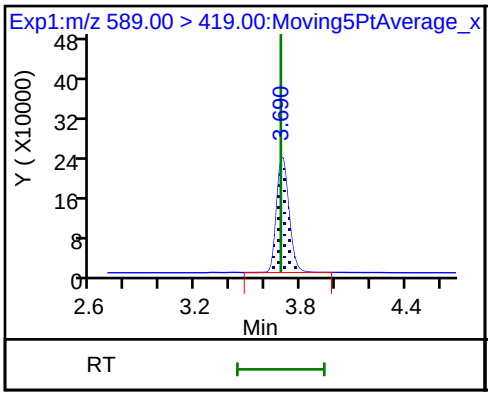
D 27 d3-NMeFOSAA



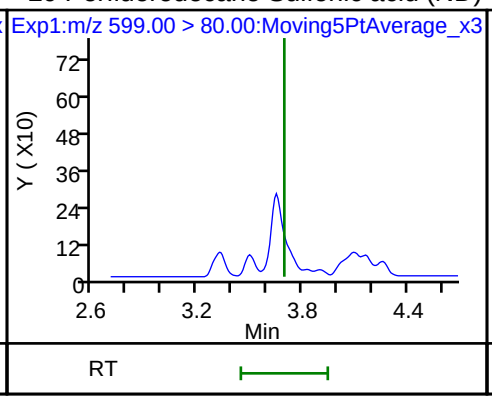
28 N-methyl perfluorooctane sulfonami (ND)



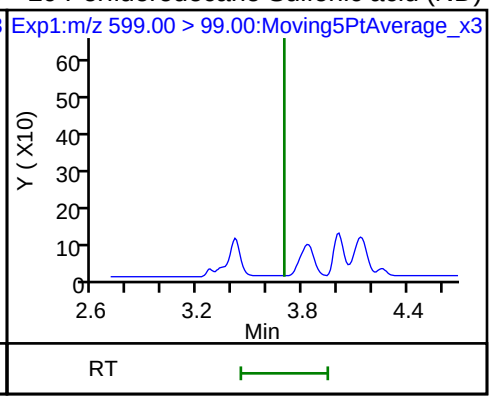
D 32 d5-NEtFOSAA



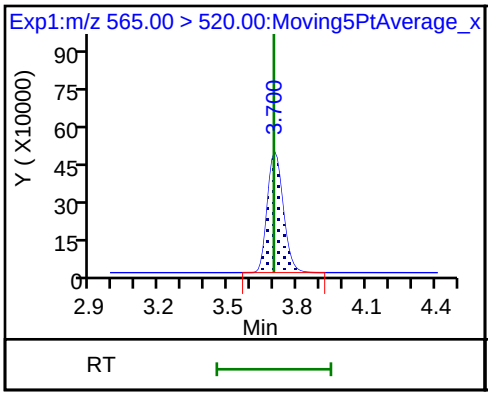
29 Perfluorodecane Sulfonic acid (ND)



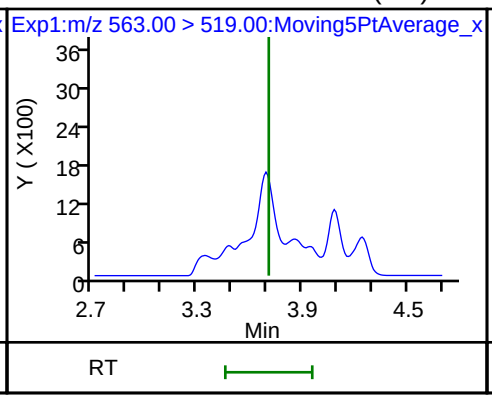
29 Perfluorodecane Sulfonic acid (ND)



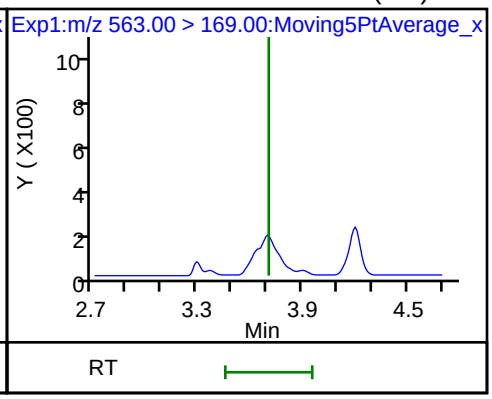
D 30 13C2 PFUnA



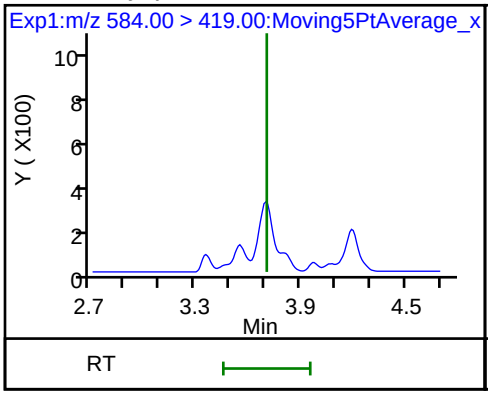
31 Perfluoroundecanoic acid (ND)



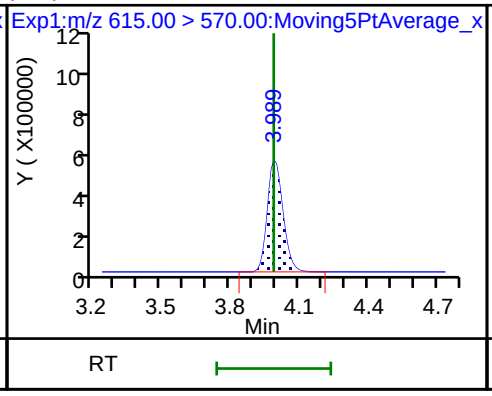
31 Perfluoroundecanoic acid (ND)



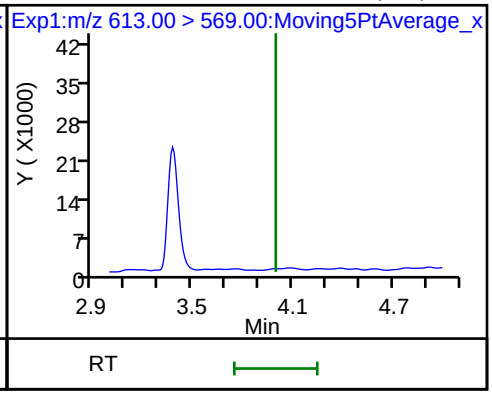
33 N-ethyl perfluorooctane sulfonamid (ND)



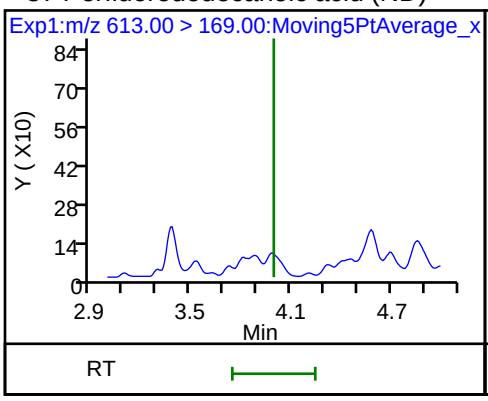
D 36 13C2 PFDoA



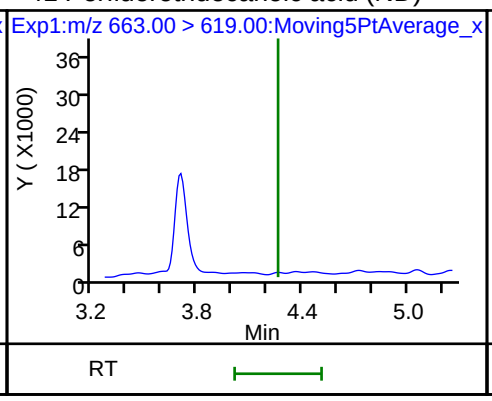
37 Perfluorododecanoic acid (ND)



37 Perfluorododecanoic acid (ND)



41 Perfluorotridecanoic acid (ND)



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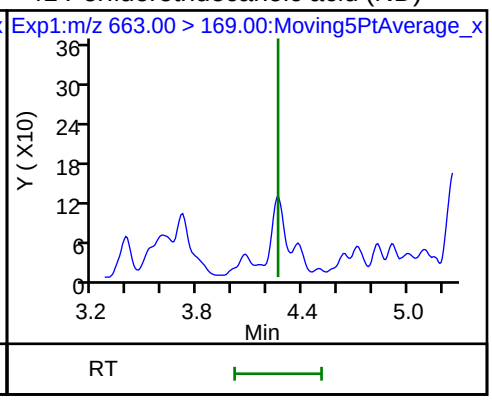
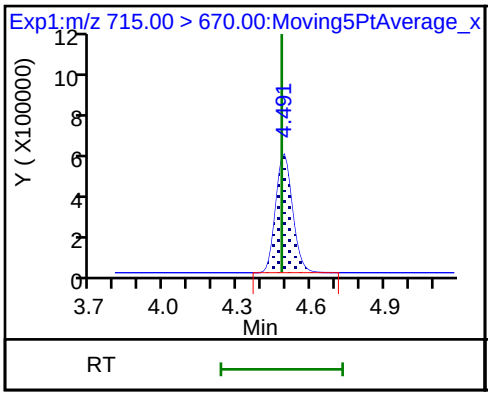
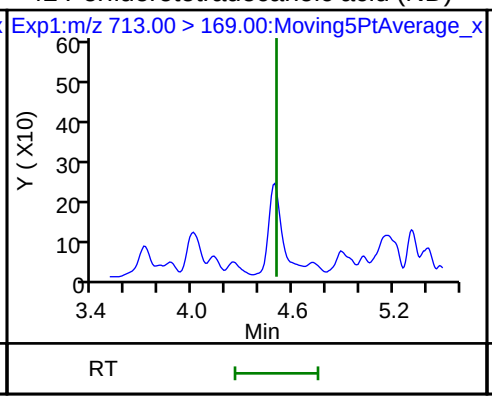


D 43 13C2-PFTeDA



42 Perfluorotetradecanoic acid (ND)



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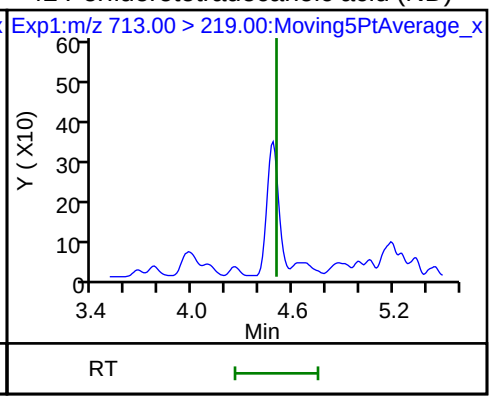


Manual Integration/User Assign Peak Report

TestAmerica Sacramento

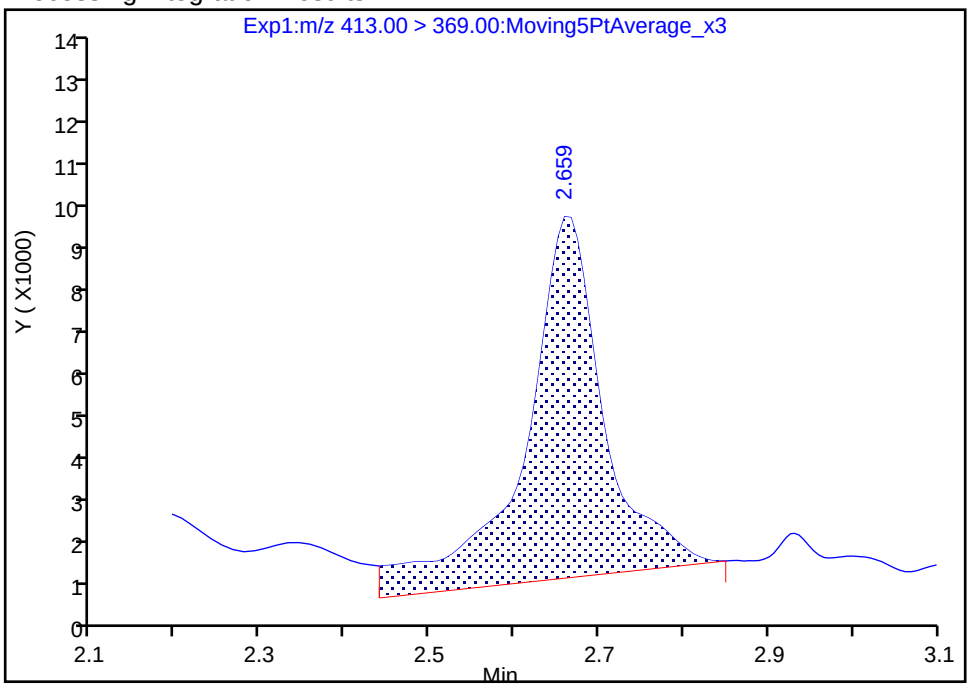
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180716-61105.b\2018.07.14LLA_028.d				
Injection Date:	14-Jul-2018 14:16:52	Instrument ID:	A8_N		
Lims ID:	320-40571-A-32-A	Lab Sample ID:	320-40571-32		
Client ID:	NF31-SS-02				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	18	Worklist Smp#:	11
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

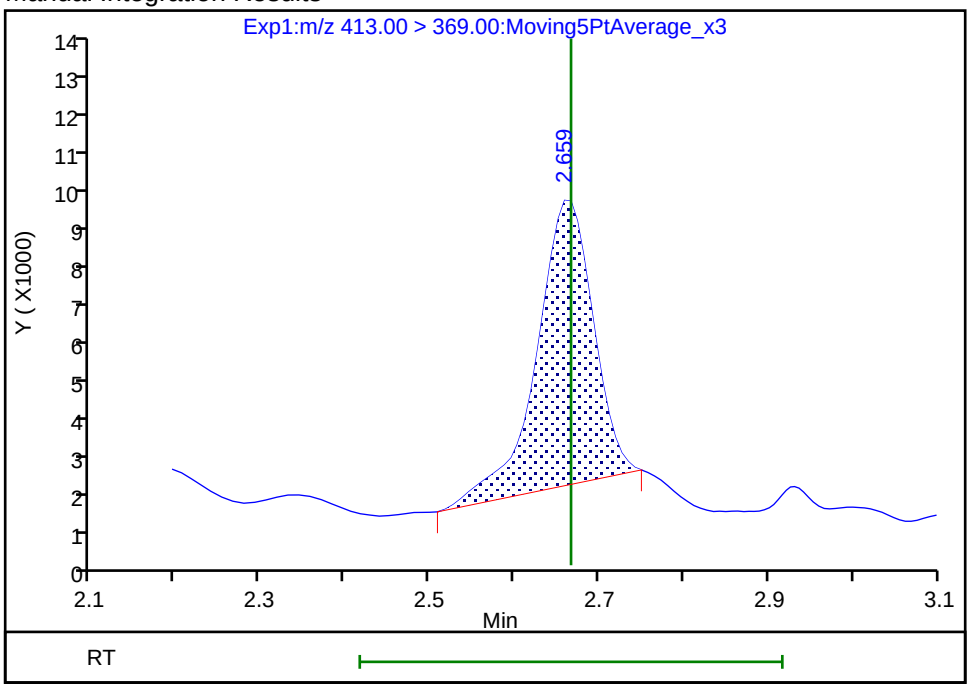
Processing Integration Results

RT: 2.66
Area: 50728
Amount: 0.027577
Amount Units: ng/ml



Manual Integration Results

RT: 2.66
Area: 31671
Amount: 0.017217
Amount Units: ng/ml



Reviewer: mongkols, 17-Jul-2018 08:23:06

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

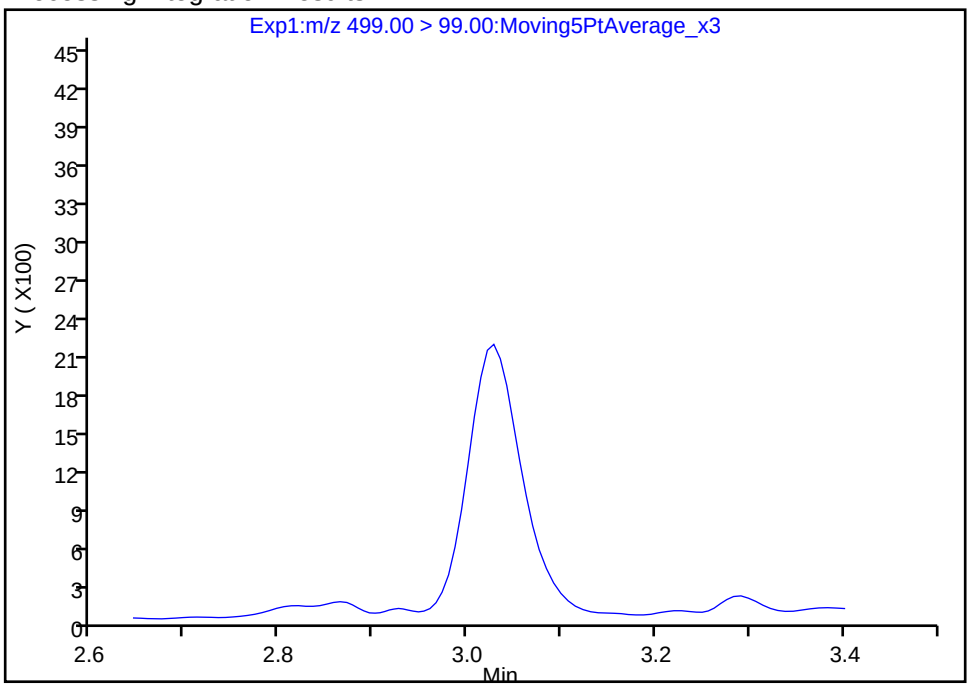
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180716-61105.b\2018.07.14LLA_028.d				
Injection Date:	14-Jul-2018 14:16:52	Instrument ID:	A8_N		
Lims ID:	320-40571-A-32-A	Lab Sample ID:	320-40571-32		
Client ID:	NF31-SS-02				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	18	Worklist Smp#:	11
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

17 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 2

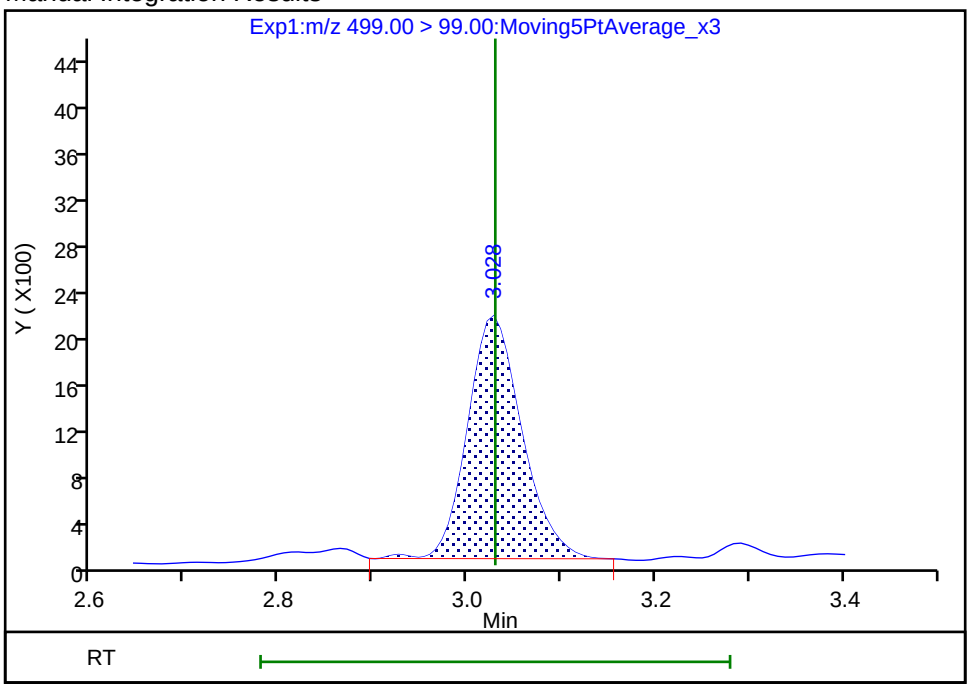
Processing Integration Results

RT: 3.02
Area: 0
Amount: 0.028219
Amount Units: ng/ml



Manual Integration Results

RT: 3.03
Area: 8478
Amount: 0.028219
Amount Units: ng/ml



Reviewer: mongkols, 17-Jul-2018 08:23:43

Audit Action: Manually Integrated Audit Reason: Assign Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

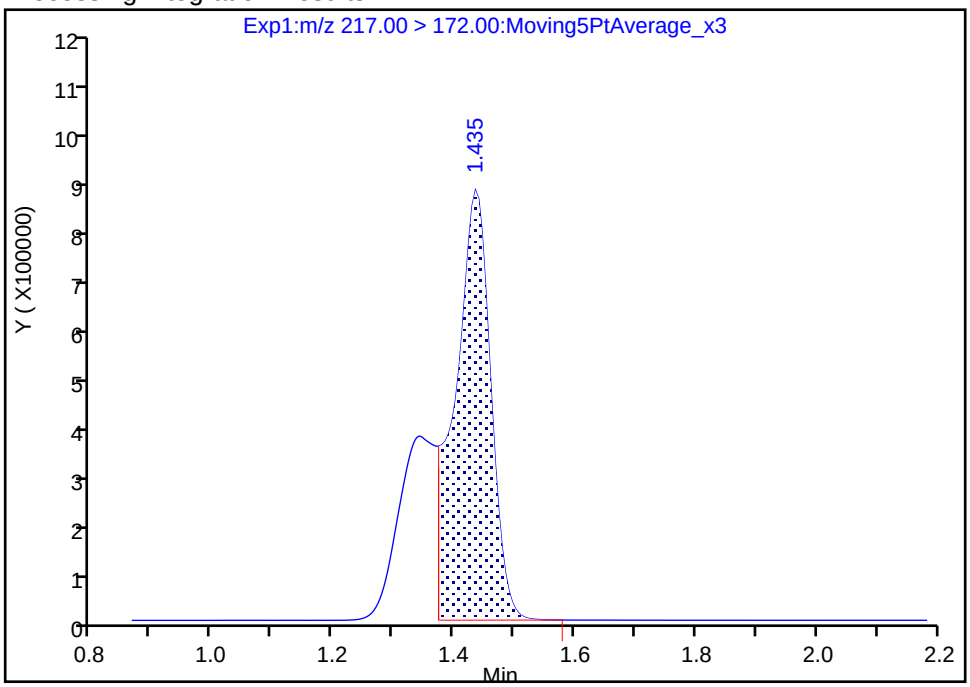
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180716-61105.b\2018.07.14LLA_028.d				
Injection Date:	14-Jul-2018 14:16:52	Instrument ID:	A8_N		
Lims ID:	320-40571-A-32-A	Lab Sample ID:	320-40571-32		
Client ID:	NF31-SS-02				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	18	Worklist Smp#:	11
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

D 1 13C4 PFBA, CAS: STL00992

Signal: 1

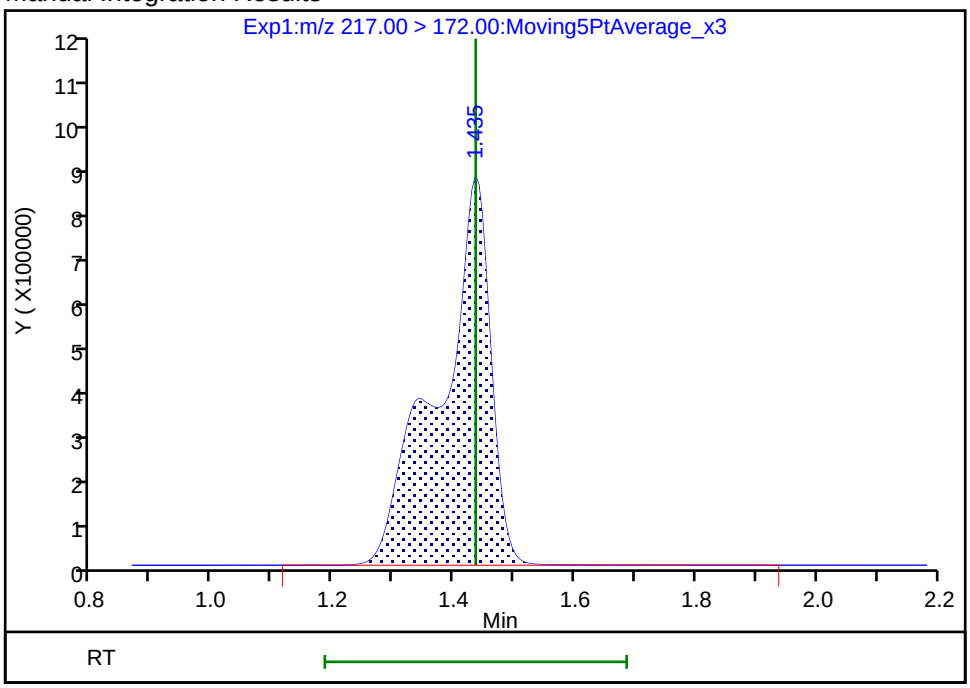
Processing Integration Results

RT: 1.44
Area: 3319364
Amount: 1.358066
Amount Units: ng/ml



Manual Integration Results

RT: 1.44
Area: 4844222
Amount: 1.981937
Amount Units: ng/ml



Reviewer: mongkols, 17-Jul-2018 08:22:44

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF32-GW-01
Lab Sample ID: 320-40571-33
Matrix: Water
Lab File ID: 2018.07.06LLC_042.d
Analysis Method: 537 (modified)
Date Collected: 06/21/2018 10:00
Extraction Method: 3535
Date Extracted: 07/02/2018 14:58
Sample wt/vol: 283.5(mL)
Date Analyzed: 07/07/2018 04:43
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 232800
Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	0.026	B	0.0018	0.00031
2706-90-3	Perfluoropentanoic acid (PFPeA)	0.015		0.0018	0.00043
307-24-4	Perfluorohexanoic acid (PFHxA)	0.0027		0.0018	0.00051
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.0018		0.0018	0.00022
335-67-1	Perfluorooctanoic acid (PFOA)	0.0032		0.0018	0.00075
375-95-1	Perfluorononanoic acid (PFNA)	0.00077	J	0.0018	0.00024
335-76-2	Perfluorodecanoic acid (PFDA)	ND		0.0018	0.00027
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		0.0018	0.00097
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		0.0018	0.00049
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		0.0018	0.0011
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		0.0018	0.00026
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.020		0.0018	0.00018
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	0.00039	J	0.0018	0.00026
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.0023	B	0.0018	0.00015
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.0018	0.00017
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.0016	J	0.0018	0.00048
8789-57-2	Perfluorononanesulfonic acid (PFNS)	ND		0.0018	0.00014
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		0.0018	0.00028
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		0.0018	0.00031
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.018	0.0027
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.018	0.0017
757124-72-4	4:2 FTS	ND		0.018	0.0046
27619-97-2	6:2 FTS	ND		0.018	0.0018
39108-34-4	8:2 FTS	ND		0.018	0.0018

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF32-GW-01
Lab Sample ID: 320-40571-33
Matrix: Water
Lab File ID: 2018.07.06LLC_042.d
Analysis Method: 537 (modified)
Date Collected: 06/21/2018 10:00
Extraction Method: 3535
Date Extracted: 07/02/2018 14:58
Sample wt/vol: 283.5(mL)
Date Analyzed: 07/07/2018 04:43
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 232800
Units: ug/L

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00992	13C4 PFBA	50		25-150
STL01893	13C5 PFPeA	76		25-150
STL00993	13C2 PFHxA	86		25-150
STL01892	13C4-PFHpA	98		25-150
STL00990	13C4 PFOA	104		25-150
STL00995	13C5 PFNA	107		25-150
STL00996	13C2 PFDA	112		25-150
STL00997	13C2 PFUnA	107		25-150
STL00998	13C2 PFDoA	92		25-150
STL02116	13C2-PFTeDA	90		25-150
STL02337	13C3-PFBS	86		25-150
STL00994	18O2 PFHxS	105		25-150
STL00991	13C4 PFOS	105		25-150
STL01056	13C8 FOSA	91		25-150
STL02118	d3-NMeFOSAA	110		25-150
STL02117	d5-NEtFOSAA	107		25-150
STL02279	M2-6:2FTS	193	*	25-150
STL02280	M2-8:2FTS	132		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\2018.07.06LLC_042.d
Lims ID: 320-40571-A-33-A
Client ID: NF32-GW-01
Sample Type: Client
Inject. Date: 07-Jul-2018 04:43:31 ALS Bottle#: 28 Worklist Smp#: 30
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-40571-a-33-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 09-Jul-2018 14:46:30 Calib Date: 05-Jul-2018 09:38:17
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180705-60684.b\2018.07.05LLICALAA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK010

First Level Reviewer: mongkols Date: 09-Jul-2018 14:46:30

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.428	1.428	0.0	0.536	3436886	1.24		49.8	12286	
2 Perfluorobutyric acid										M
212.90 > 169.00	1.428	1.428	0.0	1.000	1045983	0.7449			82.1	M
4 Perfluoropentanoic acid										M
262.90 > 219.00	1.708	1.698	0.010	1.000	759595	0.4133			55.2	M
D 3 13C5-PFPeA										
267.90 > 223.00	1.708	1.707	0.001	0.641	3858547	1.89		75.5	11387	
D 47 13C3-PFBS										
301.90 > 83.00	1.744	1.743	0.001	0.654	97891	2.00		86.1	127	
5 Perfluorobutanesulfonic acid										M
298.90 > 80.00	1.753	1.743	0.010	1.005	1774958	0.5561			240	M
298.90 > 99.00	1.753	1.743	0.010	1.005	717553		2.47(1.25-3.74)		425	
6 Perfluorohexanoic acid										M
313.00 > 269.00	1.988	1.978	0.010	1.000	144588	0.0754			29.9	M
313.00 > 119.00	1.988	1.978	0.010	1.000	12998		11.12(5.03-15.10)		66.4	
D 7 13C2 PFHxA										
315.00 > 270.00	1.988	1.988	0.0	0.746	4709887	2.15		86.1	54587	
70 Perfluoropentanesulfonic acid										M
349.00 > 80.00	2.011	2.000	0.011	1.153	30559	0.0112			9.7	M
349.00 > 99.00	2.011	2.000	0.011	1.153	11050		2.77(1.36-4.07)		12.3	M
D 9 13C4-PFHpA										
367.00 > 322.00	2.316	2.302	0.014	0.869	4735274	2.44		97.5	41838	
10 Perfluoroheptanoic acid										M
363.00 > 319.00	2.316	2.303	0.013	1.000	111228	0.0520			36.2	M
363.00 > 169.00	2.316	2.303	0.013	1.000	59488		1.87(1.13-3.40)		301	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.329	2.303	0.026	1.000	185120	0.0638			37.7	
399.00 > 99.00	2.329	2.303	0.026	1.000	60414		3.06(1.50-4.49)		47.0	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 11 18O2 PFHxS										
403.00 > 84.00	2.329	2.315	0.014	0.874	5933916	2.48		105	48048	
D 12 M2-6:2FTS										
429.00 > 81.00	2.635	2.626	0.009	0.988	1998441	4.58		193	4485	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.635	2.627	0.009	1.000	31112	0.0236			117	
D 14 13C4 PFOA										
417.00 > 372.00	2.658	2.650	0.008	0.997	4960737	2.61		104	47305	
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.666	2.651	0.015	1.003	214322	0.0911			61.7	M
413.00 > 169.00	2.658	2.651	0.007	1.000	145966		1.47(0.84-2.52)		439	
* 62 13C2-PFOA										
415.00 > 370.00	2.666	2.651	0.015		4987291	2.50			37909	
17 Perfluorooctane sulfonic acid										M
499.00 > 80.00	3.026	3.008	0.018	1.000	94045	0.0449			70.8	M
499.00 > 99.00	3.026	3.008	0.018	1.000	20147		4.67(2.31-6.93)		60.4	M
20 Perfluorononanoic acid										R
463.00 > 419.00	3.026	3.015	0.011	1.000	40582	0.0218			29.8	R
463.00 > 169.00	3.026	3.015	0.011	1.000	6841		5.93(1.90-5.69)		80.6	
D 18 13C4 PFOS										
503.00 > 80.00	3.026	3.015	0.011	1.135	4283939	2.51		105	13317	
D 19 13C5 PFNA										
468.00 > 423.00	3.026	3.015	0.011	1.135	4326701	2.67		107	47578	
D 26 M2-8:2FTS										
529.00 > 81.00	3.371	3.367	0.004	1.264	1533959	3.16		132	9188	
D 21 13C8 FOSA										
506.00 > 78.00	3.371	3.367	0.004	1.264	5404695	2.28		91.3	39155	
D 23 13C2 PFDA										
515.00 > 470.00	3.380	3.376	0.004	1.268	3919623	2.81		112	53266	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.530	3.525	0.005	1.324	2263393	2.75		110	45762	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.709	3.694	0.015	1.003	7904	0.0101			181	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.698	3.694	0.004	1.387	2164640	2.67		107	28099	
D 30 13C2 PFUnA										
565.00 > 520.00	3.709	3.705	0.004	1.391	3126871	2.67		107	40685	
D 36 13C2 PFDoA										
615.00 > 570.00	3.999	3.995	0.004	1.500	2900744	2.31		92.4	21337	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.490	4.489	0.001	1.684	3451751	2.26		90.2	18200	

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Review Flags

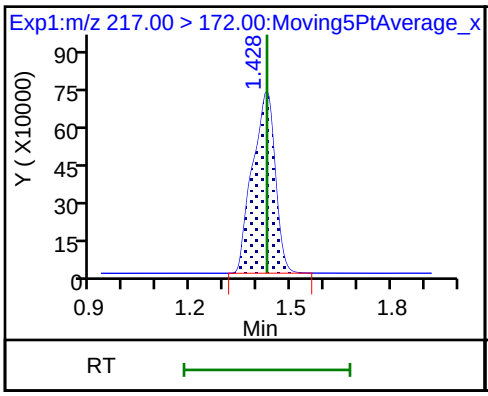
M - Manually Integrated

Report Date: 09-Jul-2018 14:46:31 Chrom Revision: 2.2 07-Jun-2018 07:41:54

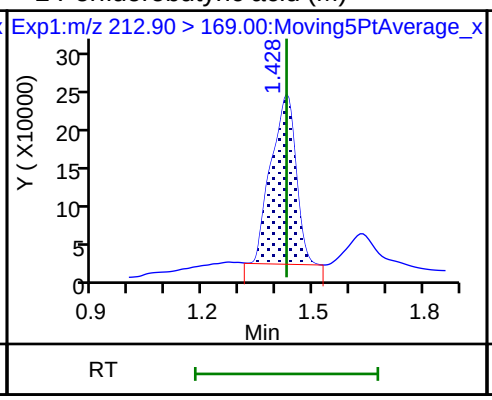
TestAmerica Sacramento

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\2018.07.06LLC_042.d				
Injection Date:	07-Jul-2018 04:43:31	Instrument ID:	A8_N		
Lims ID:	320-40571-A-33-A	Lab Sample ID:	320-40571-33		
Client ID:	NF32-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	28	Worklist Smp#:	30
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		

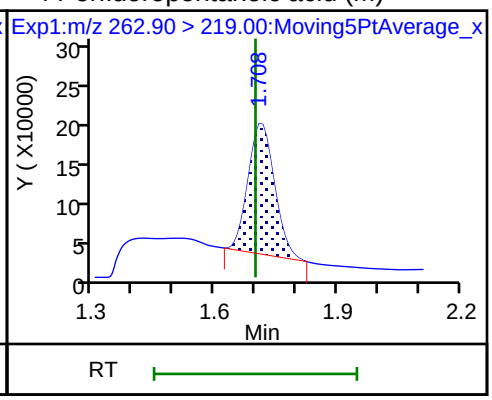
D 1 13C4 PFBA



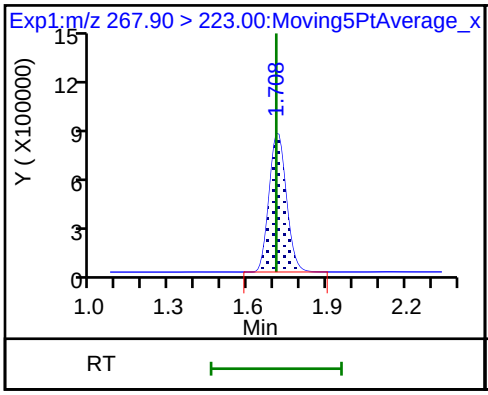
2 Perfluorobutyric acid (M)



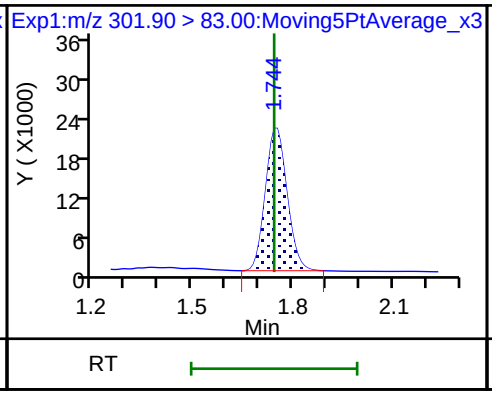
4 Perfluoropentanoic acid (M)



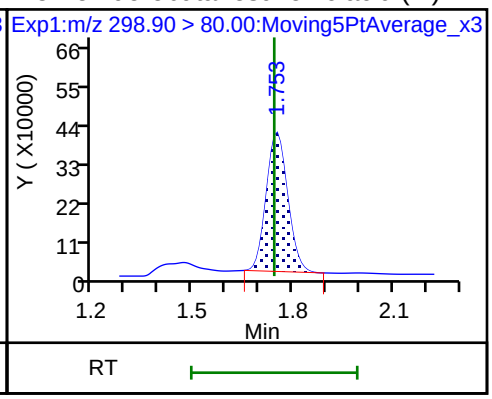
D 3 13C5-PFPeA



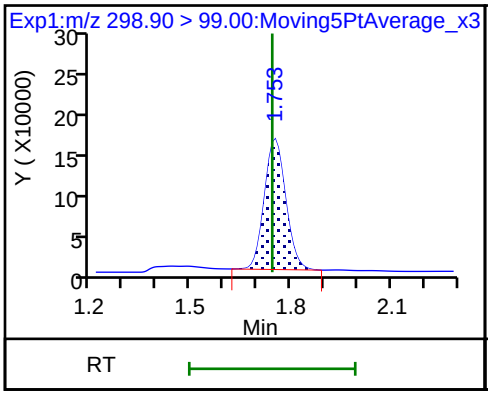
D 47 13C3-PFBS



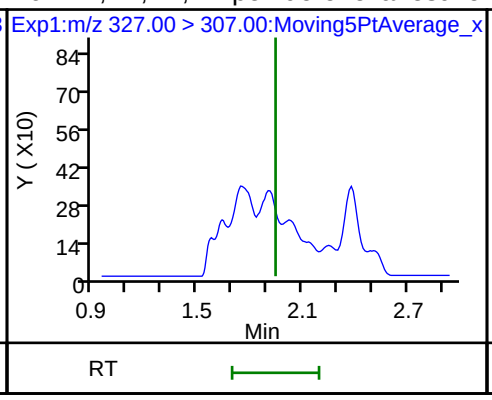
5 Perfluorobutanesulfonic acid (M)



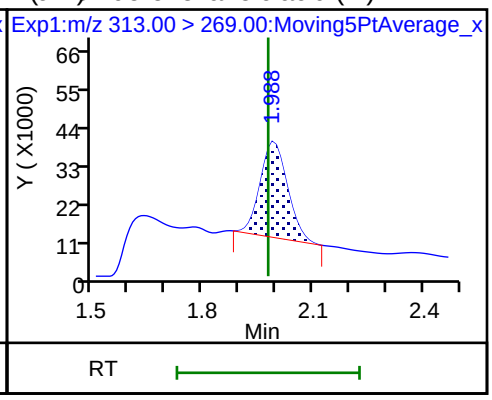
5 Perfluorobutanesulfonic acid



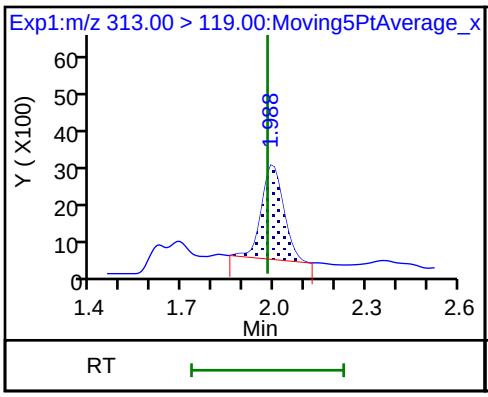
61 1H,1H,2H,2H-perfluorohexanesulfoni (M)



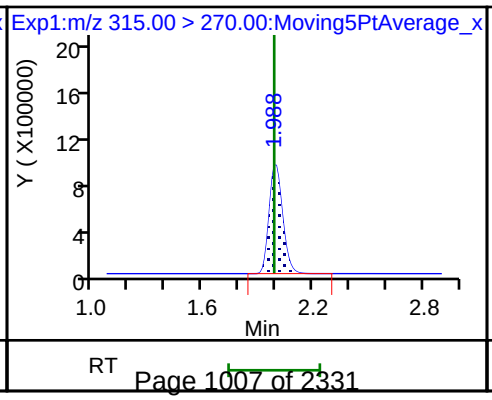
6 Perfluorohexanoic acid (M)



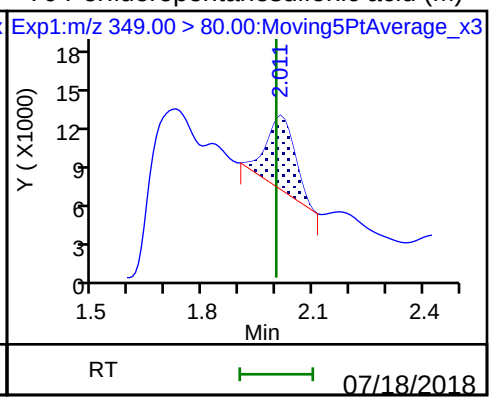
6 Perfluorohexanoic acid



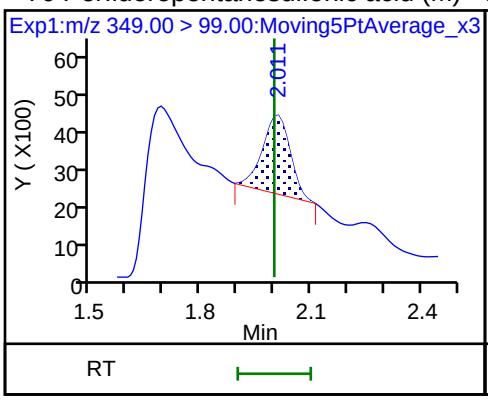
D 7 13C2 PFHxA



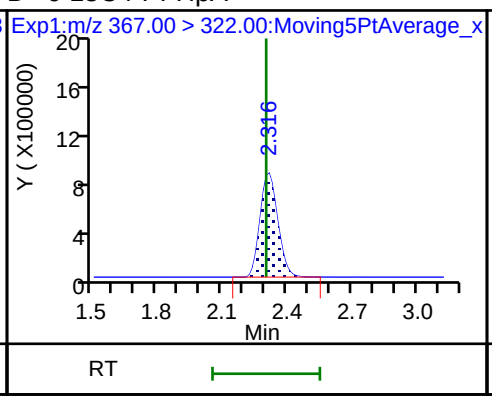
70 Perfluoropentanesulfonic acid (M)



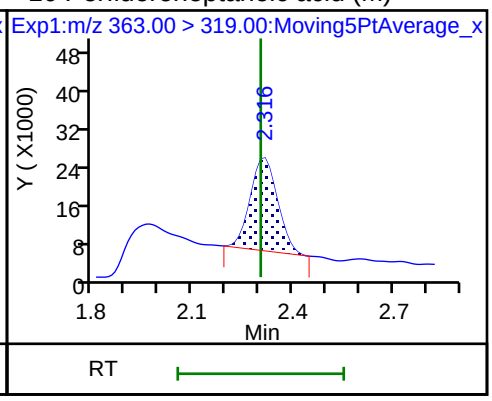
70 Perfluoropentanesulfonic acid (M)



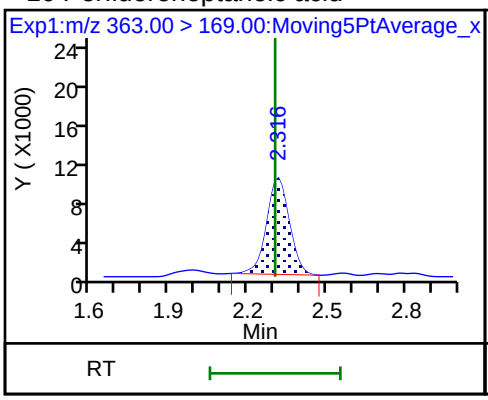
D 9 13C4-PFHpA



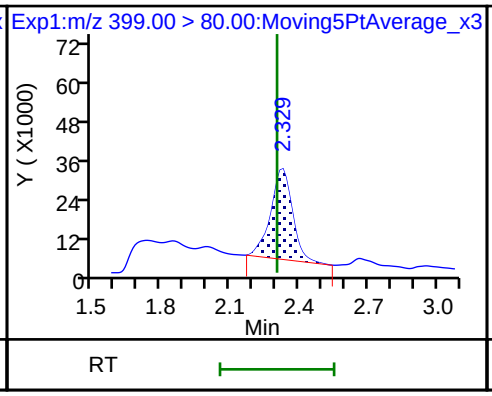
10 Perfluoroheptanoic acid (M)



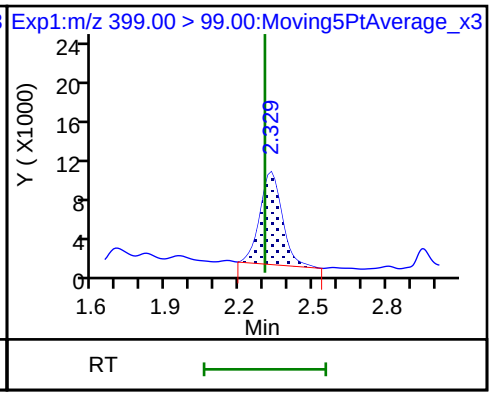
10 Perfluoroheptanoic acid



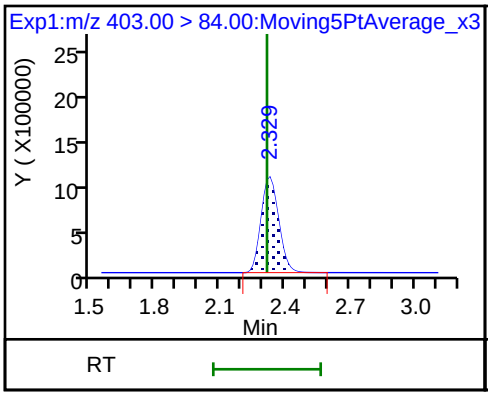
8 Perfluorohexanesulfonic acid



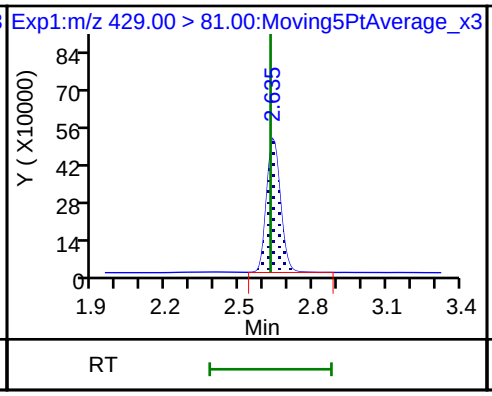
8 Perfluorohexanesulfonic acid



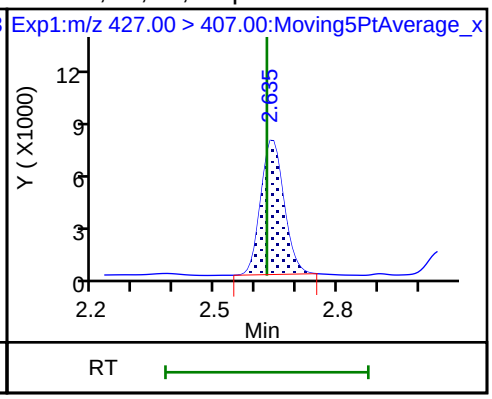
D 11 18O2 PFHxS



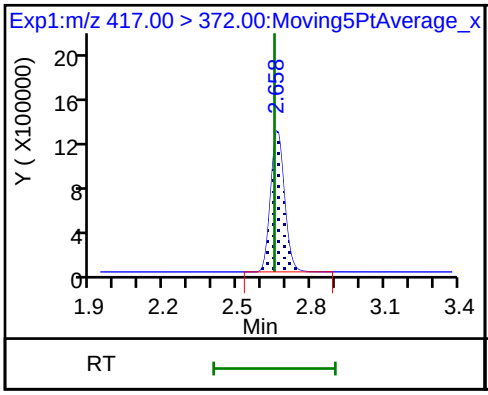
D 12 M2-6:2FTS



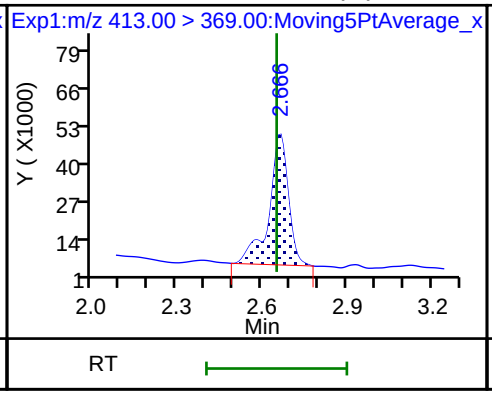
13 1H,1H,2H,2H-perfluorooctanesulfoni



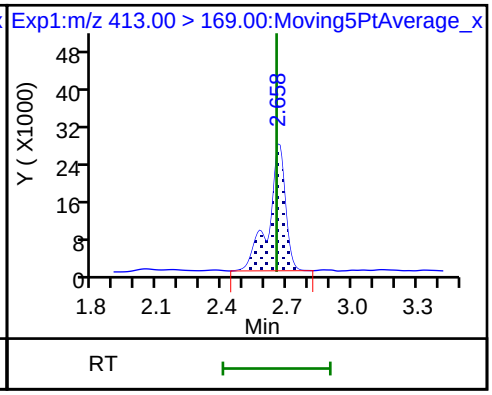
D 14 13C4 PFOA



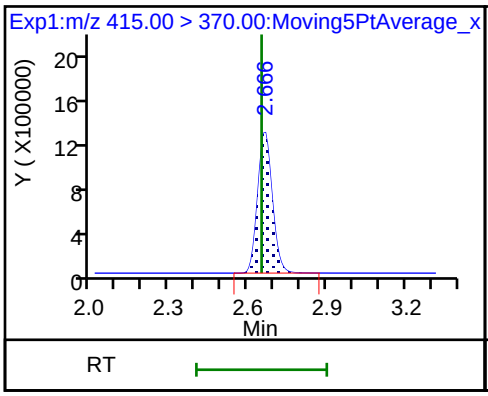
15 Perfluorooctanoic acid (M)



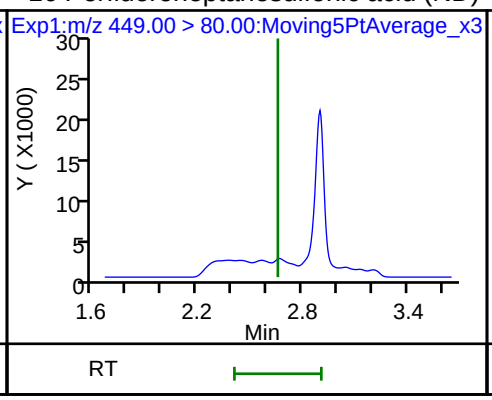
15 Perfluorooctanoic acid



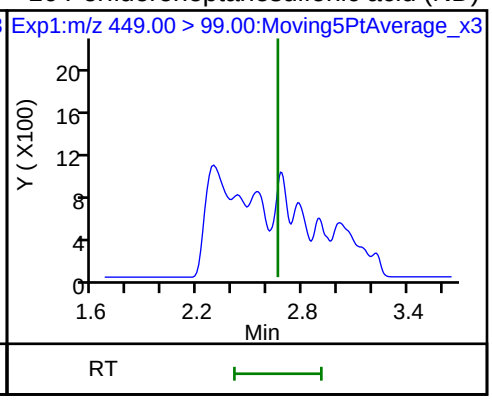
* 62 13C2-PFOA



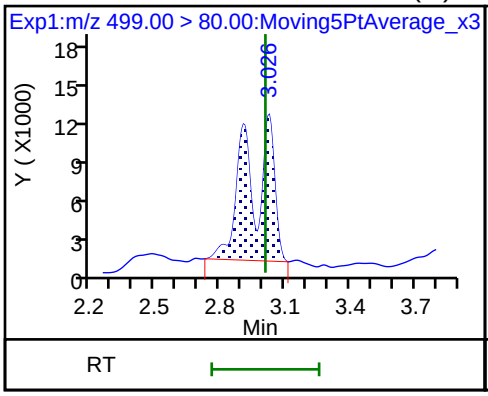
16 Perfluoroheptanesulfonic acid (ND)



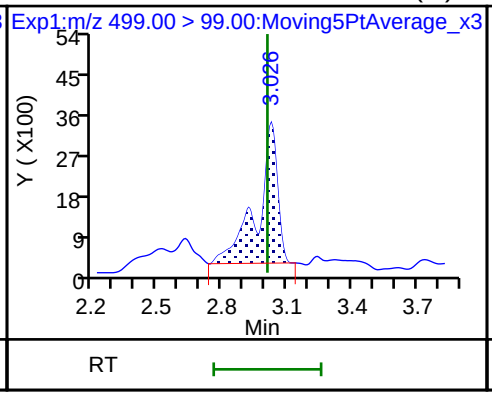
16 Perfluoroheptanesulfonic acid (ND)



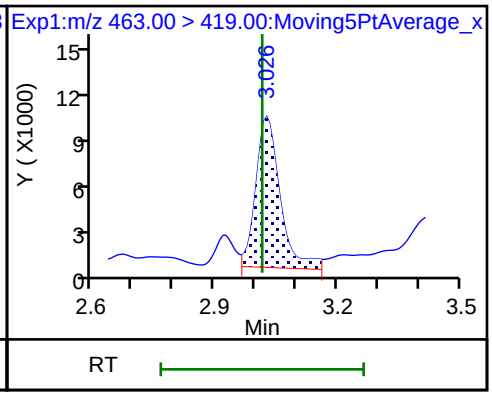
17 Perfluorooctane sulfonic acid (M)



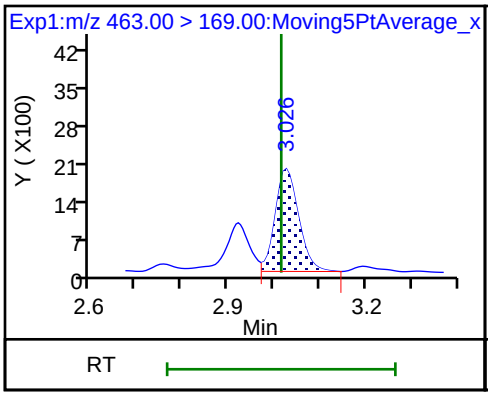
17 Perfluorooctane sulfonic acid (M)



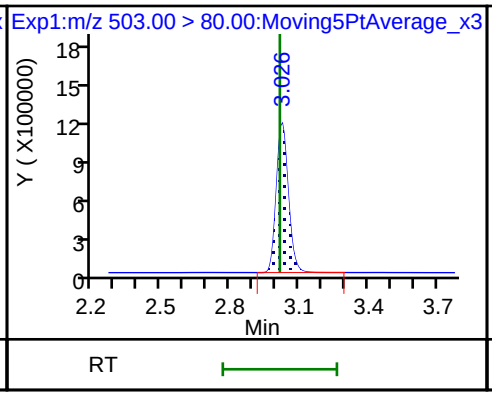
20 Perfluorononanoic acid



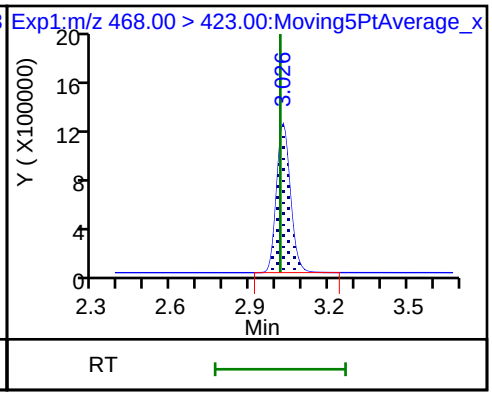
20 Perfluorononanoic acid



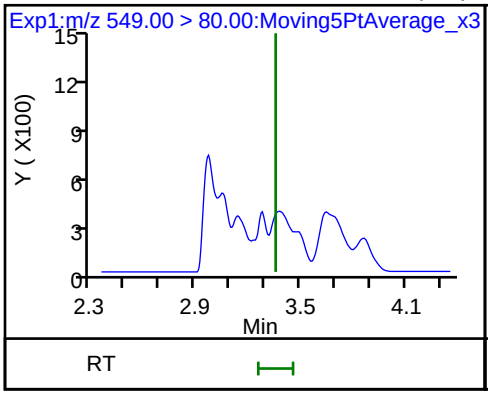
D 18 13C4 PFOS



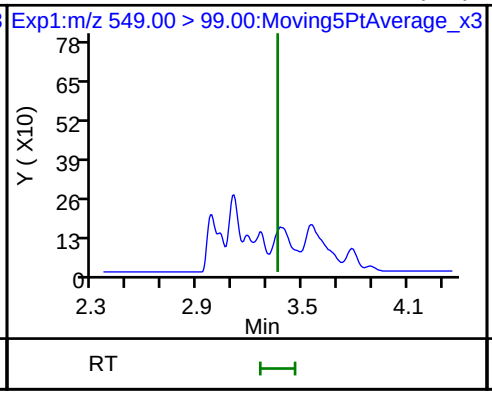
D 19 13C5 PFNA



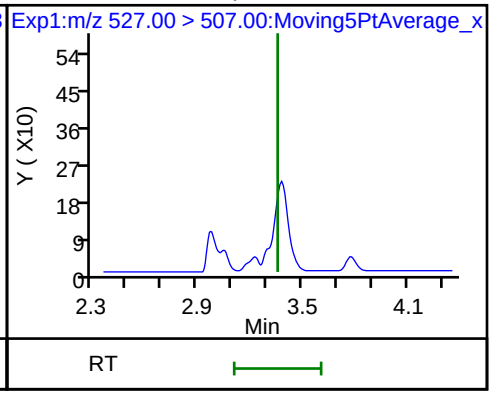
68 Perfluorononanesulfonic acid (ND)



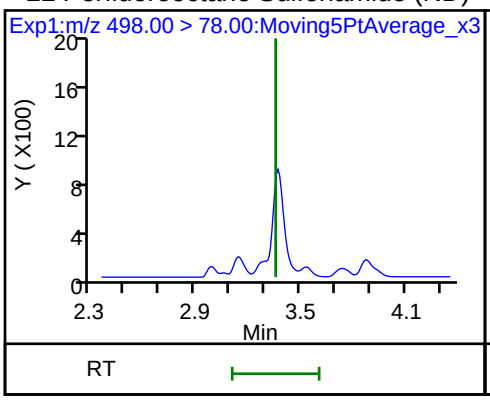
68 Perfluorononanesulfonic acid (ND)



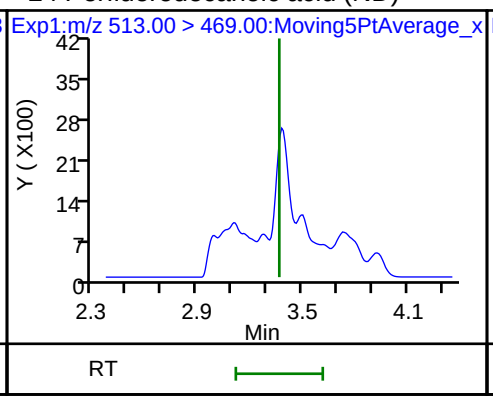
25 1H,1H,2H,2H-perfluorodecanesulfoni (ND)



22 Perfluorooctane Sulfonamide (ND)



24 Perfluorodecanoic acid (ND)



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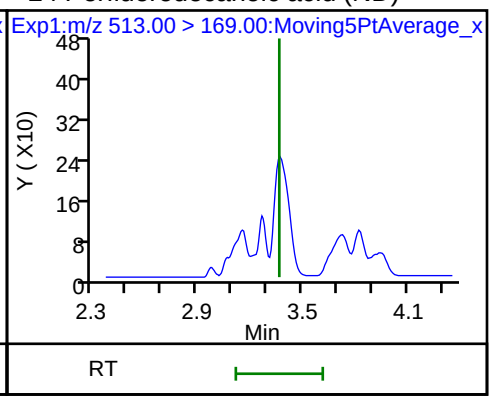
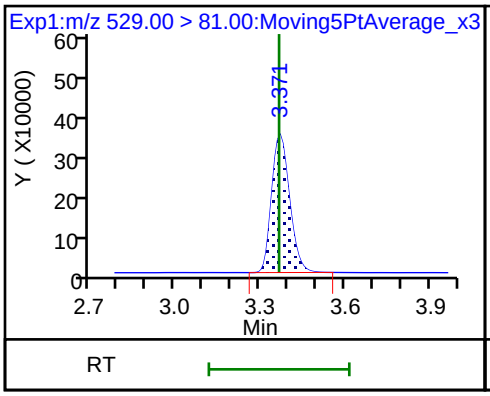
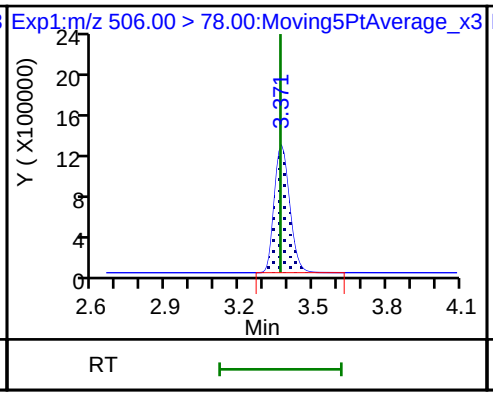


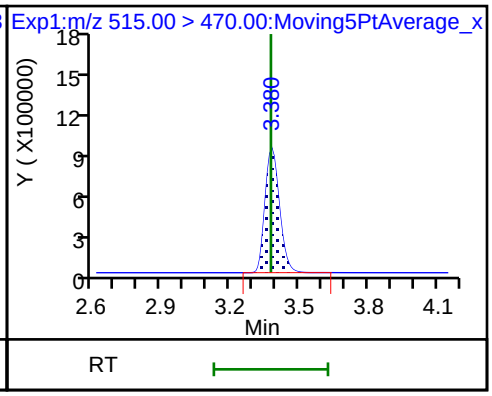
D 26 M2-8:2FTS



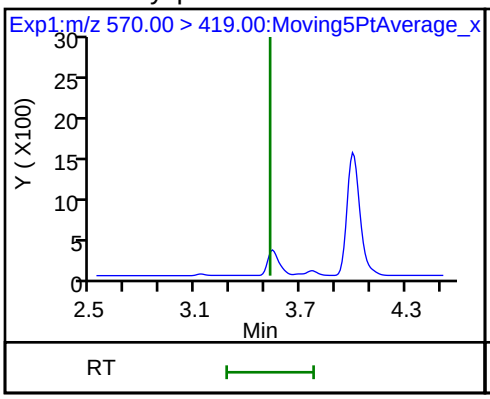
D 21 13C8 FOSA



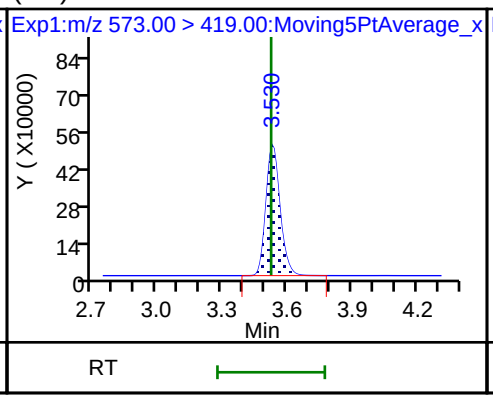
D 23 13C2 PFDA



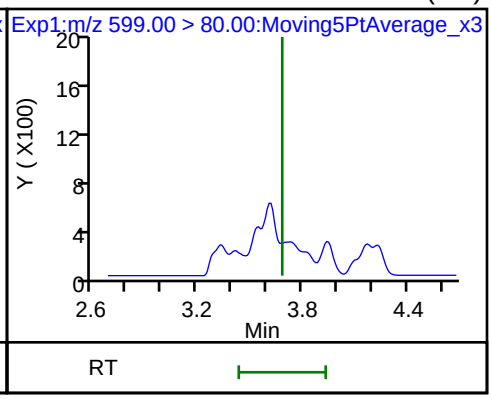
28 N-methyl perfluorooctane sulfonamid (ND)



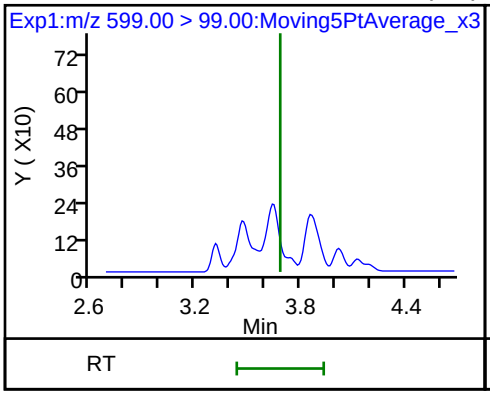
27 d3-NMeFOSAA



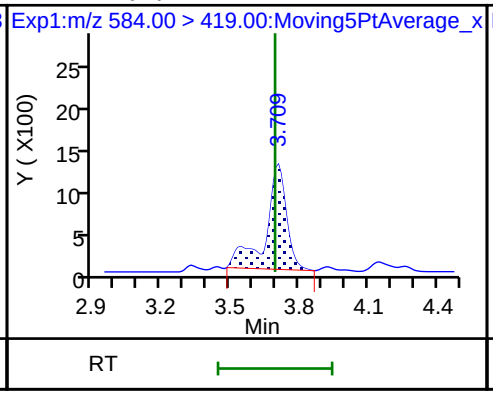
29 Perfluorodecane Sulfonic acid (ND)



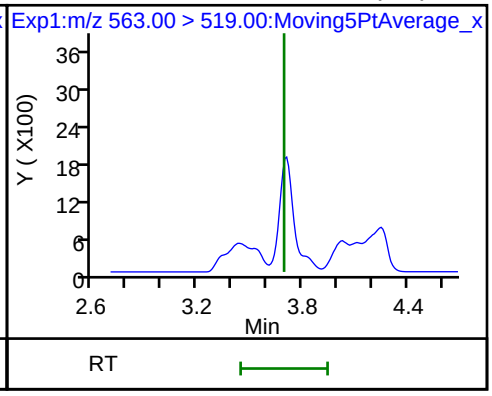
29 Perfluorodecane Sulfonic acid (ND)



33 N-ethyl perfluorooctane sulfonamid



31 Perfluoroundecanoic acid (ND)



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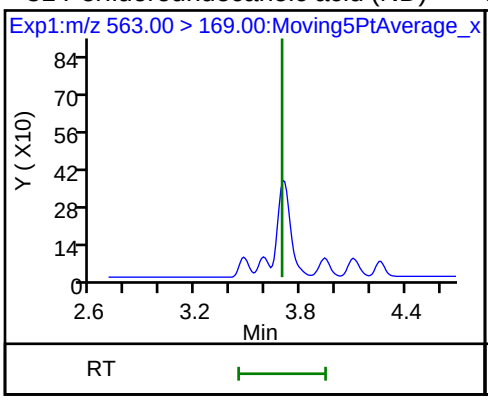
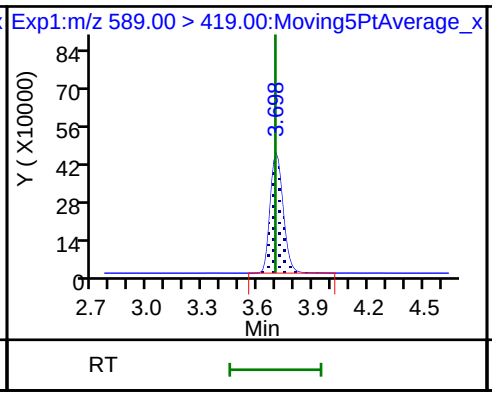
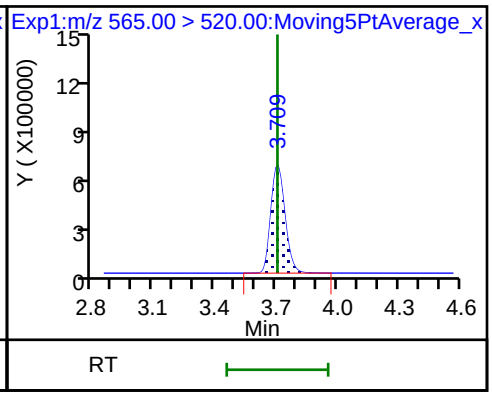


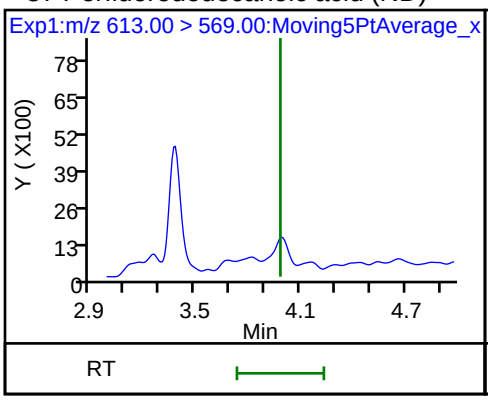
D 32 d5-NEtFOSAA



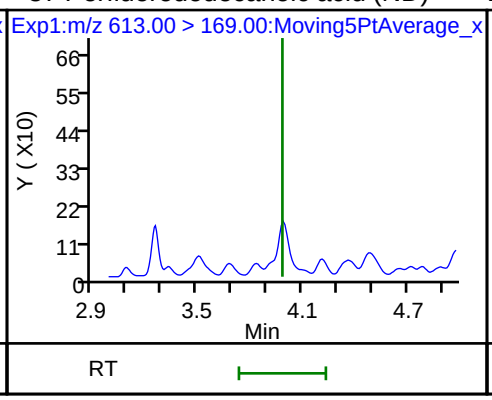
D 30 13C2 PFUnA



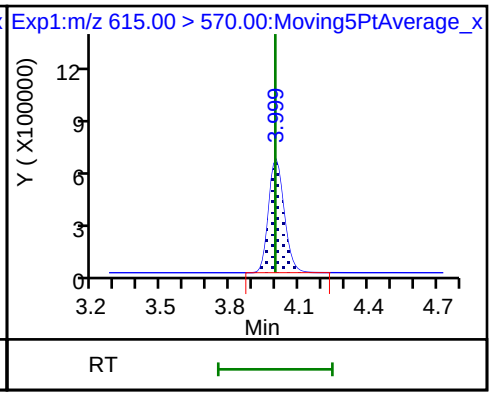
37 Perfluorododecanoic acid (ND)



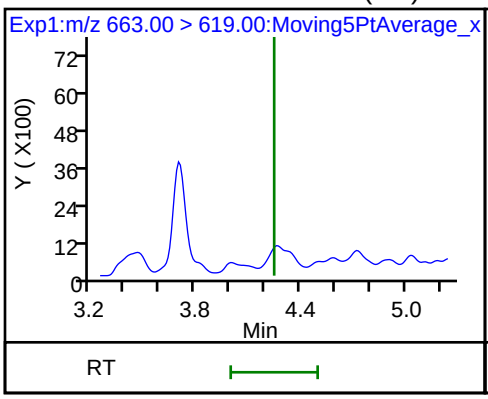
37 Perfluorododecanoic acid (ND)



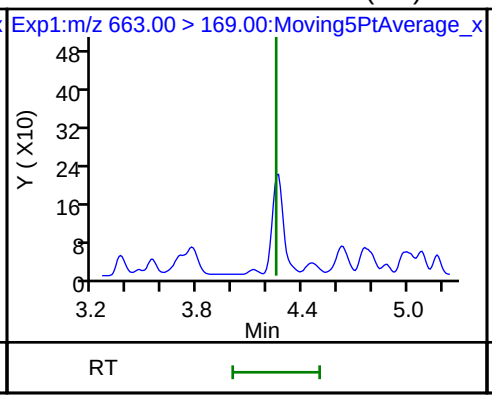
D 36 13C2 PFDoA



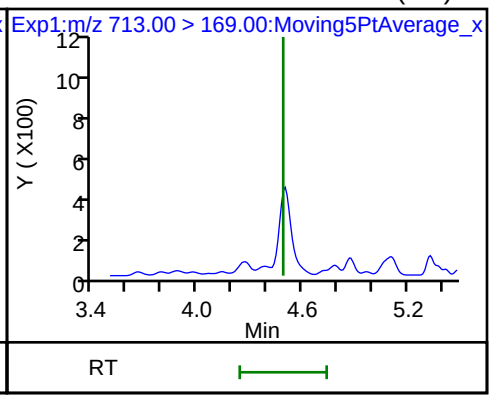
41 Perfluorotridecanoic acid (ND)



41 Perfluorotridecanoic acid (ND)



42 Perfluorotetradecanoic acid (ND)



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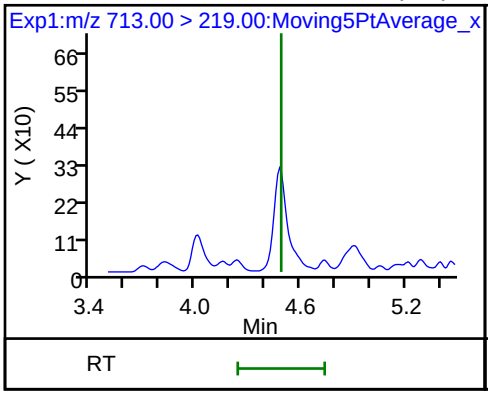
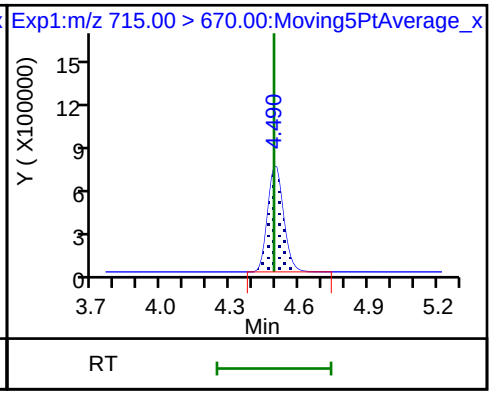


D 43 13C2-PFTeDA



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

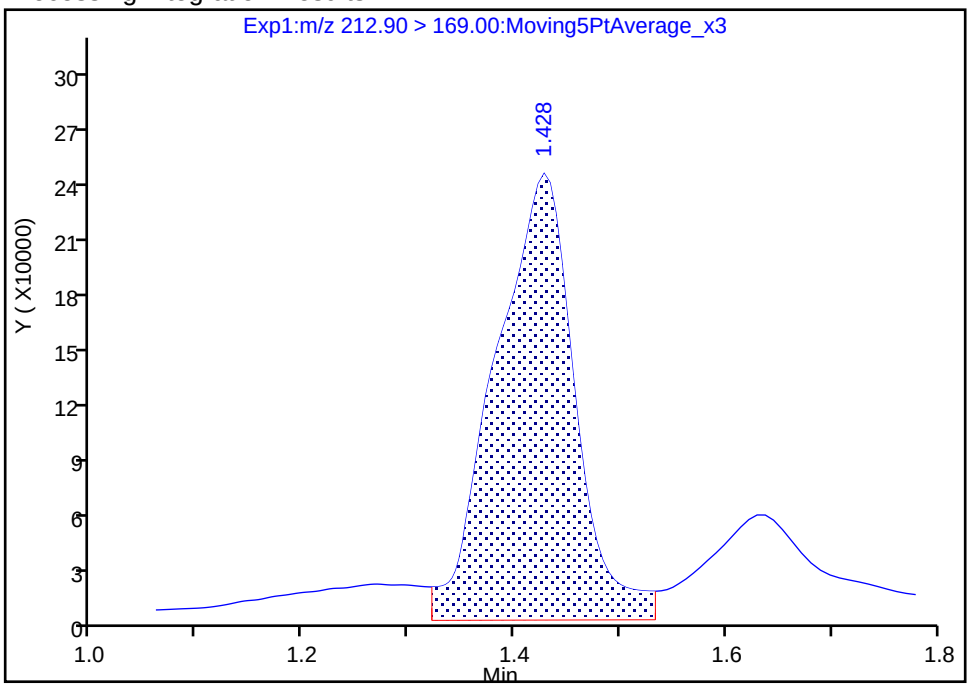
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\2018.07.06LLC_042.d				
Injection Date:	07-Jul-2018 04:43:31	Instrument ID:	A8_N		
Lims ID:	320-40571-A-33-A	Lab Sample ID:	320-40571-33		
Client ID:	NF32-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	28	Worklist Smp#:	30
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

2 Perfluorobutyric acid, CAS: 375-22-4

Signal: 1

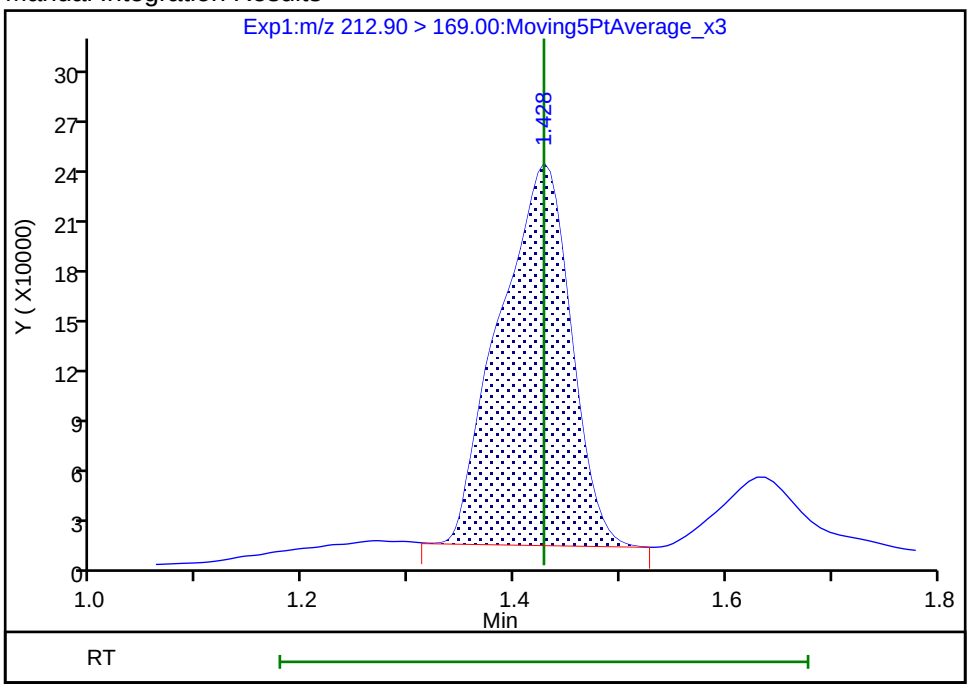
Processing Integration Results

RT: 1.43
Area: 1254486
Amount: 0.893372
Amount Units: ng/ml



Manual Integration Results

RT: 1.43
Area: 1045983
Amount: 0.744888
Amount Units: ng/ml



Reviewer: mongkols, 09-Jul-2018 14:43:53

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\2018.07.06LLC_042.d				
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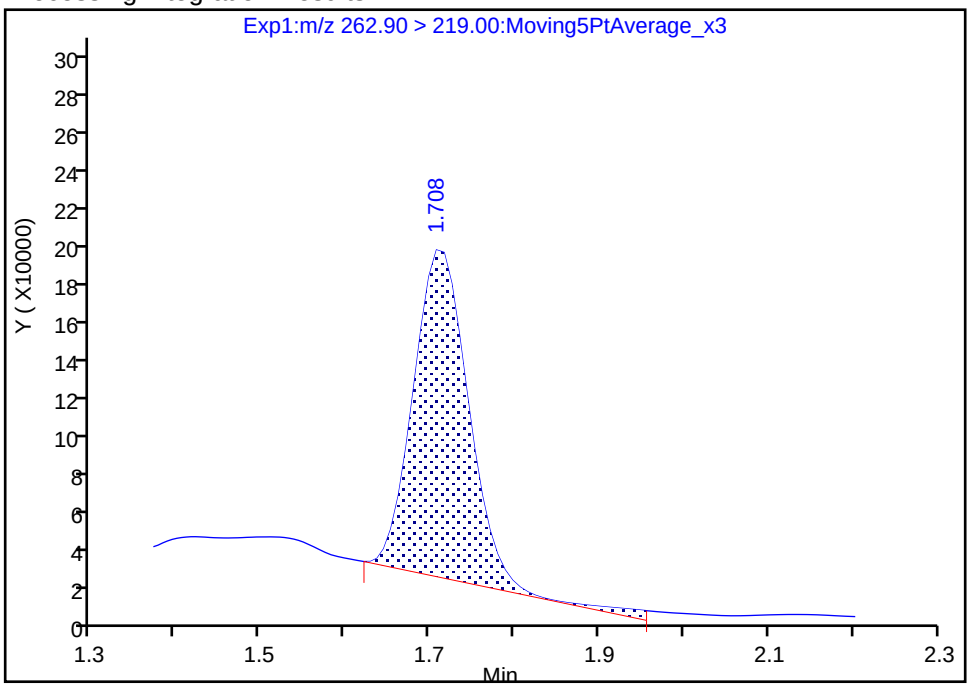
Lims ID:	320-40571-A-33-A	Lab Sample ID:	320-40571-33		
Client ID:	NF32-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	28	Worklist Smp#:	30
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

4 Perfluoropentanoic acid, CAS: 2706-90-3

Signal: 1

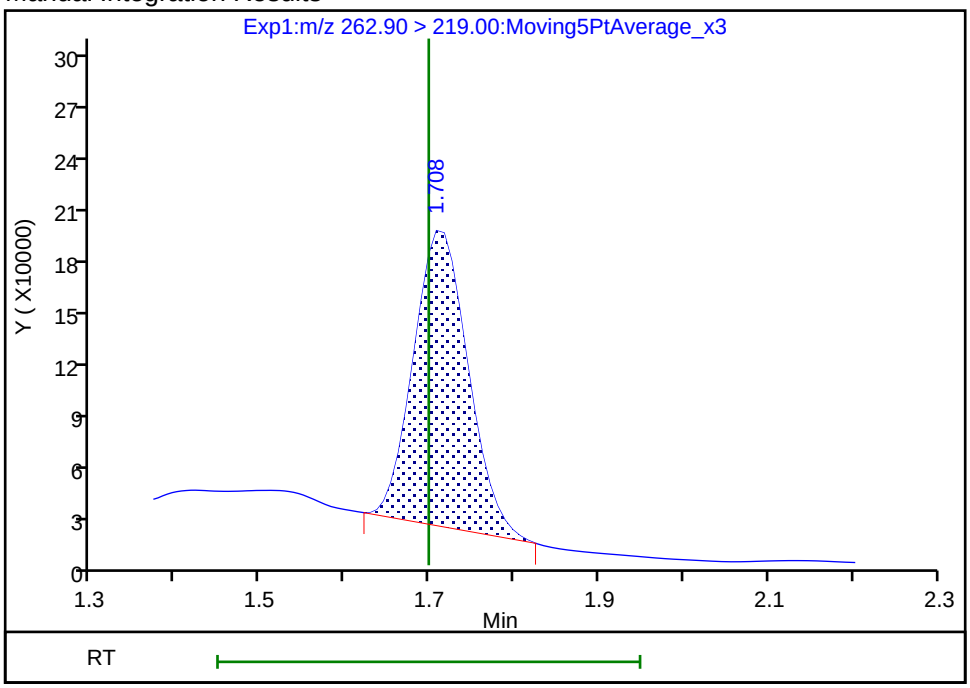
Processing Integration Results

RT: 1.71
Area: 781835
Amount: 0.425367
Amount Units: ng/ml



Manual Integration Results

RT: 1.71
Area: 759595
Amount: 0.413267
Amount Units: ng/ml



Reviewer: mongkols, 09-Jul-2018 14:44:00

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

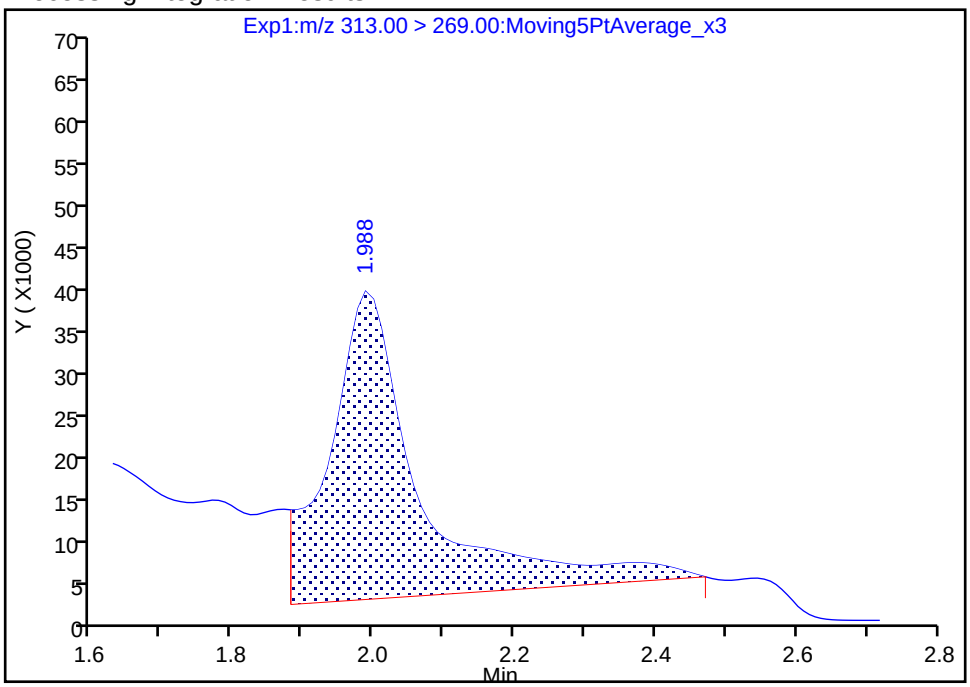
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\2018.07.06LLC_042.d				
Injection Date:	07-Jul-2018 04:43:31	Instrument ID:	A8_N		
Lims ID:	320-40571-A-33-A	Lab Sample ID:	320-40571-33		
Client ID:	NF32-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	28	Worklist Smp#:	30
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

6 Perfluorohexanoic acid, CAS: 307-24-4

Signal: 1

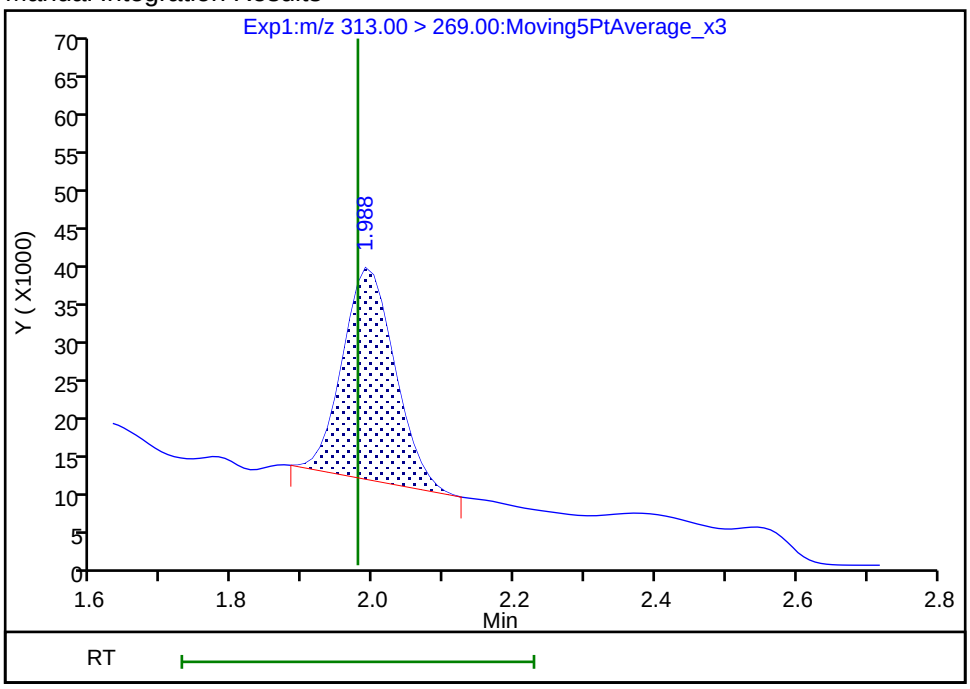
Processing Integration Results

RT: 1.99
Area: 327675
Amount: 0.170812
Amount Units: ng/ml



Manual Integration Results

RT: 1.99
Area: 144588
Amount: 0.075371
Amount Units: ng/ml



Reviewer: mongkols, 09-Jul-2018 14:44:15
Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

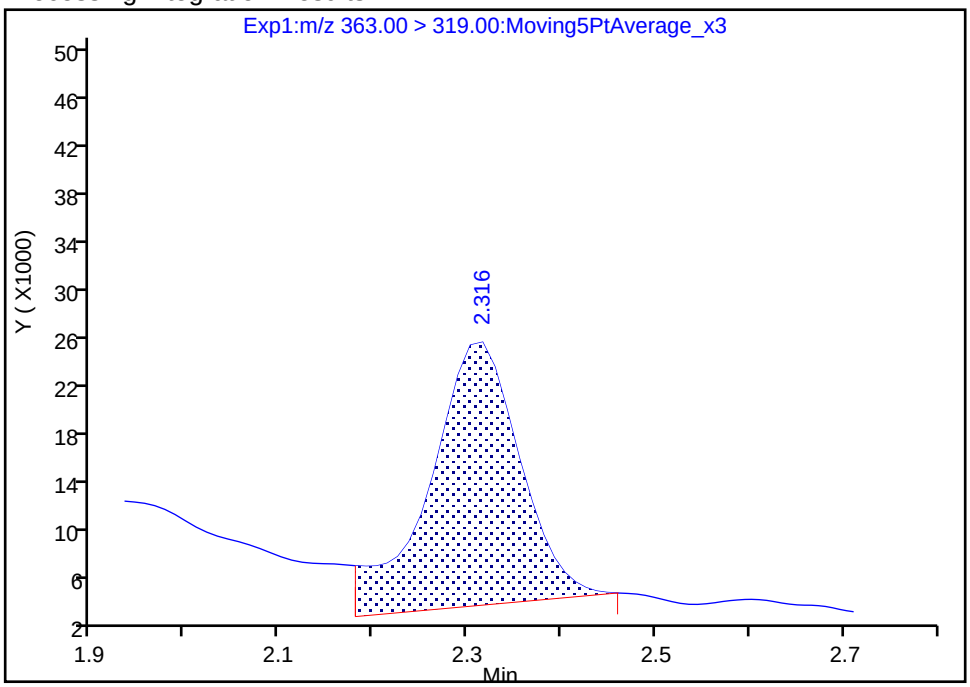
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\2018.07.06LLC_042.d				
Injection Date:	07-Jul-2018 04:43:31	Instrument ID:	A8_N		
Lims ID:	320-40571-A-33-A	Lab Sample ID:	320-40571-33		
Client ID:	NF32-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	28	Worklist Smp#:	30
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

10 Perfluoroheptanoic acid, CAS: 375-85-9

Signal: 1

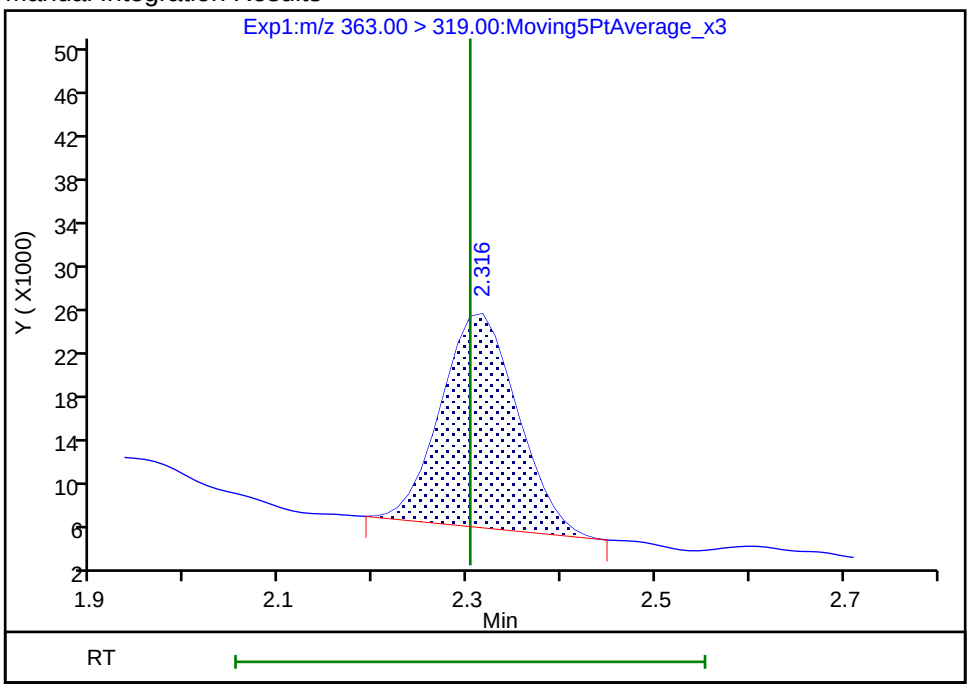
Processing Integration Results

RT: 2.32
Area: 146441
Amount: 0.068436
Amount Units: ng/ml



Manual Integration Results

RT: 2.32
Area: 111228
Amount: 0.051980
Amount Units: ng/ml



Reviewer: mongkols, 09-Jul-2018 14:44:33
Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

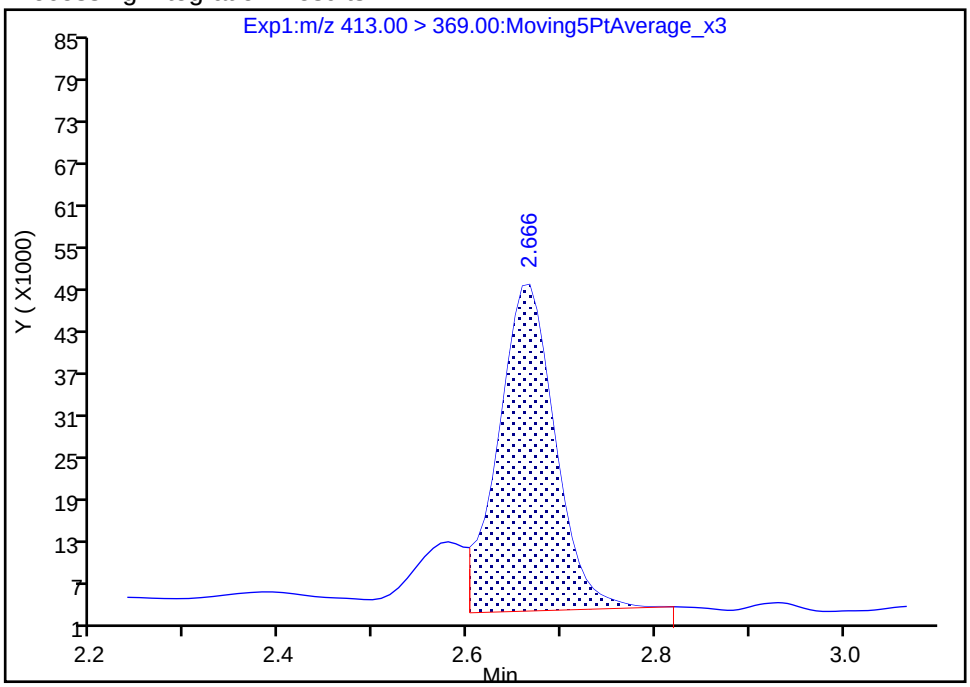
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\2018.07.06LLC_042.d				
Injection Date:	07-Jul-2018 04:43:31	Instrument ID:	A8_N		
Lims ID:	320-40571-A-33-A	Lab Sample ID:	320-40571-33		
Client ID:	NF32-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	28	Worklist Smp#:	30
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

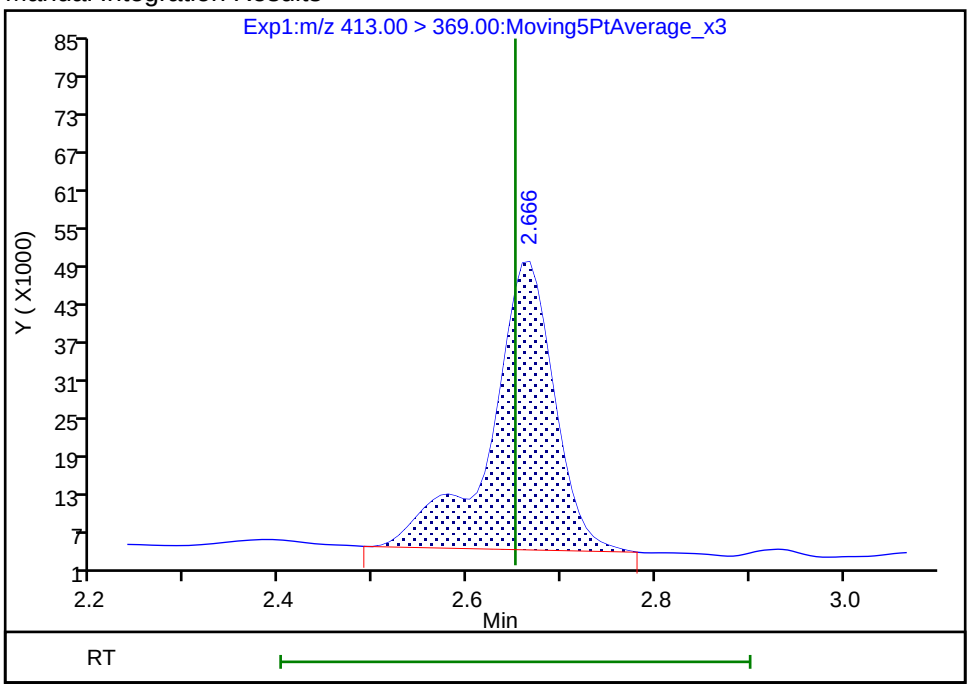
Processing Integration Results

RT: 2.67
Area: 193606
Amount: 0.082282
Amount Units: ng/ml



Manual Integration Results

RT: 2.67
Area: 214322
Amount: 0.091086
Amount Units: ng/ml



Reviewer: mongkols, 09-Jul-2018 14:44:45

Audit Action: Manually Integrated Audit Reason: Isomers

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

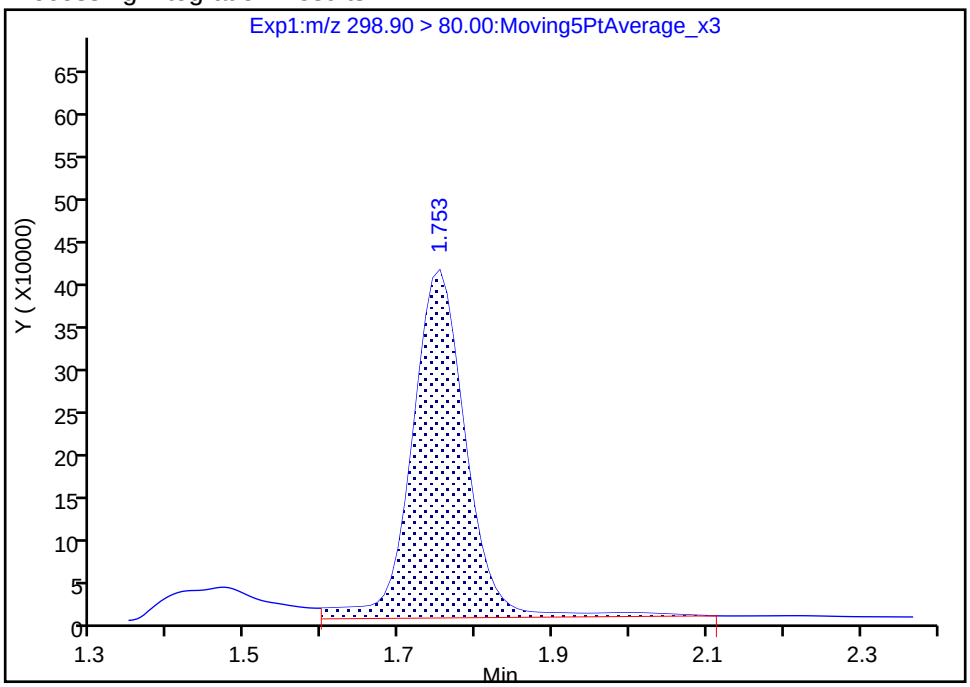
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\2018.07.06LLC_042.d				
Injection Date:	07-Jul-2018 04:43:31	Instrument ID:	A8_N		
Lims ID:	320-40571-A-33-A	Lab Sample ID:	320-40571-33		
Client ID:	NF32-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	28	Worklist Smp#:	30
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

5 Perfluorobutanesulfonic acid, CAS: 375-73-5

Signal: 1

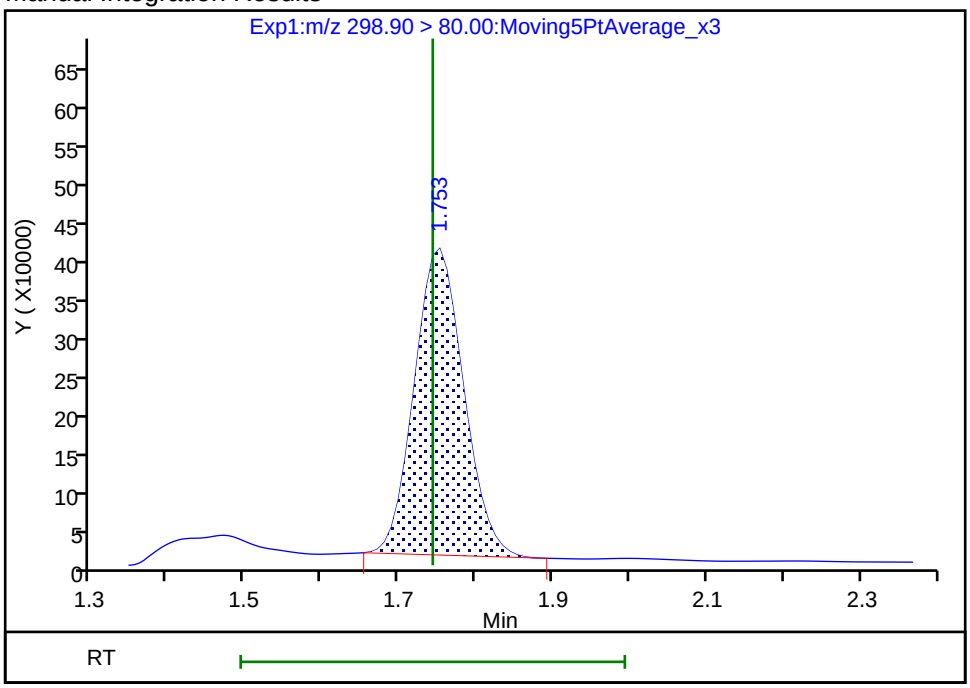
Processing Integration Results

RT: 1.75
Area: 2000991
Amount: 0.626948
Amount Units: ng/ml



Manual Integration Results

RT: 1.75
Area: 1774958
Amount: 0.556128
Amount Units: ng/ml



Reviewer: mongkols, 09-Jul-2018 14:44:09
Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

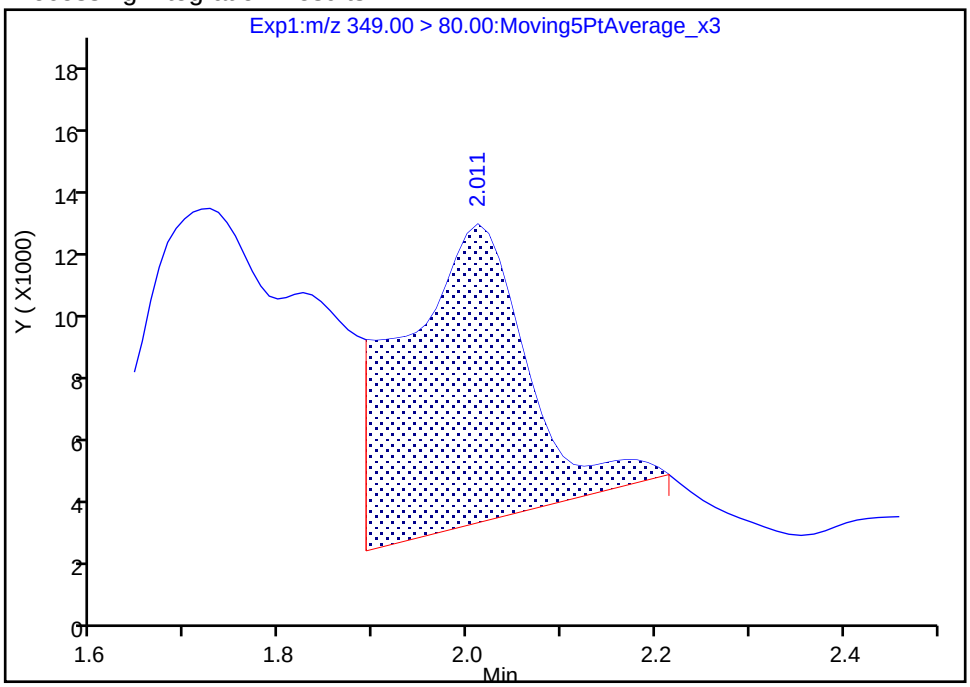
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\2018.07.06LLC_042.d				
Injection Date:	07-Jul-2018 04:43:31	Instrument ID:	A8_N		
Lims ID:	320-40571-A-33-A	Lab Sample ID:	320-40571-33		
Client ID:	NF32-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	28	Worklist Smp#:	30
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

70 Perfluoropentanesulfonic acid, CAS: 2706-91-4

Signal: 1

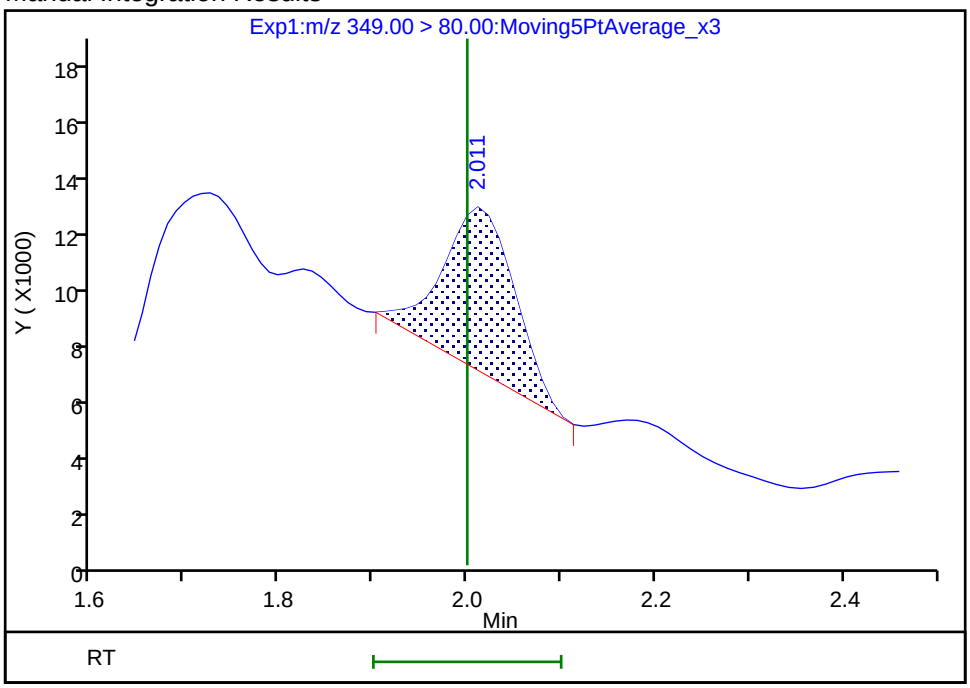
Processing Integration Results

RT: 2.01
Area: 87576
Amount: 0.032075
Amount Units: ng/ml



Manual Integration Results

RT: 2.01
Area: 30559
Amount: 0.011192
Amount Units: ng/ml



Reviewer: mongkols, 09-Jul-2018 14:44:20

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

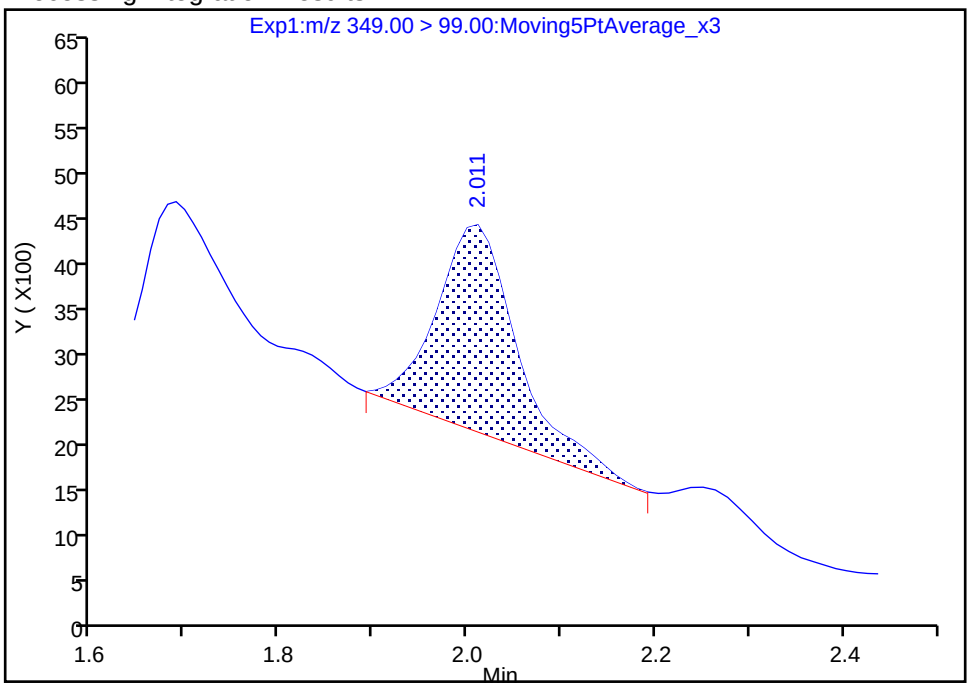
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\2018.07.06LLC_042.d				
Injection Date:	07-Jul-2018 04:43:31	Instrument ID:	A8_N		
Lims ID:	320-40571-A-33-A	Lab Sample ID:	320-40571-33		
Client ID:	NF32-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	28	Worklist Smp#:	30
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

70 Perfluoropentanesulfonic acid, CAS: 2706-91-4

Signal: 2

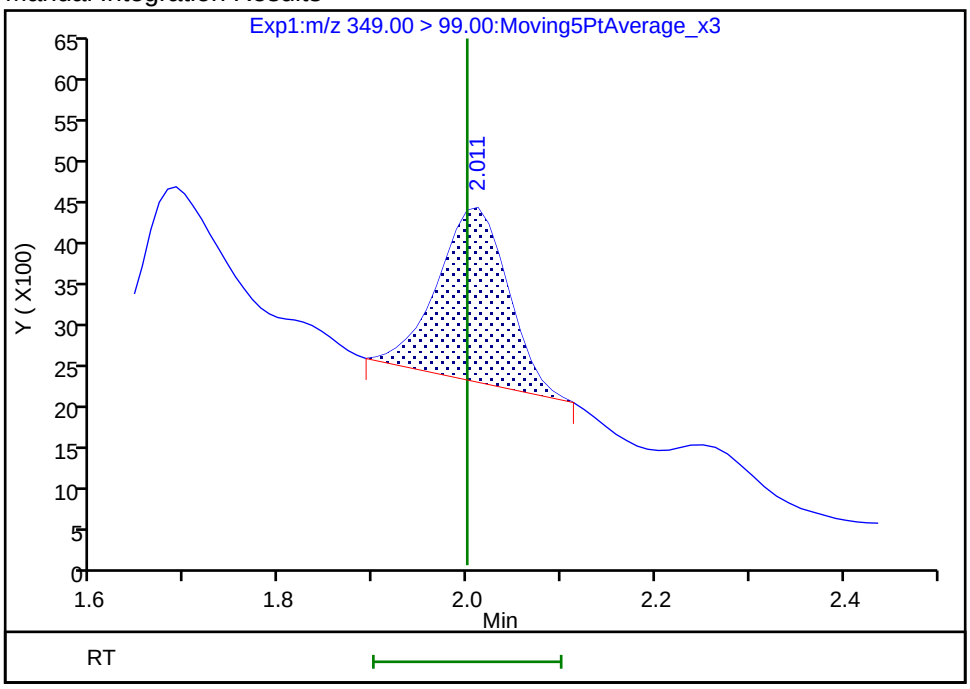
Processing Integration Results

RT: 2.01
Area: 13527
Amount: 0.032075
Amount Units: ng/ml



Manual Integration Results

RT: 2.01
Area: 11050
Amount: 0.011192
Amount Units: ng/ml



Reviewer: mongkols, 09-Jul-2018 14:44:27
Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

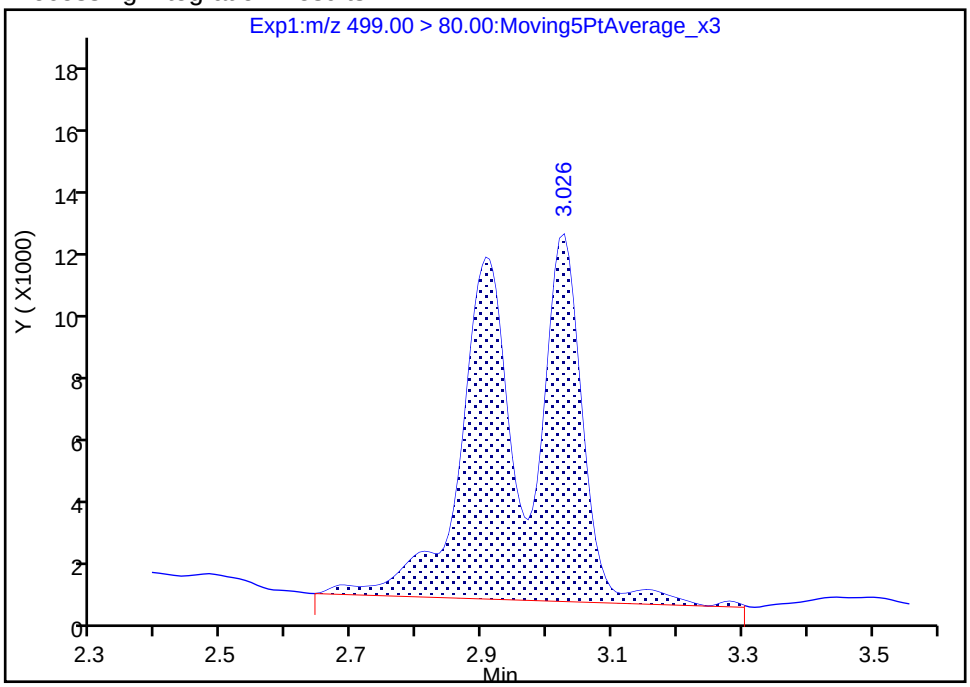
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\2018.07.06LLC_042.d				
Injection Date:	07-Jul-2018 04:43:31	Instrument ID:	A8_N		
Lims ID:	320-40571-A-33-A	Lab Sample ID:	320-40571-33		
Client ID:	NF32-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	28	Worklist Smp#:	30
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

17 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

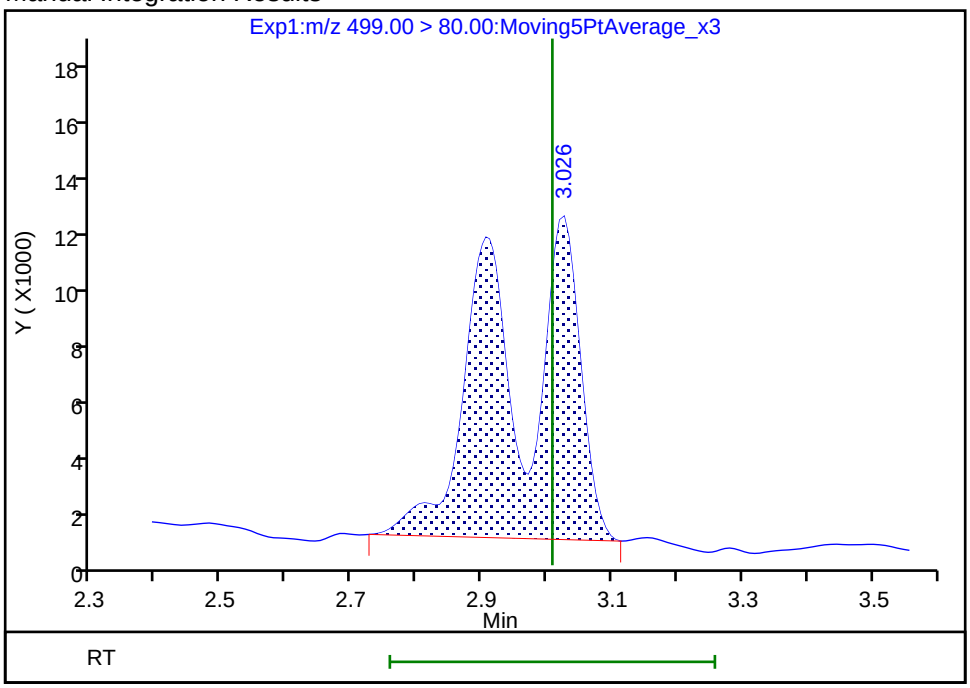
Processing Integration Results

RT: 3.03
Area: 104565
Amount: 0.049941
Amount Units: ng/ml



Manual Integration Results

RT: 3.03
Area: 94045
Amount: 0.044917
Amount Units: ng/ml



Reviewer: mongkols, 09-Jul-2018 14:44:58

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

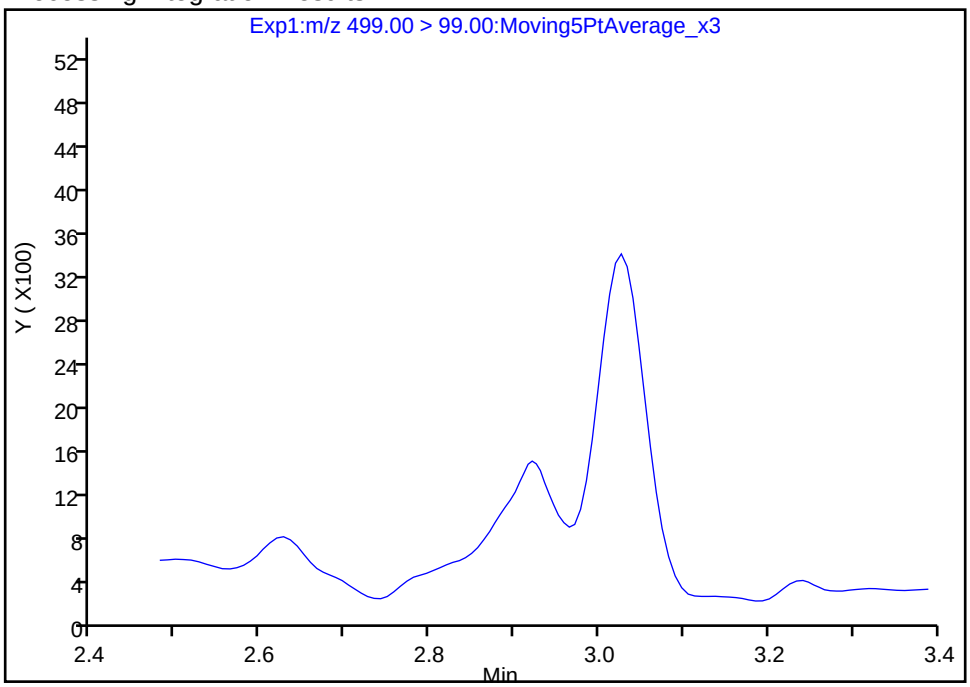
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\2018.07.06LLC_042.d				
Injection Date:	07-Jul-2018 04:43:31	Instrument ID:	A8_N		
Lims ID:	320-40571-A-33-A	Lab Sample ID:	320-40571-33		
Client ID:	NF32-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	28	Worklist Smp#:	30
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

17 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 2

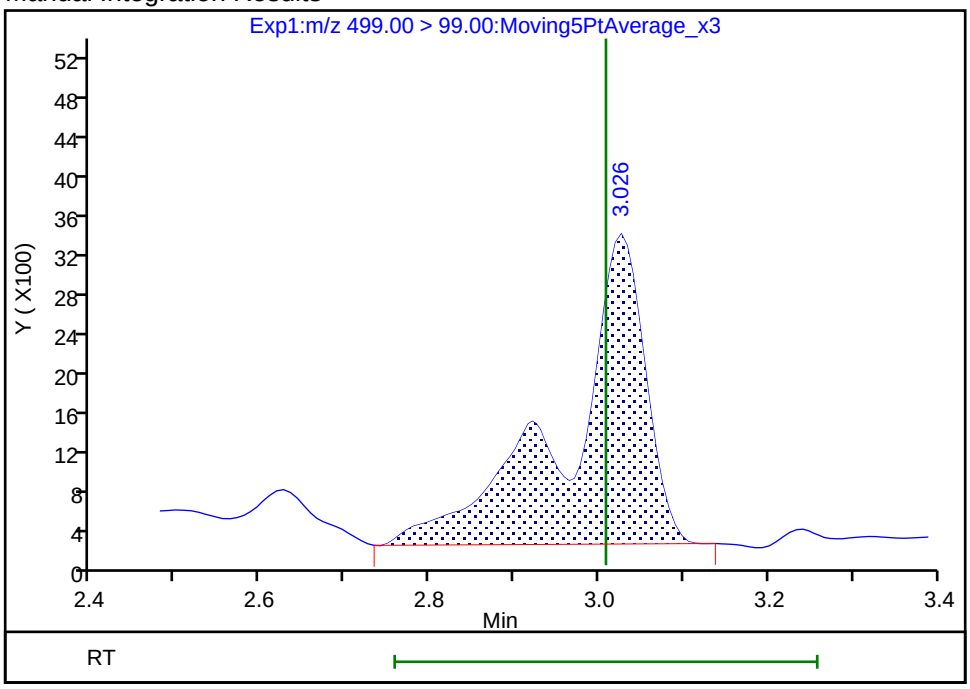
Processing Integration Results

RT: 3.01
Area: 0
Amount: 0.049941
Amount Units: ng/ml



Manual Integration Results

RT: 3.03
Area: 20147
Amount: 0.044917
Amount Units: ng/ml



Reviewer: mongkols, 09-Jul-2018 14:45:02
Audit Action: Manually Integrated Audit Reason: Baseline

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF32-SS-02
Lab Sample ID: 320-40571-34
Matrix: Solid
Lab File ID: 2018.07.14LLA_029.d
Analysis Method: 537 (modified)
Date Collected: 06/19/2018 12:45
Extraction Method: SHAKE
Date Extracted: 06/28/2018 06:06
Sample wt/vol: 5.07(g)
Date Analyzed: 07/14/2018 14:24
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture: 9.7
GPC Cleanup:(Y/N) N
Analysis Batch No.: 234231
Units: mg/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	ND		0.00022	0.000031
2706-90-3	Perfluoropentanoic acid (PFPeA)	ND		0.00022	0.000084
307-24-4	Perfluorohexanoic acid (PFHxA)	ND		0.00022	0.000046
375-85-9	Perfluoroheptanoic acid (PFHpA)	ND		0.00022	0.000032
335-67-1	Perfluorooctanoic acid (PFOA)	ND		0.00022	0.000094
375-95-1	Perfluorononanoic acid (PFNA)	ND		0.00022	0.000039
335-76-2	Perfluorodecanoic acid (PFDA)	ND		0.00022	0.000024
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		0.00022	0.000039
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		0.00022	0.000073
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		0.00022	0.000056
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		0.00022	0.000059
375-73-5	Perfluorobutanesulfonic acid (PFBS)	ND		0.00022	0.000027
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	ND		0.00022	0.000034
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.00022	0.000038
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	ND		0.00055	0.00022
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		0.00022	0.000043
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		0.00022	0.000090
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.0022	0.00043
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.0022	0.00040
27619-97-2	6:2 FTS	ND		0.0022	0.00016
39108-34-4	8:2 FTS	ND		0.0022	0.00027

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF32-SS-02
Lab Sample ID: 320-40571-34
Matrix: Solid
Lab File ID: 2018.07.14LLA_029.d
Analysis Method: 537 (modified)
Date Collected: 06/19/2018 12:45
Extraction Method: SHAKE
Date Extracted: 06/28/2018 06:06
Sample wt/vol: 5.07(g)
Date Analyzed: 07/14/2018 14:24
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture: 9.7
GPC Cleanup:(Y/N) N
Analysis Batch No.: 234231
Units: mg/Kg

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00992	13C4 PFBA	78		25-150
STL01893	13C5 PFPeA	82		25-150
STL00993	13C2 PFHxA	83		25-150
STL01892	13C4-PFHpA	91		25-150
STL00990	13C4 PFOA	90		25-150
STL00995	13C5 PFNA	88		25-150
STL00996	13C2 PFDA	90		25-150
STL00997	13C2 PFUnA	80		25-150
STL00998	13C2 PFDoA	81		25-150
STL02116	13C2-PFTeDA	90		25-150
STL02337	13C3-PFBS	72		25-150
STL00994	18O2 PFHxS	77		25-150
STL00991	13C4 PFOS	72		25-150
STL01056	13C8 FOSA	62		25-150
STL02118	d3-NMeFOSAA	87		25-150
STL02117	d5-NEtFOSAA	85		25-150
STL02279	M2-6:2FTS	77		25-150
STL02280	M2-8:2FTS	94		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180716-61105.b\2018.07.14LLA_029.d
Lims ID: 320-40571-A-34-A
Client ID: NF32-SS-02
Sample Type: Client
Inject. Date: 14-Jul-2018 14:24:40 ALS Bottle#: 19 Worklist Smp#: 12
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-40571-a-34-a
Misc. Info.: Plate: 1 Rack: 5
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180716-61105.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 17-Jul-2018 08:24:52 Calib Date: 11-Jul-2018 15:38:42
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK016

First Level Reviewer: mongkols Date: 17-Jul-2018 08:24:52

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										M
217.00 > 172.00	1.436	1.436	0.0	0.540	5045637	1.95		77.8	45811	M
2 Perfluorobutyric acid										
212.90 > 169.00	1.442	1.441	0.001	1.004	24878	0.0125			5.1	
D 3 13C5-PFPeA										
267.90 > 223.00	1.721	1.720	0.001	0.647	3700713	2.05		82.1	41937	
D 47 13C3-PFBS										
301.90 > 83.00	1.757	1.756	0.001	0.661	75617	1.67		71.8	271	
D 7 13C2 PFHxA										
315.00 > 270.00	1.993	1.992	0.001	0.749	4043972	2.08		83.1	62578	
D 9 13C4-PFHpA										
367.00 > 322.00	2.308	2.306	0.002	0.868	4067066	2.27		90.8	39921	
D 11 18O2 PFHxS										
403.00 > 84.00	2.321	2.319	0.002	0.873	4620773	1.82		77.0	59110	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.321	2.332	-0.011	1.000	16470	0.007343			74.3	
399.00 > 99.00	2.334	2.332	0.002	1.006	4176		3.94(1.50-4.49)		18.2	
D 12 M2-6:2FTS										
429.00 > 81.00	2.636	2.628	0.008	0.991	706859	1.84		77.5	6345	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.636	2.644	-0.008	1.000	3115	0.006690			13.3	
D 14 13C4 PFOA										
417.00 > 372.00	2.660	2.652	0.008	1.000	4110190	2.25		89.9	47236	
* 62 13C2-PFOA										
415.00 > 370.00	2.660	2.667	-0.007		4781391	2.50			63967	
D 19 13C5 PFNA										
468.00 > 423.00	3.022	3.018	0.004	1.136	3577337	2.19		87.5	52724	
D 18 13C4 PFOS										
503.00 > 80.00	3.022	3.018	0.004	1.136	3190069	1.71		71.6	35099	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.022	3.029	-0.007	1.000	29023	0.0192			317	
499.00 > 99.00	3.022	3.029	-0.007	1.000	6703		4.33(2.31-6.93)		49.5	
D 26 M2-8:2FTS										
529.00 > 81.00	3.367	3.361	0.005	1.266	1262769	2.25		93.8	13106	
D 23 13C2 PFDA										
515.00 > 470.00	3.376	3.370	0.006	1.269	3243850	2.26		90.4	48884	
D 21 13C8 FOSA										
506.00 > 78.00	3.376	3.370	0.006	1.269	4170977	1.55		62.1	48368	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.535	3.520	0.015	1.329	1283356	2.18		87.3	34990	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.694	3.687	0.007	1.389	1285194	2.13		85.3	4564	
D 30 13C2 PFUnA										
565.00 > 520.00	3.705	3.698	0.007	1.393	2405679	2.01		80.3	45750	
D 36 13C2 PFDoA										
615.00 > 570.00	3.994	3.988	0.006	1.502	2514312	2.02		80.9	25490	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.488	4.480	0.008	1.687	2898102	2.25		89.9	20252	

QC Flag Legend

Review Flags

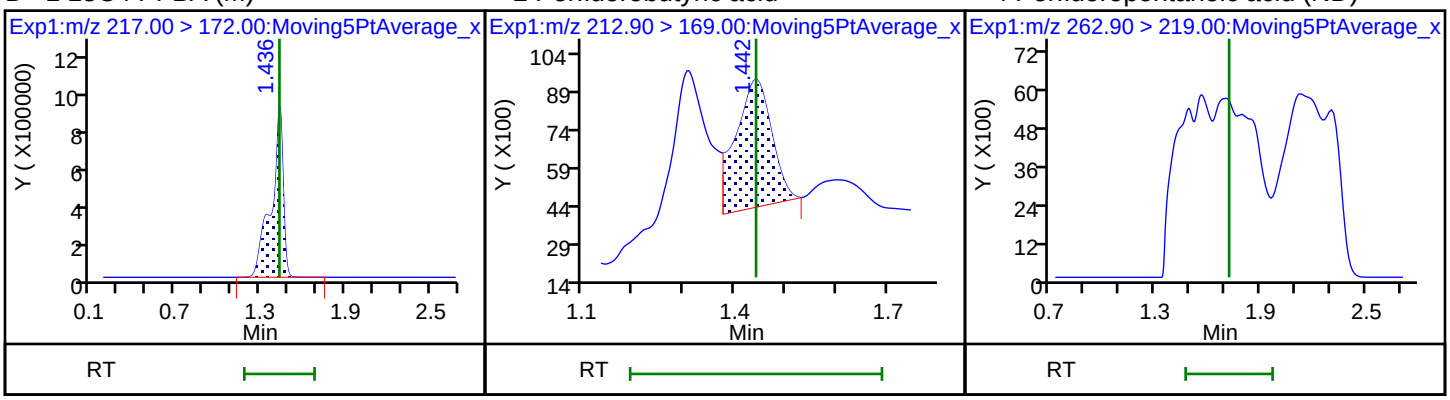
M - Manually Integrated

Report Date: 17-Jul-2018 08:24:53 Chrom Revision: 2.2 07-Jun-2018 07:41:54

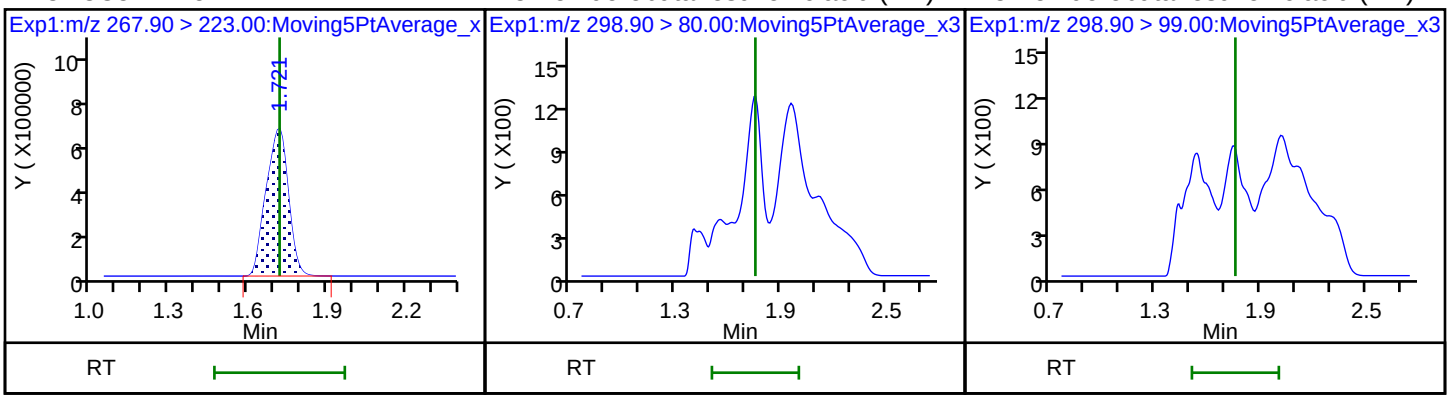
TestAmerica Sacramento

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180716-61105.b\2018.07.14LLA_029.d				
Injection Date:	14-Jul-2018 14:24:40	Instrument ID:	A8_N		
Lims ID:	320-40571-A-34-A	Lab Sample ID:	320-40571-34		
Client ID:	NF32-SS-02				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	19	Worklist Smp#:	12
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		

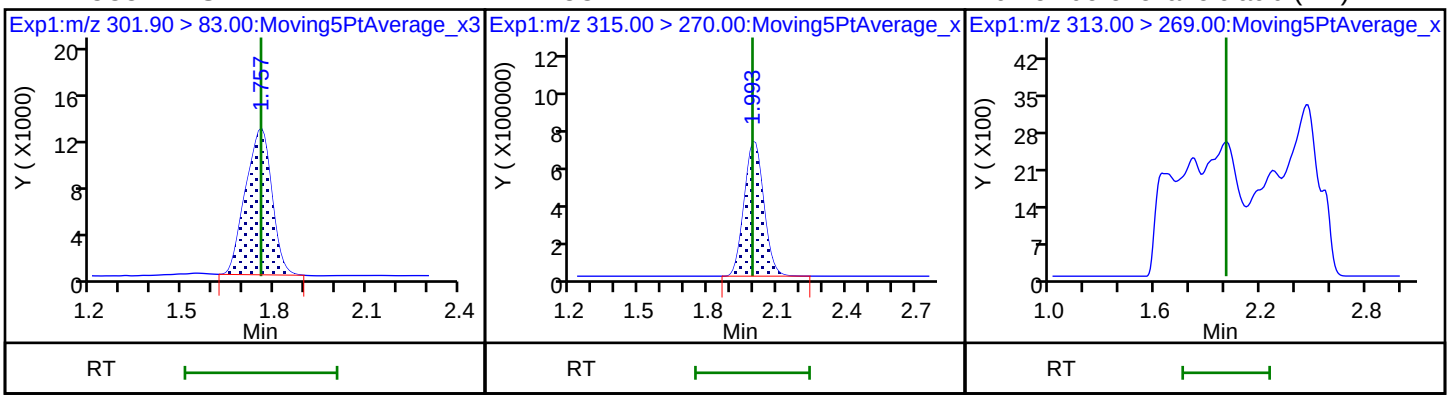
D 1 13C4 PFBA (M) | 2 Perfluorobutyric acid | 4 Perfluoropentanoic acid (ND)



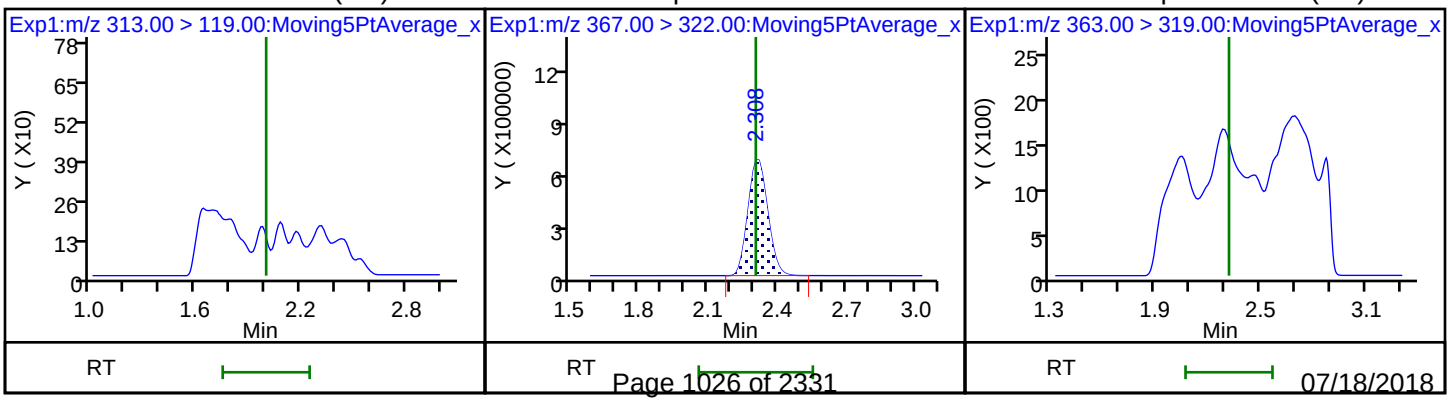
D 3 13C5-PFPeA | 5 Perfluorobutanesulfonic acid (ND) | 5 Perfluorobutanesulfonic acid (ND)



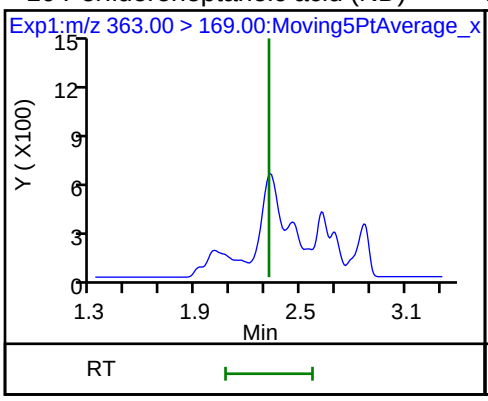
D 47 13C3-PFBS | D 7 13C2 PFHxA | 6 Perfluorohexanoic acid (ND)



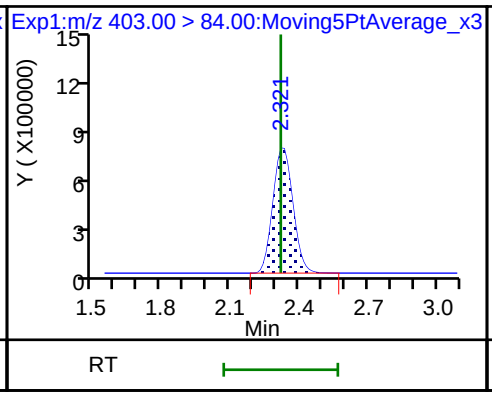
6 Perfluorohexanoic acid (ND) | D 9 13C4-PFHpA | 10 Perfluoroheptanoic acid (ND)



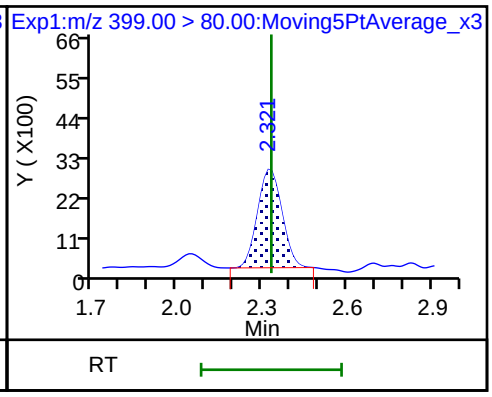
10 Perfluoroheptanoic acid (ND)



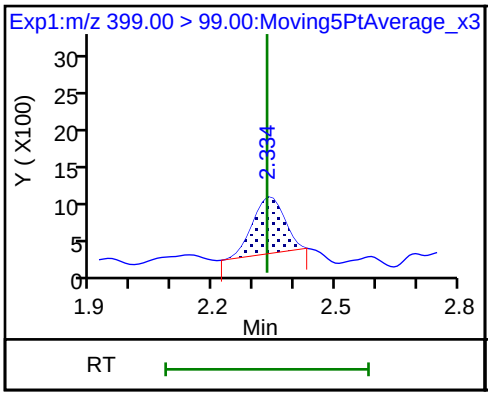
D 11 18O2 PFHxS



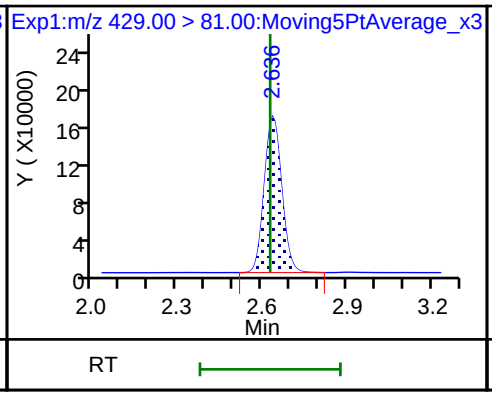
8 Perfluorohexanesulfonic acid



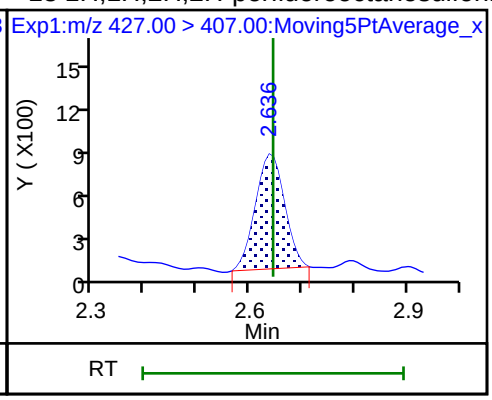
8 Perfluorohexanesulfonic acid



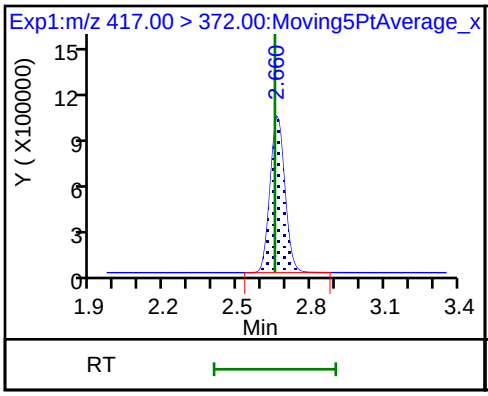
D 12 M2-6:2FTS



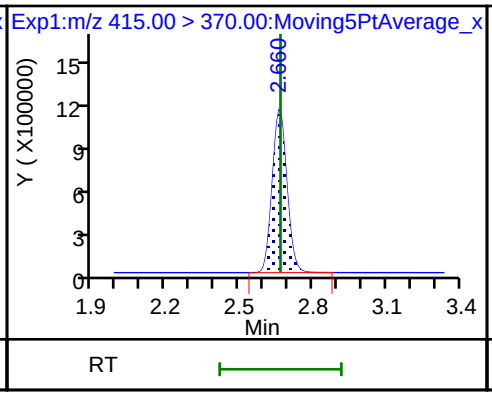
13 1H,1H,2H,2H-perfluorooctanesulfoni



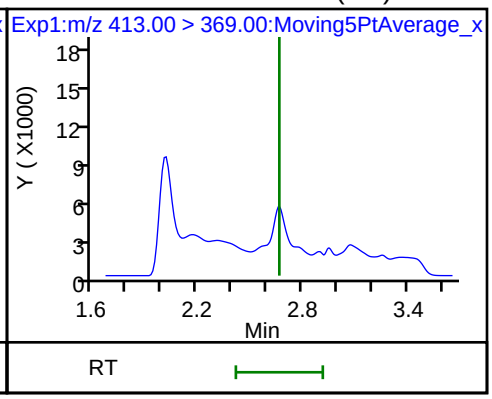
D 14 13C4 PFOA



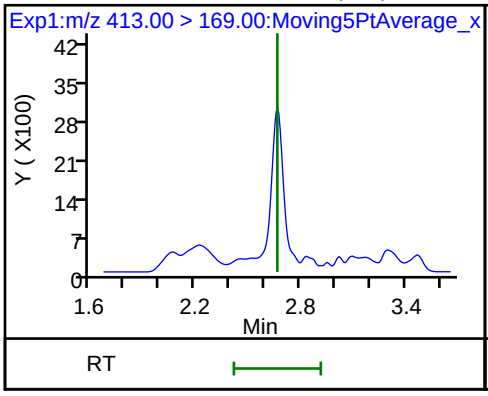
* 62 13C2-PFOA



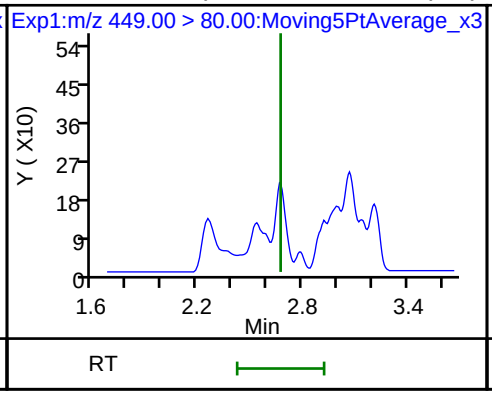
15 Perfluorooctanoic acid (ND)



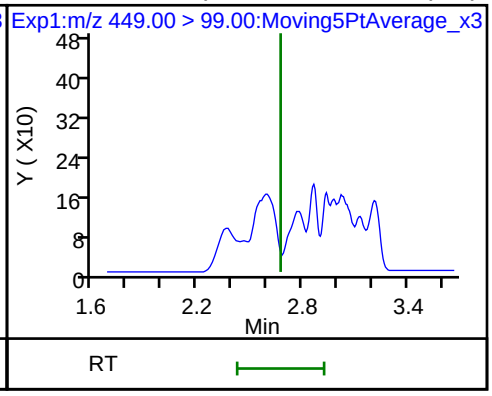
15 Perfluorooctanoic acid (ND)



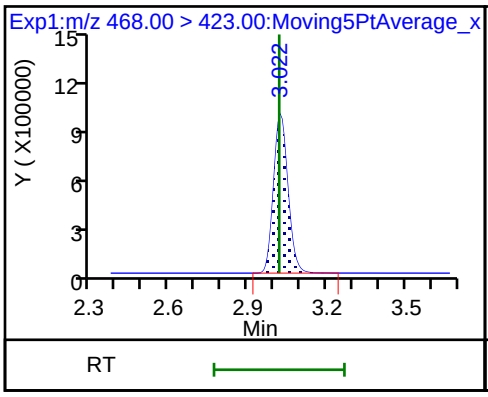
16 Perfluoroheptanesulfonic acid (ND)



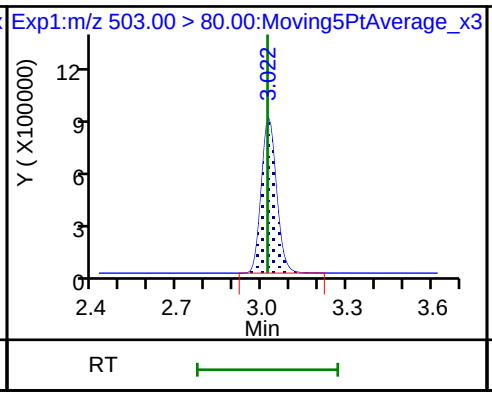
16 Perfluoroheptanesulfonic acid (ND)



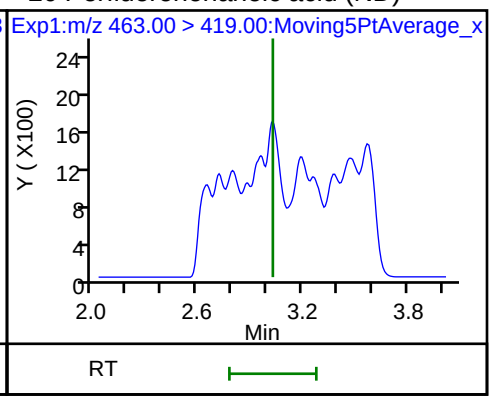
D 19 13C5 PFNA



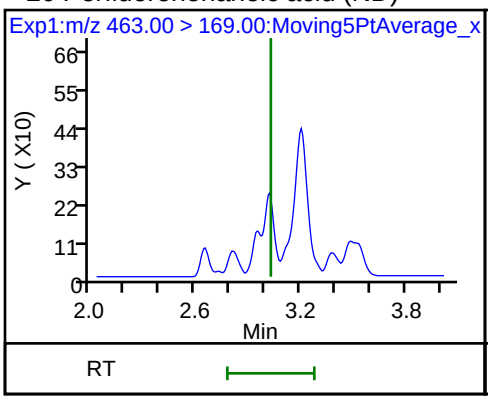
D 18 13C4 PFOS



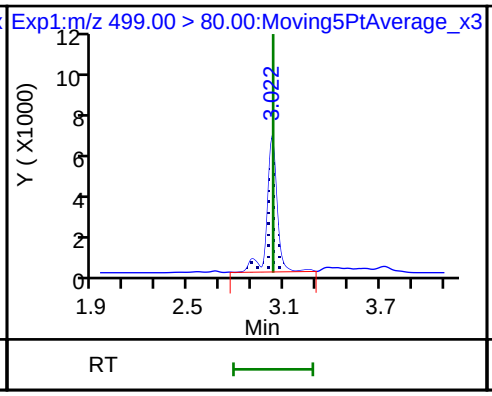
20 Perfluorononanoic acid (ND)



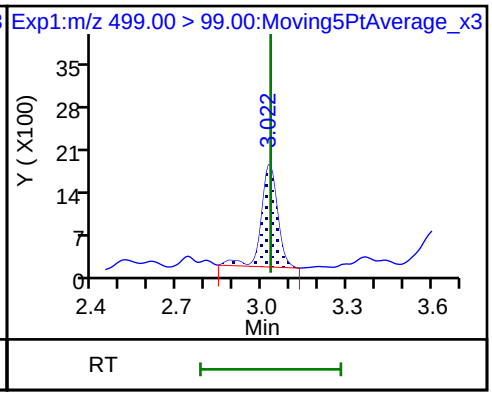
20 Perfluorononanoic acid (ND)



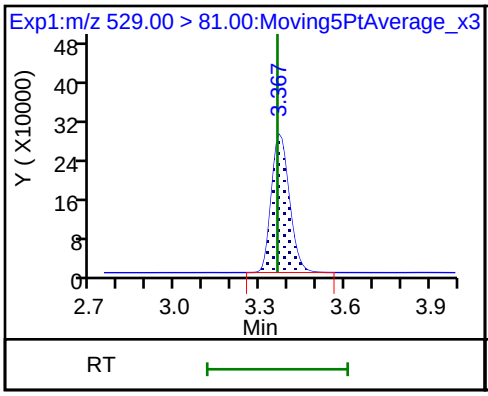
17 Perfluorooctane sulfonic acid



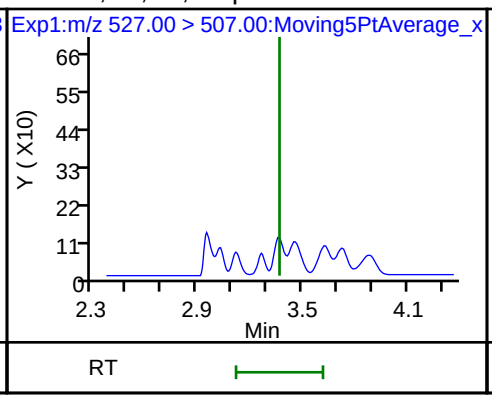
17 Perfluorooctane sulfonic acid



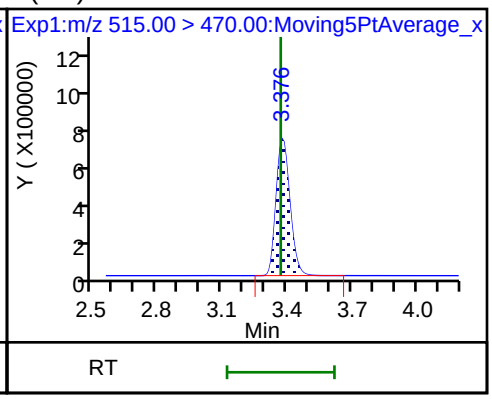
D 26 M2-8:2FTS



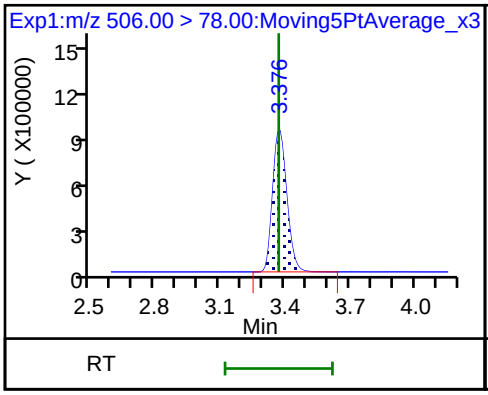
25 1H,1H,2H,2H-perfluorodecanesulfonic acid (ND)



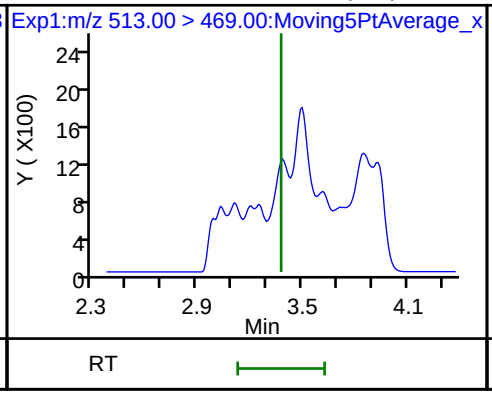
D 28 13C2 PFDA



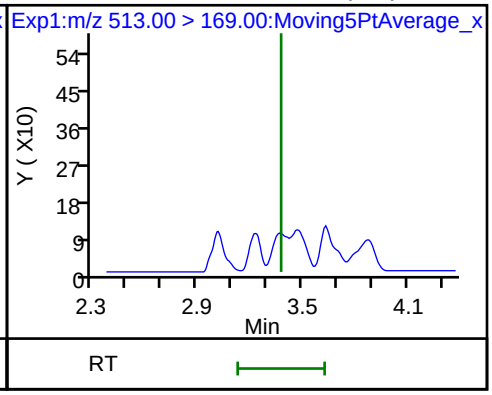
D 21 13C8 FOSA



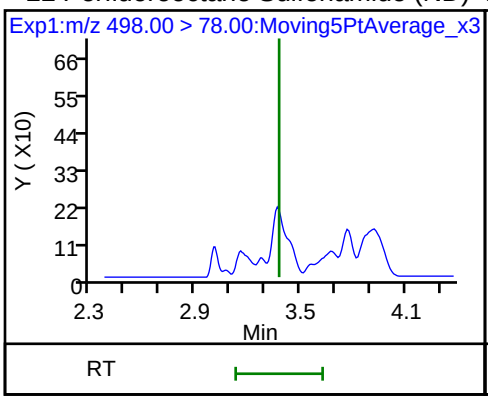
24 Perfluorodecanoic acid (ND)



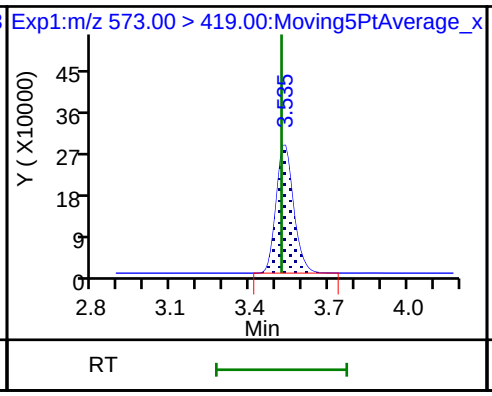
24 Perfluorodecanoic acid (ND)



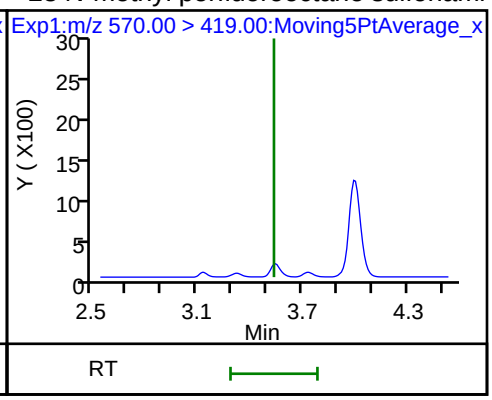
22 Perfluorooctane Sulfonamide (ND)



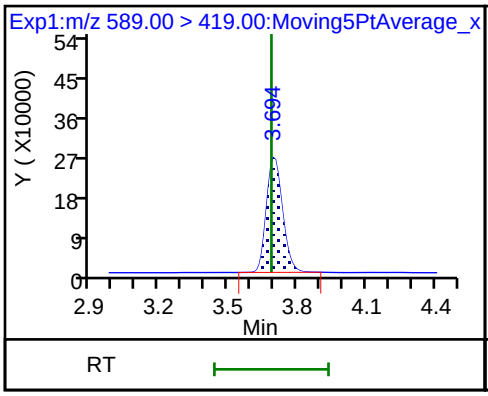
D 27 d3-NMeFOSAA



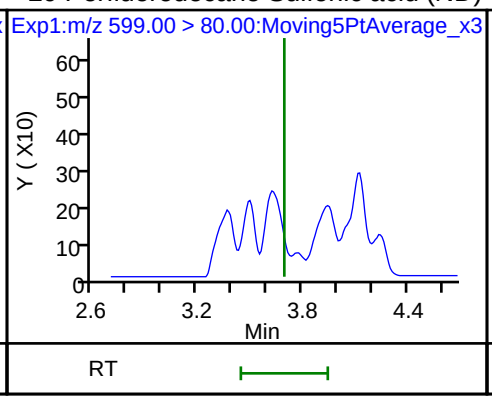
28 N-methyl perfluorooctane sulfonami (ND)



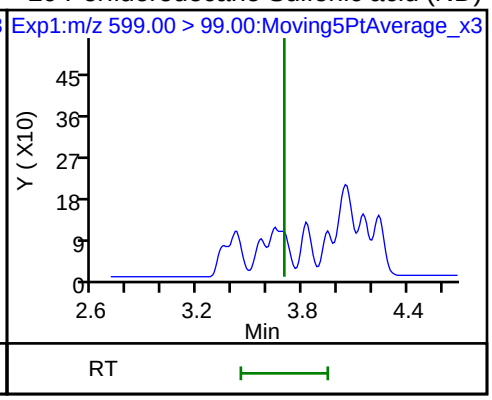
D 32 d5-NEtFOSAA



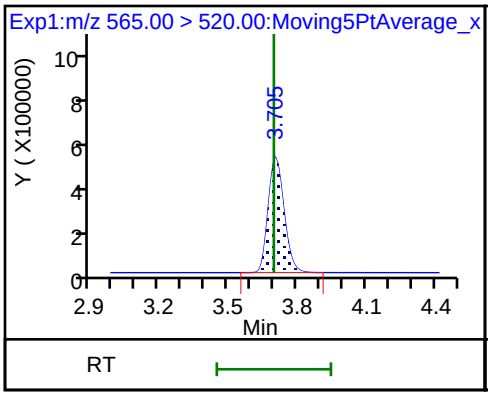
29 Perfluorodecane Sulfonic acid (ND)



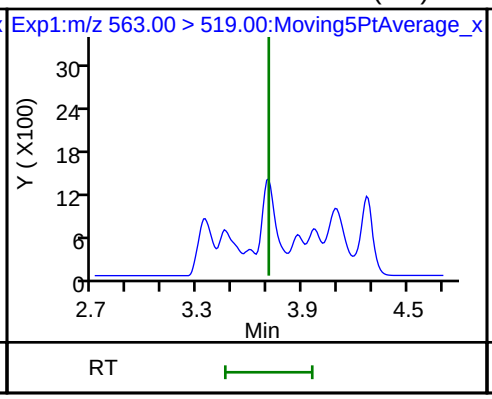
29 Perfluorodecane Sulfonic acid (ND)



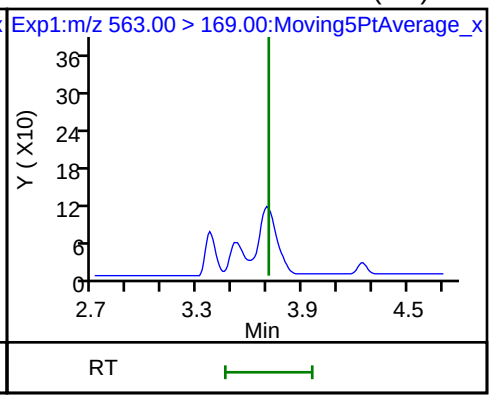
D 30 13C2 PFUnA



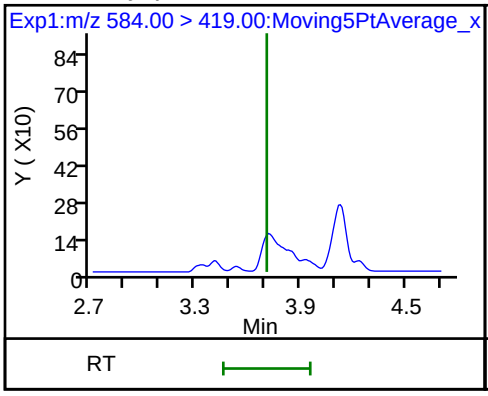
31 Perfluoroundecanoic acid (ND)



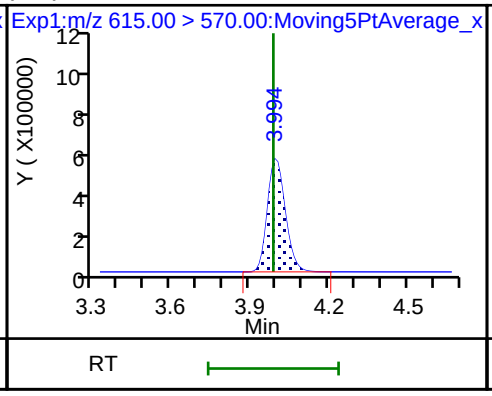
31 Perfluoroundecanoic acid (ND)



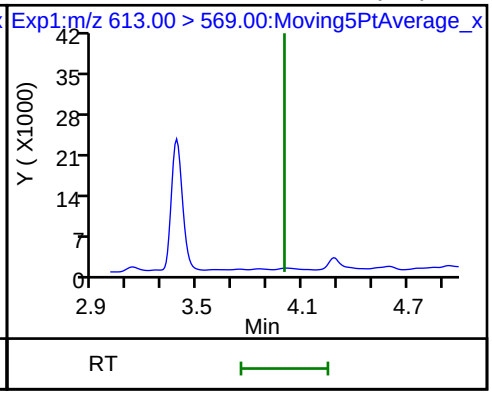
33 N-ethyl perfluorooctane sulfonamid (ND)



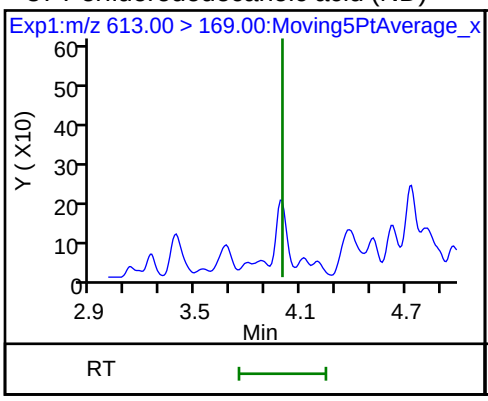
D 36 13C2 PFDoA



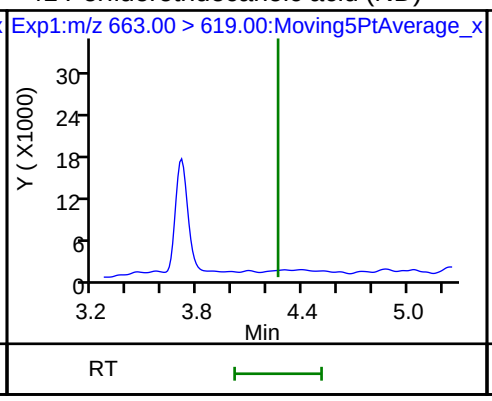
37 Perfluorododecanoic acid (ND)



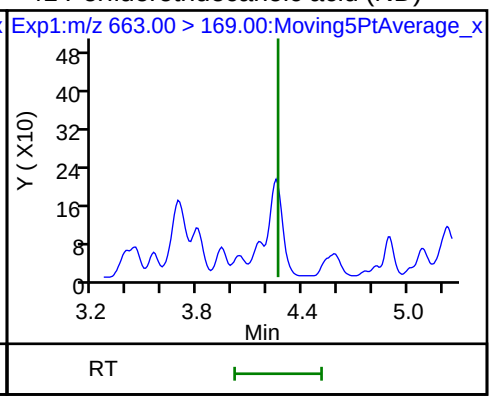
37 Perfluorododecanoic acid (ND)



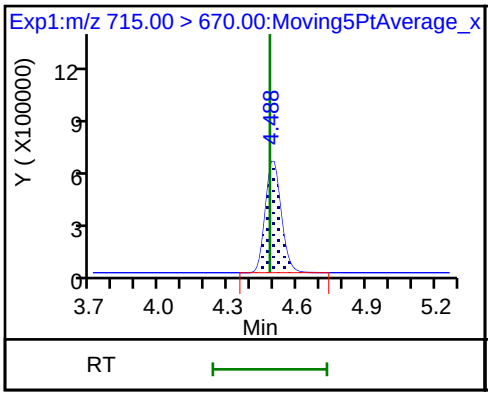
41 Perfluorotridecanoic acid (ND)



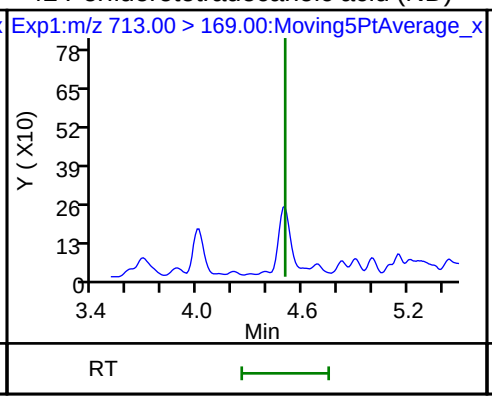
41 Perfluorotridecanoic acid (ND)



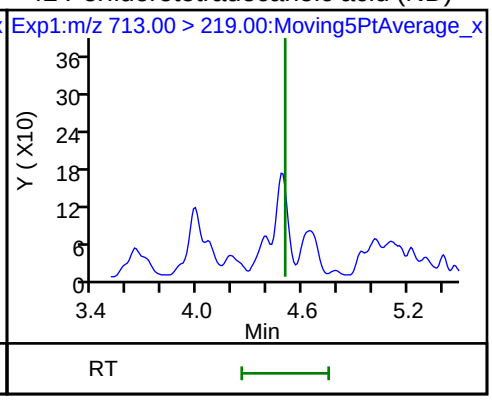
D 43 13C2-PFTeDA



42 Perfluorotetradecanoic acid (ND)



42 Perfluorotetradecanoic acid (ND)



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

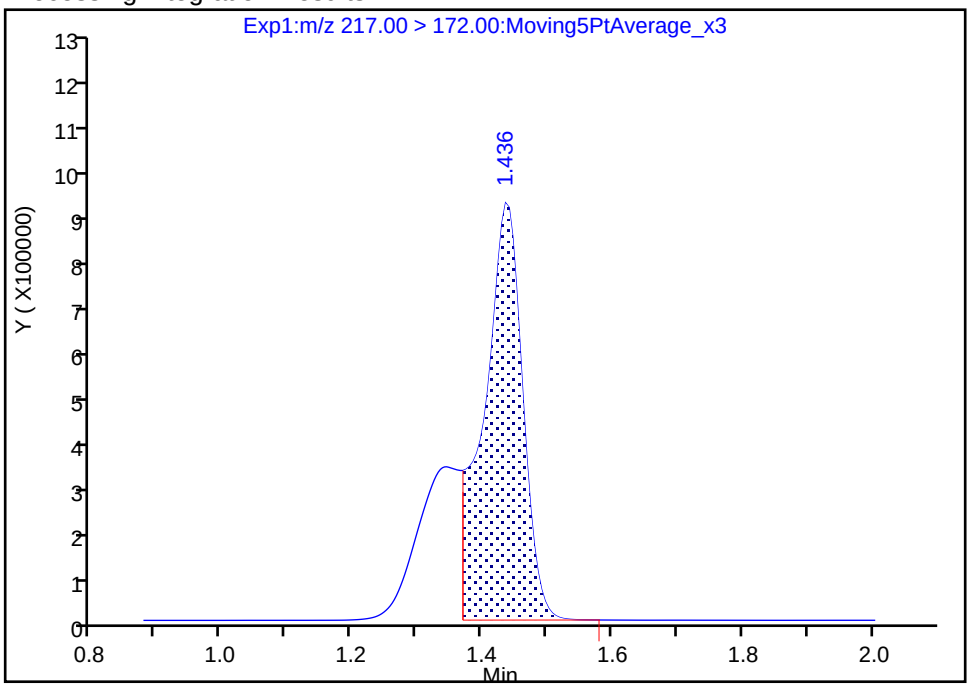
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180716-61105.b\2018.07.14LLA_029.d				
Injection Date:	14-Jul-2018 14:24:40	Instrument ID:	A8_N		
Lims ID:	320-40571-A-34-A	Lab Sample ID:	320-40571-34		
Client ID:	NF32-SS-02				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	19	Worklist Smp#:	12
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

D 1 13C4 PFBA, CAS: STL00992

Signal: 1

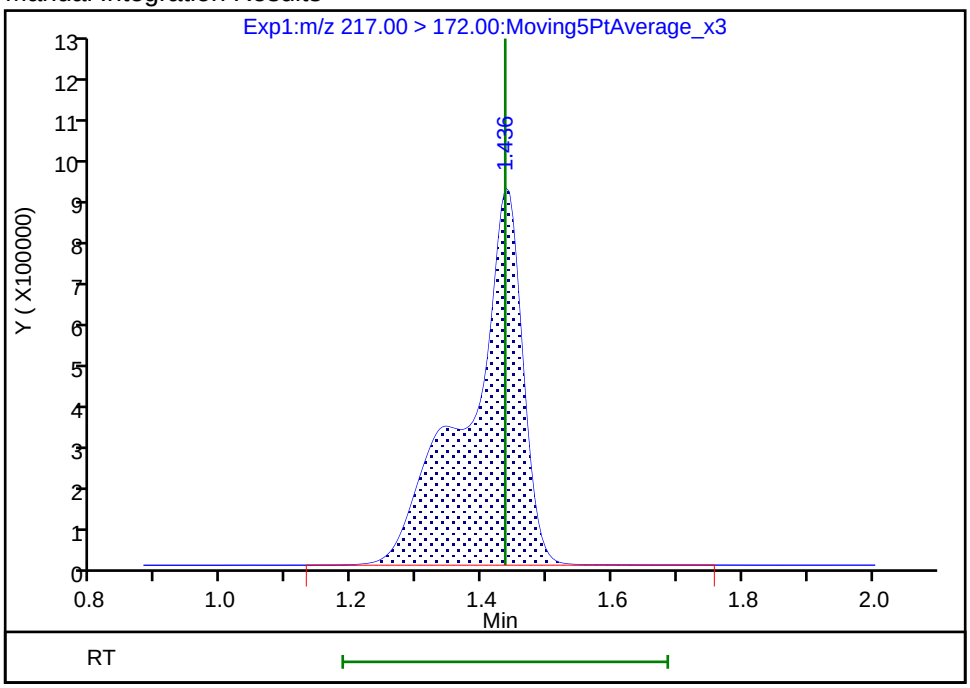
Processing Integration Results

RT: 1.44
Area: 3558800
Amount: 1.372330
Amount Units: ng/ml



Manual Integration Results

RT: 1.44
Area: 5045637
Amount: 1.945678
Amount Units: ng/ml



Reviewer: mongkols, 17-Jul-2018 08:24:17

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF33-GW-01
Lab Sample ID: 320-40571-35
Matrix: Water
Lab File ID: 2018.07.06LLAAA_036.d
Analysis Method: 537 (modified)
Date Collected: 06/19/2018 17:00
Extraction Method: 3535
Date Extracted: 07/02/2018 16:10
Sample wt/vol: 255.2(mL)
Date Analyzed: 07/06/2018 18:09
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 232788
Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	0.014	B F2	0.0020	0.00034
2706-90-3	Perfluoropentanoic acid (PFPeA)	0.0096	F2	0.0020	0.00048
307-24-4	Perfluorohexanoic acid (PFHxA)	0.0021		0.0020	0.00057
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.0015	J	0.0020	0.00024
335-67-1	Perfluorooctanoic acid (PFOA)	ND		0.0020	0.00083
375-95-1	Perfluorononanoic acid (PFNA)	0.00077	J	0.0020	0.00026
335-76-2	Perfluorodecanoic acid (PFDA)	ND		0.0020	0.00030
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		0.0020	0.0011
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		0.0020	0.00054
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		0.0020	0.0013
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		0.0020	0.00028
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.0017	J	0.0020	0.00020
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	ND		0.0020	0.00029
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.00047	J B	0.0020	0.00017
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.0020	0.00019
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.00096	J	0.0020	0.00053
8789-57-2	Perfluorononanesulfonic acid (PFNS)	ND		0.0020	0.00016
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		0.0020	0.00031
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		0.0020	0.00034
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.020	0.0030
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.020	0.0019
757124-72-4	4:2 FTS	ND	F1	0.020	0.0051
27619-97-2	6:2 FTS	0.0022	J	0.020	0.0020
39108-34-4	8:2 FTS	ND		0.020	0.0020

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF33-GW-01
Lab Sample ID: 320-40571-35
Matrix: Water
Lab File ID: 2018.07.06LLAAA_036.d
Analysis Method: 537 (modified)
Date Collected: 06/19/2018 17:00
Extraction Method: 3535
Date Extracted: 07/02/2018 16:10
Sample wt/vol: 255.2(mL)
Date Analyzed: 07/06/2018 18:09
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 232788
Units: ug/L

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00992	13C4 PFBA	95		25-150
STL01893	13C5 PFPeA	94		25-150
STL00993	13C2 PFHxA	101		25-150
STL01892	13C4-PFHpA	105		25-150
STL00990	13C4 PFOA	103		25-150
STL00995	13C5 PFNA	115		25-150
STL00996	13C2 PFDA	115		25-150
STL00997	13C2 PFUnA	109		25-150
STL00998	13C2 PFDoA	109		25-150
STL02116	13C2-PFTeDA	104		25-150
STL02337	13C3-PFBS	100		25-150
STL00994	18O2 PFHxS	111		25-150
STL00991	13C4 PFOS	111		25-150
STL01056	13C8 FOSA	94		25-150
STL02118	d3-NMeFOSAA	115		25-150
STL02117	d5-NEtFOSAA	115		25-150
STL02279	M2-6:2FTS	136		25-150
STL02280	M2-8:2FTS	133		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180706-60751.b\2018.07.06LLAAA_036.d
Lims ID: 320-40571-A-35-A
Client ID: NF33-GW-01
Sample Type: Client
Inject. Date: 06-Jul-2018 18:09:28 ALS Bottle#: 26 Worklist Smp#: 6
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-40571-a-35-a
Misc. Info.: Plate: 1 Rack: 5
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180706-60751.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 17-Jul-2018 08:56:21 Calib Date: 05-Jul-2018 09:38:17
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180705-60684.b\2018.07.05LLICALAA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK028

First Level Reviewer: westendorfc Date: 17-Jul-2018 08:56:21

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.425	1.424	0.001	0.537	6351785	2.38		95.1	25355	
2 Perfluorobutyric acid										
212.90 > 169.00	1.425	1.433	-0.008	1.000	923572	0.3559			239	
D 3 13C5-PFPeA										
267.90 > 223.00	1.702	1.702	0.0	0.642	4638505	2.35		93.8	41525	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.711	1.707	0.004	1.005	541805	0.2452			286	
D 47 13C3-PFBS										
301.90 > 83.00	1.738	1.738	0.0	0.655	109825	2.32		99.9	519	
5 Perfluorobutanesulfonic acid										M
298.90 > 80.00	1.747	1.752	-0.005	1.005	153131	0.0428			191	
298.90 > 99.00	1.747	1.752	-0.005	1.005	64866		2.36(1.25-3.74)		215	M
D 60 M2-4:2FTS										
329.00 > 81.00	1.927	1.948	-0.021	0.726	7794	0.0256		0.0	16.9	
D 7 13C2 PFHxA										
315.00 > 270.00	1.992	1.981	0.011	0.751	5350703	2.53		101	52013	
6 Perfluorohexanoic acid										M
313.00 > 269.00	1.992	1.988	0.004	1.000	118746	0.0545			108	M
313.00 > 119.00	1.981	1.988	-0.007	0.994	9643		12.31(5.03-15.10)		137	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.083	2.070	0.013	0.785	468818	2.70		108	1131	
D 9 13C4-PFHpA										
367.00 > 322.00	2.307	2.293	0.014	0.870	4919578	2.62		105	34758	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.307	2.302	0.005	1.000	83161	0.0374			75.8	
363.00 > 169.00	2.307	2.302	0.005	1.000	33439		2.49(1.13-3.40)		198	
D 11 18O2 PFHxS										
403.00 > 84.00	2.320	2.306	0.014	0.874	6074844	2.63		111	48948	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.320	2.315	0.005	1.000	35354	0.0119			38.7	
399.00 > 99.00	2.320	2.315	0.005	1.000	10923		3.24(1.50-4.49)		30.3	
D 12 M2-6:2FTS										
429.00 > 81.00	2.629	2.627	0.002	0.991	1363597	3.23		136	5275	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.629	2.634	-0.005	1.000	50860	0.0565			207	
D 14 13C4 PFOA										
417.00 > 372.00	2.653	2.652	0.001	1.000	4754331	2.58		103	52937	
* 62 13C2-PFOA										
415.00 > 370.00	2.653	2.658	-0.005		4825229	2.50			34060	
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.660	2.658	0.002	1.003	44344	0.0197			17.6	M
413.00 > 169.00	2.653	2.658	-0.005	1.000	29012		1.53(0.84-2.52)		105	M
D 19 13C5 PFNA										
468.00 > 423.00	3.022	3.009	0.013	1.139	4506960	2.88		115	55356	
D 18 13C4 PFOS										
503.00 > 80.00	3.015	3.009	0.006	1.137	4377925	2.65		111	25650	
17 Perfluorooctane sulfonic acid										M
499.00 > 80.00	2.903	3.022	-0.119	0.963	52556	0.0246			91.5	
499.00 > 99.00	3.015	3.022	-0.007	1.000	9517		5.52(2.31-6.93)		46.6	M
20 Perfluorononanoic acid										
463.00 > 419.00	3.022	3.022	0.0	1.000	37983	0.0196			53.0	
463.00 > 169.00	3.015	3.022	-0.007	0.998	8959		4.24(1.90-5.69)		160	
D 21 13C8 FOSA										
506.00 > 78.00	3.367	3.359	0.008	1.269	5398842	2.36		94.3	48023	
D 26 M2-8:2FTS										
529.00 > 81.00	3.367	3.359	0.008	1.269	1500007	3.20		133	12452	
D 23 13C2 PFDA										
515.00 > 470.00	3.376	3.368	0.008	1.273	3894612	2.89		115	38910	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.526	3.518	0.008	1.329	2276629	2.86		115	29865	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.684	3.685	-0.001	1.389	2248851	2.86		115	21175	
D 30 13C2 PFUnA										
565.00 > 520.00	3.694	3.696	-0.002	1.393	3096010	2.73		109	40622	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.694	3.705	-0.011	1.000	20760	0.0197			96.9	
563.00 > 169.00	3.694	3.705	-0.011	1.000	6196		3.35(2.12-6.36)		365	
D 36 13C2 PFDoA										
615.00 > 570.00	3.985	3.986	-0.001	1.502	3323129	2.74		109	23563	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.489	4.479	0.010	1.692	3851937	2.60		104	19272	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.895	4.896	-0.001	1.845	6412223	2.34		93.6	15046	

QC Flag Legend

Review Flags

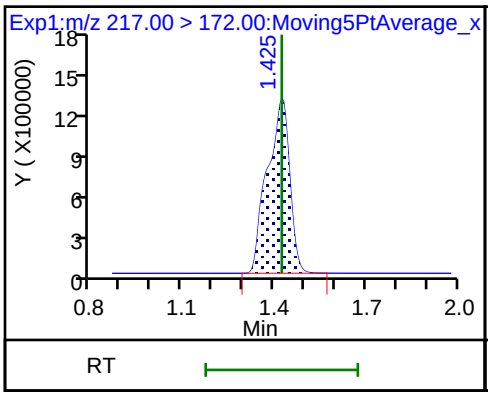
M - Manually Integrated

Report Date: 17-Jul-2018 08:56:21 Chrom Revision: 2.3 16-Jul-2018 18:07:38

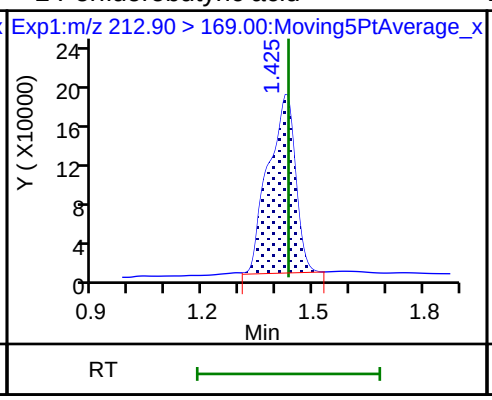
TestAmerica Sacramento

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180706-60751.b\2018.07.06LLAAA_036.d				
Injection Date:	06-Jul-2018 18:09:28	Instrument ID:	A8_N		
Lims ID:	320-40571-A-35-A	Lab Sample ID:	320-40571-35		
Client ID:	NF33-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	26	Worklist Smp#:	6
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		

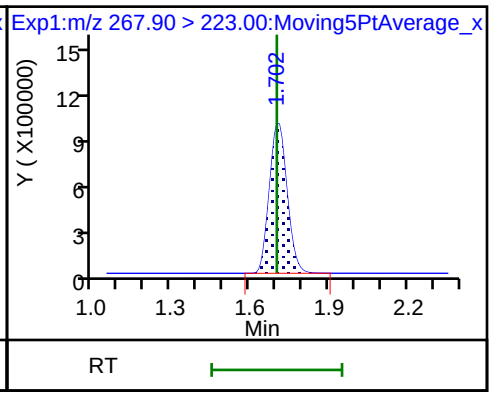
D 1 13C4 PFBA



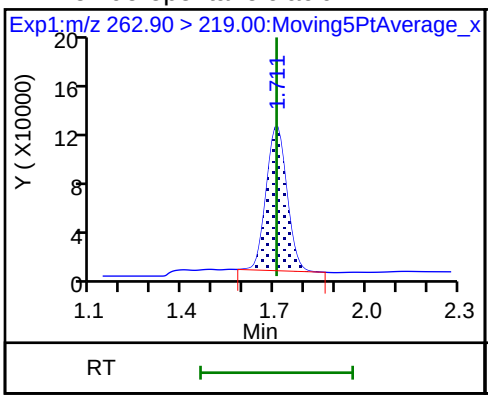
2 Perfluorobutyric acid



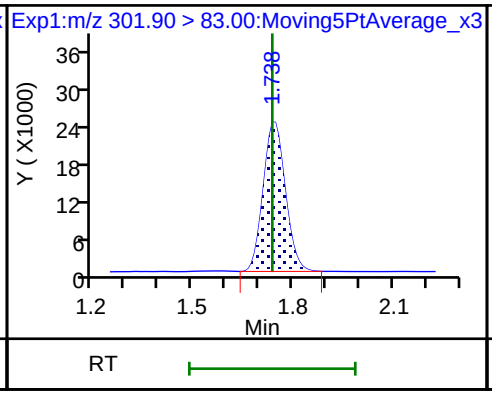
D 3 13C5-PFPeA



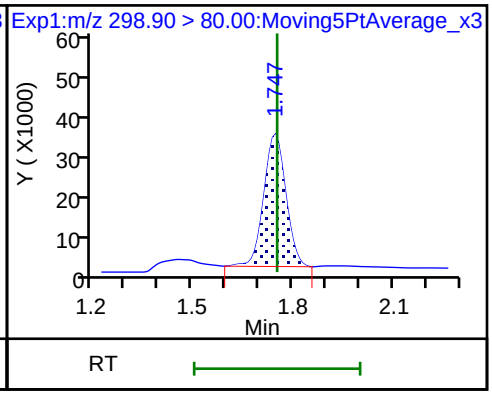
4 Perfluoropentanoic acid



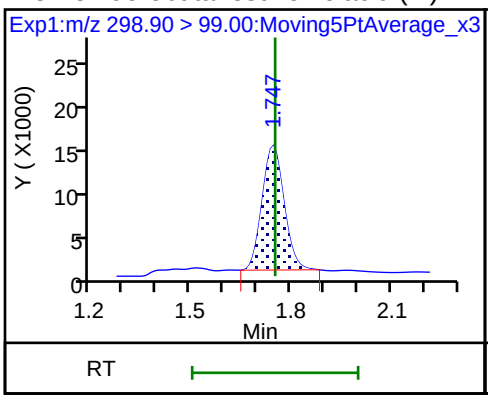
D 47 13C3-PFBS



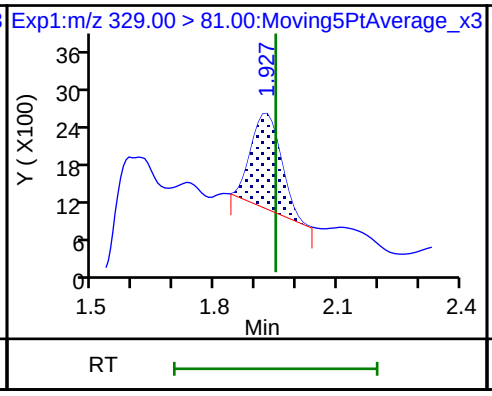
5 Perfluorobutanesulfonic acid



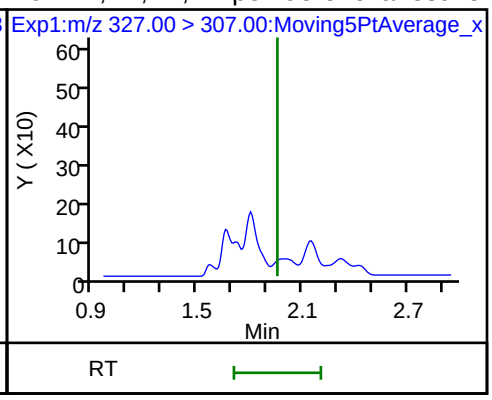
5 Perfluorobutanesulfonic acid (M)



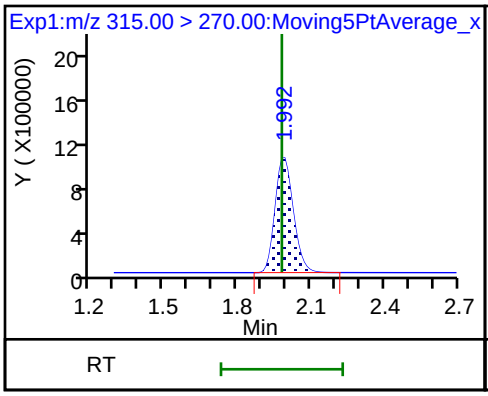
D 60 M2-4:2FTS



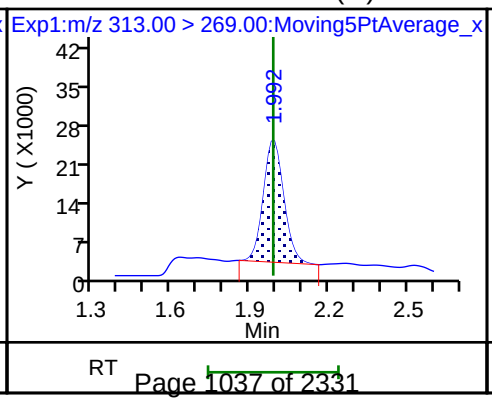
61 1H,1H,2H,2H-perfluorohexanesulfoni (ND)



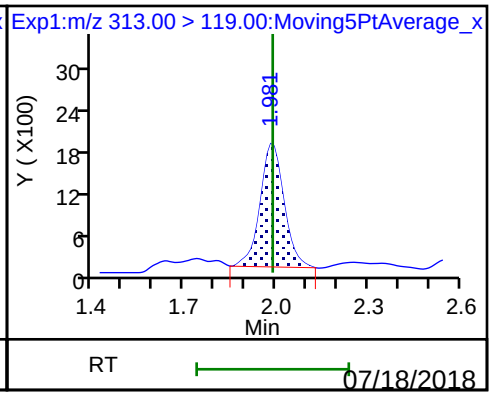
D 7 13C2 PFHxA



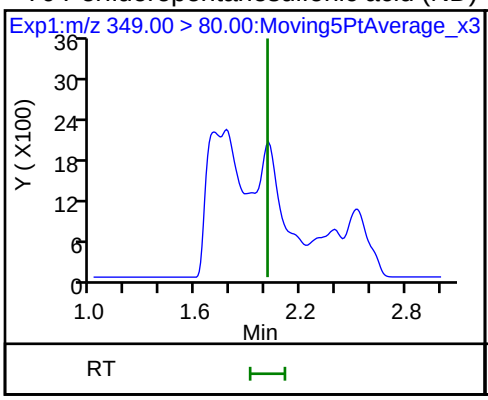
6 Perfluorohexanoic acid (M)



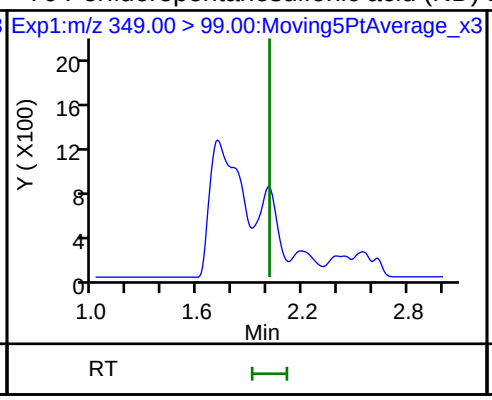
6 Perfluorohexanoic acid



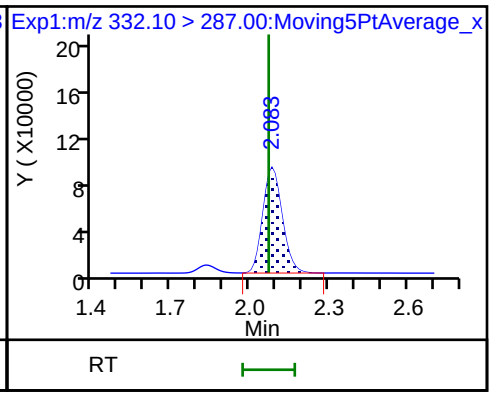
70 Perfluoropentanesulfonic acid (ND)



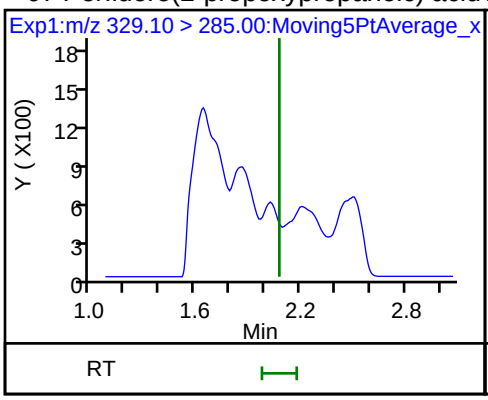
70 Perfluoropentanesulfonic acid (ND)



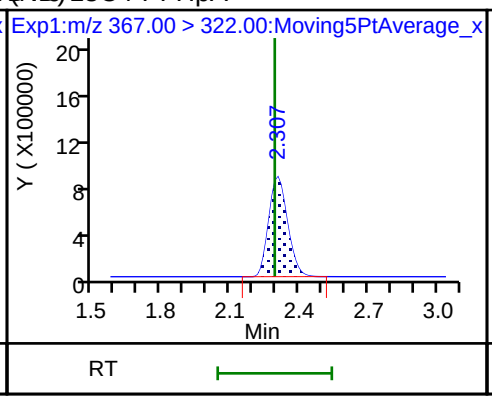
D 64 13C3 HFPO-DA



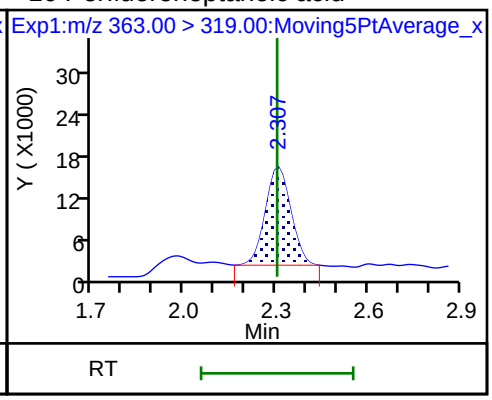
67 Perfluoro(2-propoxypropanoic) acid (ND)



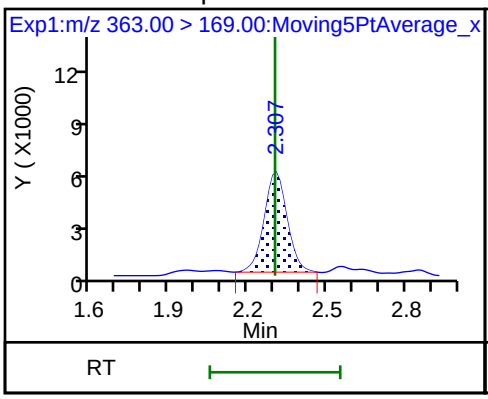
D 9 13C4-PFHpA



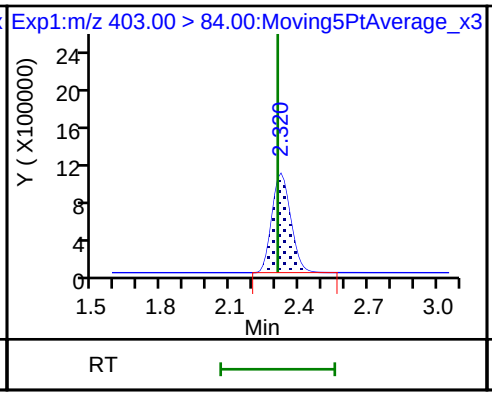
10 Perfluoroheptanoic acid



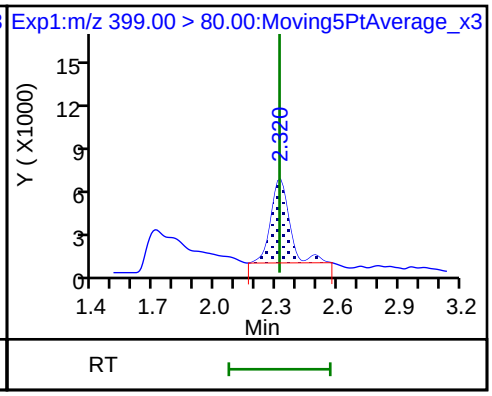
10 Perfluoroheptanoic acid



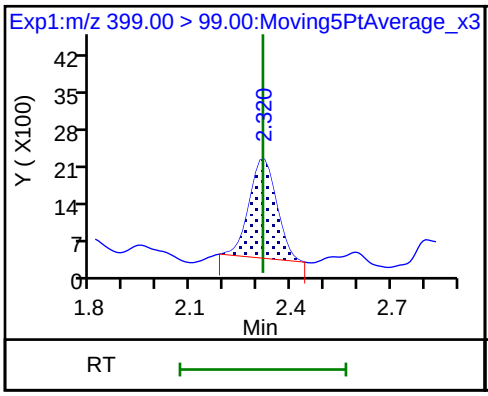
D 11 18O2 PFHxS



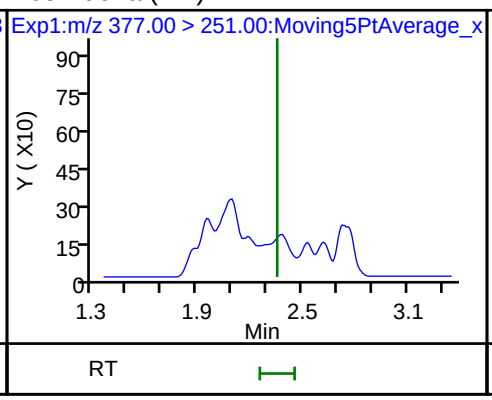
8 Perfluorohexanesulfonic acid



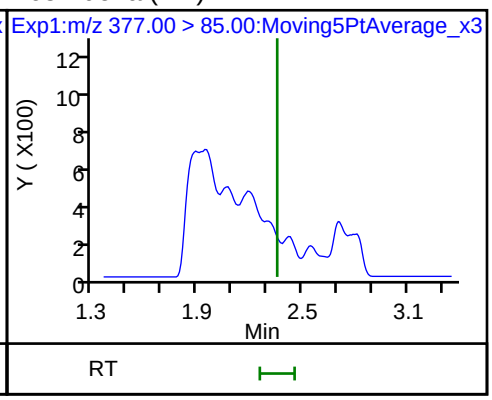
8 Perfluorohexanesulfonic acid



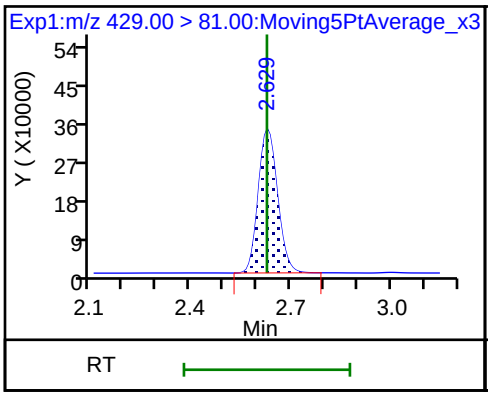
65 Adona (ND)



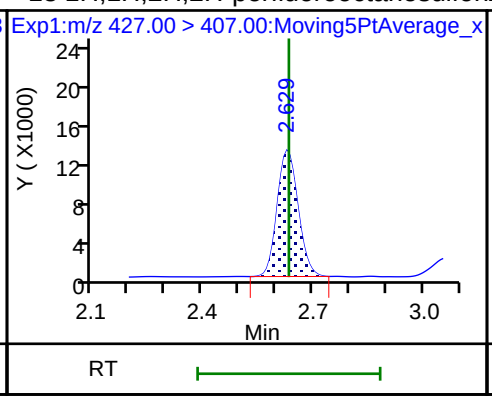
65 Adona (ND)



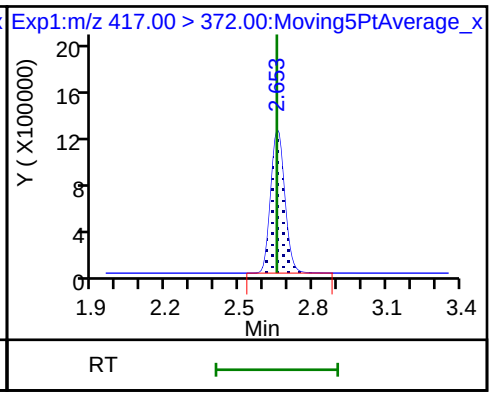
D 12 M2-6:2FTS



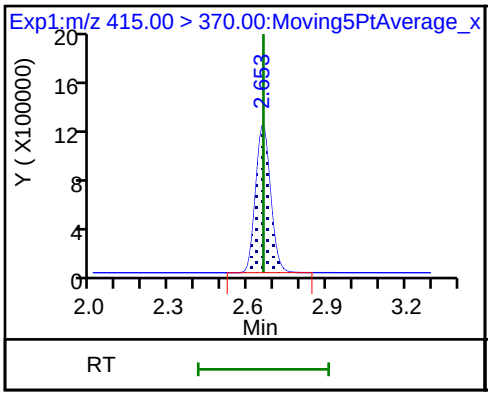
13 1H,1H,2H,2H-perfluorooctanesulfon



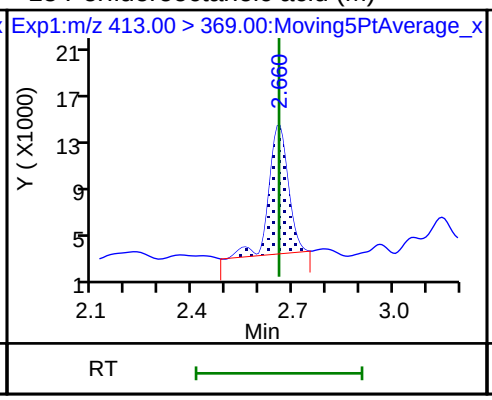
D 14 13C4 PFOA



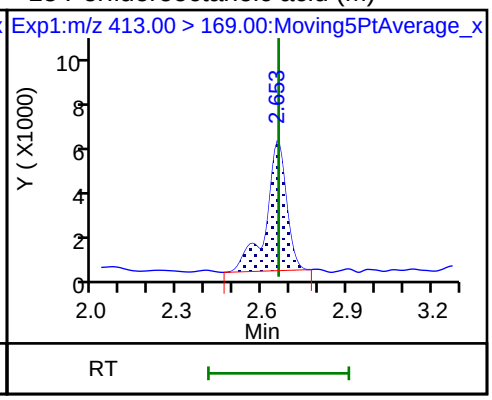
* 62 13C2-PFOA



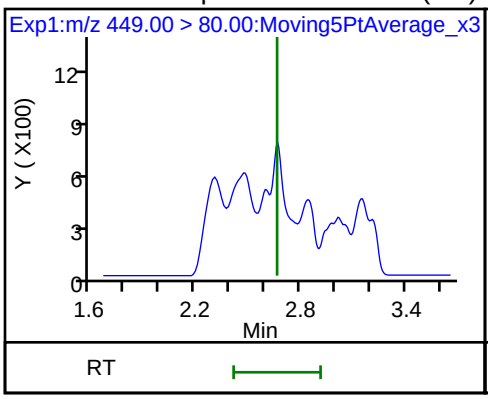
15 Perfluorooctanoic acid (M)



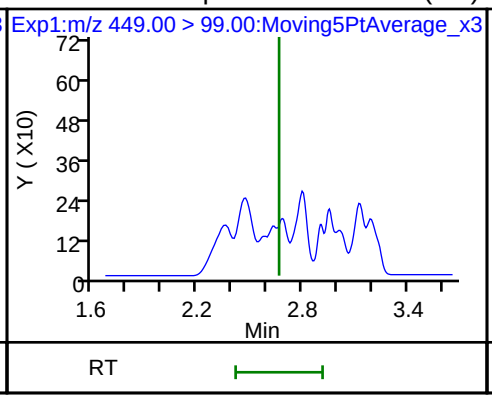
15 Perfluorooctanoic acid (M)



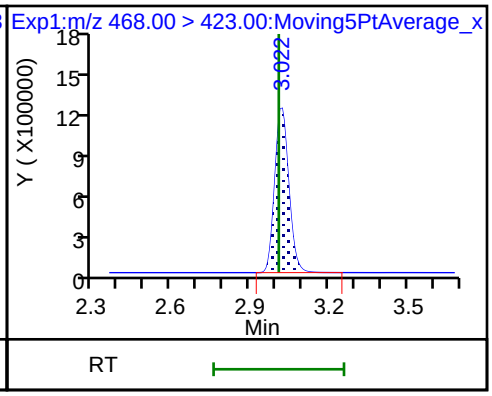
16 Perfluoroheptanesulfonic acid (ND)



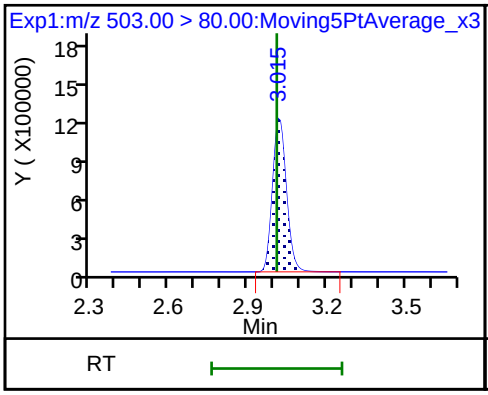
16 Perfluoroheptanesulfonic acid (ND)



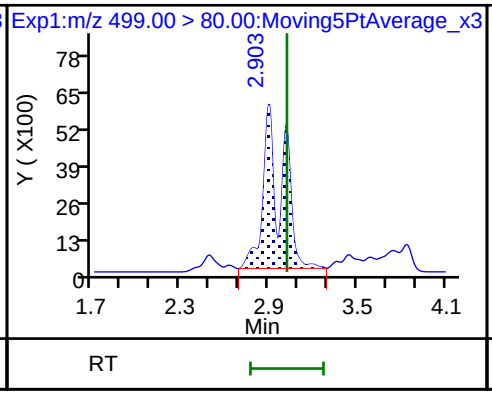
D 19 13C5 PFNA



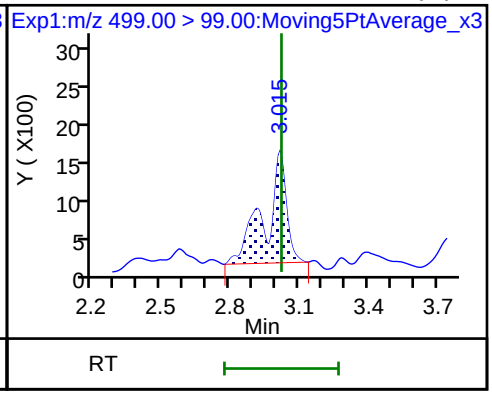
D 18 13C4 PFOS



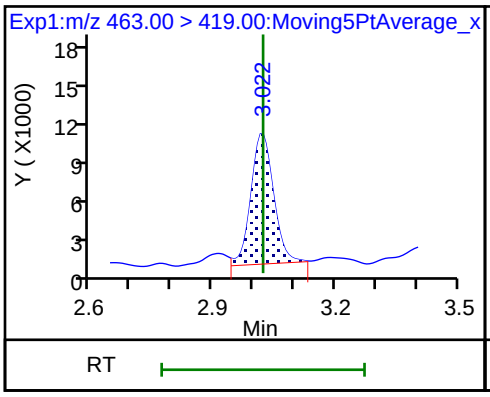
17 Perfluorooctane sulfonic acid



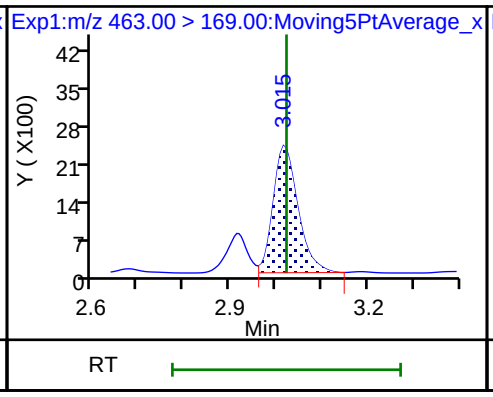
17 Perfluorooctane sulfonic acid (M)



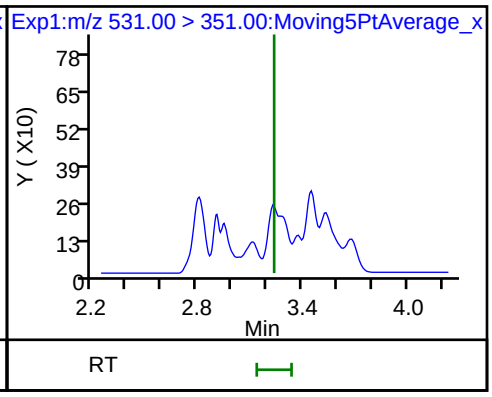
20 Perfluorononanoic acid



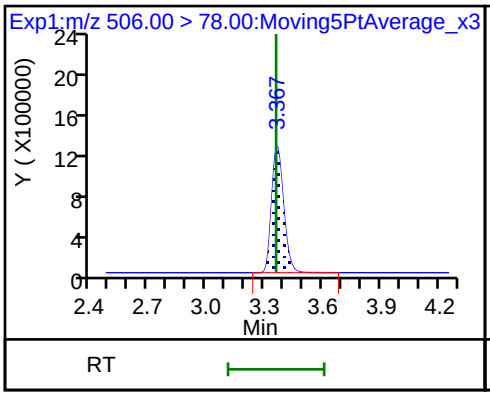
20 Perfluorononanoic acid



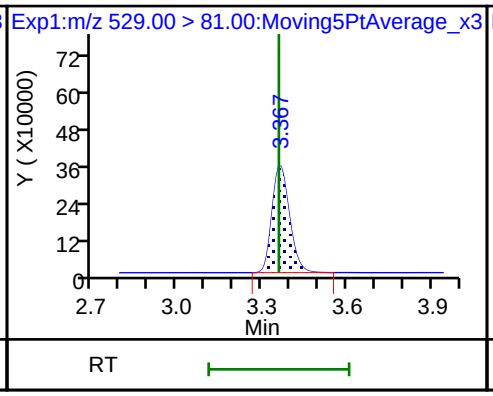
69 9-Chlorohexadecafluoro-3-oxanonane (ND)



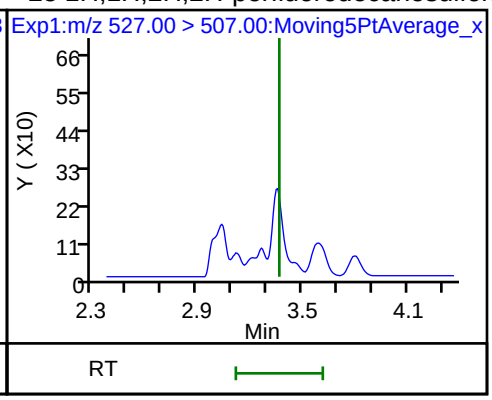
D 21 13C8 FOSA



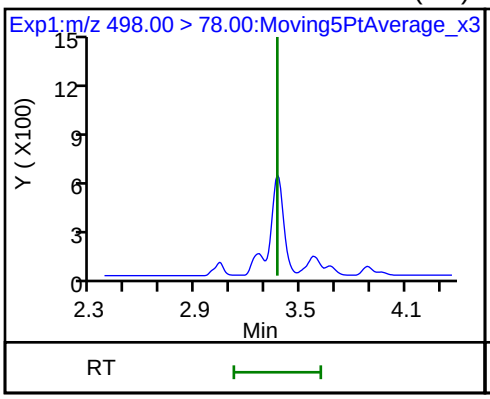
D 26 M2-8:2FTS



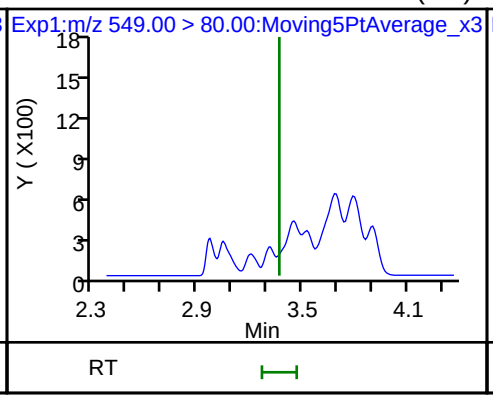
25 1H,1H,2H,2H-perfluorodecanesulfoni (ND)



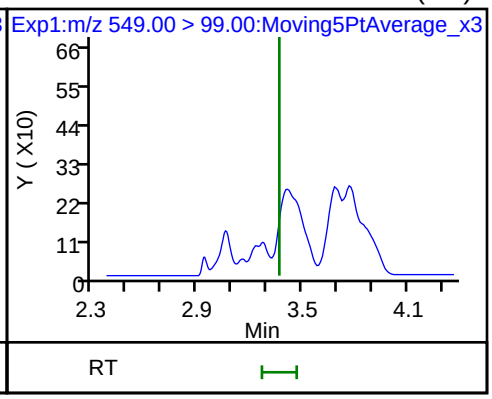
22 Perfluorooctane Sulfonamide (ND)



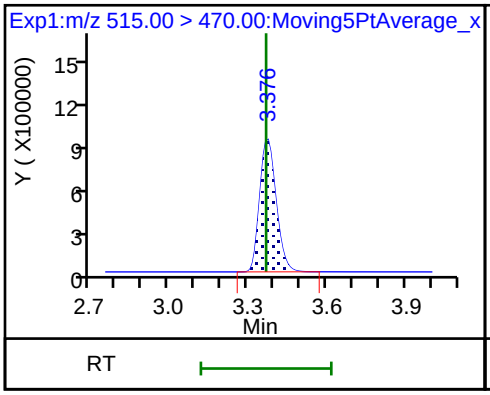
68 Perfluorononanesulfonic acid (ND)



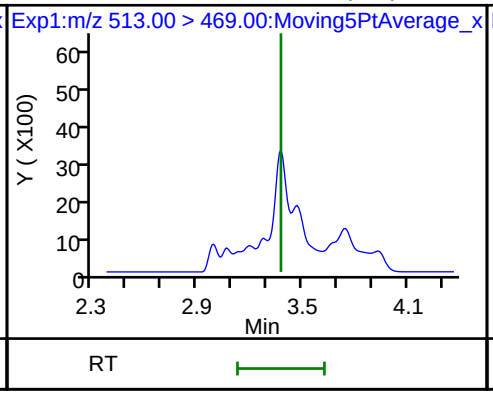
68 Perfluorononanesulfonic acid (ND)



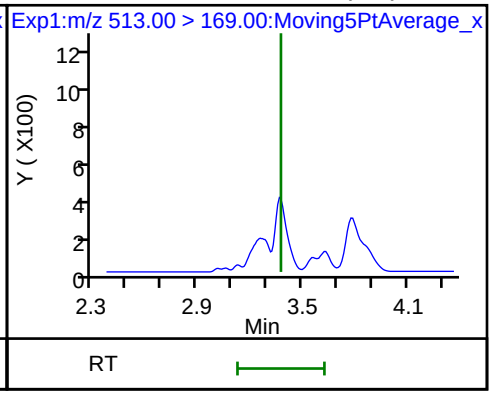
D 23 13C2 PFDA



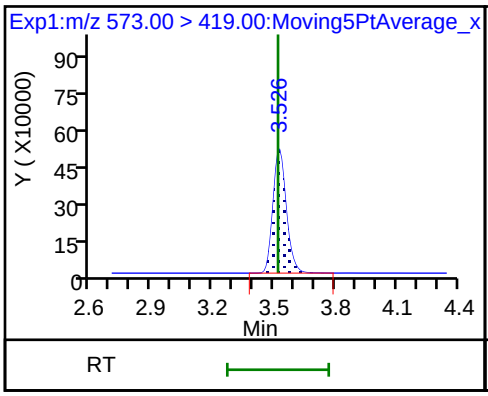
24 Perfluorodecanoic acid (ND)



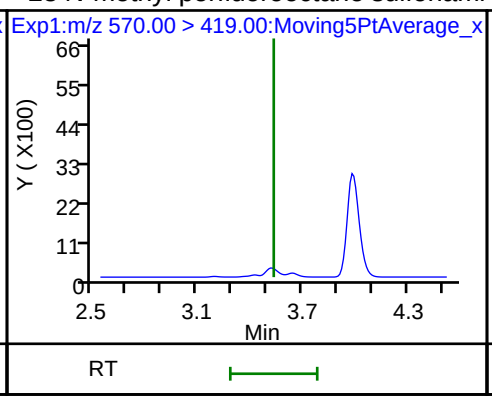
24 Perfluorodecanoic acid (ND)



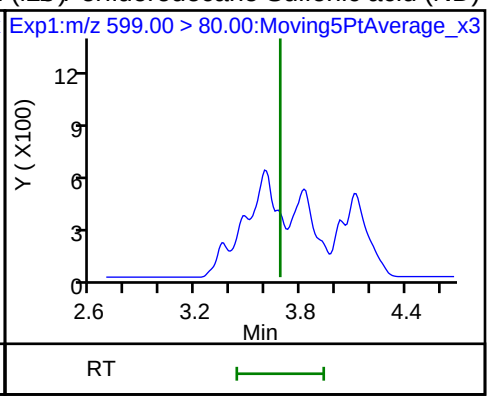
D 27 d3-NMeFOSAA



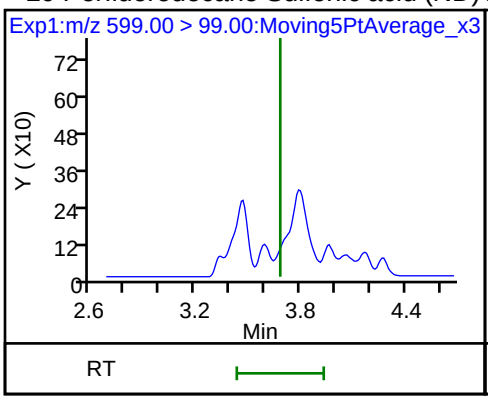
28 N-methyl perfluorooctane sulfonami (ND)



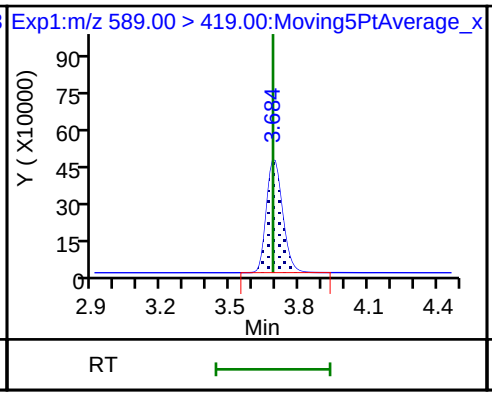
29 Perfluorodecane Sulfonic acid (ND)



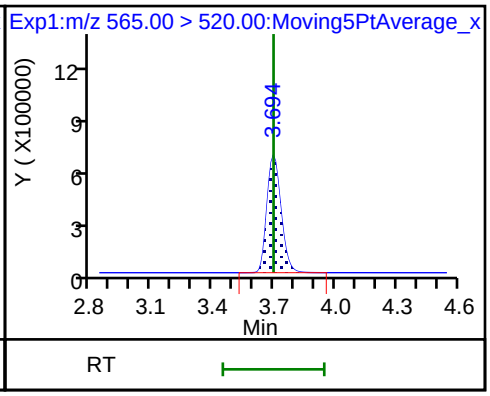
29 Perfluorodecane Sulfonic acid (ND)



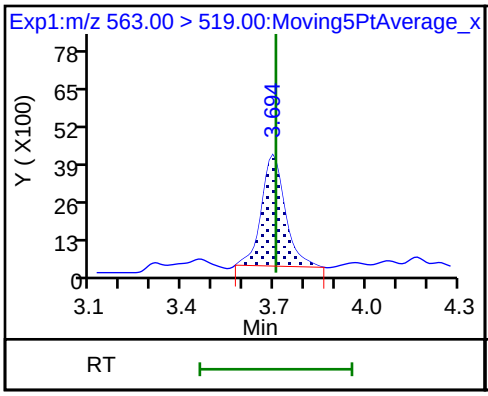
D 32 d5-NEtFOSAA



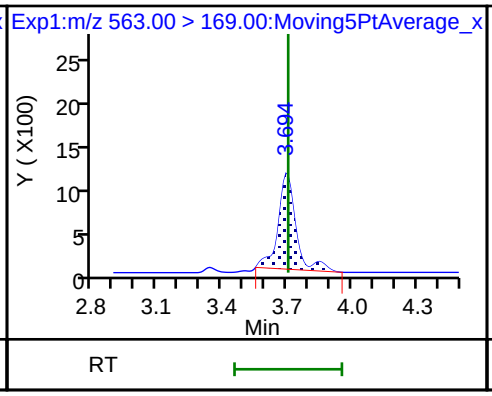
D 30 13C2 PFUnA



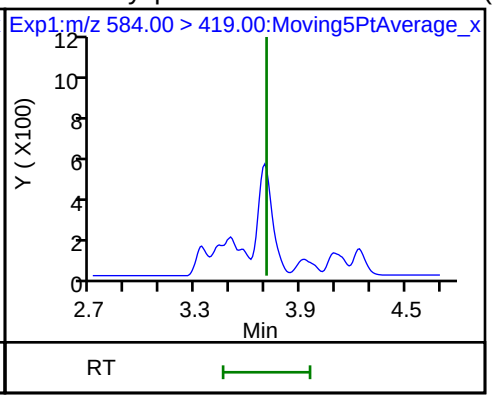
31 Perfluoroundecanoic acid



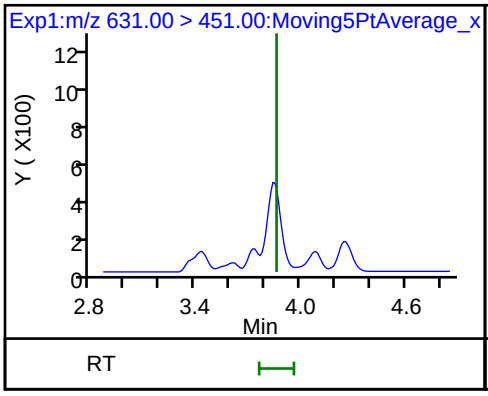
31 Perfluoroundecanoic acid



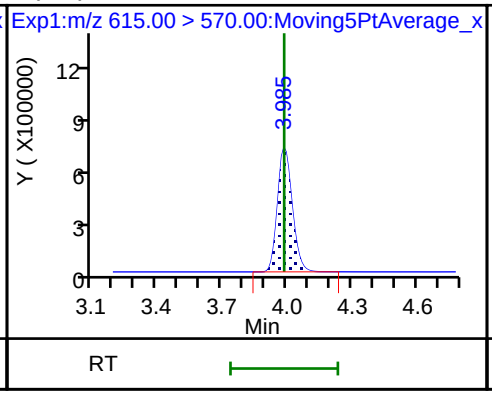
33 N-ethyl perfluorooctane sulfonamid (ND)



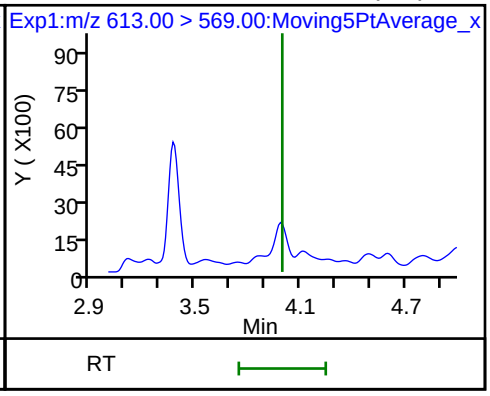
66 11-Chloroeicosafluoro-3-oxaundecan (ND)



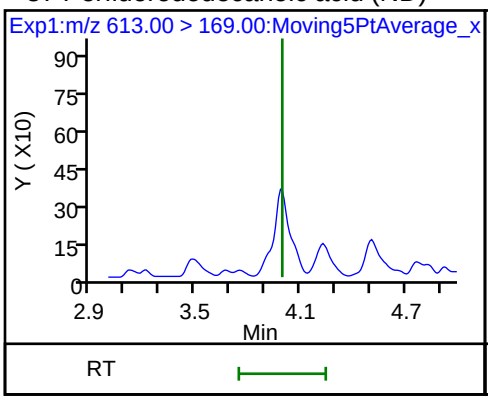
D 36 13C2 PFDoA



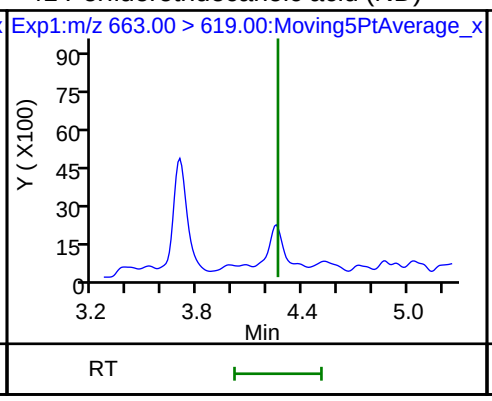
37 Perfluorododecanoic acid (ND)



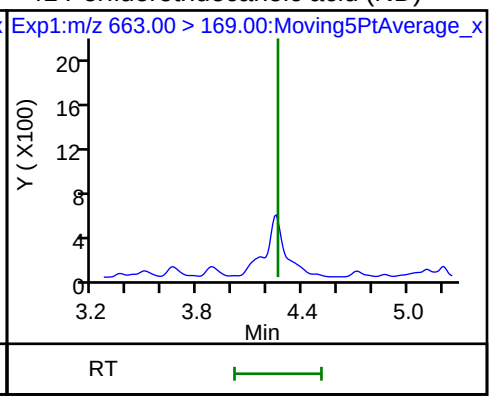
37 Perfluorododecanoic acid (ND)



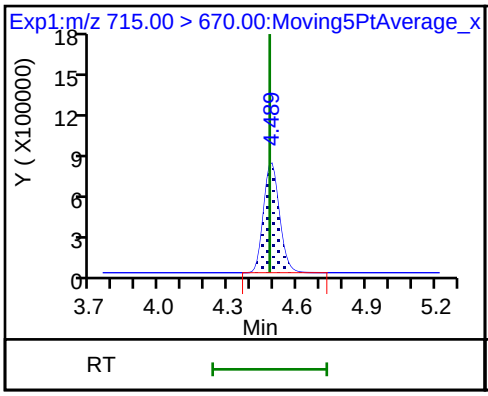
41 Perfluorotridecanoic acid (ND)



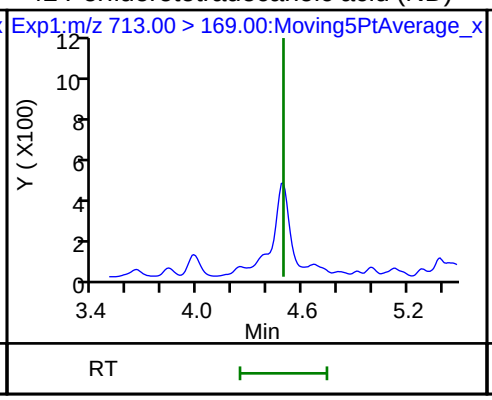
41 Perfluorotridecanoic acid (ND)



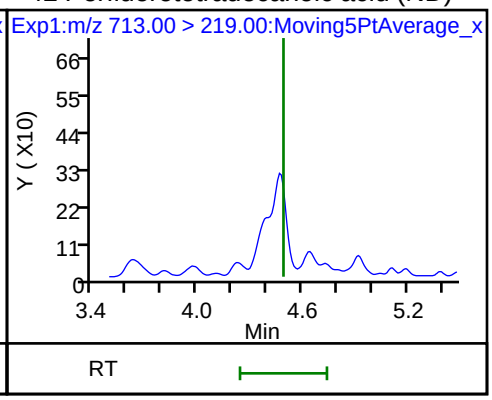
D 43 13C2-PFTeDA



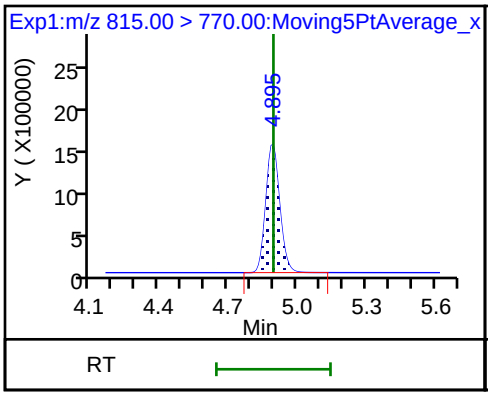
42 Perfluorotetradecanoic acid (ND)



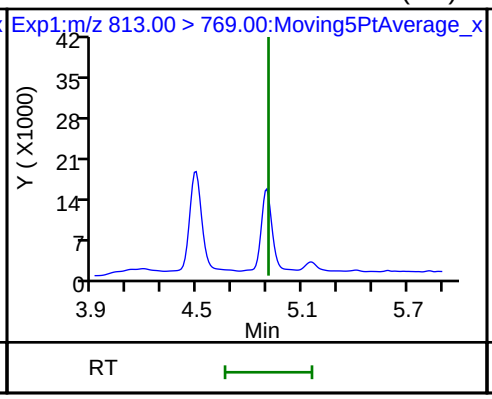
42 Perfluorotetradecanoic acid (ND)



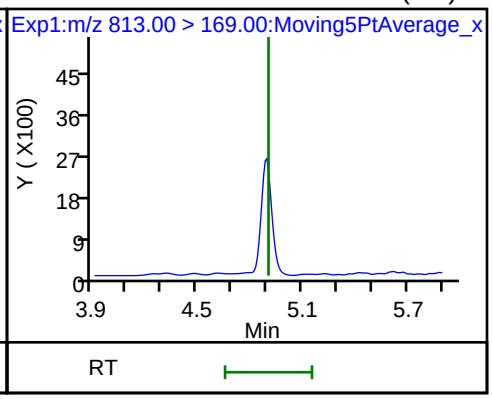
D 44 13C2-PFHxDA



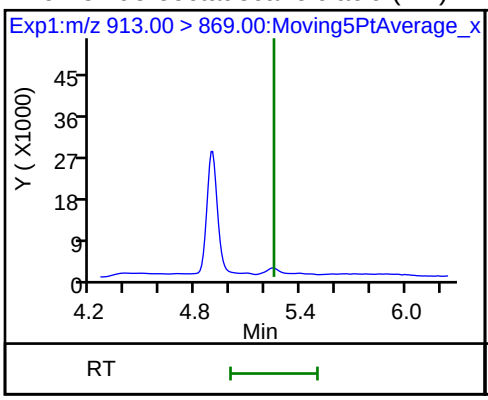
45 Perfluorohexadecanoic acid (ND)



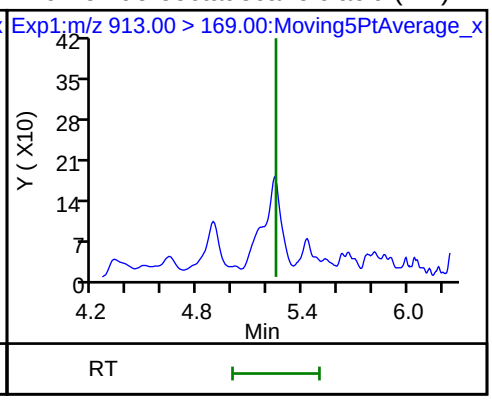
45 Perfluorohexadecanoic acid (ND)



46 Perfluorooctadecanoic acid (ND)



46 Perfluorooctadecanoic acid (ND)



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

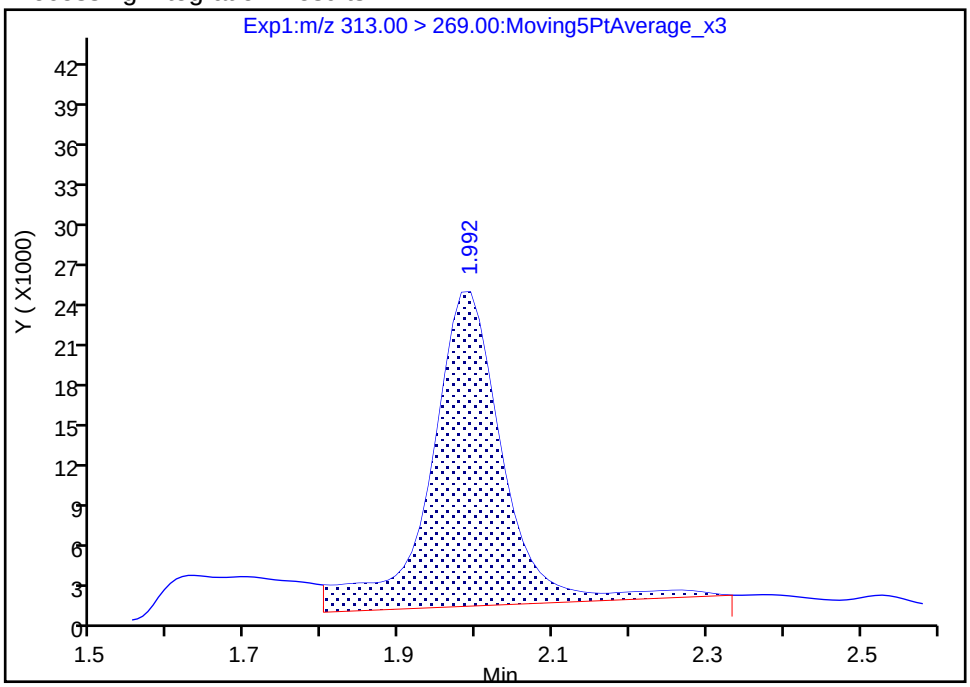
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180706-60751.b\2018.07.06LLAAA_036.d				
Injection Date:	06-Jul-2018 18:09:28	Instrument ID:	A8_N		
Lims ID:	320-40571-A-35-A	Lab Sample ID:	320-40571-35		
Client ID:	NF33-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	26	Worklist Smp#:	6
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

6 Perfluorohexanoic acid, CAS: 307-24-4

Signal: 1

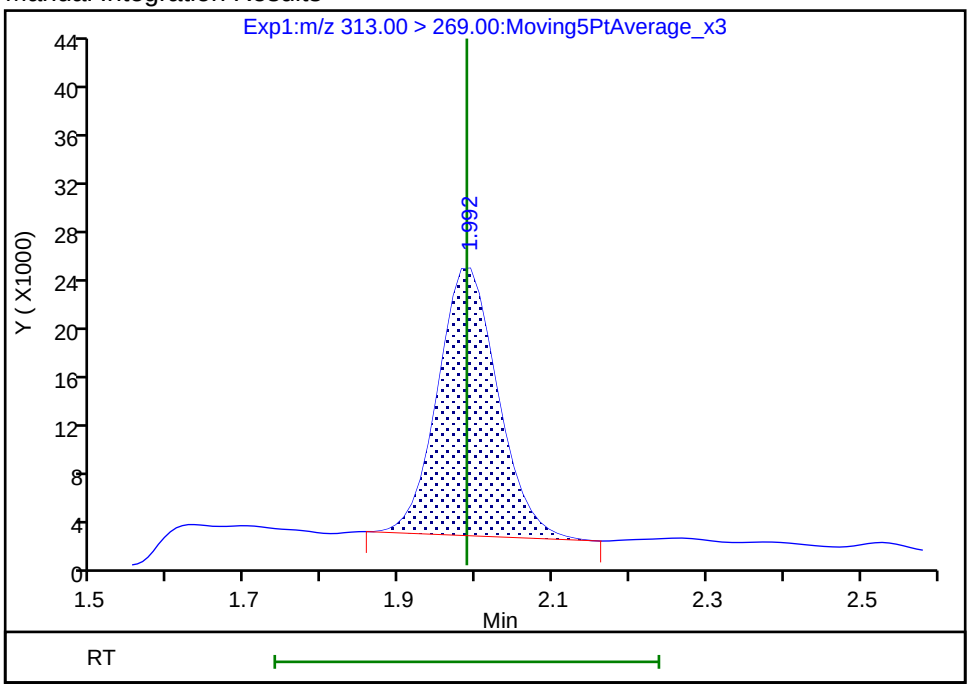
Processing Integration Results

RT: 1.99
Area: 153056
Amount: 0.070230
Amount Units: ng/ml



Manual Integration Results

RT: 1.99
Area: 118746
Amount: 0.054487
Amount Units: ng/ml



Reviewer: mongkols, 09-Jul-2018 10:15:34
Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

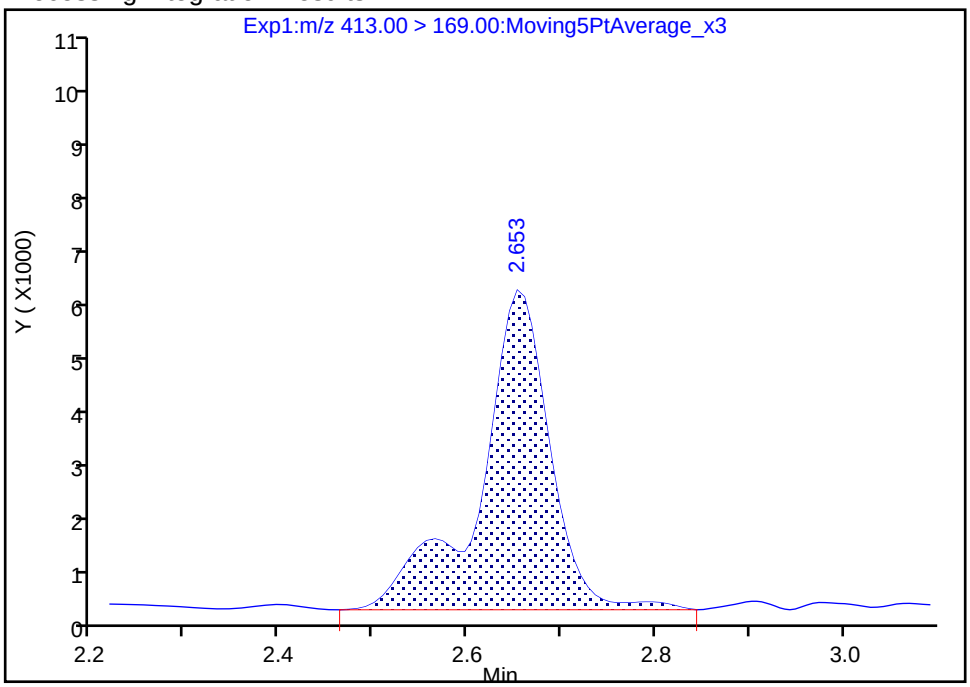
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180706-60751.b\2018.07.06LLAAA_036.d				
Injection Date:	06-Jul-2018 18:09:28	Instrument ID:	A8_N		
Lims ID:	320-40571-A-35-A	Lab Sample ID:	320-40571-35		
Client ID:	NF33-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	26	Worklist Smp#:	6
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 2

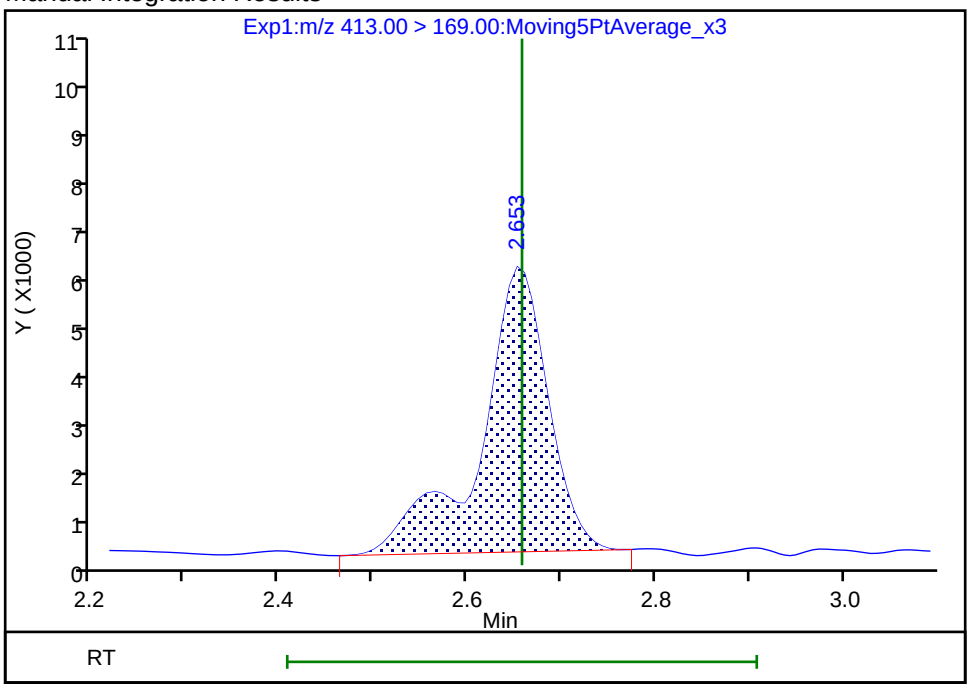
Processing Integration Results

RT: 2.65
Area: 30561
Amount: 0.021568
Amount Units: ng/ml



Manual Integration Results

RT: 2.65
Area: 29012
Amount: 0.019664
Amount Units: ng/ml



Reviewer: mongkols, 09-Jul-2018 10:16:00

Audit Action: Manually Integrated Audit Reason: Isomers

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

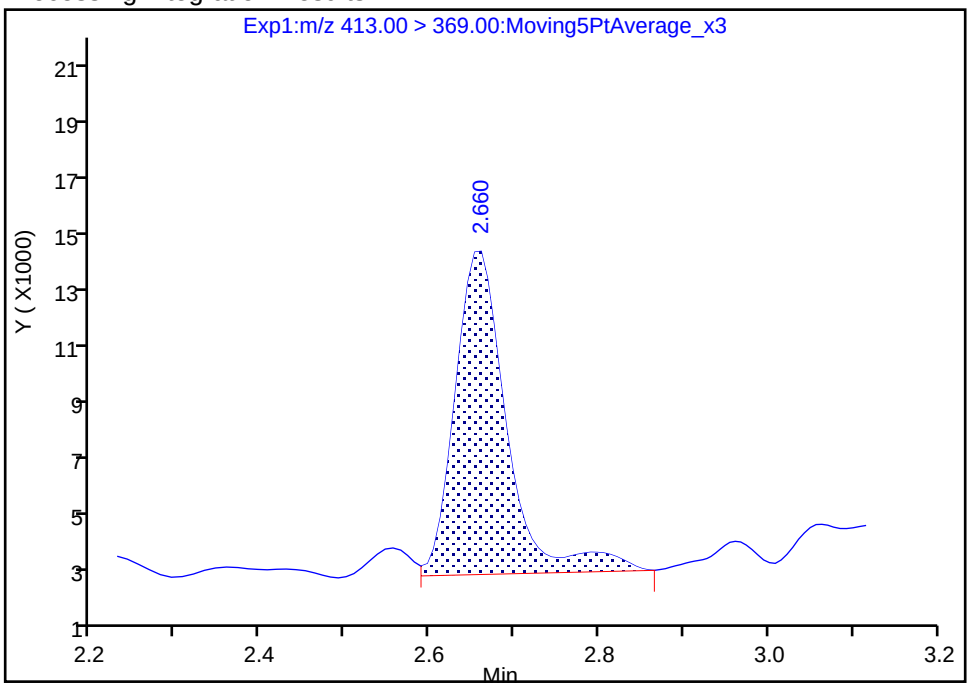
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180706-60751.b\2018.07.06LLAAA_036.d				
Injection Date:	06-Jul-2018 18:09:28	Instrument ID:	A8_N		
Lims ID:	320-40571-A-35-A	Lab Sample ID:	320-40571-35		
Client ID:	NF33-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	26	Worklist Smp#:	6
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

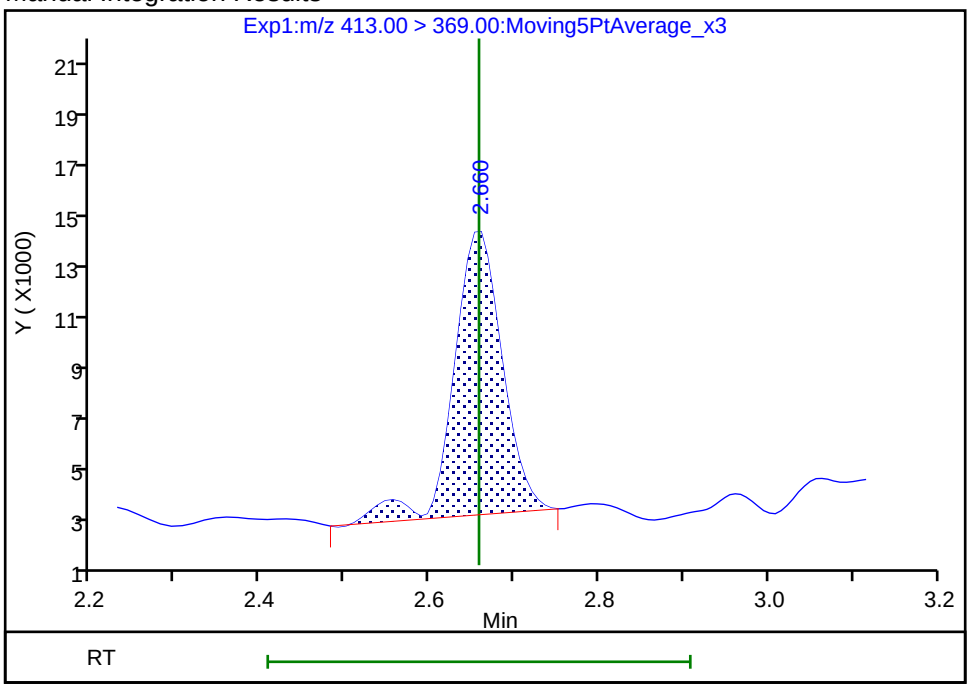
Processing Integration Results

RT: 2.66
Area: 48636
Amount: 0.021568
Amount Units: ng/ml



Manual Integration Results

RT: 2.66
Area: 44344
Amount: 0.019664
Amount Units: ng/ml



Reviewer: westendorfc, 17-Jul-2018 08:56:15

Audit Action: Manually Integrated Audit Reason: Isomers

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

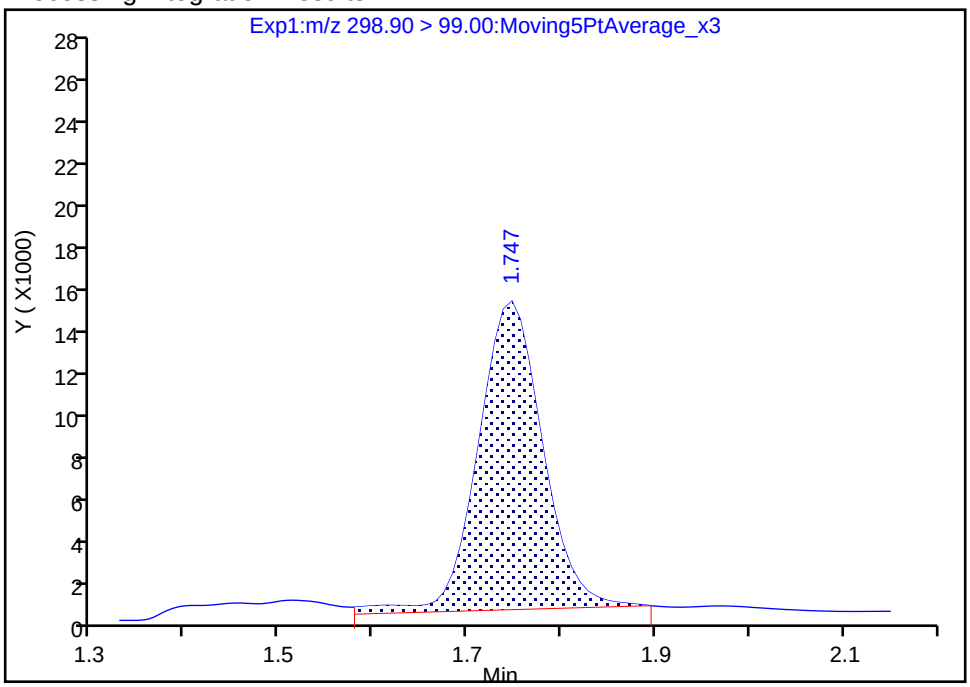
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180706-60751.b\2018.07.06LLAAA_036.d				
Injection Date:	06-Jul-2018 18:09:28	Instrument ID:	A8_N		
Lims ID:	320-40571-A-35-A	Lab Sample ID:	320-40571-35		
Client ID:	NF33-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	26	Worklist Smp#:	6
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

5 Perfluorobutanesulfonic acid, CAS: 375-73-5

Signal: 2

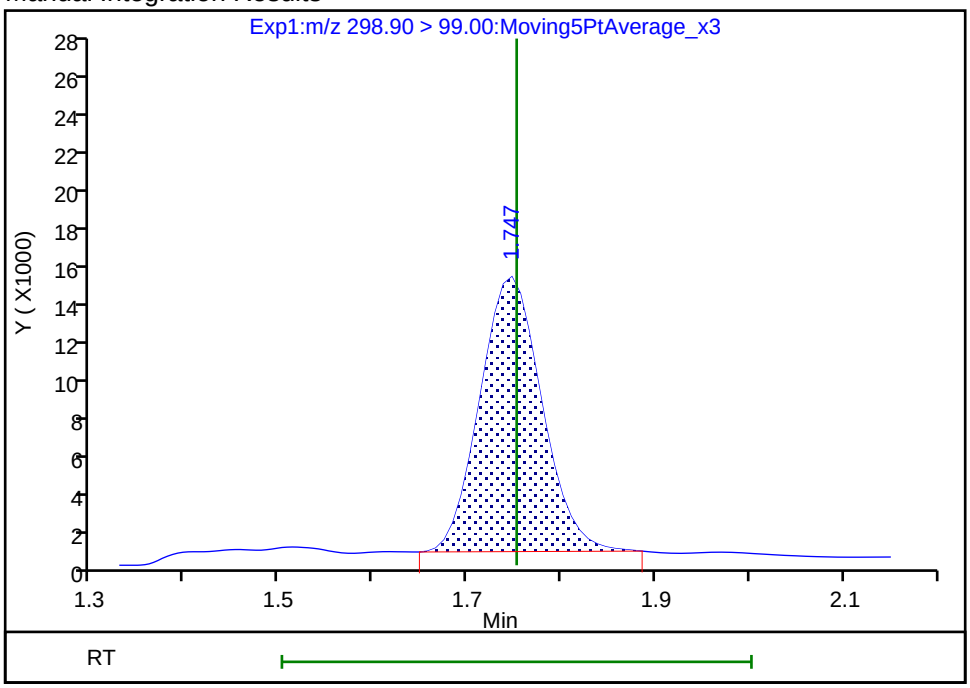
Processing Integration Results

RT: 1.75
Area: 68911
Amount: 0.042765
Amount Units: ng/ml



Manual Integration Results

RT: 1.75
Area: 64866
Amount: 0.042765
Amount Units: ng/ml



Reviewer: mongkols, 09-Jul-2018 10:15:27
Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

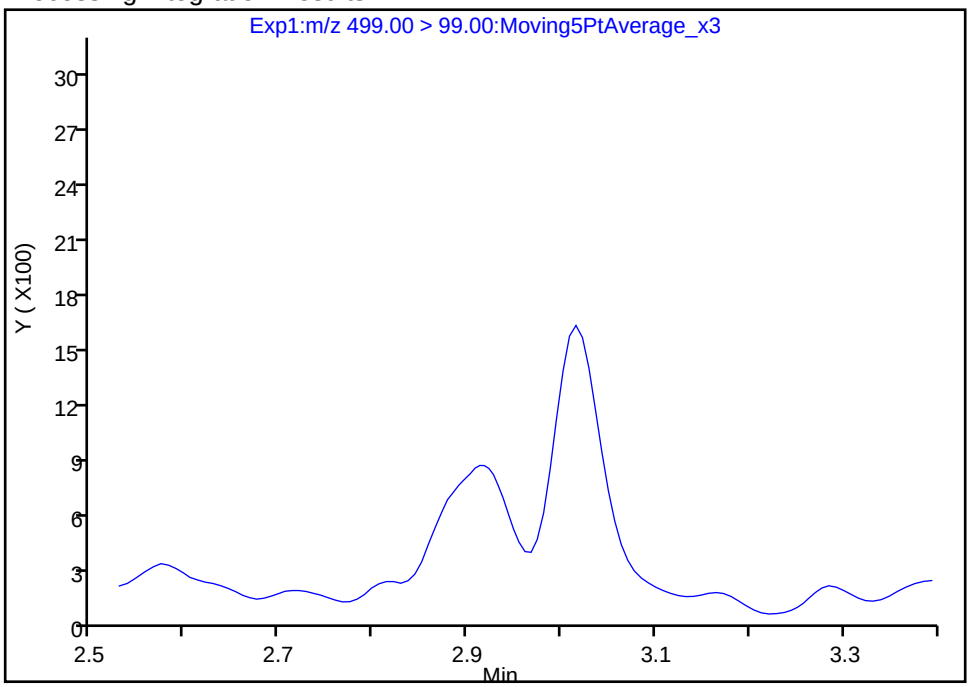
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180706-60751.b\2018.07.06LLAAA_036.d				
Injection Date:	06-Jul-2018 18:09:28	Instrument ID:	A8_N		
Lims ID:	320-40571-A-35-A	Lab Sample ID:	320-40571-35		
Client ID:	NF33-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	26	Worklist Smp#:	6
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

17 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 2

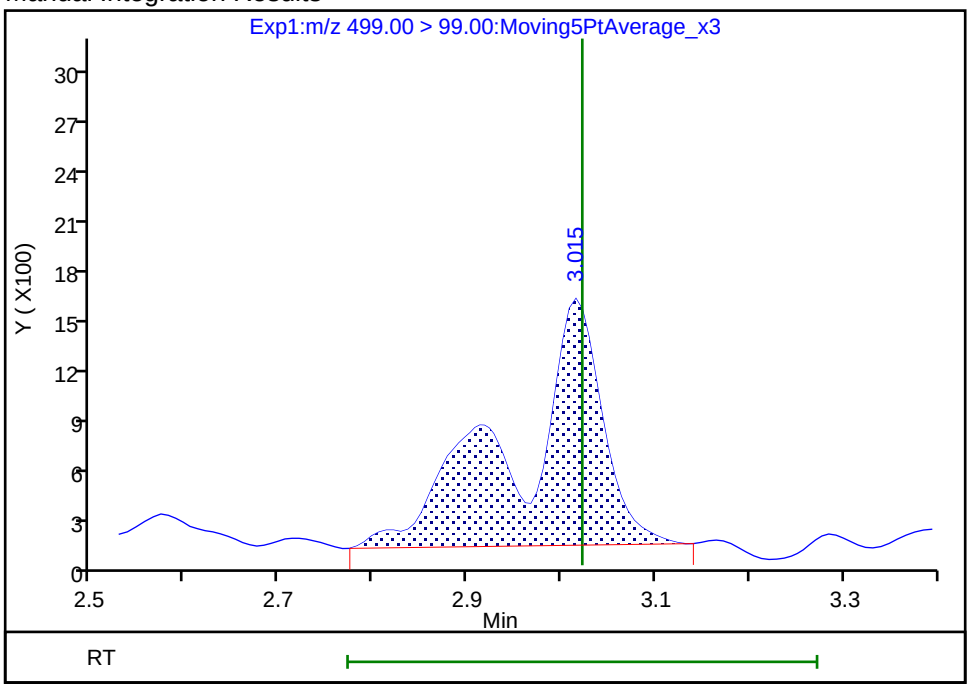
Processing Integration Results

RT: 3.01
Area: 0
Amount: 0.024562
Amount Units: ng/ml



Manual Integration Results

RT: 3.02
Area: 9517
Amount: 0.024562
Amount Units: ng/ml



Reviewer: mongkols, 09-Jul-2018 10:16:11

Audit Action: Manually Integrated Audit Reason: Assign Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF33-SS-01
Lab Sample ID: 320-40571-36
Matrix: Solid
Lab File ID: 2018.07.13LLB_068.d
Analysis Method: 537 (modified)
Date Collected: 06/19/2018 16:10
Extraction Method: SHAKE
Date Extracted: 06/28/2018 05:15
Sample wt/vol: 5.08(g)
Date Analyzed: 07/14/2018 05:38
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture: 12.2
GPC Cleanup:(Y/N) N
Analysis Batch No.: 233997
Units: mg/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	0.00020	J	0.00022	0.000031
2706-90-3	Perfluoropentanoic acid (PFPeA)	ND		0.00022	0.000086
307-24-4	Perfluorohexanoic acid (PFHxA)	ND		0.00022	0.000047
375-85-9	Perfluoroheptanoic acid (PFHpA)	ND		0.00022	0.000032
335-67-1	Perfluorooctanoic acid (PFOA)	ND		0.00022	0.000096
375-95-1	Perfluorononanoic acid (PFNA)	ND		0.00022	0.000040
335-76-2	Perfluorodecanoic acid (PFDA)	ND		0.00022	0.000025
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		0.00022	0.000040
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		0.00022	0.000075
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		0.00022	0.000057
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		0.00022	0.000061
375-73-5	Perfluorobutanesulfonic acid (PFBS)	ND		0.00022	0.000028
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	ND		0.00022	0.000035
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.00022	0.000039
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	ND		0.00056	0.00022
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		0.00022	0.000044
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		0.00022	0.000092
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.0022	0.00044
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.0022	0.00041
27619-97-2	6:2 FTS	ND		0.0022	0.00017
39108-34-4	8:2 FTS	ND		0.0022	0.00028

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF33-SS-01
Lab Sample ID: 320-40571-36
Matrix: Solid
Lab File ID: 2018.07.13LLB_068.d
Analysis Method: 537 (modified)
Date Collected: 06/19/2018 16:10
Extraction Method: SHAKE
Date Extracted: 06/28/2018 05:15
Sample wt/vol: 5.08(g)
Date Analyzed: 07/14/2018 05:38
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture: 12.2
GPC Cleanup:(Y/N) N
Analysis Batch No.: 233997
Units: mg/Kg

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00992	13C4 PFBA	78		25-150
STL01893	13C5 PFPeA	83		25-150
STL00993	13C2 PFHxA	69		25-150
STL01892	13C4-PFHpA	92		25-150
STL00990	13C4 PFOA	92		25-150
STL00995	13C5 PFNA	93		25-150
STL00996	13C2 PFDA	95		25-150
STL00997	13C2 PFUnA	86		25-150
STL00998	13C2 PFDoA	84		25-150
STL02116	13C2-PFTeDA	93		25-150
STL02337	13C3-PFBS	74		25-150
STL00994	18O2 PFHxS	81		25-150
STL00991	13C4 PFOS	72		25-150
STL01056	13C8 FOSA	58		25-150
STL02118	d3-NMeFOSAA	115		25-150
STL02117	d5-NEtFOSAA	103		25-150
STL02279	M2-6:2FTS	149		25-150
STL02280	M2-8:2FTS	140		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\2018.07.13LLB_068.d
Lims ID: 320-40571-A-36-A
Client ID: NF33-SS-01
Sample Type: Client
Inject. Date: 14-Jul-2018 05:38:48 ALS Bottle#: 52 Worklist Smp#: 17
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-40571-a-36-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 16-Jul-2018 14:26:54 Calib Date: 11-Jul-2018 15:38:42
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK023

First Level Reviewer: mongkols Date: 16-Jul-2018 14:26:54

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										M
217.00 > 172.00	1.435	1.441	-0.006	0.540	5067281	1.94		77.6	45899	M
2 Perfluorobutyric acid										M
212.90 > 169.00	1.457	1.445	0.012	1.015	177221	0.0887			13.4	M
D 3 13C5-PFPeA										
267.90 > 223.00	1.710	1.720	-0.010	0.643	3765115	2.07		82.9	36020	
D 47 13C3-PFBS										
301.90 > 83.00	1.755	1.765	-0.010	0.660	78940	1.73		74.4	356	
D 7 13C2 PFHxA										
315.00 > 270.00	1.991	2.003	-0.012	0.749	3397730	1.73		69.3	44800	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.093	2.105	-0.012	0.787	299084	2.14		85.8	4786	
D 9 13C4-PFHpA										
367.00 > 322.00	2.306	2.319	-0.013	0.867	4133263	2.29		91.6	40621	
D 11 18O2 PFHxS										
403.00 > 84.00	2.319	2.332	-0.013	0.872	4879299	1.91		80.7	62520	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.635	2.643	-0.008	1.000	12624	0.0140			42.5	
D 12 M2-6:2FTS										
429.00 > 81.00	2.635	2.644	-0.009	0.991	1373348	3.55		149	4690	
* 62 13C2-PFOA										
415.00 > 370.00	2.659	2.666	-0.007		4816811	2.50			44627	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.667	2.666	0.001	1.003	24629	0.0118			7.0	
413.00 > 169.00	2.667	2.666	0.001	1.003	21141		1.16(0.84-2.52)		88.3	
D 14 13C4 PFOA										
417.00 > 372.00	2.659	2.667	-0.008	1.000	4239316	2.30		92.1	60279	
D 18 13C4 PFOS										
503.00 > 80.00	3.021	3.027	-0.006	1.136	3232911	1.72		72.1	15768	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 19 13C5 PFNA										
468.00 > 423.00	3.021	3.034	-0.013	1.136	3823836	2.32		92.9	42911	
D 21 13C8 FOSA										
506.00 > 78.00	3.365	3.379	-0.014	1.265	3921347	1.45		58.0	30350	
D 26 M2-8:2FTS										
529.00 > 81.00	3.365	3.379	-0.014	1.265	1893695	3.34		140	6253	
D 23 13C2 PFDA										
515.00 > 470.00	3.374	3.389	-0.015	1.269	3451494	2.39		95.5	65917	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.524	3.538	-0.014	1.325	1699625	2.87		115	28964	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.690	3.708	-0.018	1.388	1555496	2.56		103	5748	
D 30 13C2 PFUnA										
565.00 > 520.00	3.700	3.708	-0.008	1.392	2593490	2.15		85.9	36315	
D 36 13C2 PFDoA										
615.00 > 570.00	3.989	3.999	-0.010	1.500	2623376	2.10		83.8	18063	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.490	4.501	-0.011	1.689	3009566	2.32		92.7	16493	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.896	4.905	-0.009	1.841	4755742	2.30		92.0	14068	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.896	4.912	-0.016	1.000	47015	0.004446			12.1	
813.00 > 169.00	4.896	4.912	-0.016	1.000	7184		6.54(2.86-8.58)		64.7	

QC Flag Legend

Review Flags

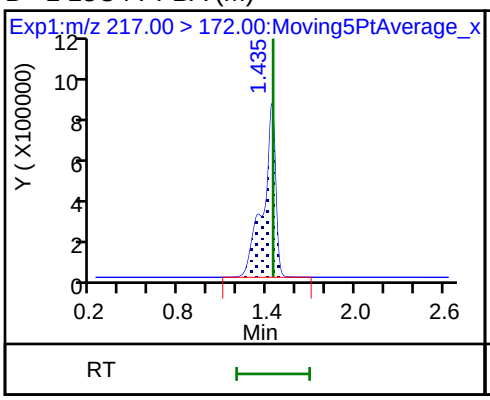
M - Manually Integrated

Report Date: 16-Jul-2018 14:26:55 Chrom Revision: 2.2 07-Jun-2018 07:41:54

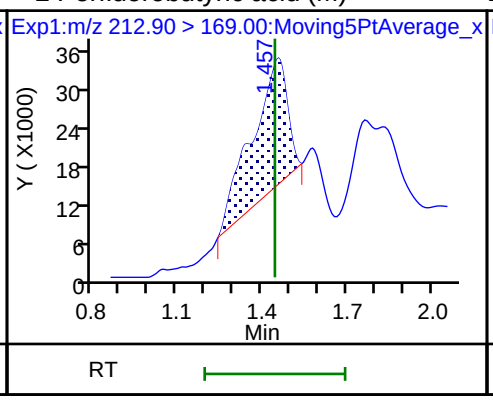
TestAmerica Sacramento

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\2018.07.13LLB_068.d				
Injection Date:	14-Jul-2018 05:38:48	Instrument ID:	A8_N		
Lims ID:	320-40571-A-36-A	Lab Sample ID:	320-40571-36		
Client ID:	NF33-SS-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	52	Worklist Smp#:	17
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		

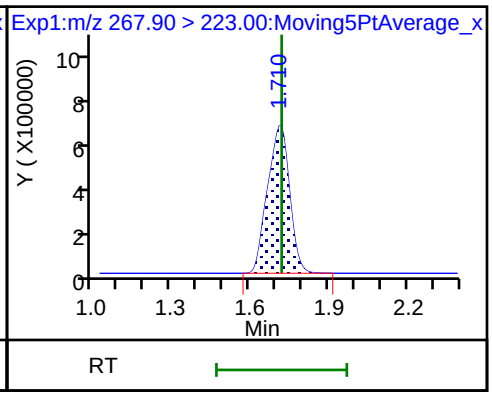
D 1 13C4 PFBA (M)



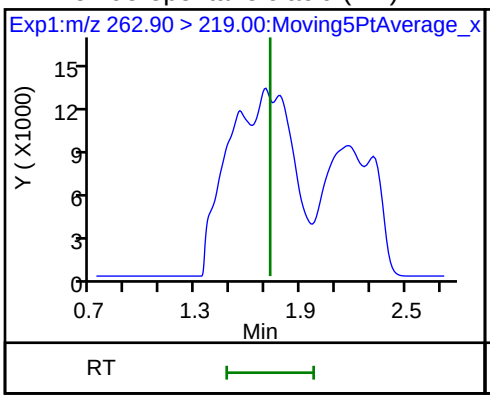
2 Perfluorobutyric acid (M)



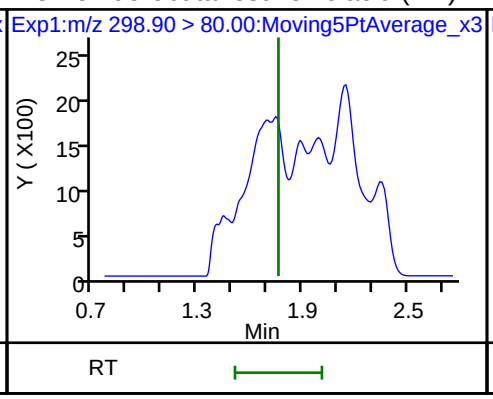
D 3 13C5-PFPeA



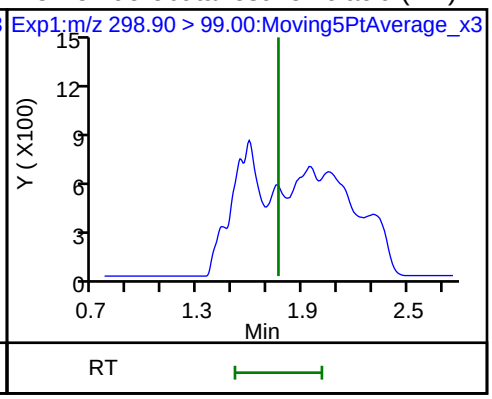
4 Perfluoropentanoic acid (ND)



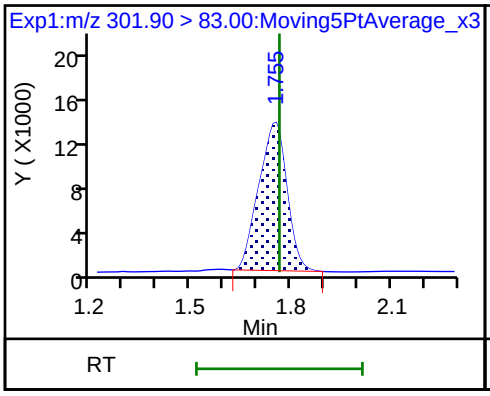
5 Perfluorobutanesulfonic acid (ND)



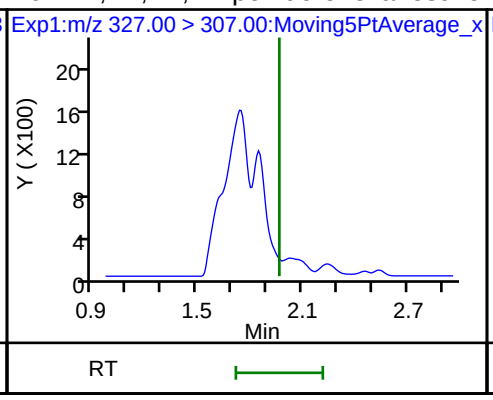
5 Perfluorobutanesulfonic acid (ND)



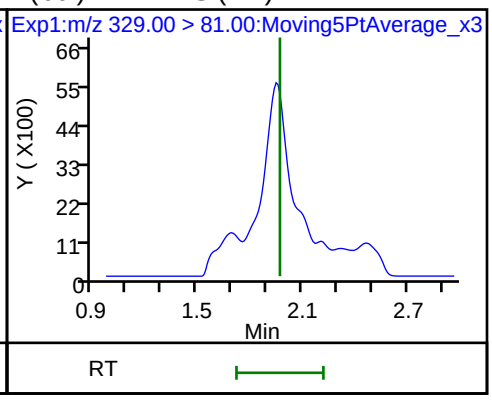
D 47 13C3-PFBS



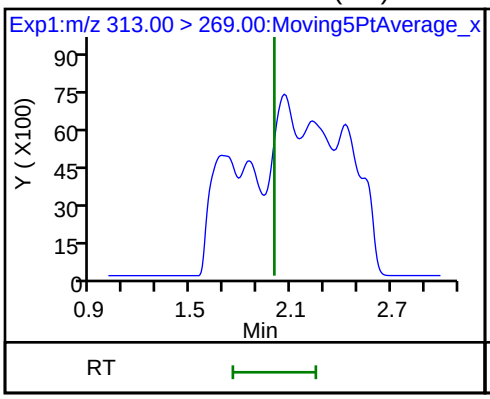
61 1H,1H,2H,2H-perfluorohexanesulfonic acid (ND)



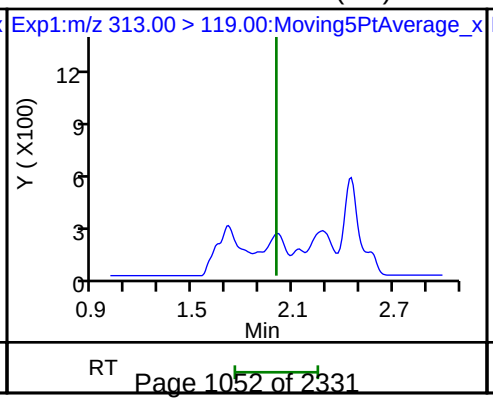
D 60 M2-4:2FTS (ND)



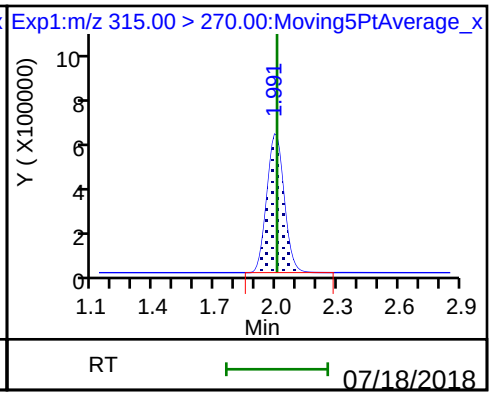
6 Perfluorohexanoic acid (ND)



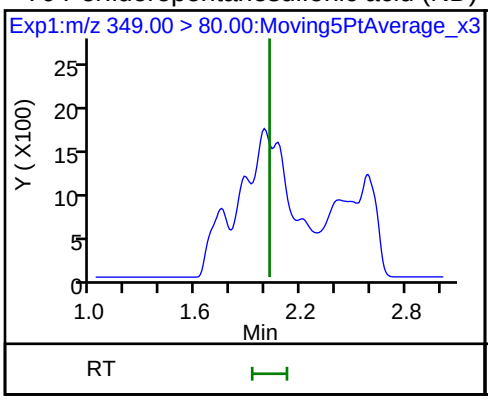
6 Perfluorohexanoic acid (ND)



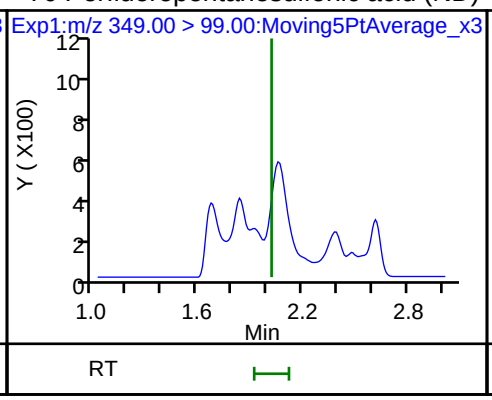
D 7 13C2 PFHxA



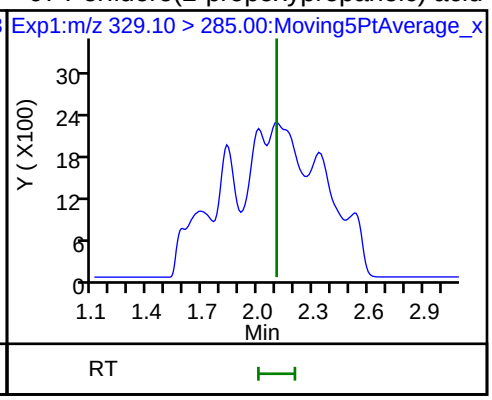
70 Perfluoropentanesulfonic acid (ND)



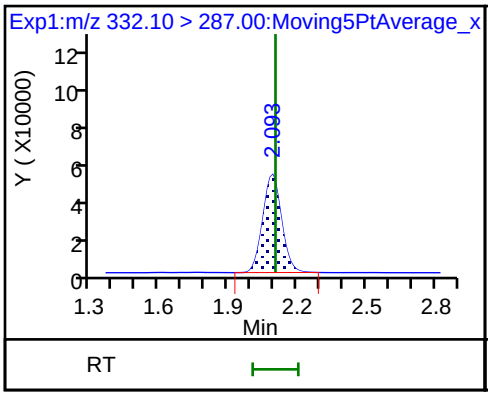
70 Perfluoropentanesulfonic acid (ND)



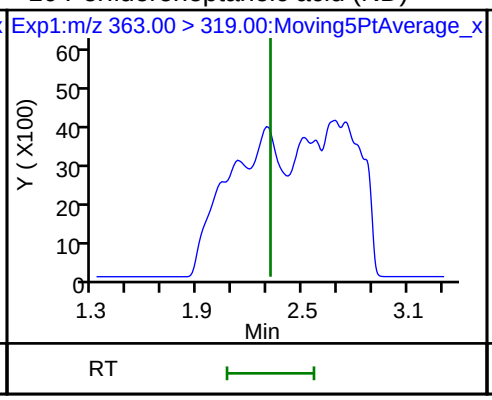
67 Perfluoro(2-propoxypropanoic) acid (ND)



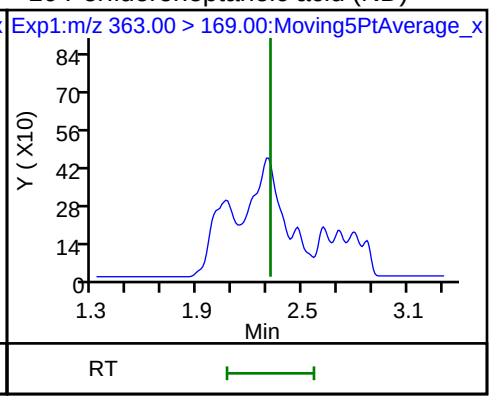
D 64 13C3 HFPO-DA



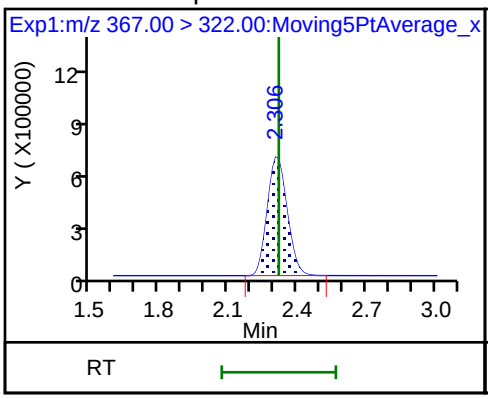
10 Perfluoroheptanoic acid (ND)



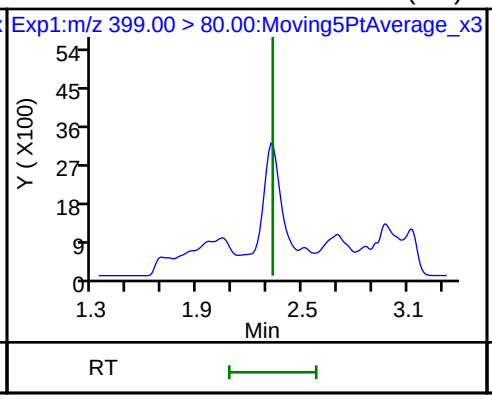
10 Perfluoroheptanoic acid (ND)



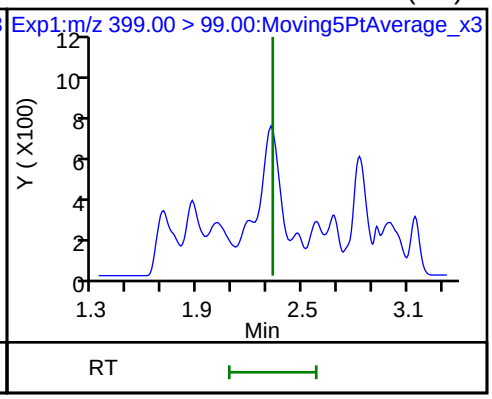
D 9 13C4-PFHpA



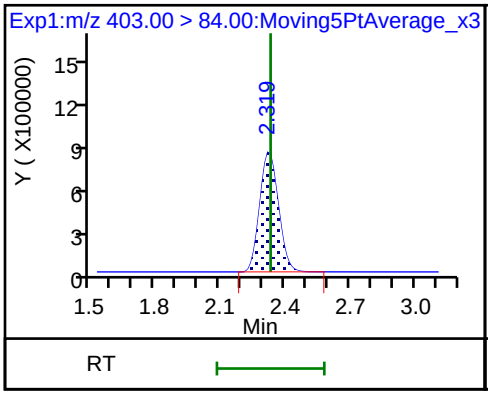
8 Perfluorohexanesulfonic acid (ND)



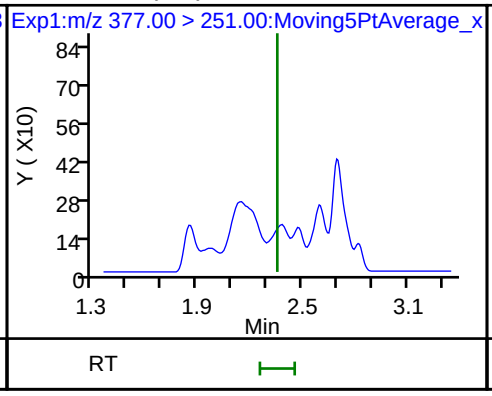
8 Perfluorohexanesulfonic acid (ND)



D 11 18O2 PFHxS



65 Adona (ND)



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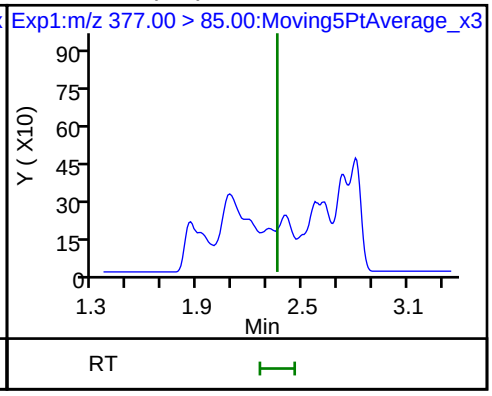
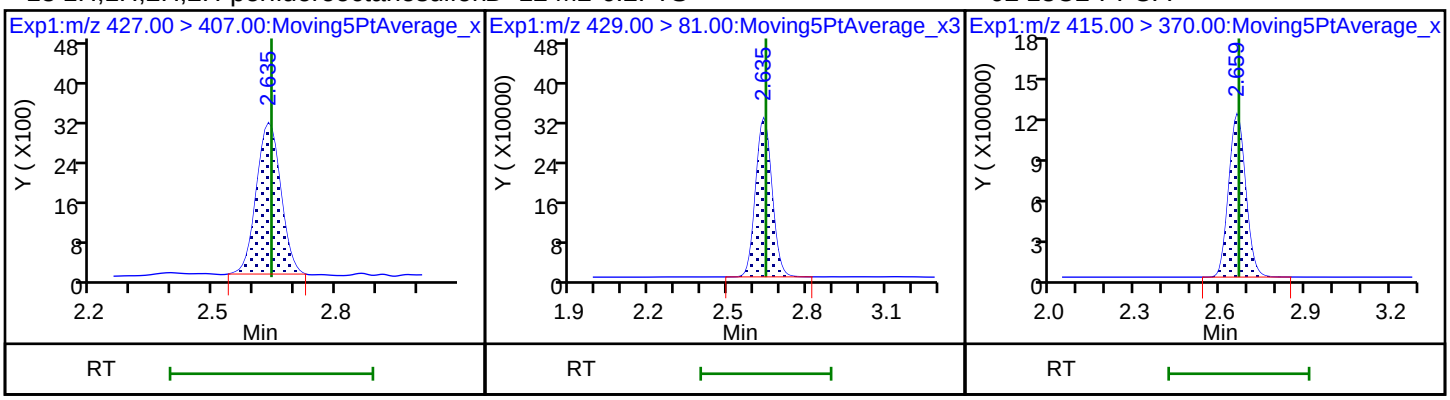
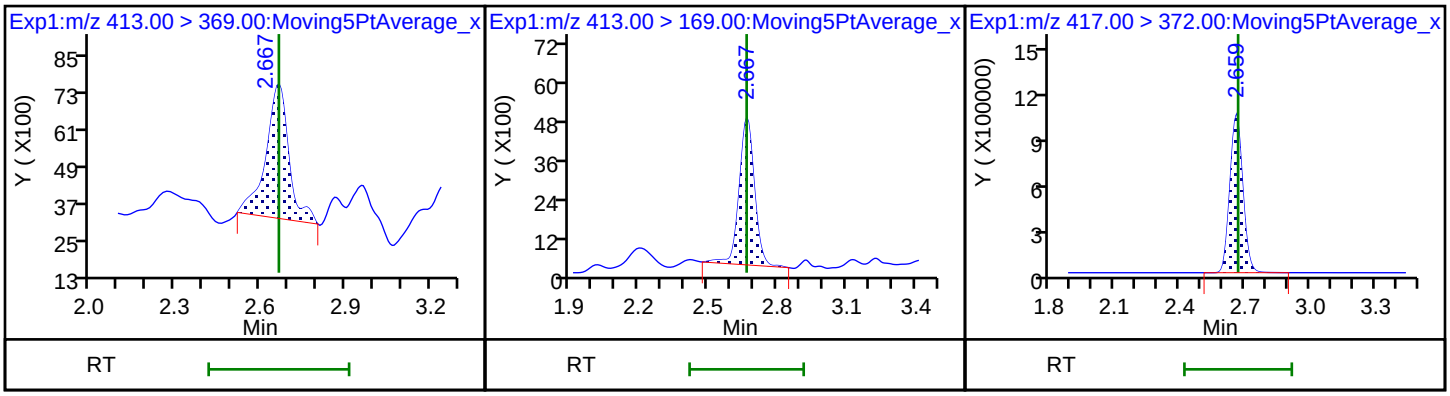


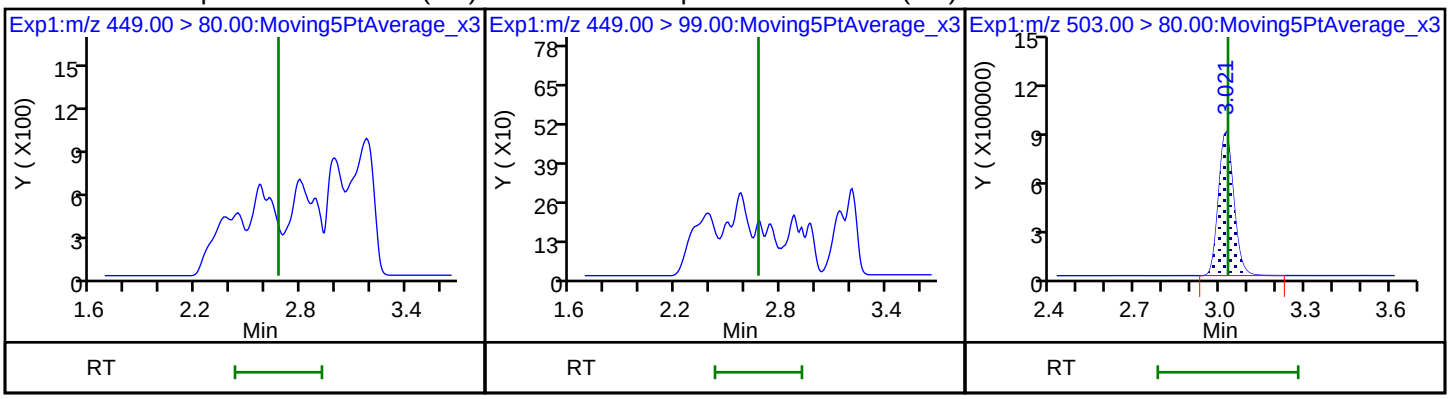
13 1H,1H,2H,2H-perfluorooctanesulfon D 12 M2-6:2FTS * 62 13C2-PFOA



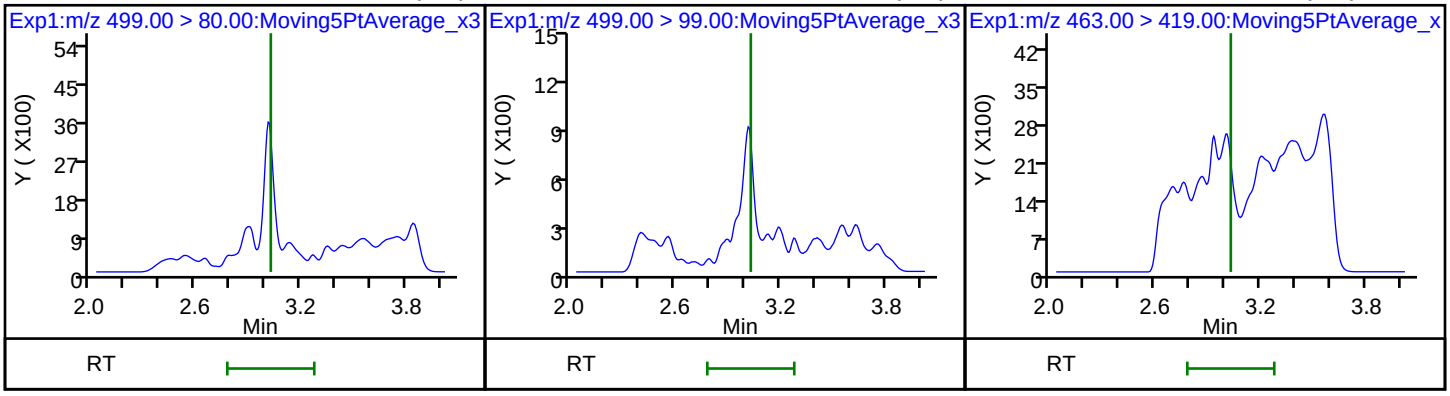
15 Perfluorooctanoic acid 15 Perfluorooctanoic acid D 14 13C4 PFOA



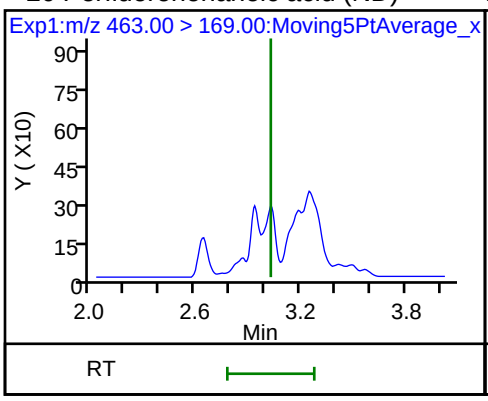
16 Perfluoroheptanesulfonic acid (ND) 16 Perfluoroheptanesulfonic acid (ND) D 18 13C4 PFOS



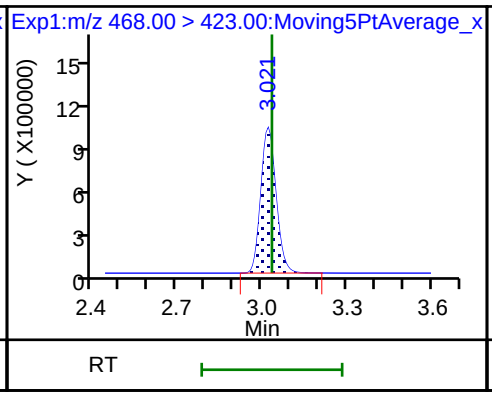
17 Perfluorooctane sulfonic acid (ND) 17 Perfluorooctane sulfonic acid (ND) 20 Perfluorononanoic acid (ND)



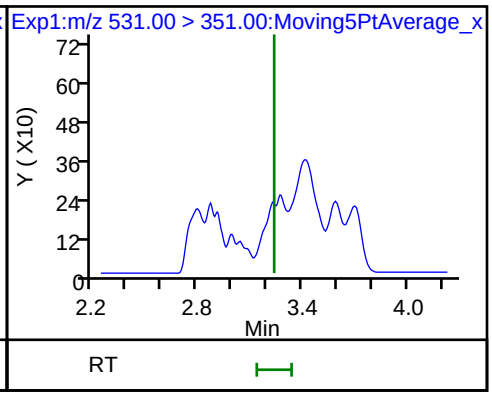
20 Perfluorononanoic acid (ND)



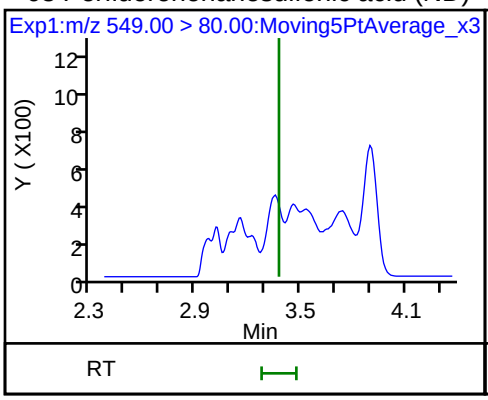
D 19 13C5 PFNA



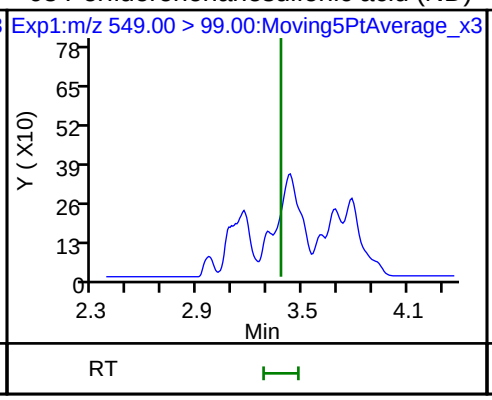
69 9-Chlorohexadecafluoro-3-oxanonane (ND)



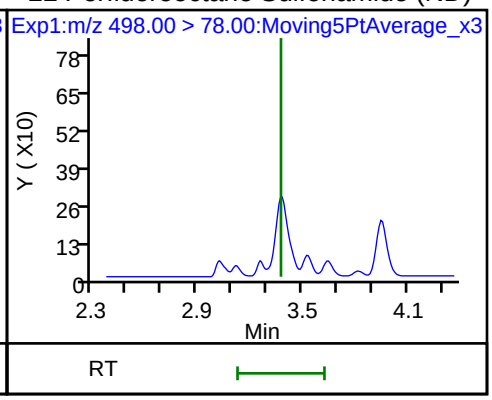
68 Perfluorononanesulfonic acid (ND)



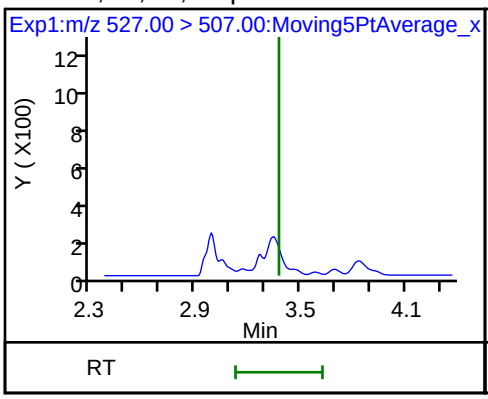
68 Perfluorononanesulfonic acid (ND)



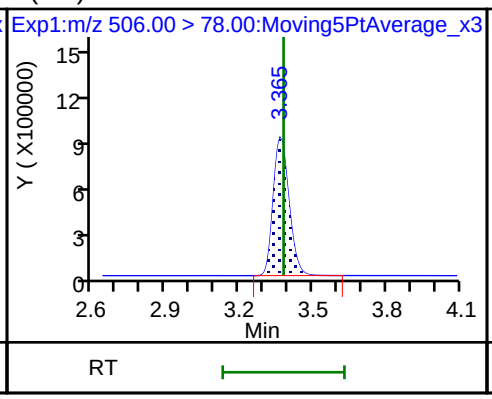
22 Perfluorooctane Sulfonamide (ND)



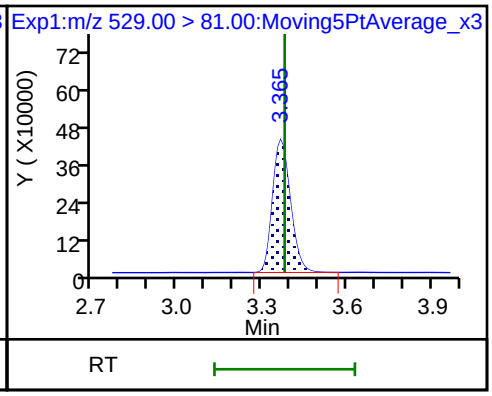
25 1H,1H,2H,2H-perfluorodecanesulfonic acid (ND)



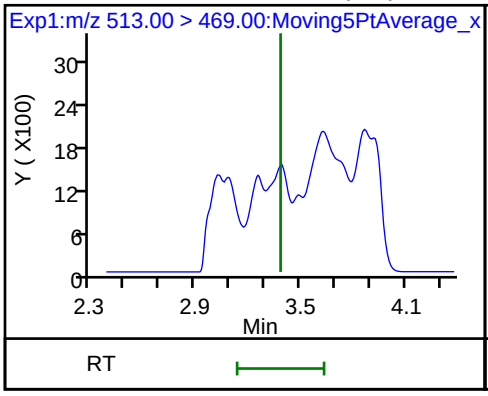
D 21 13C8 FOSA



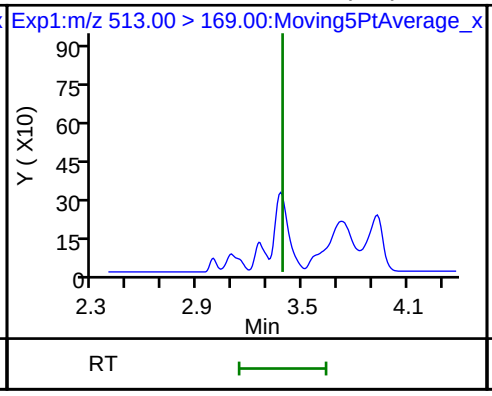
D 26 M2-8:2FTS



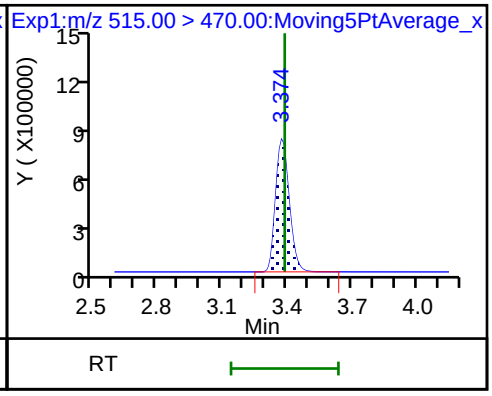
24 Perfluorodecanoic acid (ND)



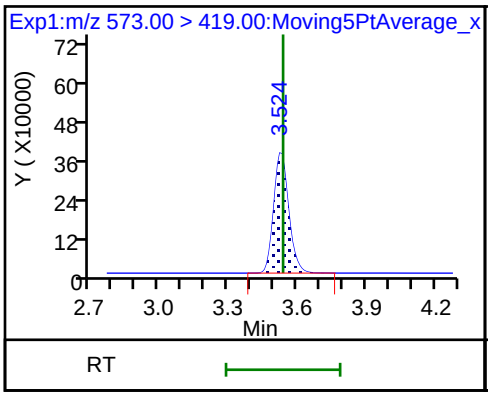
24 Perfluorodecanoic acid (ND)



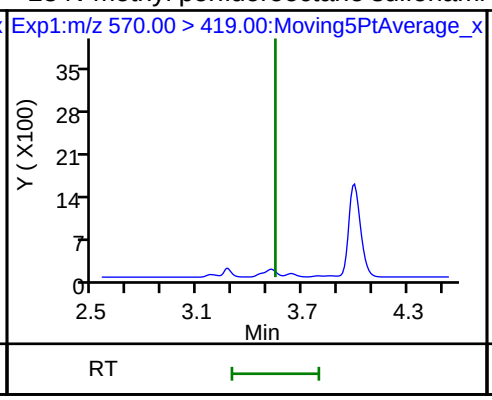
D 23 13C2 PFDA



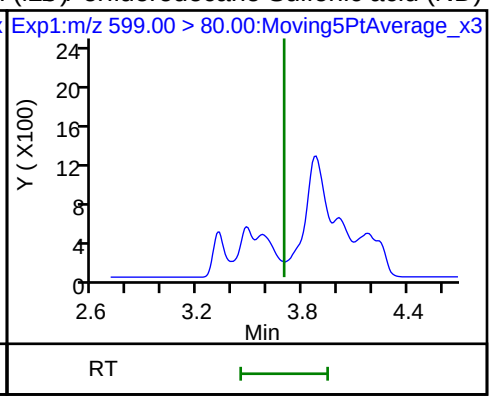
D 27 d3-NMeFOSAA



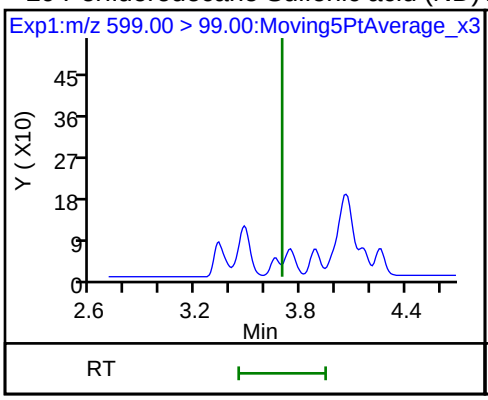
28 N-methyl perfluorooctane sulfonami (ND)



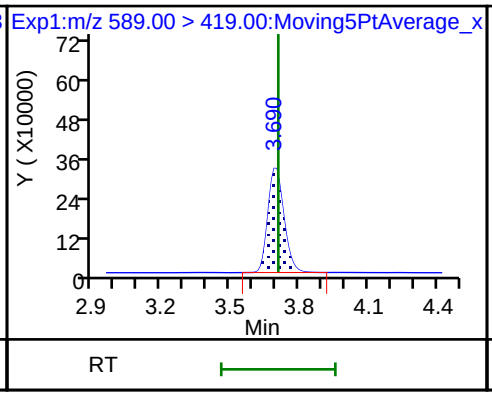
29 Perfluorodecane Sulfonic acid (ND)



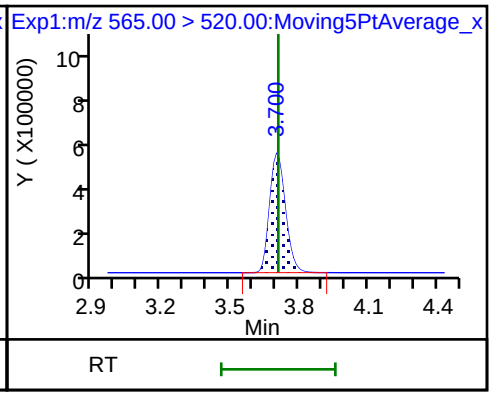
29 Perfluorodecane Sulfonic acid (ND)



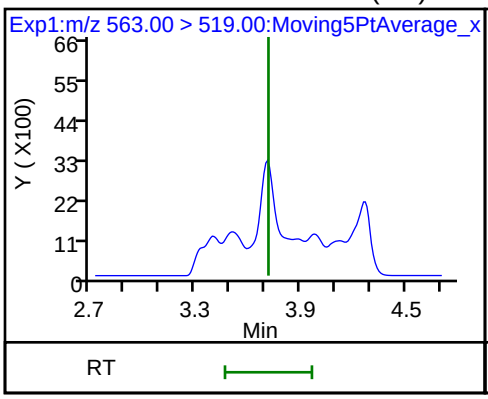
D 32 d5-NEtFOSAA



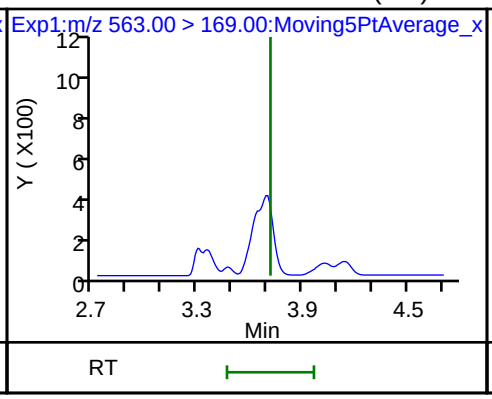
D 30 13C2 PFUnA



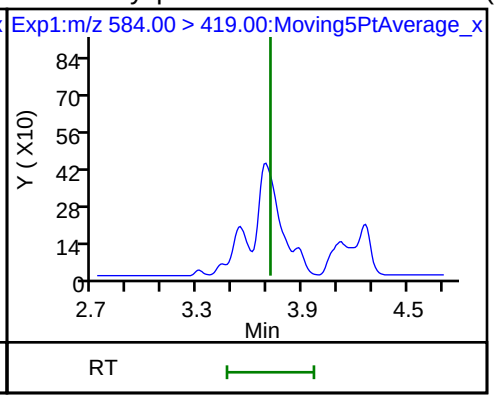
31 Perfluoroundecanoic acid (ND)



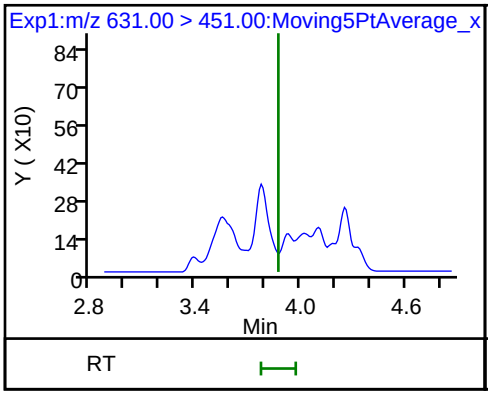
31 Perfluoroundecanoic acid (ND)



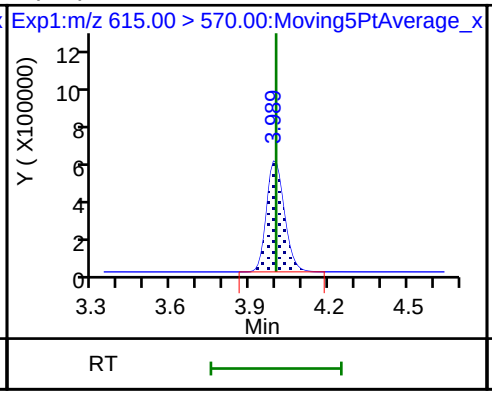
33 N-ethyl perfluorooctane sulfonamid (ND)



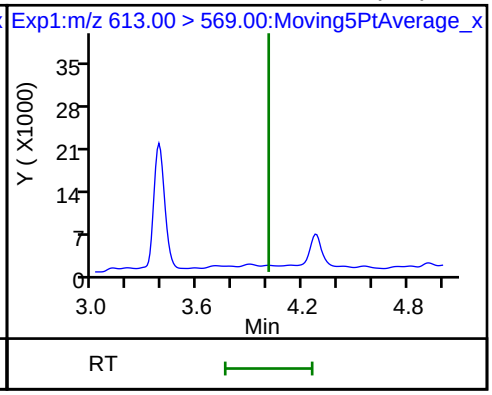
66 11-Chloroeicosafluoro-3-oxaundecan (ND)



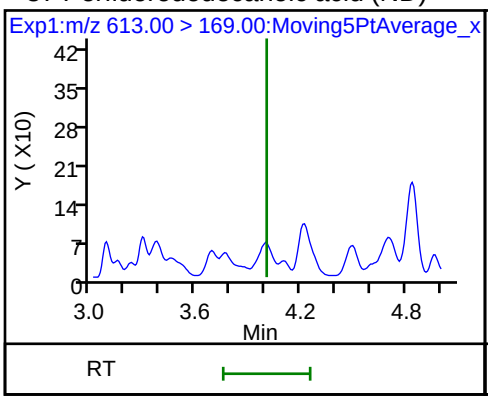
D 36 13C2 PFDoA



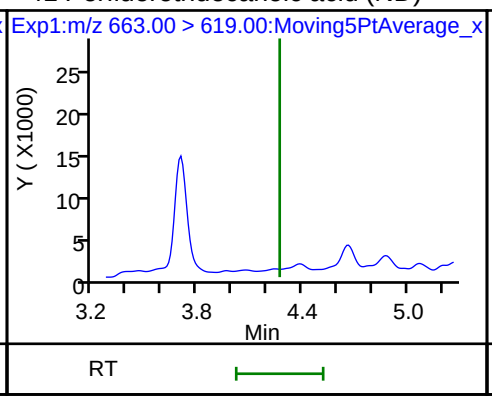
37 Perfluorododecanoic acid (ND)



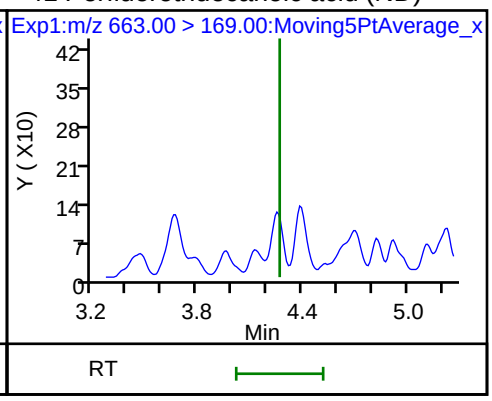
37 Perfluorododecanoic acid (ND)



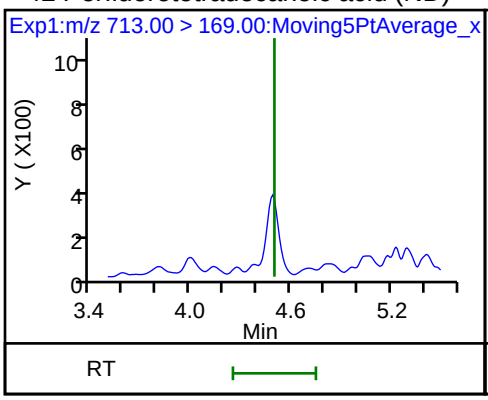
41 Perfluorotridecanoic acid (ND)



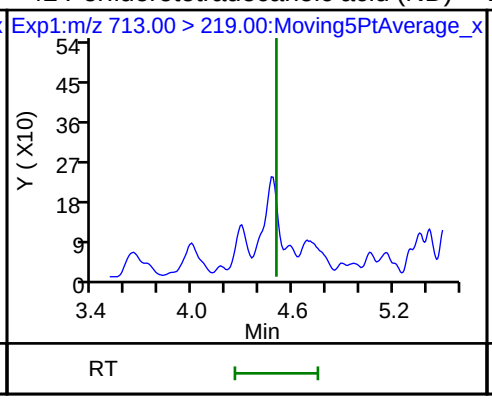
41 Perfluorotridecanoic acid (ND)



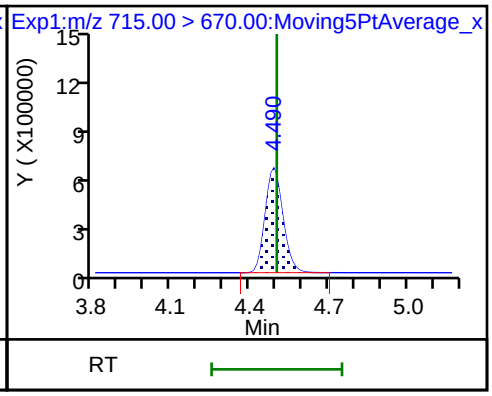
42 Perfluorotetradecanoic acid (ND)



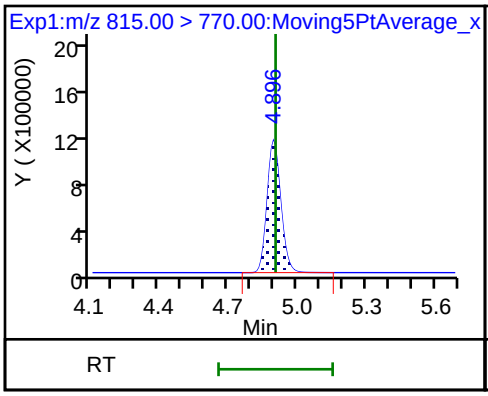
42 Perfluorotetradecanoic acid (ND)



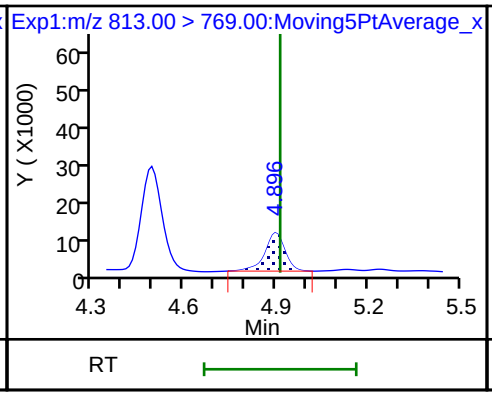
D 43 13C2-PFTeDA



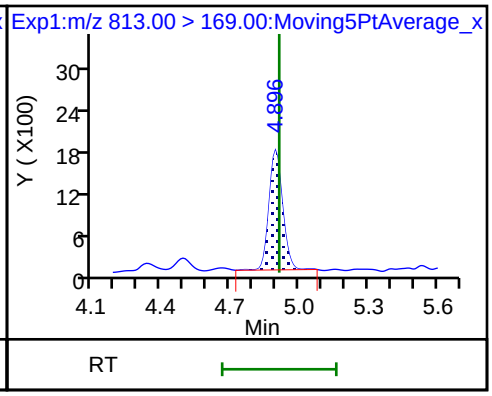
D 44 13C2-PFHxDA



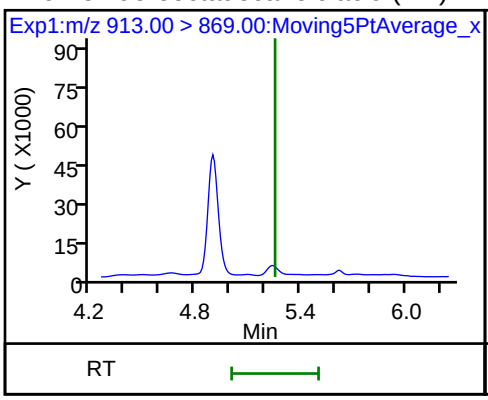
45 Perfluorohexadecanoic acid



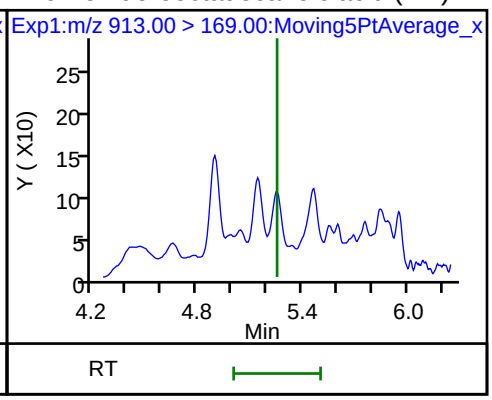
45 Perfluorohexadecanoic acid



46 Perfluorooctadecanoic acid (ND)



46 Perfluorooctadecanoic acid (ND)



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

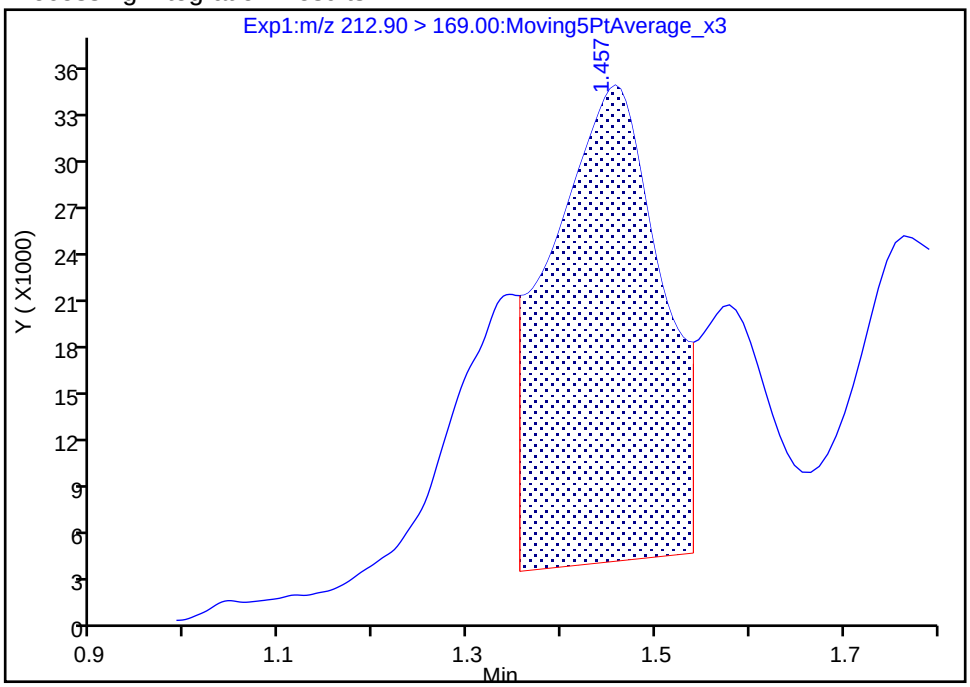
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\2018.07.13LLB_068.d				
Injection Date:	14-Jul-2018 05:38:48	Instrument ID:	A8_N		
Lims ID:	320-40571-A-36-A	Lab Sample ID:	320-40571-36		
Client ID:	NF33-SS-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	52	Worklist Smp#:	17
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

2 Perfluorobutyric acid, CAS: 375-22-4

Signal: 1

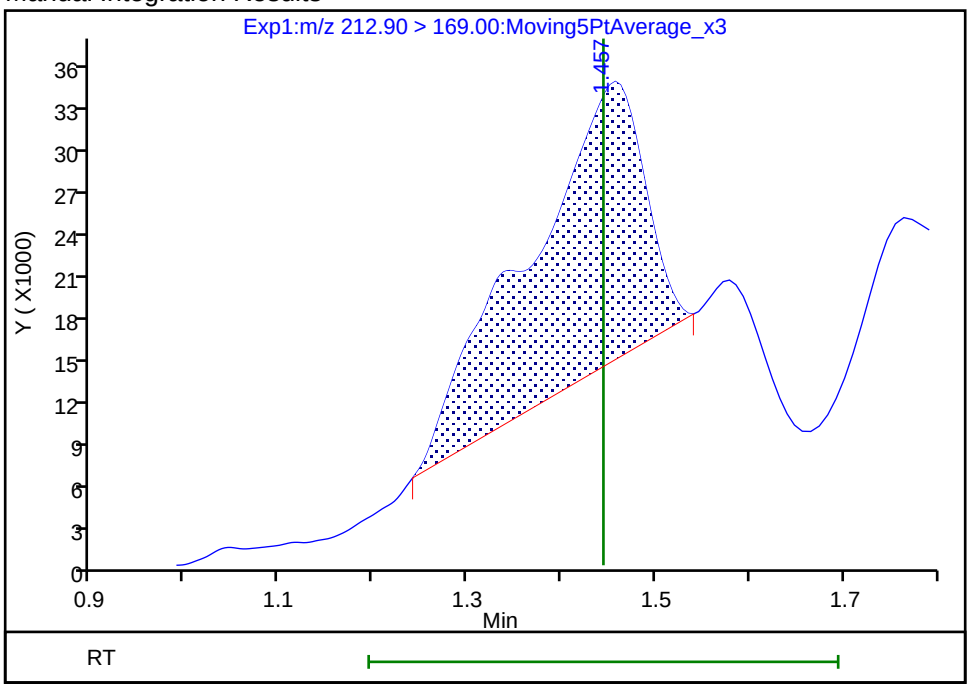
Processing Integration Results

RT: 1.46
Area: 250284
Amount: 0.125288
Amount Units: ng/ml



Manual Integration Results

RT: 1.46
Area: 177221
Amount: 0.088714
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 14:26:16

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

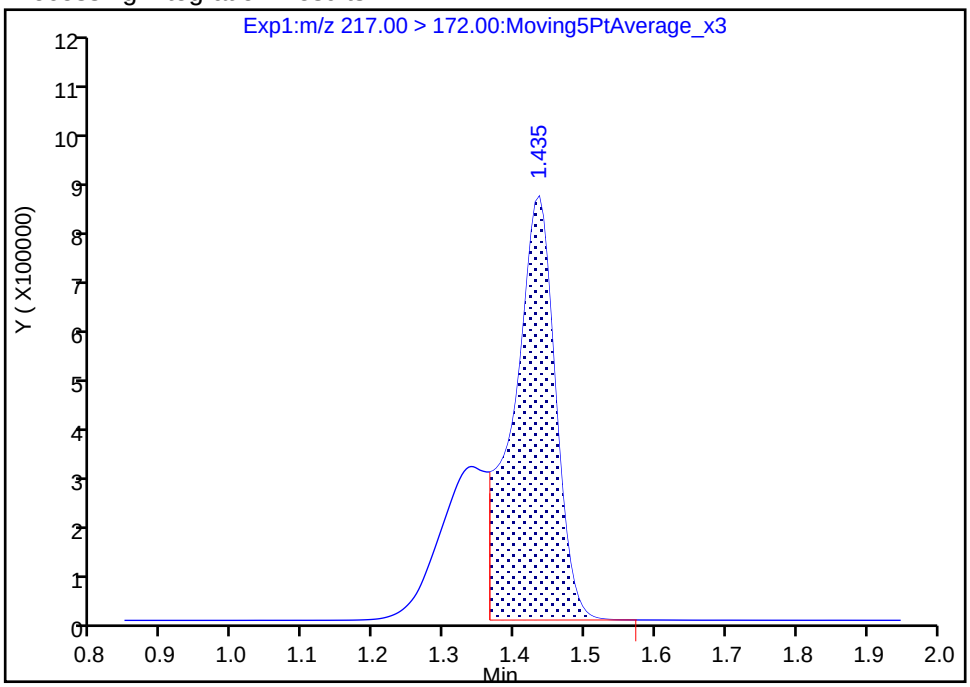
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\2018.07.13LLB_068.d				
Injection Date:	14-Jul-2018 05:38:48	Instrument ID:	A8_N		
Lims ID:	320-40571-A-36-A	Lab Sample ID:	320-40571-36		
Client ID:	NF33-SS-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	52	Worklist Smp#:	17
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

D 1 13C4 PFBA, CAS: STL00992

Signal: 1

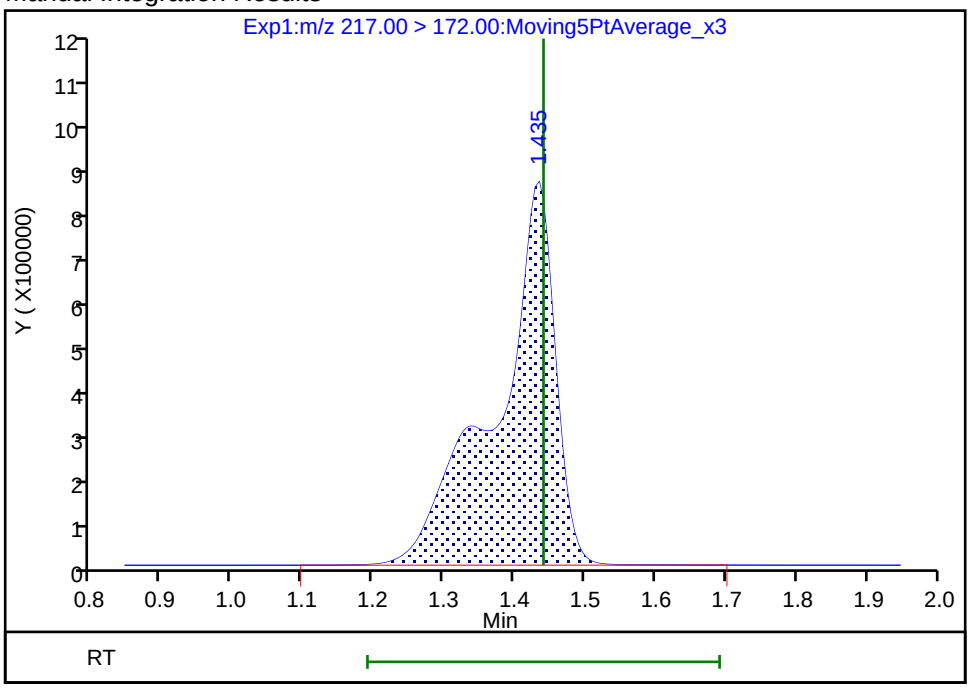
Processing Integration Results

RT: 1.44
Area: 3576799
Amount: 1.369129
Amount Units: ng/ml



Manual Integration Results

RT: 1.44
Area: 5067281
Amount: 1.939656
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 14:25:59

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF34-GW-01
Lab Sample ID: 320-40571-37
Matrix: Water
Lab File ID: 2018.07.13LLC_018.d
Analysis Method: 537 (modified)
Date Collected: 06/19/2018 13:30
Extraction Method: 3535
Date Extracted: 07/02/2018 16:10
Sample wt/vol: 291.4(mL)
Date Analyzed: 07/13/2018 22:20
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 233989
Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	0.022	B	0.0017	0.00030
2706-90-3	Perfluoropentanoic acid (PFPeA)	0.011		0.0017	0.00042
307-24-4	Perfluorohexanoic acid (PFHxA)	0.0028		0.0017	0.00050
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.0025	I	0.0017	0.00021
335-67-1	Perfluorooctanoic acid (PFOA)	0.0031		0.0017	0.00073
375-95-1	Perfluorononanoic acid (PFNA)	0.00071	J	0.0017	0.00023
335-76-2	Perfluorodecanoic acid (PFDA)	ND		0.0017	0.00027
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		0.0017	0.00094
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		0.0017	0.00047
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		0.0017	0.0011
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		0.0017	0.00025
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.00095	J	0.0017	0.00017
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	ND		0.0017	0.00026
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.00097	J B	0.0017	0.00015
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.0017	0.00016
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.052		0.0017	0.00046
8789-57-2	Perfluorononanesulfonic acid (PFNS)	ND		0.0017	0.00014
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		0.0017	0.00027
754-91-6	Perfluorooctane Sulfonamide (FOSA)	0.00046	J	0.0017	0.00030
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.017	0.0027
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.017	0.0016
757124-72-4	4:2 FTS	ND		0.017	0.0045
27619-97-2	6:2 FTS	0.026		0.017	0.0017
39108-34-4	8:2 FTS	ND		0.017	0.0017

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF34-GW-01
Lab Sample ID: 320-40571-37
Matrix: Water
Lab File ID: 2018.07.13LLC_018.d
Analysis Method: 537 (modified)
Date Collected: 06/19/2018 13:30
Extraction Method: 3535
Date Extracted: 07/02/2018 16:10
Sample wt/vol: 291.4(mL)
Date Analyzed: 07/13/2018 22:20
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 233989
Units: ug/L

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00992	13C4 PFBA	56		25-150
STL01893	13C5 PFPeA	80		25-150
STL00993	13C2 PFHxA	95		25-150
STL01892	13C4-PFHpA	98		25-150
STL00990	13C4 PFOA	103		25-150
STL00995	13C5 PFNA	100		25-150
STL00996	13C2 PFDA	92		25-150
STL00997	13C2 PFUnA	93		25-150
STL00998	13C2 PFDoA	91		25-150
STL02116	13C2-PFTeDA	86		25-150
STL02337	13C3-PFBS	88		25-150
STL00994	18O2 PFHxS	100		25-150
STL00991	13C4 PFOS	94		25-150
STL01056	13C8 FOSA	82		25-150
STL02118	d3-NMeFOSAA	94		25-150
STL02117	d5-NEtFOSAA	97		25-150
STL02279	M2-6:2FTS	120		25-150
STL02280	M2-8:2FTS	90		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\2018.07.13LLC_018.d
Lims ID: 320-40571-A-37-A
Client ID: NF34-GW-01
Sample Type: Client
Inject. Date: 13-Jul-2018 22:20:10 ALS Bottle#: 11 Worklist Smp#: 13
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-40571-a-37-a (232150)
Misc. Info.: Plate: 1 Rack: 4
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 16-Jul-2018 12:45:46 Calib Date: 11-Jul-2018 15:38:42
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK023

First Level Reviewer: mongkols Date: 16-Jul-2018 12:45:46

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										M
212.90 > 169.00	1.430	1.433	-0.003	1.000	888256	0.6291			150	M
D 1 13C4 PFBA										
217.00 > 172.00	1.430	1.445	-0.015	0.535	3581549	1.41		56.4	25366	
4 Perfluoropentanoic acid										M
262.90 > 219.00	1.730	1.716	0.014	1.005	533331	0.3120			80.6	M
D 3 13C5-PFPeA										
267.90 > 223.00	1.721	1.725	-0.004	0.643	3522328	1.99		79.7	18682	
5 Perfluorobutanesulfonic acid										M
298.90 > 80.00	1.766	1.761	0.005	1.000	82289	0.0276			29.8	M
298.90 > 99.00	1.766	1.761	0.005	1.000	36548		2.25(1.25-3.74)		31.1	
D 47 13C3-PFBS										
301.90 > 83.00	1.766	1.762	0.004	0.660	90702	2.04		87.9	165	
6 Perfluorohexanoic acid										
313.00 > 269.00	2.004	1.999	0.005	1.000	150924	0.0807			53.3	
313.00 > 119.00	2.004	1.999	0.005	1.000	12626		11.95(5.03-15.10)		125	
D 7 13C2 PFHxA										
315.00 > 270.00	2.004	2.011	-0.007	0.749	4539638	2.38		95.2	61270	
10 Perfluoroheptanoic acid										R
363.00 > 319.00	2.308	2.316	-0.008	0.994	146754	0.0740			60.0	R
363.00 > 169.00	2.321	2.316	0.005	1.000	32198		4.56(1.13-3.40)		204	
D 9 13C4-PFHpA										
367.00 > 322.00	2.321	2.329	-0.008	0.868	4286270	2.44		97.6	64407	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.334	2.329	0.005	1.000	80453	0.0283			43.3	
399.00 > 99.00	2.334	2.329	0.005	1.000	22412		3.59(1.50-4.49)		27.0	
D 11 18O2 PFHxS										
403.00 > 84.00	2.334	2.342	-0.008	0.872	5862399	2.36		99.6	106381	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.644	2.634	0.010	1.000	527229	0.7438			3430	
D 12 M2-6:2FTS										
429.00 > 81.00	2.644	2.651	-0.007	0.989	1076174	2.86		120	4562	
* 62 13C2-PFOA										
415.00 > 370.00	2.675	2.658	0.017		4686309	2.50			38136	
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.675	2.658	0.017	1.003	204208	0.0895			81.3	M
413.00 > 169.00	2.675	2.658	0.017	1.003	118881		1.72(0.84-2.52)		401	M
D 14 13C4 PFOA										
417.00 > 372.00	2.667	2.673	-0.006	0.997	4633857	2.59		103	46257	
17 Perfluorooctane sulfonic acid										M
499.00 > 80.00	3.035	3.018	0.017	1.002	2960914	1.52			11132	M
499.00 > 99.00	3.035	3.018	0.017	1.002	679033		4.36(2.31-6.93)		4089	
20 Perfluorononanoic acid										
463.00 > 419.00	3.035	3.025	0.010	1.000	36690	0.0206			37.3	
463.00 > 169.00	3.035	3.025	0.010	1.000	8854		4.14(1.90-5.69)		148	
D 18 13C4 PFOS										
503.00 > 80.00	3.029	3.036	-0.007	1.132	4113077	2.25		94.2	24211	
D 19 13C5 PFNA										
468.00 > 423.00	3.035	3.036	-0.001	1.135	4006995	2.50		100	45813	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.376	3.371	0.005	1.000	28536	0.0134			285	
D 21 13C8 FOSA										
506.00 > 78.00	3.376	3.376	0.0	1.262	5411291	2.06		82.2	62141	
D 26 M2-8:2FTS										
529.00 > 81.00	3.376	3.376	0.0	1.262	1184633	2.15		89.8	7765	
D 23 13C2 PFDA										
515.00 > 470.00	3.385	3.385	0.0	1.265	3224970	2.29		91.7	32142	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.543	3.544	-0.001	1.325	1359892	2.36		94.4	24815	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.715	3.698	0.017	1.000	11353	0.0127			52.1	
563.00 > 169.00	3.715	3.698	0.017	1.000	2336		4.86(2.12-6.36)		101	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.715	3.698	0.017	1.003	8109	0.0160			145	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.705	3.705	0.0	1.385	1432351	2.43		97.0	5561	
D 30 13C2 PFUnA										
565.00 > 520.00	3.715	3.715	0.0	1.389	2723273	2.32		92.7	51740	
D 36 13C2 PFDoA										
615.00 > 570.00	4.005	4.005	0.0	1.497	2784141	2.29		91.5	24652	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.499	4.500	-0.001	1.682	2718572	2.15		86.1	15186	

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Review Flags

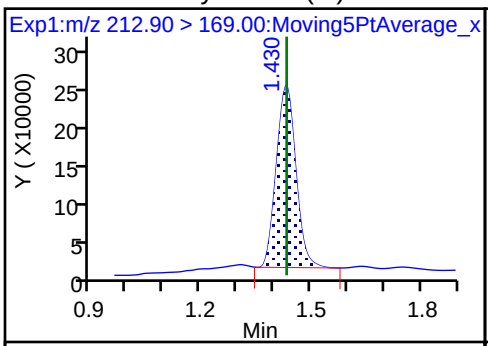
M - Manually Integrated

Report Date: 16-Jul-2018 12:45:47 Chrom Revision: 2.2 07-Jun-2018 07:41:54

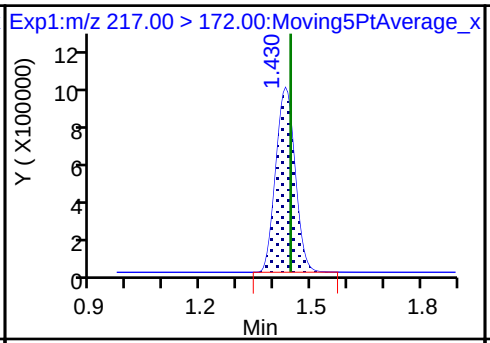
TestAmerica Sacramento

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\2018.07.13LLC_018.d				
Injection Date:	13-Jul-2018 22:20:10	Instrument ID:	A8_N		
Lims ID:	320-40571-A-37-A	Lab Sample ID:	320-40571-37		
Client ID:	NF34-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	11	Worklist Smp#:	13
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		

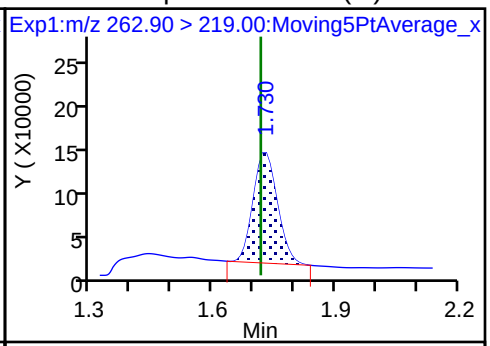
2 Perfluorobutyric acid (M)



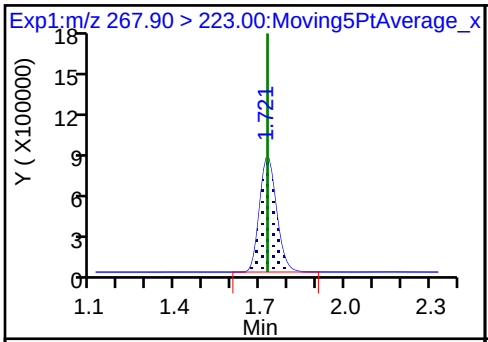
D 1 13C4 PFBA



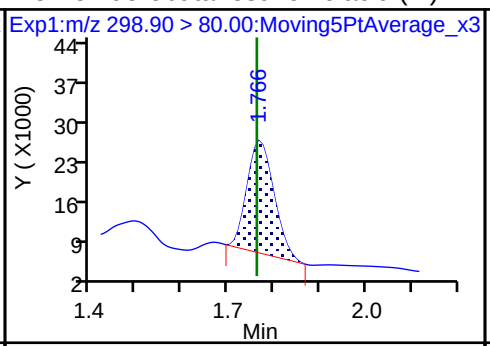
4 Perfluoropentanoic acid (M)



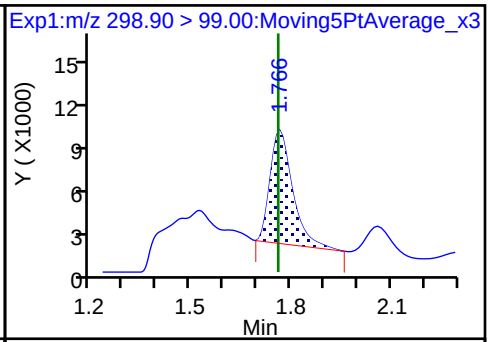
D 3 13C5-PFPeA



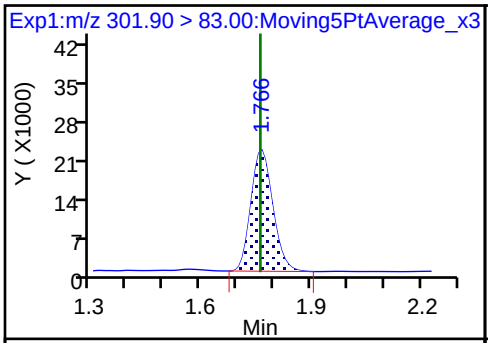
5 Perfluorobutanesulfonic acid (M)



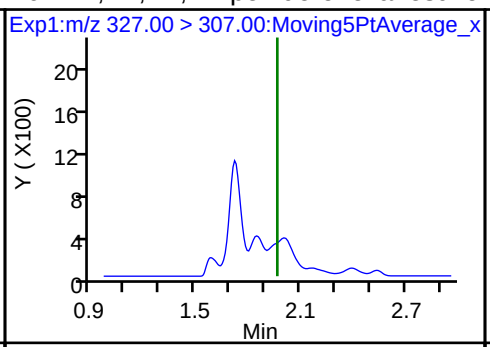
5 Perfluorobutanesulfonic acid



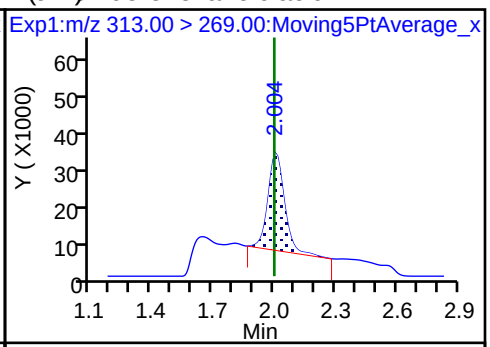
D 47 13C3-PFBS



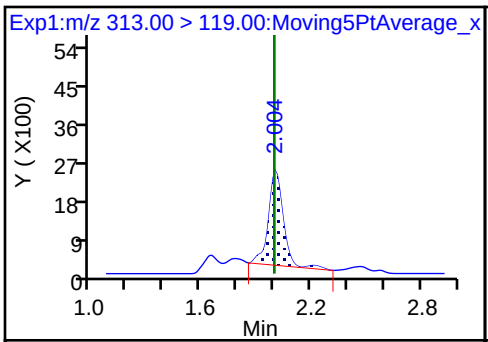
61 1H,1H,2H,2H-perfluorohexanesulfoni (ND)



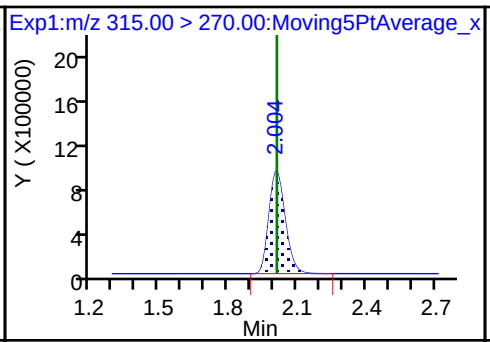
6 Perfluorohexanoic acid



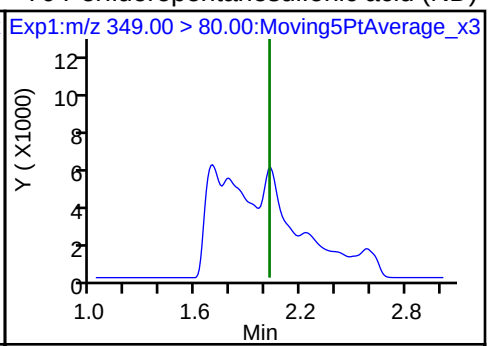
6 Perfluorohexanoic acid



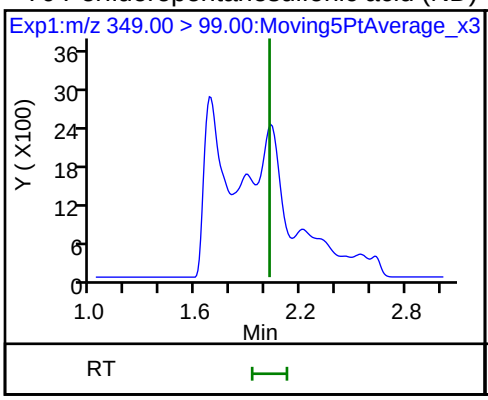
D 7 13C2 PFHxA



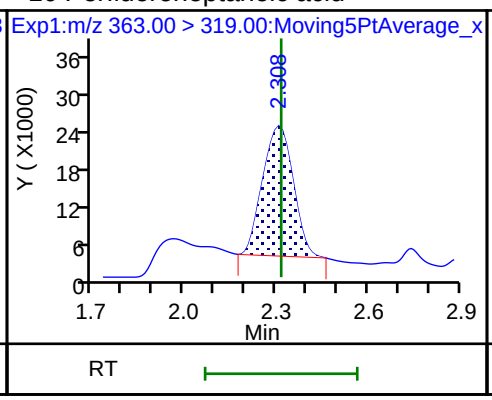
70 Perfluoropentanesulfonic acid (ND)



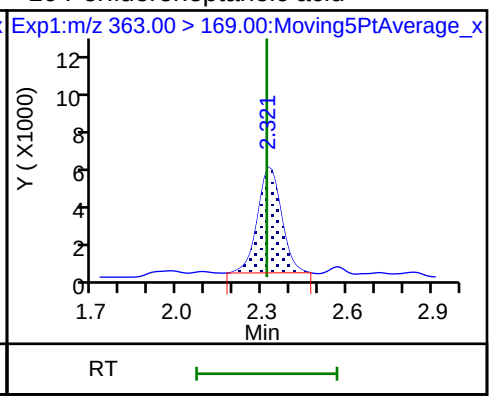
70 Perfluoropentanesulfonic acid (ND)



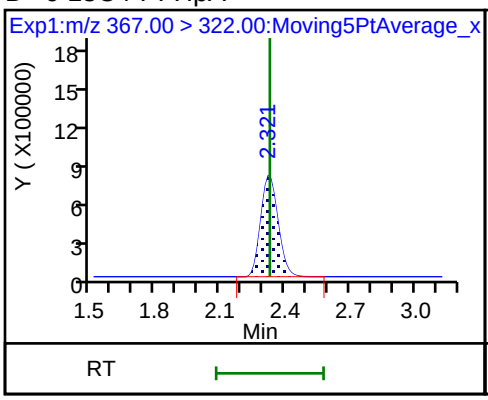
10 Perfluoroheptanoic acid



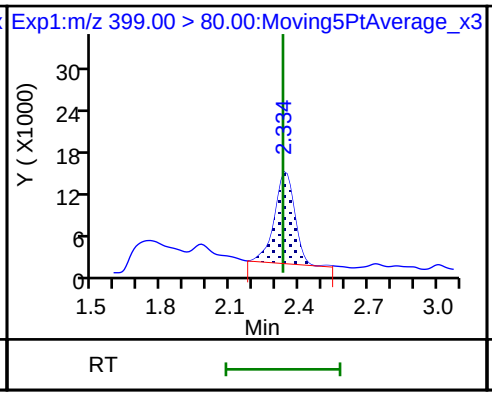
10 Perfluoroheptanoic acid



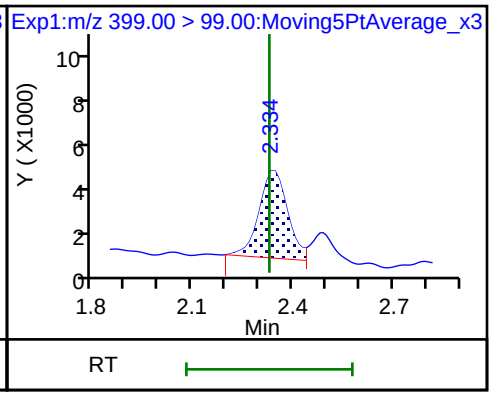
D 9 13C4-PFHpA



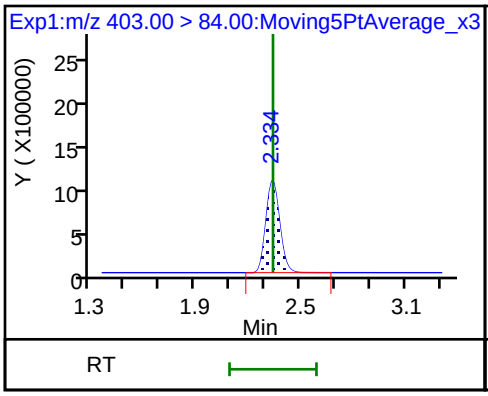
8 Perfluorohexanesulfonic acid



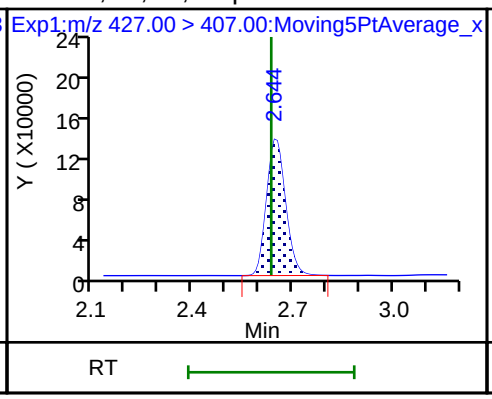
8 Perfluorohexanesulfonic acid



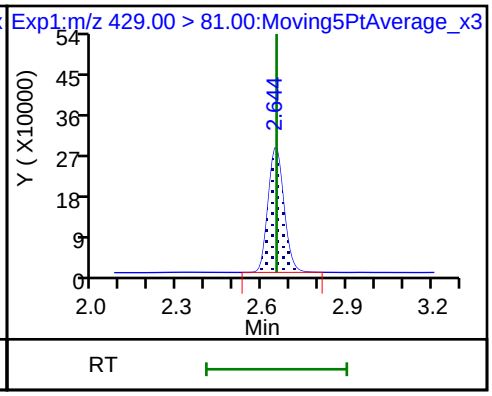
D 11 18O2 PFHxS



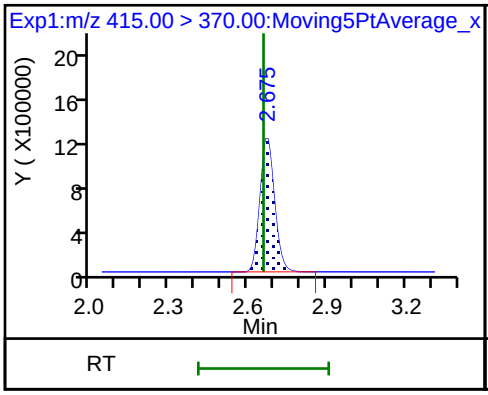
13 1H,1H,2H,2H-perfluorooctanesulfon



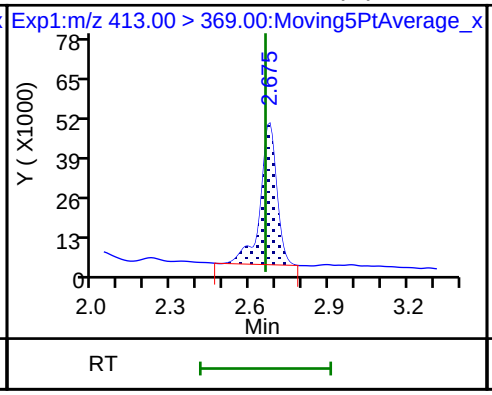
D 12 M2-6:2FTS



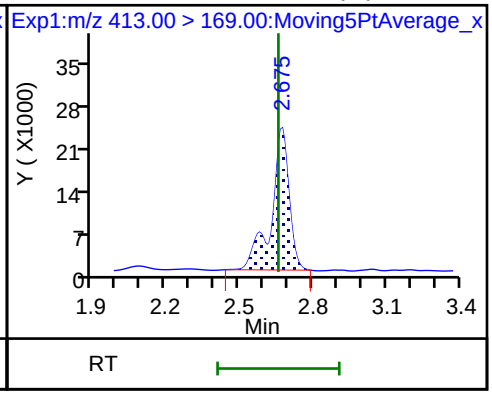
* 62 13C2-PFOA



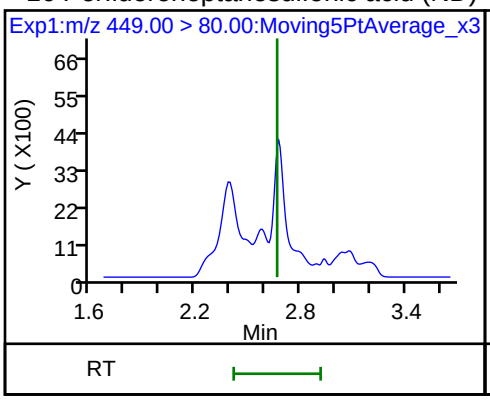
15 Perfluorooctanoic acid (M)



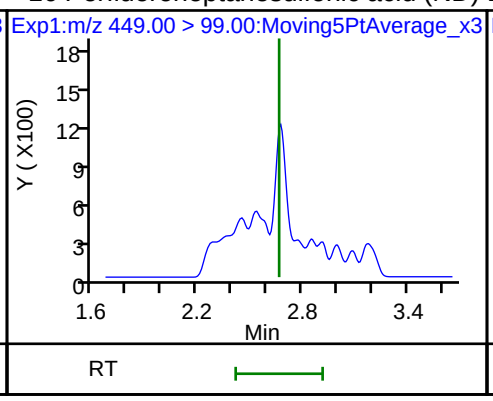
15 Perfluorooctanoic acid (M)



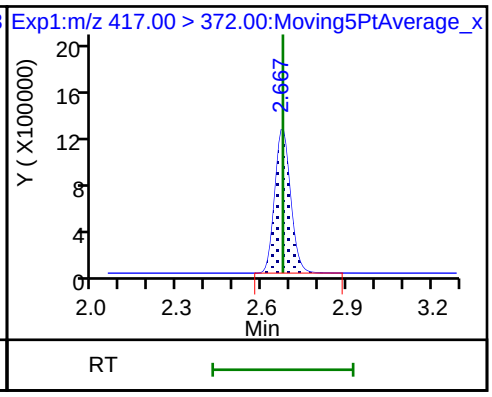
16 Perfluoroheptanesulfonic acid (ND)



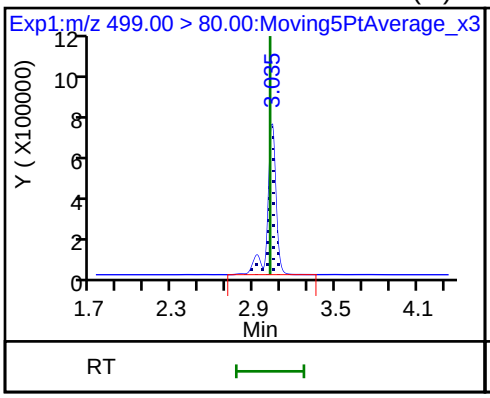
16 Perfluoroheptanesulfonic acid (ND)



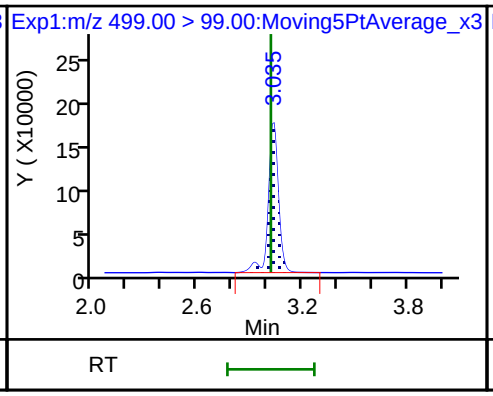
D 14 13C4 PFOA



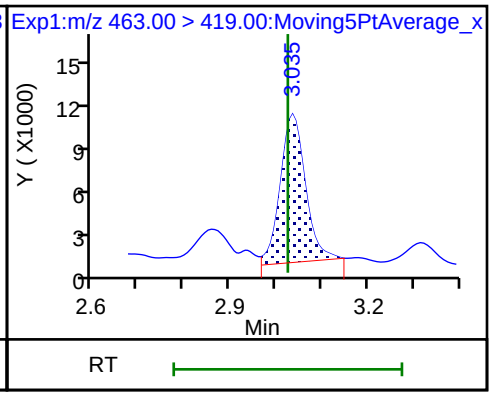
17 Perfluorooctane sulfonic acid (M)



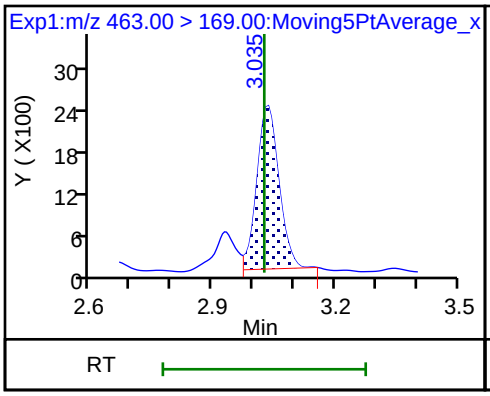
17 Perfluorooctane sulfonic acid



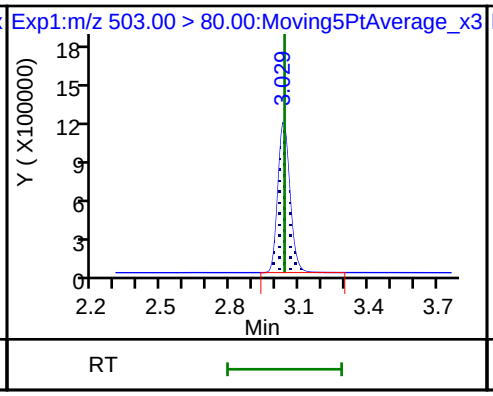
20 Perfluorononanoic acid



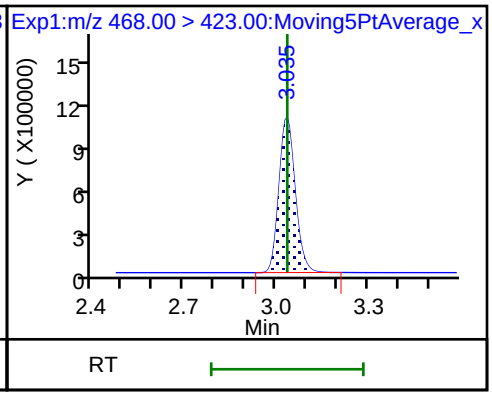
20 Perfluorononanoic acid



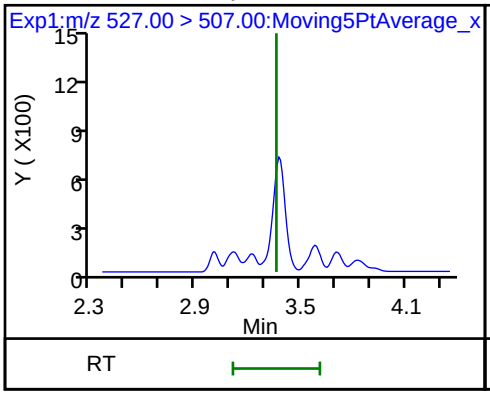
D 18 13C4 PFOS



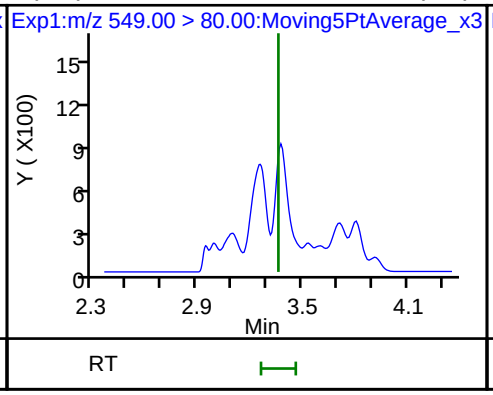
D 19 13C5 PFNA



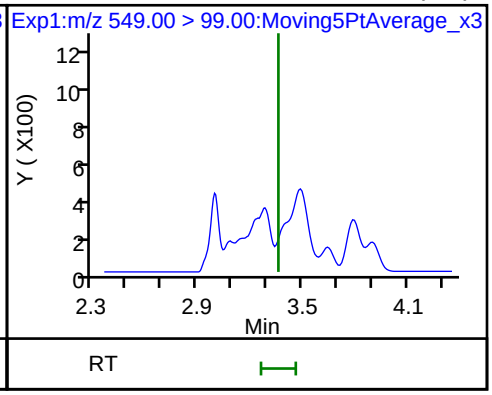
25 1H,1H,2H,2H-perfluorodecanesulfoni (ND)



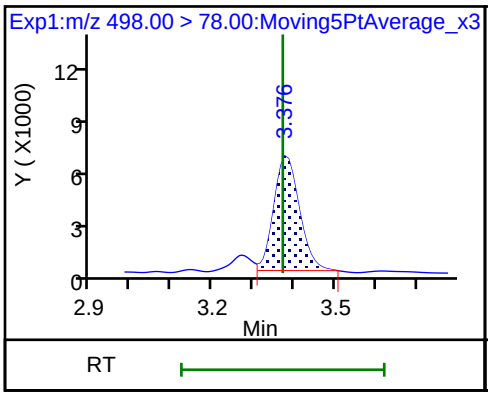
68 Perfluorononanesulfonic acid (ND)



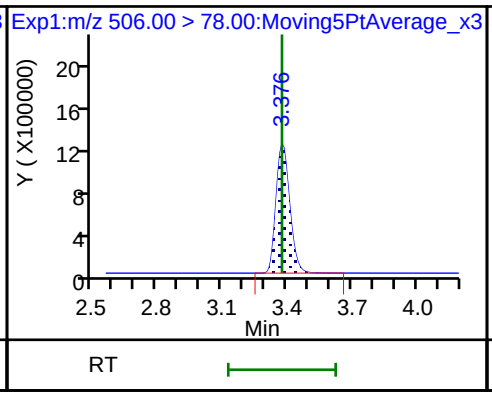
68 Perfluorononanesulfonic acid (ND)



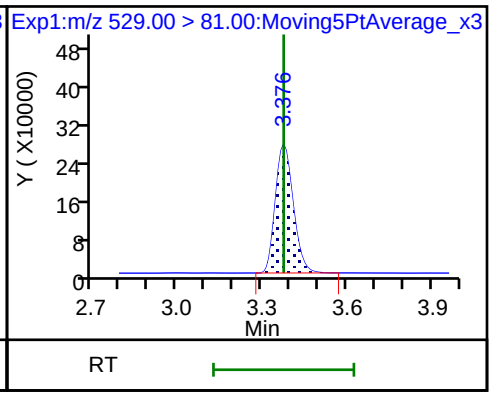
22 Perfluorooctane Sulfonamide



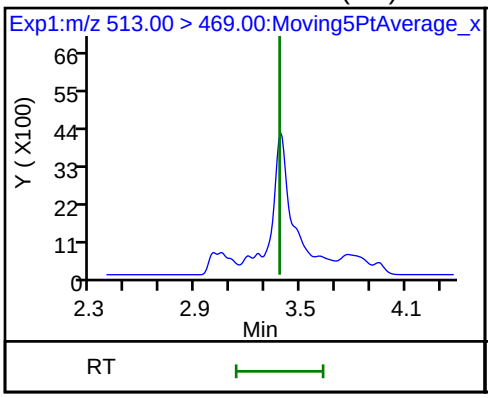
D 21 13C8 FOSA



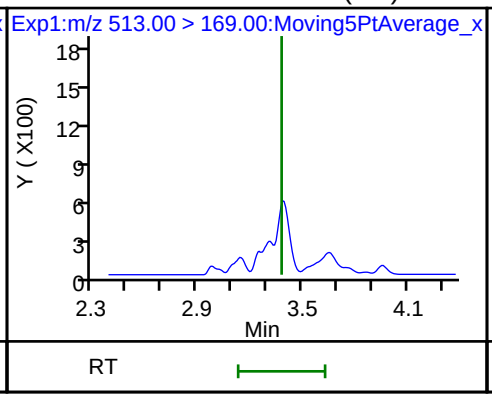
D 26 M2-8:2FTS



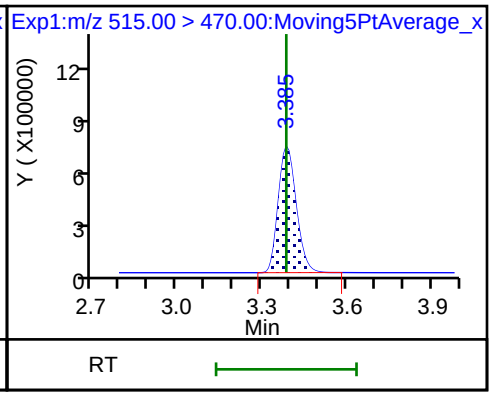
24 Perfluorodecanoic acid (ND)



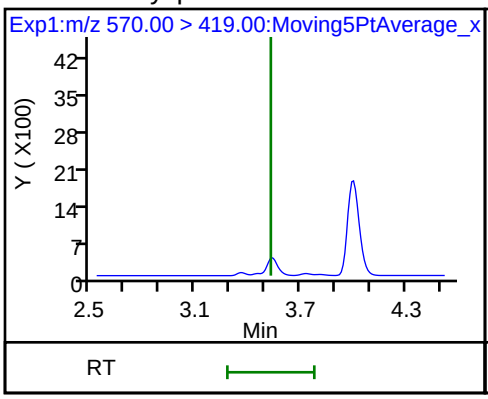
24 Perfluorodecanoic acid (ND)



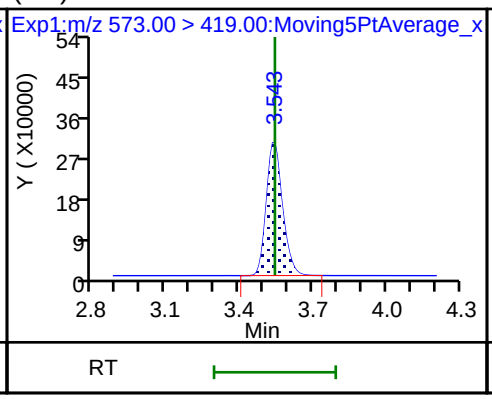
D 23 13C2 PFDA



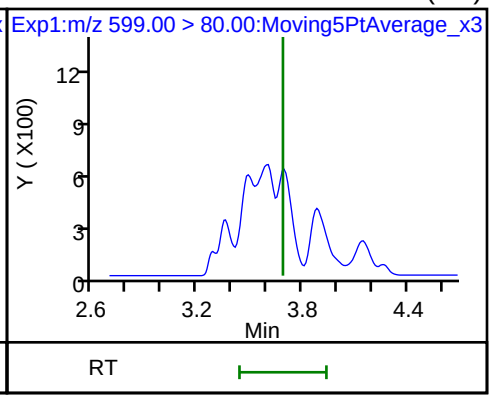
28 N-methyl perfluorooctane sulfonamid (ND)



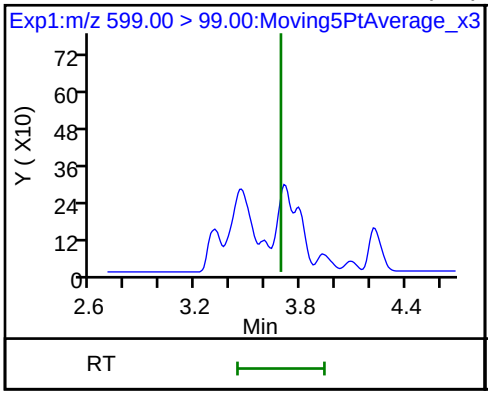
D 27 d3-NMeFOSAA



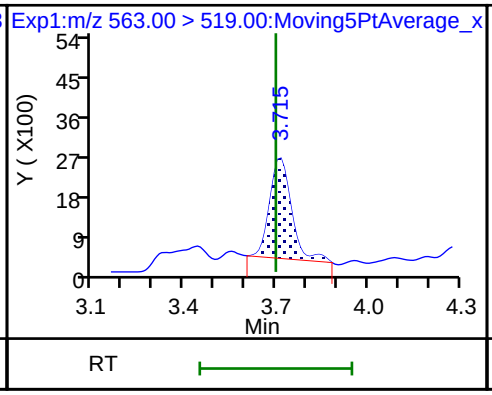
29 Perfluorodecane Sulfonic acid (ND)



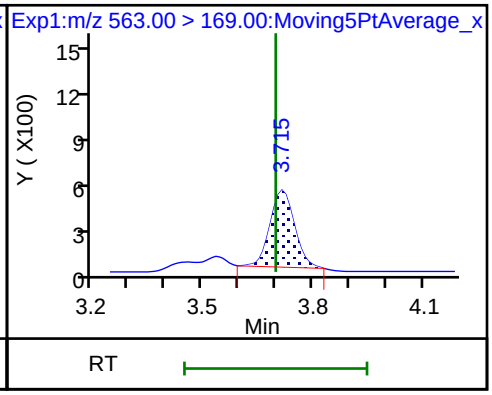
29 Perfluorodecane Sulfonic acid (ND)



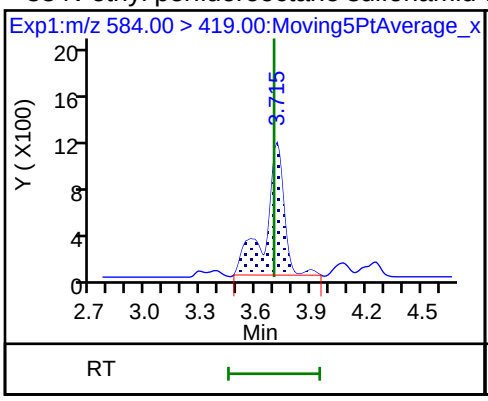
31 Perfluoroundecanoic acid



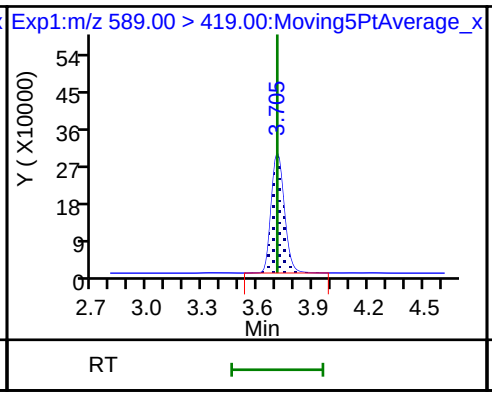
31 Perfluoroundecanoic acid



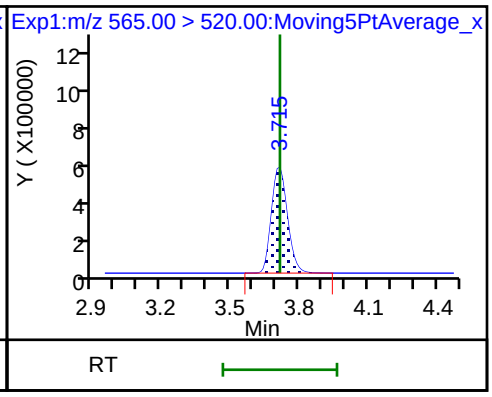
33 N-ethyl perfluorooctane sulfonamid



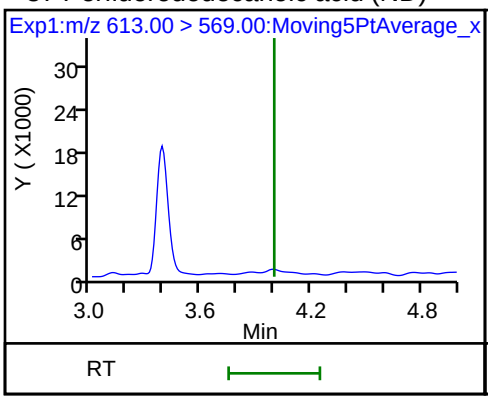
D 32 d5-NEtFOSAA



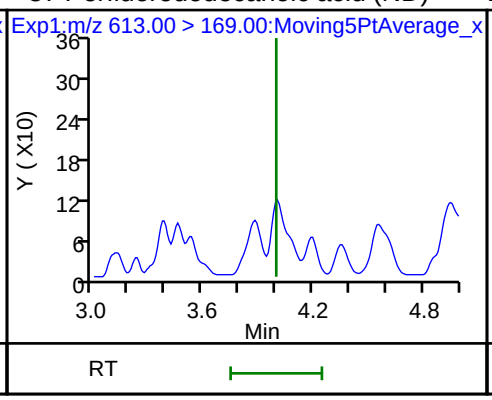
D 30 13C2 PFUnA



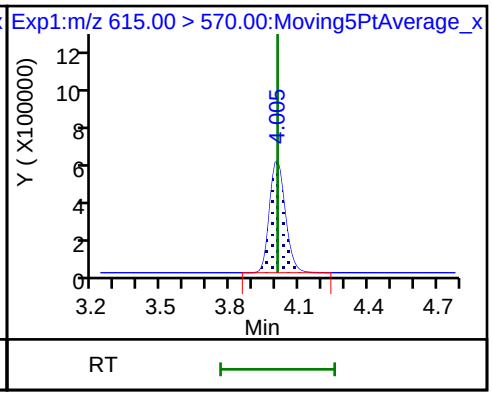
37 Perfluorododecanoic acid (ND)



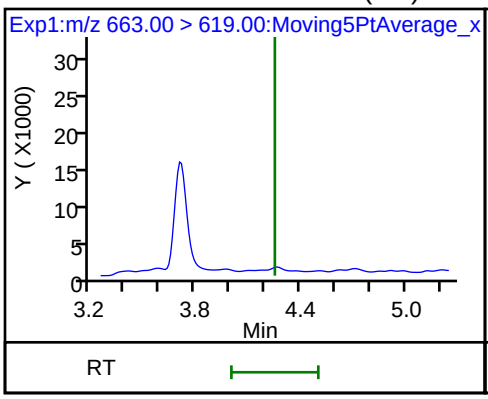
37 Perfluorododecanoic acid (ND)



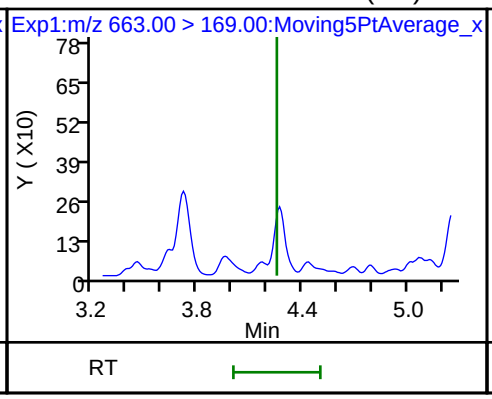
D 36 13C2 PFDoA



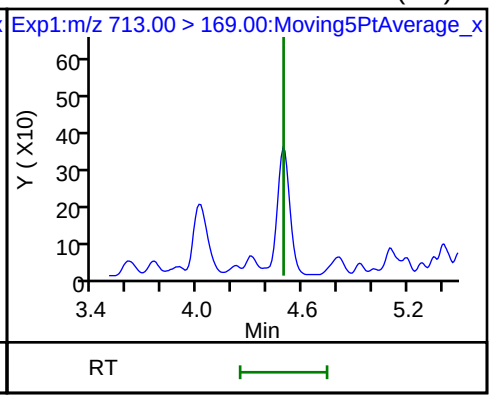
41 Perfluorotridecanoic acid (ND)



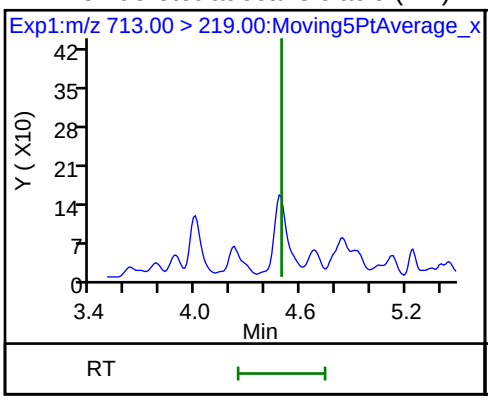
41 Perfluorotridecanoic acid (ND)



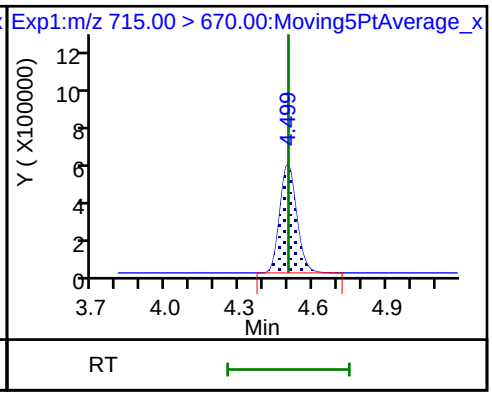
42 Perfluorotetradecanoic acid (ND)



42 Perfluorotetradecanoic acid (ND)



D 43 13C2-PFTeDA



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

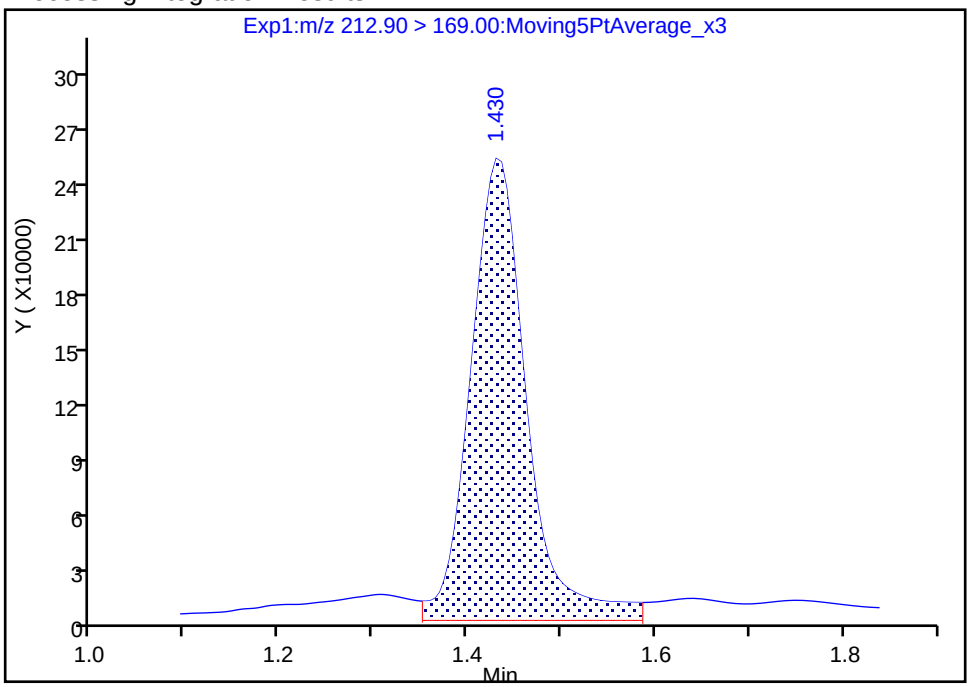
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\2018.07.13LLC_018.d				
Injection Date:	13-Jul-2018 22:20:10	Instrument ID:	A8_N		
Lims ID:	320-40571-A-37-A	Lab Sample ID:	320-40571-37		
Client ID:	NF34-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	11	Worklist Smp#:	13
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

2 Perfluorobutyric acid, CAS: 375-22-4

Signal: 1

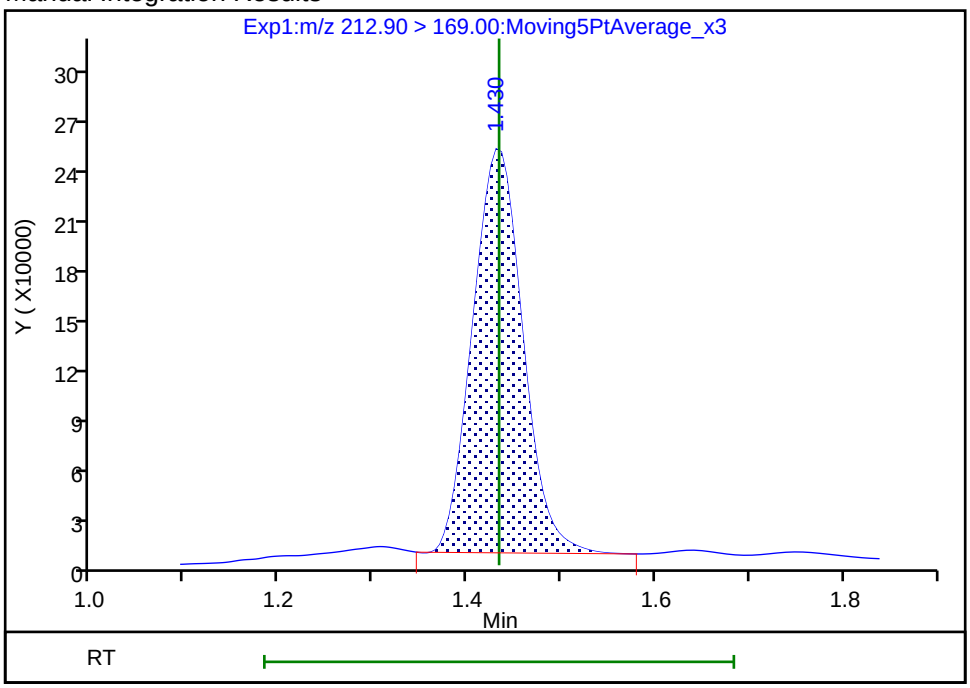
Processing Integration Results

RT: 1.43
Area: 1031382
Amount: 0.730463
Amount Units: ng/ml



Manual Integration Results

RT: 1.43
Area: 888256
Amount: 0.629096
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 12:43:57

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

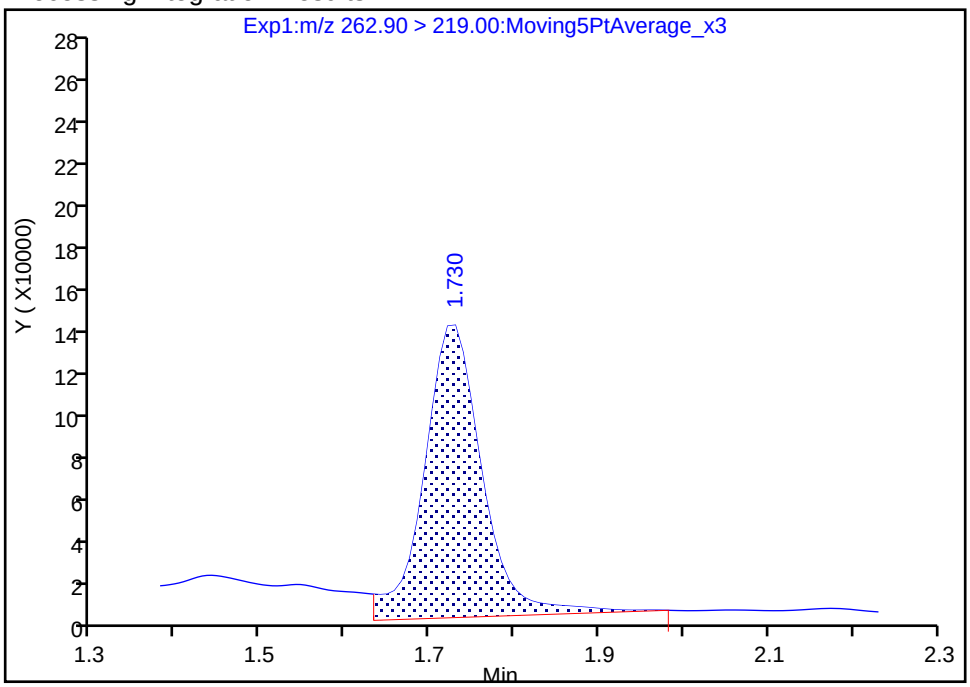
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\2018.07.13LLC_018.d				
Injection Date:	13-Jul-2018 22:20:10	Instrument ID:	A8_N		
Lims ID:	320-40571-A-37-A	Lab Sample ID:	320-40571-37		
Client ID:	NF34-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	11	Worklist Smp#:	13
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

4 Perfluoropentanoic acid, CAS: 2706-90-3

Signal: 1

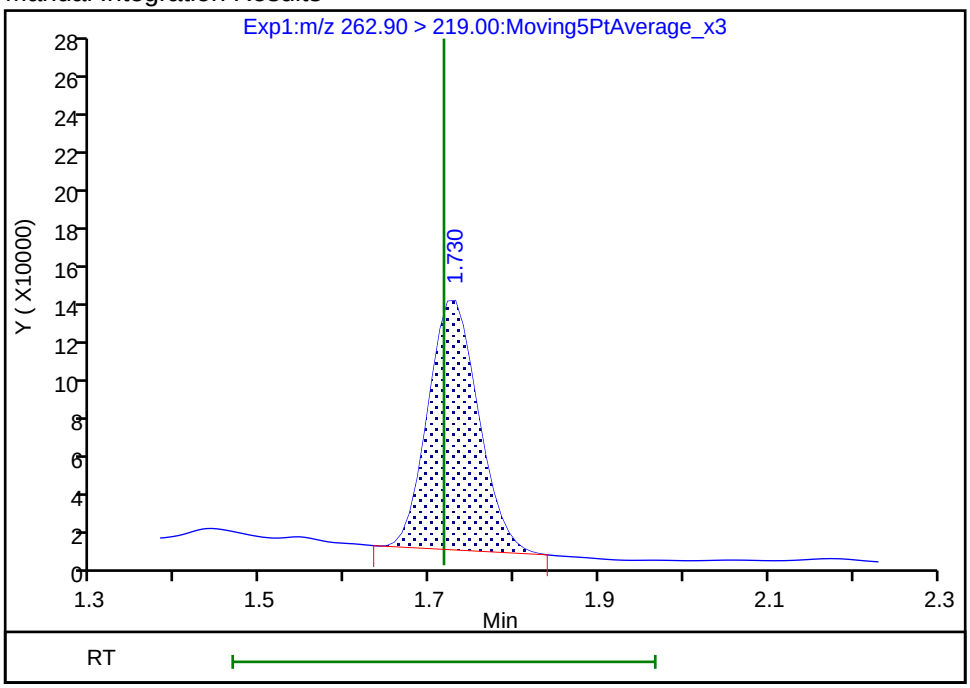
Processing Integration Results

RT: 1.73
Area: 654797
Amount: 0.383095
Amount Units: ng/ml



Manual Integration Results

RT: 1.73
Area: 533331
Amount: 0.312030
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 12:44:04

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

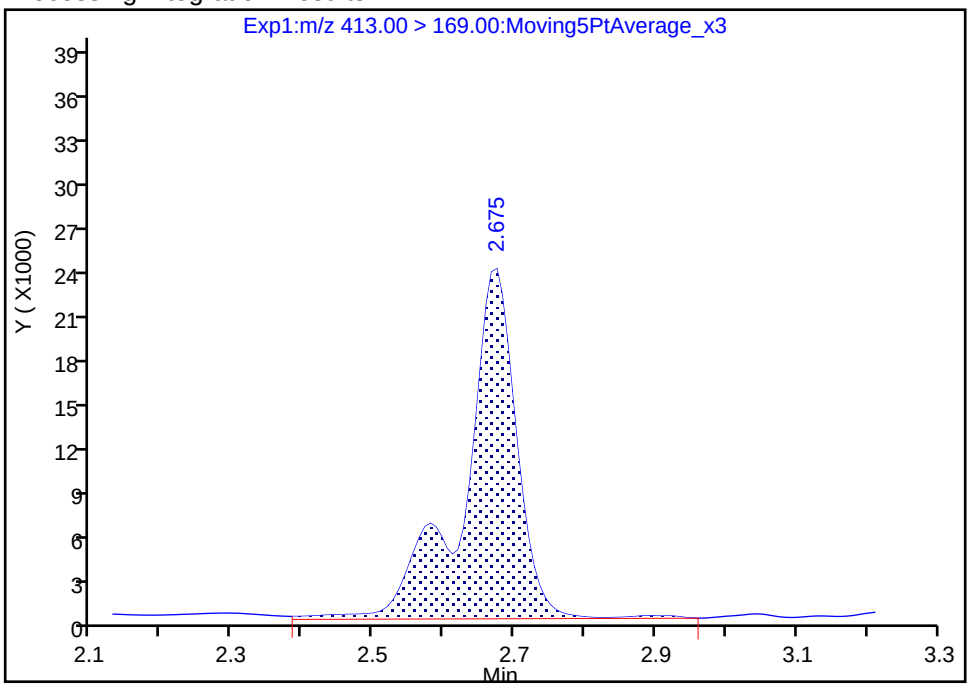
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\2018.07.13LLC_018.d				
Injection Date:	13-Jul-2018 22:20:10	Instrument ID:	A8_N		
Lims ID:	320-40571-A-37-A	Lab Sample ID:	320-40571-37		
Client ID:	NF34-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	11	Worklist Smp#:	13
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 2

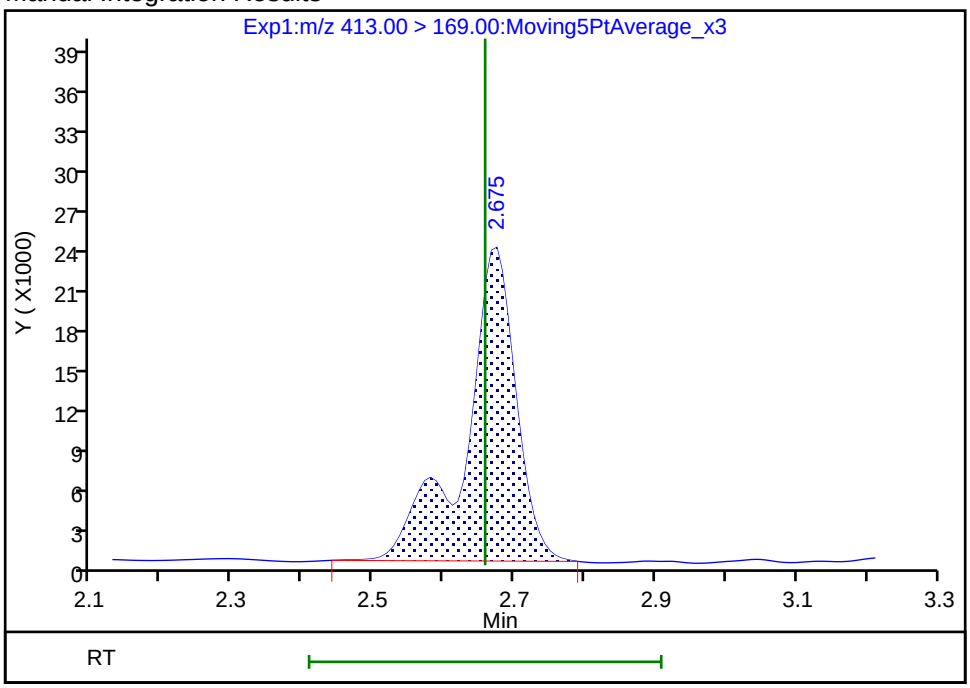
Processing Integration Results

RT: 2.67
Area: 125531
Amount: 0.081553
Amount Units: ng/ml



Manual Integration Results

RT: 2.67
Area: 118881
Amount: 0.089458
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 12:44:38

Audit Action: Manually Integrated Audit Reason: Isomers

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

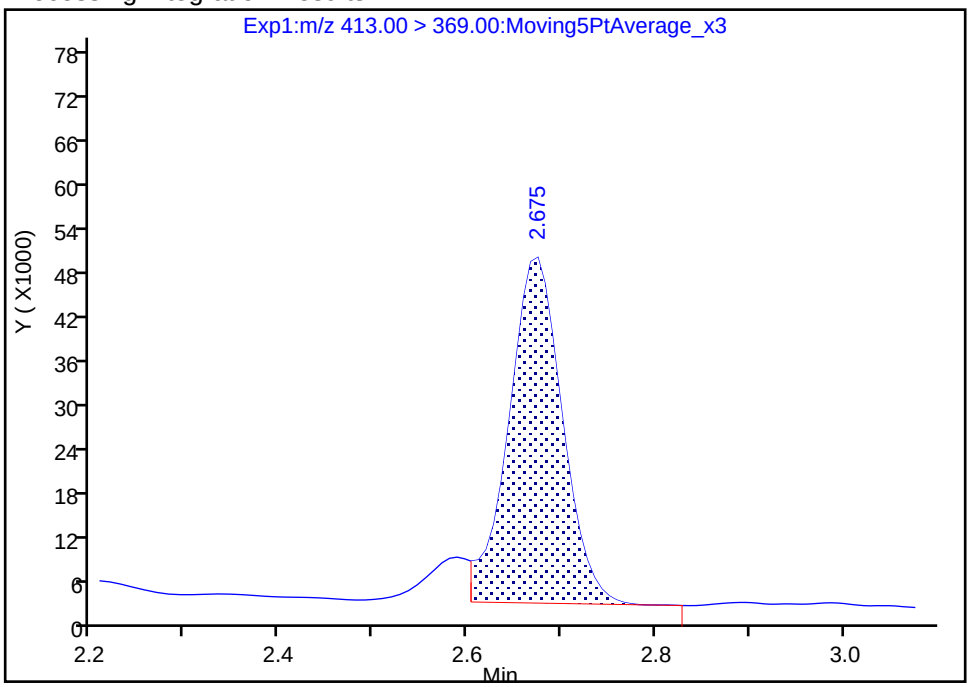
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\2018.07.13LLC_018.d				
Injection Date:	13-Jul-2018 22:20:10	Instrument ID:	A8_N		
Lims ID:	320-40571-A-37-A	Lab Sample ID:	320-40571-37		
Client ID:	NF34-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	11	Worklist Smp#:	13
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

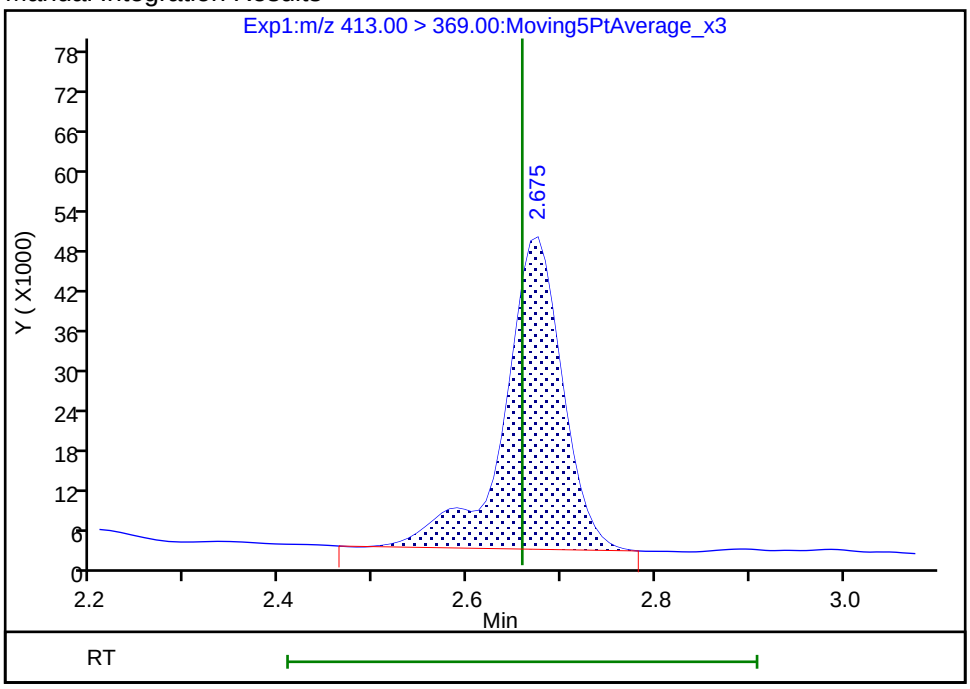
Processing Integration Results

RT: 2.67
Area: 186163
Amount: 0.081553
Amount Units: ng/ml



Manual Integration Results

RT: 2.67
Area: 204208
Amount: 0.089458
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 12:44:42
Audit Action: Manually Integrated Audit Reason: Isomers

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

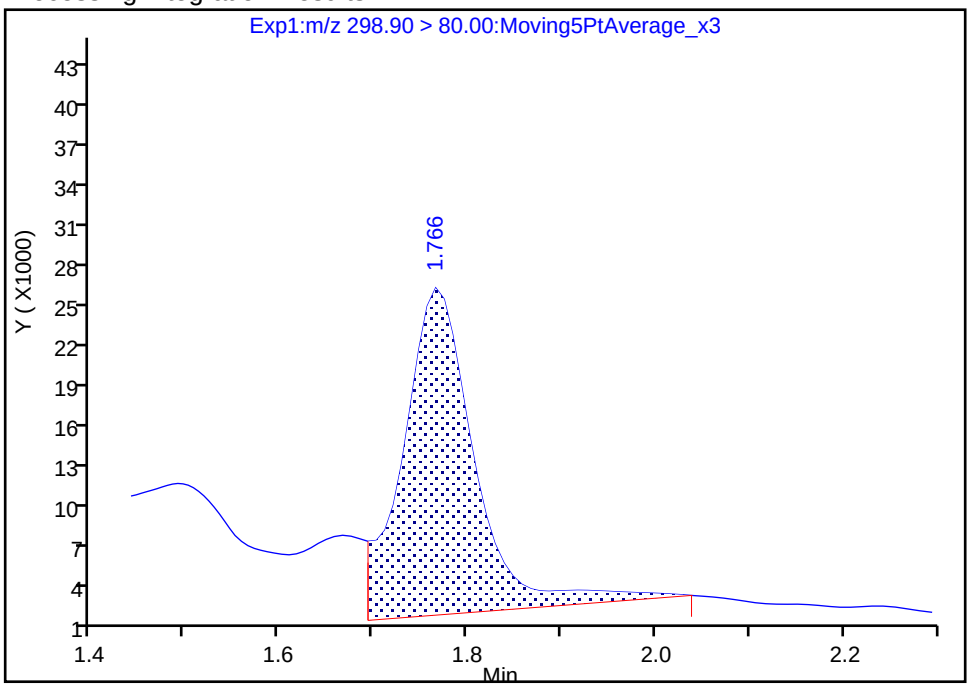
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\2018.07.13LLC_018.d				
Injection Date:	13-Jul-2018 22:20:10	Instrument ID:	A8_N		
Lims ID:	320-40571-A-37-A	Lab Sample ID:	320-40571-37		
Client ID:	NF34-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	11	Worklist Smp#:	13
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

5 Perfluorobutanesulfonic acid, CAS: 375-73-5

Signal: 1

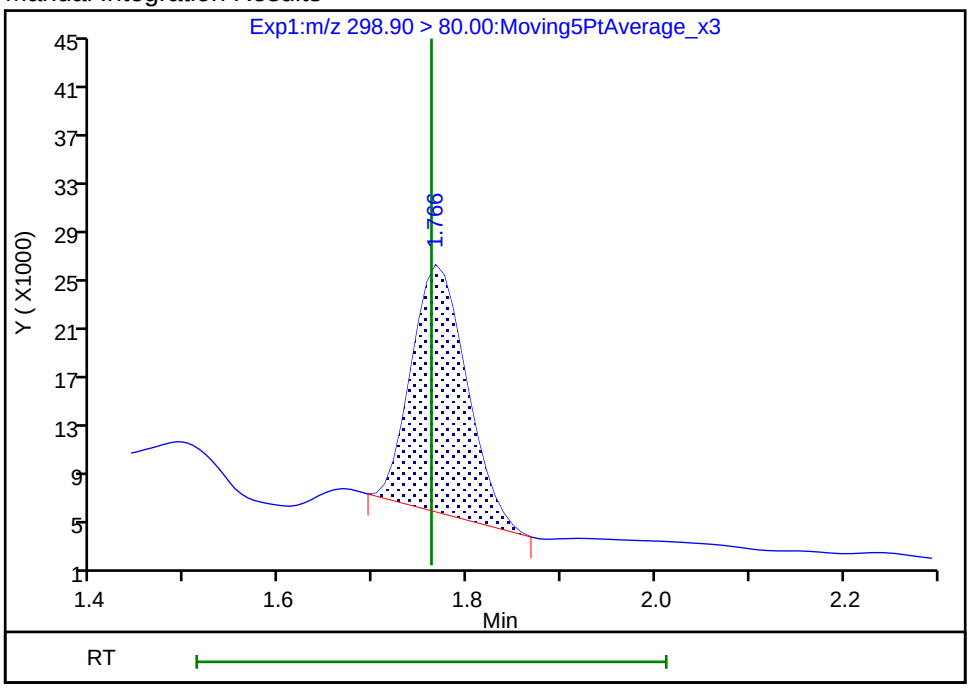
Processing Integration Results

RT: 1.77
Area: 127123
Amount: 0.042599
Amount Units: ng/ml



Manual Integration Results

RT: 1.77
Area: 82289
Amount: 0.027575
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 12:44:10
Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

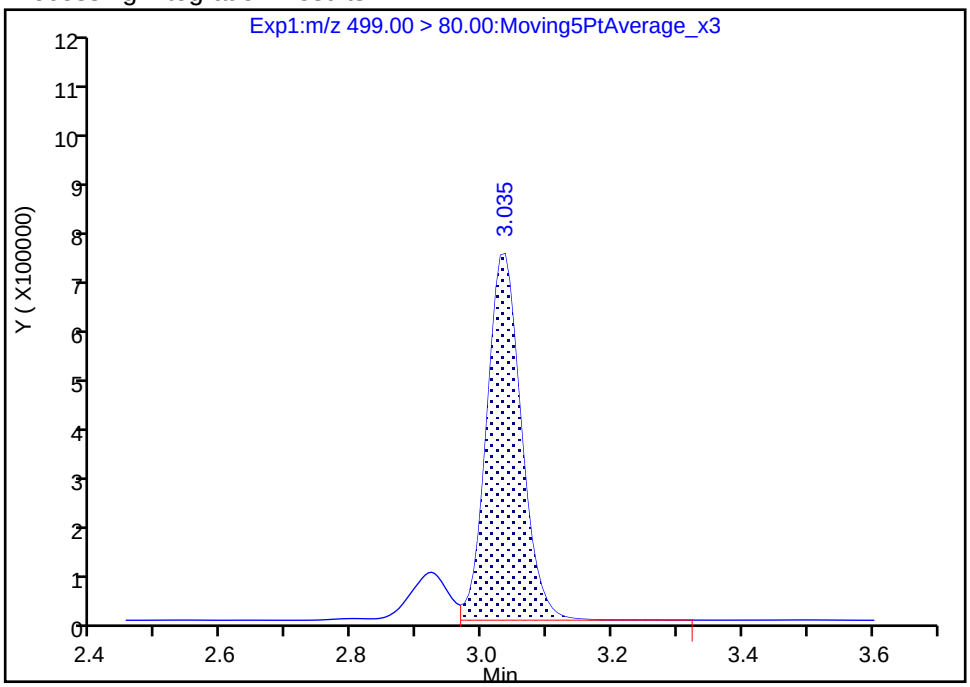
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\2018.07.13LLC_018.d				
Injection Date:	13-Jul-2018 22:20:10	Instrument ID:	A8_N		
Lims ID:	320-40571-A-37-A	Lab Sample ID:	320-40571-37		
Client ID:	NF34-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	11	Worklist Smp#:	13
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

17 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

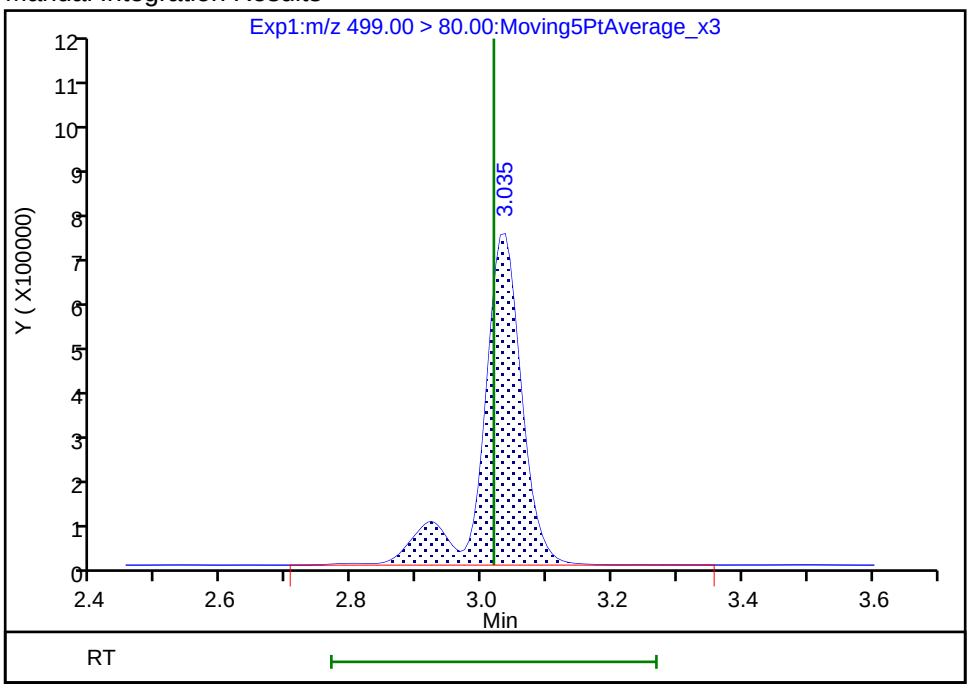
Processing Integration Results

RT: 3.04
Area: 2579680
Amount: 1.322835
Amount Units: ng/ml



Manual Integration Results

RT: 3.04
Area: 2960914
Amount: 1.518328
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 12:45:00

Audit Action: Manually Integrated Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF34-SS-01
Lab Sample ID: 320-40571-38
Matrix: Solid
Lab File ID: 2018.07.14LLA_030.d
Analysis Method: 537 (modified)
Date Collected: 06/19/2018 11:55
Extraction Method: SHAKE
Date Extracted: 06/28/2018 06:06
Sample wt/vol: 5.00(g)
Date Analyzed: 07/14/2018 14:32
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture: 15.8
GPC Cleanup:(Y/N) N
Analysis Batch No.: 234231
Units: mg/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	0.000039	J	0.00024	0.000033
2706-90-3	Perfluoropentanoic acid (PFPeA)	ND		0.00024	0.000091
307-24-4	Perfluorohexanoic acid (PFHxA)	ND		0.00024	0.000050
375-85-9	Perfluoroheptanoic acid (PFHpA)	ND		0.00024	0.000034
335-67-1	Perfluorooctanoic acid (PFOA)	ND		0.00024	0.00010
375-95-1	Perfluorononanoic acid (PFNA)	ND		0.00024	0.000043
335-76-2	Perfluorodecanoic acid (PFDA)	ND		0.00024	0.000026
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		0.00024	0.000043
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		0.00024	0.000080
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		0.00024	0.000061
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		0.00024	0.000064
375-73-5	Perfluorobutanesulfonic acid (PFBS)	ND		0.00024	0.000030
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	ND		0.00024	0.000037
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.00024	0.000042
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.00089		0.00059	0.00024
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		0.00024	0.000046
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		0.00024	0.000097
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.0024	0.00046
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.0024	0.00044
27619-97-2	6:2 FTS	ND		0.0024	0.00018
39108-34-4	8:2 FTS	ND		0.0024	0.00030

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF34-SS-01
Lab Sample ID: 320-40571-38
Matrix: Solid
Lab File ID: 2018.07.14LLA_030.d
Analysis Method: 537 (modified)
Date Collected: 06/19/2018 11:55
Extraction Method: SHAKE
Date Extracted: 06/28/2018 06:06
Sample wt/vol: 5.00(g)
Date Analyzed: 07/14/2018 14:32
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture: 15.8
GPC Cleanup:(Y/N) N
Analysis Batch No.: 234231
Units: mg/Kg

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00992	13C4 PFBA	69		25-150
STL01893	13C5 PFPeA	76		25-150
STL00993	13C2 PFHxA	71		25-150
STL01892	13C4-PFHpA	82		25-150
STL00990	13C4 PFOA	80		25-150
STL00995	13C5 PFNA	82		25-150
STL00996	13C2 PFDA	83		25-150
STL00997	13C2 PFUnA	75		25-150
STL00998	13C2 PFDoA	72		25-150
STL02116	13C2-PFTeDA	78		25-150
STL02337	13C3-PFBS	66		25-150
STL00994	18O2 PFHxS	70		25-150
STL00991	13C4 PFOS	63		25-150
STL01056	13C8 FOSA	60		25-150
STL02118	d3-NMeFOSAA	79		25-150
STL02117	d5-NEtFOSAA	73		25-150
STL02279	M2-6:2FTS	78		25-150
STL02280	M2-8:2FTS	83		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180716-61105.b\2018.07.14LLA_030.d
Lims ID: 320-40571-A-38-A
Client ID: NF34-SS-01
Sample Type: Client
Inject. Date: 14-Jul-2018 14:32:29 ALS Bottle#: 20 Worklist Smp#: 13
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-40571-a-38-a
Misc. Info.: Plate: 1 Rack: 5
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180716-61105.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 17-Jul-2018 08:26:28 Calib Date: 11-Jul-2018 15:38:42
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK016

First Level Reviewer: mongkols Date: 17-Jul-2018 08:26:28

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										M
217.00 > 172.00	1.433	1.436	-0.003	0.539	4761825	1.73		69.4	38900	M
2 Perfluorobutyric acid										
212.90 > 169.00	1.439	1.441	-0.002	1.004	30670	0.0163			4.7	
D 3 13C5-PFPeA										
267.90 > 223.00	1.717	1.720	-0.004	0.646	3614465	1.89		75.8	39172	
D 47 13C3-PFBS										
301.90 > 83.00	1.753	1.756	-0.003	0.659	73079	1.52		65.5	260	
D 7 13C2 PFHxA										
315.00 > 270.00	1.988	1.992	-0.004	0.748	3655167	1.77		71.0	62874	
D 9 13C4-PFHpA										
367.00 > 322.00	2.303	2.306	-0.003	0.866	3880912	2.05		81.8	42696	
D 11 18O2 PFHxS										
403.00 > 84.00	2.329	2.319	0.010	0.876	4477481	1.67		70.4	41395	
8 Perfluorohexanesulfonic acid										M
399.00 > 80.00	2.329	2.332	-0.003	1.000	21988	0.0101			33.4	M
399.00 > 99.00	2.316	2.332	-0.016	0.994	6096		3.61(1.50-4.49)		19.5	
D 12 M2-6:2FTS										
429.00 > 81.00	2.635	2.628	0.007	0.991	756208	1.86		78.3	3277	
D 14 13C4 PFOA										
417.00 > 372.00	2.658	2.652	0.006	1.000	3888344	2.01		80.3	45117	
* 62 13C2-PFOA										
415.00 > 370.00	2.658	2.667	-0.009		5062098	2.50			50920	
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.658	2.667	-0.009	1.000	64145	0.0335			35.6	M
413.00 > 169.00	2.658	2.667	-0.009	1.000	37322		1.72(0.84-2.52)		147	M
D 19 13C5 PFNA										
468.00 > 423.00	3.020	3.018	0.002	1.136	3561361	2.06		82.3	44932	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 18 13C4 PFOS										
503.00 > 80.00	3.020	3.018	0.002	1.136	2991663	1.52		63.5	14524	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.020	3.029	-0.009	1.000	530946	0.3743			2978	
499.00 > 99.00	3.020	3.029	-0.009	1.000	124095		4.28(2.31-6.93)		939	
D 26 M2-8:2FTS										
529.00 > 81.00	3.372	3.361	0.011	1.269	1186062	1.99		83.2	4299	
D 23 13C2 PFDA										
515.00 > 470.00	3.382	3.370	0.012	1.272	3142048	2.07		82.7	70494	
D 21 13C8 FOSA										
506.00 > 78.00	3.372	3.370	0.002	1.269	4239626	1.49		59.6	45794	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.372	3.377	-0.005	1.000	16623	0.0099			123	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.531	3.520	0.011	1.328	1231314	1.98		79.1	30471	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.531	3.536	-0.005	1.000	6506	0.0134			63.1	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.700	3.687	0.013	1.392	1159360	1.82		72.7	4377	
D 30 13C2 PFUnA										
565.00 > 520.00	3.700	3.698	0.002	1.392	2385702	1.88		75.2	50274	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.700	3.706	-0.006	1.000	19325	0.0471			419	
D 36 13C2 PFDoA										
615.00 > 570.00	3.988	3.988	0.0	1.500	2362810	1.80		71.9	20111	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.490	4.480	0.010	1.689	2651013	1.94		77.7	17560	

QC Flag Legend

Review Flags

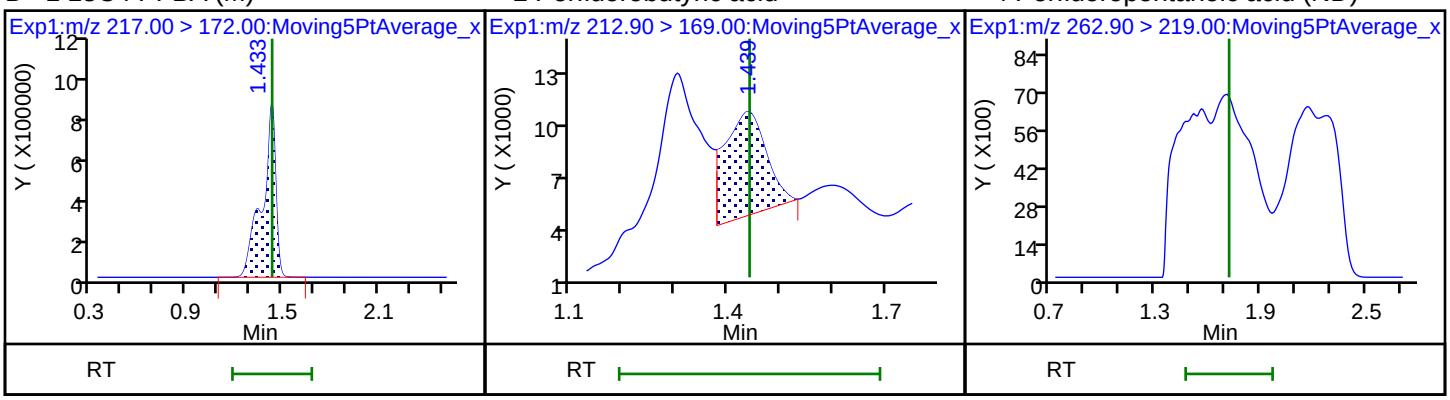
M - Manually Integrated

Report Date: 17-Jul-2018 08:26:29 Chrom Revision: 2.2 07-Jun-2018 07:41:54

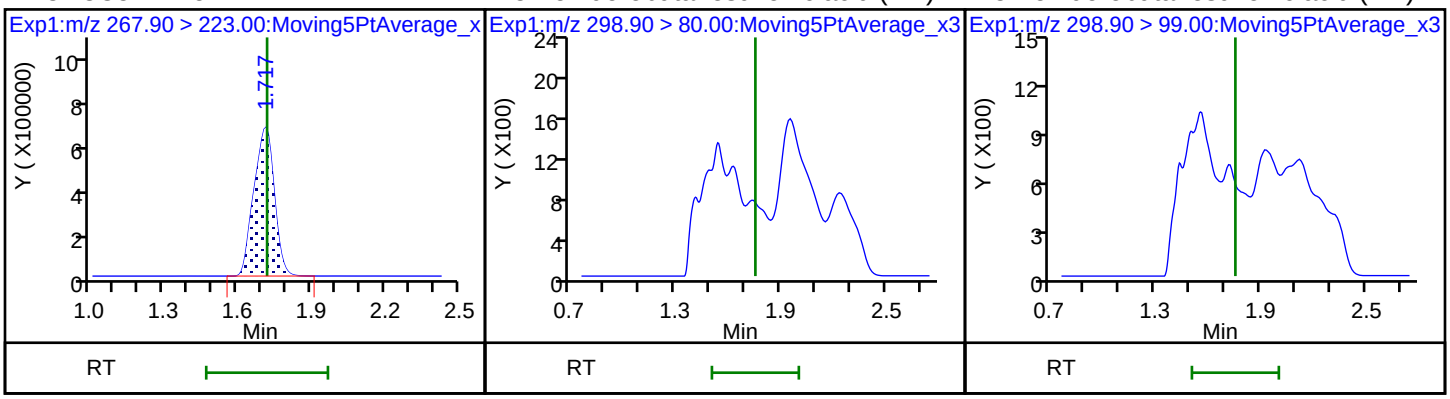
TestAmerica Sacramento

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180716-61105.b\2018.07.14LLA_030.d				
Injection Date:	14-Jul-2018 14:32:29	Instrument ID:	A8_N		
Lims ID:	320-40571-A-38-A	Lab Sample ID:	320-40571-38		
Client ID:	NF34-SS-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	20	Worklist Smp#:	13
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		

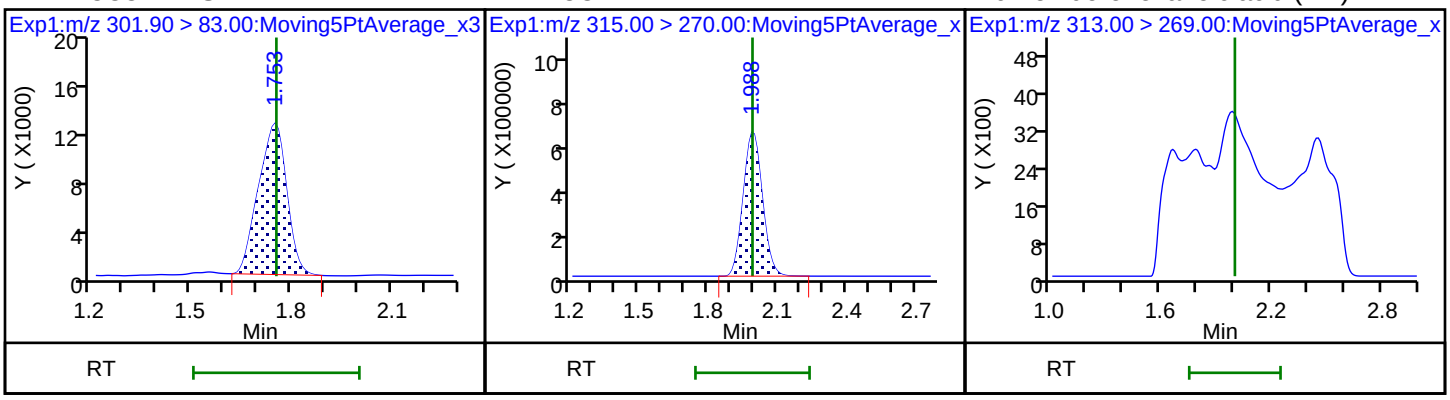
D 1 13C4 PFBA (M) | 2 Perfluorobutyric acid | 4 Perfluoropentanoic acid (ND)



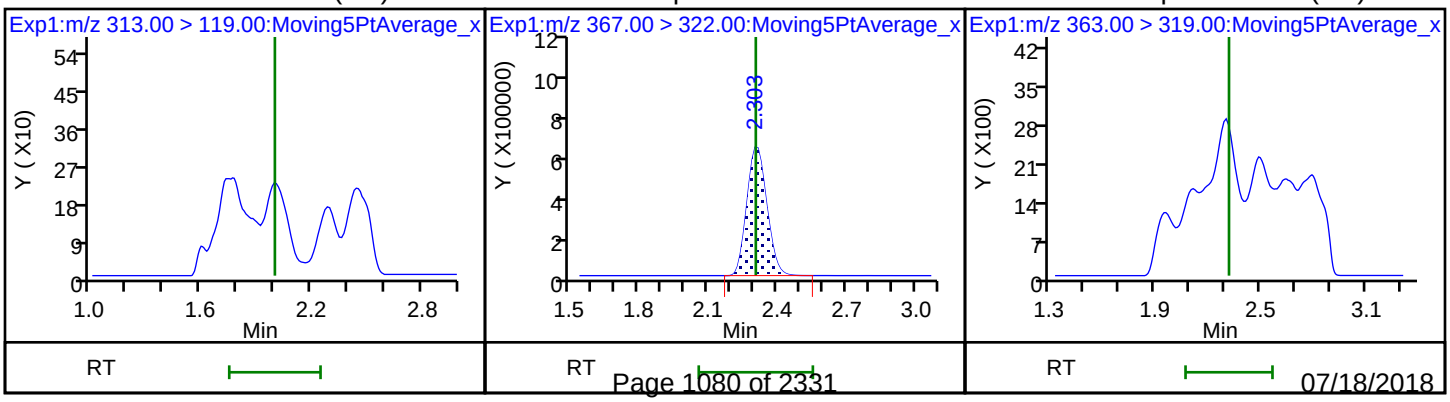
D 3 13C5-PFPeA | 5 Perfluorobutanesulfonic acid (ND) | 5 Perfluorobutanesulfonic acid (ND)



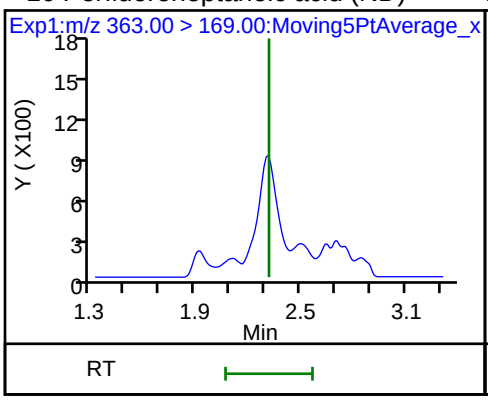
D 47 13C3-PFBS | D 7 13C2 PFHxA | 6 Perfluorohexanoic acid (ND)



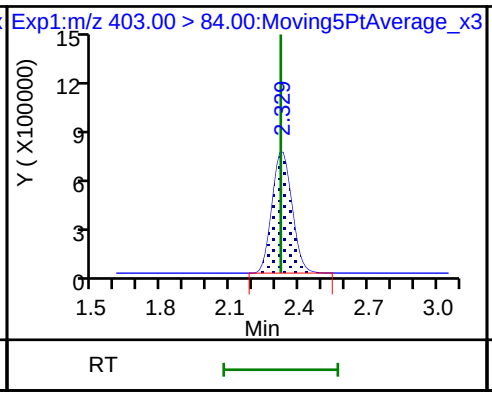
6 Perfluorohexanoic acid (ND) | D 9 13C4-PFHpA | 10 Perfluoroheptanoic acid (ND)



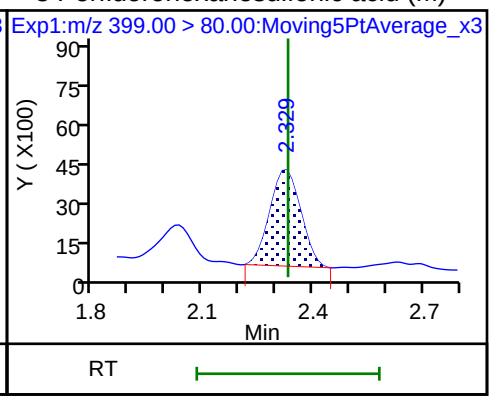
10 Perfluoroheptanoic acid (ND)



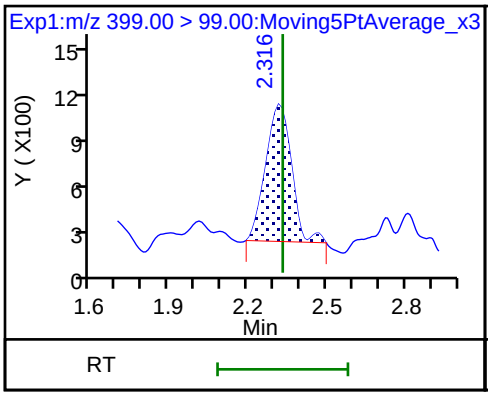
D 11 18O2 PFHxS



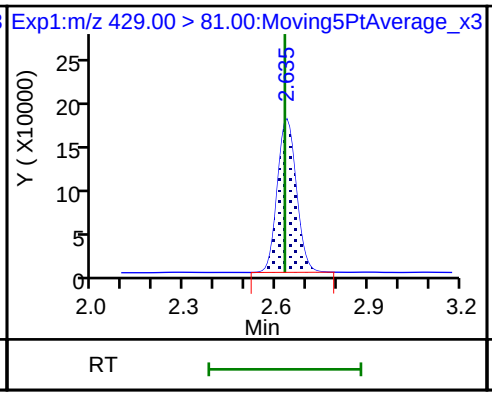
8 Perfluorohexanesulfonic acid (M)



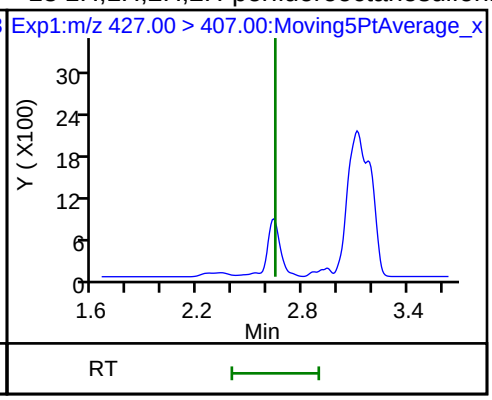
8 Perfluorohexanesulfonic acid



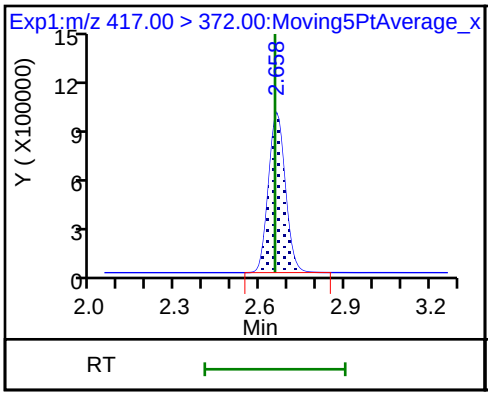
D 12 M2-6:2FTS



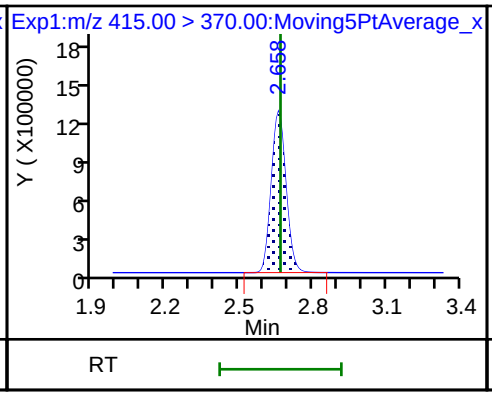
13 1H,1H,2H,2H-perfluorooctanesulfoni (ND)



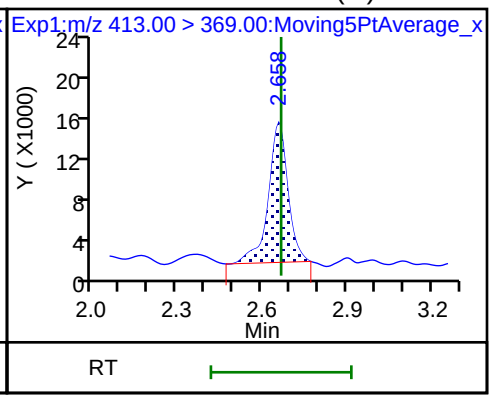
D 14 13C4 PFOA



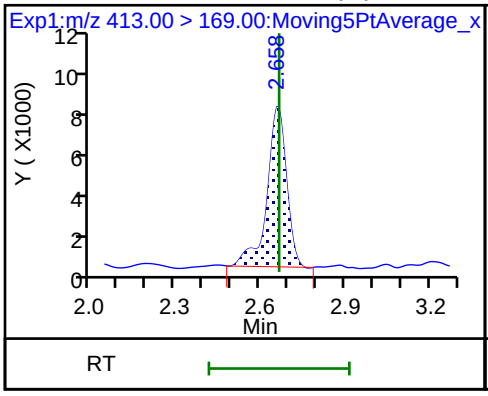
* 62 13C2-PFOA



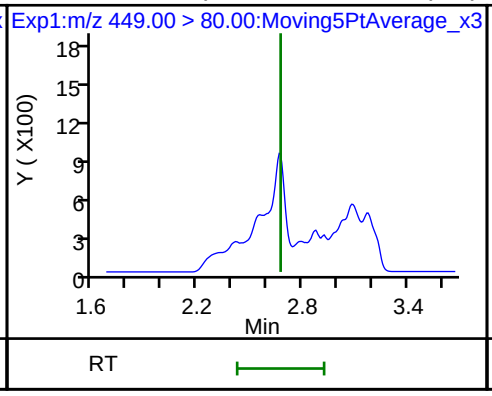
15 Perfluorooctanoic acid (M)



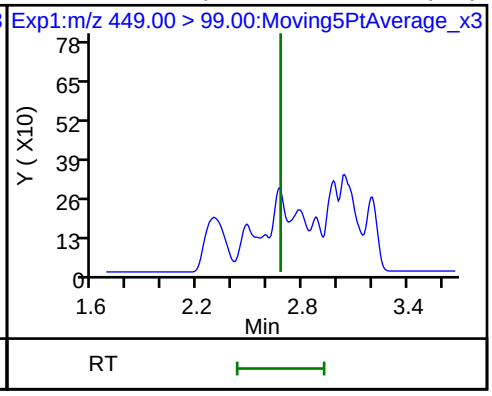
15 Perfluorooctanoic acid (M)



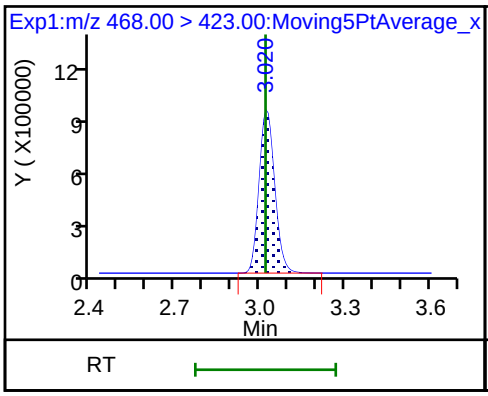
16 Perfluoroheptanesulfonic acid (ND)



16 Perfluoroheptanesulfonic acid (ND)



D 19 13C5 PFNA



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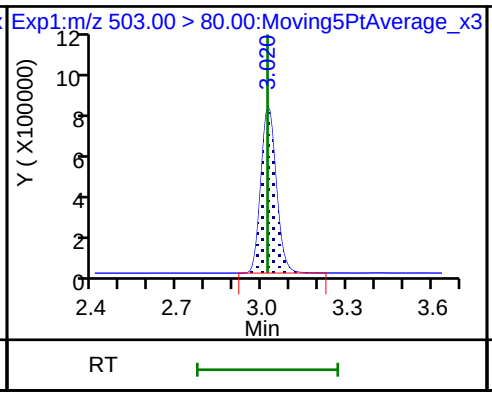
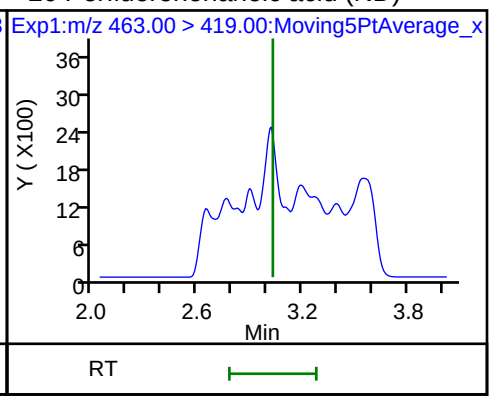
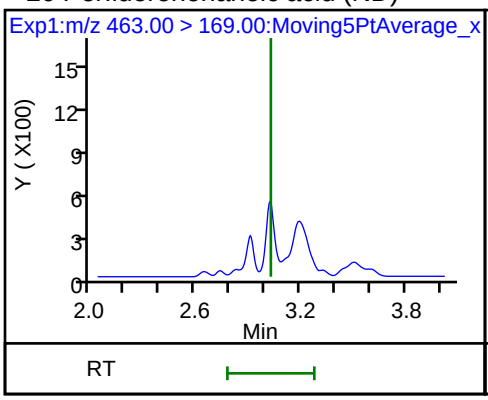


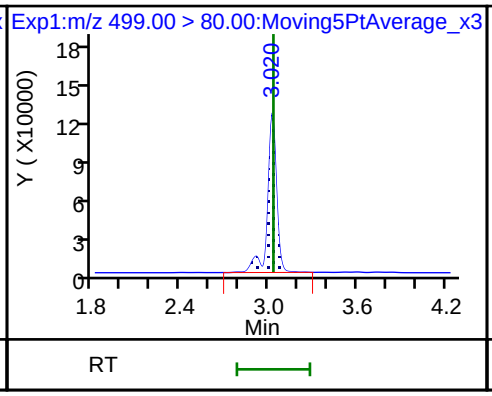
20 Perfluorononanoic acid (ND)



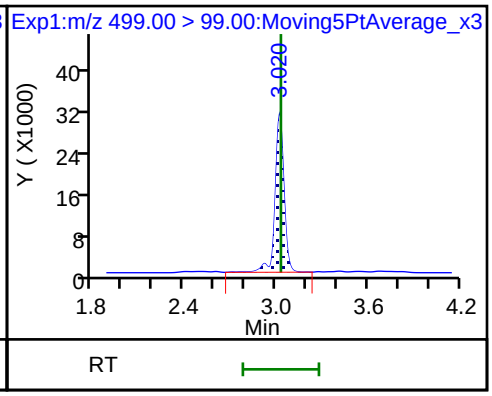
20 Perfluorononanoic acid (ND)



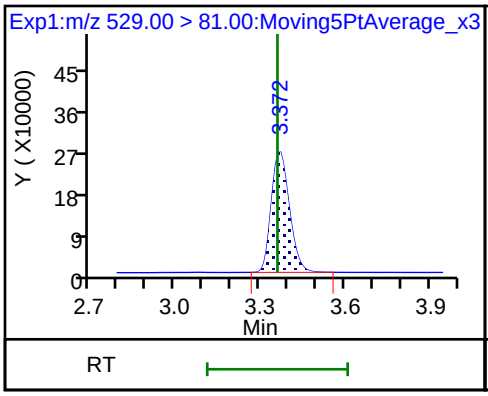
17 Perfluorooctane sulfonic acid



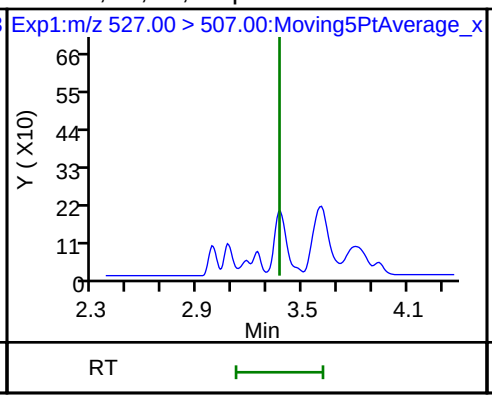
17 Perfluorooctane sulfonic acid



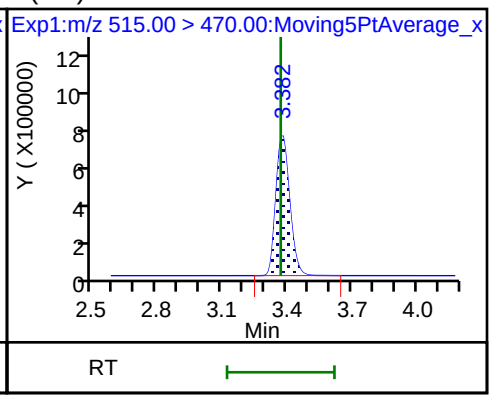
D 26 M2-8:2FTS



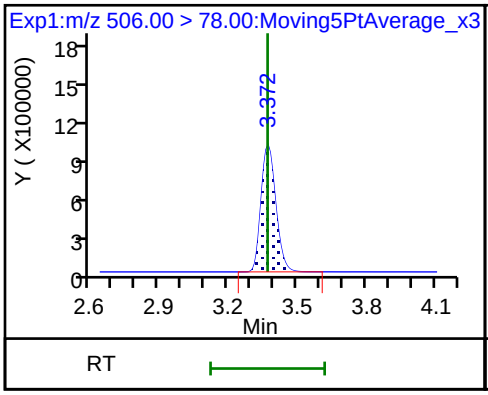
25 1H,1H,2H,2H-perfluorodecanesulfonic acid (ND)



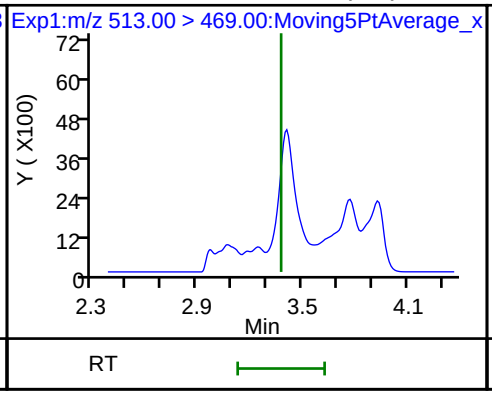
D 28 13C2 PFDA



D 21 13C8 FOSA



24 Perfluorodecanoic acid (ND)



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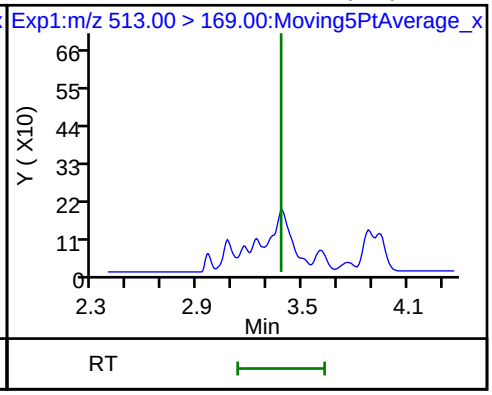
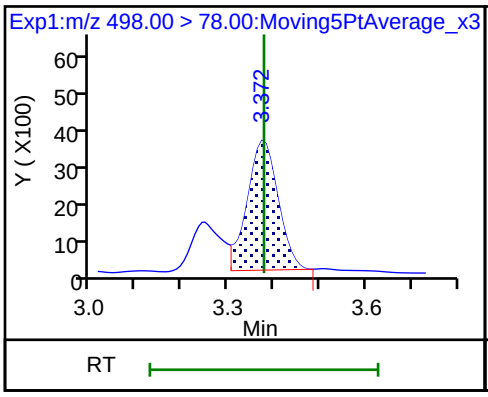
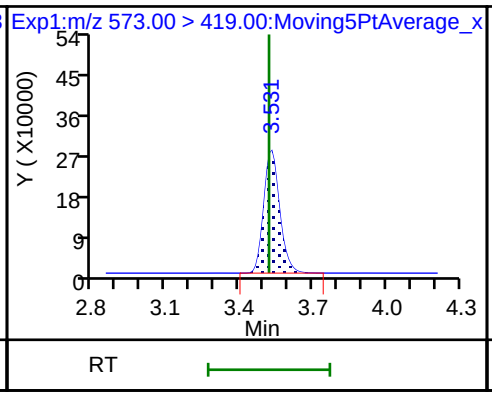


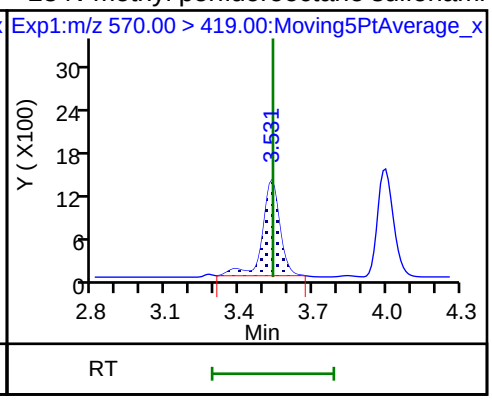
22 Perfluorooctane Sulfonamide



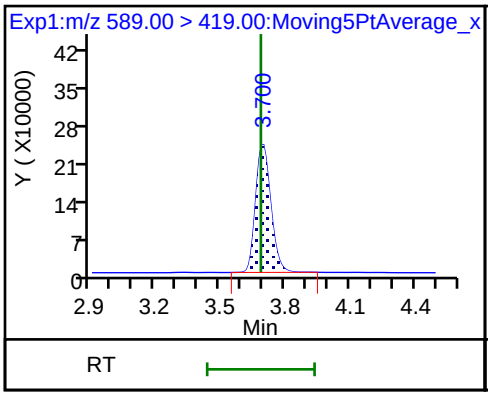
D 27 d3-NMeFOSAA



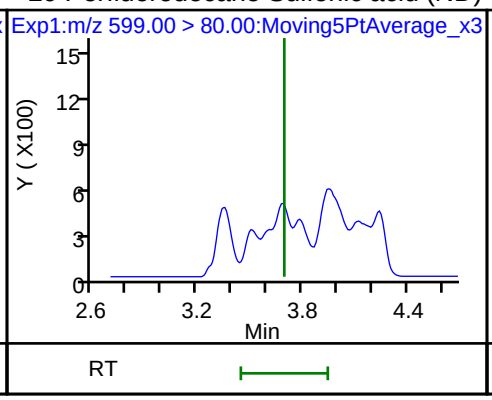
28 N-methyl perfluorooctane sulfonami



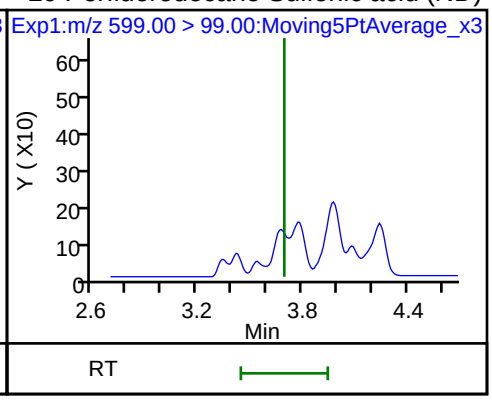
D 32 d5-NEtFOSAA



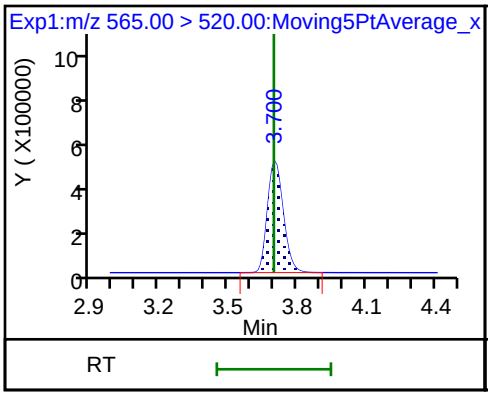
29 Perfluorodecane Sulfonic acid (ND)



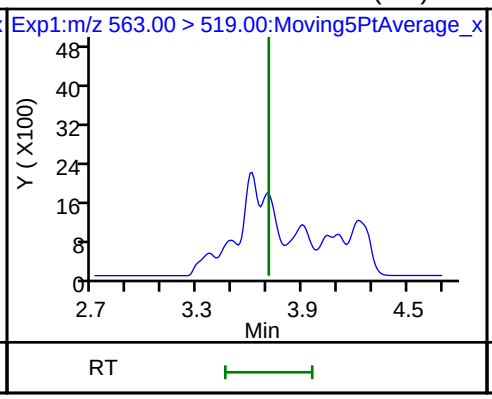
29 Perfluorodecane Sulfonic acid (ND)



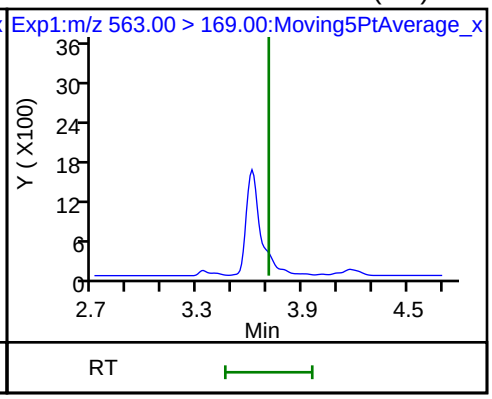
D 30 13C2 PFUnA



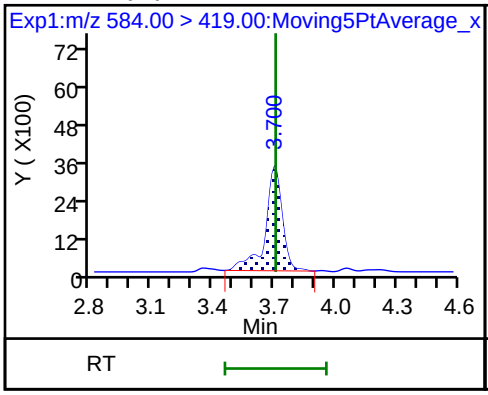
31 Perfluoroundecanoic acid (ND)



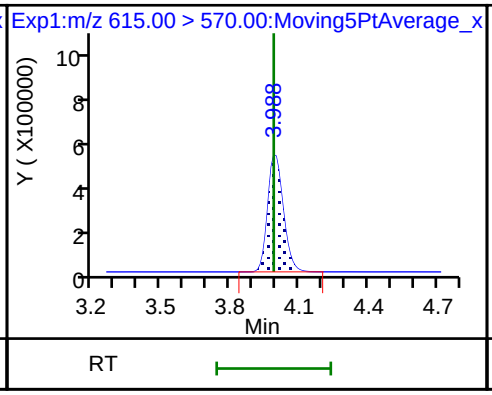
31 Perfluoroundecanoic acid (ND)



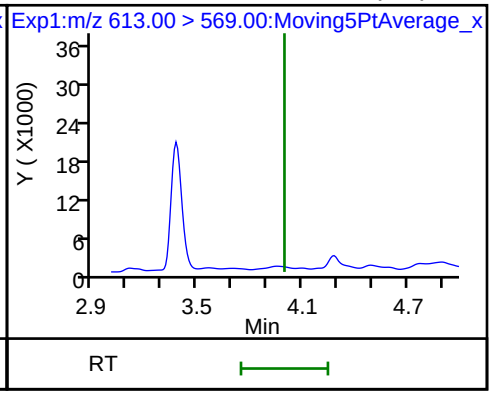
33 N-ethyl perfluorooctane sulfonamid



D 36 13C2 PFDoA

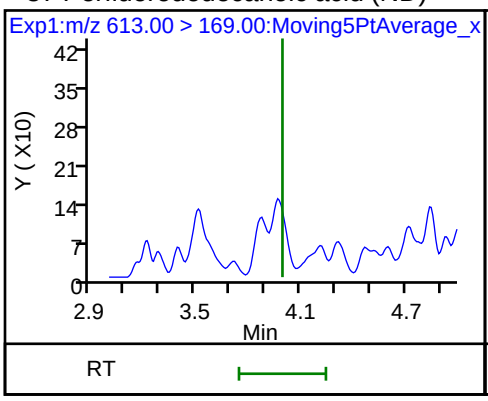


37 Perfluorododecanoic acid (ND)

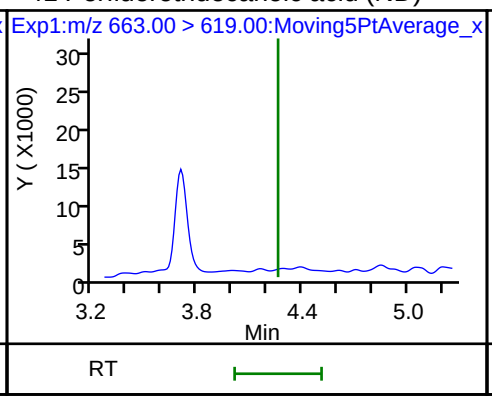


Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180716-61105.b\2018.07.14LLA_030.d

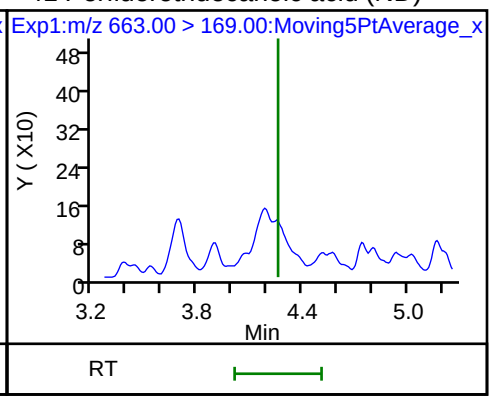
37 Perfluorododecanoic acid (ND)



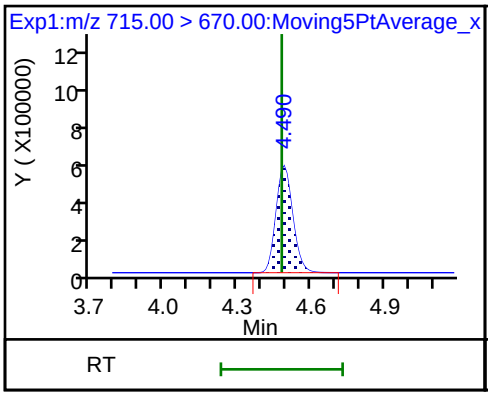
41 Perfluorotridecanoic acid (ND)



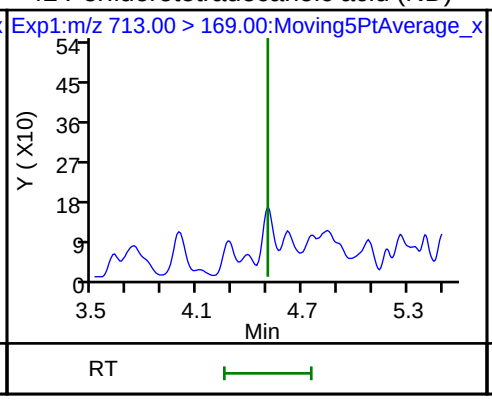
41 Perfluorotridecanoic acid (ND)



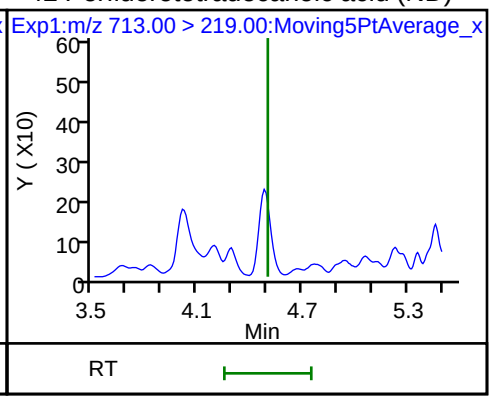
D 43 13C2-PFTeDA



42 Perfluorotetradecanoic acid (ND)



42 Perfluorotetradecanoic acid (ND)



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

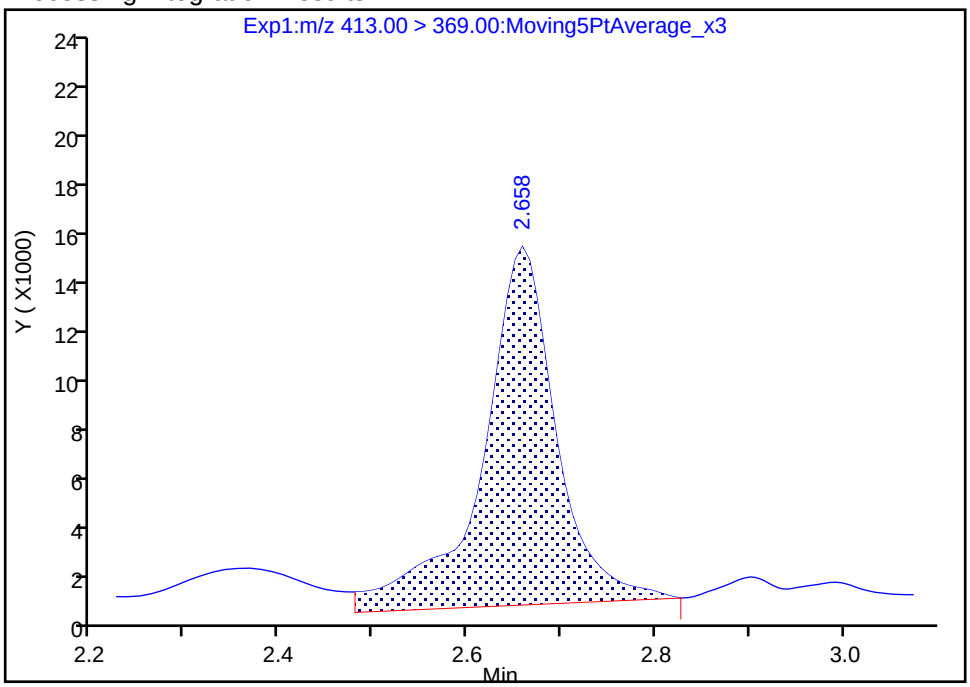
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180716-61105.b\2018.07.14LLA_030.d				
Injection Date:	14-Jul-2018 14:32:29	Instrument ID:	A8_N		
Lims ID:	320-40571-A-38-A	Lab Sample ID:	320-40571-38		
Client ID:	NF34-SS-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	20	Worklist Smp#:	13
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

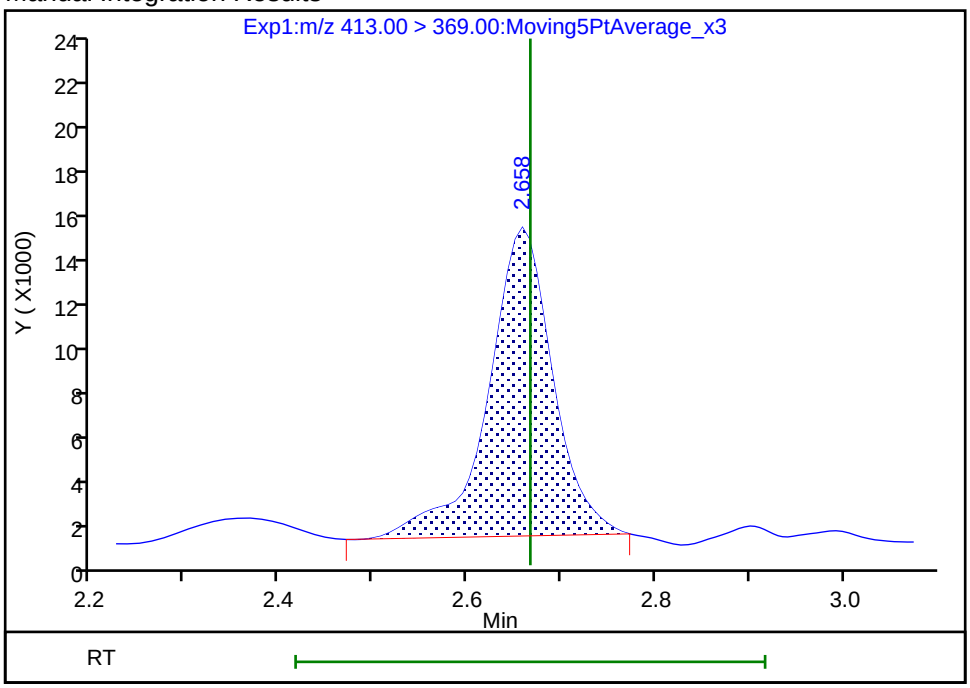
Processing Integration Results

RT: 2.66
Area: 77310
Amount: 0.040361
Amount Units: ng/ml



Manual Integration Results

RT: 2.66
Area: 64145
Amount: 0.033488
Amount Units: ng/ml



Reviewer: mongkols, 17-Jul-2018 08:25:50

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

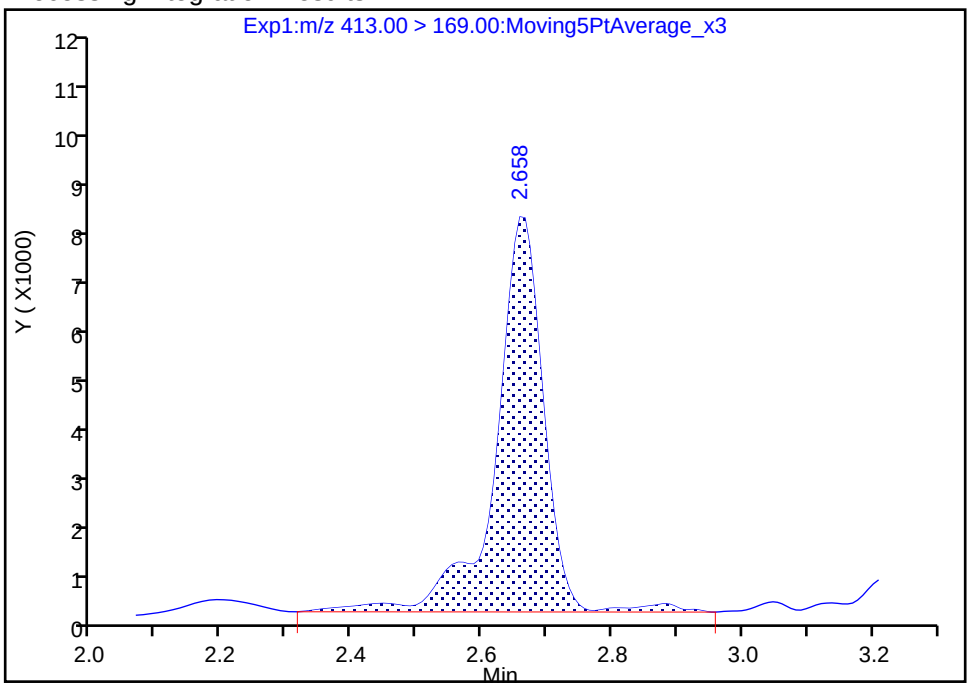
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180716-61105.b\2018.07.14LLA_030.d				
Injection Date:	14-Jul-2018 14:32:29	Instrument ID:	A8_N		
Lims ID:	320-40571-A-38-A	Lab Sample ID:	320-40571-38		
Client ID:	NF34-SS-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	20	Worklist Smp#:	13
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 2

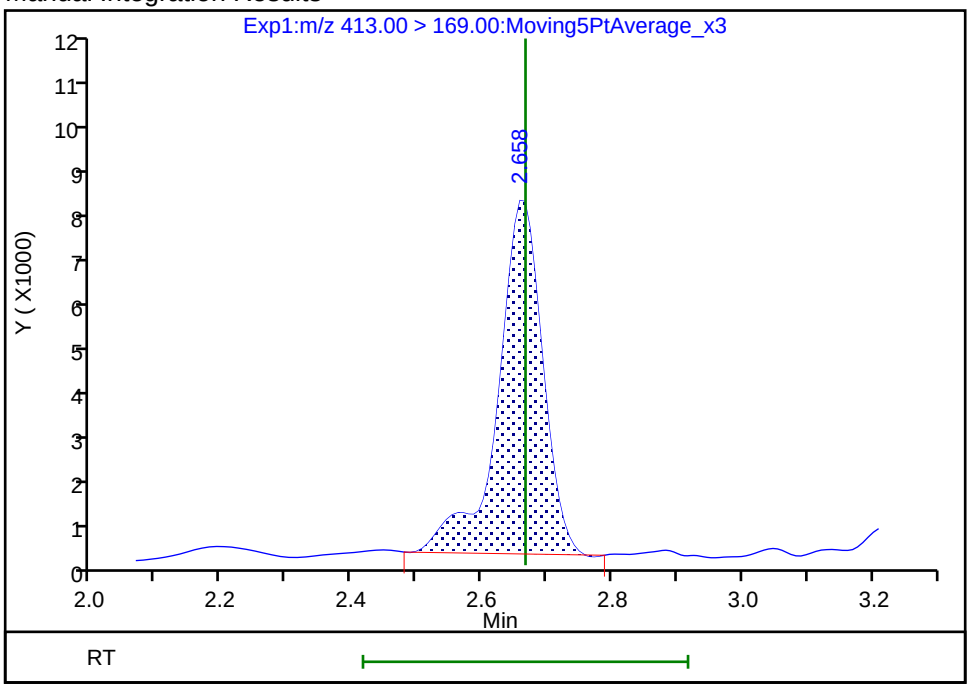
Processing Integration Results

RT: 2.66
Area: 40739
Amount: 0.040361
Amount Units: ng/ml



Manual Integration Results

RT: 2.66
Area: 37322
Amount: 0.033488
Amount Units: ng/ml



Reviewer: mongkols, 17-Jul-2018 08:25:55
Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

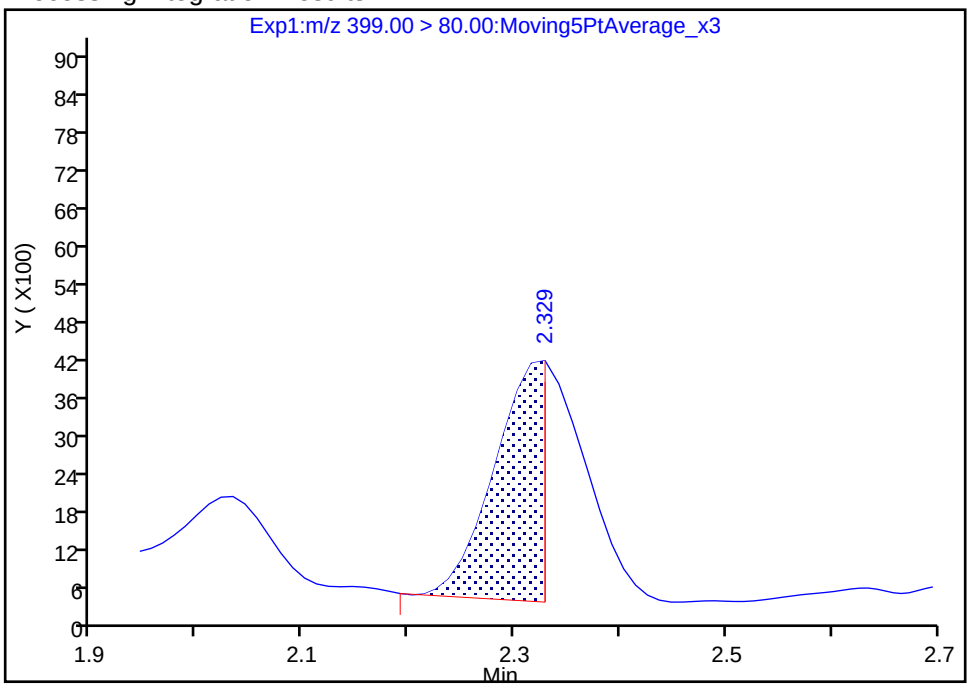
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180716-61105.b\2018.07.14LLA_030.d				
Injection Date:	14-Jul-2018 14:32:29	Instrument ID:	A8_N		
Lims ID:	320-40571-A-38-A	Lab Sample ID:	320-40571-38		
Client ID:	NF34-SS-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	20	Worklist Smp#:	13
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

8 Perfluorohexanesulfonic acid, CAS: 355-46-4

Signal: 1

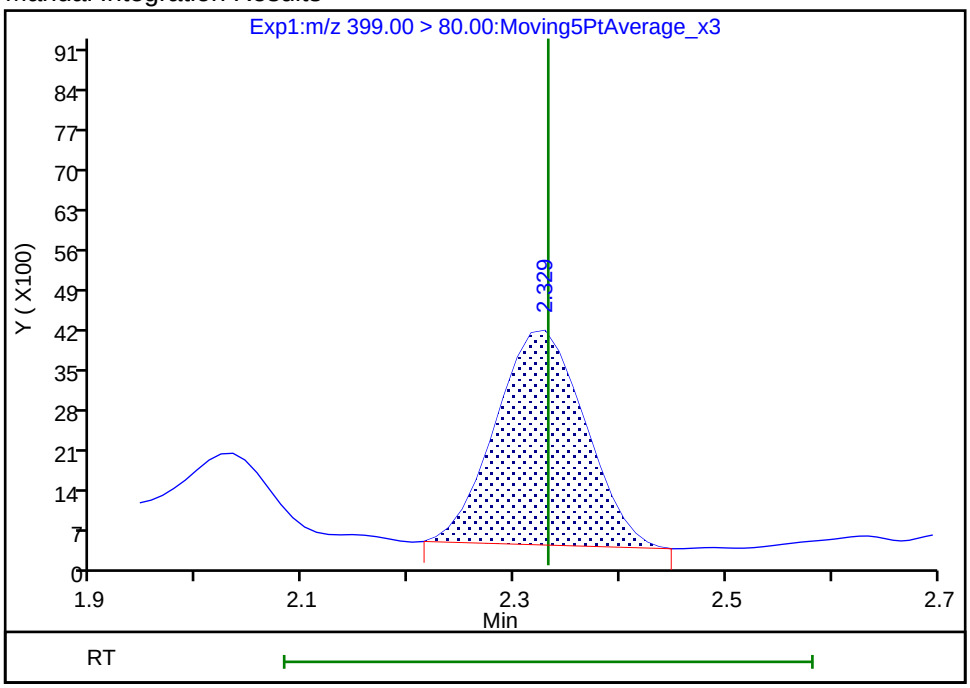
Processing Integration Results

RT: 2.33
Area: 12142
Amount: 0.005587
Amount Units: ng/ml



Manual Integration Results

RT: 2.33
Area: 21988
Amount: 0.010117
Amount Units: ng/ml



Reviewer: mongkols, 17-Jul-2018 08:25:34

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

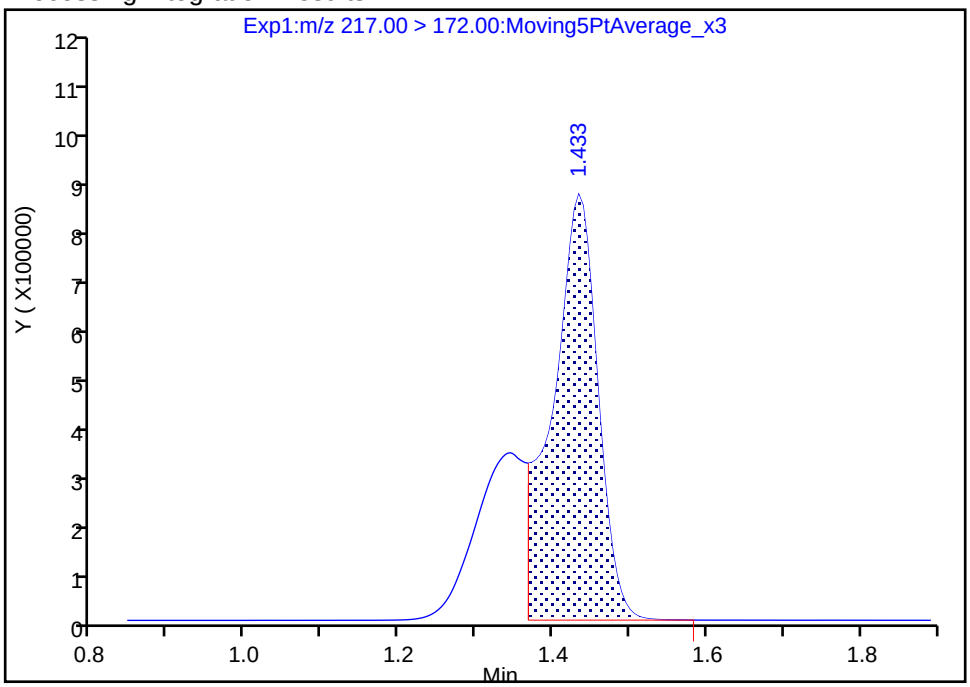
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180716-61105.b\2018.07.14LLA_030.d				
Injection Date:	14-Jul-2018 14:32:29	Instrument ID:	A8_N		
Lims ID:	320-40571-A-38-A	Lab Sample ID:	320-40571-38		
Client ID:	NF34-SS-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	20	Worklist Smp#:	13
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

D 1 13C4 PFBA, CAS: STL00992

Signal: 1

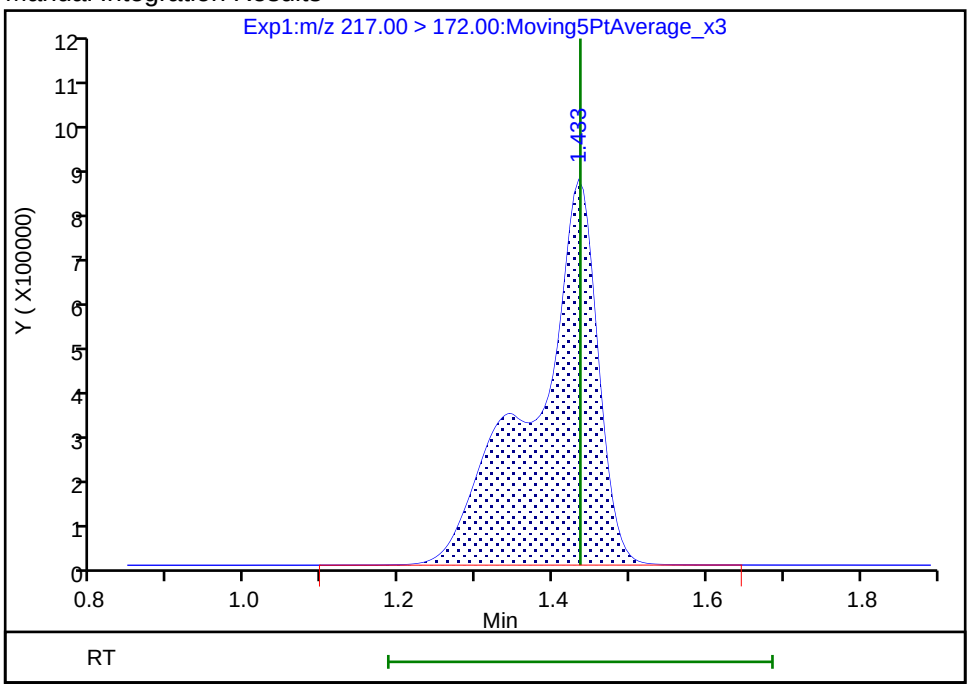
Processing Integration Results

RT: 1.43
Area: 3318143
Amount: 1.208576
Amount Units: ng/ml



Manual Integration Results

RT: 1.43
Area: 4761825
Amount: 1.734412
Amount Units: ng/ml



Reviewer: mongkols, 17-Jul-2018 08:25:06

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF35-GW-01
Lab Sample ID: 320-40571-39
Matrix: Water
Lab File ID: 2018.07.12LLC_025.d
Analysis Method: 537 (modified)
Date Collected: 06/20/2018 15:20
Extraction Method: 3535
Date Extracted: 07/02/2018 16:10
Sample wt/vol: 262.8(mL)
Date Analyzed: 07/12/2018 22:36
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 233774
Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	0.011	B	0.0019	0.00033
2706-90-3	Perfluoropentanoic acid (PFPeA)	0.0017	J	0.0019	0.00047
307-24-4	Perfluorohexanoic acid (PFHxA)	0.0035		0.0019	0.00055
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.0026		0.0019	0.00024
335-67-1	Perfluorooctanoic acid (PFOA)	0.0082		0.0019	0.00081
375-95-1	Perfluorononanoic acid (PFNA)	0.0016	J	0.0019	0.00026
335-76-2	Perfluorodecanoic acid (PFDA)	ND		0.0019	0.00029
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		0.0019	0.0010
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		0.0019	0.00052
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		0.0019	0.0012
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		0.0019	0.00028
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.0055		0.0019	0.00019
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	0.00067	J	0.0019	0.00029
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.0017	J B	0.0019	0.00016
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.0019	0.00018
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.012		0.0019	0.00051
8789-57-2	Perfluorononanesulfonic acid (PFNS)	ND		0.0019	0.00015
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		0.0019	0.00030
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		0.0019	0.00033
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.019	0.0029
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.019	0.0018
757124-72-4	4:2 FTS	ND		0.019	0.0049
27619-97-2	6:2 FTS	0.0021	J	0.019	0.0019
39108-34-4	8:2 FTS	ND		0.019	0.0019

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF35-GW-01
Lab Sample ID: 320-40571-39
Matrix: Water
Lab File ID: 2018.07.12LLC_025.d
Analysis Method: 537 (modified)
Date Collected: 06/20/2018 15:20
Extraction Method: 3535
Date Extracted: 07/02/2018 16:10
Sample wt/vol: 262.8(mL)
Date Analyzed: 07/12/2018 22:36
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 233774
Units: ug/L

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00992	13C4 PFBA	30		25-150
STL01893	13C5 PFPeA	60		25-150
STL00993	13C2 PFHxA	72		25-150
STL01892	13C4-PFHpA	89		25-150
STL00990	13C4 PFOA	102		25-150
STL00995	13C5 PFNA	104		25-150
STL00996	13C2 PFDA	105		25-150
STL00997	13C2 PFUnA	97		25-150
STL00998	13C2 PFDoA	94		25-150
STL02116	13C2-PFTeDA	85		25-150
STL02337	13C3-PFBS	79		25-150
STL00994	18O2 PFHxS	96		25-150
STL00991	13C4 PFOS	97		25-150
STL01056	13C8 FOSA	82		25-150
STL02118	d3-NMeFOSAA	102		25-150
STL02117	d5-NEtFOSAA	107		25-150
STL02279	M2-6:2FTS	202	*	25-150
STL02280	M2-8:2FTS	131		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180712-60996.b\2018.07.12LLC_025.d
Lims ID: 320-40571-A-39-A
Client ID: NF35-GW-01
Sample Type: Client
Inject. Date: 12-Jul-2018 22:36:02 ALS Bottle#: 15 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-40571-a-39-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180712-60996.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 13-Jul-2018 13:22:17 Calib Date: 11-Jul-2018 15:38:42
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK010

First Level Reviewer: mongkols Date: 13-Jul-2018 13:22:17

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										M
212.90 > 169.00	1.423	1.424	-0.002	1.000	204711	0.2891			19.6	M
D 1 13C4 PFBA										
217.00 > 172.00	1.423	1.430	-0.008	0.531	1796358	0.7605		30.4	6211	
4 Perfluoropentanoic acid										M
262.90 > 219.00	1.717	1.719	-0.002	0.995	54184	0.0454			2.1	M
D 3 13C5-PFPeA										
267.90 > 223.00	1.726	1.729	-0.003	0.644	2460100	1.50		59.9	6894	
5 Perfluorobutanesulfonic acid										R
298.90 > 80.00	1.771	1.765	0.007	1.005	363469	0.1449			40.6	R
298.90 > 99.00	1.771	1.765	0.007	1.005	91292		3.98(1.25-3.74)		39.4	
D 47 13C3-PFBS										
301.90 > 83.00	1.762	1.765	-0.003	0.657	76226	1.85		79.4	70.5	
6 Perfluorohexanoic acid										M
313.00 > 269.00	2.011	2.014	-0.003	0.994	121406	0.0919			9.5	M
313.00 > 119.00	2.011	2.014	-0.003	0.994	11084		10.95(5.03-15.10)		29.5	
D 7 13C2 PFHxA										
315.00 > 270.00	2.022	2.014	0.008	0.754	3206998	1.81		72.4	26598	
70 Perfluoropentanesulfonic acid										M
349.00 > 80.00	2.034	2.036	-0.002	1.154	40416	0.0177			10.5	M
349.00 > 99.00	2.034	2.036	-0.002	1.154	16491		2.45(1.36-4.07)		7.2	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.329	2.319	0.010	1.000	115492	0.0684			12.7	
363.00 > 169.00	2.329	2.319	0.010	1.000	46935		2.46(1.13-3.40)		132	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.342	2.332	0.010	1.000	112549	0.0440			17.7	
399.00 > 99.00	2.342	2.332	0.010	1.000	28230		3.99(1.50-4.49)		15.5	
D 9 13C4-PFHpA										
367.00 > 322.00	2.329	2.332	-0.003	0.869	3647048	2.23		89.4	23449	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 11 18O2 PFHxS										
403.00 > 84.00	2.342	2.345	-0.003	0.874	5266902	2.28		96.3	39910	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.658	2.644	0.014	1.003	60351	0.0545			784	
D 12 M2-6:2FTS										
429.00 > 81.00	2.651	2.652	-0.001	0.989	1682382	4.81		202	1895	
* 62 13C2-PFOA										
415.00 > 370.00	2.681	2.674	0.007		4355332	2.50			29747	
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.681	2.674	0.007	1.000	449101	0.2144			56.3	M
413.00 > 169.00	2.673	2.674	-0.001	0.997	289618		1.55(0.84-2.52)		442	
D 14 13C4 PFOA										
417.00 > 372.00	2.681	2.675	0.006	1.000	4252432	2.55		102	48057	
17 Perfluorooctane sulfonic acid										M
499.00 > 80.00	3.033	3.030	0.003	1.000	591498	0.3182			455	M
499.00 > 99.00	3.033	3.030	0.003	1.000	96390		6.14(2.31-6.93)		126	M
20 Perfluorononanoic acid										
463.00 > 419.00	3.040	3.030	0.010	1.002	74012	0.0430			42.5	
463.00 > 169.00	3.033	3.030	0.003	1.000	22190		3.34(1.90-5.69)		160	
D 19 13C5 PFNA										
468.00 > 423.00	3.033	3.038	-0.005	1.131	3882682	2.61		104	43953	
D 18 13C4 PFOS										
503.00 > 80.00	3.033	3.038	-0.005	1.131	3920726	2.31		96.7	6474	
D 21 13C8 FOSA										
506.00 > 78.00	3.380	3.380	0.0	1.261	5040489	2.06		82.4	38593	
D 26 M2-8:2FTS										
529.00 > 81.00	3.380	3.380	0.0	1.261	1607958	3.14		131	5254	
D 23 13C2 PFDA										
515.00 > 470.00	3.389	3.389	0.0	1.264	3440169	2.63		105	41675	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.539	3.539	0.0	1.320	1368704	2.55		102	16891	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.709	3.707	0.002	1.000	8410	0.0162			186	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.709	3.709	0.0	1.383	1467677	2.67		107	4183	
D 30 13C2 PFUnA										
565.00 > 520.00	3.709	3.719	-0.010	1.383	2637773	2.42		96.7	36494	
D 36 13C2 PFDoA										
615.00 > 570.00	3.999	4.010	-0.011	1.492	2670586	2.36		94.4	18874	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.501	4.502	-0.001	1.679	2488298	2.12		84.8	12614	

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Review Flags

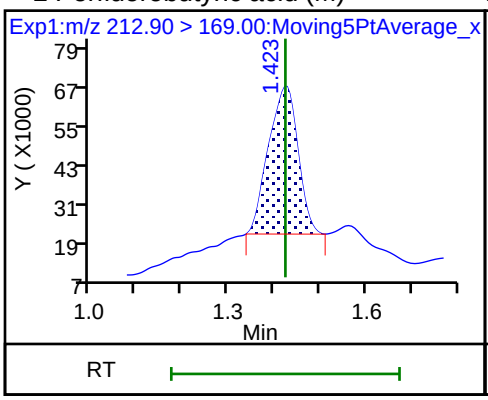
M - Manually Integrated

Report Date: 13-Jul-2018 13:22:18 Chrom Revision: 2.2 07-Jun-2018 07:41:54

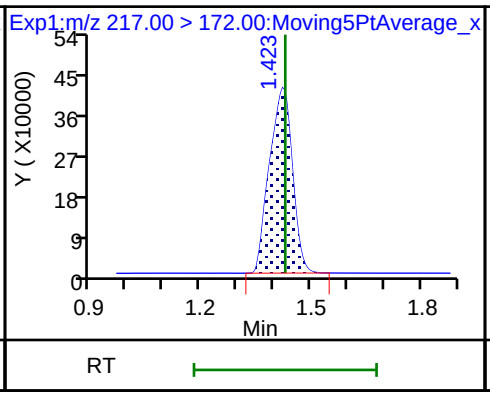
TestAmerica Sacramento

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180712-60996.b\2018.07.12LLC_025.d				
Injection Date:	12-Jul-2018 22:36:02	Instrument ID:	A8_N		
Lims ID:	320-40571-A-39-A	Lab Sample ID:	320-40571-39		
Client ID:	NF35-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	15	Worklist Smp#:	2
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		

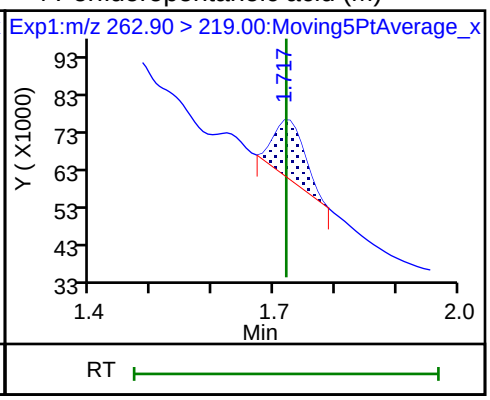
2 Perfluorobutyric acid (M)



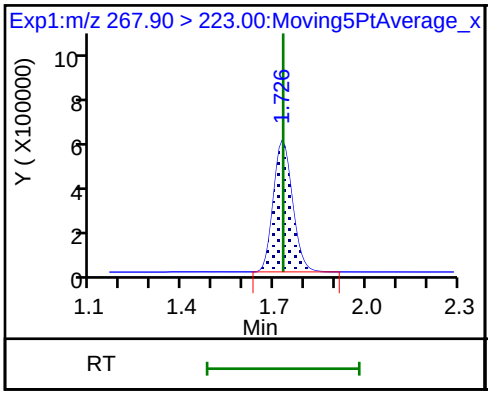
D 1 13C4 PFBA



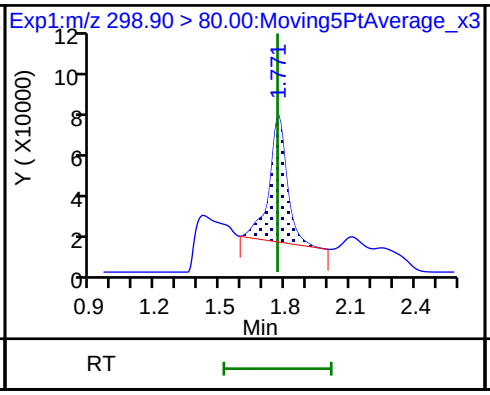
4 Perfluoropentanoic acid (M)



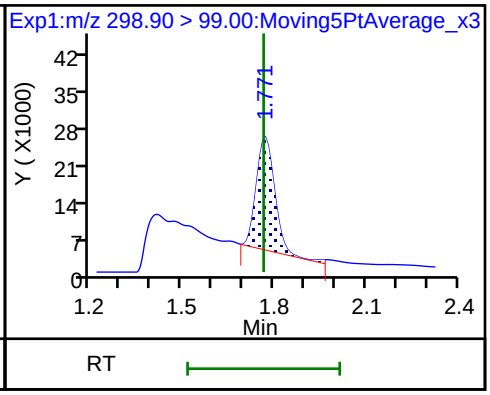
D 3 13C5-PFPeA



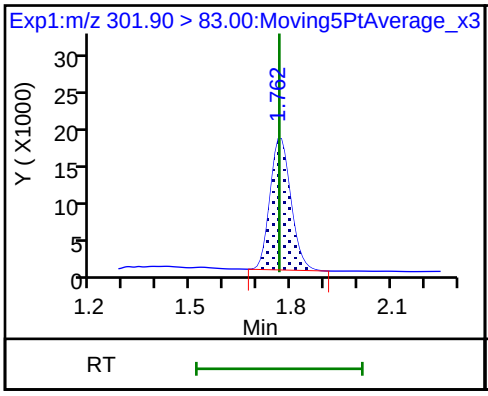
5 Perfluorobutanesulfonic acid



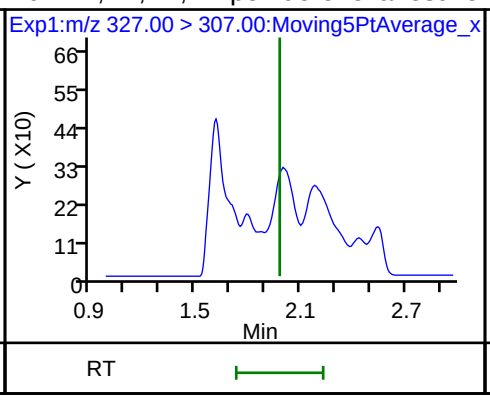
5 Perfluorobutanesulfonic acid



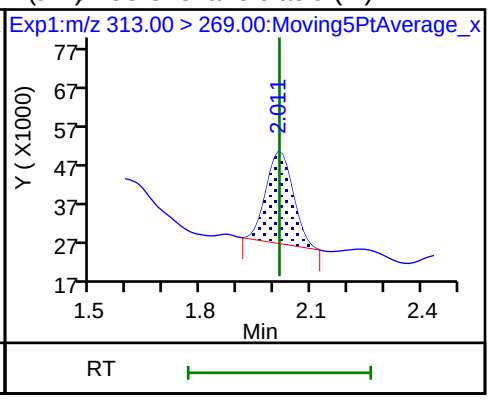
D 47 13C3-PFBS



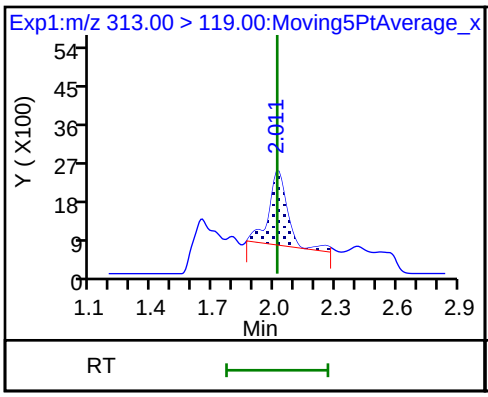
61 1H,1H,2H,2H-perfluorohexanesulfoni (ND)



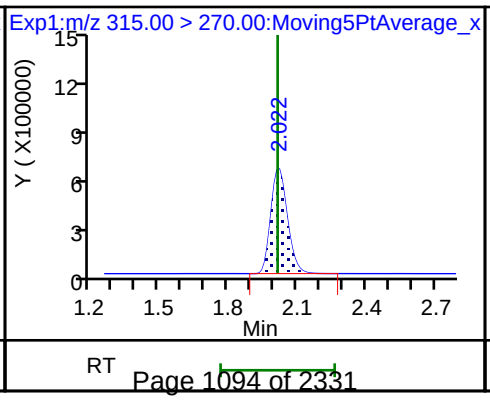
6 Perfluorohexanoic acid (M)



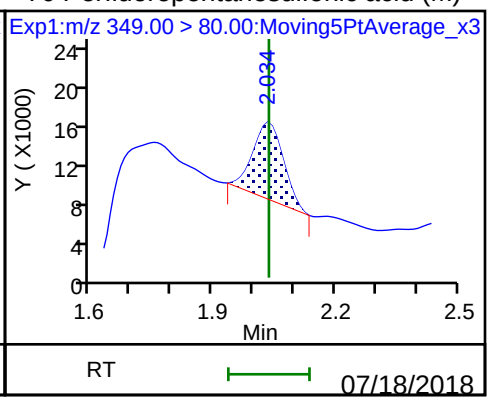
6 Perfluorohexanoic acid



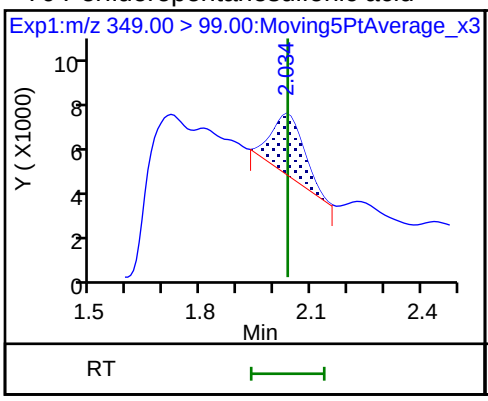
D 7 13C2 PFHxA



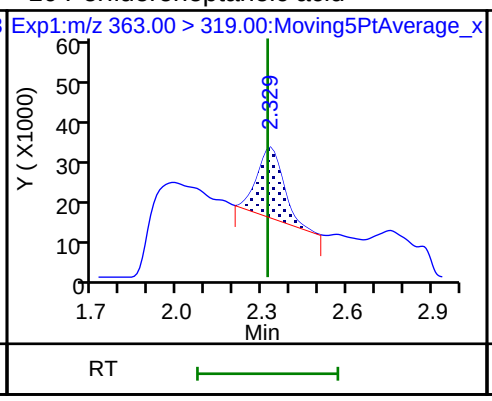
70 Perfluoropentanesulfonic acid (M)



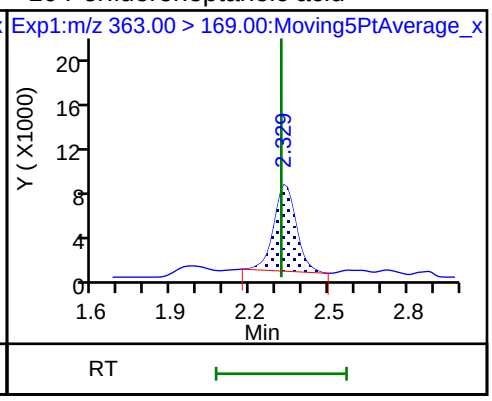
70 Perfluoropentanesulfonic acid



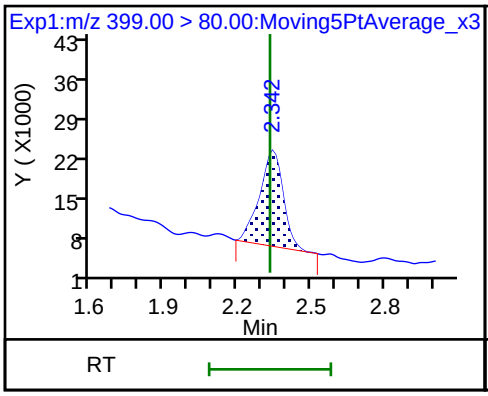
10 Perfluoroheptanoic acid



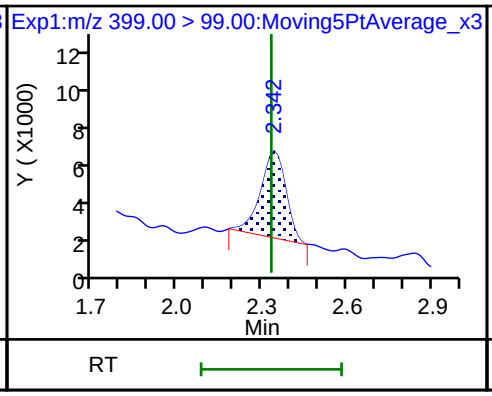
10 Perfluoroheptanoic acid



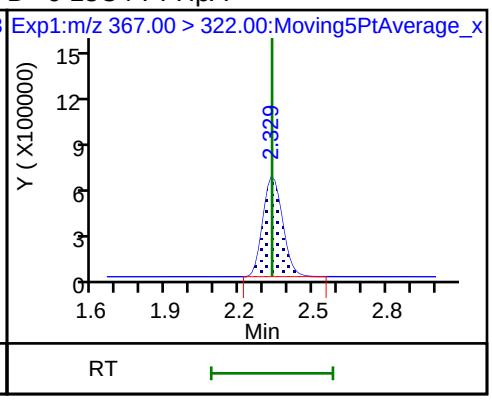
8 Perfluorohexanesulfonic acid



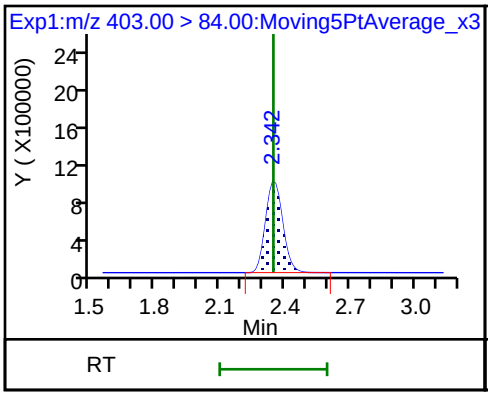
8 Perfluorohexanesulfonic acid



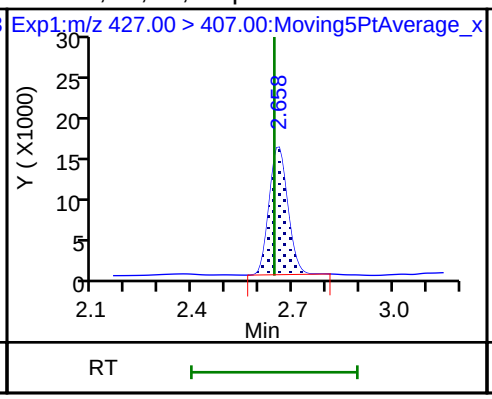
D 9 13C4-PFHpA



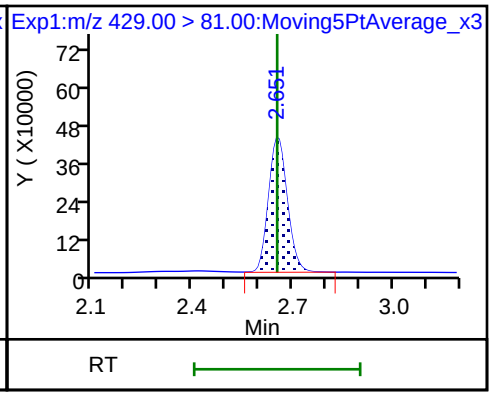
D 11 18O2 PFHxS



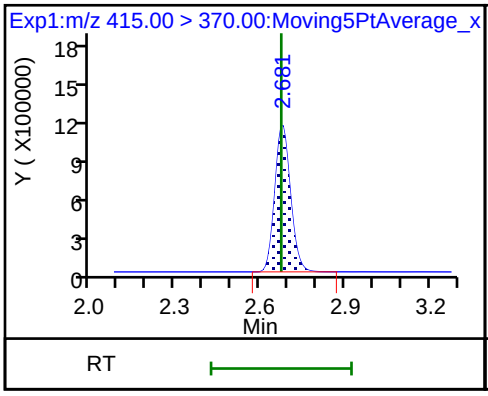
13 1H,1H,2H,2H-perfluorooctanesulfon



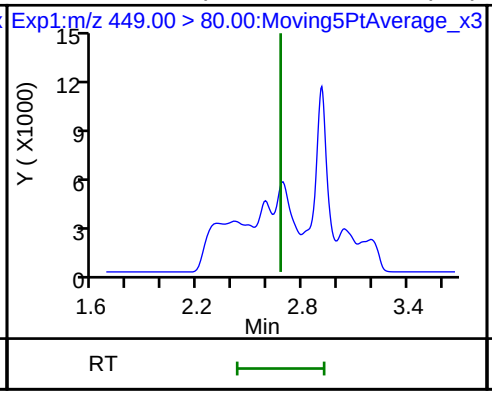
D 12 M2-6:2FTS



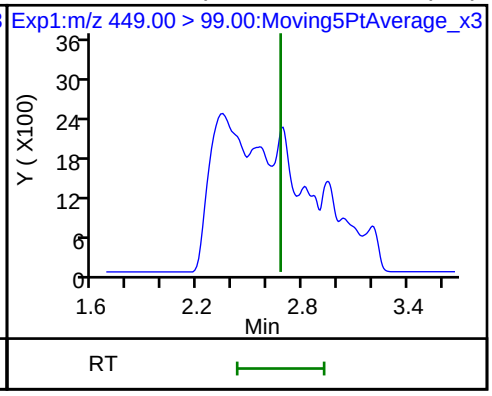
* 62 13C2-PFOA



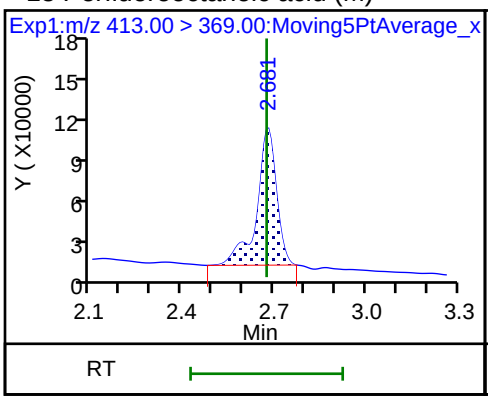
16 Perfluoroheptanesulfonic acid (ND)



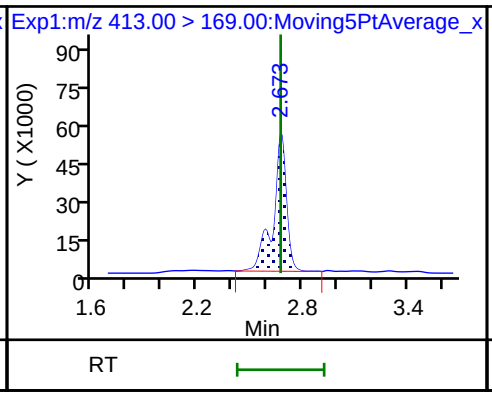
16 Perfluoroheptanesulfonic acid (ND)



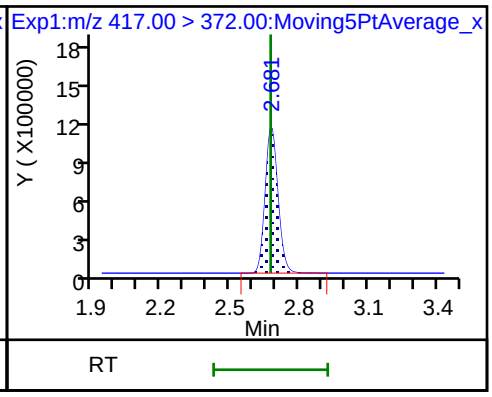
15 Perfluorooctanoic acid (M)



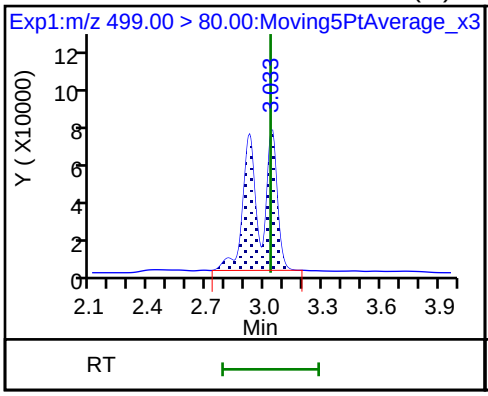
15 Perfluorooctanoic acid



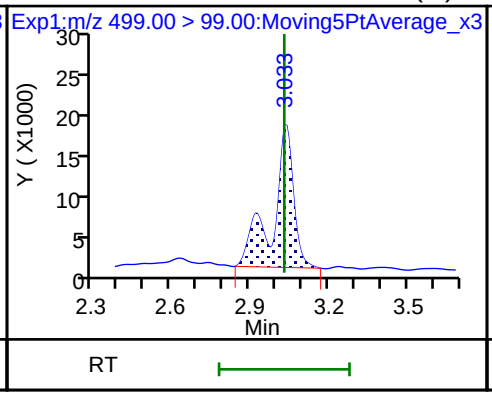
D 14 13C4 PFOA



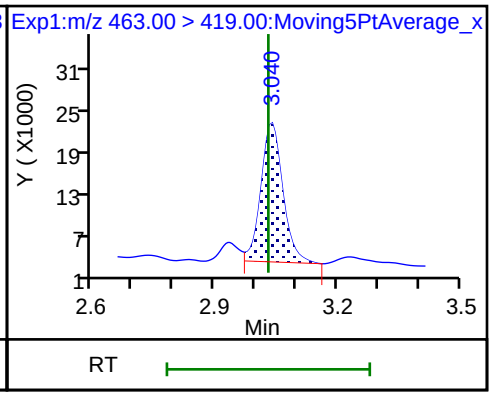
17 Perfluorooctane sulfonic acid (M)



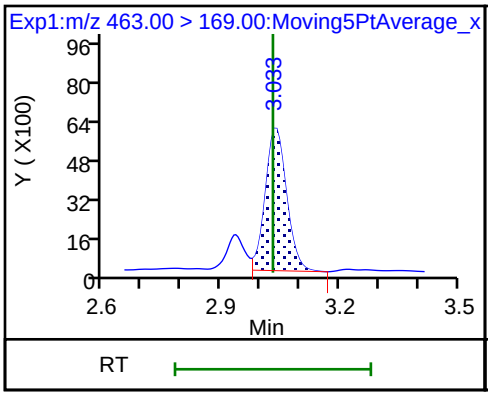
17 Perfluorooctane sulfonic acid (M)



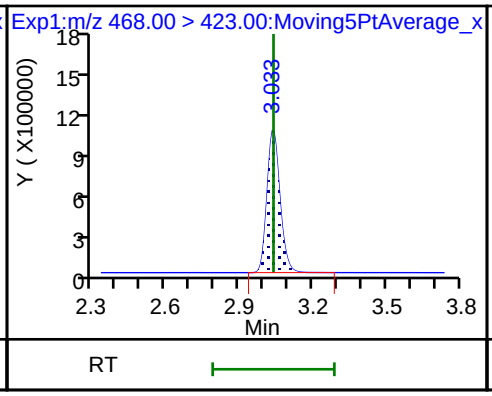
20 Perfluorononanoic acid



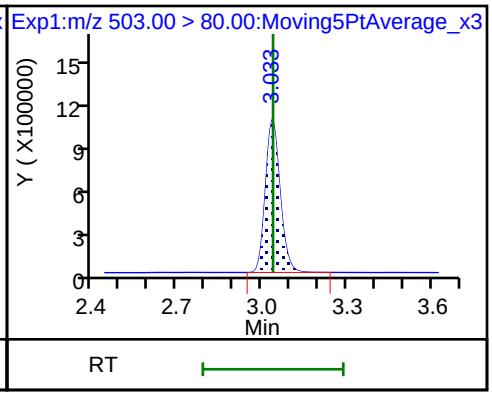
20 Perfluorononanoic acid



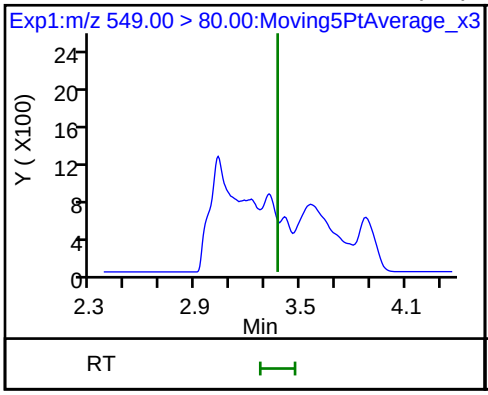
D 19 13C5 PFNA



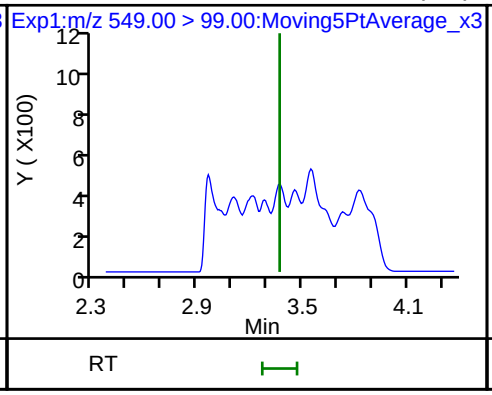
D 18 13C4 PFOS



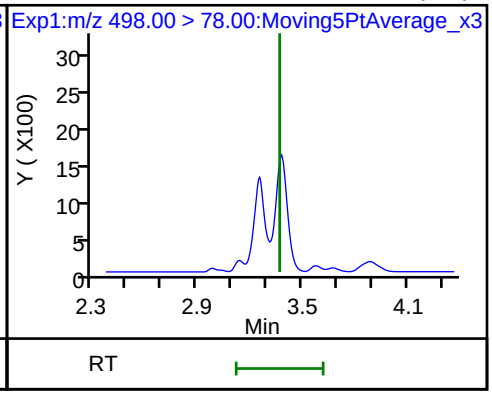
68 Perfluorononanesulfonic acid (ND)



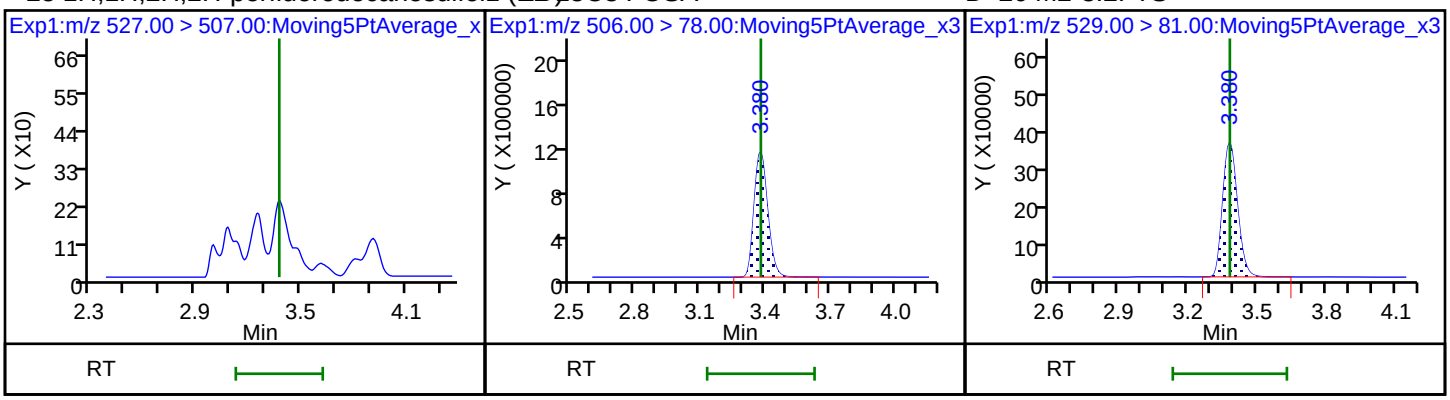
68 Perfluorononanesulfonic acid (ND)



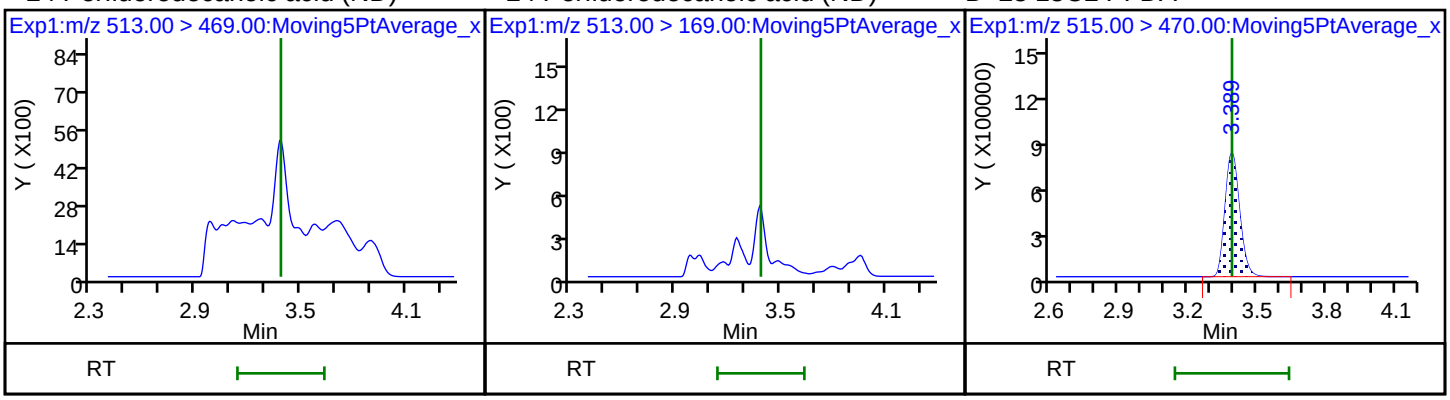
22 Perfluorooctane Sulfonamide (ND)



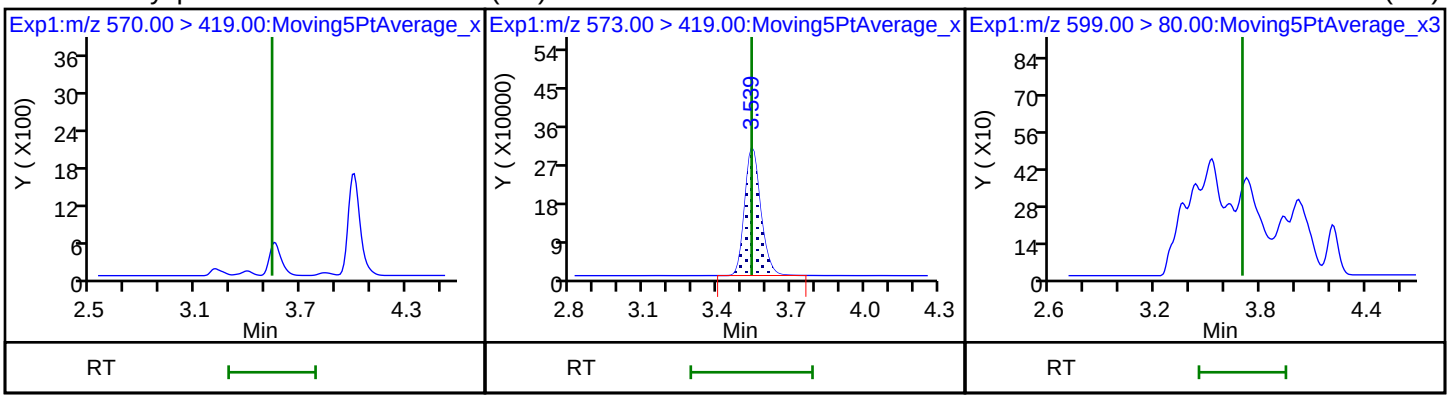
25 1H,1H,2H-perfluorodecanesulfonic (ND) | D 21 13C8 FOSA | D 26 M2-8:2FTS



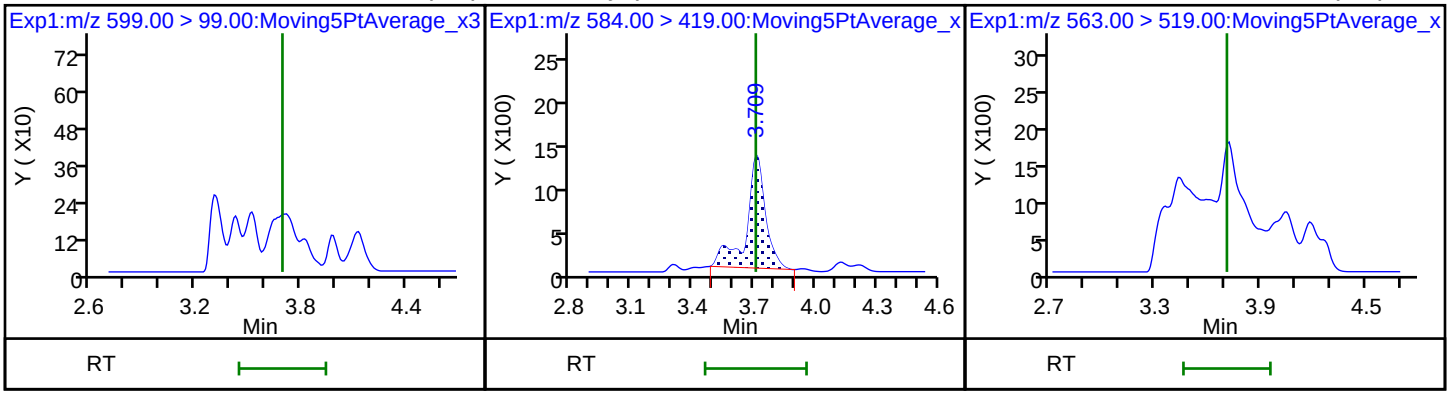
24 Perfluorodecanoic acid (ND) | 24 Perfluorodecanoic acid (ND) | D 23 13C2 PFDA



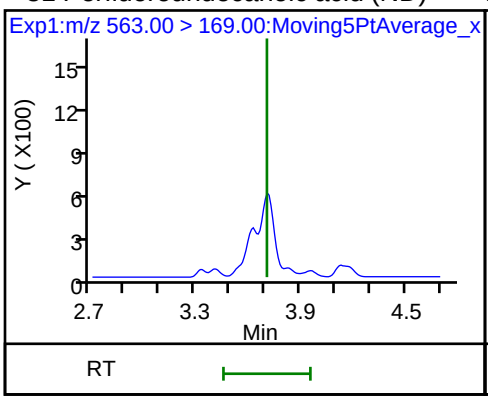
28 N-methyl perfluorooctane sulfonamid (ND) | D 27 d3-NMeFOSAA | 29 Perfluorodecane Sulfonic acid (ND)



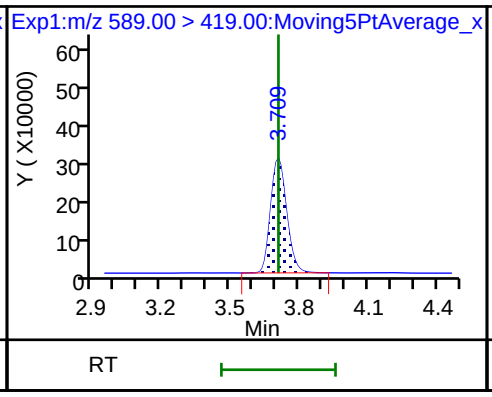
29 Perfluorodecane Sulfonic acid (ND) | 33 N-ethyl perfluorooctane sulfonamid | 31 Perfluoroundecanoic acid (ND)



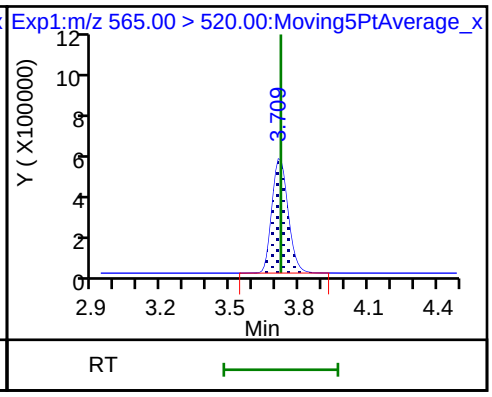
31 Perfluoroundecanoic acid (ND)



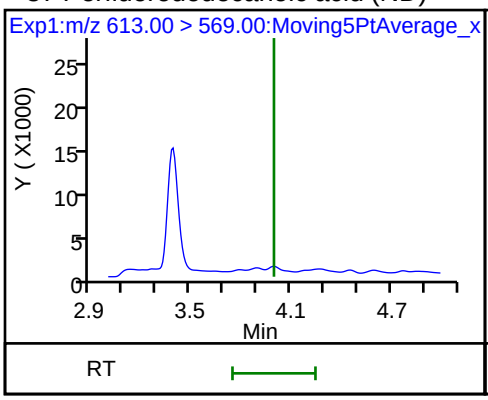
D 32 d5-NEtFOSAA



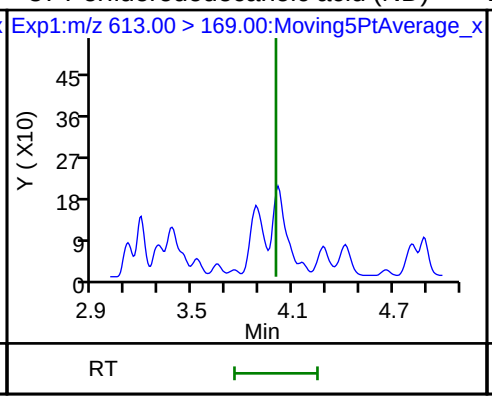
D 30 13C2 PFUnA



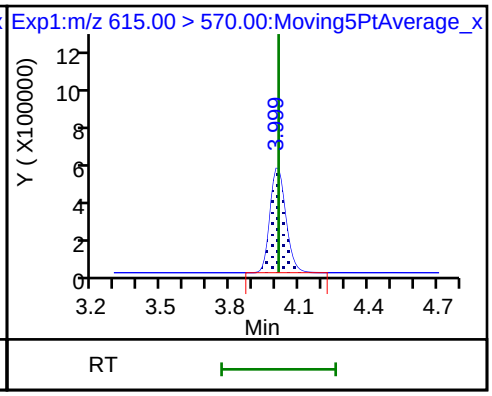
37 Perfluorododecanoic acid (ND)



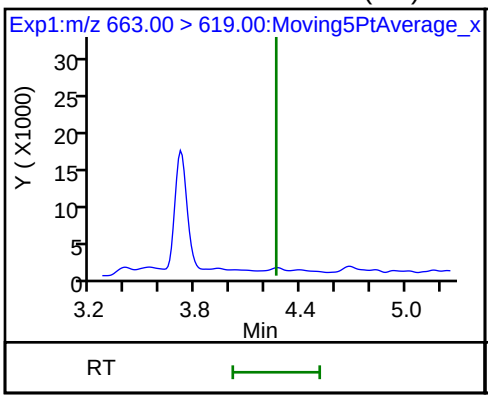
37 Perfluorododecanoic acid (ND)



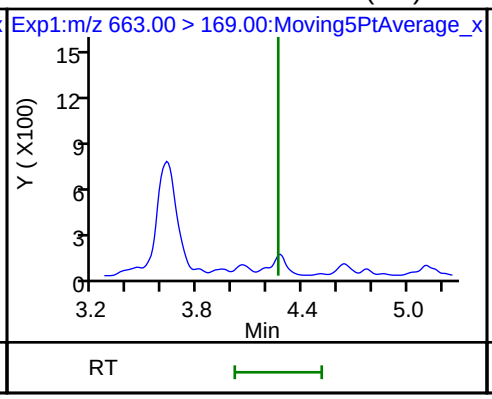
D 36 13C2 PFDoA



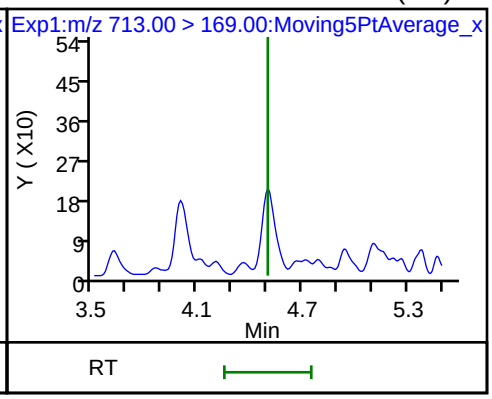
41 Perfluorotridecanoic acid (ND)



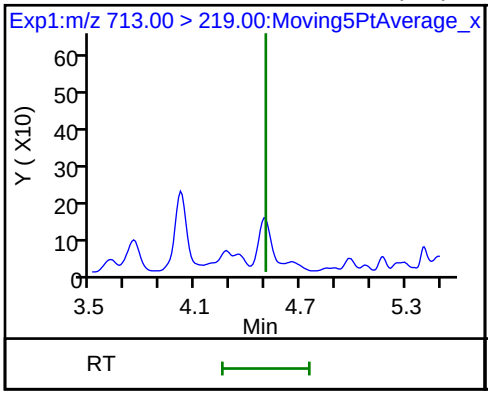
41 Perfluorotridecanoic acid (ND)



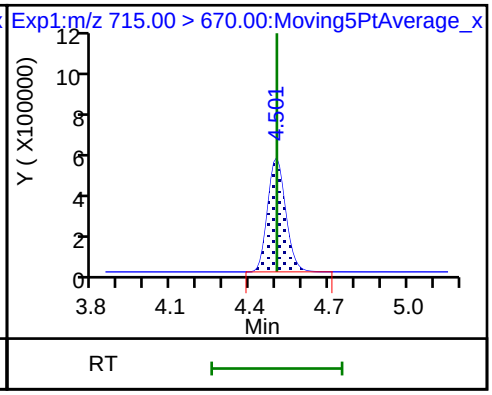
42 Perfluorotetradecanoic acid (ND)



42 Perfluorotetradecanoic acid (ND)



D 43 13C2-PFTeDA



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

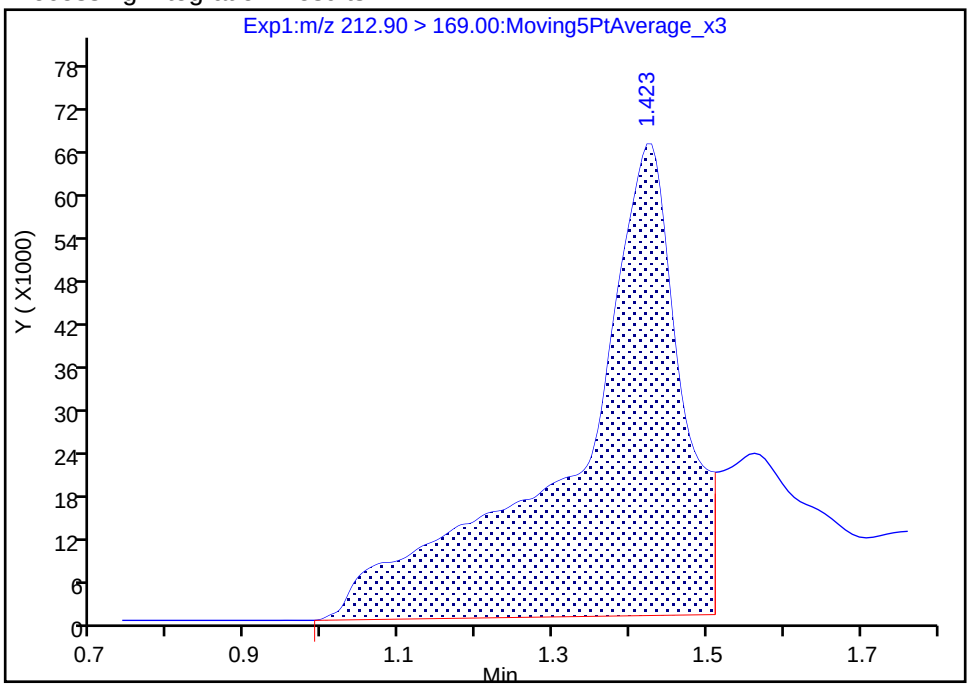
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180712-60996.b\2018.07.12LLC_025.d				
Injection Date:	12-Jul-2018 22:36:02	Instrument ID:	A8_N		
Lims ID:	320-40571-A-39-A	Lab Sample ID:	320-40571-39		
Client ID:	NF35-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	15	Worklist Smp#:	2
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

2 Perfluorobutyric acid, CAS: 375-22-4

Signal: 1

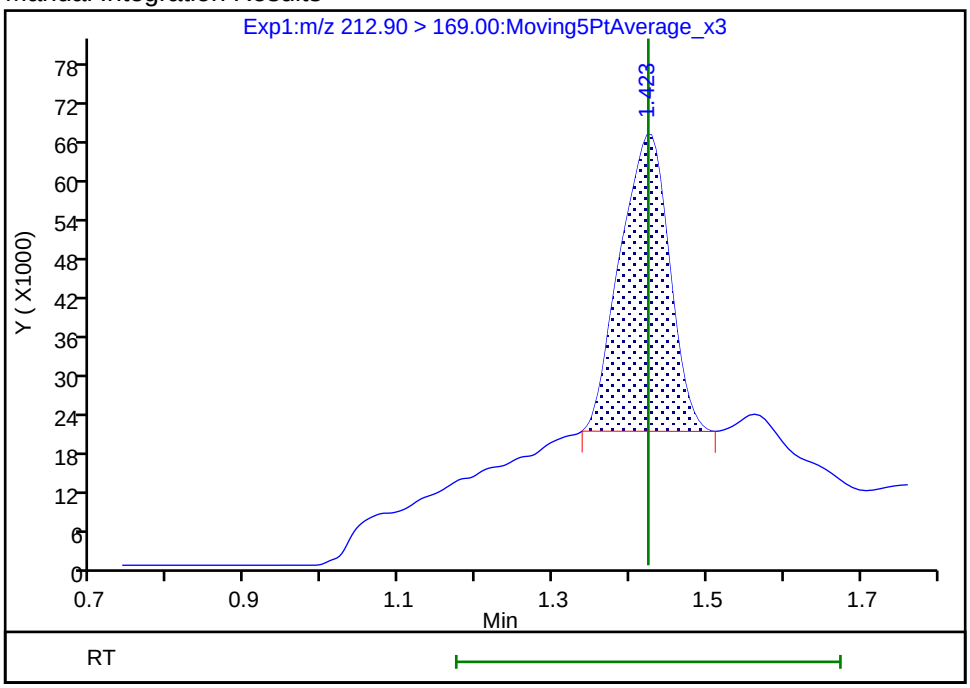
Processing Integration Results

RT: 1.42
Area: 651576
Amount: 0.920072
Amount Units: ng/ml



Manual Integration Results

RT: 1.42
Area: 204711
Amount: 0.289067
Amount Units: ng/ml



Reviewer: mongkols, 13-Jul-2018 13:21:07

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

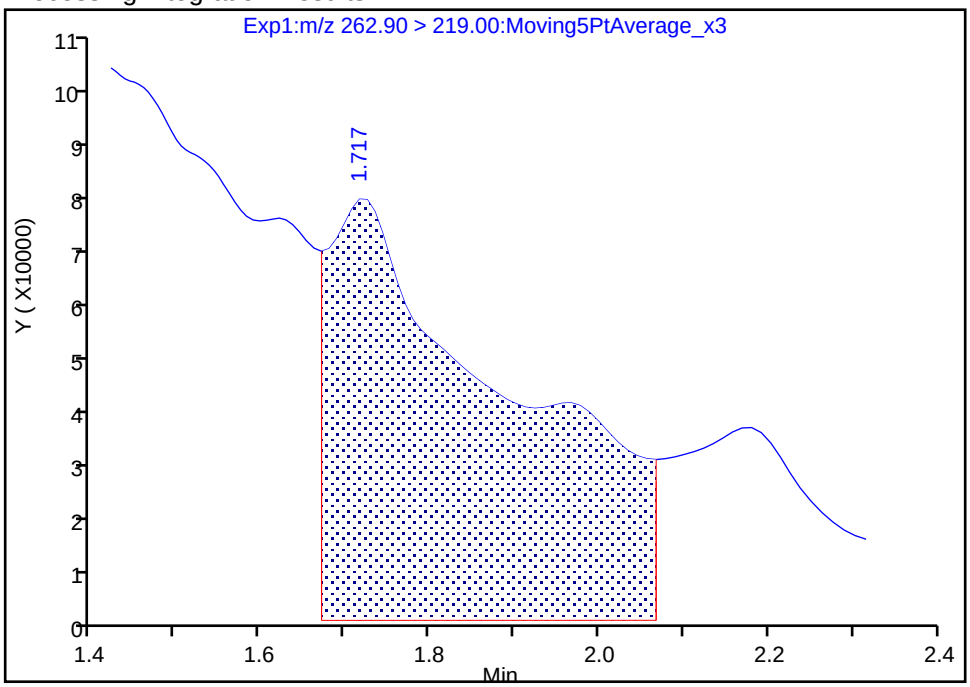
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180712-60996.b\2018.07.12LLC_025.d				
Injection Date:	12-Jul-2018 22:36:02	Instrument ID:	A8_N		
Lims ID:	320-40571-A-39-A	Lab Sample ID:	320-40571-39		
Client ID:	NF35-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	15	Worklist Smp#:	2
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

4 Perfluoropentanoic acid, CAS: 2706-90-3

Signal: 1

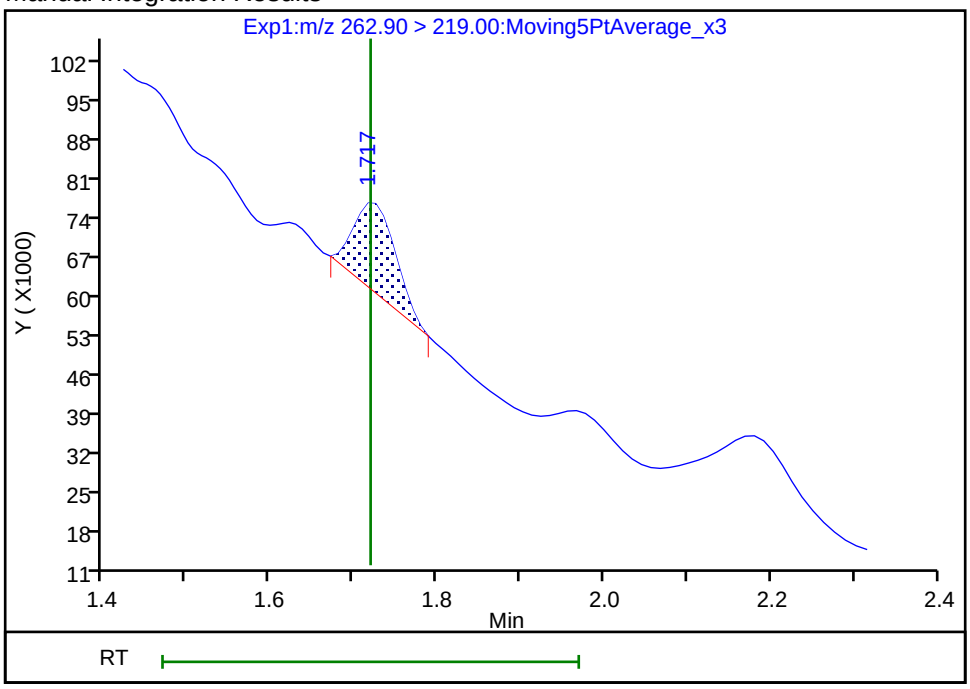
Processing Integration Results

RT: 1.72
Area: 1132574
Amount: 0.948731
Amount Units: ng/ml



Manual Integration Results

RT: 1.72
Area: 54184
Amount: 0.045389
Amount Units: ng/ml



Reviewer: mongkols, 13-Jul-2018 13:21:15

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

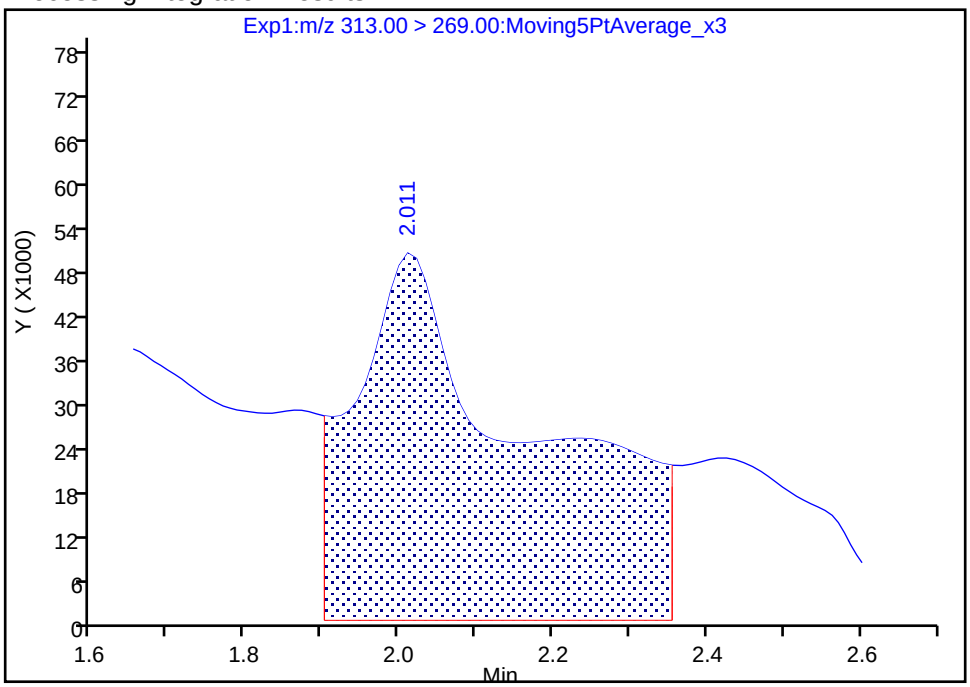
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180712-60996.b\2018.07.12LLC_025.d				
Injection Date:	12-Jul-2018 22:36:02	Instrument ID:	A8_N		
Lims ID:	320-40571-A-39-A	Lab Sample ID:	320-40571-39		
Client ID:	NF35-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	15	Worklist Smp#:	2
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

6 Perfluorohexanoic acid, CAS: 307-24-4

Signal: 1

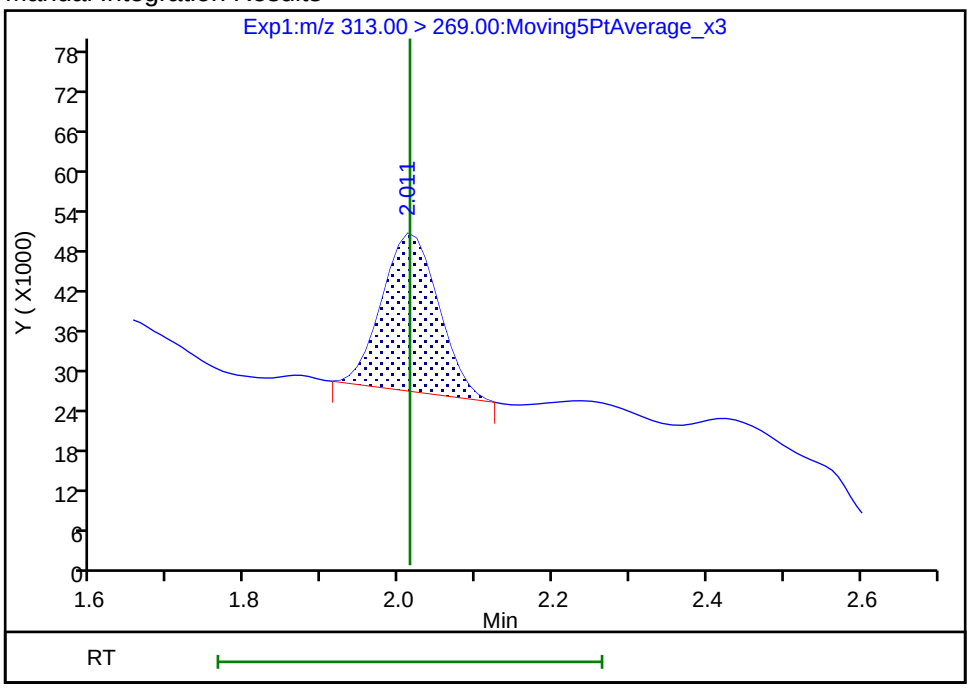
Processing Integration Results

RT: 2.01
Area: 798541
Amount: 0.604777
Amount Units: ng/ml



Manual Integration Results

RT: 2.01
Area: 121406
Amount: 0.091947
Amount Units: ng/ml



Reviewer: mongkols, 13-Jul-2018 13:21:23

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

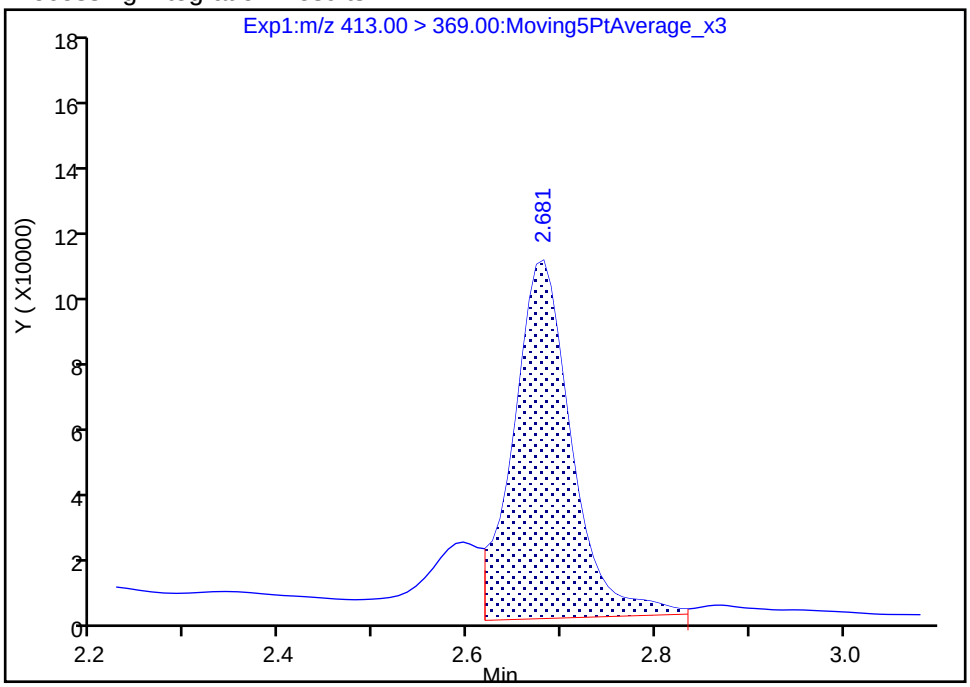
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180712-60996.b\2018.07.12LLC_025.d				
Injection Date:	12-Jul-2018 22:36:02	Instrument ID:	A8_N		
Lims ID:	320-40571-A-39-A	Lab Sample ID:	320-40571-39		
Client ID:	NF35-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	15	Worklist Smp#:	2
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

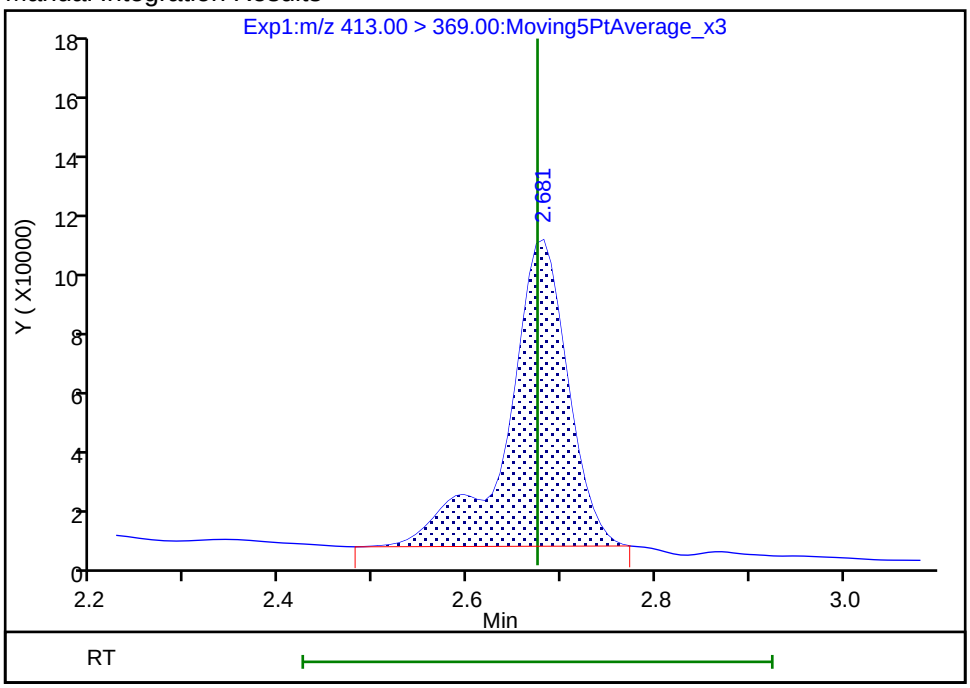
Processing Integration Results

RT: 2.68
Area: 453727
Amount: 0.216593
Amount Units: ng/ml



Manual Integration Results

RT: 2.68
Area: 449101
Amount: 0.214385
Amount Units: ng/ml



Reviewer: mongkols, 13-Jul-2018 13:21:45

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

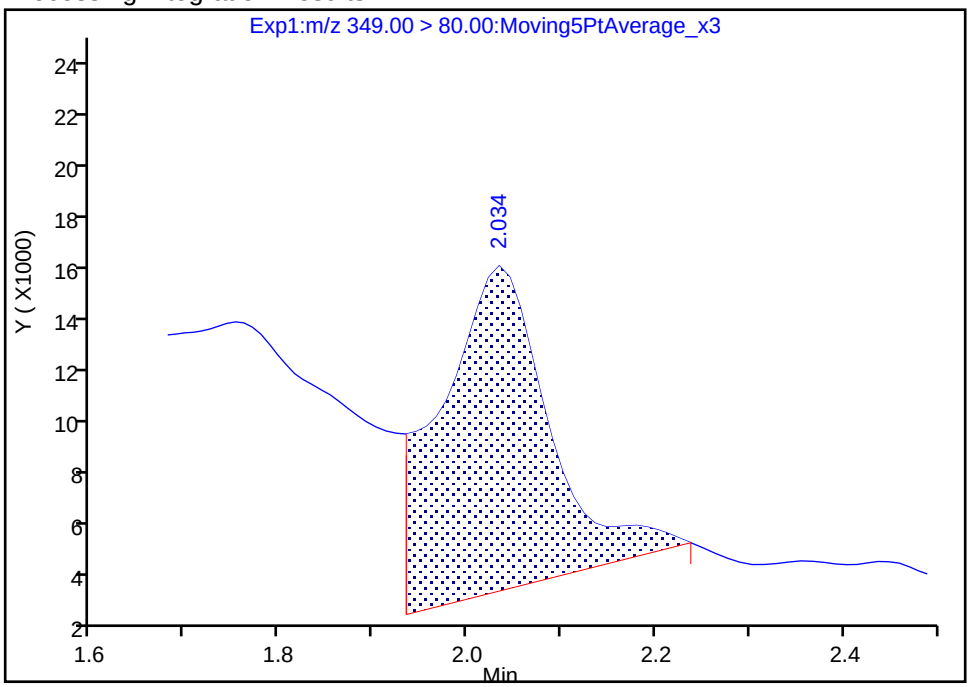
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180712-60996.b\2018.07.12LLC_025.d				
Injection Date:	12-Jul-2018 22:36:02	Instrument ID:	A8_N		
Lims ID:	320-40571-A-39-A	Lab Sample ID:	320-40571-39		
Client ID:	NF35-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	15	Worklist Smp#:	2
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

70 Perfluoropentanesulfonic acid, CAS: 2706-91-4

Signal: 1

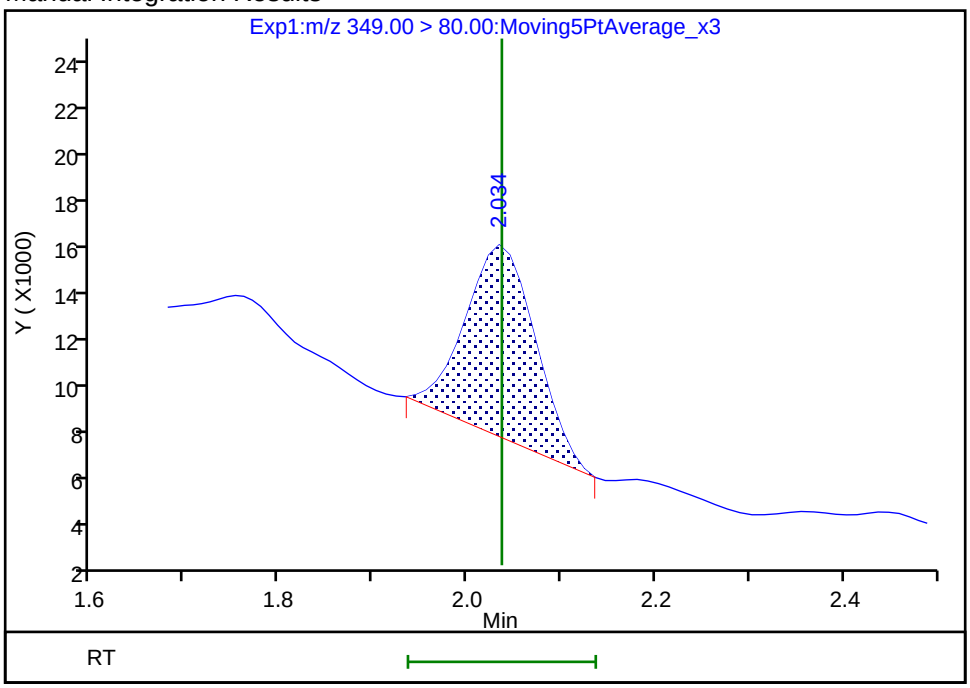
Processing Integration Results

RT: 2.03
Area: 95700
Amount: 0.041830
Amount Units: ng/ml



Manual Integration Results

RT: 2.03
Area: 40416
Amount: 0.017666
Amount Units: ng/ml



Reviewer: mongkols, 13-Jul-2018 13:21:29

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

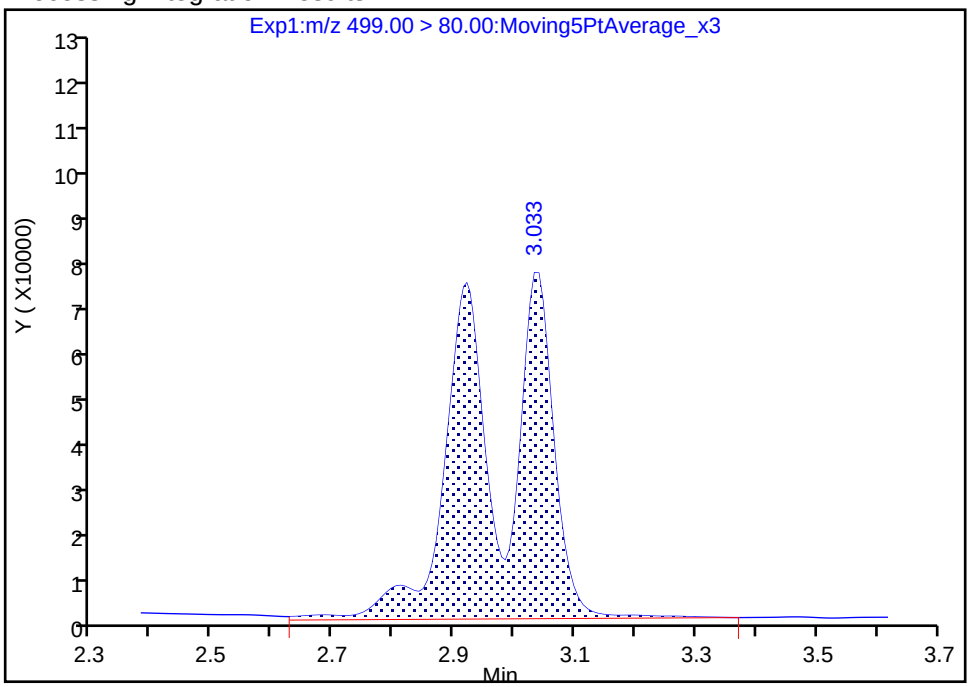
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180712-60996.b\2018.07.12LLC_025.d				
Injection Date:	12-Jul-2018 22:36:02	Instrument ID:	A8_N		
Lims ID:	320-40571-A-39-A	Lab Sample ID:	320-40571-39		
Client ID:	NF35-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	15	Worklist Smp#:	2
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

17 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

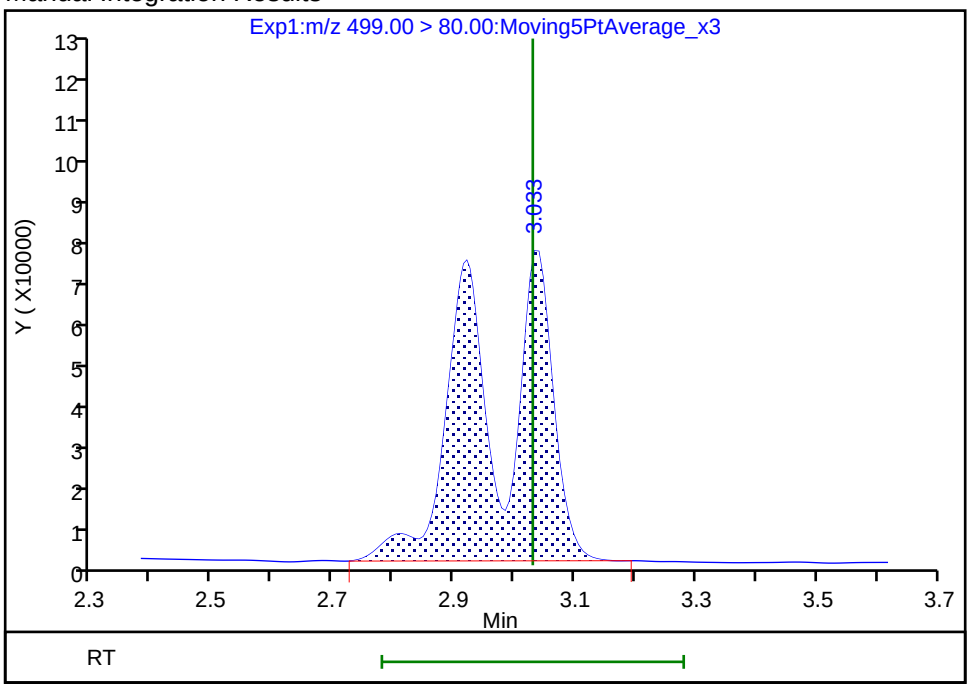
Processing Integration Results

RT: 3.03
Area: 619891
Amount: 0.333469
Amount Units: ng/ml



Manual Integration Results

RT: 3.03
Area: 591498
Amount: 0.318195
Amount Units: ng/ml



Reviewer: mongkols, 13-Jul-2018 13:21:53

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

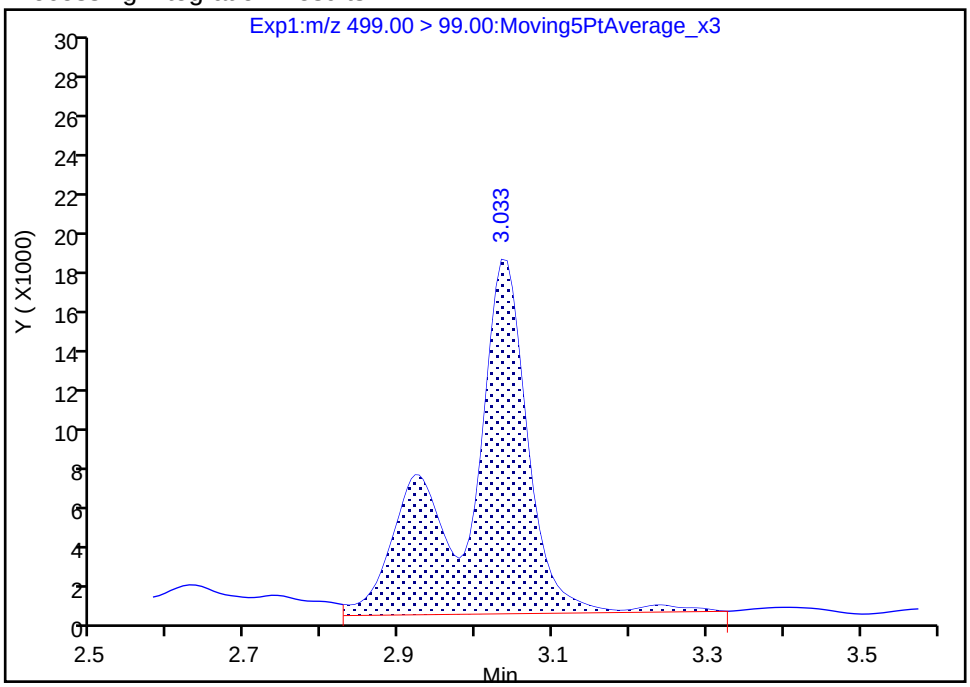
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180712-60996.b\2018.07.12LLC_025.d				
Injection Date:	12-Jul-2018 22:36:02	Instrument ID:	A8_N		
Lims ID:	320-40571-A-39-A	Lab Sample ID:	320-40571-39		
Client ID:	NF35-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	15	Worklist Smp#:	2
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

17 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 2

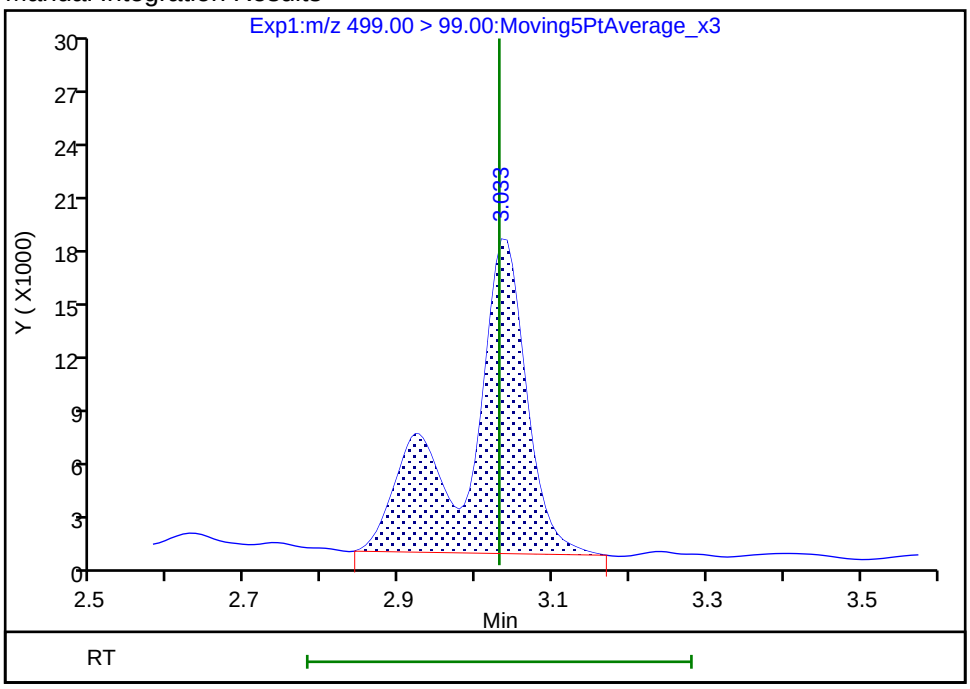
Processing Integration Results

RT: 3.03
Area: 105540
Amount: 0.333469
Amount Units: ng/ml



Manual Integration Results

RT: 3.03
Area: 96390
Amount: 0.318195
Amount Units: ng/ml



Reviewer: mongkols, 13-Jul-2018 13:22:00

Audit Action: Manually Integrated Audit Reason: Baseline

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF35-SS-01
Lab Sample ID: 320-40571-40
Matrix: Solid
Lab File ID: 2018.07.14LLA_031.d
Analysis Method: 537 (modified)
Date Collected: 06/20/2018 15:00
Extraction Method: SHAKE
Date Extracted: 06/28/2018 06:06
Sample wt/vol: 5.08(g)
Date Analyzed: 07/14/2018 14:40
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture: 14.4
GPC Cleanup:(Y/N) N
Analysis Batch No.: 234231
Units: mg/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	ND		0.00023	0.000032
2706-90-3	Perfluoropentanoic acid (PFPeA)	ND		0.00023	0.000089
307-24-4	Perfluorohexanoic acid (PFHxA)	ND		0.00023	0.000048
375-85-9	Perfluoroheptanoic acid (PFHpA)	ND		0.00023	0.000033
335-67-1	Perfluorooctanoic acid (PFOA)	0.00019	J	0.00023	0.000099
375-95-1	Perfluorononanoic acid (PFNA)	0.000050	J	0.00023	0.000041
335-76-2	Perfluorodecanoic acid (PFDA)	ND		0.00023	0.000025
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		0.00023	0.000041
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		0.00023	0.000077
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		0.00023	0.000059
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		0.00023	0.000062
375-73-5	Perfluorobutanesulfonic acid (PFBS)	ND		0.00023	0.000029
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	ND		0.00023	0.000036
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.00023	0.000040
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.0014		0.00058	0.00023
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		0.00023	0.000045
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		0.00023	0.000094
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.0023	0.00045
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.0023	0.00043
27619-97-2	6:2 FTS	ND		0.0023	0.00017
39108-34-4	8:2 FTS	ND		0.0023	0.00029

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF35-SS-01
Lab Sample ID: 320-40571-40
Matrix: Solid
Lab File ID: 2018.07.14LLA_031.d
Analysis Method: 537 (modified)
Date Collected: 06/20/2018 15:00
Extraction Method: SHAKE
Date Extracted: 06/28/2018 06:06
Sample wt/vol: 5.08(g)
Date Analyzed: 07/14/2018 14:40
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture: 14.4
GPC Cleanup:(Y/N) N
Analysis Batch No.: 234231
Units: mg/Kg

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00992	13C4 PFBA	70		25-150
STL01893	13C5 PFPeA	74		25-150
STL00993	13C2 PFHxA	73		25-150
STL01892	13C4-PFHpA	85		25-150
STL00990	13C4 PFOA	87		25-150
STL00995	13C5 PFNA	81		25-150
STL00996	13C2 PFDA	87		25-150
STL00997	13C2 PFUnA	85		25-150
STL00998	13C2 PFDoA	65		25-150
STL02116	13C2-PFTeDA	73		25-150
STL02337	13C3-PFBS	65		25-150
STL00994	18O2 PFHxS	70		25-150
STL00991	13C4 PFOS	65		25-150
STL01056	13C8 FOSA	59		25-150
STL02118	d3-NMeFOSAA	97		25-150
STL02117	d5-NEtFOSAA	96		25-150
STL02279	M2-6:2FTS	175	*	25-150
STL02280	M2-8:2FTS	123		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180716-61105.b\2018.07.14LLA_031.d
Lims ID: 320-40571-A-40-A
Client ID: NF35-SS-01
Sample Type: Client
Inject. Date: 14-Jul-2018 14:40:18 ALS Bottle#: 21 Worklist Smp#: 14
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-40571-a-40-a
Misc. Info.: Plate: 1 Rack: 5
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180716-61105.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 17-Jul-2018 08:29:20 Calib Date: 11-Jul-2018 15:38:42
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK016

First Level Reviewer: mongkols Date: 17-Jul-2018 08:29:20

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										M
217.00 > 172.00	1.435	1.436	-0.001	0.540	5011358	1.76		70.4	46148	M
2 Perfluorobutyric acid										M
212.90 > 169.00	1.435	1.441	-0.006	1.000	19929	0.0101			2.6	M
D 3 13C5-PFPeA										
267.90 > 223.00	1.720	1.720	0.0	0.647	3659971	1.85		74.0	29747	
D 47 13C3-PFBS										
301.90 > 83.00	1.756	1.756	0.0	0.660	75450	1.52		65.3	234	
D 7 13C2 PFHxA										
315.00 > 270.00	1.991	1.992	-0.001	0.749	3917869	1.83		73.4	48051	
D 9 13C4-PFHpA										
367.00 > 322.00	2.319	2.306	0.013	0.872	4162886	2.12		84.6	42794	
D 11 18O2 PFHxS										
403.00 > 84.00	2.332	2.319	0.013	0.877	4629910	1.66		70.2	51265	
8 Perfluorohexanesulfonic acid										RM
399.00 > 80.00	2.332	2.332	0.0	1.000	33803	0.0150			46.4	RM
399.00 > 99.00	2.345	2.332	0.013	1.006	32012		1.06(1.50-4.49)		7.1	M
D 12 M2-6:2FTS										
429.00 > 81.00	2.636	2.628	0.008	0.991	1757604	4.17		175	8402	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.636	2.644	-0.008	1.000	6330	0.005468			20.5	
D 14 13C4 PFOA										
417.00 > 372.00	2.660	2.652	0.008	1.000	4383934	2.18		87.4	43909	
* 62 13C2-PFOA										
415.00 > 370.00	2.660	2.667	-0.007		5248976	2.50			57088	
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.660	2.667	-0.007	1.000	174297	0.0807			15.8	M
413.00 > 169.00	2.667	2.667	0.0	1.003	81029		2.15(0.84-2.52)		263	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 19 13C5 PFNA										
468.00 > 423.00	3.028	3.018	0.010	1.139	3631705	2.02		81.0	55152	
D 18 13C4 PFOS										
503.00 > 80.00	3.021	3.018	0.003	1.136	3162360	1.55		64.7	17863	
20 Perfluorononanoic acid										RM
463.00 > 419.00	3.021	3.029	-0.008	0.998	35082	0.0218			20.9	RM
463.00 > 169.00	3.015	3.029	-0.014	0.995	2156		16.27(1.90-5.69)		35.5	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.021	3.029	-0.008	1.000	882732	0.5887			4909	
499.00 > 99.00	3.028	3.029	-0.001	1.002	184126		4.79(2.31-6.93)		468	
D 26 M2-8:2FTS										
529.00 > 81.00	3.375	3.361	0.014	1.269	1815120	2.94		123	8687	
D 23 13C2 PFDA										
515.00 > 470.00	3.384	3.370	0.014	1.272	3411313	2.17		86.6	45368	
D 21 13C8 FOSA										
506.00 > 78.00	3.375	3.370	0.005	1.269	4326198	1.47		58.7	42283	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.533	3.520	0.013	1.328	1566685	2.43		97.1	15822	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.701	3.687	0.014	1.392	1581025	2.39		95.6	7608	
D 30 13C2 PFUnA										
565.00 > 520.00	3.701	3.698	0.003	1.392	2806677	2.13		85.3	36698	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.712	3.706	0.006	1.003	8026	0.0144			102	
D 36 13C2 PFDoA										
615.00 > 570.00	3.989	3.988	0.001	1.500	2204874	1.62		64.7	20331	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.491	4.480	0.011	1.689	2570897	1.82		72.7	13105	

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Review Flags

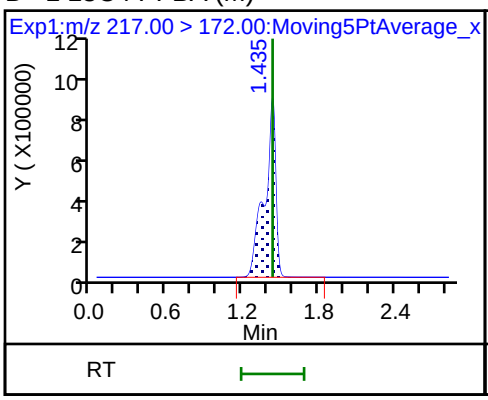
M - Manually Integrated

Report Date: 17-Jul-2018 08:29:21 Chrom Revision: 2.2 07-Jun-2018 07:41:54

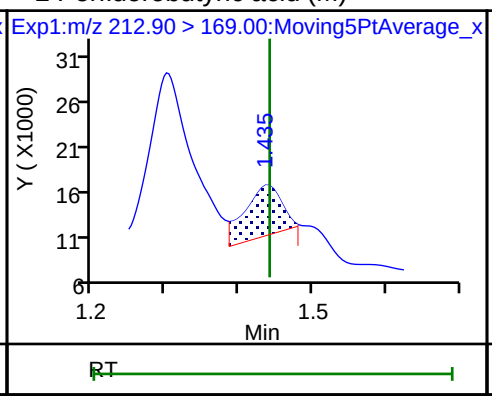
TestAmerica Sacramento

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180716-61105.b\2018.07.14LLA_031.d				
Injection Date:	14-Jul-2018 14:40:18	Instrument ID:	A8_N		
Lims ID:	320-40571-A-40-A	Lab Sample ID:	320-40571-40		
Client ID:	NF35-SS-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	21	Worklist Smp#:	14
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		

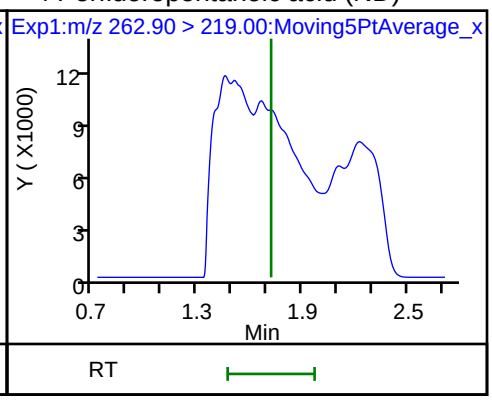
D 1 13C4 PFBA (M)



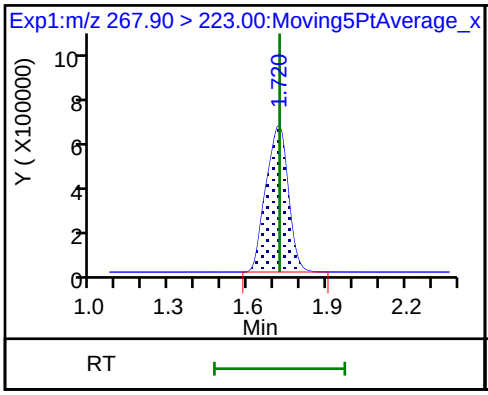
2 Perfluorobutyric acid (M)



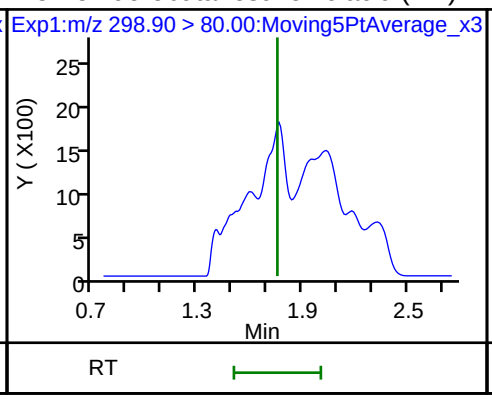
4 Perfluoropentanoic acid (ND)



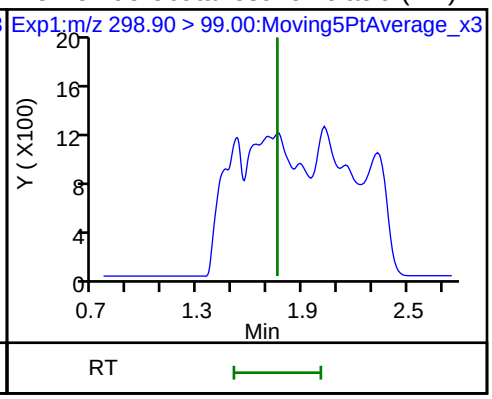
D 3 13C5-PFPeA



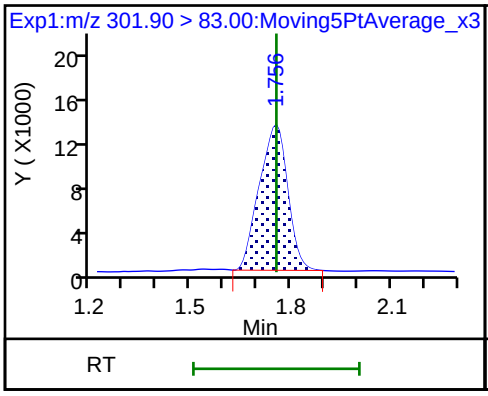
5 Perfluorobutanesulfonic acid (ND)



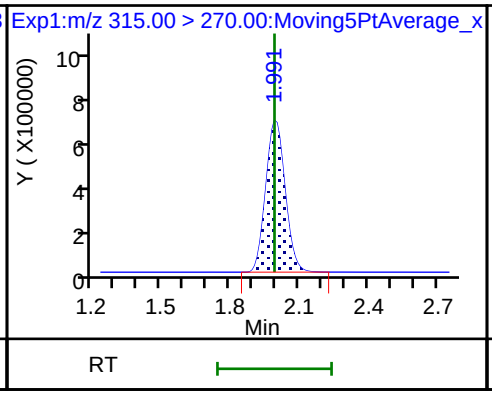
5 Perfluorobutanesulfonic acid (ND)



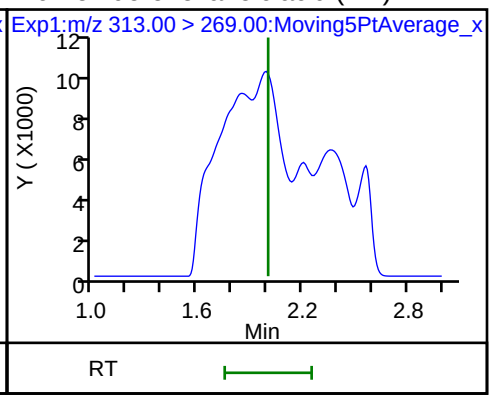
D 47 13C3-PFBS



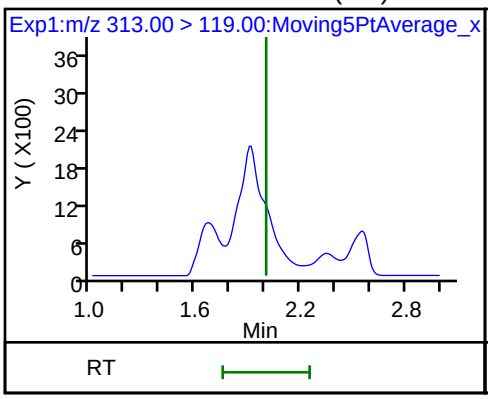
D 7 13C2 PFHxA



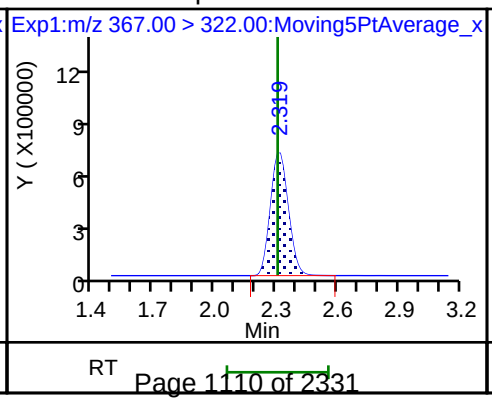
6 Perfluorohexanoic acid (ND)



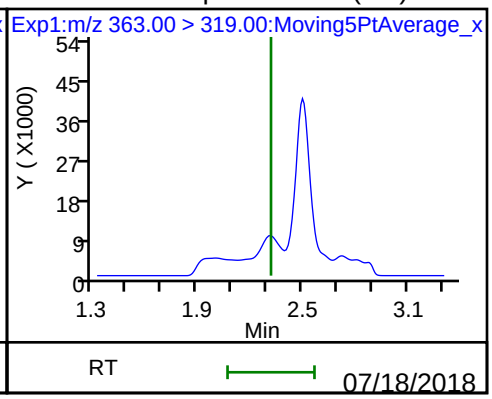
6 Perfluorohexanoic acid (ND)



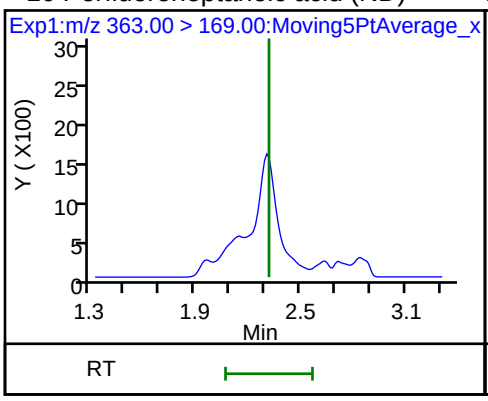
D 9 13C4-PFHpA



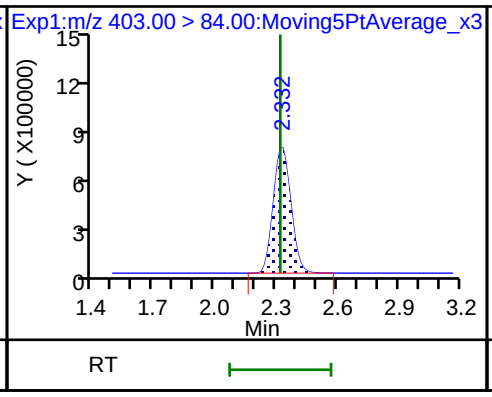
10 Perfluoroheptanoic acid (ND)



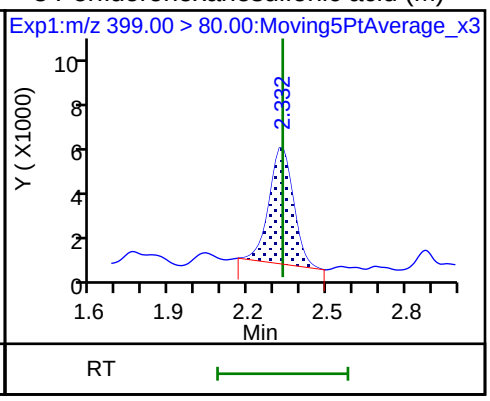
10 Perfluoroheptanoic acid (ND)



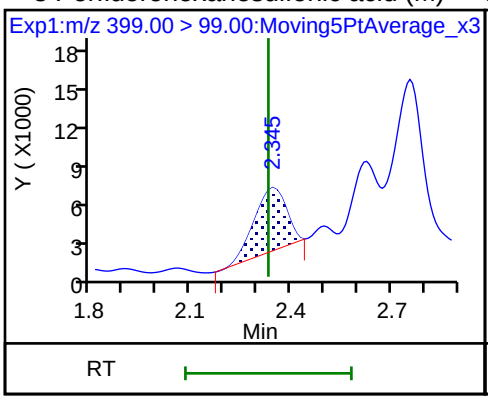
D 11 18O2 PFHxS



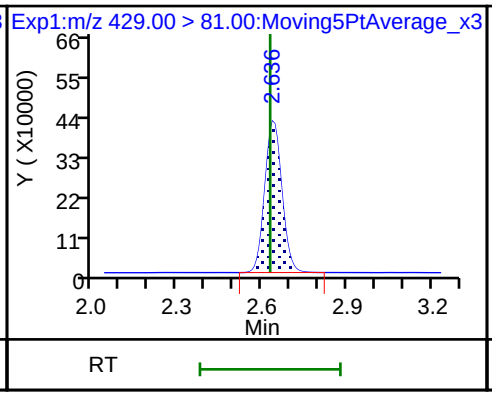
8 Perfluorohexanesulfonic acid (M)



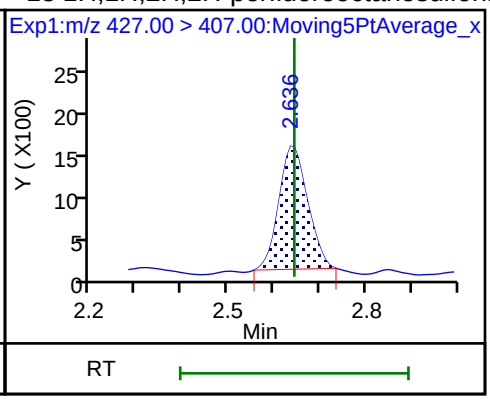
8 Perfluorohexanesulfonic acid (M)



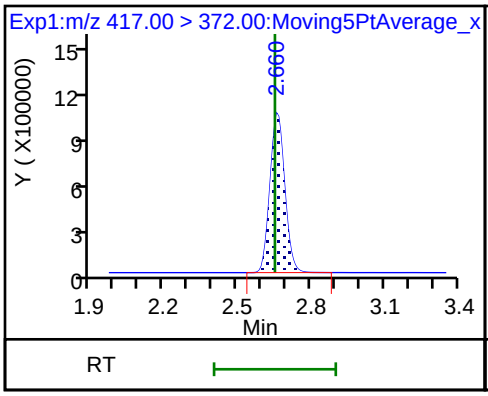
D 12 M2-6:2FTS



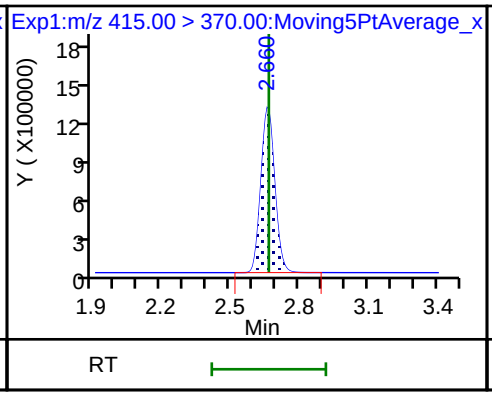
13 1H,1H,2H,2H-perfluorooctanesulfoni



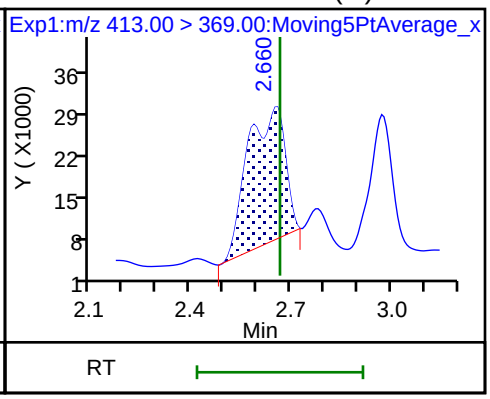
D 14 13C4 PFOA



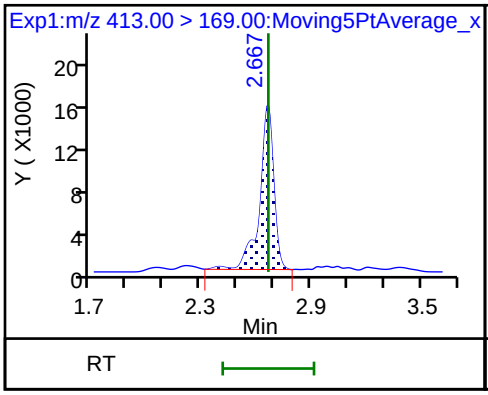
* 62 13C2-PFOA



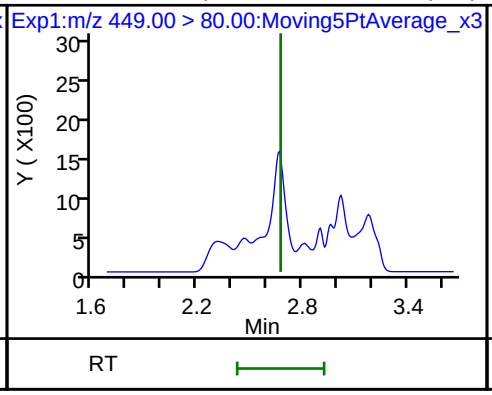
15 Perfluorooctanoic acid (M)



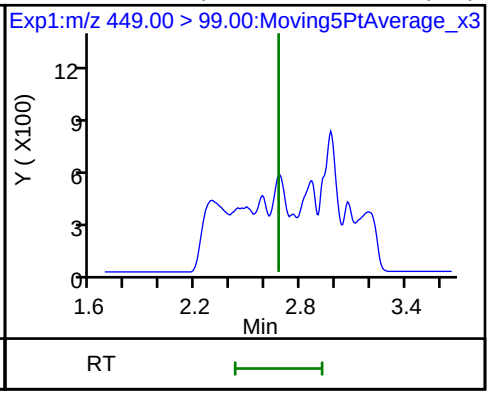
15 Perfluorooctanoic acid



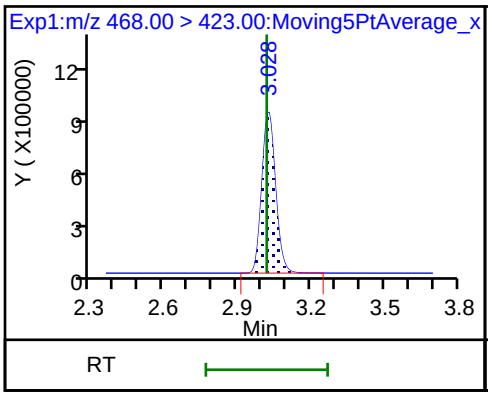
16 Perfluoroheptanesulfonic acid (ND)



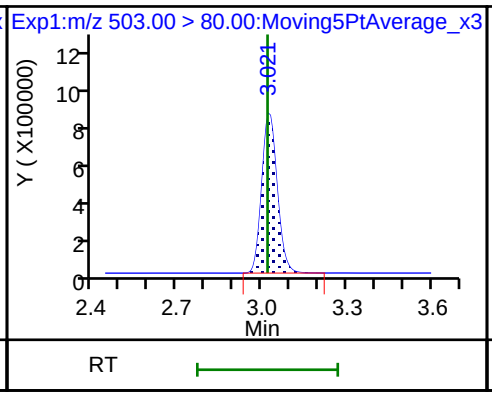
16 Perfluoroheptanesulfonic acid (ND)



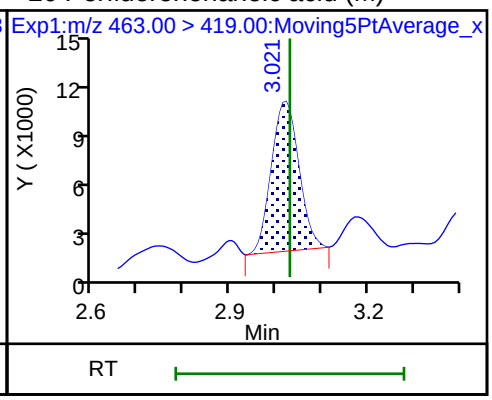
D 19 13C5 PFNA



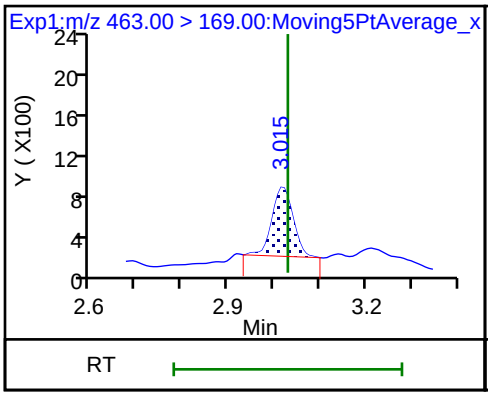
D 18 13C4 PFOS



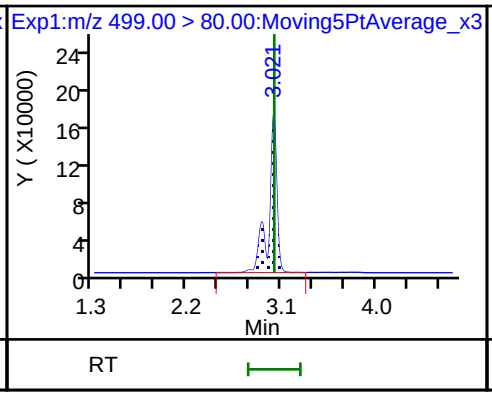
20 Perfluorononanoic acid (M)



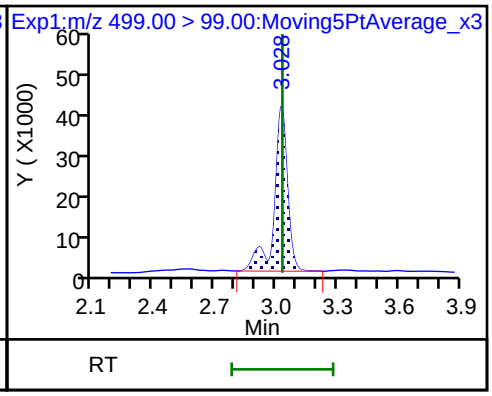
20 Perfluorononanoic acid



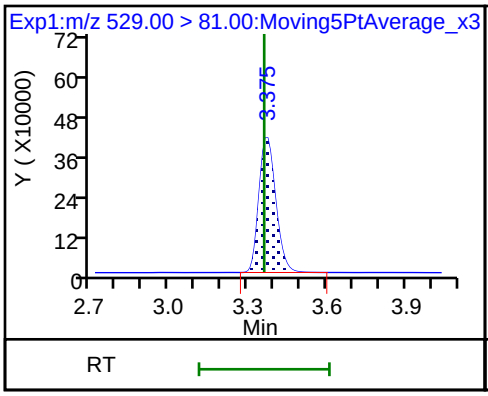
17 Perfluorooctane sulfonic acid



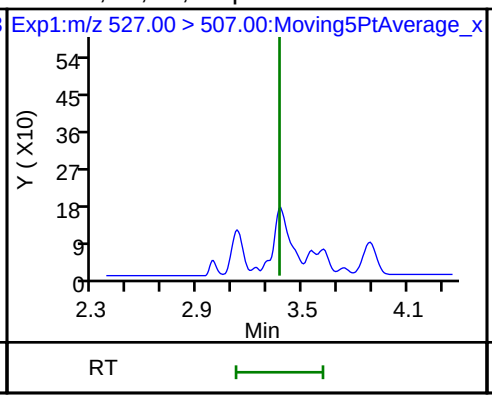
17 Perfluorooctane sulfonic acid



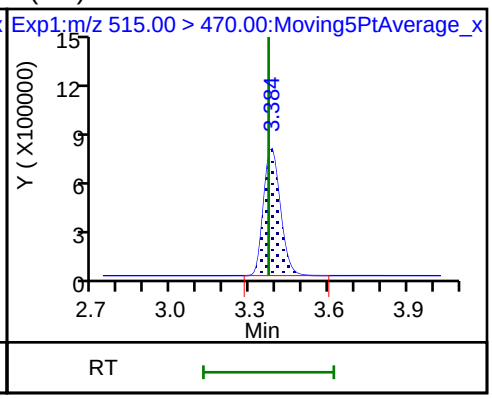
D 26 M2-8:2FTS



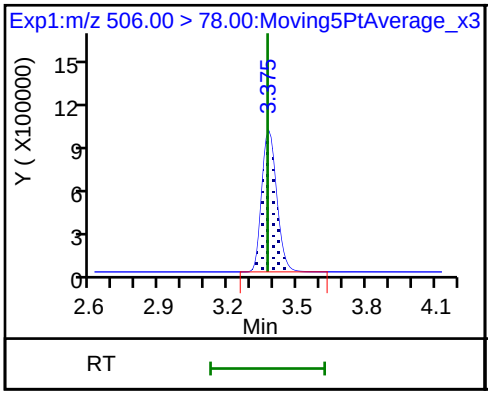
25 1H,1H,2H,2H-perfluorodecanesulfonic acid (ND)



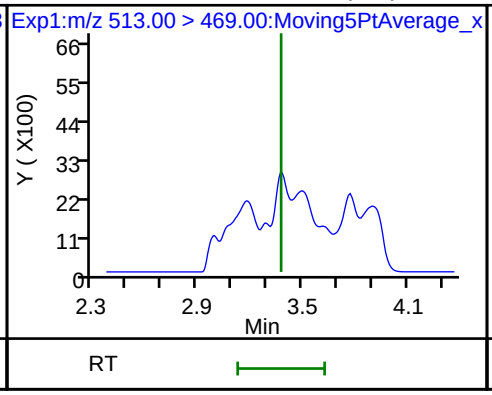
D 28 13C2 PFDA



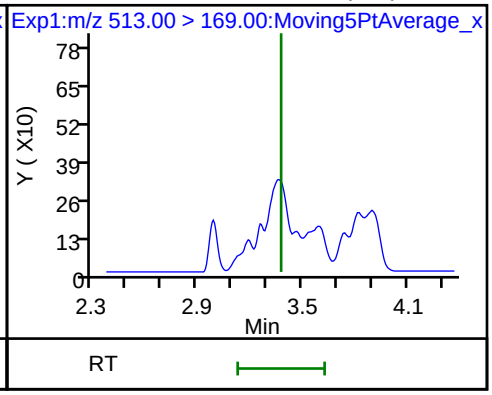
D 21 13C8 FOSA



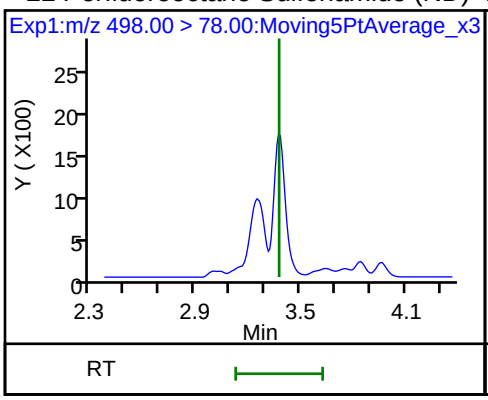
24 Perfluorodecanoic acid (ND)



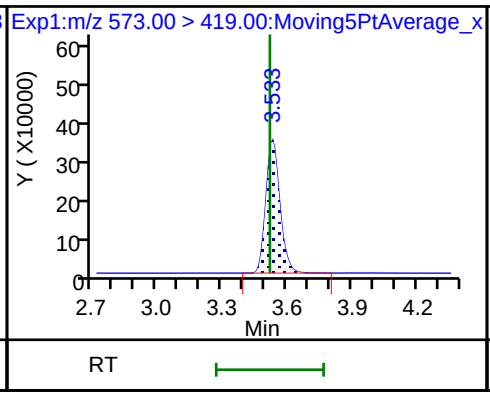
24 Perfluorodecanoic acid (ND)



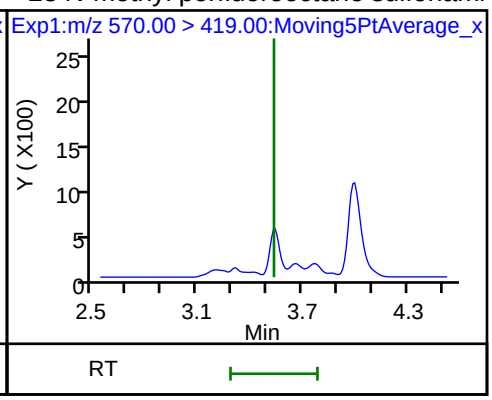
22 Perfluorooctane Sulfonamide (ND)



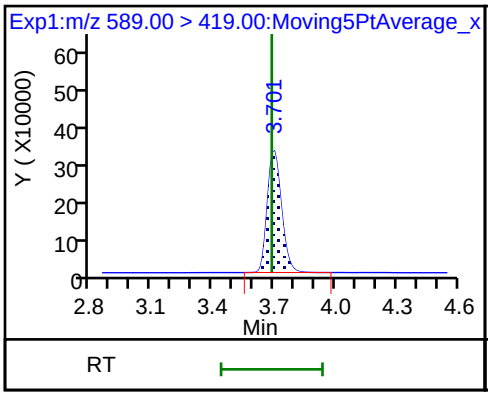
D 27 d3-NMeFOSAA



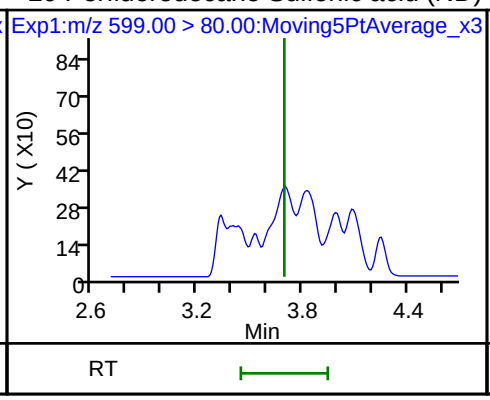
28 N-methyl perfluorooctane sulfonami (ND)



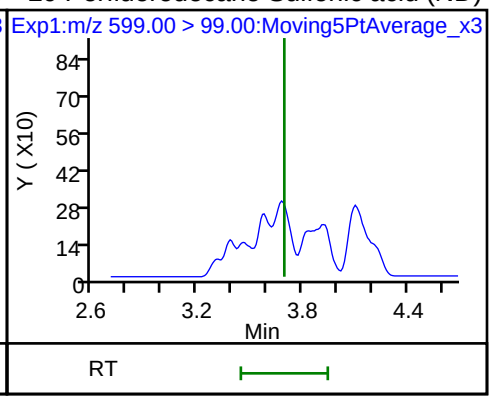
D 32 d5-NEtFOSAA



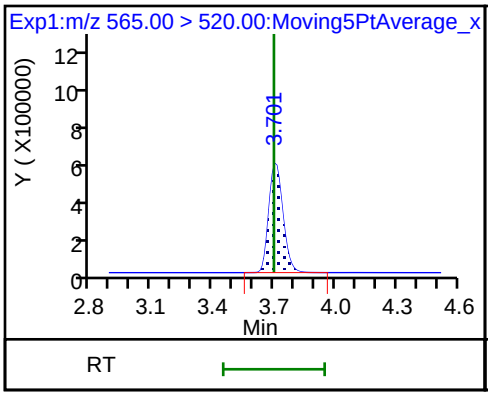
29 Perfluorodecane Sulfonic acid (ND)



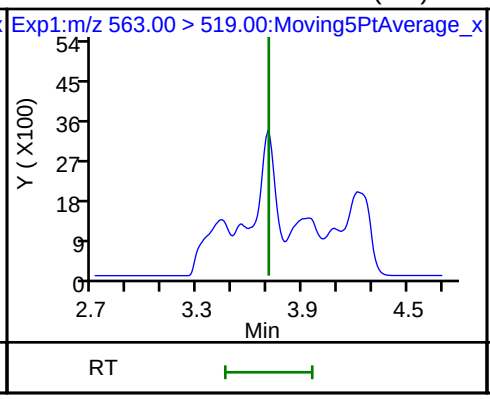
29 Perfluorodecane Sulfonic acid (ND)



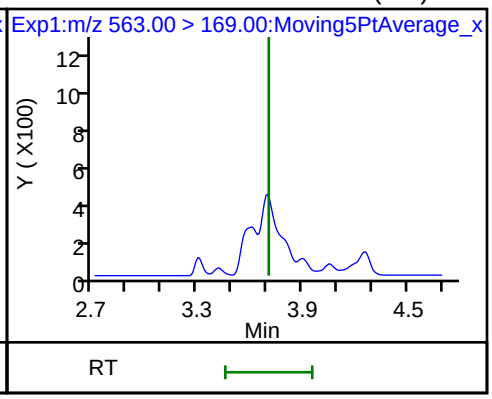
D 30 13C2 PFUnA



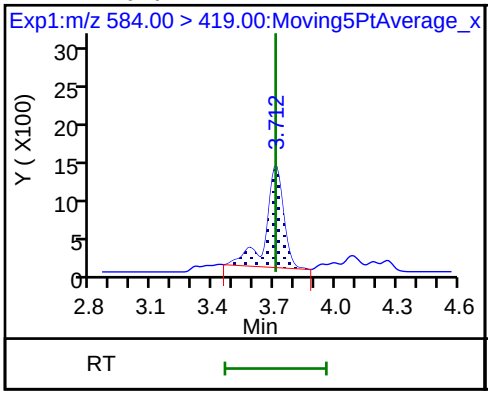
31 Perfluoroundecanoic acid (ND)



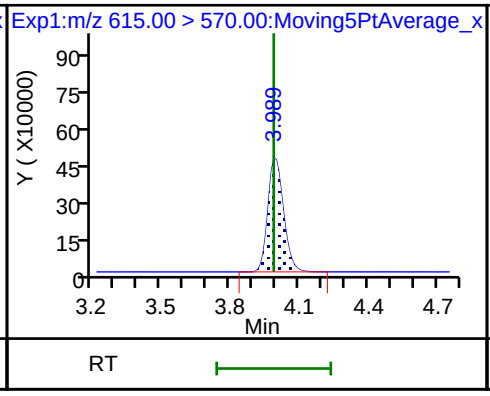
31 Perfluoroundecanoic acid (ND)



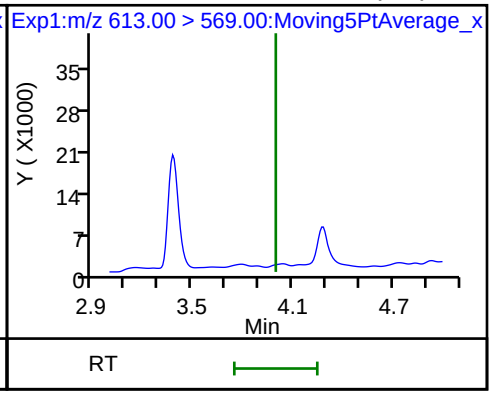
33 N-ethyl perfluorooctane sulfonamid



D 36 13C2 PFDoA

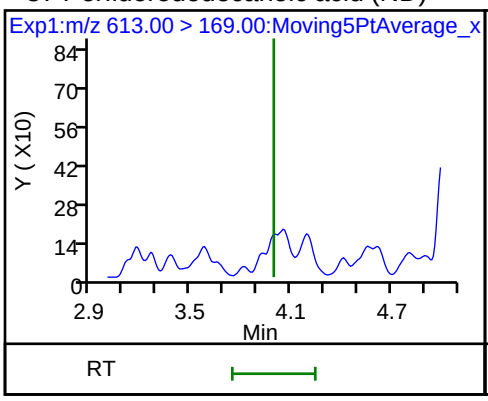


37 Perfluorododecanoic acid (ND)

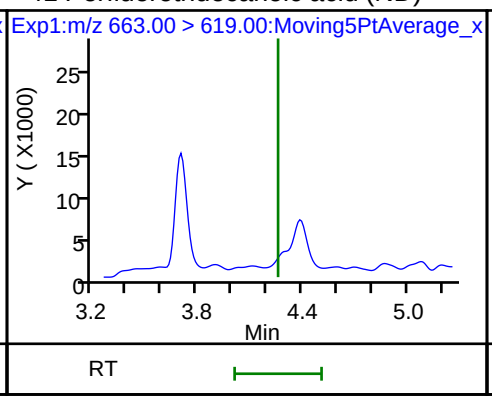


Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180716-61105.b\2018.07.14LLA_031.d

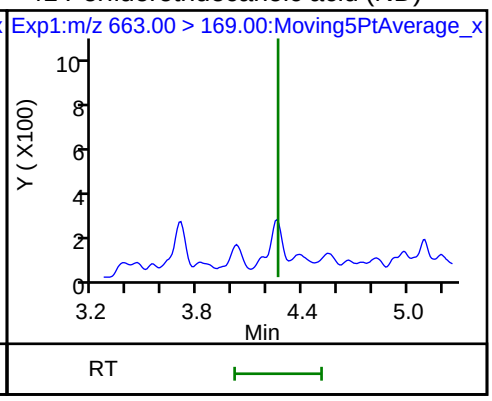
37 Perfluorododecanoic acid (ND)



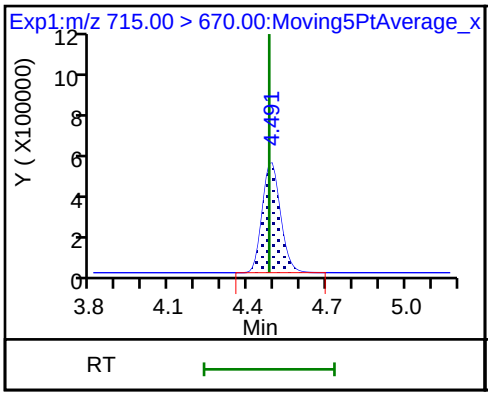
41 Perfluorotridecanoic acid (ND)



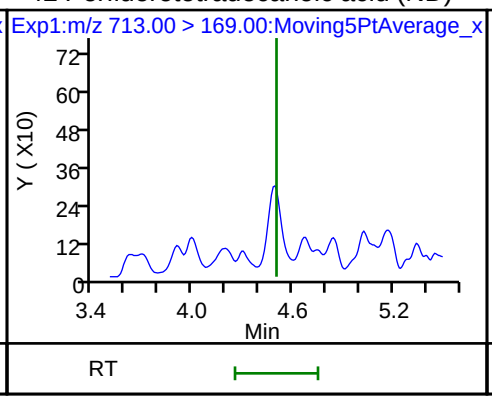
41 Perfluorotridecanoic acid (ND)



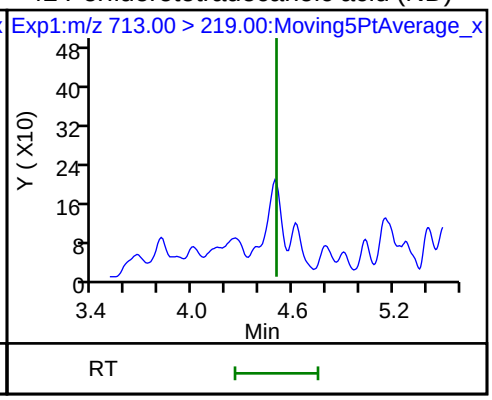
D 43 13C2-PFTeDA



42 Perfluorotetradecanoic acid (ND)



42 Perfluorotetradecanoic acid (ND)



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

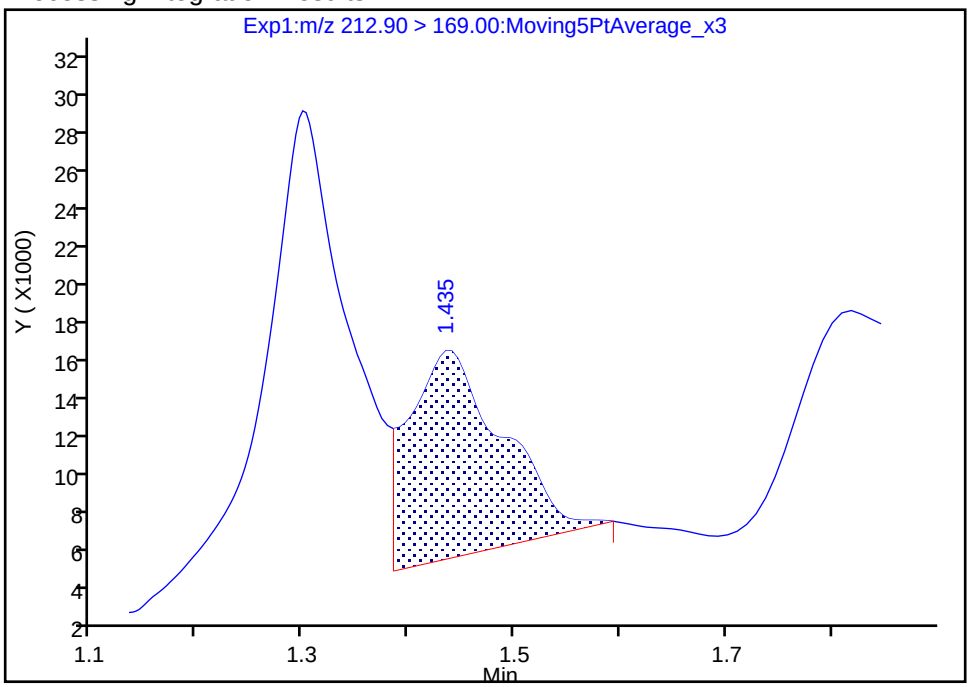
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180716-61105.b\2018.07.14LLA_031.d				
Injection Date:	14-Jul-2018 14:40:18	Instrument ID:	A8_N		
Lims ID:	320-40571-A-40-A	Lab Sample ID:	320-40571-40		
Client ID:	NF35-SS-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	21	Worklist Smp#:	14
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

2 Perfluorobutyric acid, CAS: 375-22-4

Signal: 1

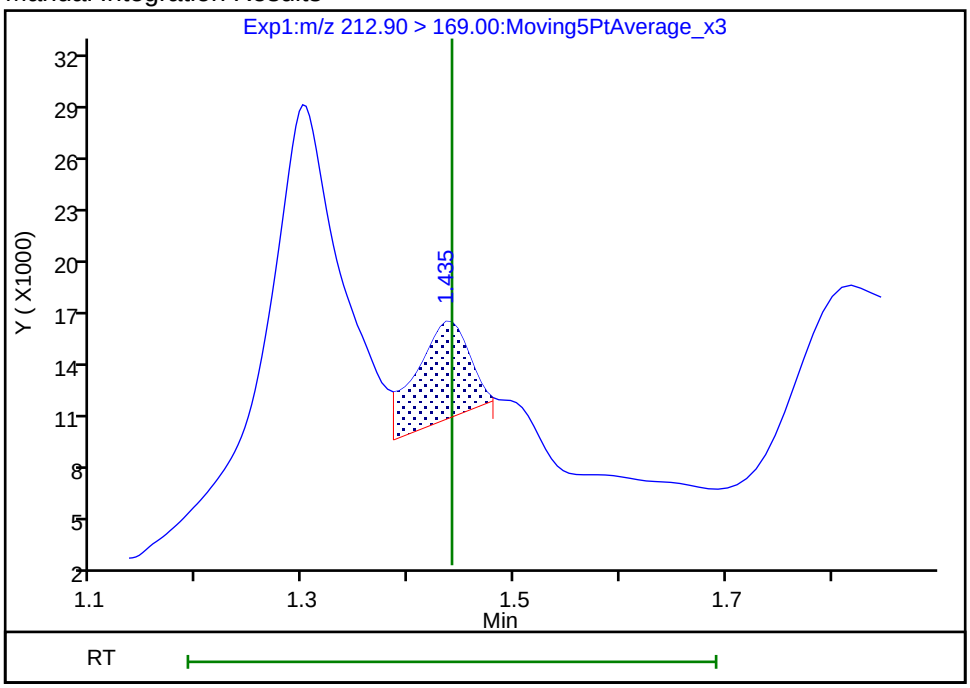
Processing Integration Results

RT: 1.44
Area: 66276
Amount: 0.033547
Amount Units: ng/ml



Manual Integration Results

RT: 1.44
Area: 19929
Amount: 0.010087
Amount Units: ng/ml



Reviewer: mongkols, 17-Jul-2018 08:27:42

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

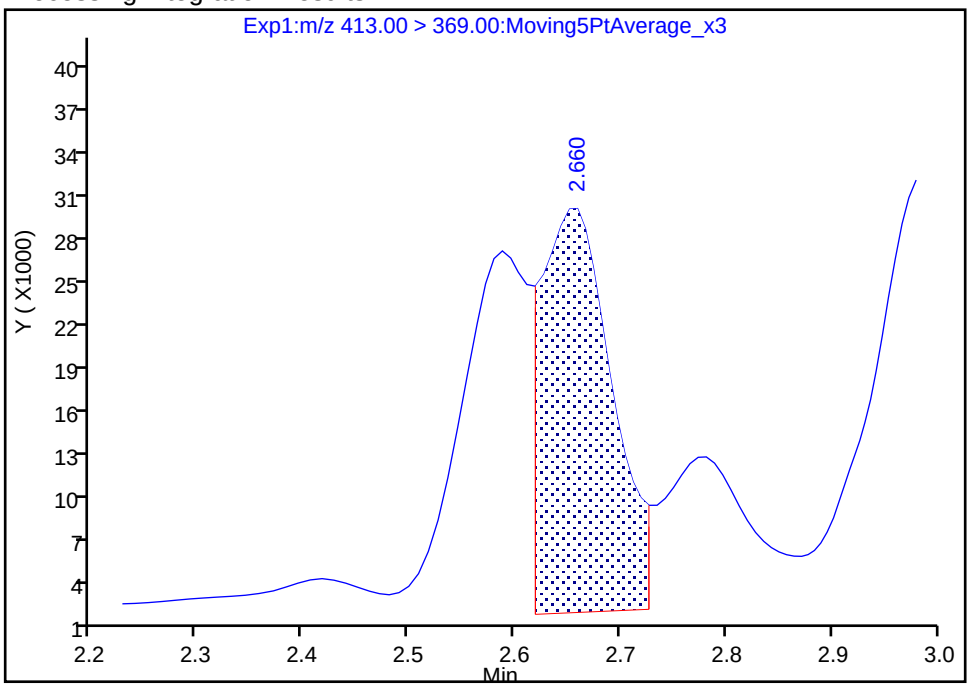
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180716-61105.b\2018.07.14LLA_031.d				
Injection Date:	14-Jul-2018 14:40:18	Instrument ID:	A8_N		
Lims ID:	320-40571-A-40-A	Lab Sample ID:	320-40571-40		
Client ID:	NF35-SS-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	21	Worklist Smp#:	14
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

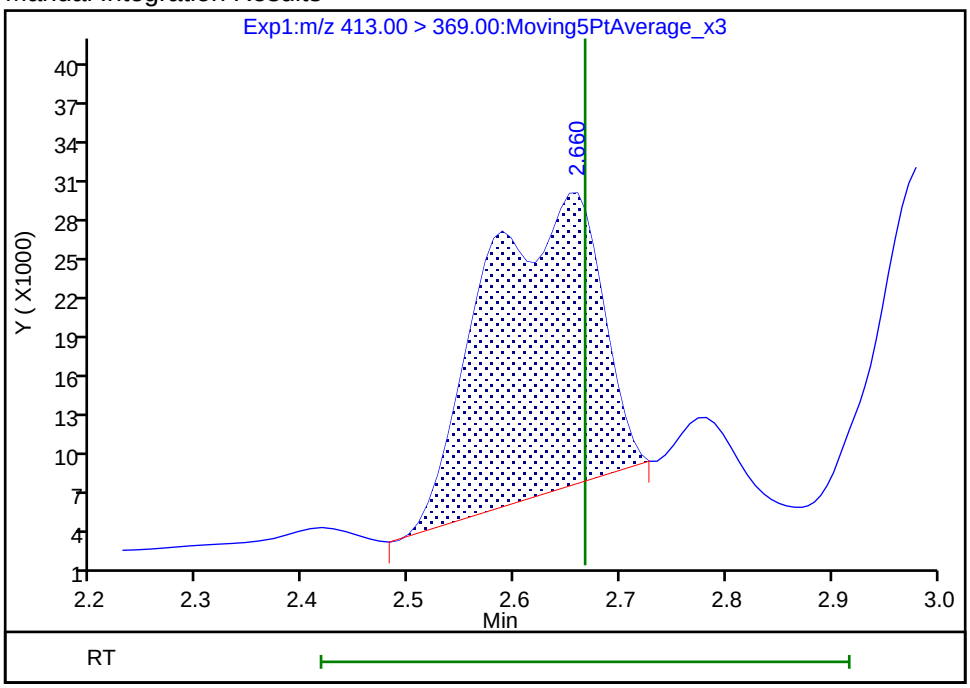
Processing Integration Results

RT: 2.66
Area: 124748
Amount: 0.057764
Amount Units: ng/ml



Manual Integration Results

RT: 2.66
Area: 174297
Amount: 0.080708
Amount Units: ng/ml



Reviewer: mongkols, 17-Jul-2018 08:28:36

Audit Action: Manually Integrated Audit Reason: Isomers

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

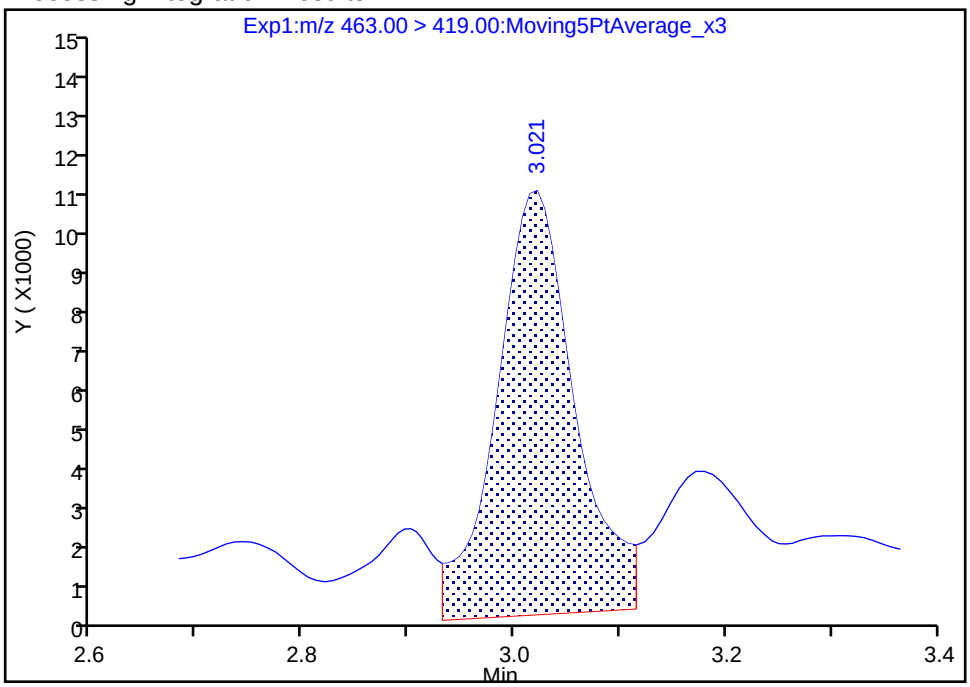
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180716-61105.b\2018.07.14LLA_031.d				
Injection Date:	14-Jul-2018 14:40:18	Instrument ID:	A8_N		
Lims ID:	320-40571-A-40-A	Lab Sample ID:	320-40571-40		
Client ID:	NF35-SS-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	21	Worklist Smp#:	14
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

20 Perfluorononanoic acid, CAS: 375-95-1

Signal: 1

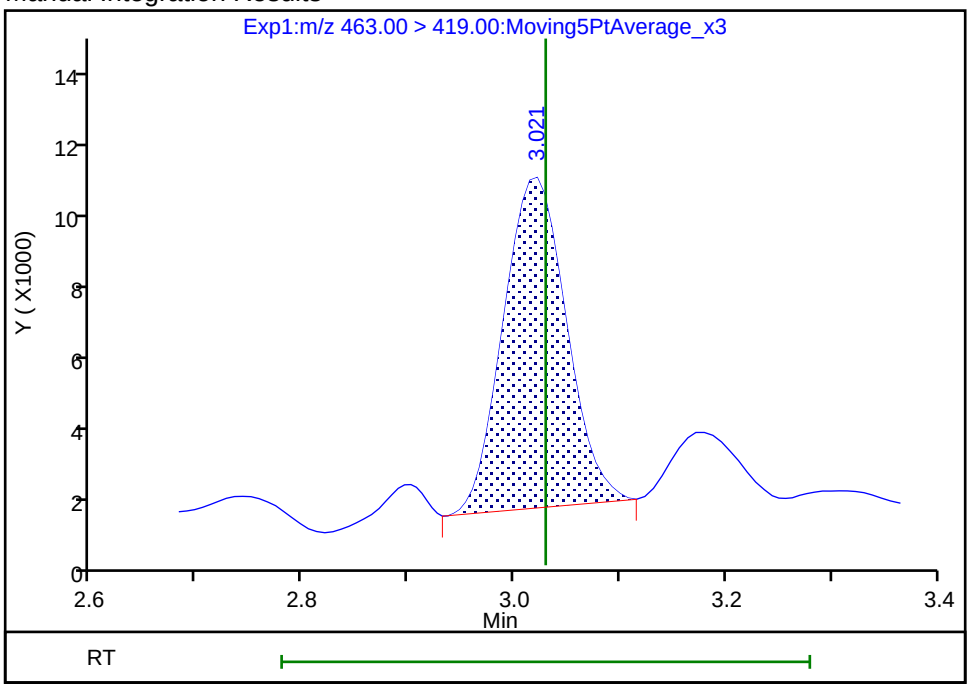
Processing Integration Results

RT: 3.02
Area: 50554
Amount: 0.031370
Amount Units: ng/ml



Manual Integration Results

RT: 3.02
Area: 35082
Amount: 0.021769
Amount Units: ng/ml



Reviewer: mongkols, 17-Jul-2018 08:29:01

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

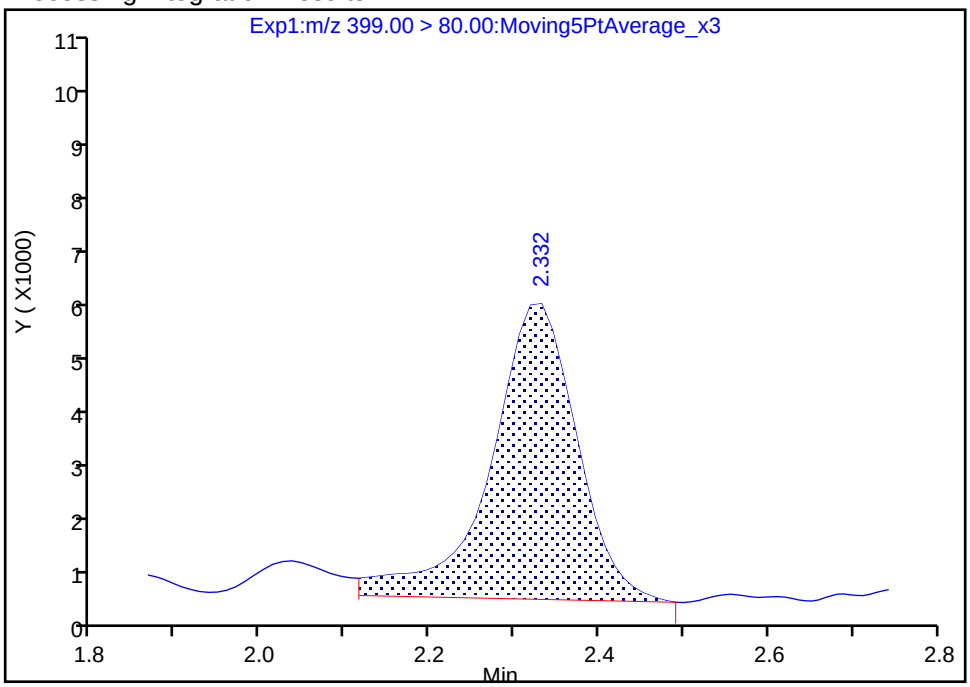
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180716-61105.b\2018.07.14LLA_031.d				
Injection Date:	14-Jul-2018 14:40:18	Instrument ID:	A8_N		
Lims ID:	320-40571-A-40-A	Lab Sample ID:	320-40571-40		
Client ID:	NF35-SS-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	21	Worklist Smp#:	14
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

8 Perfluorohexanesulfonic acid, CAS: 355-46-4

Signal: 1

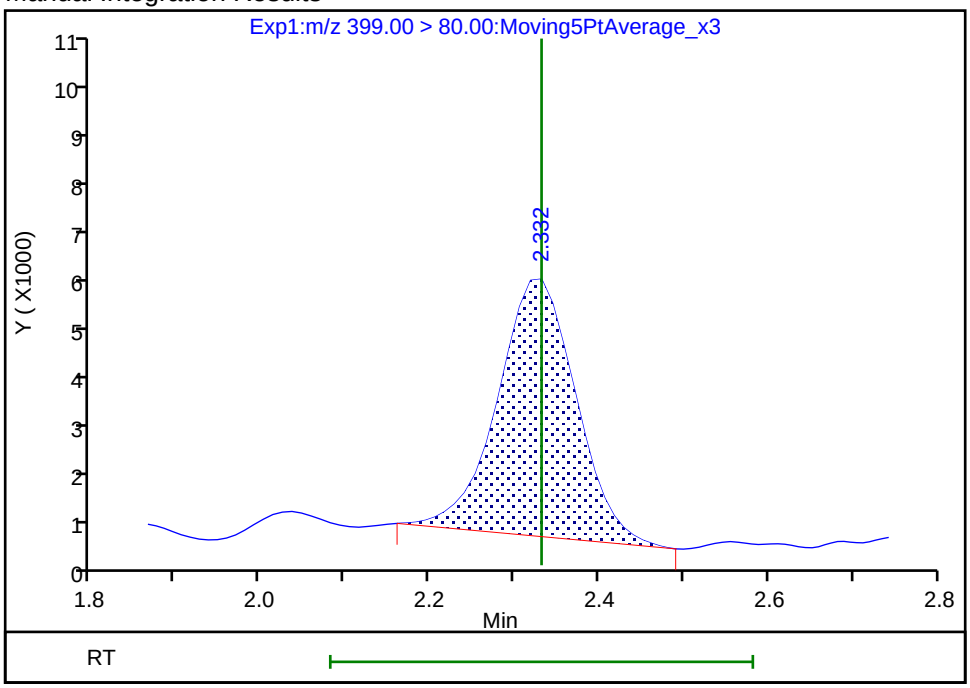
Processing Integration Results

RT: 2.33
Area: 38844
Amount: 0.017285
Amount Units: ng/ml



Manual Integration Results

RT: 2.33
Area: 33803
Amount: 0.015042
Amount Units: ng/ml



Reviewer: mongkols, 17-Jul-2018 08:28:11

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

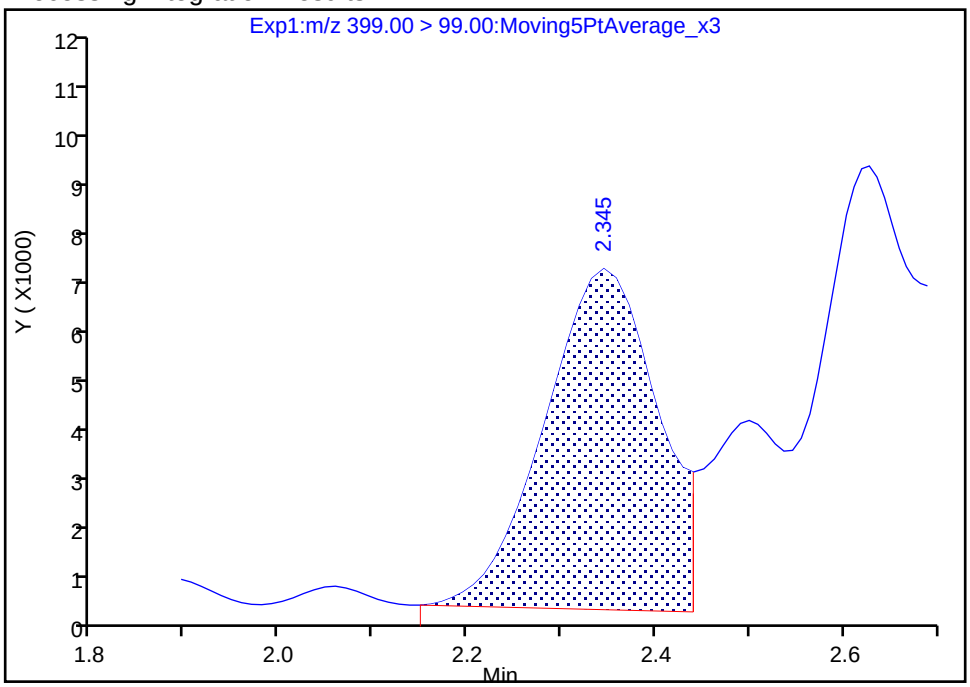
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180716-61105.b\2018.07.14LLA_031.d				
Injection Date:	14-Jul-2018 14:40:18	Instrument ID:	A8_N		
Lims ID:	320-40571-A-40-A	Lab Sample ID:	320-40571-40		
Client ID:	NF35-SS-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	21	Worklist Smp#:	14
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

8 Perfluorohexanesulfonic acid, CAS: 355-46-4

Signal: 2

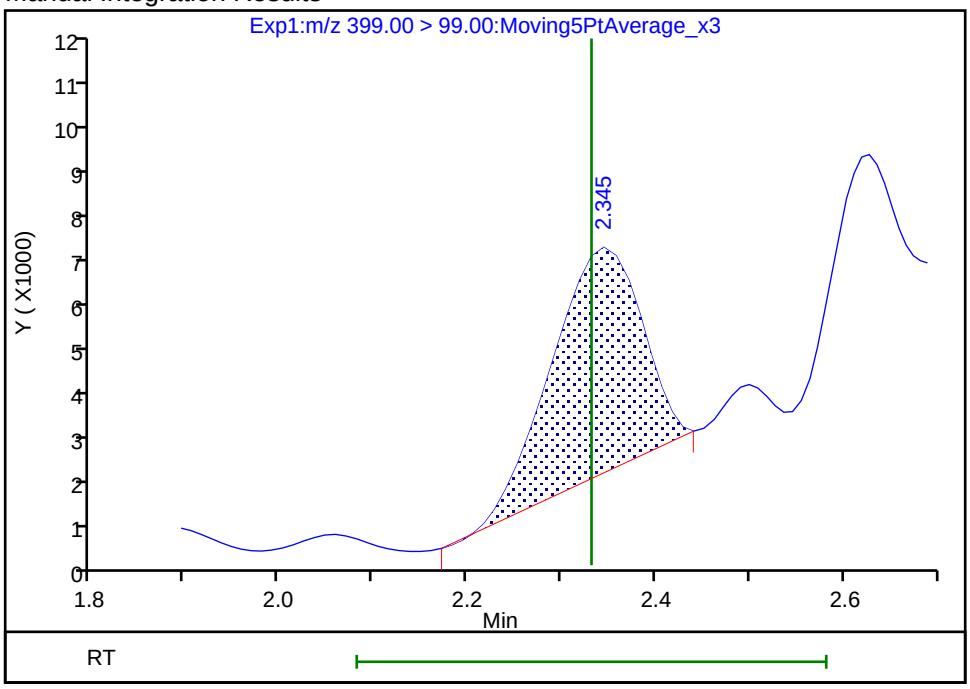
Processing Integration Results

RT: 2.35
Area: 54113
Amount: 0.017285
Amount Units: ng/ml



Manual Integration Results

RT: 2.35
Area: 32012
Amount: 0.015042
Amount Units: ng/ml



Reviewer: mongkols, 17-Jul-2018 08:28:15

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

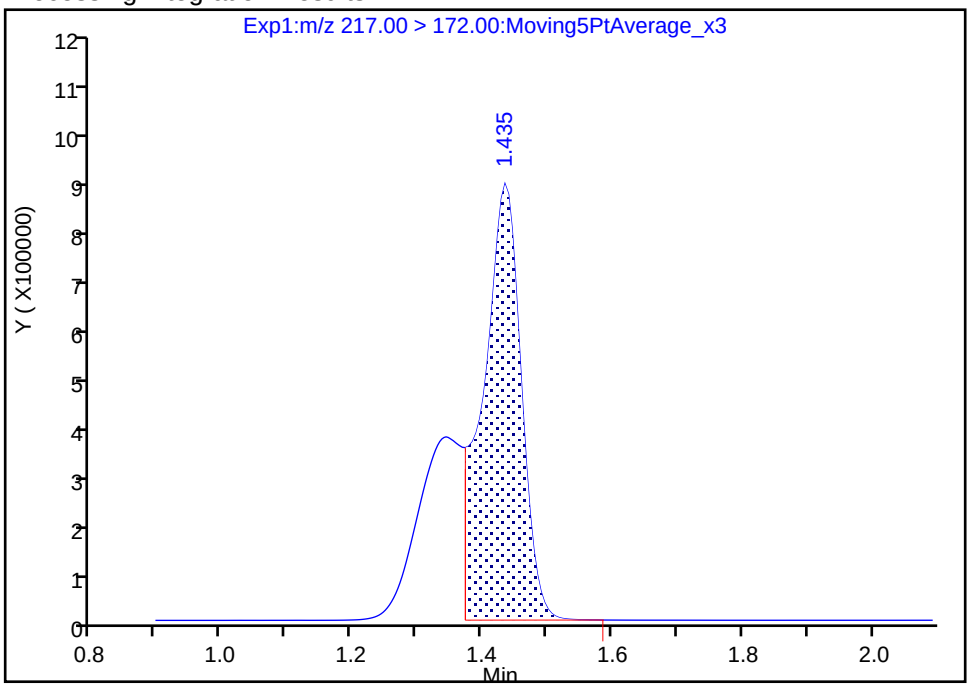
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180716-61105.b\2018.07.14LLA_031.d				
Injection Date:	14-Jul-2018 14:40:18	Instrument ID:	A8_N		
Lims ID:	320-40571-A-40-A	Lab Sample ID:	320-40571-40		
Client ID:	NF35-SS-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	21	Worklist Smp#:	14
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

D 1 13C4 PFBA, CAS: STL00992

Signal: 1

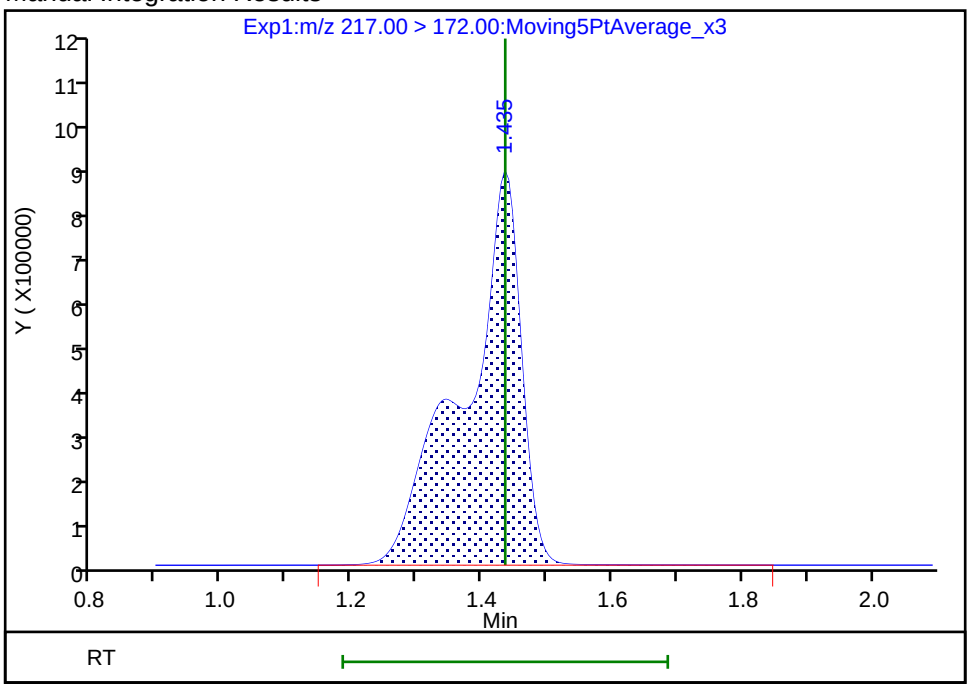
Processing Integration Results

RT: 1.44
Area: 3335648
Amount: 1.171696
Amount Units: ng/ml



Manual Integration Results

RT: 1.44
Area: 5011358
Amount: 1.760314
Amount Units: ng/ml



Reviewer: mongkols, 17-Jul-2018 08:26:42

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF36-GW-01
Lab Sample ID: 320-40571-41
Matrix: Water
Lab File ID: 2018.07.13LLC_019.d
Analysis Method: 537 (modified)
Date Collected: 06/21/2018 10:35
Extraction Method: 3535
Date Extracted: 07/02/2018 16:10
Sample wt/vol: 170.3(mL)
Date Analyzed: 07/13/2018 22:28
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 233989
Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	0.17	B	0.0029	0.00051
2706-90-3	Perfluoropentanoic acid (PFPeA)	0.18		0.0029	0.00072
307-24-4	Perfluorohexanoic acid (PFHxA)	0.046		0.0029	0.00085
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.047		0.0029	0.00037
335-67-1	Perfluorooctanoic acid (PFOA)	0.020		0.0029	0.0012
375-95-1	Perfluorononanoic acid (PFNA)	0.020		0.0029	0.00040
335-76-2	Perfluorodecanoic acid (PFDA)	0.0085		0.0029	0.00046
2058-94-8	Perfluoroundecanoic acid (PFUnA)	0.0096		0.0029	0.0016
307-55-1	Perfluorododecanoic acid (PFDoA)	0.0039		0.0029	0.00081
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	0.0043		0.0029	0.0019
376-06-7	Perfluorotetradecanoic acid (PFTeA)	0.0032		0.0029	0.00043
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.0076		0.0029	0.00029
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	0.00065	J	0.0029	0.00044
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.0032	B	0.0029	0.00025
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.0029	0.00028
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	ND		0.0029	0.00079
8789-57-2	Perfluorononanesulfonic acid (PFNS)	ND		0.0029	0.00023
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		0.0029	0.00047
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		0.0029	0.00051
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.029	0.0046
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.029	0.0028
757124-72-4	4:2 FTS	ND		0.029	0.0076
27619-97-2	6:2 FTS	0.0034	J	0.029	0.0029
39108-34-4	8:2 FTS	ND		0.029	0.0029

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF36-GW-01
Lab Sample ID: 320-40571-41
Matrix: Water
Lab File ID: 2018.07.13LLC_019.d
Analysis Method: 537 (modified)
Date Collected: 06/21/2018 10:35
Extraction Method: 3535
Date Extracted: 07/02/2018 16:10
Sample wt/vol: 170.3(mL)
Date Analyzed: 07/13/2018 22:28
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 233989
Units: ug/L

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00992	13C4 PFBA	61		25-150
STL01893	13C5 PFPeA	84		25-150
STL00993	13C2 PFHxA	94		25-150
STL01892	13C4-PFHpA	105		25-150
STL00990	13C4 PFOA	103		25-150
STL00995	13C5 PFNA	99		25-150
STL00996	13C2 PFDA	96		25-150
STL00997	13C2 PFUnA	98		25-150
STL00998	13C2 PFDoA	93		25-150
STL02116	13C2-PFTeDA	91		25-150
STL02337	13C3-PFBS	89		25-150
STL00994	18O2 PFHxS	100		25-150
STL00991	13C4 PFOS	94		25-150
STL01056	13C8 FOSA	80		25-150
STL02118	d3-NMeFOSAA	98		25-150
STL02117	d5-NEtFOSAA	97		25-150
STL02279	M2-6:2FTS	132		25-150
STL02280	M2-8:2FTS	94		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\2018.07.13LLC_019.d
Lims ID: 320-40571-A-41-A
Client ID: NF36-GW-01
Sample Type: Client
Inject. Date: 13-Jul-2018 22:28:02 ALS Bottle#: 12 Worklist Smp#: 14
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-40571-a-41-a
Misc. Info.: Plate: 1 Rack: 4
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 16-Jul-2018 12:47:58 Calib Date: 11-Jul-2018 15:38:42
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK023

First Level Reviewer: mongkols Date: 16-Jul-2018 12:47:58

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										M
212.90 > 169.00	1.433	1.433	0.0	1.000	4276522	2.86			365	M
D 1 13C4 PFBA										
217.00 > 172.00	1.433	1.445	-0.012	0.539	3795823	1.54		61.5	16785	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.716	1.716	0.0	1.000	5428847	3.10			953	
D 3 13C5-PFPeA										
267.90 > 223.00	1.716	1.725	-0.009	0.646	3606841	2.10		84.1	17003	
5 Perfluorobutanesulfonic acid										M
298.90 > 80.00	1.761	1.761	0.0	1.005	380554	0.1301			86.4	M
298.90 > 99.00	1.761	1.761	0.0	1.005	162922		2.34(1.25-3.74)		156	M
D 47 13C3-PFBS										
301.90 > 83.00	1.752	1.762	-0.010	0.659	88872	2.06		88.6	146	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.999	1.999	0.0	1.000	1407757	0.7839			434	
313.00 > 119.00	1.999	1.999	0.0	1.000	123270		11.42(5.03-15.10)		841	
D 7 13C2 PFHxA										
315.00 > 270.00	1.999	2.011	-0.012	0.752	4361615	2.35		94.2	56700	
70 Perfluoropentanesulfonic acid										M
349.00 > 80.00	2.022	2.022	0.0	1.154	29726	0.0111			12.5	M
349.00 > 99.00	2.022	2.022	0.0	1.154	13066		2.28(1.36-4.07)		22.0	M
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.316	2.316	0.0	1.000	1667707	0.8064			648	
363.00 > 169.00	2.316	2.316	0.0	1.000	693908		2.40(1.13-3.40)		3500	
D 9 13C4-PFHpA										
367.00 > 322.00	2.316	2.329	-0.013	0.871	4470330	2.62		105	52766	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.329	2.329	0.0	1.000	149270	0.0540			35.5	
399.00 > 99.00	2.329	2.329	0.0	1.000	44061		3.39(1.50-4.49)		52.6	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 11 18O2 PFHxS										
403.00 > 84.00	2.329	2.342	-0.013	0.876	5695809	2.36		99.6	59614	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.635	2.634	0.0	1.000	43499	0.0574			263	
D 12 M2-6:2FTS										
429.00 > 81.00	2.635	2.651	-0.017	0.991	1150758	3.15		132	3072	
* 62 13C2-PFOA										
415.00 > 370.00	2.658	2.658	0.0		4552482	2.50			48314	
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.658	2.658	0.0	1.000	736393	0.3329			234	M
413.00 > 169.00	2.658	2.658	0.0	1.000	413938		1.78(0.84-2.52)		1680	
D 14 13C4 PFOA										
417.00 > 372.00	2.658	2.673	-0.015	1.000	4490640	2.58		103	42532	
20 Perfluorononanoic acid										
463.00 > 419.00	3.019	3.025	-0.006	1.000	583274	0.3395			382	
463.00 > 169.00	3.026	3.025	0.001	1.002	137179		4.25(1.90-5.69)		233	
D 18 13C4 PFOS										
503.00 > 80.00	3.019	3.036	-0.017	1.136	3993074	2.25		94.2	16192	
D 19 13C5 PFNA										
468.00 > 423.00	3.019	3.036	-0.017	1.136	3871222	2.49		99.5	40444	
D 21 13C8 FOSA										
506.00 > 78.00	3.361	3.376	-0.015	1.264	5100393	1.99		79.8	39034	
D 26 M2-8:2FTS										
529.00 > 81.00	3.361	3.376	-0.015	1.264	1207316	2.26		94.2	6484	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.380	3.380	0.0	1.000	198690	0.1441			261	
513.00 > 169.00	3.371	3.380	-0.009	0.997	37379		5.32(2.36-7.09)		101	
D 23 13C2 PFDA										
515.00 > 470.00	3.380	3.385	-0.005	1.271	3284904	2.40		96.2	46530	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.529	3.544	-0.015	1.328	1365656	2.44		97.6	38219	
31 Perfluoroundecanoic acid										M
563.00 > 519.00	3.698	3.698	0.0	1.000	150945	0.1643			317	M
563.00 > 169.00	3.698	3.698	0.0	1.000	42855		3.52(2.12-6.36)		152	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.698	3.705	-0.007	1.391	1388415	2.42		96.8	4185	
D 30 13C2 PFUnA										
565.00 > 520.00	3.698	3.715	-0.017	1.391	2802978	2.46		98.3	65586	
37 Perfluorododecanoic acid										M
613.00 > 569.00	3.988	3.999	-0.011	1.000	80152	0.0670			42.5	M
613.00 > 169.00	3.988	3.999	-0.011	1.000	19703		4.07(2.13-6.40)		84.8	
D 36 13C2 PFDoA										
615.00 > 570.00	3.988	4.005	-0.017	1.500	2738210	2.31		92.6	25324	
41 Perfluorotridecanoic acid										M
663.00 > 619.00	4.252	4.252	0.0	1.066	84776	0.0725			38.1	M
663.00 > 169.00	4.252	4.252	0.0	1.066	25291		3.35(1.25-3.76)		106	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
42 Perfluorotetradecanoic acid										RM
713.00 > 169.00	4.490	4.491	-0.001	1.000	16001	0.0549			93.2	RM
713.00 > 219.00	4.469	4.491	-0.022	0.995	5865		2.73(0.71-2.13)		23.2	M
D 43 13C2-PFTeDA										
715.00 > 670.00	4.490	4.500	-0.010	1.689	2799983	2.28		91.2	16975	

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Review Flags

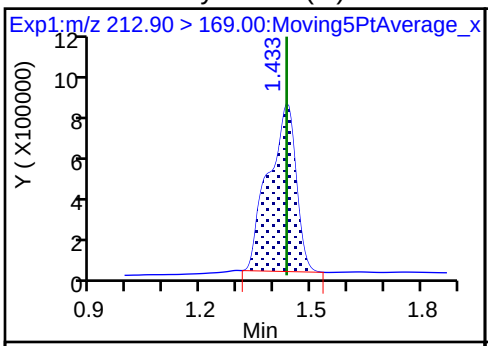
M - Manually Integrated

Report Date: 16-Jul-2018 12:47:58 Chrom Revision: 2.2 07-Jun-2018 07:41:54

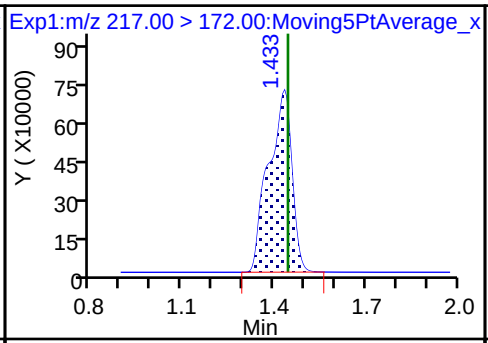
TestAmerica Sacramento

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\2018.07.13LLC_019.d				
Injection Date:	13-Jul-2018 22:28:02	Instrument ID:	A8_N		
Lims ID:	320-40571-A-41-A	Lab Sample ID:	320-40571-41		
Client ID:	NF36-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	12	Worklist Smp#:	14
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		

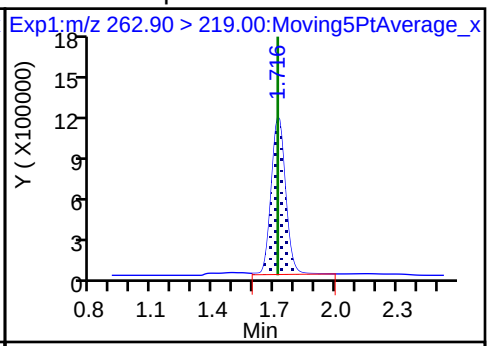
2 Perfluorobutyric acid (M)



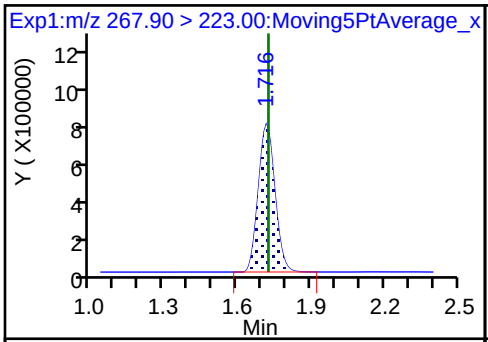
D 1 13C4 PFBA



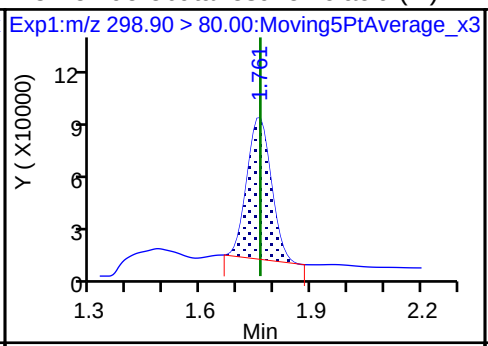
4 Perfluoropentanoic acid



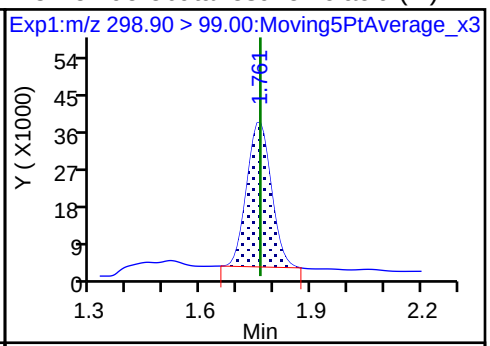
D 3 13C5-PFPeA



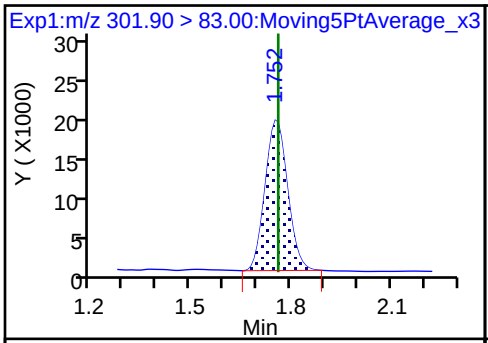
5 Perfluorobutanesulfonic acid (M)



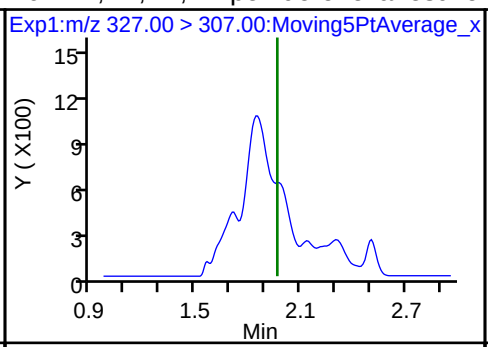
5 Perfluorobutanesulfonic acid (M)



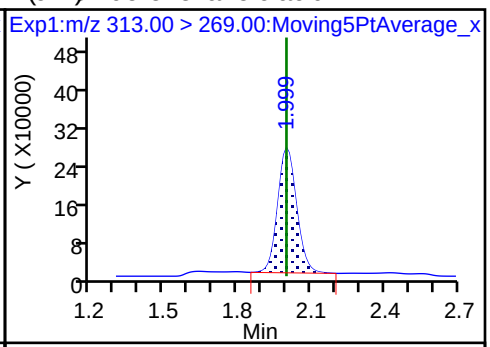
D 47 13C3-PFBS



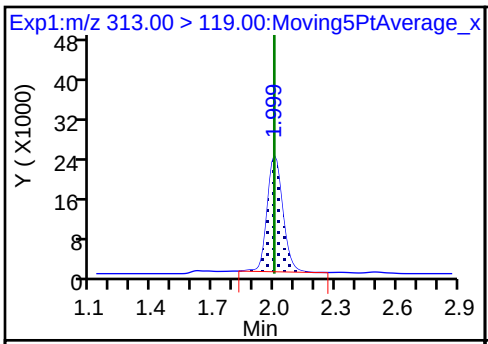
61 1H,1H,2H,2H-perfluorohexanesulfoni (M)



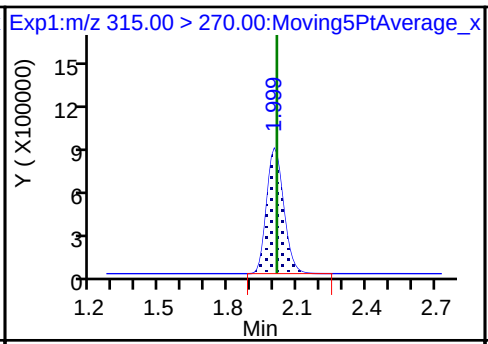
6 Perfluorohexanoic acid



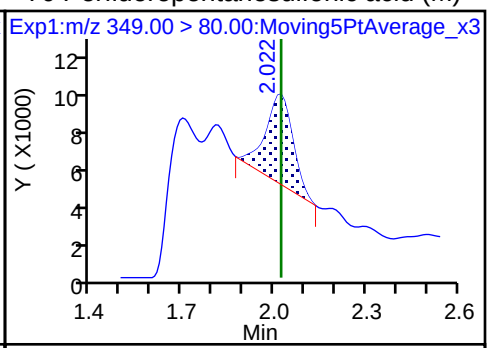
6 Perfluorohexanoic acid



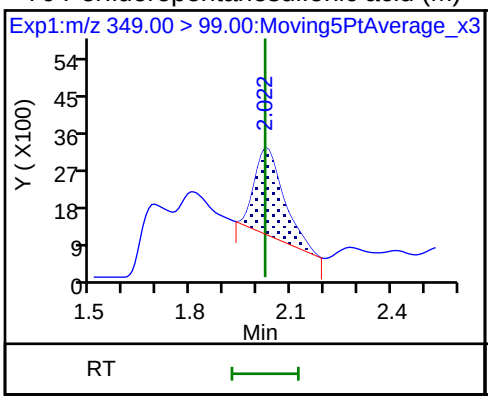
D 7 13C2 PFHxA



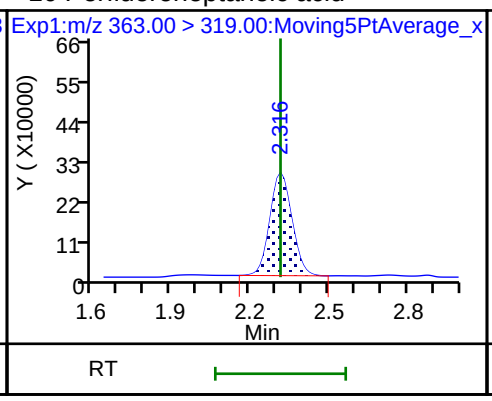
70 Perfluoropentanesulfonic acid (M)



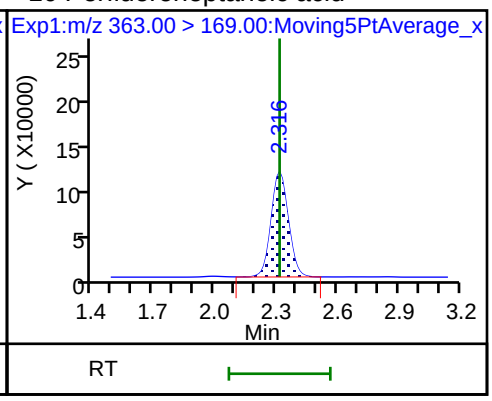
70 Perfluoropentanesulfonic acid (M)



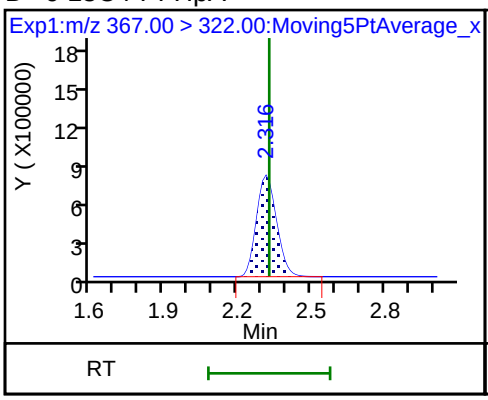
10 Perfluoroheptanoic acid



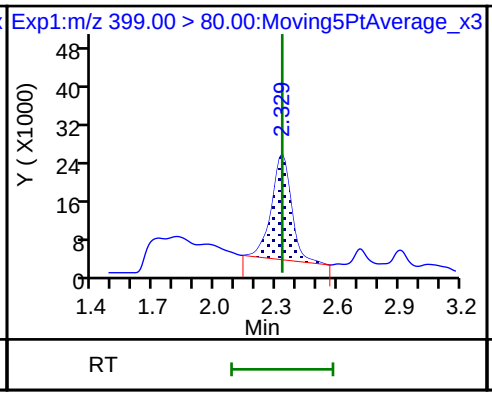
10 Perfluoroheptanoic acid



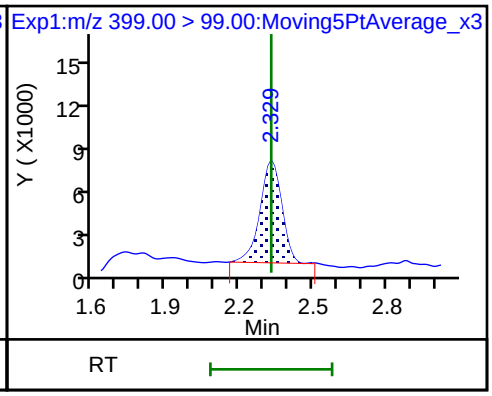
D 9 13C4-PFHpA



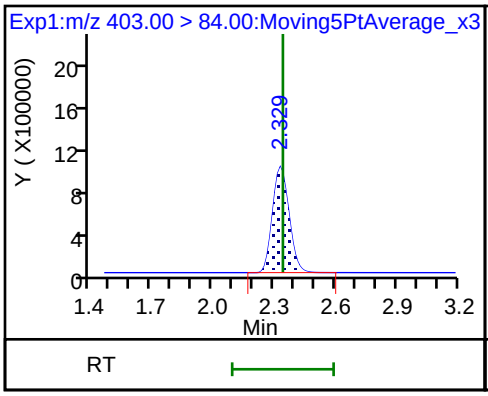
8 Perfluorohexanesulfonic acid



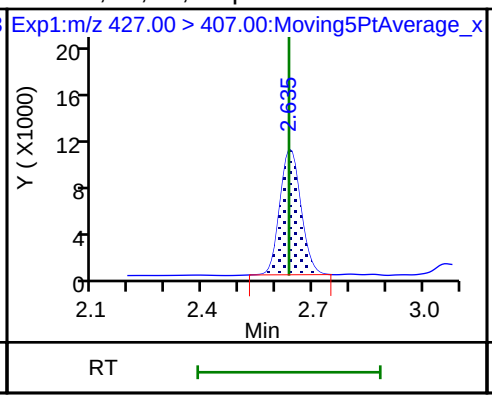
8 Perfluorohexanesulfonic acid



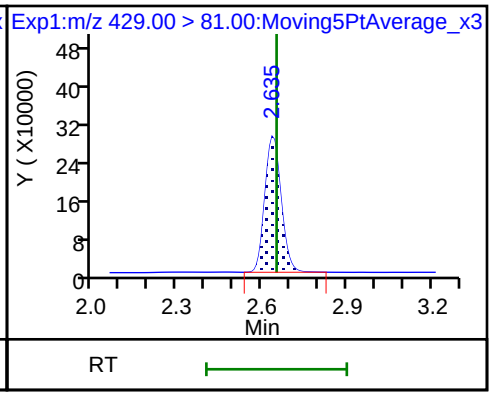
D 11 18O2 PFHxS



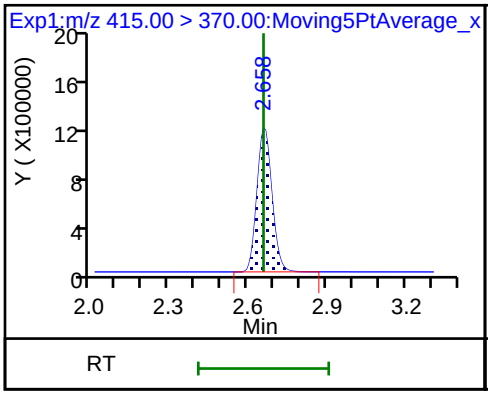
13 1H,1H,2H,2H-perfluorooctanesulfon



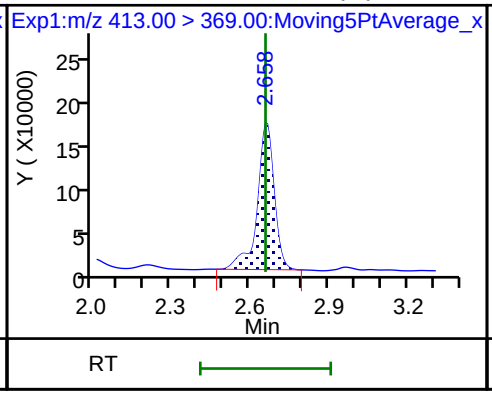
D 12 M2-6:2FTS



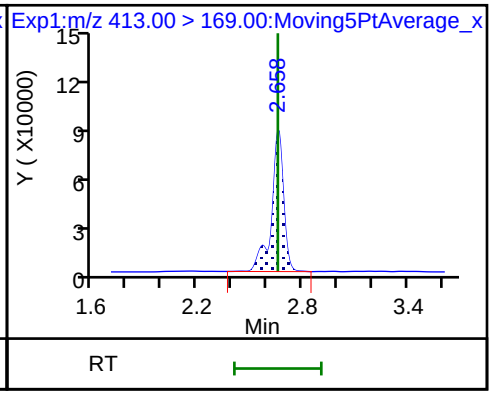
* 62 13C2-PFOA



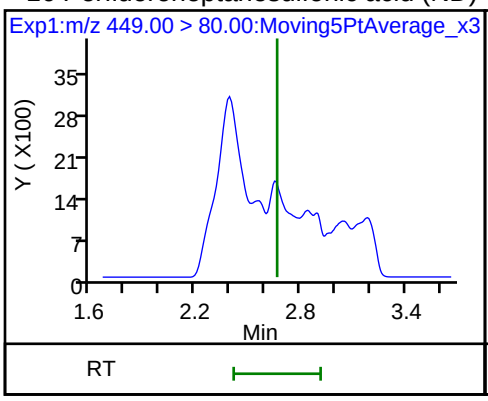
15 Perfluorooctanoic acid (M)



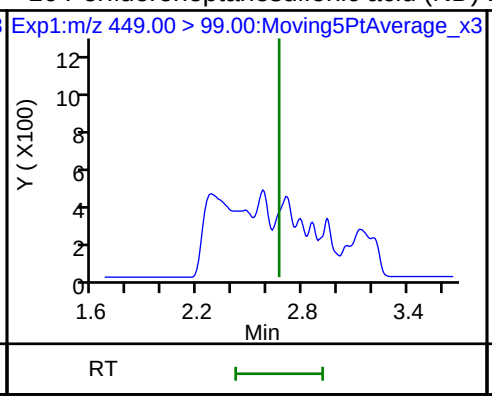
15 Perfluorooctanoic acid



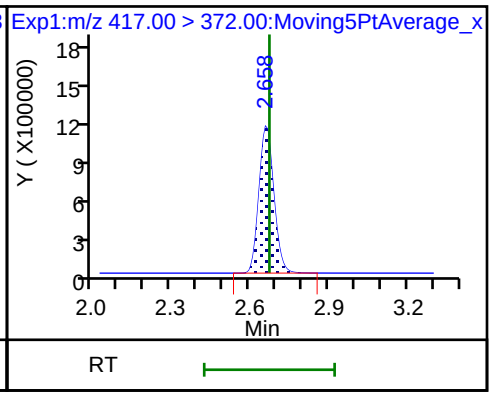
16 Perfluoroheptanesulfonic acid (ND)



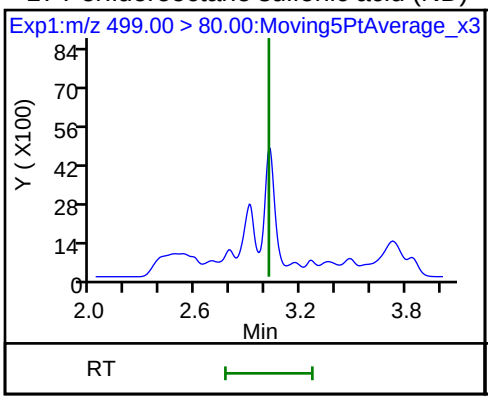
16 Perfluoroheptanesulfonic acid (ND)



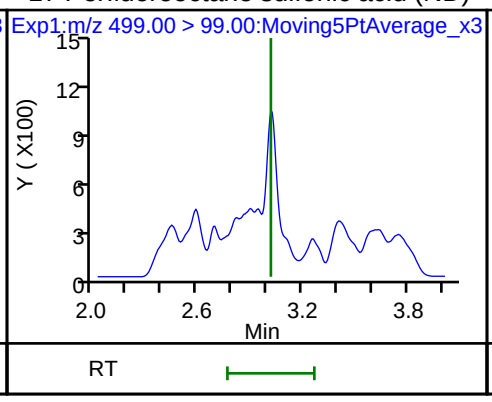
D 14 13C4 PFOA



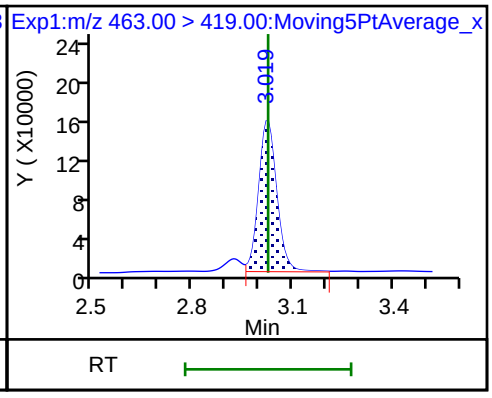
17 Perfluorooctane sulfonic acid (ND)



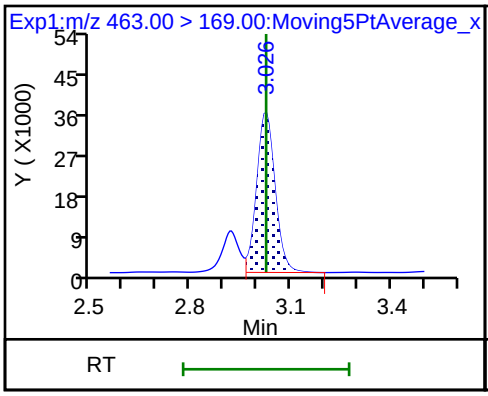
17 Perfluorooctane sulfonic acid (ND)



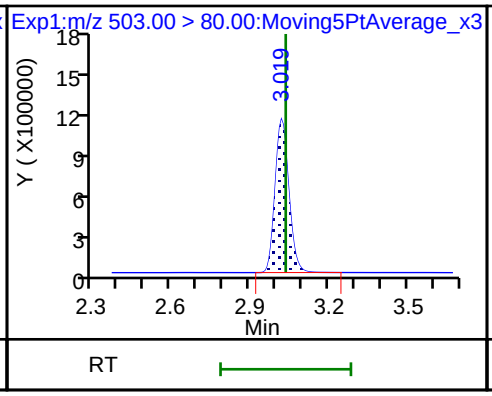
20 Perfluorononanoic acid



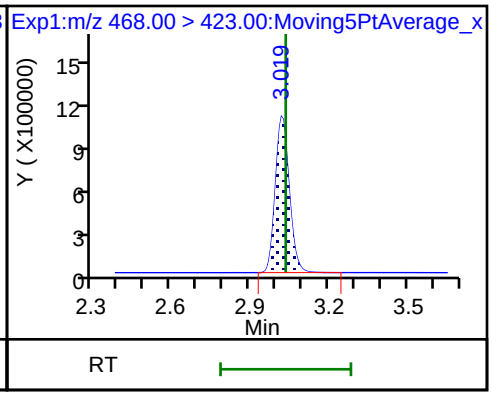
20 Perfluorononanoic acid



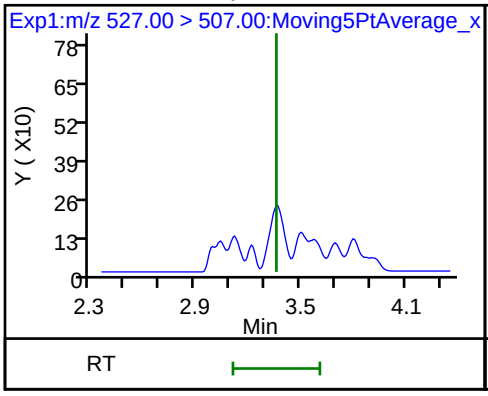
D 18 13C4 PFOS



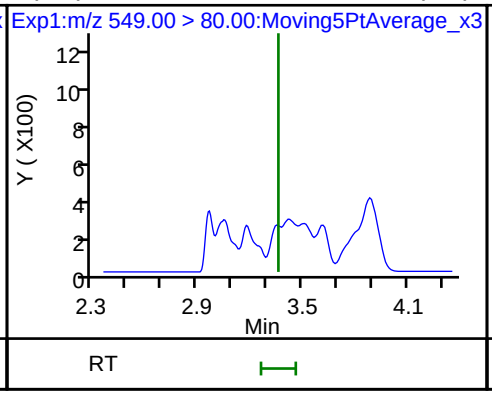
D 19 13C5 PFNA



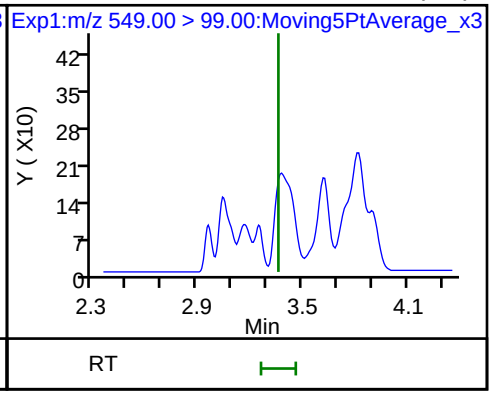
25 1H,1H,2H,2H-perfluorodecanesulfoni (ND)



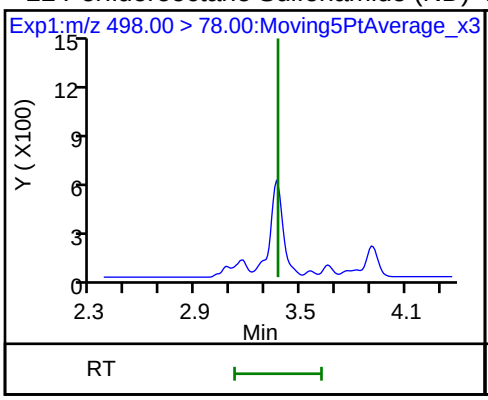
68 Perfluorononanesulfonic acid (ND)



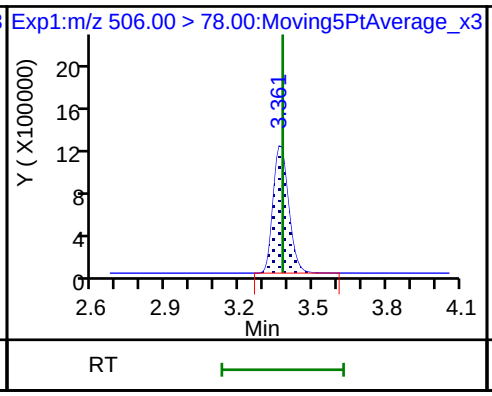
68 Perfluorononanesulfonic acid (ND)



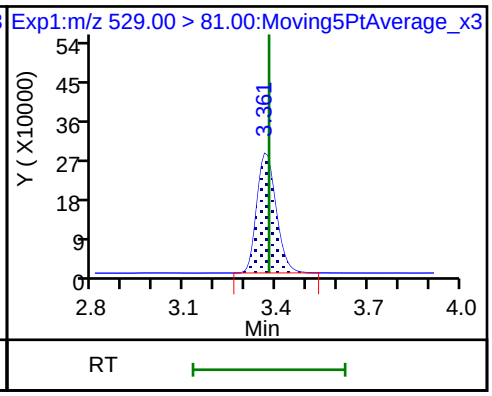
22 Perfluorooctane Sulfonamide (ND)



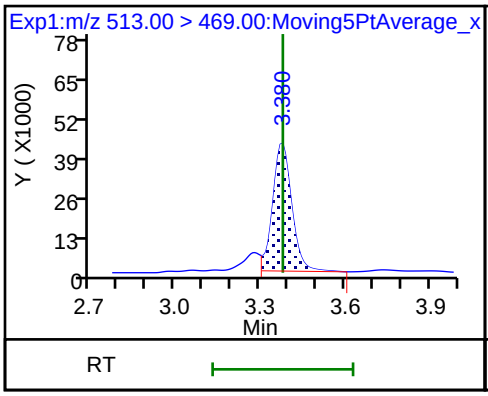
D 21 13C8 FOSA



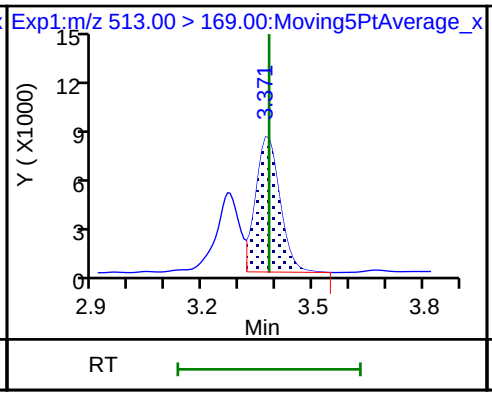
D 26 M2-8:2FTS



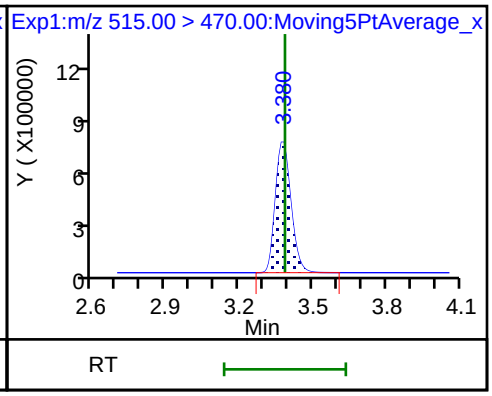
24 Perfluorodecanoic acid



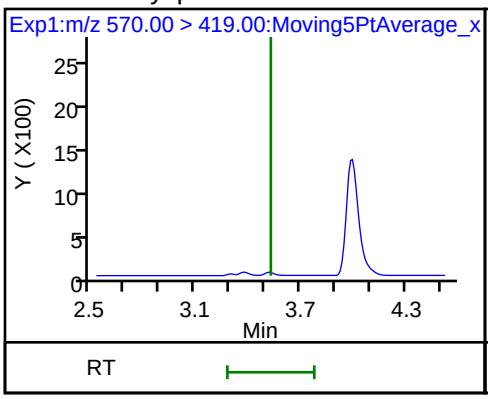
24 Perfluorodecanoic acid



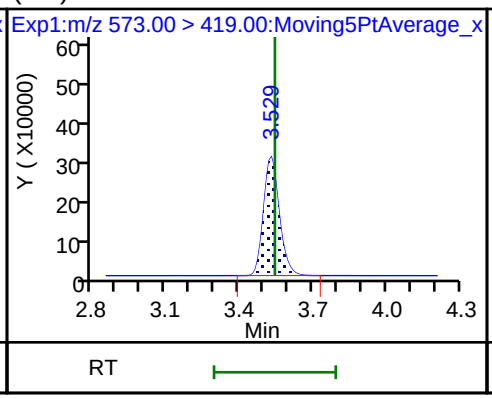
D 23 13C2 PFDA



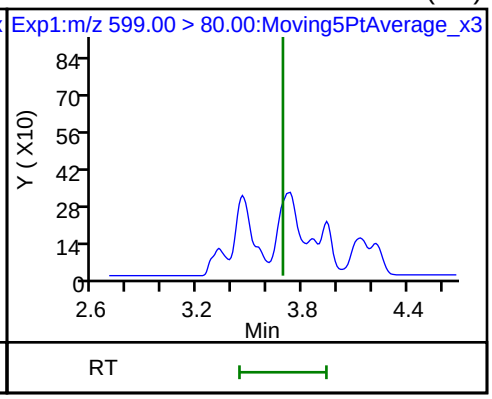
28 N-methyl perfluorooctane sulfonamid (ND)



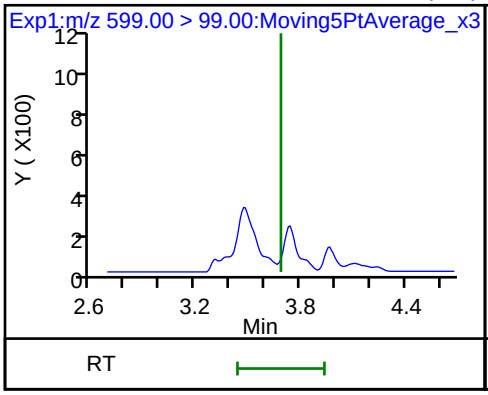
D 27 d3-NMeFOSAA



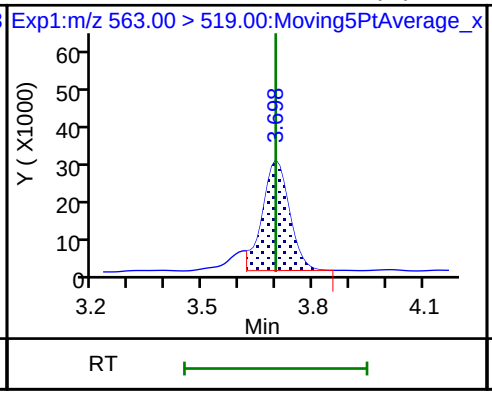
29 Perfluorodecane Sulfonic acid (ND)



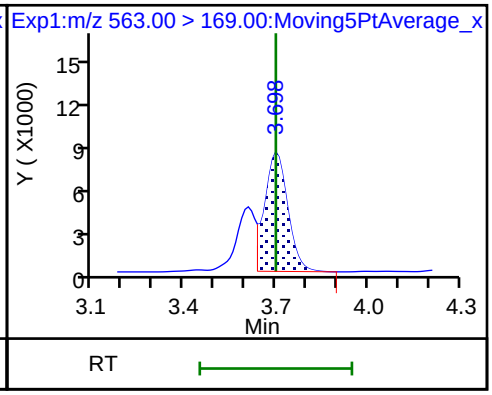
29 Perfluorodecane Sulfonic acid (ND)



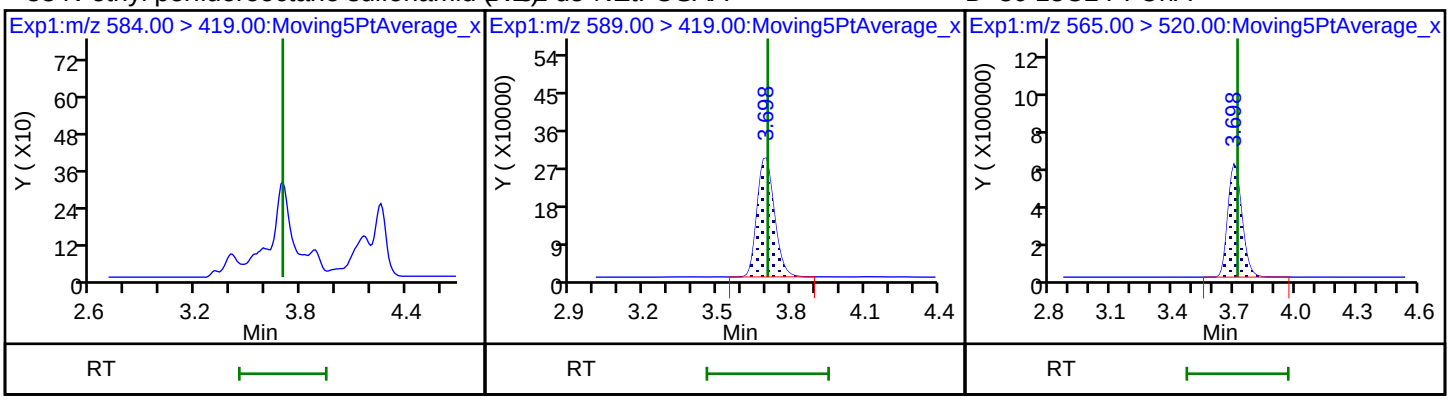
31 Perfluoroundecanoic acid (M)



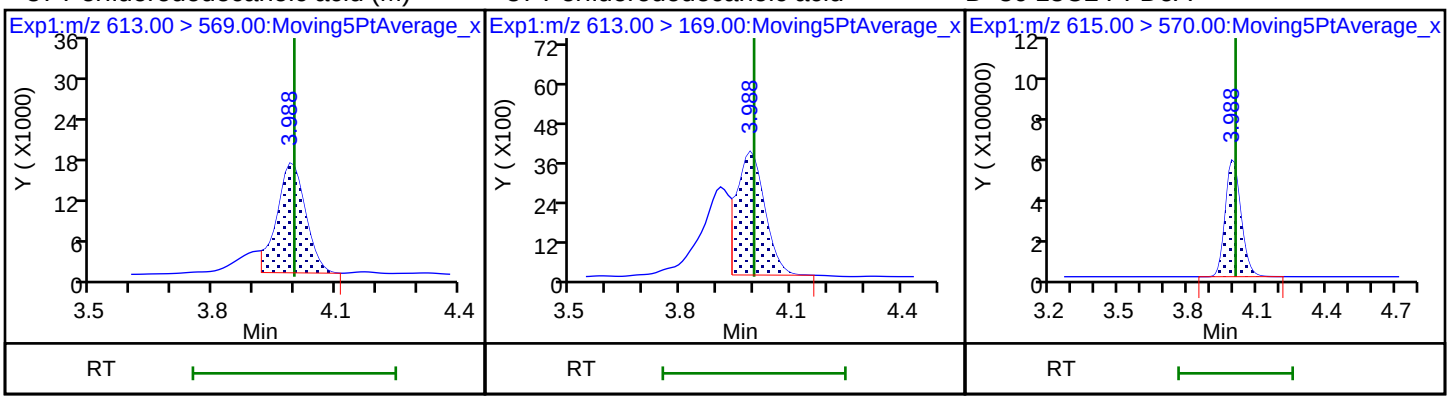
31 Perfluoroundecanoic acid



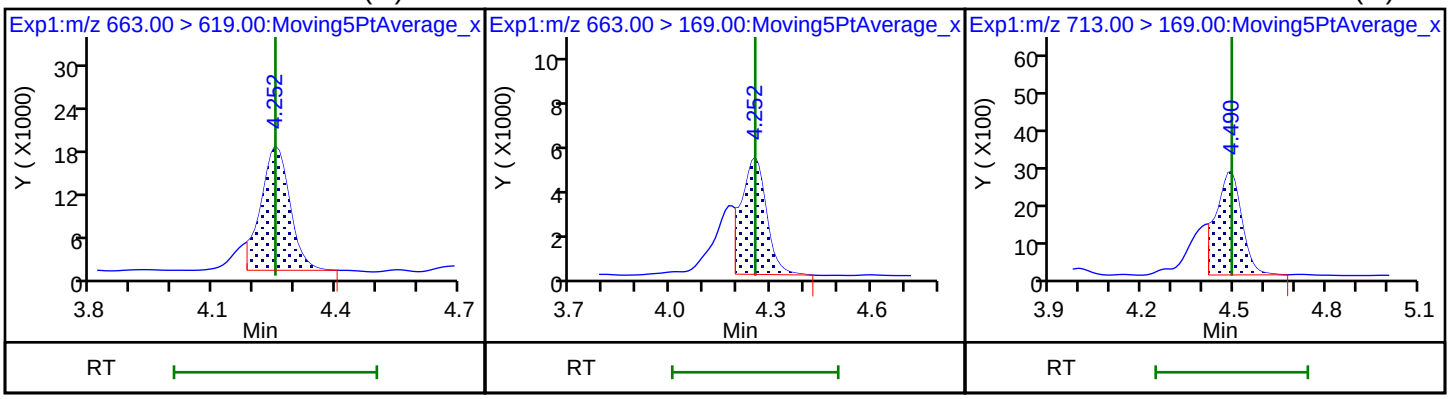
33 N-ethyl perfluorooctane sulfonamid (M) D 32 d5-NEtFOSAA D 30 13C2 PFUnA



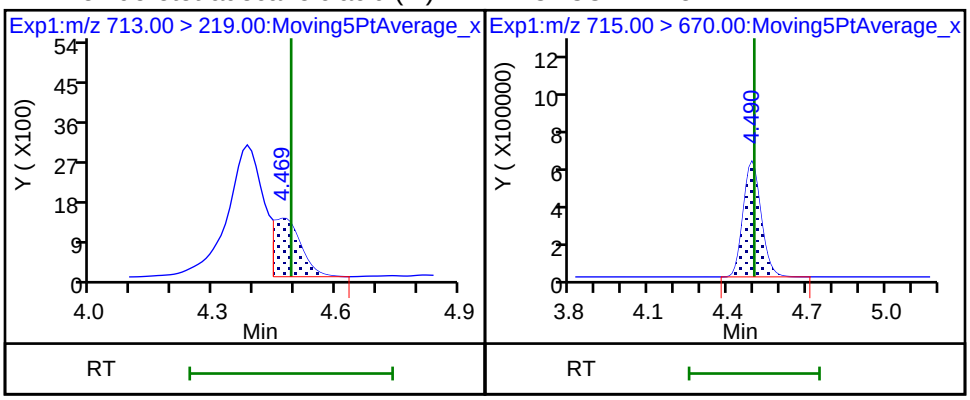
37 Perfluorododecanoic acid (M) 37 Perfluorododecanoic acid D 36 13C2 PFDoA



41 Perfluorotridecanoic acid (M) 41 Perfluorotridecanoic acid 42 Perfluorotetradecanoic acid (M)



42 Perfluorotetradecanoic acid (M) D 43 13C2-PFTeDA



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

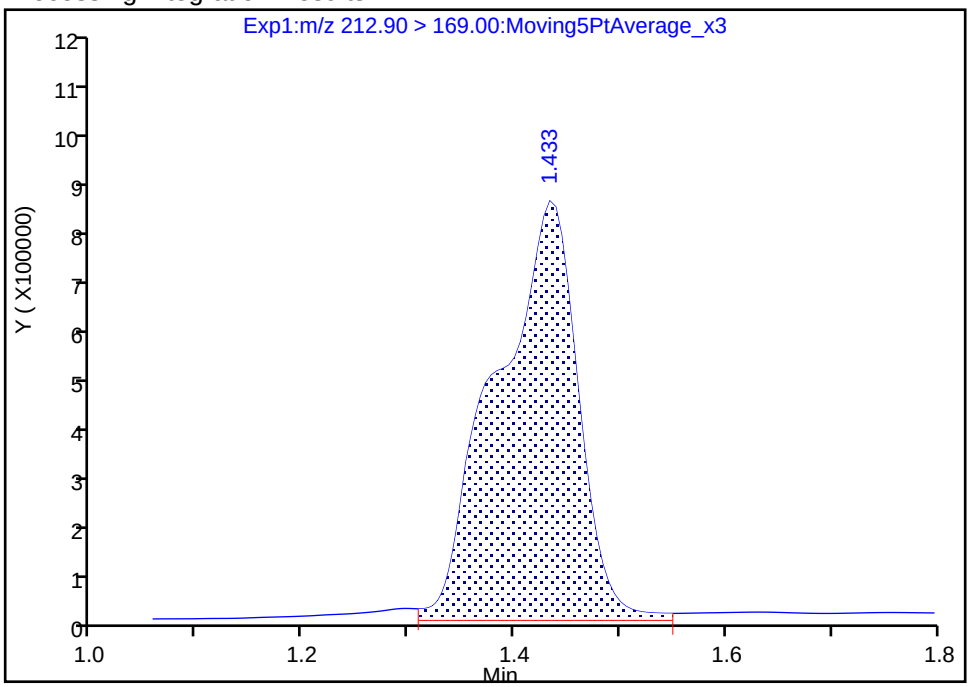
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\2018.07.13LLC_019.d				
Injection Date:	13-Jul-2018 22:28:02	Instrument ID:	A8_N		
Lims ID:	320-40571-A-41-A	Lab Sample ID:	320-40571-41		
Client ID:	NF36-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	12	Worklist Smp#:	14
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

2 Perfluorobutyric acid, CAS: 375-22-4

Signal: 1

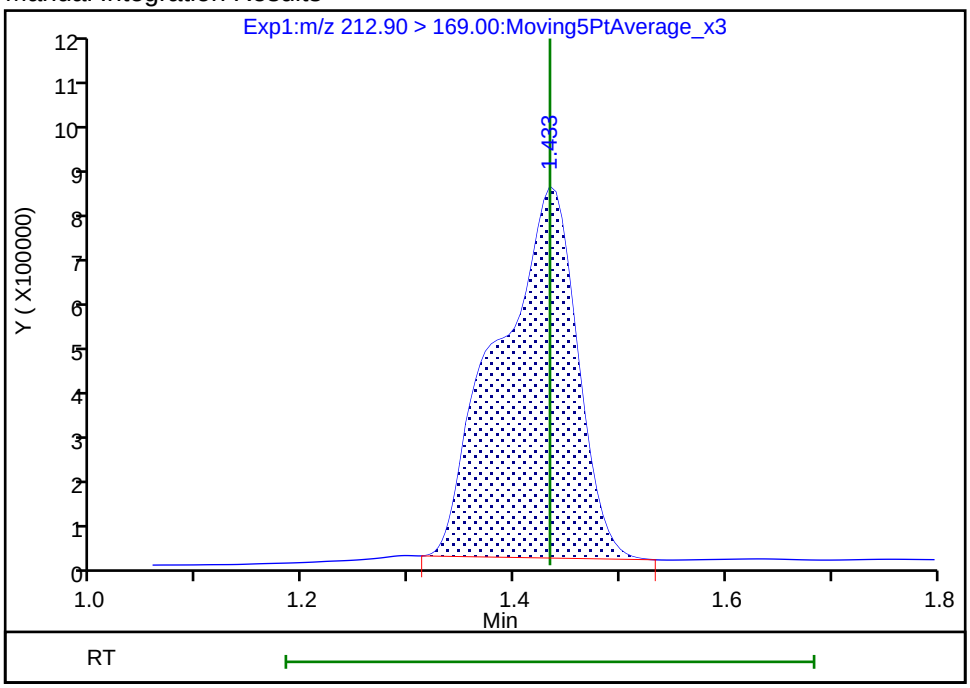
Processing Integration Results

RT: 1.43
Area: 4546539
Amount: 3.038258
Amount Units: ng/ml



Manual Integration Results

RT: 1.43
Area: 4276522
Amount: 2.857817
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 12:46:10

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

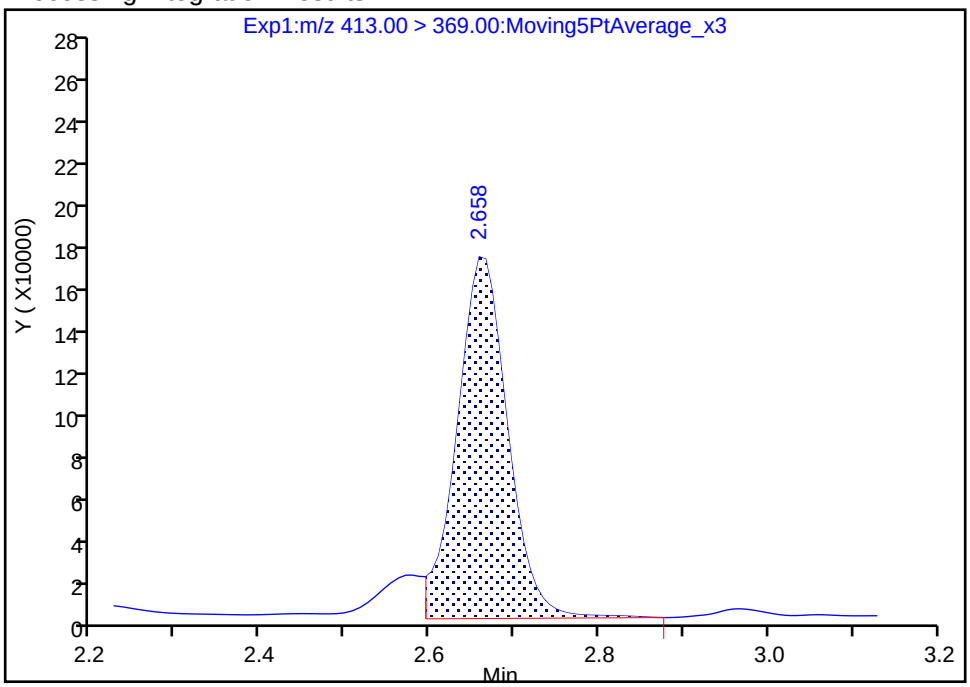
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\2018.07.13LLC_019.d				
Injection Date:	13-Jul-2018 22:28:02	Instrument ID:	A8_N		
Lims ID:	320-40571-A-41-A	Lab Sample ID:	320-40571-41		
Client ID:	NF36-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	12	Worklist Smp#:	14
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

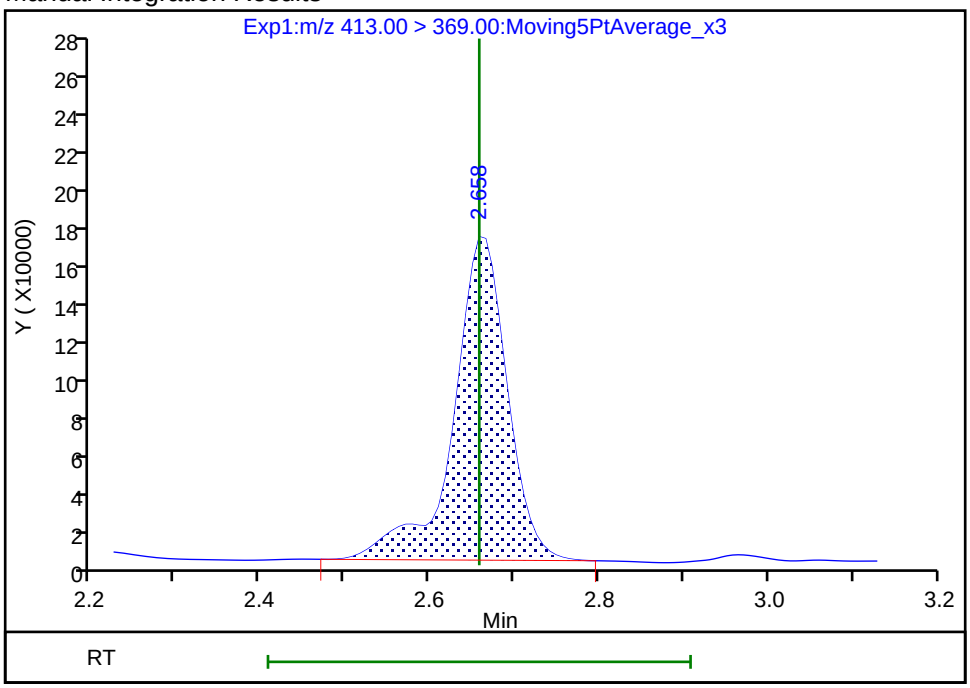
Processing Integration Results

RT: 2.66
Area: 695570
Amount: 0.314428
Amount Units: ng/ml



Manual Integration Results

RT: 2.66
Area: 736393
Amount: 0.332881
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 12:46:47

Audit Action: Manually Integrated Audit Reason: Isomers

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

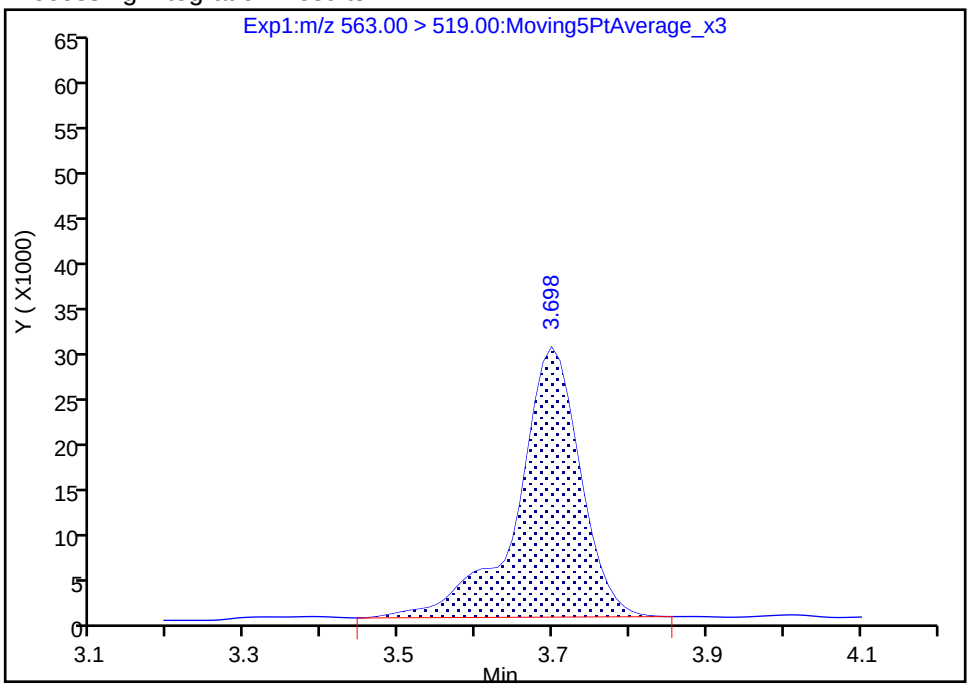
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\2018.07.13LLC_019.d				
Injection Date:	13-Jul-2018 22:28:02	Instrument ID:	A8_N		
Lims ID:	320-40571-A-41-A	Lab Sample ID:	320-40571-41		
Client ID:	NF36-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	12	Worklist Smp#:	14
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

31 Perfluoroundecanoic acid, CAS: 2058-94-8

Signal: 1

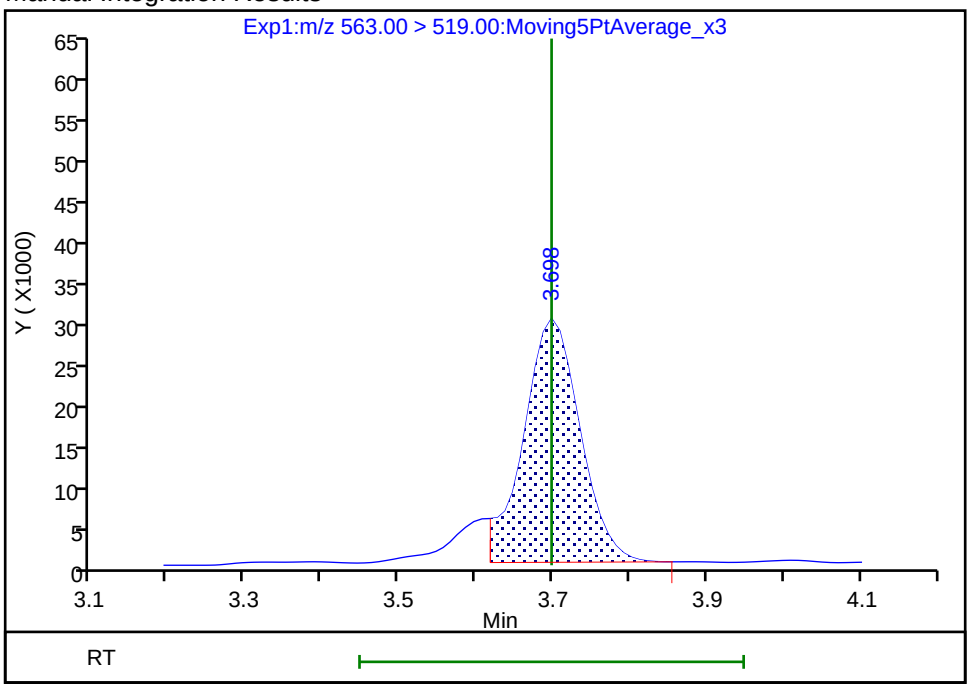
Processing Integration Results

RT: 3.70
Area: 170290
Amount: 0.185346
Amount Units: ng/ml



Manual Integration Results

RT: 3.70
Area: 150945
Amount: 0.164291
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 12:47:22

Audit Action: Manually Integrated Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

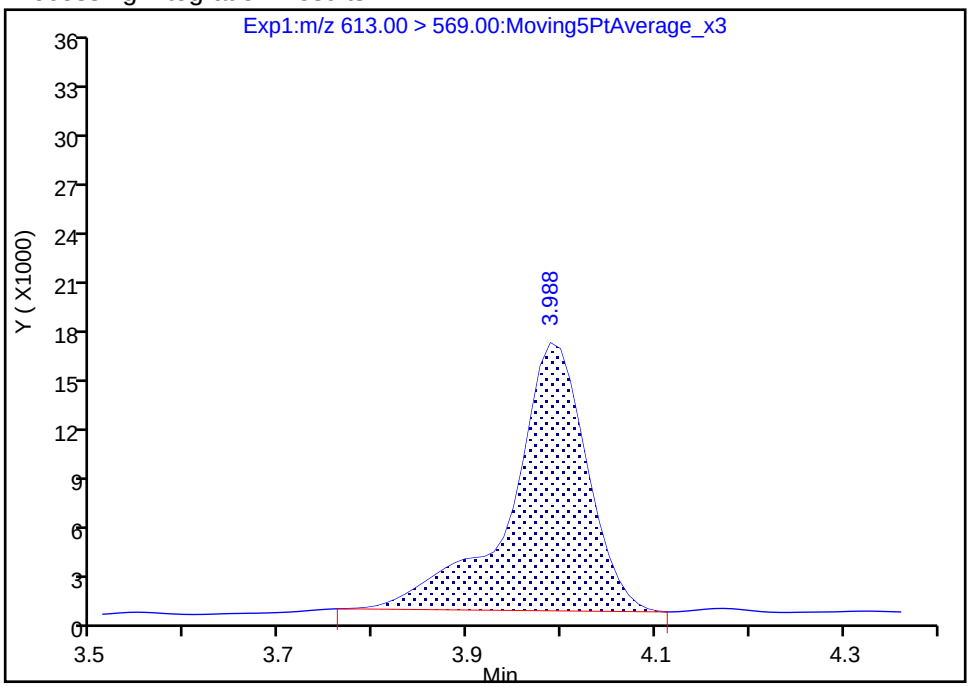
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\2018.07.13LLC_019.d				
Injection Date:	13-Jul-2018 22:28:02	Instrument ID:	A8_N		
Lims ID:	320-40571-A-41-A	Lab Sample ID:	320-40571-41		
Client ID:	NF36-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	12	Worklist Smp#:	14
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

37 Perfluorododecanoic acid, CAS: 307-55-1

Signal: 1

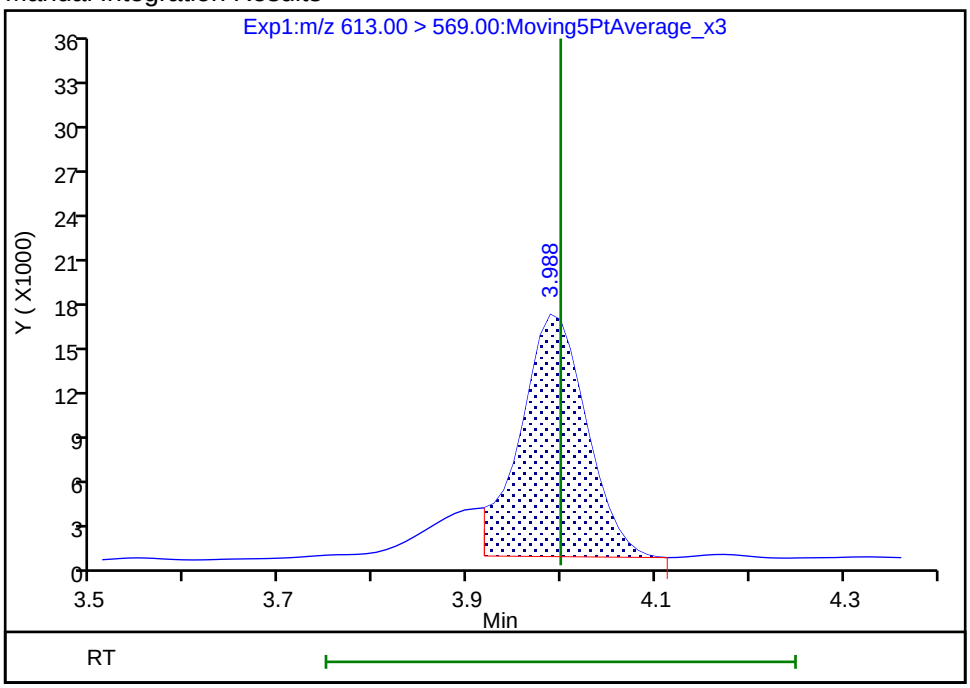
Processing Integration Results

RT: 3.99
Area: 93257
Amount: 0.077980
Amount Units: ng/ml



Manual Integration Results

RT: 3.99
Area: 80152
Amount: 0.067022
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 12:47:29

Audit Action: Manually Integrated Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

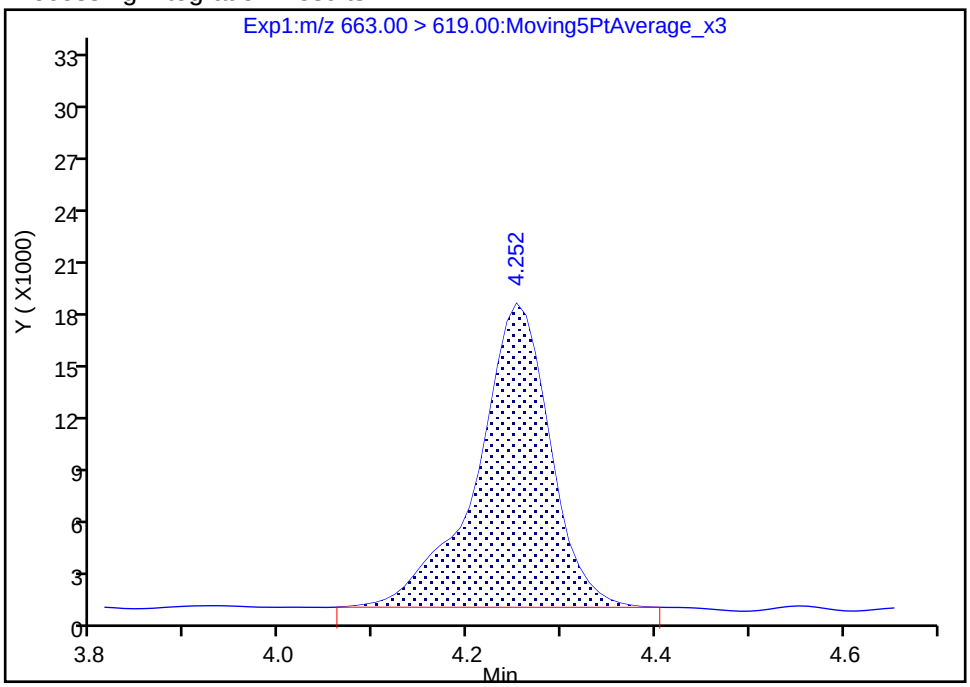
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\2018.07.13LLC_019.d				
Injection Date:	13-Jul-2018 22:28:02	Instrument ID:	A8_N		
Lims ID:	320-40571-A-41-A	Lab Sample ID:	320-40571-41		
Client ID:	NF36-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	12	Worklist Smp#:	14
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

41 Perfluorotridecanoic acid, CAS: 72629-94-8

Signal: 1

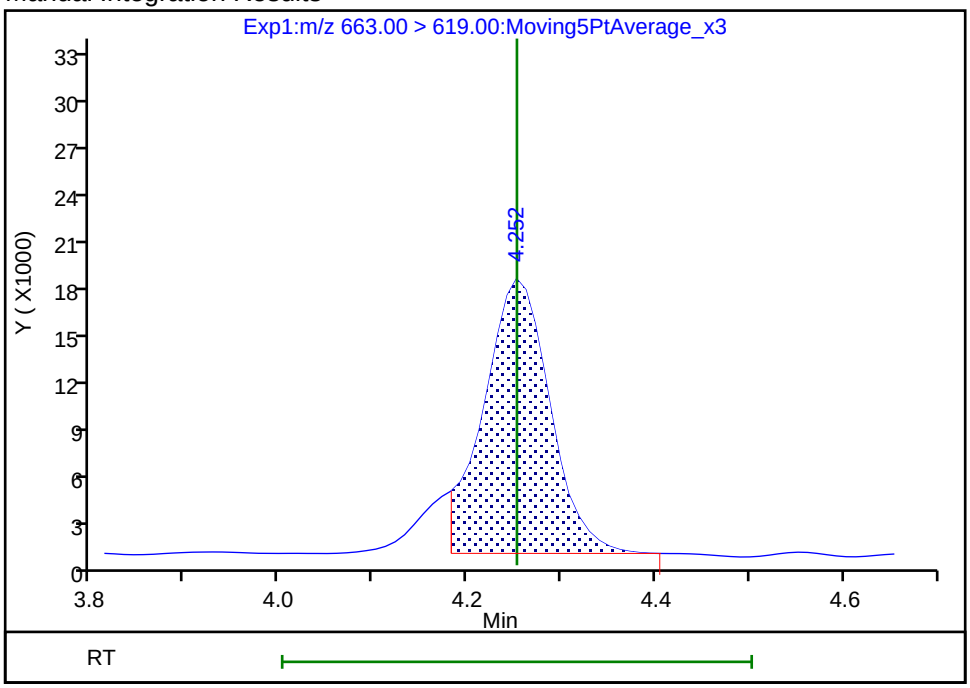
Processing Integration Results

RT: 4.25
Area: 94295
Amount: 0.080634
Amount Units: ng/ml



Manual Integration Results

RT: 4.25
Area: 84776
Amount: 0.072494
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 12:47:34

Audit Action: Manually Integrated Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

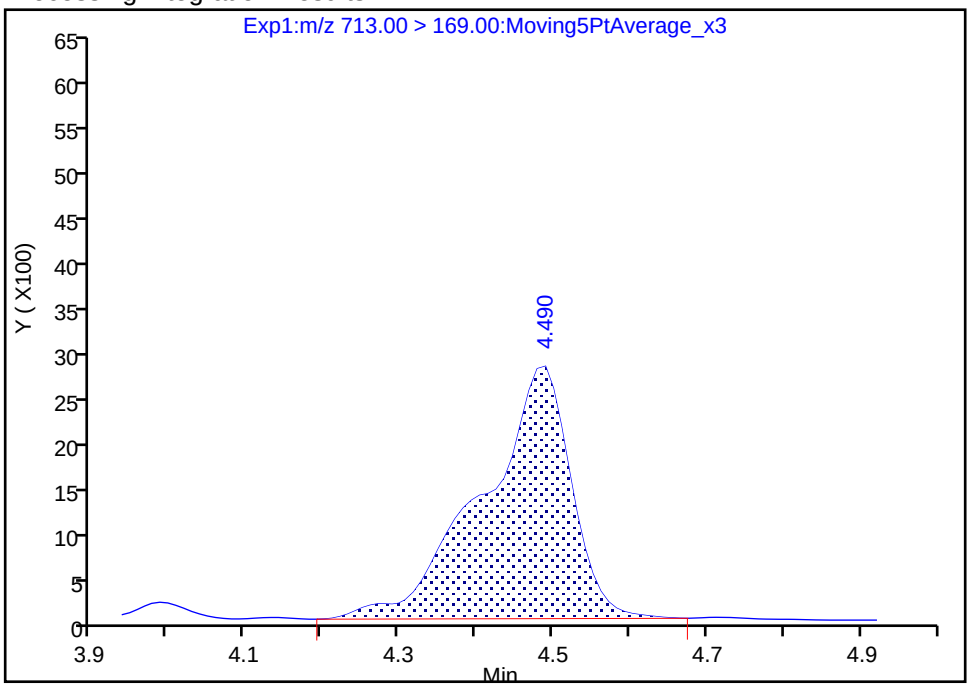
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\2018.07.13LLC_019.d				
Injection Date:	13-Jul-2018 22:28:02	Instrument ID:	A8_N		
Lims ID:	320-40571-A-41-A	Lab Sample ID:	320-40571-41		
Client ID:	NF36-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	12	Worklist Smp#:	14
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

42 Perfluorotetradecanoic acid, CAS: 376-06-7

Signal: 1

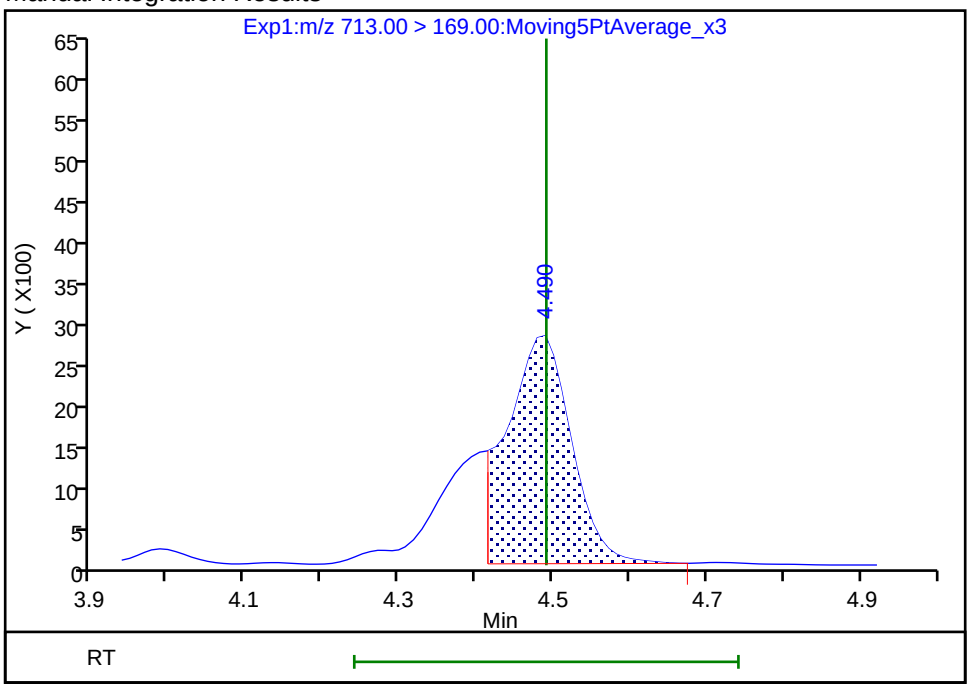
Processing Integration Results

RT: 4.49
Area: 22398
Amount: 0.076865
Amount Units: ng/ml



Manual Integration Results

RT: 4.49
Area: 16001
Amount: 0.054912
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 12:47:39

Audit Action: Manually Integrated Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

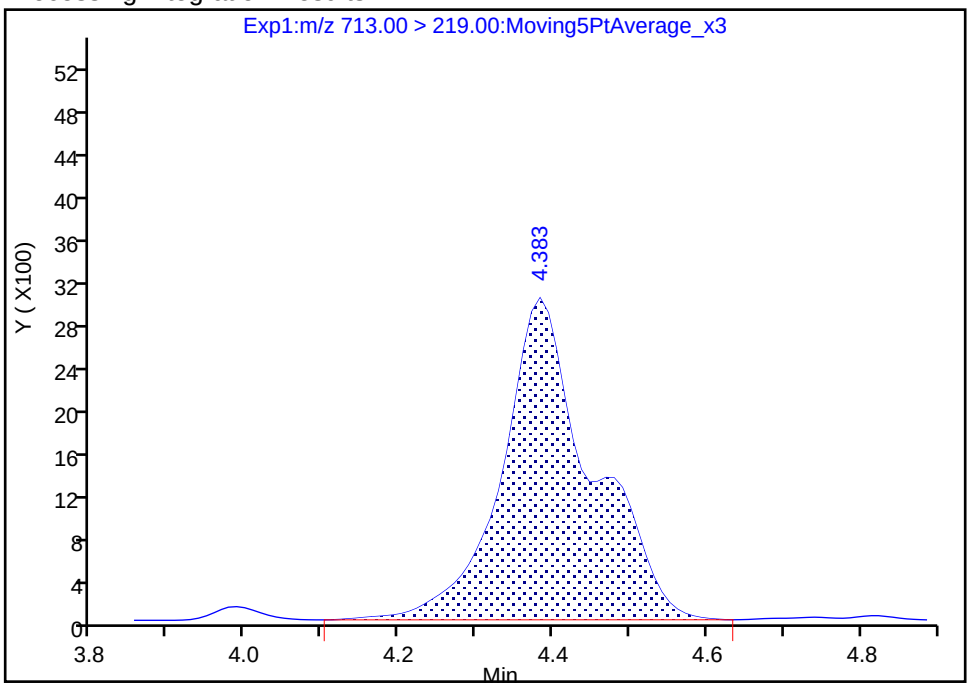
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\2018.07.13LLC_019.d				
Injection Date:	13-Jul-2018 22:28:02	Instrument ID:	A8_N		
Lims ID:	320-40571-A-41-A	Lab Sample ID:	320-40571-41		
Client ID:	NF36-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	12	Worklist Smp#:	14
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

42 Perfluorotetradecanoic acid, CAS: 376-06-7

Signal: 2

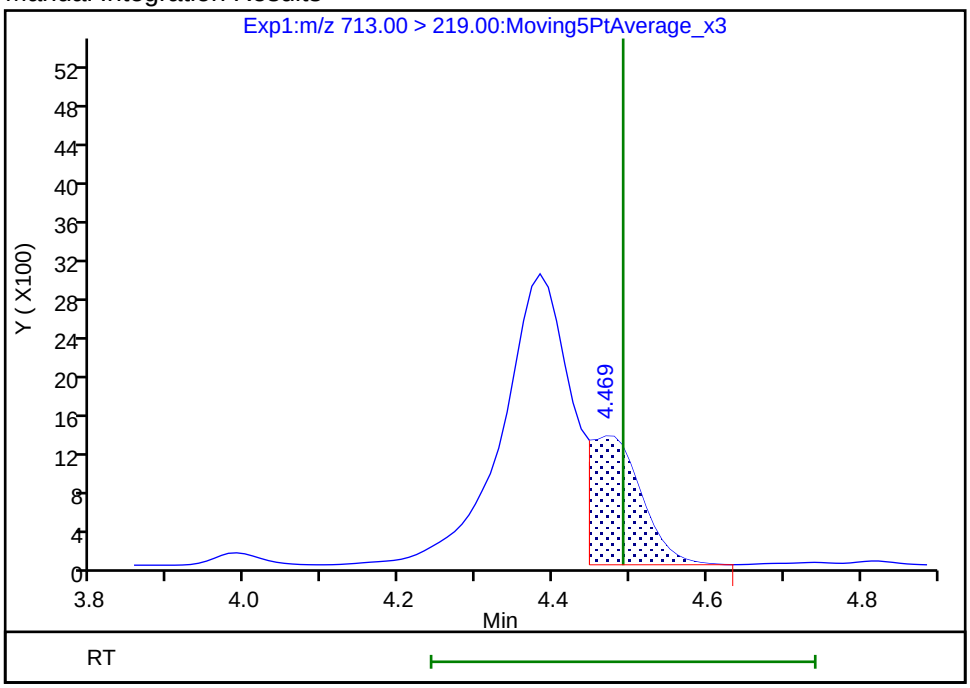
Processing Integration Results

RT: 4.38
Area: 24329
Amount: 0.076865
Amount Units: ng/ml



Manual Integration Results

RT: 4.47
Area: 5865
Amount: 0.054912
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 12:47:41
Audit Action: Manually Integrated Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

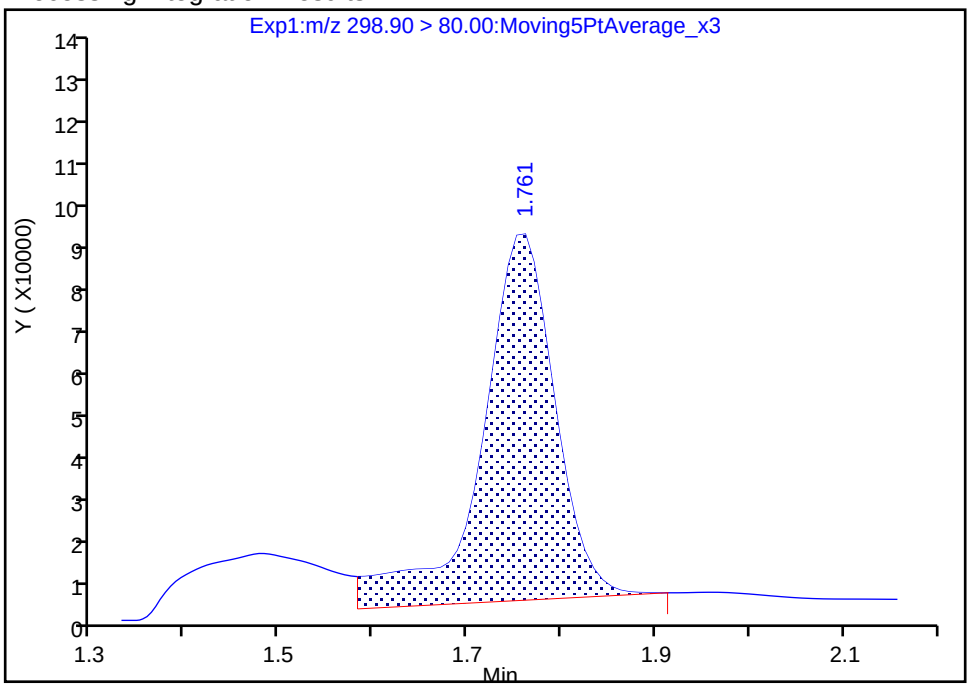
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\2018.07.13LLC_019.d				
Injection Date:	13-Jul-2018 22:28:02	Instrument ID:	A8_N		
Lims ID:	320-40571-A-41-A	Lab Sample ID:	320-40571-41		
Client ID:	NF36-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	12	Worklist Smp#:	14
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

5 Perfluorobutanesulfonic acid, CAS: 375-73-5

Signal: 1

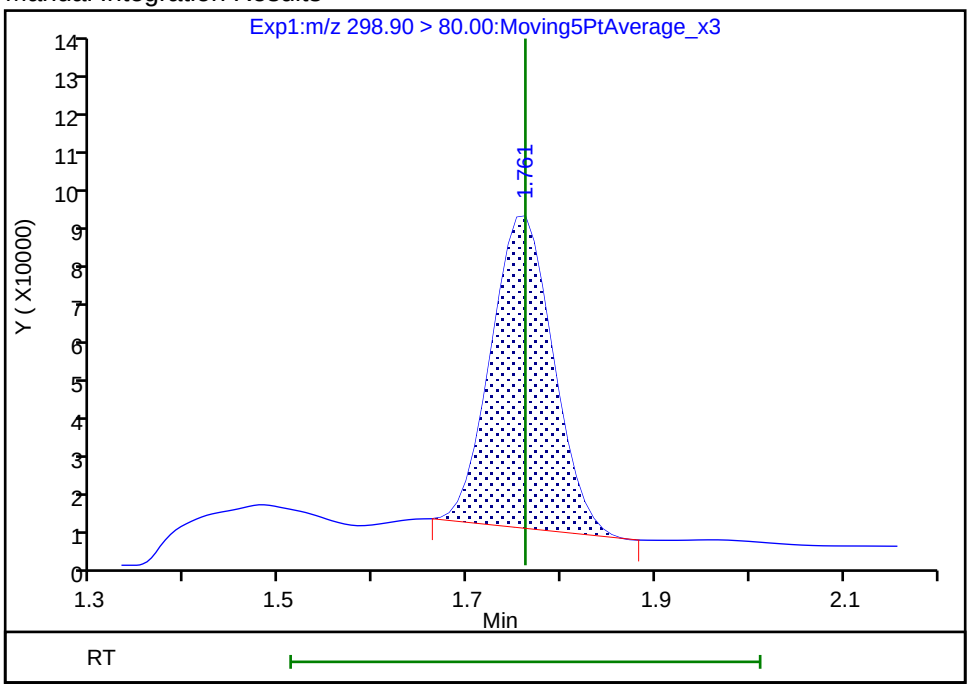
Processing Integration Results

RT: 1.76
Area: 480133
Amount: 0.164204
Amount Units: ng/ml



Manual Integration Results

RT: 1.76
Area: 380554
Amount: 0.130148
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 12:46:18

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

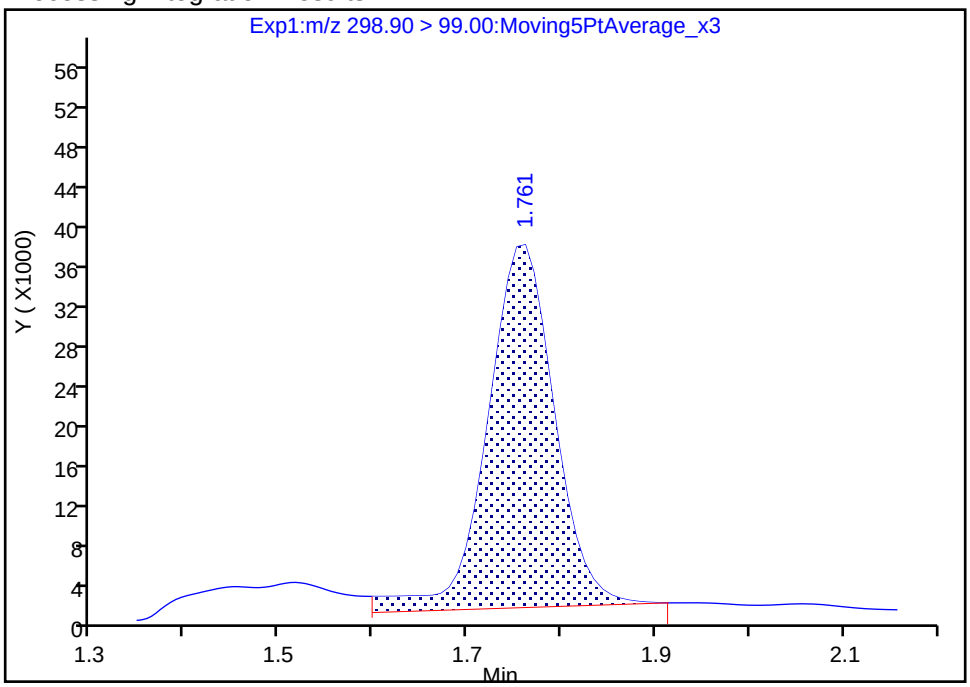
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\2018.07.13LLC_019.d				
Injection Date:	13-Jul-2018 22:28:02	Instrument ID:	A8_N		
Lims ID:	320-40571-A-41-A	Lab Sample ID:	320-40571-41		
Client ID:	NF36-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	12	Worklist Smp#:	14
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

5 Perfluorobutanesulfonic acid, CAS: 375-73-5

Signal: 2

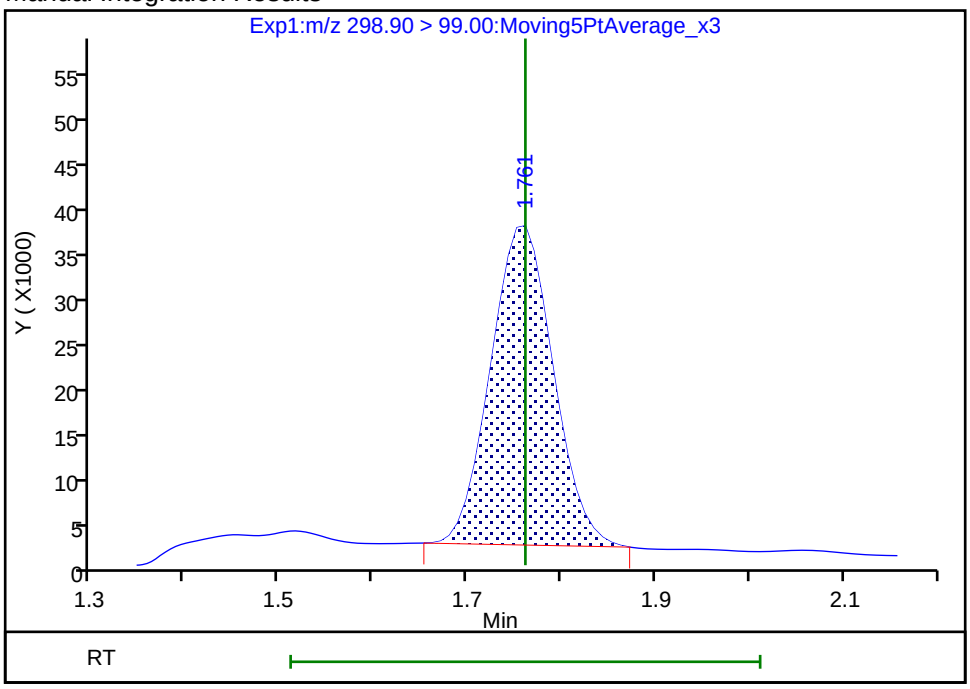
Processing Integration Results

RT: 1.76
Area: 180755
Amount: 0.164204
Amount Units: ng/ml



Manual Integration Results

RT: 1.76
Area: 162922
Amount: 0.130148
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 12:46:21

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

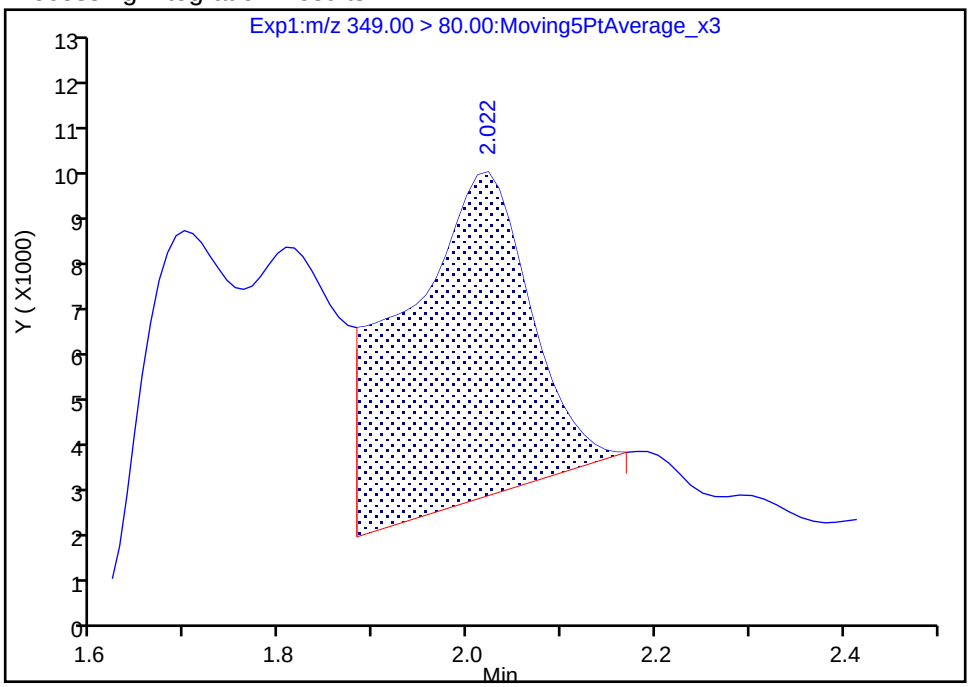
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\2018.07.13LLC_019.d				
Injection Date:	13-Jul-2018 22:28:02	Instrument ID:	A8_N		
Lims ID:	320-40571-A-41-A	Lab Sample ID:	320-40571-41		
Client ID:	NF36-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	12	Worklist Smp#:	14
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

70 Perfluoropentanesulfonic acid, CAS: 2706-91-4

Signal: 1

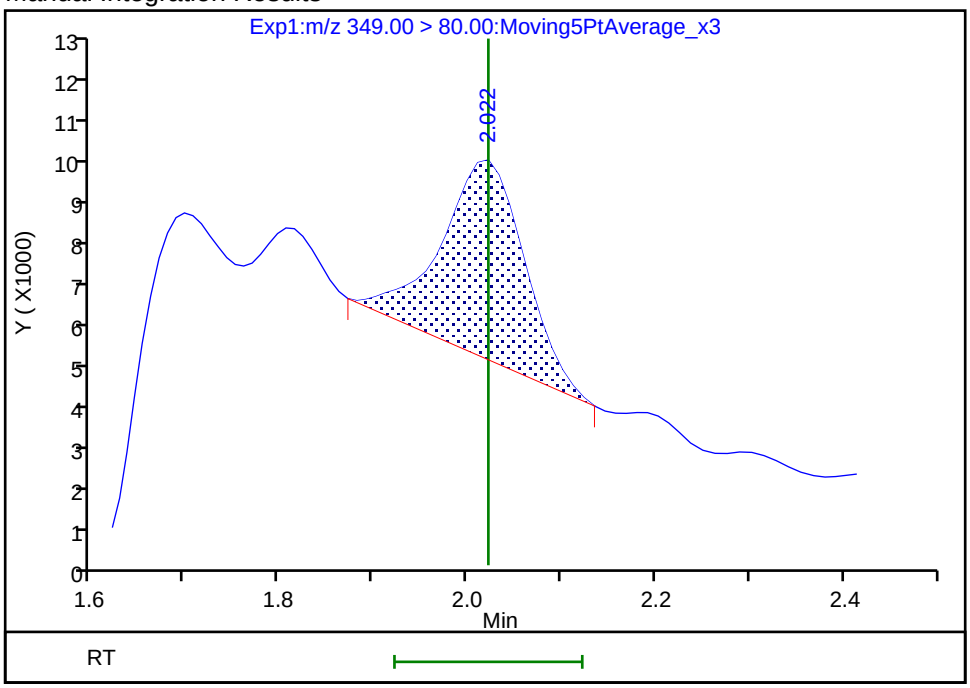
Processing Integration Results

RT: 2.02
Area: 67621
Amount: 0.025351
Amount Units: ng/ml



Manual Integration Results

RT: 2.02
Area: 29726
Amount: 0.011144
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 12:46:31

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

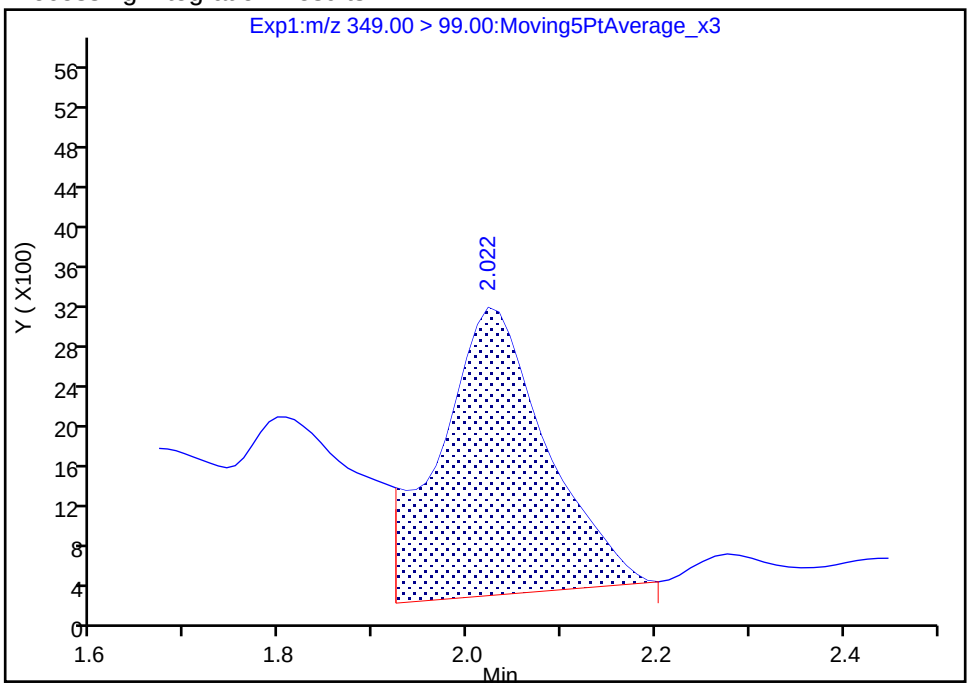
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\2018.07.13LLC_019.d				
Injection Date:	13-Jul-2018 22:28:02	Instrument ID:	A8_N		
Lims ID:	320-40571-A-41-A	Lab Sample ID:	320-40571-41		
Client ID:	NF36-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	12	Worklist Smp#:	14
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

70 Perfluoropentanesulfonic acid, CAS: 2706-91-4

Signal: 2

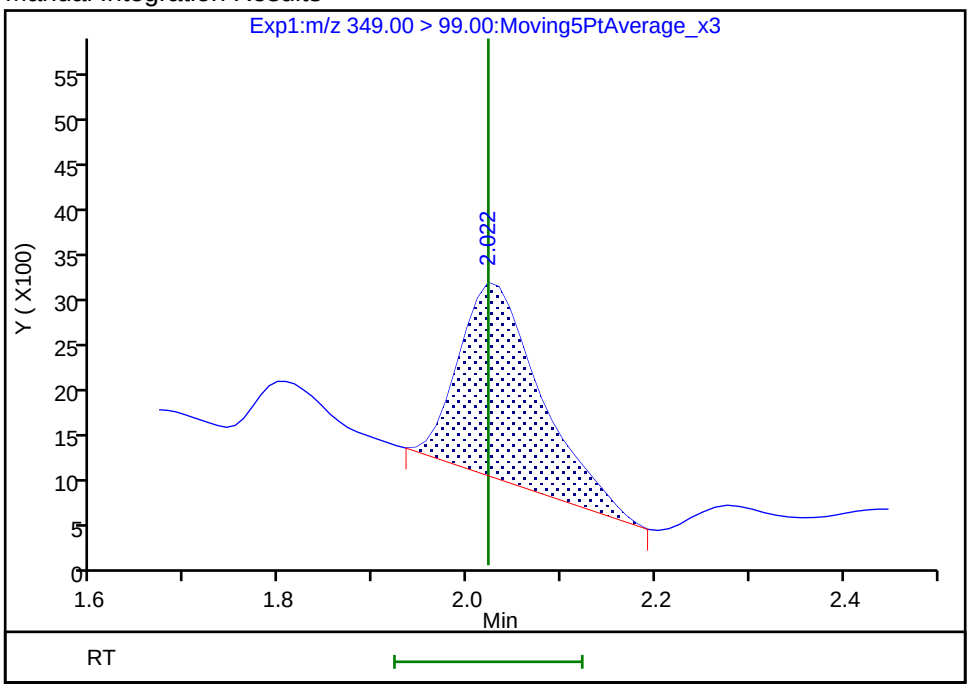
Processing Integration Results

RT: 2.02
Area: 22532
Amount: 0.025351
Amount Units: ng/ml



Manual Integration Results

RT: 2.02
Area: 13066
Amount: 0.011144
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 12:46:34

Audit Action: Manually Integrated Audit Reason: Baseline

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF36-SS-02
Lab Sample ID: 320-40571-42
Matrix: Solid
Lab File ID: 2018.07.14LLA_032.d
Analysis Method: 537 (modified)
Date Collected: 06/20/2018 16:50
Extraction Method: SHAKE
Date Extracted: 06/28/2018 06:06
Sample wt/vol: 5.02(g)
Date Analyzed: 07/14/2018 14:48
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture: 16.5
GPC Cleanup:(Y/N) N
Analysis Batch No.: 234231
Units: mg/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	ND		0.00024	0.000033
2706-90-3	Perfluoropentanoic acid (PFPeA)	ND		0.00024	0.000092
307-24-4	Perfluorohexanoic acid (PFHxA)	ND		0.00024	0.000050
375-85-9	Perfluoroheptanoic acid (PFHpA)	ND		0.00024	0.000035
335-67-1	Perfluorooctanoic acid (PFOA)	ND		0.00024	0.00010
375-95-1	Perfluorononanoic acid (PFNA)	ND		0.00024	0.000043
335-76-2	Perfluorodecanoic acid (PFDA)	ND		0.00024	0.000026
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		0.00024	0.000043
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		0.00024	0.000080
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		0.00024	0.000061
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		0.00024	0.000064
375-73-5	Perfluorobutanesulfonic acid (PFBS)	ND		0.00024	0.000030
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	ND		0.00024	0.000037
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.00024	0.000042
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	ND		0.00060	0.00024
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		0.00024	0.000047
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		0.00024	0.000098
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.0024	0.00047
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.0024	0.00044
27619-97-2	6:2 FTS	ND		0.0024	0.00018
39108-34-4	8:2 FTS	ND		0.0024	0.00030

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF36-SS-02
Lab Sample ID: 320-40571-42
Matrix: Solid
Lab File ID: 2018.07.14LLA_032.d
Analysis Method: 537 (modified)
Date Collected: 06/20/2018 16:50
Extraction Method: SHAKE
Date Extracted: 06/28/2018 06:06
Sample wt/vol: 5.02(g)
Date Analyzed: 07/14/2018 14:48
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture: 16.5
GPC Cleanup:(Y/N) N
Analysis Batch No.: 234231
Units: mg/Kg

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00992	13C4 PFBA	80		25-150
STL01893	13C5 PFPeA	84		25-150
STL00993	13C2 PFHxA	86		25-150
STL01892	13C4-PFHpA	90		25-150
STL00990	13C4 PFOA	86		25-150
STL00995	13C5 PFNA	83		25-150
STL00996	13C2 PFDA	89		25-150
STL00997	13C2 PFUnA	84		25-150
STL00998	13C2 PFDoA	86		25-150
STL02116	13C2-PFTeDA	84		25-150
STL02337	13C3-PFBS	79		25-150
STL00994	18O2 PFHxS	79		25-150
STL00991	13C4 PFOS	76		25-150
STL01056	13C8 FOSA	70		25-150
STL02118	d3-NMeFOSAA	90		25-150
STL02117	d5-NEtFOSAA	86		25-150
STL02279	M2-6:2FTS	68		25-150
STL02280	M2-8:2FTS	70		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180716-61105.b\2018.07.14LLA_032.d
Lims ID: 320-40571-A-42-A
Client ID: NF36-SS-02
Sample Type: Client
Inject. Date: 14-Jul-2018 14:48:10 ALS Bottle#: 22 Worklist Smp#: 15
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-40571-a-42-a
Misc. Info.: Plate: 1 Rack: 5
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180716-61105.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 17-Jul-2018 08:30:31 Calib Date: 11-Jul-2018 15:38:42
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK016

First Level Reviewer: mongkols Date: 17-Jul-2018 08:30:31

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										M
217.00 > 172.00	1.441	1.436	0.005	0.541	4923079	2.01		80.4	46663	M
2 Perfluorobutyric acid										M
212.90 > 169.00	1.441	1.441	0.0	1.000	24560	0.0127			6.7	M
D 3 13C5-PFPeA										
267.90 > 223.00	1.720	1.720	0.0	0.646	3566902	2.10		83.8	47858	
D 47 13C3-PFBS										
301.90 > 83.00	1.756	1.756	0.0	0.659	78904	1.84		79.3	509	
D 7 13C2 PFHxA										
315.00 > 270.00	2.003	1.992	0.011	0.752	3943911	2.15		85.9	62185	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.093	2.082	0.011	0.786	344248	2.63		105	7679	
D 9 13C4-PFHpA										
367.00 > 322.00	2.319	2.306	0.013	0.871	3793101	2.24		89.7	48854	
D 11 18O2 PFHxS										
403.00 > 84.00	2.332	2.319	0.013	0.876	4464813	1.86		78.8	44138	
8 Perfluorohexanesulfonic acid										R
399.00 > 80.00	2.332	2.332	0.0	1.000	12937	0.005970			143	R
399.00 > 99.00	2.332	2.332	0.0	1.000	2617		4.94(1.50-4.49)		21.3	
D 12 M2-6:2FTS										
429.00 > 81.00	2.639	2.628	0.011	0.991	586176	1.62		68.0	10861	
D 14 13C4 PFOA										
417.00 > 372.00	2.663	2.652	0.011	1.000	3716222	2.15		86.1	47254	
* 62 13C2-PFOA										
415.00 > 370.00	2.663	2.667	-0.004		4514006	2.50			43465	
D 19 13C5 PFNA										
468.00 > 423.00	3.024	3.018	0.006	1.136	3221019	2.09		83.5	40296	
D 18 13C4 PFOS										
503.00 > 80.00	3.024	3.018	0.006	1.136	3189153	1.81		75.9	36945	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.024	3.029	-0.005	1.000	36856	0.0244			553	
499.00 > 99.00	3.024	3.029	-0.005	1.000	11018		3.35(2.31-6.93)		154	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.240	3.238	0.002	1.071	8613	0.003516			93.1	
D 26 M2-8:2FTS										
529.00 > 81.00	3.371	3.361	0.010	1.266	892610	1.68		70.2	10881	
D 23 13C2 PFDA										
515.00 > 470.00	3.380	3.370	0.010	1.269	3025550	2.23		89.3	29043	
D 21 13C8 FOSA										
506.00 > 78.00	3.380	3.370	0.010	1.269	4422693	1.74		69.7	42962	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.529	3.520	0.009	1.325	1244676	2.24		89.7	46005	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.698	3.687	0.011	1.389	1223340	2.15		86.0	3733	
D 30 13C2 PFUnA										
565.00 > 520.00	3.709	3.698	0.011	1.393	2379245	2.10		84.1	70913	
66 11-Chloroeicosafluoro-3-oxaundecan										
631.00 > 451.00	3.855	3.863	-0.008	1.275	14593	0.004121			510	
D 36 13C2 PFDoA										
615.00 > 570.00	3.999	3.988	0.011	1.502	2536151	2.16		86.5	22433	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.490	4.480	0.010	1.686	2564598	2.11		84.3	17983	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.501	4.501	0.001	1.002	2697	0.0101			26.6	
713.00 > 219.00	4.490	4.501	-0.010	1.000	2030		1.33(0.71-2.13)		28.3	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.904	4.887	0.017	1.842	4373487	2.26		90.2	11841	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.904	4.904	0.0	1.000	46961	0.006686			11.1	
813.00 > 169.00	4.904	4.904	0.0	1.000	7099		6.62(2.86-8.58)		54.1	

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Review Flags

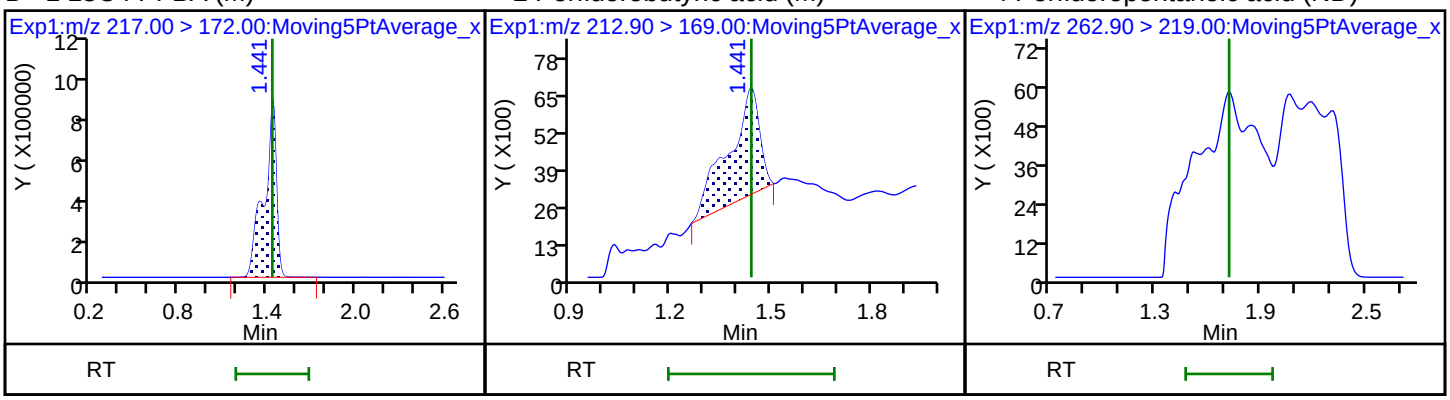
M - Manually Integrated

Report Date: 17-Jul-2018 08:30:32 Chrom Revision: 2.2 07-Jun-2018 07:41:54

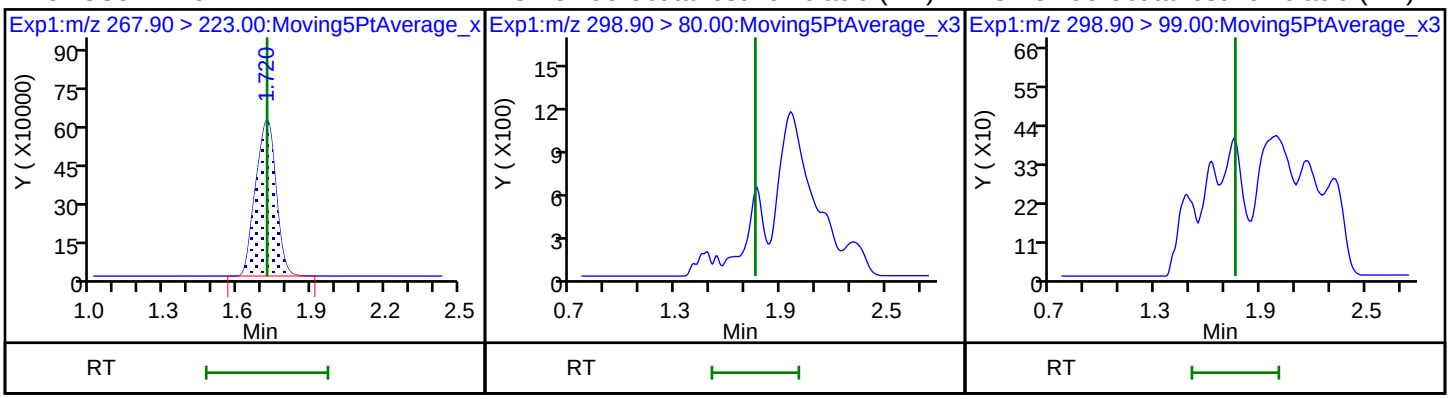
TestAmerica Sacramento

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180716-61105.b\2018.07.14LLA_032.d				
Injection Date:	14-Jul-2018 14:48:10	Instrument ID:	A8_N		
Lims ID:	320-40571-A-42-A	Lab Sample ID:	320-40571-42		
Client ID:	NF36-SS-02				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	22	Worklist Smp#:	15
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		

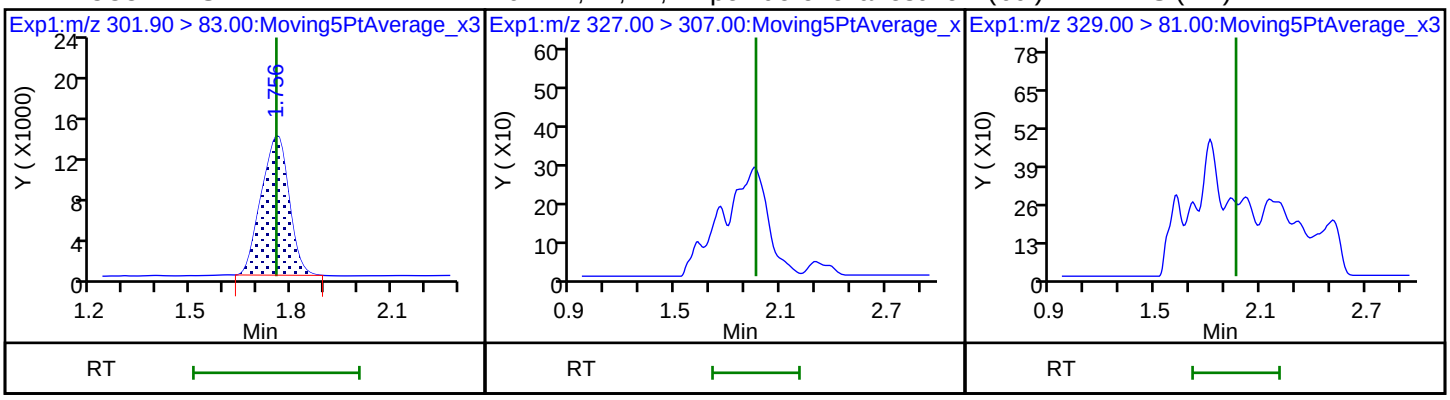
D 1 13C4 PFBA (M) | 2 Perfluorobutyric acid (M) | 4 Perfluoropentanoic acid (ND)



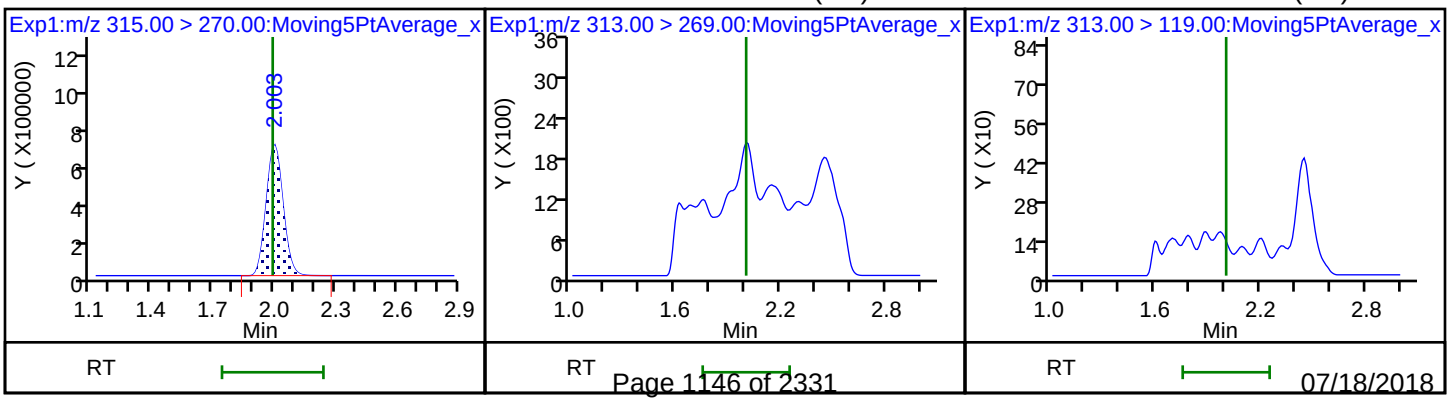
D 3 13C5-PFPeA | 5 Perfluorobutanesulfonic acid (ND) | 5 Perfluorobutanesulfonic acid (ND)



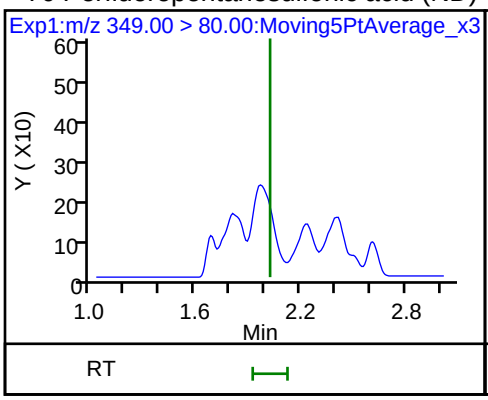
D 47 13C3-PFBS | 61 1H,1H,2H,2H-perfluorohexanesulfonic acid (ND) | 51 M2-4:2FTS (ND)



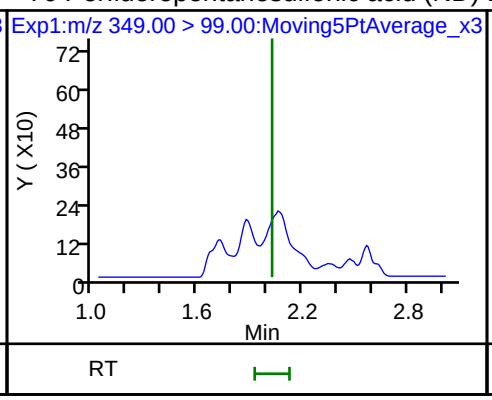
D 7 13C2 PFHxA | 6 Perfluorohexanoic acid (ND) | 6 Perfluorohexanoic acid (ND)



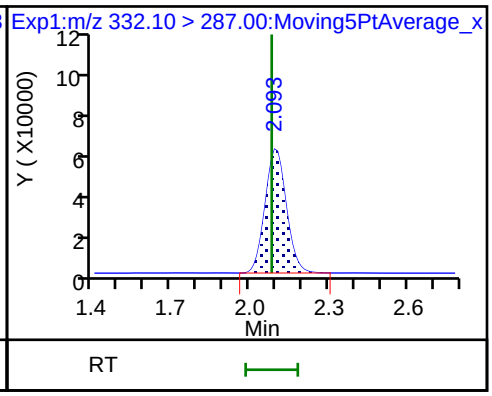
70 Perfluoropentanesulfonic acid (ND)



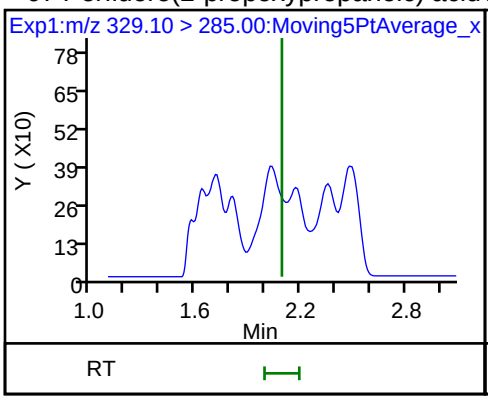
70 Perfluoropentanesulfonic acid (ND) D



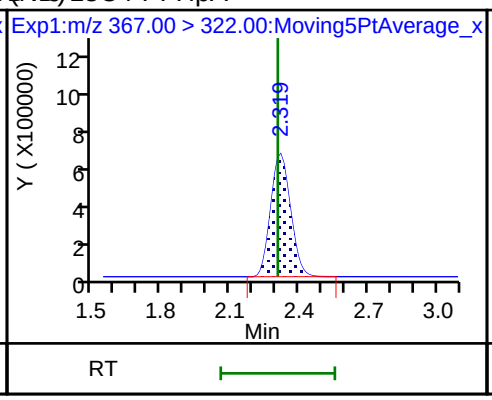
64 13C3 HFPO-DA



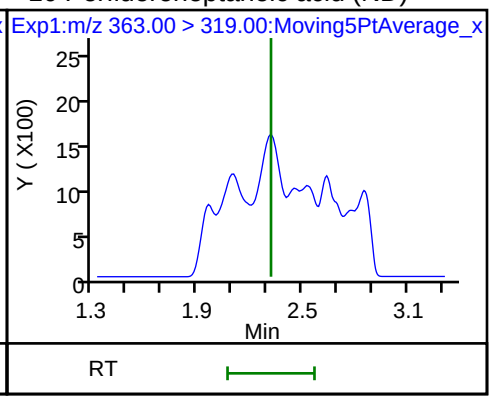
67 Perfluoro(2-propoxypropanoic) acid (ND)



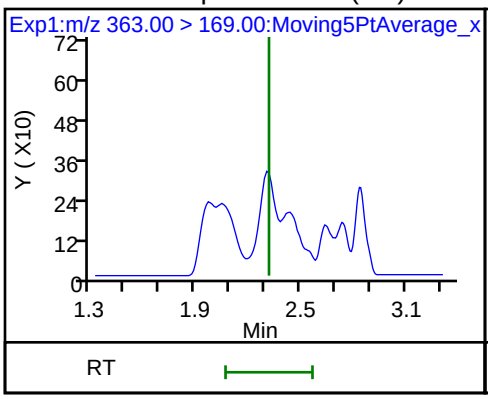
D 9 13C4-PFHpA



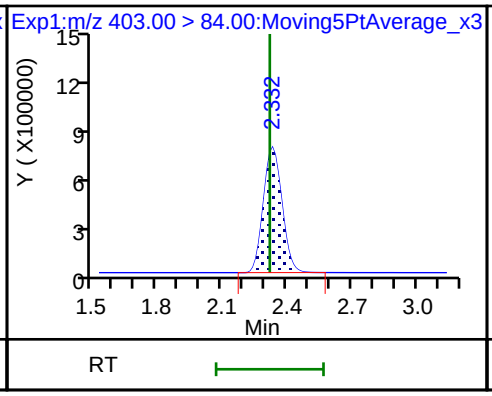
10 Perfluoroheptanoic acid (ND)



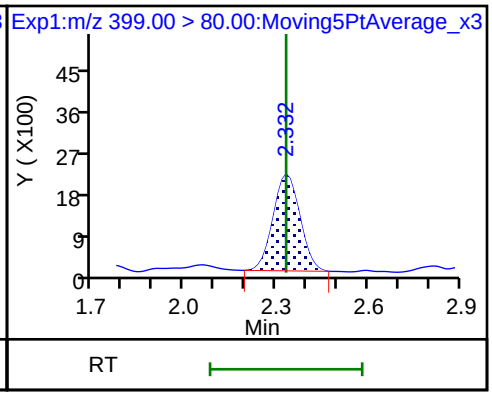
10 Perfluoroheptanoic acid (ND)



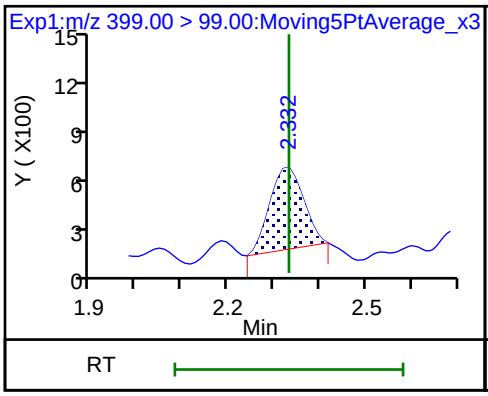
D 11 18O2 PFHxS



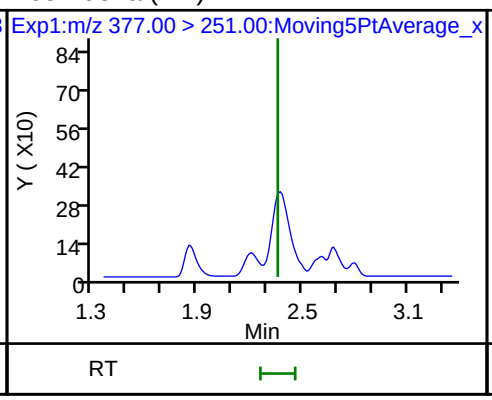
8 Perfluorohexanesulfonic acid



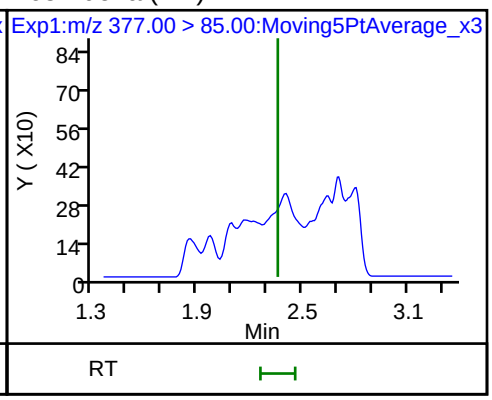
8 Perfluorohexanesulfonic acid



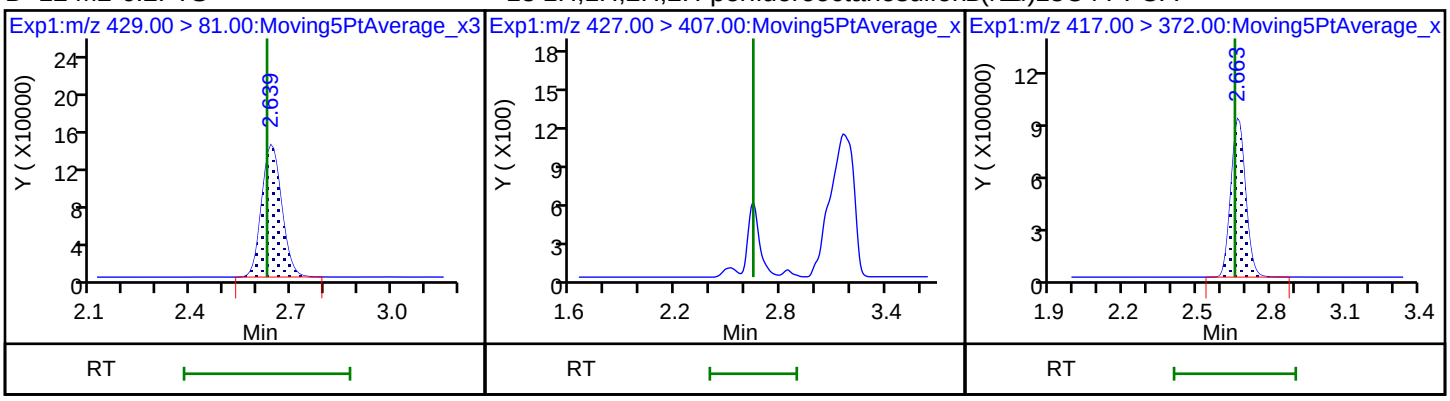
65 Adona (ND)



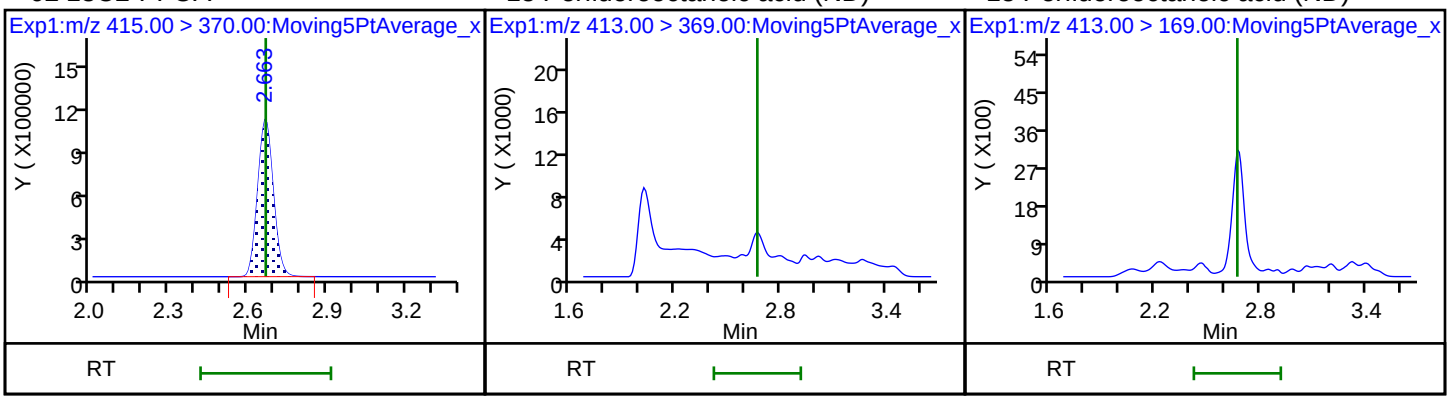
65 Adona (ND)



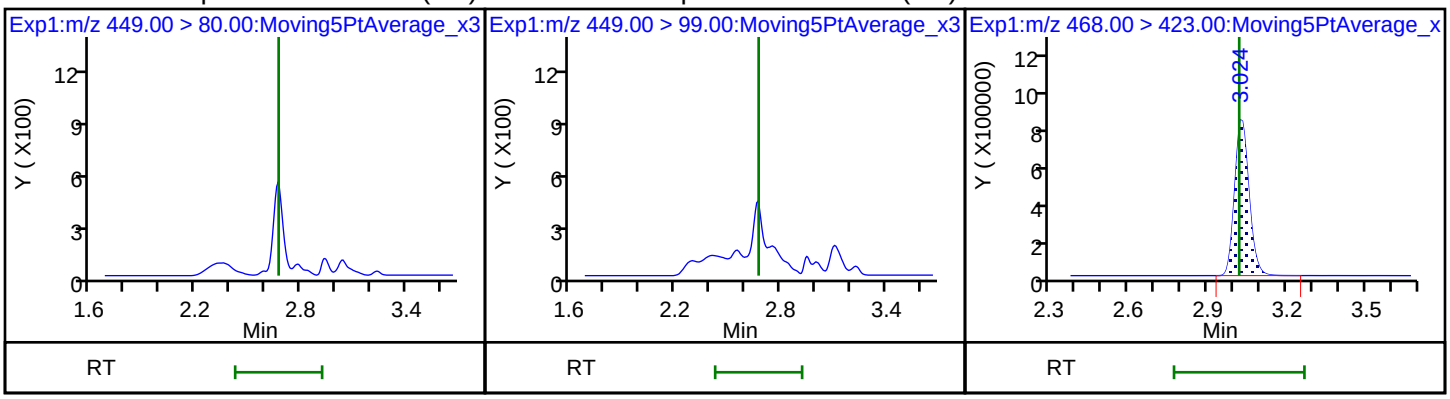
D 12 M2-6:2FTS | 13 1H,1H,2H,2H-perfluorooctanesulfon(ND) | D 14 13C4 PFOA



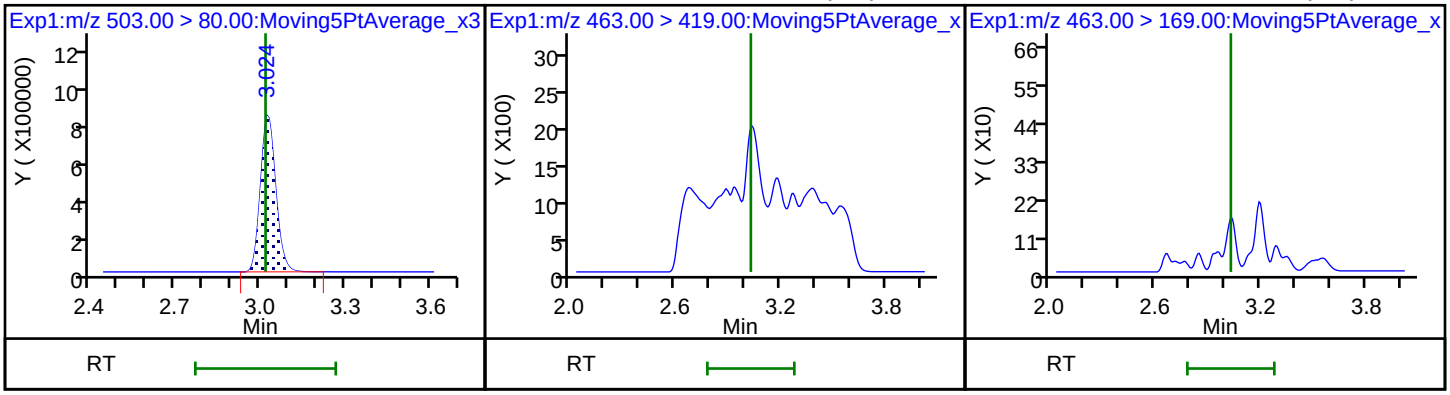
* 62 13C2-PFOA | 15 Perfluorooctanoic acid (ND) | 15 Perfluorooctanoic acid (ND)



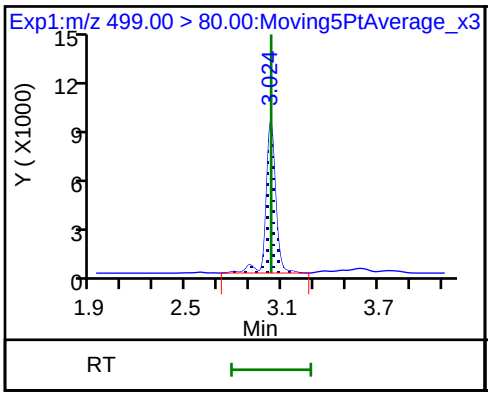
16 Perfluoroheptanesulfonic acid (ND) | 16 Perfluoroheptanesulfonic acid (ND) | D 19 13C5 PFNA



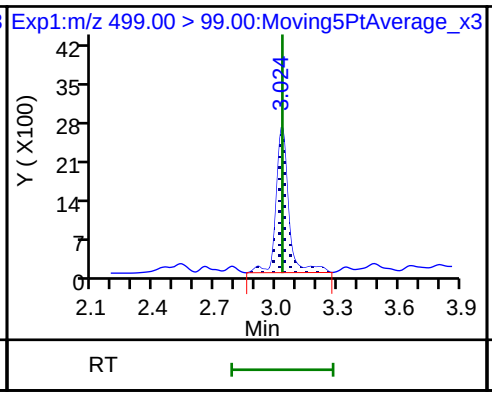
D 18 13C4 PFOS | 20 Perfluorononanoic acid (ND) | 20 Perfluorononanoic acid (ND)



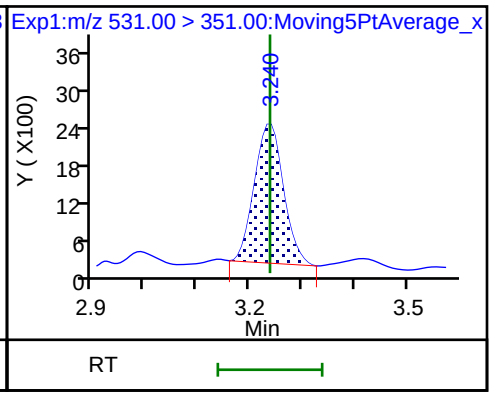
17 Perfluorooctane sulfonic acid



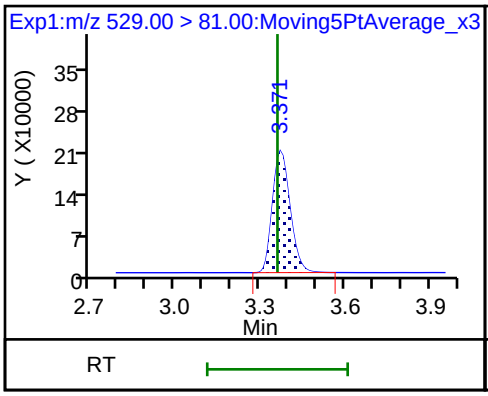
17 Perfluorooctane sulfonic acid



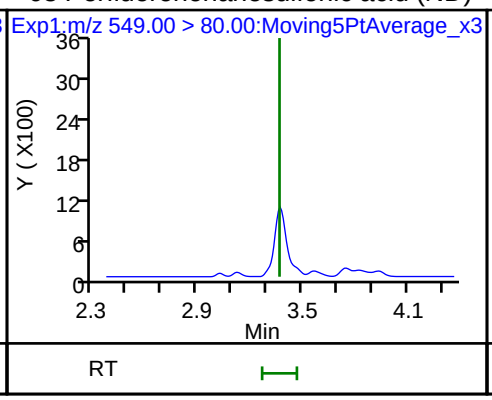
69 9-Chlorohexadecafluoro-3-oxanonane



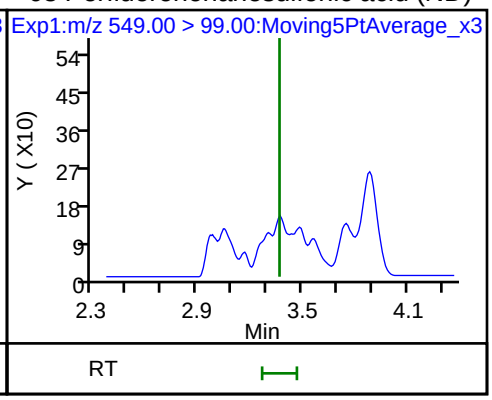
D 26 M2-8:2FTS



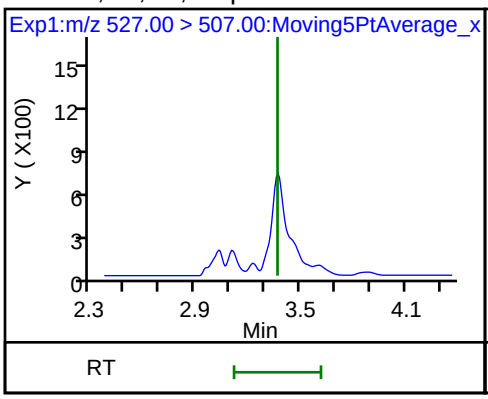
68 Perfluorononanesulfonic acid (ND)



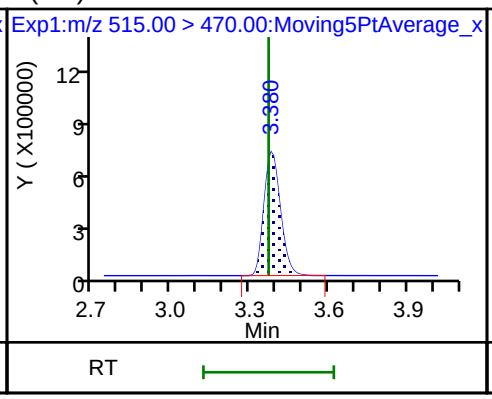
68 Perfluorononanesulfonic acid (ND)



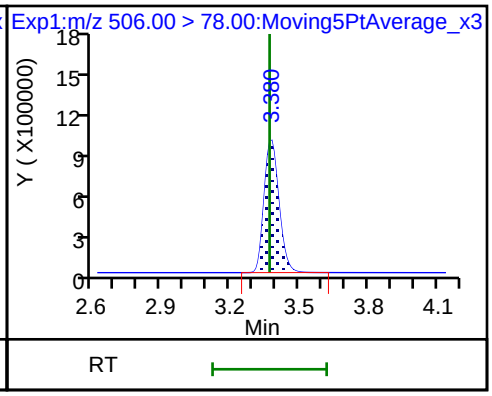
25 1H,1H,2H,2H-perfluorodecanesulfonic acid (ND)



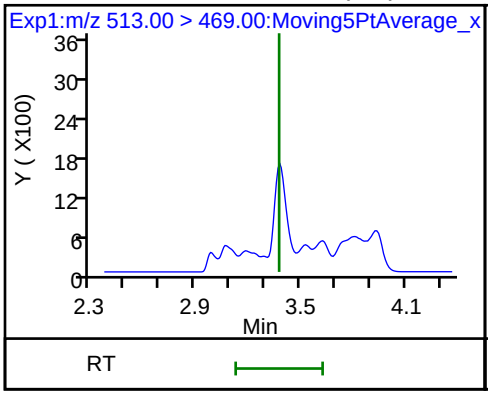
D 23 13C2 PFDA



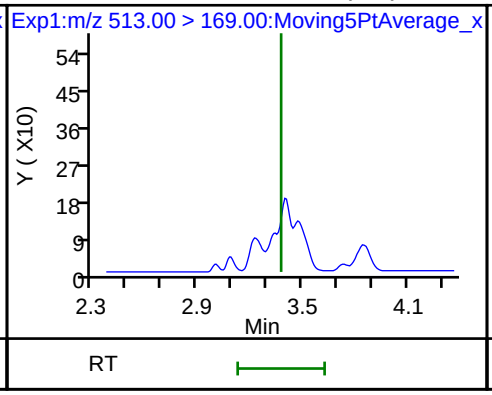
D 21 13C8 FOSA



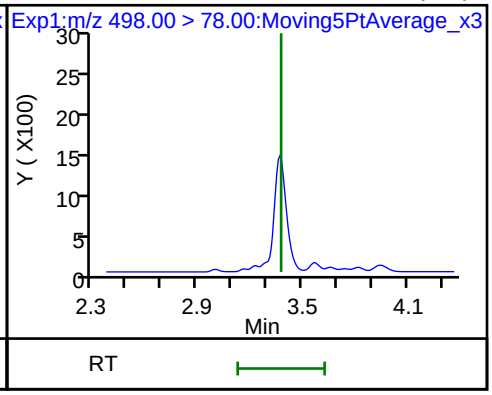
24 Perfluorodecanoic acid (ND)



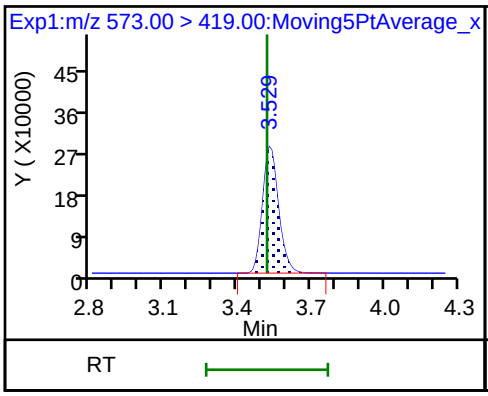
24 Perfluorodecanoic acid (ND)



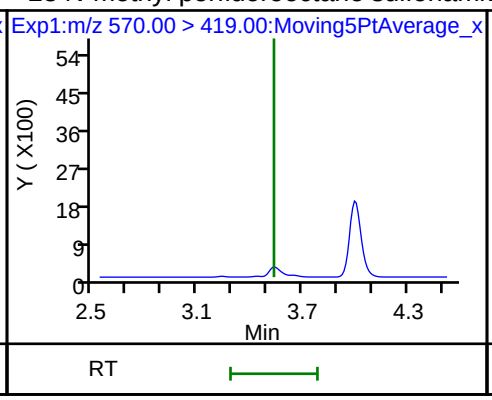
22 Perfluorooctane Sulfonamide (ND)



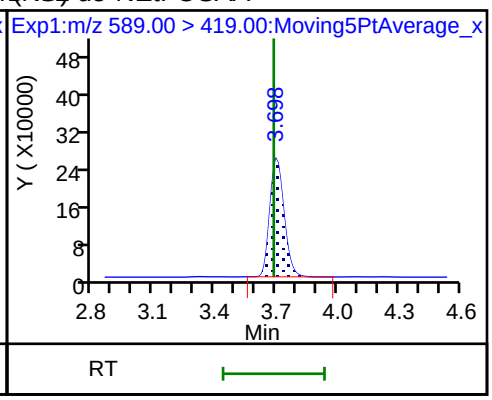
D 27 d3-NMeFOSAA



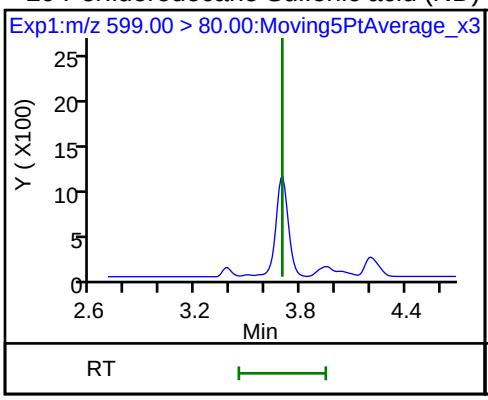
28 N-methyl perfluorooctane sulfonamid (ND)



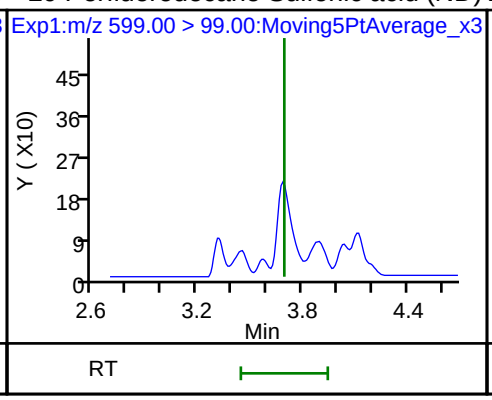
D 32 d5-NEtFOSAA



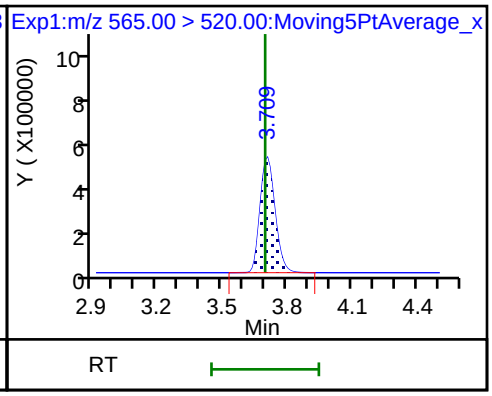
29 Perfluorodecane Sulfonic acid (ND)



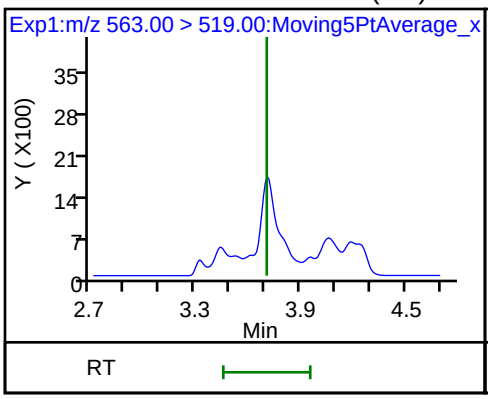
29 Perfluorodecane Sulfonic acid (ND)



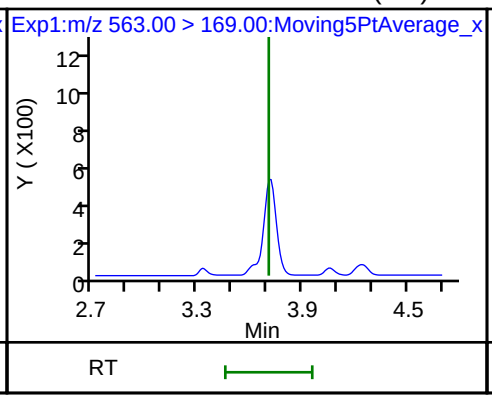
D 30 13C2 PFUnA



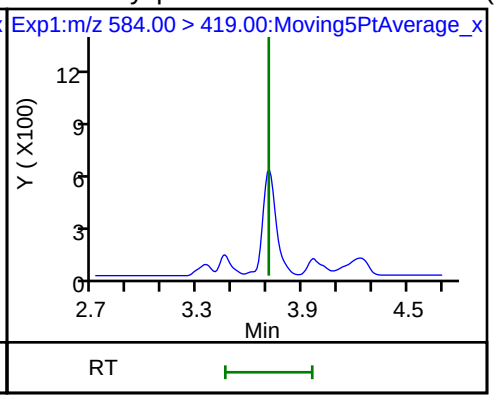
31 Perfluoroundecanoic acid (ND)



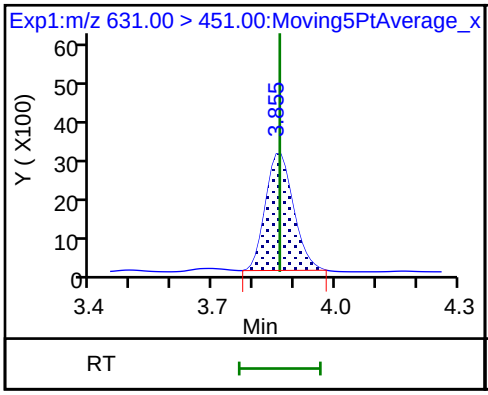
31 Perfluoroundecanoic acid (ND)



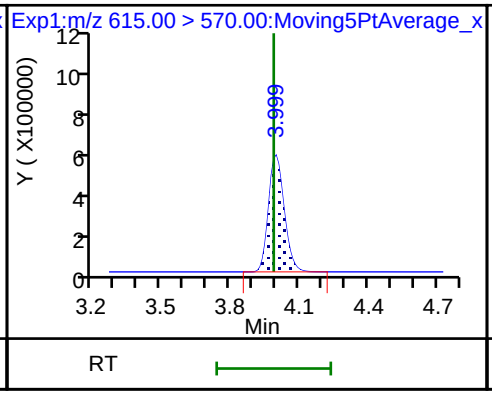
33 N-ethyl perfluorooctane sulfonamid (ND)



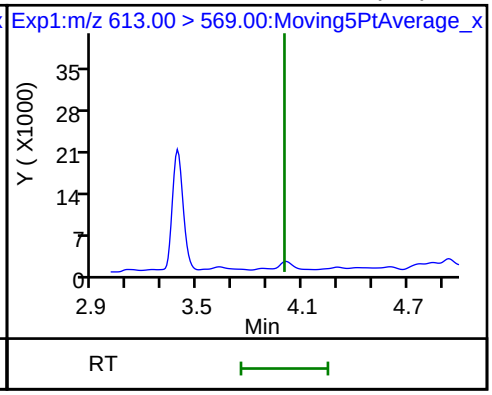
66 11-Chloroeicosafluoro-3-oxaundecan



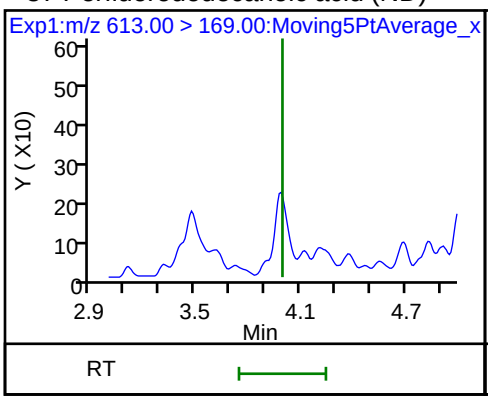
D 36 13C2 PFDoA



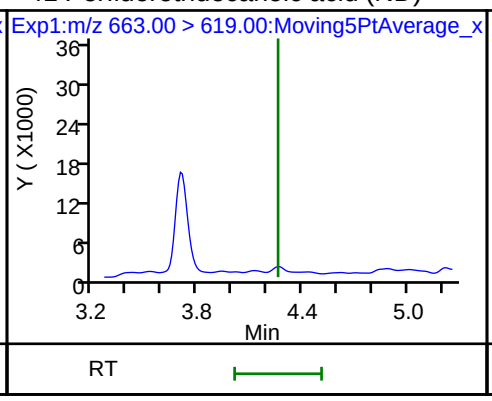
37 Perfluorododecanoic acid (ND)



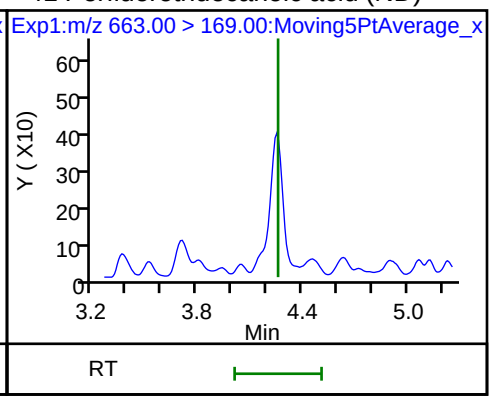
37 Perfluorododecanoic acid (ND)



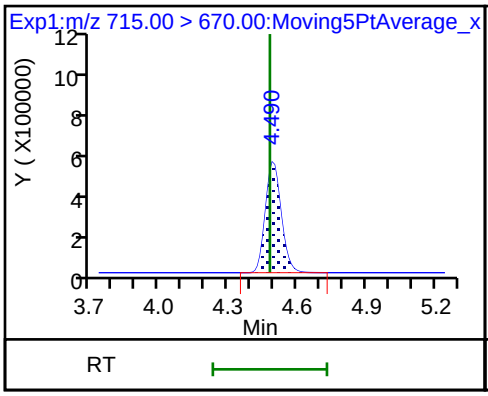
41 Perfluorotridecanoic acid (ND)



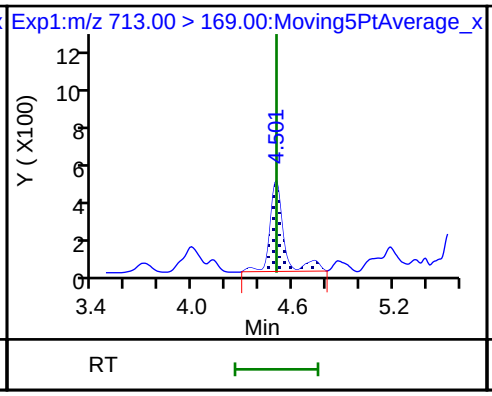
41 Perfluorotridecanoic acid (ND)



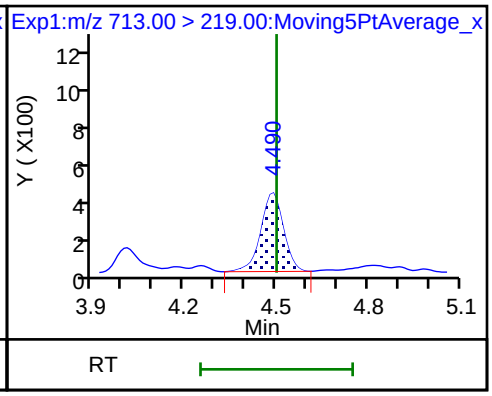
D 43 13C2-PFTeDA



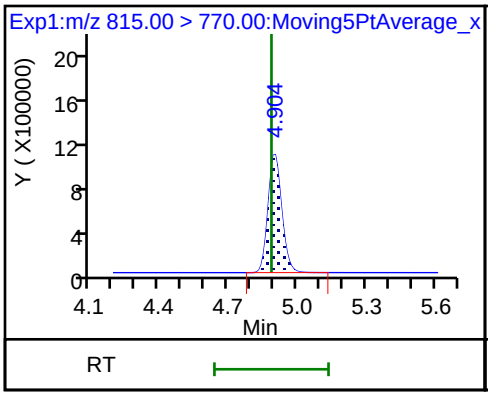
42 Perfluorotetradecanoic acid



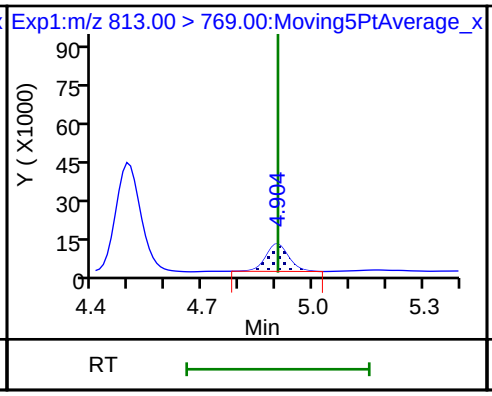
42 Perfluorotetradecanoic acid



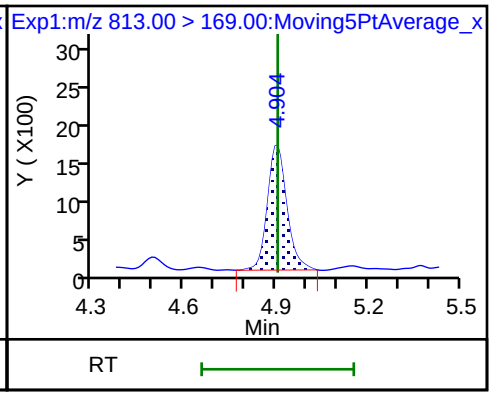
D 44 13C2-PFHxDA



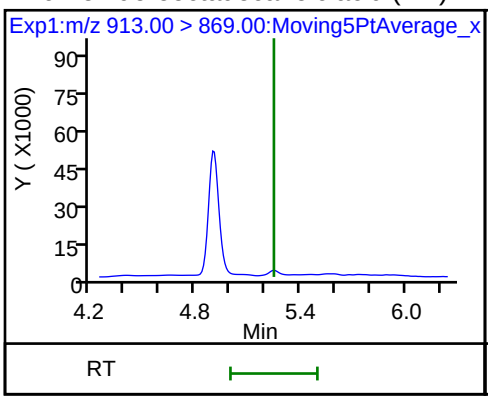
45 Perfluorohexadecanoic acid



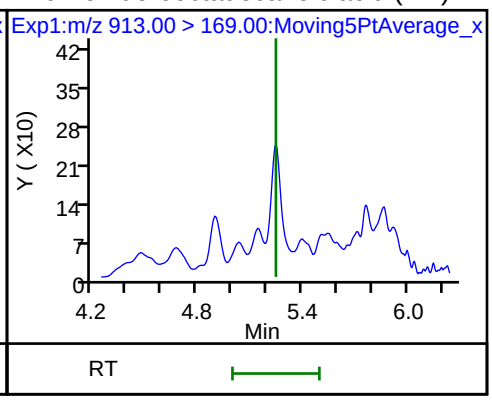
45 Perfluorohexadecanoic acid



46 Perfluorooctadecanoic acid (ND)



46 Perfluorooctadecanoic acid (ND)



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

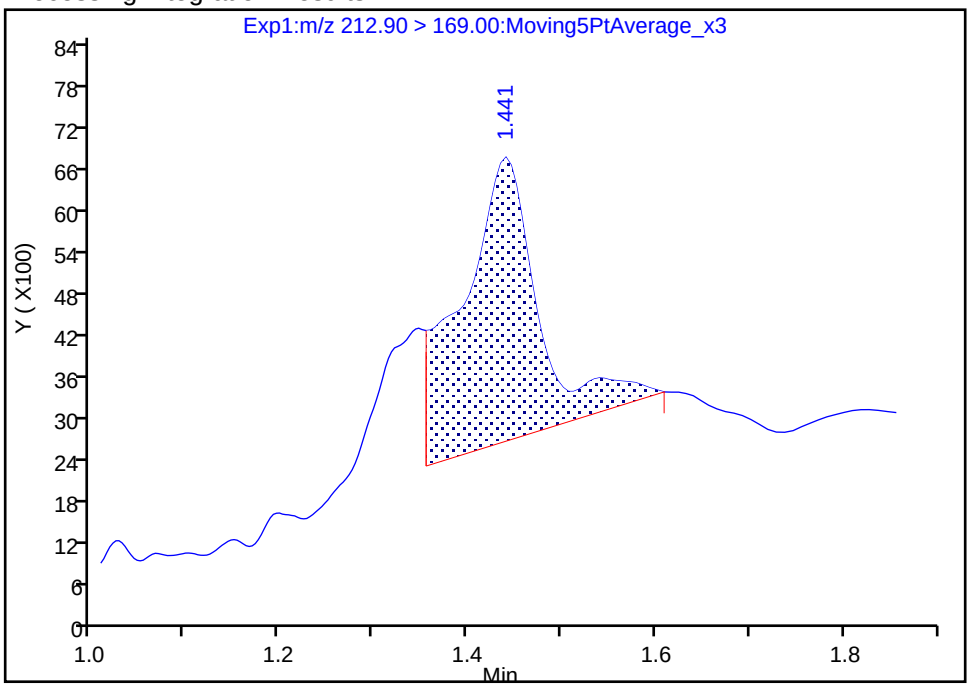
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180716-61105.b\2018.07.14LLA_032.d				
Injection Date:	14-Jul-2018 14:48:10	Instrument ID:	A8_N		
Lims ID:	320-40571-A-42-A	Lab Sample ID:	320-40571-42		
Client ID:	NF36-SS-02				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	22	Worklist Smp#:	15
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

2 Perfluorobutyric acid, CAS: 375-22-4

Signal: 1

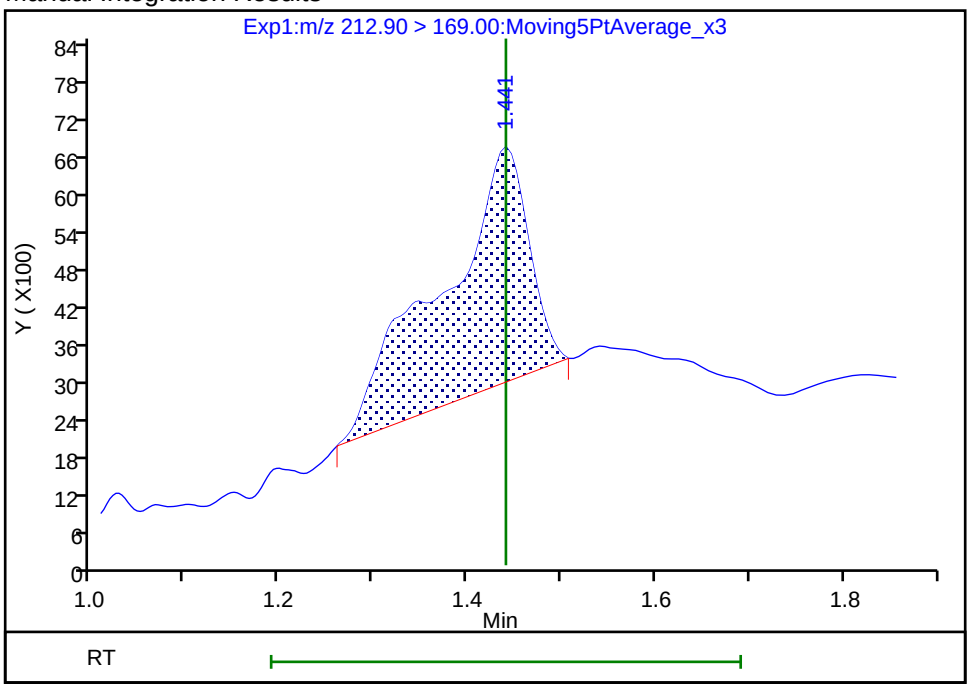
Processing Integration Results

RT: 1.44
Area: 23348
Amount: 0.012030
Amount Units: ng/ml



Manual Integration Results

RT: 1.44
Area: 24560
Amount: 0.012654
Amount Units: ng/ml



Reviewer: mongkols, 17-Jul-2018 08:29:45

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

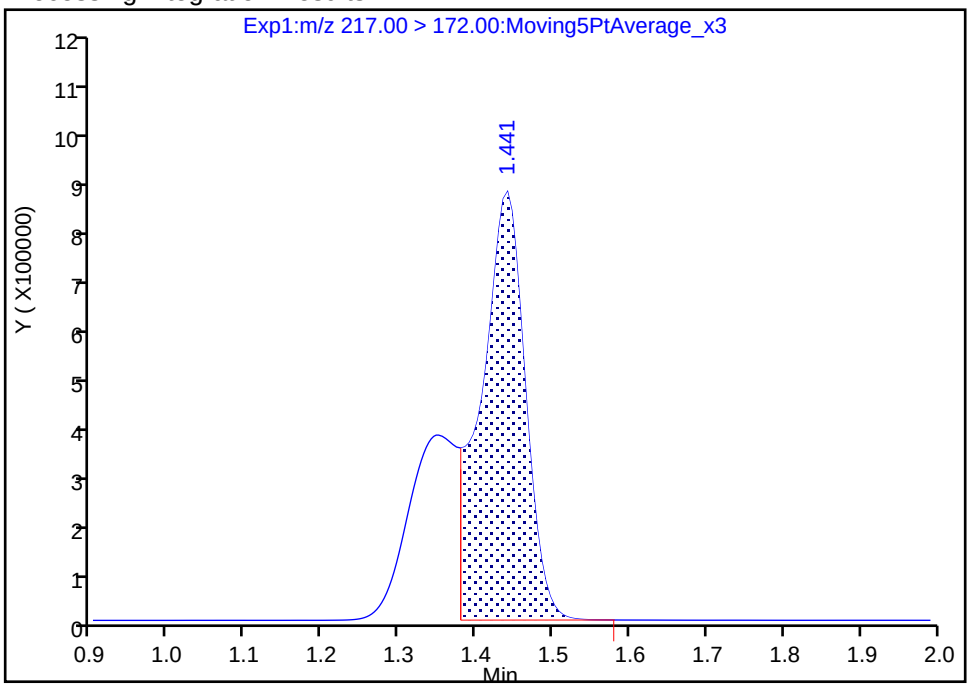
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180716-61105.b\2018.07.14LLA_032.d				
Injection Date:	14-Jul-2018 14:48:10	Instrument ID:	A8_N		
Lims ID:	320-40571-A-42-A	Lab Sample ID:	320-40571-42		
Client ID:	NF36-SS-02				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	22	Worklist Smp#:	15
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

D 1 13C4 PFBA, CAS: STL00992

Signal: 1

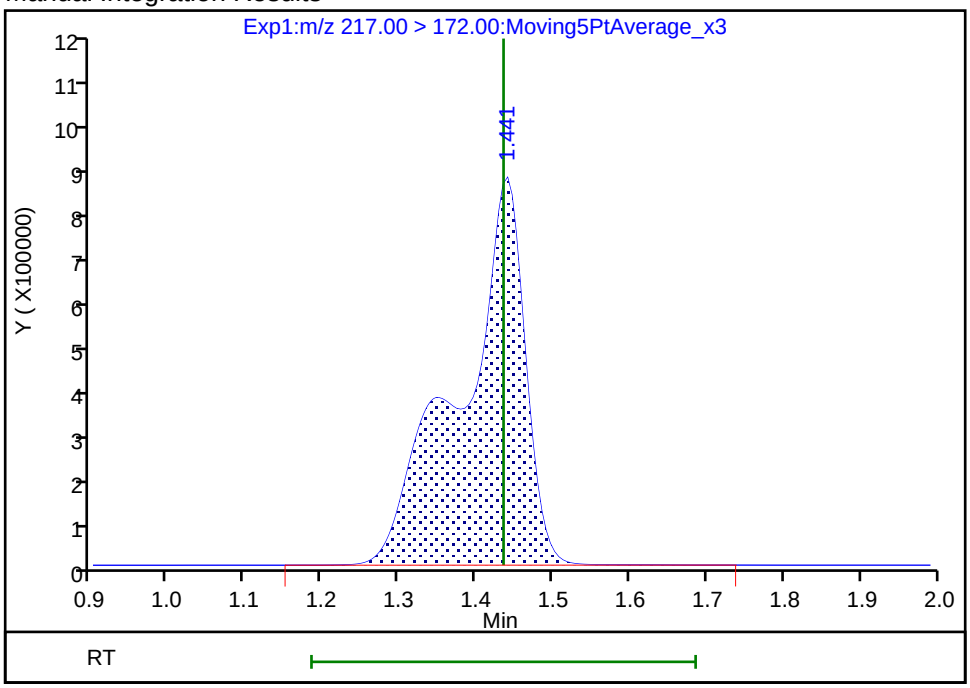
Processing Integration Results

RT: 1.44
Area: 3318786
Amount: 1.355584
Amount Units: ng/ml



Manual Integration Results

RT: 1.44
Area: 4923079
Amount: 2.010870
Amount Units: ng/ml



Reviewer: mongkols, 17-Jul-2018 08:29:32

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF-EB-02
Lab Sample ID: 320-40571-43
Matrix: Water
Lab File ID: 2018.07.06LLAAA_043.d
Analysis Method: 537 (modified)
Date Collected: 06/21/2018 09:20
Extraction Method: 3535
Date Extracted: 07/02/2018 16:10
Sample wt/vol: 284.3(mL)
Date Analyzed: 07/06/2018 19:04
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 232788
Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	0.00097	J B	0.0018	0.00031
2706-90-3	Perfluoropentanoic acid (PFPeA)	ND		0.0018	0.00043
307-24-4	Perfluorohexanoic acid (PFHxA)	ND		0.0018	0.00051
375-85-9	Perfluoroheptanoic acid (PFHpA)	ND		0.0018	0.00022
335-67-1	Perfluorooctanoic acid (PFOA)	ND		0.0018	0.00075
375-95-1	Perfluorononanoic acid (PFNA)	ND		0.0018	0.00024
335-76-2	Perfluorodecanoic acid (PFDA)	ND		0.0018	0.00027
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		0.0018	0.00097
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		0.0018	0.00048
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		0.0018	0.0011
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		0.0018	0.00026
375-73-5	Perfluorobutanesulfonic acid (PFBS)	ND		0.0018	0.00018
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	ND		0.0018	0.00026
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	ND		0.0018	0.00015
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.0018	0.00017
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	ND		0.0018	0.00047
8789-57-2	Perfluorononanesulfonic acid (PFNS)	ND		0.0018	0.00014
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		0.0018	0.00028
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		0.0018	0.00031
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.018	0.0027
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.018	0.0017
757124-72-4	4:2 FTS	ND		0.018	0.0046
27619-97-2	6:2 FTS	ND		0.018	0.0018
39108-34-4	8:2 FTS	ND		0.018	0.0018

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF-EB-02
Lab Sample ID: 320-40571-43
Matrix: Water
Lab File ID: 2018.07.06LLAAA_043.d
Analysis Method: 537 (modified)
Date Collected: 06/21/2018 09:20
Extraction Method: 3535
Date Extracted: 07/02/2018 16:10
Sample wt/vol: 284.3(mL)
Date Analyzed: 07/06/2018 19:04
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 232788
Units: ug/L

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00992	13C4 PFBA	92		25-150
STL01893	13C5 PFPeA	100		25-150
STL00993	13C2 PFHxA	97		25-150
STL01892	13C4-PFHpA	106		25-150
STL00990	13C4 PFOA	107		25-150
STL00995	13C5 PFNA	105		25-150
STL00996	13C2 PFDA	115		25-150
STL00997	13C2 PFUnA	100		25-150
STL00998	13C2 PFDoA	102		25-150
STL02116	13C2-PFTeDA	103		25-150
STL02337	13C3-PFBS	97		25-150
STL00994	18O2 PFHxS	107		25-150
STL00991	13C4 PFOS	104		25-150
STL01056	13C8 FOSA	93		25-150
STL02118	d3-NMeFOSAA	109		25-150
STL02117	d5-NEtFOSAA	114		25-150
STL02279	M2-6:2FTS	114		25-150
STL02280	M2-8:2FTS	133		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180706-60751.b\2018.07.06LLAAA_043.d
Lims ID: 320-40571-A-43-A
Client ID: NF-EB-02
Sample Type: Client
Inject. Date: 06-Jul-2018 19:04:04 ALS Bottle#: 31 Worklist Smp#: 13
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-40571-a-43-a
Misc. Info.: Plate: 1 Rack: 5
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180706-60751.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 09-Jul-2018 10:23:57 Calib Date: 05-Jul-2018 09:38:17
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180705-60684.b\2018.07.05LLICALAA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK010

First Level Reviewer: mongkols Date: 09-Jul-2018 10:23:57

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.436	1.424	0.012	0.538	6248841	2.30		92.2	25039	
2 Perfluorobutyric acid										
212.90 > 169.00	1.436	1.433	0.003	1.000	70230	0.0275			20.5	
D 3 13C5-PFPeA										
267.90 > 223.00	1.711	1.702	0.009	0.641	5006480	2.49		99.8	41586	
D 47 13C3-PFBS										
301.90 > 83.00	1.747	1.738	0.009	0.655	108106	2.25		96.9	746	
D 7 13C2 PFHxA										
315.00 > 270.00	1.992	1.981	0.011	0.747	5227333	2.43		97.3	71094	
D 9 13C4-PFHpA										
367.00 > 322.00	2.319	2.293	0.026	0.870	5075519	2.66		106	49108	
D 11 18O2 PFHxS										
403.00 > 84.00	2.332	2.306	0.026	0.874	5932719	2.53		107	52086	
D 12 M2-6:2FTS										
429.00 > 81.00	2.644	2.627	0.017	0.991	1159285	2.71		114	24298	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.636	2.634	0.002	0.997	14010	0.0183			83.3	
D 14 13C4 PFOA										
417.00 > 372.00	2.667	2.652	0.015	1.000	4983447	2.67		107	34920	
* 62 13C2-PFOA										
415.00 > 370.00	2.667	2.658	0.009		4897412	2.50			37976	
D 19 13C5 PFNA										
468.00 > 423.00	3.028	3.009	0.019	1.135	4186264	2.64		105	54102	
D 18 13C4 PFOS										
503.00 > 80.00	3.028	3.009	0.019	1.135	4169685	2.49		104	34637	
D 21 13C8 FOSA										
506.00 > 78.00	3.375	3.359	0.016	1.266	5431905	2.34		93.4	29832	

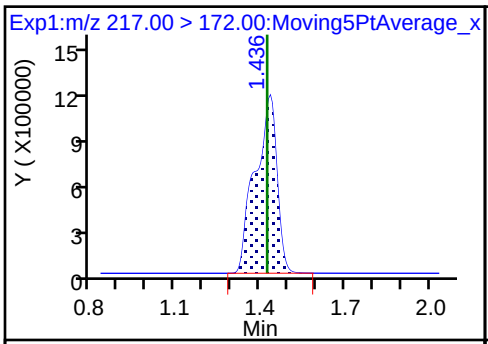
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 26 M2-8:2FTS										
529.00 > 81.00	3.375	3.359	0.016	1.266	1515154	3.18		133	23375	
D 23 13C2 PFDA										
515.00 > 470.00	3.385	3.368	0.017	1.269	3935523	2.87		115	50798	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.534	3.518	0.016	1.325	2191392	2.72		109	30360	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.704	3.685	0.019	1.389	2274231	2.85		114	14857	
D 30 13C2 PFUnA										
565.00 > 520.00	3.704	3.696	0.008	1.389	2870225	2.49		99.8	35211	
D 36 13C2 PFDoA										
615.00 > 570.00	3.994	3.986	0.008	1.497	3141624	2.55		102	17967	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.498	4.479	0.019	1.686	3854421	2.56		103	17039	

Report Date: 09-Jul-2018 10:23:58 Chrom Revision: 2.2 07-Jun-2018 07:41:54

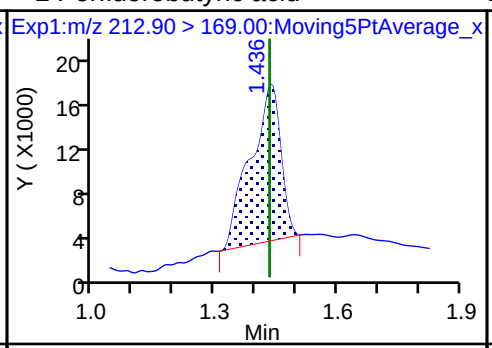
TestAmerica Sacramento

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180706-60751.b\2018.07.06LLAAA_043.d				
Injection Date:	06-Jul-2018 19:04:04	Instrument ID:	A8_N		
Lims ID:	320-40571-A-43-A	Lab Sample ID:	320-40571-43		
Client ID:	NF-EB-02				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	31	Worklist Smp#:	13
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		

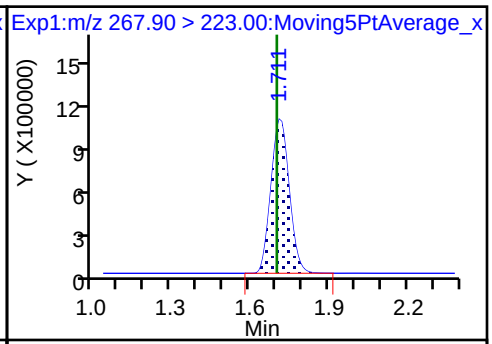
D 1 13C4 PFBA



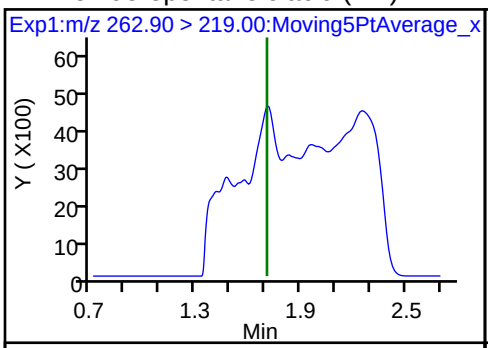
2 Perfluorobutyric acid



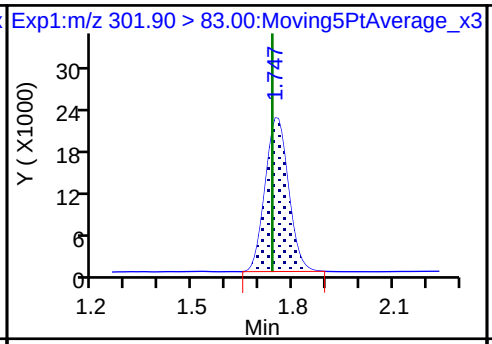
D 3 13C5-PFPeA



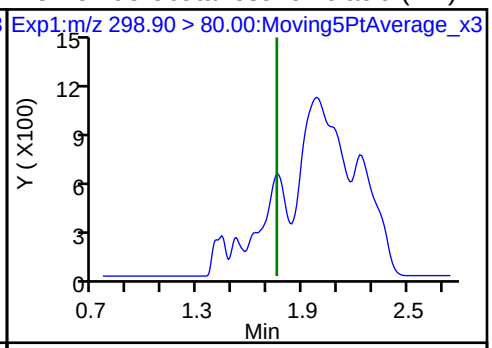
4 Perfluoropentanoic acid (ND)



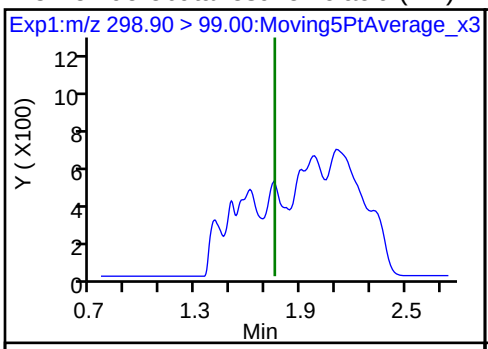
D 47 13C3-PFBS



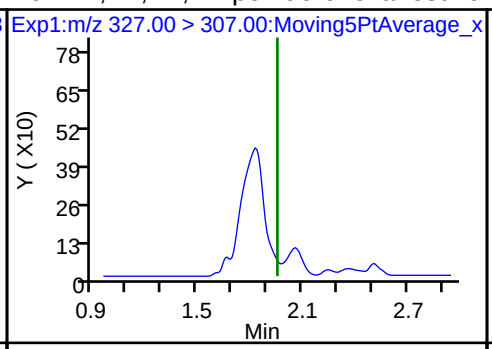
5 Perfluorobutanesulfonic acid (ND)



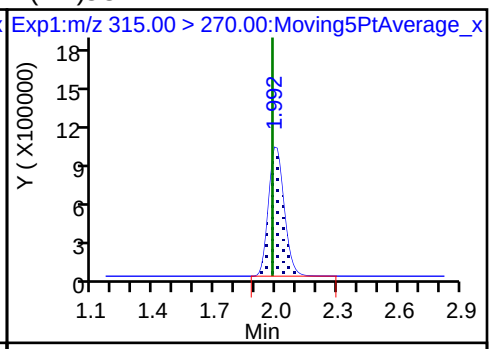
5 Perfluorobutanesulfonic acid (ND)



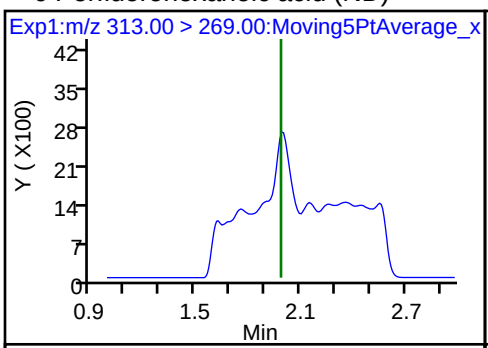
61 1H,1H,2H,2H-perfluorohexanesulfon (ND)



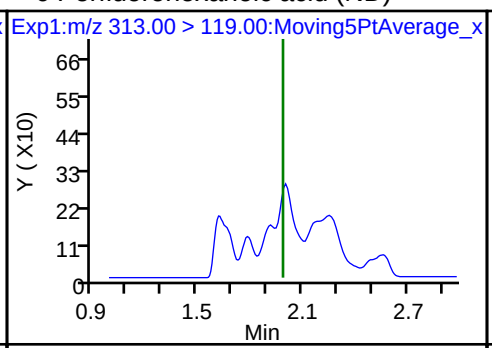
D 70 13C2 PFHxA



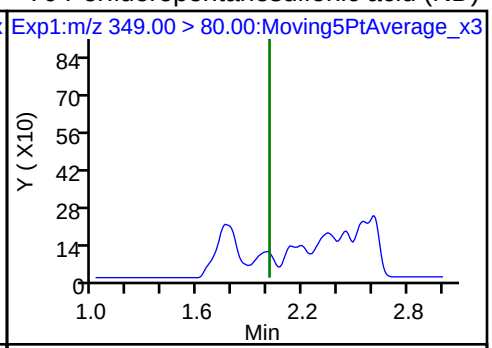
6 Perfluorohexanoic acid (ND)



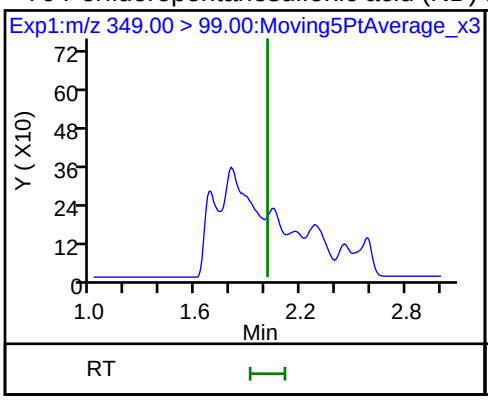
6 Perfluorohexanoic acid (ND)



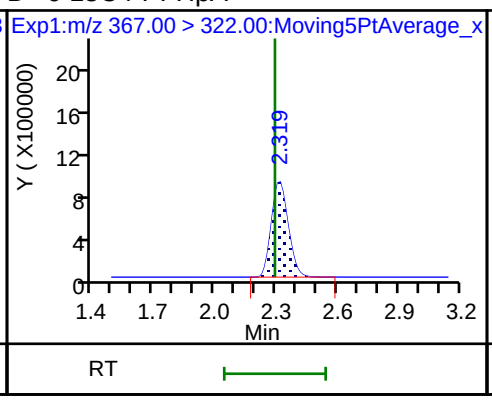
70 Perfluoropentanesulfonic acid (ND)



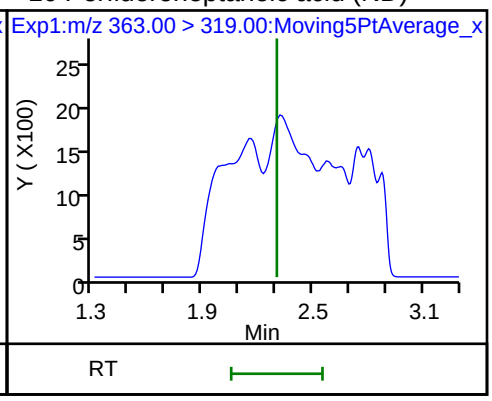
70 Perfluoropentanesulfonic acid (ND)



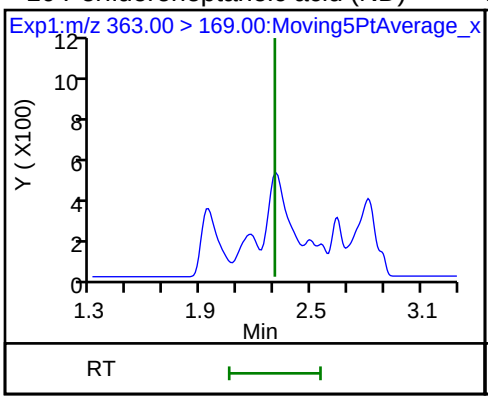
D 9 13C4-PFHpA



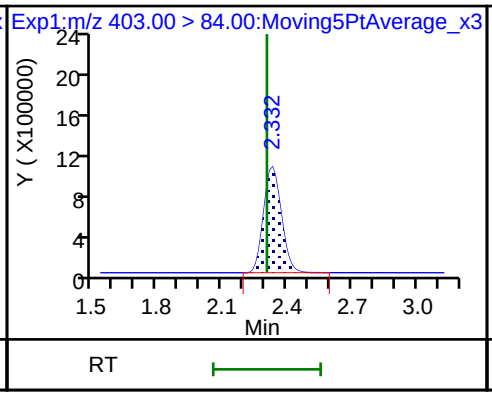
10 Perfluoroheptanoic acid (ND)



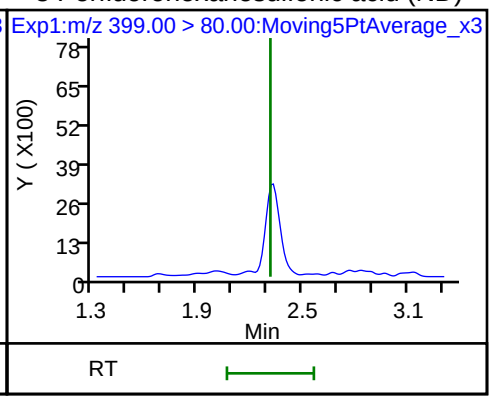
10 Perfluoroheptanoic acid (ND)



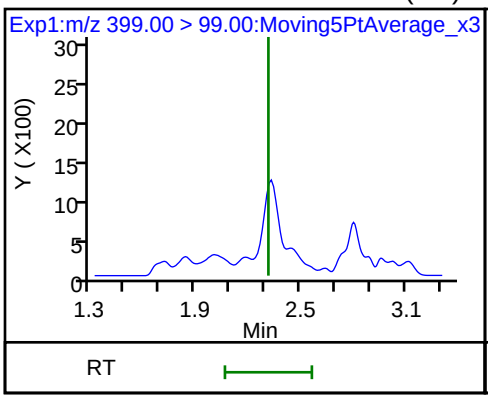
D 11 18O2 PFHxS



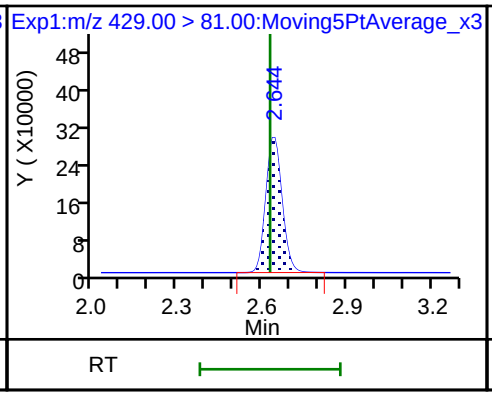
8 Perfluorohexanesulfonic acid (ND)



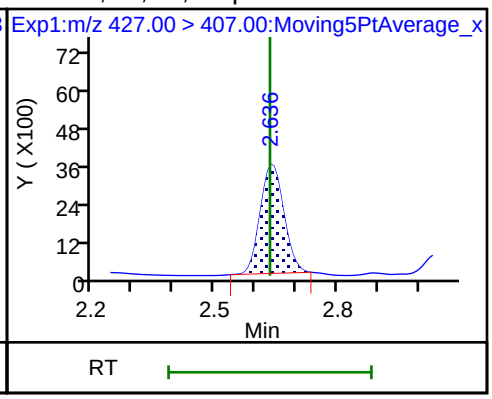
8 Perfluorohexanesulfonic acid (ND)



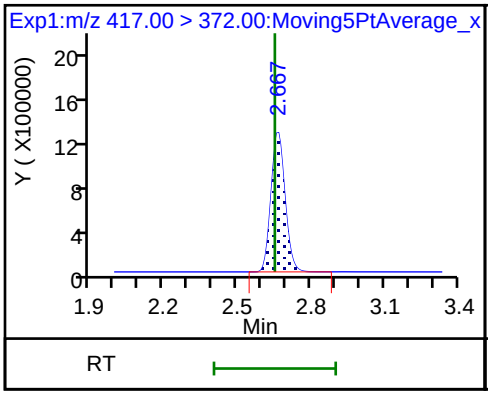
D 12 M2-6:2FTS



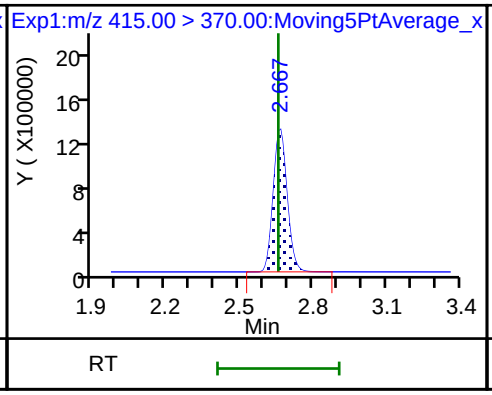
13 1H,1H,2H,2H-perfluorooctanesulfoni



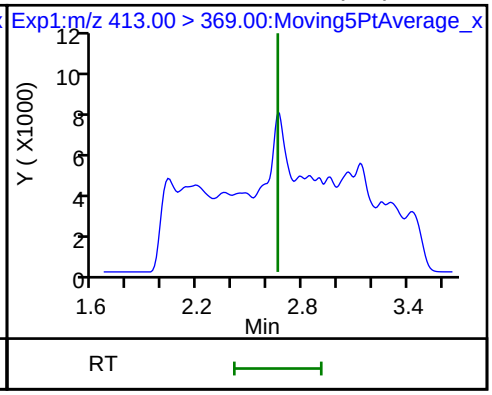
D 14 13C4 PFOA



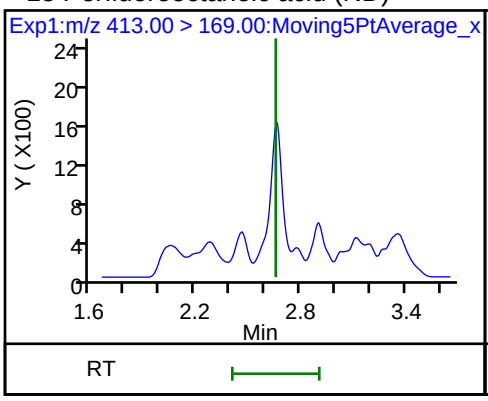
* 62 13C2-PFOA



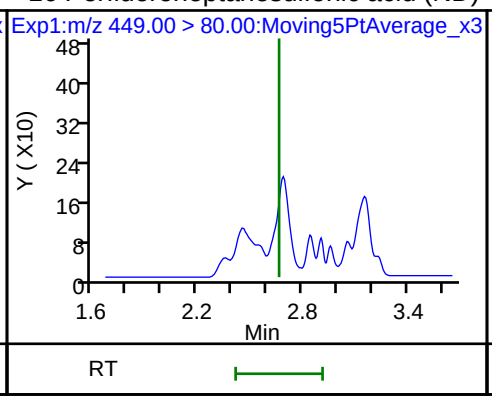
15 Perfluorooctanoic acid (ND)



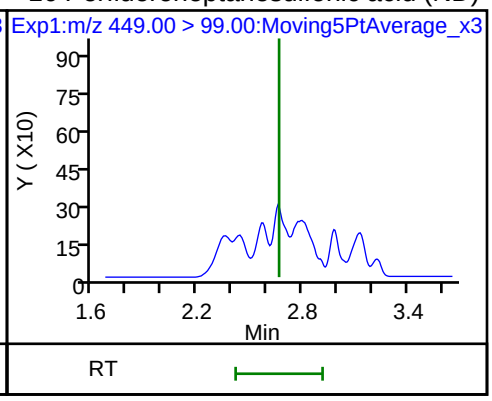
15 Perfluorooctanoic acid (ND)



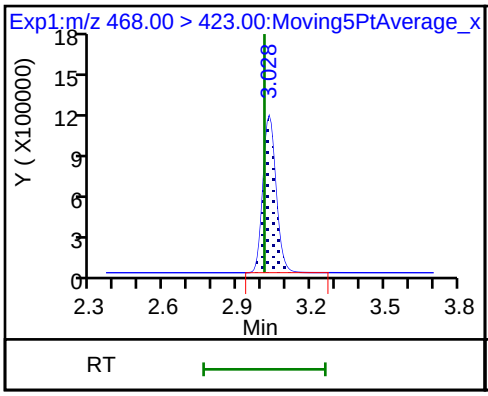
16 Perfluoroheptanesulfonic acid (ND)



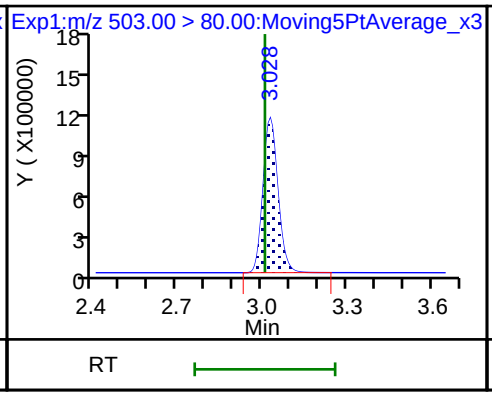
16 Perfluoroheptanesulfonic acid (ND)



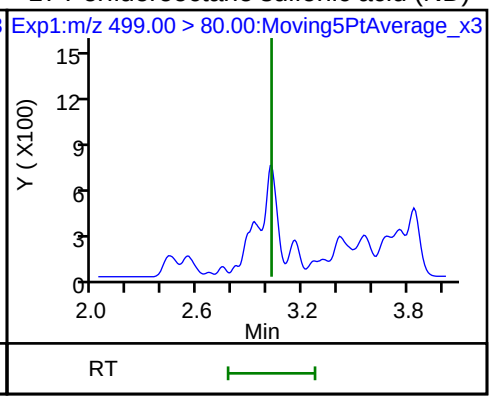
D 19 13C5 PFNA



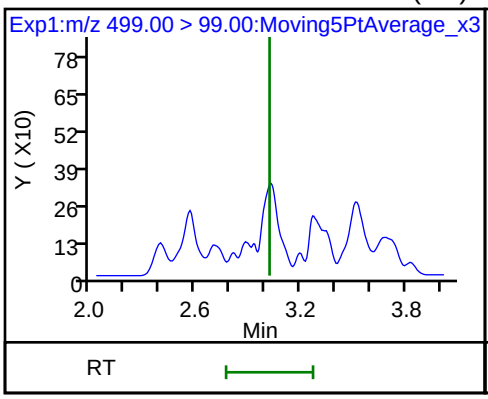
D 18 13C4 PFOS



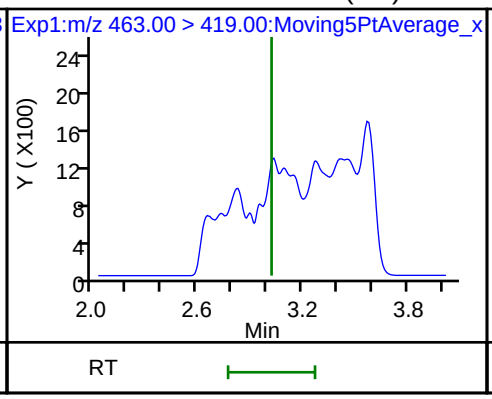
17 Perfluorooctane sulfonic acid (ND)



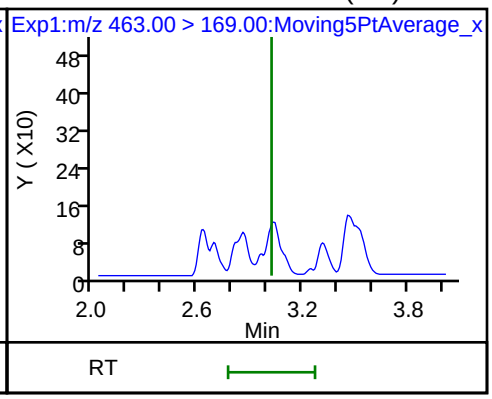
17 Perfluorooctane sulfonic acid (ND)



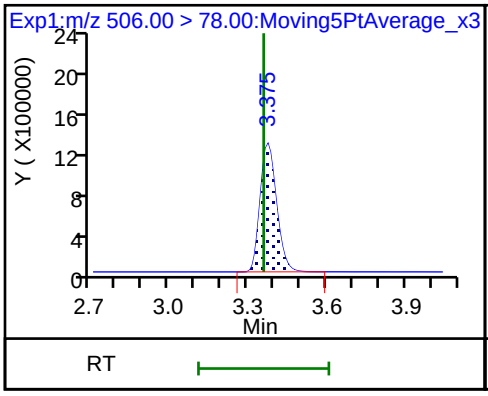
20 Perfluorononanoic acid (ND)



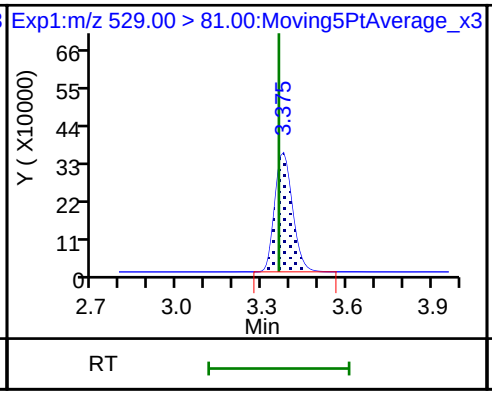
20 Perfluorononanoic acid (ND)



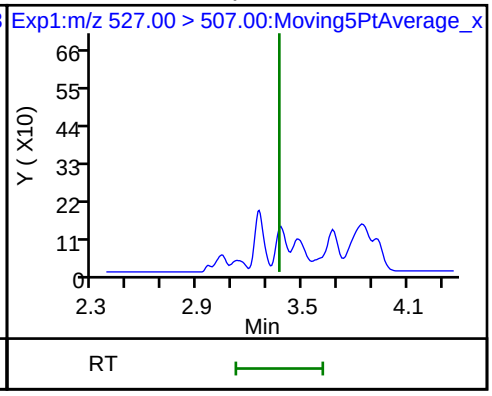
D 21 13C8 FOSA



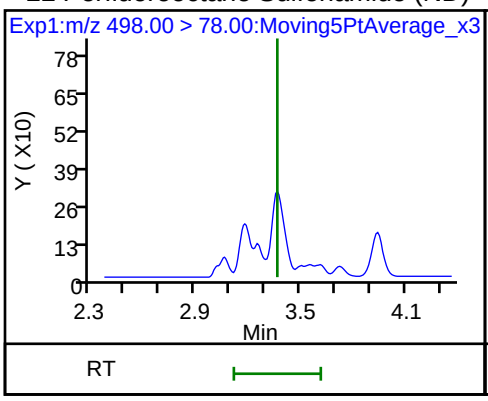
D 26 M2-8:2FTS



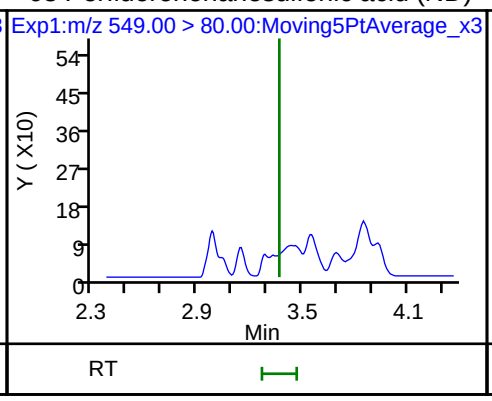
25 1H,1H,2H,2H-perfluorodecanesulfoni (ND)



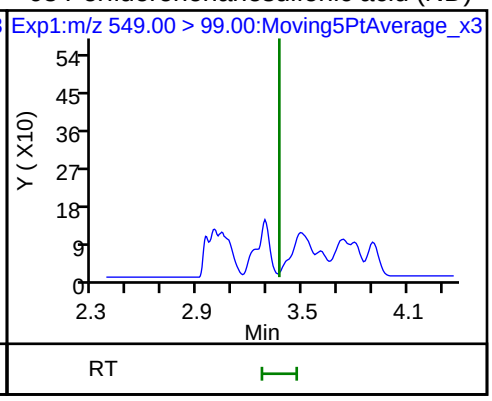
22 Perfluorooctane Sulfonamide (ND)



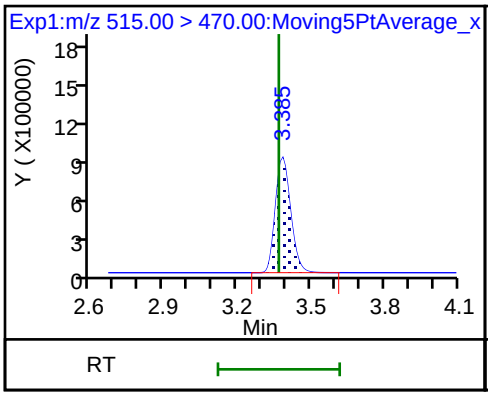
68 Perfluorononanesulfonic acid (ND)



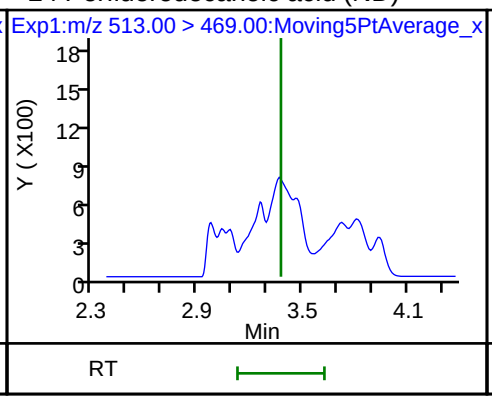
68 Perfluorononanesulfonic acid (ND)



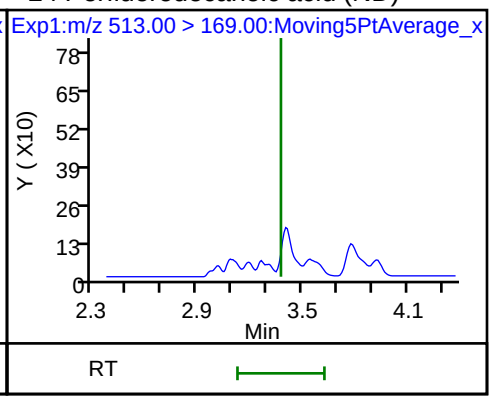
D 23 13C2 PFDA



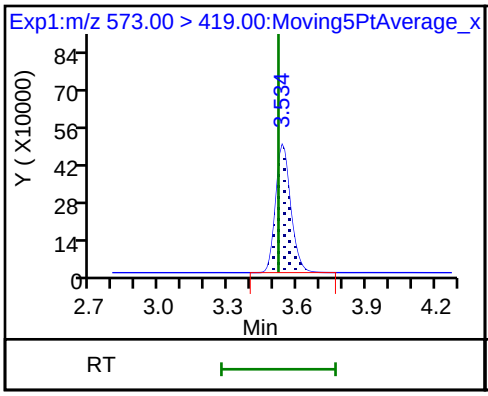
24 Perfluorodecanoic acid (ND)



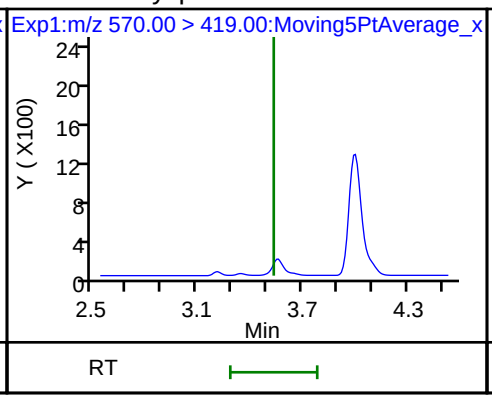
24 Perfluorodecanoic acid (ND)



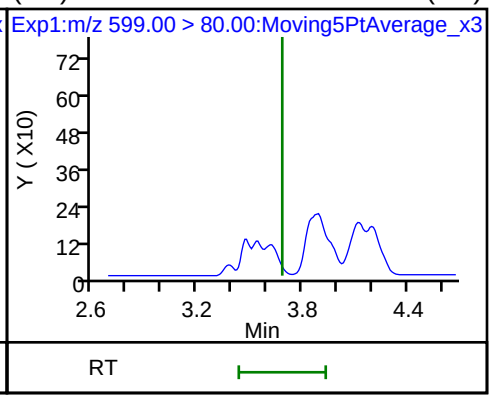
D 27 d3-NMeFOSAA



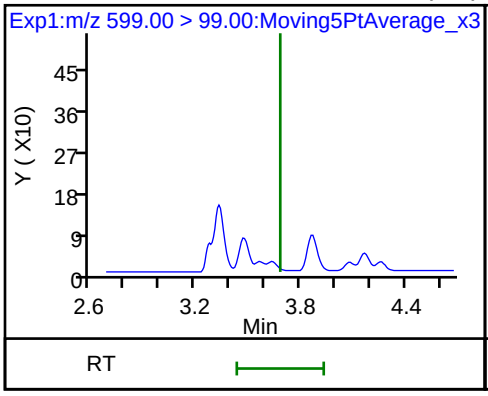
28 N-methyl perfluorooctane sulfonami (ND)



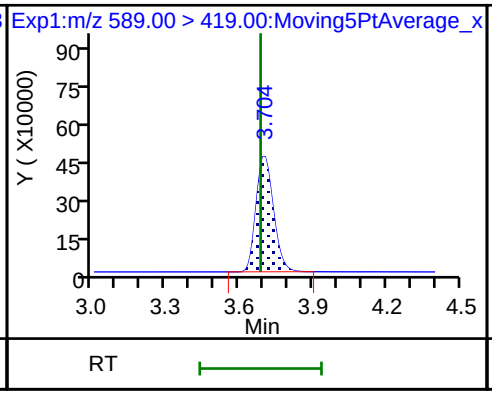
29 Perfluorodecane Sulfonic acid (ND)



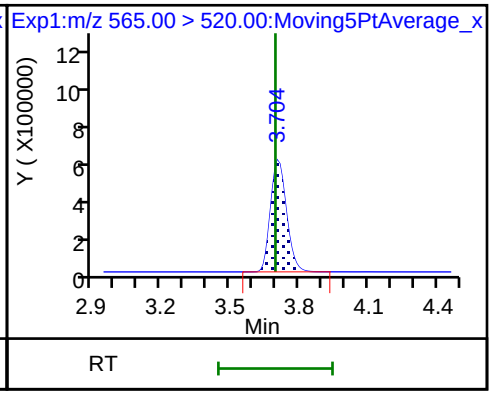
29 Perfluorodecane Sulfonic acid (ND)



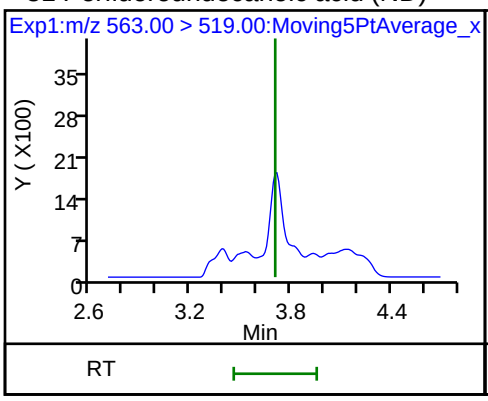
D 32 d5-NEtFOSAA



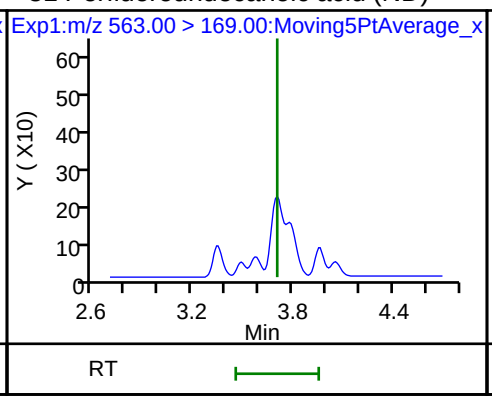
D 30 13C2 PFUnA



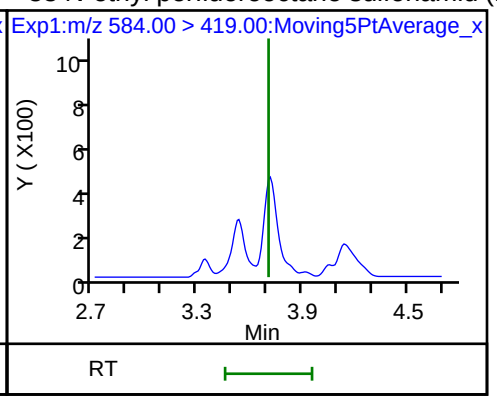
31 Perfluoroundecanoic acid (ND)



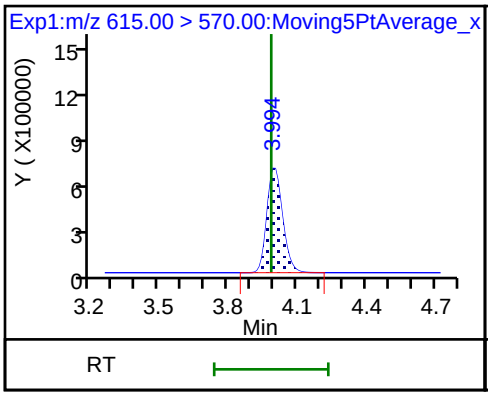
31 Perfluoroundecanoic acid (ND)



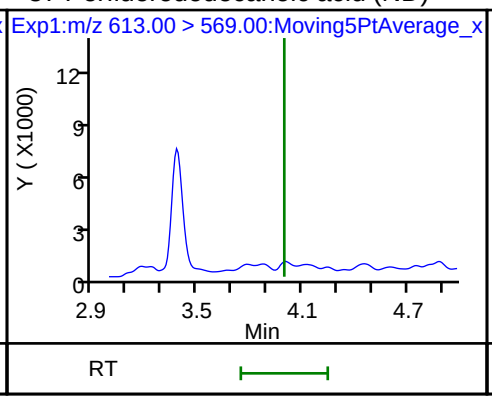
33 N-ethyl perfluorooctane sulfonamid (ND)



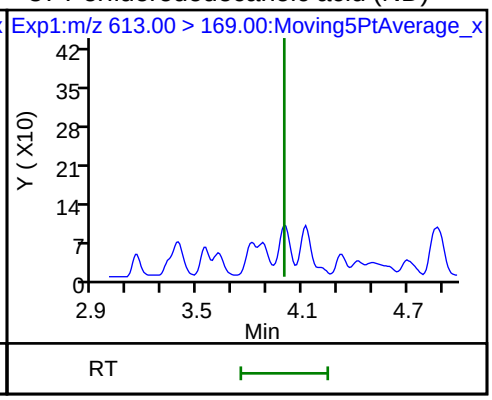
D 36 13C2 PFDoA



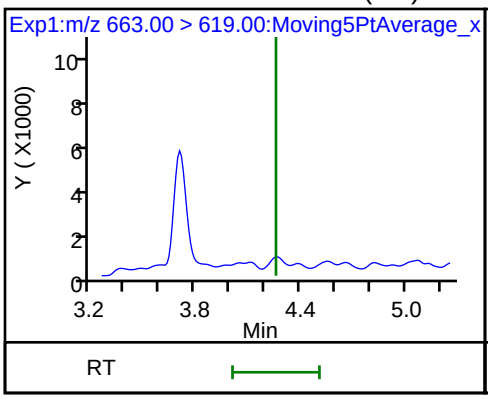
37 Perfluorododecanoic acid (ND)



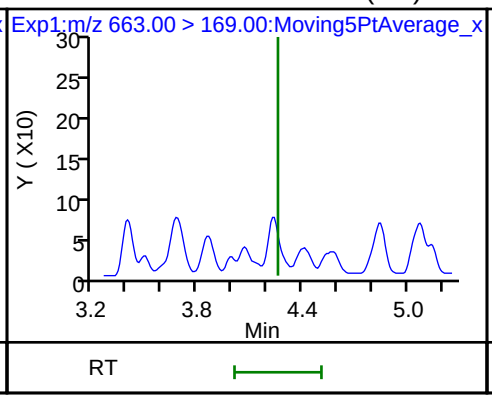
37 Perfluorododecanoic acid (ND)



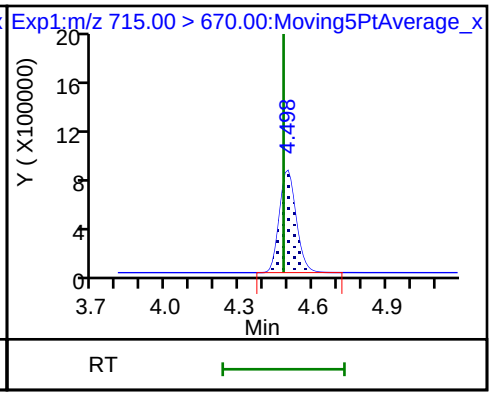
41 Perfluorotridecanoic acid (ND)



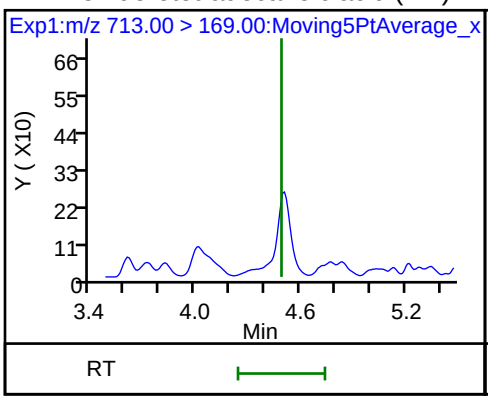
41 Perfluorotridecanoic acid (ND)



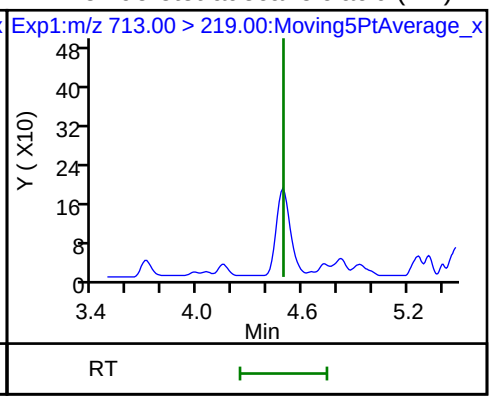
D 43 13C2-PFTeDA



42 Perfluorotetradecanoic acid (ND)



42 Perfluorotetradecanoic acid (ND)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF-FB-02
Lab Sample ID: 320-40571-44
Matrix: Water
Lab File ID: 2018.07.06LLAAA_044.d
Analysis Method: 537 (modified)
Date Collected: 06/21/2018 09:30
Extraction Method: 3535
Date Extracted: 07/02/2018 16:10
Sample wt/vol: 277.1(mL)
Date Analyzed: 07/06/2018 19:11
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 232788
Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	0.00093	J B	0.0018	0.00032
2706-90-3	Perfluoropentanoic acid (PFPeA)	ND		0.0018	0.00044
307-24-4	Perfluorohexanoic acid (PFHxA)	ND		0.0018	0.00052
375-85-9	Perfluoroheptanoic acid (PFHpA)	ND		0.0018	0.00023
335-67-1	Perfluorooctanoic acid (PFOA)	ND		0.0018	0.00077
375-95-1	Perfluorononanoic acid (PFNA)	ND		0.0018	0.00024
335-76-2	Perfluorodecanoic acid (PFDA)	ND		0.0018	0.00028
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		0.0018	0.00099
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		0.0018	0.00050
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		0.0018	0.0012
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		0.0018	0.00026
375-73-5	Perfluorobutanesulfonic acid (PFBS)	ND		0.0018	0.00018
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	ND		0.0018	0.00027
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	ND		0.0018	0.00015
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.0018	0.00017
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	ND		0.0018	0.00049
8789-57-2	Perfluorononanesulfonic acid (PFNS)	ND		0.0018	0.00014
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		0.0018	0.00029
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		0.0018	0.00032
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.018	0.0028
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.018	0.0017
757124-72-4	4:2 FTS	ND		0.018	0.0047
27619-97-2	6:2 FTS	ND		0.018	0.0018
39108-34-4	8:2 FTS	ND		0.018	0.0018

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF-FB-02
Lab Sample ID: 320-40571-44
Matrix: Water
Lab File ID: 2018.07.06LLAAA_044.d
Analysis Method: 537 (modified)
Date Collected: 06/21/2018 09:30
Extraction Method: 3535
Date Extracted: 07/02/2018 16:10
Sample wt/vol: 277.1(mL)
Date Analyzed: 07/06/2018 19:11
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 232788
Units: ug/L

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00992	13C4 PFBA	99		25-150
STL01893	13C5 PFPeA	95		25-150
STL00993	13C2 PFHxA	93		25-150
STL01892	13C4-PFHpA	104		25-150
STL00990	13C4 PFOA	101		25-150
STL00995	13C5 PFNA	102		25-150
STL00996	13C2 PFDA	104		25-150
STL00997	13C2 PFUnA	100		25-150
STL00998	13C2 PFDoA	98		25-150
STL02116	13C2-PFTeDA	97		25-150
STL02337	13C3-PFBS	95		25-150
STL00994	18O2 PFHxS	105		25-150
STL00991	13C4 PFOS	104		25-150
STL01056	13C8 FOSA	87		25-150
STL02118	d3-NMeFOSAA	97		25-150
STL02117	d5-NEtFOSAA	100		25-150
STL02279	M2-6:2FTS	113		25-150
STL02280	M2-8:2FTS	109		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180706-60751.b\2018.07.06LLAAA_044.d
Lims ID: 320-40571-A-44-A
Client ID: NF-FB-02
Sample Type: Client
Inject. Date: 06-Jul-2018 19:11:54 ALS Bottle#: 32 Worklist Smp#: 14
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-40571-a-44-a
Misc. Info.: Plate: 1 Rack: 5
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180706-60751.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 09-Jul-2018 10:24:46 Calib Date: 05-Jul-2018 09:38:17
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180705-60684.b\2018.07.05LLICALAA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK010

First Level Reviewer: mongkols Date: 09-Jul-2018 10:24:46

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.425	1.424	0.001	0.537	6746482	2.47		99.0	25939	
2 Perfluorobutyric acid										M
212.90 > 169.00	1.425	1.433	-0.008	1.000	71219	0.0258			25.7	M
D 3 13C5-PFPeA										
267.90 > 223.00	1.703	1.702	0.001	0.642	4769534	2.36		94.5	55395	
D 47 13C3-PFBS										
301.90 > 83.00	1.739	1.738	0.001	0.655	106412	2.20		94.8	803	
D 7 13C2 PFHxA										
315.00 > 270.00	1.993	1.981	0.012	0.751	5007304	2.32		92.7	59953	
D 9 13C4-PFHpA										
367.00 > 322.00	2.307	2.293	0.014	0.870	4963734	2.59		104	48478	
D 11 18O2 PFHxS										
403.00 > 84.00	2.321	2.306	0.014	0.875	5850069	2.48		105	54124	
D 12 M2-6:2FTS										
429.00 > 81.00	2.629	2.627	0.002	0.991	1155404	2.68		113	18365	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.629	2.634	-0.005	1.000	15653	0.0205			96.0	
D 14 13C4 PFOA										
417.00 > 372.00	2.653	2.652	0.001	1.000	4728240	2.52		101	50062	
* 62 13C2-PFOA										
415.00 > 370.00	2.653	2.658	-0.005		4924941	2.50			40179	
D 19 13C5 PFNA										
468.00 > 423.00	3.016	3.009	0.007	1.137	4064671	2.54		102	52380	
D 18 13C4 PFOS										
503.00 > 80.00	3.016	3.009	0.007	1.137	4186624	2.49		104	39947	
D 21 13C8 FOSA										
506.00 > 78.00	3.368	3.359	0.009	1.269	5075162	2.17		86.8	64791	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 26 M2-8:2FTS										
529.00 > 81.00	3.359	3.359	0.0	1.266	1251993	2.61		109	16096	
D 23 13C2 PFDA										
515.00 > 470.00	3.368	3.368	0.0	1.269	3585570	2.60		104	37614	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.527	3.518	0.009	1.329	1967581	2.42		97.0	27418	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.696	3.685	0.011	1.393	2011470	2.51		100	16568	
D 30 13C2 PFUnA										
565.00 > 520.00	3.696	3.696	0.0	1.393	2887619	2.50		99.8	38077	
D 36 13C2 PFDoA										
615.00 > 570.00	3.986	3.986	0.0	1.502	3036451	2.45		98.0	18537	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.489	4.479	0.010	1.692	3652524	2.42		96.7	17058	

QC Flag Legend

Review Flags

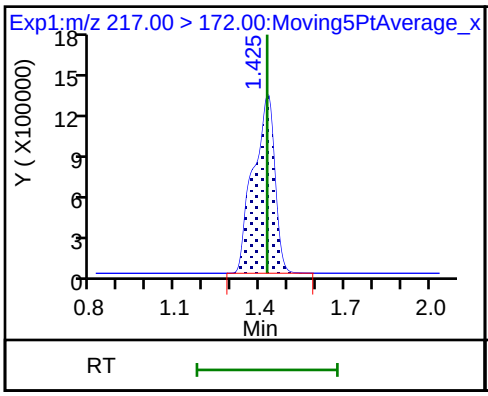
M - Manually Integrated

Report Date: 09-Jul-2018 10:24:47 Chrom Revision: 2.2 07-Jun-2018 07:41:54

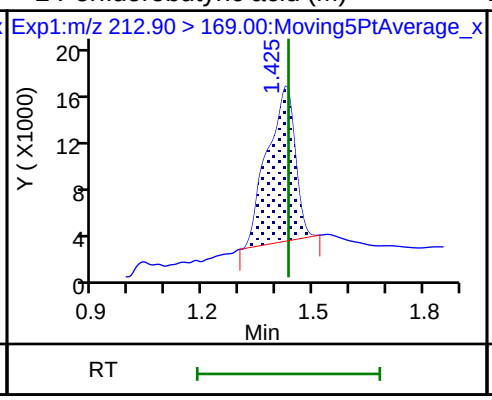
TestAmerica Sacramento

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180706-60751.b\2018.07.06LLAAA_044.d				
Injection Date:	06-Jul-2018 19:11:54	Instrument ID:	A8_N		
Lims ID:	320-40571-A-44-A	Lab Sample ID:	320-40571-44		
Client ID:	NF-FB-02				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	32	Worklist Smp#:	14
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		

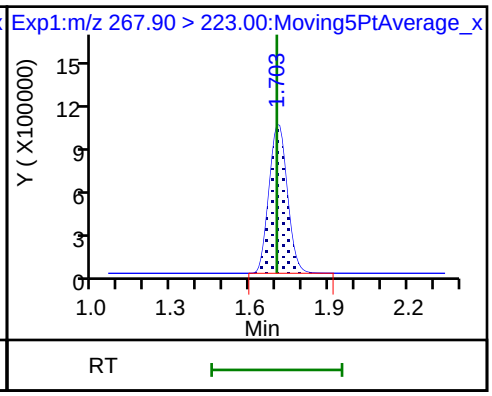
D 1 13C4 PFBA



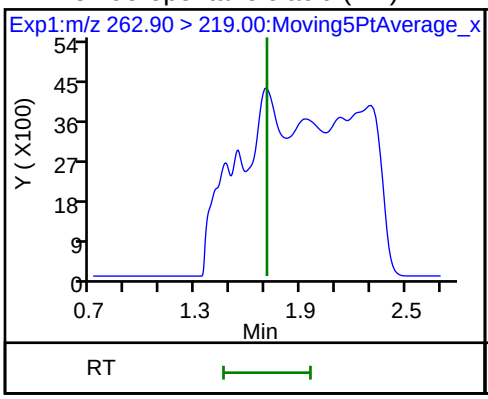
2 Perfluorobutyric acid (M)



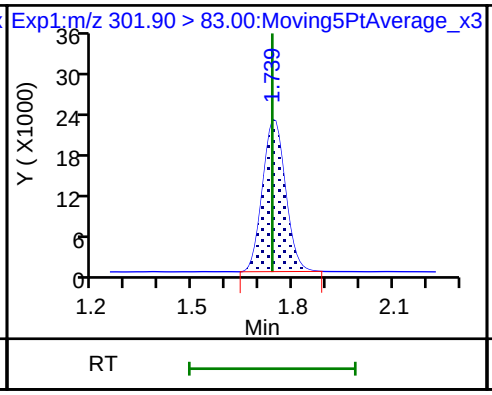
D 3 13C5-PFPeA



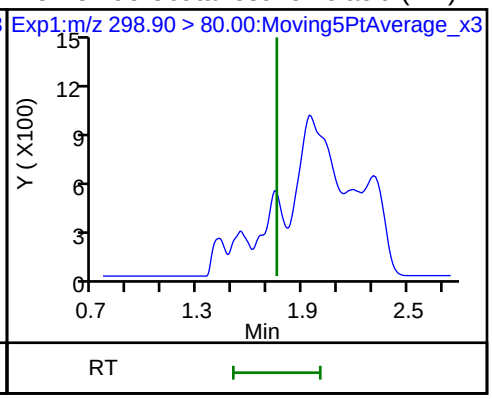
4 Perfluoropentanoic acid (ND)



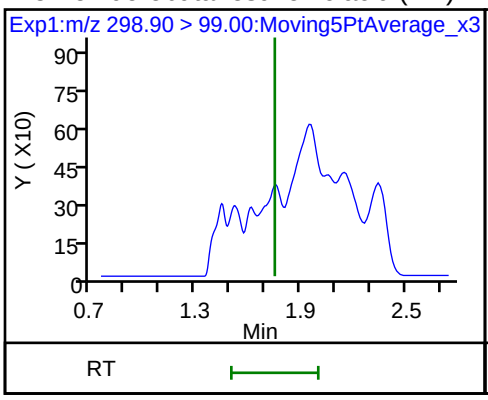
D 47 13C3-PFBS



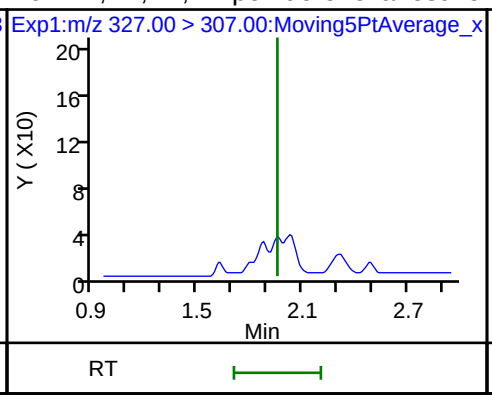
5 Perfluorobutanesulfonic acid (ND)



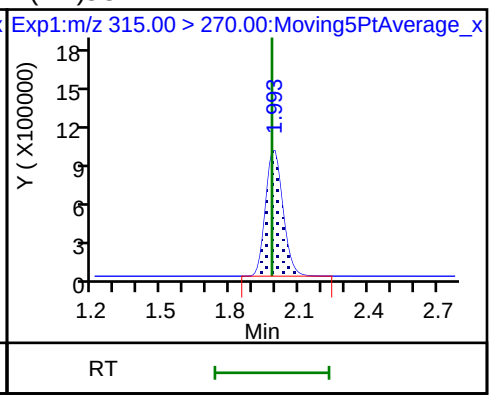
5 Perfluorobutanesulfonic acid (ND)



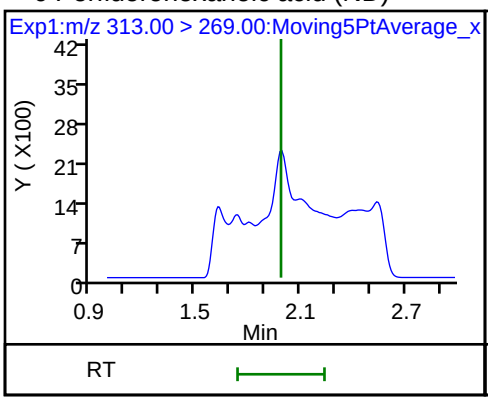
61 1H,1H,2H,2H-perfluorohexanesulfonic acid (ND)



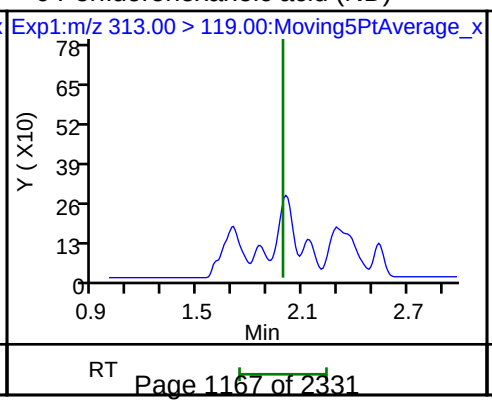
D 70 13C2 PFHxA



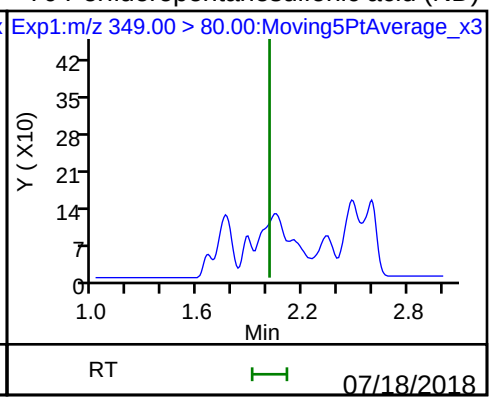
6 Perfluorohexanoic acid (ND)



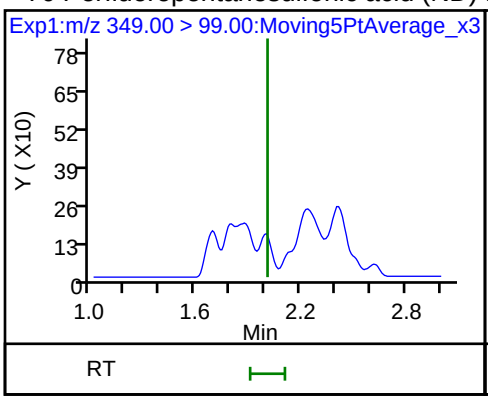
6 Perfluorohexanoic acid (ND)



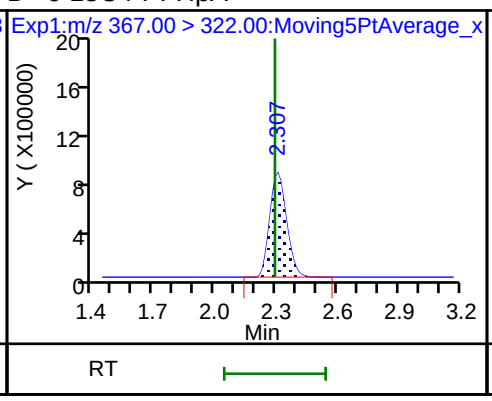
70 Perfluoropentanesulfonic acid (ND)



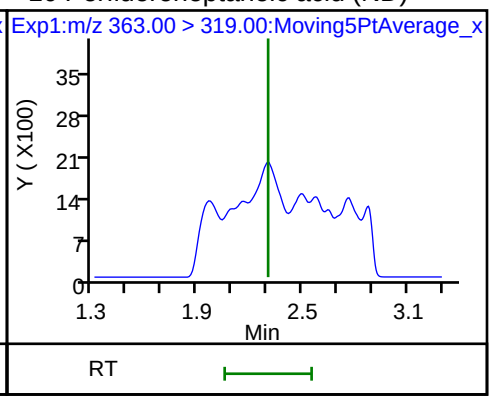
70 Perfluoropentanesulfonic acid (ND)



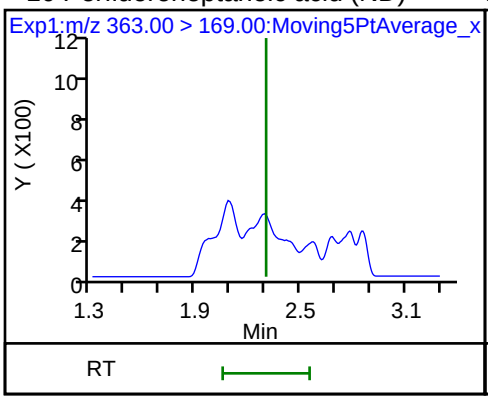
D 9 13C4-PFHpA



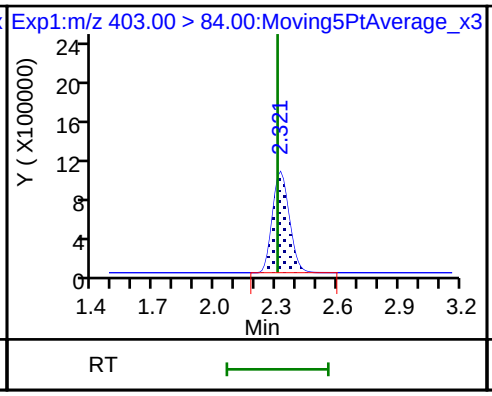
10 Perfluoroheptanoic acid (ND)



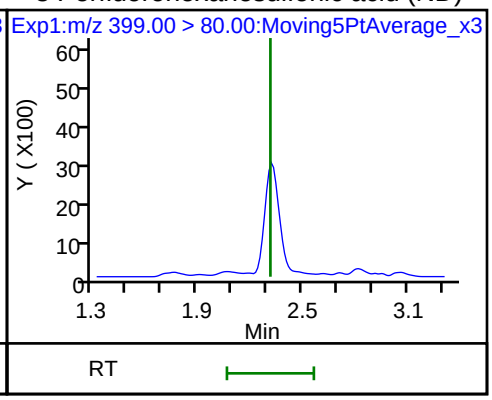
10 Perfluoroheptanoic acid (ND)



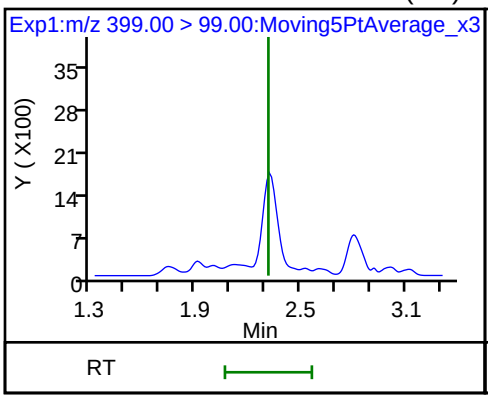
D 11 18O2 PFHxS



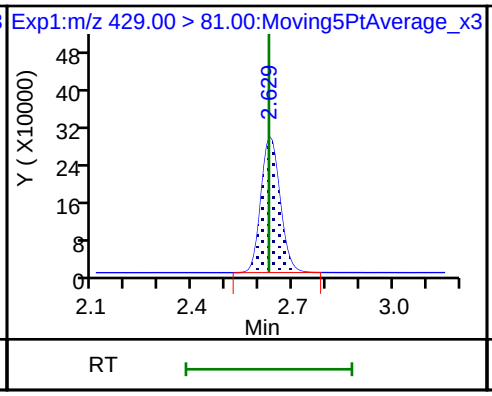
8 Perfluorohexanesulfonic acid (ND)



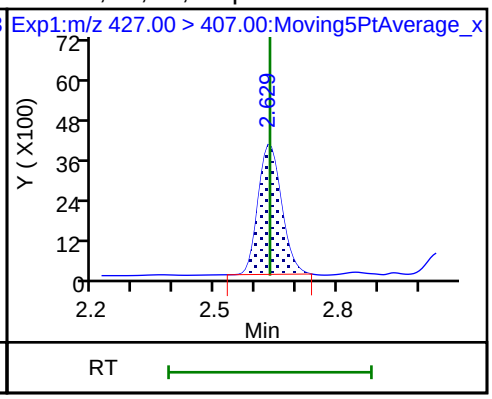
8 Perfluorohexanesulfonic acid (ND)



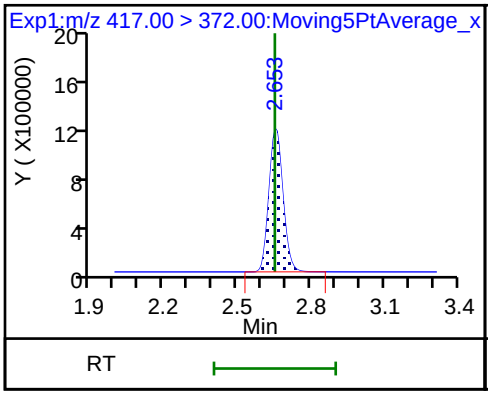
D 12 M2-6:2FTS



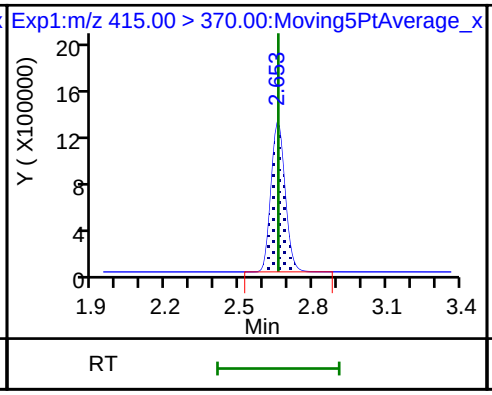
13 1H,1H,2H,2H-perfluorooctanesulfoni



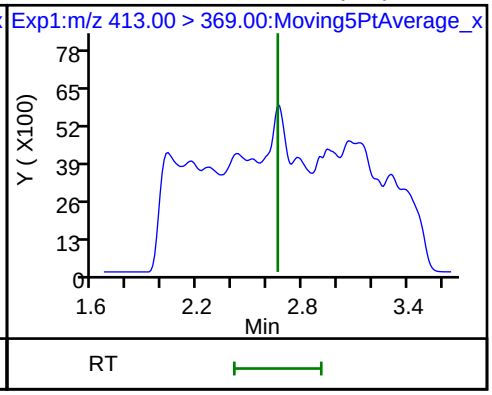
D 14 13C4 PFOA



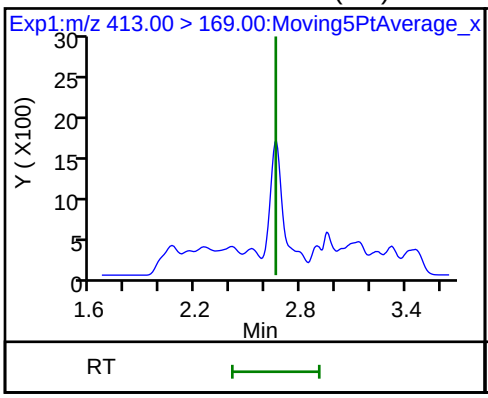
* 62 13C2-PFOA



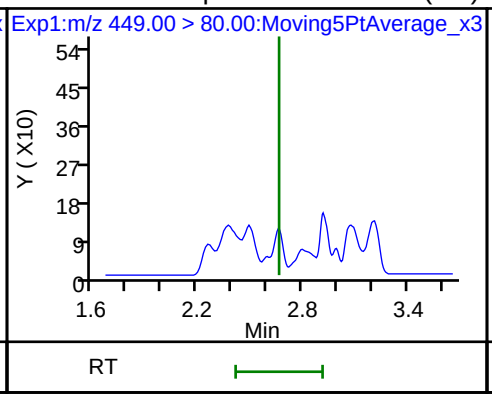
15 Perfluorooctanoic acid (ND)



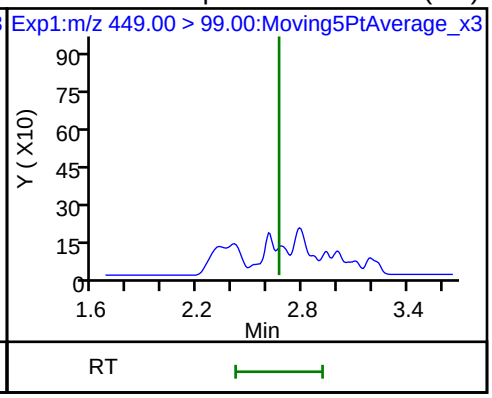
15 Perfluorooctanoic acid (ND)



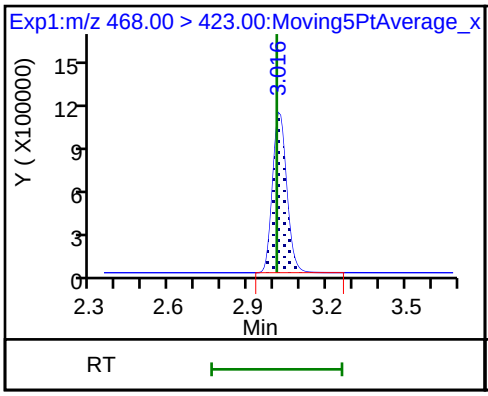
16 Perfluoroheptanesulfonic acid (ND)



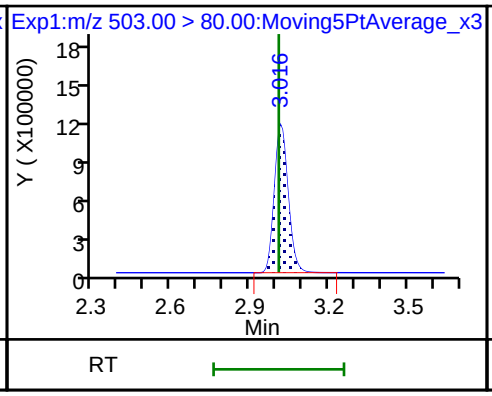
16 Perfluoroheptanesulfonic acid (ND)



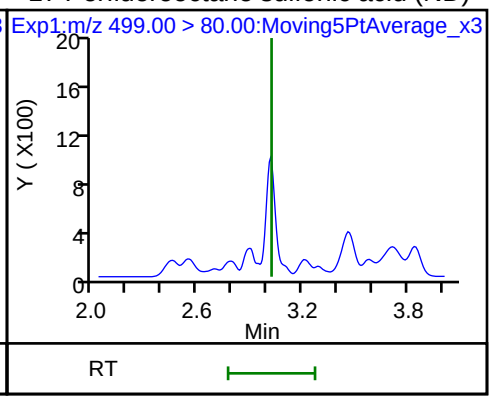
D 19 13C5 PFNA



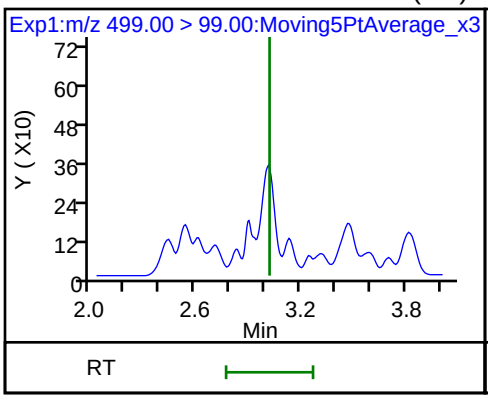
D 18 13C4 PFOS



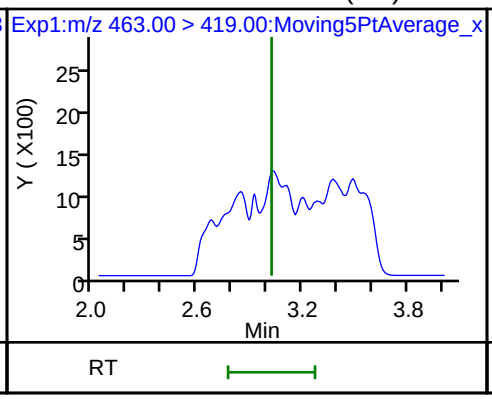
17 Perfluorooctane sulfonic acid (ND)



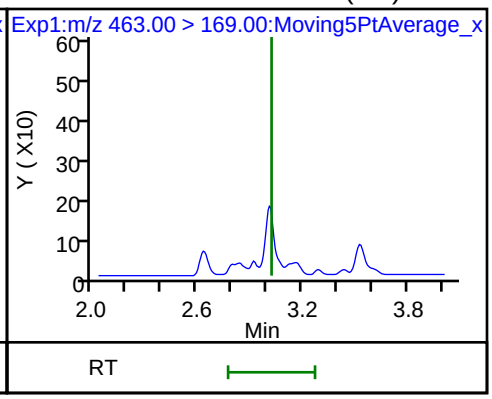
17 Perfluorooctane sulfonic acid (ND)



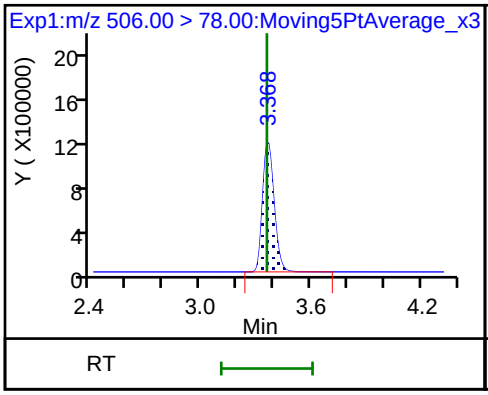
20 Perfluorononanoic acid (ND)



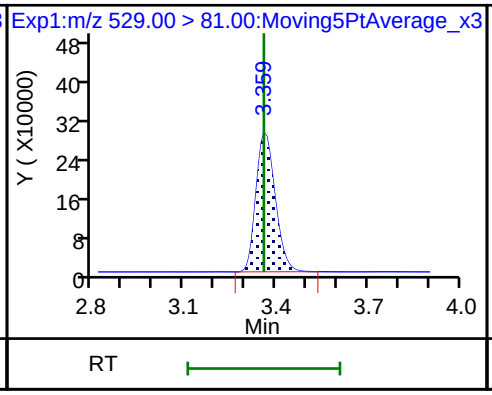
20 Perfluorononanoic acid (ND)



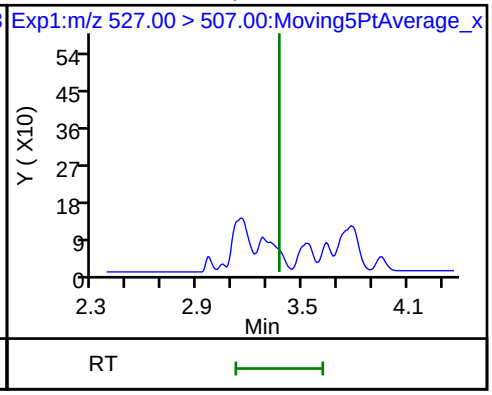
D 21 13C8 FOSA



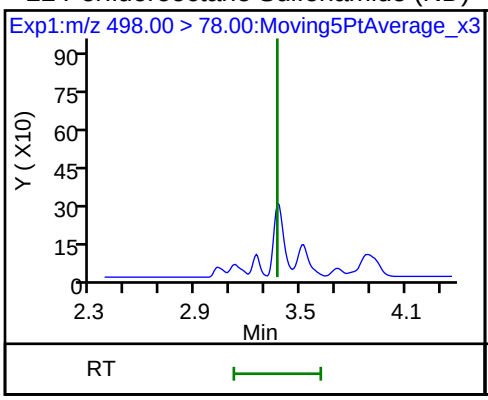
D 26 M2-8:2FTS



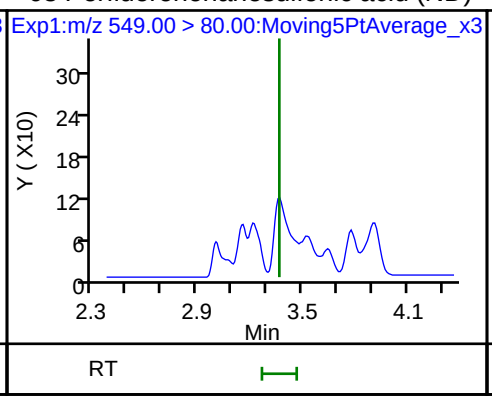
25 1H,1H,2H,2H-perfluorodecanesulfoni (ND)



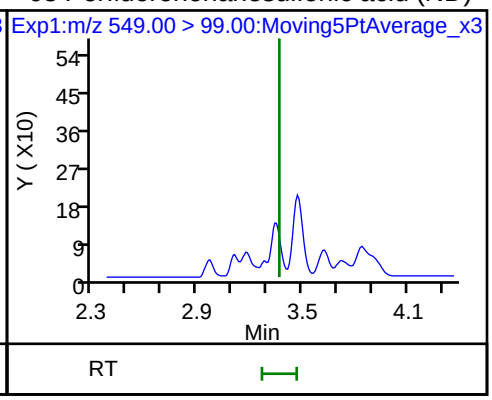
22 Perfluorooctane Sulfonamide (ND)



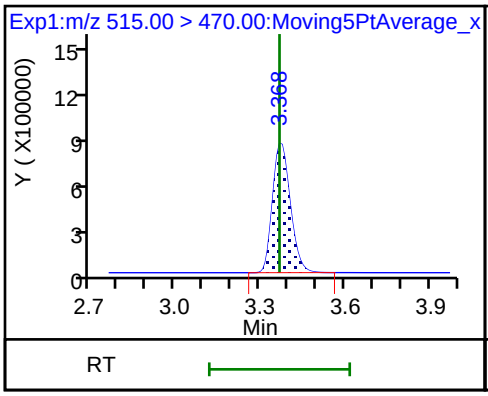
68 Perfluorononanesulfonic acid (ND)



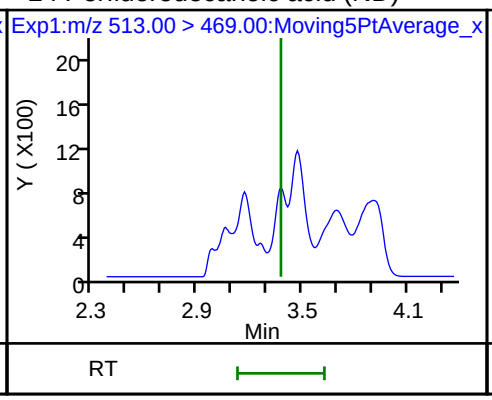
68 Perfluorononanesulfonic acid (ND)



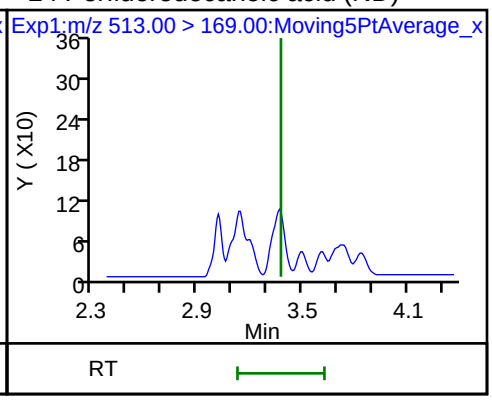
D 23 13C2 PFDA



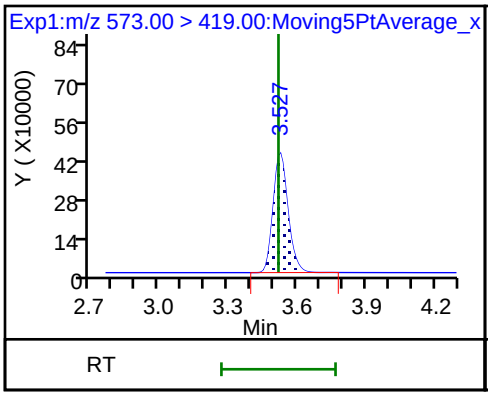
24 Perfluorodecanoic acid (ND)



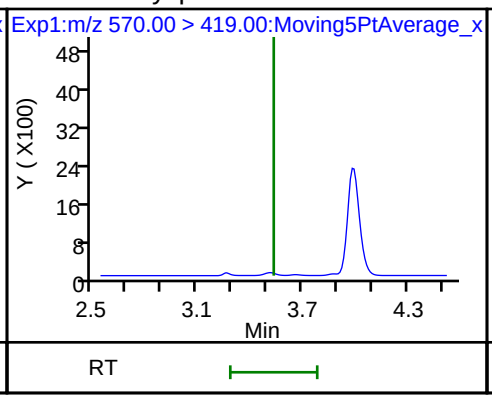
24 Perfluorodecanoic acid (ND)



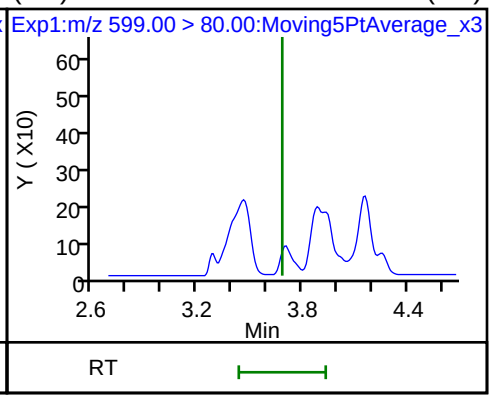
D 27 d3-NMeFOSAA



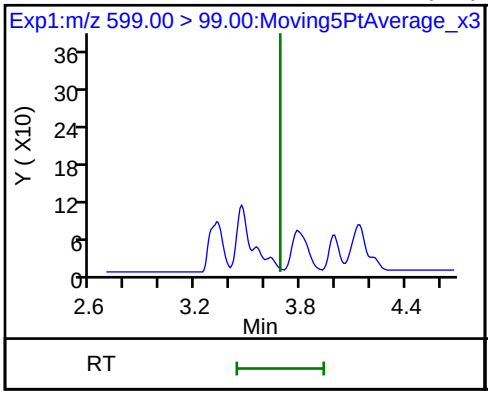
28 N-methyl perfluorooctane sulfonami (ND)



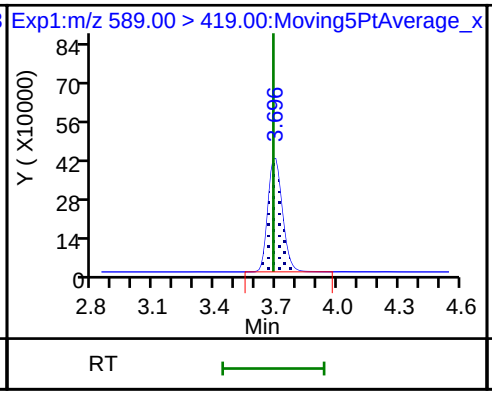
29 Perfluorodecane Sulfonic acid (ND)



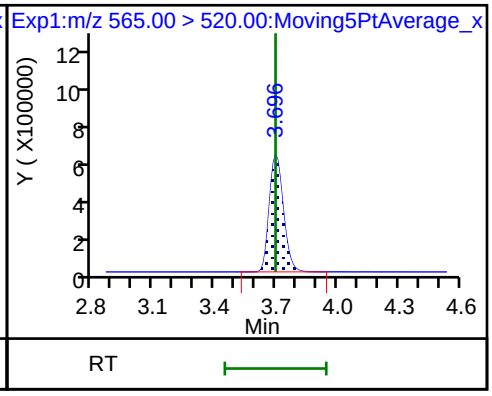
29 Perfluorodecane Sulfonic acid (ND)



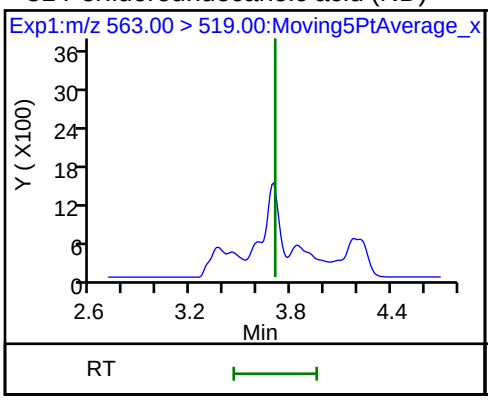
D 32 d5-NEtFOSAA



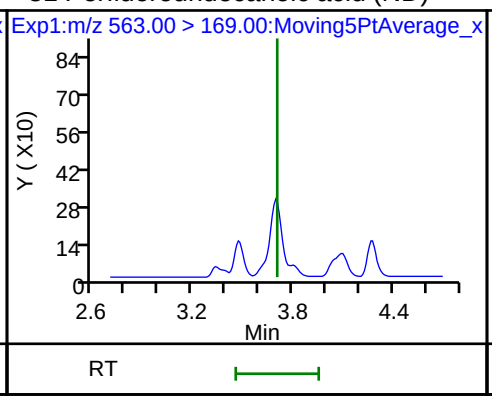
D 30 13C2 PFUnA



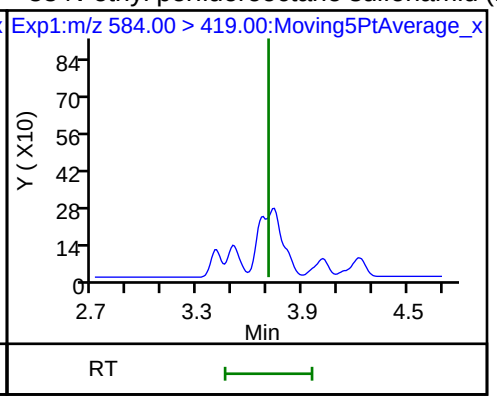
31 Perfluoroundecanoic acid (ND)



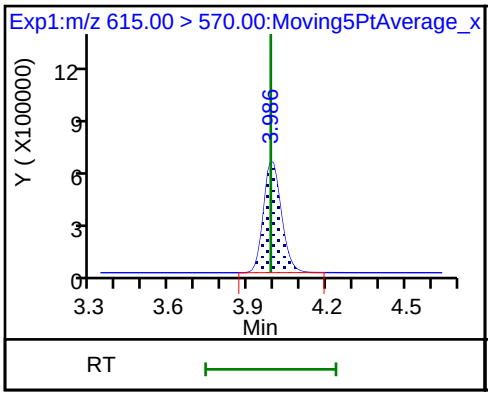
31 Perfluoroundecanoic acid (ND)



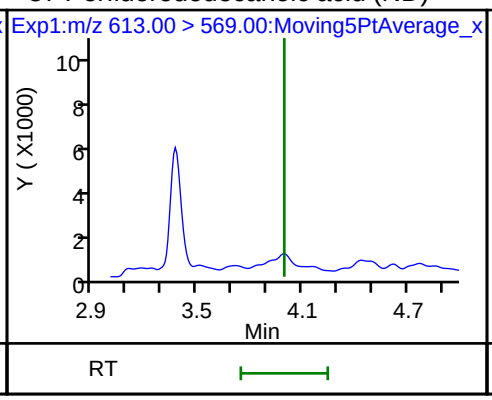
33 N-ethyl perfluorooctane sulfonamid (ND)



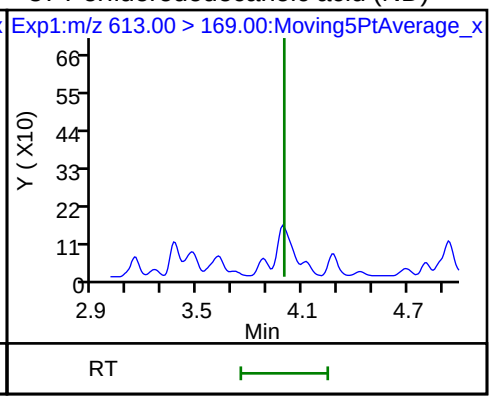
D 36 13C2 PFDoA



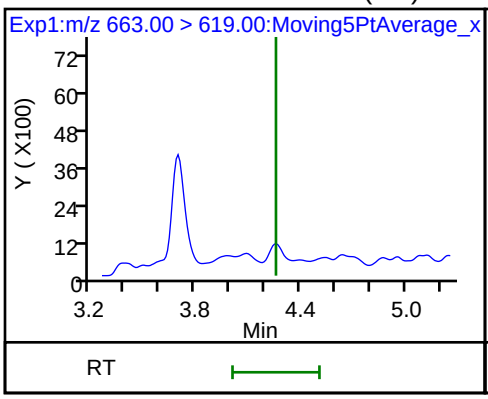
37 Perfluorododecanoic acid (ND)



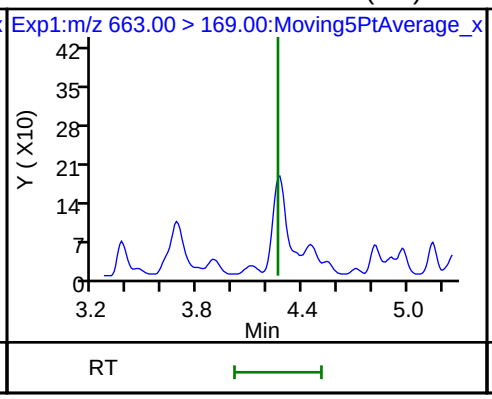
37 Perfluorododecanoic acid (ND)



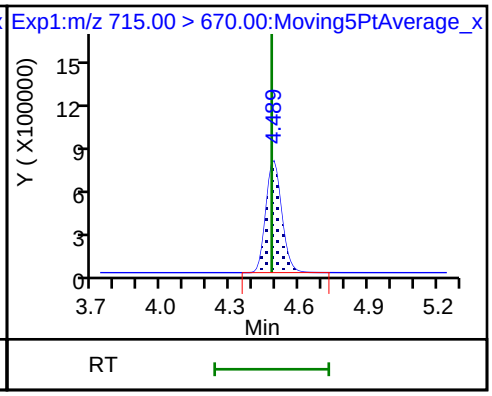
41 Perfluorotridecanoic acid (ND)



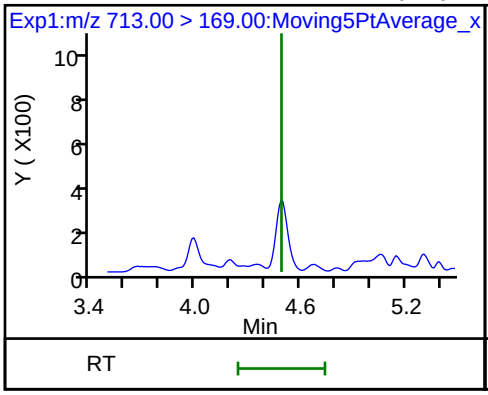
41 Perfluorotridecanoic acid (ND)



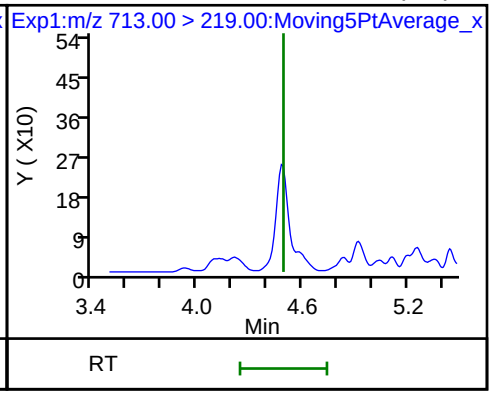
D 43 13C2-PFTeDA



42 Perfluorotetradecanoic acid (ND)



42 Perfluorotetradecanoic acid (ND)



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

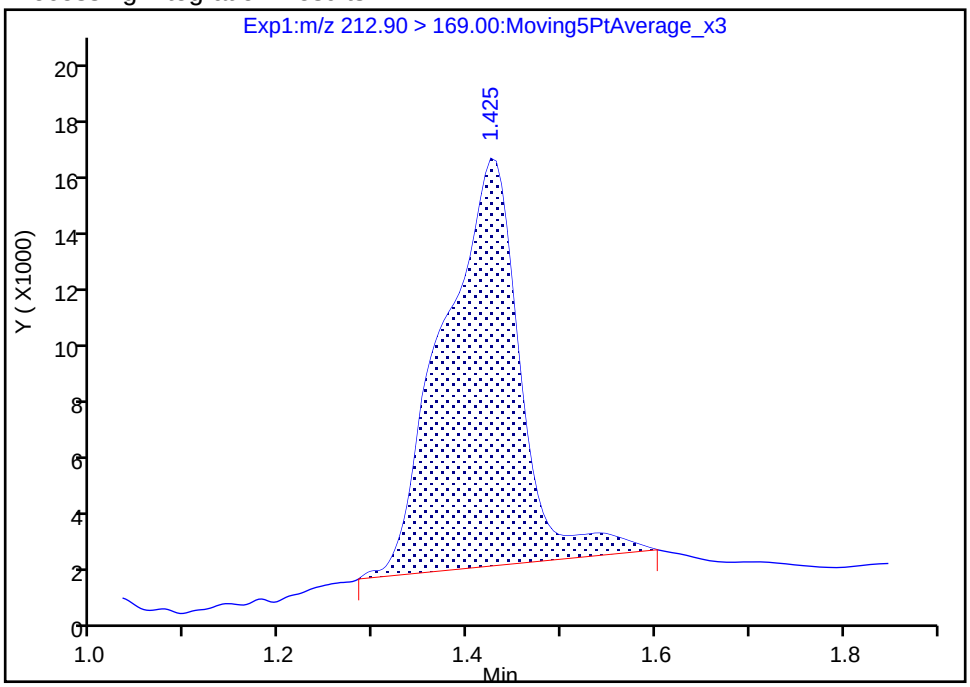
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180706-60751.b\2018.07.06LLAAA_044.d				
Injection Date:	06-Jul-2018 19:11:54	Instrument ID:	A8_N		
Lims ID:	320-40571-A-44-A	Lab Sample ID:	320-40571-44		
Client ID:	NF-FB-02				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	32	Worklist Smp#:	14
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

2 Perfluorobutyric acid, CAS: 375-22-4

Signal: 1

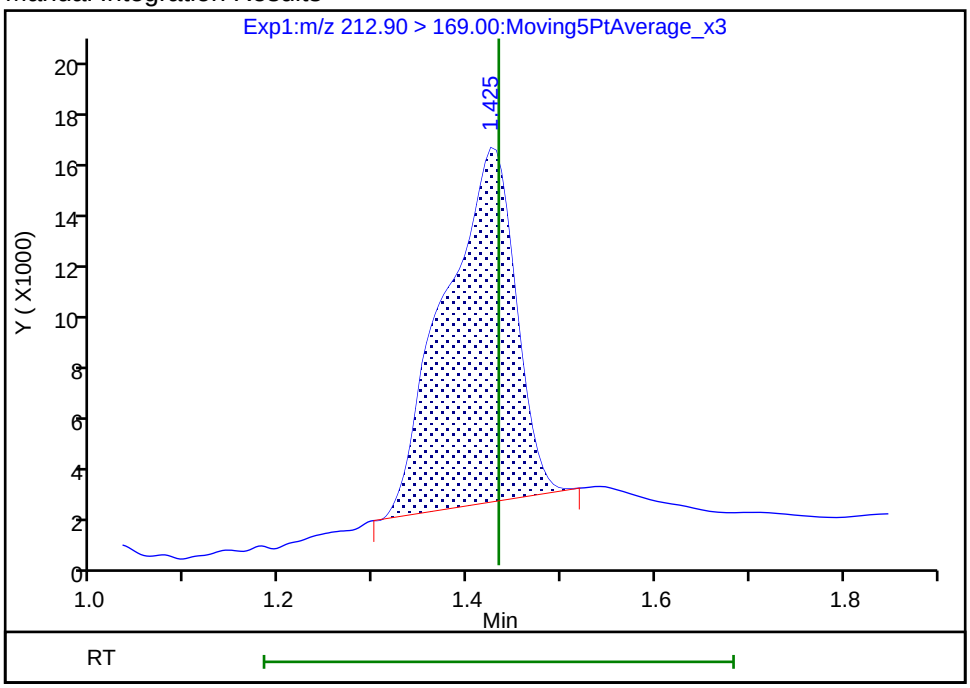
Processing Integration Results

RT: 1.42
Area: 80426
Amount: 0.029178
Amount Units: ng/ml



Manual Integration Results

RT: 1.42
Area: 71219
Amount: 0.025837
Amount Units: ng/ml



Reviewer: mongkols, 09-Jul-2018 10:24:24

Audit Action: Manually Integrated Audit Reason: Baseline

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NFMW1-GW-01
Lab Sample ID: 320-40571-45
Matrix: Water
Lab File ID: 2018.07.06LLC_043.d
Analysis Method: 537 (modified)
Date Collected: 06/18/2018 15:15
Extraction Method: 3535
Date Extracted: 07/02/2018 14:58
Sample wt/vol: 261.5(mL)
Date Analyzed: 07/07/2018 04:51
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 232800
Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	0.017	B	0.0019	0.00033
2706-90-3	Perfluoropentanoic acid (PFPeA)	0.014		0.0019	0.00047
307-24-4	Perfluorohexanoic acid (PFHxA)	0.011		0.0019	0.00055
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.0053		0.0019	0.00024
335-67-1	Perfluorooctanoic acid (PFOA)	0.0087		0.0019	0.00081
375-95-1	Perfluorononanoic acid (PFNA)	0.00037	J	0.0019	0.00026
335-76-2	Perfluorodecanoic acid (PFDA)	ND		0.0019	0.00030
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		0.0019	0.0011
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		0.0019	0.00053
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		0.0019	0.0012
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		0.0019	0.00028
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.011		0.0019	0.00019
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	0.0019		0.0019	0.00029
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.0053	B	0.0019	0.00016
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.0019	0.00018
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.0011	J	0.0019	0.00052
8789-57-2	Perfluorononanesulfonic acid (PFNS)	ND		0.0019	0.00015
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		0.0019	0.00031
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		0.0019	0.00033
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.019	0.0030
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.019	0.0018
757124-72-4	4:2 FTS	ND		0.019	0.0050
27619-97-2	6:2 FTS	ND		0.019	0.0019
39108-34-4	8:2 FTS	ND		0.019	0.0019

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NFMW1-GW-01
Lab Sample ID: 320-40571-45
Matrix: Water
Lab File ID: 2018.07.06LLC_043.d
Analysis Method: 537 (modified)
Date Collected: 06/18/2018 15:15
Extraction Method: 3535
Date Extracted: 07/02/2018 14:58
Sample wt/vol: 261.5(mL)
Date Analyzed: 07/07/2018 04:51
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 232800
Units: ug/L

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00992	13C4 PFBA	38		25-150
STL01893	13C5 PFPeA	63		25-150
STL00993	13C2 PFHxA	79		25-150
STL01892	13C4-PFHpA	95		25-150
STL00990	13C4 PFOA	101		25-150
STL00995	13C5 PFNA	103		25-150
STL00996	13C2 PFDA	103		25-150
STL00997	13C2 PFUnA	91		25-150
STL00998	13C2 PFDoA	89		25-150
STL02116	13C2-PFTeDA	88		25-150
STL02337	13C3-PFBS	82		25-150
STL00994	18O2 PFHxS	108		25-150
STL00991	13C4 PFOS	107		25-150
STL01056	13C8 FOSA	83		25-150
STL02118	d3-NMeFOSAA	95		25-150
STL02117	d5-NEtFOSAA	91		25-150
STL02279	M2-6:2FTS	141		25-150
STL02280	M2-8:2FTS	118		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\2018.07.06LLC_043.d
Lims ID: 320-40571-A-45-A
Client ID: NFMW1-GW-01
Sample Type: Client
Inject. Date: 07-Jul-2018 04:51:22 ALS Bottle#: 29 Worklist Smp#: 31
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-40571-a-45-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 09-Jul-2018 14:48:17 Calib Date: 05-Jul-2018 09:38:17
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180705-60684.b\2018.07.05LLICALAA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK010

First Level Reviewer: mongkols Date: 09-Jul-2018 14:48:17

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.430	1.428	0.002	0.538	2798411	0.9458		37.8	12258	
2 Perfluorobutyric acid										M
212.90 > 169.00	1.430	1.428	0.002	1.000	494621	0.4326			74.5	M
4 Perfluoropentanoic acid										M
262.90 > 219.00	1.711	1.698	0.013	1.000	615966	0.3756			48.3	M
D 3 13C5-PFPeA										
267.90 > 223.00	1.711	1.707	0.004	0.643	3443172	1.57		62.9	13249	
D 47 13C3-PFBS										
301.90 > 83.00	1.747	1.743	0.004	0.657	99986	1.91		82.1	113	
5 Perfluorobutanesulfonic acid										M
298.90 > 80.00	1.747	1.743	0.004	1.000	973480	0.2986			52.1	M
298.90 > 99.00	1.747	1.743	0.004	1.000	435291		2.24(1.25-3.74)		275	
6 Perfluorohexanoic acid										M
313.00 > 269.00	1.992	1.978	0.014	1.000	545220	0.2899			63.8	M
313.00 > 119.00	1.992	1.978	0.014	1.000	44550		12.24(5.03-15.10)		176	
D 7 13C2 PFHxA										
315.00 > 270.00	1.992	1.988	0.004	0.749	4617403	1.97		78.8	47471	
70 Perfluoropentanesulfonic acid										M
349.00 > 80.00	2.015	2.000	0.015	1.153	139275	0.0499			25.6	M
349.00 > 99.00	2.015	2.000	0.015	1.153	64957		2.14(1.36-4.07)		61.3	
D 9 13C4-PFHpA										
367.00 > 322.00	2.307	2.302	0.005	0.867	4922466	2.37		94.6	39177	
10 Perfluoroheptanoic acid										M
363.00 > 319.00	2.307	2.303	0.004	1.000	307220	0.1381			70.4	M
363.00 > 169.00	2.307	2.303	0.004	1.000	121509		2.53(1.13-3.40)		575	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.320	2.303	0.017	1.000	443693	0.1383			42.0	
399.00 > 99.00	2.320	2.303	0.017	1.000	138036		3.21(1.50-4.49)		149	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 11 18O2 PFHxS										
403.00 > 84.00	2.320	2.315	0.005	0.872	6562931	2.56		108	60771	
D 12 M2-6:2FTS										
429.00 > 81.00	2.637	2.626	0.011	0.991	1565516	3.35		141	1994	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.637	2.627	0.011	1.000	24793	0.0240			132	
D 14 13C4 PFOA										
417.00 > 372.00	2.660	2.650	0.010	1.000	5161749	2.53		101	66061	
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.660	2.651	0.009	1.000	559136	0.2284			98.6	M
413.00 > 169.00	2.660	2.651	0.009	1.000	357379		1.56(0.84-2.52)		814	M
* 62 13C2-PFOA										
415.00 > 370.00	2.660	2.651	0.009		5343825	2.50			31753	
17 Perfluorooctane sulfonic acid										M
499.00 > 80.00	2.903	3.008	-0.105	0.960	65399	0.0287			57.8	M
499.00 > 99.00	2.918	3.008	-0.090	0.965	4977		13.14(2.31-6.93)		32.1	M
20 Perfluorononanoic acid										
463.00 > 419.00	3.029	3.015	0.014	1.000	18567	0.009693			22.6	
463.00 > 169.00	3.022	3.015	0.007	0.998	5219		3.56(1.90-5.69)		68.6	
D 18 13C4 PFOS										
503.00 > 80.00	3.022	3.015	0.007	1.136	4661017	2.55		107	7463	
D 19 13C5 PFNA										
468.00 > 423.00	3.029	3.015	0.014	1.139	4443800	2.56		103	44474	
D 26 M2-8:2FTS										
529.00 > 81.00	3.367	3.367	0.0	1.266	1472917	2.83		118	7105	
D 21 13C8 FOSA										
506.00 > 78.00	3.367	3.367	0.0	1.266	5270662	2.08		83.1	33558	
D 23 13C2 PFDA										
515.00 > 470.00	3.385	3.376	0.009	1.273	3864250	2.59		103	48554	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.535	3.525	0.010	1.329	2091619	2.38		95.0	25548	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.705	3.694	0.011	1.000	23292	0.0239			71.1	
563.00 > 169.00	3.705	3.694	0.011	1.000	6513		3.58(2.12-6.36)		80.9	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.695	3.694	0.0	1.389	1984270	2.28		91.2	16245	
D 30 13C2 PFUnA										
565.00 > 520.00	3.705	3.705	0.0	1.393	2869986	2.29		91.4	39691	
D 36 13C2 PFDoA										
615.00 > 570.00	3.995	3.995	0.0	1.502	3002762	2.23		89.3	18197	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.499	4.489	0.010	1.691	3618625	2.21		88.3	15991	

QC Flag Legend

Review Flags

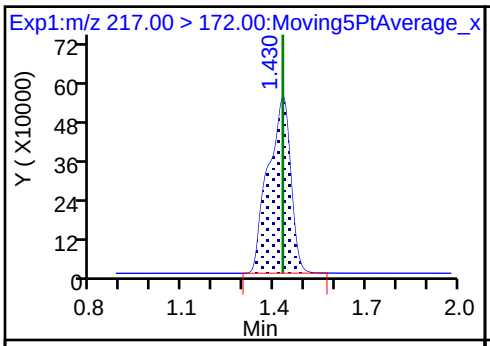
M - Manually Integrated

Report Date: 09-Jul-2018 14:48:18 Chrom Revision: 2.2 07-Jun-2018 07:41:54

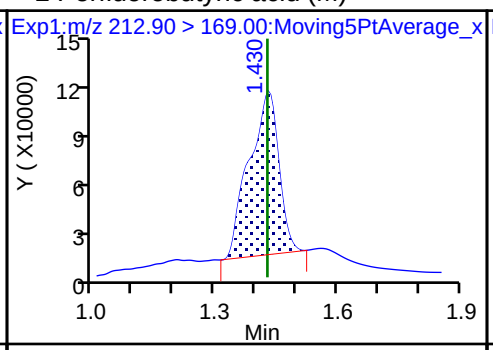
TestAmerica Sacramento

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\2018.07.06LLC_043.d				
Injection Date:	07-Jul-2018 04:51:22	Instrument ID:	A8_N		
Lims ID:	320-40571-A-45-A	Lab Sample ID:	320-40571-45		
Client ID:	NFMW1-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	29	Worklist Smp#:	31
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		

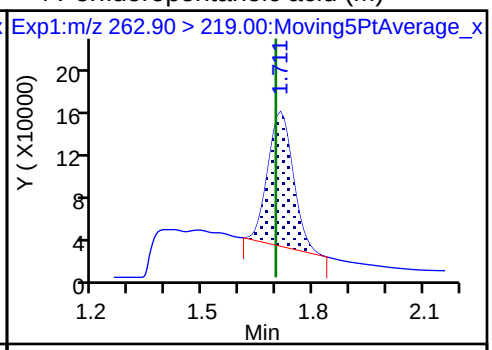
D 1 13C4 PFBA



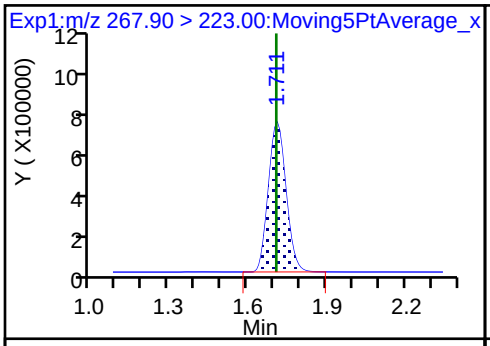
2 Perfluorobutyric acid (M)



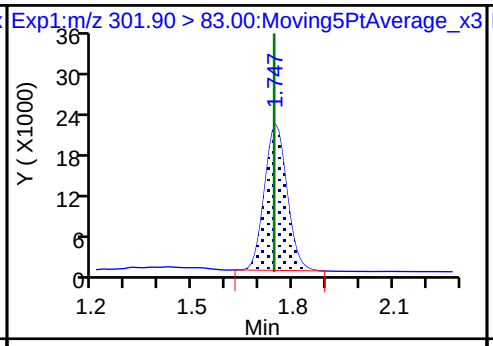
4 Perfluoropentanoic acid (M)



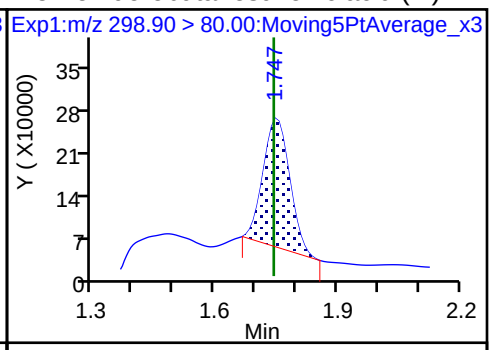
D 3 13C5-PFPeA



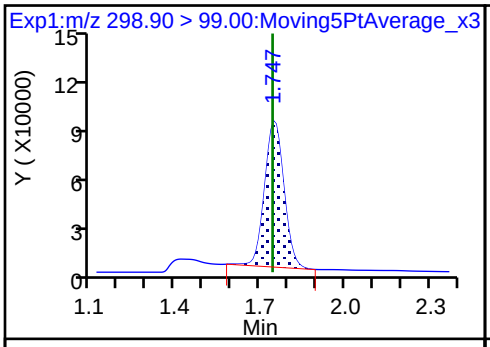
D 47 13C3-PFBS



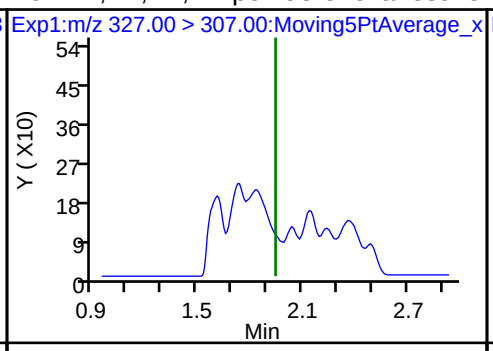
5 Perfluorobutanesulfonic acid (M)



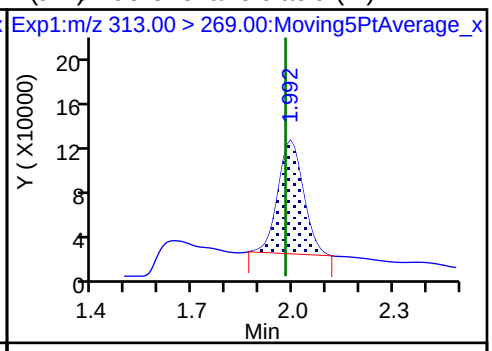
5 Perfluorobutanesulfonic acid



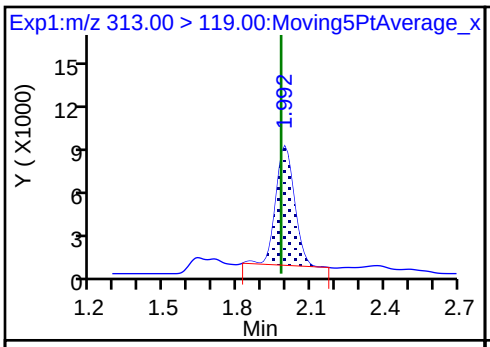
61 1H,1H,2H,2H-perfluorohexanesulfoni (ND)



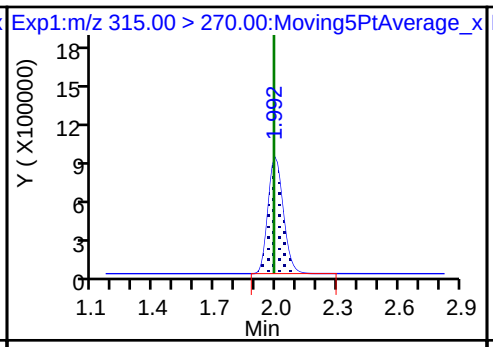
6 Perfluorohexanoic acid (M)



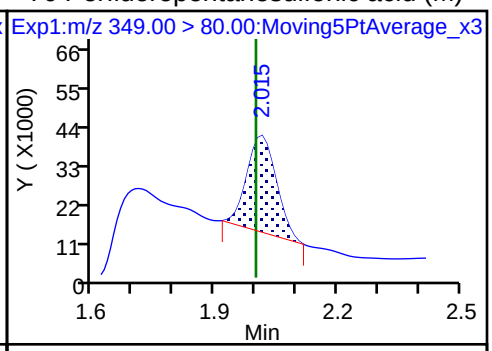
6 Perfluorohexanoic acid



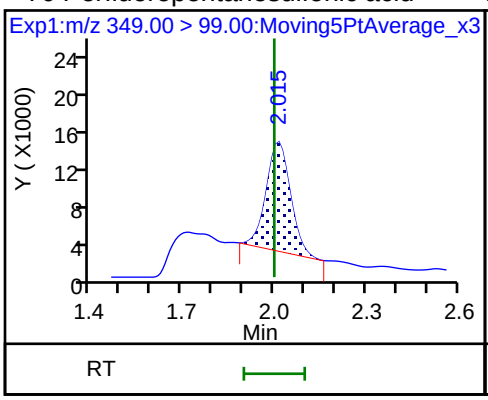
D 7 13C2 PFHxA



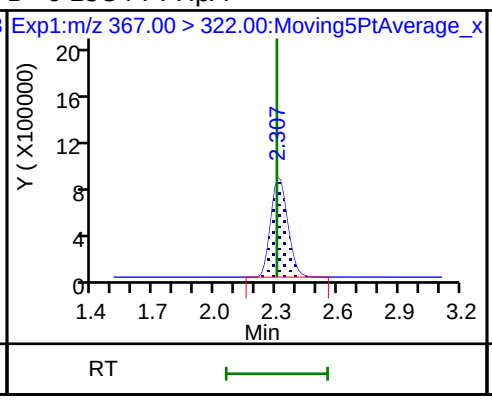
70 Perfluoropentanesulfonic acid (M)



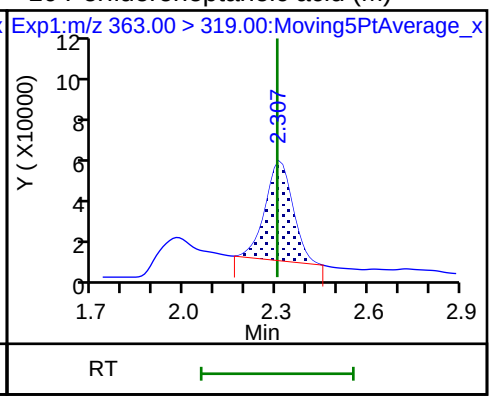
70 Perfluoropentanesulfonic acid



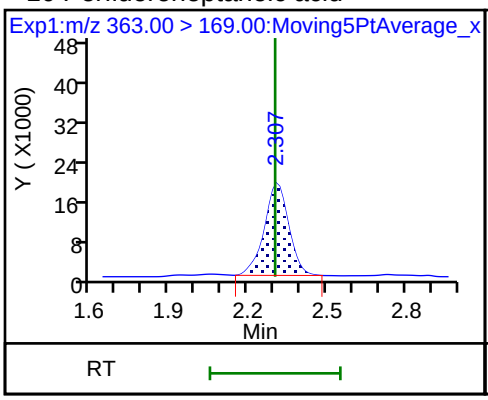
D 9 13C4-PFHpA



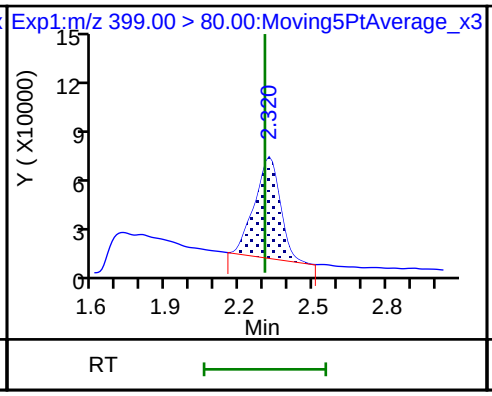
10 Perfluoroheptanoic acid (M)



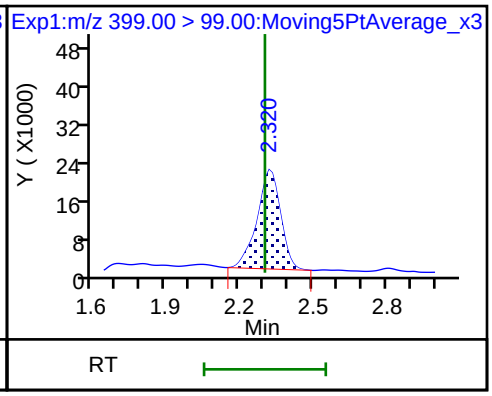
10 Perfluoroheptanoic acid



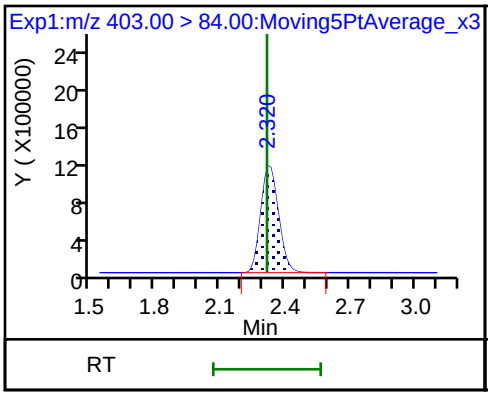
8 Perfluorohexanesulfonic acid



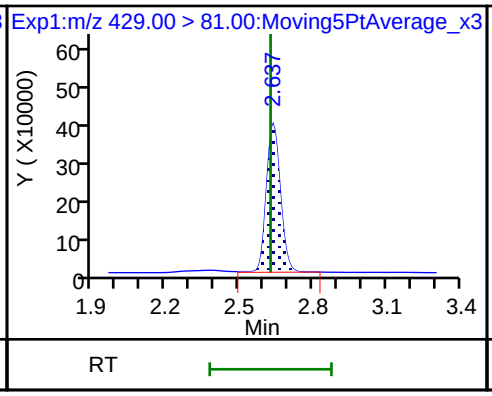
8 Perfluorohexanesulfonic acid



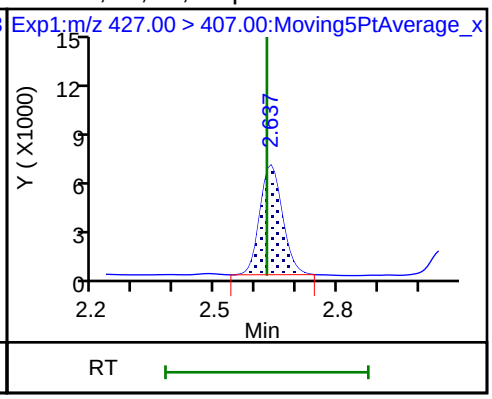
D 11 18O2 PFHxS



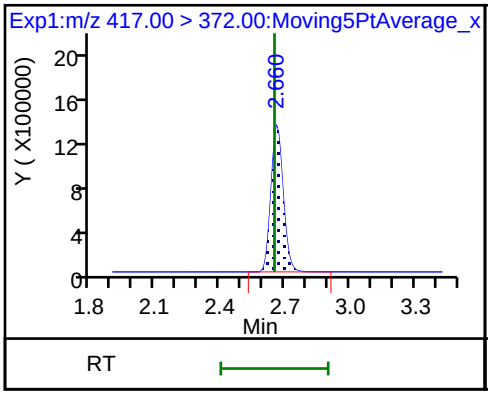
D 12 M2-6:2FTS



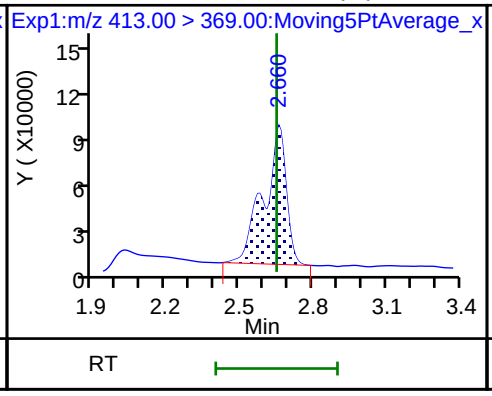
13 1H,1H,2H,2H-perfluorooctanesulfoni



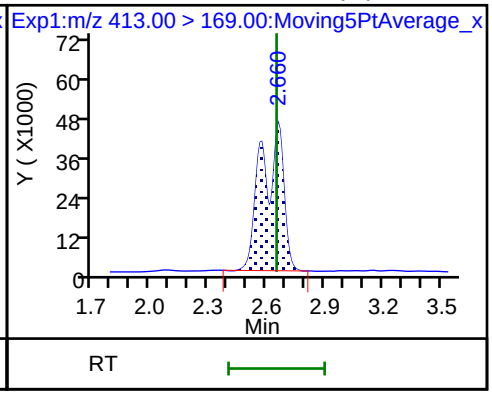
D 14 13C4 PFOA



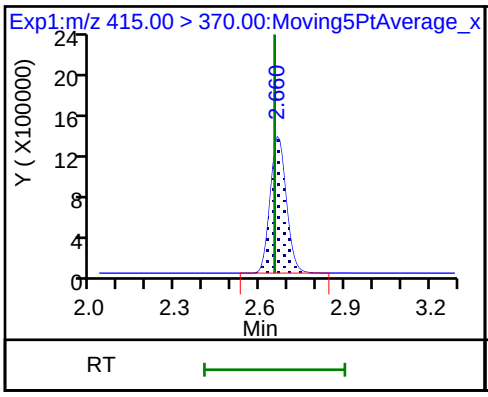
15 Perfluorooctanoic acid (M)



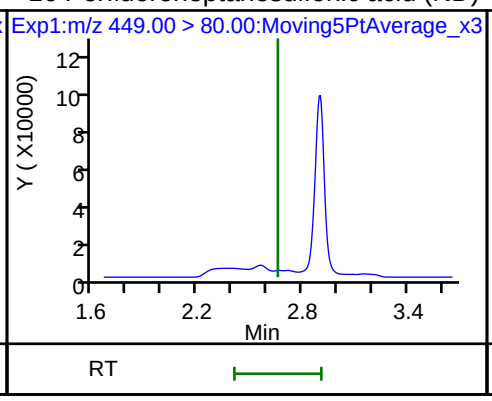
15 Perfluorooctanoic acid (M)



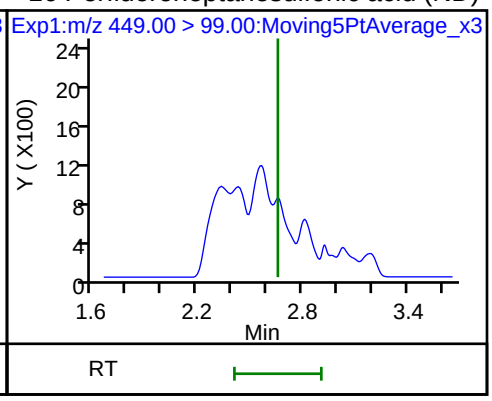
* 62 13C2-PFOA



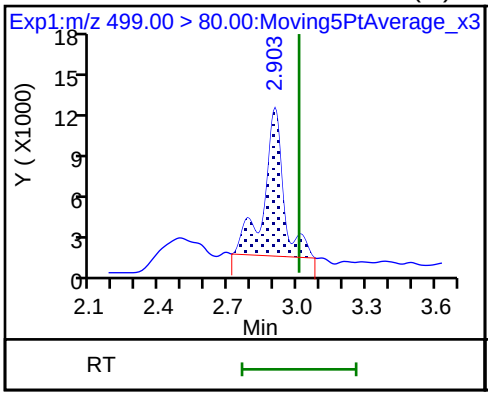
16 Perfluoroheptanesulfonic acid (ND)



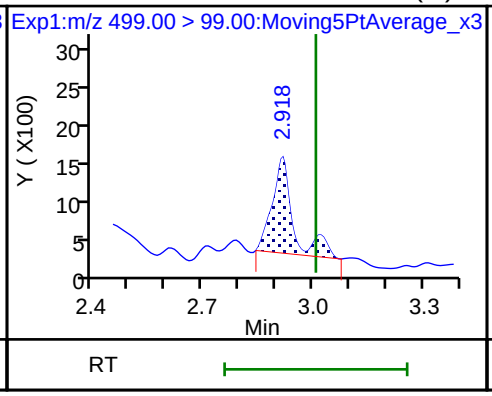
16 Perfluoroheptanesulfonic acid (ND)



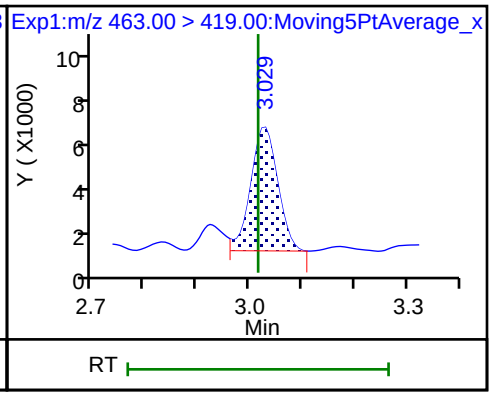
17 Perfluorooctane sulfonic acid (M)



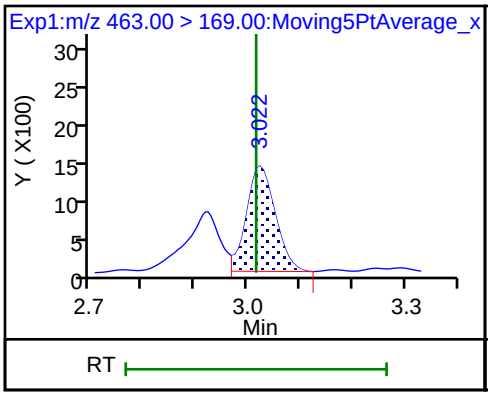
17 Perfluorooctane sulfonic acid (M)



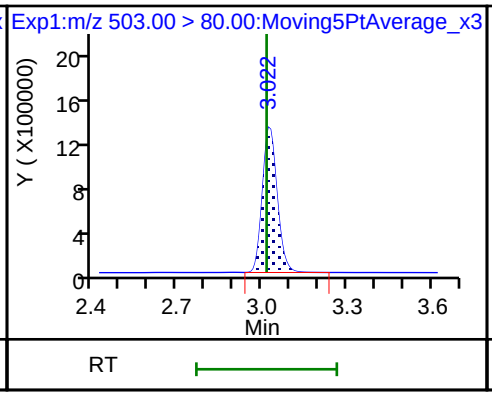
20 Perfluorononanoic acid



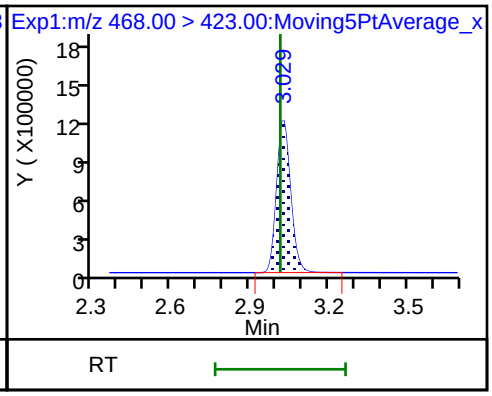
20 Perfluorononanoic acid



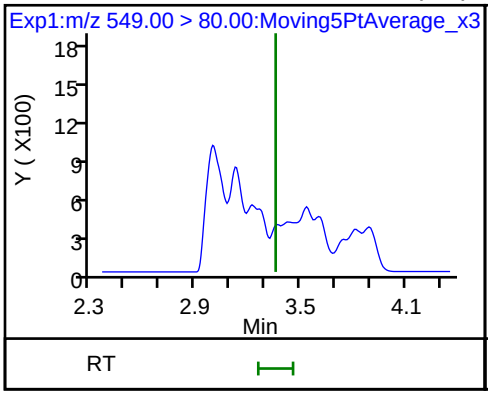
D 18 13C4 PFOS



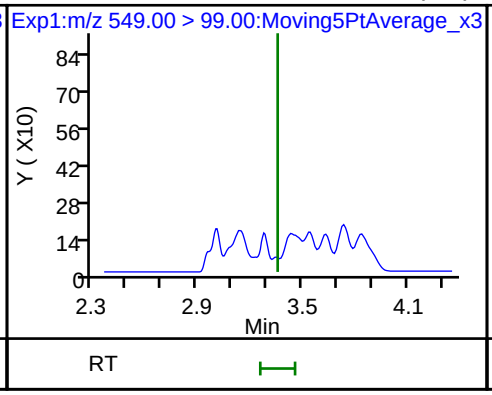
D 19 13C5 PFNA



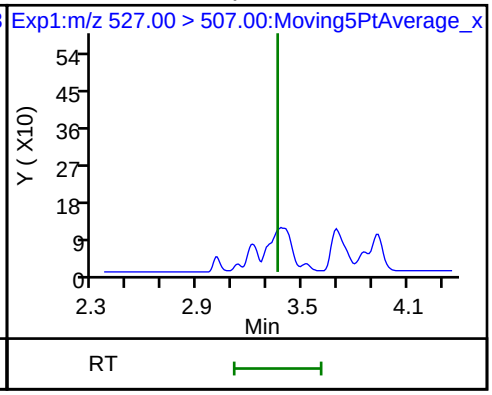
68 Perfluorononanesulfonic acid (ND)



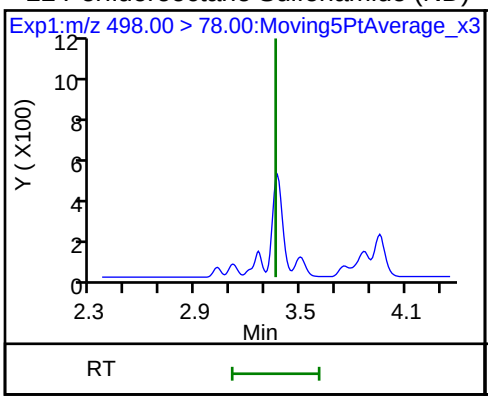
68 Perfluorononanesulfonic acid (ND)



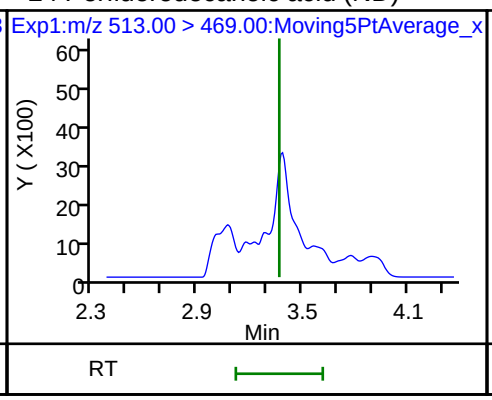
25 1H,1H,2H,2H-perfluorodecanesulfoni (ND)



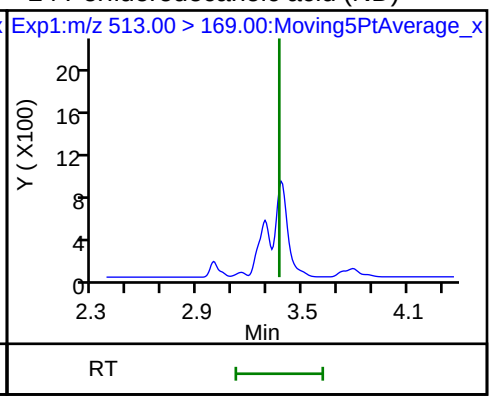
22 Perfluorooctane Sulfonamide (ND)



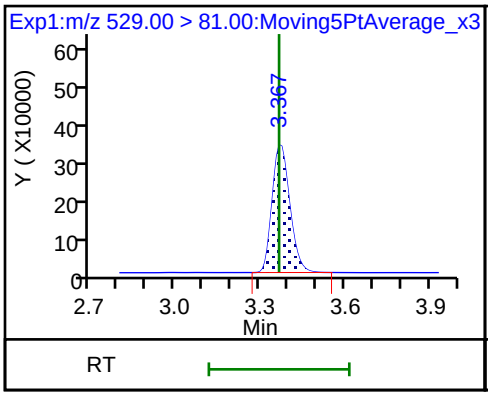
24 Perfluorodecanoic acid (ND)



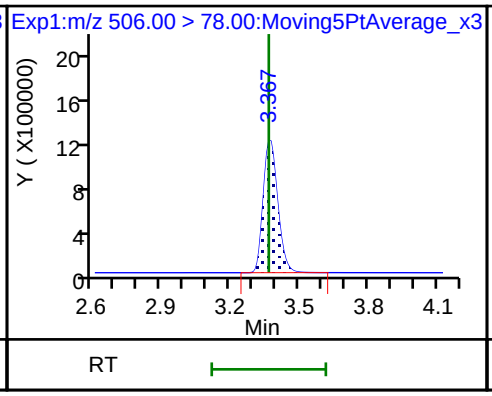
24 Perfluorodecanoic acid (ND)



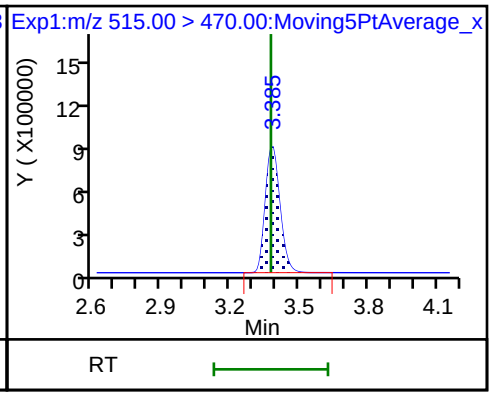
D 26 M2-8:2FTS



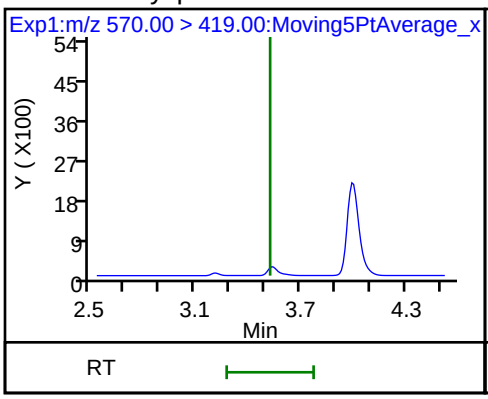
D 21 13C8 FOSA



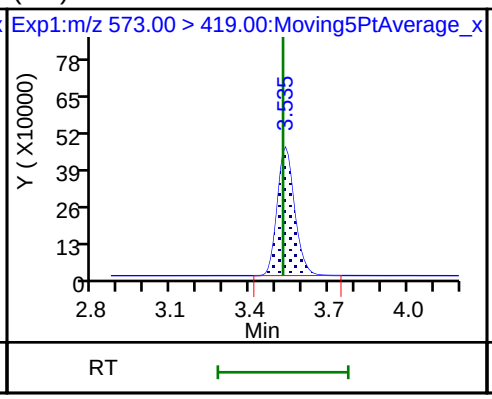
D 23 13C2 PFDA



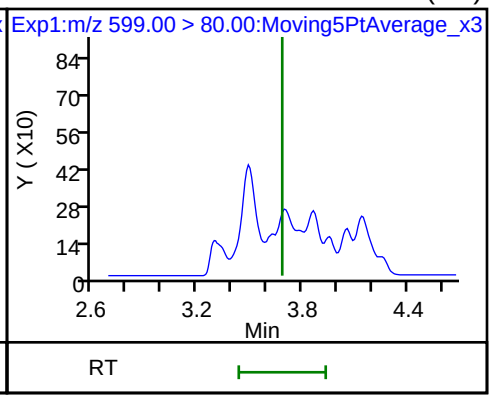
28 N-methyl perfluorooctane sulfonamid (ND)



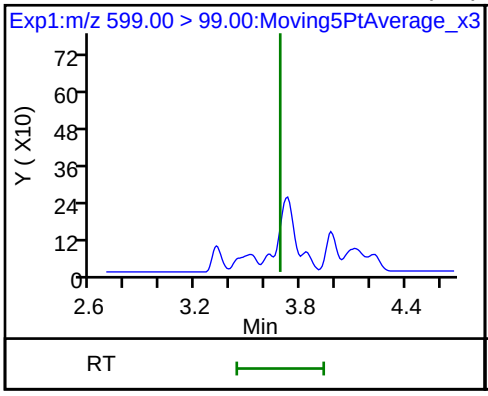
D 27 d3-NMeFOSAA



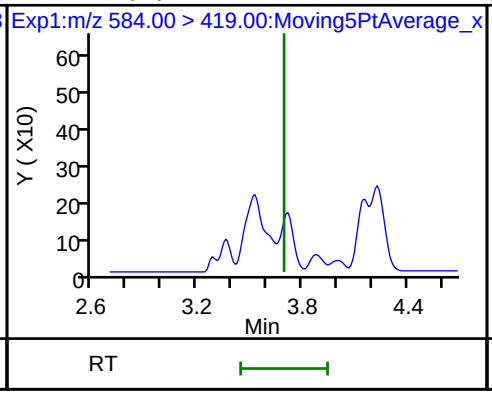
29 Perfluorodecane Sulfonic acid (ND)



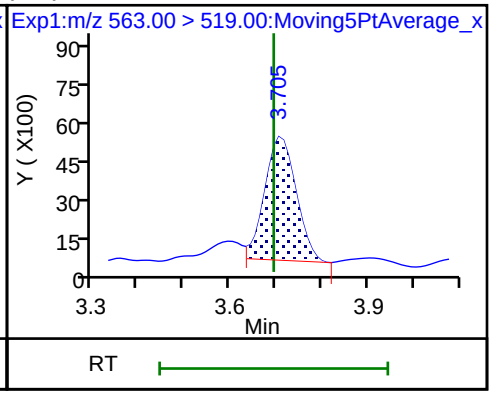
29 Perfluorodecane Sulfonic acid (ND)



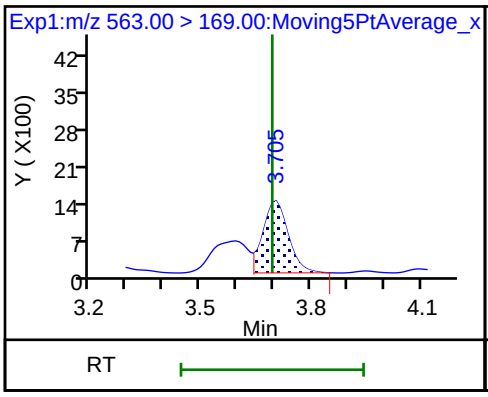
33 N-ethyl perfluorooctane sulfonamid (ND)



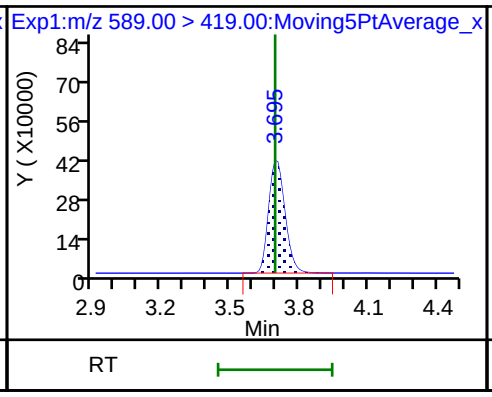
31 Perfluoroundecanoic acid



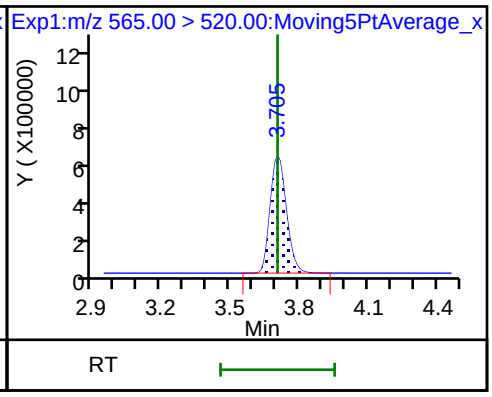
31 Perfluoroundecanoic acid



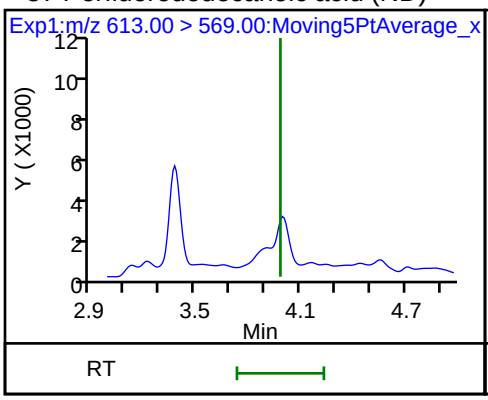
D 32 d5-NEtFOSAA



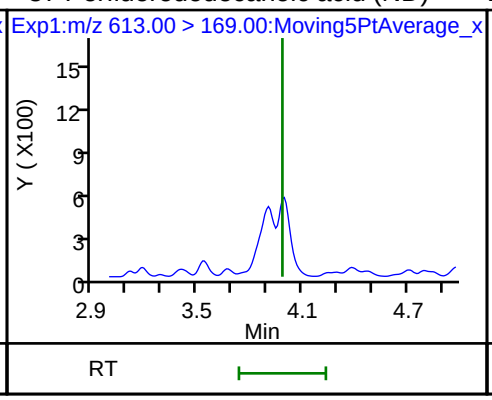
D 30 13C2 PFUnA



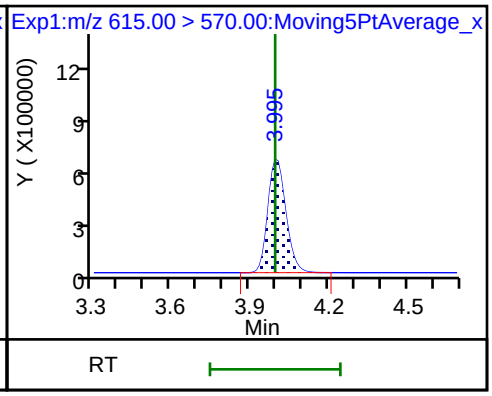
37 Perfluorododecanoic acid (ND)



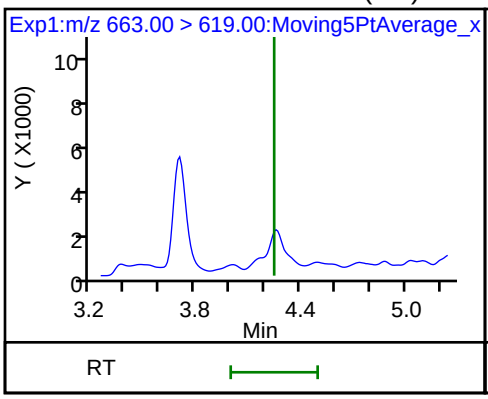
37 Perfluorododecanoic acid (ND)



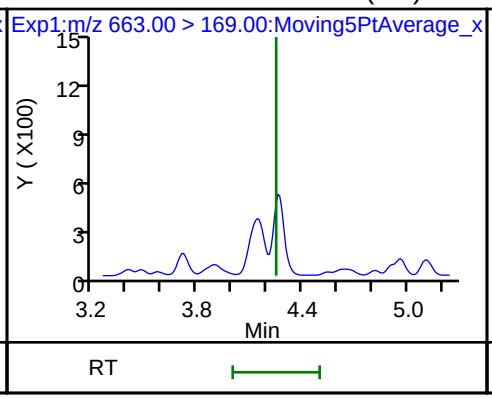
D 36 13C2 PFDoA



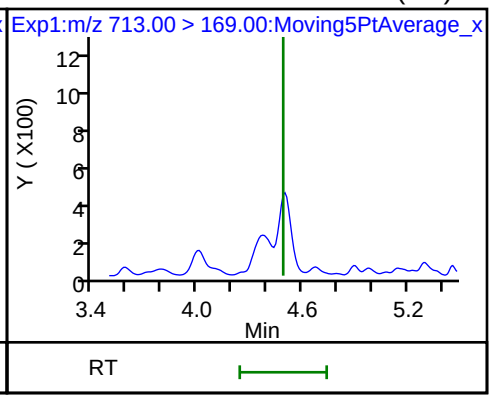
41 Perfluorotridecanoic acid (ND)



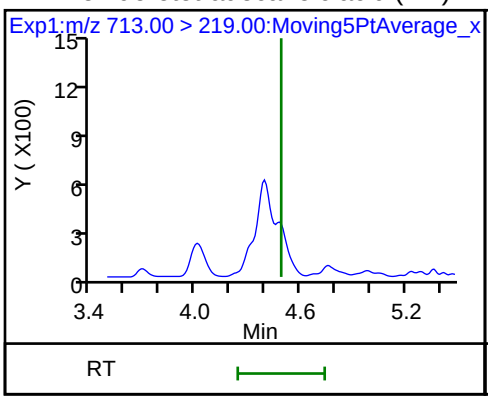
41 Perfluorotridecanoic acid (ND)



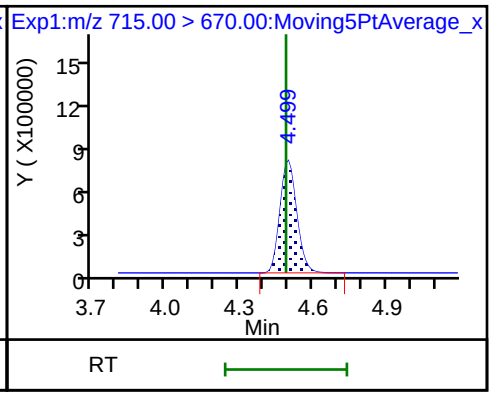
42 Perfluorotetradecanoic acid (ND)



42 Perfluorotetradecanoic acid (ND)



D 43 13C2-PFTeDA



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

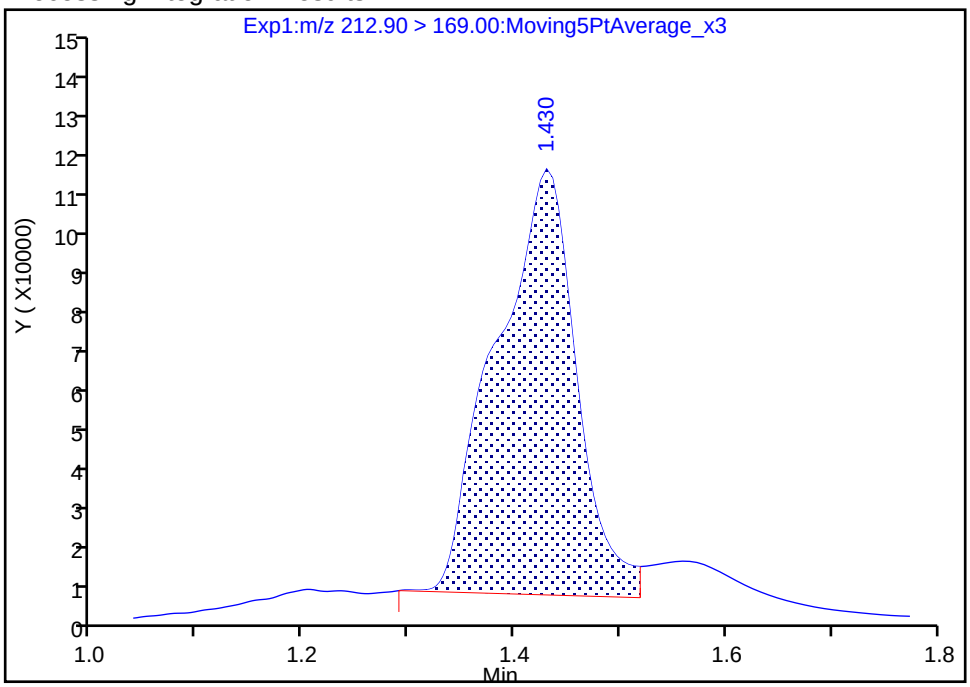
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\2018.07.06LLC_043.d				
Injection Date:	07-Jul-2018 04:51:22	Instrument ID:	A8_N		
Lims ID:	320-40571-A-45-A	Lab Sample ID:	320-40571-45		
Client ID:	NFMW1-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	29	Worklist Smp#:	31
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

2 Perfluorobutyric acid, CAS: 375-22-4

Signal: 1

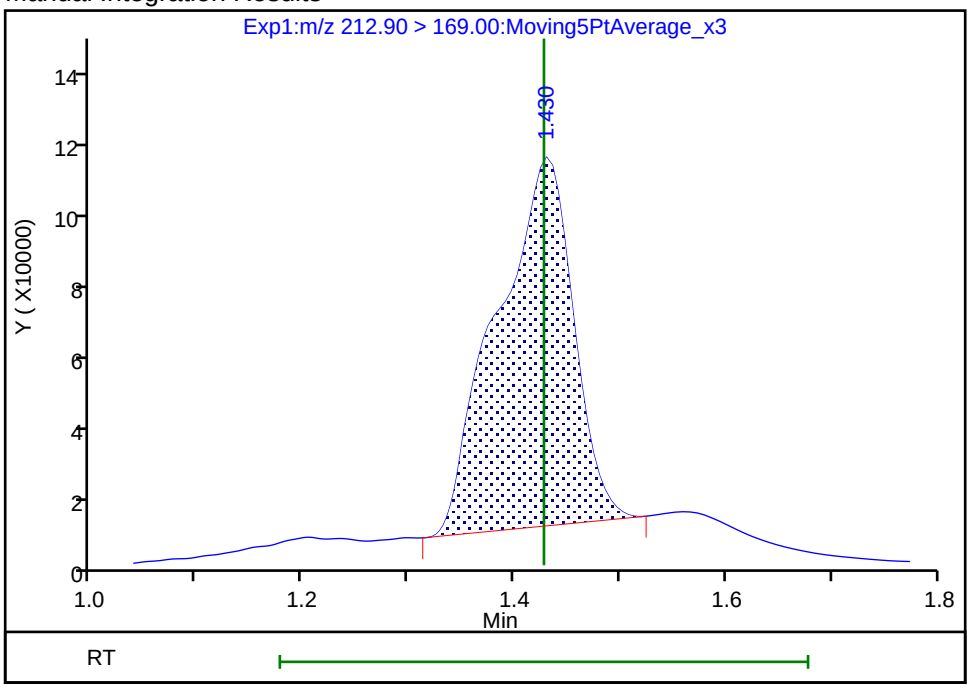
Processing Integration Results

RT: 1.43
Area: 542818
Amount: 0.474760
Amount Units: ng/ml



Manual Integration Results

RT: 1.43
Area: 494621
Amount: 0.432606
Amount Units: ng/ml



Reviewer: mongkols, 09-Jul-2018 14:46:52

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

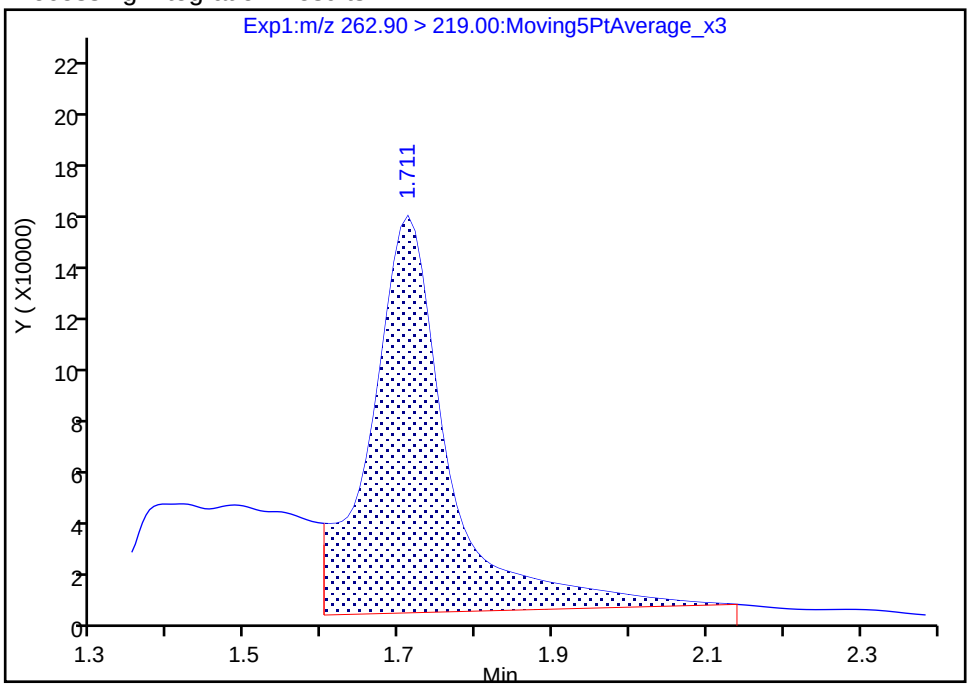
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\2018.07.06LLC_043.d				
Injection Date:	07-Jul-2018 04:51:22	Instrument ID:	A8_N		
Lims ID:	320-40571-A-45-A	Lab Sample ID:	320-40571-45		
Client ID:	NFMW1-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	29	Worklist Smp#:	31
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

4 Perfluoropentanoic acid, CAS: 2706-90-3

Signal: 1

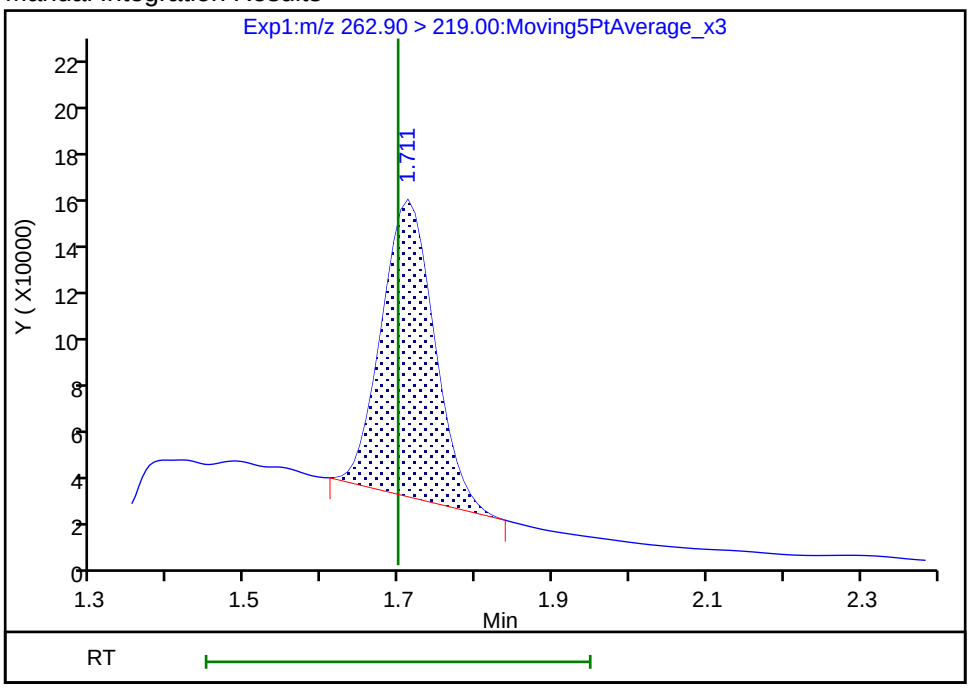
Processing Integration Results

RT: 1.71
Area: 1093368
Amount: 0.666623
Amount Units: ng/ml



Manual Integration Results

RT: 1.71
Area: 615966
Amount: 0.375552
Amount Units: ng/ml



Reviewer: mongkols, 09-Jul-2018 14:46:57

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

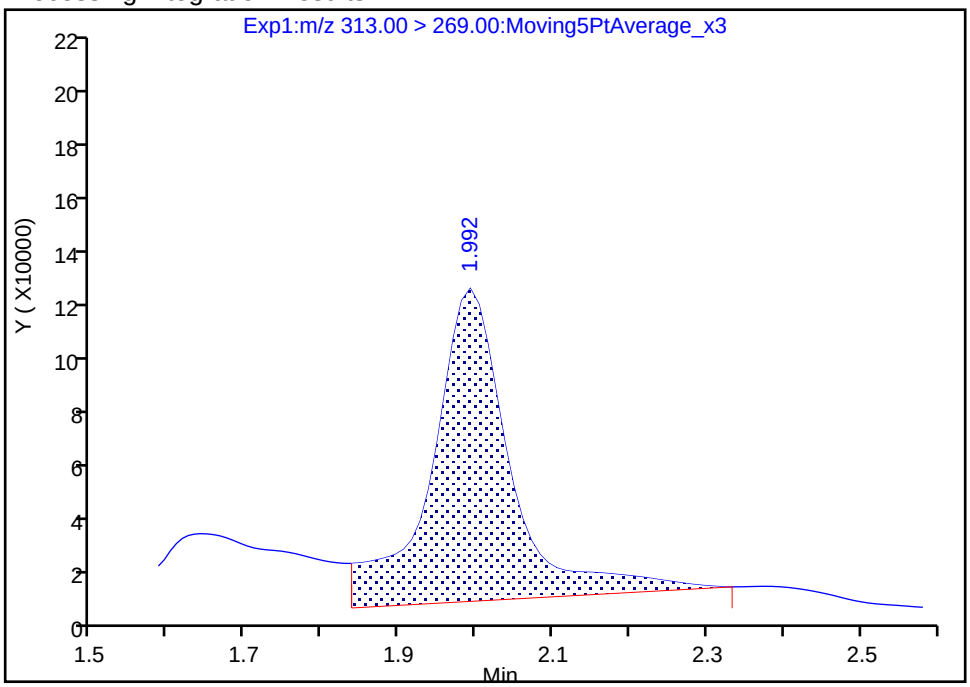
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\2018.07.06LLC_043.d				
Injection Date:	07-Jul-2018 04:51:22	Instrument ID:	A8_N		
Lims ID:	320-40571-A-45-A	Lab Sample ID:	320-40571-45		
Client ID:	NFMW1-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	29	Worklist Smp#:	31
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

6 Perfluorohexanoic acid, CAS: 307-24-4

Signal: 1

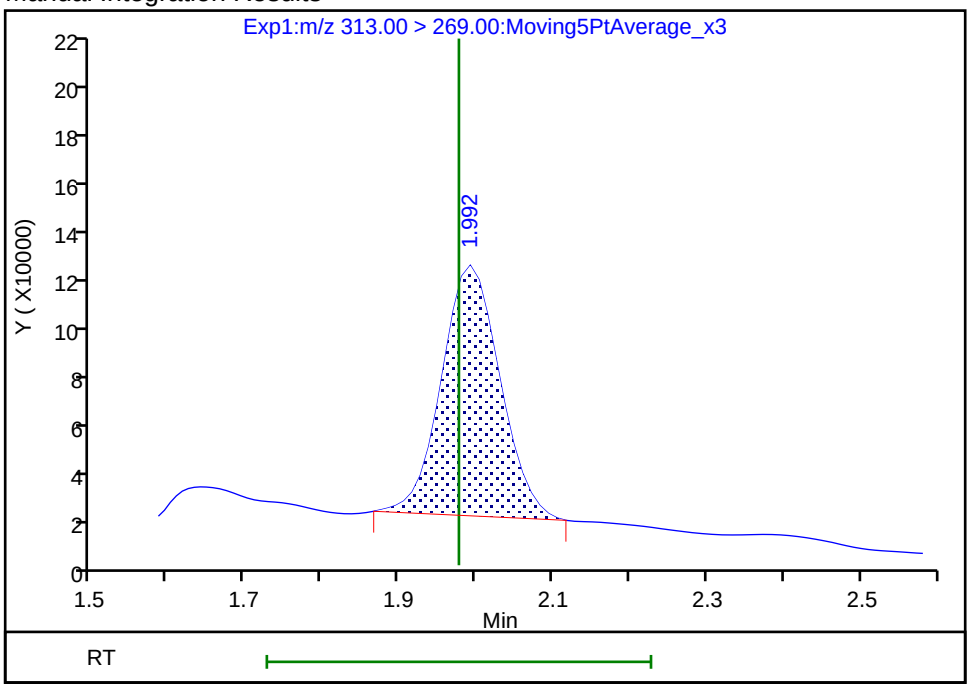
Processing Integration Results

RT: 1.99
Area: 836032
Amount: 0.444539
Amount Units: ng/ml



Manual Integration Results

RT: 1.99
Area: 545220
Amount: 0.289907
Amount Units: ng/ml



Reviewer: mongkols, 09-Jul-2018 14:47:09

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

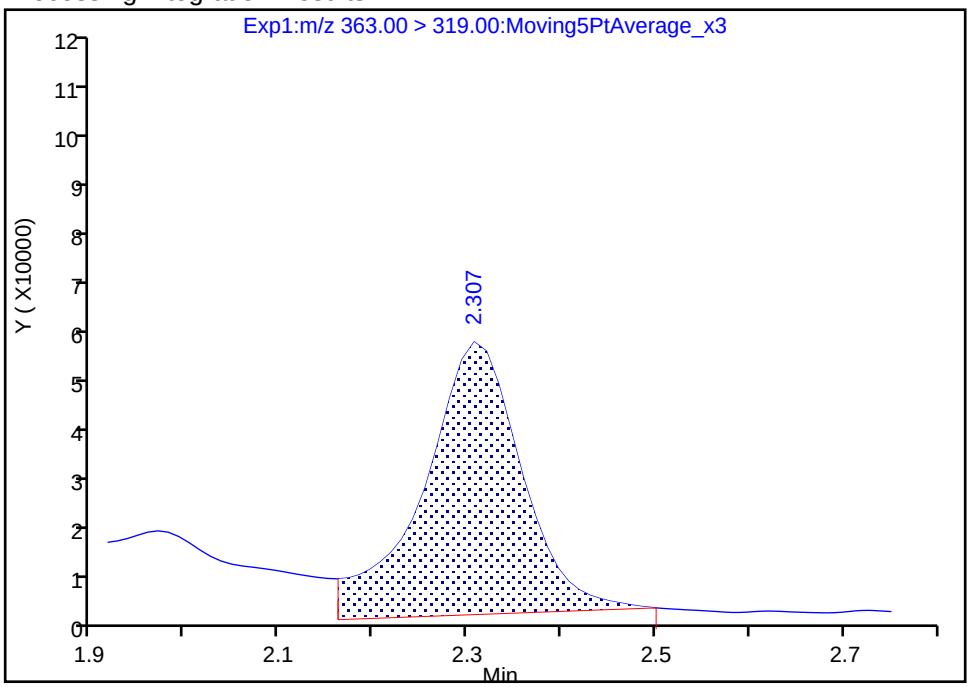
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\2018.07.06LLC_043.d				
Injection Date:	07-Jul-2018 04:51:22	Instrument ID:	A8_N		
Lims ID:	320-40571-A-45-A	Lab Sample ID:	320-40571-45		
Client ID:	NFMW1-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	29	Worklist Smp#:	31
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

10 Perfluoroheptanoic acid, CAS: 375-85-9

Signal: 1

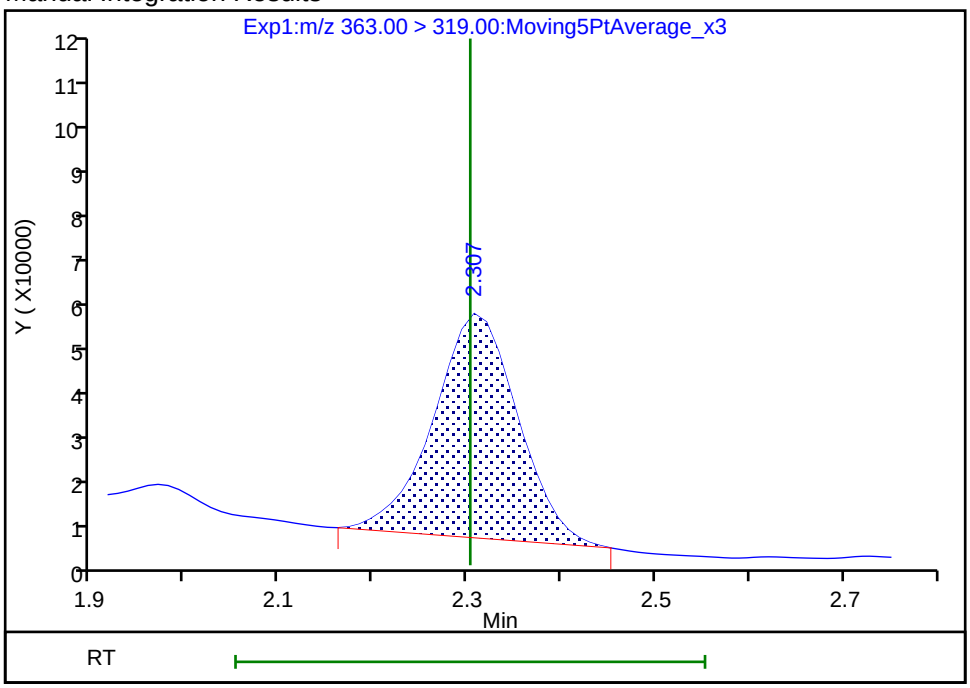
Processing Integration Results

RT: 2.31
Area: 394512
Amount: 0.177355
Amount Units: ng/ml



Manual Integration Results

RT: 2.31
Area: 307220
Amount: 0.138112
Amount Units: ng/ml



Reviewer: mongkols, 09-Jul-2018 14:47:19

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

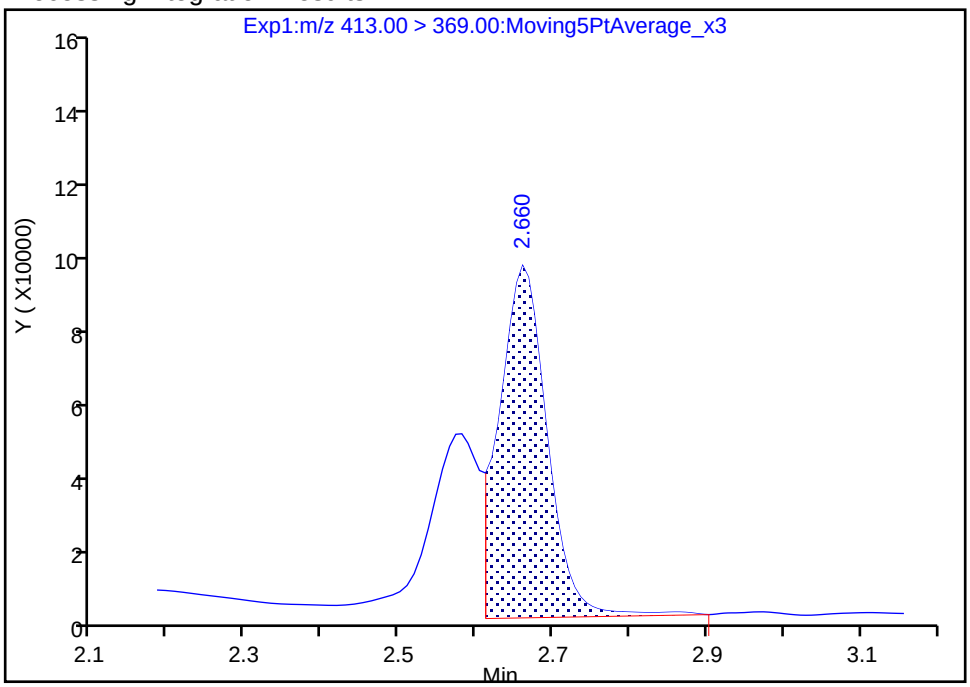
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\2018.07.06LLC_043.d				
Injection Date:	07-Jul-2018 04:51:22	Instrument ID:	A8_N		
Lims ID:	320-40571-A-45-A	Lab Sample ID:	320-40571-45		
Client ID:	NFMW1-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	29	Worklist Smp#:	31
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

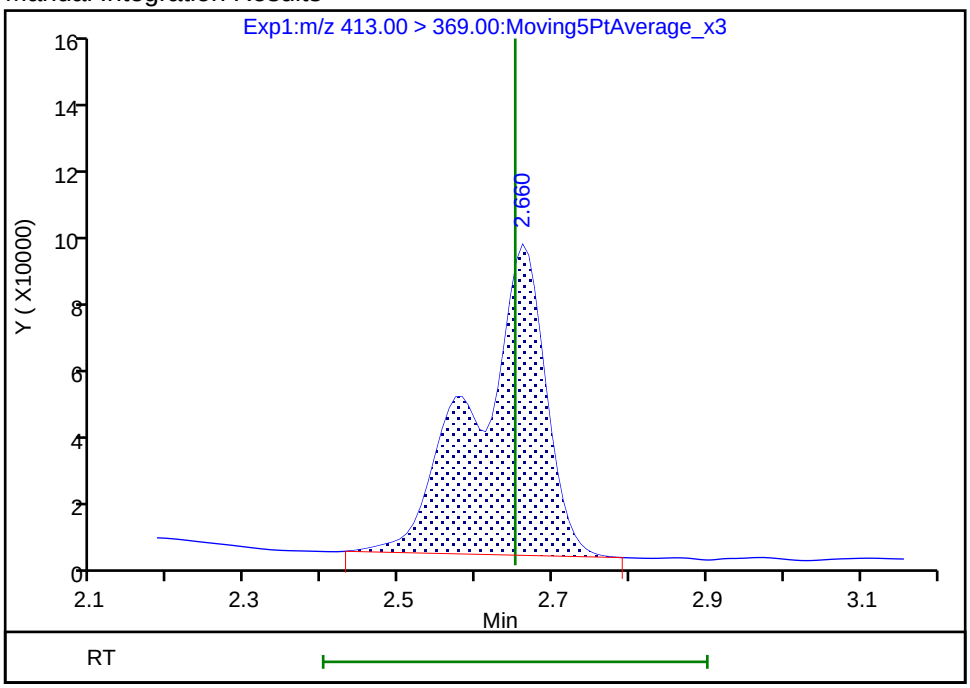
Processing Integration Results

RT: 2.66
Area: 387587
Amount: 0.158309
Amount Units: ng/ml



Manual Integration Results

RT: 2.66
Area: 559136
Amount: 0.228378
Amount Units: ng/ml



Reviewer: mongkols, 09-Jul-2018 14:47:30

Audit Action: Manually Integrated Audit Reason: Isomers

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

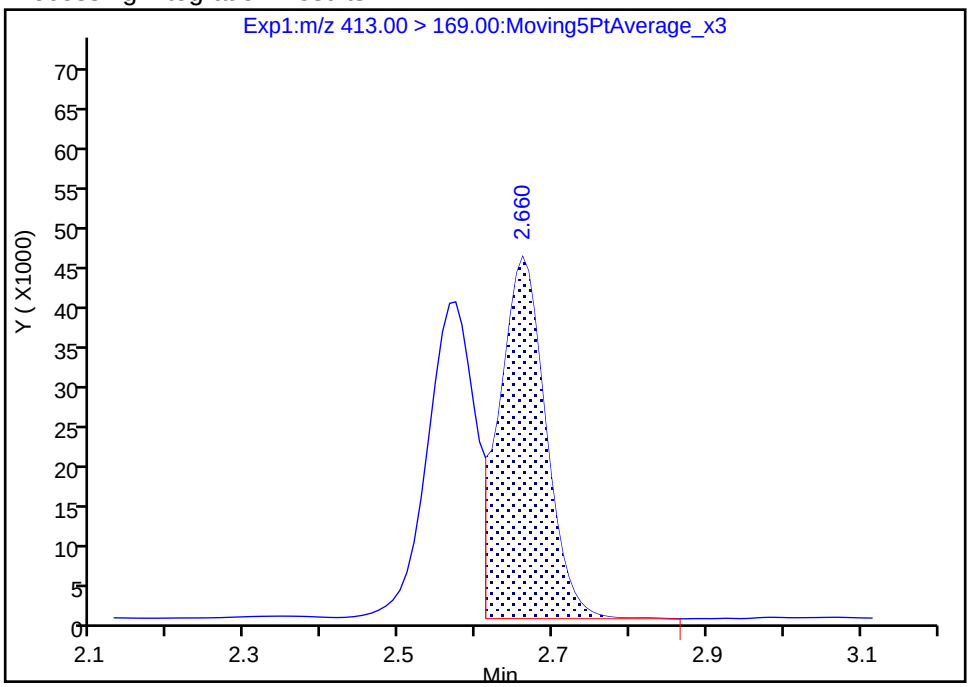
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\2018.07.06LLC_043.d				
Injection Date:	07-Jul-2018 04:51:22	Instrument ID:	A8_N		
Lims ID:	320-40571-A-45-A	Lab Sample ID:	320-40571-45		
Client ID:	NFMW1-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	29	Worklist Smp#:	31
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 2

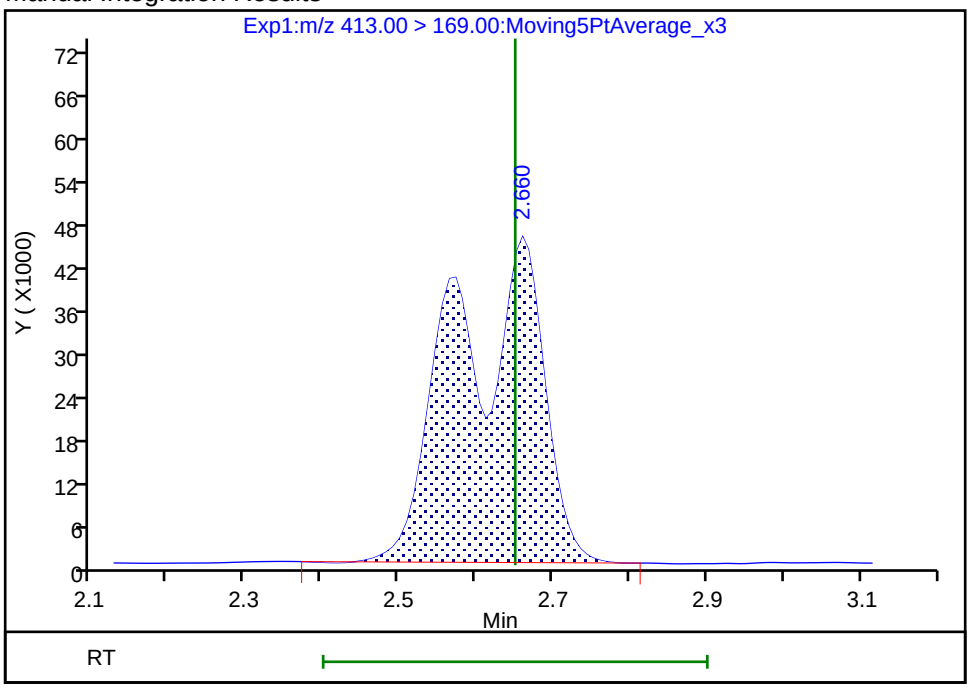
Processing Integration Results

RT: 2.66
Area: 189775
Amount: 0.158309
Amount Units: ng/ml



Manual Integration Results

RT: 2.66
Area: 357379
Amount: 0.228378
Amount Units: ng/ml



Reviewer: mongkols, 09-Jul-2018 14:47:33

Audit Action: Manually Integrated Audit Reason: Isomers

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

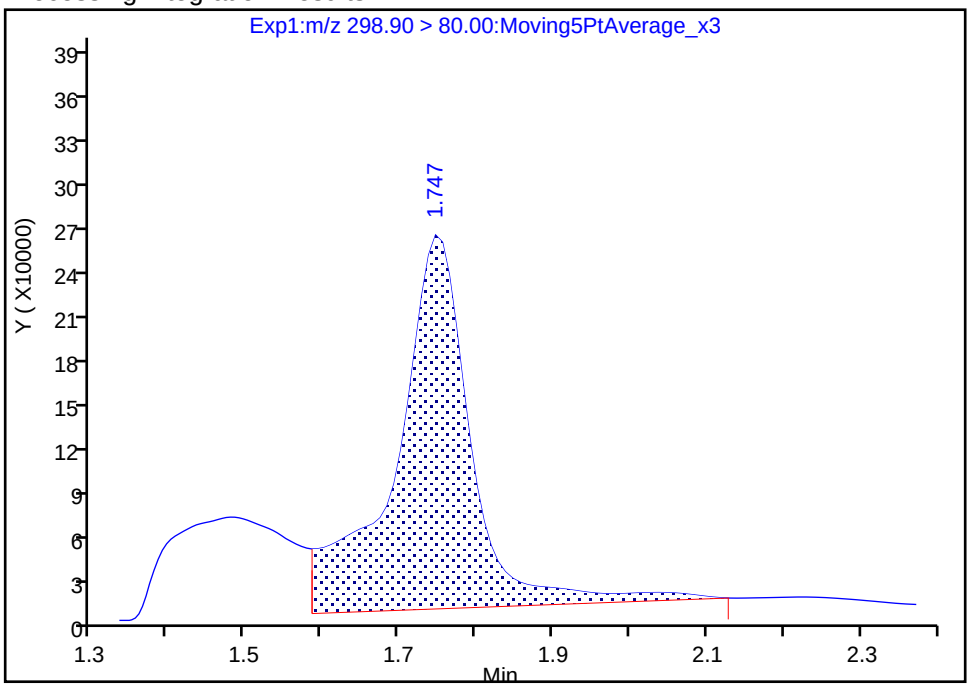
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\2018.07.06LLC_043.d				
Injection Date:	07-Jul-2018 04:51:22	Instrument ID:	A8_N		
Lims ID:	320-40571-A-45-A	Lab Sample ID:	320-40571-45		
Client ID:	NFMW1-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	29	Worklist Smp#:	31
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

5 Perfluorobutanesulfonic acid, CAS: 375-73-5

Signal: 1

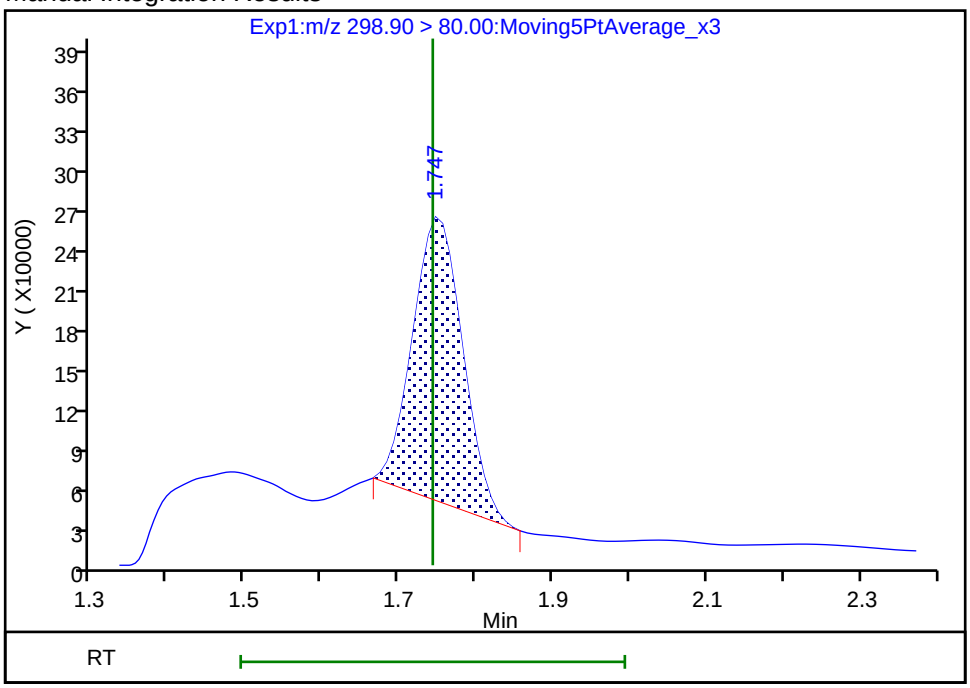
Processing Integration Results

RT: 1.75
Area: 1761372
Amount: 0.540308
Amount Units: ng/ml



Manual Integration Results

RT: 1.75
Area: 973480
Amount: 0.298619
Amount Units: ng/ml



Reviewer: mongkols, 09-Jul-2018 14:47:03
Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

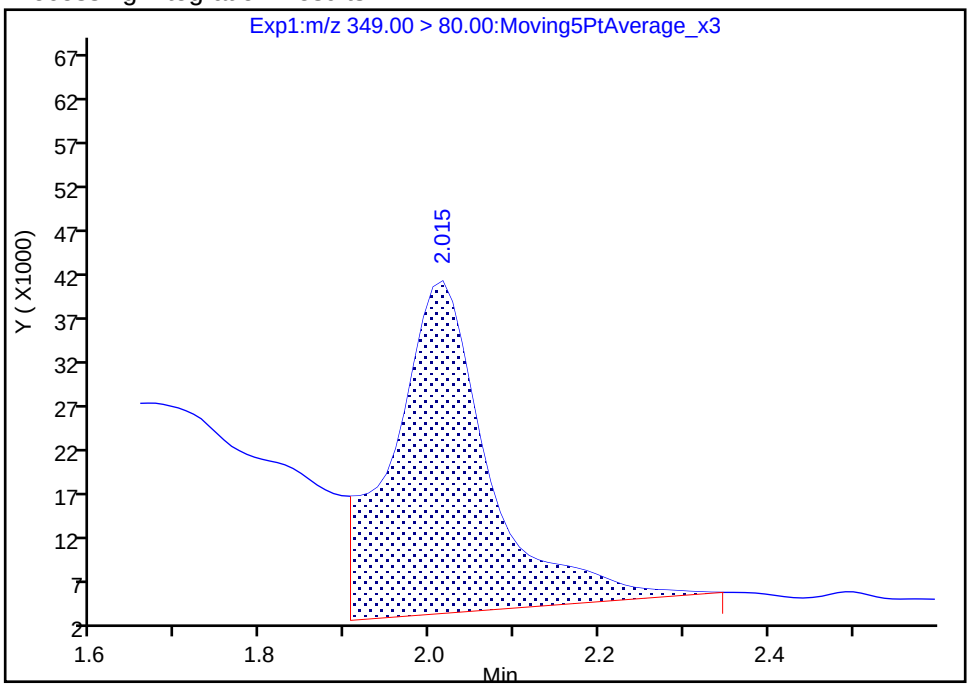
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\2018.07.06LLC_043.d				
Injection Date:	07-Jul-2018 04:51:22	Instrument ID:	A8_N		
Lims ID:	320-40571-A-45-A	Lab Sample ID:	320-40571-45		
Client ID:	NFMW1-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	29	Worklist Smp#:	31
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

70 Perfluoropentanesulfonic acid, CAS: 2706-91-4

Signal: 1

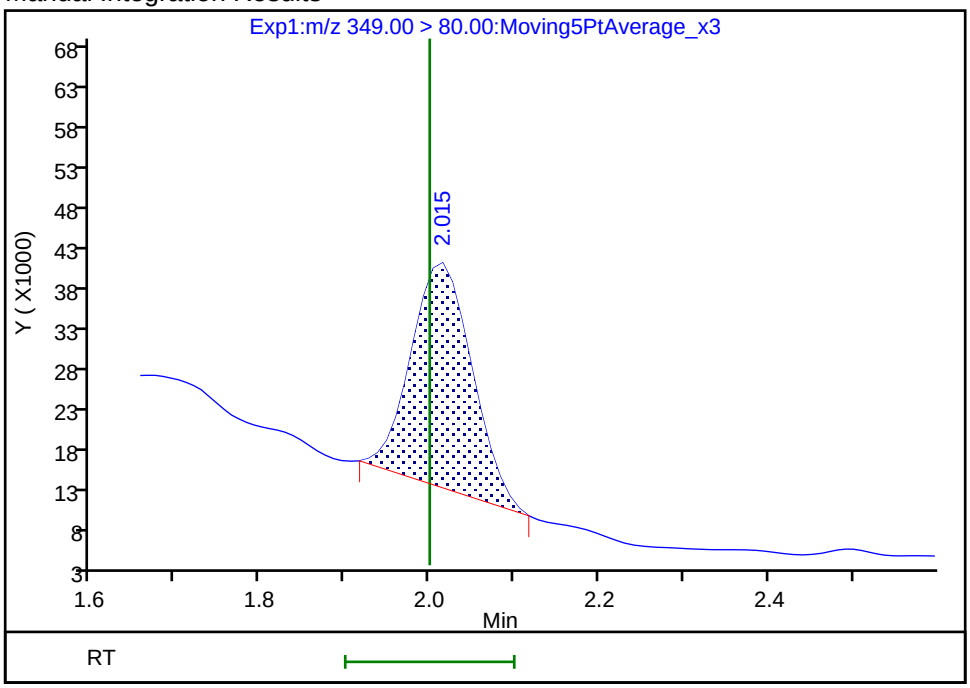
Processing Integration Results

RT: 2.02
Area: 298965
Amount: 0.107203
Amount Units: ng/ml



Manual Integration Results

RT: 2.02
Area: 139275
Amount: 0.049941
Amount Units: ng/ml



Reviewer: mongkols, 09-Jul-2018 14:47:14

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

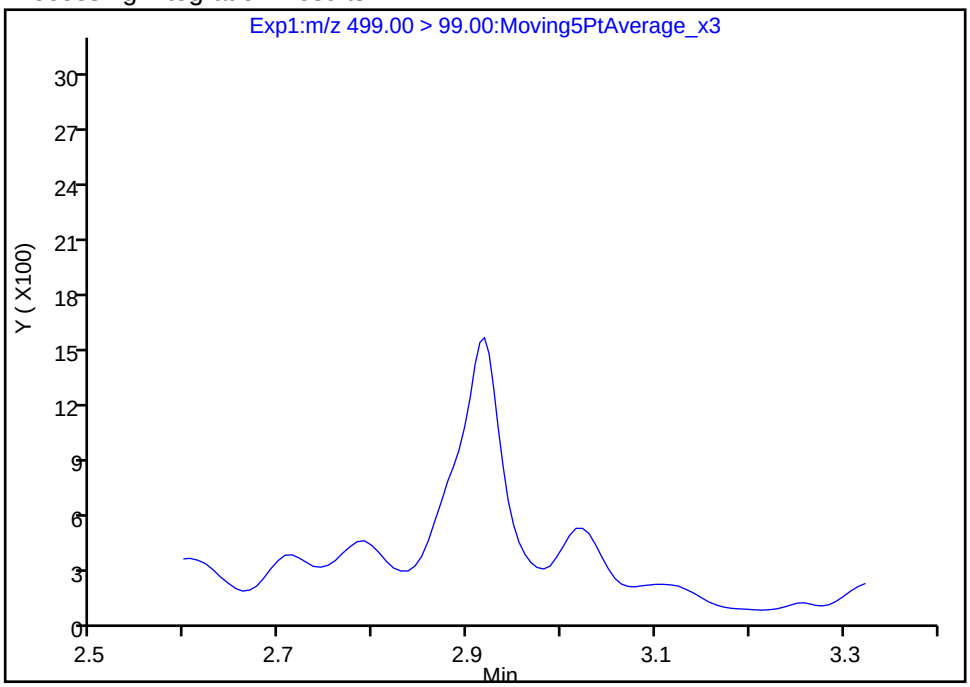
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\2018.07.06LLC_043.d				
Injection Date:	07-Jul-2018 04:51:22	Instrument ID:	A8_N		
Lims ID:	320-40571-A-45-A	Lab Sample ID:	320-40571-45		
Client ID:	NFMW1-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	29	Worklist Smp#:	31
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

17 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 2

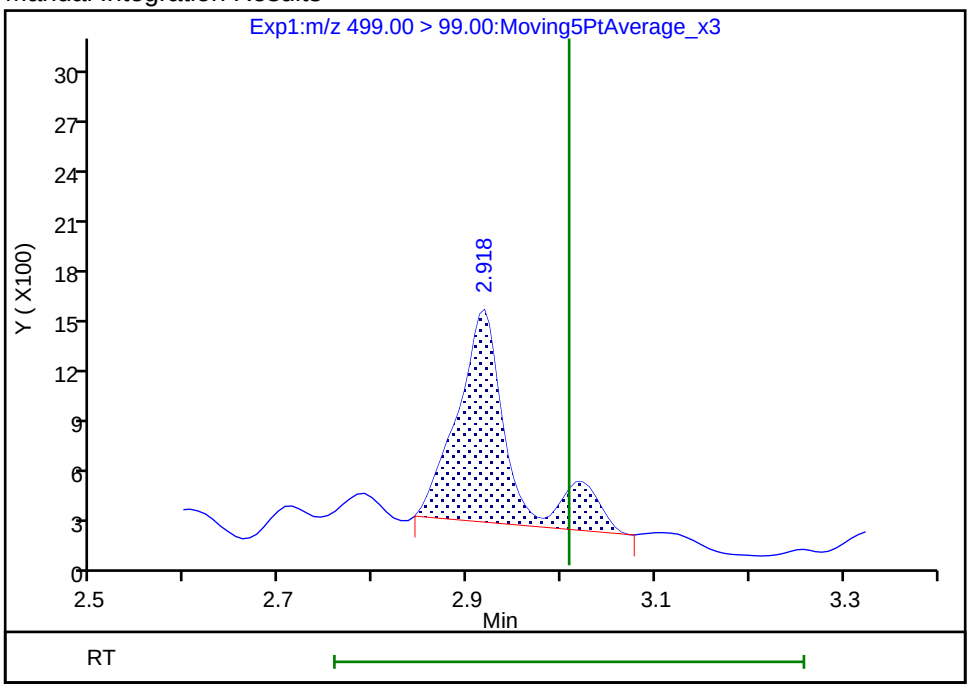
Processing Integration Results

RT: 3.01
Area: 0
Amount: 0.037191
Amount Units: ng/ml



Manual Integration Results

RT: 2.92
Area: 4977
Amount: 0.028708
Amount Units: ng/ml



Reviewer: mongkols, 09-Jul-2018 14:47:51

Audit Action: Manually Integrated Audit Reason: Isomers

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

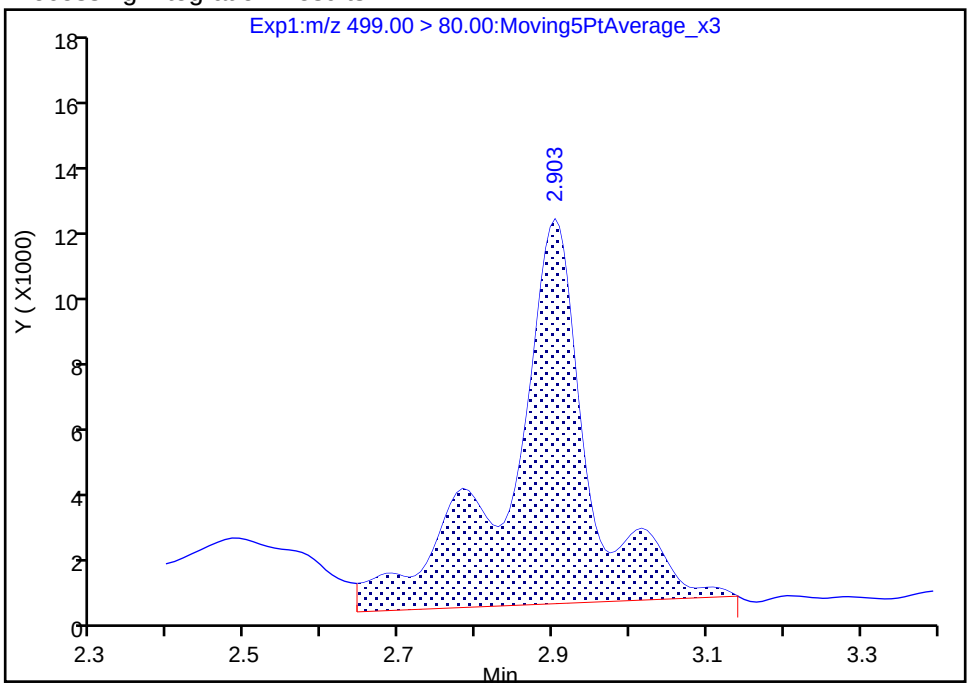
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\2018.07.06LLC_043.d				
Injection Date:	07-Jul-2018 04:51:22	Instrument ID:	A8_N		
Lims ID:	320-40571-A-45-A	Lab Sample ID:	320-40571-45		
Client ID:	NFMW1-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	29	Worklist Smp#:	31
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

17 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

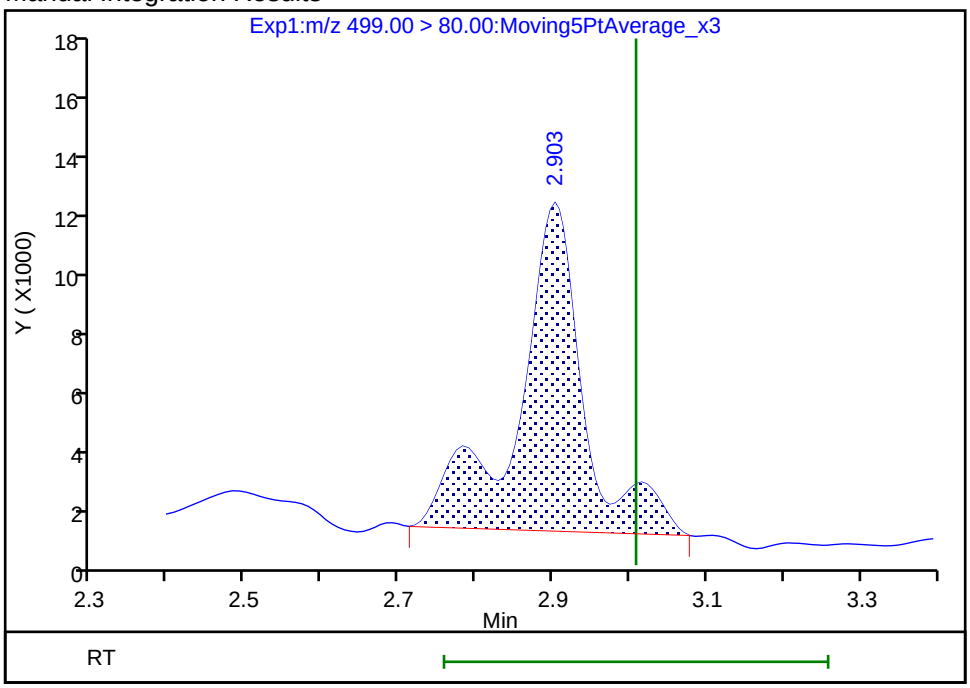
Processing Integration Results

RT: 2.90
Area: 84723
Amount: 0.037191
Amount Units: ng/ml



Manual Integration Results

RT: 2.90
Area: 65399
Amount: 0.028708
Amount Units: ng/ml



Reviewer: mongkols, 09-Jul-2018 14:47:51

Audit Action: Manually Integrated Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NFMW7-GW-01
Lab Sample ID: 320-40571-46
Matrix: Water
Lab File ID: 2018.07.06LLAAA_045.d
Analysis Method: 537 (modified)
Date Collected: 06/21/2018 11:55
Extraction Method: 3535
Date Extracted: 07/02/2018 16:10
Sample wt/vol: 269.9(mL)
Date Analyzed: 07/06/2018 19:19
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 232788
Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	0.022	B	0.0019	0.00032
2706-90-3	Perfluoropentanoic acid (PFPeA)	0.022		0.0019	0.00045
307-24-4	Perfluorohexanoic acid (PFHxA)	0.0059		0.0019	0.00054
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.0050		0.0019	0.00023
335-67-1	Perfluorooctanoic acid (PFOA)	0.0065		0.0019	0.00079
375-95-1	Perfluorononanoic acid (PFNA)	0.00097	J	0.0019	0.00025
335-76-2	Perfluorodecanoic acid (PFDA)	ND		0.0019	0.00029
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		0.0019	0.0010
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		0.0019	0.00051
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		0.0019	0.0012
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		0.0019	0.00027
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.0054		0.0019	0.00019
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	0.00084	J	0.0019	0.00028
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.0034	B	0.0019	0.00016
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.0019	0.00018
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.0025		0.0019	0.00050
8789-57-2	Perfluorononanesulfonic acid (PFNS)	ND		0.0019	0.00015
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		0.0019	0.00030
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		0.0019	0.00032
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.019	0.0029
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.019	0.0018
757124-72-4	4:2 FTS	ND		0.019	0.0048
27619-97-2	6:2 FTS	ND		0.019	0.0019
39108-34-4	8:2 FTS	ND		0.019	0.0019

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NFMW7-GW-01
Lab Sample ID: 320-40571-46
Matrix: Water
Lab File ID: 2018.07.06LLAAA_045.d
Analysis Method: 537 (modified)
Date Collected: 06/21/2018 11:55
Extraction Method: 3535
Date Extracted: 07/02/2018 16:10
Sample wt/vol: 269.9(mL)
Date Analyzed: 07/06/2018 19:19
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 232788
Units: ug/L

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00992	13C4 PFBA	61		25-150
STL01893	13C5 PFPeA	79		25-150
STL00993	13C2 PFHxA	92		25-150
STL01892	13C4-PFHpA	103		25-150
STL00990	13C4 PFOA	99		25-150
STL00995	13C5 PFNA	101		25-150
STL00996	13C2 PFDA	98		25-150
STL00997	13C2 PFUnA	94		25-150
STL00998	13C2 PFDoA	92		25-150
STL02116	13C2-PFTeDA	90		25-150
STL02337	13C3-PFBS	87		25-150
STL00994	18O2 PFHxS	102		25-150
STL00991	13C4 PFOS	100		25-150
STL01056	13C8 FOSA	86		25-150
STL02118	d3-NMeFOSAA	91		25-150
STL02117	d5-NEtFOSAA	89		25-150
STL02279	M2-6:2FTS	114		25-150
STL02280	M2-8:2FTS	100		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180706-60751.b\2018.07.06LLAAA_045.d
Lims ID: 320-40571-A-46-A
Client ID: NFMW7-GW-01
Sample Type: Client
Inject. Date: 06-Jul-2018 19:19:51 ALS Bottle#: 33 Worklist Smp#: 15
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-40571-a-46-a
Misc. Info.: Plate: 1 Rack: 5
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180706-60751.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 09-Jul-2018 10:26:15 Calib Date: 05-Jul-2018 09:38:17
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180705-60684.b\2018.07.05LLICALAA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK010

First Level Reviewer: mongkols Date: 09-Jul-2018 10:26:15

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.424	1.424	0.0	0.535	4343181	1.51		60.6	17322	
2 Perfluorobutyric acid										M
212.90 > 169.00	1.430	1.433	-0.003	1.004	1068423	0.6021			196	M
D 3 13C5-PFPeA										
267.90 > 223.00	1.710	1.702	0.008	0.643	4173564	1.97		78.7	22100	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.710	1.707	0.003	1.000	1189038	0.5981			186	
D 47 13C3-PFBS										
301.90 > 83.00	1.746	1.738	0.008	0.657	102621	2.02		86.9	272	
5 Perfluorobutanesulfonic acid										M
298.90 > 80.00	1.746	1.752	-0.006	1.000	491054	0.1468			104	M
298.90 > 99.00	1.746	1.752	-0.006	1.000	200388		2.45(1.25-3.74)		246	
D 7 13C2 PFHxA										
315.00 > 270.00	1.991	1.981	0.010	0.749	5218512	2.30		91.9	72403	
6 Perfluorohexanoic acid										M
313.00 > 269.00	1.991	1.988	0.003	1.000	338227	0.1591			112	M
313.00 > 119.00	1.991	1.988	0.003	1.000	32986		10.25(5.03-15.10)		298	
70 Perfluoropentanesulfonic acid										M
349.00 > 80.00	2.014	2.010	0.004	1.153	65157	0.0228			39.6	M
349.00 > 99.00	2.014	2.010	0.004	1.153	21256		3.07(1.36-4.07)		44.6	M
D 9 13C4-PFHpA										
367.00 > 322.00	2.306	2.293	0.013	0.867	5180491	2.57		103	45685	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.306	2.302	0.004	1.000	315879	0.1349			174	
363.00 > 169.00	2.306	2.302	0.004	1.000	130687		2.42(1.13-3.40)		947	
D 11 18O2 PFHxS										
403.00 > 84.00	2.319	2.306	0.013	0.872	5993866	2.42		102	45852	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.319	2.315	0.004	1.000	269581	0.0920			116	
399.00 > 99.00	2.319	2.315	0.004	1.000	87195		3.09(1.50-4.49)		191	
D 12 M2-6:2FTS										
429.00 > 81.00	2.636	2.627	0.009	0.991	1223989	2.70		114	5771	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.636	2.634	0.002	1.000	31934	0.0396			151	
D 14 13C4 PFOA										
417.00 > 372.00	2.659	2.652	0.007	1.000	4901347	2.48		99.2	39122	
* 62 13C2-PFOA										
415.00 > 370.00	2.659	2.658	0.001		5179321	2.50			57358	
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.659	2.658	0.001	1.000	407883	0.1755			128	M
413.00 > 169.00	2.659	2.658	0.001	1.000	245217		1.66(0.84-2.52)		872	
D 19 13C5 PFNA										
468.00 > 423.00	3.021	3.009	0.012	1.136	4257306	2.53		101	40267	
D 18 13C4 PFOS										
503.00 > 80.00	3.021	3.009	0.012	1.136	4248206	2.40		100	21708	
17 Perfluorooctane sulfonic acid										M
499.00 > 80.00	3.021	3.022	-0.001	1.000	139102	0.0670			304	M
499.00 > 99.00	3.021	3.022	-0.001	1.000	30086		4.62(2.31-6.93)		206	
20 Perfluorononanoic acid										
463.00 > 419.00	3.021	3.022	-0.001	1.000	48046	0.0262			74.5	
463.00 > 169.00	3.014	3.022	-0.008	0.998	11180		4.30(1.90-5.69)		97.0	
D 21 13C8 FOSA										
506.00 > 78.00	3.365	3.359	0.006	1.265	5284900	2.15		86.0	37273	
D 26 M2-8:2FTS										
529.00 > 81.00	3.365	3.359	0.006	1.265	1205506	2.39		99.9	13816	
D 23 13C2 PFDA										
515.00 > 470.00	3.374	3.368	0.006	1.269	3545726	2.45		97.9	43037	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.524	3.518	0.006	1.325	1946010	2.28		91.2	31343	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.690	3.685	0.005	1.388	1874427	2.22		88.9	13542	
D 30 13C2 PFUnA										
565.00 > 520.00	3.701	3.696	0.005	1.392	2853527	2.35		93.8	39886	
D 36 13C2 PFDoA										
615.00 > 570.00	3.989	3.986	0.003	1.500	3005051	2.30		92.2	18579	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.480	4.479	0.001	1.685	3587977	2.26		90.3	17961	

QC Flag Legend

Review Flags

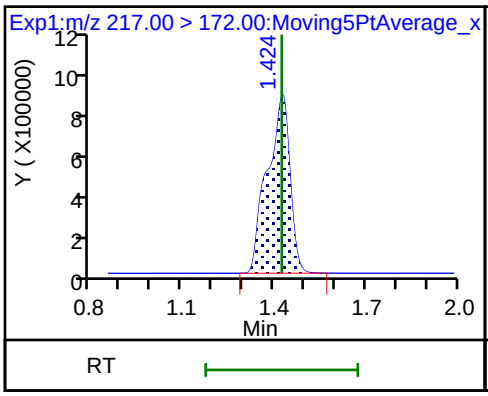
M - Manually Integrated

Report Date: 09-Jul-2018 10:26:16 Chrom Revision: 2.2 07-Jun-2018 07:41:54

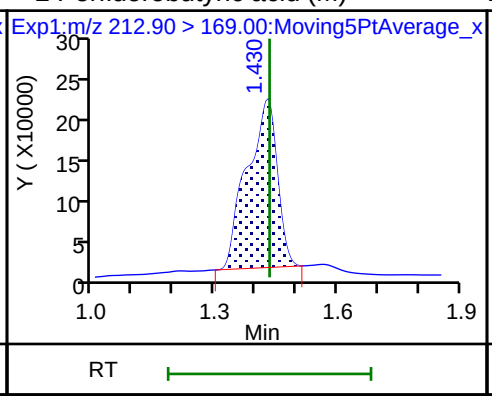
TestAmerica Sacramento

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180706-60751.b\2018.07.06LLAAA_045.d				
Injection Date:	06-Jul-2018 19:19:51	Instrument ID:	A8_N		
Lims ID:	320-40571-A-46-A	Lab Sample ID:	320-40571-46		
Client ID:	NFMW7-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	33	Worklist Smp#:	15
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		

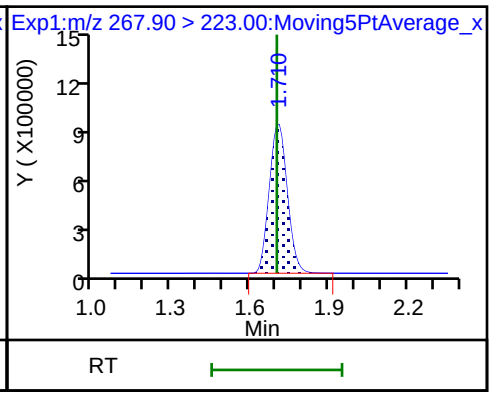
D 1 13C4 PFBA



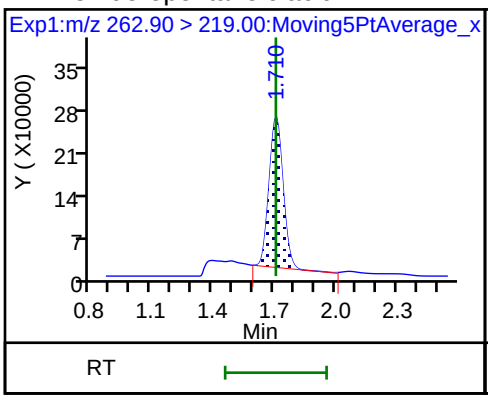
2 Perfluorobutyric acid (M)



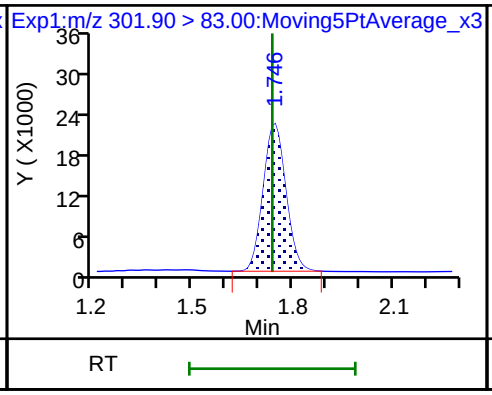
D 3 13C5-PFPeA



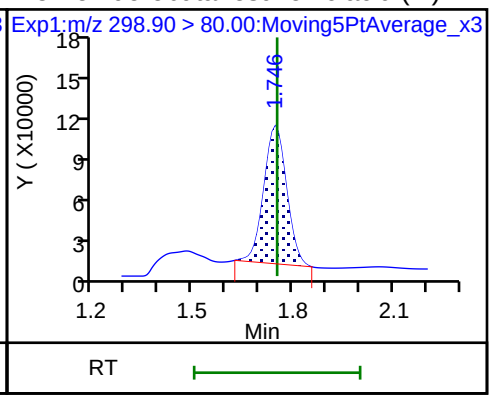
4 Perfluoropentanoic acid



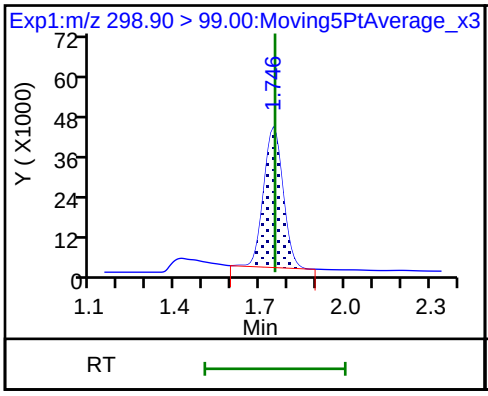
D 47 13C3-PFBS



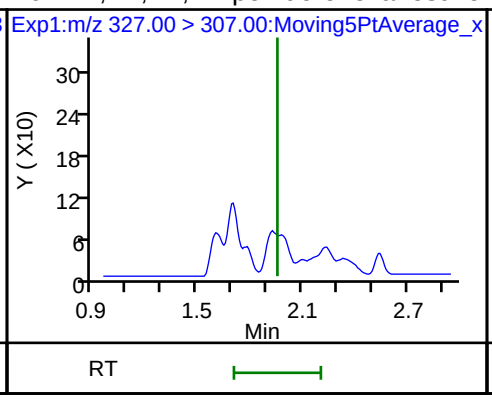
5 Perfluorobutanesulfonic acid (M)



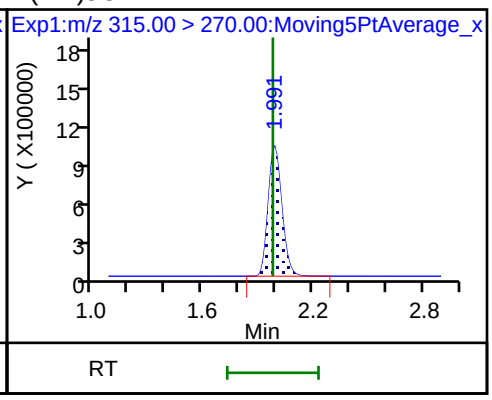
5 Perfluorobutanesulfonic acid



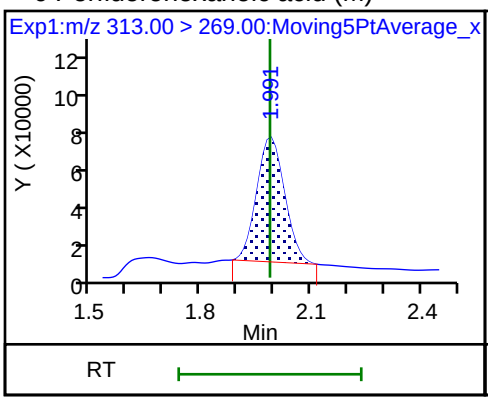
61 1H,1H,2H,2H-perfluorohexanesulfonic acid (M)



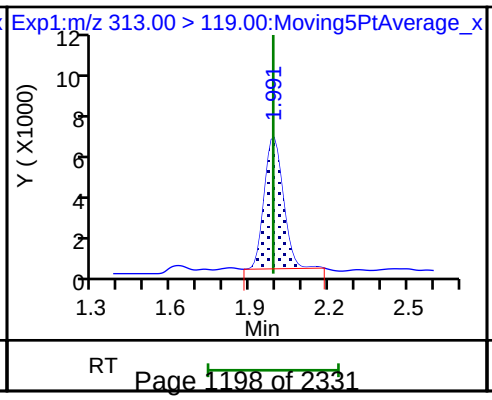
D 70 13C2 PFHxA



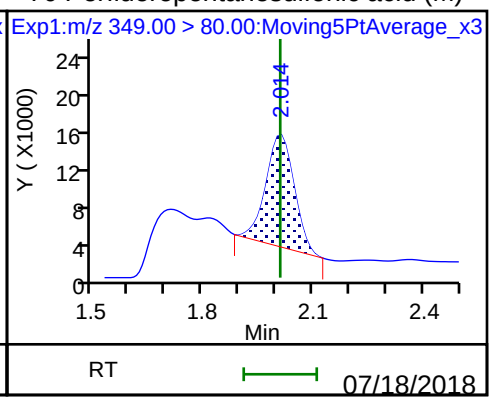
6 Perfluorohexanoic acid (M)



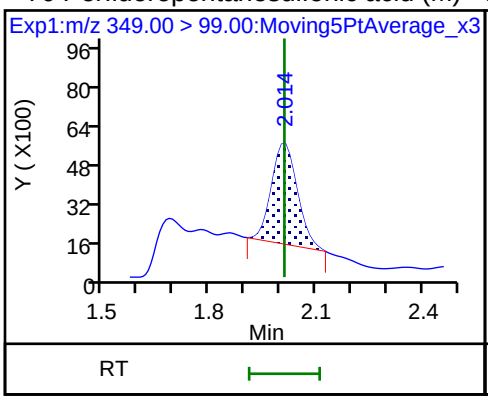
6 Perfluorohexanoic acid



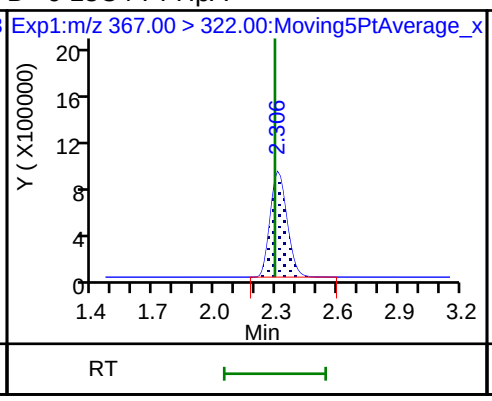
70 Perfluoropentanesulfonic acid (M)



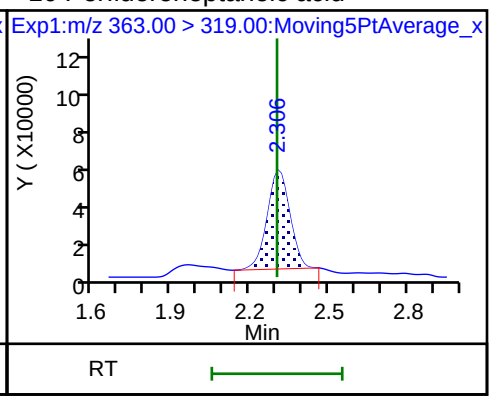
70 Perfluoropentanesulfonic acid (M)



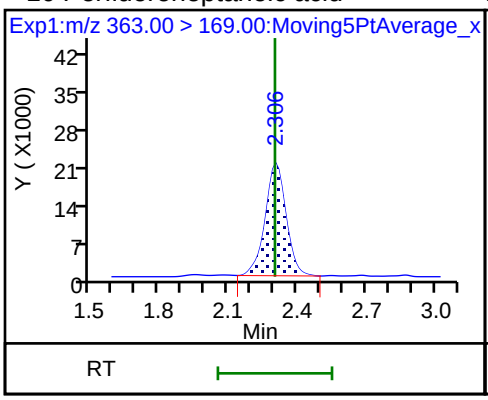
D 9 13C4-PFHpA



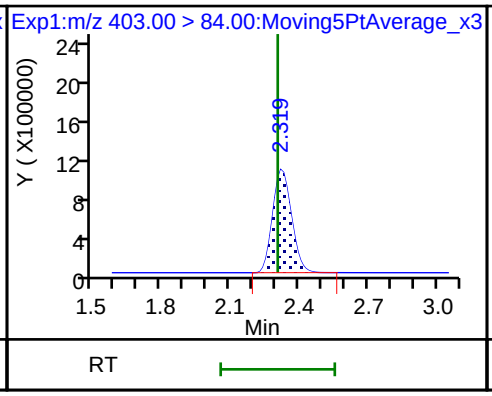
10 Perfluoroheptanoic acid



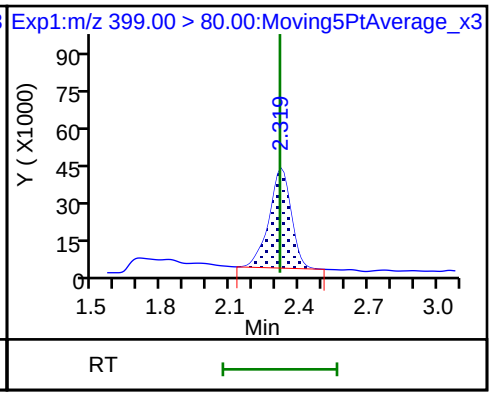
10 Perfluoroheptanoic acid



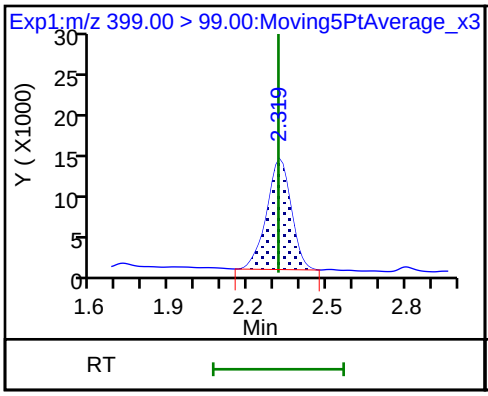
D 11 18O2 PFHxS



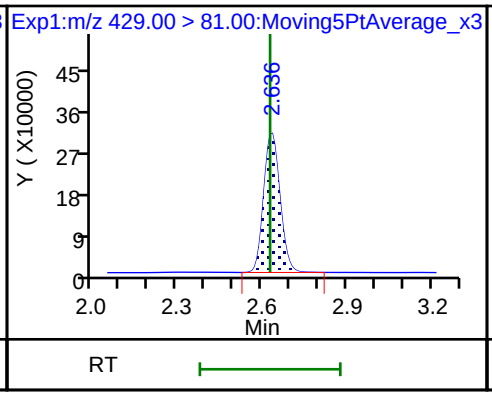
8 Perfluorohexanesulfonic acid



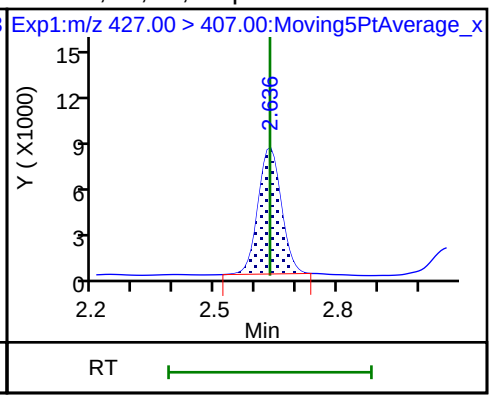
8 Perfluorohexanesulfonic acid



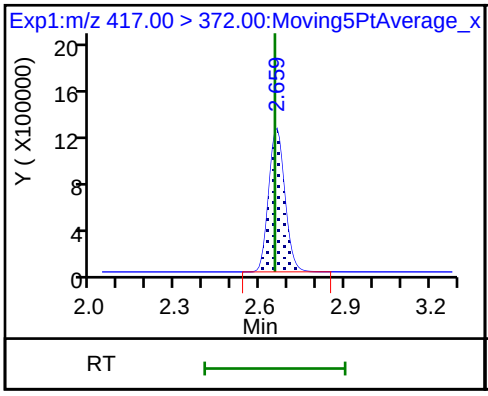
D 12 M2-6:2FTS



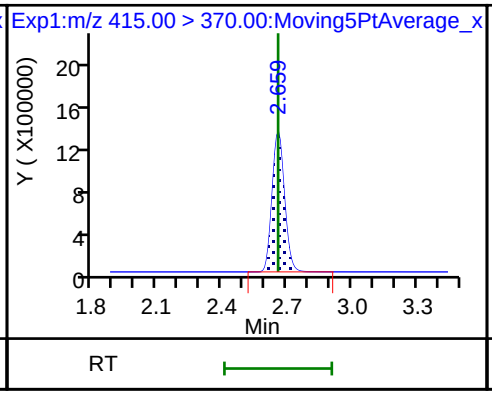
13 1H,1H,2H,2H-perfluorooctanesulfoni



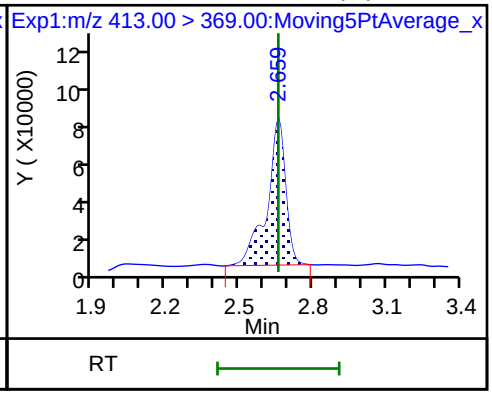
D 14 13C4 PFOA



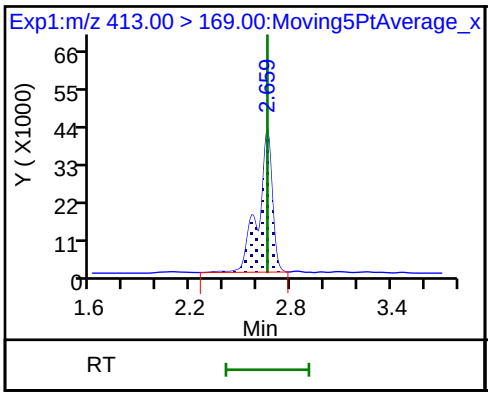
* 62 13C2-PFOA



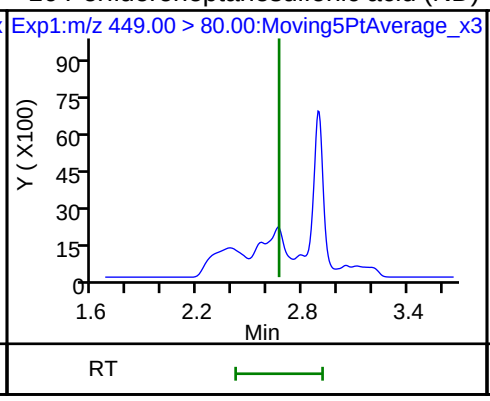
15 Perfluorooctanoic acid (M)



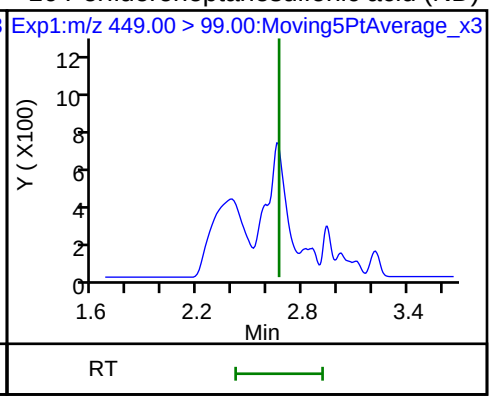
15 Perfluorooctanoic acid



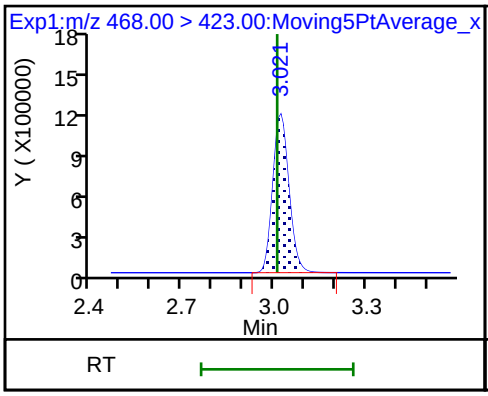
16 Perfluoroheptanesulfonic acid (ND)



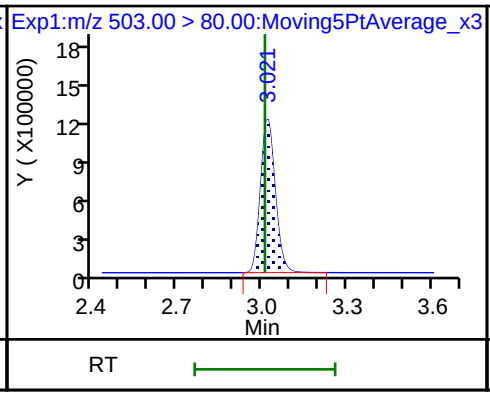
16 Perfluoroheptanesulfonic acid (ND)



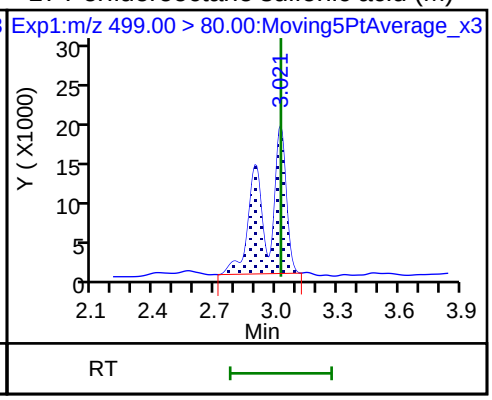
D 19 13C5 PFNA



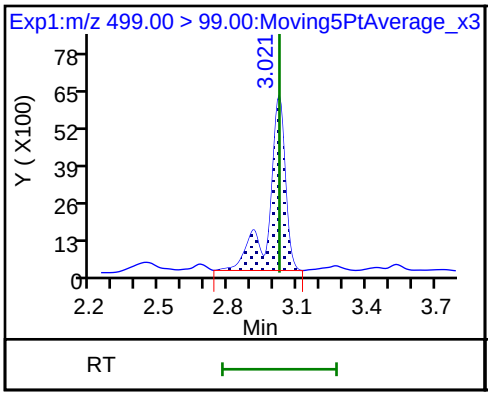
D 18 13C4 PFOS



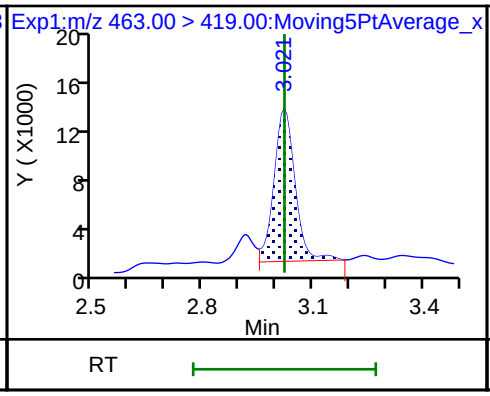
17 Perfluorooctane sulfonic acid (M)



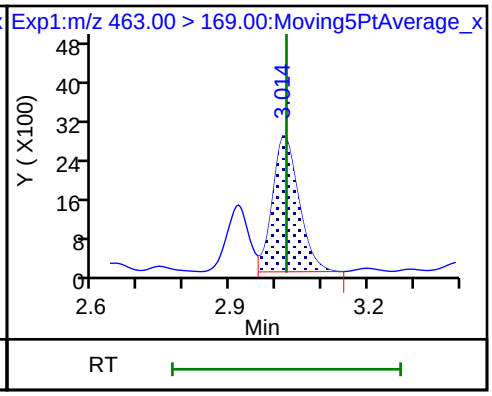
17 Perfluorooctane sulfonic acid



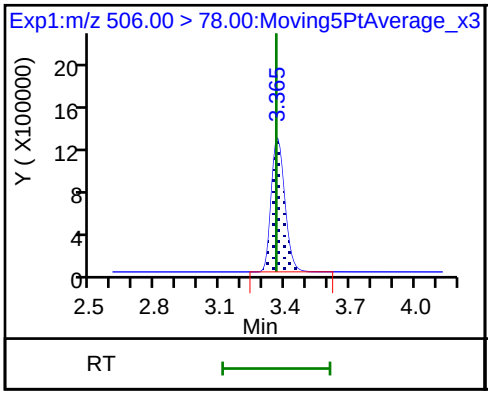
20 Perfluorononanoic acid



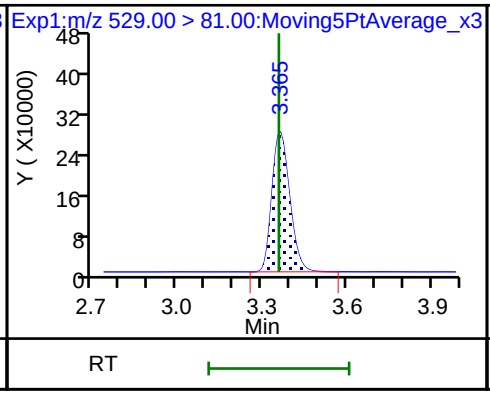
20 Perfluorononanoic acid



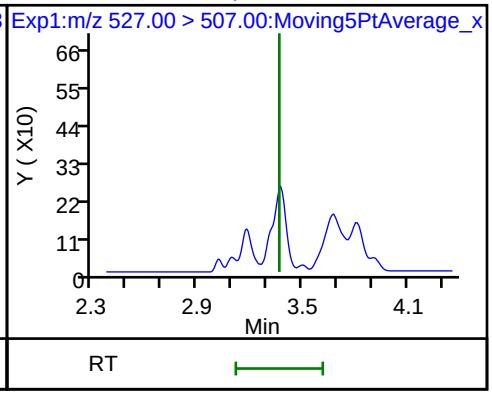
D 21 13C8 FOSA



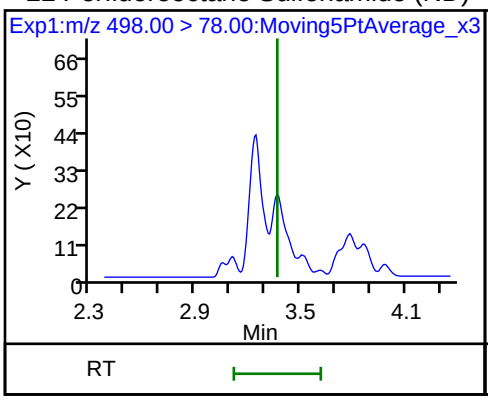
D 26 M2-8:2FTS



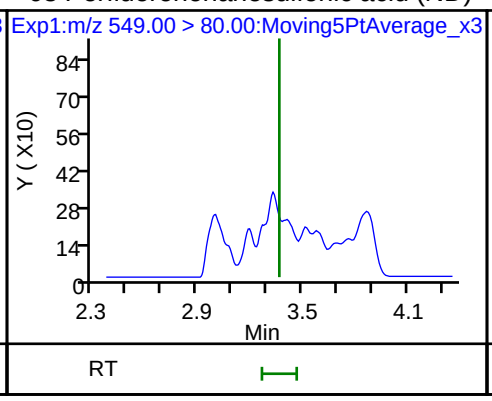
25 1H,1H,2H,2H-perfluorodecanesulfoni (ND)



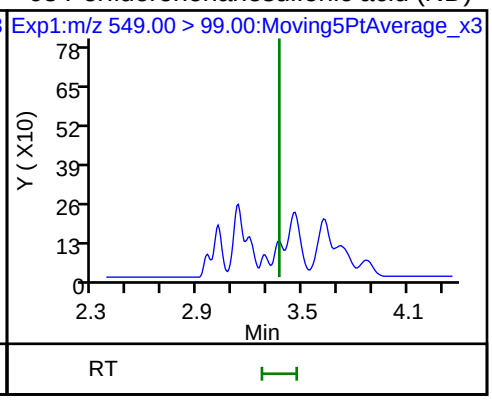
22 Perfluorooctane Sulfonamide (ND)



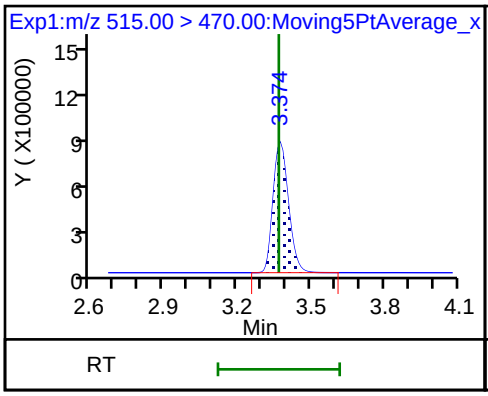
68 Perfluorononanesulfonic acid (ND)



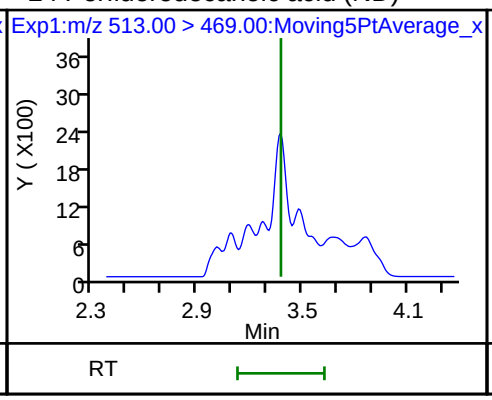
68 Perfluorononanesulfonic acid (ND)



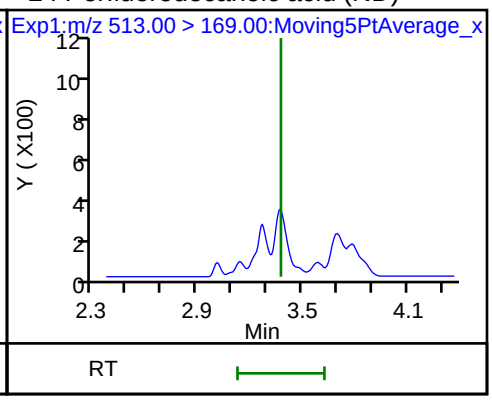
D 23 13C2 PFDA



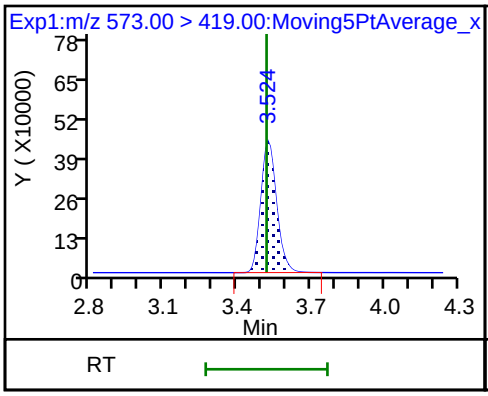
24 Perfluorodecanoic acid (ND)



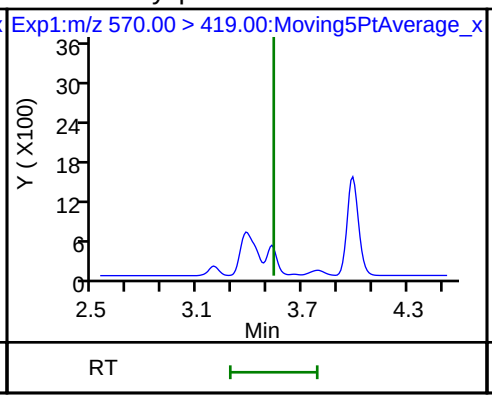
24 Perfluorodecanoic acid (ND)



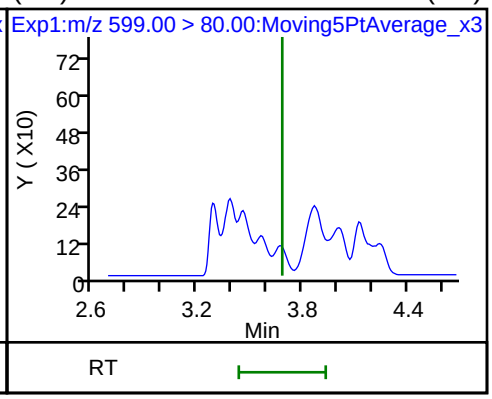
D 27 d3-NMeFOSAA



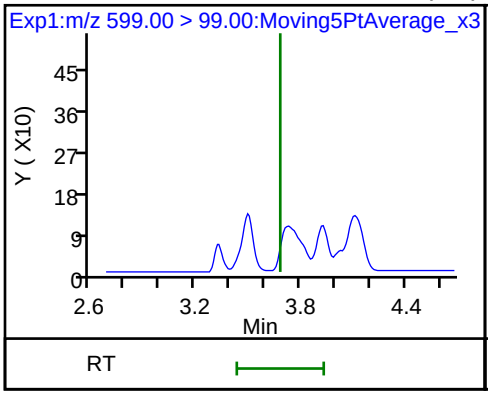
28 N-methyl perfluorooctane sulfonami (ND)



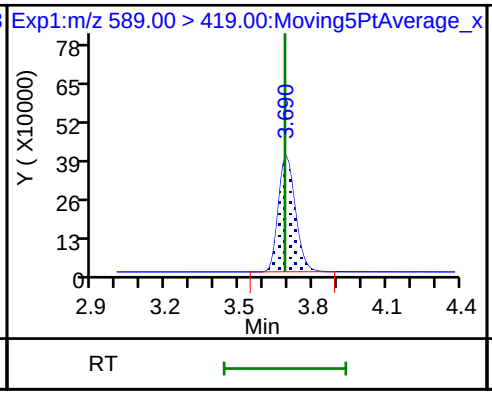
29 Perfluorodecane Sulfonic acid (ND)



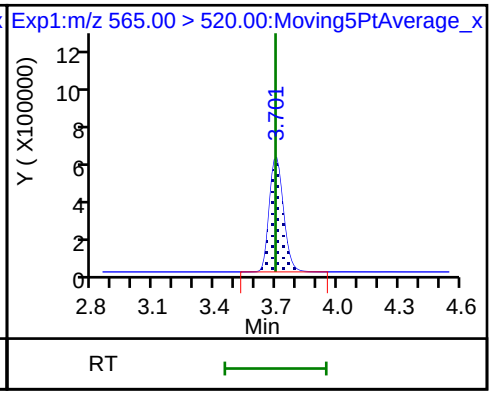
29 Perfluorodecane Sulfonic acid (ND)



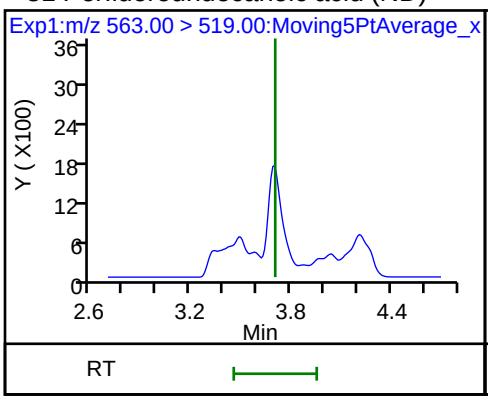
D 32 d5-NEtFOSAA



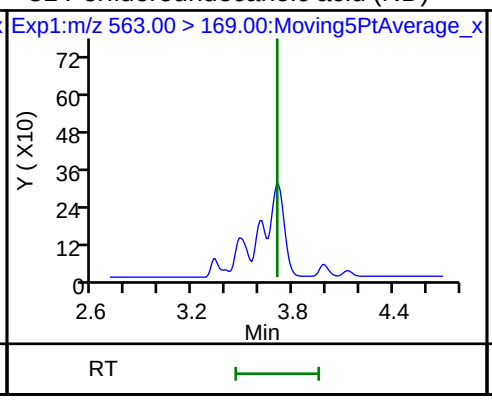
D 30 13C2 PFUnA



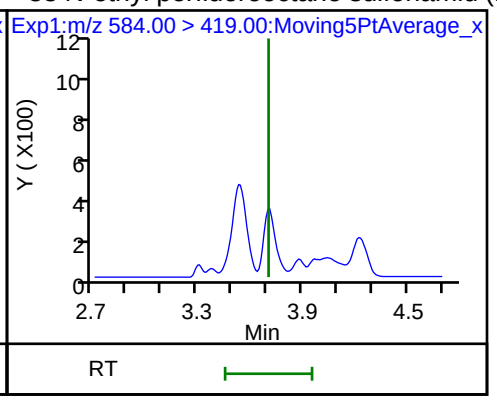
31 Perfluoroundecanoic acid (ND)



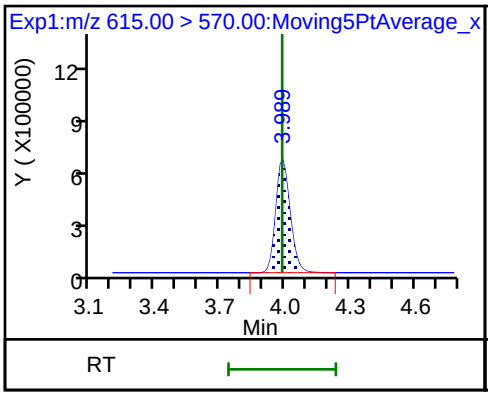
31 Perfluoroundecanoic acid (ND)



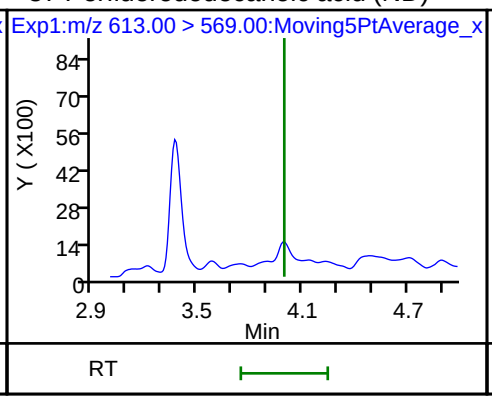
33 N-ethyl perfluorooctane sulfonamid (ND)



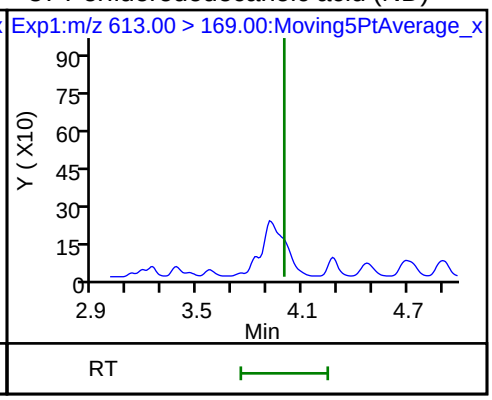
D 36 13C2 PFDoA



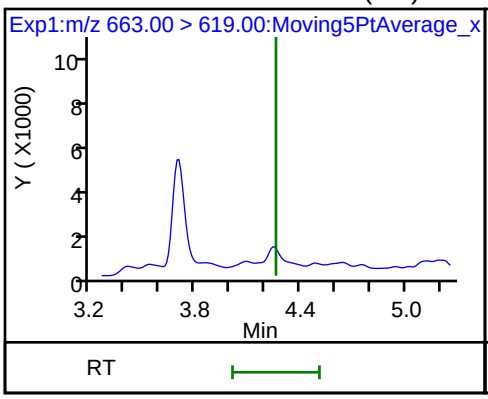
37 Perfluorododecanoic acid (ND)



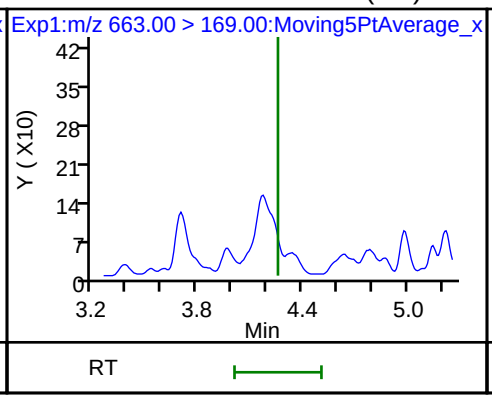
37 Perfluorododecanoic acid (ND)



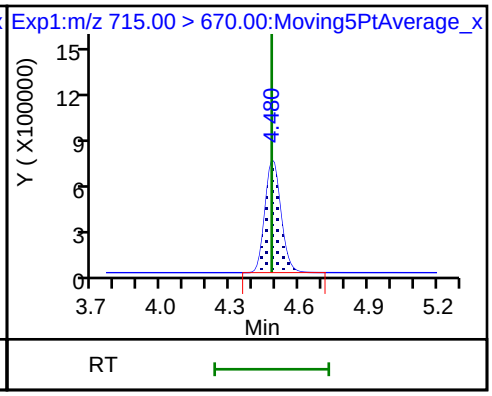
41 Perfluorotridecanoic acid (ND)



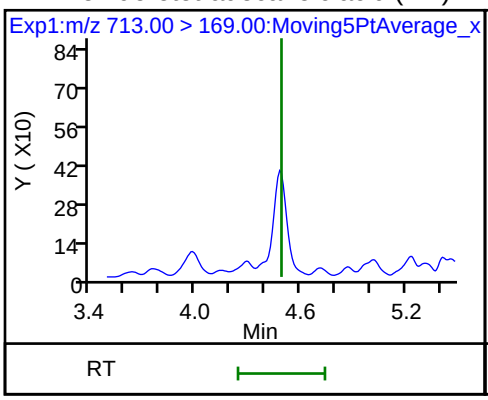
41 Perfluorotridecanoic acid (ND)



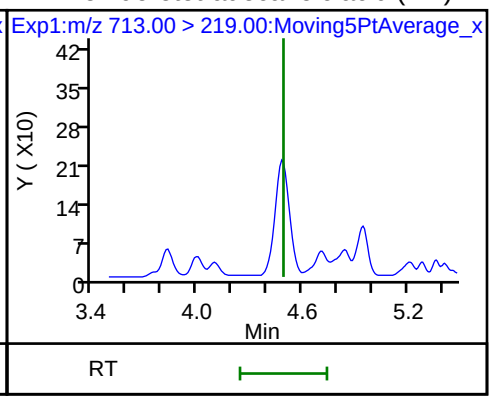
D 43 13C2-PFTeDA



42 Perfluorotetradecanoic acid (ND)



42 Perfluorotetradecanoic acid (ND)



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

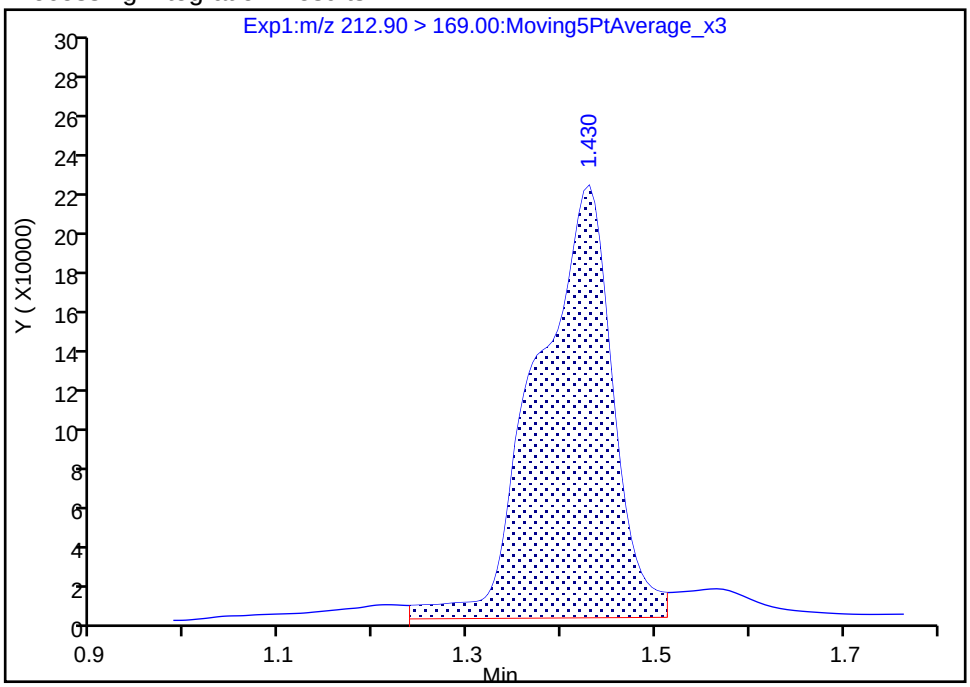
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180706-60751.b\2018.07.06LLAAA_045.d				
Injection Date:	06-Jul-2018 19:19:51	Instrument ID:	A8_N		
Lims ID:	320-40571-A-46-A	Lab Sample ID:	320-40571-46		
Client ID:	NFMW7-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	33	Worklist Smp#:	15
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

2 Perfluorobutyric acid, CAS: 375-22-4

Signal: 1

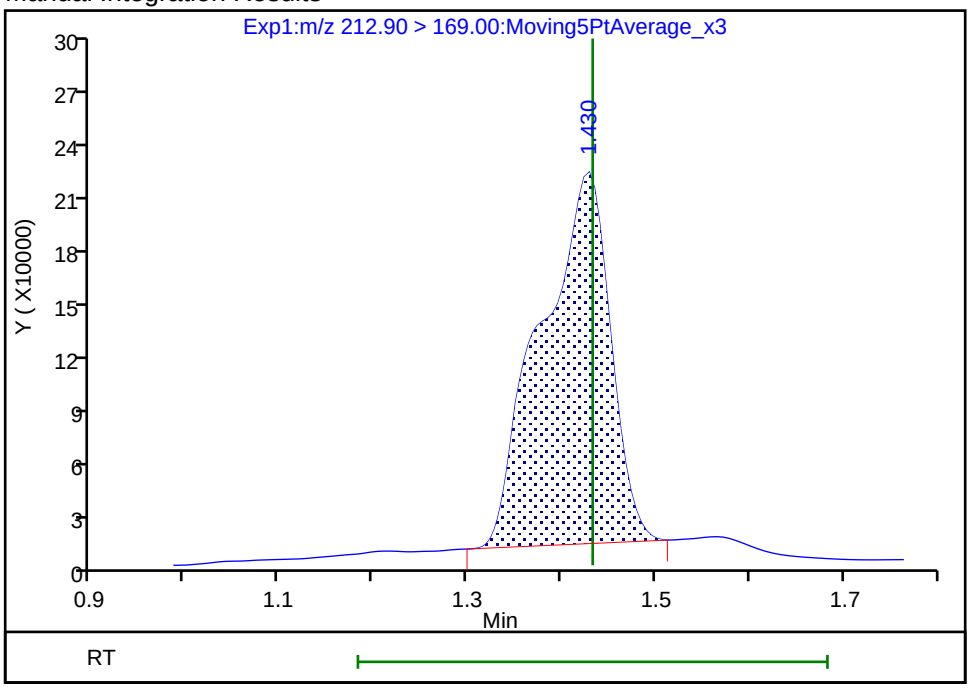
Processing Integration Results

RT: 1.43
Area: 1228389
Amount: 0.692244
Amount Units: ng/ml



Manual Integration Results

RT: 1.43
Area: 1068423
Amount: 0.602097
Amount Units: ng/ml



Reviewer: mongkols, 09-Jul-2018 10:25:10

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

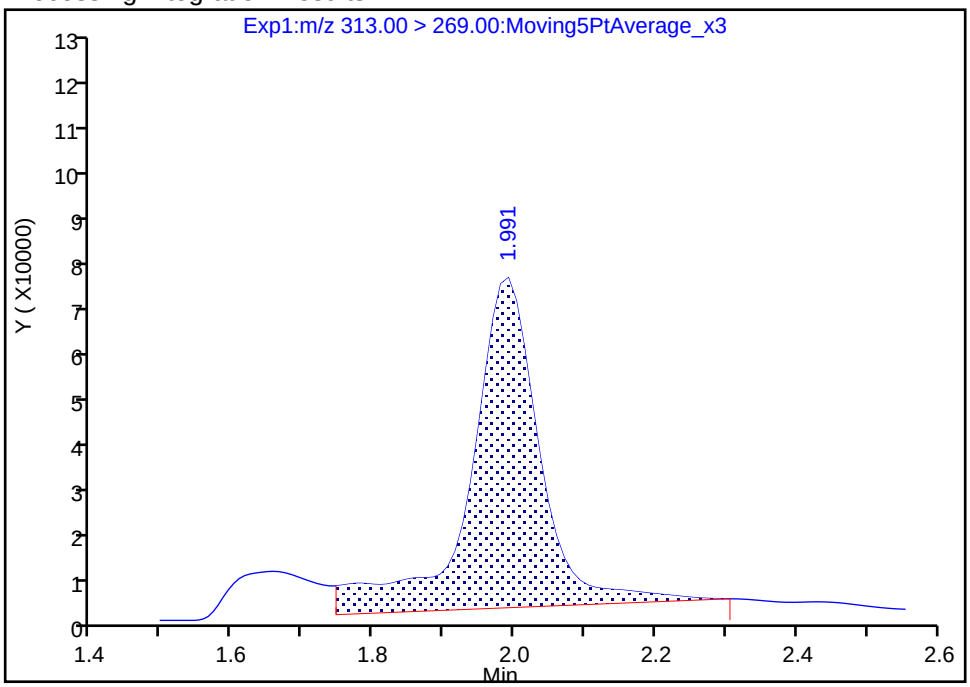
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180706-60751.b\2018.07.06LLAAA_045.d				
Injection Date:	06-Jul-2018 19:19:51	Instrument ID:	A8_N		
Lims ID:	320-40571-A-46-A	Lab Sample ID:	320-40571-46		
Client ID:	NFMW7-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	33	Worklist Smp#:	15
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

6 Perfluorohexanoic acid, CAS: 307-24-4

Signal: 1

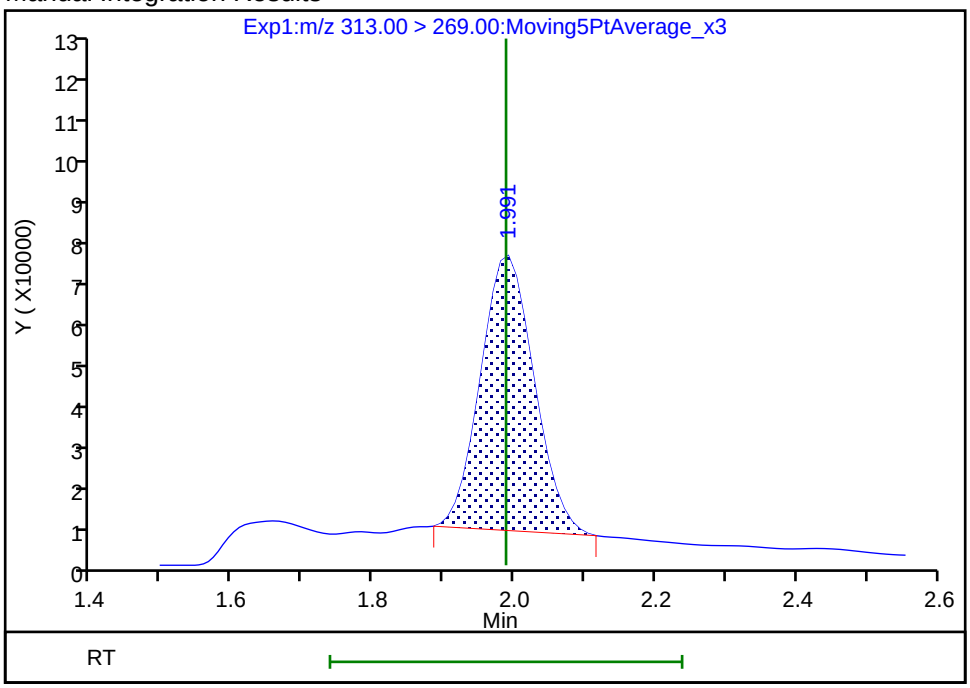
Processing Integration Results

RT: 1.99
Area: 482468
Amount: 0.226990
Amount Units: ng/ml



Manual Integration Results

RT: 1.99
Area: 338227
Amount: 0.159128
Amount Units: ng/ml



Reviewer: mongkols, 09-Jul-2018 10:25:25

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

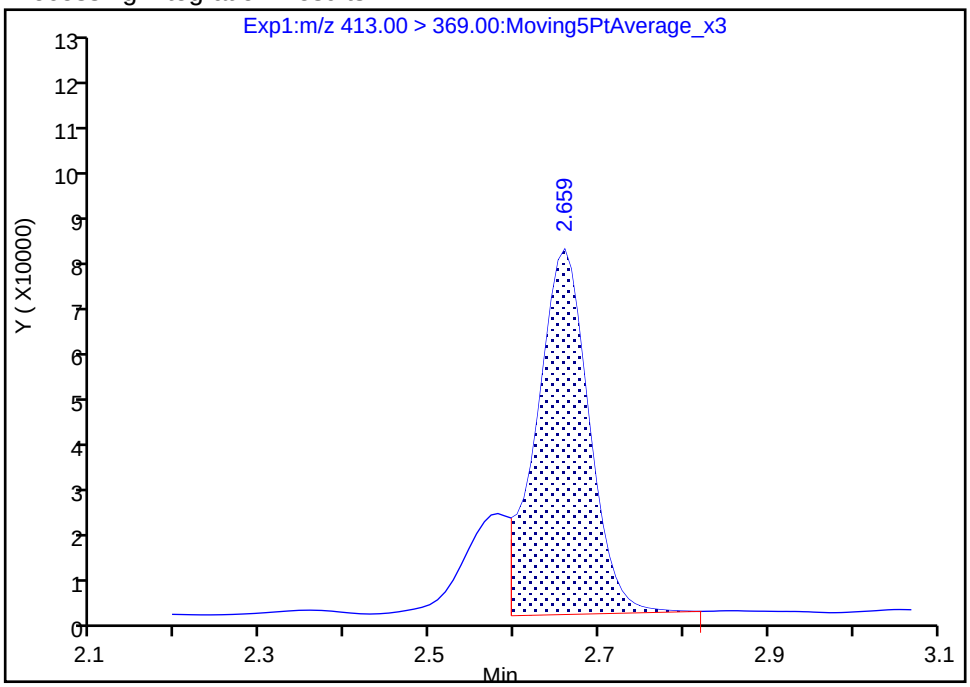
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180706-60751.b\2018.07.06LLAAA_045.d				
Injection Date:	06-Jul-2018 19:19:51	Instrument ID:	A8_N		
Lims ID:	320-40571-A-46-A	Lab Sample ID:	320-40571-46		
Client ID:	NFMW7-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	33	Worklist Smp#:	15
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

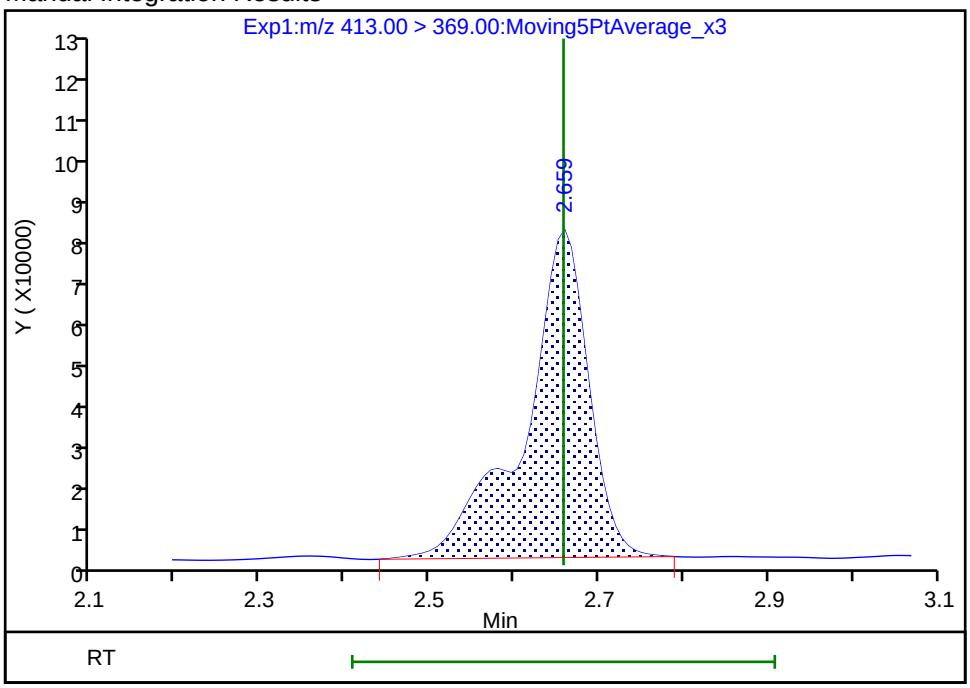
Processing Integration Results

RT: 2.66
Area: 335483
Amount: 0.144307
Amount Units: ng/ml



Manual Integration Results

RT: 2.66
Area: 407883
Amount: 0.175450
Amount Units: ng/ml



Reviewer: mongkols, 09-Jul-2018 10:25:49

Audit Action: Manually Integrated Audit Reason: Isomers

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

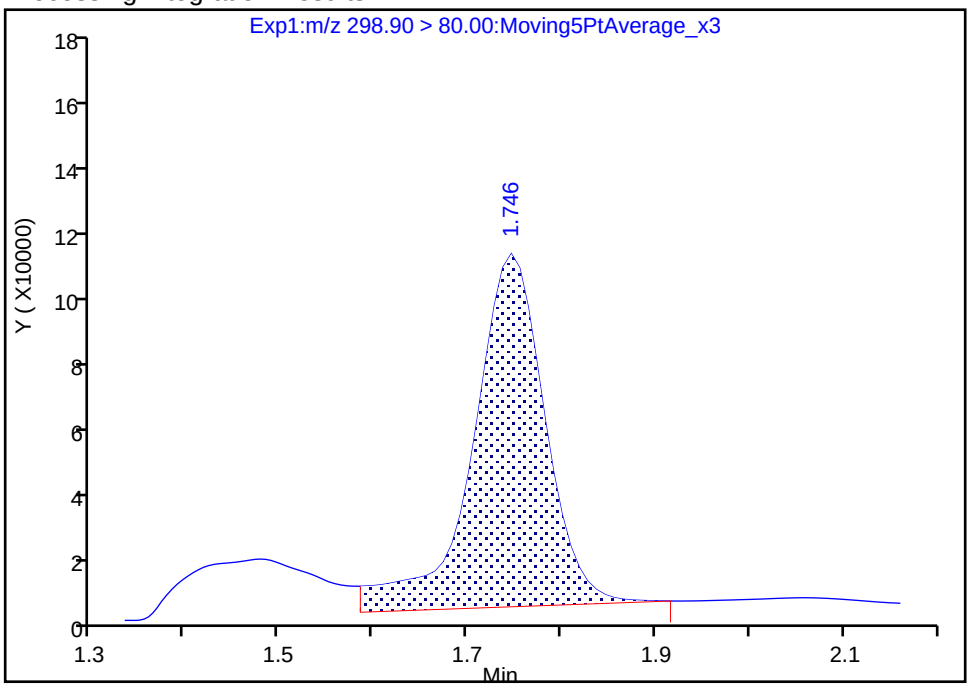
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180706-60751.b\2018.07.06LLAAA_045.d				
Injection Date:	06-Jul-2018 19:19:51	Instrument ID:	A8_N		
Lims ID:	320-40571-A-46-A	Lab Sample ID:	320-40571-46		
Client ID:	NFMW7-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	33	Worklist Smp#:	15
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

5 Perfluorobutanesulfonic acid, CAS: 375-73-5

Signal: 1

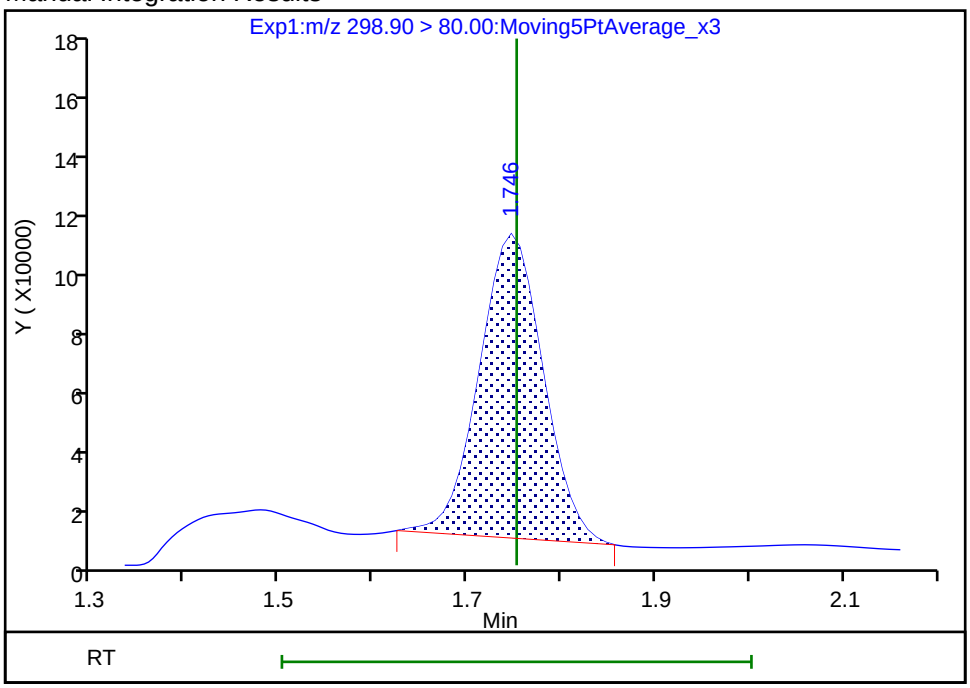
Processing Integration Results

RT: 1.75
Area: 585883
Amount: 0.175107
Amount Units: ng/ml



Manual Integration Results

RT: 1.75
Area: 491054
Amount: 0.146765
Amount Units: ng/ml



Reviewer: mongkols, 09-Jul-2018 10:25:19

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

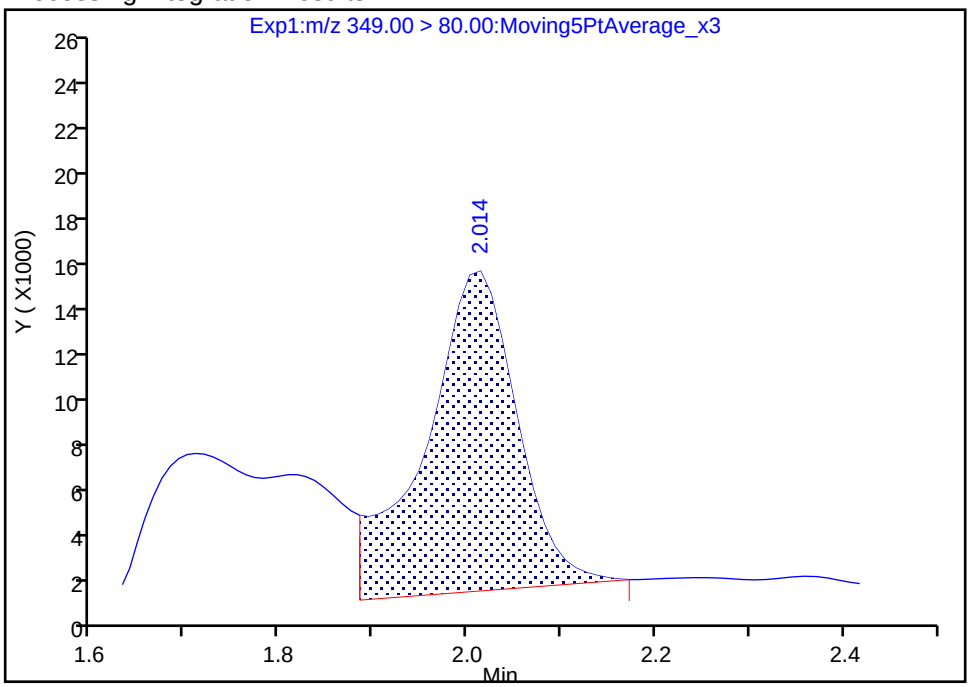
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180706-60751.b\2018.07.06LLAAA_045.d				
Injection Date:	06-Jul-2018 19:19:51	Instrument ID:	A8_N		
Lims ID:	320-40571-A-46-A	Lab Sample ID:	320-40571-46		
Client ID:	NFMW7-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	33	Worklist Smp#:	15
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

70 Perfluoropentanesulfonic acid, CAS: 2706-91-4

Signal: 1

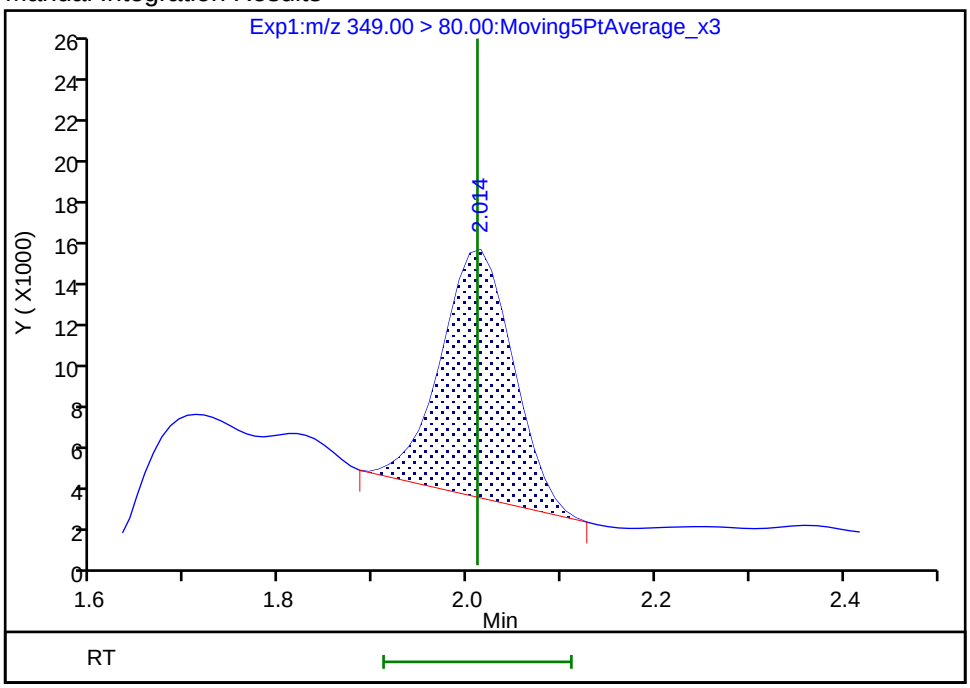
Processing Integration Results

RT: 2.01
Area: 96096
Amount: 0.033573
Amount Units: ng/ml



Manual Integration Results

RT: 2.01
Area: 65157
Amount: 0.022764
Amount Units: ng/ml



Reviewer: mongkols, 09-Jul-2018 10:25:31

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

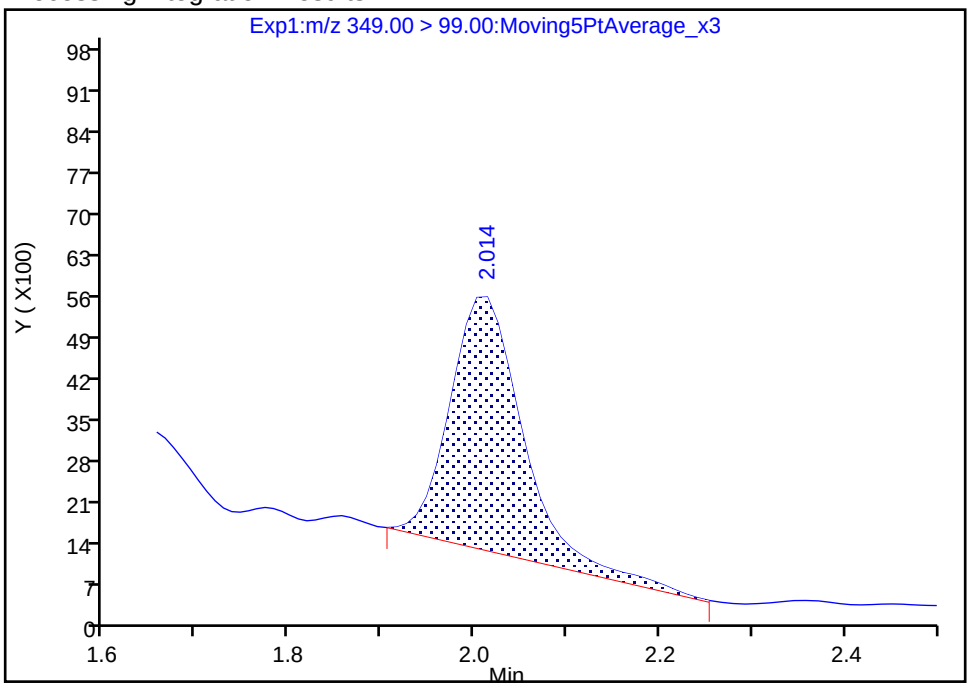
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180706-60751.b\2018.07.06LLAAA_045.d				
Injection Date:	06-Jul-2018 19:19:51	Instrument ID:	A8_N		
Lims ID:	320-40571-A-46-A	Lab Sample ID:	320-40571-46		
Client ID:	NFMW7-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	33	Worklist Smp#:	15
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

70 Perfluoropentanesulfonic acid, CAS: 2706-91-4

Signal: 2

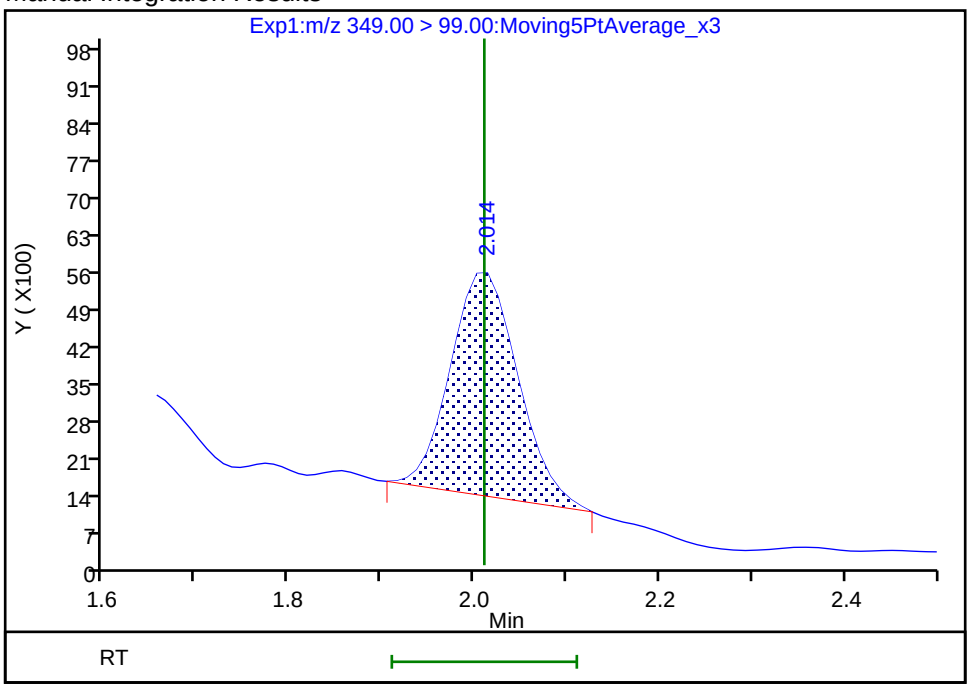
Processing Integration Results

RT: 2.01
Area: 23767
Amount: 0.033573
Amount Units: ng/ml



Manual Integration Results

RT: 2.01
Area: 21256
Amount: 0.022764
Amount Units: ng/ml



Reviewer: mongkols, 09-Jul-2018 10:25:34
Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

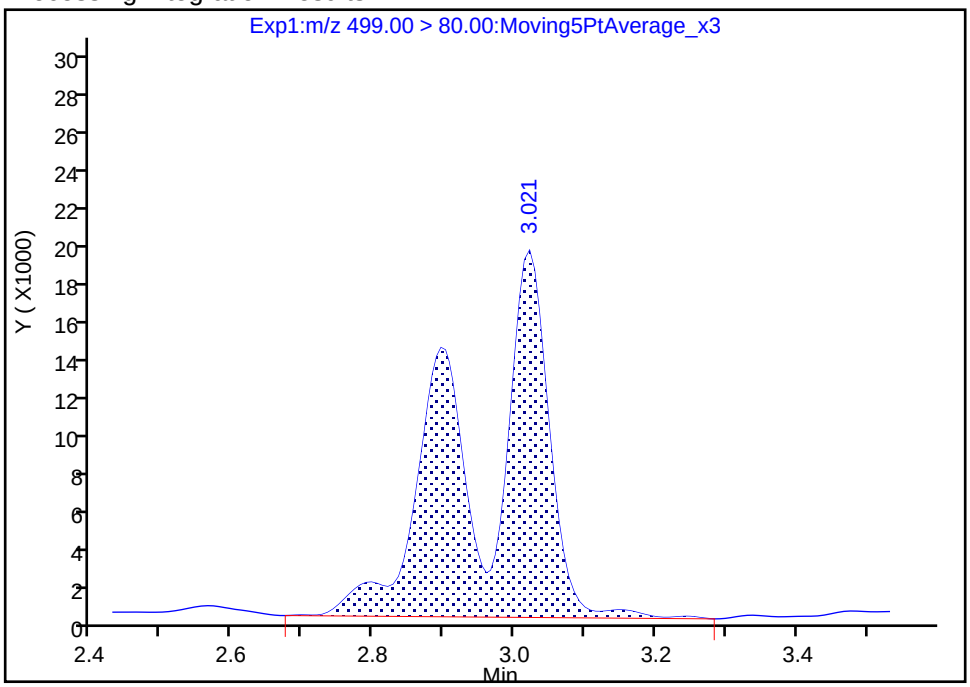
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180706-60751.b\2018.07.06LLAAA_045.d				
Injection Date:	06-Jul-2018 19:19:51	Instrument ID:	A8_N		
Lims ID:	320-40571-A-46-A	Lab Sample ID:	320-40571-46		
Client ID:	NFMW7-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	33	Worklist Smp#:	15
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

17 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

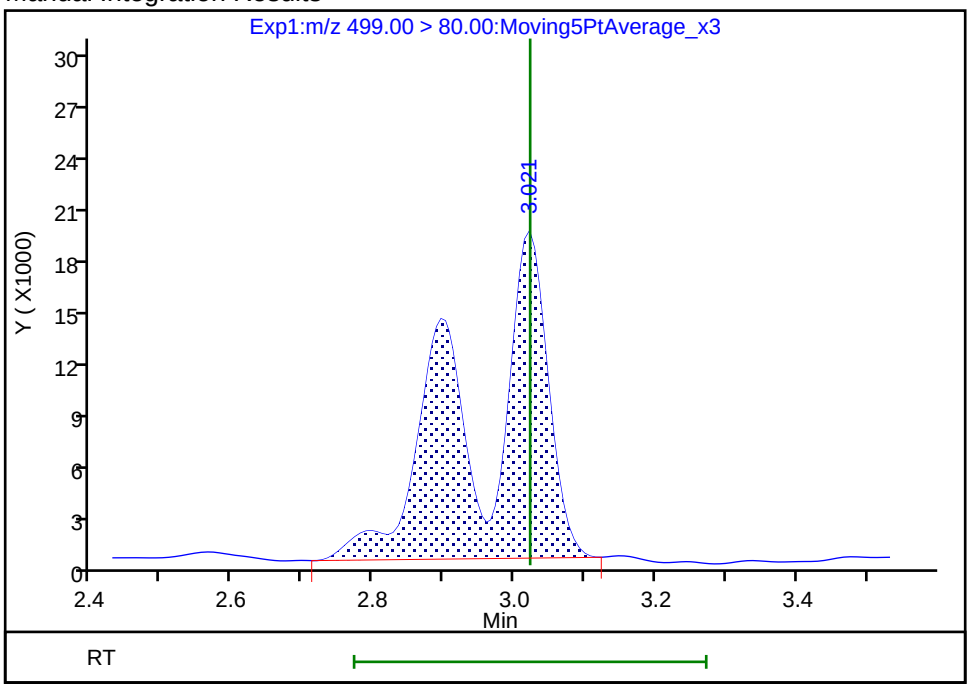
Processing Integration Results

RT: 3.02
Area: 145523
Amount: 0.070088
Amount Units: ng/ml



Manual Integration Results

RT: 3.02
Area: 139102
Amount: 0.066995
Amount Units: ng/ml



Reviewer: mongkols, 09-Jul-2018 10:25:59

Audit Action: Manually Integrated Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NFMW7-GW-01-DUP
Lab Sample ID: 320-40571-47
Matrix: Water
Lab File ID: 2018.07.06LLAAA_046.d
Analysis Method: 537 (modified)
Date Collected: 06/21/2018 12:00
Extraction Method: 3535
Date Extracted: 07/02/2018 16:10
Sample wt/vol: 278.2(mL)
Date Analyzed: 07/06/2018 19:27
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 232788
Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	0.019	B	0.0018	0.00031
2706-90-3	Perfluoropentanoic acid (PFPeA)	0.018		0.0018	0.00044
307-24-4	Perfluorohexanoic acid (PFHxA)	0.0055		0.0018	0.00052
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.0051		0.0018	0.00022
335-67-1	Perfluorooctanoic acid (PFOA)	0.0063		0.0018	0.00076
375-95-1	Perfluorononanoic acid (PFNA)	0.00082	J	0.0018	0.00024
335-76-2	Perfluorodecanoic acid (PFDA)	ND		0.0018	0.00028
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		0.0018	0.00099
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		0.0018	0.00049
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		0.0018	0.0012
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		0.0018	0.00026
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.0052		0.0018	0.00018
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	0.00080	J	0.0018	0.00027
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.0031	B	0.0018	0.00015
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.0018	0.00017
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.0025		0.0018	0.00049
8789-57-2	Perfluorononanesulfonic acid (PFNS)	ND		0.0018	0.00014
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		0.0018	0.00029
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		0.0018	0.00031
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.018	0.0028
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.018	0.0017
757124-72-4	4:2 FTS	ND		0.018	0.0047
27619-97-2	6:2 FTS	ND		0.018	0.0018
39108-34-4	8:2 FTS	ND		0.018	0.0018

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NFMW7-GW-01-DUP
Lab Sample ID: 320-40571-47
Matrix: Water
Lab File ID: 2018.07.06LLAAA_046.d
Analysis Method: 537 (modified)
Date Collected: 06/21/2018 12:00
Extraction Method: 3535
Date Extracted: 07/02/2018 16:10
Sample wt/vol: 278.2(mL)
Date Analyzed: 07/06/2018 19:27
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 232788
Units: ug/L

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00992	13C4 PFBA	62		25-150
STL01893	13C5 PFPeA	83		25-150
STL00993	13C2 PFHxA	92		25-150
STL01892	13C4-PFHpA	101		25-150
STL00990	13C4 PFOA	104		25-150
STL00995	13C5 PFNA	102		25-150
STL00996	13C2 PFDA	105		25-150
STL00997	13C2 PFUnA	96		25-150
STL00998	13C2 PFDoA	96		25-150
STL02116	13C2-PFTeDA	94		25-150
STL02337	13C3-PFBS	88		25-150
STL00994	18O2 PFHxS	113		25-150
STL00991	13C4 PFOS	100		25-150
STL01056	13C8 FOSA	86		25-150
STL02118	d3-NMeFOSAA	93		25-150
STL02117	d5-NEtFOSAA	99		25-150
STL02279	M2-6:2FTS	115		25-150
STL02280	M2-8:2FTS	112		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180706-60751.b\2018.07.06LLAAA_046.d
Lims ID: 320-40571-A-47-A
Client ID: NFMW7-GW-01-DUP
Sample Type: Client
Inject. Date: 06-Jul-2018 19:27:44 ALS Bottle#: 34 Worklist Smp#: 16
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-40571-a-47-a
Misc. Info.: Plate: 1 Rack: 5
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180706-60751.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 09-Jul-2018 10:27:28 Calib Date: 05-Jul-2018 09:38:17
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180705-60684.b\2018.07.05LLICALAA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK010

First Level Reviewer: mongkols Date: 09-Jul-2018 10:27:28

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.430	1.424	0.006	0.539	4271175	1.55		61.9	17737	
2 Perfluorobutyric acid										M
212.90 > 169.00	1.430	1.433	-0.003	1.000	946640	0.5425			175	M
D 3 13C5-PFPeA										
267.90 > 223.00	1.712	1.702	0.010	0.645	4219045	2.06		82.6	22713	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.712	1.707	0.005	1.000	1030392	0.5127			146	
D 47 13C3-PFBS										
301.90 > 83.00	1.748	1.738	0.010	0.659	99585	2.04		87.6	243	
5 Perfluorobutanesulfonic acid										M
298.90 > 80.00	1.748	1.752	-0.004	1.000	471127	0.1451			95.7	M
298.90 > 99.00	1.748	1.752	-0.004	1.000	194701		2.42(1.25-3.74)		226	
D 7 13C2 PFHxA										
315.00 > 270.00	1.993	1.981	0.012	0.751	5033664	2.30		92.0	60472	
6 Perfluorohexanoic acid										M
313.00 > 269.00	1.993	1.988	0.005	1.000	311439	0.1519			107	M
313.00 > 119.00	1.993	1.988	0.005	1.000	31407		9.92(5.03-15.10)		313	
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.004	2.010	-0.006	1.147	61512	0.0221			35.4	
349.00 > 99.00	2.004	2.010	-0.006	1.147	20766		2.96(1.36-4.07)		37.6	
D 9 13C4-PFHpA										
367.00 > 322.00	2.307	2.293	0.014	0.870	4898852	2.52		101	40888	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.307	2.302	0.005	1.000	314196	0.1419			187	
363.00 > 169.00	2.307	2.302	0.005	1.000	127775		2.46(1.13-3.40)		812	
D 11 18O2 PFHxS										
403.00 > 84.00	2.320	2.306	0.014	0.875	6400794	2.68		113	53701	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.320	2.315	0.005	1.000	266883	0.0853			114	
399.00 > 99.00	2.320	2.315	0.005	1.000	89347		2.99(1.50-4.49)		221	
D 12 M2-6:2FTS										
429.00 > 81.00	2.629	2.627	0.002	0.991	1191117	2.73		115	5976	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.629	2.634	-0.005	1.000	22740	0.0289			124	
D 14 13C4 PFOA										
417.00 > 372.00	2.653	2.652	0.001	1.000	4970138	2.61		104	52673	
* 62 13C2-PFOA										
415.00 > 370.00	2.653	2.658	-0.005		4988026	2.50			50816	
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.653	2.658	-0.005	1.000	412329	0.1749			132	M
413.00 > 169.00	2.653	2.658	-0.005	1.000	257066		1.60(0.84-2.52)		1032	
D 19 13C5 PFNA										
468.00 > 423.00	3.016	3.009	0.007	1.137	4121328	2.55		102	39068	
D 18 13C4 PFOS										
503.00 > 80.00	3.016	3.009	0.007	1.137	4094999	2.40		100	22676	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.016	3.022	-0.006	1.000	141686	0.0708			361	
499.00 > 99.00	3.016	3.022	-0.006	1.000	27052		5.24(2.31-6.93)		260	
20 Perfluorononanoic acid										
463.00 > 419.00	3.016	3.022	-0.006	1.000	40310	0.0227			56.1	
463.00 > 169.00	3.016	3.022	-0.006	1.000	10584		3.81(1.90-5.69)		150	
D 21 13C8 FOSA										
506.00 > 78.00	3.359	3.359	0.0	1.266	5105075	2.16		86.2	34959	
D 26 M2-8:2FTS										
529.00 > 81.00	3.359	3.359	0.0	1.266	1295262	2.67		112	13160	
D 23 13C2 PFDA										
515.00 > 470.00	3.368	3.368	0.0	1.269	3657833	2.62		105	50050	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.517	3.518	-0.001	1.326	1920557	2.34		93.5	17611	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.685	3.685	0.0	1.389	2015892	2.48		99.3	18991	
D 30 13C2 PFUnA										
565.00 > 520.00	3.695	3.696	-0.001	1.393	2820760	2.41		96.3	36912	
D 36 13C2 PFDoA										
615.00 > 570.00	3.986	3.986	0.0	1.502	3004255	2.39		95.7	18397	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.489	4.479	0.010	1.692	3603687	2.35		94.2	15342	

QC Flag Legend

Review Flags

M - Manually Integrated

Report Date: 09-Jul-2018 10:27:29 Chrom Revision: 2.2 07-Jun-2018 07:41:54

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180706-60751.b\2018.07.06LLAAA_046.d

Injection Date: 06-Jul-2018 19:27:44 Instrument ID: A8_N

Lims ID: 320-40571-A-47-A Lab Sample ID: 320-40571-47

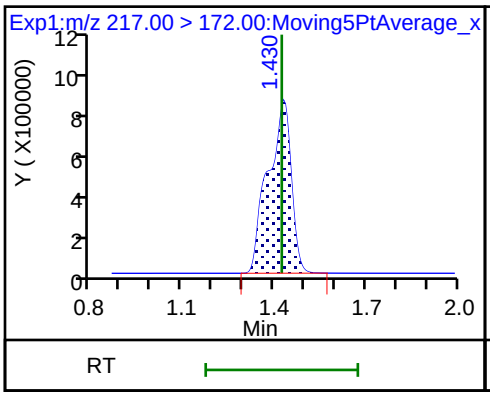
Client ID: NFMW7-GW-01-DUP

Operator ID: SACINSTLCMS01 ALS Bottle#: 34 Worklist Smp#: 16

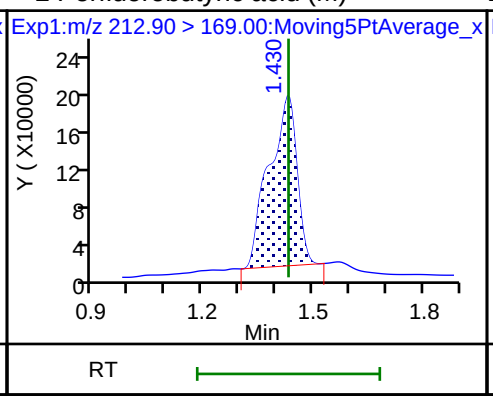
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC ICAL

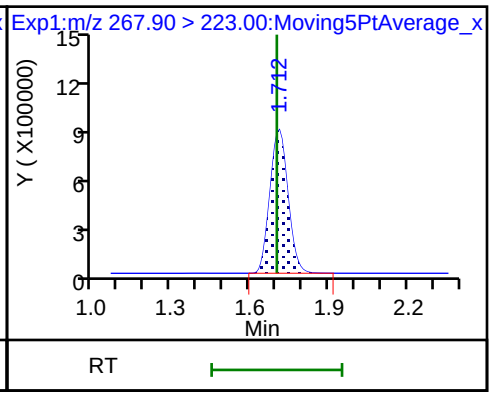
D 1 13C4 PFBA



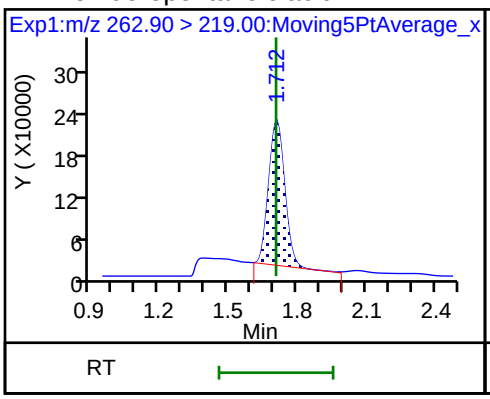
2 Perfluorobutyric acid (M)



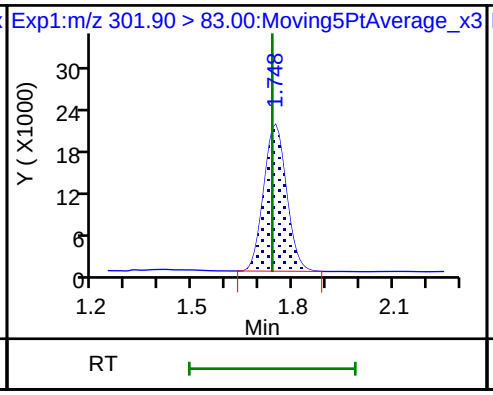
D 3 13C5-PFPeA



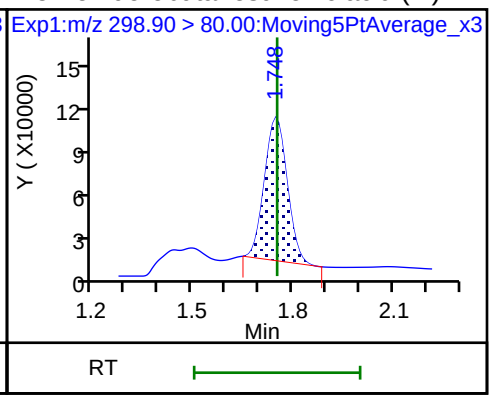
4 Perfluoropentanoic acid



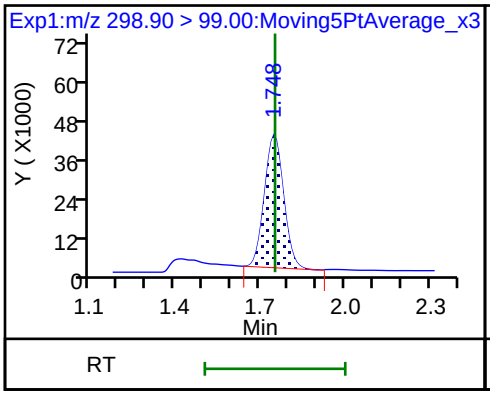
D 47 13C3-PFBS



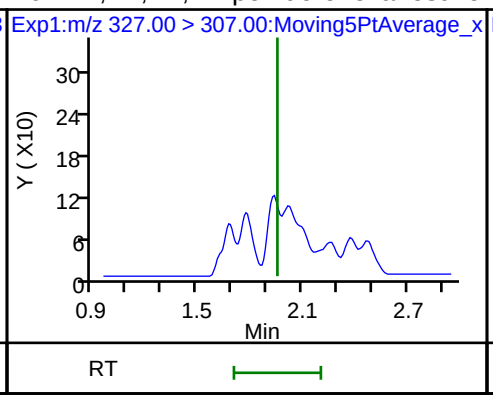
5 Perfluorobutanesulfonic acid (M)



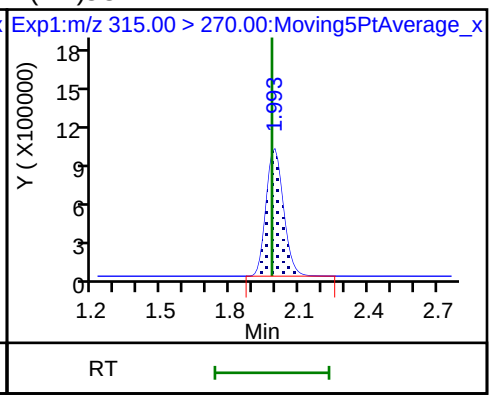
5 Perfluorobutanesulfonic acid



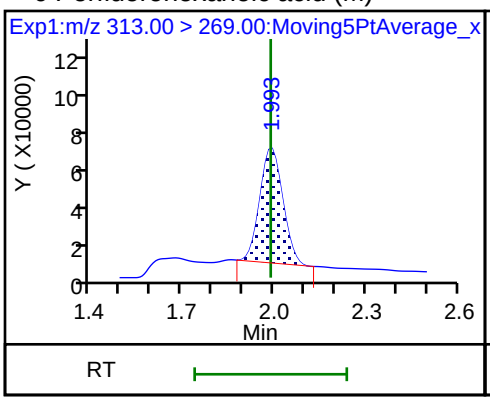
61 1H,1H,2H,2H-perfluorohexanesulfonic acid (M)



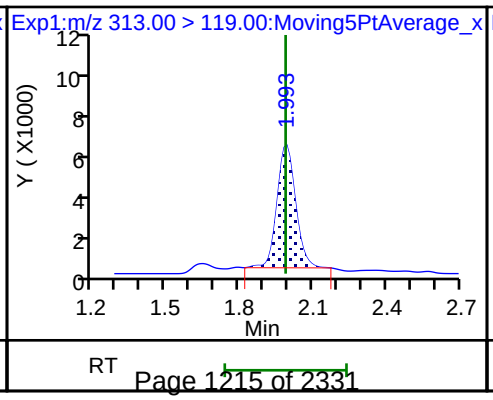
D 70 13C2 PFHxA



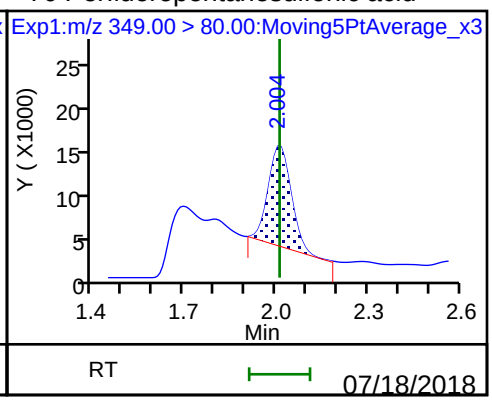
6 Perfluorohexanoic acid (M)



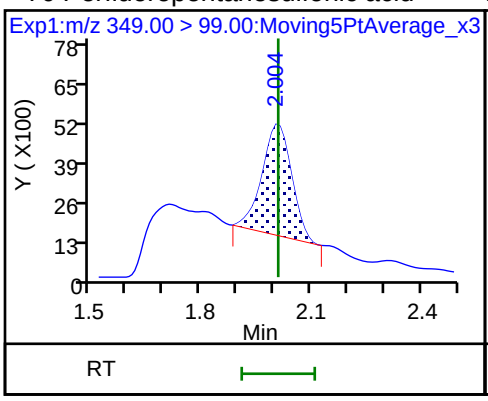
6 Perfluorohexanoic acid



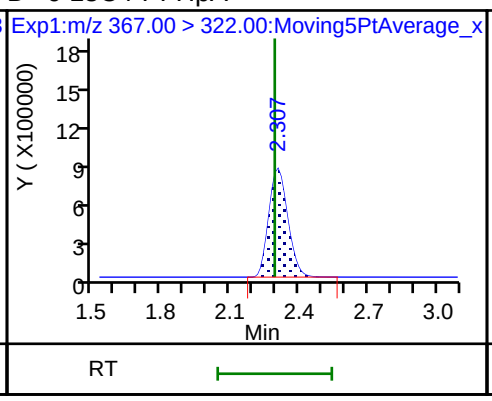
70 Perfluoropentanesulfonic acid



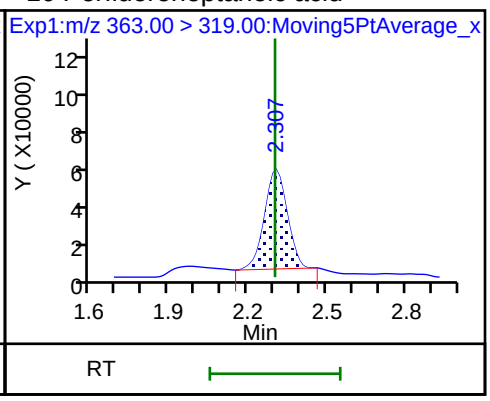
70 Perfluoropentanesulfonic acid



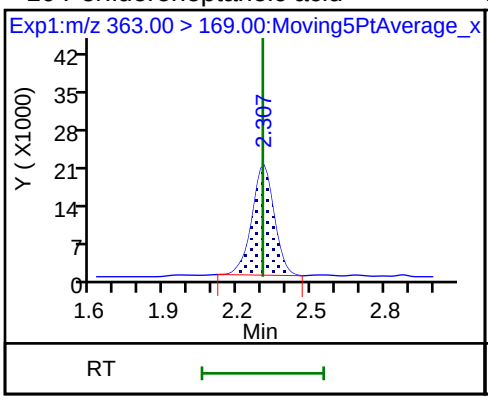
D 9 13C4-PFHpA



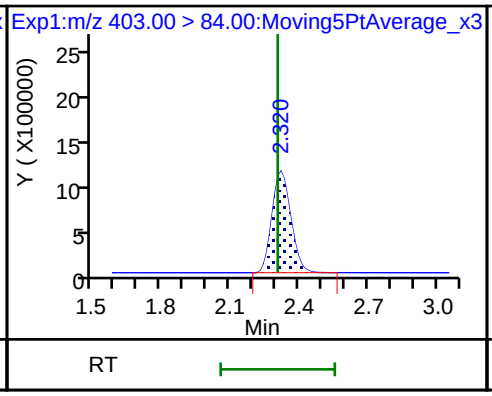
10 Perfluoroheptanoic acid



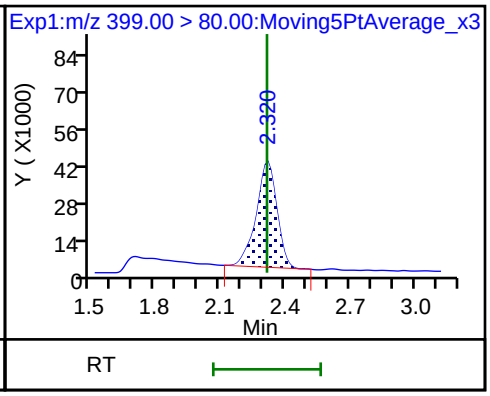
10 Perfluoroheptanoic acid



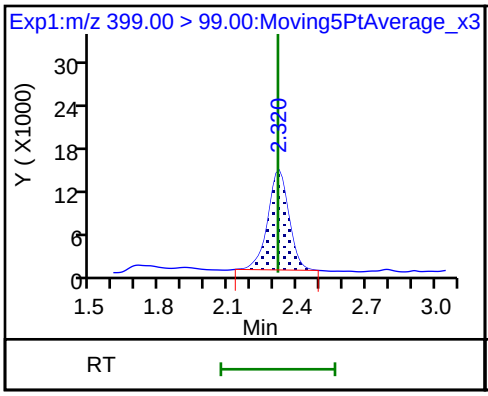
D 11 18O2 PFHxS



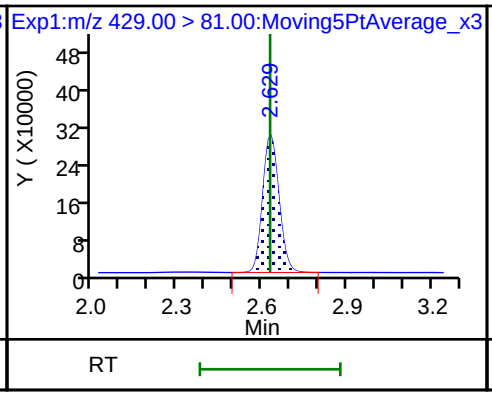
8 Perfluorohexanesulfonic acid



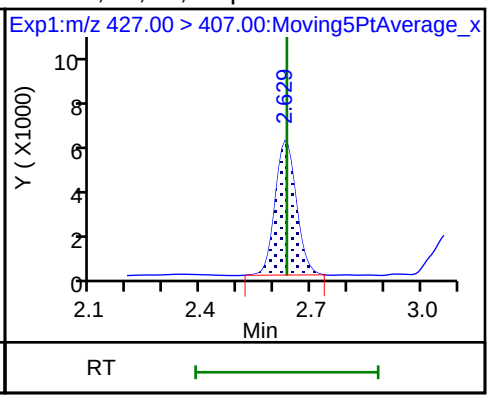
8 Perfluorohexanesulfonic acid



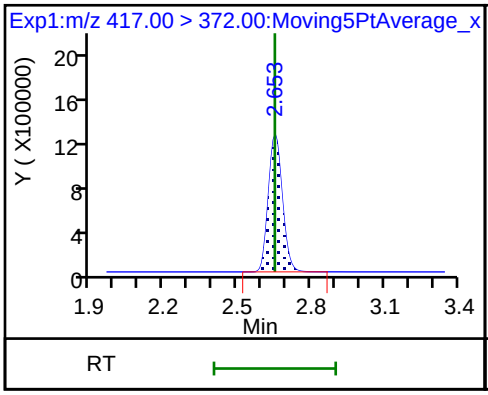
D 12 M2-6:2FTS



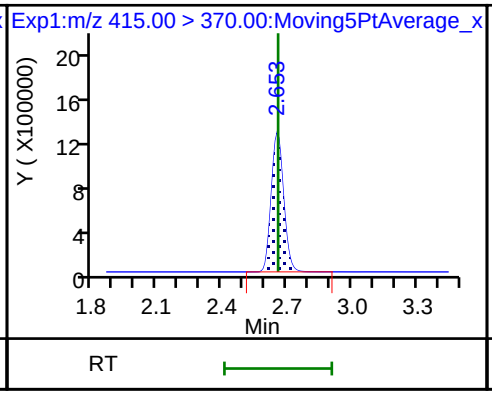
13 1H,1H,2H,2H-perfluorooctanesulfoni



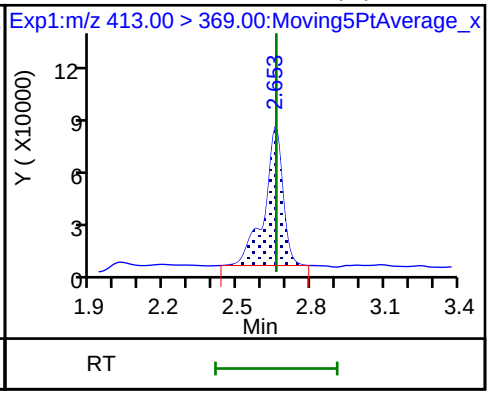
D 14 13C4 PFOA



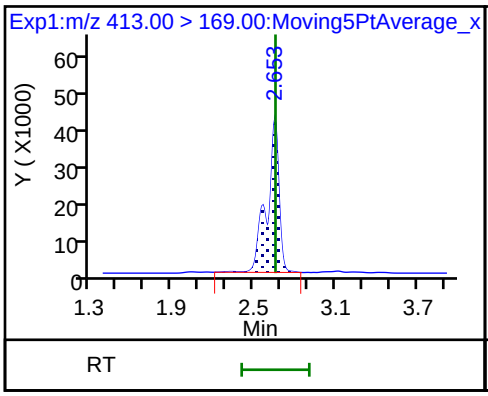
* 62 13C2-PFOA



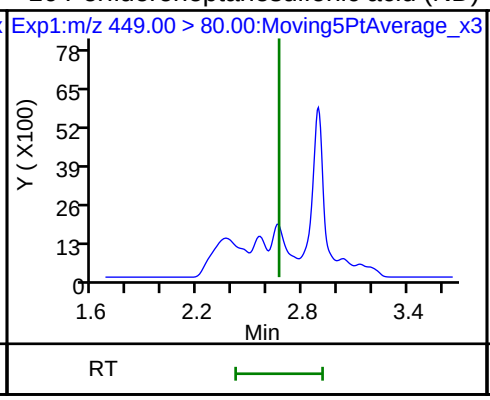
15 Perfluorooctanoic acid (M)



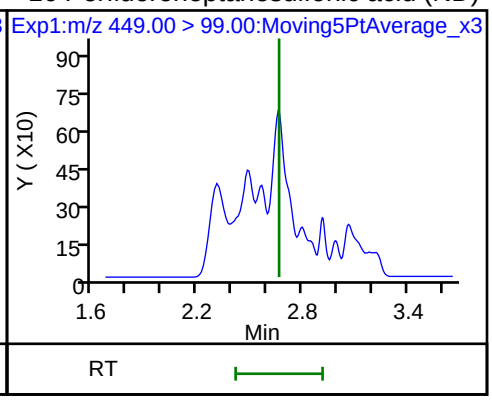
15 Perfluorooctanoic acid



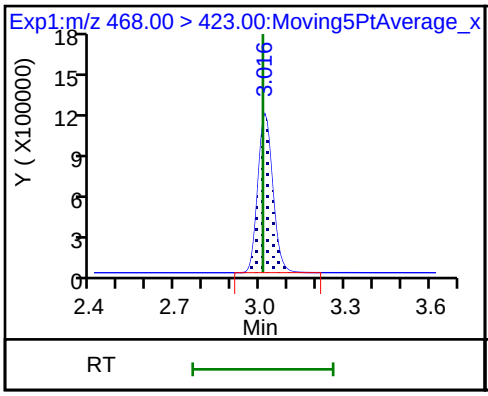
16 Perfluoroheptanesulfonic acid (ND)



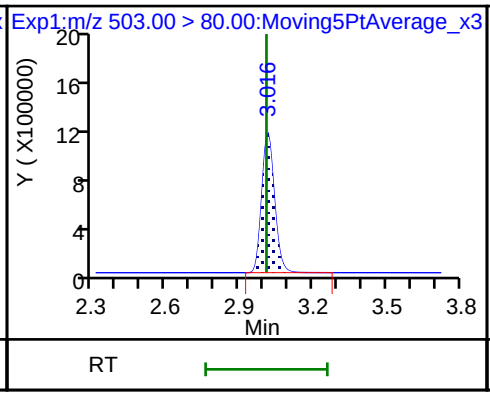
16 Perfluoroheptanesulfonic acid (ND)



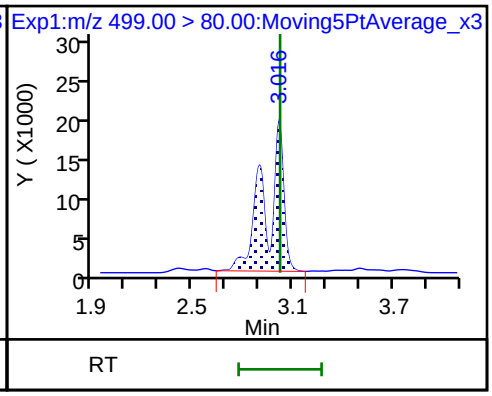
D 19 13C5 PFNA



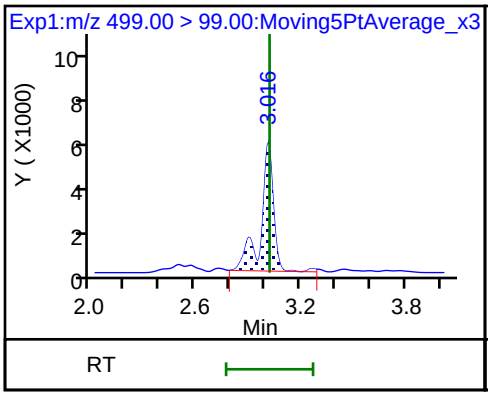
D 18 13C4 PFOS



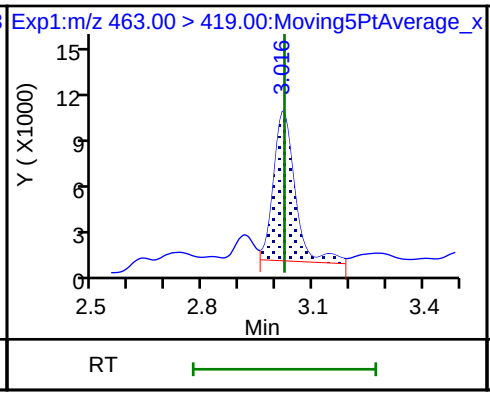
17 Perfluorooctane sulfonic acid



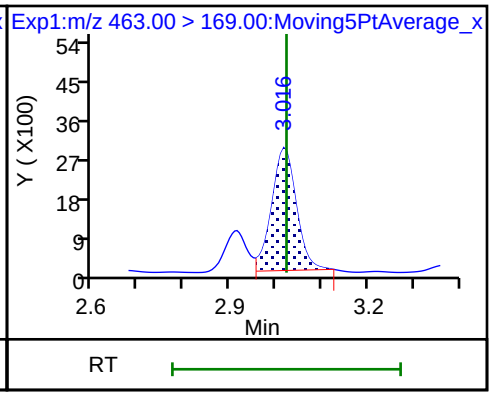
17 Perfluorooctane sulfonic acid



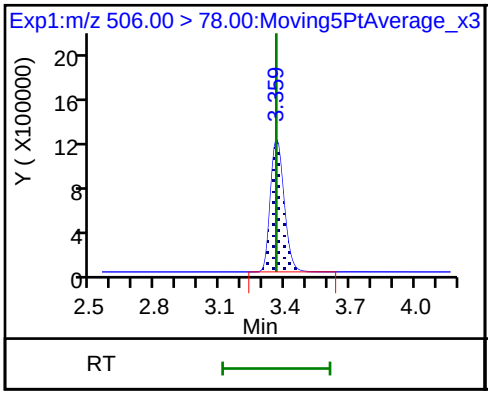
20 Perfluorononanoic acid



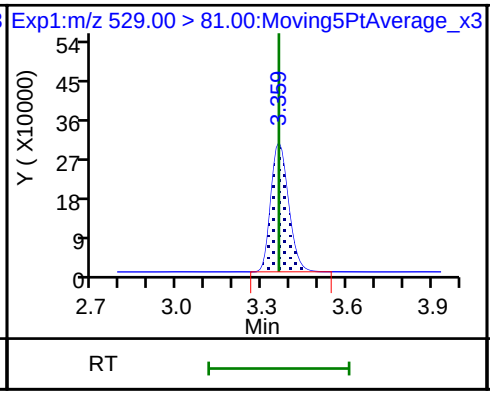
20 Perfluorononanoic acid



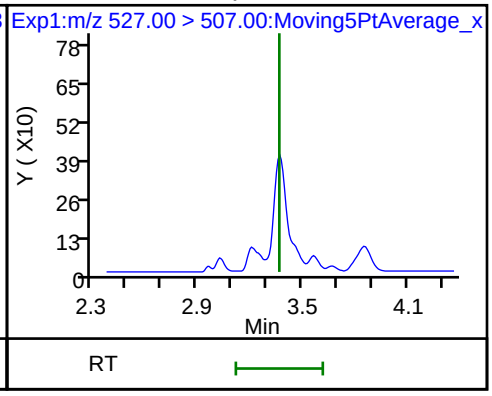
D 21 13C8 FOSA



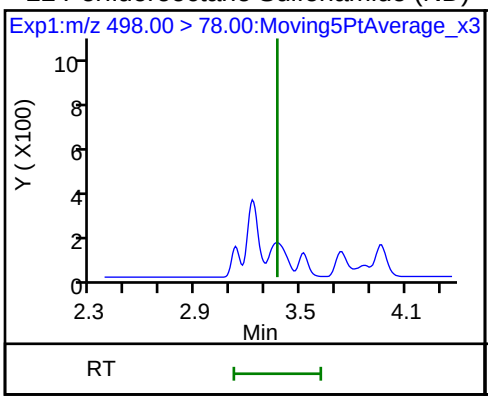
D 26 M2-8:2FTS



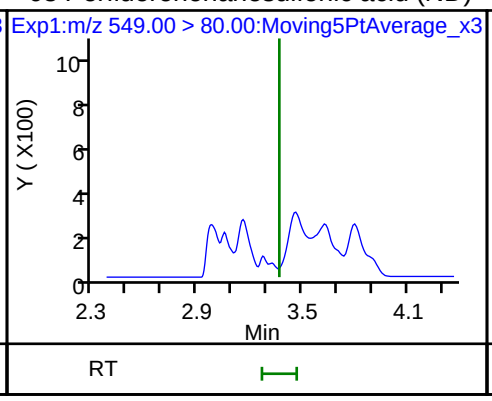
25 1H,1H,2H,2H-perfluorodecanesulfoni (ND)



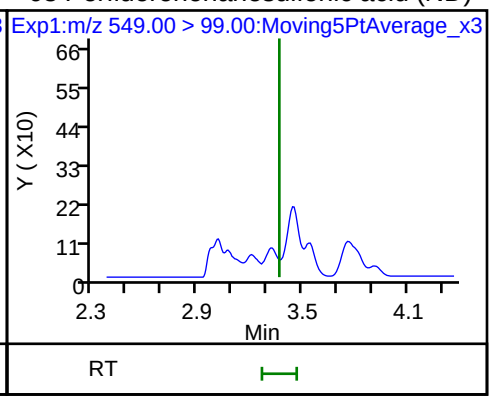
22 Perfluorooctane Sulfonamide (ND)



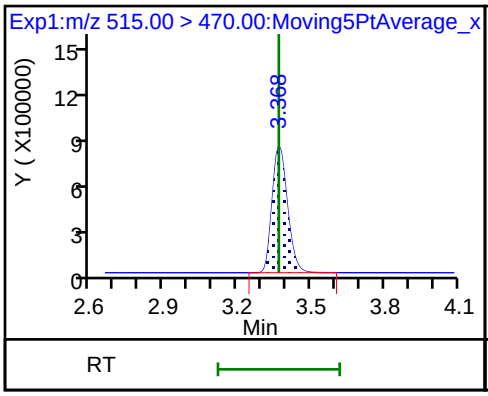
68 Perfluorononanesulfonic acid (ND)



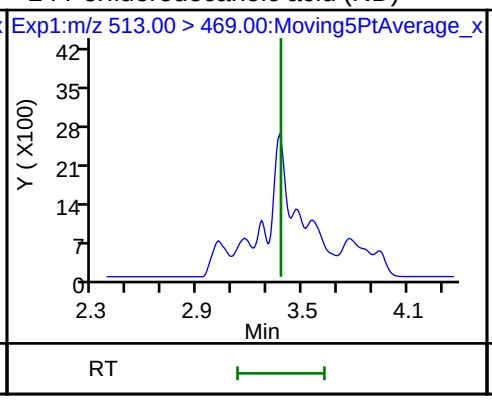
68 Perfluorononanesulfonic acid (ND)



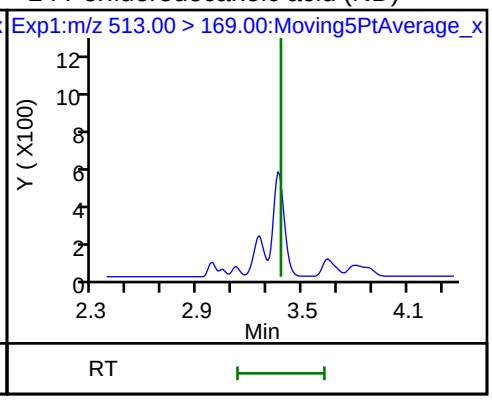
D 23 13C2 PFDA



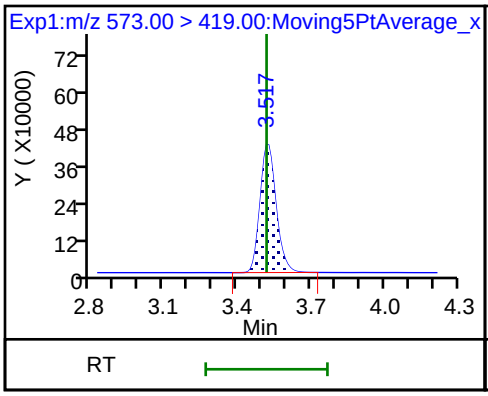
24 Perfluorodecanoic acid (ND)



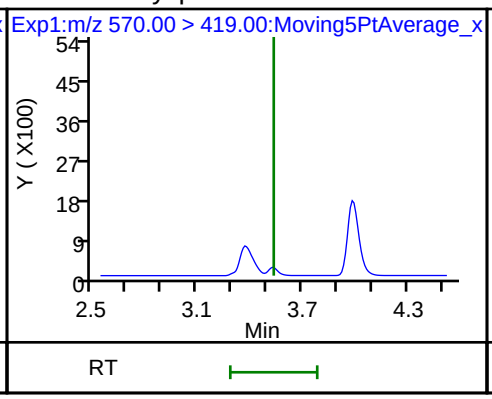
24 Perfluorodecanoic acid (ND)



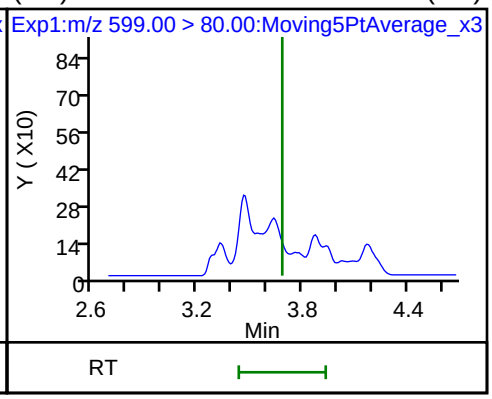
D 27 d3-NMeFOSAA



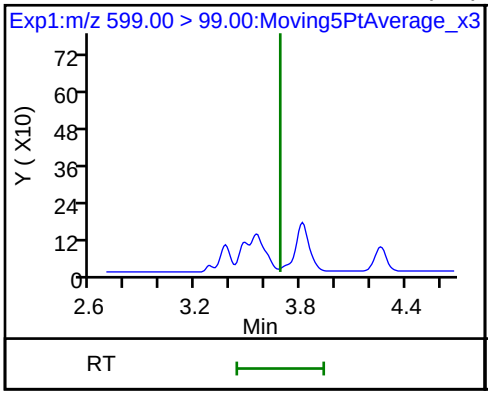
28 N-methyl perfluorooctane sulfonami (ND)



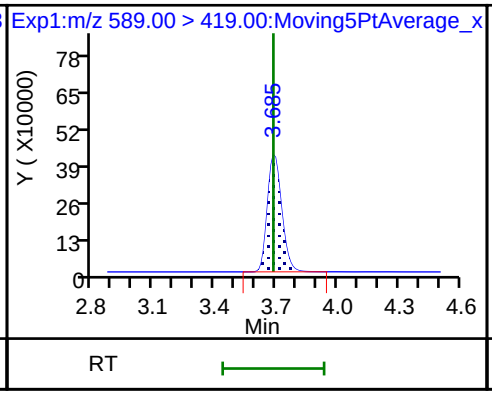
29 Perfluorodecane Sulfonic acid (ND)



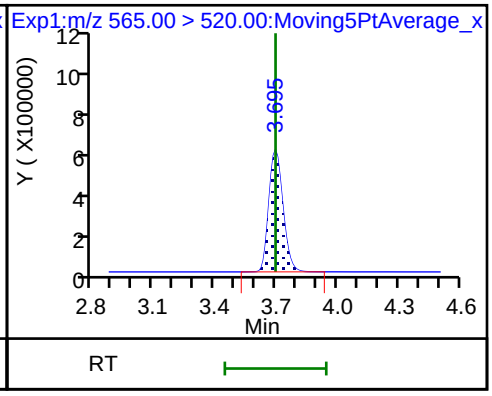
29 Perfluorodecane Sulfonic acid (ND)



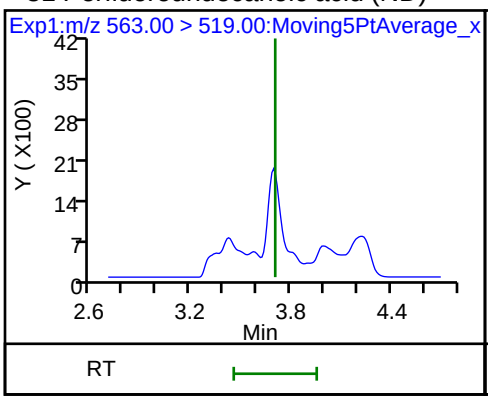
D 32 d5-NEtFOSAA



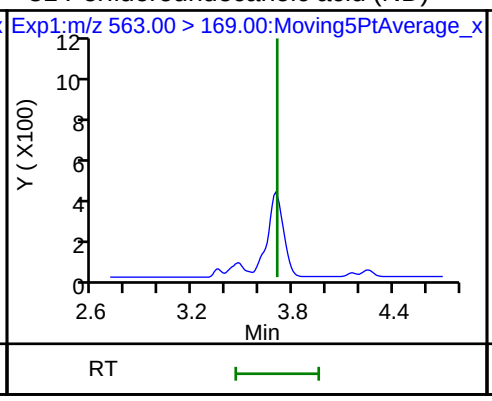
D 30 13C2 PFUnA



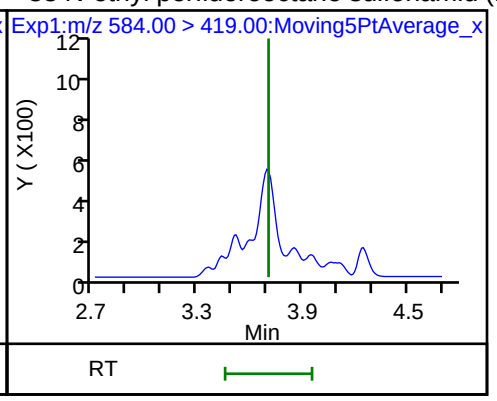
31 Perfluoroundecanoic acid (ND)



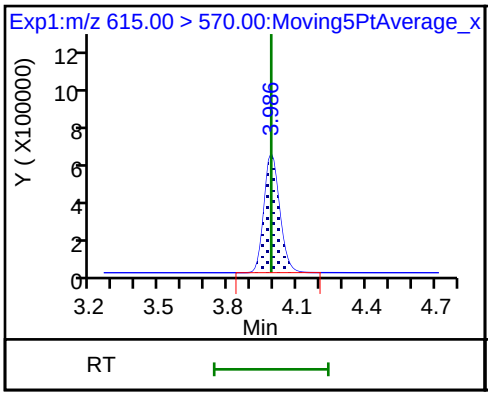
31 Perfluoroundecanoic acid (ND)



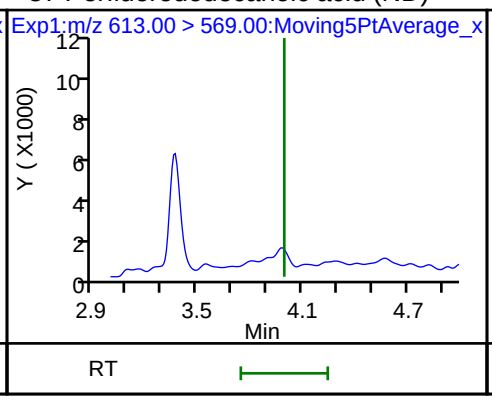
33 N-ethyl perfluorooctane sulfonamid (ND)



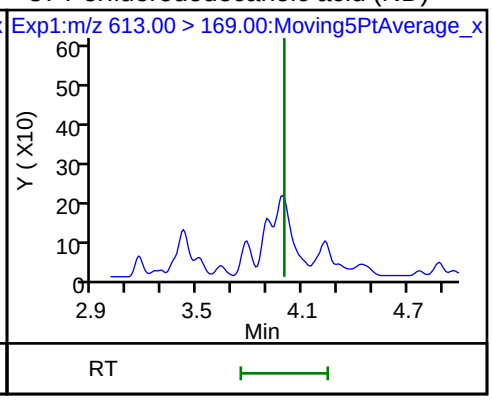
D 36 13C2 PFDoA



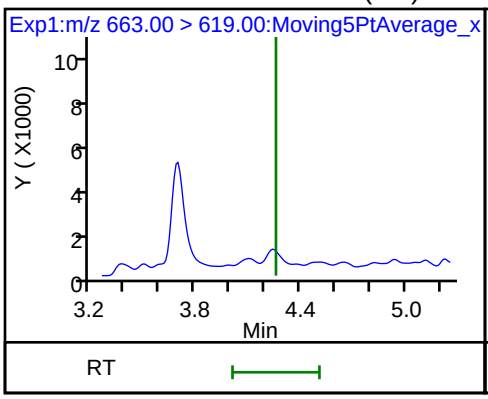
37 Perfluorododecanoic acid (ND)



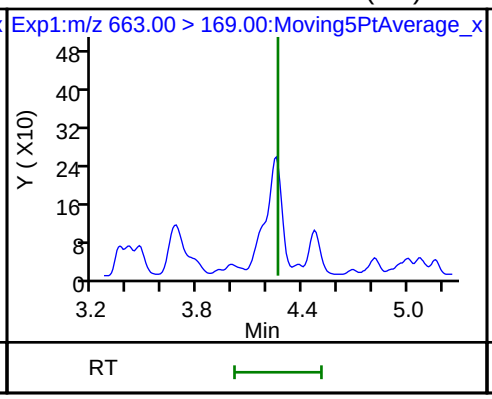
37 Perfluorododecanoic acid (ND)



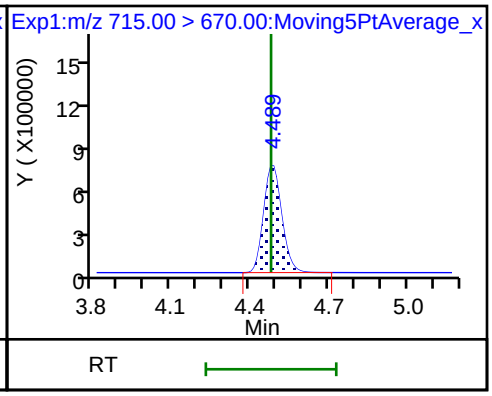
41 Perfluorotridecanoic acid (ND)



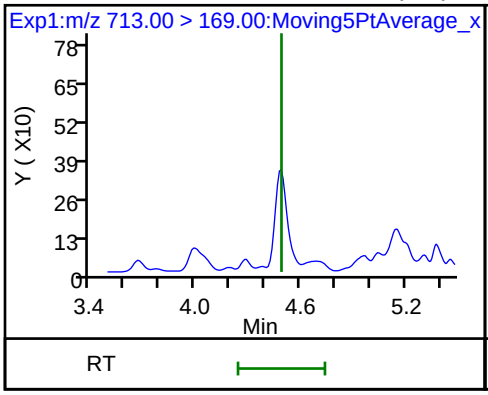
41 Perfluorotridecanoic acid (ND)



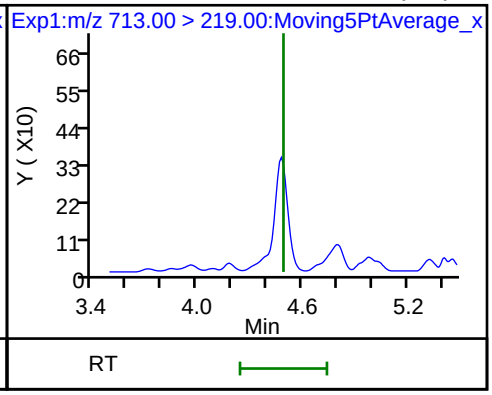
D 43 13C2-PFTeDA



42 Perfluorotetradecanoic acid (ND)



42 Perfluorotetradecanoic acid (ND)



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

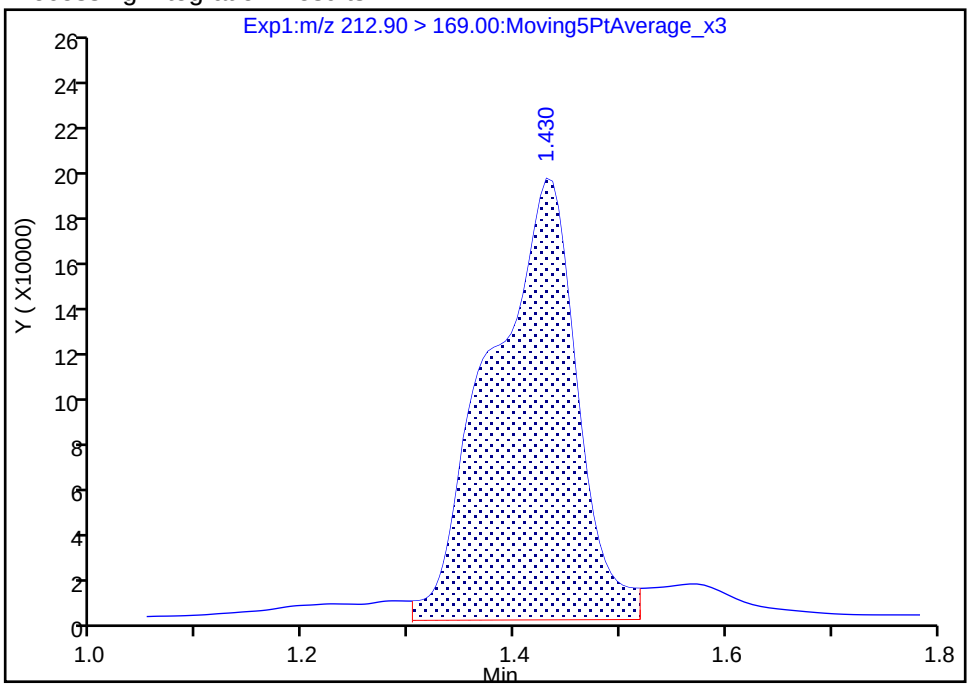
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180706-60751.b\2018.07.06LLAAA_046.d				
Injection Date:	06-Jul-2018 19:27:44	Instrument ID:	A8_N		
Lims ID:	320-40571-A-47-A	Lab Sample ID:	320-40571-47		
Client ID:	NFMW7-GW-01-DUP				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	34	Worklist Smp#:	16
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

2 Perfluorobutyric acid, CAS: 375-22-4

Signal: 1

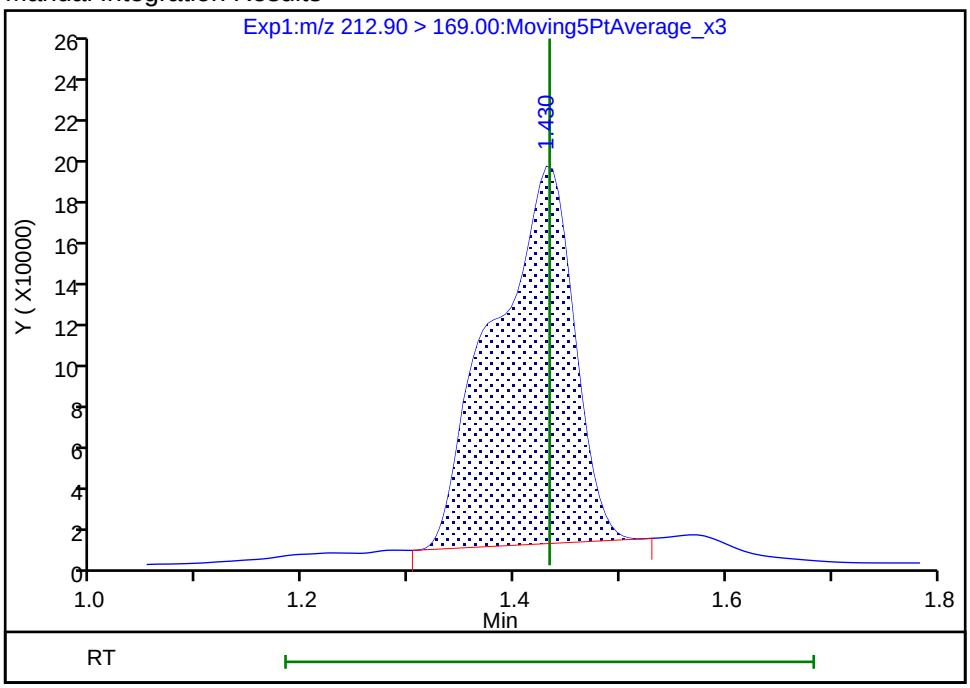
Processing Integration Results

RT: 1.43
Area: 1087588
Amount: 0.623230
Amount Units: ng/ml



Manual Integration Results

RT: 1.43
Area: 946640
Amount: 0.542461
Amount Units: ng/ml



Reviewer: mongkols, 09-Jul-2018 10:26:37

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

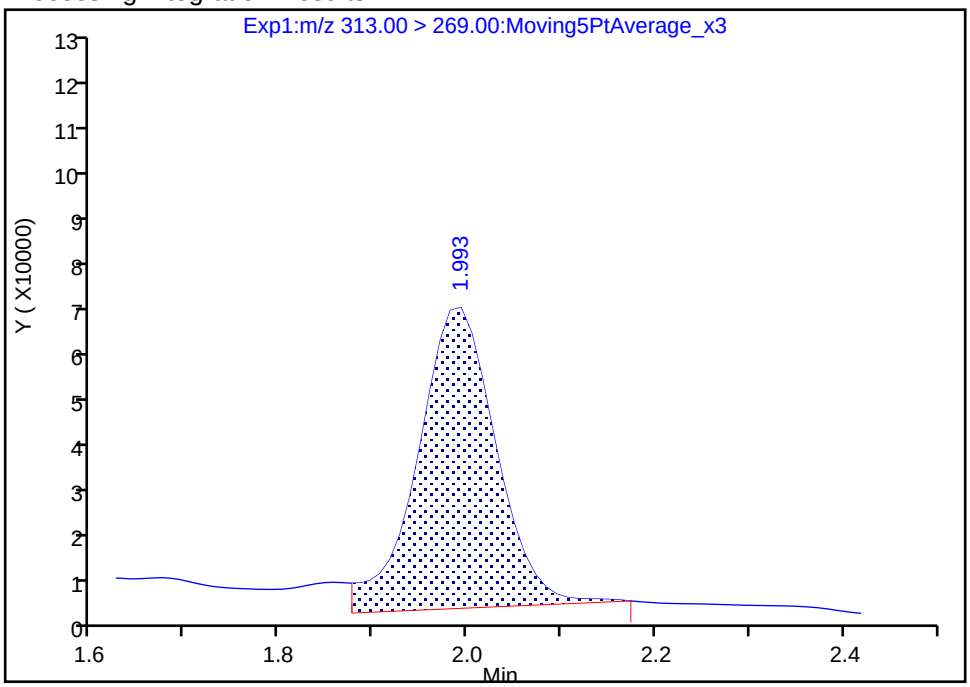
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180706-60751.b\2018.07.06LLAAA_046.d				
Injection Date:	06-Jul-2018 19:27:44	Instrument ID:	A8_N		
Lims ID:	320-40571-A-47-A	Lab Sample ID:	320-40571-47		
Client ID:	NFMW7-GW-01-DUP				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	34	Worklist Smp#:	16
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

6 Perfluorohexanoic acid, CAS: 307-24-4

Signal: 1

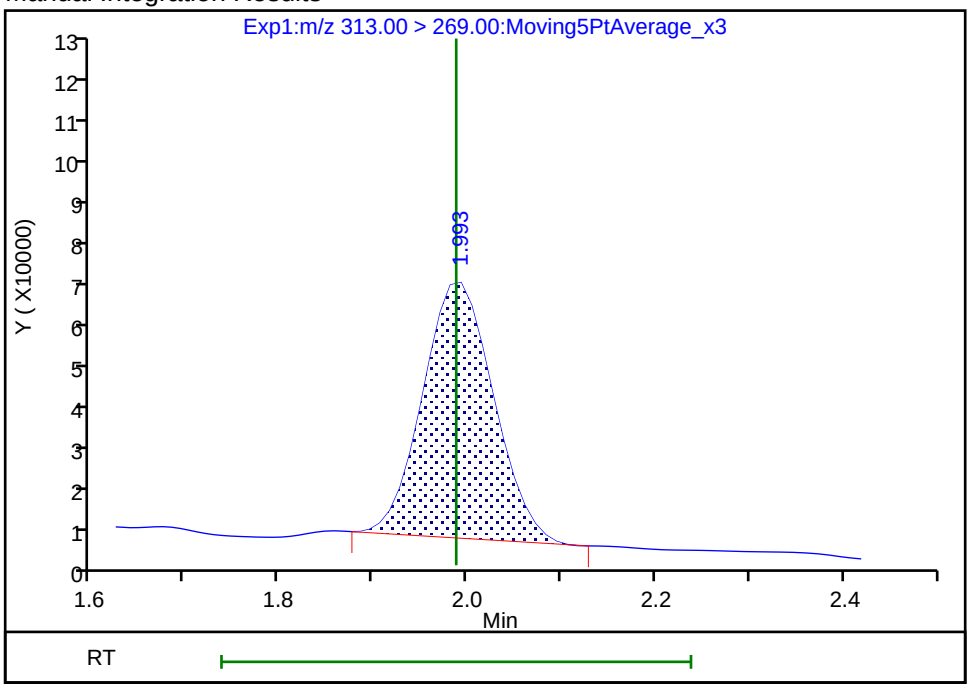
Processing Integration Results

RT: 1.99
Area: 366195
Amount: 0.178613
Amount Units: ng/ml



Manual Integration Results

RT: 1.99
Area: 311439
Amount: 0.151906
Amount Units: ng/ml



Reviewer: mongkols, 09-Jul-2018 10:26:49
Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

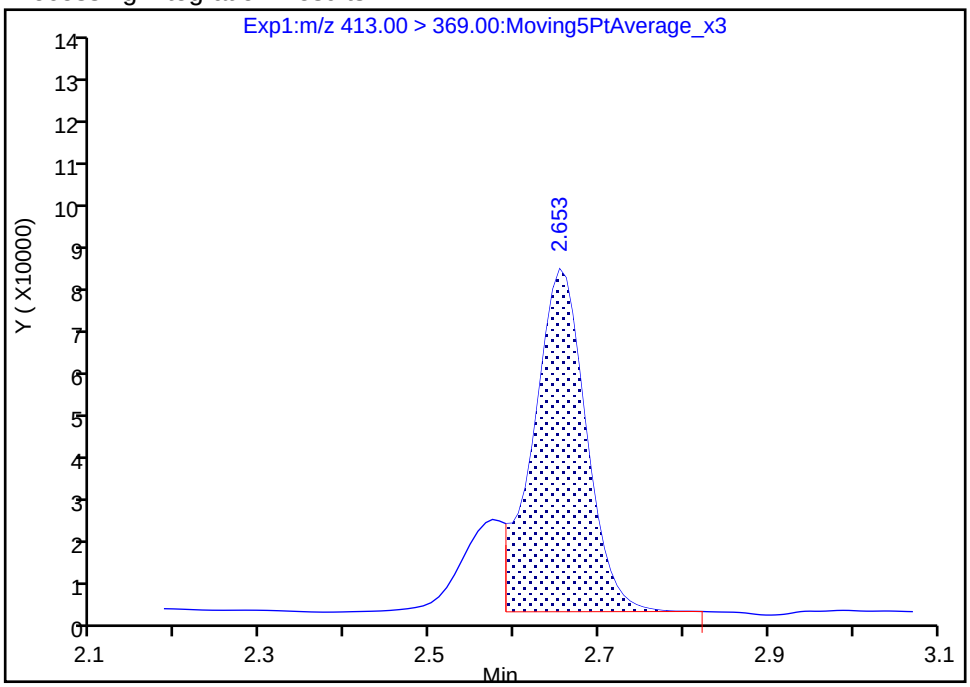
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180706-60751.b\2018.07.06LLAAA_046.d				
Injection Date:	06-Jul-2018 19:27:44	Instrument ID:	A8_N		
Lims ID:	320-40571-A-47-A	Lab Sample ID:	320-40571-47		
Client ID:	NFMW7-GW-01-DUP				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	34	Worklist Smp#:	16
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

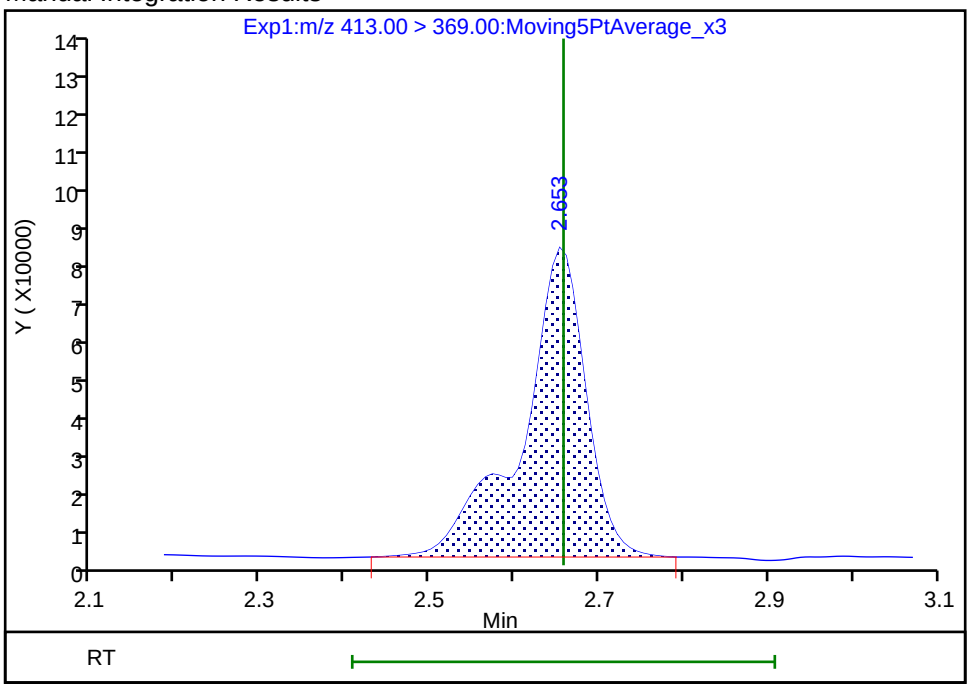
Processing Integration Results

RT: 2.65
Area: 340124
Amount: 0.144279
Amount Units: ng/ml



Manual Integration Results

RT: 2.65
Area: 412329
Amount: 0.174908
Amount Units: ng/ml



Reviewer: mongkols, 09-Jul-2018 10:27:03

Audit Action: Manually Integrated Audit Reason: Isomers

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

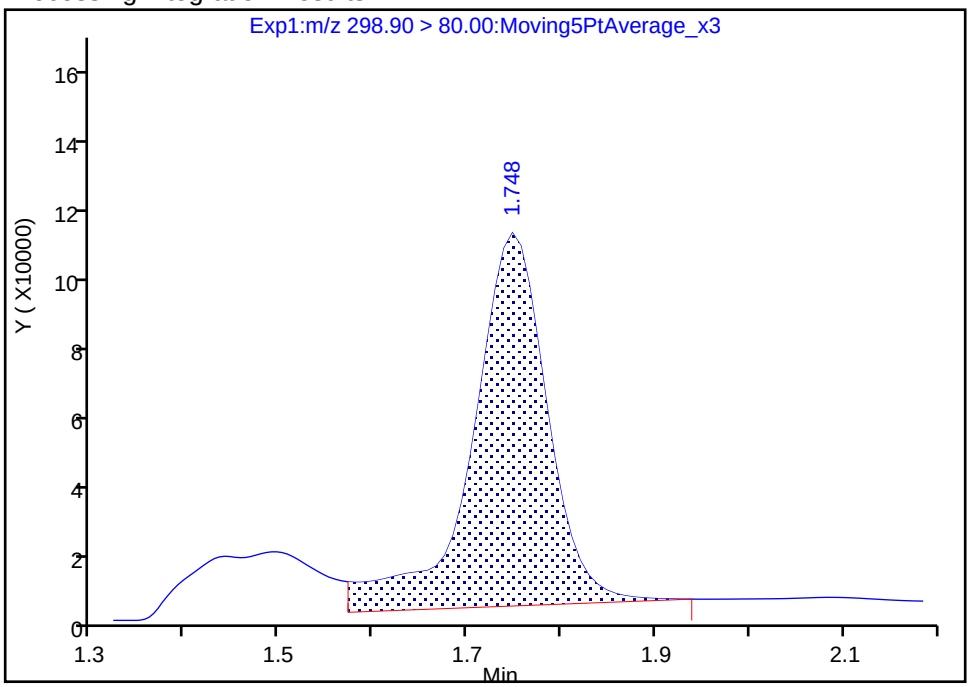
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180706-60751.b\2018.07.06LLAAA_046.d				
Injection Date:	06-Jul-2018 19:27:44	Instrument ID:	A8_N		
Lims ID:	320-40571-A-47-A	Lab Sample ID:	320-40571-47		
Client ID:	NFMW7-GW-01-DUP				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	34	Worklist Smp#:	16
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

5 Perfluorobutanesulfonic acid, CAS: 375-73-5

Signal: 1

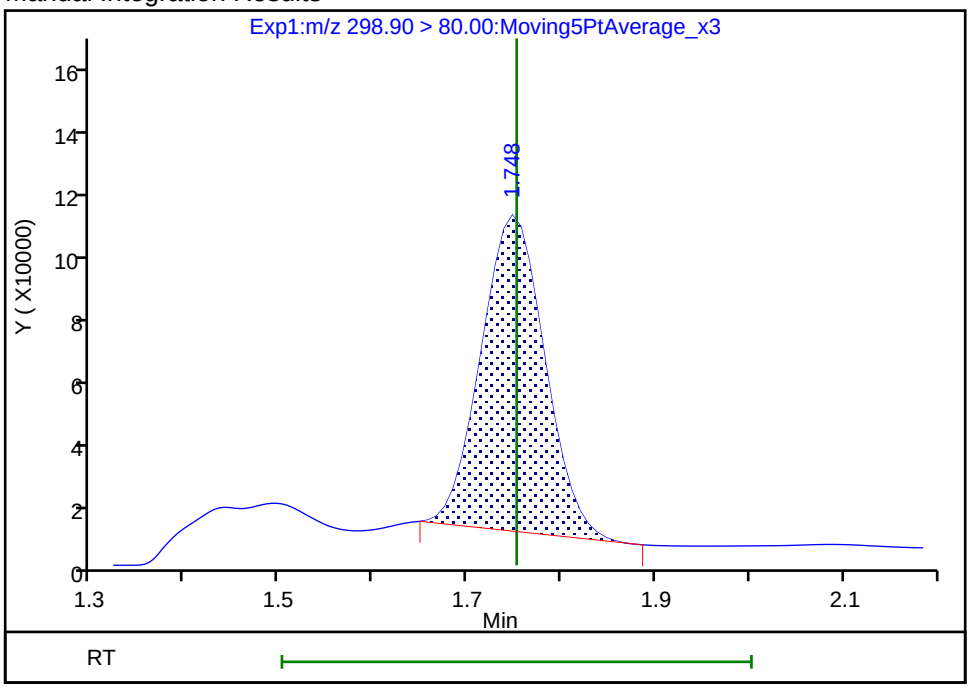
Processing Integration Results

RT: 1.75
Area: 598670
Amount: 0.184384
Amount Units: ng/ml



Manual Integration Results

RT: 1.75
Area: 471127
Amount: 0.145102
Amount Units: ng/ml



Reviewer: mongkols, 09-Jul-2018 10:26:44

Audit Action: Manually Integrated Audit Reason: Baseline

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1 Analy Batch No.: 232544

SDG No.:

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 07/05/2018 08:51 Calibration End Date: 07/05/2018 09:38 Calibration ID: 39943

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-232544/2	2018.07.05LLICALAA_002.d
Level 2	IC 320-232544/3	2018.07.05LLICALAA_003.d
Level 3	IC 320-232544/4	2018.07.05LLICALAA_004.d
Level 4	IC 320-232544/5	2018.07.05LLICALAA_005.d
Level 5	IC 320-232544/6	2018.07.05LLICALAA_006.d
Level 6	IC 320-232544/7	2018.07.05LLICALAA_007.d
Level 7	IC 320-232544/8	2018.07.05LLICALAA_008.d

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5		B	M1	M2								
Perfluorobutanoic acid (PFBA)	1.1599 1.0003	1.0400 0.9742	0.9844	0.9784	1.0130	AveID		1.0214				6.4		35.0			
Perfluoropentanoic acid (PFPeA)	1.3494 1.1872	1.2423 1.1353	1.1293	1.1531	1.1396	AveID		1.1909				6.7		35.0			
Perfluorobutanesulfonic acid (PFBS)	75.947 76.688	75.791 69.580	76.843	76.844	78.936	AveID		75.804				3.9		50.0			
4:2 FTS	16.213 15.304	17.153 14.607	14.439	16.648	15.409	AveID		15.682				6.5		50.0			
Perfluorohexanoic acid (PFHxA)	1.0840 1.0203	1.0591 0.9835	0.9513	1.0069	1.0226	AveID		1.0183				4.4		35.0			
Perfluoropentanesulfonic acid (PFPeS)	67.284 63.367	65.353 58.197	66.375	66.272	67.091	AveID		64.848				5.0		50.0			
HFPO-DA (GenX)	2.3057 2.6343	2.2554 2.0791	1.8716	2.5810	2.3656	AveID		2.2990				11.6		35.0			
Perfluoroheptanoic acid (PFHpA)	1.2104 1.1917	1.0279 1.0122	1.1900	1.0765	1.1995	AveID		1.1297				7.7		35.0			
Perfluorohexanesulfonic acid (PFHxS)	1.3407 1.1365	1.2396 1.0973	1.1046	1.0785	1.0964	AveID		1.1562				8.4		35.0			
ADONA	3.6365 3.6048	3.7345 2.9552	3.7967	4.0875	4.1287	AveID		3.7063				10.5		50.0			
6:2 FTS	1.5354 1.5654	1.6674 1.5719	1.4840	1.5183	1.6234	AveID		1.5665				4.0		35.0			
Perfluorooctanoic acid (PFOA)	1.2192 1.2268	1.2620 1.1016	1.1156	1.2077	1.1675	AveID		1.1858				5.0		35.0			
Perfluoroheptanesulfonic Acid (PFHpS)	1.1926 1.3472	1.4478 1.3042	1.2807	1.3674	1.4360	AveID		1.3394				6.7		50.0			
Perfluorooctanesulfonic acid (PFOS)	1.2121 1.1885	1.2202 1.1799	1.0639	1.1354	1.1768	AveID		1.1681				4.6		35.0			

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1 Analy Batch No.: 232544

SDG No.:

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 07/05/2018 08:51 Calibration End Date: 07/05/2018 09:38 Calibration ID: 39943

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5		B	M1	M2								
Perfluorononanoic acid (PFNA)	1.1213 1.1593	1.0185 1.0515	1.0090	1.0546	1.1292	AveID		1.0776				5.4		35.0			
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonate	1.8371 1.9273	1.9871 1.7749	1.7938	1.9428	1.9705	AveID		1.8905				4.6		50.0			
Perfluorooctane Sulfonamide (FOSA)	1.0066 0.9778	1.0130 0.9552	0.9944	0.9898	1.0050	AveID		0.9917				2.0		35.0			
Perfluorononanesulfonic acid (PFNS)	0.7702 0.8185	0.8839 0.8030	0.7867	0.8165	0.8096	AveID		0.8126				4.4		50.0			
8:2 FTS	1.4013 1.3609	1.2823 1.3569	1.3100	1.2085	1.3282	AveID		1.3212				4.8		35.0			
Perfluorodecanoic acid (PFDA)	1.0056 1.0566	1.0483 1.0584	1.0509	1.0079	1.0686	AveID		1.0423				2.4		35.0			
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	1.0315 1.0175	1.1546 0.9800	0.9971	0.9903	1.0331	AveID		1.0292				5.7		35.0			
Perfluorodecanesulfonic acid (PFDS)	0.7023 0.7669	0.7487 0.7270	0.6844	0.7024	0.7049	AveID		0.7195				4.1		50.0			
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	0.9826 0.9329	0.9062 0.8580	0.8600	0.8349	0.9369	AveID		0.9017				5.9		35.0			
Perfluoroundecanoic acid (PFUnA)	1.0834 0.7976	0.8362 0.8400	0.7717	0.8162	0.8057	AveID		0.8501				12.4		35.0			
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonate	2.8155 2.8075	3.0083 2.4752	2.8310	3.1108	3.1400	AveID		2.8841				7.9		50.0			
Perfluorododecanoic acid (PFDoA)	1.1617 1.1259	1.0302 1.0627	1.0854	1.0743	1.1736	AveID		1.1020				4.8		35.0			
Perfluorotridecanoic Acid (PFTriA)	1.3439 1.2254	1.2852 1.1348	1.2080	1.1963	1.1989	AveID		1.2275				5.5		50.0			
Perfluorotetradecanoic acid (PFTeA)	0.3365 0.2566	0.2689 0.2676	0.2577	0.2506	0.2575	AveID		0.2708				11.0		50.0			
Perfluoro-n-hexadecanoic acid (PFHxDA)	1.8112 0.9369	1.3974 0.8947	1.0445	0.9647	1.0270	L2ID	0.0217	0.9499							0.9980		0.9900
Perfluoro-n-octadecanoic acid (PFODA)	1.1905 1.1870	1.2284 1.0805	1.1317	1.1569	1.1735	AveID		1.1641				4.1		50.0			
13C4 PFBA	1.3432 1.4602	1.3377 1.4591	1.3336	1.3843	1.3715	Ave		1.3842				4.0		50.0			
13C5 PFPeA	0.9899 1.0617	0.9978 1.0424	1.0109	1.0339	1.0349	Ave		1.0245				2.5		50.0			
13C3-PFBS	0.0238 0.0262	0.0237 0.0254	0.0241	0.0241	0.0243	Ave		0.0245				3.8		50.0			
M2-4:2FTS	0.1576 0.1516	0.1585 0.1653	0.1586	0.1566	0.1546	Ave		0.1575				2.7		50.0			

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1 Analy Batch No.: 232544

SDG No.:

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 07/05/2018 08:51 Calibration End Date: 07/05/2018 09:38 Calibration ID: 39943

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5		B	M1	M2								
13C2 PFHxA	1.0920 1.1451	1.0620 1.1193	1.0765	1.0761	1.1051	Ave		1.0966				2.6		50.0			
13C3 HFPO-DA	0.0805 0.0882	0.0896 0.1033	0.1008	0.0788	0.0879	Ave		0.0899				10.3		50.0			
13C4-PFHpA	0.9648 0.9714	0.9738 1.0075	0.9299	1.0049	0.9620	Ave		0.9735				2.7		50.0			
18O2 PFHxS	1.2341 1.2017	1.2186 1.1483	1.1668	1.2212	1.1945	Ave		1.1979				2.6		50.0			
M2-6:2FTS	0.2274 0.2238	0.2173 0.2108	0.2151	0.2262	0.2095	Ave		0.2186				3.3		50.0			
13C4 PFOA	0.9520 0.9573	0.9525 0.9562	0.9559	0.9509	0.9525	Ave		0.9539				0.3		50.0			
13C4 PFOS	0.8583 0.8739	0.8228 0.8423	0.8886	0.8636	0.8361	Ave		0.8551				2.7		50.0			
13C5 PFNA	0.7879 0.8124	0.7968 0.8247	0.8395	0.8151	0.7999	Ave		0.8109				2.2		50.0			
13C8 FOSA	1.1690 1.2329	1.1769 1.1494	1.2007	1.2025	1.1777	Ave		1.1870				2.3		50.0			
M2-8:2FTS	0.2621 0.2334	0.2577 0.2218	0.2404	0.2505	0.2357	Ave		0.2431				5.9		50.0			
13C2 PFDA	0.7094 0.7121	0.7063 0.6634	0.7040	0.7208	0.6781	Ave		0.6992				2.9		50.0			
d3-NMeFOSAA	0.4168 0.4264	0.4023 0.4297	0.3985	0.4023	0.4078	Ave		0.4120				3.0		50.0			
d5-NEtFOSAA	0.4114 0.4009	0.4199 0.3876	0.4121	0.4353	0.3818	Ave		0.4070				4.6		50.0			
13C2 PFUnA	0.5948 0.5974	0.5971 0.5642	0.5918	0.5758	0.5904	Ave		0.5873				2.1		50.0			
13C2 PFDoA	0.6315 0.6216	0.6579 0.6276	0.6253	0.6378	0.6038	Ave		0.6294				2.6		50.0			
13C2-PFTeDA	0.8006 0.7947	0.7648 0.7332	0.7519	0.7678	0.7579	Ave		0.7673				3.1		50.0			
13C2-PFHxDA	1.4230 1.4676	1.4467 1.3521	1.3872	1.4716	1.3892	Ave		1.4196				3.2		50.0			

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1 Analy Batch No.: 232544

SDG No.:

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 07/05/2018 08:51 Calibration End Date: 07/05/2018 09:38 Calibration ID: 39943

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-232544/2	2018.07.05LLICALAA_002.d
Level 2	IC 320-232544/3	2018.07.05LLICALAA_003.d
Level 3	IC 320-232544/4	2018.07.05LLICALAA_004.d
Level 4	IC 320-232544/5	2018.07.05LLICALAA_005.d
Level 5	IC 320-232544/6	2018.07.05LLICALAA_006.d
Level 6	IC 320-232544/7	2018.07.05LLICALAA_007.d
Level 7	IC 320-232544/8	2018.07.05LLICALAA_008.d

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
Perfluorobutanoic acid (PFBA)		AveID	67169 12195770	127400 24301343	597465	2411886	6019354	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluoropentanoic acid (PFPeA)		AveID	57590 10524768	113509 20231845	519574	2123200	5110087	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorobutanesulfonic acid (PFBS)		AveID	68888 14809613	145614 26720886	743977	2913073	7339411	0.0221 4.42	0.0442 8.84	0.221	0.884	2.21
4:2 FTS		AveID	15538 3122682	34819 5926931	147699	666805	1513774	0.0234 4.67	0.0467 9.34	0.234	0.934	2.34
Perfluorohexanoic acid (PFHxA)		AveID	51033 9756155	103001 18820721	466101	1929591	4896489	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluoropentanesulfonic acid (PFPeS)		AveID	64758 12984575	133231 23714616	681882	2665768	6619076	0.0235 4.69	0.0469 9.38	0.235	0.938	2.35
HFPO-DA (GenX)		AveID	8000 1939946	18507 3672079	85883	362111	901097	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluoroheptanoic acid (PFHpA)		AveID	50347 9666111	91664 17433793	503626	1926316	4999641	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorohexanesulfonic acid (PFHxS)		AveID	64911 10377680	125879 19602527	533777	2134265	5163686	0.0228 4.55	0.0455 9.10	0.228	0.910	2.28
ADONA		AveID	126753 24778537	265083 40084780	1446461	5921462	14088161	0.0236 4.71	0.0471 9.42	0.236	0.942	2.36
6:2 FTS		AveID	14268 2772705	31462 5371036	137712	579722	1396856	0.0237 4.74	0.0474 9.48	0.237	0.948	2.37
Perfluorooctanoic acid (PFOA)		AveID	50090 9816387	110192 18026746	485826	2047028	4823268	0.0250 5.01	0.0501 10.0	0.250	1.00	2.50
Perfluoroheptanesulfonic Acid (PFHpS)		AveID	42011 9359028	103856 17877757	493106	2001929	4951993	0.0238 4.76	0.0476 9.52	0.238	0.952	2.38
Perfluorooctanesulfonic acid (PFOS)		AveID	41621 8047965	85326 15767090	399282	1620324	3955854	0.0232 4.64	0.0464 9.28	0.232	0.928	2.32
Perfluorononanoic acid (PFNA)		AveID	38090 7864000	74314 14824538	385530	1530697	3913598	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1 Analy Batch No.: 232544

SDG No.:

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 07/05/2018 08:51 Calibration End Date: 07/05/2018 09:38 Calibration ID: 39943

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonate		AveID	63354 13107538	139553 23819619	676150	2784556	6652637	0.0233 4.66	0.0466 9.32	0.233	0.932	2.33
Perfluorooctane Sulfonamide (FOSA)		AveID	50731 10065471	109173 18768991	543453	2119612	5128289	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorononanesulfonic acid (PFNS)		AveID	27359 5733386	63937 11100681	305446	1205401	2815426	0.0240 4.80	0.0480 9.60	0.240	0.960	2.40
8:2 FTS		AveID	15170 2540408	28993 4929744	137343	516484	1299370	0.0240 4.79	0.0479 9.58	0.240	0.958	2.40
Perfluorodecanoic acid (PFDA)		AveID	30755 6282630	67800 12003817	336739	1293758	3139526	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)		AveID	18536 3622994	42535 7199550	180847	709542	1825431	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorodecanesulfonic acid (PFDS)		AveID	25052 5394731	54383 10090938	266826	1041333	2461548	0.0241 4.82	0.0482 9.64	0.241	0.964	2.41
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)		AveID	17427 3122896	34849 5685758	161316	647181	1549739	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluoroundecanoic acid (PFUnA)		AveID	27781 3978902	45721 8101412	207861	836804	2060853	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonate		AveID	98137 19298262	213537 33573732	1078557	4506577	10714579	0.0236 4.71	0.0471 9.42	0.236	0.942	2.36
Perfluorododecanoic acid (PFDoA)		AveID	31624 5843687	62069 11402368	308907	1220093	3070255	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorotridecanoic Acid (PFTriA)		AveID	36584 6359926	77431 12175469	343817	1358716	3136503	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorotetradecanoic acid (PFTeA)		AveID	11614 1703041	18829 3354737	88194	342607	845500	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluoro-n-hexadecanoic acid (PFHxDA)		L2ID	111116 11482097	185133 20680874	659470	2527986	6181291	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluoro-n-octadecanoic acid (PFODA)		AveID	73036 14547117	162737 24976341	714501	3031740	7063441	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
13C4 PFBA	13PF OA	Ave	5790999 6096226	6125232 6236338	6069593	6162858	5942375	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C5 PFPeA	13PF OA	Ave	4267857 4432781	4568616 4455207	4600846	4603081	4484079	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C3-PFBS	13PF OA	Ave	95425 101582	101062 101003	101856	99704	97817	2.33 2.33	2.33 2.33	2.33	2.33	2.33
M2-4:2FTS	13PF OA	Ave	634689 591212	677914 659919	674185	650969	625570	2.34 2.34	2.34 2.34	2.34	2.34	2.34
13C2 PFHxA	13PF OA	Ave	4708005 4780842	4862877 4784020	4899406	4790767	4788239	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C3 HFPO-DA	13PF OA	Ave	346971 368208	410277 441540	458876	350748	380912	2.50 2.50	2.50 2.50	2.50	2.50	2.50

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1 Analy Batch No.: 232544

SDG No.:

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 07/05/2018 08:51 Calibration End Date: 07/05/2018 09:38 Calibration ID: 39943

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
13C4-PFHpA	13PF OA	Ave	4159575 4055763	4459007 4305905	4232132	4473611	4168061	2.50 2.50	2.50 2.50	2.50	2.50	2.50
18O2 PFHxS	13PF OA	Ave	5033013 4746316	5278239 4642819	5023662	5143052	4895856	2.37 2.37	2.37 2.37	2.37	2.37	2.37
M2-6:2FTS	13PF OA	Ave	931220 887494	945420 856056	929925	956602	862284	2.38 2.38	2.38 2.38	2.38	2.38	2.38
13C4 PFOA	13PF OA	Ave	4104235 3996804	4361265 4086844	4350463	4233363	4126992	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C4 PFOS	13PF OA	Ave	3537401 3487989	3601856 3441443	3866373	3675491	3463003	2.39 2.39	2.39 2.39	2.39	2.39	2.39
13C5 PFNA	13PF OA	Ave	3396934 3391733	3648217 3524695	3821005	3628571	3465887	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C8 FOSA	13PF OA	Ave	5039791 5147225	5388753 4912326	5465004	5353484	5102615	2.50 2.50	2.50 2.50	2.50	2.50	2.50
M2-8:2FTS	13PF OA	Ave	1082564 933375	1130537 908289	1048384	1068438	978302	2.40 2.40	2.40 2.40	2.40	2.40	2.40
13C2 PFDA	13PF OA	Ave	3058439 2973033	3233809 2835454	3204267	3209160	2937890	2.50 2.50	2.50 2.50	2.50	2.50	2.50
d3-NMeFOSAA	13PF OA	Ave	1796921 1780322	1841966 1836553	1813682	1791176	1766929	2.50 2.50	2.50 2.50	2.50	2.50	2.50
d5-NEtFOSAA	13PF OA	Ave	1773515 1673669	1922718 1656649	1875737	1938000	1654181	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C2 PFUnA	13PF OA	Ave	2564177 2494182	2733892 2411181	2693673	2563234	2557898	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C2 PFDoA	13PF OA	Ave	2722317 2595125	3012454 2682397	2846137	2839357	2616078	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C2-PFTeDA	13PF OA	Ave	3451656 3317852	3501728 3133566	3422283	3418156	3283601	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C2-PFHxDA	13PF OA	Ave	6135017 6127474	6624124 5779000	6313503	6551380	6019047	2.50 2.50	2.50 2.50	2.50	2.50	2.50

Curve Type Legend:

Ave = Average ISTD
AveID = Average isotope dilution
L2ID = Linear 1/conc^2 IsoDil

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180705-60684.b\2018.07.05LLICALAA_002.d
Lims ID: IC L1 Full
Client ID:
Sample Type: IC Calib Level: 1
Inject. Date: 05-Jul-2018 08:51:23 ALS Bottle#: 10 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L1-FULL
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-A8_N*sub32

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180705-60684.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 05-Jul-2018 12:38:46 Calib Date: 05-Jul-2018 09:38:17
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180705-60684.b\2018.07.05LLICALAA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK035

First Level Reviewer: hannigana Date: 05-Jul-2018 12:08:28

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.436	1.432	0.004	0.535	5790999	2.43		97.0	23614	
2 Perfluorobutyric acid										M
212.90 > 169.00	1.436	1.434	0.002	1.000	67169	0.0284		114	24.4	M
D 3 13C5-PFPeA										
267.90 > 223.00	1.721	1.716	0.005	0.642	4267857	2.42		96.6	39016	
4 Perfluoropentanoic acid										M
262.90 > 219.00	1.721	1.719	0.002	1.000	57590	0.0283		113	41.9	M
D 47 13C3-PFBS										
301.90 > 83.00	1.757	1.756	0.001	0.655	95425	2.26		97.1	748	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.766	1.760	0.006	1.005	68888	0.0221		100	396	
298.90 > 99.00	1.766	1.760	0.006	1.005	30581		2.25(1.25-3.74)	100	344	
D 60 M2-4:2FTS										
329.00 > 81.00	1.971	1.966	0.005	0.735	634689	2.34		100	7120	
61 1H,1H,2H,2H-perfluorohexanesulfoni										
327.00 > 307.00	1.971	1.966	0.005	1.122	15538	0.0241		103	910	
D 7 13C2 PFHxA										
315.00 > 270.00	2.004	2.000	0.004	0.747	4708005	2.49		99.6	65107	
6 Perfluorohexanoic acid										M
313.00 > 269.00	2.004	2.002	0.002	1.000	51033	0.0266		106	90.7	M
313.00 > 119.00	2.004	2.002	0.002	1.000	5299		9.63(5.03-15.10)	106	83.3	M
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.027	2.025	0.002	1.154	64758	0.0243		104	920	
349.00 > 99.00	2.027	2.025	0.002	1.154	20151		3.21(1.36-4.07)	104	408	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.095	2.099	-0.004	0.781	346971	2.24		89.6	5602	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
67 Perfluoro(2-propoxypropanoic) acid										
329.10 > 285.00	2.106	2.099	0.007	1.005	8000	0.0251		100	42.0	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.321	2.318	0.003	1.000	50347	0.0268		107	69.1	
363.00 > 169.00	2.321	2.318	0.003	1.000	19861		2.53(1.13-3.40)	107	202	
D 9 13C4-PFHpA										
367.00 > 322.00	2.321	2.318	0.003	0.865	4159575	2.48		99.1	30792	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.334	2.331	0.003	1.000	64911	0.0264		116	536	
399.00 > 99.00	2.334	2.331	0.003	1.000	21059		3.08(1.50-4.49)	116	183	
D 11 18O2 PFHxS										
403.00 > 84.00	2.334	2.333	0.001	0.870	5033013	2.44		103	35786	
65 Adona										
377.00 > 251.00	2.372	2.365	0.007	0.780	126753	0.0231		98.1	1593	
377.00 > 85.00	2.372	2.365	0.007	0.780	78260		1.62(0.84-2.53)	98.1	1744	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.652	2.645	0.007	1.000	14268	0.0232		98.0	142	
D 12 M2-6:2FTS										
429.00 > 81.00	2.652	2.645	0.007	0.989	931220	2.47		104	14182	
D 14 13C4 PFOA										
417.00 > 372.00	2.675	2.670	0.005	0.997	4104235	2.50		99.8	45143	
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.675	2.671	0.004	1.000	50090	0.0257		103	18.1	M
413.00 > 169.00	2.682	2.671	0.011	1.003	32967		1.52(0.84-2.52)	103	172	M
* 62 13C2-PFOA										
415.00 > 370.00	2.682	2.671	0.011		4311203	2.50			37209	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.690	2.678	0.012	0.884	42011	0.0212		89.0	629	
449.00 > 99.00	2.682	2.678	0.004	0.882	12466		3.37(1.94-5.82)	89.0	316	
17 Perfluorooctane sulfonic acid										M
499.00 > 80.00	3.042	3.034	0.008	1.000	41621	0.0241		104	489	
499.00 > 99.00	3.042	3.034	0.008	1.000	9995		4.16(2.31-6.93)	104	208	M
D 19 13C5 PFNA										
468.00 > 423.00	3.042	3.034	0.008	1.134	3396934	2.43		97.2	51934	
D 18 13C4 PFOS										
503.00 > 80.00	3.042	3.034	0.008	1.134	3537401	2.40		100	30670	
20 Perfluorononanoic acid										
463.00 > 419.00	3.049	3.036	0.013	1.002	38090	0.0260		104	62.6	
463.00 > 169.00	3.049	3.036	0.013	1.002	8921		4.27(1.90-5.69)	104	407	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.257	3.246	0.011	1.070	63354	0.0226		97.2	1484	
D 21 13C8 FOSA										
506.00 > 78.00	3.357	3.357	0.0	1.251	5039791	2.46		98.5	42779	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.357	3.358	-0.001	1.000	50731	0.0254		102	1053	
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.385	3.379	0.006	1.113	27359	0.0227		94.8	418	
549.00 > 99.00	3.385	3.379	0.006	1.113	11830		2.31(1.33-3.97)	94.8	547	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 26 M2-8:2FTS										
529.00 > 81.00	3.394	3.382	0.012	1.265	1082564	2.58		108	16251	
25 1H,1H,2H,2H-perfluorodecanesulfoni										
527.00 > 507.00	3.394	3.383	0.011	1.000	15170	0.0254		106	474	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.403	3.393	0.010	1.000	30755	0.0241		96.5	105	
513.00 > 169.00	3.403	3.393	0.010	1.000	5952		5.17(2.36-7.09)	96.5	266	
D 23 13C2 PFDA										
515.00 > 470.00	3.403	3.393	0.010	1.269	3058439	2.54		101	46004	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.553	3.543	0.010	1.324	1796921	2.53		101	22850	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.562	3.551	0.011	1.003	18536	0.0251		100	162	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.715	3.702	0.013	1.221	25052	0.0235		97.6	492	
599.00 > 99.00	3.715	3.702	0.013	1.221	9802		2.56(1.39-4.16)	97.6	337	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.726	3.713	0.013	1.389	1773515	2.53		101	9054	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.726	3.721	0.005	0.997	27781	0.0319		127	87.1	
563.00 > 169.00	3.736	3.721	0.015	1.000	5787		4.80(2.12-6.36)	127	238	
33 N-ethyl perfluorooctane sulfonamid										M
584.00 > 419.00	3.736	3.721	0.015	1.003	17427	0.0272		109	369	M
D 30 13C2 PFUnA										
565.00 > 520.00	3.736	3.721	0.015	1.393	2564177	2.53		101	29168	
66 11-Chloroeicosafluoro-3-oxaundecan										
631.00 > 451.00	3.892	3.879	0.013	1.279	98137	0.0230		97.6	1614	
37 Perfluorododecanoic acid										M
613.00 > 569.00	4.025	4.016	0.009	1.000	31624	0.0264		105	35.1	M
613.00 > 169.00	4.035	4.016	0.019	1.003	7882		4.01(2.13-6.40)	105	153	M
D 36 13C2 PFDoA										
615.00 > 570.00	4.025	4.016	0.009	1.501	2722317	2.51		100	12948	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.296	4.284	0.012	1.067	36584	0.0274		109	38.0	
663.00 > 169.00	4.296	4.284	0.012	1.067	12165		3.01(1.25-3.76)	109	229	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.539	4.524	0.015	1.692	3451656	2.61		104	14975	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.539	4.524	0.015	1.000	11614	0.0311		124	203	
713.00 > 219.00	4.529	4.524	0.005	0.998	7249		1.60(0.71-2.13)	124	190	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.954	4.940	0.014	1.847	6135017	2.51		100	12974	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.954	4.941	0.013	1.000	111116	0.0248		99.2	48.8	
813.00 > 169.00	4.954	4.941	0.013	1.000	18876		5.89(2.86-8.58)	99.2	178	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.319	5.302	0.017	1.074	73036	0.0256		102	25.0	
913.00 > 169.00	5.319	5.302	0.017	1.074	9580		7.62(3.83-11.48)	102	138	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

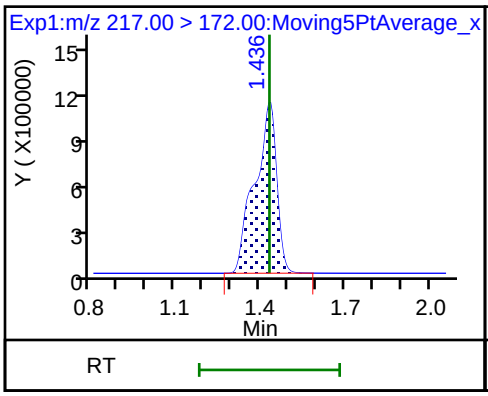
LCPFC_LL1_00006 Amount Added: 1.00 Units: mL

Report Date: 05-Jul-2018 12:38:47 Chrom Revision: 2.2 07-Jun-2018 07:41:54

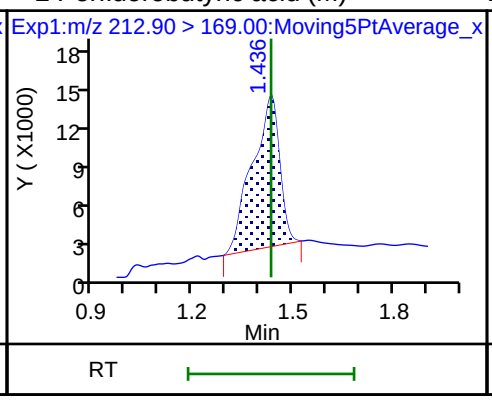
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180705-60684.b\2018.07.05LLICALAA_002.d
Injection Date: 05-Jul-2018 08:51:23 Instrument ID: A8_N
Lims ID: IC L1 Full
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 10 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC ICAL

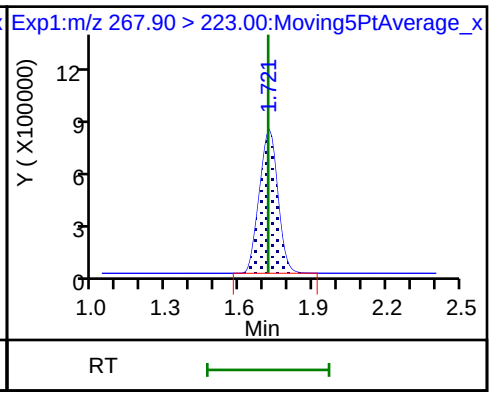
D 1 13C4 PFBA



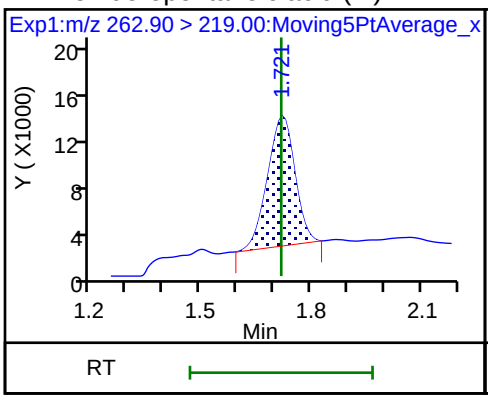
2 Perfluorobutyric acid (M)



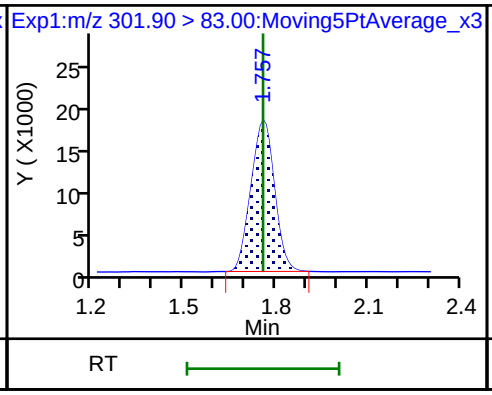
D 3 13C5-PFPeA



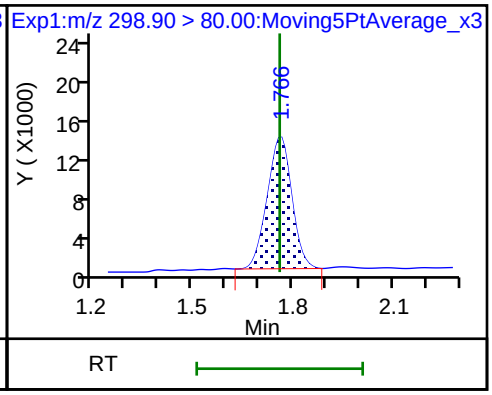
4 Perfluoropentanoic acid (M)



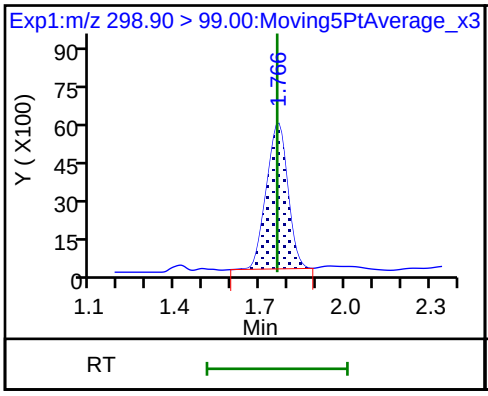
D 47 13C3-PFBS



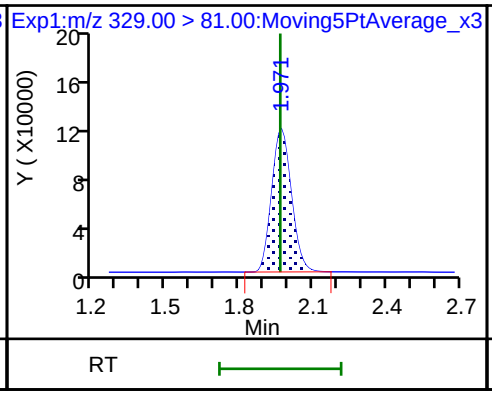
5 Perfluorobutanesulfonic acid



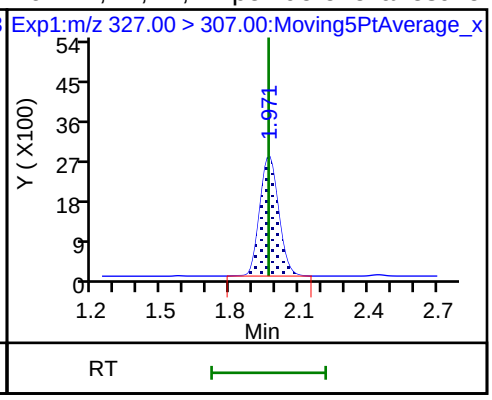
5 Perfluorobutanesulfonic acid



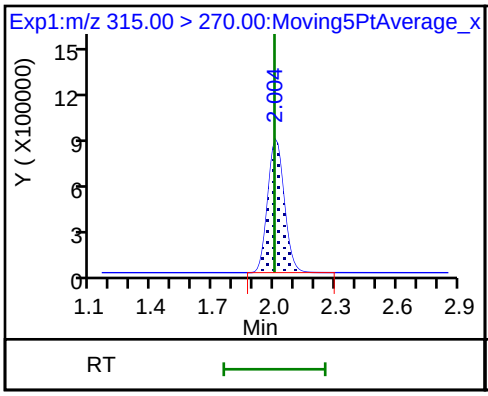
D 60 M2-4:2FTS



61 1H,1H,2H,2H-perfluorohexanesulfoni



D 7 13C2 PFHxA



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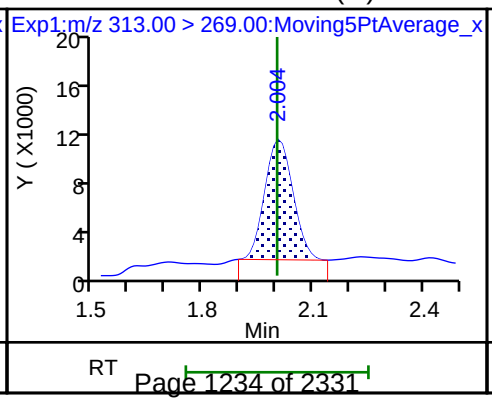
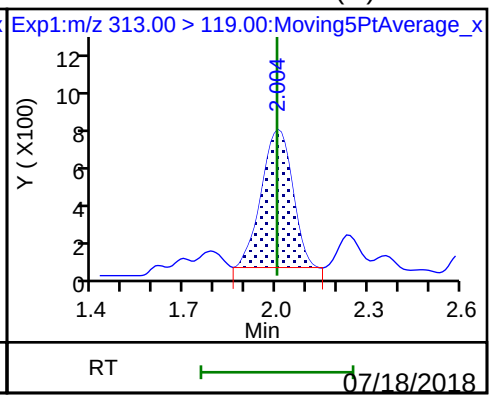
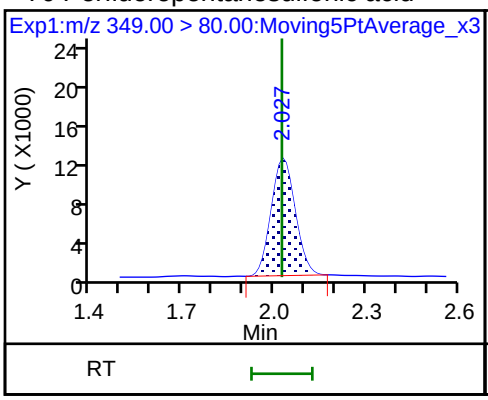


6 Perfluorohexanoic acid (M)



70 Perfluoropentanesulfonic acid



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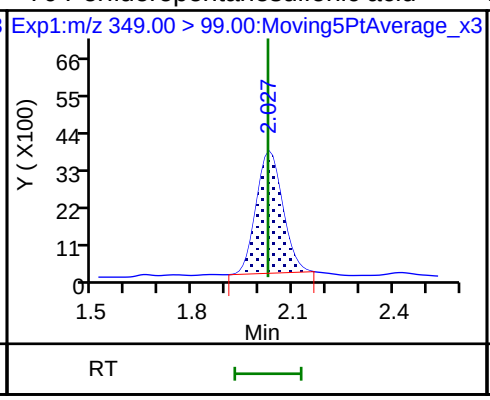
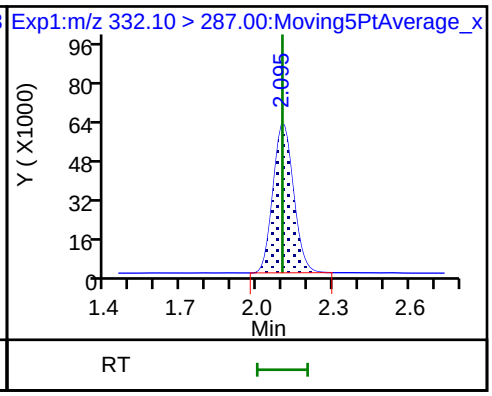
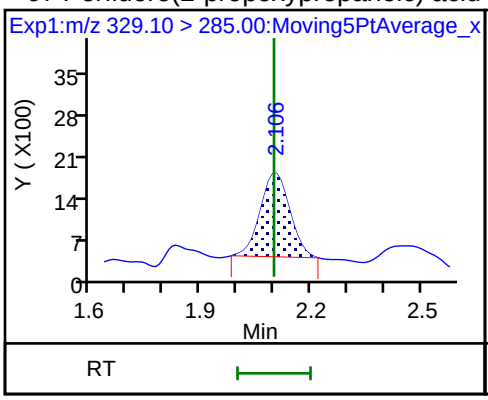


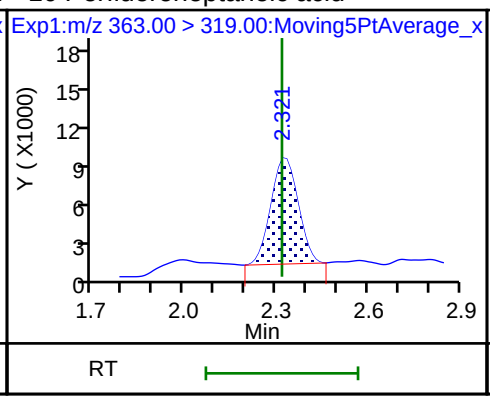
D 64 13C3 HFPO-DA



67 Perfluoro(2-propoxypropanoic) acid



10 Perfluoroheptanoic acid



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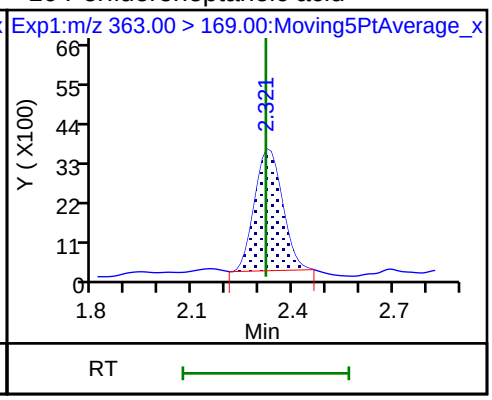
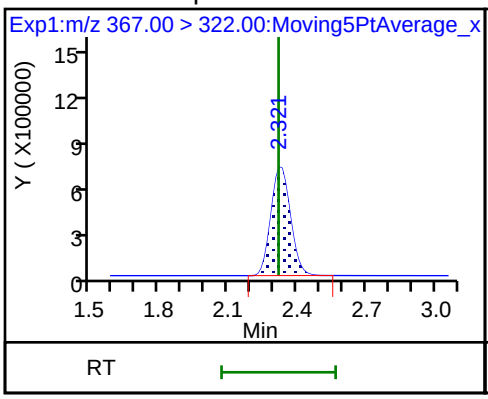
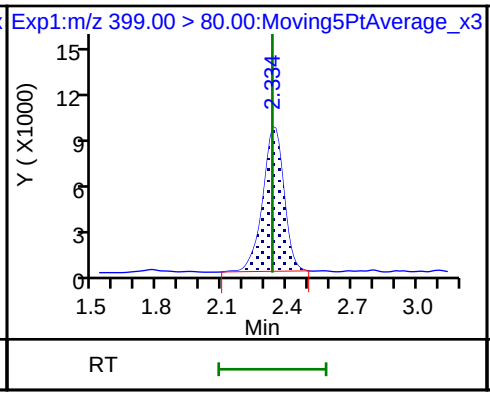


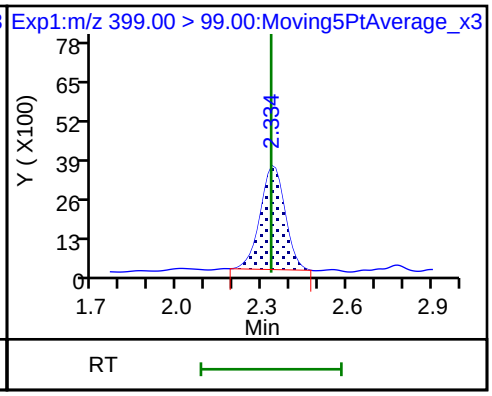
D 9 13C4-PFHpA



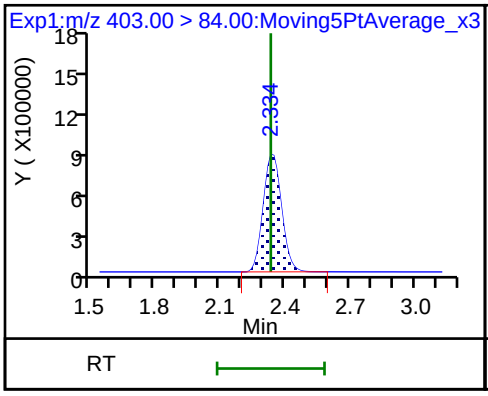
8 Perfluorohexanesulfonic acid



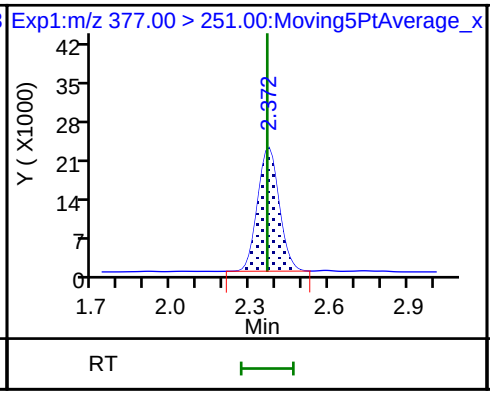
8 Perfluorohexanesulfonic acid



D 11 18O2 PFHxS



65 Adona



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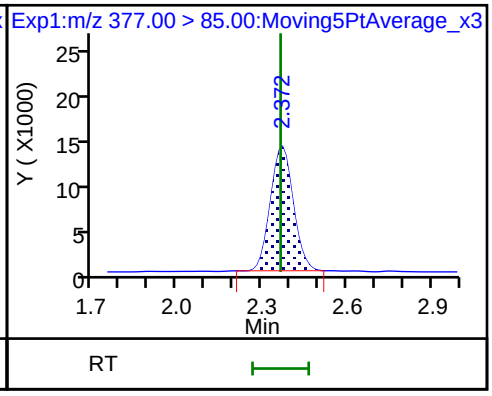
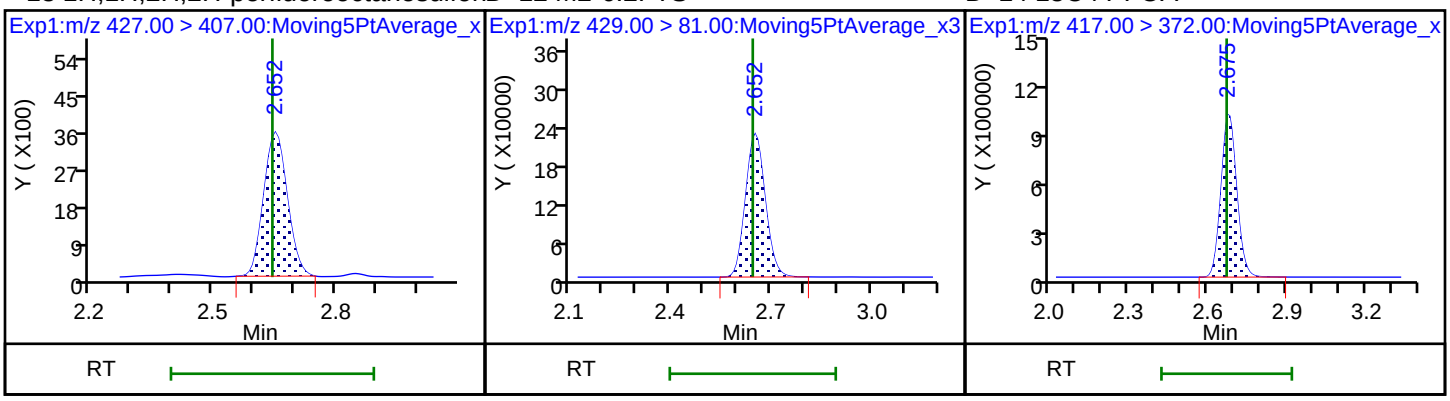
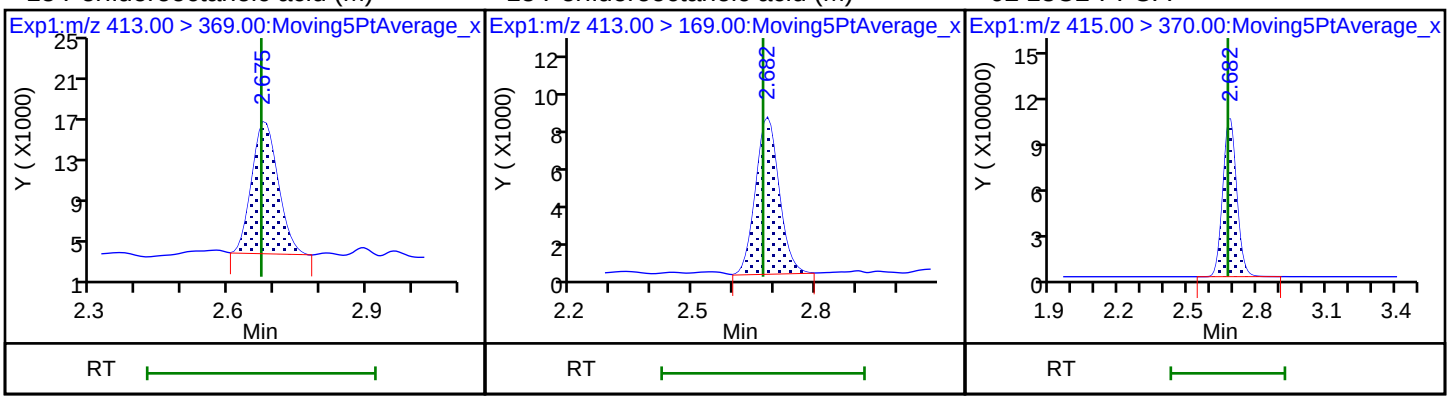


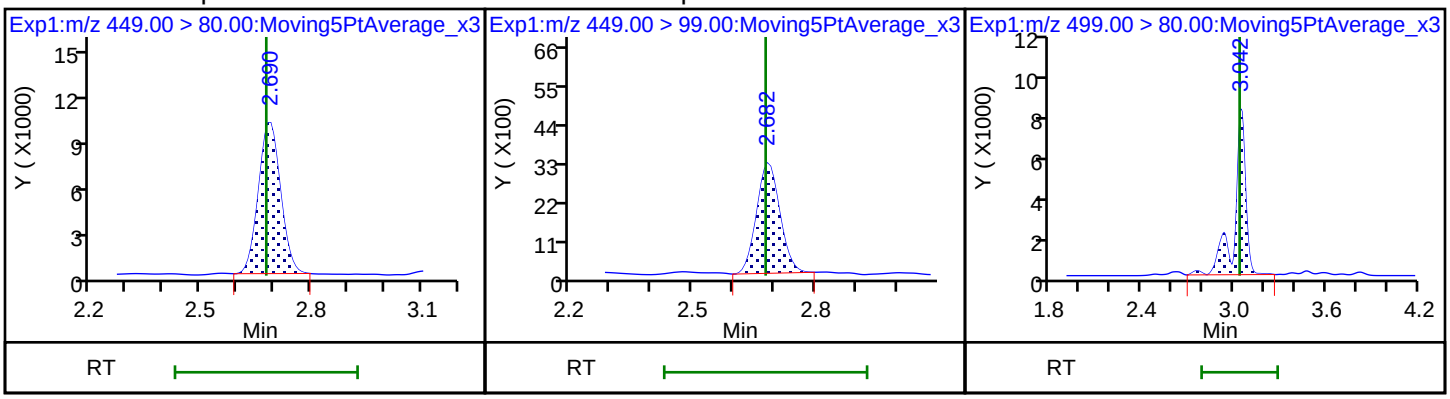
13 1H,1H,2H,2H-perfluorooctanesulfonD 12 M2-6:2FTS D 14 13C4 PFOA



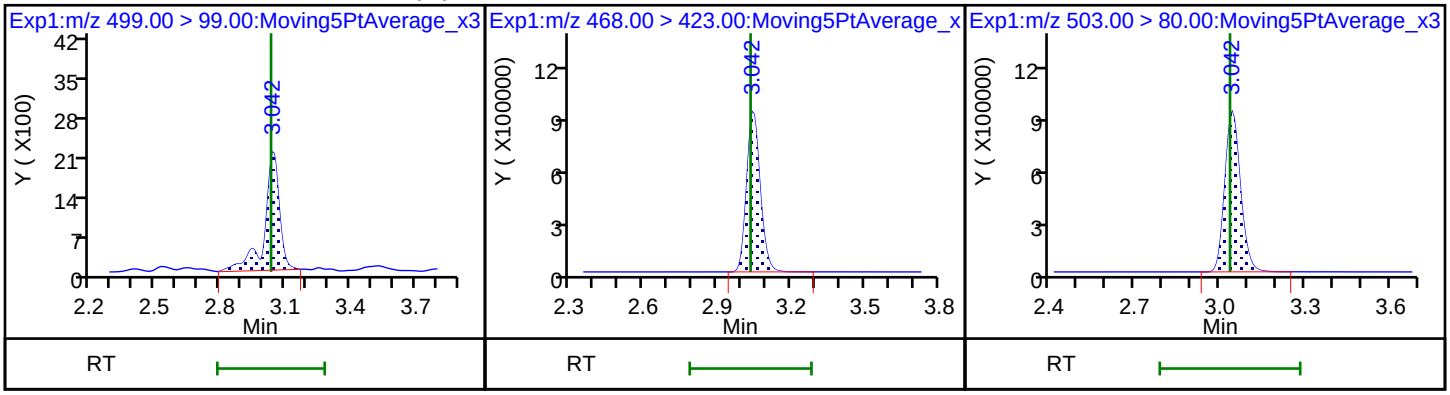
15 Perfluorooctanoic acid (M) 15 Perfluorooctanoic acid (M) * 62 13C2-PFOA



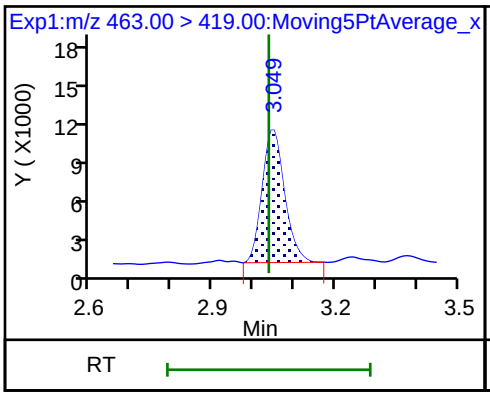
16 Perfluoroheptanesulfonic acid 16 Perfluoroheptanesulfonic acid 17 Perfluorooctane sulfonic acid



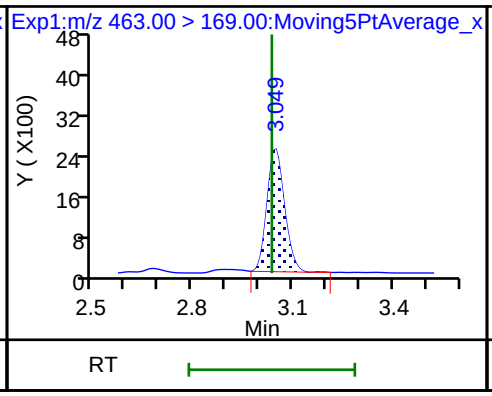
17 Perfluorooctane sulfonic acid (M) D 19 13C5 PFNA D 18 13C4 PFOS



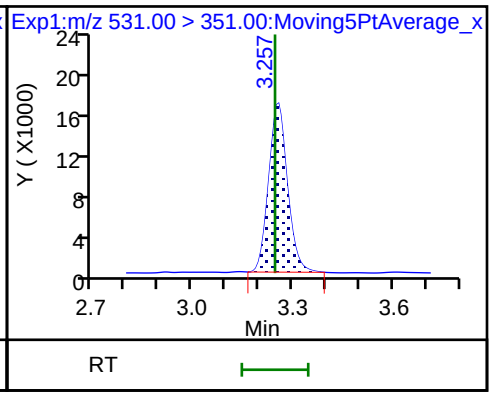
20 Perfluorononanoic acid



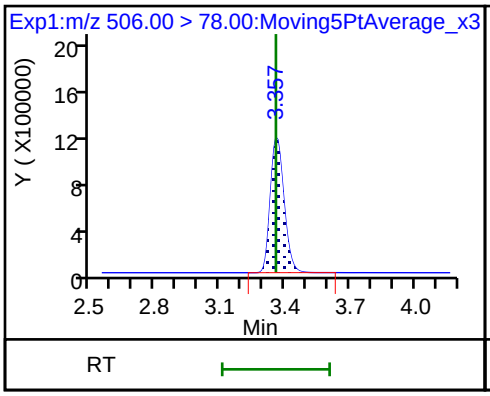
20 Perfluorononanoic acid



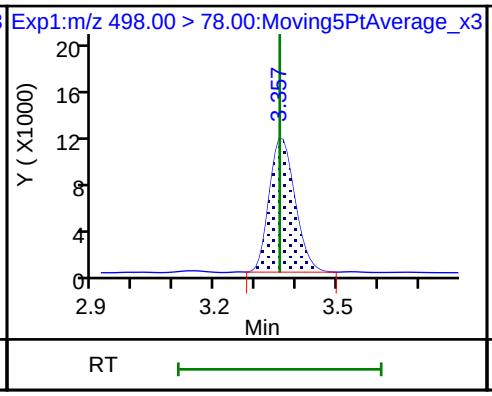
69 9-Chlorohexadecafluoro-3-oxanonane



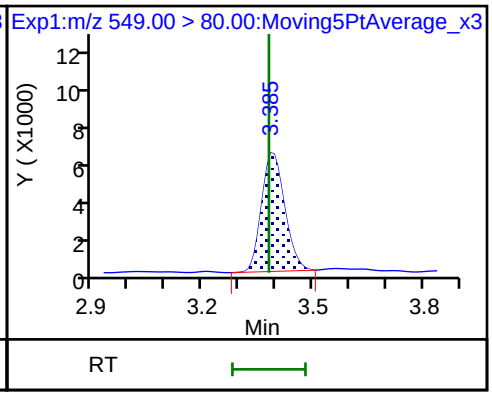
D 21 13C8 FOSA



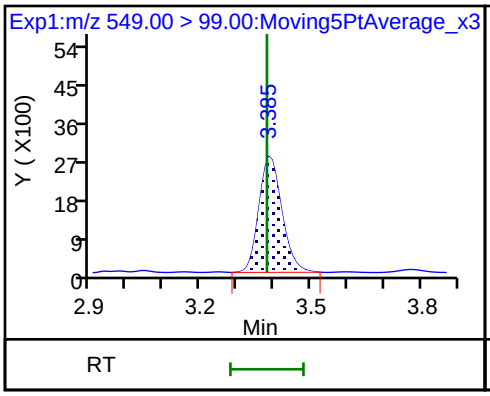
22 Perfluorooctane Sulfonamide



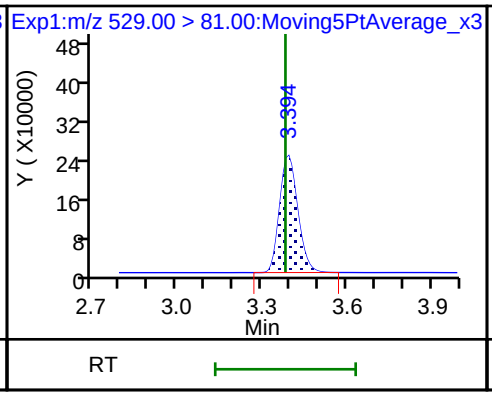
68 Perfluorononanesulfonic acid



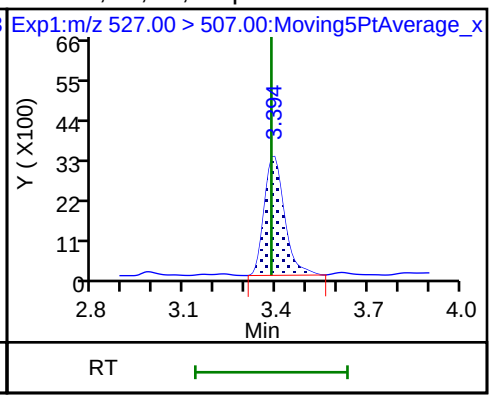
68 Perfluorononanesulfonic acid



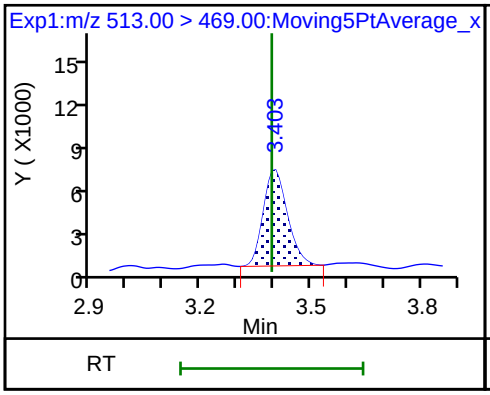
D 26 M2-8:2FTS



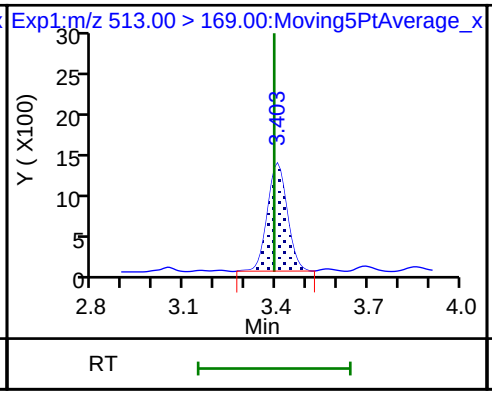
25 1H,1H,2H,2H-perfluorodecanesulfoni



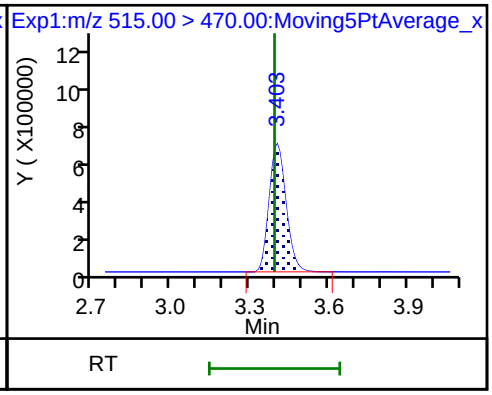
24 Perfluorodecanoic acid



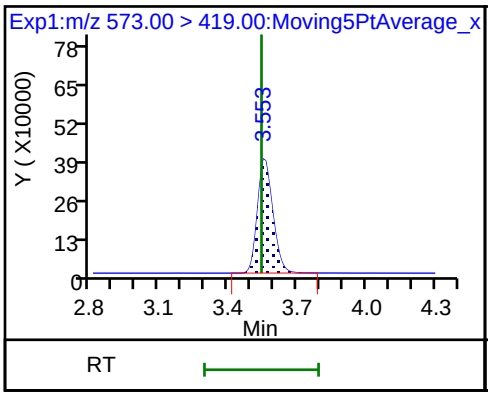
24 Perfluorodecanoic acid



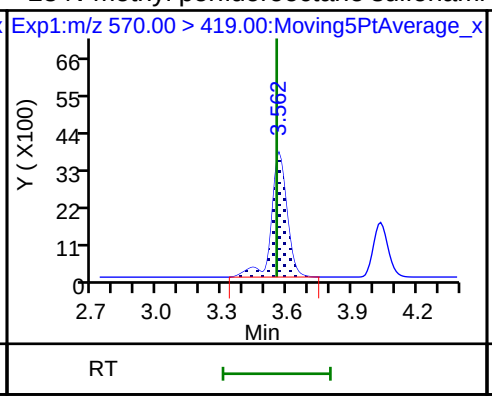
D 23 13C2 PFDA



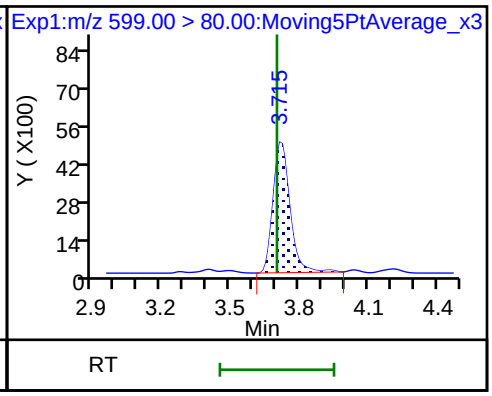
D 27 d3-NMeFOSAA



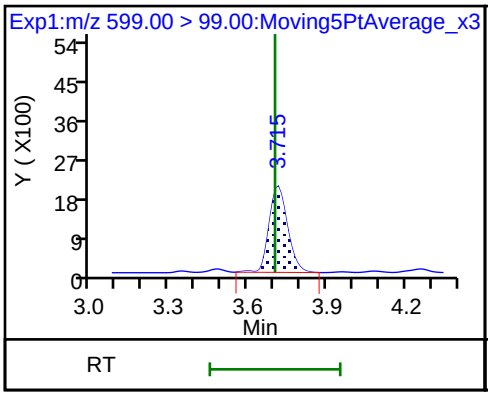
28 N-methyl perfluorooctane sulfonami



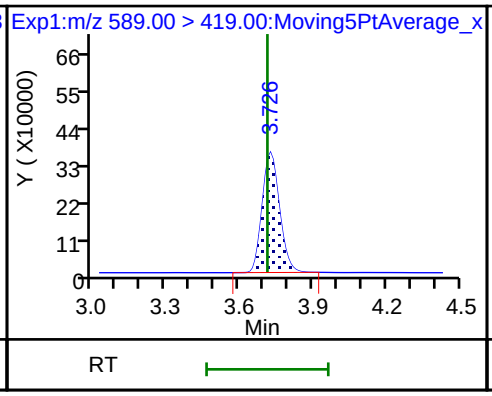
29 Perfluorodecane Sulfonic acid



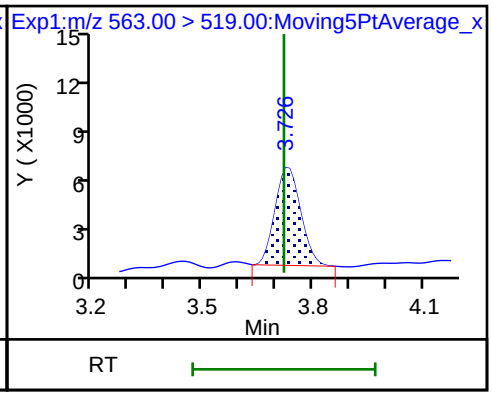
29 Perfluorodecane Sulfonic acid



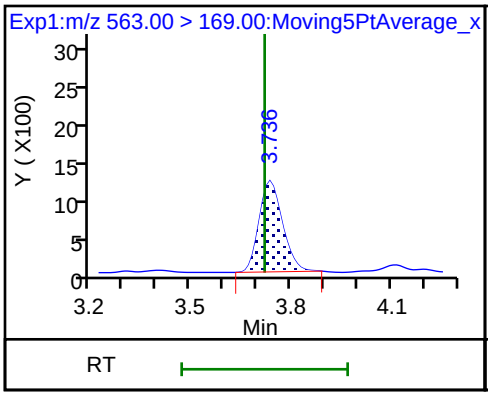
D 32 d5-NEtFOSAA



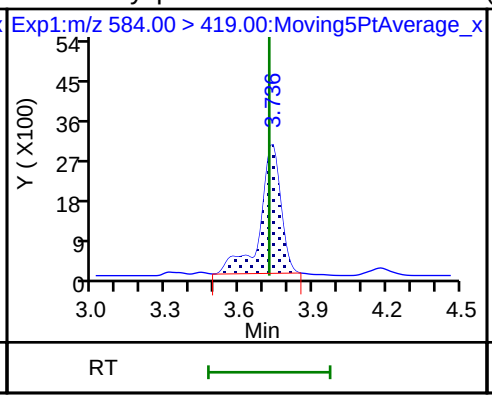
31 Perfluoroundecanoic acid



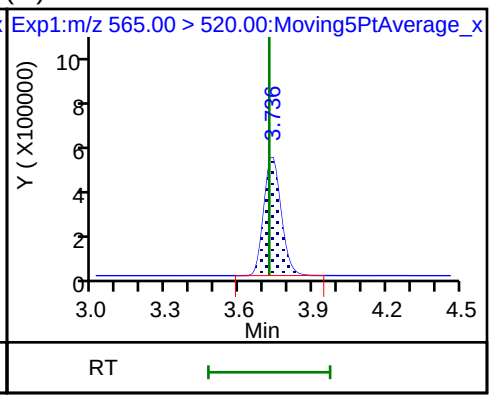
31 Perfluoroundecanoic acid



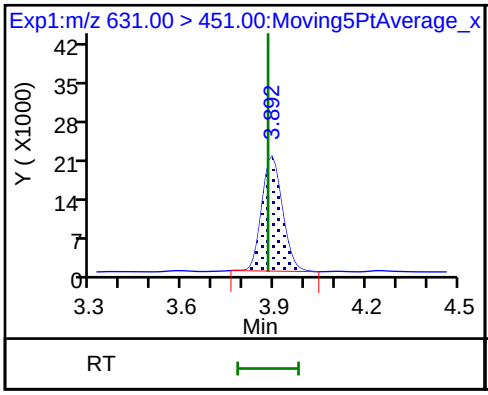
33 N-ethyl perfluorooctane sulfonamid (M)



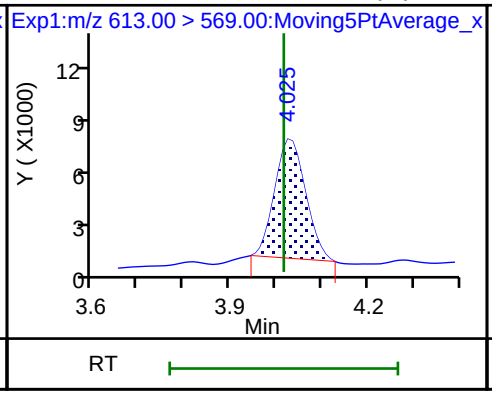
D 30 13C2 PFUnA



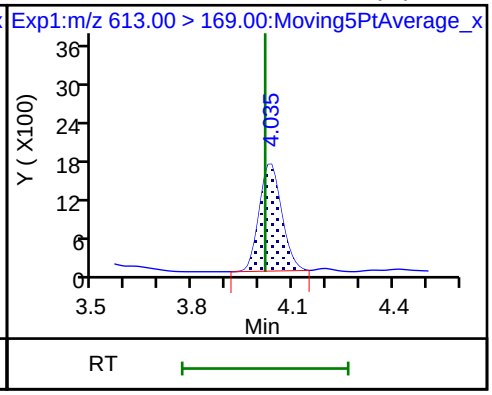
66 11-Chloroeicosafluoro-3-oxaundecan



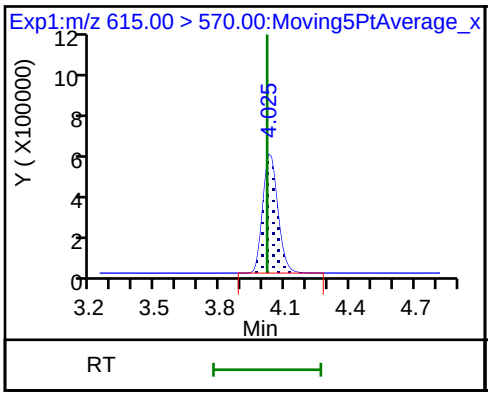
37 Perfluorododecanoic acid (M)



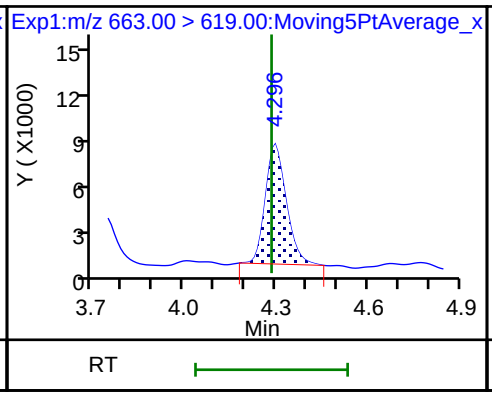
37 Perfluorododecanoic acid (M)



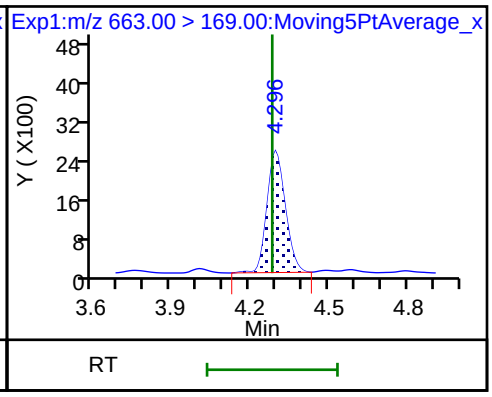
D 36 13C2 PFDoA



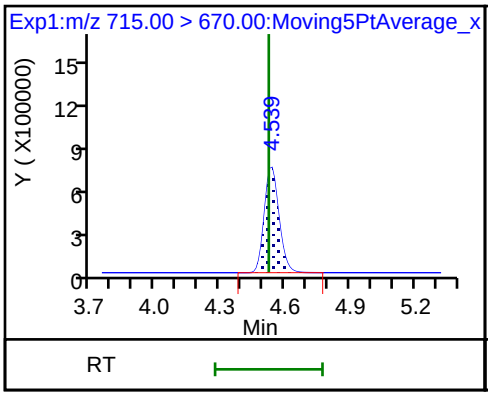
41 Perfluorotridecanoic acid



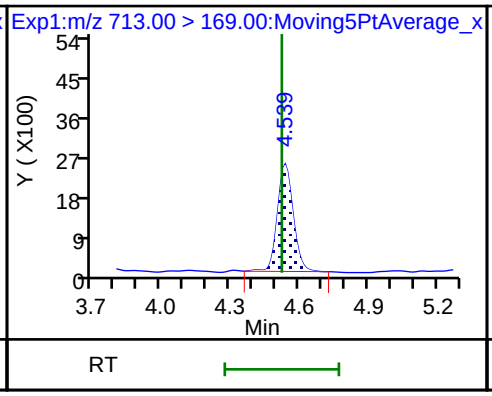
41 Perfluorotridecanoic acid



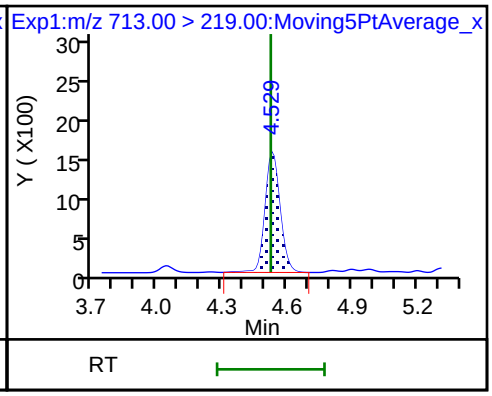
D 43 13C2-PFTeDA



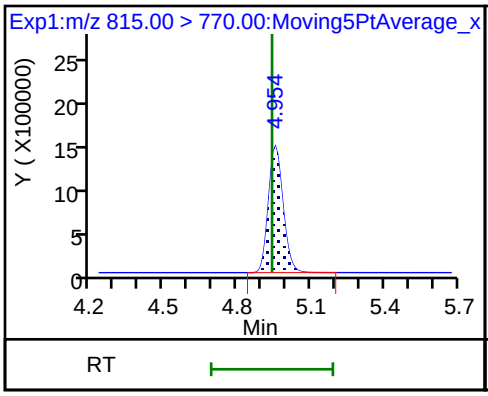
42 Perfluorotetradecanoic acid



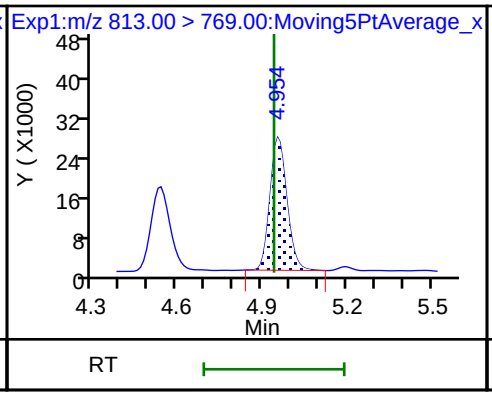
42 Perfluorotetradecanoic acid



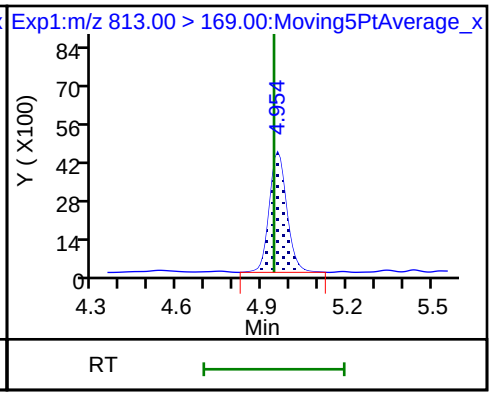
D 44 13C2-PFHxDA



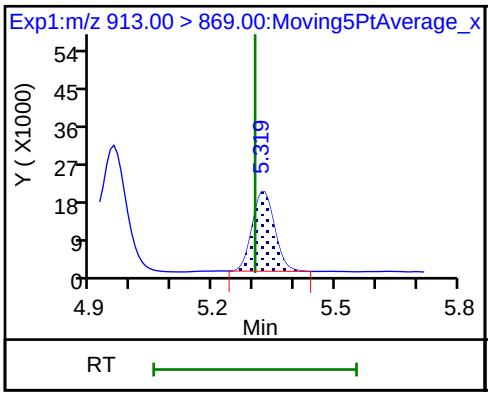
45 Perfluorohexadecanoic acid



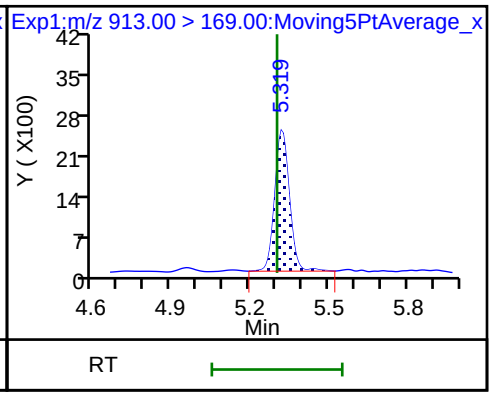
45 Perfluorohexadecanoic acid



46 Perfluorooctadecanoic acid



46 Perfluorooctadecanoic acid



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

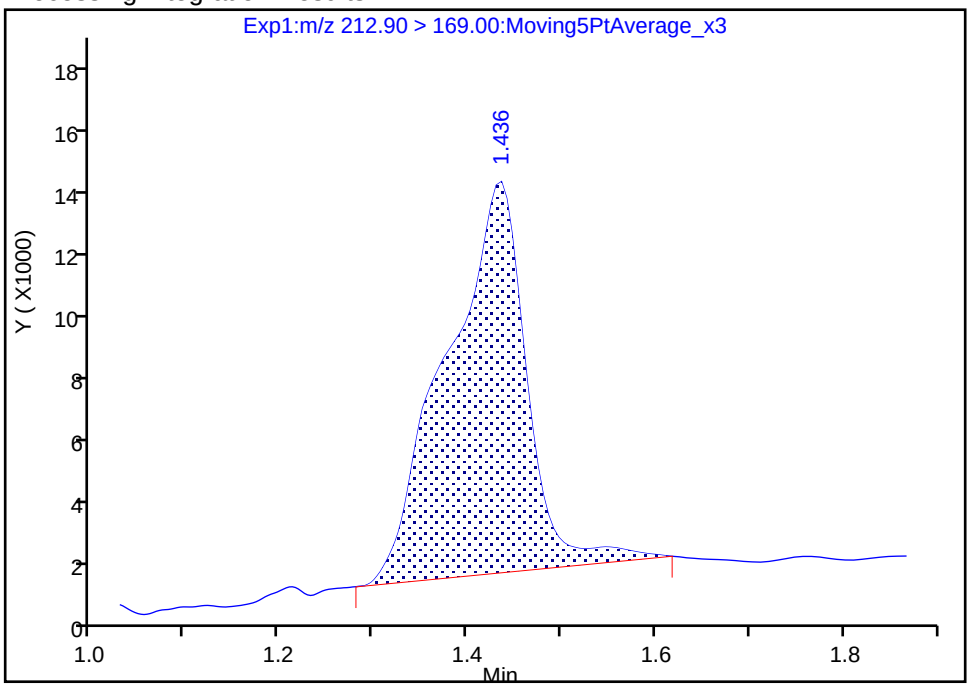
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180705-60684.b\2018.07.05LLICALAA_002.d				
Injection Date:	05-Jul-2018 08:51:23	Instrument ID:	A8_N		
Lims ID:	IC L1 Full				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	10	Worklist Smp#:	2
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

2 Perfluorobutyric acid, CAS: 375-22-4

Signal: 1

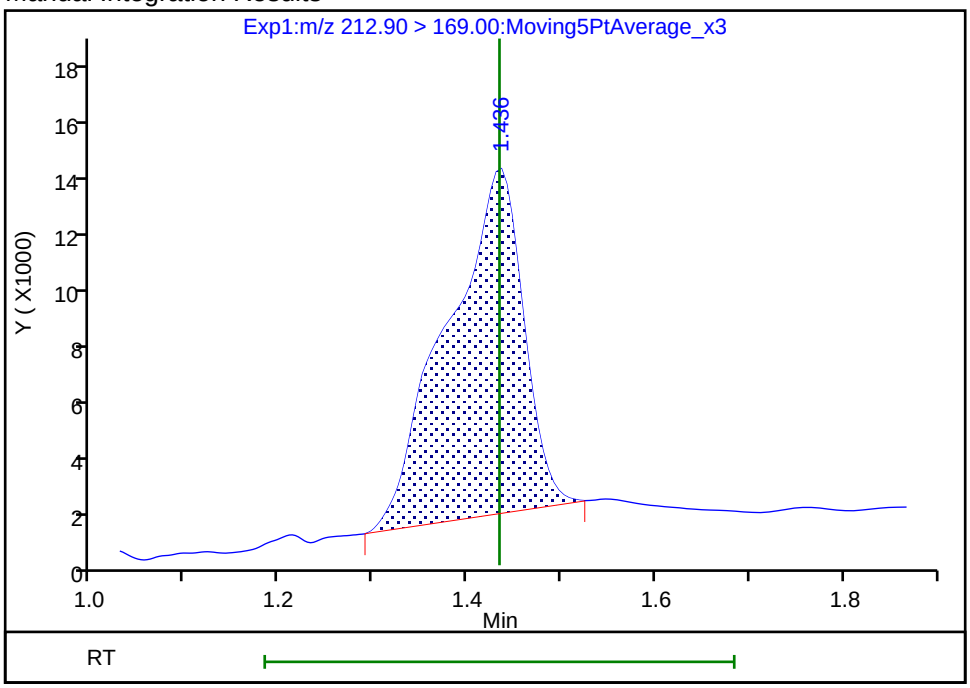
Processing Integration Results

RT: 1.44
Area: 72344
Amount: 0.029958
Amount Units: ng/ml



Manual Integration Results

RT: 1.44
Area: 67169
Amount: 0.028389
Amount Units: ng/ml



Reviewer: hannigana, 05-Jul-2018 12:06:20
Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

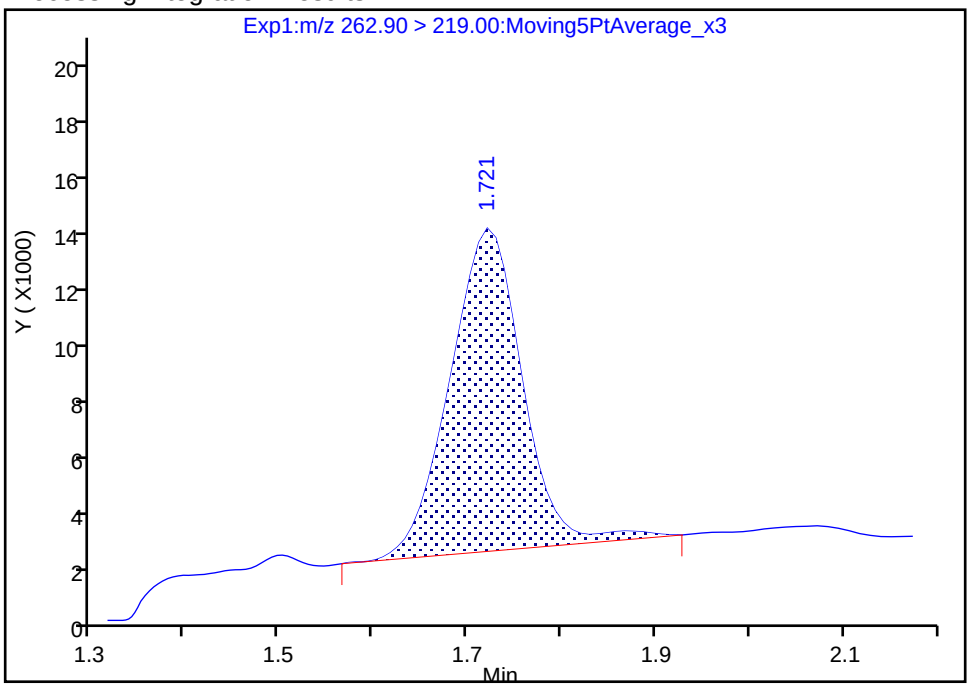
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180705-60684.b\2018.07.05LLICALAA_002.d				
Injection Date:	05-Jul-2018 08:51:23	Instrument ID:	A8_N		
Lims ID:	IC L1 Full				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	10	Worklist Smp#:	2
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

4 Perfluoropentanoic acid, CAS: 2706-90-3

Signal: 1

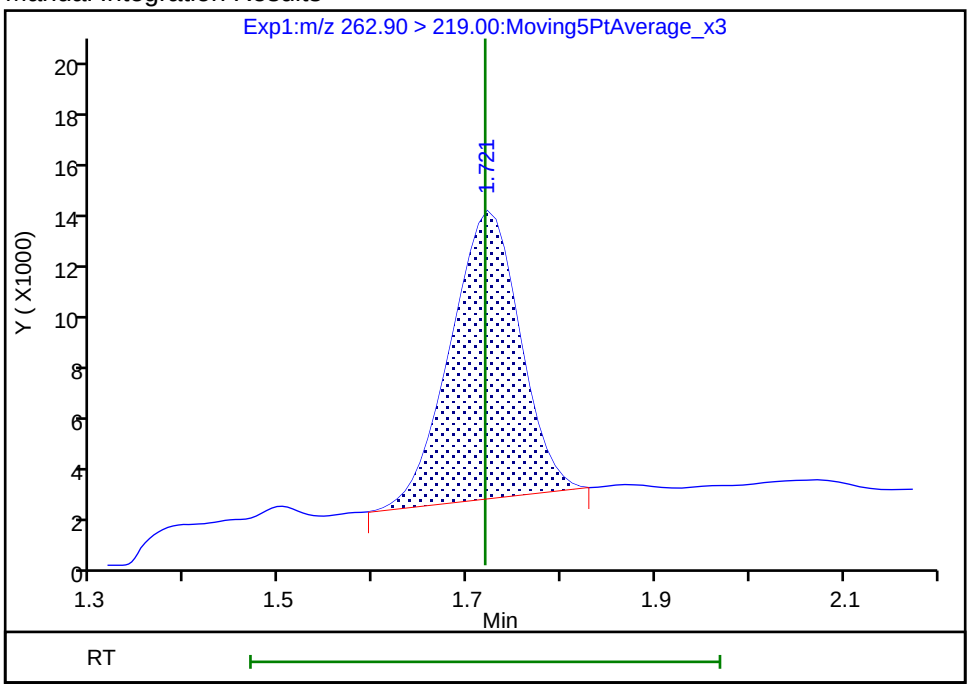
Processing Integration Results

RT: 1.72
Area: 60851
Amount: 0.029660
Amount Units: ng/ml



Manual Integration Results

RT: 1.72
Area: 57590
Amount: 0.028328
Amount Units: ng/ml



Reviewer: hannigana, 05-Jul-2018 12:06:30

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

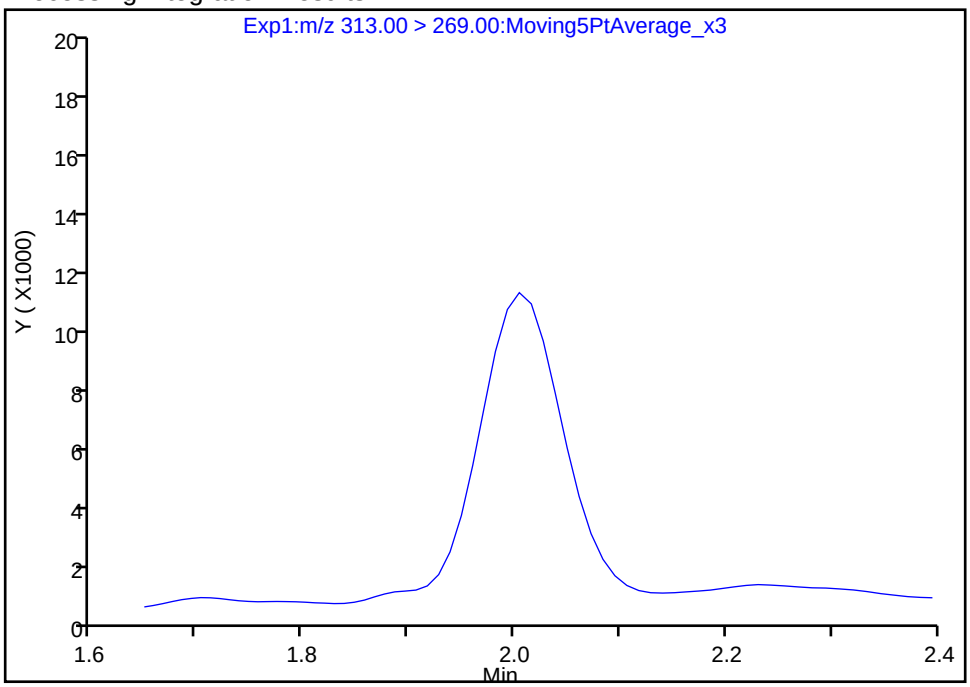
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180705-60684.b\2018.07.05LLICALAA_002.d				
Injection Date:	05-Jul-2018 08:51:23	Instrument ID:	A8_N		
Lims ID:	IC L1 Full				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	10	Worklist Smp#:	2
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

6 Perfluorohexanoic acid, CAS: 307-24-4

Signal: 1

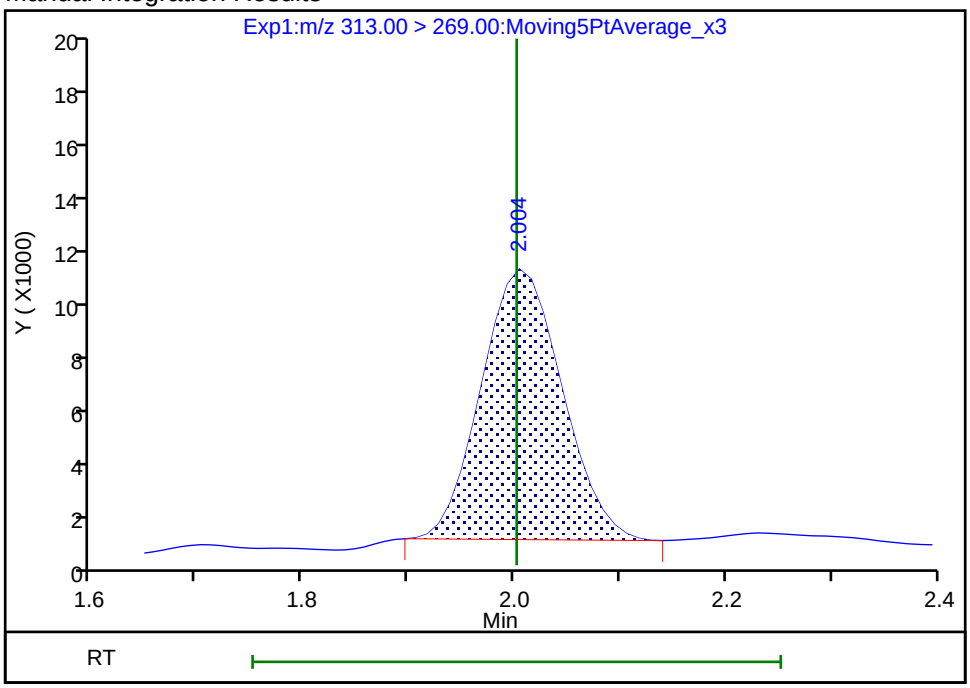
Not Detected
Expected RT: 2.00

Processing Integration Results



Manual Integration Results

RT: 2.00
Area: 51033
Amount: 0.026613
Amount Units: ng/ml



Reviewer: hannigana, 05-Jul-2018 12:05:47
Audit Action: Manually Integrated Audit Reason: Assign Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

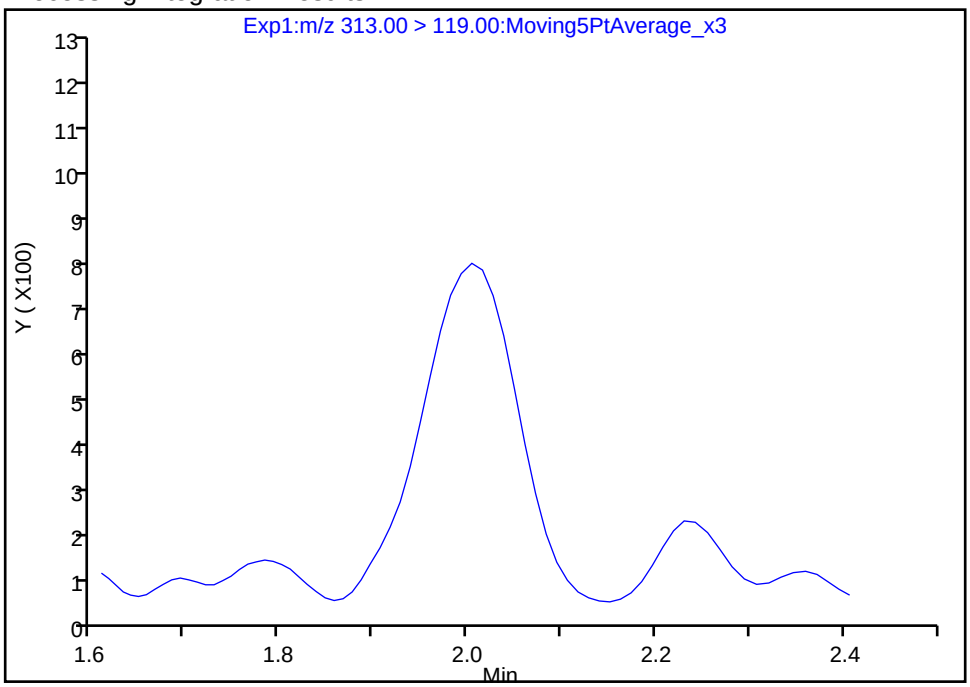
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180705-60684.b\2018.07.05LLICALAA_002.d				
Injection Date:	05-Jul-2018 08:51:23	Instrument ID:	A8_N		
Lims ID:	IC L1 Full				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	10	Worklist Smp#:	2
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

6 Perfluorohexanoic acid, CAS: 307-24-4

Signal: 2

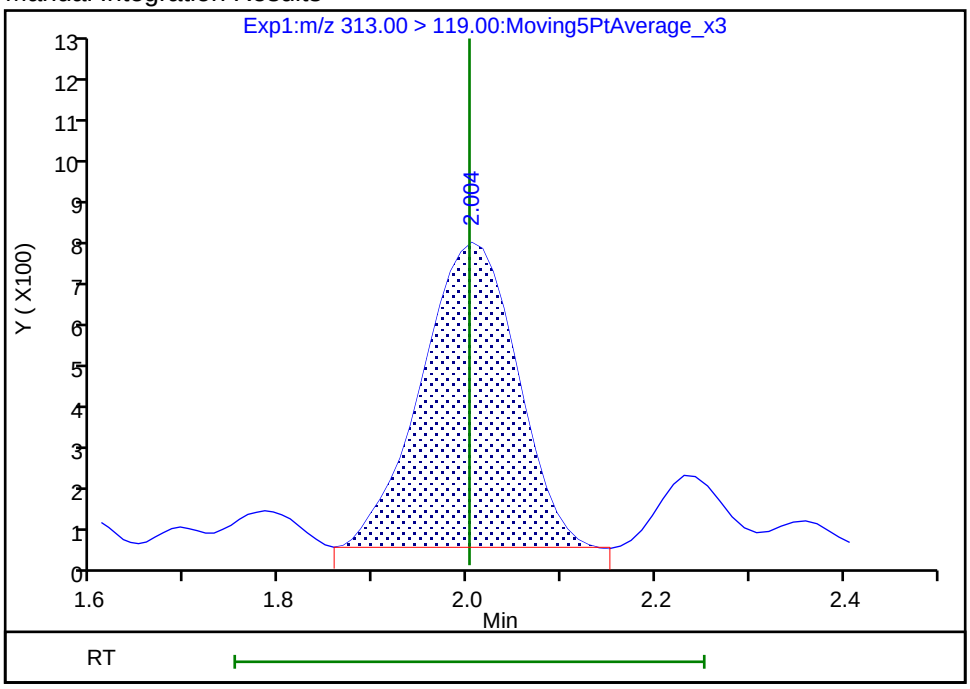
Processing Integration Results

Not Detected
Expected RT: 2.00



Manual Integration Results

RT: 2.00
Area: 5299
Amount: 0.026613
Amount Units: ng/ml



Reviewer: hannigana, 05-Jul-2018 12:05:52
Audit Action: Manually Integrated Audit Reason: Assign Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

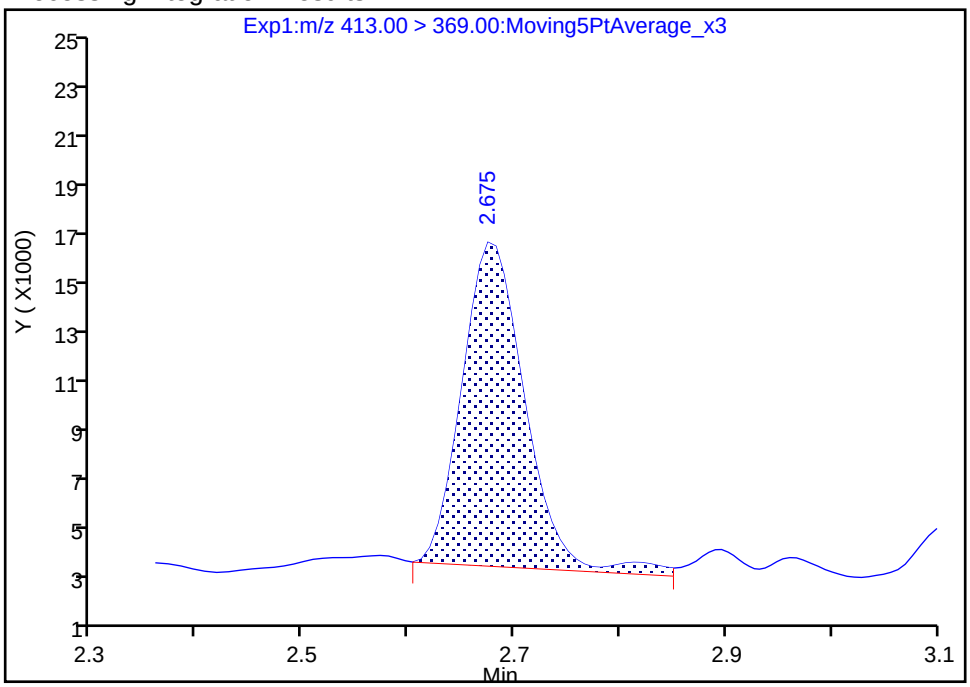
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180705-60684.b\2018.07.05LLICALAA_002.d				
Injection Date:	05-Jul-2018 08:51:23	Instrument ID:	A8_N		
Lims ID:	IC L1 Full				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	10	Worklist Smp#:	2
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

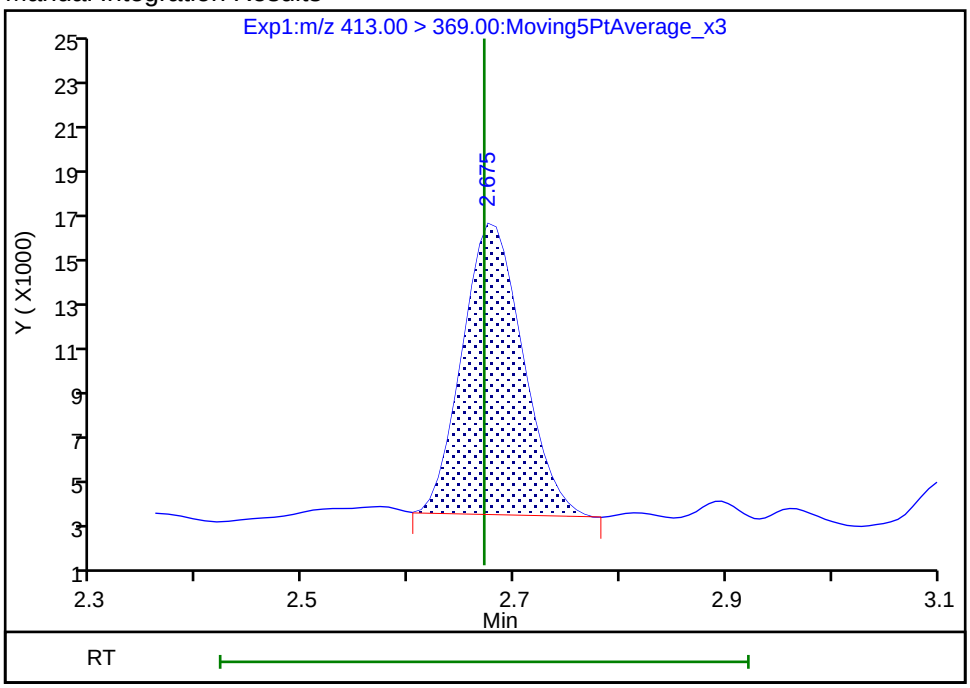
Processing Integration Results

RT: 2.67
Area: 52645
Amount: 0.026626
Amount Units: ng/ml



Manual Integration Results

RT: 2.67
Area: 50090
Amount: 0.025731
Amount Units: ng/ml



Reviewer: hannigana, 05-Jul-2018 12:06:51

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

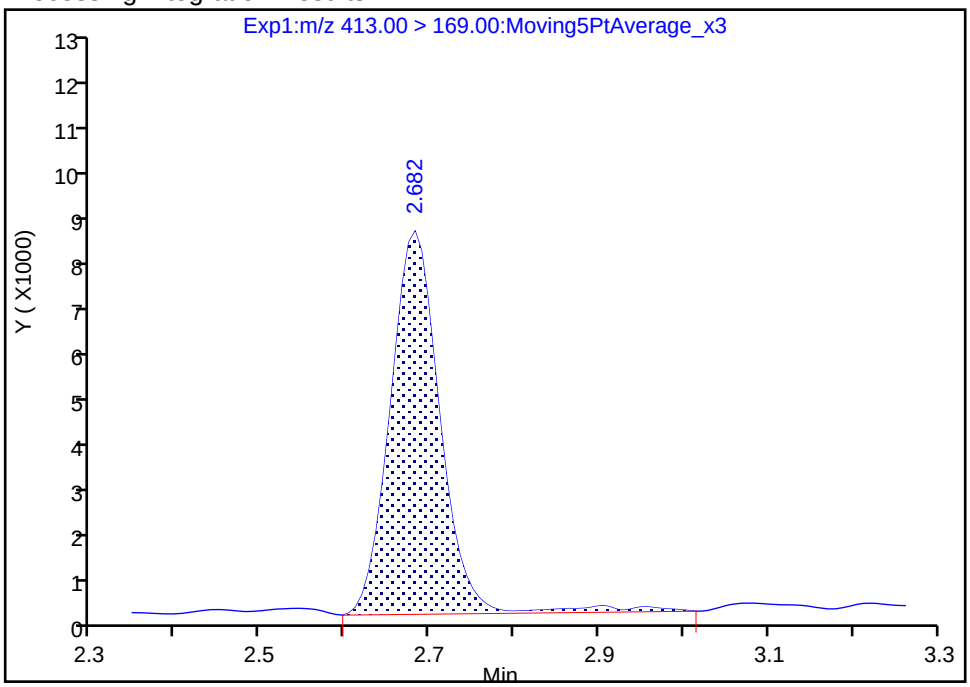
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180705-60684.b\2018.07.05LLICALAA_002.d				
Injection Date:	05-Jul-2018 08:51:23	Instrument ID:	A8_N		
Lims ID:	IC L1 Full				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	10	Worklist Smp#:	2
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 2

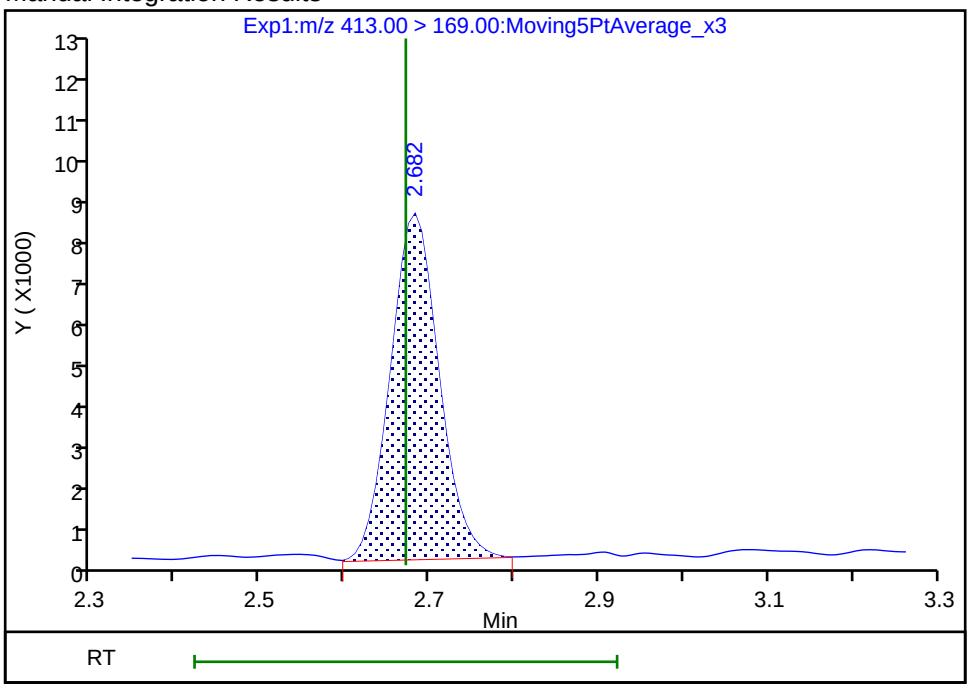
Processing Integration Results

RT: 2.68
Area: 33950
Amount: 0.026626
Amount Units: ng/ml



Manual Integration Results

RT: 2.68
Area: 32967
Amount: 0.025731
Amount Units: ng/ml



Reviewer: hannigana, 05-Jul-2018 12:06:58
Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

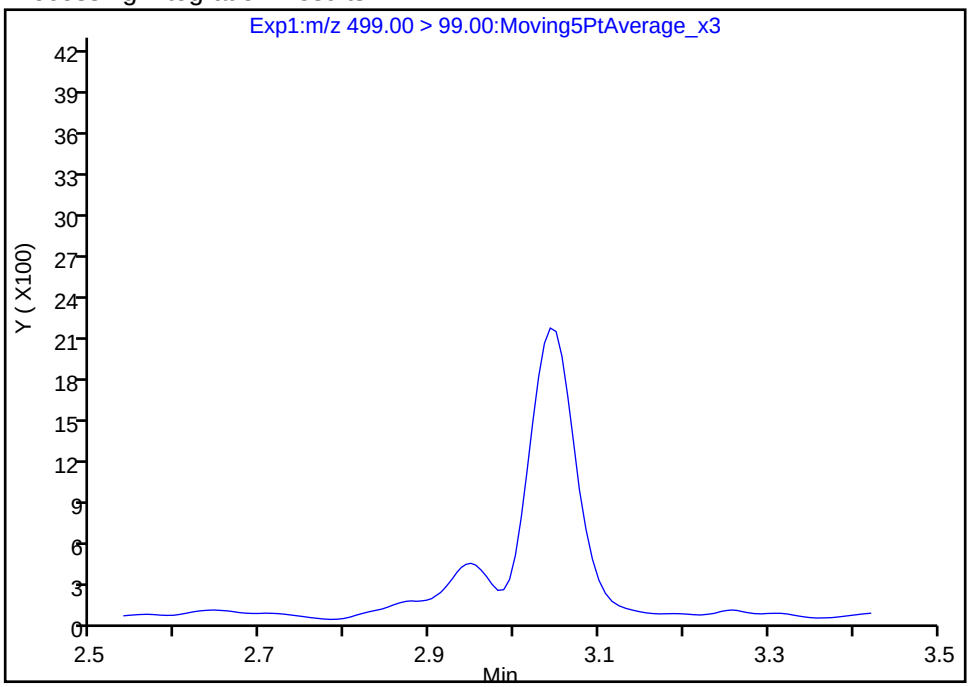
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180705-60684.b\2018.07.05LLICALAA_002.d				
Injection Date:	05-Jul-2018 08:51:23	Instrument ID:	A8_N		
Lims ID:	IC L1 Full				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	10	Worklist Smp#:	2
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

17 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 2

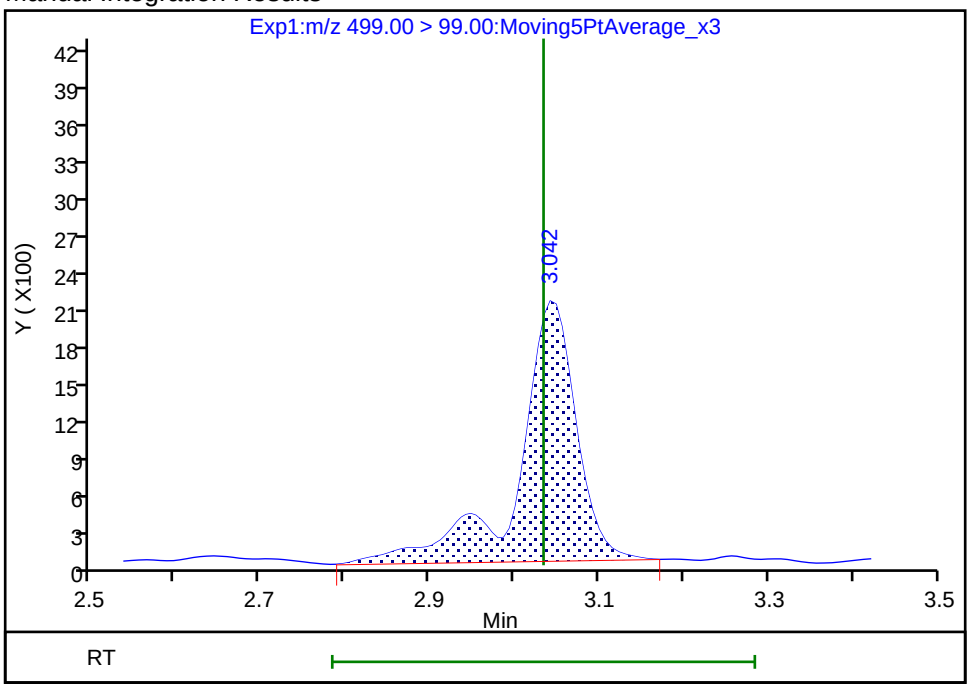
Processing Integration Results

RT: 3.00
Area: 0
Amount: 0.025654
Amount Units: ng/ml



Manual Integration Results

RT: 3.04
Area: 9995
Amount: 0.024074
Amount Units: ng/ml



Reviewer: hannigana, 05-Jul-2018 12:07:14

Audit Action: Manually Integrated Audit Reason: Assign Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

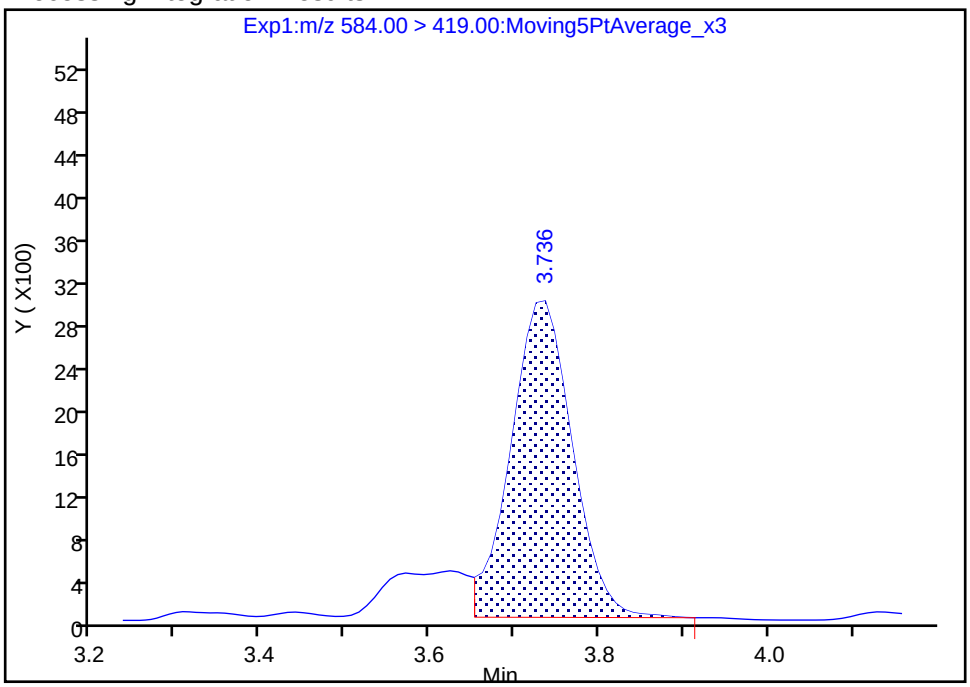
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180705-60684.b\2018.07.05LLICALAA_002.d				
Injection Date:	05-Jul-2018 08:51:23	Instrument ID:	A8_N		
Lims ID:	IC L1 Full				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	10	Worklist Smp#:	2
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

33 N-ethyl perfluorooctane sulfonamidoacetic ac, CAS: 2991-50-6

Signal: 1

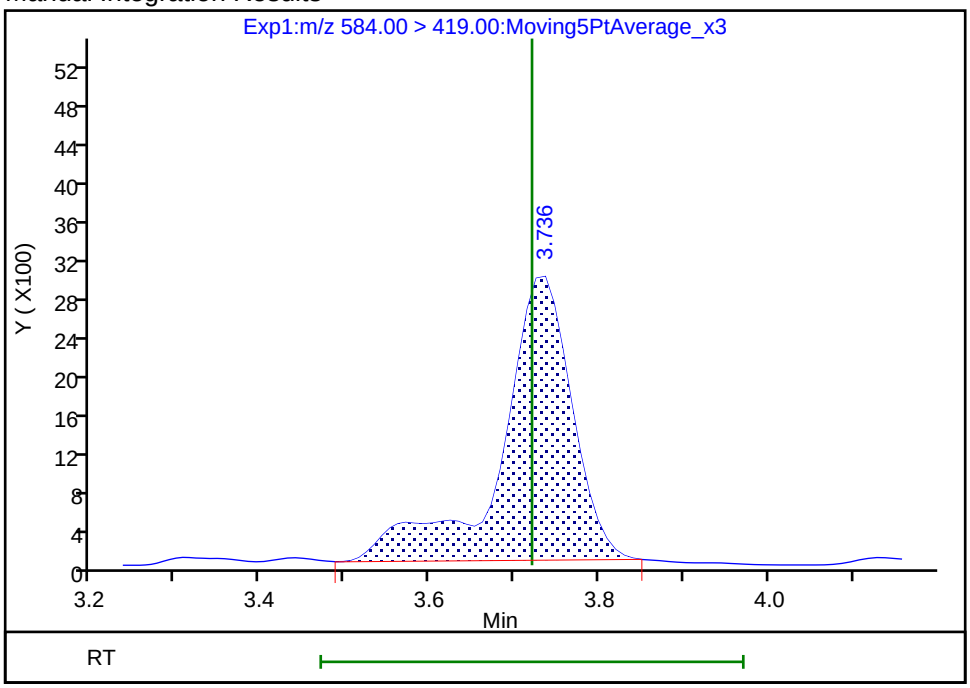
Processing Integration Results

RT: 3.74
Area: 14995
Amount: 0.024253
Amount Units: ng/ml



Manual Integration Results

RT: 3.74
Area: 17427
Amount: 0.027245
Amount Units: ng/ml



Reviewer: hannigana, 05-Jul-2018 12:07:36

Audit Action: Manually Integrated Audit Reason: Isomers

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

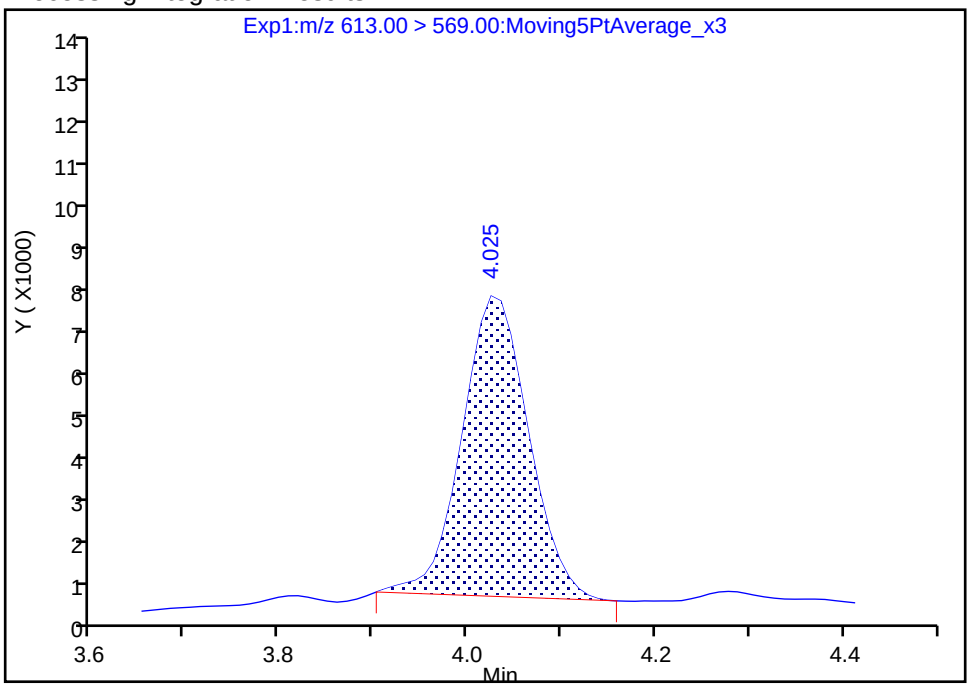
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180705-60684.b\2018.07.05LLICALAA_002.d				
Injection Date:	05-Jul-2018 08:51:23	Instrument ID:	A8_N		
Lims ID:	IC L1 Full				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	10	Worklist Smp#:	2
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

37 Perfluorododecanoic acid, CAS: 307-55-1

Signal: 1

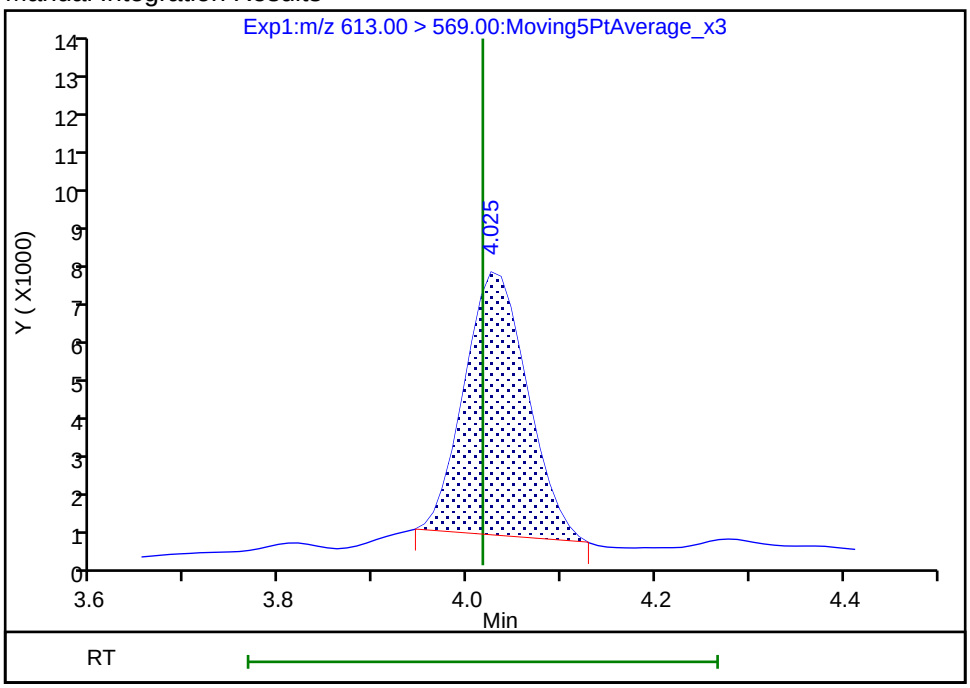
Processing Integration Results

RT: 4.03
Area: 34414
Amount: 0.028303
Amount Units: ng/ml



Manual Integration Results

RT: 4.03
Area: 31624
Amount: 0.026354
Amount Units: ng/ml



Reviewer: hannigana, 05-Jul-2018 12:08:05
Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

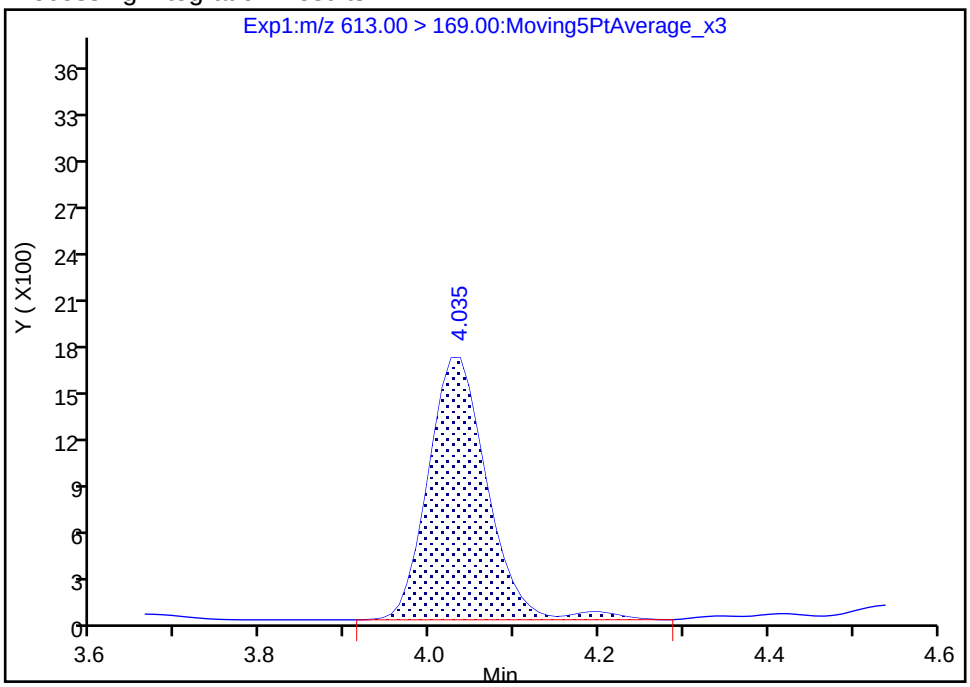
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180705-60684.b\2018.07.05LLICALAA_002.d				
Injection Date:	05-Jul-2018 08:51:23	Instrument ID:	A8_N		
Lims ID:	IC L1 Full				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	10	Worklist Smp#:	2
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

37 Perfluorododecanoic acid, CAS: 307-55-1

Signal: 2

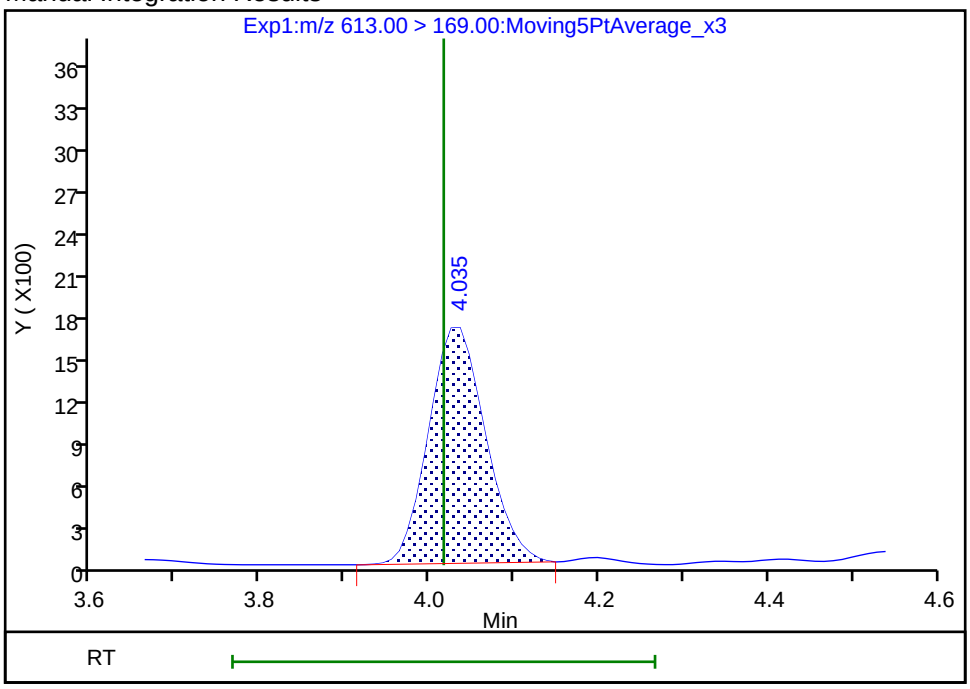
Processing Integration Results

RT: 4.04
Area: 8220
Amount: 0.028303
Amount Units: ng/ml



Manual Integration Results

RT: 4.04
Area: 7882
Amount: 0.026354
Amount Units: ng/ml



Reviewer: hannigana, 05-Jul-2018 12:08:20
Audit Action: Manually Integrated Audit Reason: Baseline

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180705-60684.b\2018.07.05LLICALAA_003.d
Lims ID: IC L2 Full
Client ID:
Sample Type: IC Calib Level: 2
Inject. Date: 05-Jul-2018 08:59:11 ALS Bottle#: 11 Worklist Smp#: 3
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L2-FULL
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-A8_N*sub32

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180705-60684.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 05-Jul-2018 12:38:50 Calib Date: 05-Jul-2018 09:38:17
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180705-60684.b\2018.07.05LLICALAA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK035

First Level Reviewer: hannigana Date: 05-Jul-2018 12:10:03

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.430	1.432	-0.002	0.535	6125232	2.42		96.6	25828	
2 Perfluorobutyric acid										M
212.90 > 169.00	1.436	1.434	0.002	1.004	127400	0.0509		102	45.8	M
D 3 13C5-PFPeA										
267.90 > 223.00	1.720	1.716	0.004	0.643	4568616	2.43		97.4	49155	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.720	1.719	0.001	1.000	113509	0.0522		104	81.6	
D 47 13C3-PFBS										
301.90 > 83.00	1.756	1.756	0.0	0.657	101062	2.25		96.9	787	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.756	1.760	-0.004	1.000	145614	0.0442		100.0	845	
298.90 > 99.00	1.756	1.760	-0.004	1.000	57950		2.51(1.25-3.74)	100.0	646	
D 60 M2-4:2FTS										
329.00 > 81.00	1.970	1.966	0.004	0.737	677914	2.35		101	9719	
61 1H,1H,2H,2H-perfluorohexanesulfoni										
327.00 > 307.00	1.970	1.966	0.004	1.122	34819	0.0511		109	2054	
D 7 13C2 PFHxA										
315.00 > 270.00	2.003	2.000	0.003	0.749	4862877	2.42		96.8	63588	
6 Perfluorohexanoic acid										M
313.00 > 269.00	2.003	2.002	0.001	1.000	103001	0.0520		104	175	M
313.00 > 119.00	2.003	2.002	0.001	1.000	9150		11.26(5.03-15.10)	104	136	M
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.025	2.025	0.0	1.154	133231	0.0473		101	2022	
349.00 > 99.00	2.025	2.025	0.0	1.154	50485		2.64(1.36-4.07)	101	1013	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.105	2.099	0.006	0.787	410277	2.49		99.7	8337	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
67 Perfluoro(2-propoxypropanoic) acid										
329.10 > 285.00	2.093	2.099	-0.006	0.995	18507	0.0491		98.1	119	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.319	2.318	0.001	1.000	91664	0.0455		91.0	133	
363.00 > 169.00	2.319	2.318	0.001	1.000	39505		2.32(1.13-3.40)	91.0	374	
D 9 13C4-PFHpA										
367.00 > 322.00	2.319	2.318	0.001	0.867	4459007	2.50		100	47397	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.332	2.331	0.001	1.000	125879	0.0488		107	1261	
399.00 > 99.00	2.332	2.331	0.001	1.000	37997		3.31(1.50-4.49)	107	360	
D 11 18O2 PFHxS										
403.00 > 84.00	2.332	2.333	-0.001	0.872	5278239	2.41		102	31180	
65 Adona										
377.00 > 251.00	2.358	2.365	-0.007	0.777	265083	0.0475		101	2308	
377.00 > 85.00	2.358	2.365	-0.007	0.777	168363		1.57(0.84-2.53)	101	3234	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.644	2.645	-0.001	1.000	31462	0.0505		106	299	
D 12 M2-6:2FTS										
429.00 > 81.00	2.644	2.645	-0.001	0.989	945420	2.36		99.4	18792	
D 14 13C4 PFOA										
417.00 > 372.00	2.675	2.670	0.005	1.000	4361265	2.50		99.9	36654	
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.675	2.671	0.004	1.000	110192	0.0533		106	39.0	M
413.00 > 169.00	2.675	2.671	0.004	1.000	60029		1.84(0.84-2.52)	106	360	
* 62 13C2-PFOA										
415.00 > 370.00	2.675	2.671	0.004		4578801	2.50			39626	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.682	2.678	0.004	0.884	103856	0.0515		108	1694	
449.00 > 99.00	2.675	2.678	-0.003	0.881	27065		3.84(1.94-5.82)	108	755	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.035	3.034	0.001	1.000	85326	0.0485		104	2397	
499.00 > 99.00	3.035	3.034	0.001	1.000	21775		3.92(2.31-6.93)	104	522	
D 19 13C5 PFNA										
468.00 > 423.00	3.035	3.034	0.001	1.135	3648217	2.46		98.3	31198	
D 18 13C4 PFOS										
503.00 > 80.00	3.035	3.034	0.001	1.135	3601856	2.30		96.2	31821	
20 Perfluorononanoic acid										
463.00 > 419.00	3.035	3.036	-0.001	1.000	74314	0.0473		94.5	125	
463.00 > 169.00	3.035	3.036	-0.001	1.000	19664		3.78(1.90-5.69)	94.5	766	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.244	3.246	-0.002	1.069	139553	0.0490		105	2218	
D 21 13C8 FOSA										
506.00 > 78.00	3.357	3.357	0.0	1.255	5388753	2.48		99.1	32851	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.357	3.358	-0.001	1.000	109173	0.0511		102	2805	
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.385	3.379	0.006	1.115	63937	0.0522		109	1802	
549.00 > 99.00	3.385	3.379	0.006	1.115	22013		2.90(1.33-3.97)	109	711	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 26 M2-8:2FTS										
529.00 > 81.00	3.385	3.382	0.003	1.265	1130537	2.54		106	19719	
25 1H,1H,2H,2H-perfluorodecanesulfoni										
527.00 > 507.00	3.385	3.383	0.002	1.000	28993	0.0465		97.1	649	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.394	3.393	0.001	1.000	67800	0.0503		101	259	
513.00 > 169.00	3.394	3.393	0.001	1.000	12210		5.55(2.36-7.09)	101	252	
D 23 13C2 PFDA										
515.00 > 470.00	3.394	3.393	0.001	1.269	3233809	2.53		101	33327	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.543	3.543	0.0	1.325	1841966	2.44		97.6	28355	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.553	3.551	0.001	1.003	42535	0.0561		112	296	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.704	3.702	0.002	1.220	54383	0.0502		104	1125	
599.00 > 99.00	3.704	3.702	0.002	1.220	17030		3.19(1.39-4.16)	104	917	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.715	3.713	0.002	1.389	1922718	2.58		103	14506	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.726	3.721	0.005	1.000	45721	0.0492		98.4	157	
563.00 > 169.00	3.726	3.721	0.005	1.000	9252		4.94(2.12-6.36)	98.4	273	
33 N-ethyl perfluorooctane sulfonamid										M
584.00 > 419.00	3.726	3.721	0.005	1.003	34849	0.0503		101	538	M
D 30 13C2 PFUnA										
565.00 > 520.00	3.726	3.721	0.005	1.393	2733892	2.54		102	37599	
66 11-Chloroeicosafluoro-3-oxaundecan										
631.00 > 451.00	3.882	3.879	0.003	1.279	213537	0.0491		104	3758	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.015	4.016	-0.001	1.000	62069	0.0467		93.5	62.4	
613.00 > 169.00	4.015	4.016	-0.001	1.000	17778		3.49(2.13-6.40)	93.5	377	
D 36 13C2 PFDoA										
615.00 > 570.00	4.015	4.016	-0.001	1.501	3012454	2.61		105	15080	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.287	4.284	0.003	1.068	77431	0.0524		105	84.5	
663.00 > 169.00	4.287	4.284	0.003	1.068	22681		3.41(1.25-3.76)	105	370	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.528	4.524	0.004	1.693	3501728	2.49		99.7	14609	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.528	4.524	0.004	1.000	18829	0.0496		99.3	255	
713.00 > 219.00	4.518	4.524	-0.006	0.998	14104		1.34(0.71-2.13)	99.3	293	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.945	4.940	0.005	1.849	6624124	2.55		102	13383	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.945	4.941	0.004	1.000	185133	0.0507		101	86.0	
813.00 > 169.00	4.945	4.941	0.004	1.000	31417		5.89(2.86-8.58)	101	268	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.311	5.302	0.009	1.074	162737	0.0528		106	53.6	
913.00 > 169.00	5.311	5.302	0.009	1.074	21103		7.71(3.83-11.48)	106	301	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

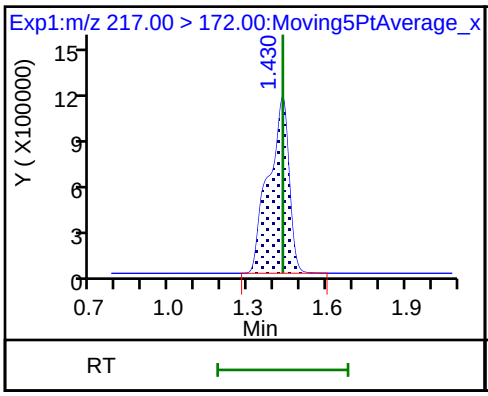
LCPFC_LL2_00005 Amount Added: 1.00 Units: mL

Report Date: 05-Jul-2018 12:38:51 Chrom Revision: 2.2 07-Jun-2018 07:41:54

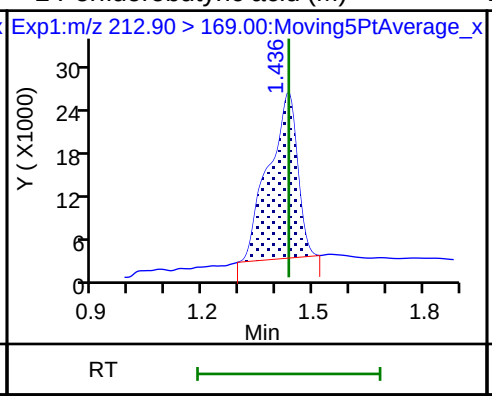
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180705-60684.b\2018.07.05LLICALAA_003.d
Injection Date: 05-Jul-2018 08:59:11 Instrument ID: A8_N
Lims ID: IC L2 Full
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 11 Worklist Smp#: 3
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC ICAL

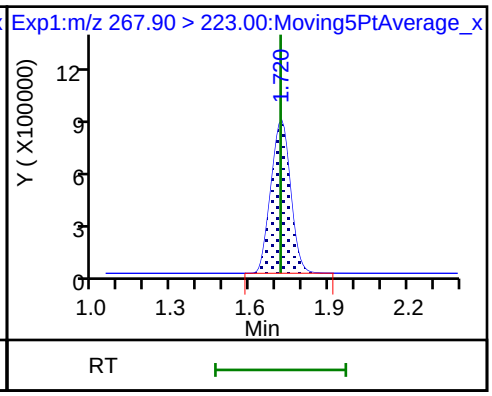
D 1 13C4 PFBA



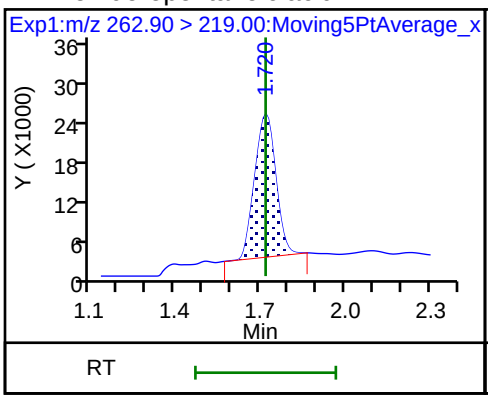
2 Perfluorobutyric acid (M)



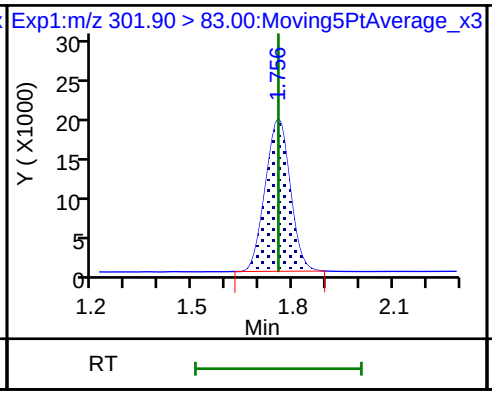
D 3 13C5-PFPeA



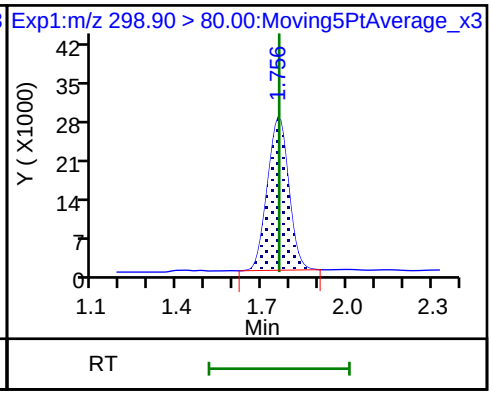
4 Perfluoropentanoic acid



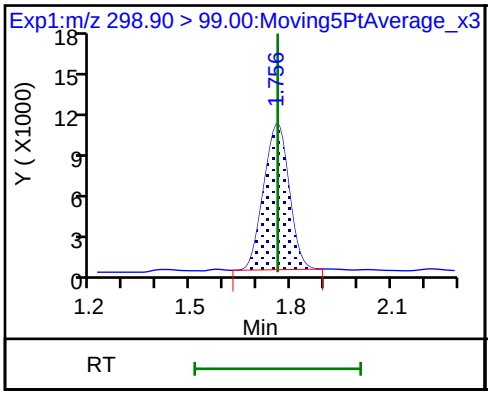
D 47 13C3-PFBS



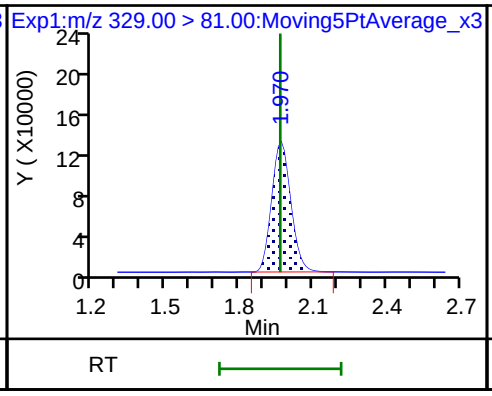
5 Perfluorobutanesulfonic acid



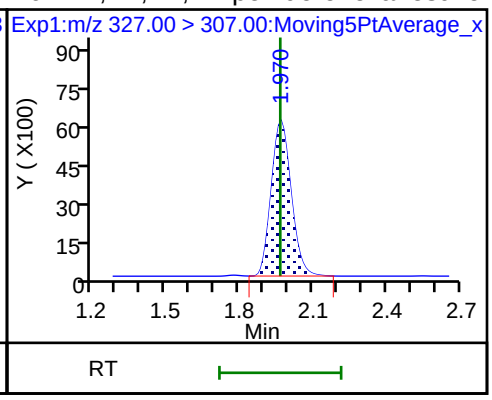
5 Perfluorobutanesulfonic acid



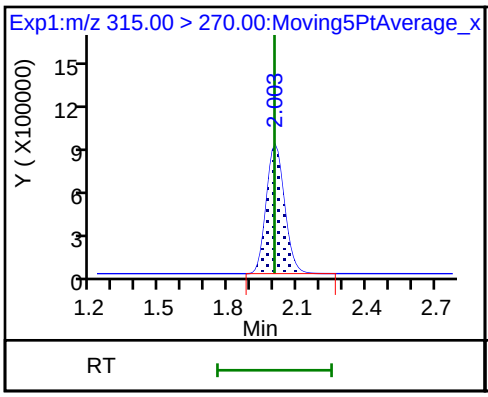
D 60 M2-4:2FTS



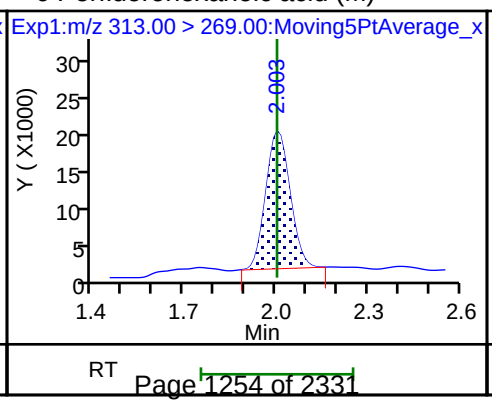
61 1H,1H,2H,2H-perfluorohexanesulfoni



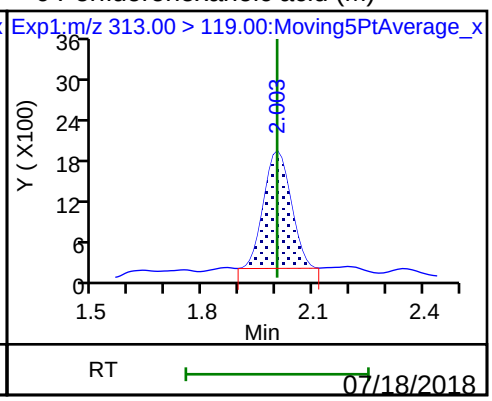
D 7 13C2 PFHxA



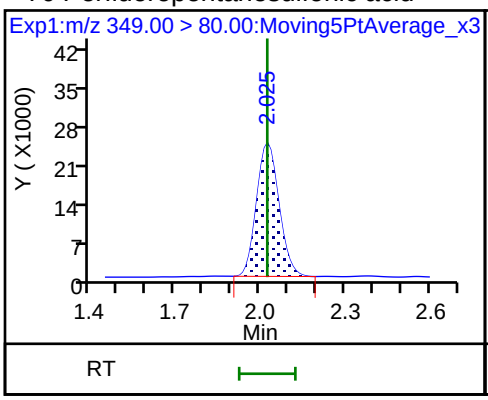
6 Perfluorohexanoic acid (M)



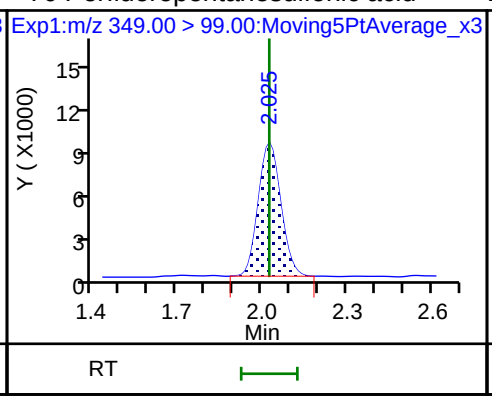
6 Perfluorohexanoic acid (M)



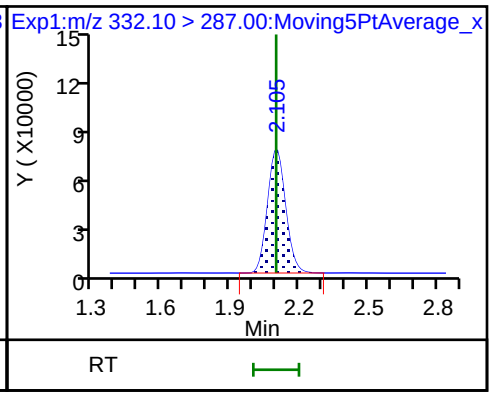
70 Perfluoropentanesulfonic acid



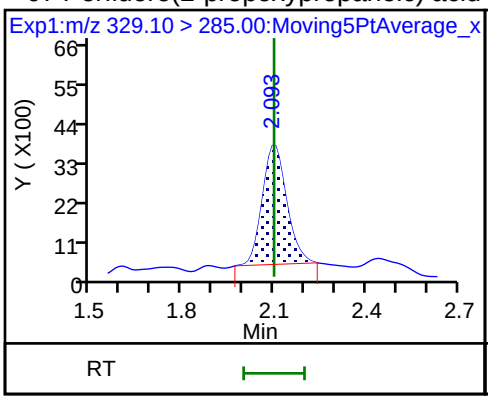
70 Perfluoropentanesulfonic acid



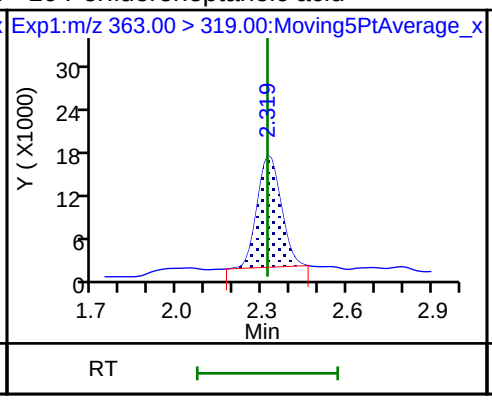
D 64 13C3 HFPO-DA



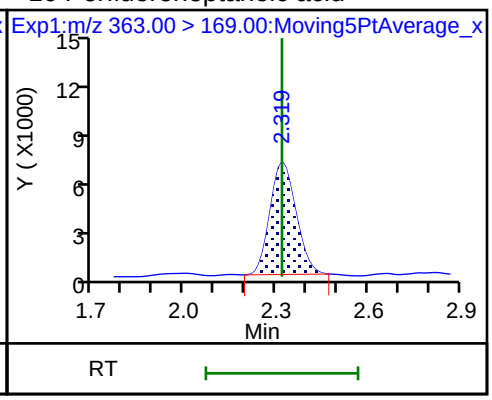
67 Perfluoro(2-propoxypropanoic) acid



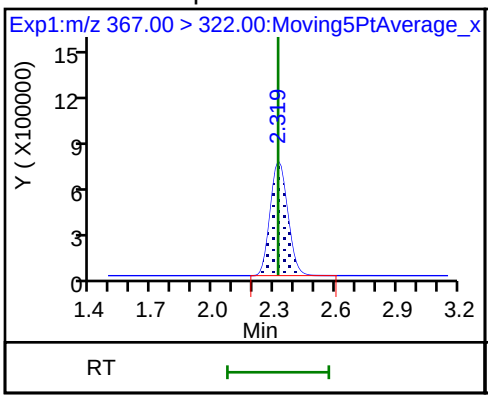
10 Perfluoroheptanoic acid



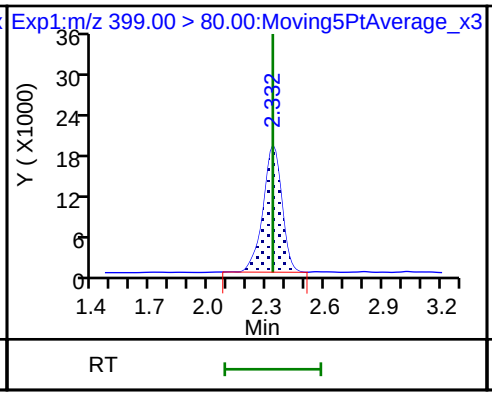
10 Perfluoroheptanoic acid



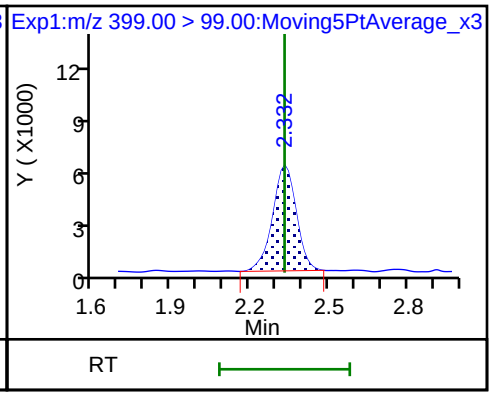
D 9 13C4-PFHpA



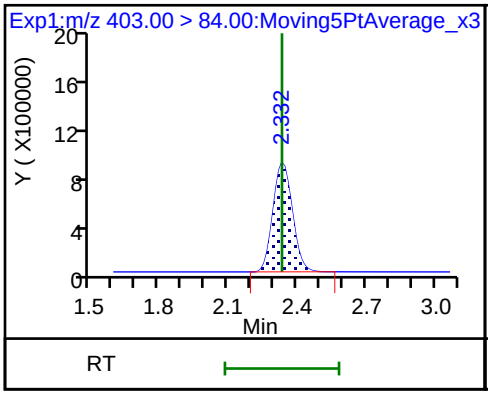
8 Perfluorohexanesulfonic acid



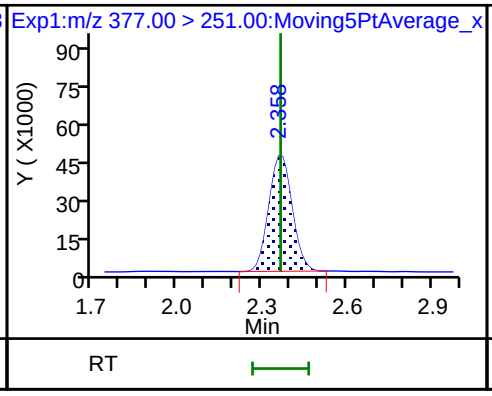
8 Perfluorohexanesulfonic acid



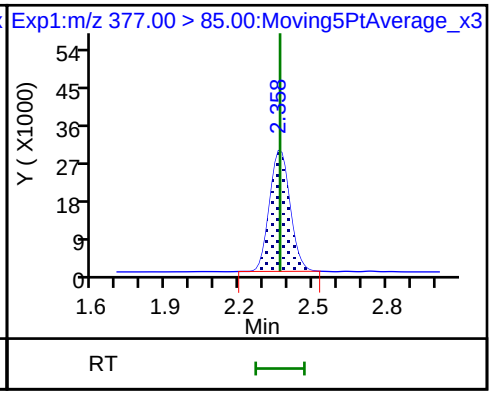
D 11 18O2 PFHxS



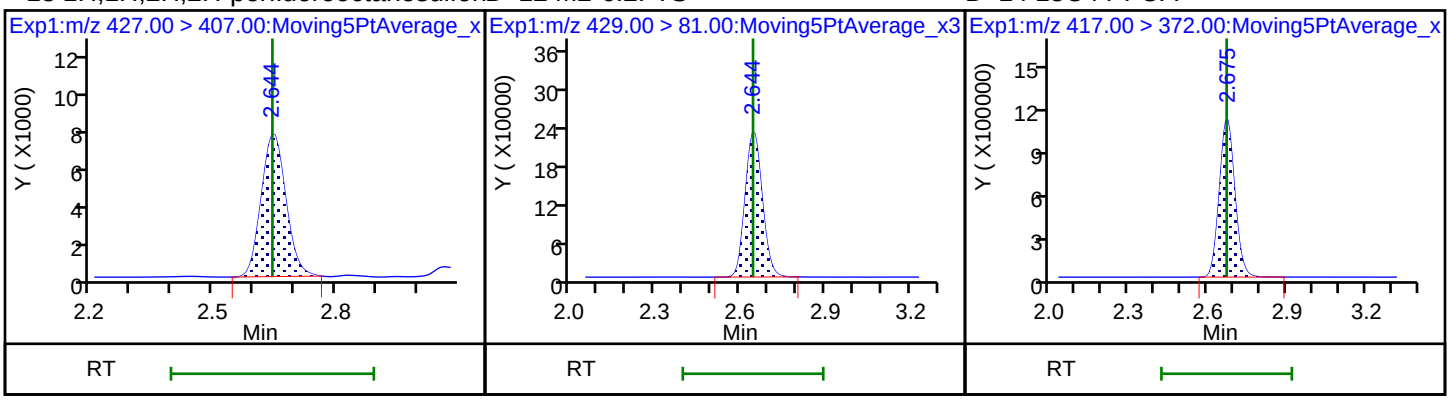
65 Adona



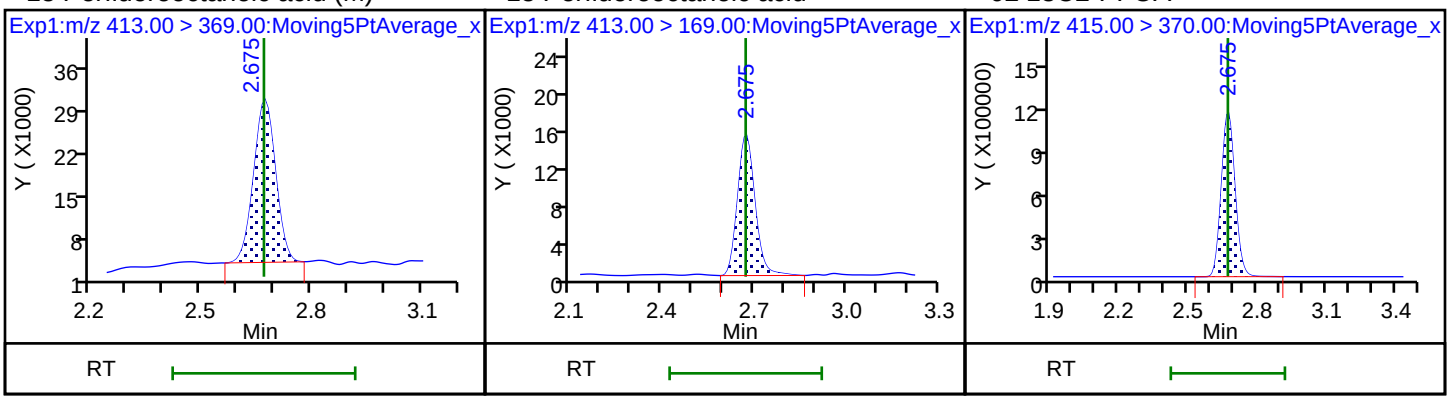
65 Adona



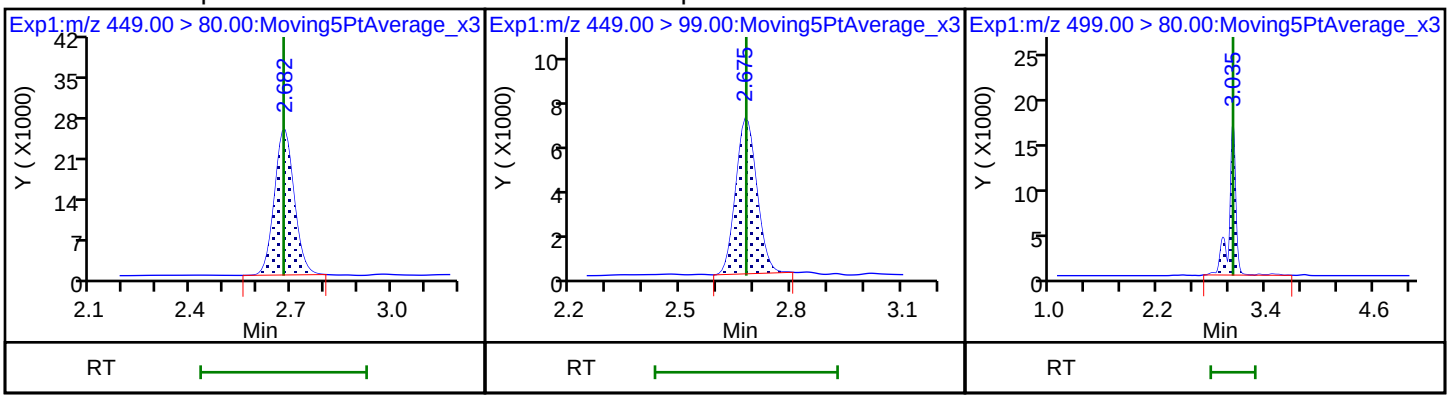
13 1H,1H,2H,2H-perfluorooctanesulfon D 12 M2-6:2FTS D 14 13C4 PFOA



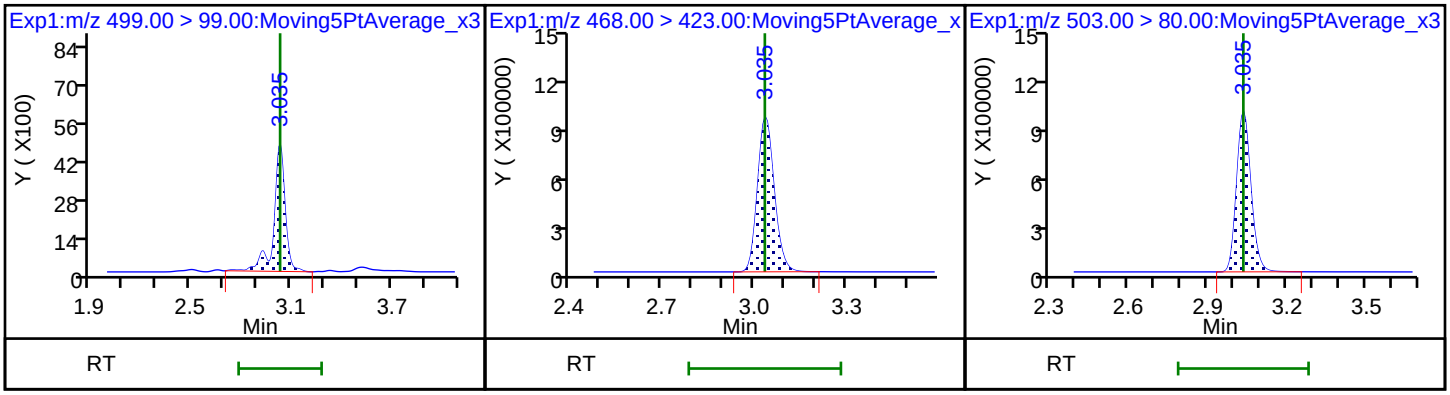
15 Perfluorooctanoic acid (M) 15 Perfluorooctanoic acid * 62 13C2-PFOA



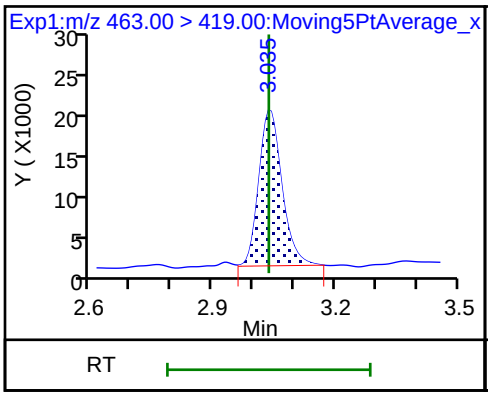
16 Perfluoroheptanesulfonic acid 16 Perfluoroheptanesulfonic acid 17 Perfluorooctane sulfonic acid



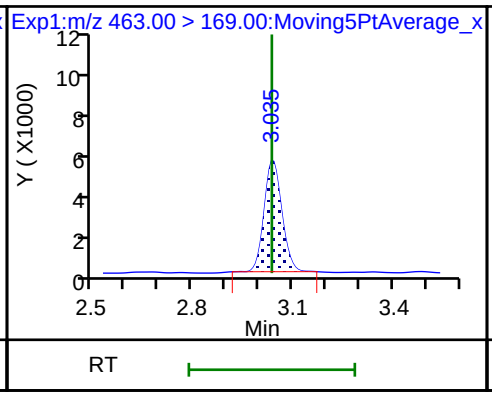
17 Perfluorooctane sulfonic acid D 19 13C5 PFNA D 18 13C4 PFOS



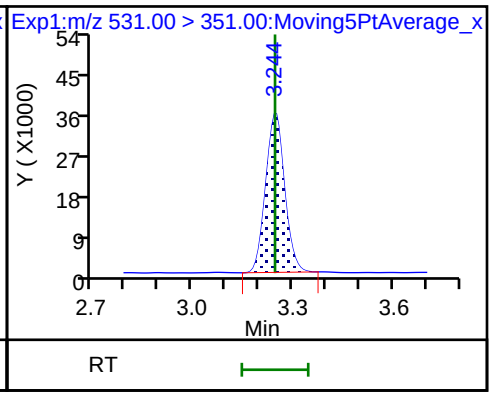
20 Perfluorononanoic acid



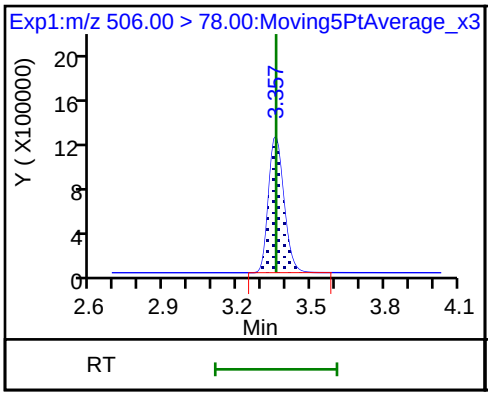
20 Perfluorononanoic acid



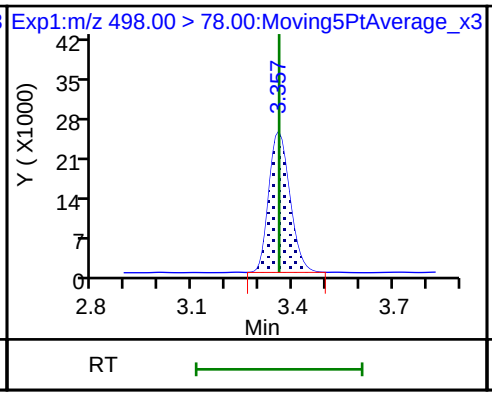
69 9-Chlorohexadecafluoro-3-oxanonane



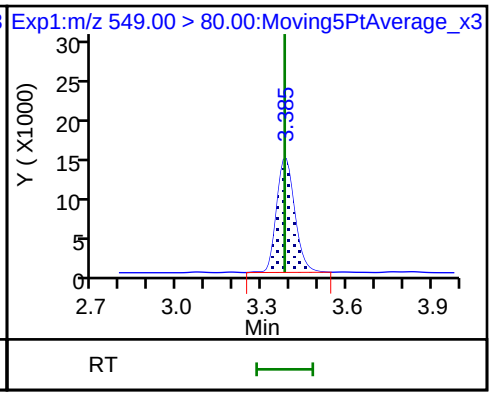
D 21 13C8 FOSA



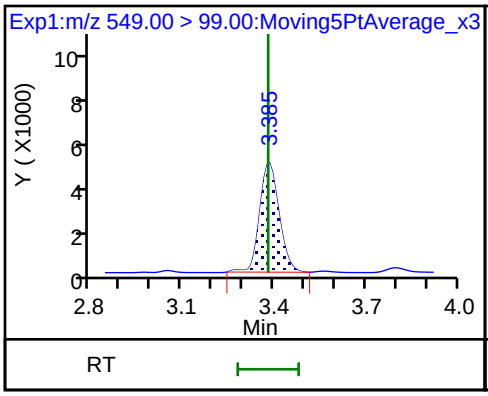
22 Perfluorooctane Sulfonamide



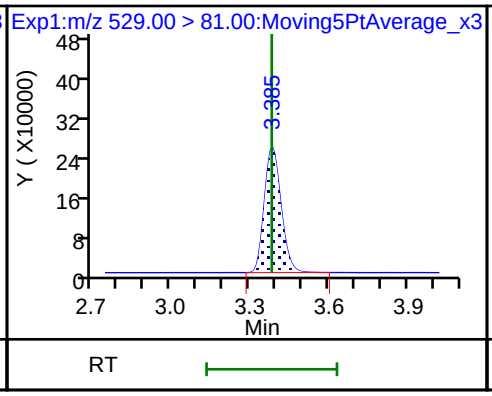
68 Perfluorononanesulfonic acid



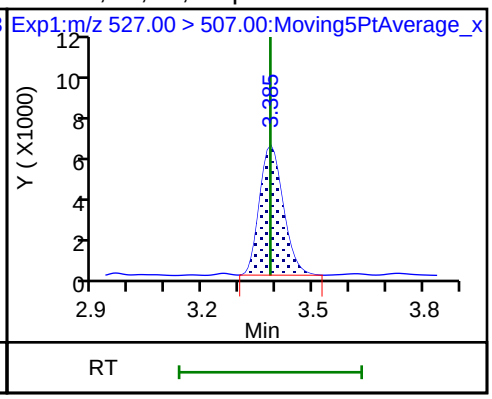
68 Perfluorononanesulfonic acid



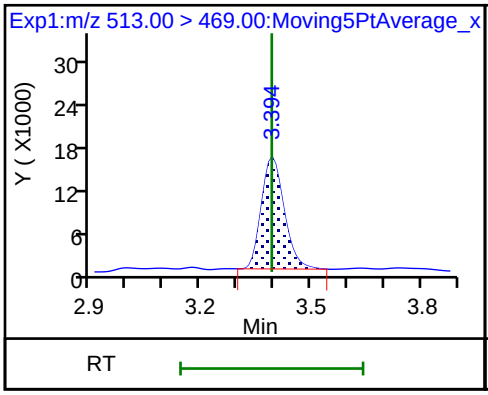
D 26 M2-8:2FTS



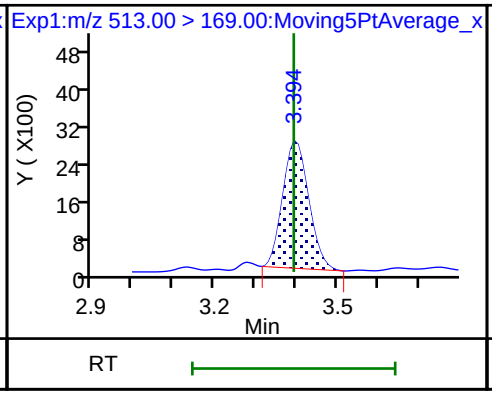
25 1H,1H,2H,2H-perfluorodecanesulfoni



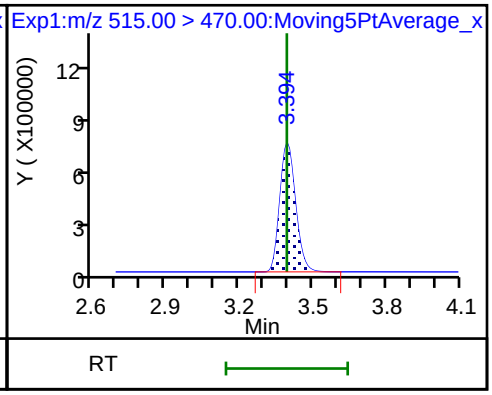
24 Perfluorodecanoic acid



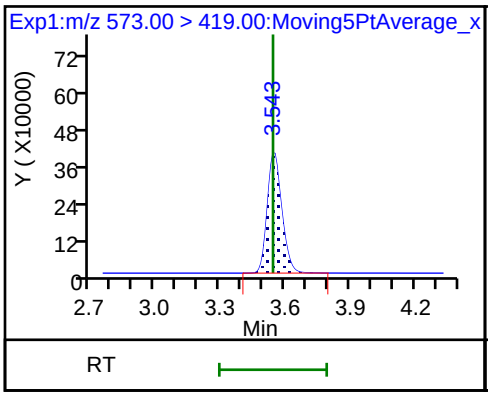
24 Perfluorodecanoic acid



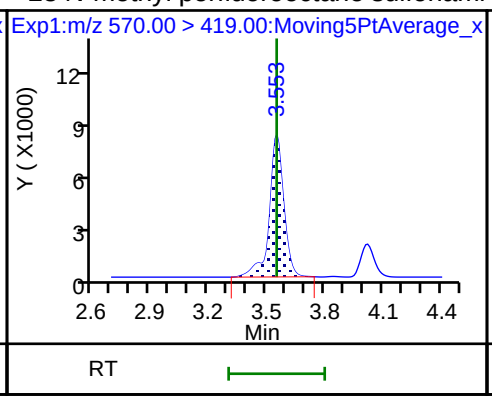
D 23 13C2 PFDA



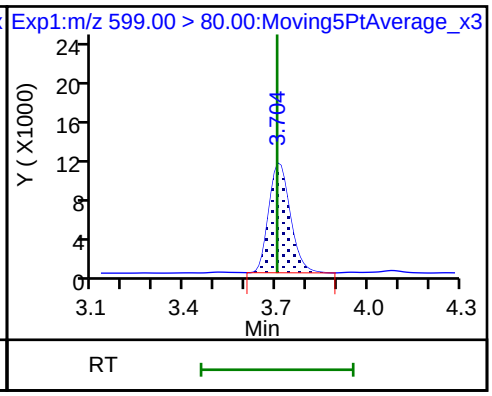
D 27 d3-NMeFOSAA



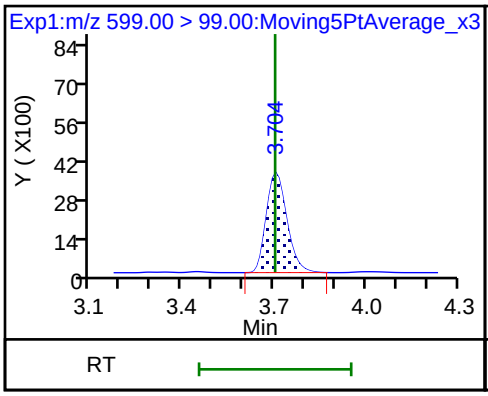
28 N-methyl perfluorooctane sulfonami



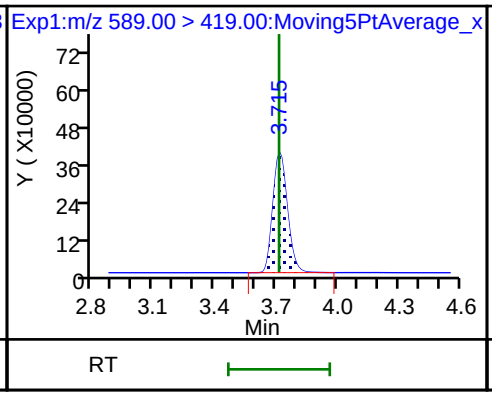
29 Perfluorodecane Sulfonic acid



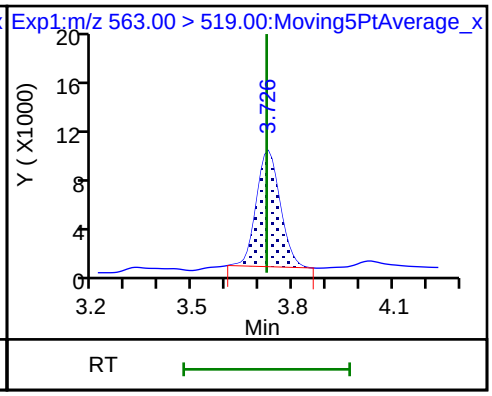
29 Perfluorodecane Sulfonic acid



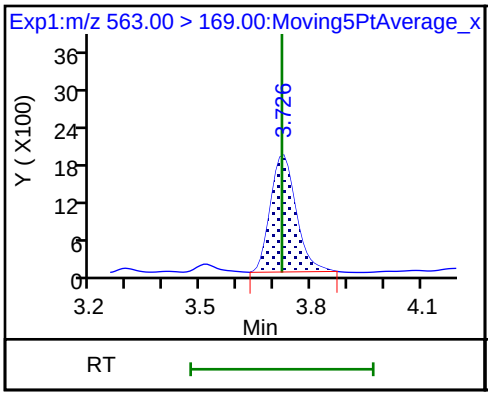
D 32 d5-NEtFOSAA



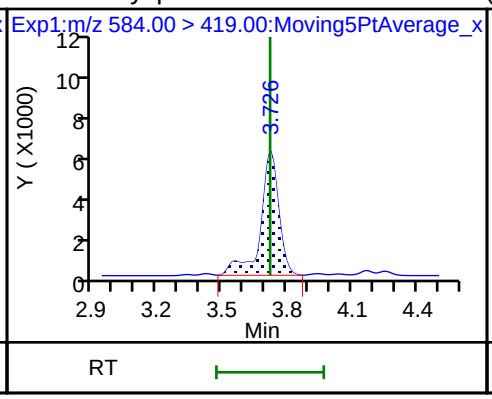
31 Perfluoroundecanoic acid



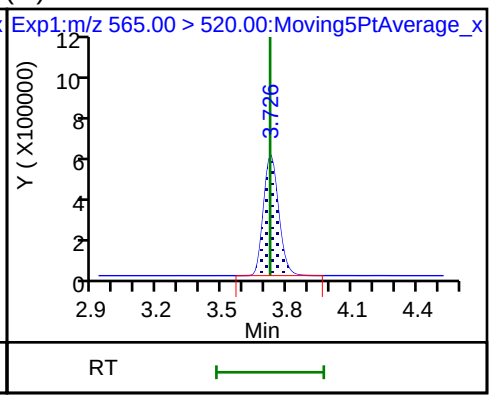
31 Perfluoroundecanoic acid



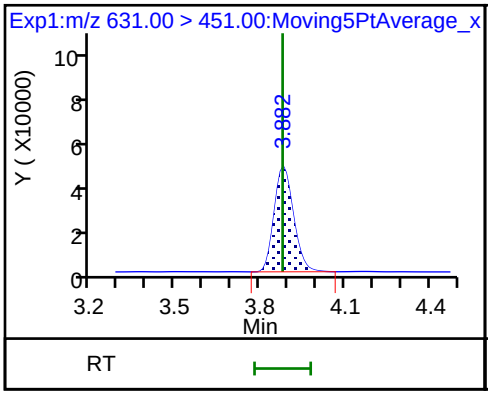
33 N-ethyl perfluorooctane sulfonamid



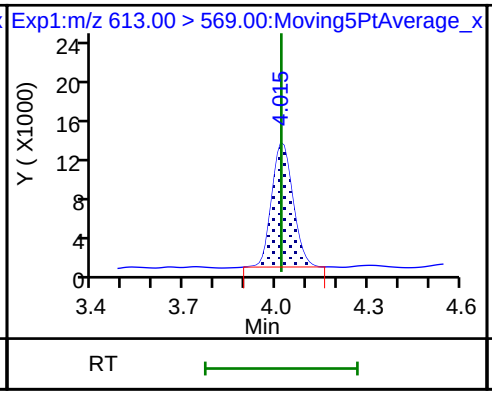
(M)30 13C2 PFUnA



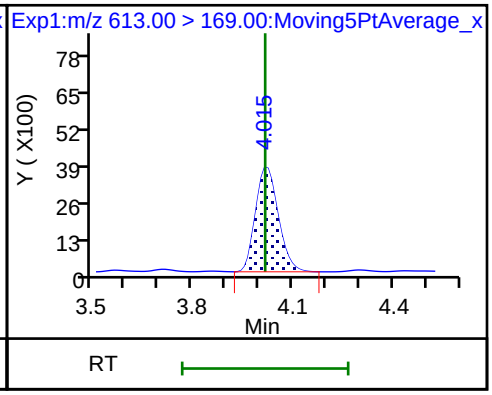
66 11-Chloroeicosafluoro-3-oxaundecan



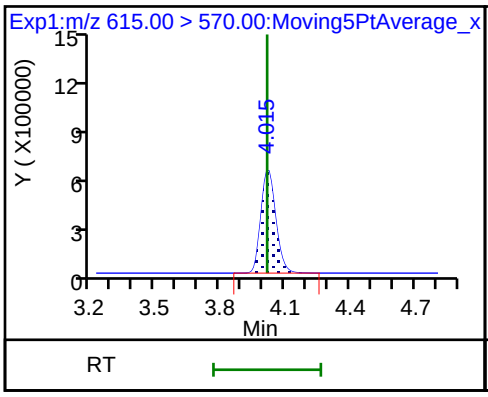
37 Perfluorododecanoic acid



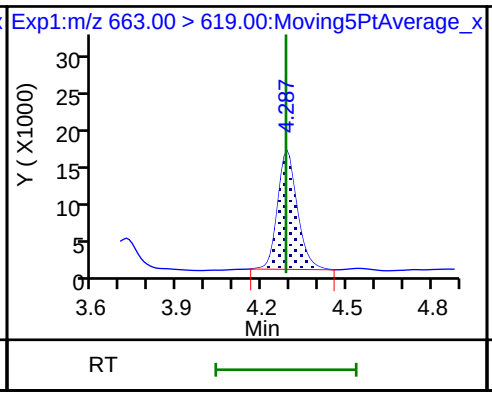
37 Perfluorododecanoic acid



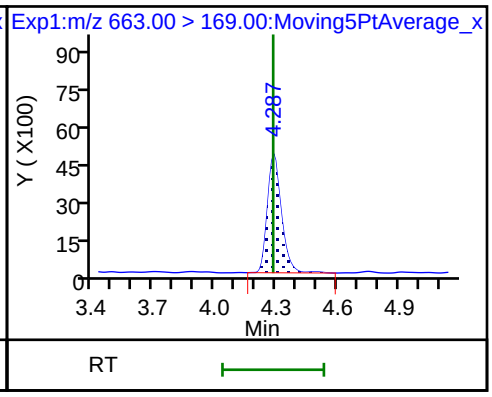
D 36 13C2 PFDoA



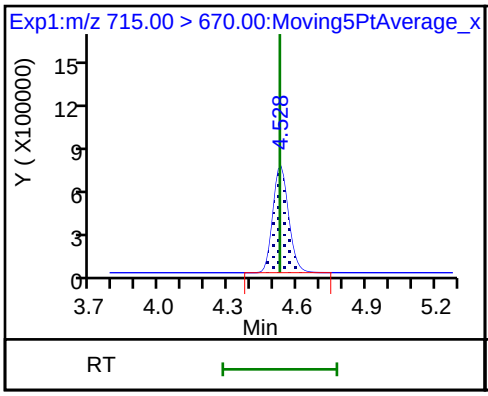
41 Perfluorotridecanoic acid



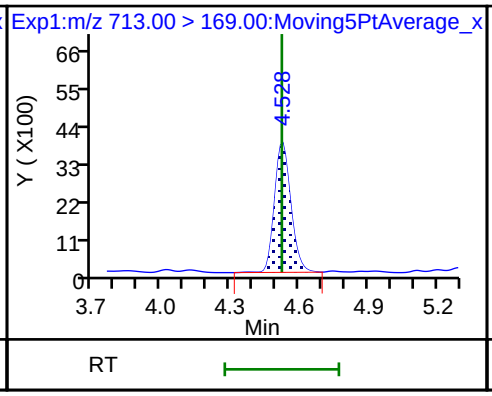
41 Perfluorotridecanoic acid



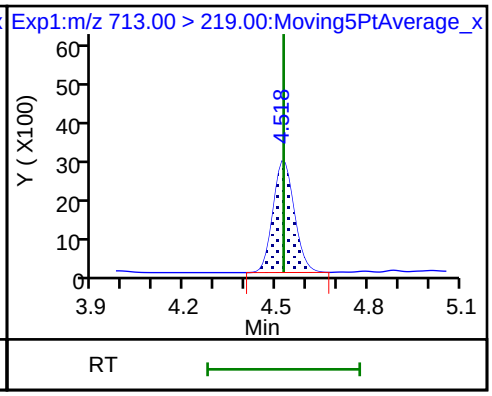
D 43 13C2-PFTeDA



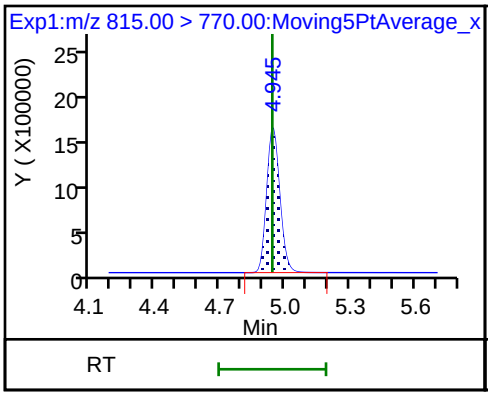
42 Perfluorotetradecanoic acid



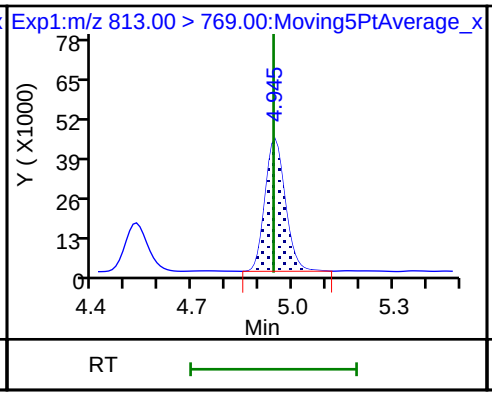
42 Perfluorotetradecanoic acid



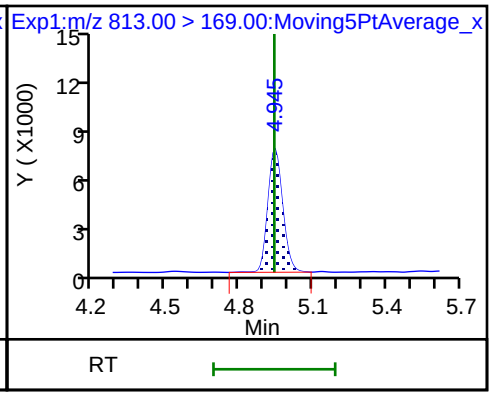
D 44 13C2-PFHxDA



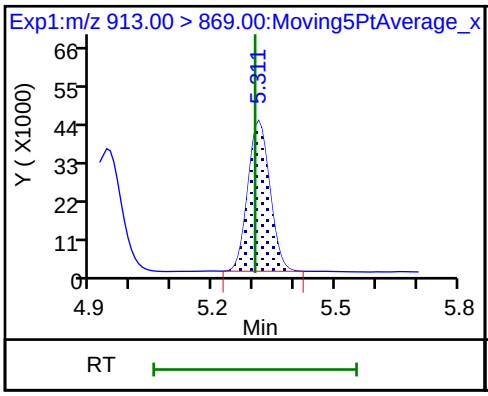
45 Perfluorohexadecanoic acid



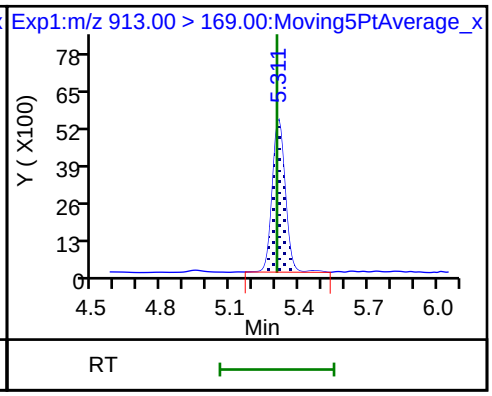
45 Perfluorohexadecanoic acid



46 Perfluorooctadecanoic acid



46 Perfluorooctadecanoic acid



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

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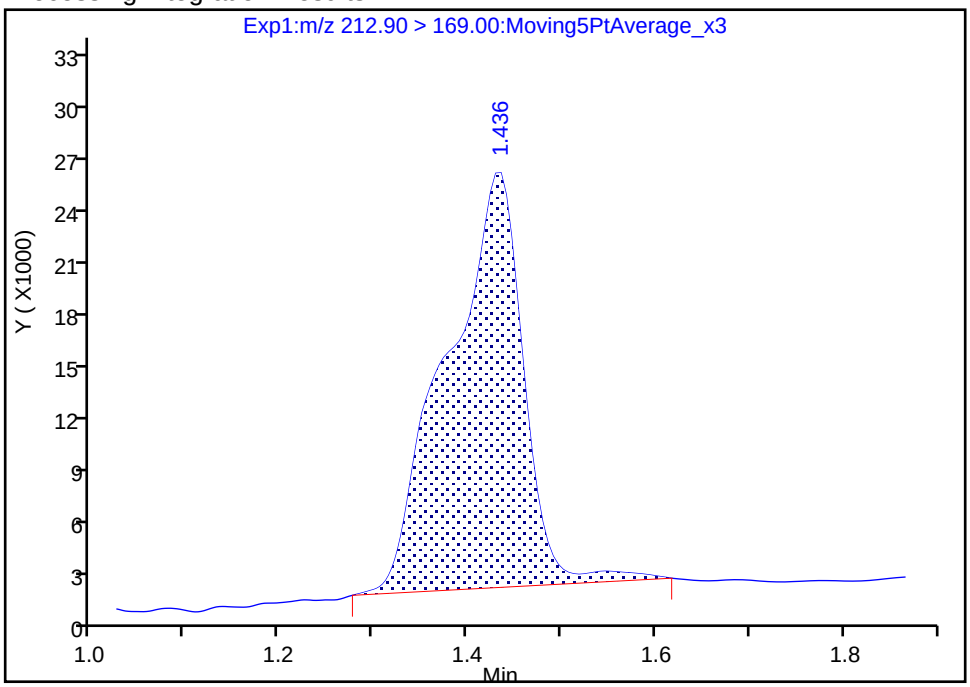
Lims ID:	IC L2 Full				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	11	Worklist Smp#:	3
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

2 Perfluorobutyric acid, CAS: 375-22-4

Signal: 1

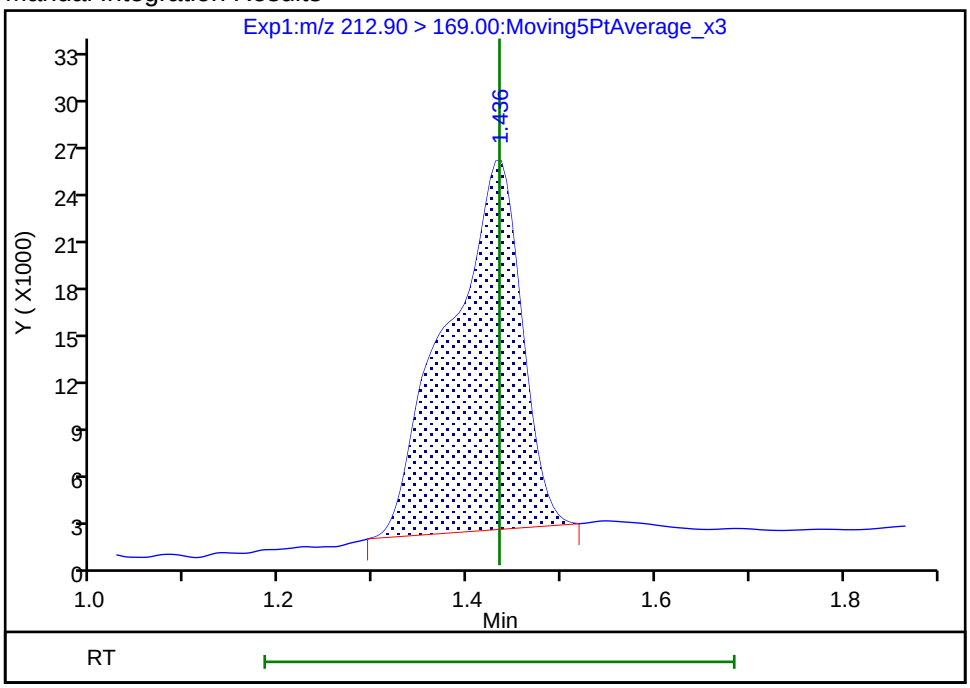
Processing Integration Results

RT: 1.44
Area: 134522
Amount: 0.053319
Amount Units: ng/ml



Manual Integration Results

RT: 1.44
Area: 127400
Amount: 0.050907
Amount Units: ng/ml



Reviewer: hannigana, 05-Jul-2018 12:08:50

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180705-60684.b\2018.07.05LLICALAA_003.d				
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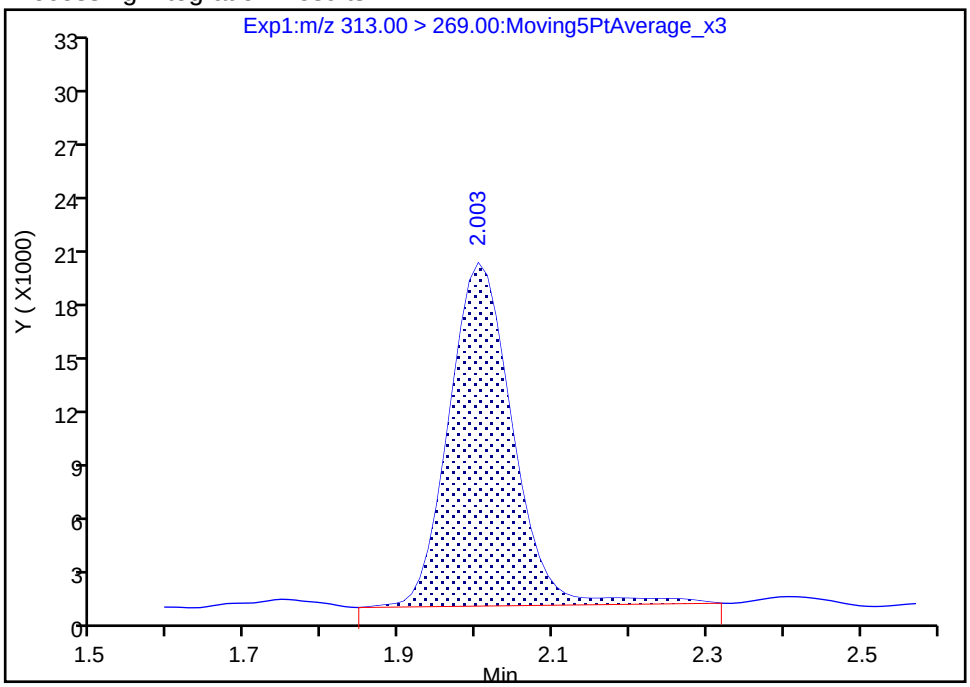
Lims ID:	IC L2 Full				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	11	Worklist Smp#:	3
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

6 Perfluorohexanoic acid, CAS: 307-24-4

Signal: 1

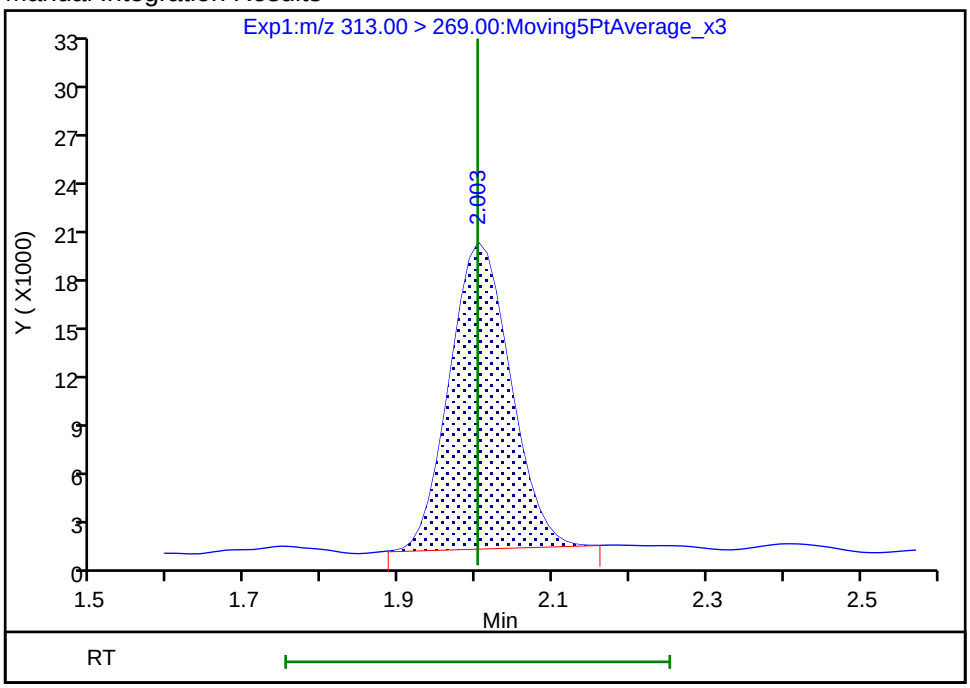
Processing Integration Results

RT: 2.00
Area: 109101
Amount: 0.054603
Amount Units: ng/ml



Manual Integration Results

RT: 2.00
Area: 103001
Amount: 0.052004
Amount Units: ng/ml



Reviewer: hannigana, 05-Jul-2018 12:09:03
Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180705-60684.b\2018.07.05LLICALAA_003.d				
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Lims ID:	IC L2 Full				
Client ID:					
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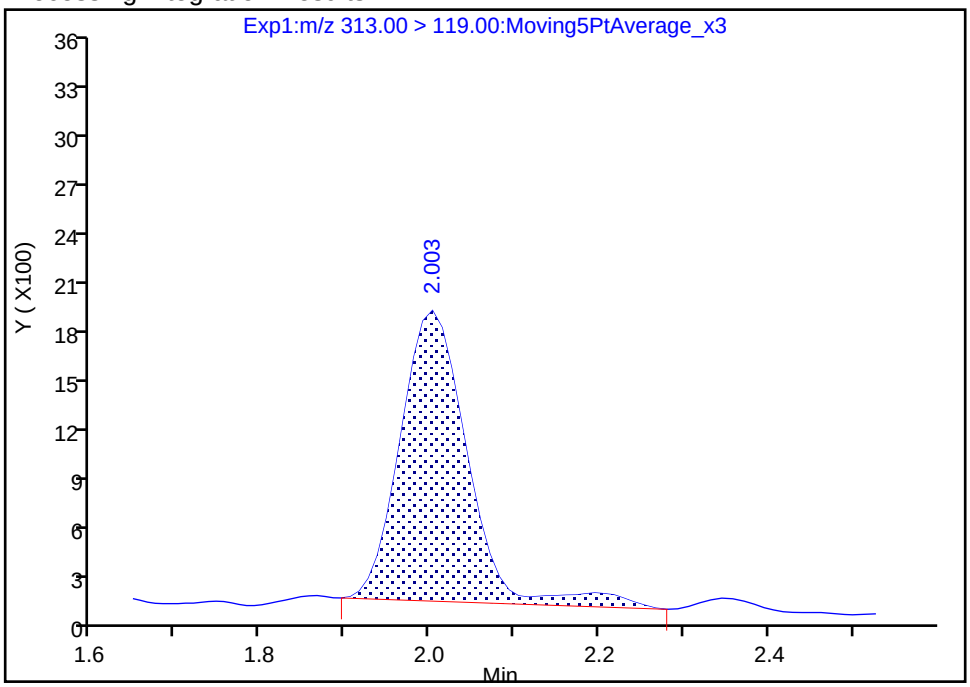
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

6 Perfluorohexanoic acid, CAS: 307-24-4

Signal: 2

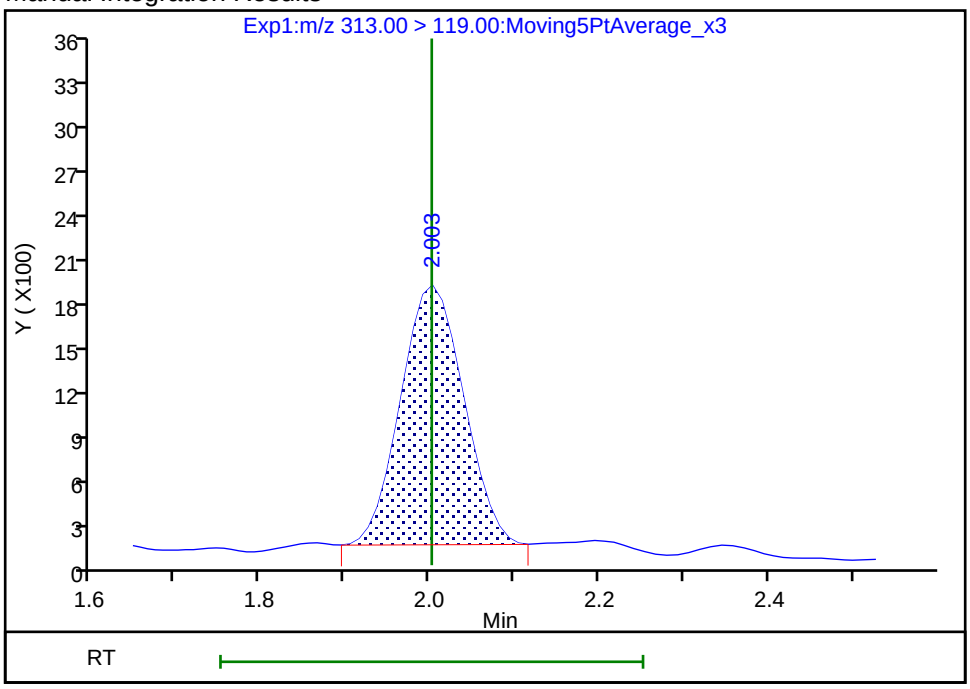
Processing Integration Results

RT: 2.00
Area: 9966
Amount: 0.054603
Amount Units: ng/ml



Manual Integration Results

RT: 2.00
Area: 9150
Amount: 0.052004
Amount Units: ng/ml



Reviewer: hannigana, 05-Jul-2018 12:09:08
Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

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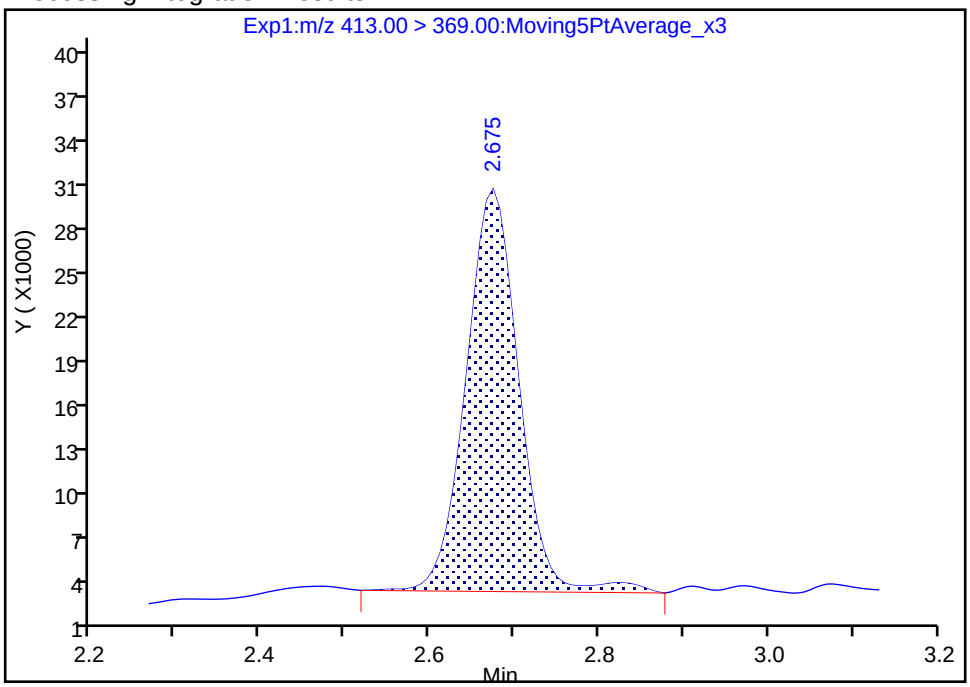
Lims ID:	IC L2 Full				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	11	Worklist Smp#:	3
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

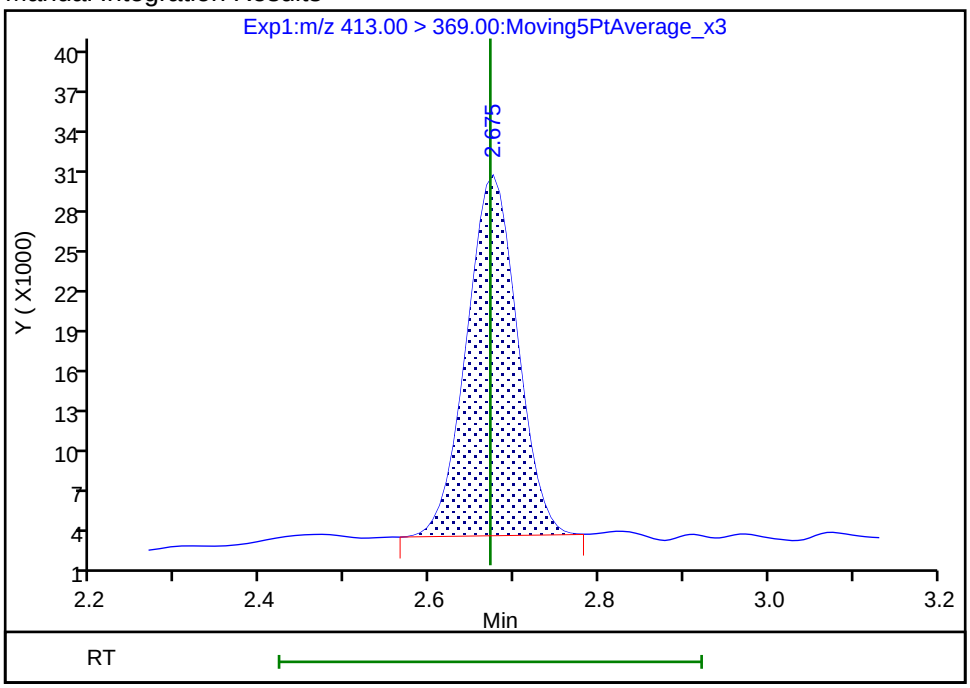
Processing Integration Results

RT: 2.67
Area: 116118
Amount: 0.055678
Amount Units: ng/ml



Manual Integration Results

RT: 2.67
Area: 110192
Amount: 0.053269
Amount Units: ng/ml



Reviewer: hannigana, 05-Jul-2018 12:09:22
Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

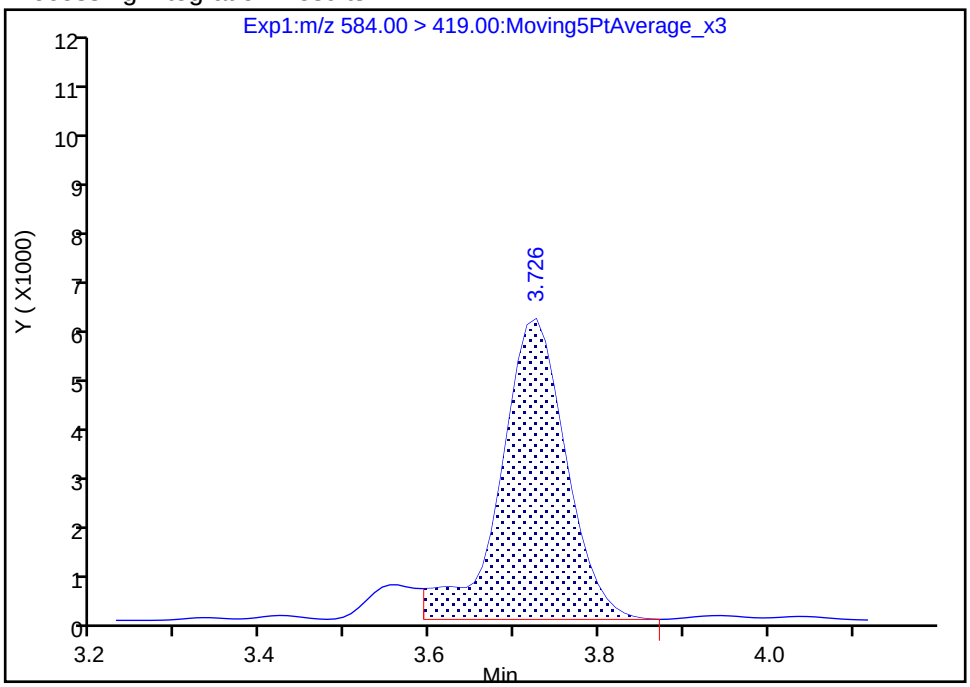
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180705-60684.b\2018.07.05LLICALAA_003.d				
Injection Date:	05-Jul-2018 08:59:11	Instrument ID:	A8_N		
Lims ID:	IC L2 Full				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	11	Worklist Smp#:	3
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

33 N-ethyl perfluorooctane sulfonamidoacetic ac, CAS: 2991-50-6

Signal: 1

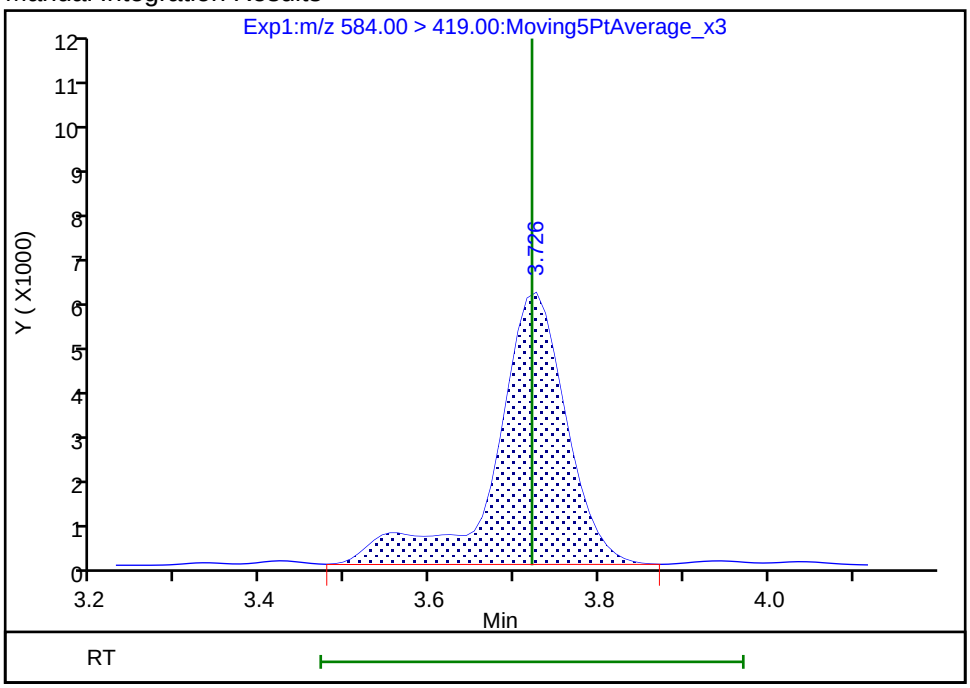
Processing Integration Results

RT: 3.73
Area: 32013
Amount: 0.046711
Amount Units: ng/ml



Manual Integration Results

RT: 3.73
Area: 34849
Amount: 0.050255
Amount Units: ng/ml



Reviewer: hannigana, 05-Jul-2018 12:09:50

Audit Action: Manually Integrated Audit Reason: Isomers

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180705-60684.b\2018.07.05LLICALAA_004.d
Lims ID: IC L3 Full
Client ID:
Sample Type: IC Calib Level: 3
Inject. Date: 05-Jul-2018 09:07:00 ALS Bottle#: 12 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L3-FULL
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-A8_N*sub32

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180705-60684.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 05-Jul-2018 12:38:53 Calib Date: 05-Jul-2018 09:38:17
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180705-60684.b\2018.07.05LLICALAA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK035

First Level Reviewer: hannigana Date: 05-Jul-2018 12:11:29

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.430	1.432	-0.002	0.536	6069593	2.41		96.3	24438	
2 Perfluorobutyric acid										
212.90 > 169.00	1.436	1.434	0.002	1.004	597465	0.2409		96.4	221	
D 3 13C5-PFPeA										
267.90 > 223.00	1.712	1.716	-0.004	0.641	4600846	2.47		98.7	43321	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.721	1.719	0.002	1.005	519574	0.2371		94.8	386	
D 47 13C3-PFBS										
301.90 > 83.00	1.757	1.756	0.001	0.658	101856	2.28		98.2	810	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.757	1.760	-0.003	1.000	743977	0.2240		101	4703	
298.90 > 99.00	1.757	1.760	-0.003	1.000	303027		2.46(1.25-3.74)	101	3833	
D 60 M2-4:2FTS										
329.00 > 81.00	1.960	1.966	-0.006	0.735	674185	2.35		101	8177	
61 1H,1H,2H,2H-perfluorohexanesulfoni										
327.00 > 307.00	1.960	1.966	-0.006	1.116	147699	0.2150		92.1	8768	
D 7 13C2 PFHxA										
315.00 > 270.00	2.004	2.000	0.004	0.751	4899406	2.45		98.2	58275	
6 Perfluorohexanoic acid										
313.00 > 269.00	2.004	2.002	0.002	1.000	466101	0.2336		93.4	925	
313.00 > 119.00	2.004	2.002	0.002	1.000	41725		11.17(5.03-15.10)	93.4	742	
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.027	2.025	0.002	1.154	681882	0.2400		102	7541	
349.00 > 99.00	2.027	2.025	0.002	1.154	244725		2.79(1.36-4.07)	102	3947	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.095	2.099	-0.004	0.785	458876	2.80		112	8477	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
67 Perfluoro(2-propoxypropanoic) acid										
329.10 > 285.00	2.095	2.099	-0.004	1.000	85883	0.2035		81.4	522	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.320	2.318	0.002	1.000	503626	0.2633		105	702	
363.00 > 169.00	2.320	2.318	0.002	1.000	177225		2.84(1.13-3.40)	105	1367	
D 9 13C4-PFHpA										
367.00 > 322.00	2.320	2.318	0.002	0.870	4232132	2.39		95.5	50954	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.334	2.331	0.003	1.000	533777	0.2173		95.5	4053	
399.00 > 99.00	2.334	2.331	0.003	1.000	181606		2.94(1.50-4.49)	95.5	1406	
D 11 18O2 PFHxS										
403.00 > 84.00	2.334	2.333	0.001	0.874	5023662	2.30		97.4	38540	
65 Adona										
377.00 > 251.00	2.360	2.365	-0.005	0.777	1446461	0.2412		102	14748	
377.00 > 85.00	2.360	2.365	-0.005	0.777	843467		1.71(0.84-2.53)	102	11221	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.645	2.645	0.0	1.000	137712	0.2245		94.7	1060	
D 12 M2-6:2FTS										
429.00 > 81.00	2.645	2.645	0.0	0.991	929925	2.34		98.4	18344	
D 14 13C4 PFOA										
417.00 > 372.00	2.668	2.670	-0.002	1.000	4350463	2.51		100	30312	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.668	2.671	-0.003	1.000	485826	0.2354		94.1	181	
413.00 > 169.00	2.668	2.671	-0.003	1.000	257288		1.89(0.84-2.52)	94.1	1573	
* 62 13C2-PFOA										
415.00 > 370.00	2.668	2.671	-0.003		4551332	2.50			32491	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.676	2.678	-0.002	0.881	493106	0.2276		95.6	6702	
449.00 > 99.00	2.676	2.678	-0.002	0.881	133314		3.70(1.94-5.82)	95.6	3279	
17 Perfluorooctane sulfonic acid										M
499.00 > 80.00	3.037	3.034	0.003	1.000	399282	0.2113		91.1	3863	M
499.00 > 99.00	3.037	3.034	0.003	1.000	97810		4.08(2.31-6.93)	91.1	2444	
D 19 13C5 PFNA										
468.00 > 423.00	3.037	3.034	0.003	1.138	3821005	2.59		104	43419	
D 18 13C4 PFOS										
503.00 > 80.00	3.037	3.034	0.003	1.138	3866373	2.48		104	37611	
20 Perfluorononanoic acid										
463.00 > 419.00	3.037	3.036	0.001	1.000	385530	0.2341		93.6	814	
463.00 > 169.00	3.037	3.036	0.001	1.000	94653		4.07(1.90-5.69)	93.6	2793	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.246	3.246	0.0	1.069	676150	0.2211		94.9	12683	
D 21 13C8 FOSA										
506.00 > 78.00	3.359	3.357	0.002	1.259	5465004	2.53		101	48663	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.359	3.358	0.001	1.000	543453	0.2507		100	12552	
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.378	3.379	-0.001	1.112	305446	0.2323		96.8	5885	
549.00 > 99.00	3.378	3.379	-0.001	1.112	117853		2.59(1.33-3.97)	96.8	2241	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 26 M2-8:2FTS										
529.00 > 81.00	3.378	3.382	-0.004	1.266	1048384	2.37		98.9	11749	
25 1H,1H,2H,2H-perfluorodecanesulfoni										
527.00 > 507.00	3.387	3.383	0.004	1.003	137343	0.2375		99.2	3786	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.396	3.393	0.003	1.000	336739	0.2521		101	1182	
513.00 > 169.00	3.396	3.393	0.003	1.000	58028		5.80(2.36-7.09)	101	1846	
D 23 13C2 PFDA										
515.00 > 470.00	3.396	3.393	0.003	1.273	3204267	2.52		101	40323	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.546	3.543	0.003	1.329	1813682	2.42		96.7	30499	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.555	3.551	0.004	1.003	180847	0.2422		96.9	1615	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.707	3.702	0.005	1.221	266826	0.2292		95.1	6930	
599.00 > 99.00	3.707	3.702	0.005	1.221	86337		3.09(1.39-4.16)	95.1	4457	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.717	3.713	0.004	1.393	1875737	2.53		101	15918	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.728	3.721	0.007	1.003	207861	0.2269		90.8	745	
563.00 > 169.00	3.728	3.721	0.007	1.003	57585		3.61(2.12-6.36)	90.8	1966	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.717	3.721	-0.004	1.000	161316	0.2385		95.4	4318	
D 30 13C2 PFUnA										
565.00 > 520.00	3.717	3.721	-0.004	1.393	2693673	2.52		101	39348	
66 11-Chloroeicosafluoro-3-oxaundecan										
631.00 > 451.00	3.884	3.879	0.005	1.279	1078557	0.2312		98.2	14180	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.017	4.016	0.001	1.000	308907	0.2462		98.5	323	
613.00 > 169.00	4.017	4.016	0.001	1.000	72977		4.23(2.13-6.40)	98.5	1424	
D 36 13C2 PFDoA										
615.00 > 570.00	4.017	4.016	0.001	1.505	2846137	2.48		99.4	15125	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.289	4.284	0.005	1.068	343817	0.2460		98.4	392	
663.00 > 169.00	4.280	4.284	-0.004	1.065	115023		2.99(1.25-3.76)	98.4	1894	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.520	4.524	-0.004	1.694	3422283	2.45		98.0	13893	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.520	4.524	-0.004	1.000	88194	0.2379		95.2	1314	
713.00 > 219.00	4.520	4.524	-0.004	1.000	64187		1.37(0.71-2.13)	95.2	1692	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.938	4.940	-0.002	1.851	6313503	2.44		97.7	13139	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.947	4.941	0.006	1.002	659470	0.2520		101	288	
813.00 > 169.00	4.947	4.941	0.006	1.002	110301		5.98(2.86-8.58)	101	906	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.305	5.302	0.003	1.074	714501	0.2430		97.2	231	
913.00 > 169.00	5.305	5.302	0.003	1.074	90949		7.86(3.83-11.48)	97.2	1008	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

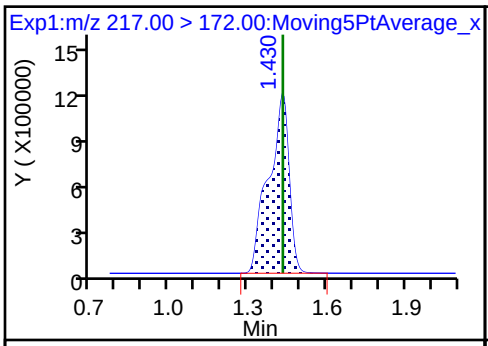
LCPFC_LL3_00005 Amount Added: 1.00 Units: mL

Report Date: 05-Jul-2018 12:38:55 Chrom Revision: 2.2 07-Jun-2018 07:41:54

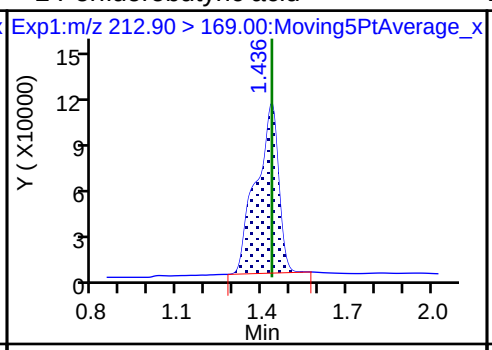
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180705-60684.b\2018.07.05LLICALAA_004.d
Injection Date: 05-Jul-2018 09:07:00 Instrument ID: A8_N
Lims ID: IC L3 Full
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 12 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC ICAL

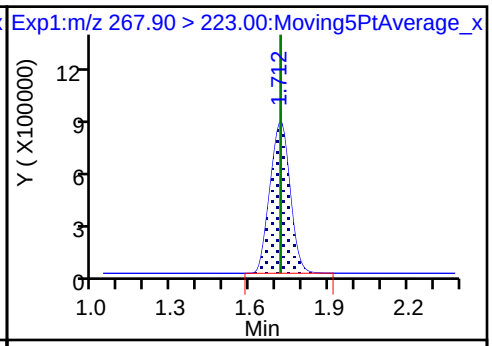
D 1 13C4 PFBA



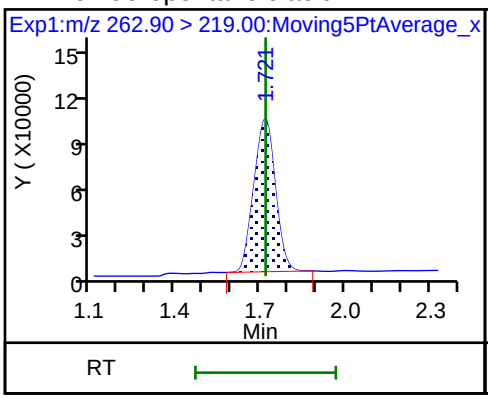
2 Perfluorobutyric acid



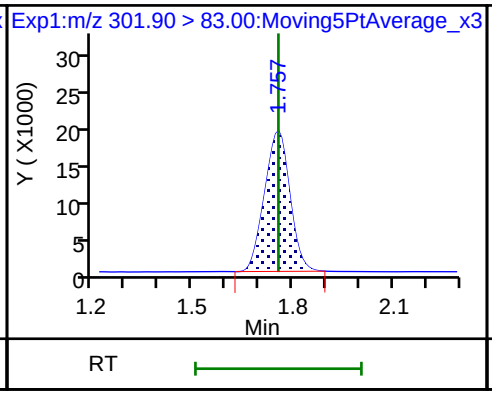
D 3 13C5-PFPeA



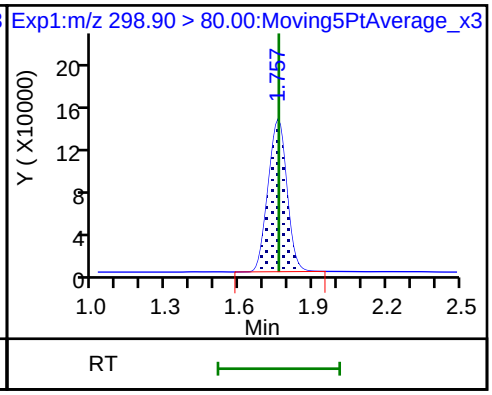
4 Perfluoropentanoic acid



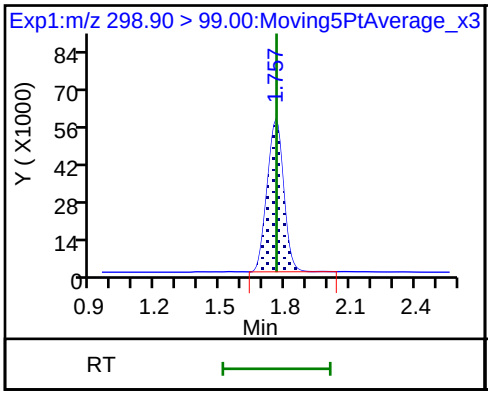
D 47 13C3-PFBS



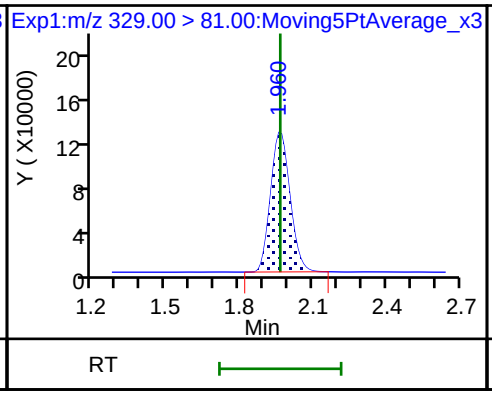
5 Perfluorobutanesulfonic acid



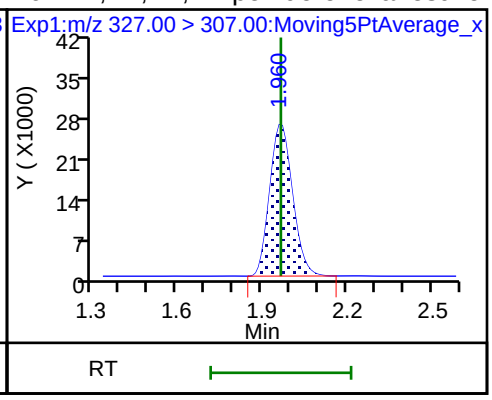
5 Perfluorobutanesulfonic acid



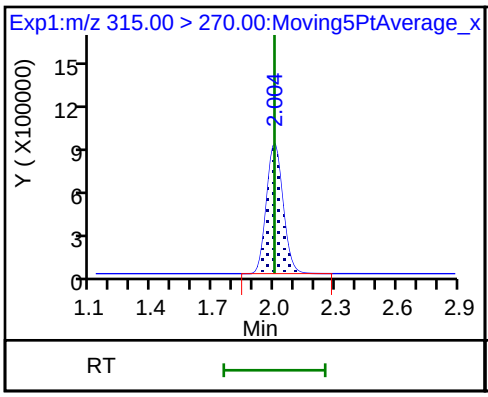
D 60 M2-4:2FTS



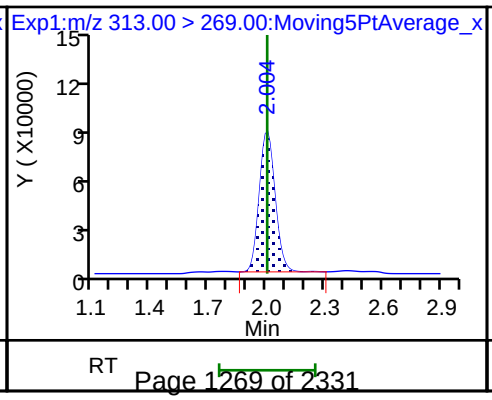
61 1H,1H,2H,2H-perfluorohexanesulfoni



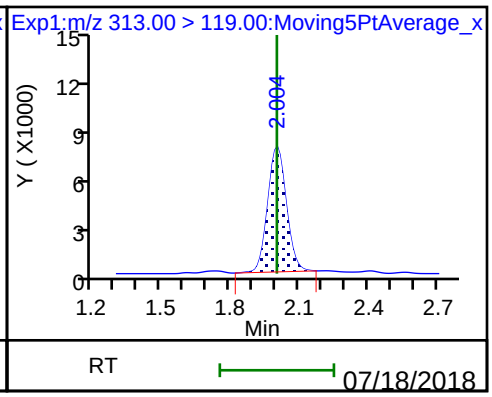
D 7 13C2 PFHxA



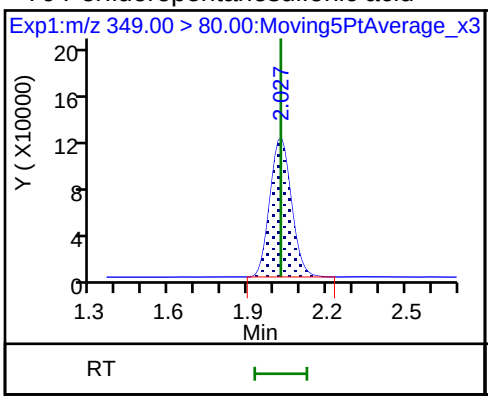
6 Perfluorohexanoic acid



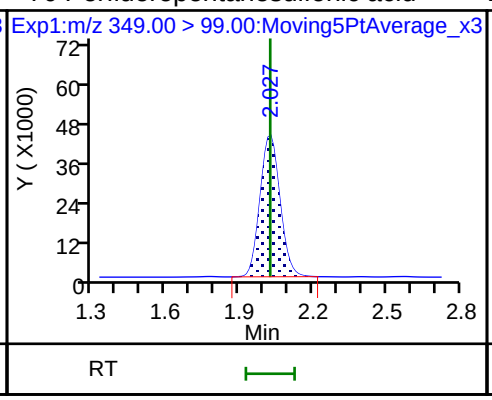
6 Perfluorohexanoic acid



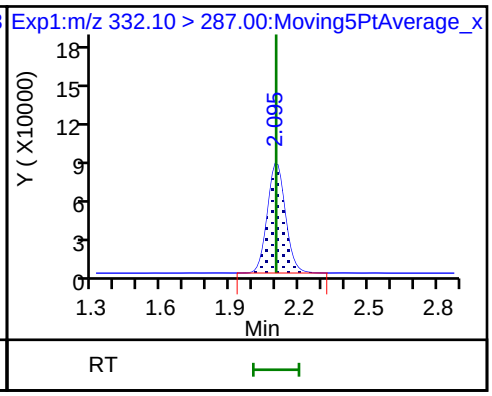
70 Perfluoropentanesulfonic acid



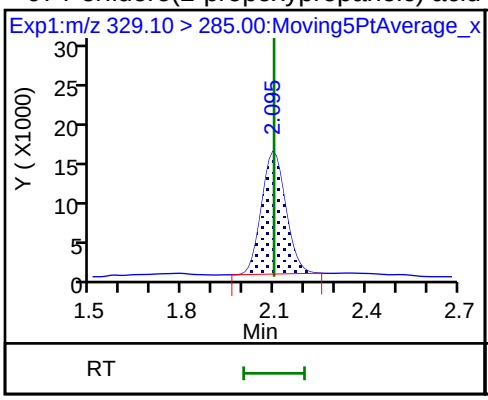
70 Perfluoropentanesulfonic acid



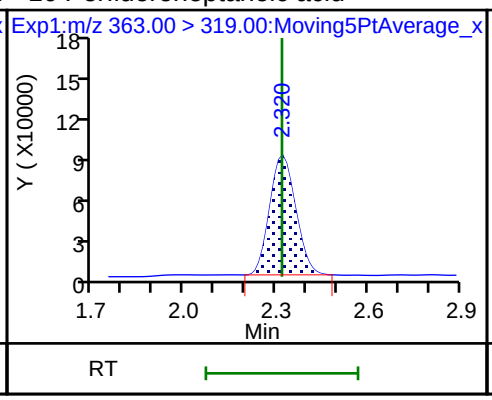
D 64 13C3 HFPO-DA



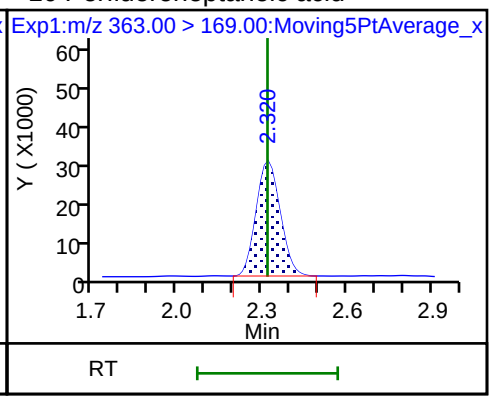
67 Perfluoro(2-propoxypropanoic) acid



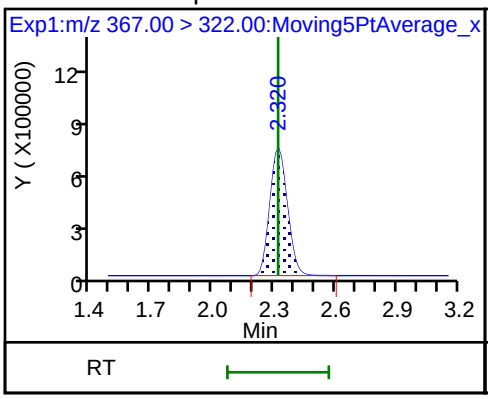
10 Perfluoroheptanoic acid



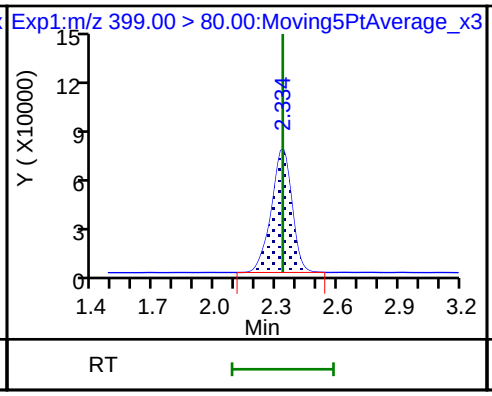
10 Perfluoroheptanoic acid



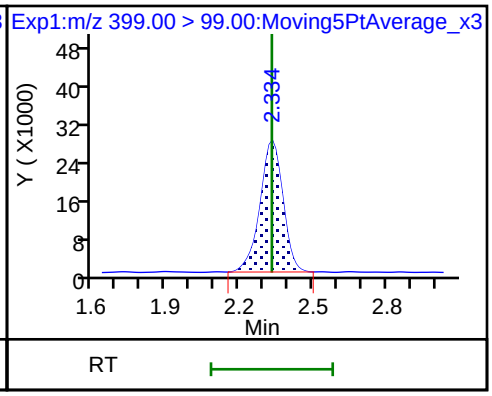
D 9 13C4-PFHpA



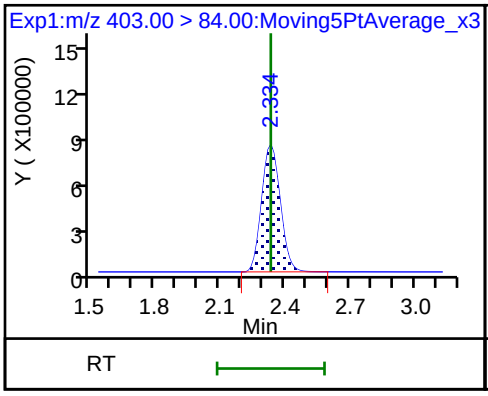
8 Perfluorohexanesulfonic acid



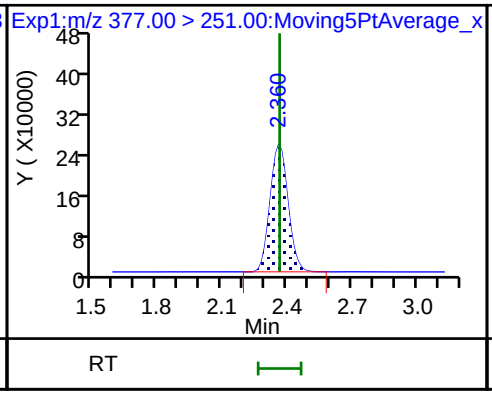
8 Perfluorohexanesulfonic acid



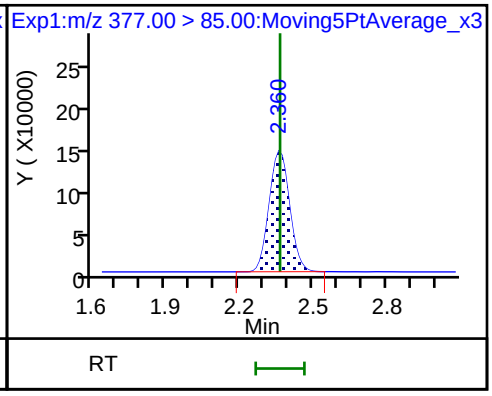
D 11 18O2 PFHxS



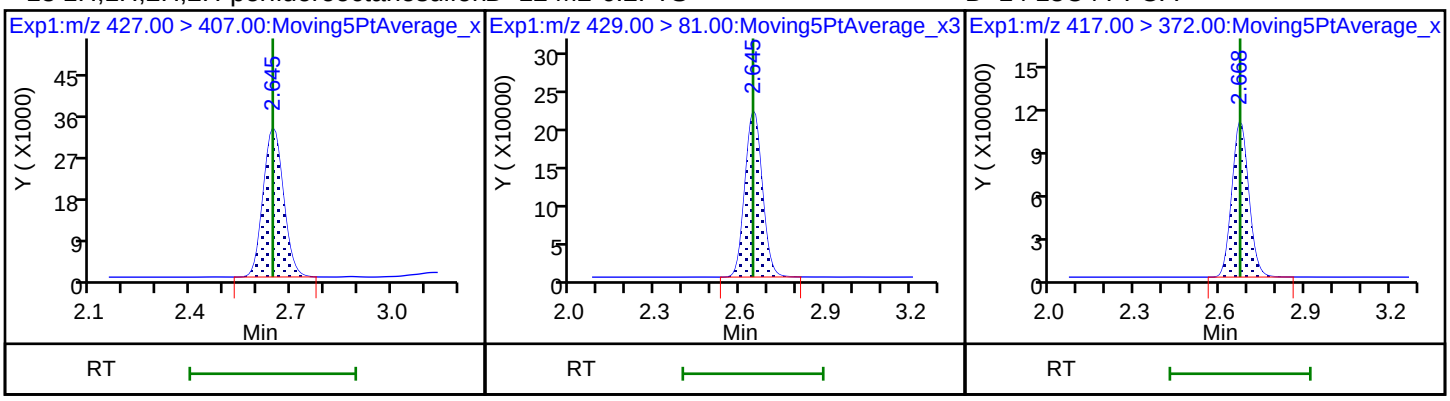
65 Adona



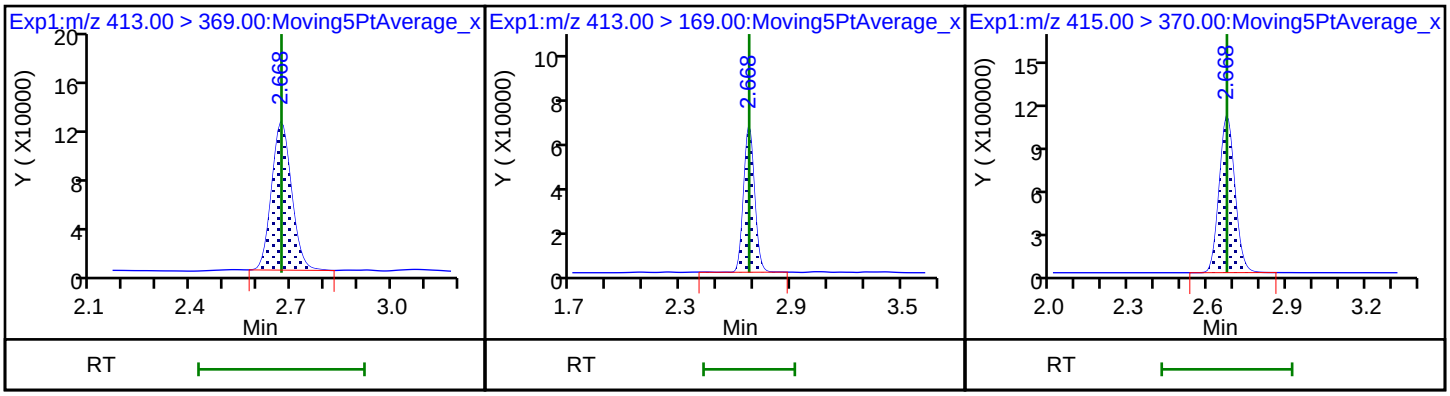
65 Adona



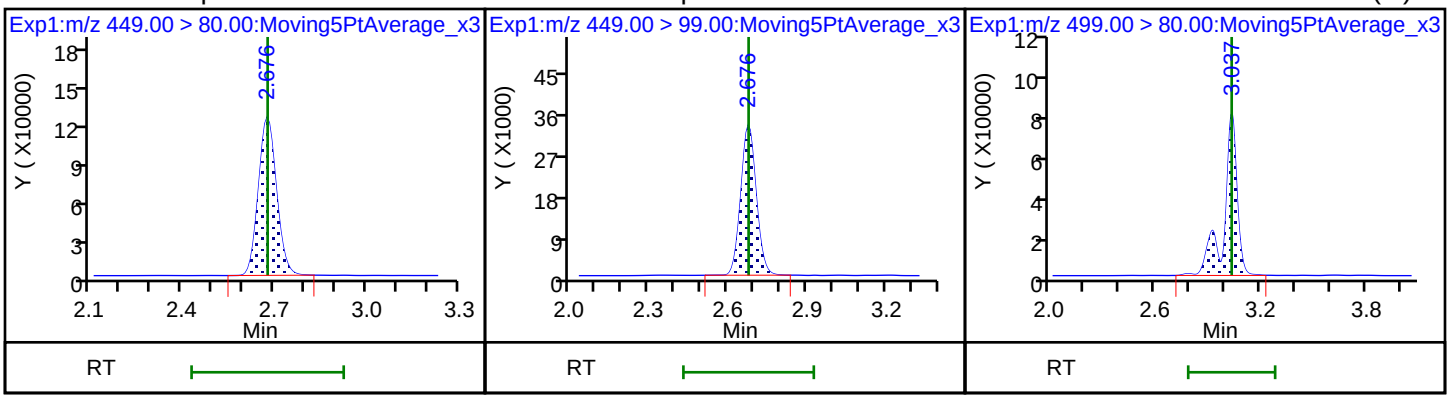
13 1H,1H,2H,2H-perfluorooctanesulfon D 12 M2-6:2FTS D 14 13C4 PFOA



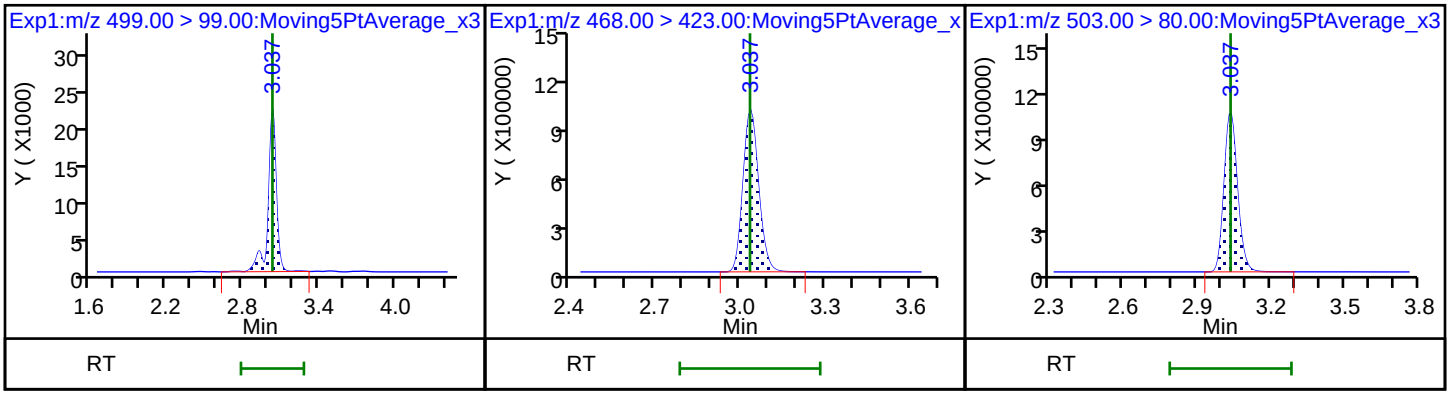
15 Perfluorooctanoic acid 15 Perfluorooctanoic acid * 62 13C2-PFOA



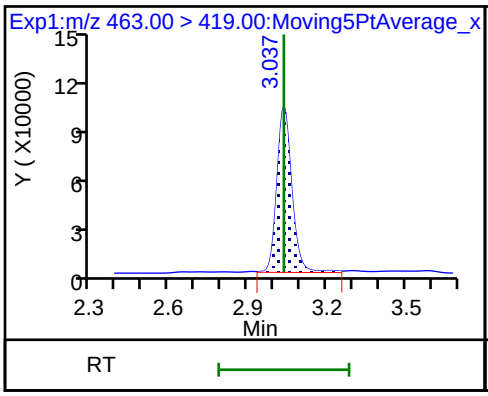
16 Perfluoroheptanesulfonic acid 16 Perfluoroheptanesulfonic acid 17 Perfluorooctane sulfonic acid (M)



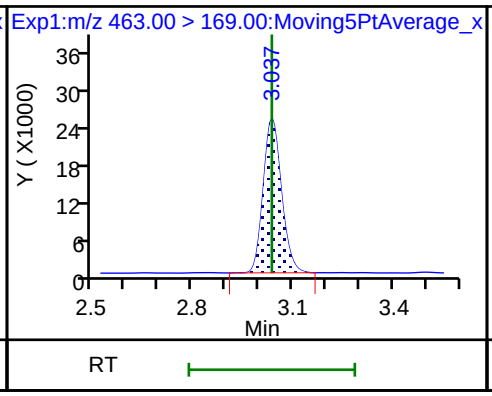
17 Perfluorooctane sulfonic acid D 19 13C5 PFNA D 18 13C4 PFOS



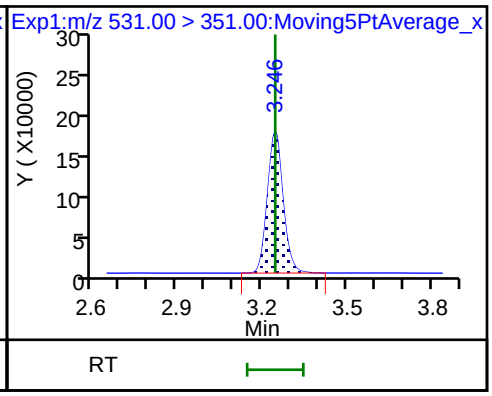
20 Perfluorononanoic acid



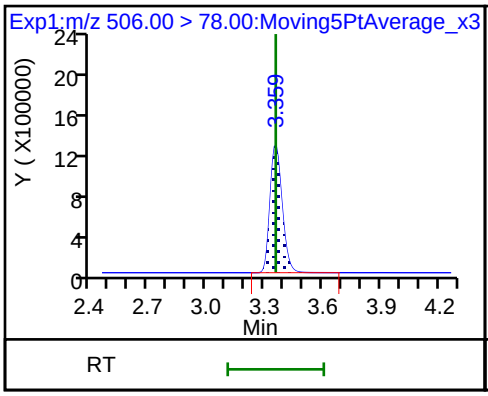
20 Perfluorononanoic acid



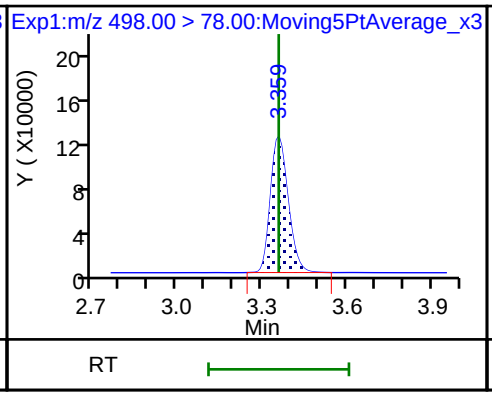
69 9-Chlorohexadecafluoro-3-oxanonane



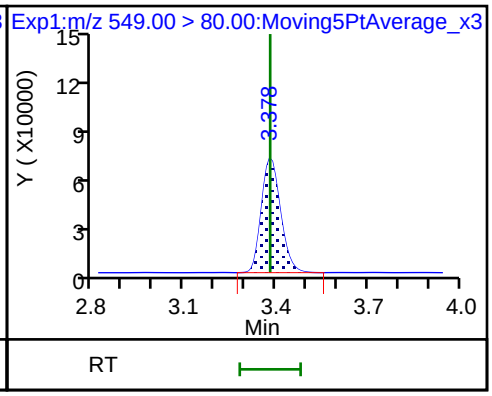
D 21 13C8 FOSA



22 Perfluorooctane Sulfonamide



68 Perfluorononanesulfonic acid



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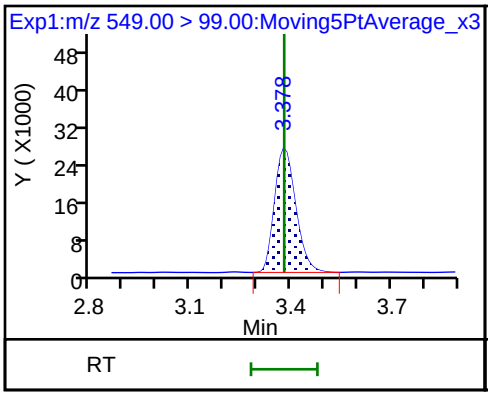
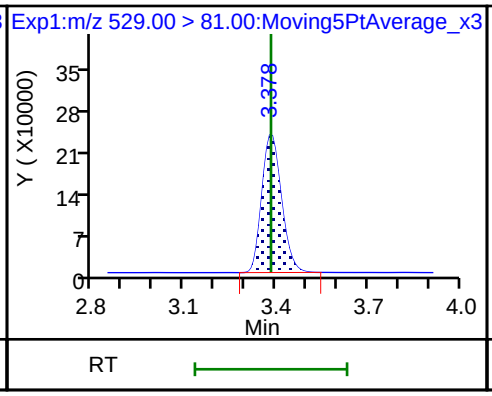
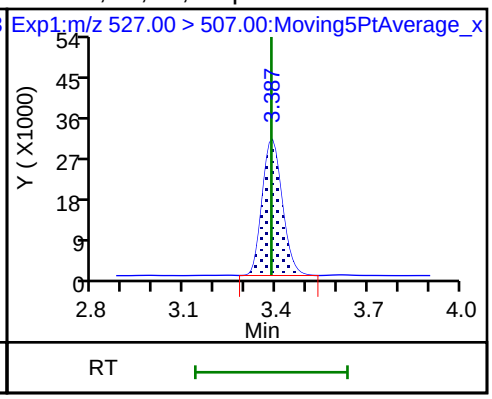


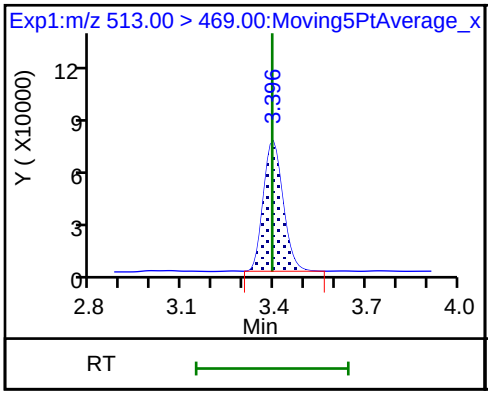
D 26 M2-8:2FTS



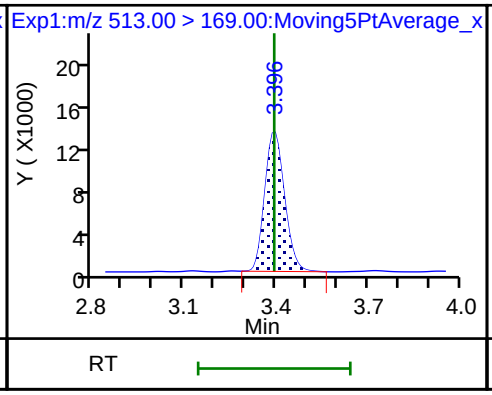
25 1H,1H,2H,2H-perfluorodecanesulfoni



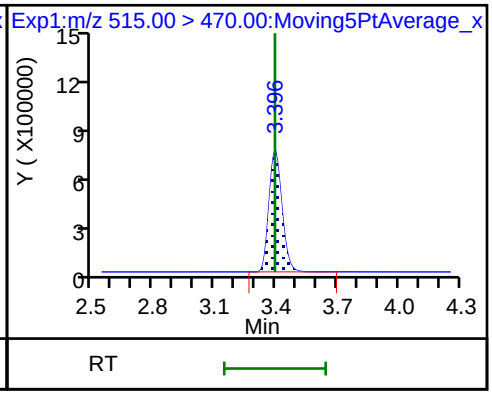
24 Perfluorodecanoic acid



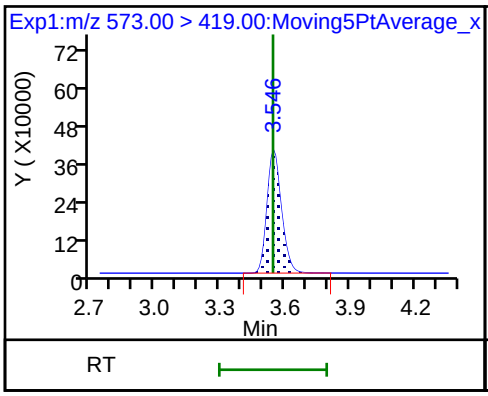
24 Perfluorodecanoic acid



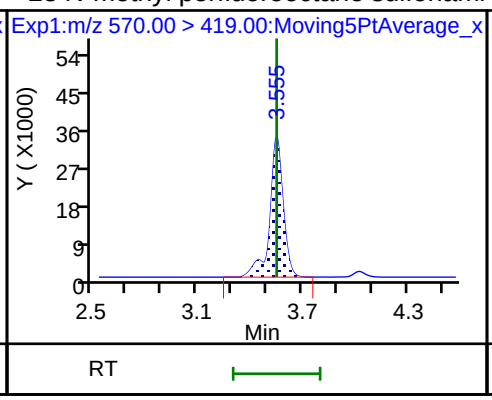
D 23 13C2 PFDA



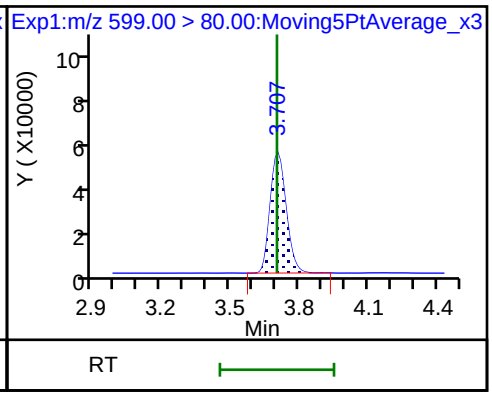
D 27 d3-NMeFOSAA



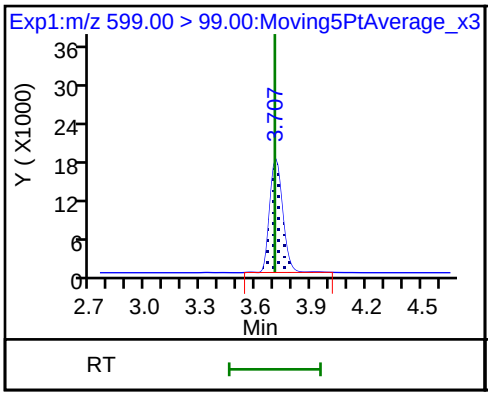
28 N-methyl perfluorooctane sulfonami



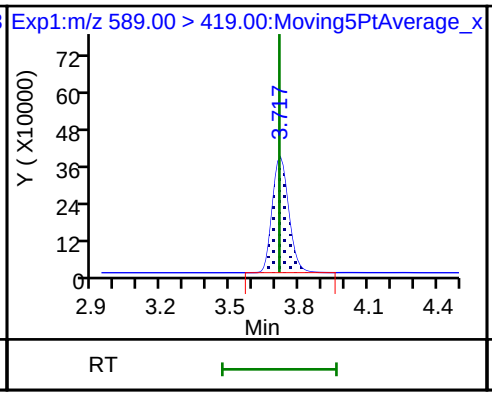
29 Perfluorodecane Sulfonic acid



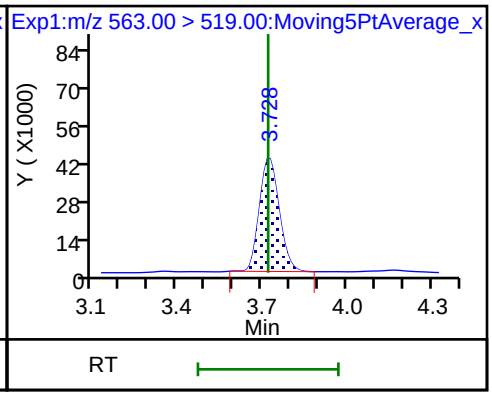
29 Perfluorodecane Sulfonic acid



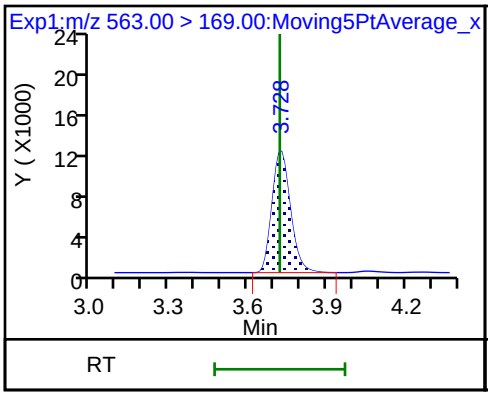
D 32 d5-NEtFOSAA



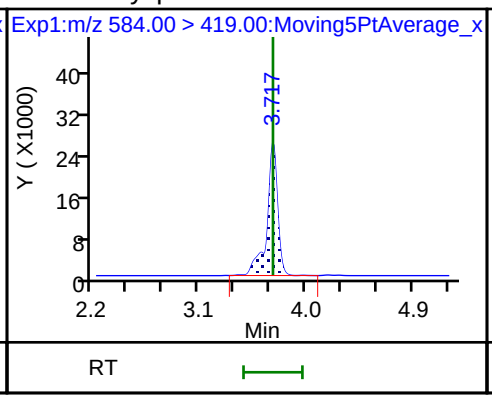
31 Perfluoroundecanoic acid



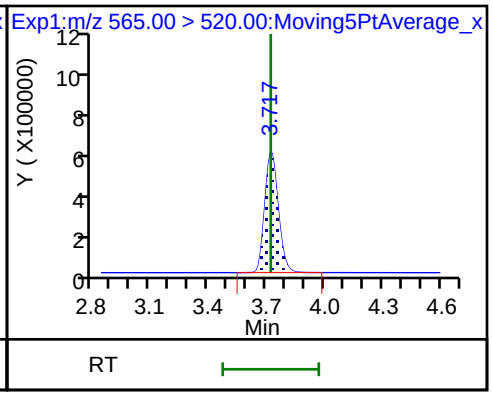
31 Perfluoroundecanoic acid



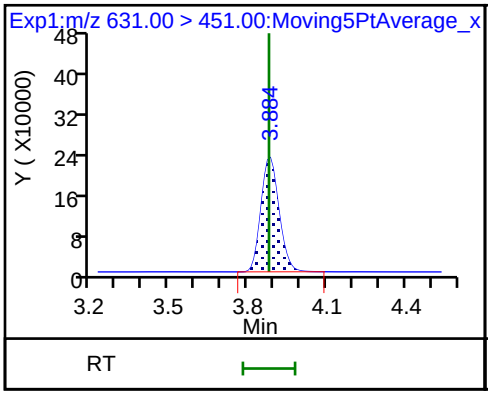
33 N-ethyl perfluorooctane sulfonamid



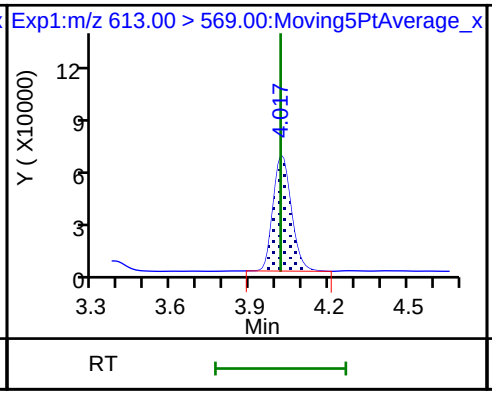
D 30 13C2 PFUnA



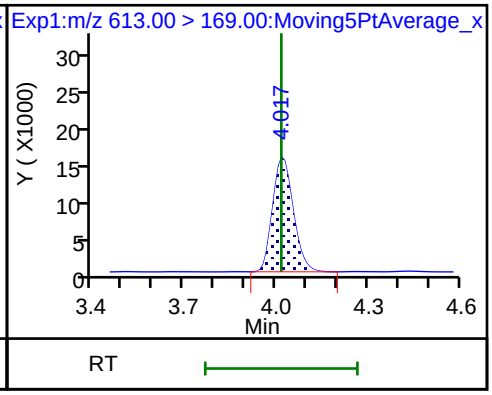
66 11-Chloroeicosafluoro-3-oxaundecan



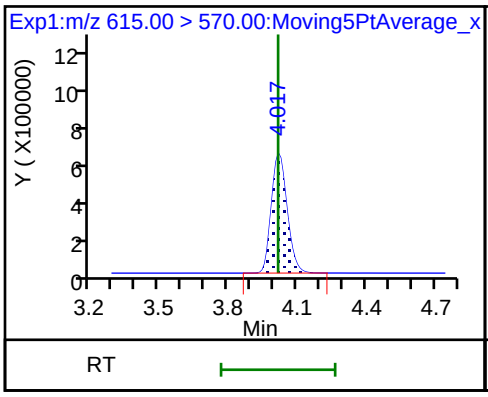
37 Perfluorododecanoic acid



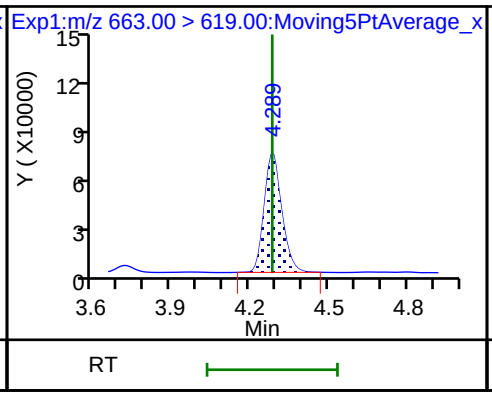
37 Perfluorododecanoic acid



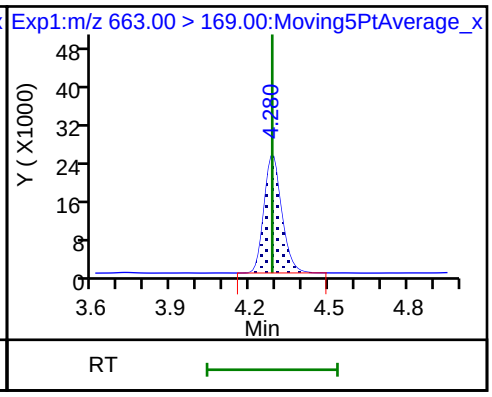
D 36 13C2 PFDoA



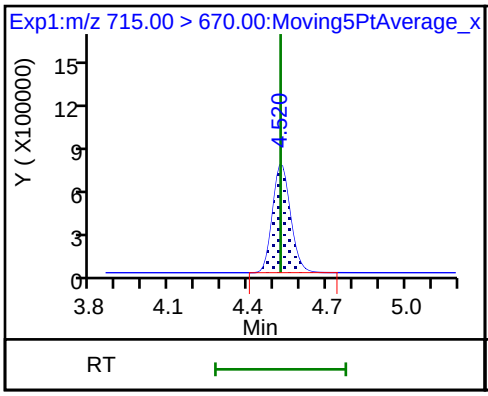
41 Perfluorotridecanoic acid



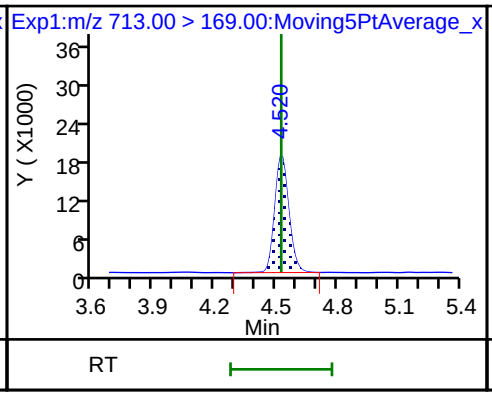
41 Perfluorotridecanoic acid



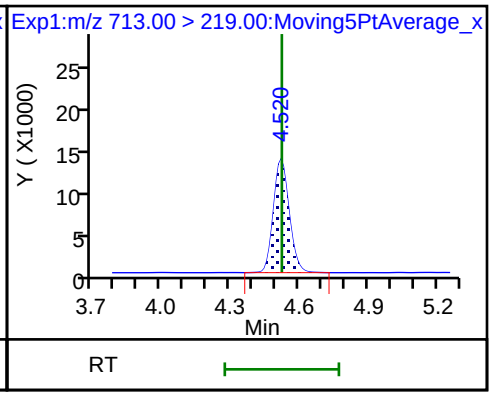
D 43 13C2-PFTeDA



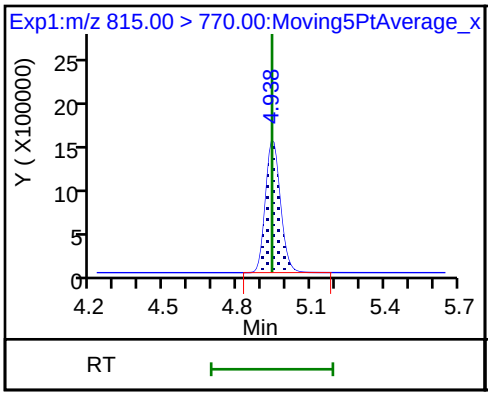
42 Perfluorotetradecanoic acid



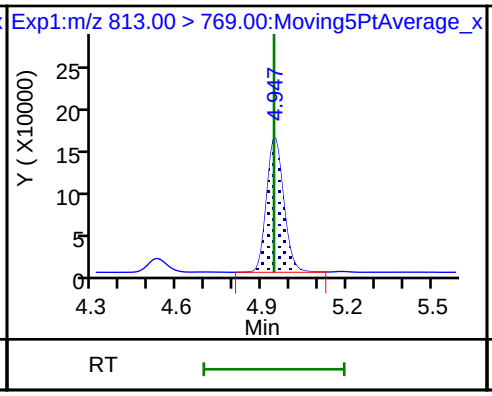
42 Perfluorotetradecanoic acid



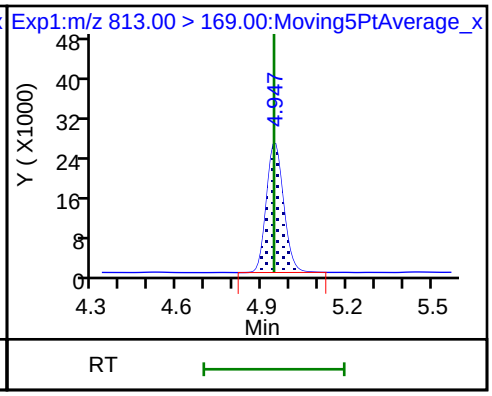
D 44 13C2-PFHxDA



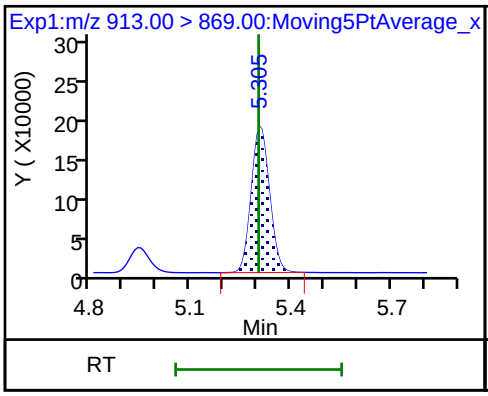
45 Perfluorohexadecanoic acid



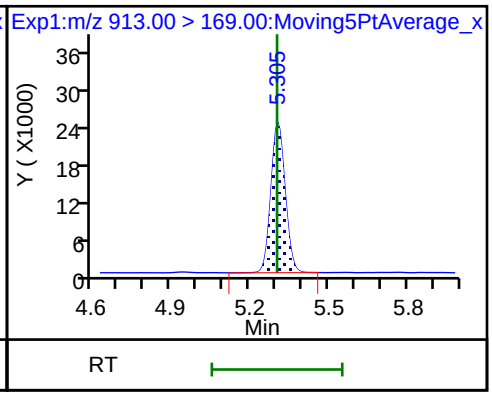
45 Perfluorohexadecanoic acid



46 Perfluorooctadecanoic acid



46 Perfluorooctadecanoic acid



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180705-60684.b\2018.07.05LLICALAA_004.d				
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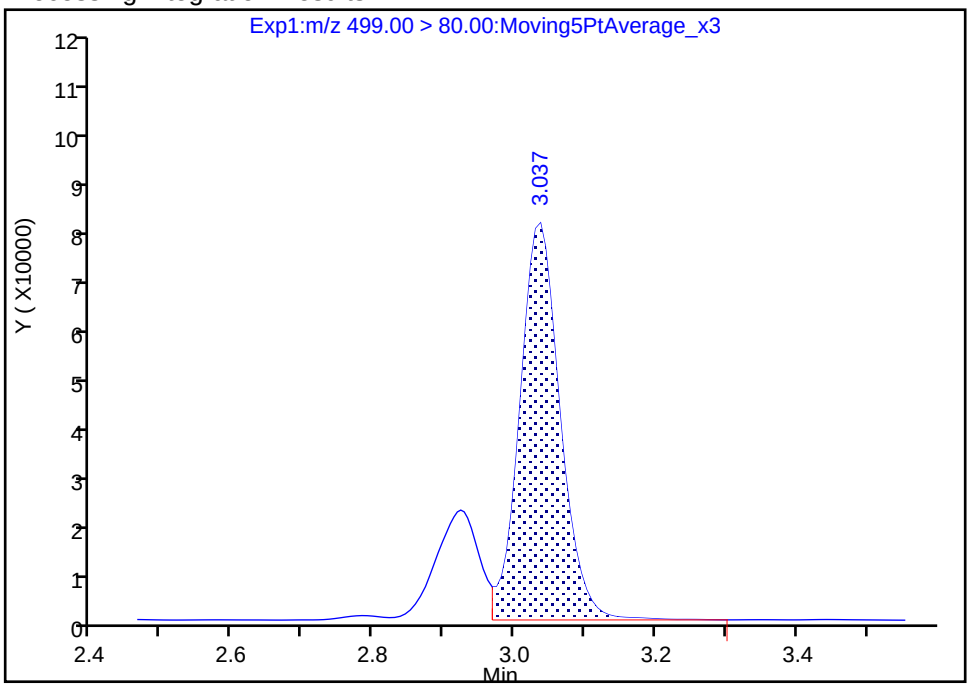
Lims ID:	IC L3 Full				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	12	Worklist Smp#:	4
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

17 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

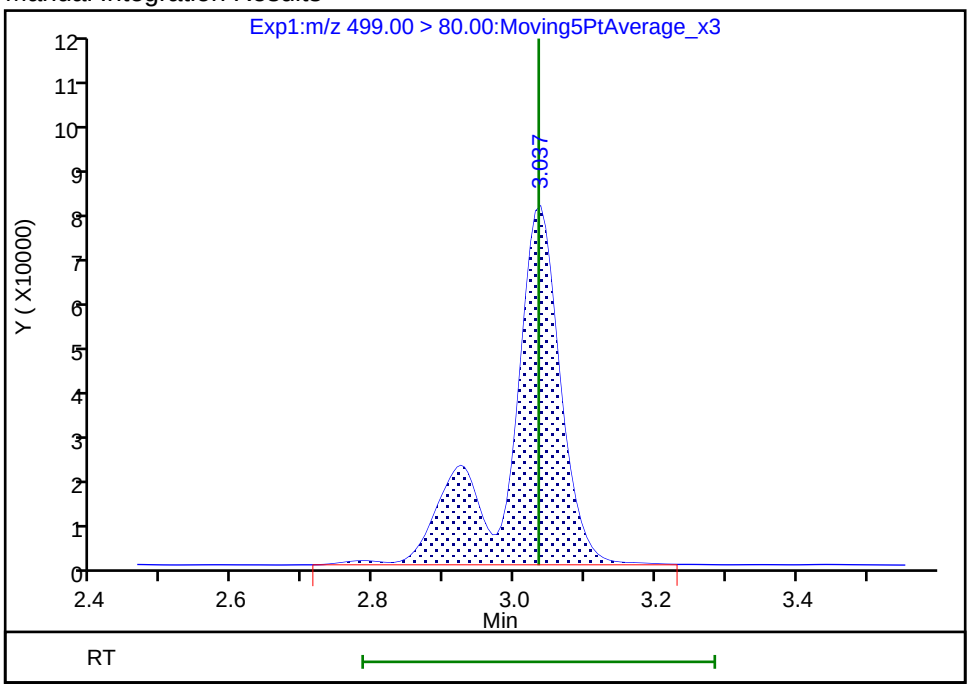
Processing Integration Results

RT: 3.04
Area: 306452
Amount: 0.172815
Amount Units: ng/ml



Manual Integration Results

RT: 3.04
Area: 399282
Amount: 0.211296
Amount Units: ng/ml



Reviewer: hannigana, 05-Jul-2018 12:10:40

Audit Action: Manually Integrated Audit Reason: Isomers

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180705-60684.b\2018.07.05LLICALAA_005.d
Lims ID: IC L4 Full
Client ID:
Sample Type: ICIS Calib Level: 4
Inject. Date: 05-Jul-2018 09:14:49 ALS Bottle#: 13 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L4-FULL
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-A8_N*sub32

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180705-60684.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 05-Jul-2018 12:38:57 Calib Date: 05-Jul-2018 09:38:17
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180705-60684.b\2018.07.05LLICALAA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK035

First Level Reviewer: hannigana Date: 05-Jul-2018 12:12:40

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.433	1.432	0.001	0.536	6162858	2.50		100	25458	
2 Perfluorobutyric acid										
212.90 > 169.00	1.433	1.434	-0.001	1.000	2411886	0.9579		95.8	956	
D 3 13C5-PFPeA										
267.90 > 223.00	1.716	1.716	0.0	0.642	4603081	2.52		101	48086	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.725	1.719	0.006	1.005	2123200	0.9683		96.8	1472	
D 47 13C3-PFBS										
301.90 > 83.00	1.761	1.756	0.005	0.659	99704	2.28		98.3	811	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.761	1.760	0.001	1.000	2913073	0.8961		101	15641	
298.90 > 99.00	1.761	1.760	0.001	1.000	1199095		2.43(1.25-3.74)	101	12545	
D 60 M2-4:2FTS										
329.00 > 81.00	1.966	1.966	0.0	0.736	650969	2.32		99.4	7391	
61 1H,1H,2H,2H-perfluorohexanesulfoni										
327.00 > 307.00	1.966	1.966	0.0	1.117	666805	0.99		106	29931	
D 7 13C2 PFHxA										
315.00 > 270.00	1.999	2.000	-0.001	0.748	4790767	2.45		98.1	53217	
6 Perfluorohexanoic acid										
313.00 > 269.00	2.011	2.002	0.009	1.006	1929591	0.9889		98.9	3402	
313.00 > 119.00	2.011	2.002	0.009	1.006	182684		10.56(5.03-15.10)	98.9	3630	
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.033	2.025	0.008	1.154	2665768	0.9586		102	25939	
349.00 > 99.00	2.022	2.025	-0.003	1.148	967302		2.76(1.36-4.07)	102	15505	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.101	2.099	0.002	0.786	350748	2.19		87.7	6930	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
67 Perfluoro(2-propoxypropanoic) acid										
329.10 > 285.00	2.101	2.099	0.002	1.000	362111	1.12		112	2325	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.329	2.318	0.010	1.000	1926316	0.9529		95.3	2437	
363.00 > 169.00	2.329	2.318	0.010	1.000	763753		2.52(1.13-3.40)	95.3	4932	
D 9 13C4-PFHpA										
367.00 > 322.00	2.329	2.318	0.010	0.871	4473611	2.58		103	32752	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.342	2.331	0.011	1.000	2134265	0.8488		93.3	10378	
399.00 > 99.00	2.342	2.331	0.011	1.000	728591		2.93(1.50-4.49)	93.3	5501	
D 11 18O2 PFHxS										
403.00 > 84.00	2.342	2.333	0.009	0.876	5143052	2.41		102	45703	
65 Adona										
377.00 > 251.00	2.368	2.365	0.003	0.780	5921462	1.04		110	37185	
377.00 > 85.00	2.368	2.365	0.003	0.780	3421126		1.73(0.84-2.53)	110	33302	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.650	2.645	0.005	1.000	579722	0.9188		96.9	4365	
D 12 M2-6:2FTS										
429.00 > 81.00	2.650	2.645	0.005	0.992	956602	2.46		103	13564	
D 14 13C4 PFOA										
417.00 > 372.00	2.673	2.670	0.003	1.000	4233363	2.49		99.7	44657	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.673	2.671	0.002	1.000	2047028	1.02		102	882	
413.00 > 169.00	2.673	2.671	0.002	1.000	1034448		1.98(0.84-2.52)	102	5173	
* 62 13C2-PFOA										
415.00 > 370.00	2.673	2.671	0.002		4451960	2.50			28463	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.680	2.678	0.002	0.882	2001929	0.9719		102	17485	
449.00 > 99.00	2.680	2.678	0.002	0.882	513009		3.90(1.94-5.82)	102	10258	
17 Perfluorooctane sulfonic acid										M
499.00 > 80.00	3.038	3.034	0.004	1.000	1620324	0.9020		97.2	9590	M
499.00 > 99.00	3.038	3.034	0.004	1.000	365112		4.44(2.31-6.93)	97.2	7492	
D 19 13C5 PFNA										
468.00 > 423.00	3.038	3.034	0.004	1.137	3628571	2.51		101	38018	
D 18 13C4 PFOS										
503.00 > 80.00	3.038	3.034	0.004	1.137	3675491	2.41		101	21579	
20 Perfluorononanoic acid										
463.00 > 419.00	3.038	3.036	0.002	1.000	1530697	0.9787		97.9	2765	
463.00 > 169.00	3.038	3.036	0.002	1.000	385539		3.97(1.90-5.69)	97.9	12335	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.247	3.246	0.001	1.069	2784556	0.9578		103	28106	
D 21 13C8 FOSA										
506.00 > 78.00	3.361	3.357	0.004	1.257	5353484	2.53		101	38452	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.361	3.358	0.003	1.000	2119612	1.00		99.8	30500	
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.380	3.379	0.001	1.113	1205401	0.9646		100	34326	
549.00 > 99.00	3.380	3.379	0.001	1.113	478001		2.52(1.33-3.97)	100	9888	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 26 M2-8:2FTS										
529.00 > 81.00	3.389	3.382	0.007	1.268	1068438	2.47		103	23819	
25 1H,1H,2H,2H-perfluorodecanesulfoni										
527.00 > 507.00	3.389	3.383	0.006	1.000	516484	0.8763		91.5	8828	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.398	3.393	0.005	1.000	1293758	0.9669		96.7	4885	
513.00 > 169.00	3.398	3.393	0.005	1.000	234842		5.51(2.36-7.09)	96.7	10444	
D 23 13C2 PFDA										
515.00 > 470.00	3.398	3.393	0.005	1.271	3209160	2.58		103	31420	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.548	3.543	0.005	1.327	1791176	2.44		97.7	24283	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.557	3.551	0.006	1.003	709542	0.9623		96.2	4838	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.709	3.702	0.007	1.221	1041333	0.9411		97.6	26968	
599.00 > 99.00	3.709	3.702	0.007	1.221	342058		3.04(1.39-4.16)	97.6	8945	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.719	3.713	0.006	1.391	1938000	2.67		107	10116	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.719	3.721	-0.002	1.000	836804	0.9601		96.0	3323	
563.00 > 169.00	3.719	3.721	-0.002	1.000	231655		3.61(2.12-6.36)	96.0	9431	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.719	3.721	-0.002	1.000	647181	0.9259		92.6	12308	
D 30 13C2 PFUnA										
565.00 > 520.00	3.719	3.721	-0.002	1.391	2563234	2.45		98.0	22804	
66 11-Chloroeicosafluoro-3-oxaundecan										
631.00 > 451.00	3.877	3.879	-0.002	1.276	4506577	1.02		108	31369	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.020	4.016	0.004	1.000	1220093	0.9749		97.5	1361	
613.00 > 169.00	4.020	4.016	0.004	1.000	290513		4.20(2.13-6.40)	97.5	6141	
D 36 13C2 PFDoA										
615.00 > 570.00	4.020	4.016	0.004	1.504	2839357	2.53		101	13083	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.282	4.284	-0.002	1.065	1358716	0.9746		97.5	1492	
663.00 > 169.00	4.282	4.284	-0.002	1.065	413195		3.29(1.25-3.76)	97.5	5611	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.522	4.524	-0.002	1.692	3418156	2.50		100	13276	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.522	4.524	-0.002	1.000	342607	0.9254		92.5	5140	
713.00 > 219.00	4.522	4.524	-0.002	1.000	251296		1.36(0.71-2.13)	92.5	5866	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.940	4.940	0.0	1.848	6551380	2.59		104	12824	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.940	4.941	-0.001	1.000	2527986	0.99		99.3	1070	
813.00 > 169.00	4.940	4.941	-0.001	1.000	431678		5.86(2.86-8.58)	99.3	2973	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.300	5.302	-0.002	1.073	3031740	0.99		99.4	969	
913.00 > 169.00	5.300	5.302	-0.002	1.073	377149		8.04(3.83-11.48)	99.4	4016	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

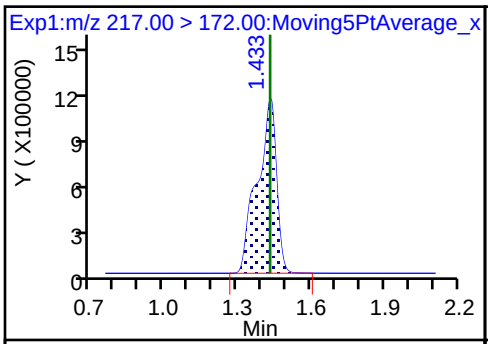
LCPFC_LL4_00005 Amount Added: 1.00 Units: mL

Report Date: 05-Jul-2018 12:38:58 Chrom Revision: 2.2 07-Jun-2018 07:41:54

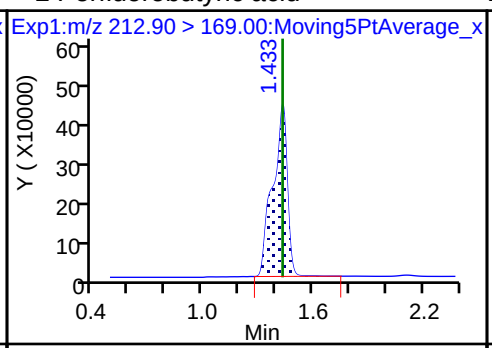
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180705-60684.b\2018.07.05LLICALAA_005.d
Injection Date: 05-Jul-2018 09:14:49 Instrument ID: A8_N
Lims ID: IC L4 Full
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 13 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC ICAL

D 1 13C4 PFBA



2 Perfluorobutyric acid



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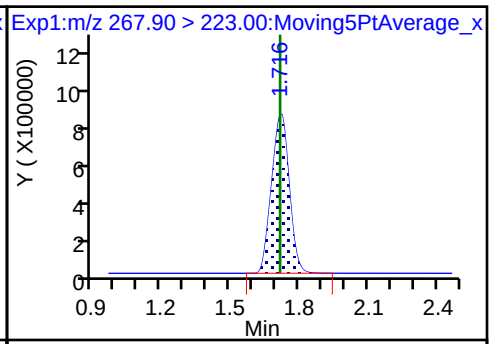
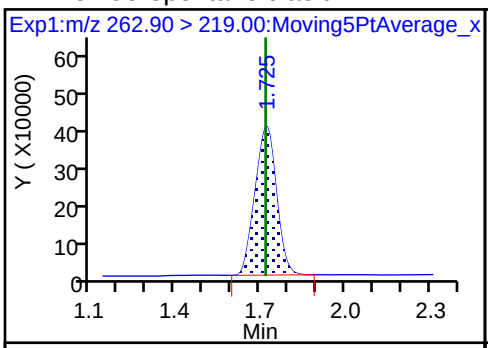
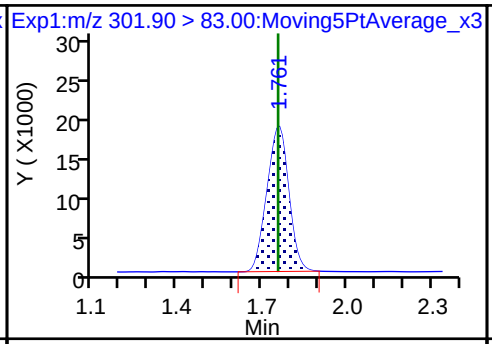


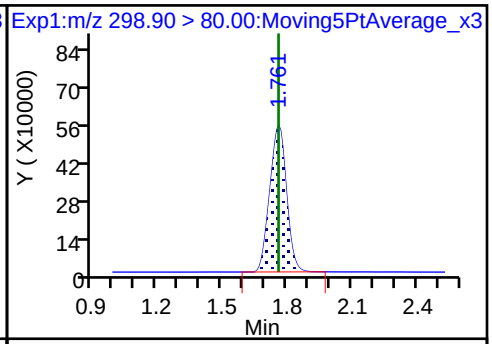
4 Perfluoropentanoic acid



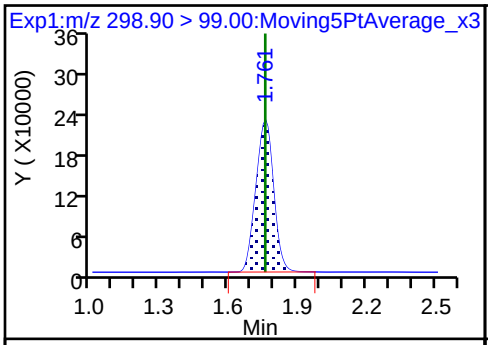
D 47 13C3-PFBS



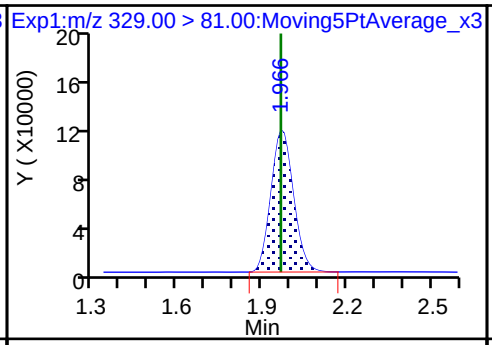
5 Perfluorobutanesulfonic acid



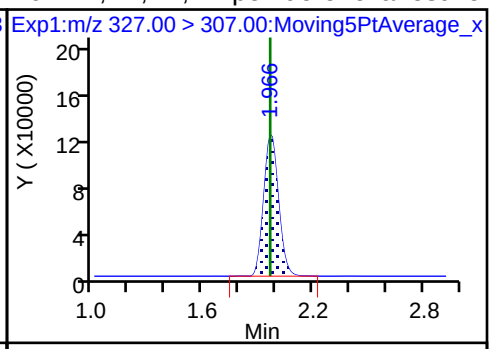
5 Perfluorobutanesulfonic acid



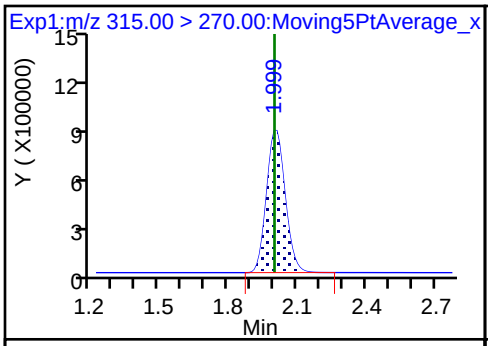
D 60 M2-4:2FTS



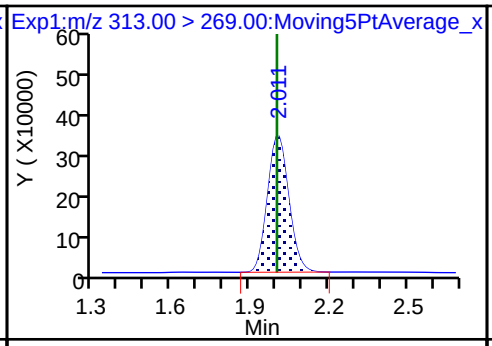
61 1H,1H,2H,2H-perfluorohexanesulfoni



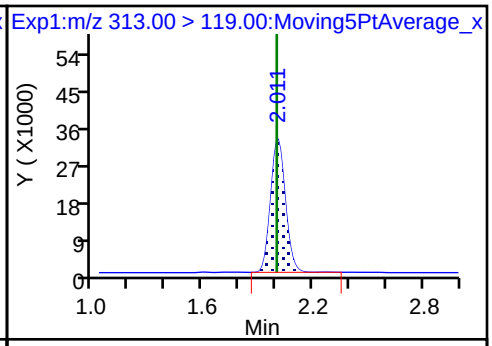
D 7 13C2 PFHxA



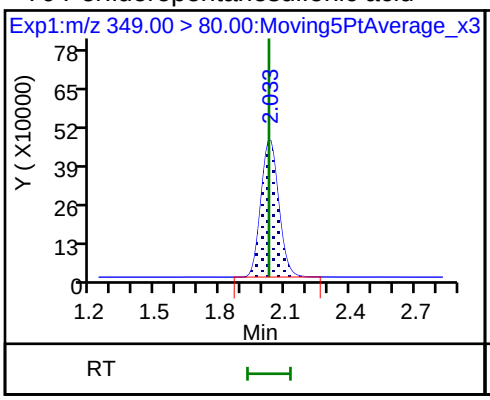
6 Perfluorohexanoic acid



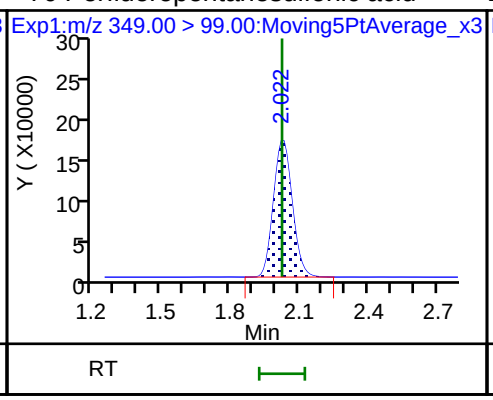
6 Perfluorohexanoic acid



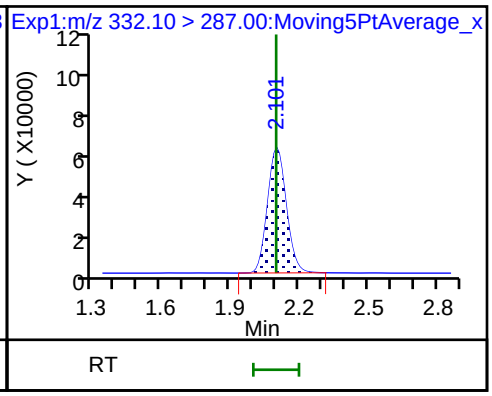
70 Perfluoropentanesulfonic acid



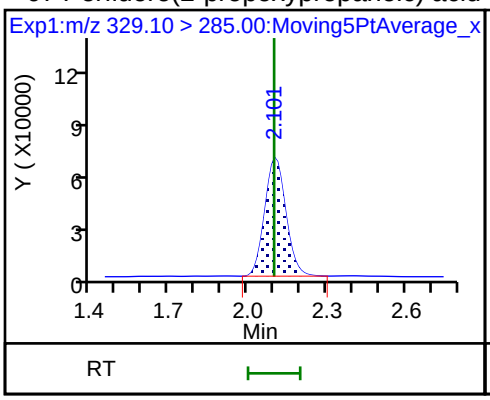
70 Perfluoropentanesulfonic acid



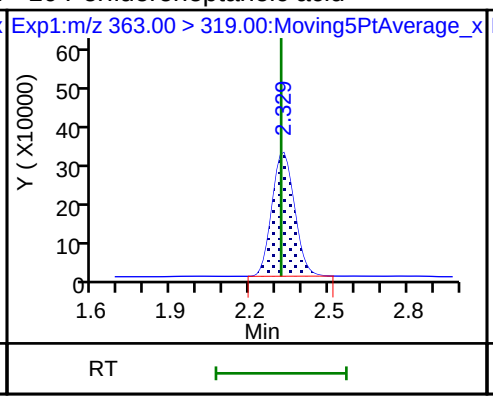
D 64 13C3 HFPO-DA



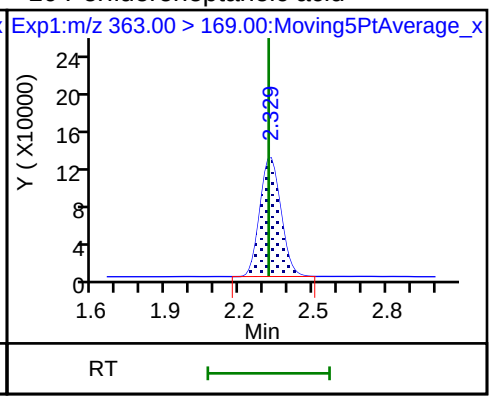
67 Perfluoro(2-propoxypropanoic) acid



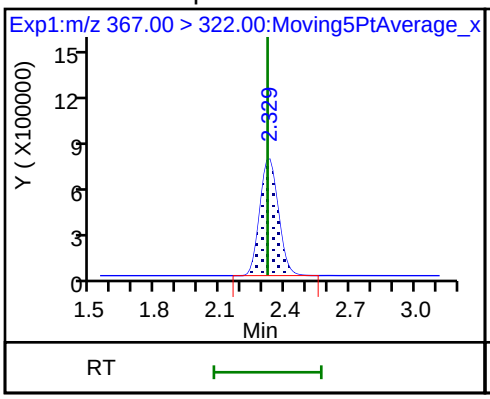
10 Perfluoroheptanoic acid



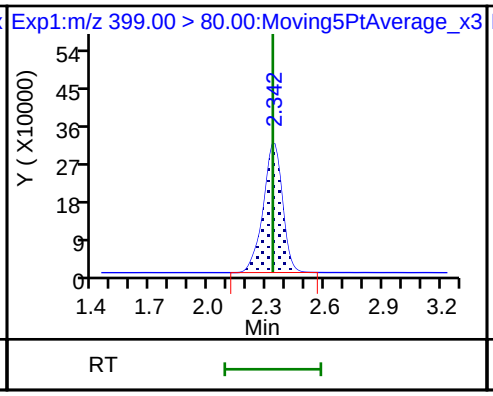
10 Perfluoroheptanoic acid



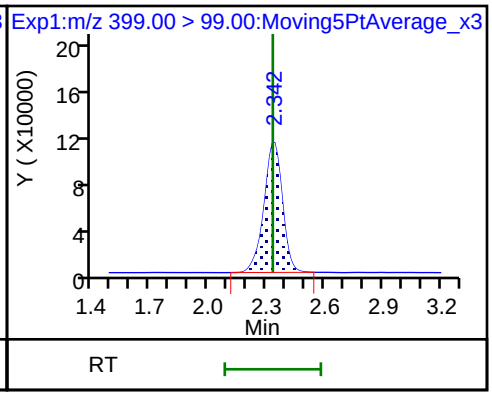
D 9 13C4-PFHpA



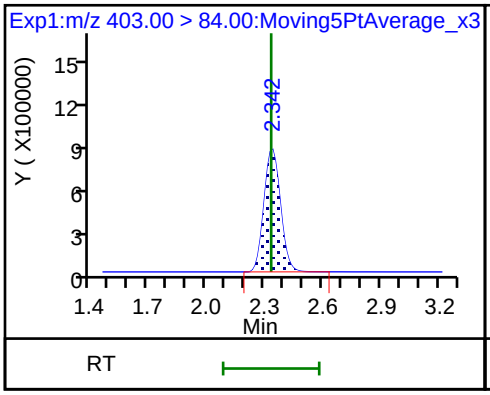
8 Perfluorohexanesulfonic acid



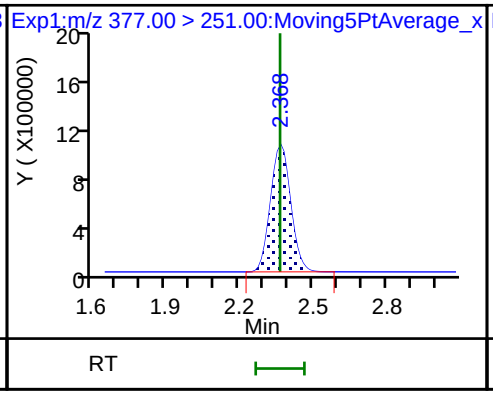
8 Perfluorohexanesulfonic acid



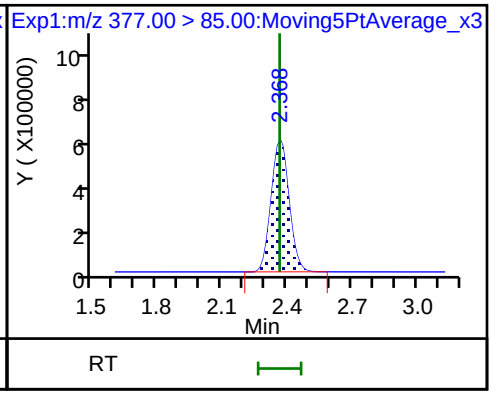
D 11 18O2 PFHxS



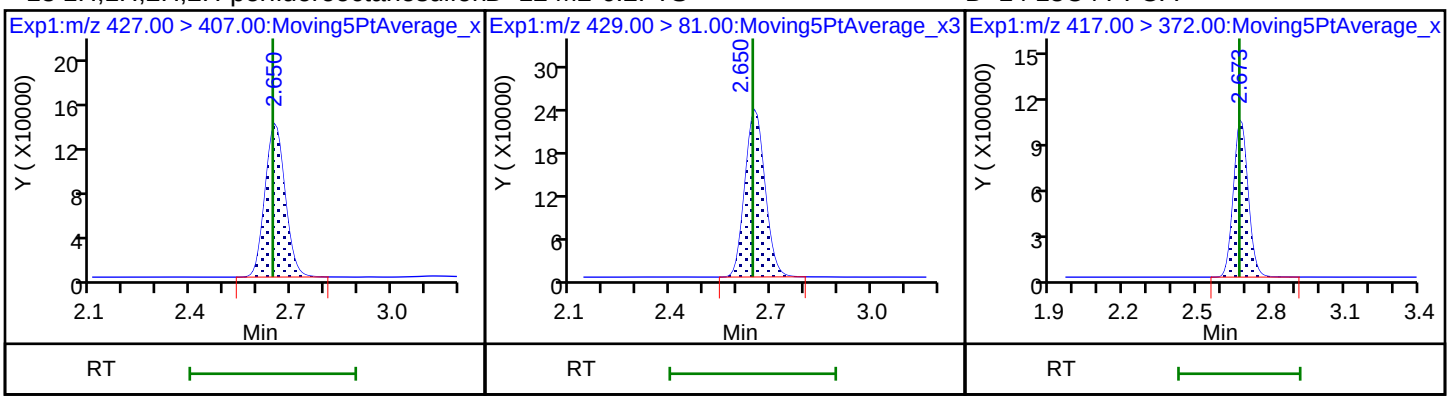
65 Adona



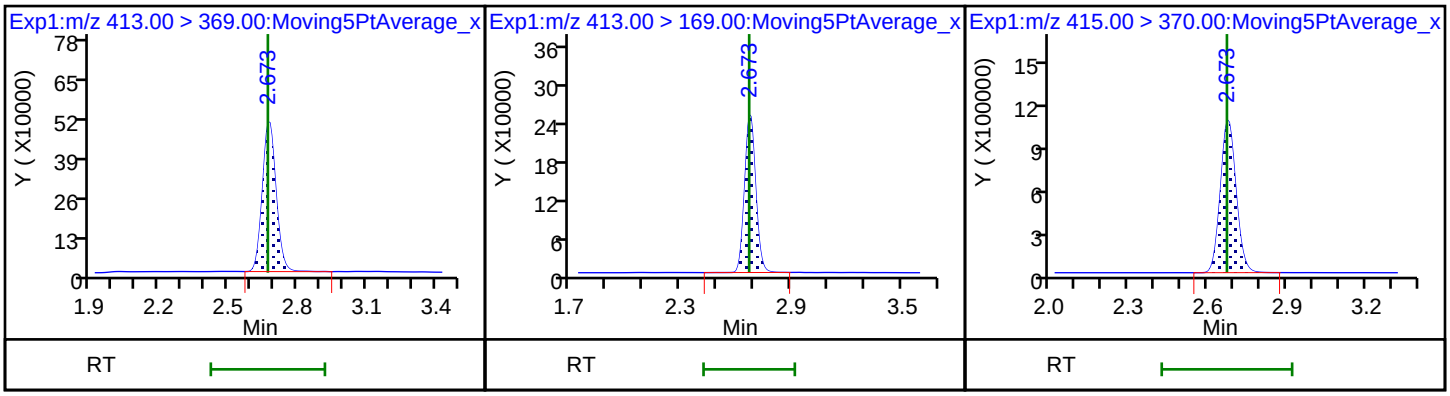
65 Adona



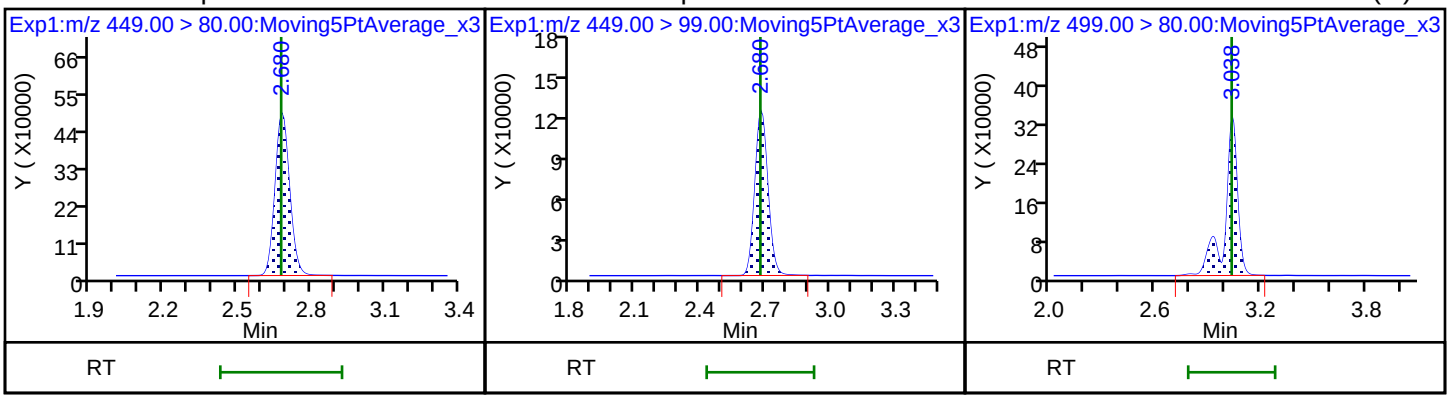
13 1H,1H,2H,2H-perfluorooctanesulfon D 12 M2-6:2FTS D 14 13C4 PFOA



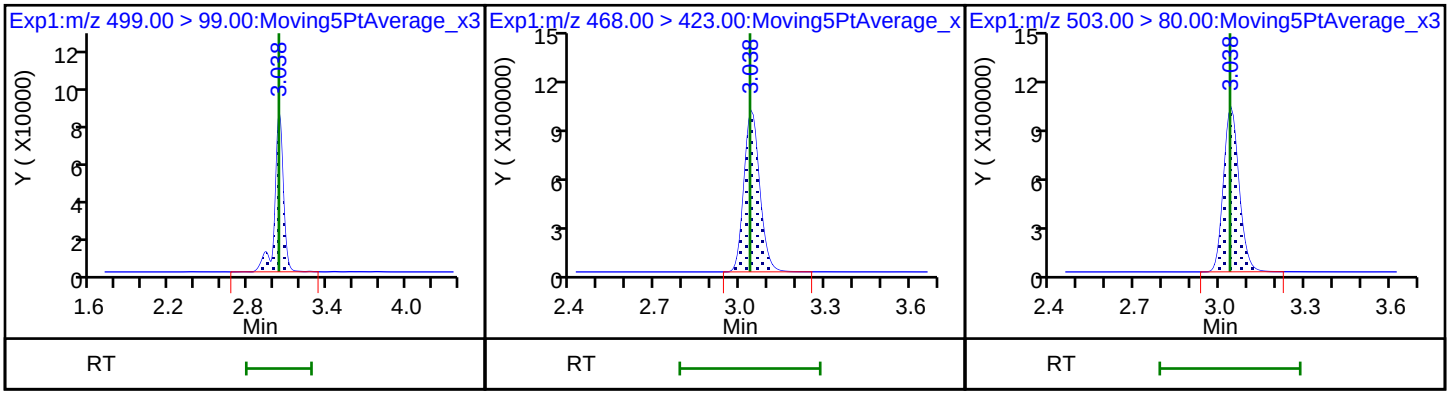
15 Perfluorooctanoic acid 15 Perfluorooctanoic acid * 62 13C2-PFOA



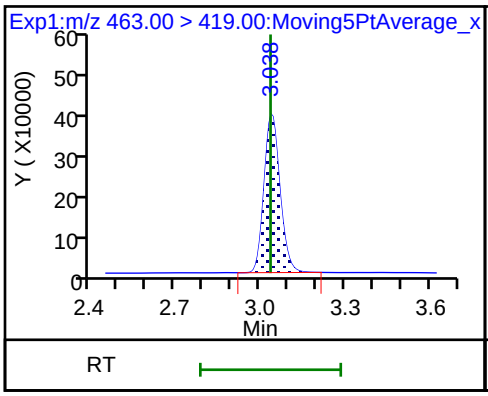
16 Perfluoroheptanesulfonic acid 16 Perfluoroheptanesulfonic acid 17 Perfluorooctane sulfonic acid (M)



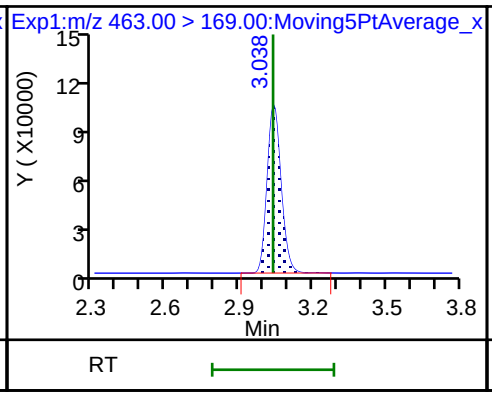
17 Perfluorooctane sulfonic acid D 19 13C5 PFNA D 18 13C4 PFOS



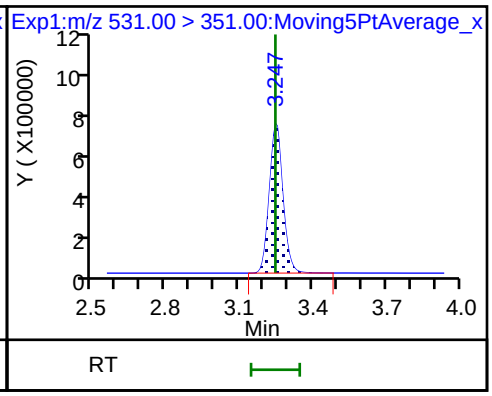
20 Perfluorononanoic acid



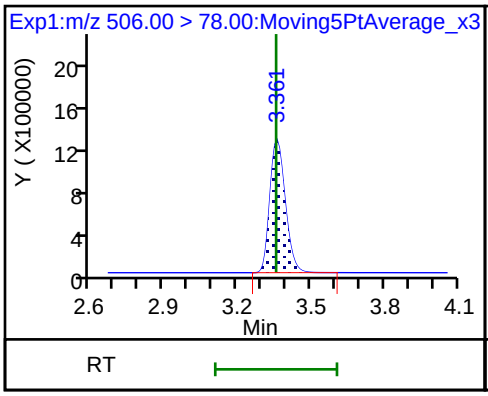
20 Perfluorononanoic acid



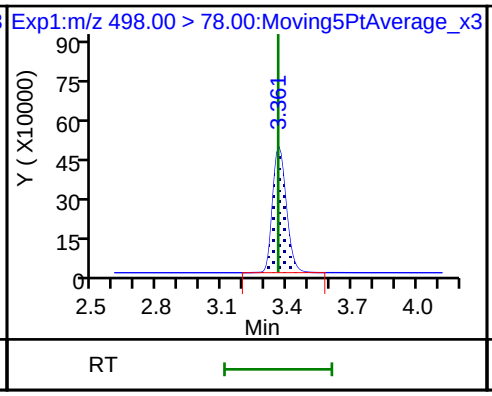
69 9-Chlorohexadecafluoro-3-oxanonane



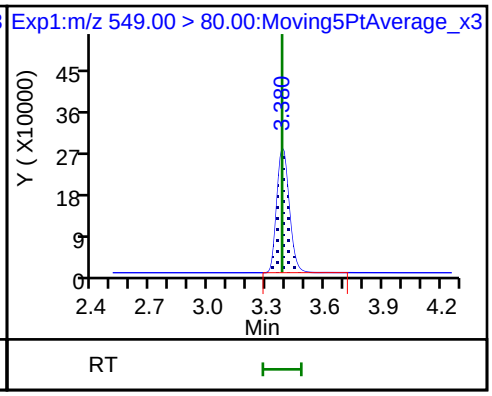
D 21 13C8 FOSA



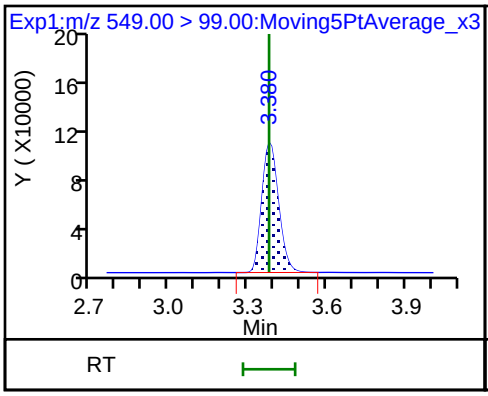
22 Perfluorooctane Sulfonamide



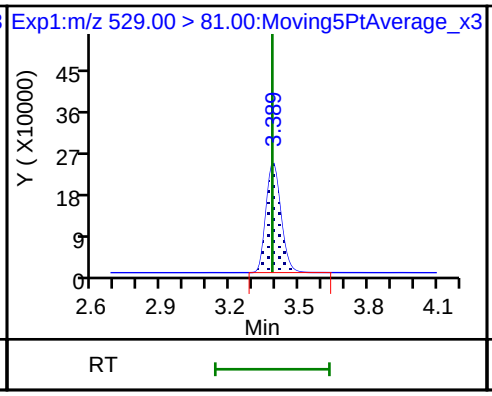
68 Perfluorononanesulfonic acid



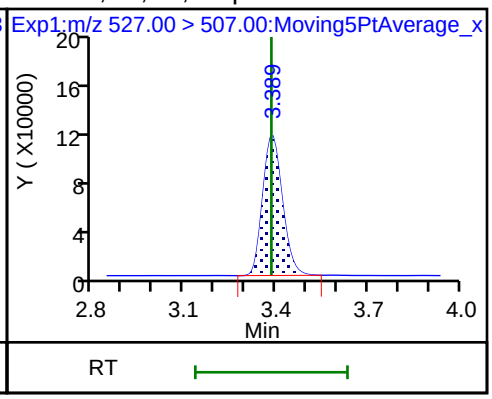
68 Perfluorononanesulfonic acid



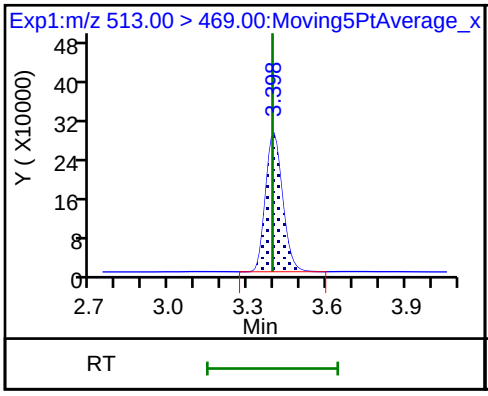
D 26 M2-8:2FTS



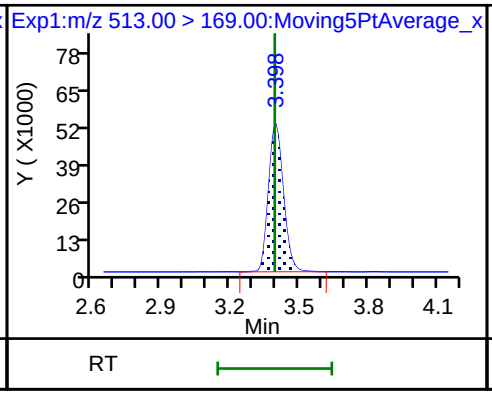
25 1H,1H,2H,2H-perfluorodecanesulfoni



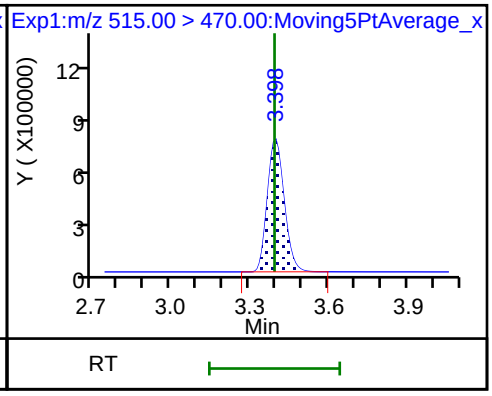
24 Perfluorodecanoic acid



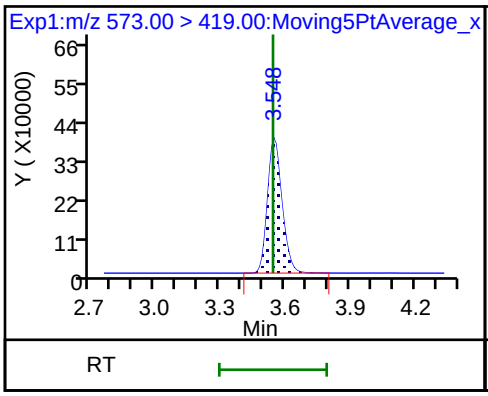
24 Perfluorodecanoic acid



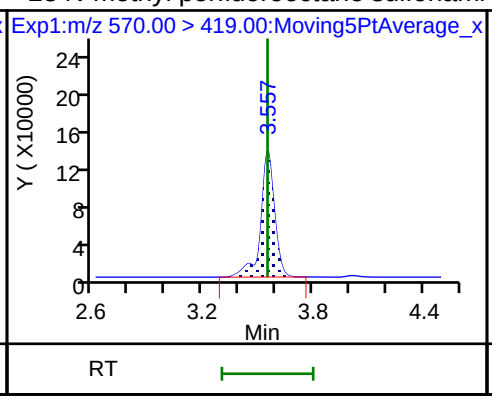
D 23 13C2 PFDA



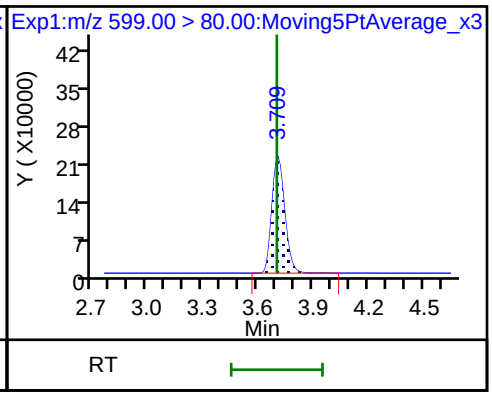
D 27 d3-NMeFOSAA



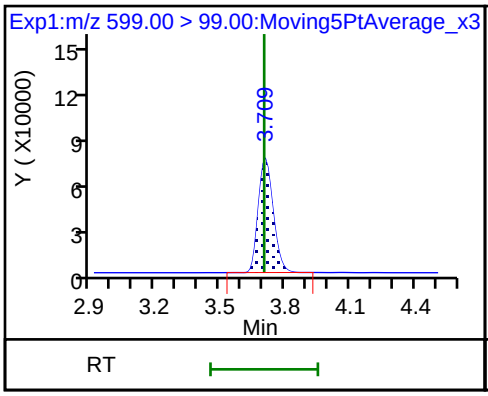
28 N-methyl perfluorooctane sulfonami



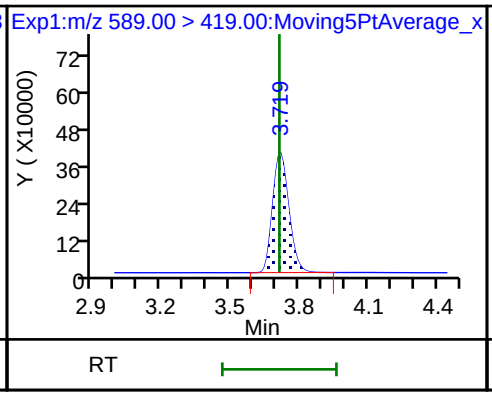
29 Perfluorodecane Sulfonic acid



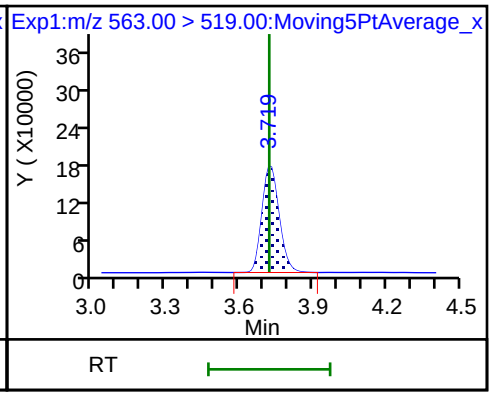
29 Perfluorodecane Sulfonic acid



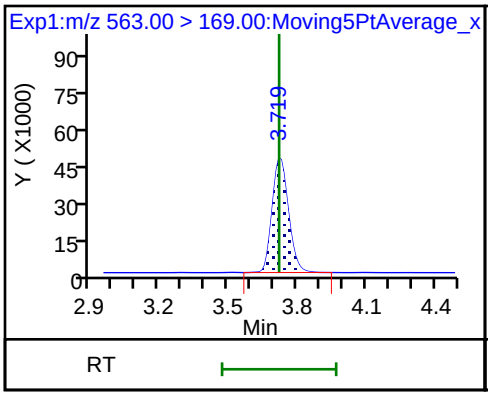
D 32 d5-NEtFOSAA



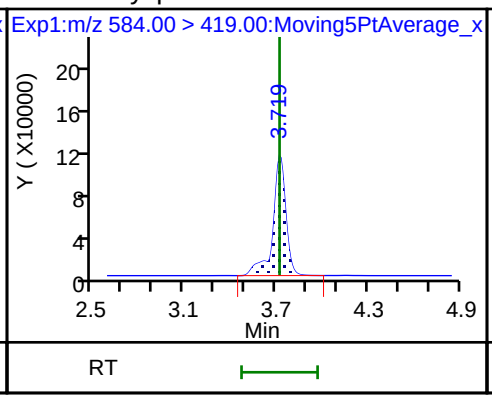
31 Perfluoroundecanoic acid



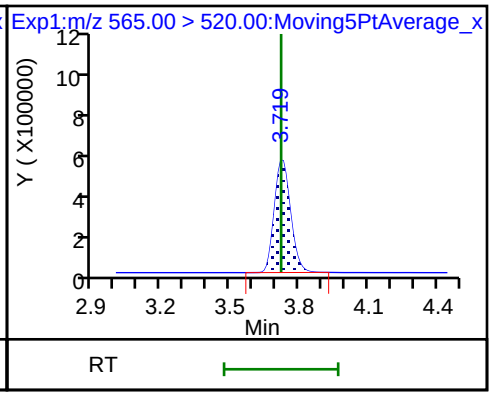
31 Perfluoroundecanoic acid



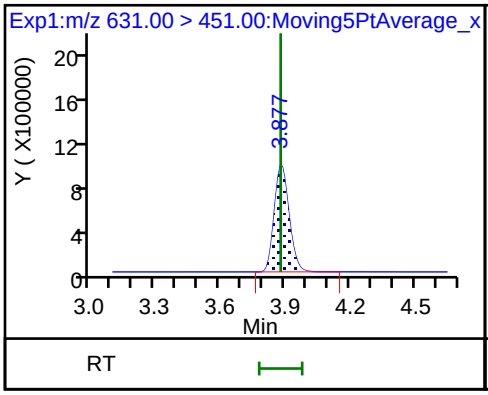
33 N-ethyl perfluorooctane sulfonamid



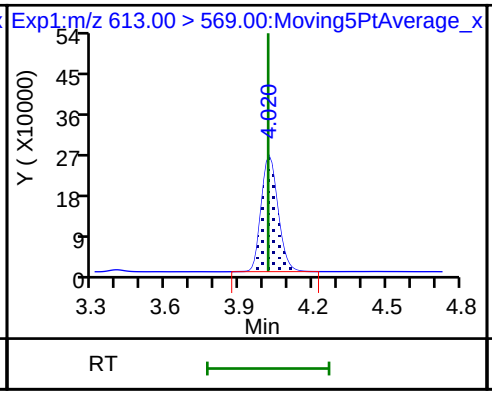
D 30 13C2 PFUnA



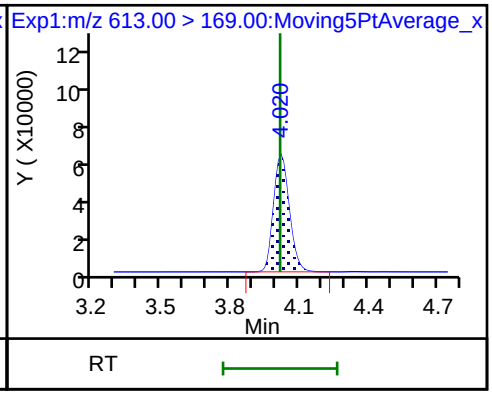
66 11-Chloroeicosafluoro-3-oxaundecan



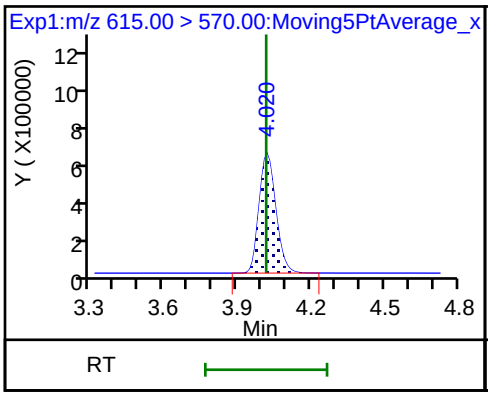
37 Perfluorododecanoic acid



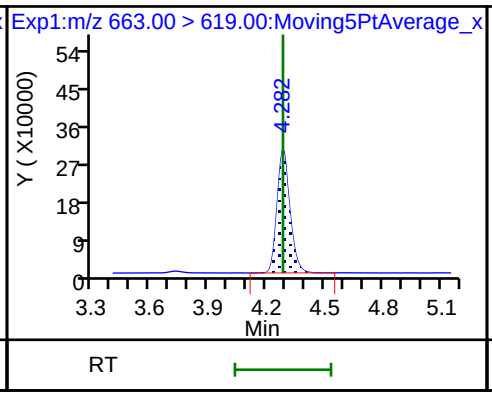
37 Perfluorododecanoic acid



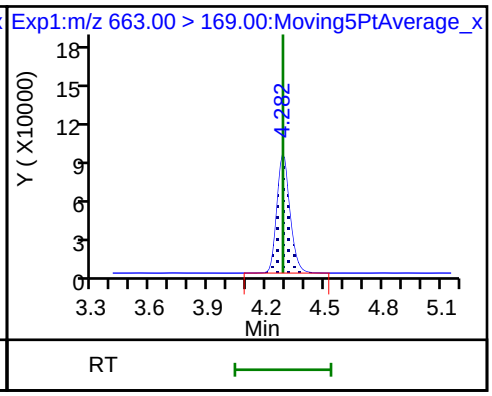
D 36 13C2 PFDoA



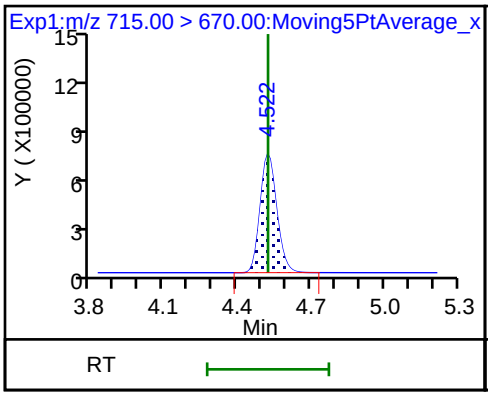
41 Perfluorotridecanoic acid



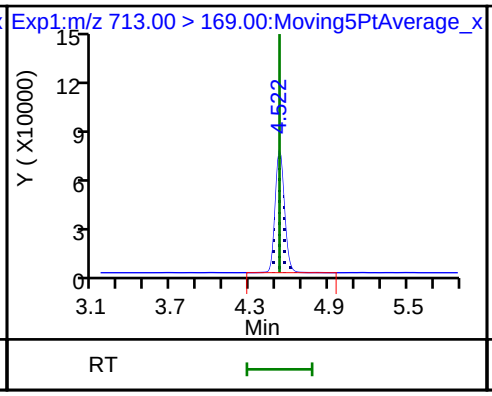
41 Perfluorotridecanoic acid



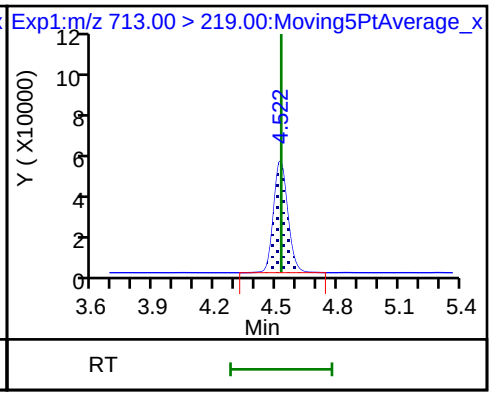
D 43 13C2-PFTeDA



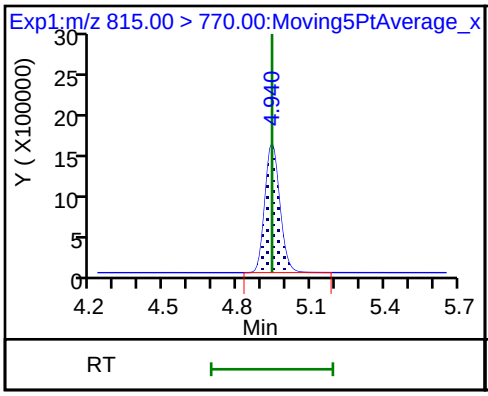
42 Perfluorotetradecanoic acid



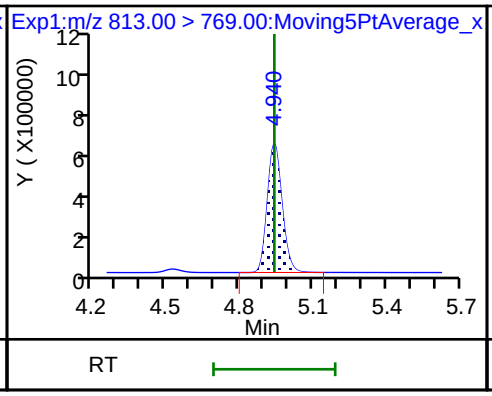
42 Perfluorotetradecanoic acid



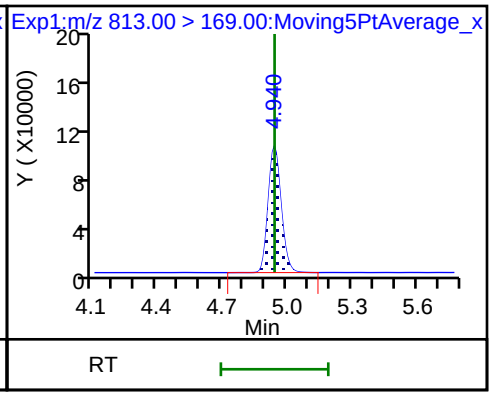
D 44 13C2-PFHxDA



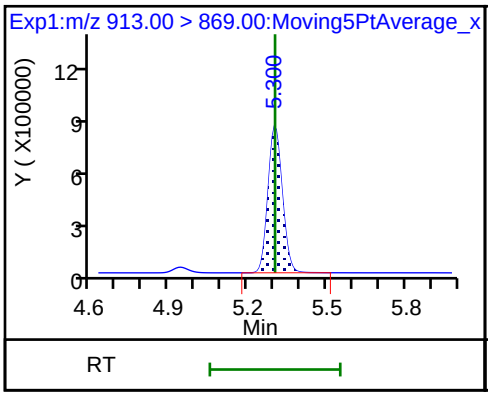
45 Perfluorohexadecanoic acid



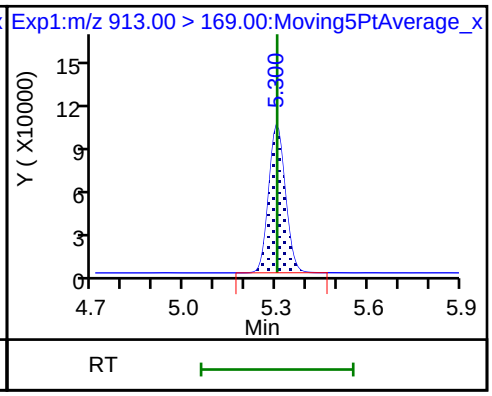
45 Perfluorohexadecanoic acid



46 Perfluorooctadecanoic acid



46 Perfluorooctadecanoic acid



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

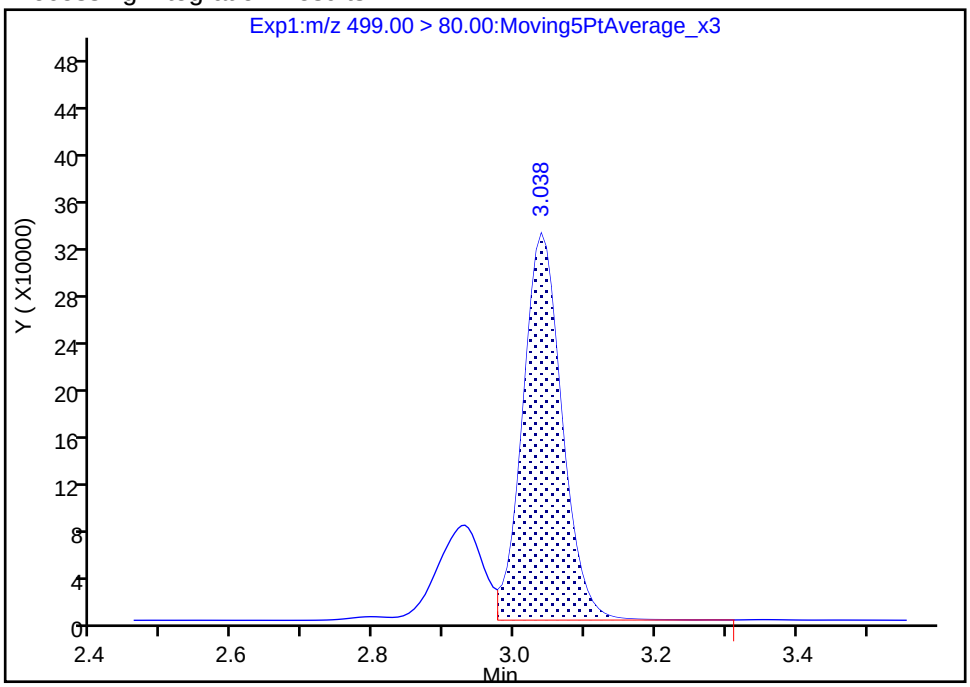
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180705-60684.b\2018.07.05LLICALAA_005.d				
Injection Date:	05-Jul-2018 09:14:49	Instrument ID:	A8_N		
Lims ID:	IC L4 Full				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	13	Worklist Smp#:	5
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

17 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

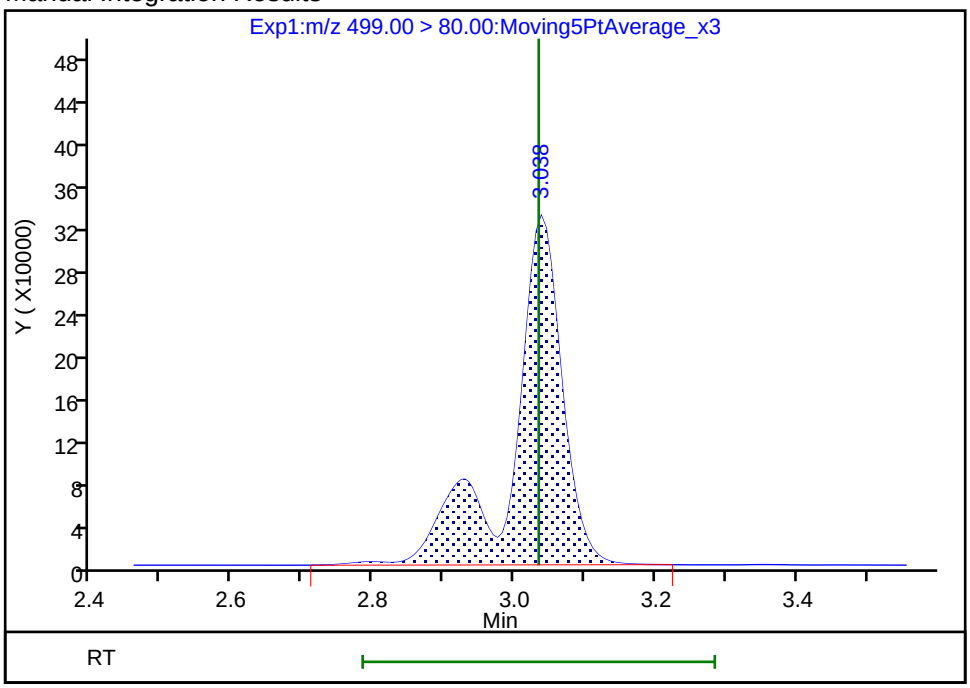
Processing Integration Results

RT: 3.04
Area: 1254577
Amount: 0.720987
Amount Units: ng/ml



Manual Integration Results

RT: 3.04
Area: 1620324
Amount: 0.901990
Amount Units: ng/ml



Reviewer: hannigana, 05-Jul-2018 12:12:23

Audit Action: Manually Integrated Audit Reason: Isomers

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180705-60684.b\2018.07.05LLICALAA_006.d
Lims ID: IC L5 Full
Client ID:
Sample Type: IC Calib Level: 5
Inject. Date: 05-Jul-2018 09:22:38 ALS Bottle#: 14 Worklist Smp#: 6
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L5-FULL
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-A8_N*sub32

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180705-60684.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 05-Jul-2018 12:39:01 Calib Date: 05-Jul-2018 09:38:17
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180705-60684.b\2018.07.05LLICALAA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK035

First Level Reviewer: hannigana Date: 05-Jul-2018 12:13:18

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.433	1.432	0.001	0.536	5942375	2.48		99.1	24684	
2 Perfluorobutyric acid										
212.90 > 169.00	1.433	1.434	-0.001	1.000	6019354	2.48		99.2	2461	
D 3 13C5-PFPeA										
267.90 > 223.00	1.716	1.716	0.0	0.642	4484079	2.53		101	38620	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.716	1.719	-0.003	1.000	5110087	2.39		95.7	3974	
D 47 13C3-PFBS										
301.90 > 83.00	1.761	1.756	0.005	0.659	97817	2.30		99.1	956	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.761	1.760	0.001	1.000	7339411	2.30		104	37350	
298.90 > 99.00	1.761	1.760	0.001	1.000	2961946		2.48(1.25-3.74)	104	26450	
D 60 M2-4:2FTS										
329.00 > 81.00	1.966	1.966	0.0	0.736	625570	2.29		98.1	7018	
61 1H,1H,2H,2H-perfluorohexanesulfoni										
327.00 > 307.00	1.966	1.966	0.0	1.116	1513774	2.29		98.3	54590	
D 7 13C2 PFHxA										
315.00 > 270.00	1.999	2.000	-0.001	0.748	4788239	2.52		101	71542	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.999	2.002	-0.003	1.000	4896489	2.51		100	8661	
313.00 > 119.00	1.999	2.002	-0.003	1.000	439446		11.14(5.03-15.10)	100	7908	
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.022	2.025	-0.003	1.148	6619076	2.43		103	73311	
349.00 > 99.00	2.022	2.025	-0.003	1.148	2396690		2.76(1.36-4.07)	103	25200	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.101	2.099	0.002	0.786	380912	2.45		97.8	6332	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
67 Perfluoro(2-propoxypropanoic) acid										
329.10 > 285.00	2.101	2.099	0.002	1.000	901097	2.57		103	6257	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.315	2.318	-0.003	1.000	4999641	2.65		106	6973	
363.00 > 169.00	2.315	2.318	-0.003	1.000	1875739		2.67(1.13-3.40)	106	13773	
D 9 13C4-PFHpA										
367.00 > 322.00	2.315	2.318	-0.003	0.866	4168061	2.47		98.8	37041	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.328	2.331	-0.003	1.000	5163686	2.16		94.8	18414	
399.00 > 99.00	2.328	2.331	-0.003	1.000	1774861		2.91(1.50-4.49)	94.8	10886	
D 11 18O2 PFHxS										
403.00 > 84.00	2.328	2.333	-0.005	0.871	4895856	2.36		99.7	29495	
65 Adona										
377.00 > 251.00	2.368	2.365	0.003	0.781	14088161	2.62		111	49595	
377.00 > 85.00	2.368	2.365	0.003	0.781	8148050		1.73(0.84-2.53)	111	52182	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.642	2.645	-0.003	1.000	1396856	2.46		104	9085	
D 12 M2-6:2FTS										
429.00 > 81.00	2.642	2.645	-0.003	0.989	862284	2.28		95.8	15731	
D 14 13C4 PFOA										
417.00 > 372.00	2.673	2.670	0.003	1.000	4126992	2.50		99.9	35468	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.673	2.671	0.002	1.000	4823268	2.46		98.5	1933	
413.00 > 169.00	2.673	2.671	0.002	1.000	2511857		1.92(0.84-2.52)	98.5	11625	
* 62 13C2-PFOA										
415.00 > 370.00	2.673	2.671	0.002		4332703	2.50			32774	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.673	2.678	-0.005	0.882	4951993	2.55		107	28016	
449.00 > 99.00	2.673	2.678	-0.005	0.882	1296760		3.82(1.94-5.82)	107	15697	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.031	3.034	-0.003	1.000	3955854	2.34		101	23872	
499.00 > 99.00	3.031	3.034	-0.003	1.000	862455		4.59(2.31-6.93)	101	12955	
D 19 13C5 PFNA										
468.00 > 423.00	3.031	3.034	-0.003	1.134	3465887	2.47		98.6	42511	
D 18 13C4 PFOS										
503.00 > 80.00	3.031	3.034	-0.003	1.134	3463003	2.34		97.8	24513	
20 Perfluorononanoic acid										
463.00 > 419.00	3.038	3.036	0.002	1.002	3913598	2.62		105	6881	
463.00 > 169.00	3.031	3.036	-0.005	1.000	959134		4.08(1.90-5.69)	105	19080	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.247	3.246	0.001	1.071	6652637	2.43		104	74525	
D 21 13C8 FOSA										
506.00 > 78.00	3.361	3.357	0.004	1.257	5102615	2.48		99.2	37782	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.361	3.358	0.003	1.000	5128289	2.53		101	36594	
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.380	3.379	0.001	1.115	2815426	2.39		99.6	35388	
549.00 > 99.00	3.380	3.379	0.001	1.115	1078510		2.61(1.33-3.97)	99.6	16289	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 26 M2-8:2FTS										
529.00 > 81.00	3.380	3.382	-0.002	1.264	978302	2.32		97.0	16680	
25 1H,1H,2H,2H-perfluorodecanesulfoni										
527.00 > 507.00	3.380	3.383	-0.003	1.000	1299370	2.41		101	24236	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.389	3.393	-0.004	1.000	3139526	2.56		103	11744	
513.00 > 169.00	3.389	3.393	-0.004	1.000	540721		5.81(2.36-7.09)	103	11136	
D 23 13C2 PFDA										
515.00 > 470.00	3.389	3.393	-0.004	1.268	2937890	2.42		97.0	39124	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.548	3.543	0.005	1.327	1766929	2.47		99.0	29664	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.548	3.551	-0.003	1.000	1825431	2.51		100	11808	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.698	3.702	-0.004	1.220	2461548	2.36		98.0	33677	
599.00 > 99.00	3.698	3.702	-0.004	1.220	852367		2.89(1.39-4.16)	98.0	22051	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.709	3.713	-0.004	1.387	1654181	2.35		93.8	11509	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.719	3.721	-0.002	1.000	2060853	2.37		94.8	7715	
563.00 > 169.00	3.719	3.721	-0.002	1.000	486954		4.23(2.12-6.36)	94.8	14305	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.719	3.721	-0.002	1.003	1549739	2.60		104	15262	
D 30 13C2 PFUnA										
565.00 > 520.00	3.719	3.721	-0.002	1.391	2557898	2.51		101	26360	
66 11-Chloroeicosafluoro-3-oxaundecan										
631.00 > 451.00	3.877	3.879	-0.002	1.279	10714579	2.56		109	60636	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.020	4.016	0.004	1.000	3070255	2.66		107	3466	
613.00 > 169.00	4.020	4.016	0.004	1.000	720660		4.26(2.13-6.40)	107	9486	
D 36 13C2 PFDoA										
615.00 > 570.00	4.020	4.016	0.004	1.504	2616078	2.40		95.9	13704	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.281	4.284	-0.003	1.065	3136503	2.44		97.7	3294	
663.00 > 169.00	4.281	4.284	-0.003	1.065	1022166		3.07(1.25-3.76)	97.7	10653	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.522	4.524	-0.002	1.692	3283601	2.47		98.8	12890	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.522	4.524	-0.002	1.000	845500	2.38		95.1	11873	
713.00 > 219.00	4.512	4.524	-0.012	0.998	587640		1.44(0.71-2.13)	95.1	8269	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.940	4.940	0.0	1.848	6019047	2.45		97.9	11221	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.940	4.941	-0.001	1.000	6181291	2.68		107	2514	
813.00 > 169.00	4.940	4.941	-0.001	1.000	977236		6.33(2.86-8.58)	107	6007	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.299	5.302	-0.003	1.073	7063441	2.52		101	2090	
913.00 > 169.00	5.299	5.302	-0.003	1.073	866383		8.15(3.83-11.48)	101	7212	

Reagents:

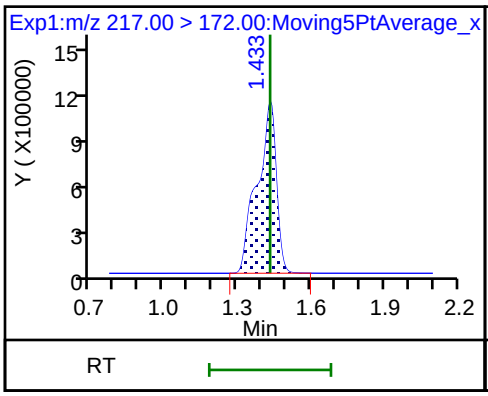
LCPFC_LL5_00005 Amount Added: 1.00 Units: mL

Report Date: 05-Jul-2018 12:39:02 Chrom Revision: 2.2 07-Jun-2018 07:41:54

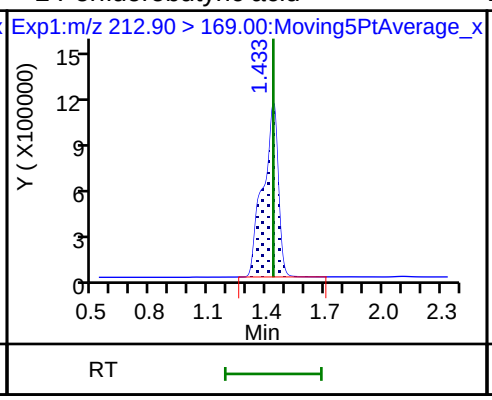
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180705-60684.b\2018.07.05LLICALAA_006.d
Injection Date: 05-Jul-2018 09:22:38 Instrument ID: A8_N
Lims ID: IC L5 Full
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 14 Worklist Smp#: 6
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC ICAL

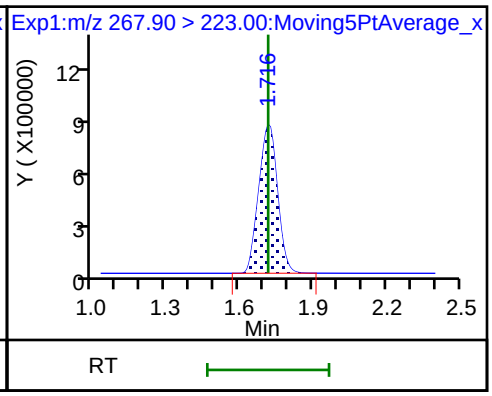
D 1 13C4 PFBA



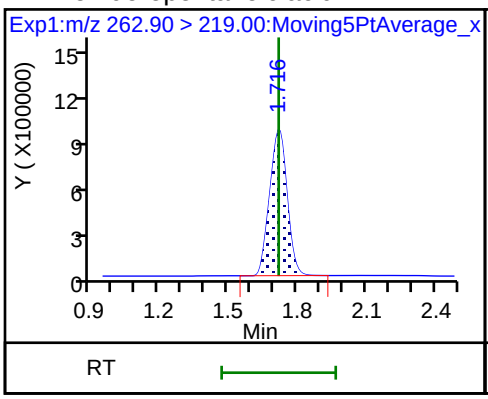
2 Perfluorobutyric acid



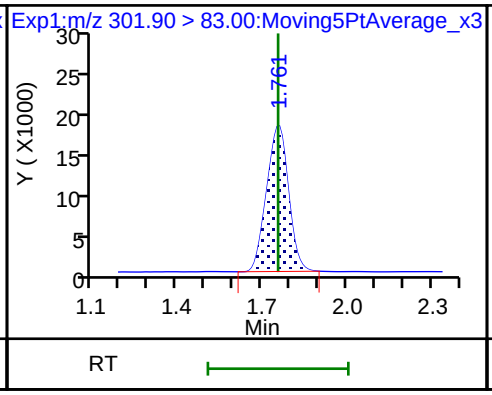
D 3 13C5-PFPeA



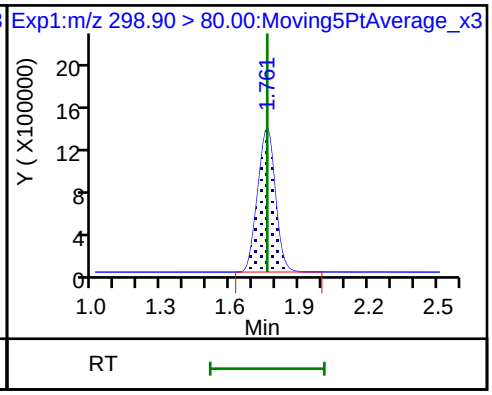
4 Perfluoropentanoic acid



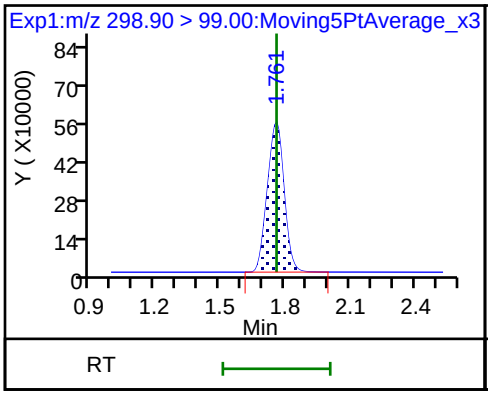
D 47 13C3-PFBS



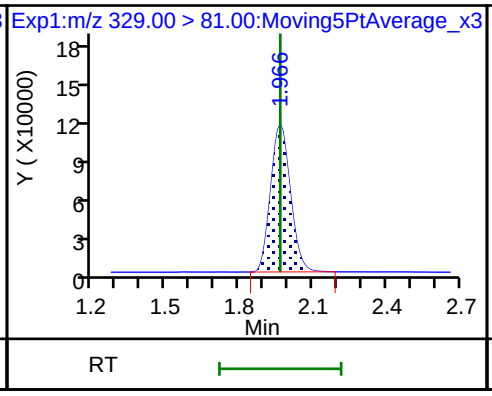
5 Perfluorobutanesulfonic acid



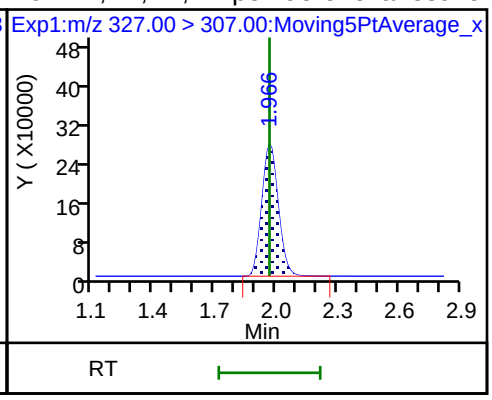
5 Perfluorobutanesulfonic acid



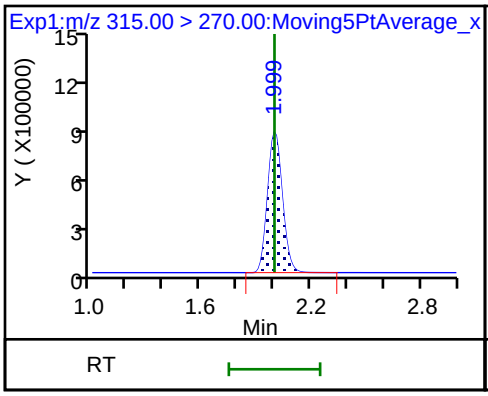
D 60 M2-4:2FTS



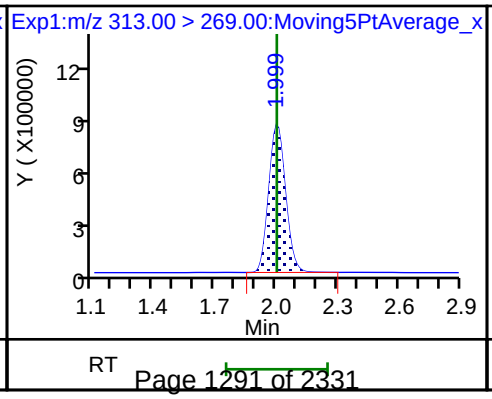
61 1H,1H,2H,2H-perfluorohexanesulfoni



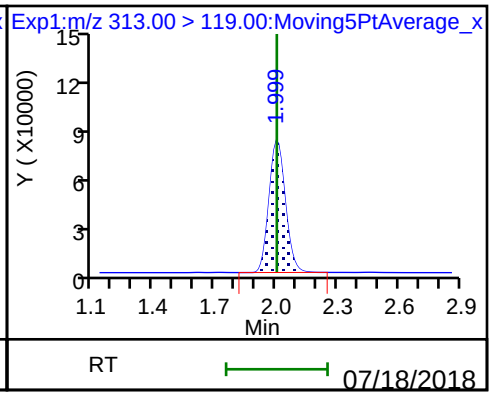
D 7 13C2 PFHxA



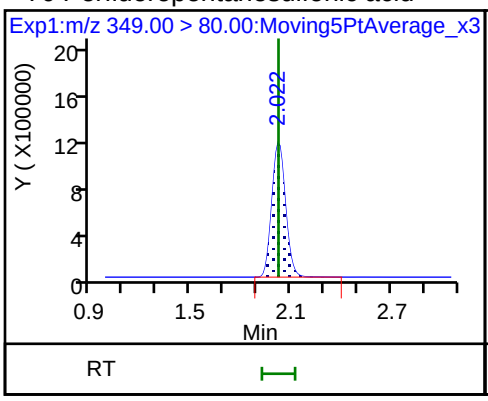
6 Perfluorohexanoic acid



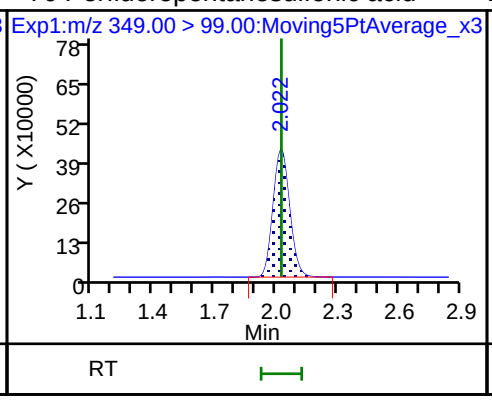
6 Perfluorohexanoic acid



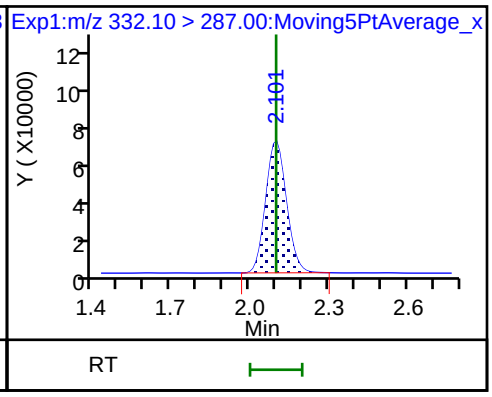
70 Perfluoropentanesulfonic acid



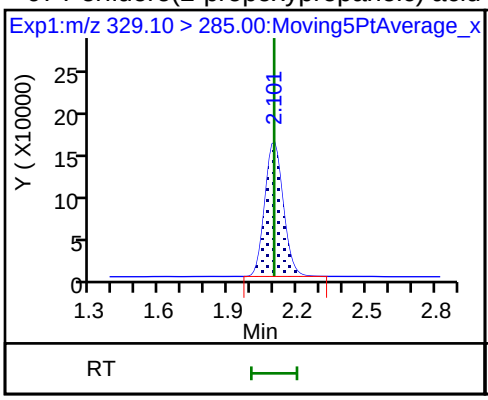
70 Perfluoropentanesulfonic acid



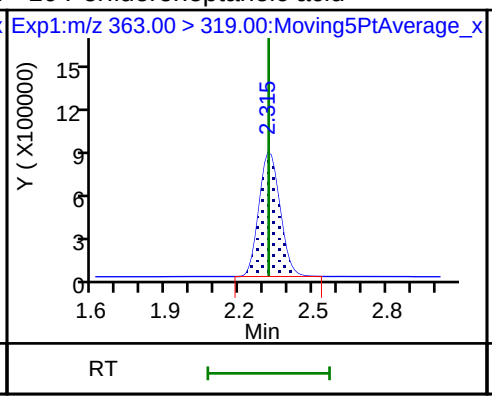
D 64 13C3 HFPO-DA



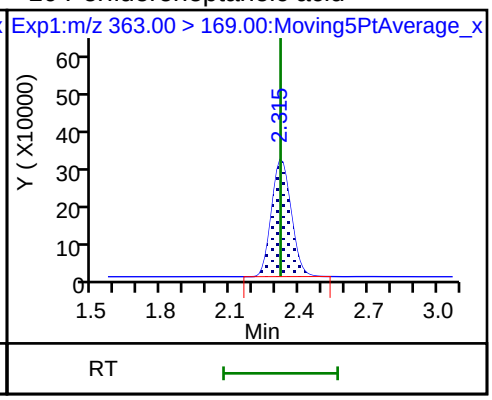
67 Perfluoro(2-propoxypropanoic) acid



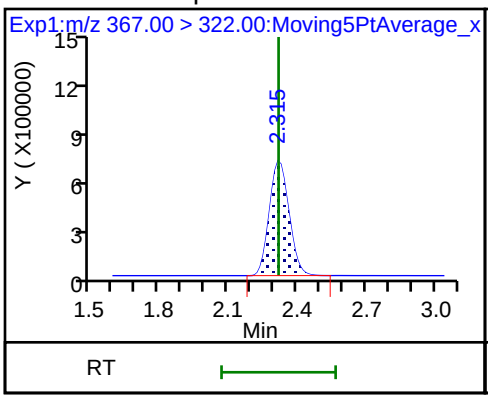
10 Perfluoroheptanoic acid



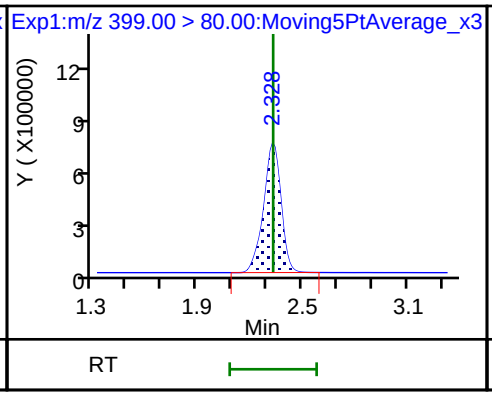
10 Perfluoroheptanoic acid



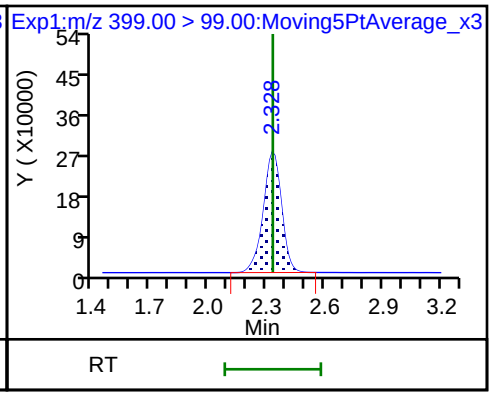
D 9 13C4-PFHpA



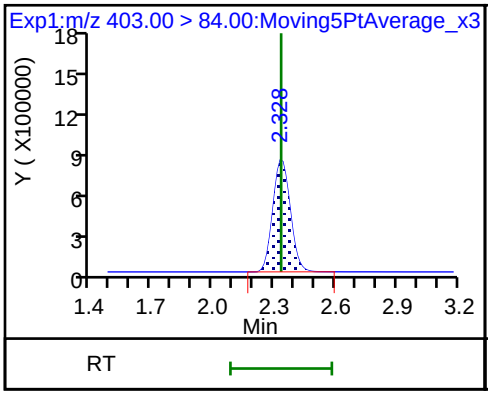
8 Perfluorohexanesulfonic acid



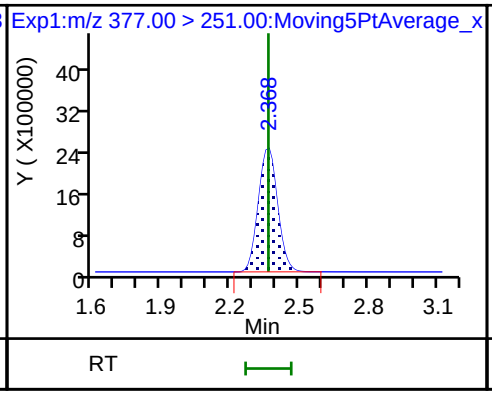
8 Perfluorohexanesulfonic acid



D 11 18O2 PFHxS



65 Adona



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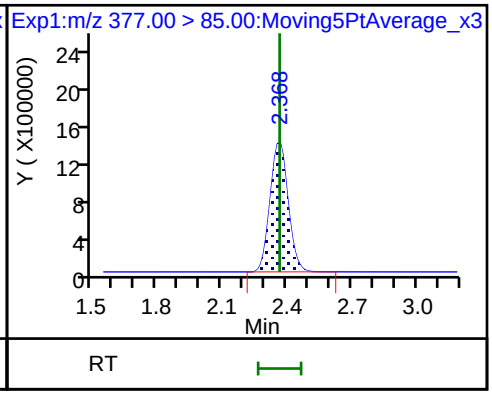
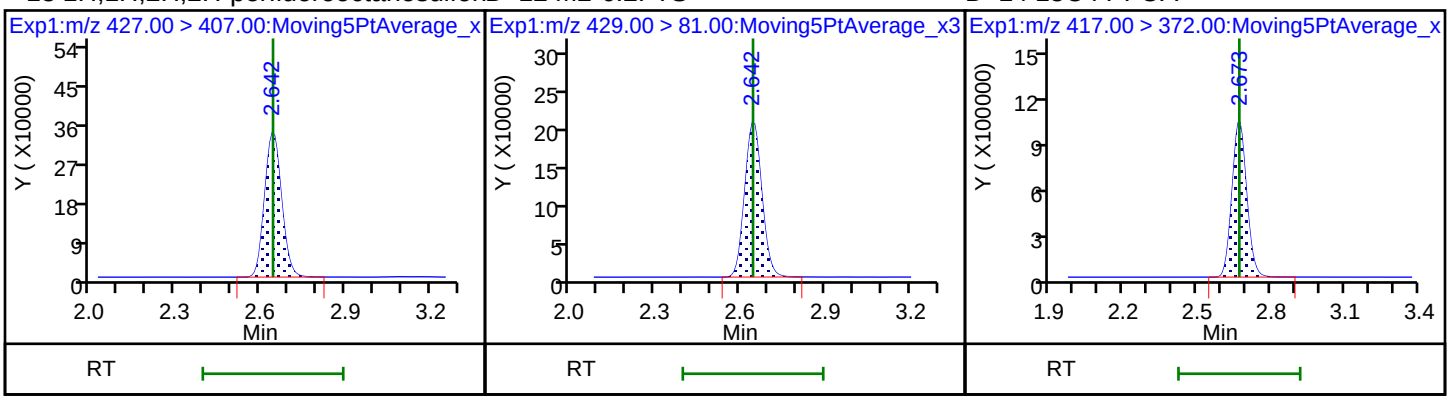
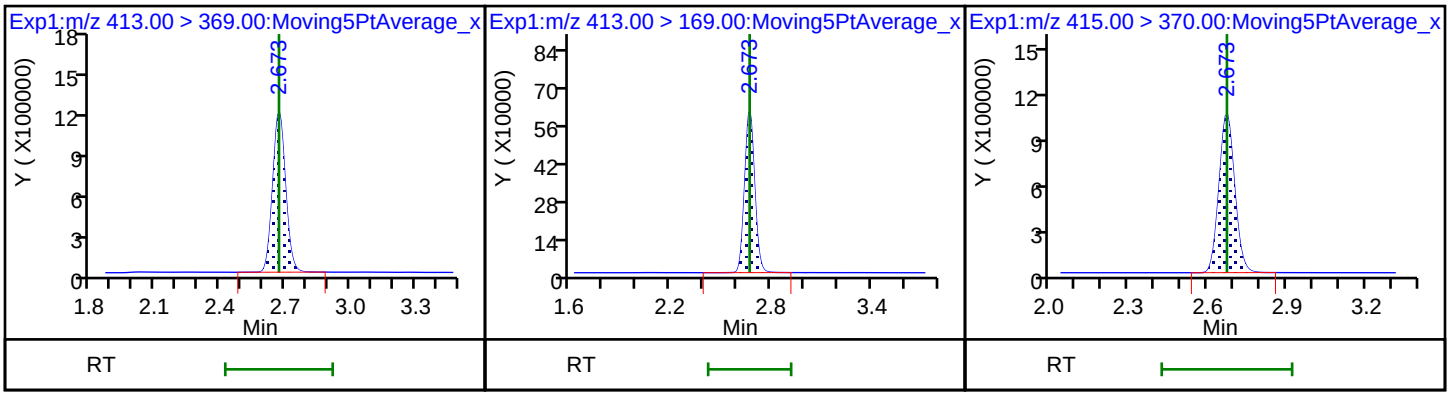


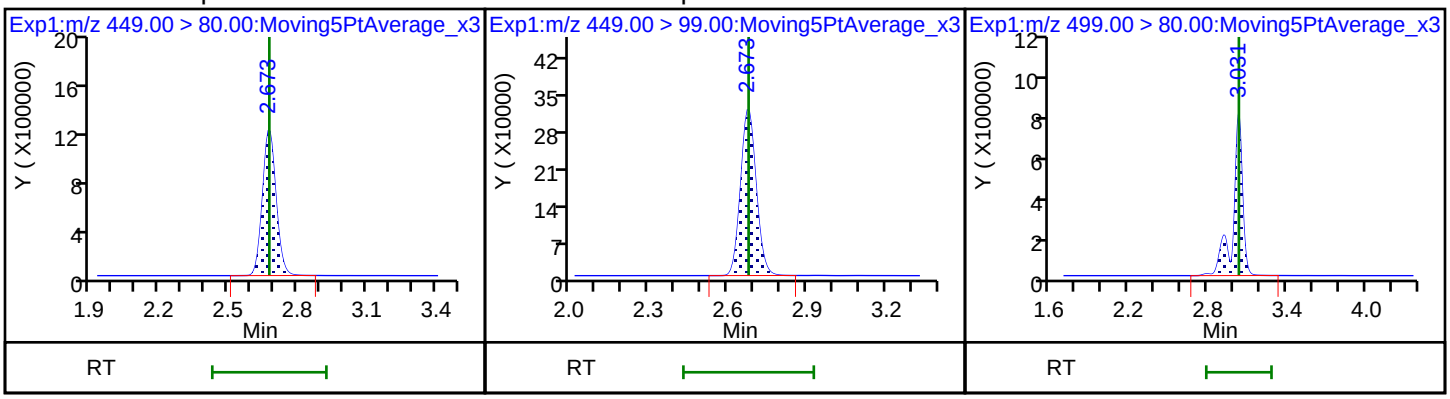
13 1H,1H,2H,2H-perfluorooctanesulfon D 12 M2-6:2FTS D 14 13C4 PFOA



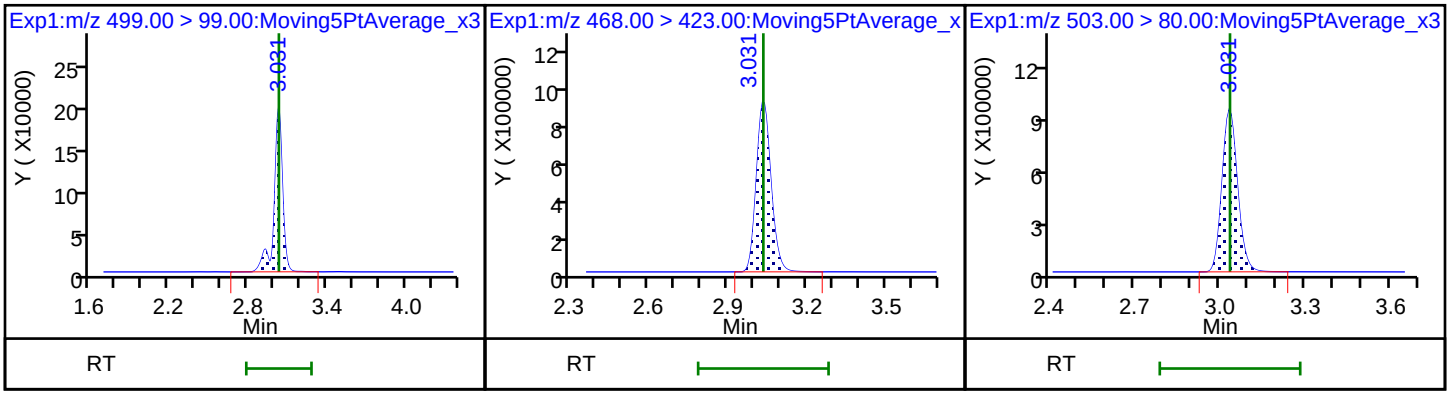
15 Perfluorooctanoic acid 15 Perfluorooctanoic acid * 62 13C2-PFOA



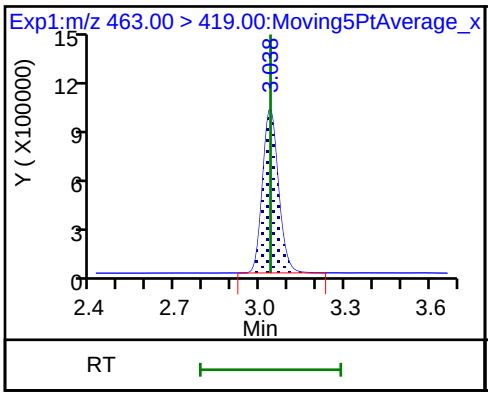
16 Perfluoroheptanesulfonic acid 16 Perfluoroheptanesulfonic acid 17 Perfluorooctane sulfonic acid



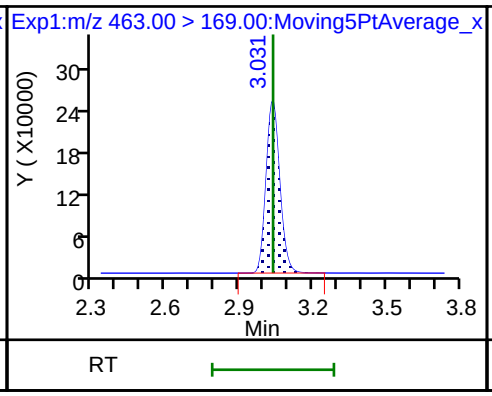
17 Perfluorooctane sulfonic acid D 19 13C5 PFNA D 18 13C4 PFOS



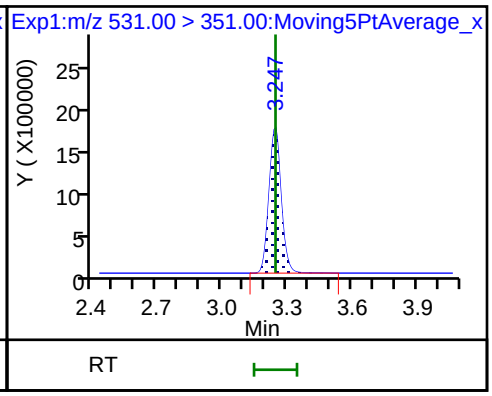
20 Perfluorononanoic acid



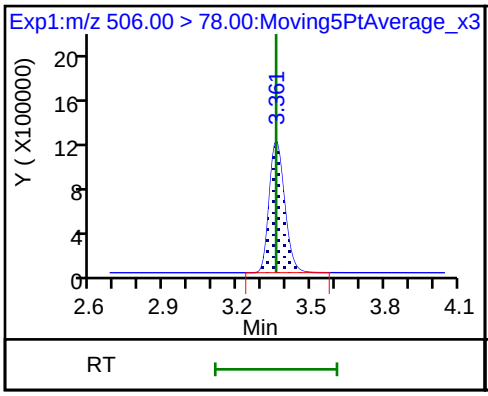
20 Perfluorononanoic acid



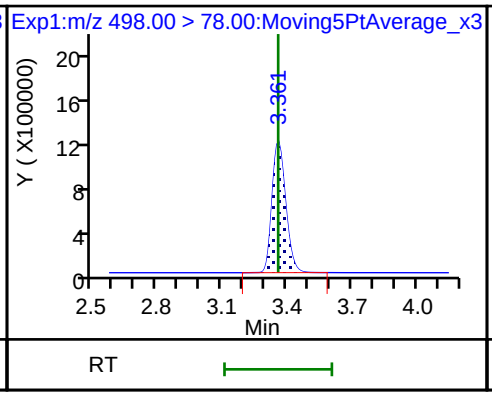
69 9-Chlorohexadecafluoro-3-oxanonane



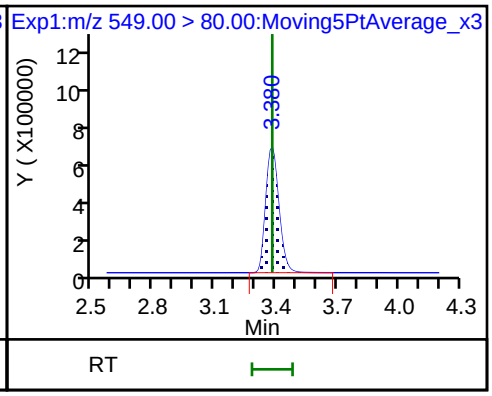
D 21 13C8 FOSA



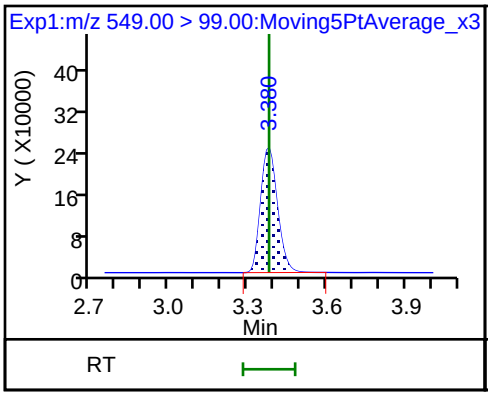
22 Perfluorooctane Sulfonamide



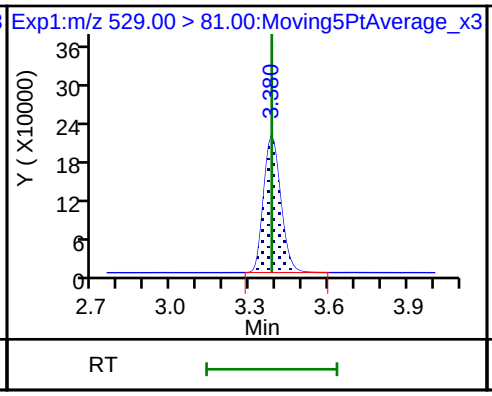
68 Perfluorononanesulfonic acid



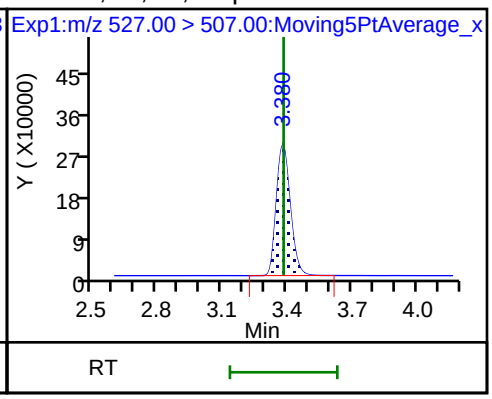
68 Perfluorononanesulfonic acid



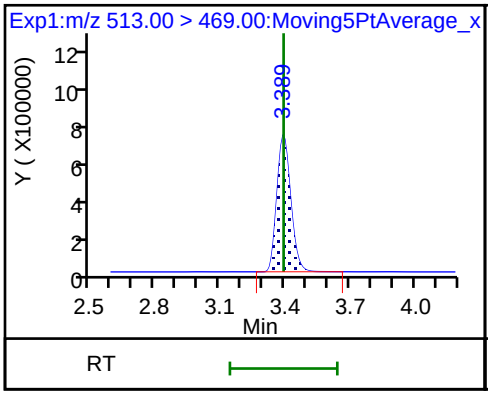
D 26 M2-8:2FTS



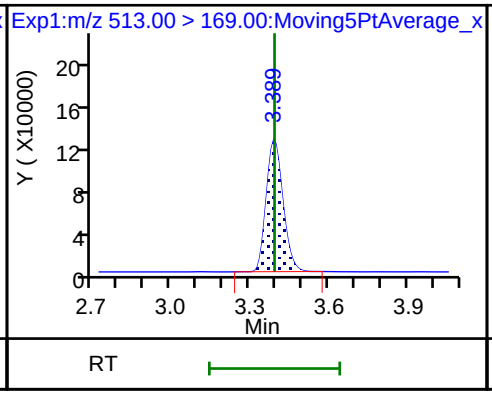
25 1H,1H,2H,2H-perfluorodecanesulfoni



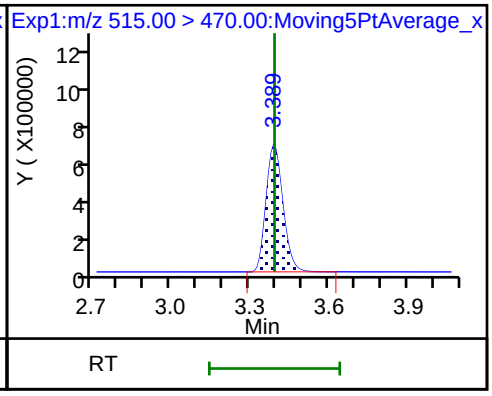
24 Perfluorodecanoic acid



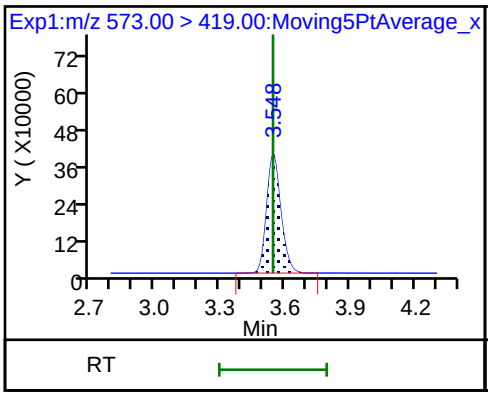
24 Perfluorodecanoic acid



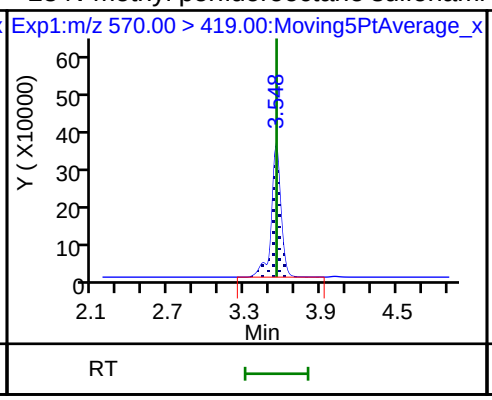
D 23 13C2 PFDA



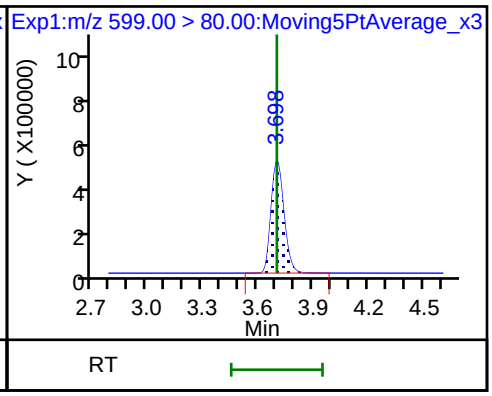
D 27 d3-NMeFOSAA



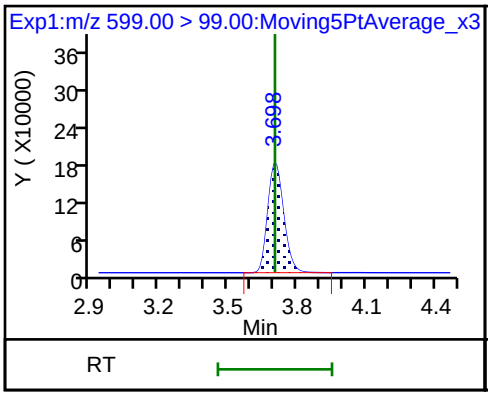
28 N-methyl perfluorooctane sulfonami



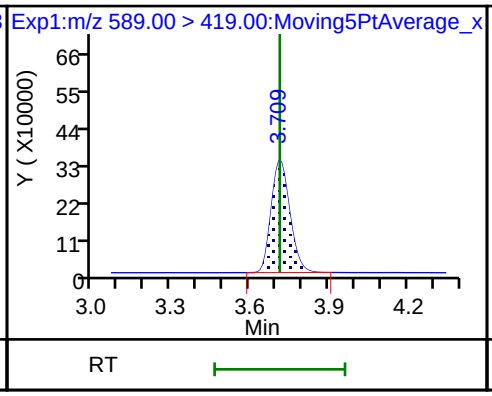
29 Perfluorodecane Sulfonic acid



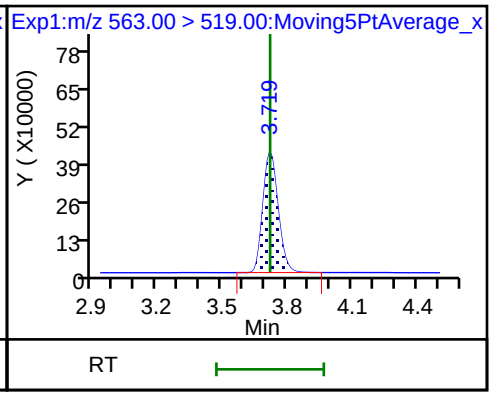
29 Perfluorodecane Sulfonic acid



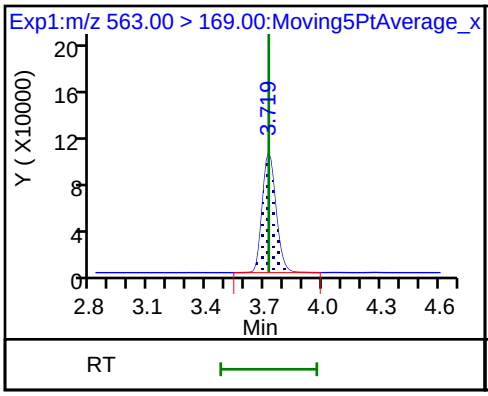
D 32 d5-NEtFOSAA



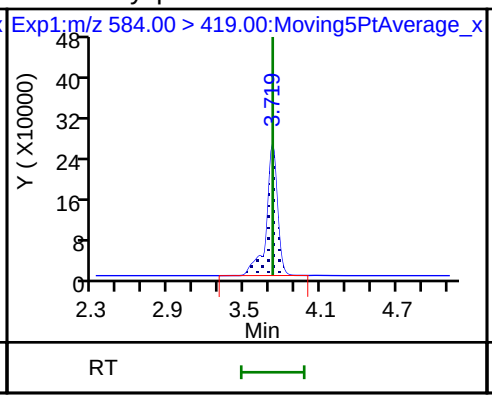
31 Perfluoroundecanoic acid



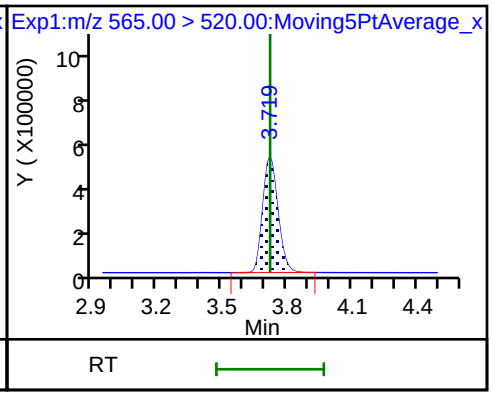
31 Perfluoroundecanoic acid



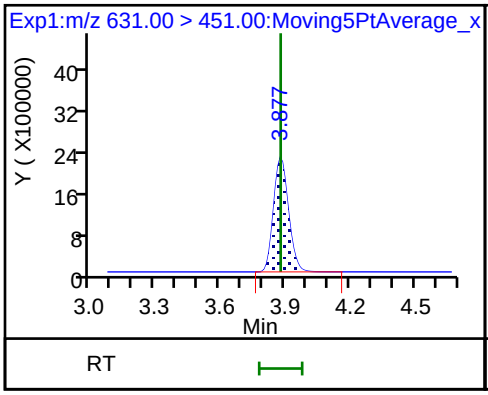
33 N-ethyl perfluorooctane sulfonamid



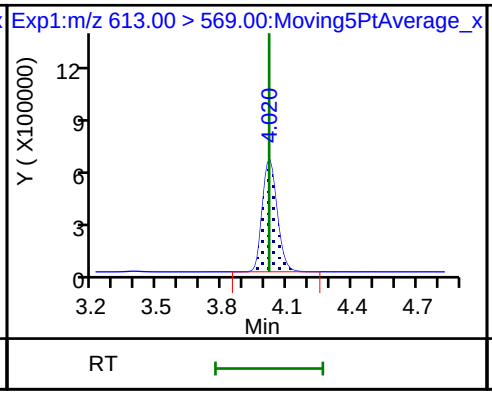
D 30 13C2 PFUnA



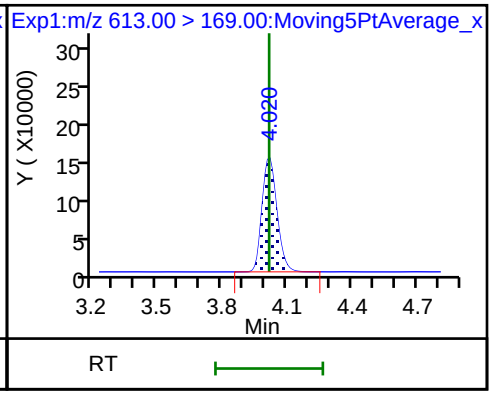
66 11-Chloroeicosafluoro-3-oxaundecan



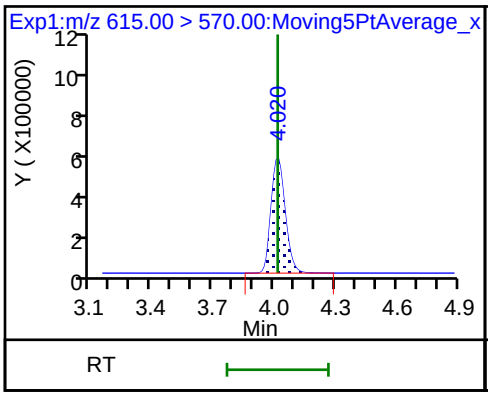
37 Perfluorododecanoic acid



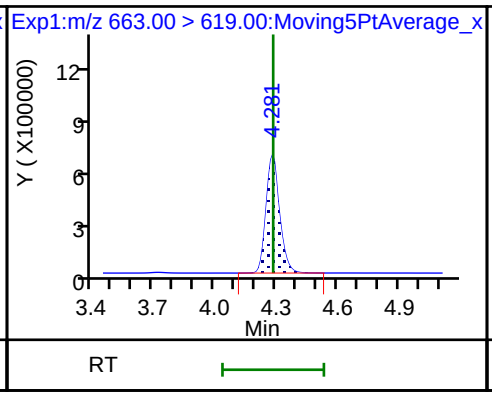
37 Perfluorododecanoic acid



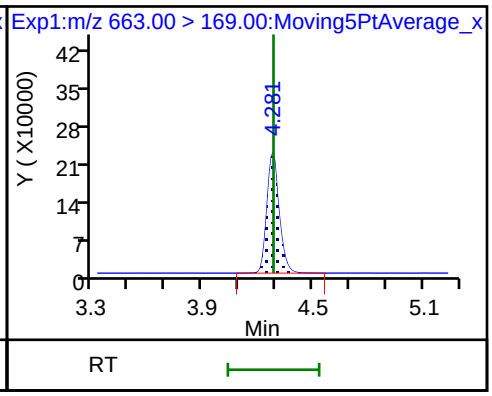
D 36 13C2 PFDoA



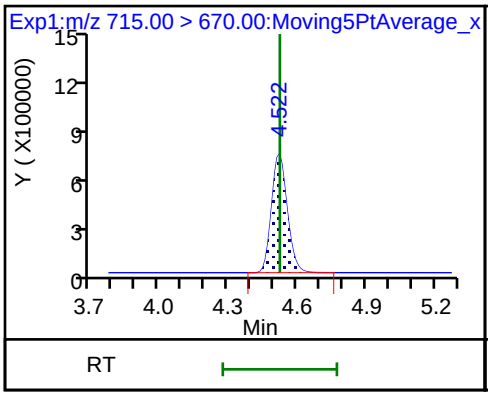
41 Perfluorotridecanoic acid



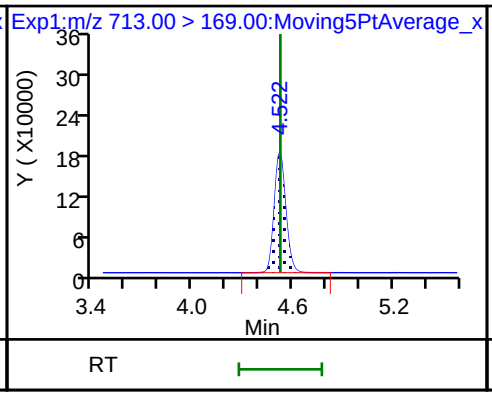
41 Perfluorotridecanoic acid



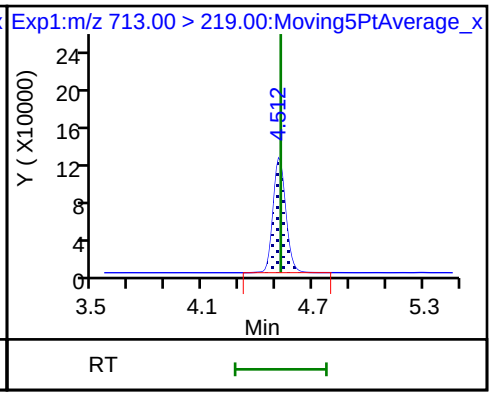
D 43 13C2-PFTeDA



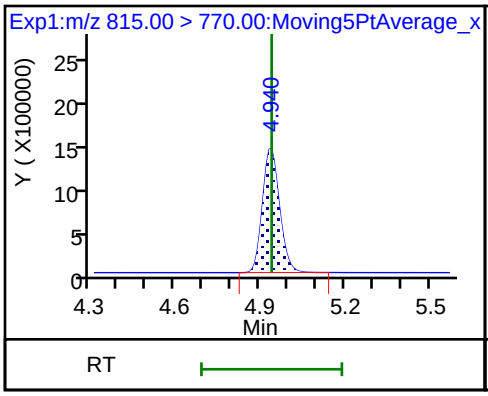
42 Perfluorotetradecanoic acid



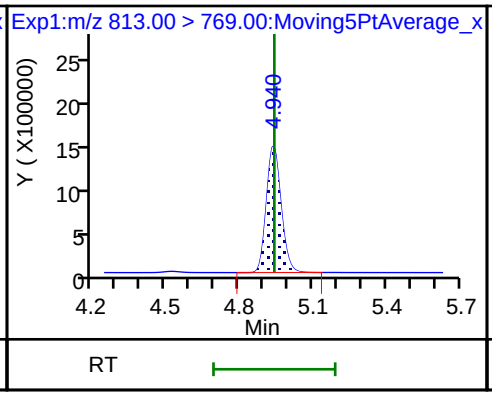
42 Perfluorotetradecanoic acid



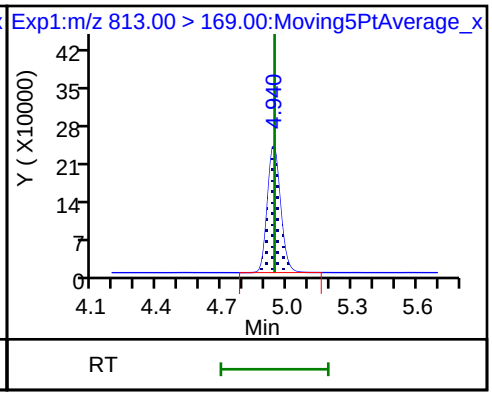
D 44 13C2-PFHxDA



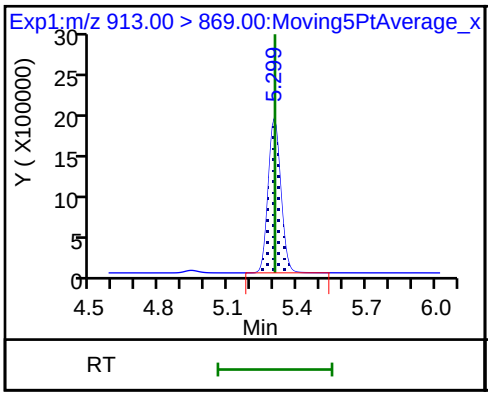
45 Perfluorohexadecanoic acid



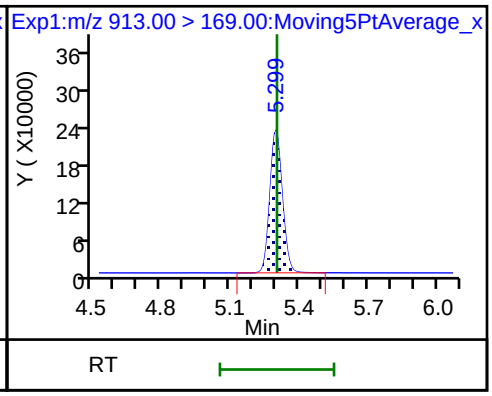
45 Perfluorohexadecanoic acid



46 Perfluorooctadecanoic acid



46 Perfluorooctadecanoic acid



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180705-60684.b\2018.07.05LLICALAA_007.d
Lims ID: IC L6 Full
Client ID:
Sample Type: IC Calib Level: 6
Inject. Date: 05-Jul-2018 09:30:26 ALS Bottle#: 15 Worklist Smp#: 7
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L6-FULL
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-A8_N*sub32

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180705-60684.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 05-Jul-2018 12:39:04 Calib Date: 05-Jul-2018 09:38:17
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180705-60684.b\2018.07.05LLICALAA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK035

First Level Reviewer: hannigana Date: 05-Jul-2018 12:13:44

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.430	1.432	-0.002	0.538	6096226	2.64		105	25217	
2 Perfluorobutyric acid										
212.90 > 169.00	1.430	1.434	-0.004	1.000	12195770	4.90		97.9	4892	
D 3 13C5-PFPeA										
267.90 > 223.00	1.712	1.716	-0.004	0.644	4432781	2.59		104	42235	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.712	1.719	-0.007	1.000	10524768	4.98		99.7	8133	
D 47 13C3-PFBS										
301.90 > 83.00	1.748	1.756	-0.008	0.657	101582	2.48		107	712	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.757	1.760	-0.003	1.005	14809613	4.47		101	77516	
298.90 > 99.00	1.757	1.760	-0.003	1.005	6061859		2.44(1.25-3.74)	101	52057	
D 60 M2-4:2FTS										
329.00 > 81.00	1.960	1.966	-0.006	0.737	591212	2.25		96.2	7157	
61 1H,1H,2H,2H-perfluorohexanesulfoni										
327.00 > 307.00	1.960	1.966	-0.006	1.122	3122682	4.56		97.6	114110	
D 7 13C2 PFHxA										
315.00 > 270.00	1.993	2.000	-0.007	0.749	4780842	2.61		104	66559	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.993	2.002	-0.009	1.000	9756155	5.01		100	17650	
313.00 > 119.00	1.993	2.002	-0.009	1.000	902574		10.81(5.03-15.10)	100	16003	
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.016	2.025	-0.009	1.153	12984575	4.58		97.7	85664	
349.00 > 99.00	2.016	2.025	-0.009	1.153	4919724		2.64(1.36-4.07)	97.7	48815	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.095	2.099	-0.004	0.788	368208	2.45		98.1	6770	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
67 Perfluoro(2-propoxypropanoic) acid										
329.10 > 285.00	2.095	2.099	-0.004	1.000	1939946	5.73		115	14121	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.308	2.318	-0.010	1.000	9666111	5.27		105	10537	
363.00 > 169.00	2.308	2.318	-0.010	1.000	3511245		2.75(1.13-3.40)	105	17981	
D 9 13C4-PFHpA										
367.00 > 322.00	2.308	2.318	-0.010	0.868	4055763	2.49		99.8	40046	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.321	2.331	-0.010	0.994	10377680	4.47		98.3	21956	
399.00 > 99.00	2.321	2.331	-0.010	0.994	3539108		2.93(1.50-4.49)	98.3	13906	
D 11 18O2 PFHxS										
403.00 > 84.00	2.334	2.333	0.001	0.877	4746316	2.37		100	47026	
65 Adona										
377.00 > 251.00	2.360	2.365	-0.005	0.779	24778537	4.58		97.3	109531	
377.00 > 85.00	2.360	2.365	-0.005	0.779	16134482		1.54(0.84-2.53)	97.3	51266	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.636	2.645	-0.009	1.000	2772705	4.74		99.9	15793	
D 12 M2-6:2FTS										
429.00 > 81.00	2.636	2.645	-0.009	0.991	887494	2.43		102	15164	
D 14 13C4 PFOA										
417.00 > 372.00	2.660	2.670	-0.010	1.000	3996804	2.51		100	39848	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.667	2.671	-0.004	1.003	9816387	5.18		103	4189	
413.00 > 169.00	2.667	2.671	-0.004	1.003	5189971		1.89(0.84-2.52)	103	19053	
* 62 13C2-PFOA										
415.00 > 370.00	2.660	2.671	-0.011		4175058	2.50			40390	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.667	2.678	-0.011	0.881	9359028	4.79		101	33235	
449.00 > 99.00	2.667	2.678	-0.011	0.881	2563857		3.65(1.94-5.82)	101	38695	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.028	3.034	-0.006	1.000	8047965	4.72		102	43056	
499.00 > 99.00	3.028	3.034	-0.006	1.000	1802235		4.47(2.31-6.93)	102	22880	
D 19 13C5 PFNA										
468.00 > 423.00	3.028	3.034	-0.006	1.138	3391733	2.50		100	34358	
D 18 13C4 PFOS										
503.00 > 80.00	3.028	3.034	-0.006	1.138	3487989	2.44		102	21787	
20 Perfluorononanoic acid										
463.00 > 419.00	3.028	3.036	-0.008	1.000	7864000	5.38		108	14690	
463.00 > 169.00	3.028	3.036	-0.008	1.000	1959106		4.01(1.90-5.69)	108	34383	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.236	3.246	-0.010	1.069	13107538	4.75		102	123913	
D 21 13C8 FOSA										
506.00 > 78.00	3.347	3.357	-0.010	1.258	5147225	2.60		104	47884	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.355	3.358	-0.003	1.003	10065471	4.93		98.6	35100	
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.374	3.379	-0.005	1.114	5733386	4.83		101	44981	
549.00 > 99.00	3.365	3.379	-0.014	1.111	2200645		2.61(1.33-3.97)	101	62707	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 26 M2-8:2FTS										
529.00 > 81.00	3.374	3.382	-0.008	1.268	933375	2.30		96.0	16152	
25 1H,1H,2H,2H-perfluorodecanesulfoni										
527.00 > 507.00	3.374	3.383	-0.009	1.000	2540408	4.93		103	44247	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.383	3.393	-0.010	1.000	6282630	5.07		101	19079	
513.00 > 169.00	3.383	3.393	-0.010	1.000	1061497		5.92(2.36-7.09)	101	18336	
D 23 13C2 PFDA										
515.00 > 470.00	3.383	3.393	-0.010	1.272	2973033	2.55		102	33594	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.533	3.543	-0.010	1.328	1780322	2.59		104	35346	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.542	3.551	-0.009	1.003	3622994	4.94		98.9	20880	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.690	3.702	-0.012	1.219	5394731	5.14		107	43279	
599.00 > 99.00	3.690	3.702	-0.012	1.219	1694363		3.18(1.39-4.16)	107	43713	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.700	3.713	-0.013	1.391	1673669	2.46		98.5	12091	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.711	3.721	-0.010	1.000	3978902	4.69		93.8	13217	
563.00 > 169.00	3.711	3.721	-0.010	1.000	991567		4.01(2.12-6.36)	93.8	18589	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.711	3.721	-0.010	1.003	3122896	5.17		103	35346	
D 30 13C2 PFUnA										
565.00 > 520.00	3.711	3.721	-0.010	1.395	2494182	2.54		102	28595	
66 11-Chloroeicosafluoro-3-oxaundecan										
631.00 > 451.00	3.869	3.879	-0.010	1.278	19298262	4.58		97.3	137975	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.010	4.016	-0.006	1.000	5843687	5.11		102	5972	
613.00 > 169.00	4.010	4.016	-0.006	1.000	1393765		4.19(2.13-6.40)	102	24318	
D 36 13C2 PFDoA										
615.00 > 570.00	4.010	4.016	-0.006	1.508	2595125	2.47		98.8	13994	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.273	4.284	-0.011	1.066	6359926	4.99		99.8	6383	
663.00 > 169.00	4.273	4.284	-0.011	1.066	1946731		3.27(1.25-3.76)	99.8	24940	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.513	4.524	-0.011	1.697	3317852	2.59		104	14664	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.513	4.524	-0.011	1.000	1703041	4.74		94.8	18934	
713.00 > 219.00	4.503	4.524	-0.021	0.998	1188914		1.43(0.71-2.13)	94.8	12370	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.932	4.940	-0.008	1.854	6127474	2.58		103	12963	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.932	4.941	-0.009	1.000	11482097	4.91		98.2	4395	
813.00 > 169.00	4.932	4.941	-0.009	1.000	2014785		5.70(2.86-8.58)	98.2	10907	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.292	5.302	-0.010	1.073	14547117	5.10		102	3597	
913.00 > 169.00	5.285	5.302	-0.017	1.071	1905404		7.63(3.83-11.48)	102	9842	

Reagents:

LCPFC_LL6_00006 Amount Added: 1.00 Units: mL

Report Date: 05-Jul-2018 12:39:06 Chrom Revision: 2.2 07-Jun-2018 07:41:54

TestAmerica Sacramento

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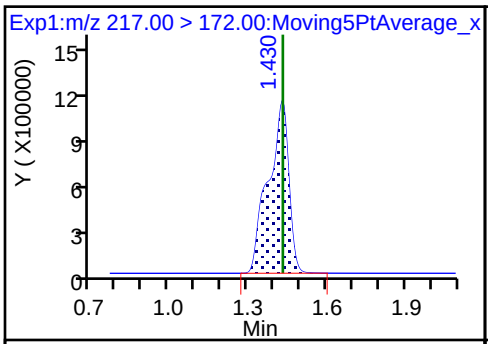
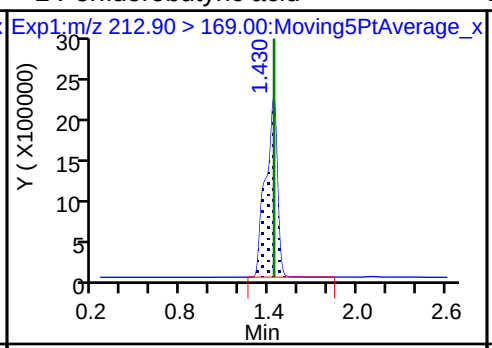
Injection Date: 05-Jul-2018 09:30:26 Instrument ID: A8_N
Lims ID: IC L6 Full
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 15 Worklist Smp#: 7
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC ICAL

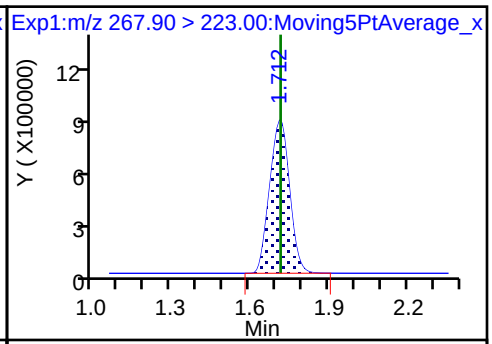
D 1 13C4 PFBA



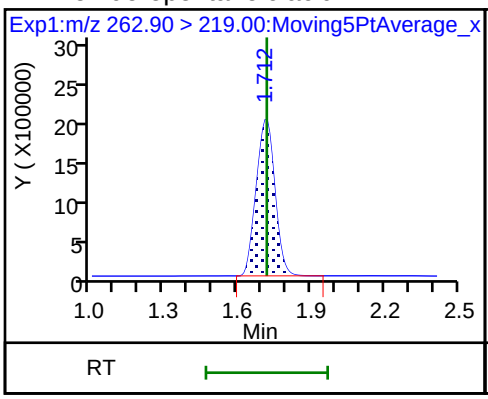
2 Perfluorobutyric acid



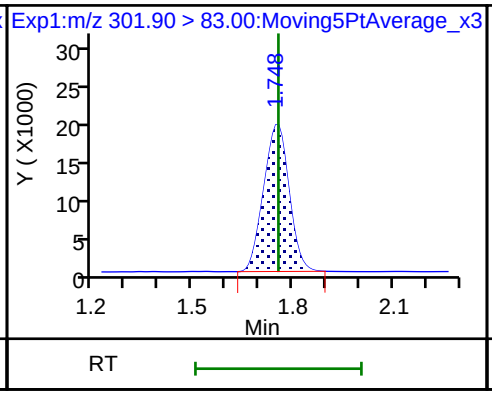
D 3 13C5-PFPeA



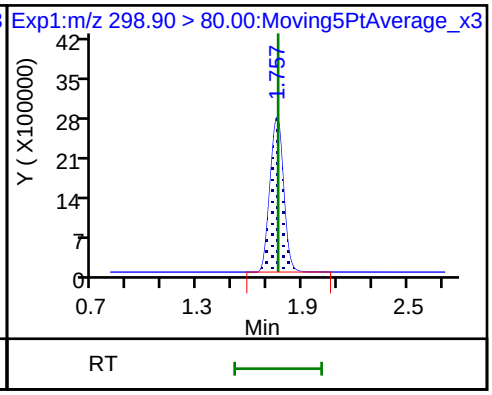
4 Perfluoropentanoic acid



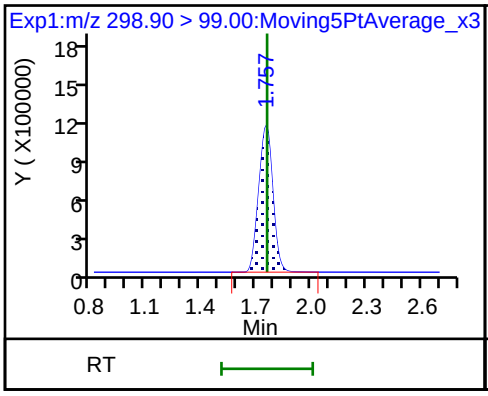
D 47 13C3-PFBS



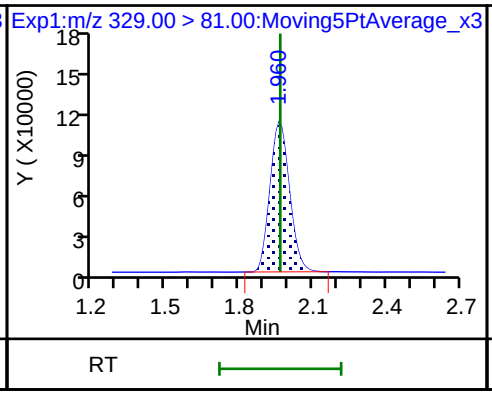
5 Perfluorobutanesulfonic acid



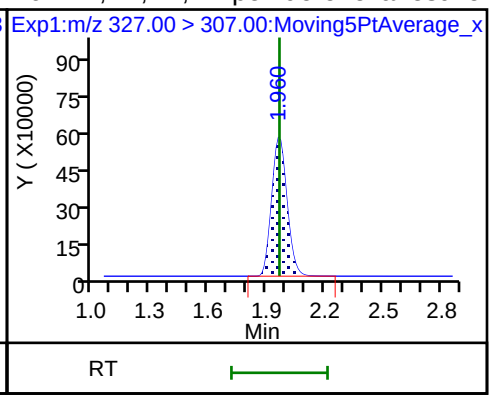
5 Perfluorobutanesulfonic acid



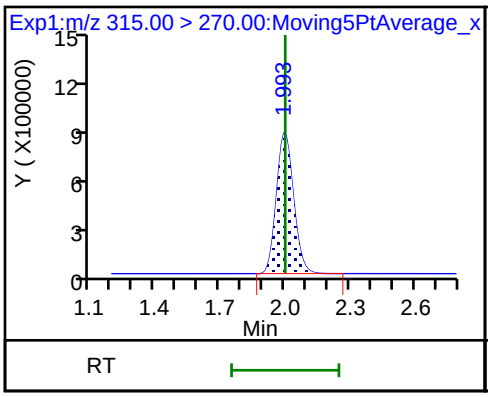
D 60 M2-4:2FTS



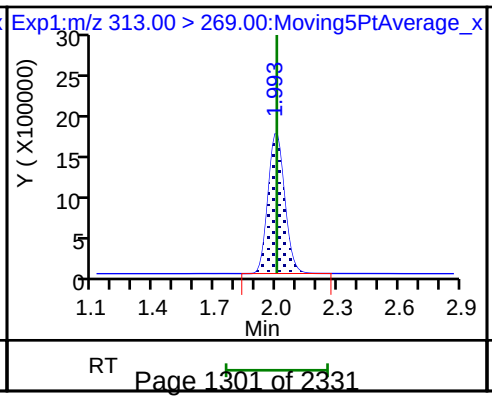
61 1H,1H,2H,2H-perfluorohexanesulfoni



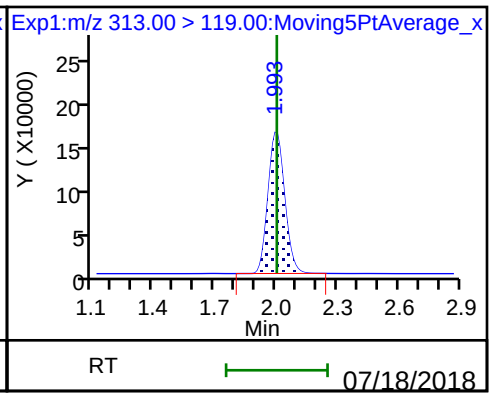
D 7 13C2 PFHxA



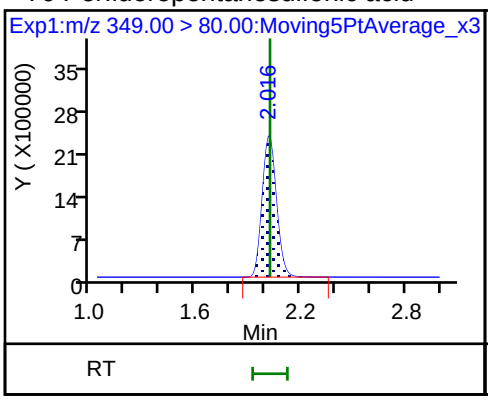
6 Perfluorohexanoic acid



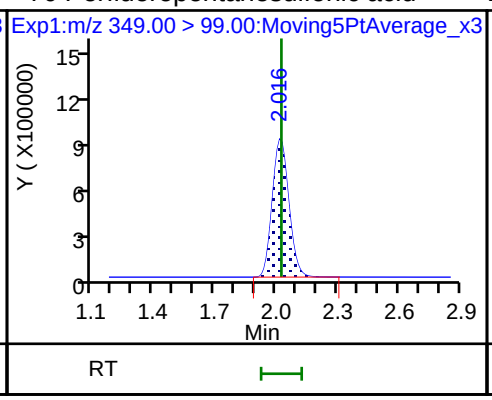
6 Perfluorohexanoic acid



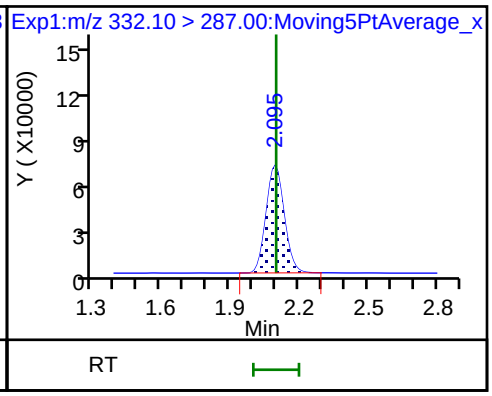
70 Perfluoropentanesulfonic acid



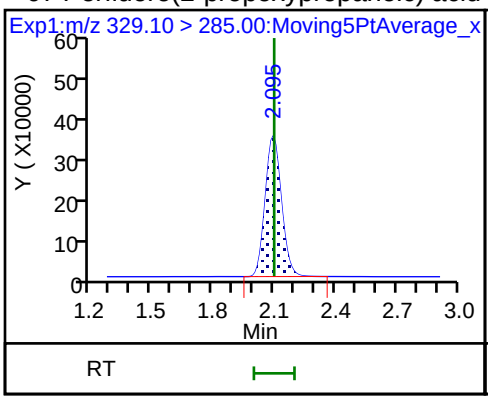
70 Perfluoropentanesulfonic acid



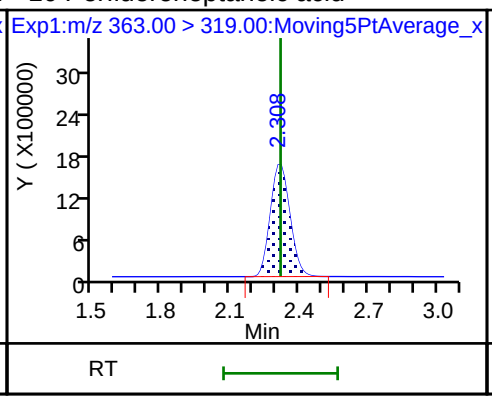
D 64 13C3 HFPO-DA



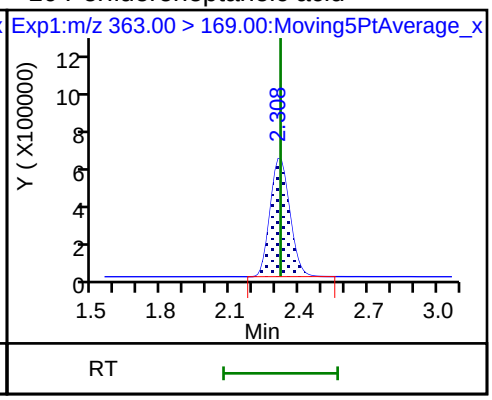
67 Perfluoro(2-propoxypropanoic) acid



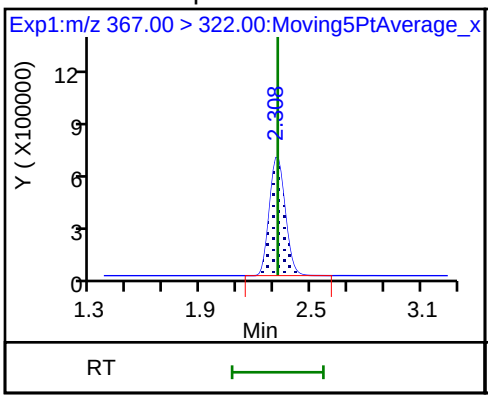
10 Perfluoroheptanoic acid



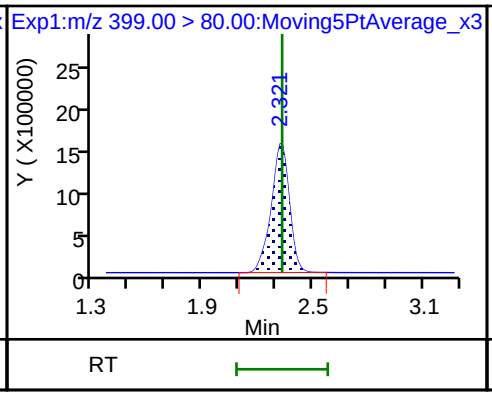
10 Perfluoroheptanoic acid



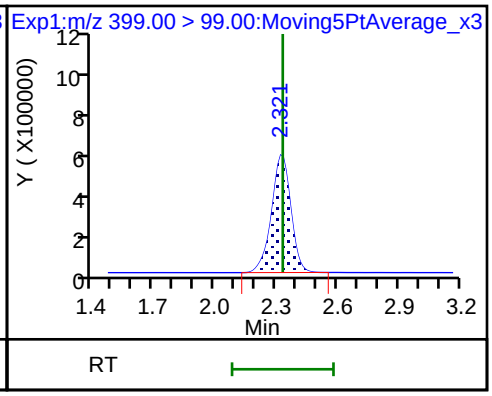
D 9 13C4-PFHpA



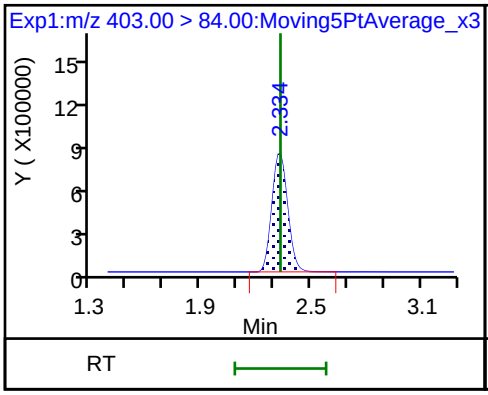
8 Perfluorohexanesulfonic acid



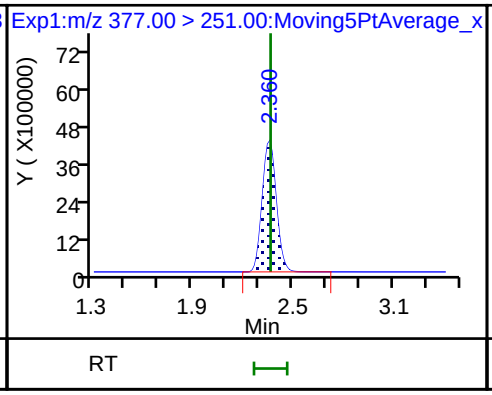
8 Perfluorohexanesulfonic acid



D 11 18O2 PFHxS



65 Adona



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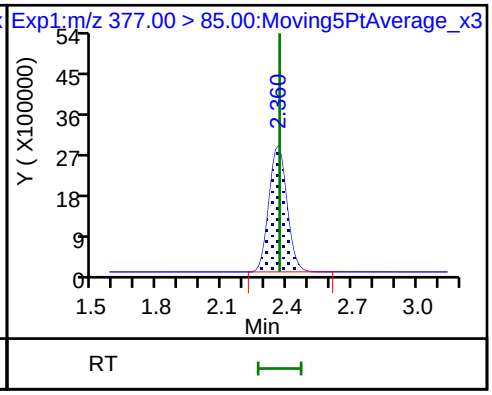
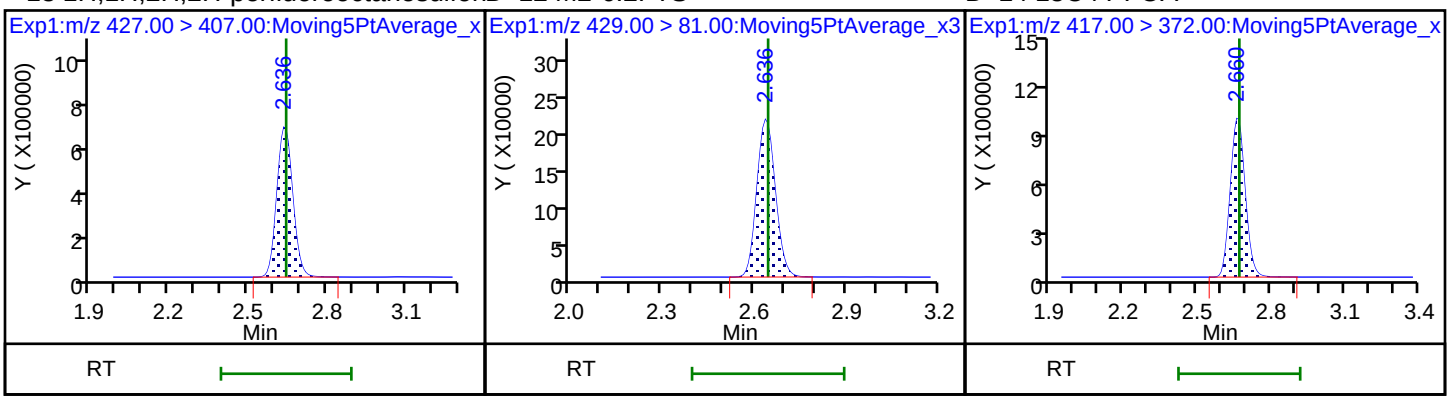
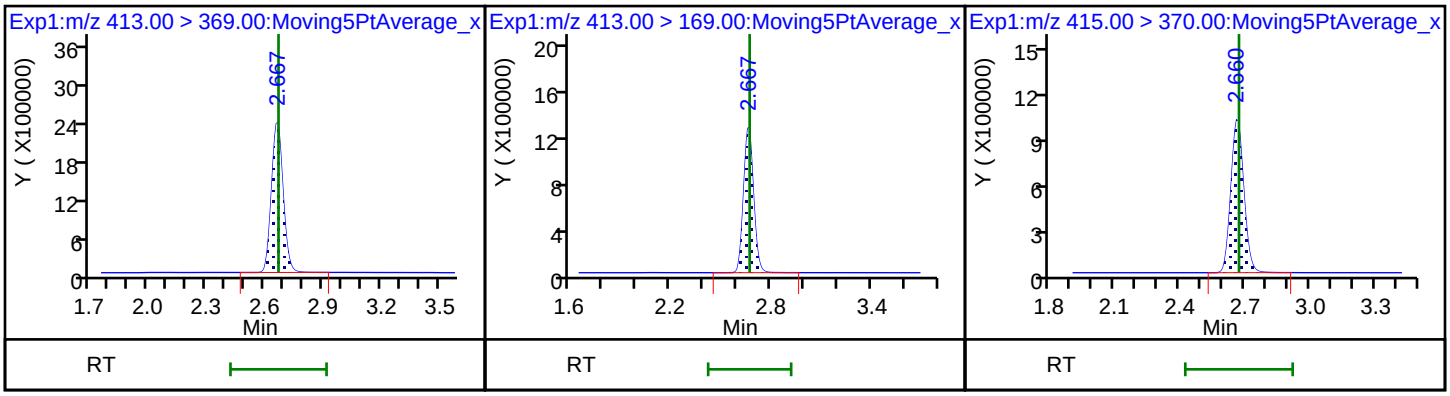


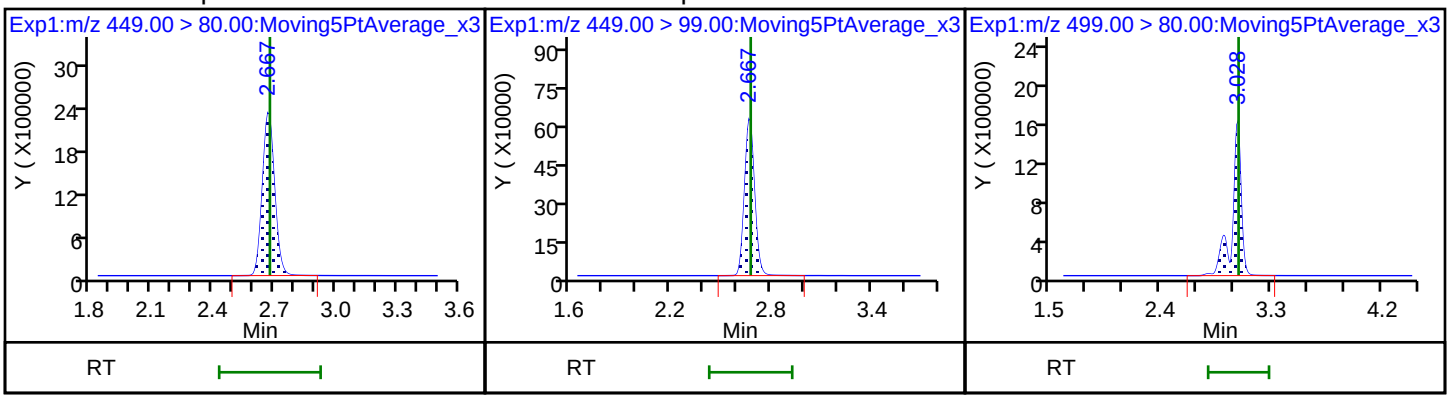
13 1H,1H,2H,2H-perfluorooctanesulfonD 12 M2-6:2FTS D 14 13C4 PFOA



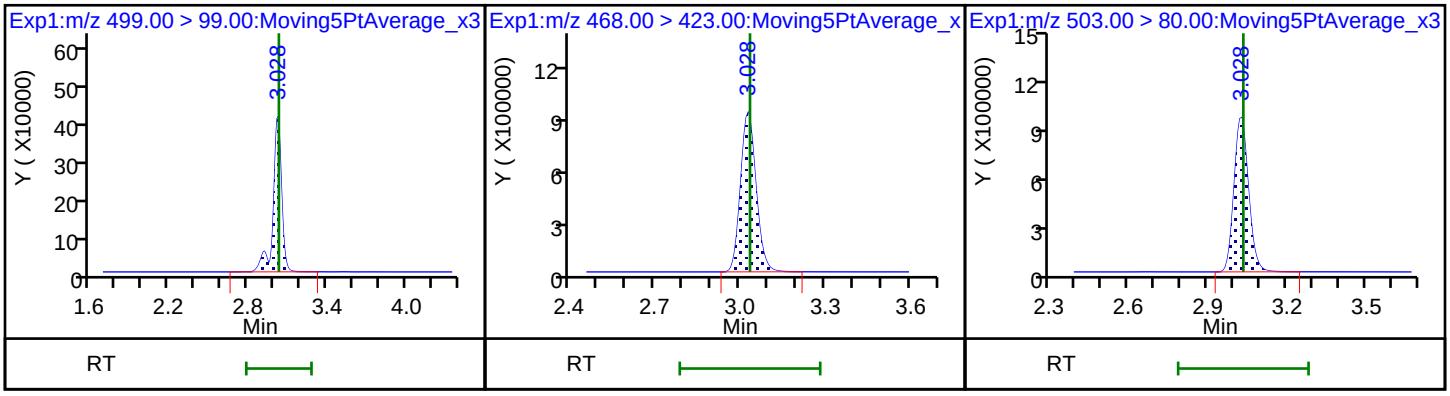
15 Perfluorooctanoic acid 15 Perfluorooctanoic acid * 62 13C2-PFOA



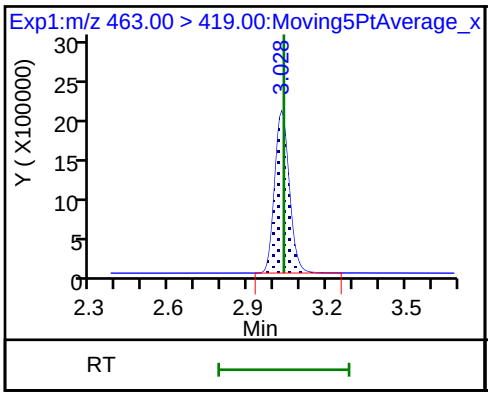
16 Perfluoroheptanesulfonic acid 16 Perfluoroheptanesulfonic acid 17 Perfluorooctane sulfonic acid



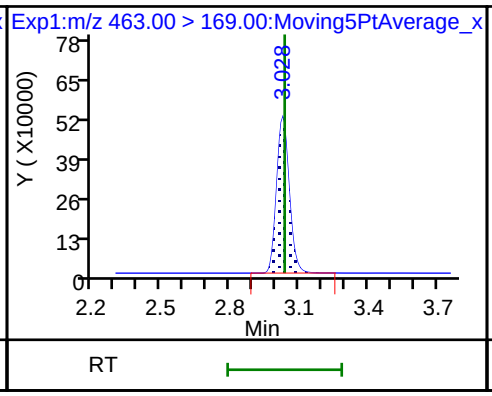
17 Perfluorooctane sulfonic acid D 19 13C5 PFNA D 18 13C4 PFOS



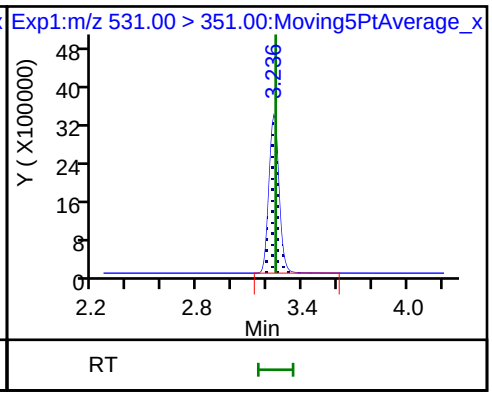
20 Perfluorononanoic acid



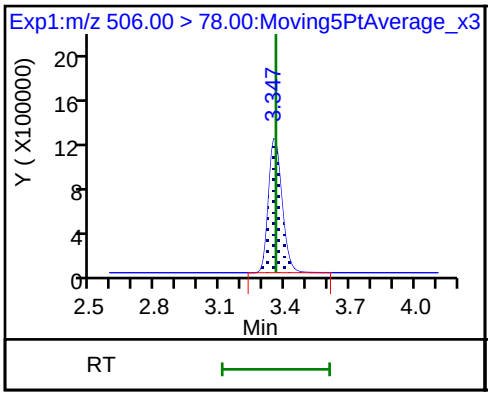
20 Perfluorononanoic acid



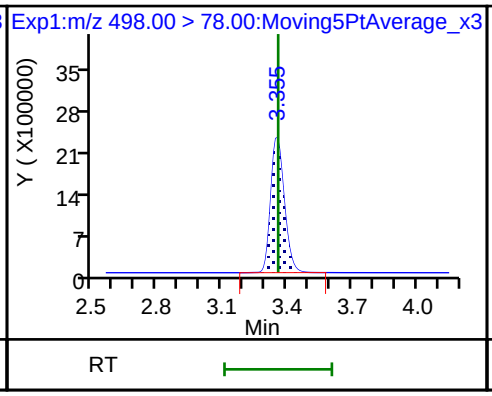
69 9-Chlorohexadecafluoro-3-oxanonane



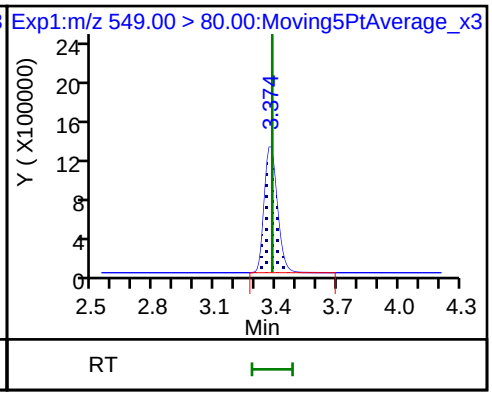
D 21 13C8 FOSA



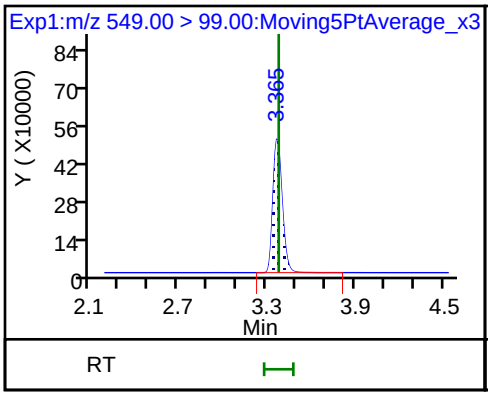
22 Perfluorooctane Sulfonamide



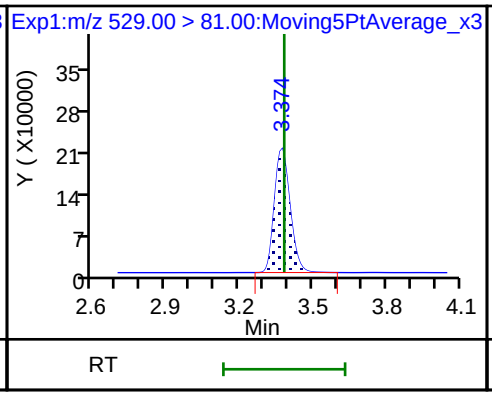
68 Perfluorononanesulfonic acid



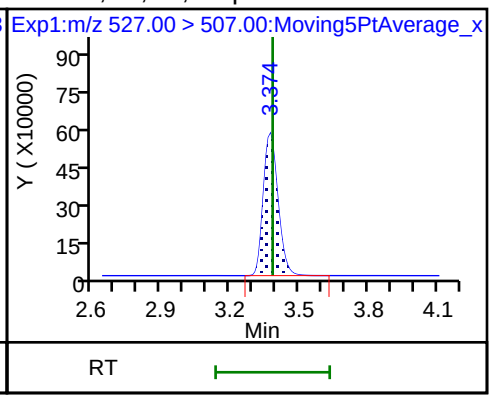
68 Perfluorononanesulfonic acid



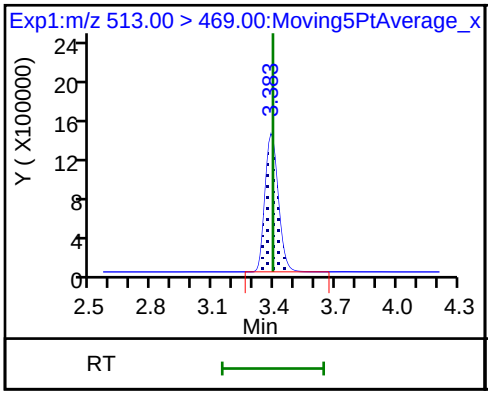
D 26 M2-8:2FTS



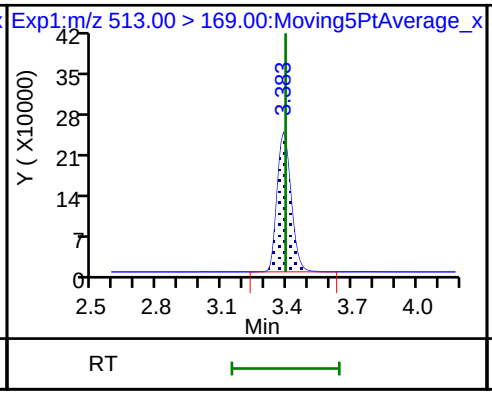
25 1H,1H,2H,2H-perfluorodecanesulfoni



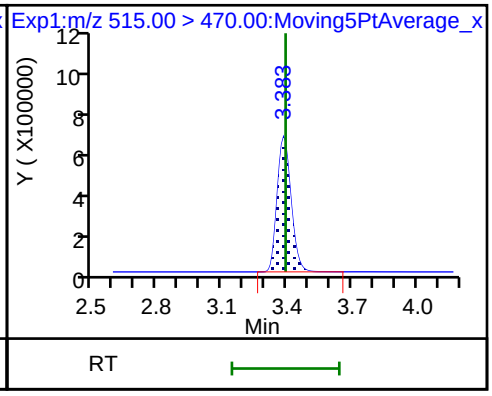
24 Perfluorodecanoic acid



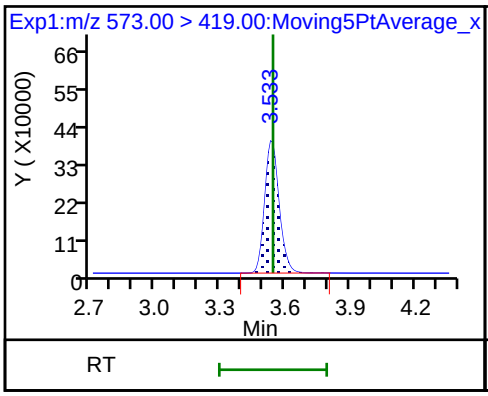
24 Perfluorodecanoic acid



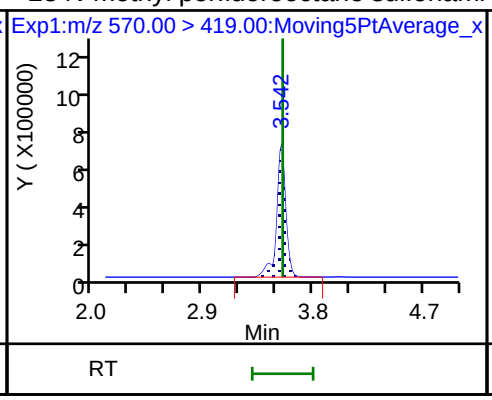
D 23 13C2 PFDA



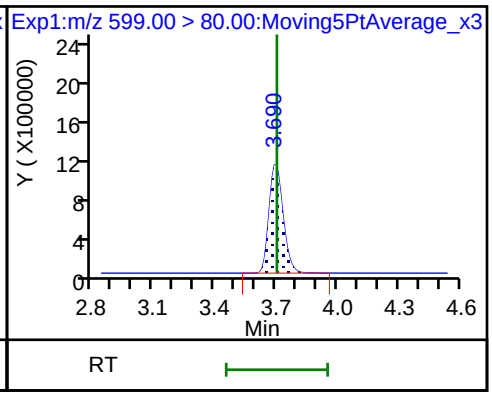
D 27 d3-NMeFOSAA



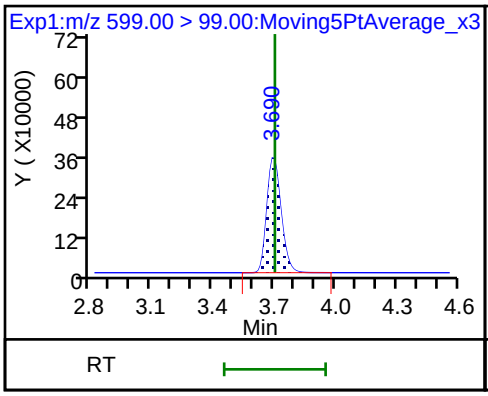
28 N-methyl perfluorooctane sulfonami



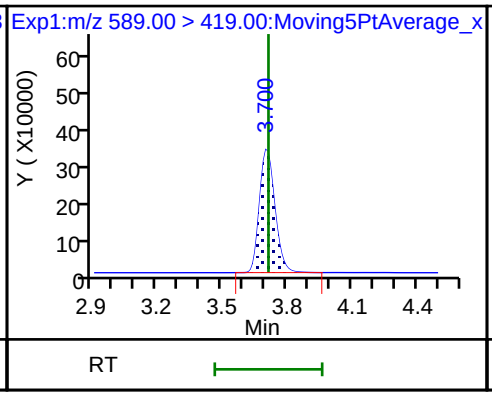
29 Perfluorodecane Sulfonic acid



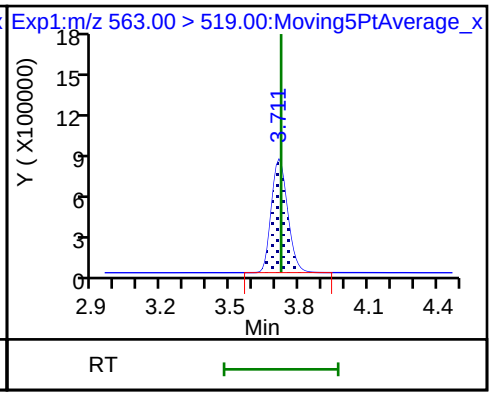
29 Perfluorodecane Sulfonic acid



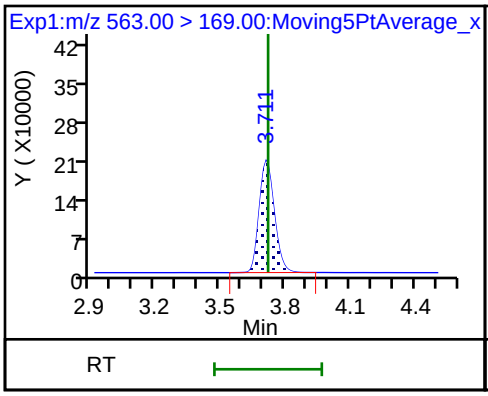
D 32 d5-NEtFOSAA



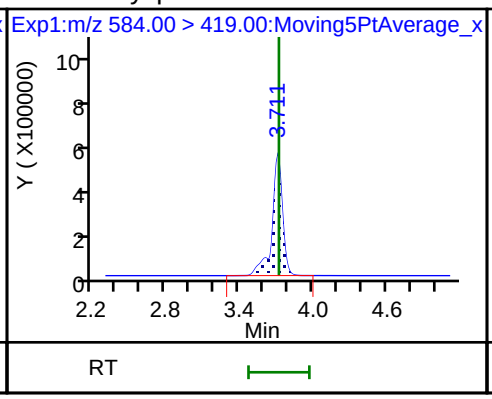
31 Perfluoroundecanoic acid



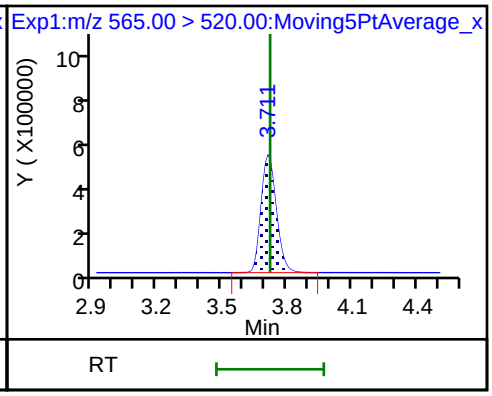
31 Perfluoroundecanoic acid



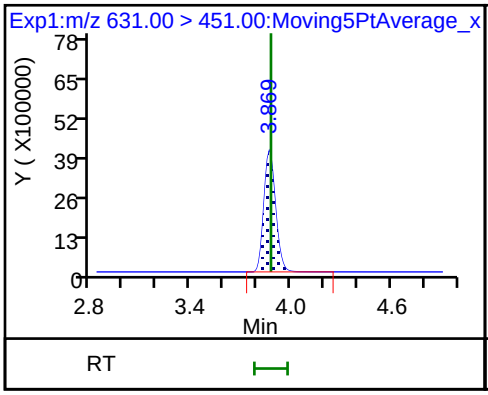
33 N-ethyl perfluorooctane sulfonamid



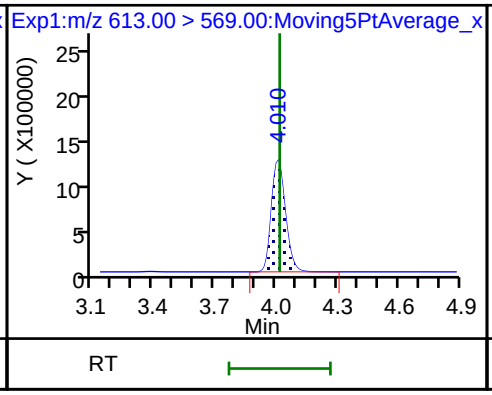
D 30 13C2 PFUnA



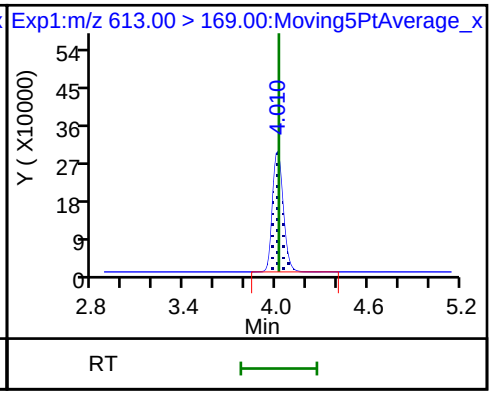
66 11-Chloroeicosafluoro-3-oxaundecan



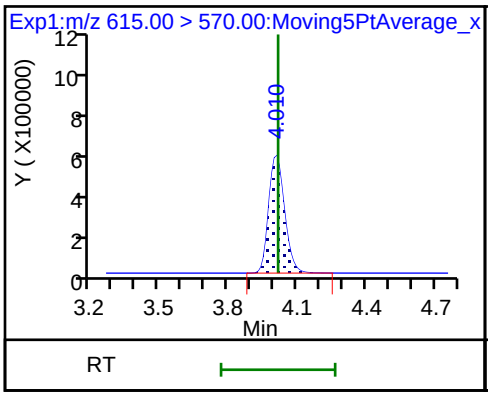
37 Perfluorododecanoic acid



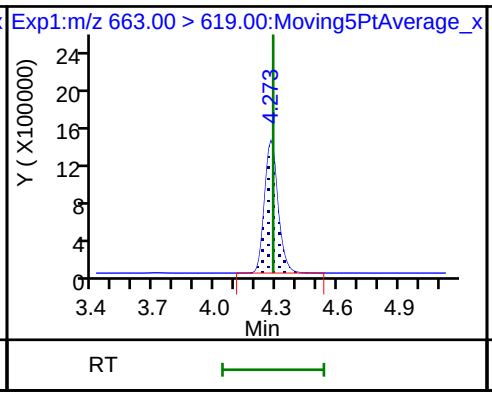
37 Perfluorododecanoic acid



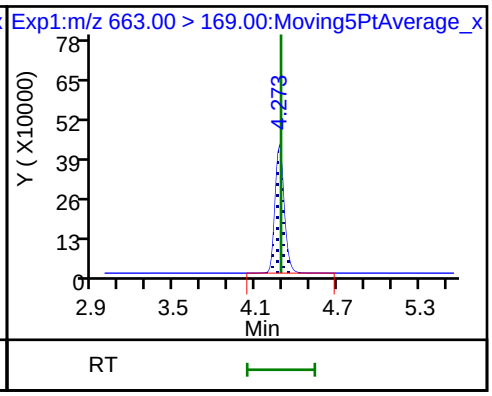
D 36 13C2 PFDoA



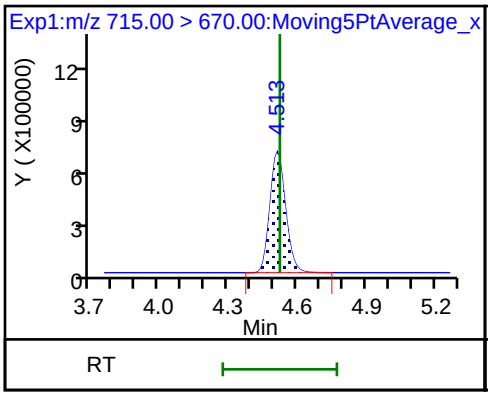
41 Perfluorotridecanoic acid



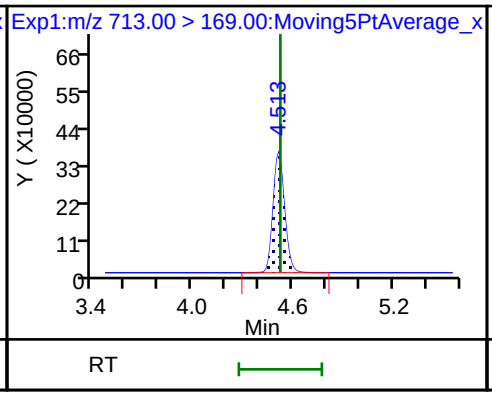
41 Perfluorotridecanoic acid



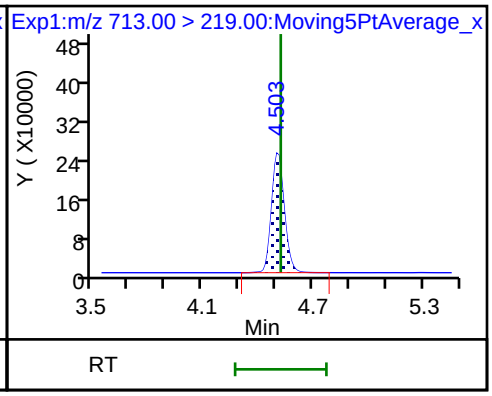
D 43 13C2-PFTeDA



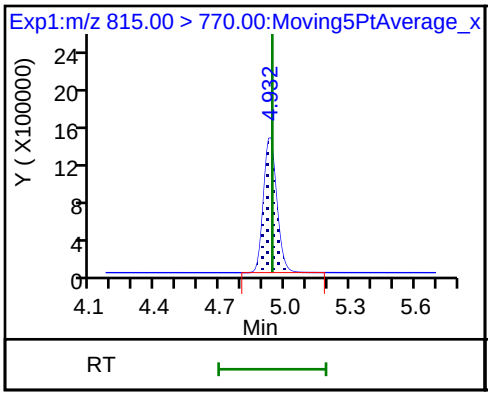
42 Perfluorotetradecanoic acid



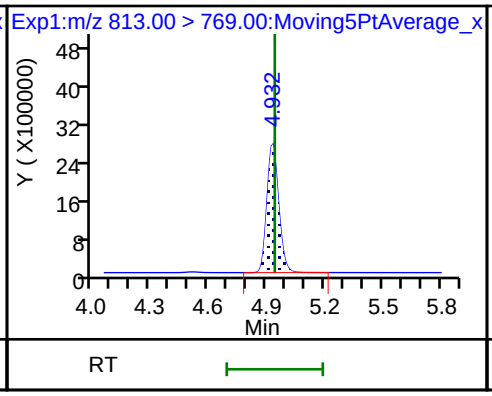
42 Perfluorotetradecanoic acid



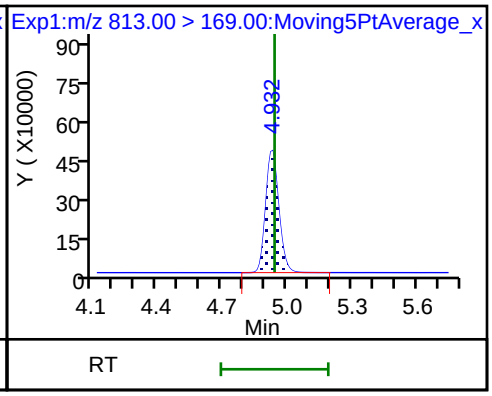
D 44 13C2-PFHxDA



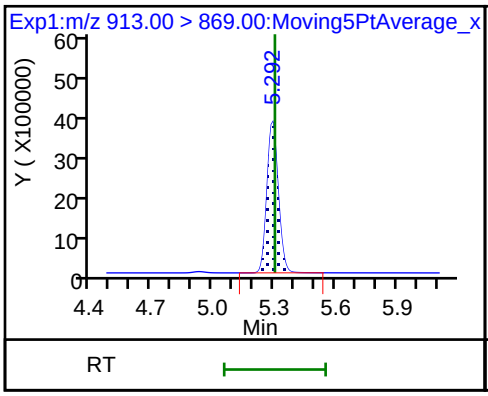
45 Perfluorohexadecanoic acid



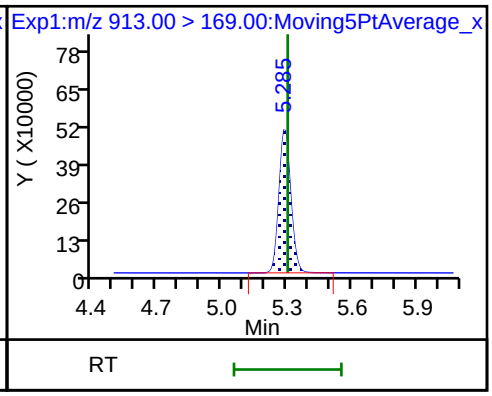
45 Perfluorohexadecanoic acid



46 Perfluorooctadecanoic acid



46 Perfluorooctadecanoic acid



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180705-60684.b\2018.07.05LLICALAA_008.d
Lims ID: IC L7 Full
Client ID:
Sample Type: IC Calib Level: 7
Inject. Date: 05-Jul-2018 09:38:17 ALS Bottle#: 16 Worklist Smp#: 8
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L7-FULL
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-A8_N*sub32

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180705-60684.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 05-Jul-2018 12:39:08 Calib Date: 05-Jul-2018 09:38:17
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180705-60684.b\2018.07.05LLICALAA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK035

First Level Reviewer: hannigana Date: 05-Jul-2018 12:14:09

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.433	1.432	0.001	0.537	6236338	2.64		105	24595	
2 Perfluorobutyric acid										
212.90 > 169.00	1.433	1.434	-0.001	1.000	24301343	9.54		95.4	8385	
D 3 13C5-PFPeA										
267.90 > 223.00	1.716	1.716	0.0	0.643	4455207	2.54		102	47432	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.716	1.719	-0.003	1.000	20231845	9.53		95.3	15332	
D 47 13C3-PFBS										
301.90 > 83.00	1.752	1.756	-0.004	0.657	101003	2.41		104	713	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.761	1.760	0.001	1.005	26720886	8.11		91.8	98810	
298.90 > 99.00	1.761	1.760	0.001	1.005	11741638		2.28(1.25-3.74)	91.8	101674	
D 60 M2-4:2FTS										
329.00 > 81.00	1.966	1.966	0.0	0.737	659919	2.45		105	9393	
61 1H,1H,2H,2H-perfluorohexanesulfoni										
327.00 > 307.00	1.966	1.966	0.0	1.122	5926931	8.70		93.1	182167	
D 7 13C2 PFHxA										
315.00 > 270.00	1.999	2.000	-0.001	0.749	4784020	2.55		102	54735	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.999	2.002	-0.003	1.000	18820721	9.66		96.6	37072	
313.00 > 119.00	1.999	2.002	-0.003	1.000	1782628		10.56(5.03-15.10)	96.6	32241	
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.022	2.025	-0.003	1.154	23714616	8.42		89.7	114113	
349.00 > 99.00	2.022	2.025	-0.003	1.154	9818889		2.42(1.36-4.07)	89.7	74538	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.101	2.099	0.002	0.788	441540	2.87		115	7439	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
67 Perfluoro(2-propoxypropanoic) acid										
329.10 > 285.00	2.101	2.099	0.002	1.000	3672079	9.04		90.4	24798	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.315	2.318	-0.003	1.000	17433793	8.96		89.6	19089	
363.00 > 169.00	2.315	2.318	-0.003	1.000	7593095		2.30(1.13-3.40)	89.6	41699	
D 9 13C4-PFHpA										
367.00 > 322.00	2.315	2.318	-0.003	0.868	4305905	2.59		103	35067	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.328	2.331	-0.003	1.000	19602527	8.64		94.9	42428	
399.00 > 99.00	2.328	2.331	-0.003	1.000	7247472		2.70(1.50-4.49)	94.9	22800	
D 11 18O2 PFHxS										
403.00 > 84.00	2.328	2.333	-0.005	0.873	4642819	2.27		95.9	28231	
65 Adona										
377.00 > 251.00	2.368	2.365	0.003	0.782	40084780	7.51		79.7	68194	
377.00 > 85.00	2.368	2.365	0.003	0.782	27231082		1.47(0.84-2.53)	79.7	76354	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.645	2.645	0.0	1.000	5371036	9.51		100	22759	
D 12 M2-6:2FTS										
429.00 > 81.00	2.645	2.645	0.0	0.991	856056	2.29		96.5	14664	
D 14 13C4 PFOA										
417.00 > 372.00	2.668	2.670	-0.002	1.000	4086844	2.51		100	29283	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.668	2.671	-0.003	1.000	18026746	9.30		92.9	8216	
413.00 > 169.00	2.668	2.671	-0.003	1.000	9722024		1.85(0.84-2.52)	92.9	40626	
* 62 13C2-PFOA										
415.00 > 370.00	2.668	2.671	-0.003		4273995	2.50			30819	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.675	2.678	-0.003	0.883	17877757	9.27		97.4	103542	
449.00 > 99.00	2.675	2.678	-0.003	0.883	5089491		3.51(1.94-5.82)	97.4	124731	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.029	3.034	-0.005	1.000	15767090	9.37		101	39551	
499.00 > 99.00	3.029	3.034	-0.005	1.000	3509122		4.49(2.31-6.93)	101	28546	
D 19 13C5 PFNA										
468.00 > 423.00	3.029	3.034	-0.005	1.135	3524695	2.54		102	43789	
D 18 13C4 PFOS										
503.00 > 80.00	3.029	3.034	-0.005	1.135	3441443	2.35		98.5	22621	
20 Perfluorononanoic acid										
463.00 > 419.00	3.029	3.036	-0.007	1.000	14824538	9.76		97.6	28217	
463.00 > 169.00	3.029	3.036	-0.007	1.000	3920101		3.78(1.90-5.69)	97.6	203427	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.244	3.246	-0.002	1.071	23819619	8.75		93.9	109480	
D 21 13C8 FOSA										
506.00 > 78.00	3.357	3.357	0.0	1.258	4912326	2.42		96.8	39113	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.357	3.358	-0.001	1.000	18768991	9.63		96.3	109747	
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.376	3.379	-0.003	1.115	11100681	9.49		98.8	62308	
549.00 > 99.00	3.376	3.379	-0.003	1.115	4125927		2.69(1.33-3.97)	98.8	71242	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 26 M2-8:2FTS										
529.00 > 81.00	3.376	3.382	-0.006	1.265	908289	2.19		91.3	13581	
25 1H,1H,2H,2H-perfluorodecanesulfoni										
527.00 > 507.00	3.376	3.383	-0.007	1.000	4929744	9.84		103	84731	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.385	3.393	-0.008	1.000	12003817	10.2		102	36647	
513.00 > 169.00	3.385	3.393	-0.008	1.000	2074529		5.79(2.36-7.09)	102	42255	
D 23 13C2 PFDA										
515.00 > 470.00	3.385	3.393	-0.008	1.269	2835454	2.37		94.9	28852	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.535	3.543	-0.008	1.325	1836553	2.61		104	26799	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.544	3.551	-0.007	1.003	7199550	9.52		95.2	42030	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.694	3.702	-0.008	1.220	10090938	9.74		101	230854	
599.00 > 99.00	3.694	3.702	-0.008	1.220	3279452		3.08(1.39-4.16)	101	84106	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.705	3.713	-0.008	1.389	1656649	2.38		95.2	13918	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.715	3.721	-0.006	1.000	8101412	9.88		98.8	27557	
563.00 > 169.00	3.715	3.721	-0.006	1.000	2010700		4.03(2.12-6.36)	98.8	29277	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.715	3.721	-0.006	1.003	5685758	9.52		95.2	36655	
D 30 13C2 PFUnA										
565.00 > 520.00	3.715	3.721	-0.006	1.393	2411181	2.40		96.1	23453	
66 11-Chloroeicosafluoro-3-oxaundecan										
631.00 > 451.00	3.873	3.879	-0.006	1.279	33573732	8.08		85.8	568422	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.006	4.016	-0.010	1.000	11402368	9.64		96.4	10558	
613.00 > 169.00	4.006	4.016	-0.010	1.000	2757575		4.13(2.13-6.40)	96.4	26108	
D 36 13C2 PFDoA										
615.00 > 570.00	4.006	4.016	-0.010	1.502	2682397	2.49		99.7	14047	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.279	4.284	-0.005	1.068	12175469	9.24		92.4	10602	
663.00 > 169.00	4.279	4.284	-0.005	1.068	4071287		2.99(1.25-3.76)	92.4	25179	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.521	4.524	-0.003	1.695	3133566	2.39		95.6	13285	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.521	4.524	-0.003	1.000	3354737	9.88		98.8	24856	
713.00 > 219.00	4.511	4.524	-0.013	0.998	2302197		1.46(0.71-2.13)	98.8	15045	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.930	4.940	-0.010	1.848	5779000	2.38		95.2	13310	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.930	4.941	-0.011	1.000	20680874	9.40		94.0	7306	
813.00 > 169.00	4.930	4.941	-0.011	1.000	3850814		5.37(2.86-8.58)	94.0	15076	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.291	5.302	-0.011	1.073	24976341	9.28		92.8	5397	
913.00 > 169.00	5.291	5.302	-0.011	1.073	3473288		7.19(3.83-11.48)	92.8	13301	

Reagents:

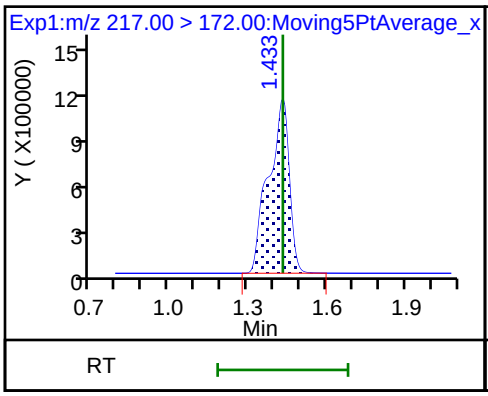
LCPFC_LL7_00005 Amount Added: 1.00 Units: mL

Report Date: 05-Jul-2018 12:39:09 Chrom Revision: 2.2 07-Jun-2018 07:41:54

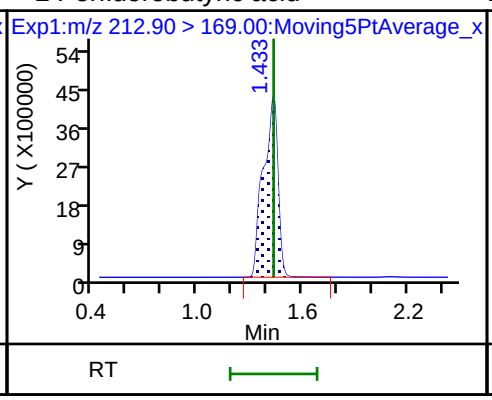
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180705-60684.b\2018.07.05LLICALAA_008.d
Injection Date: 05-Jul-2018 09:38:17 Instrument ID: A8_N
Lims ID: IC L7 Full
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 16 Worklist Smp#: 8
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC ICAL

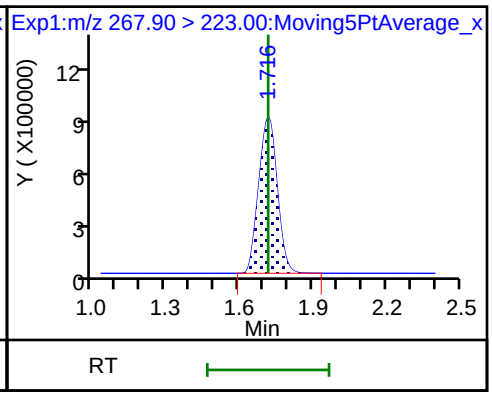
D 1 13C4 PFBA



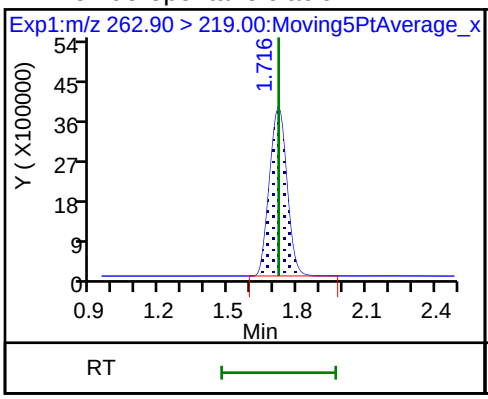
2 Perfluorobutyric acid



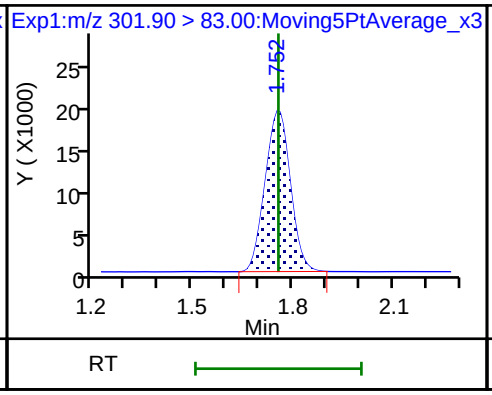
D 3 13C5-PFPeA



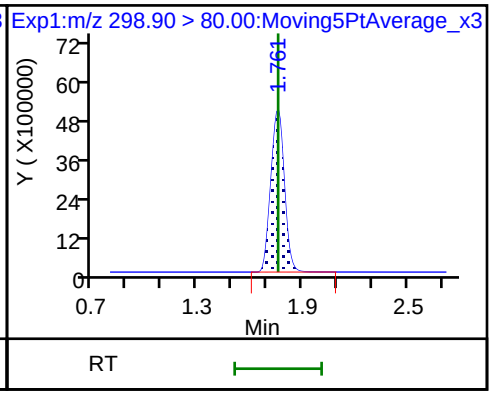
4 Perfluoropentanoic acid



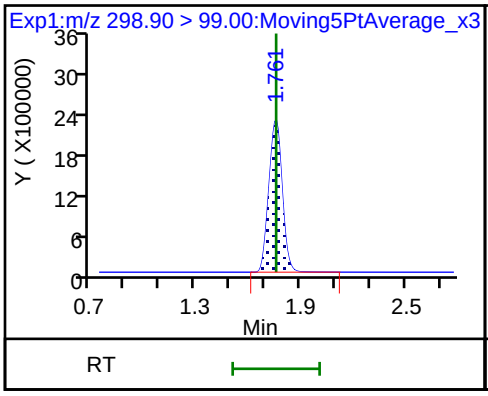
D 47 13C3-PFBS



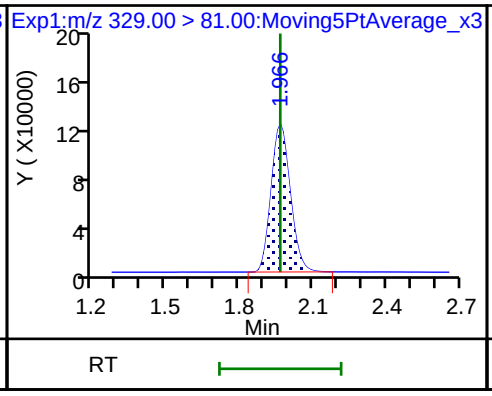
5 Perfluorobutanesulfonic acid



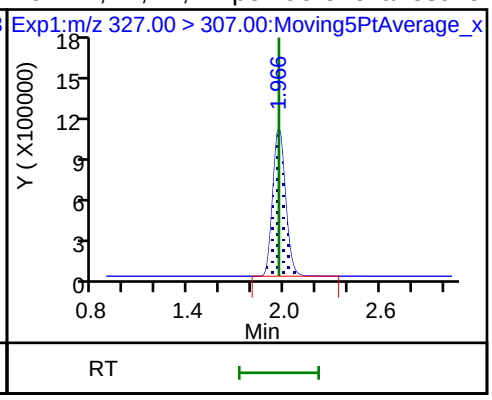
5 Perfluorobutanesulfonic acid



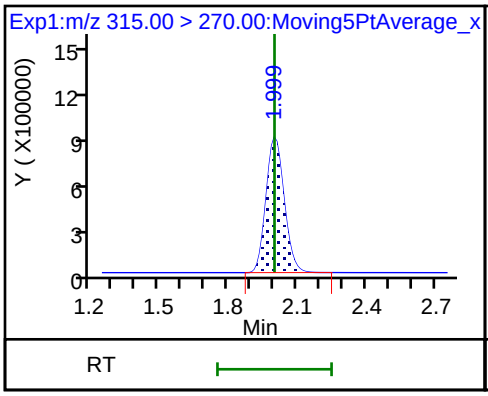
D 60 M2-4:2FTS



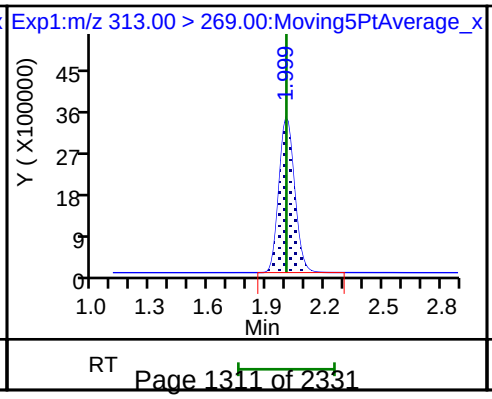
61 1H,1H,2H,2H-perfluorohexanesulfoni



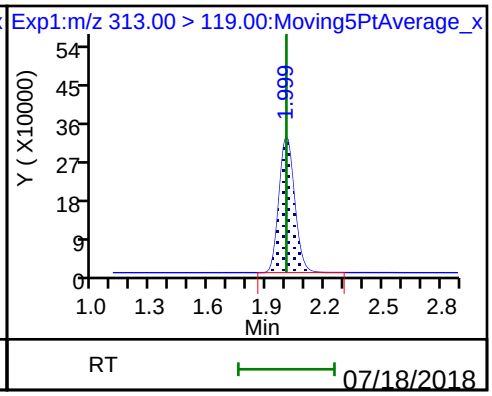
D 7 13C2 PFHxA



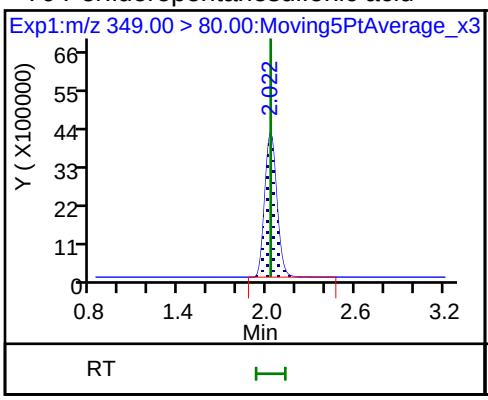
6 Perfluorohexanoic acid



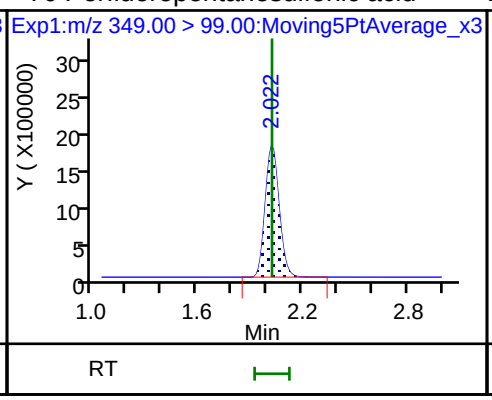
6 Perfluorohexanoic acid



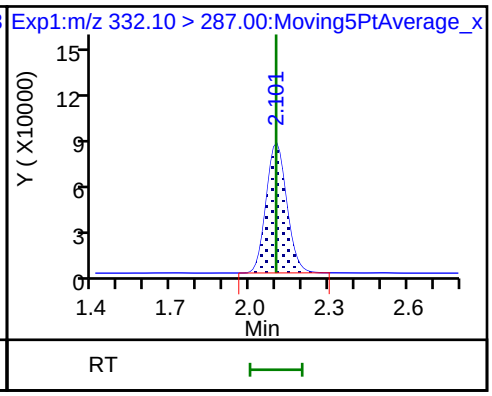
70 Perfluoropentanesulfonic acid



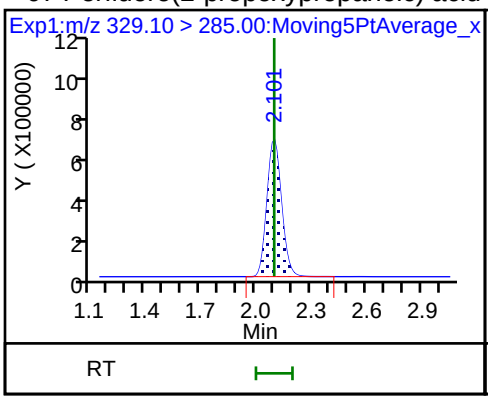
70 Perfluoropentanesulfonic acid



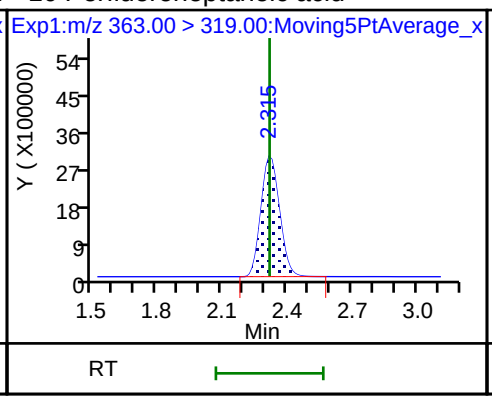
D 64 13C3 HFPO-DA



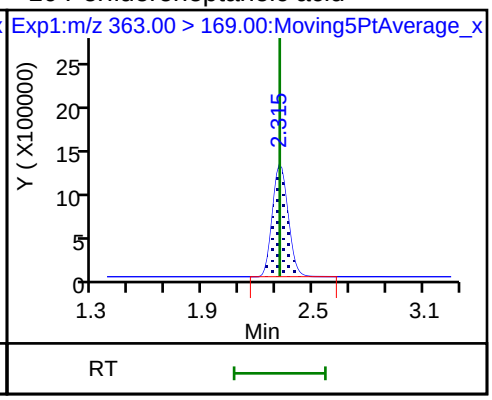
67 Perfluoro(2-propoxypropanoic) acid



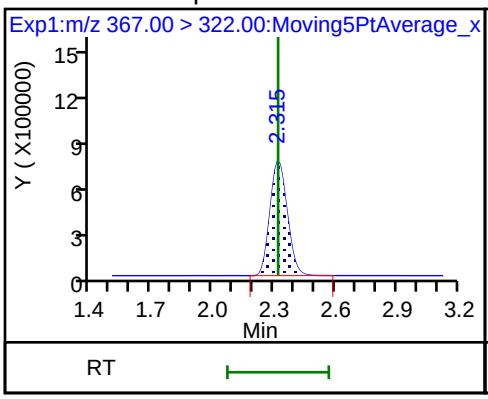
10 Perfluoroheptanoic acid



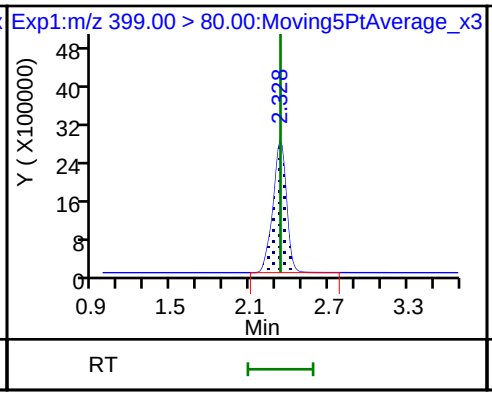
10 Perfluoroheptanoic acid



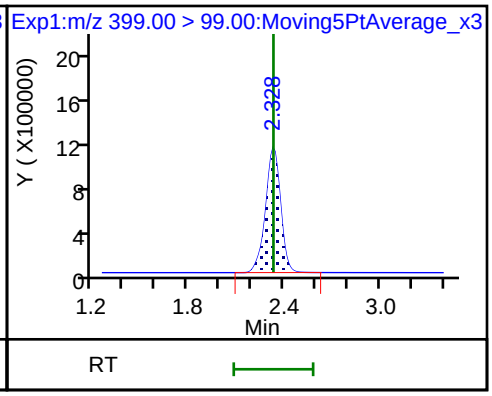
D 9 13C4-PFHpA



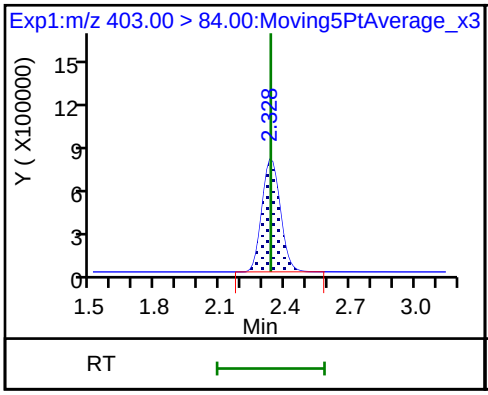
8 Perfluorohexanesulfonic acid



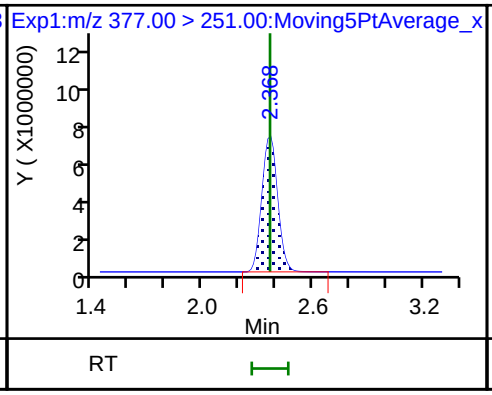
8 Perfluorohexanesulfonic acid



D 11 18O2 PFHxS



65 Adona



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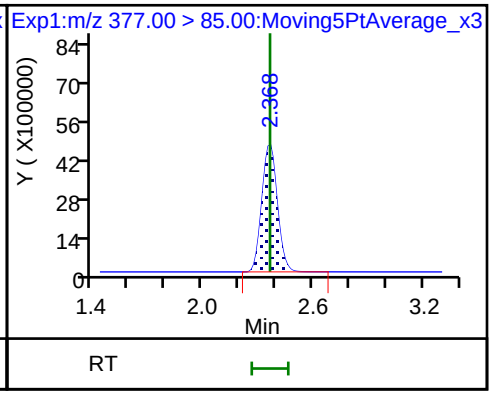
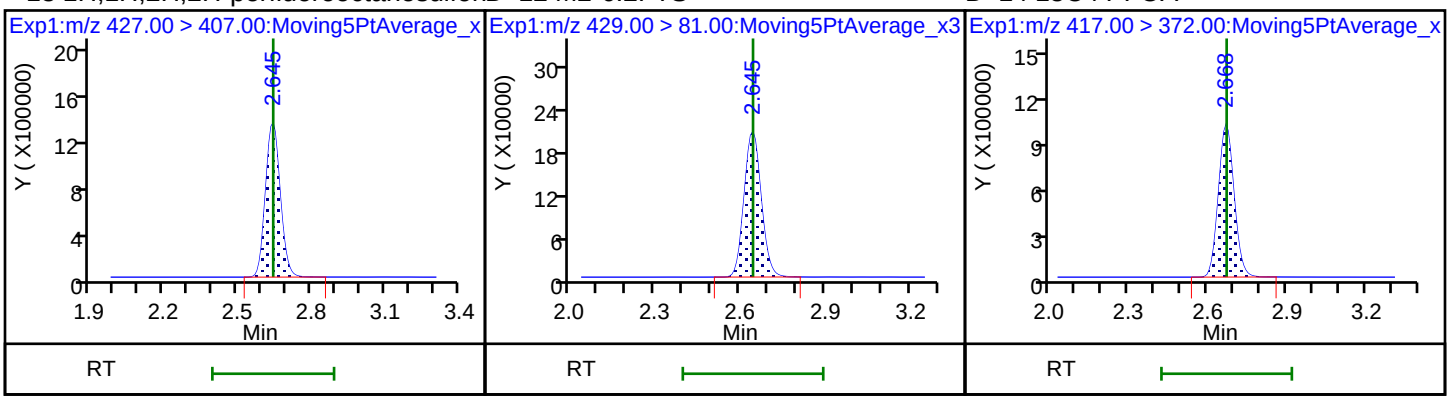
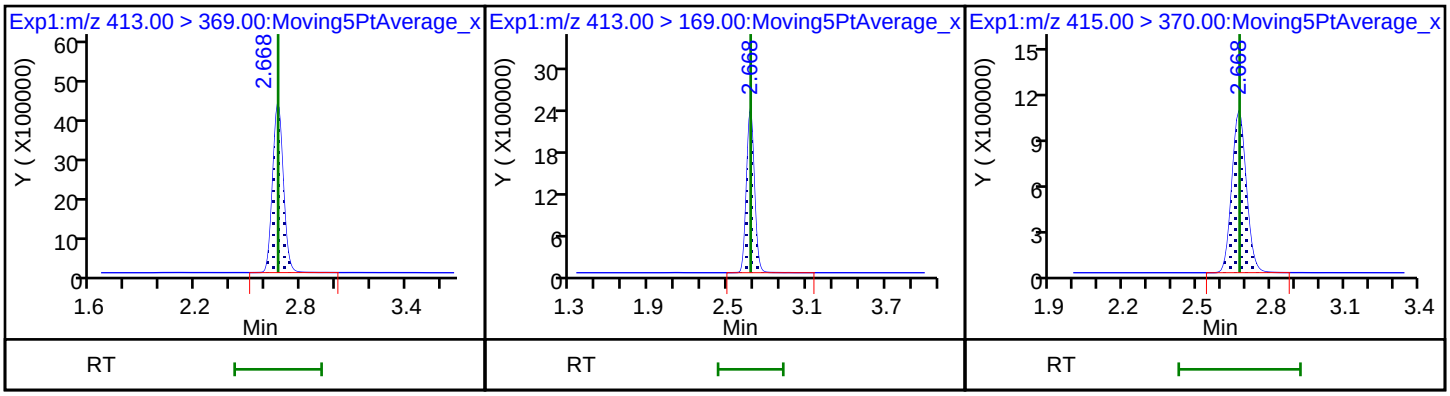


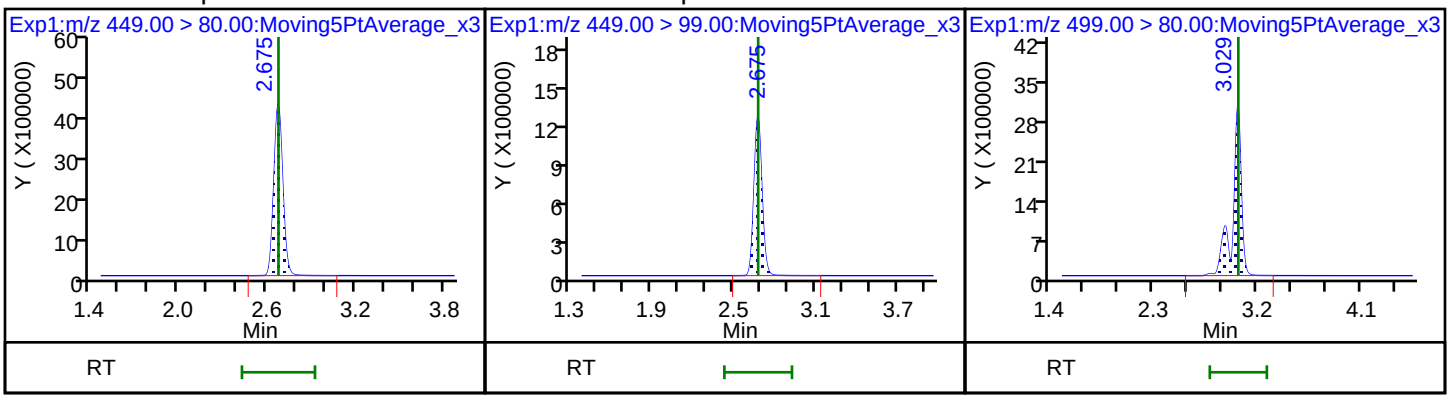
13 1H,1H,2H,2H-perfluorooctanesulfon D 12 M2-6:2FTS D 14 13C4 PFOA



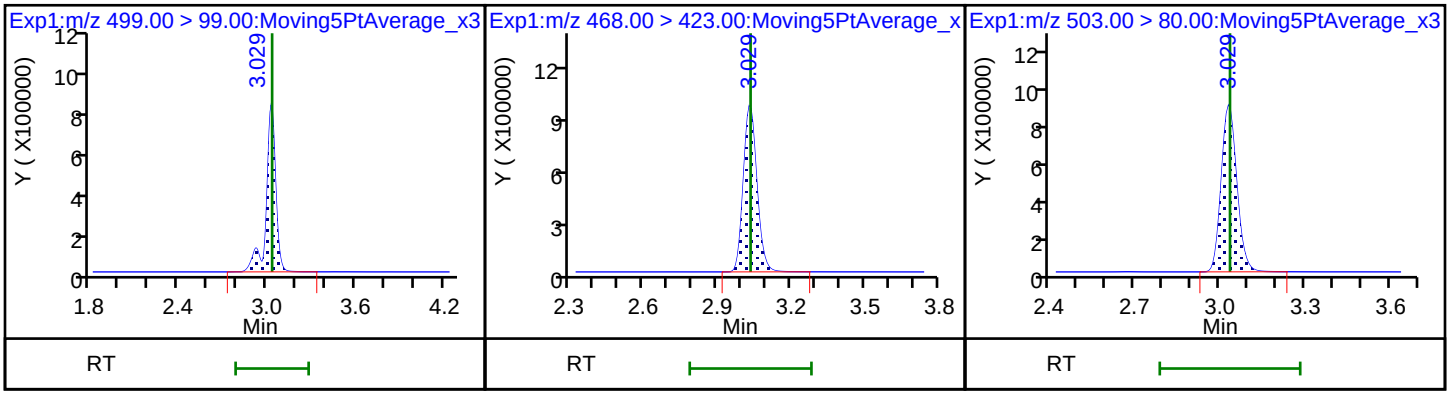
15 Perfluorooctanoic acid 15 Perfluorooctanoic acid * 62 13C2-PFOA



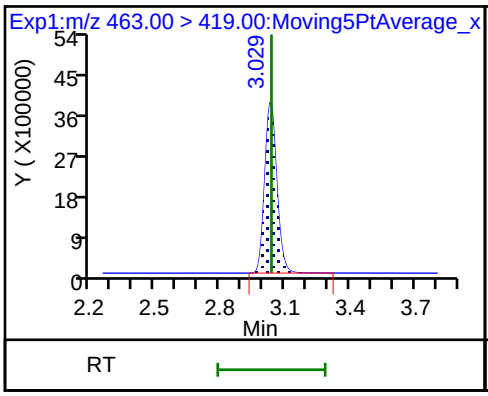
16 Perfluoroheptanesulfonic acid 16 Perfluoroheptanesulfonic acid 17 Perfluorooctane sulfonic acid



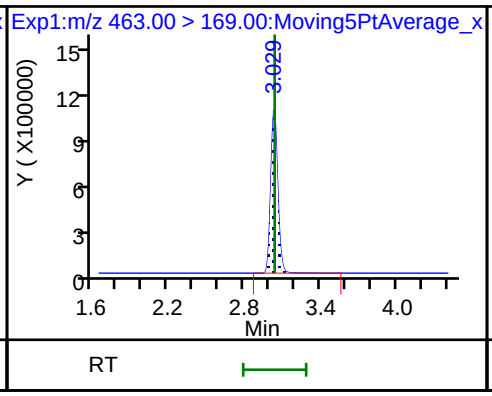
17 Perfluorooctane sulfonic acid D 19 13C5 PFNA D 18 13C4 PFOS



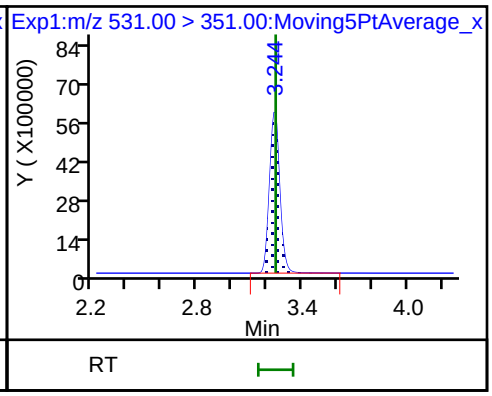
20 Perfluorononanoic acid



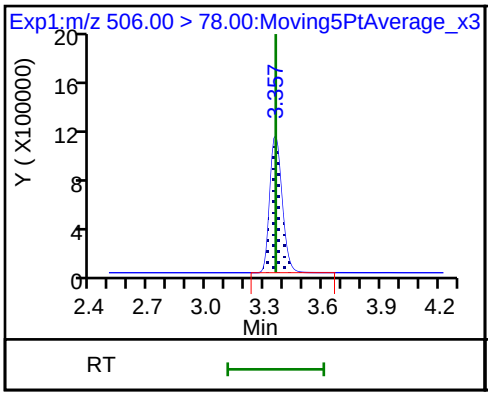
20 Perfluorononanoic acid



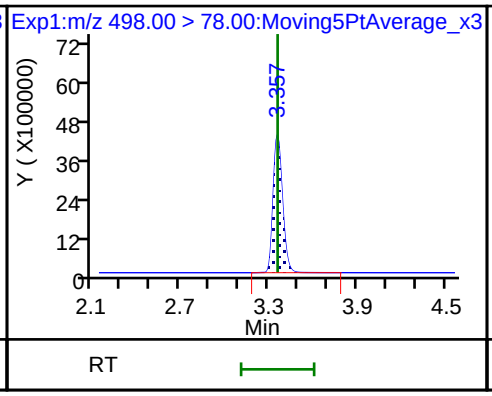
69 9-Chlorohexadecafluoro-3-oxanonane



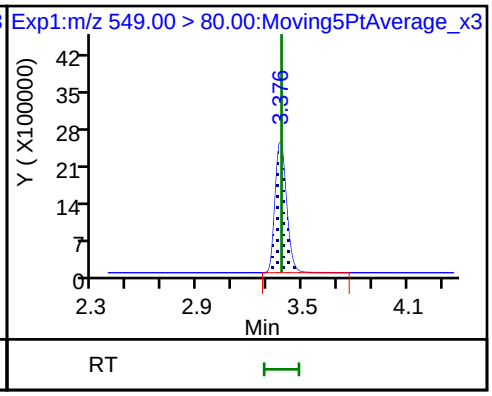
D 21 13C8 FOSA



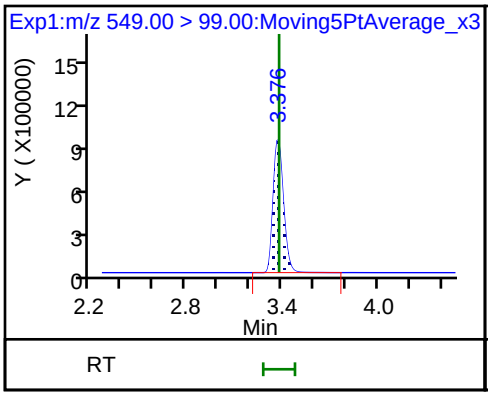
22 Perfluorooctane Sulfonamide



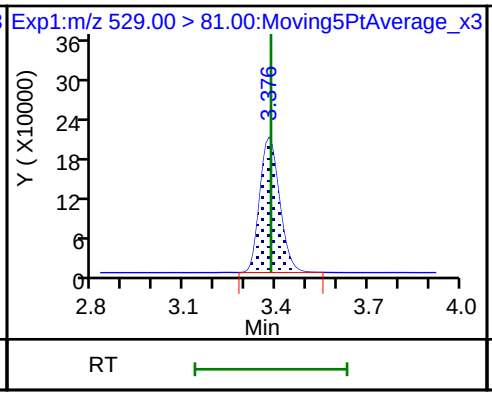
68 Perfluorononanesulfonic acid



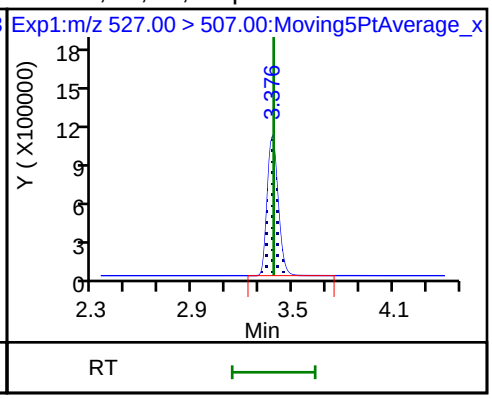
68 Perfluorononanesulfonic acid



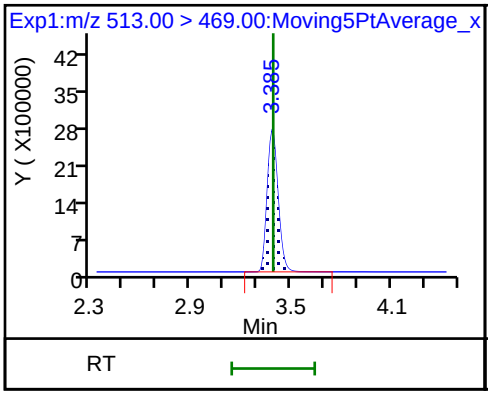
D 26 M2-8:2FTS



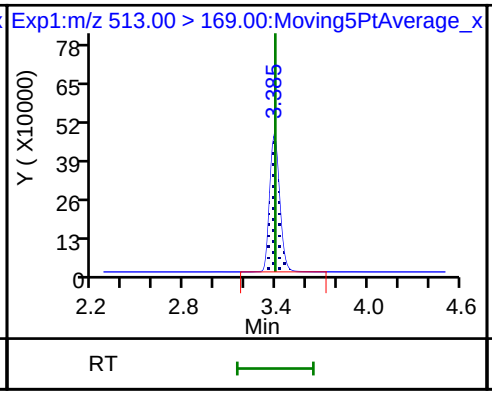
25 1H,1H,2H,2H-perfluorodecanesulfoni



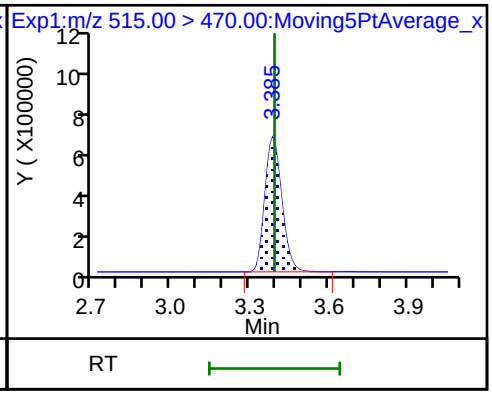
24 Perfluorodecanoic acid



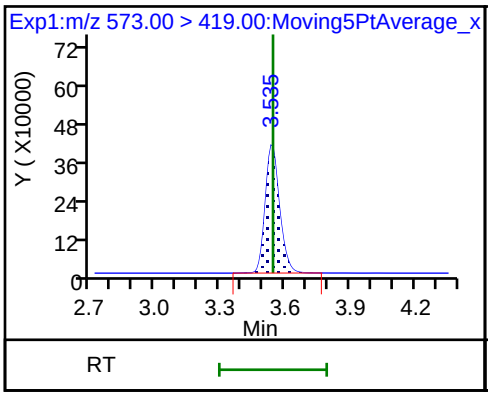
24 Perfluorodecanoic acid



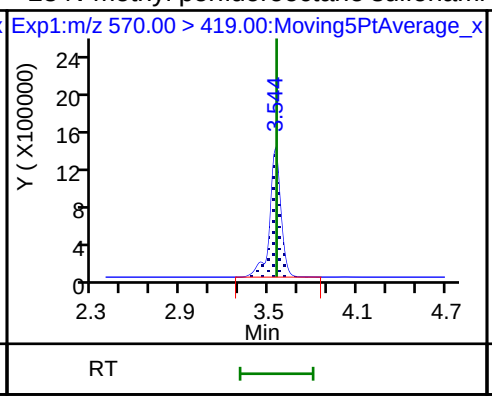
D 23 13C2 PFDA



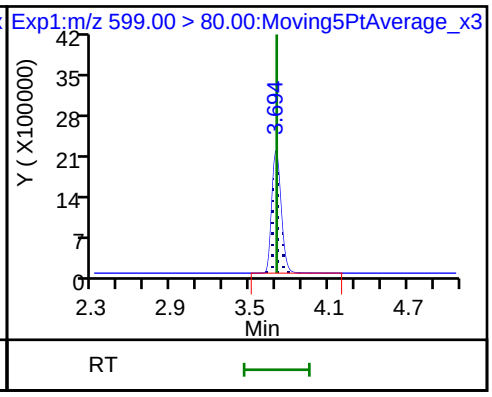
D 27 d3-NMeFOSAA



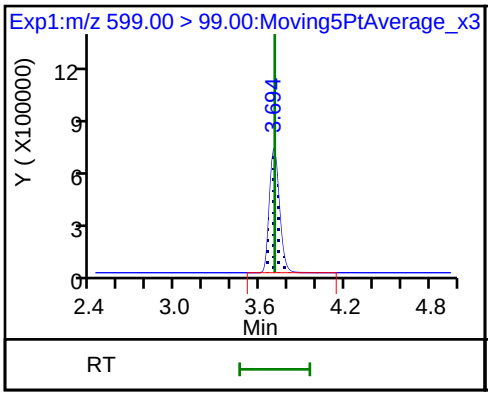
28 N-methyl perfluorooctane sulfonami



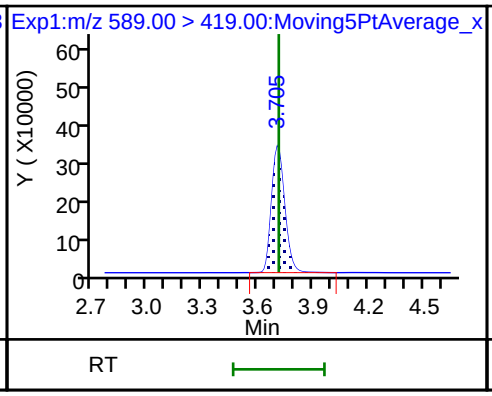
29 Perfluorodecane Sulfonic acid



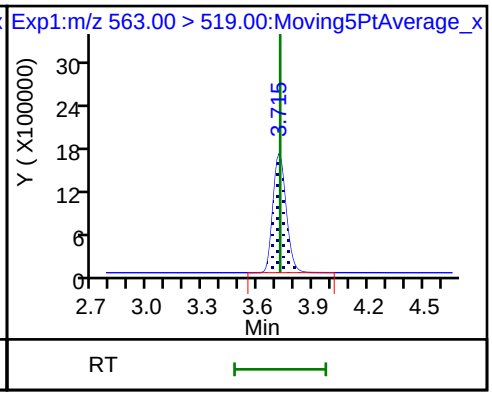
29 Perfluorodecane Sulfonic acid



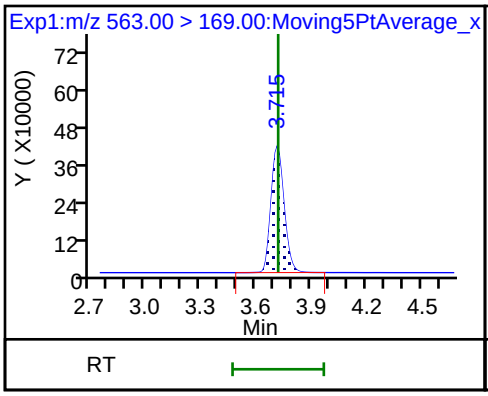
D 32 d5-NEtFOSAA



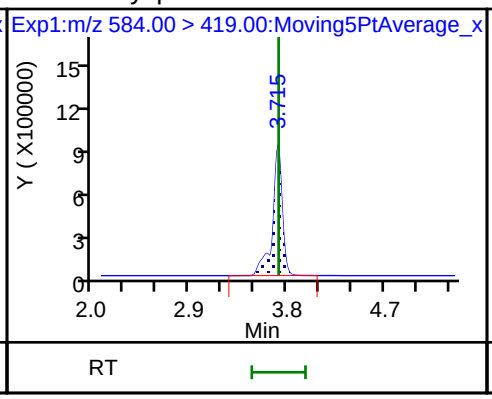
31 Perfluoroundecanoic acid



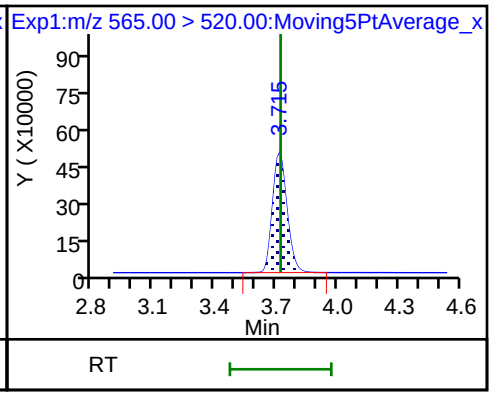
31 Perfluoroundecanoic acid



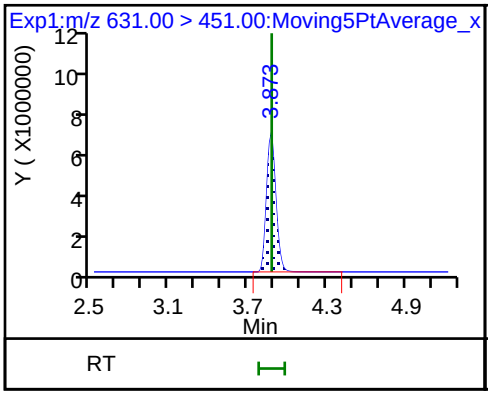
33 N-ethyl perfluorooctane sulfonamid



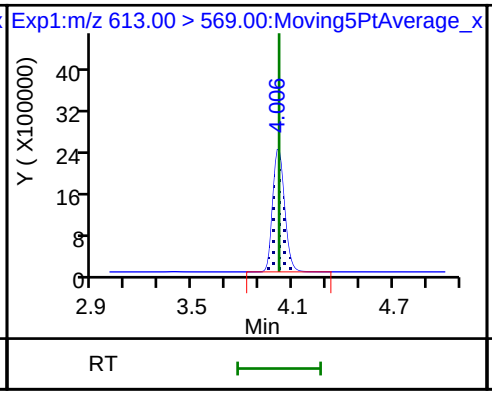
D 30 13C2 PFUnA



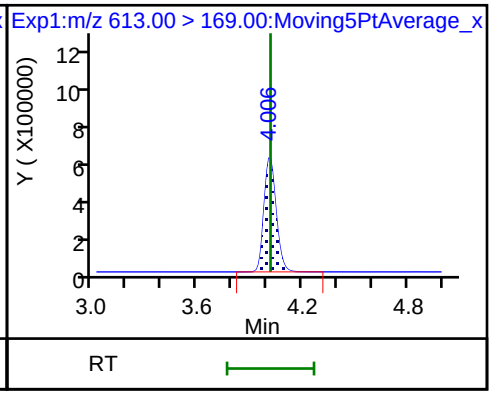
66 11-Chloroeicosafluoro-3-oxaundecan



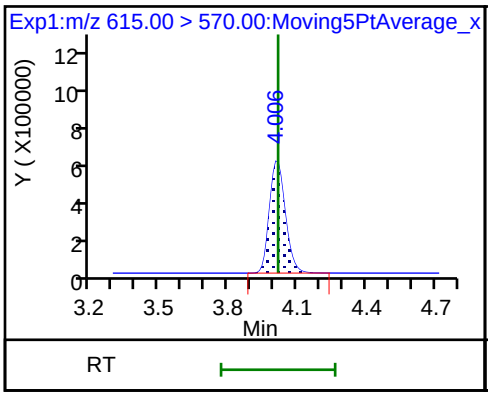
37 Perfluorododecanoic acid



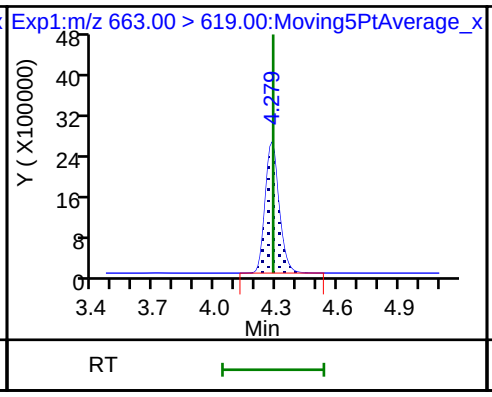
37 Perfluorododecanoic acid



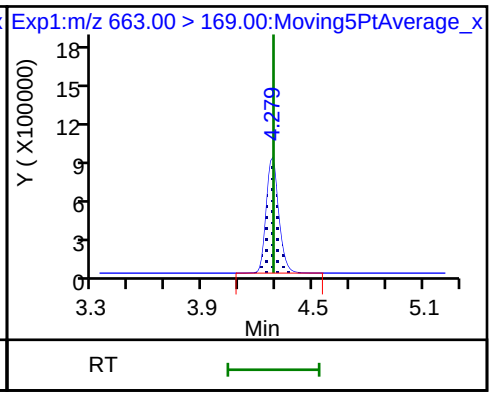
D 36 13C2 PFDoA



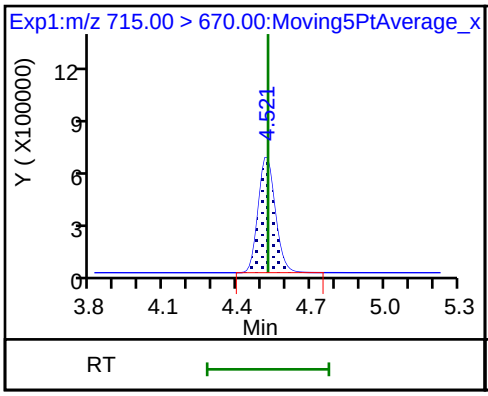
41 Perfluorotridecanoic acid



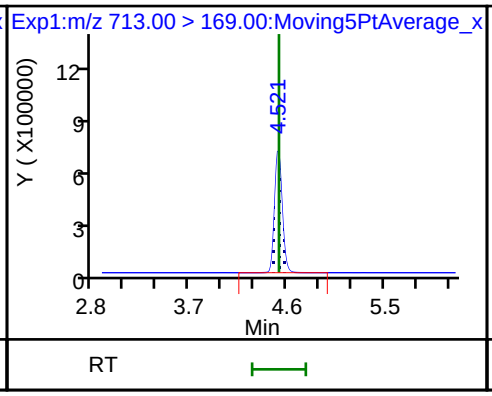
41 Perfluorotridecanoic acid



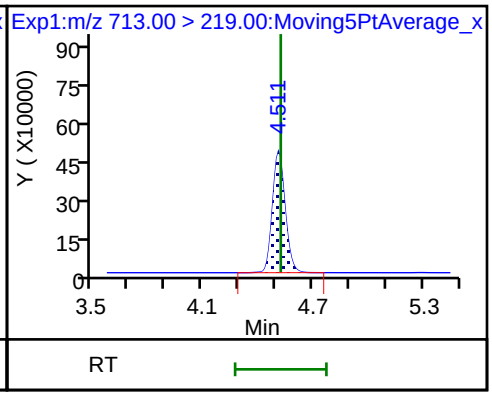
D 43 13C2-PFTeDA



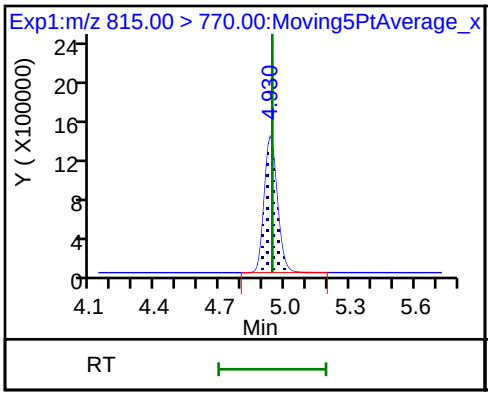
42 Perfluorotetradecanoic acid



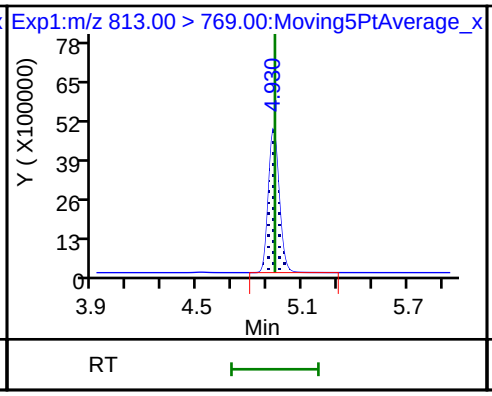
42 Perfluorotetradecanoic acid



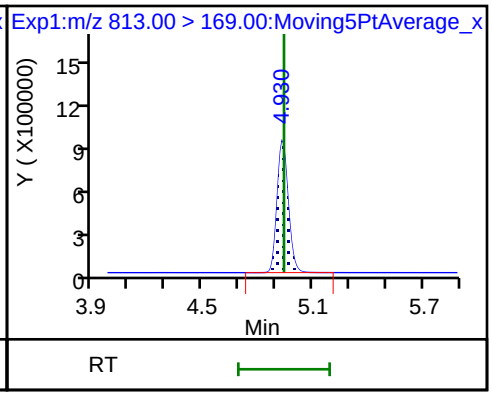
D 44 13C2-PFHxDA



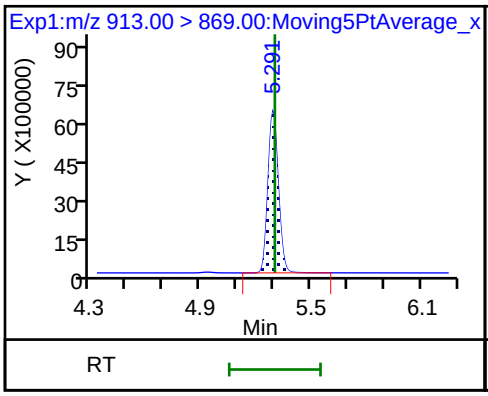
45 Perfluorohexadecanoic acid



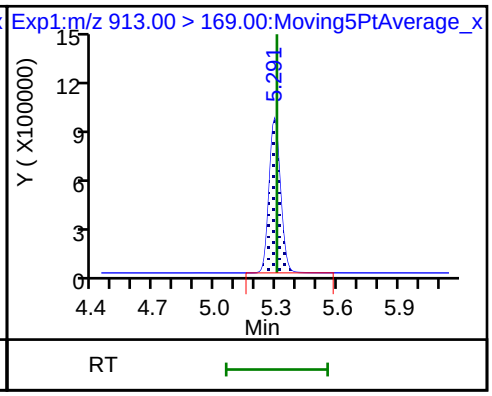
45 Perfluorohexadecanoic acid



46 Perfluorooctadecanoic acid



46 Perfluorooctadecanoic acid



Calibration / Perfluorobutyric acid

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

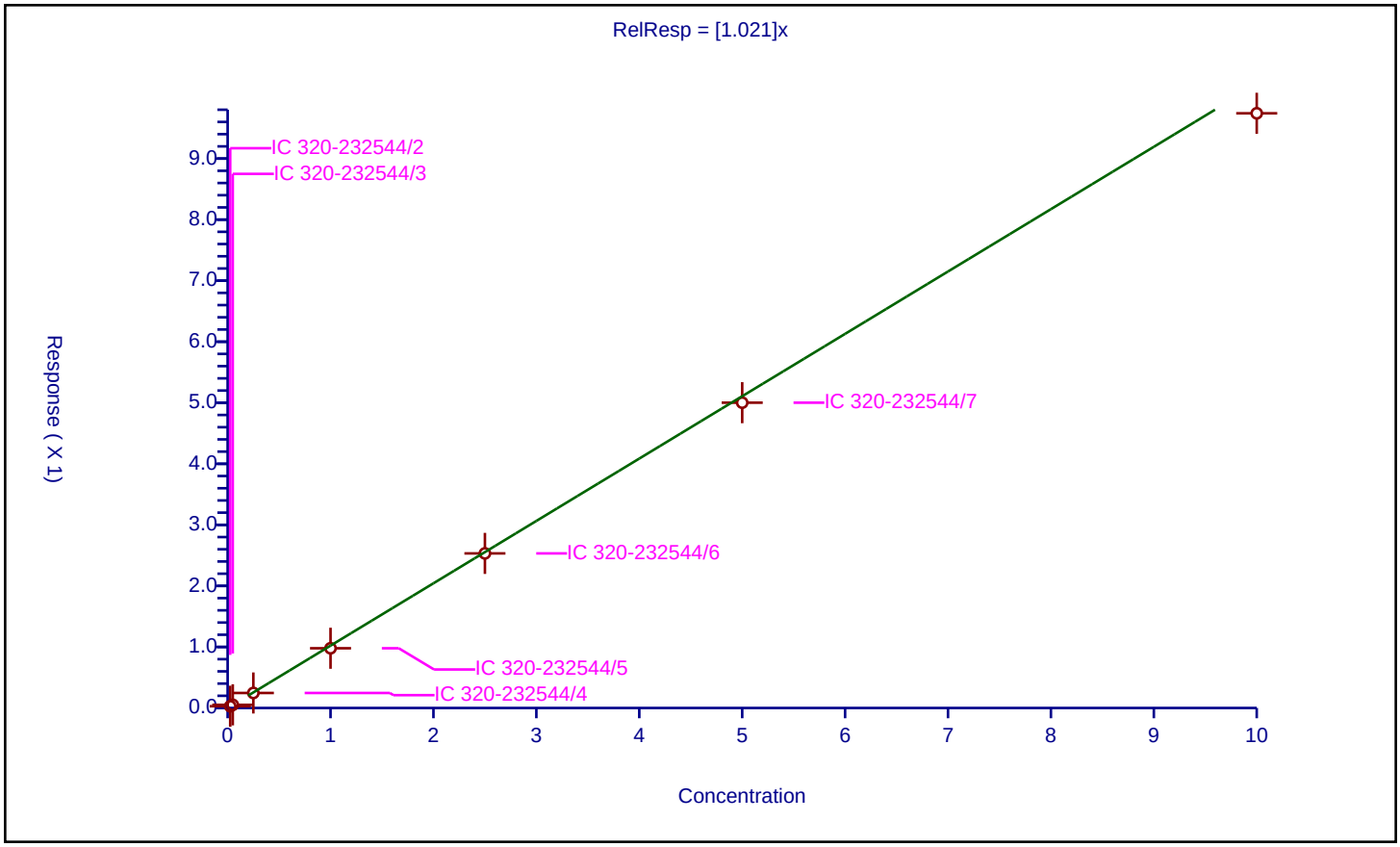
Curve Coefficients

Intercept:	0
Slope:	1.021

Error Coefficients

Standard Error:	11400000
Relative Standard Error:	6.4
Correlation Coefficient:	1.000
Coefficient of Determination (Adjusted):	0.995

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-232544/2	0.025	0.028997	2.5	5790999.0	1.159886	Y
2	IC 320-232544/3	0.05	0.051998	2.5	6125232.0	1.039961	Y
3	IC 320-232544/4	0.25	0.246089	2.5	6069593.0	0.984358	Y
4	IC 320-232544/5	1.0	0.978396	2.5	6162858.0	0.978396	Y
5	IC 320-232544/6	2.5	2.532386	2.5	5942375.0	1.012954	Y
6	IC 320-232544/7	5.0	5.001361	2.5	6096226.0	1.000272	Y
7	IC 320-232544/8	10.0	9.741832	2.5	6236338.0	0.974183	Y



Calibration / Perfluoropentanoic acid

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

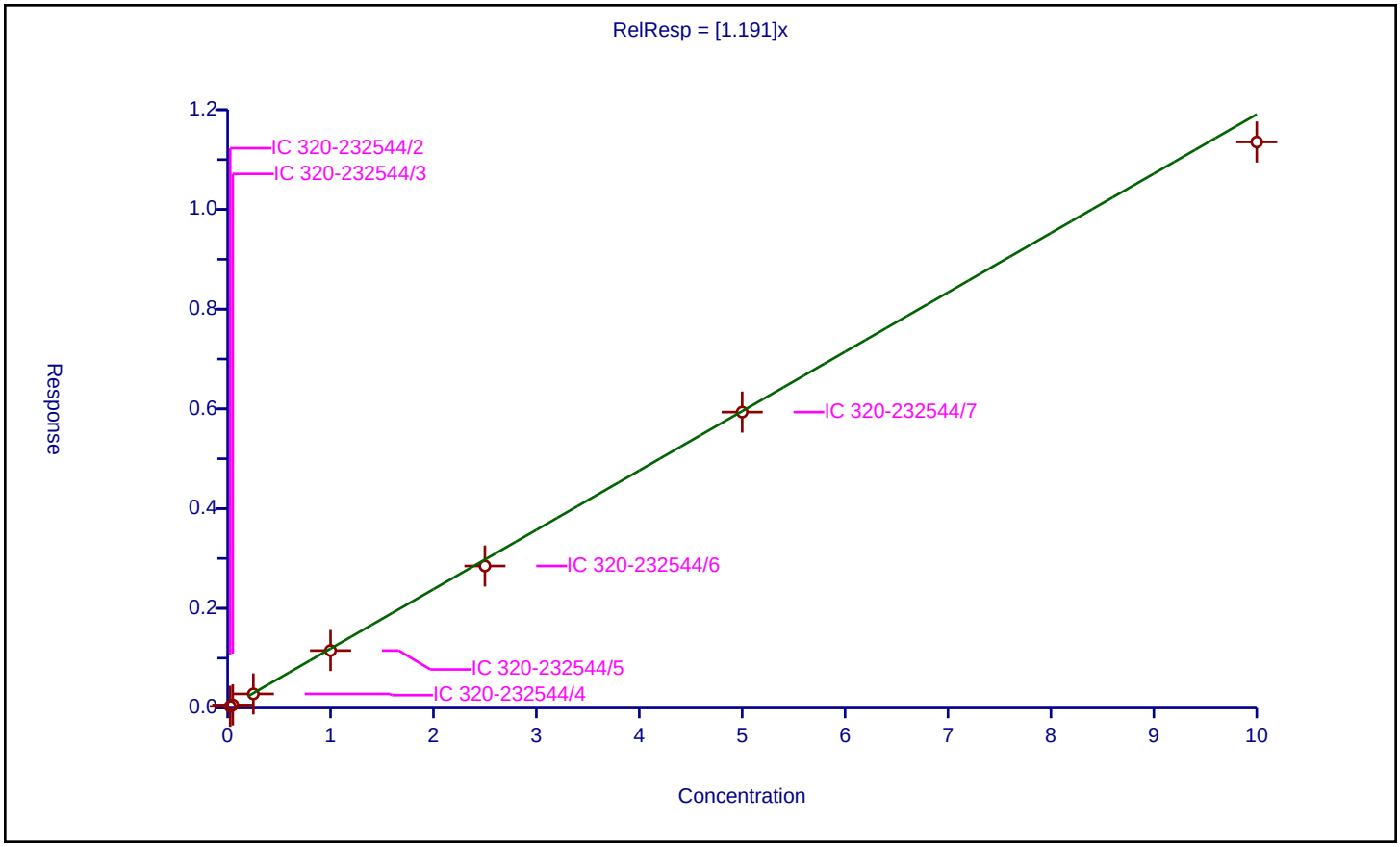
Curve Coefficients

Intercept:	0
Slope:	1.191

Error Coefficients

Standard Error:	9580000
Relative Standard Error:	6.7
Correlation Coefficient:	1.000
Coefficient of Determination (Adjusted):	0.994

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-232544/2	0.025	0.033735	2.5	4267857.0	1.349389	Y
2	IC 320-232544/3	0.05	0.062113	2.5	4568616.0	1.242269	Y
3	IC 320-232544/4	0.25	0.282325	2.5	4600846.0	1.129301	Y
4	IC 320-232544/5	1.0	1.153141	2.5	4603081.0	1.153141	Y
5	IC 320-232544/6	2.5	2.849017	2.5	4484079.0	1.139607	Y
6	IC 320-232544/7	5.0	5.935759	2.5	4432781.0	1.187152	Y
7	IC 320-232544/8	10.0	11.352921	2.5	4455207.0	1.135292	Y



Calibration / Perfluorobutanesulfonic acid

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

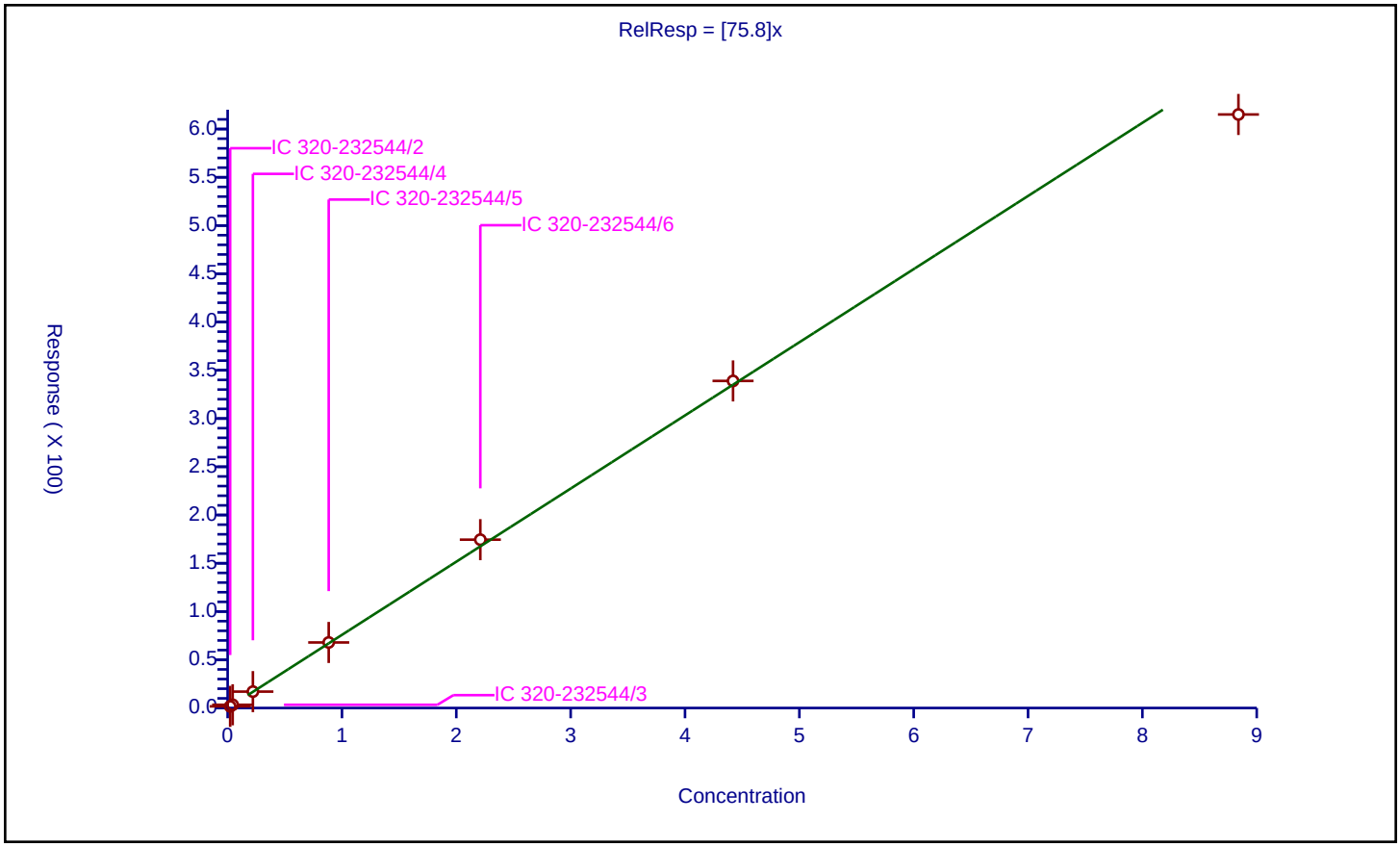
Curve Coefficients

Intercept:	0
Slope:	75.8

Error Coefficients

Standard Error:	12900000
Relative Standard Error:	3.9
Correlation Coefficient:	0.997
Coefficient of Determination (Adjusted):	0.998

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-232544/2	0.0221	1.678434	2.325	95425.0	75.947257	Y
2	IC 320-232544/3	0.0442	3.349949	2.325	101062.0	75.790702	Y
3	IC 320-232544/4	0.221	16.982274	2.325	101856.0	76.84287	Y
4	IC 320-232544/5	0.884	67.93002	2.325	99704.0	76.843914	Y
5	IC 320-232544/6	2.21	174.449539	2.325	97817.0	78.936443	Y
6	IC 320-232544/7	4.42	338.961137	2.325	101582.0	76.68804	Y
7	IC 320-232544/8	8.84	615.091234	2.325	101003.0	69.580456	Y



Calibration / 1H,1H,2H,2H-perfluorohexanesulfonic acid (4:2)

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

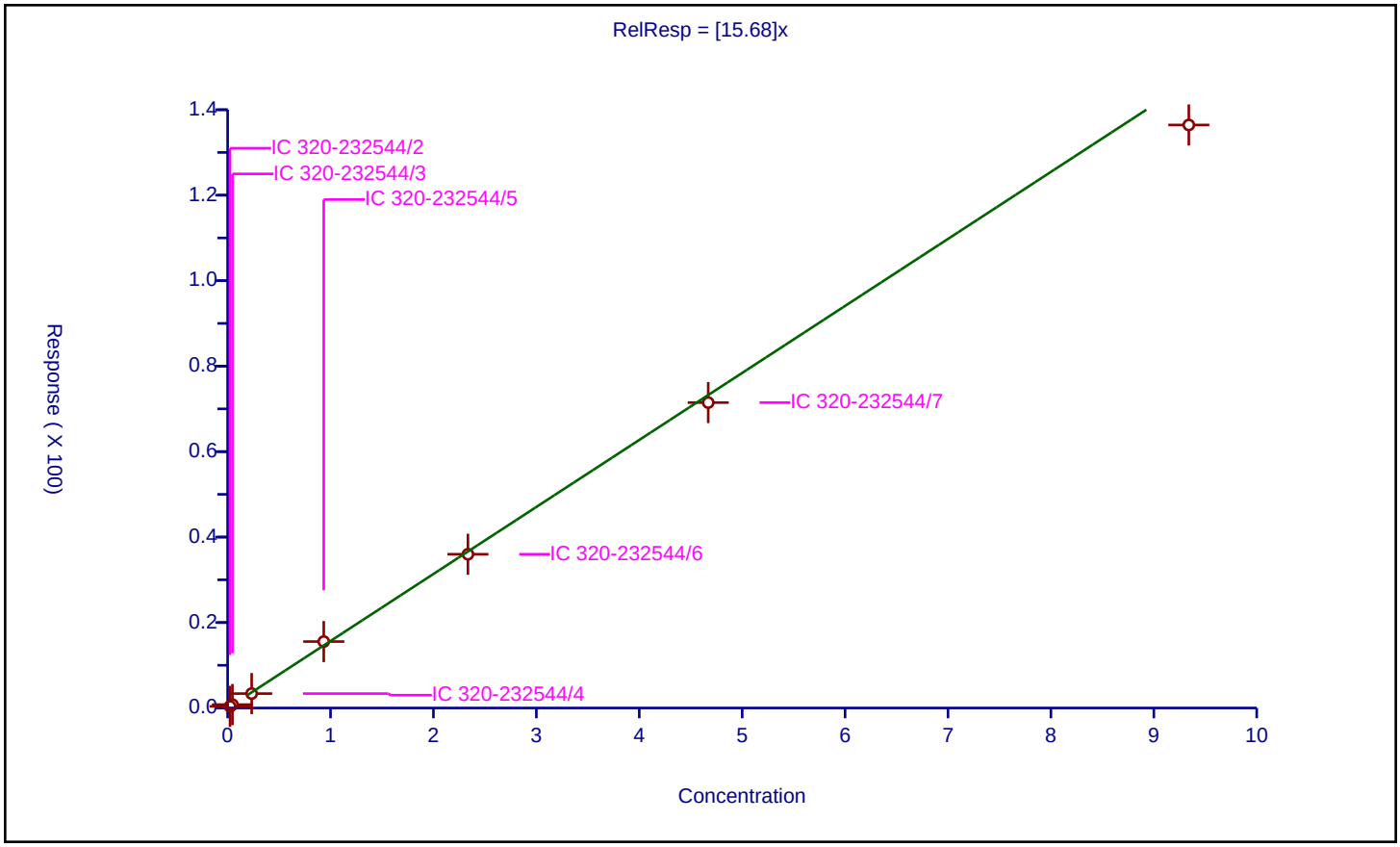
Curve Coefficients

Intercept:	0
Slope:	15.68

Error Coefficients

Standard Error:	2820000
Relative Standard Error:	6.5
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.995

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-232544/2	0.02335	0.378578	2.325	95425.0	16.21321	Y
2	IC 320-232544/3	0.0467	0.801035	2.325	101062.0	17.152779	Y
3	IC 320-232544/4	0.2335	3.371428	2.325	101856.0	14.438664	Y
4	IC 320-232544/5	0.934	15.549242	2.325	99704.0	16.648011	Y
5	IC 320-232544/6	2.335	35.980704	2.325	97817.0	15.409295	Y
6	IC 320-232544/7	4.67	71.471675	2.325	101582.0	15.304427	Y
7	IC 320-232544/8	9.34	136.432726	2.325	101003.0	14.607358	Y



Calibration / Perfluorohexanoic acid

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

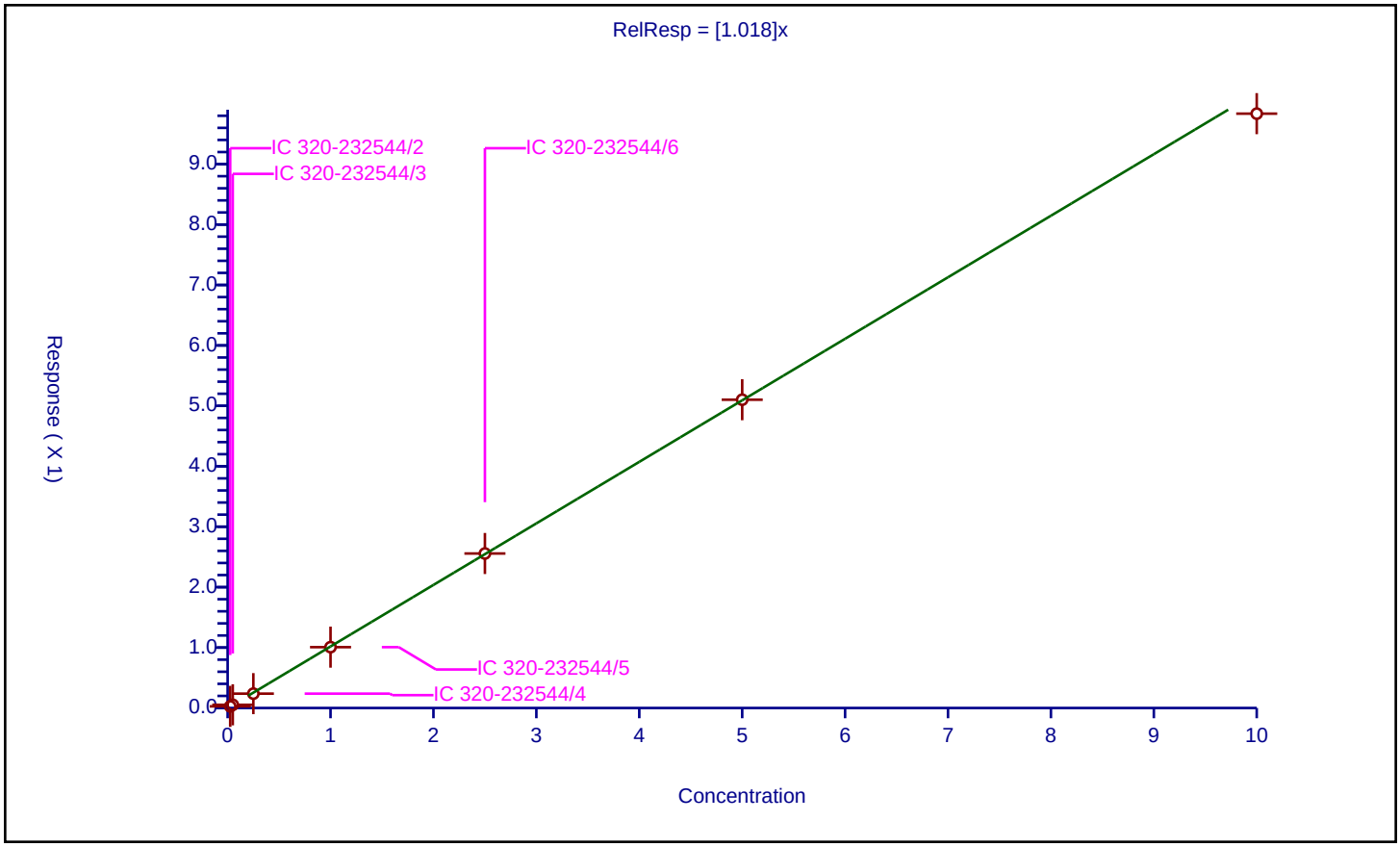
Curve Coefficients

Intercept:	0
Slope:	1.018

Error Coefficients

Standard Error:	8920000
Relative Standard Error:	4.4
Correlation Coefficient:	1.000
Coefficient of Determination (Adjusted):	0.998

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-232544/2	0.025	0.027099	2.5	4708005.0	1.083962	Y
2	IC 320-232544/3	0.05	0.052953	2.5	4862877.0	1.059054	Y
3	IC 320-232544/4	0.25	0.237835	2.5	4899406.0	0.951342	Y
4	IC 320-232544/5	1.0	1.006932	2.5	4790767.0	1.006932	Y
5	IC 320-232544/6	2.5	2.556519	2.5	4788239.0	1.022607	Y
6	IC 320-232544/7	5.0	5.101693	2.5	4780842.0	1.020339	Y
7	IC 320-232544/8	10.0	9.835202	2.5	4784020.0	0.98352	Y



Calibration / Perfluoropentanesulfonic acid

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

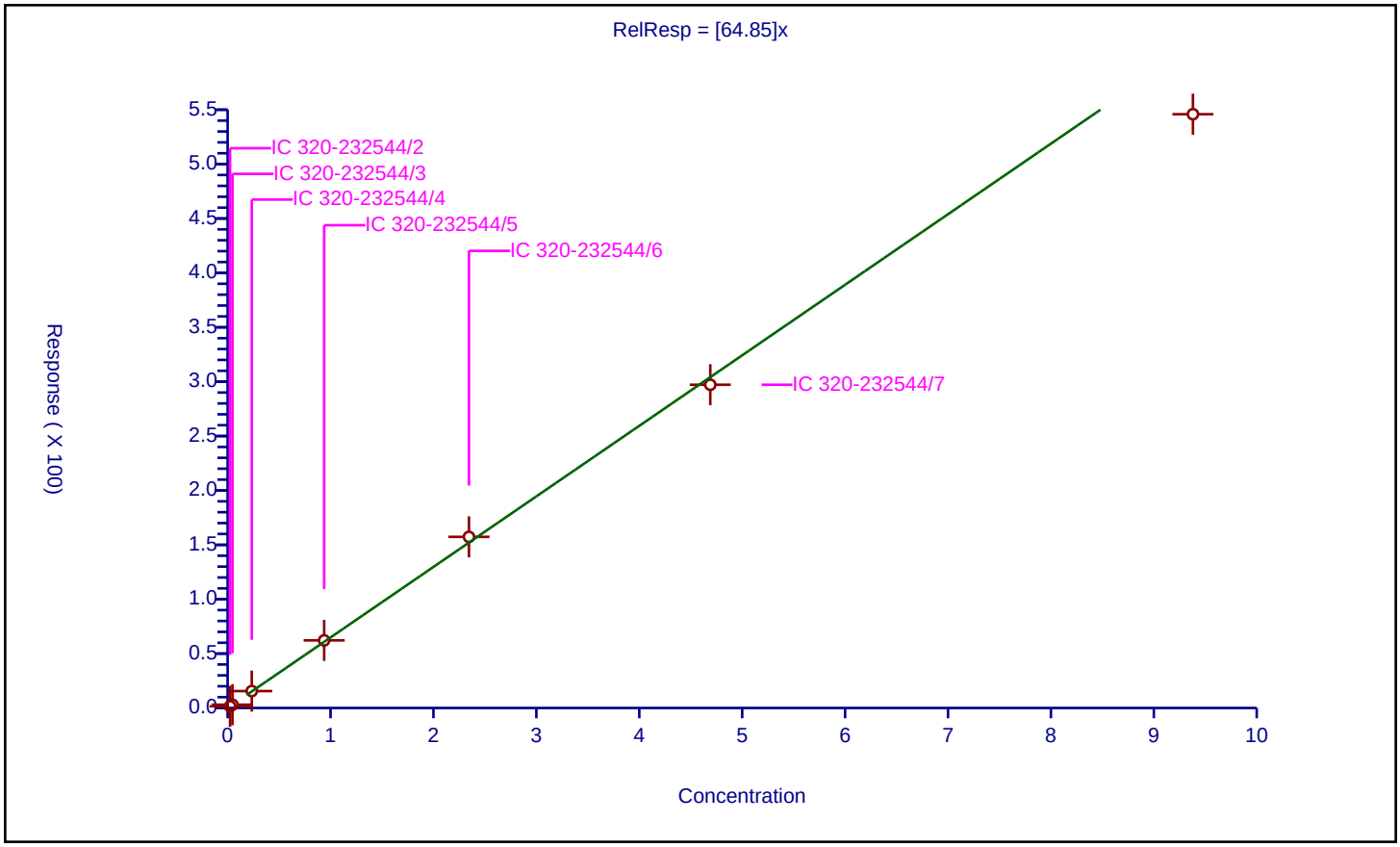
Curve Coefficients

Intercept:	0
Slope:	64.85

Error Coefficients

Standard Error:	11400000
Relative Standard Error:	5.0
Correlation Coefficient:	0.998
Coefficient of Determination (Adjusted):	0.997

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-232544/2	0.02345	1.577808	2.325	95425.0	67.283933	Y
2	IC 320-232544/3	0.0469	3.06507	2.325	101062.0	65.353299	Y
3	IC 320-232544/4	0.2345	15.564872	2.325	101856.0	66.374723	Y
4	IC 320-232544/5	0.938	62.163109	2.325	99704.0	66.271971	Y
5	IC 320-232544/6	2.345	157.327987	2.325	97817.0	67.090826	Y
6	IC 320-232544/7	4.69	297.189826	2.325	101582.0	63.366701	Y
7	IC 320-232544/8	9.38	545.88955	2.325	101003.0	58.19718	Y



Calibration / Perfluoro(2-propoxypropanoic) acid

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

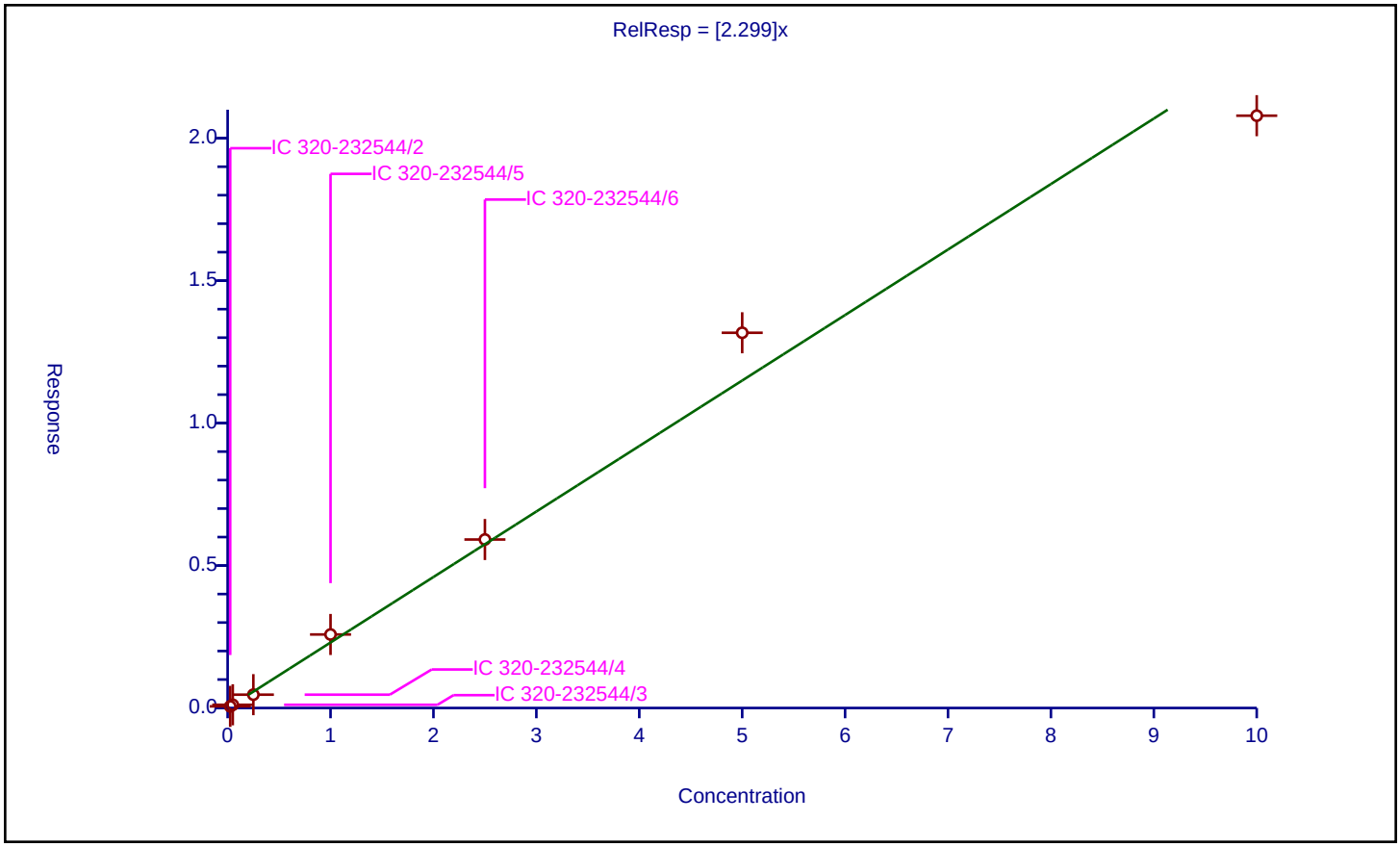
Curve Coefficients

Intercept:	0
Slope:	2.299

Error Coefficients

Standard Error:	1740000
Relative Standard Error:	11.6
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.984

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-232544/2	0.025	0.057642	2.5	346971.0	2.305668	Y
2	IC 320-232544/3	0.05	0.112771	2.5	410277.0	2.255427	Y
3	IC 320-232544/4	0.25	0.467899	2.5	458876.0	1.871595	Y
4	IC 320-232544/5	1.0	2.580991	2.5	350748.0	2.580991	Y
5	IC 320-232544/6	2.5	5.914076	2.5	380912.0	2.36563	Y
6	IC 320-232544/7	5.0	13.171536	2.5	368208.0	2.634307	Y
7	IC 320-232544/8	10.0	20.791316	2.5	441540.0	2.079132	Y



Calibration / Perfluoroheptanoic acid

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

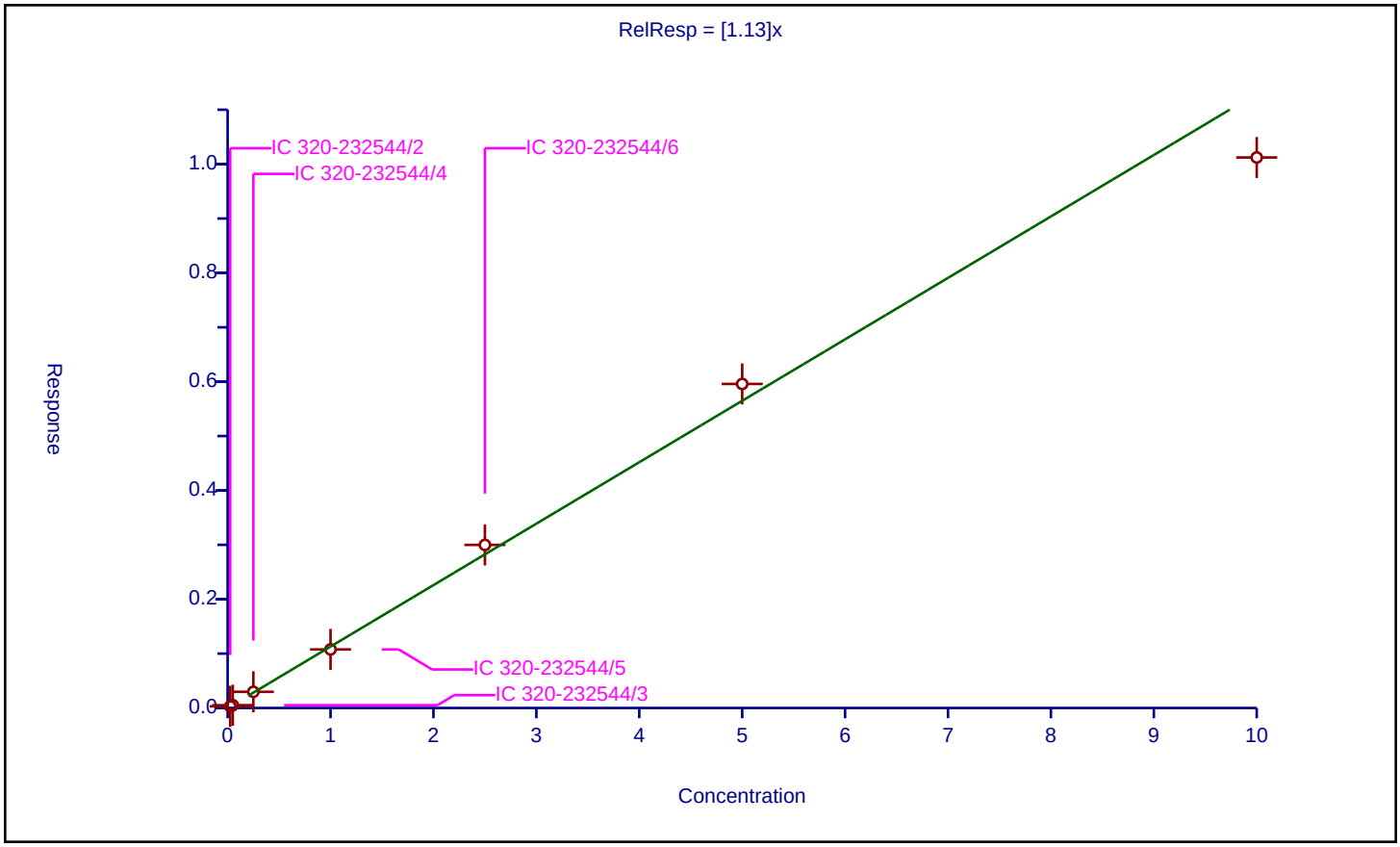
Curve Coefficients

Intercept:	0
Slope:	1.13

Error Coefficients

Standard Error:	8430000
Relative Standard Error:	7.7
Correlation Coefficient:	0.997
Coefficient of Determination (Adjusted):	0.993

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-232544/2	0.025	0.03026	2.5	4159575.0	1.210388	Y
2	IC 320-232544/3	0.05	0.051393	2.5	4459007.0	1.027852	Y
3	IC 320-232544/4	0.25	0.297501	2.5	4232132.0	1.190005	Y
4	IC 320-232544/5	1.0	1.076488	2.5	4473611.0	1.076488	Y
5	IC 320-232544/6	2.5	2.998781	2.5	4168061.0	1.199512	Y
6	IC 320-232544/7	5.0	5.958257	2.5	4055763.0	1.191651	Y
7	IC 320-232544/8	10.0	10.122026	2.5	4305905.0	1.012203	Y



Calibration / Perfluorohexanesulfonic acid

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

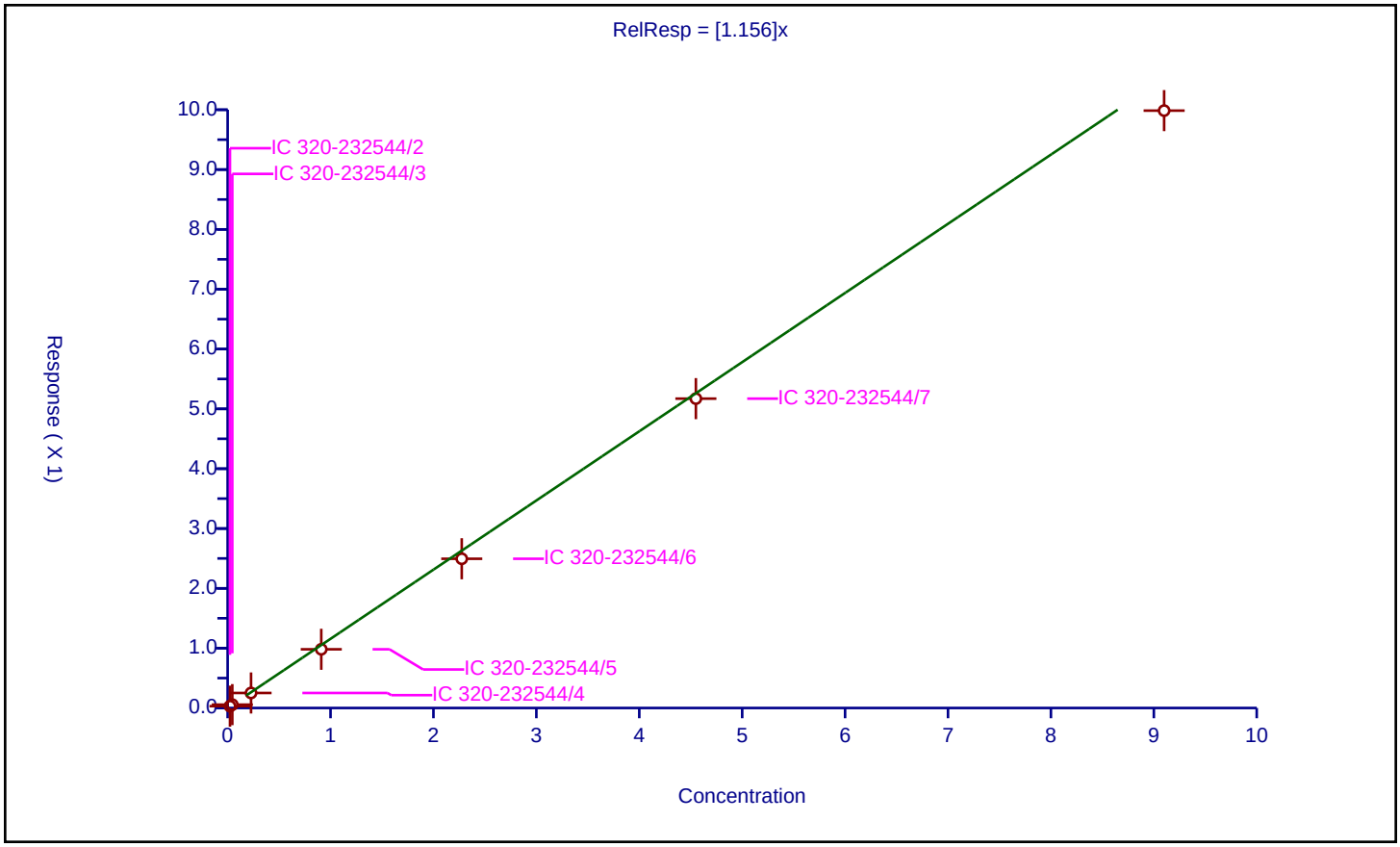
Curve Coefficients

Intercept:	0
Slope:	1.156

Error Coefficients

Standard Error:	9340000
Relative Standard Error:	8.4
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.990

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-232544/2	0.02275	0.030502	2.365	5033013.0	1.340726	Y
2	IC 320-232544/3	0.0455	0.056402	2.365	5278239.0	1.239607	Y
3	IC 320-232544/4	0.2275	0.251287	2.365	5023662.0	1.10456	Y
4	IC 320-232544/5	0.91	0.981428	2.365	5143052.0	1.078493	Y
5	IC 320-232544/6	2.275	2.494378	2.365	4895856.0	1.09643	Y
6	IC 320-232544/7	4.55	5.171003	2.365	4746316.0	1.136484	Y
7	IC 320-232544/8	9.1	9.985308	2.365	4642819.0	1.097287	Y



Calibration

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

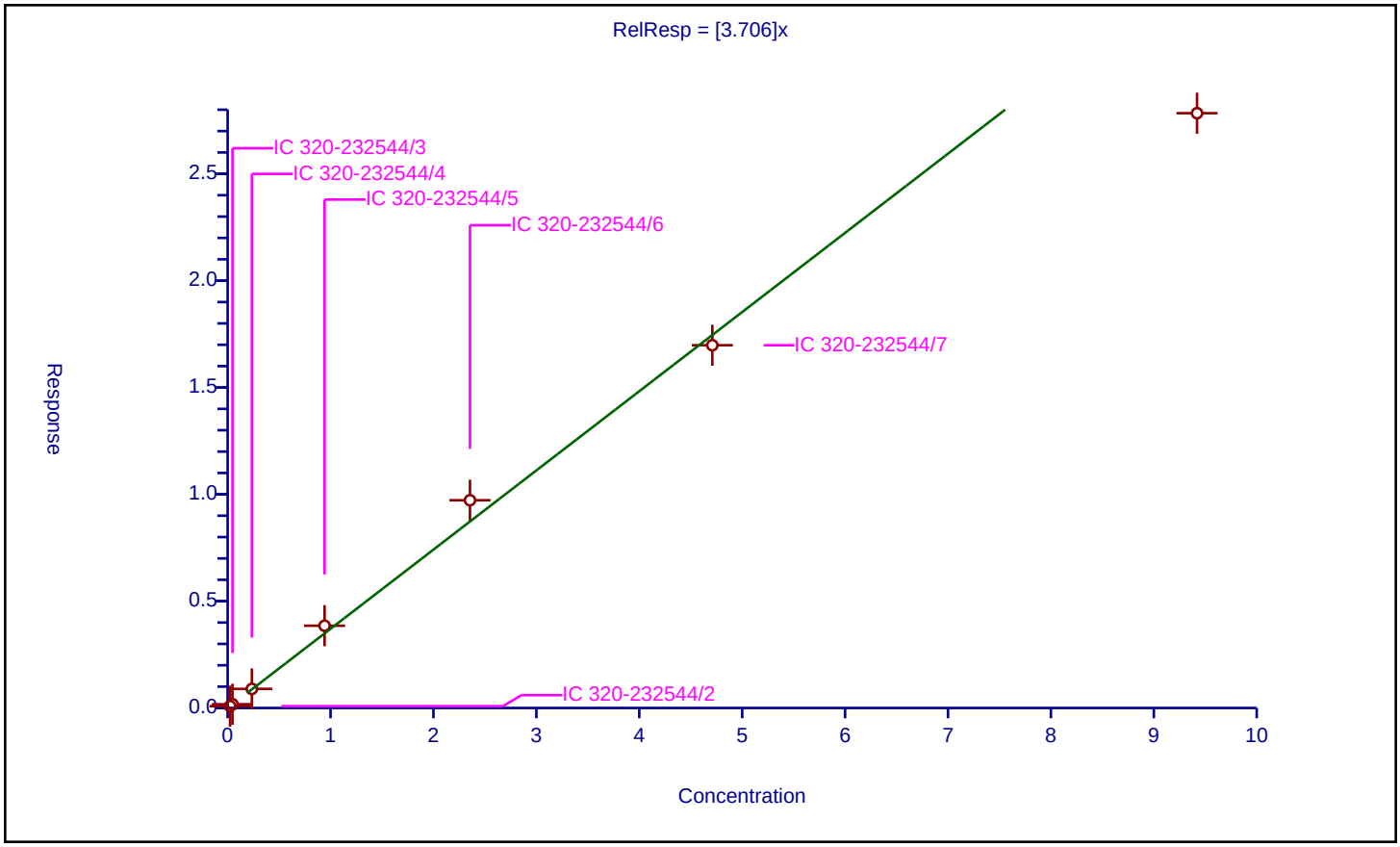
Curve Coefficients

Intercept:	0
Slope:	3.706

Error Coefficients

Standard Error:	20200000
Relative Standard Error:	10.5
Correlation Coefficient:	0.982
Coefficient of Determination (Adjusted):	0.987

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-232544/2	0.02355	0.085639	2.39	3537401.0	3.636478	Y
2	IC 320-232544/3	0.0471	0.175895	2.39	3601856.0	3.734501	Y
3	IC 320-232544/4	0.2355	0.89413	2.39	3866373.0	3.796732	Y
4	IC 320-232544/5	0.942	3.85045	2.39	3675491.0	4.087526	Y
5	IC 320-232544/6	2.355	9.722979	2.39	3463003.0	4.128653	Y
6	IC 320-232544/7	4.71	16.978466	2.39	3487989.0	3.60477	Y
7	IC 320-232544/8	9.42	27.837923	2.39	3441443.0	2.955193	Y



Calibration / 1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

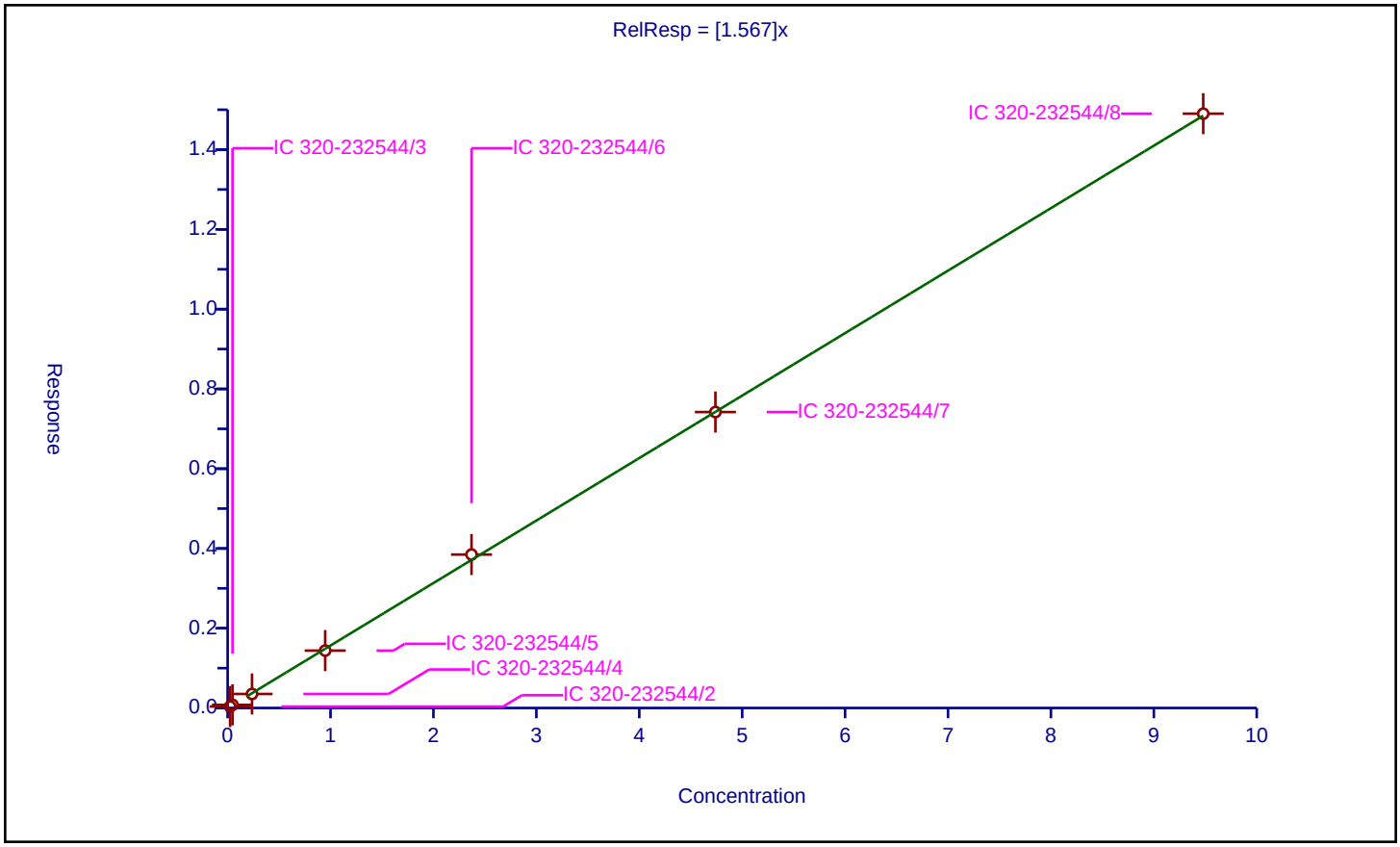
Curve Coefficients

Intercept:	0
Slope:	1.567

Error Coefficients

Standard Error:	2540000
Relative Standard Error:	4.0
Correlation Coefficient:	1.000
Coefficient of Determination (Adjusted):	0.998

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-232544/2	0.0237	0.036389	2.375	931220.0	1.535416	Y
2	IC 320-232544/3	0.0474	0.079036	2.375	945420.0	1.667427	Y
3	IC 320-232544/4	0.237	0.351712	2.375	929925.0	1.484018	Y
4	IC 320-232544/5	0.948	1.439303	2.375	956602.0	1.518252	Y
5	IC 320-232544/6	2.37	3.847379	2.375	862284.0	1.623366	Y
6	IC 320-232544/7	4.74	7.419965	2.375	887494.0	1.565393	Y
7	IC 320-232544/8	9.48	14.90114	2.375	856056.0	1.57185	Y



Calibration / Perfluoroheptanesulfonic acid

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

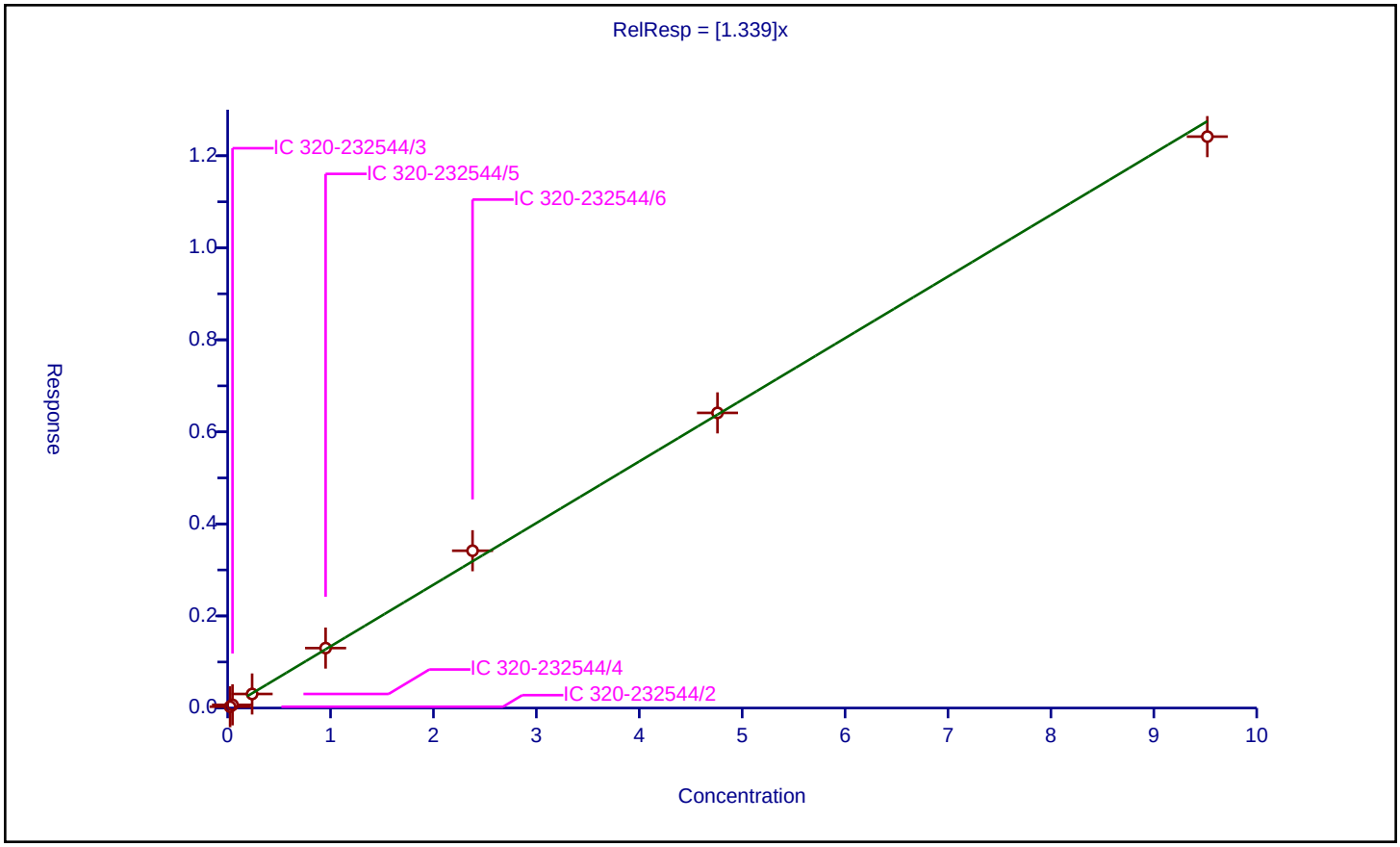
Curve Coefficients

Intercept:	0
Slope:	1.339

Error Coefficients

Standard Error:	8520000
Relative Standard Error:	6.7
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.995

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-232544/2	0.0238	0.028384	2.39	3537401.0	1.192613	Y
2	IC 320-232544/3	0.0476	0.068913	2.39	3601856.0	1.447759	Y
3	IC 320-232544/4	0.238	0.304814	2.39	3866373.0	1.28073	Y
4	IC 320-232544/5	0.952	1.301761	2.39	3675491.0	1.367396	Y
5	IC 320-232544/6	2.38	3.41763	2.39	3463003.0	1.435979	Y
6	IC 320-232544/7	4.76	6.412886	2.39	3487989.0	1.347245	Y
7	IC 320-232544/8	9.52	12.415675	2.39	3441443.0	1.304168	Y



Calibration / Perfluorooctanoic acid

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

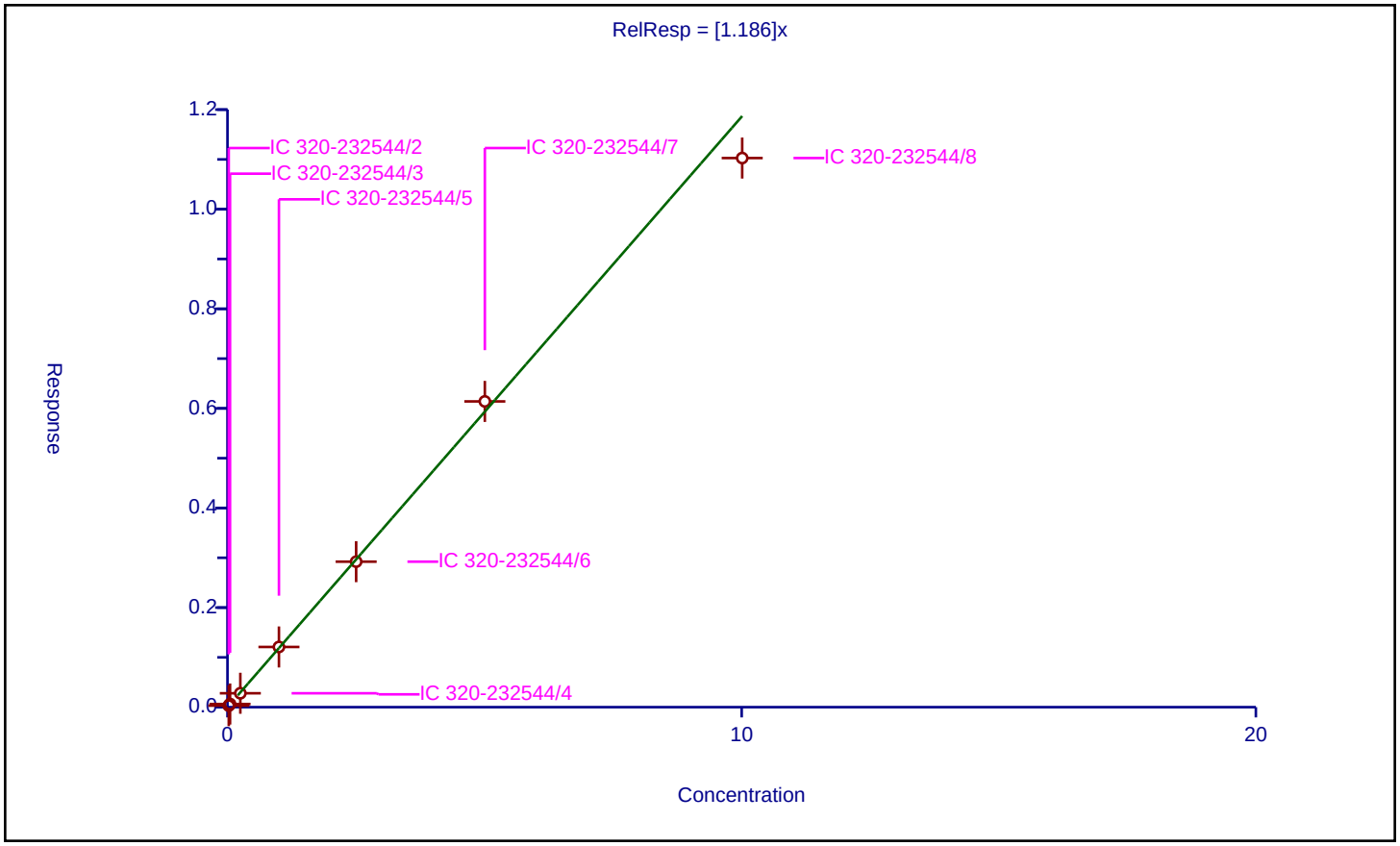
Curve Coefficients

Intercept:	0
Slope:	1.186

Error Coefficients

Standard Error:	8650000
Relative Standard Error:	5.0
Correlation Coefficient:	0.998
Coefficient of Determination (Adjusted):	0.997

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-232544/2	0.025025	0.030511	2.5	4104235.0	1.219227	Y
2	IC 320-232544/3	0.05005	0.063165	2.5	4361265.0	1.262041	Y
3	IC 320-232544/4	0.25025	0.279181	2.5	4350463.0	1.115607	Y
4	IC 320-232544/5	1.001	1.208866	2.5	4233363.0	1.207659	Y
5	IC 320-232544/6	2.5025	2.921782	2.5	4126992.0	1.167545	Y
6	IC 320-232544/7	5.005	6.140148	2.5	3996804.0	1.226803	Y
7	IC 320-232544/8	10.01	11.027302	2.5	4086844.0	1.101629	Y



Calibration / Perfluorononanoic acid

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

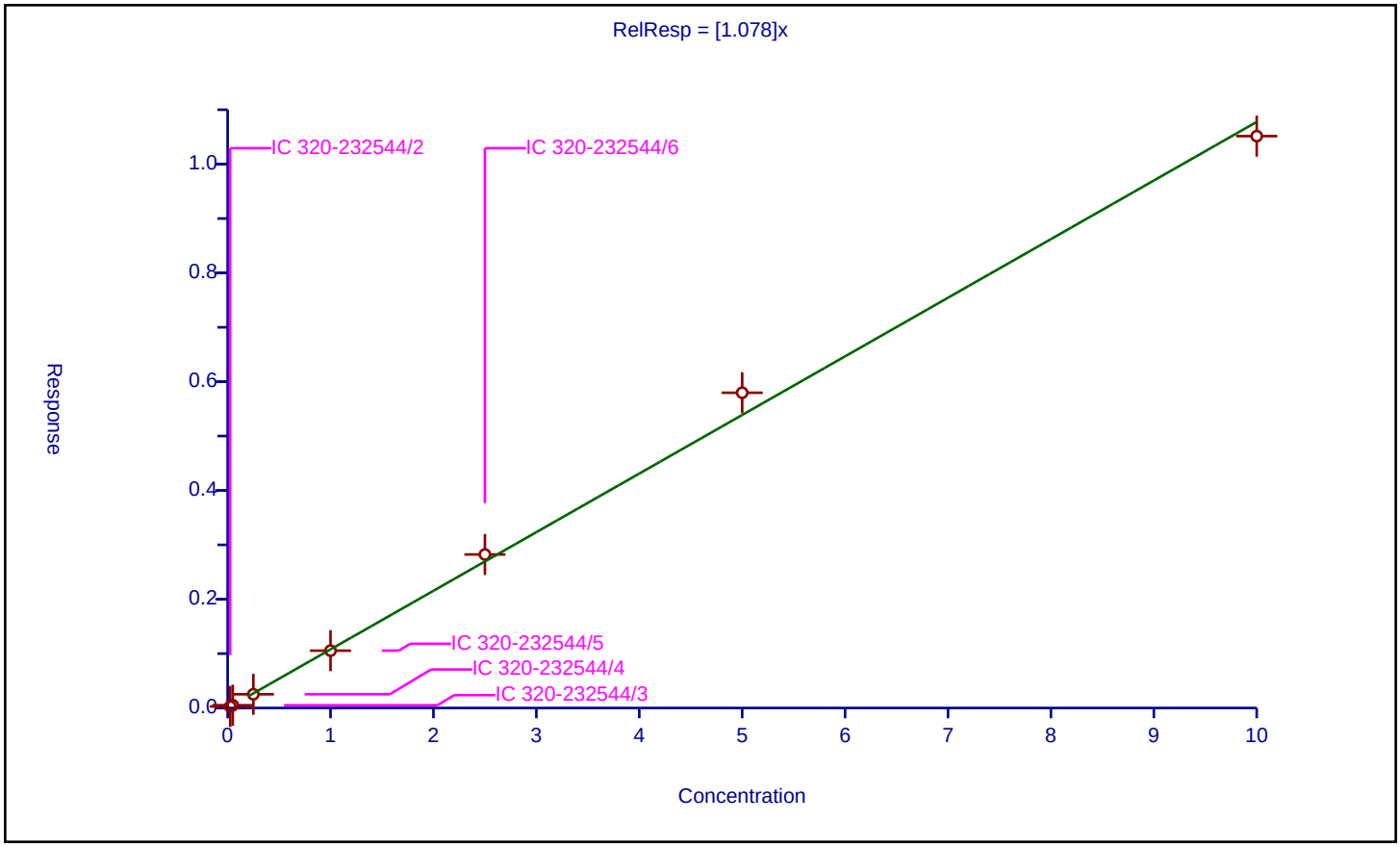
Curve Coefficients

Intercept:	0
Slope:	1.078

Error Coefficients

Standard Error:	7060000
Relative Standard Error:	5.4
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.996

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-232544/2	0.025	0.028033	2.5	3396934.0	1.121305	Y
2	IC 320-232544/3	0.05	0.050925	2.5	3648217.0	1.018498	Y
3	IC 320-232544/4	0.25	0.252244	2.5	3821005.0	1.008975	Y
4	IC 320-232544/5	1.0	1.054614	2.5	3628571.0	1.054614	Y
5	IC 320-232544/6	2.5	2.822941	2.5	3465887.0	1.129176	Y
6	IC 320-232544/7	5.0	5.796447	2.5	3391733.0	1.159289	Y
7	IC 320-232544/8	10.0	10.514767	2.5	3524695.0	1.051477	Y



Calibration / Perfluorooctane sulfonic acid

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

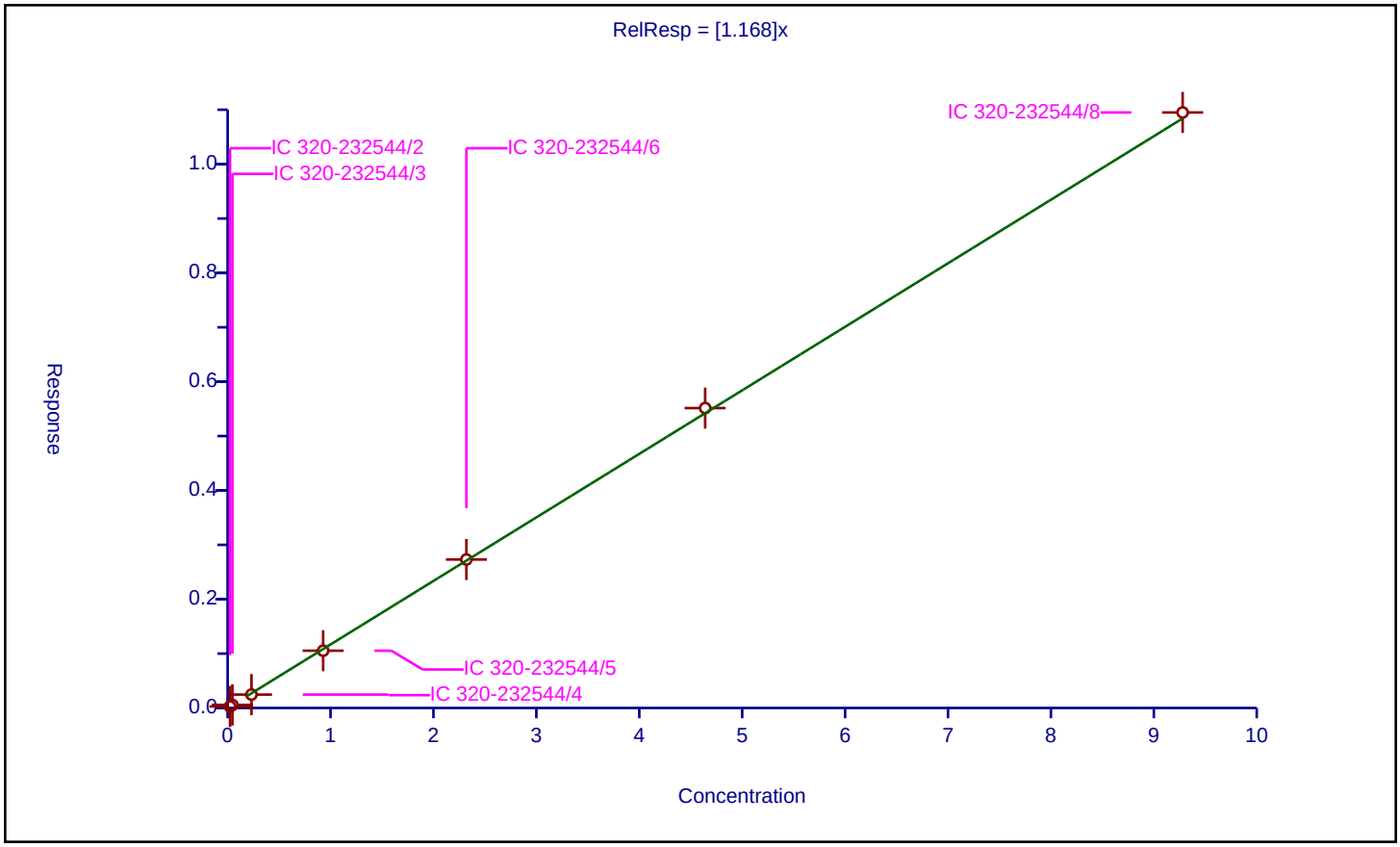
Curve Coefficients

Intercept:	0
Slope:	1.168

Error Coefficients

Standard Error:	7440000
Relative Standard Error:	4.6
Correlation Coefficient:	1.000
Coefficient of Determination (Adjusted):	0.997

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-232544/2	0.0232	0.028121	2.39	3537401.0	1.212099	Y
2	IC 320-232544/3	0.0464	0.056618	2.39	3601856.0	1.220211	Y
3	IC 320-232544/4	0.232	0.246816	2.39	3866373.0	1.063863	Y
4	IC 320-232544/5	0.928	1.053621	2.39	3675491.0	1.135367	Y
5	IC 320-232544/6	2.32	2.730142	2.39	3463003.0	1.176785	Y
6	IC 320-232544/7	4.64	5.514535	2.39	3487989.0	1.188477	Y
7	IC 320-232544/8	9.28	10.949868	2.39	3441443.0	1.179943	Y



Calibration / 9-Chlorohexadecafluoro-3-oxanonane-1-sulfonate

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

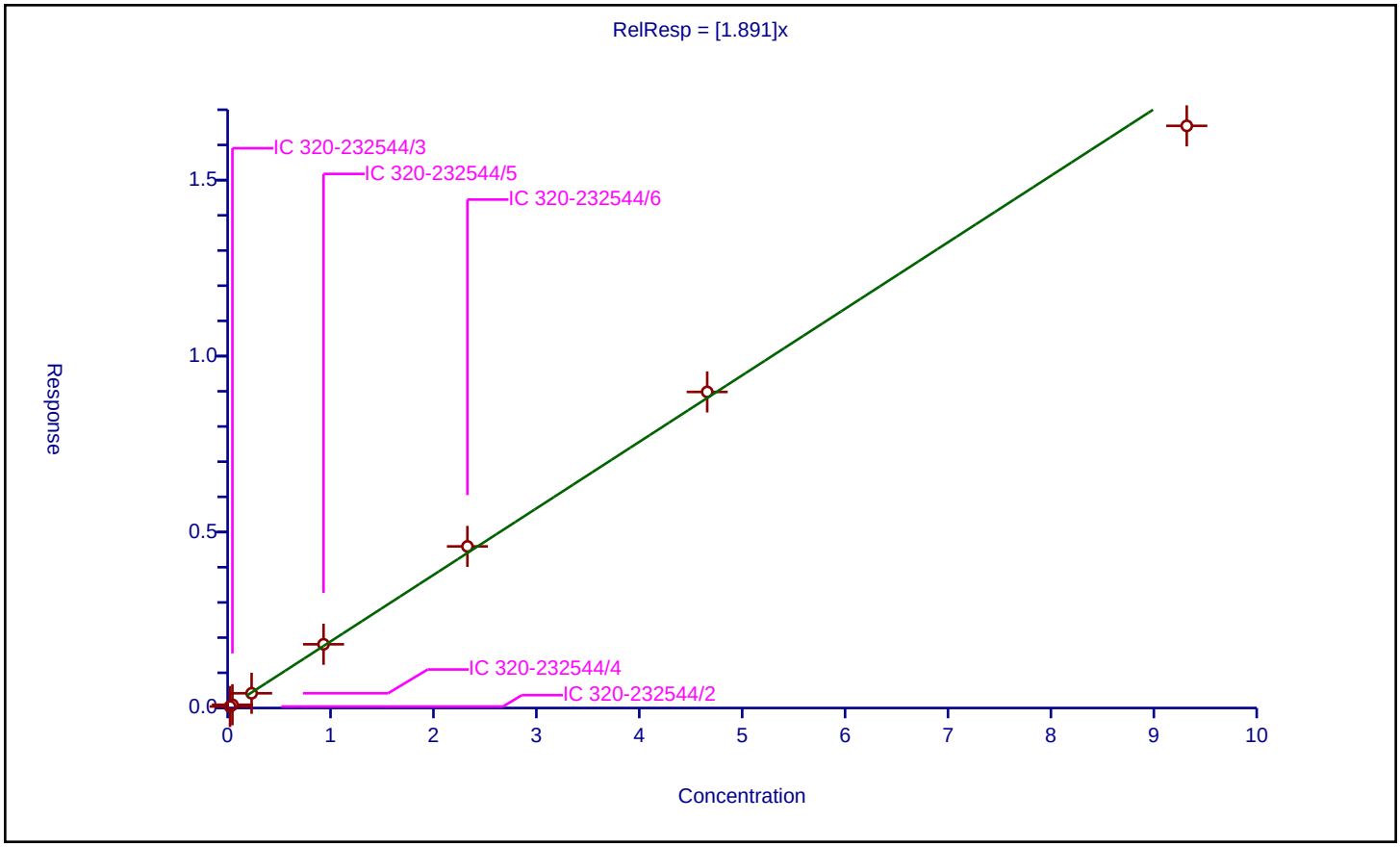
Curve Coefficients

Intercept:	0
Slope:	1.891

Error Coefficients

Standard Error:	11500000
Relative Standard Error:	4.6
Correlation Coefficient:	0.997
Coefficient of Determination (Adjusted):	0.997

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-232544/2	0.0233	0.042804	2.39	3537401.0	1.837095	Y
2	IC 320-232544/3	0.0466	0.0926	2.39	3601856.0	1.987123	Y
3	IC 320-232544/4	0.233	0.417962	2.39	3866373.0	1.79383	Y
4	IC 320-232544/5	0.932	1.810667	2.39	3675491.0	1.942775	Y
5	IC 320-232544/6	2.33	4.591334	2.39	3463003.0	1.970529	Y
6	IC 320-232544/7	4.66	8.981398	2.39	3487989.0	1.927339	Y
7	IC 320-232544/8	9.32	16.542157	2.39	3441443.0	1.77491	Y



Calibration / Perfluorooctane Sulfonamide

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

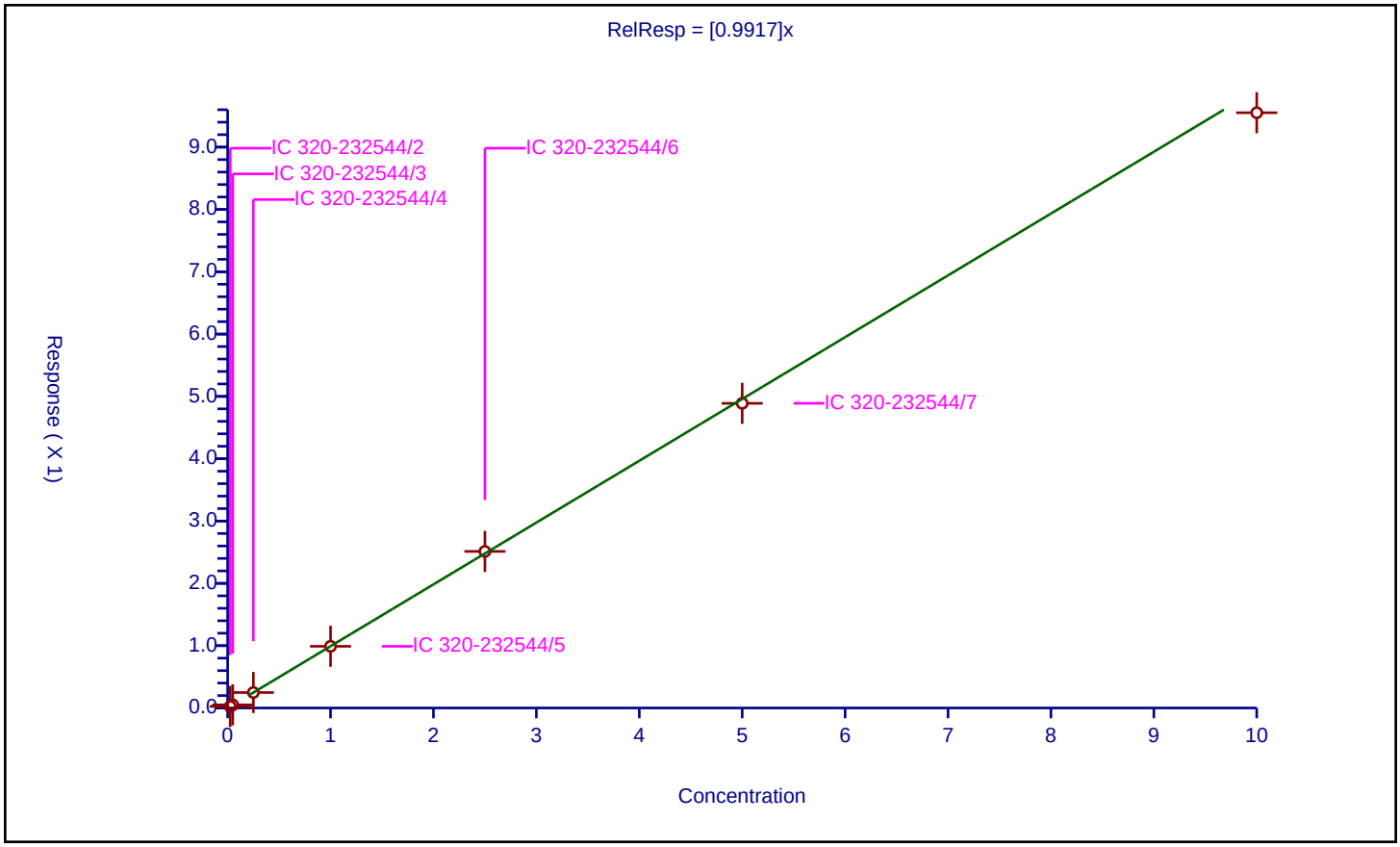
Curve Coefficients

Intercept:	0
Slope:	0.9917

Error Coefficients

Standard Error:	8990000
Relative Standard Error:	2.0
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-232544/2	0.025	0.025165	2.5	5039791.0	1.006609	Y
2	IC 320-232544/3	0.05	0.050649	2.5	5388753.0	1.012971	Y
3	IC 320-232544/4	0.25	0.248606	2.5	5465004.0	0.994424	Y
4	IC 320-232544/5	1.0	0.989828	2.5	5353484.0	0.989828	Y
5	IC 320-232544/6	2.5	2.512579	2.5	5102615.0	1.005032	Y
6	IC 320-232544/7	5.0	4.888785	2.5	5147225.0	0.977757	Y
7	IC 320-232544/8	10.0	9.551988	2.5	4912326.0	0.955199	Y



Calibration / 1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

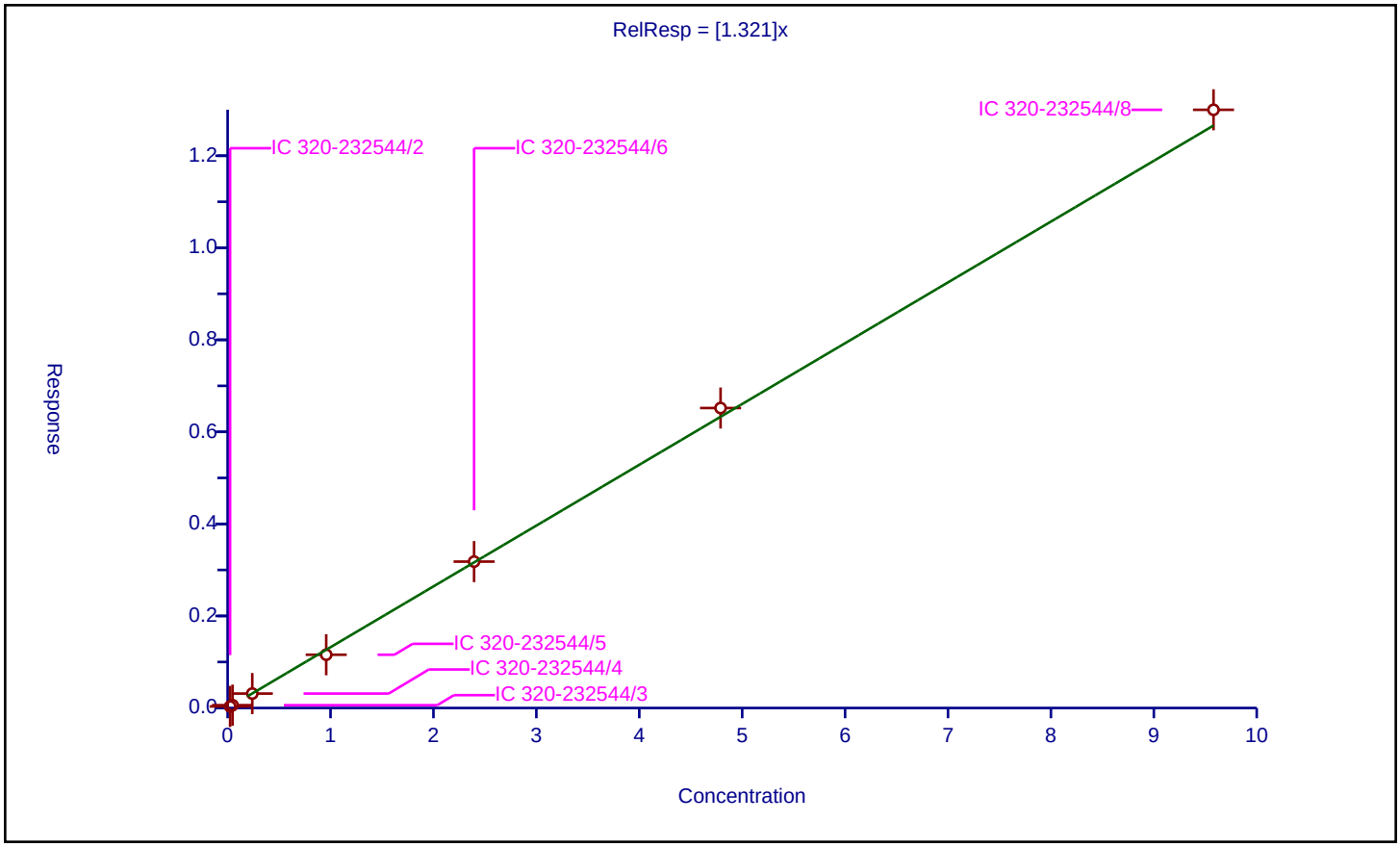
Curve Coefficients

Intercept:	0
Slope:	1.321

Error Coefficients

Standard Error:	2340000
Relative Standard Error:	4.8
Correlation Coefficient:	1.000
Coefficient of Determination (Adjusted):	0.997

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-232544/2	0.02395	0.033561	2.395	1082564.0	1.401303	Y
2	IC 320-232544/3	0.0479	0.061421	2.395	1130537.0	1.282267	Y
3	IC 320-232544/4	0.2395	0.313756	2.395	1048384.0	1.310045	Y
4	IC 320-232544/5	0.958	1.157745	2.395	1068438.0	1.208503	Y
5	IC 320-232544/6	2.395	3.181013	2.395	978302.0	1.328189	Y
6	IC 320-232544/7	4.79	6.518577	2.395	933375.0	1.360872	Y
7	IC 320-232544/8	9.58	12.998877	2.395	908289.0	1.356877	Y



Calibration / Perfluorononanesulfonic acid

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

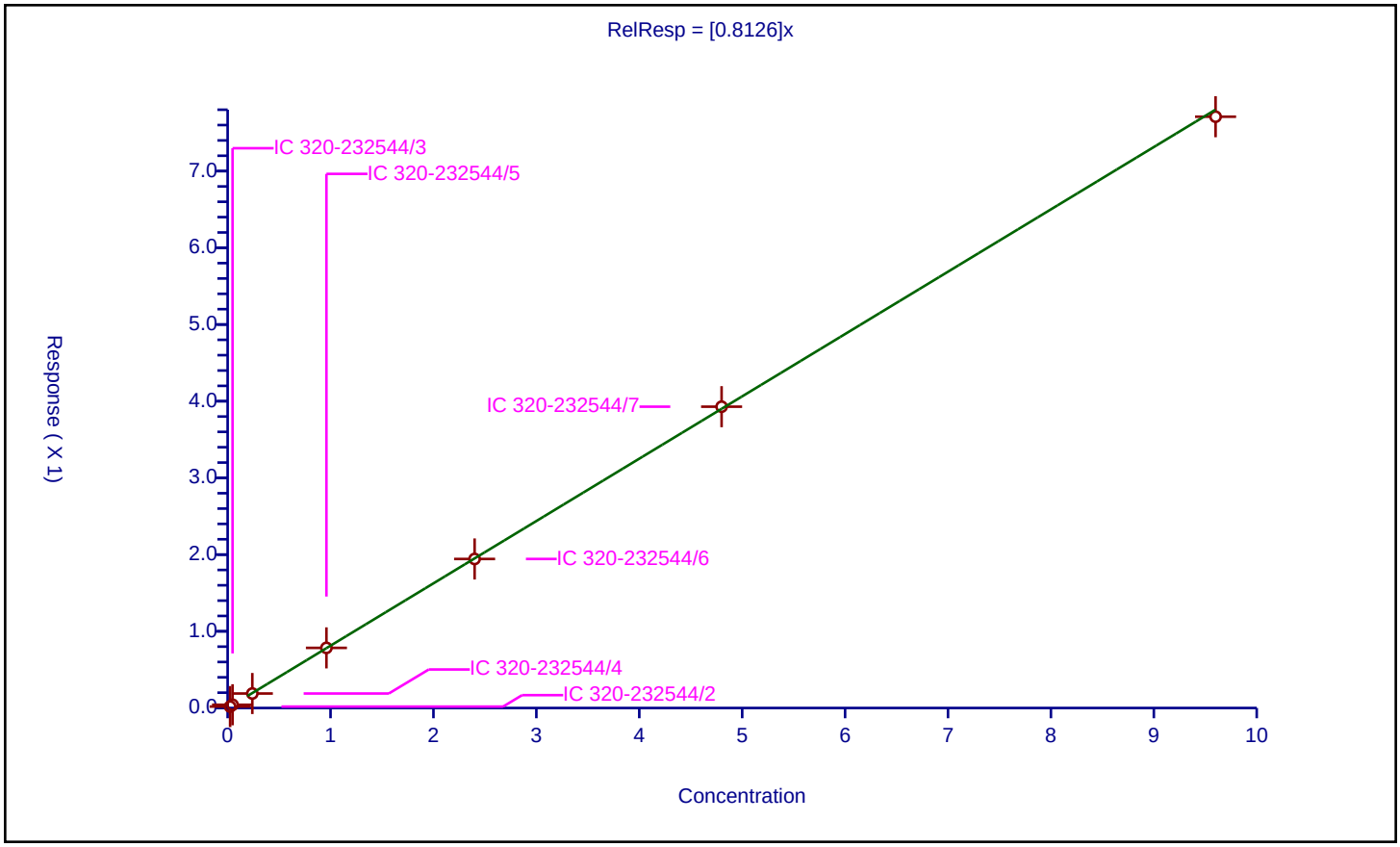
Curve Coefficients

Intercept:	0
Slope:	0.8126

Error Coefficients

Standard Error:	5250000
Relative Standard Error:	4.4
Correlation Coefficient:	1.000
Coefficient of Determination (Adjusted):	0.998

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-232544/2	0.024	0.018485	2.39	3537401.0	0.770198	Y
2	IC 320-232544/3	0.048	0.042425	2.39	3601856.0	0.883858	Y
3	IC 320-232544/4	0.24	0.188812	2.39	3866373.0	0.786715	Y
4	IC 320-232544/5	0.96	0.783816	2.39	3675491.0	0.816475	Y
5	IC 320-232544/6	2.4	1.943073	2.39	3463003.0	0.809614	Y
6	IC 320-232544/7	4.8	3.928565	2.39	3487989.0	0.818451	Y
7	IC 320-232544/8	9.6	7.709158	2.39	3441443.0	0.803037	Y



Calibration / Perfluorodecanoic acid

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

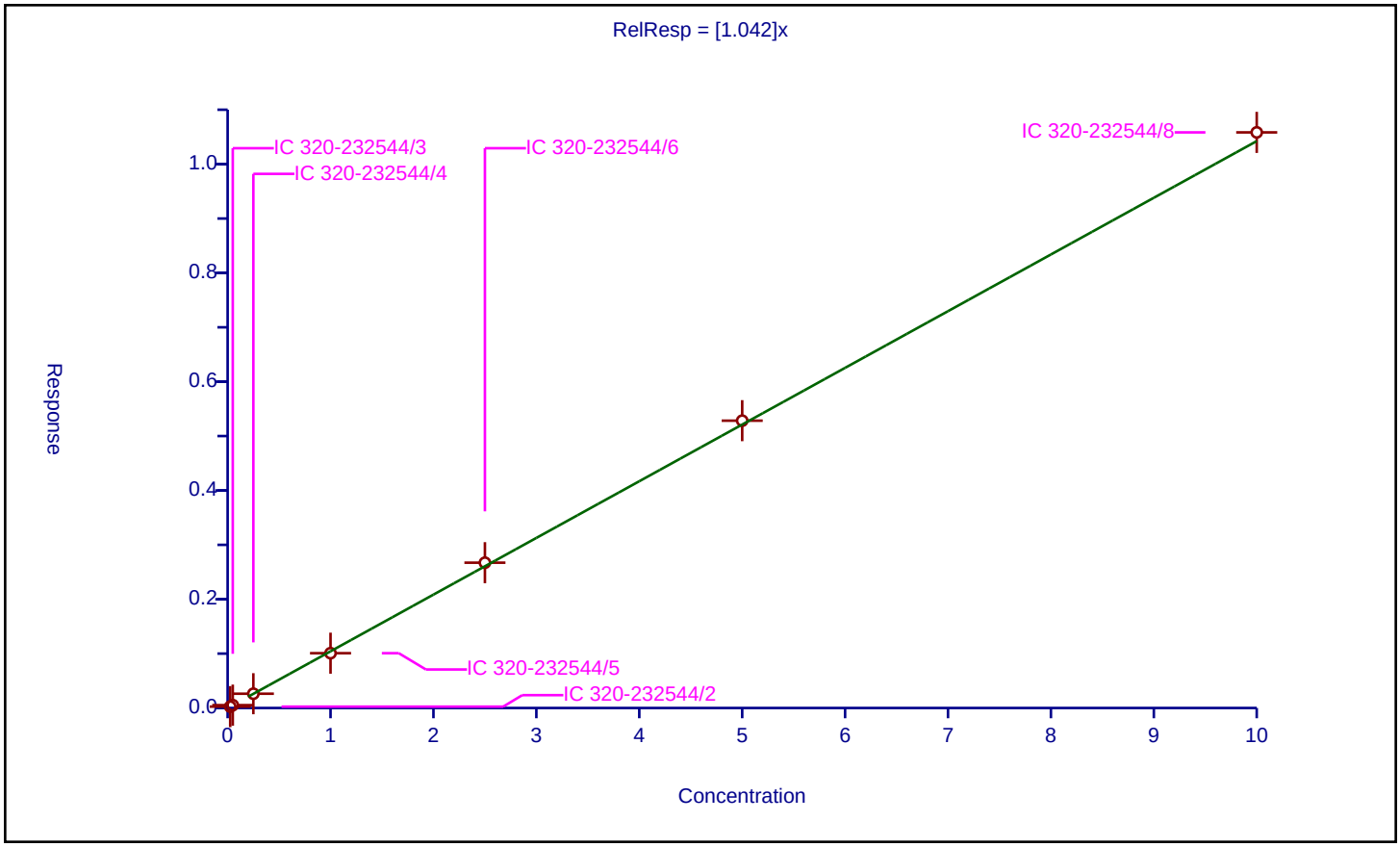
Curve Coefficients

Intercept:	0
Slope:	1.042

Error Coefficients

Standard Error:	5700000
Relative Standard Error:	2.4
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-232544/2	0.025	0.025139	2.5	3058439.0	1.005578	Y
2	IC 320-232544/3	0.05	0.052415	2.5	3233809.0	1.048299	Y
3	IC 320-232544/4	0.25	0.262727	2.5	3204267.0	1.050908	Y
4	IC 320-232544/5	1.0	1.007863	2.5	3209160.0	1.007863	Y
5	IC 320-232544/6	2.5	2.671582	2.5	2937890.0	1.068633	Y
6	IC 320-232544/7	5.0	5.283014	2.5	2973033.0	1.056603	Y
7	IC 320-232544/8	10.0	10.583682	2.5	2835454.0	1.058368	Y



Calibration / N-methyl perfluorooctane sulfonamidoacetic acid

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

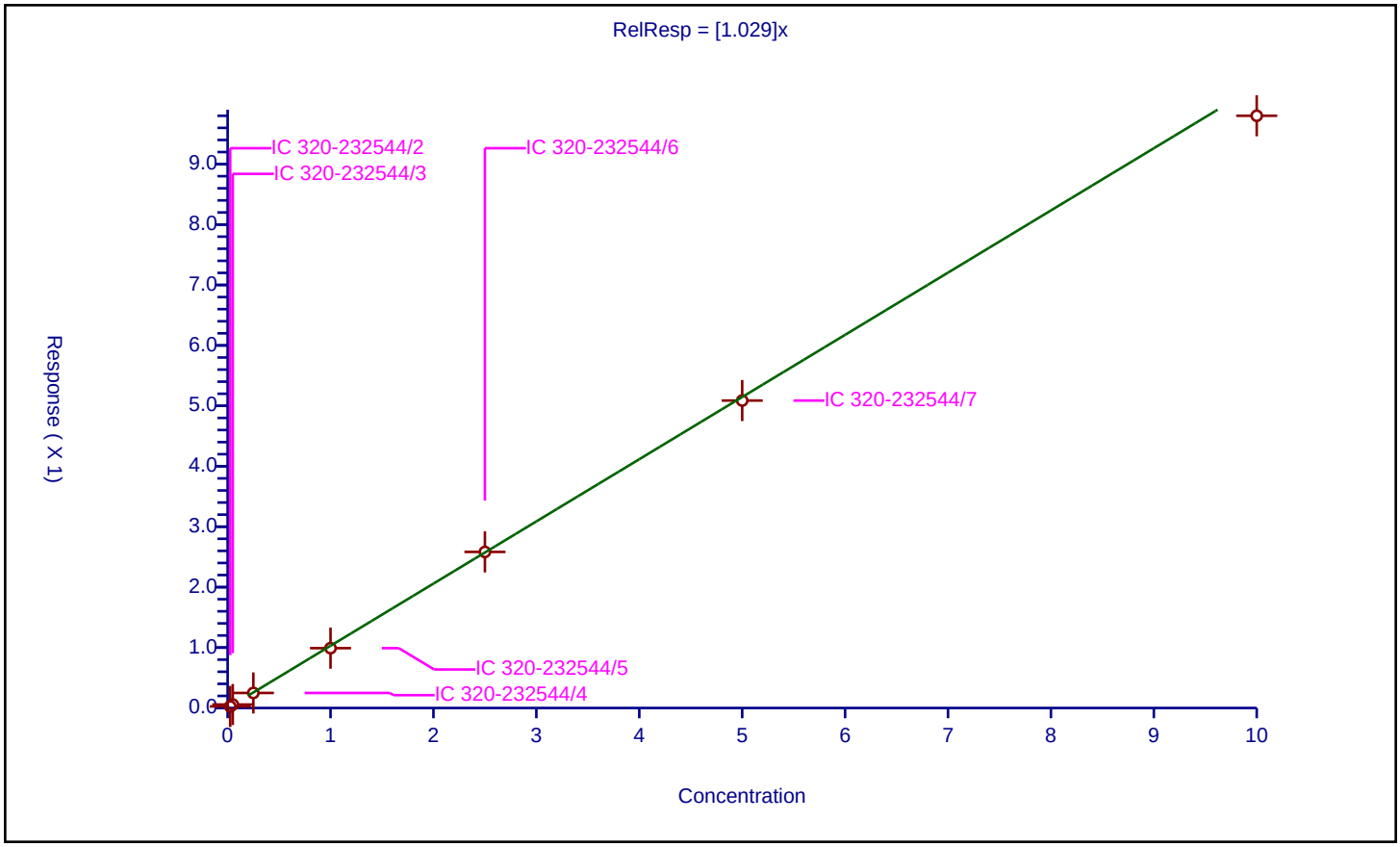
Curve Coefficients

Intercept:	0
Slope:	1.029

Error Coefficients

Standard Error:	3390000
Relative Standard Error:	5.7
Correlation Coefficient:	1.000
Coefficient of Determination (Adjusted):	0.996

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-232544/2	0.025	0.025789	2.5	1796921.0	1.031542	Y
2	IC 320-232544/3	0.05	0.05773	2.5	1841966.0	1.154609	Y
3	IC 320-232544/4	0.25	0.249282	2.5	1813682.0	0.997126	Y
4	IC 320-232544/5	1.0	0.99033	2.5	1791176.0	0.99033	Y
5	IC 320-232544/6	2.5	2.582774	2.5	1766929.0	1.033109	Y
6	IC 320-232544/7	5.0	5.087554	2.5	1780322.0	1.017511	Y
7	IC 320-232544/8	10.0	9.800357	2.5	1836553.0	0.980036	Y



Calibration / Perfluorodecane Sulfonic acid

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

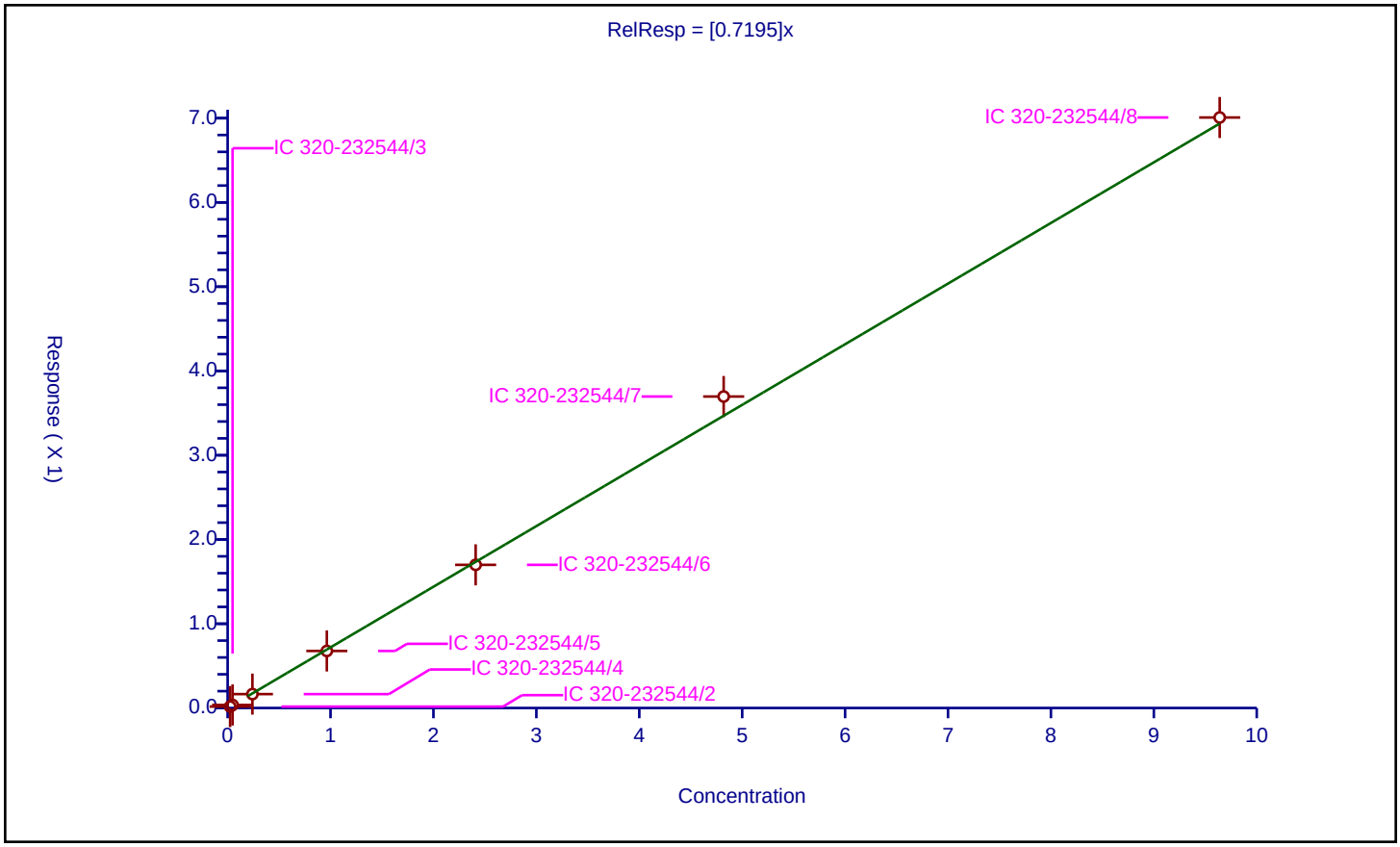
Curve Coefficients

Intercept:	0
Slope:	0.7195

Error Coefficients

Standard Error:	4800000
Relative Standard Error:	4.1
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.998

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-232544/2	0.0241	0.016926	2.39	3537401.0	0.702326	Y
2	IC 320-232544/3	0.0482	0.036086	2.39	3601856.0	0.748665	Y
3	IC 320-232544/4	0.241	0.164939	2.39	3866373.0	0.684393	Y
4	IC 320-232544/5	0.964	0.67713	2.39	3675491.0	0.702417	Y
5	IC 320-232544/6	2.41	1.698843	2.39	3463003.0	0.704914	Y
6	IC 320-232544/7	4.82	3.696516	2.39	3487989.0	0.766912	Y
7	IC 320-232544/8	9.64	7.007916	2.39	3441443.0	0.726962	Y



Calibration / N-ethyl perfluorooctane sulfonamidoacetic acid

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

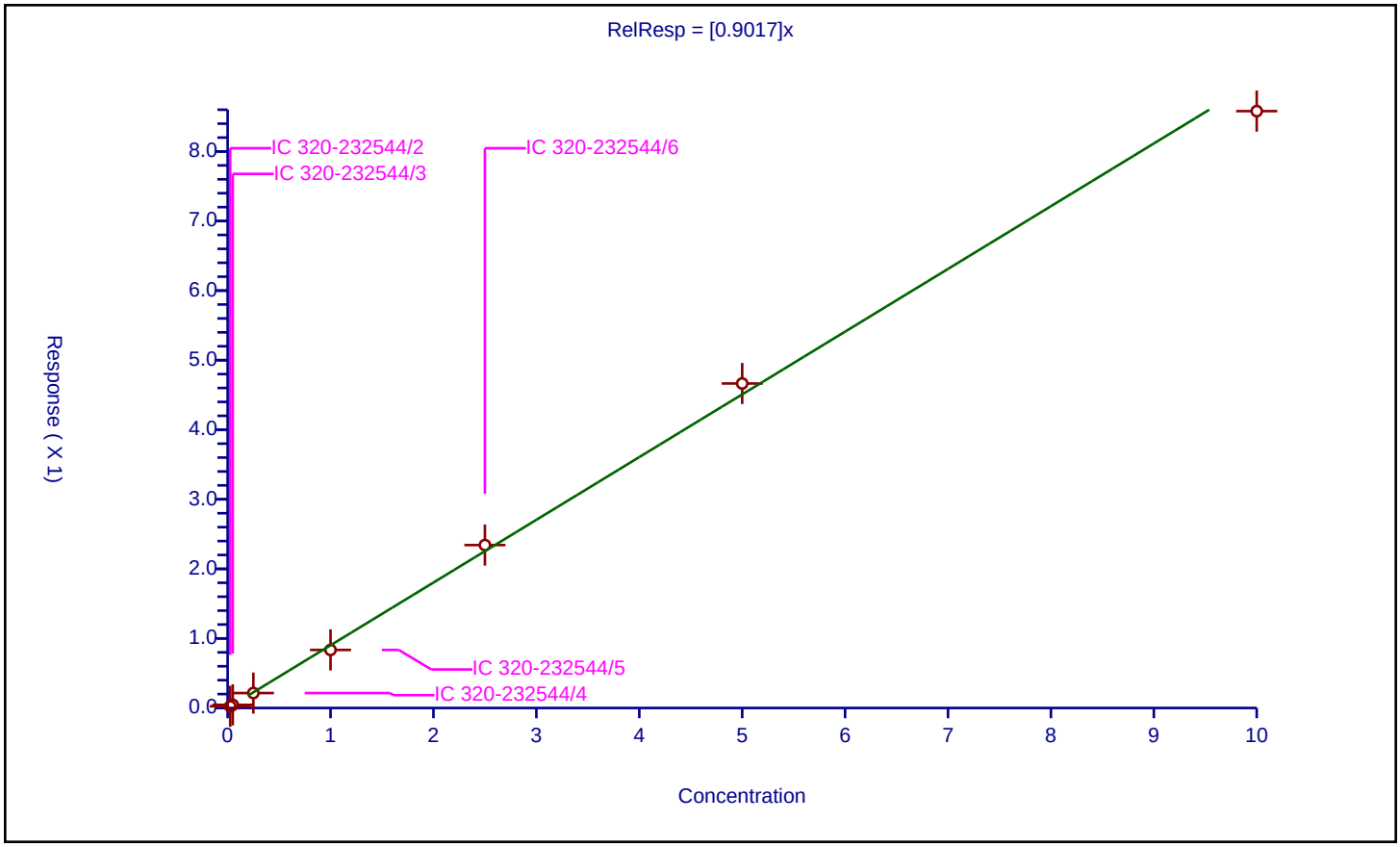
Curve Coefficients

Intercept:	0
Slope:	0.9017

Error Coefficients

Standard Error:	2740000
Relative Standard Error:	5.9
Correlation Coefficient:	0.998
Coefficient of Determination (Adjusted):	0.996

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-232544/2	0.025	0.024566	2.5	1773515.0	0.982625	Y
2	IC 320-232544/3	0.05	0.045312	2.5	1922718.0	0.906243	Y
3	IC 320-232544/4	0.25	0.215003	2.5	1875737.0	0.860014	Y
4	IC 320-232544/5	1.0	0.834857	2.5	1938000.0	0.834857	Y
5	IC 320-232544/6	2.5	2.342155	2.5	1654181.0	0.936862	Y
6	IC 320-232544/7	5.0	4.664746	2.5	1673669.0	0.932949	Y
7	IC 320-232544/8	10.0	8.580209	2.5	1656649.0	0.858021	Y



Calibration / Perfluoroundecanoic acid

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

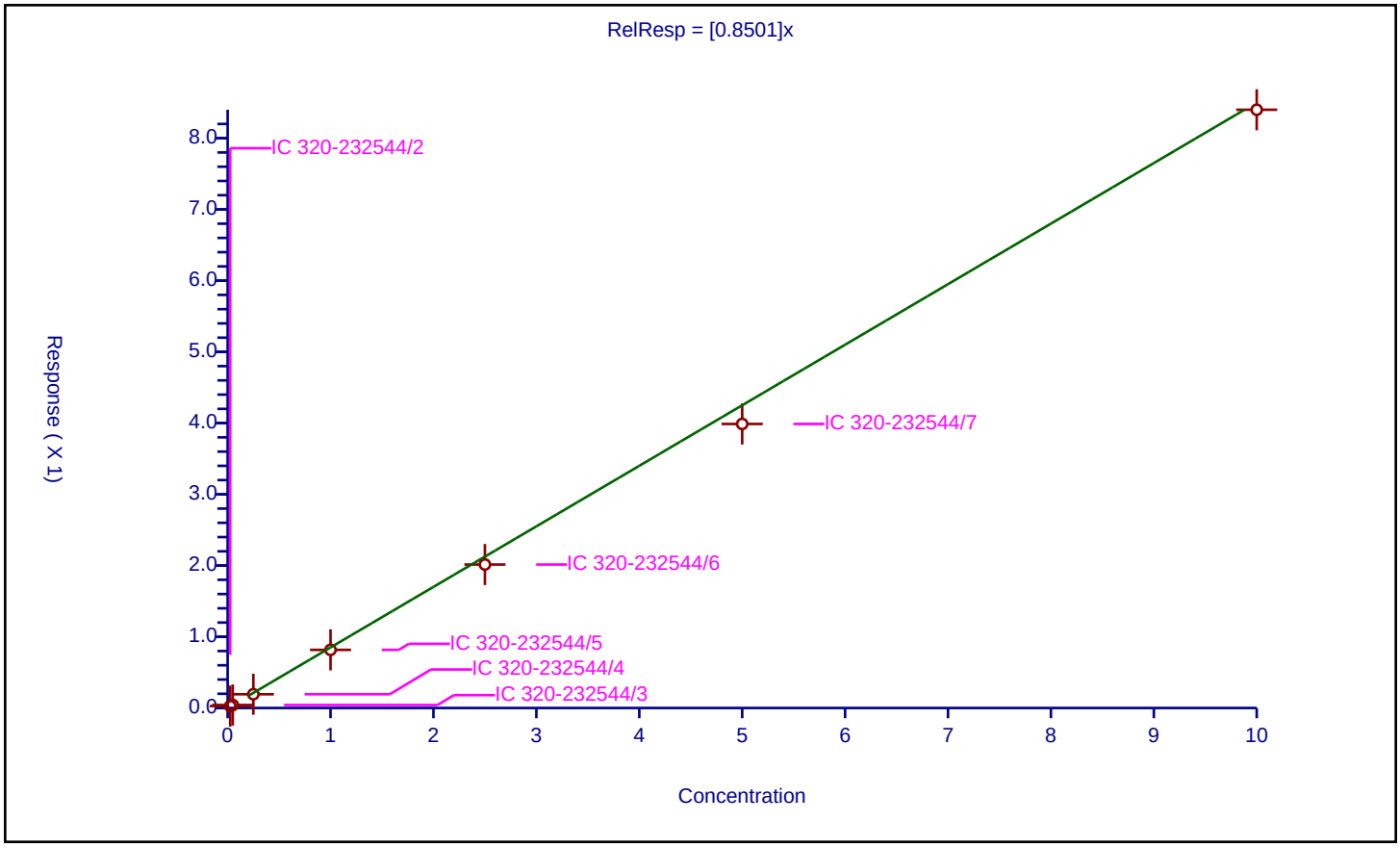
Curve Coefficients

Intercept:	0
Slope:	0.8501

Error Coefficients

Standard Error:	3800000
Relative Standard Error:	12.4
Correlation Coefficient:	1.000
Coefficient of Determination (Adjusted):	0.978

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-232544/2	0.025	0.027086	2.5	2564177.0	1.083428	Y
2	IC 320-232544/3	0.05	0.041809	2.5	2733892.0	0.836189	Y
3	IC 320-232544/4	0.25	0.192916	2.5	2693673.0	0.771664	Y
4	IC 320-232544/5	1.0	0.81616	2.5	2563234.0	0.81616	Y
5	IC 320-232544/6	2.5	2.014206	2.5	2557898.0	0.805682	Y
6	IC 320-232544/7	5.0	3.988183	2.5	2494182.0	0.797637	Y
7	IC 320-232544/8	10.0	8.399838	2.5	2411181.0	0.839984	Y



Calibration / 11-Chloroeicosafluoro-3-oxaundecane-1-sulfonate

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

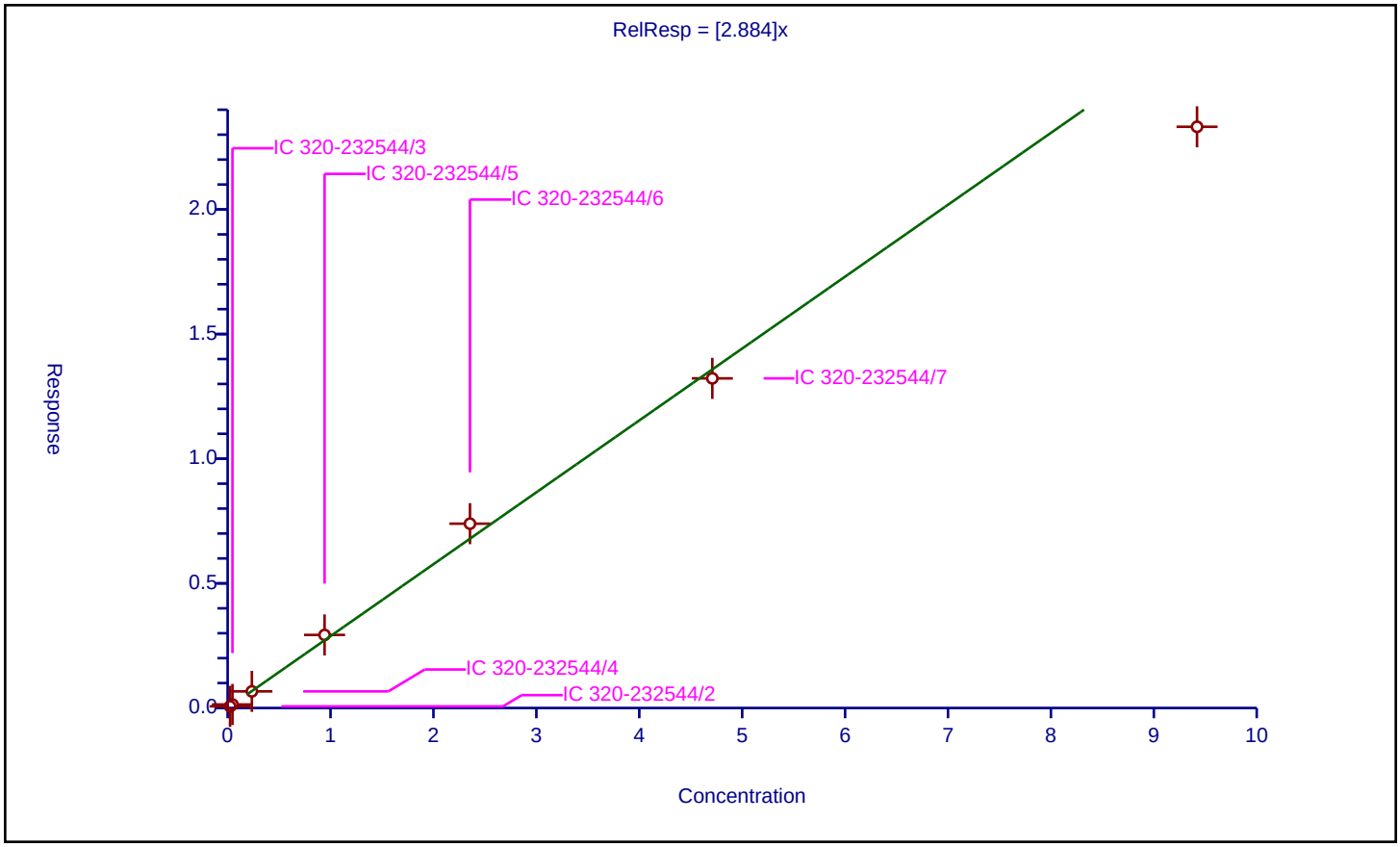
Curve Coefficients

Intercept:	0
Slope:	2.884

Error Coefficients

Standard Error:	16500000
Relative Standard Error:	7.9
Correlation Coefficient:	0.992
Coefficient of Determination (Adjusted):	0.992

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-232544/2	0.02355	0.066305	2.39	3537401.0	2.8155	Y
2	IC 320-232544/3	0.0471	0.141692	2.39	3601856.0	3.008318	Y
3	IC 320-232544/4	0.2355	0.66671	2.39	3866373.0	2.831042	Y
4	IC 320-232544/5	0.942	2.930416	2.39	3675491.0	3.110845	Y
5	IC 320-232544/6	2.355	7.394693	2.39	3463003.0	3.139997	Y
6	IC 320-232544/7	4.71	13.223335	2.39	3487989.0	2.807502	Y
7	IC 320-232544/8	9.42	23.316155	2.39	3441443.0	2.475176	Y



Calibration / Perfluorododecanoic acid

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

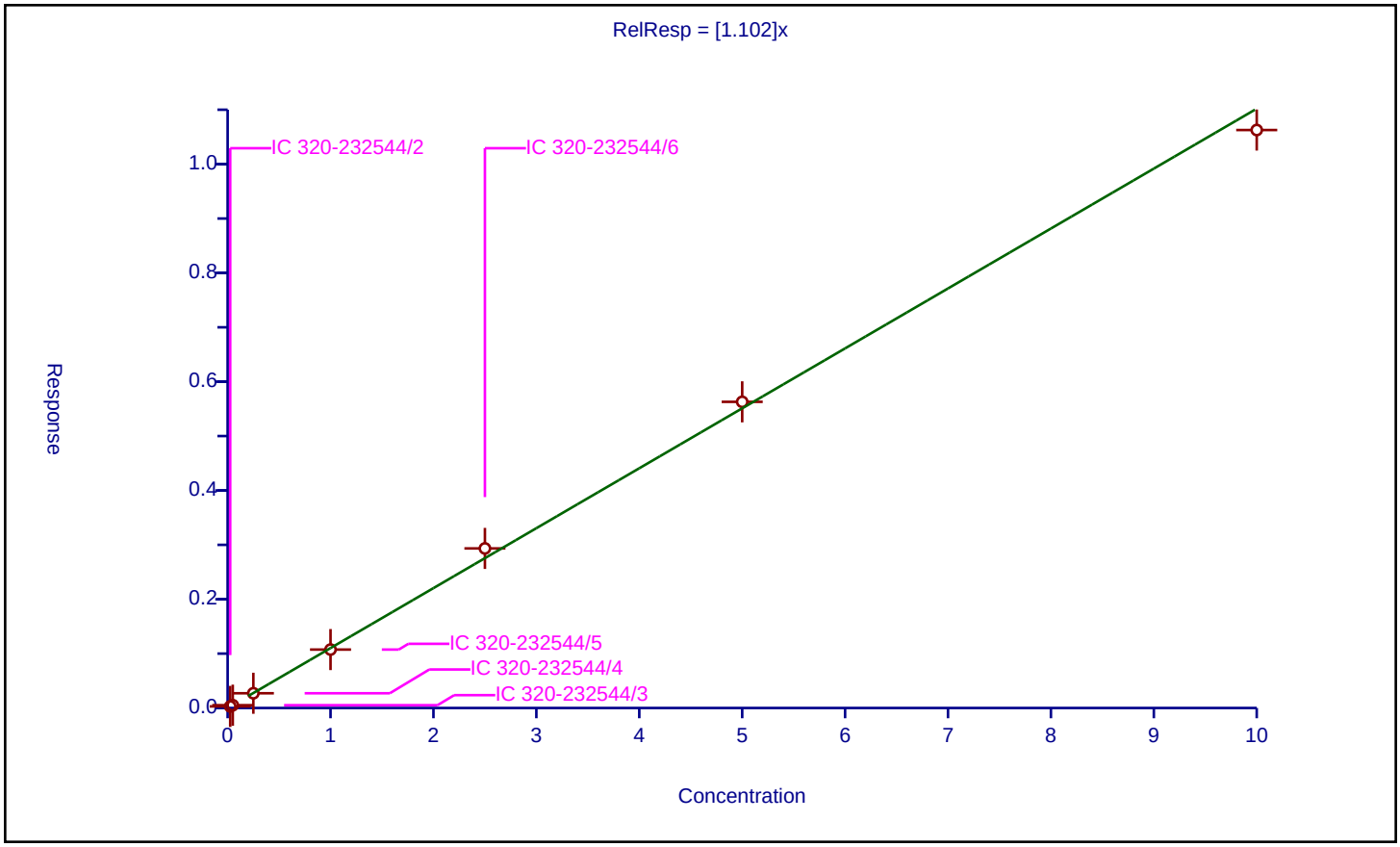
Curve Coefficients

Intercept:	0
Slope:	1.102

Error Coefficients

Standard Error:	5400000
Relative Standard Error:	4.8
Correlation Coefficient:	1.000
Coefficient of Determination (Adjusted):	0.997

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-232544/2	0.025	0.029041	2.5	2722317.0	1.161658	Y
2	IC 320-232544/3	0.05	0.05151	2.5	3012454.0	1.030207	Y
3	IC 320-232544/4	0.25	0.271339	2.5	2846137.0	1.085355	Y
4	IC 320-232544/5	1.0	1.074269	2.5	2839357.0	1.074269	Y
5	IC 320-232544/6	2.5	2.934025	2.5	2616078.0	1.17361	Y
6	IC 320-232544/7	5.0	5.629485	2.5	2595125.0	1.125897	Y
7	IC 320-232544/8	10.0	10.627032	2.5	2682397.0	1.062703	Y



Calibration / Perfluorotridecanoic acid

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

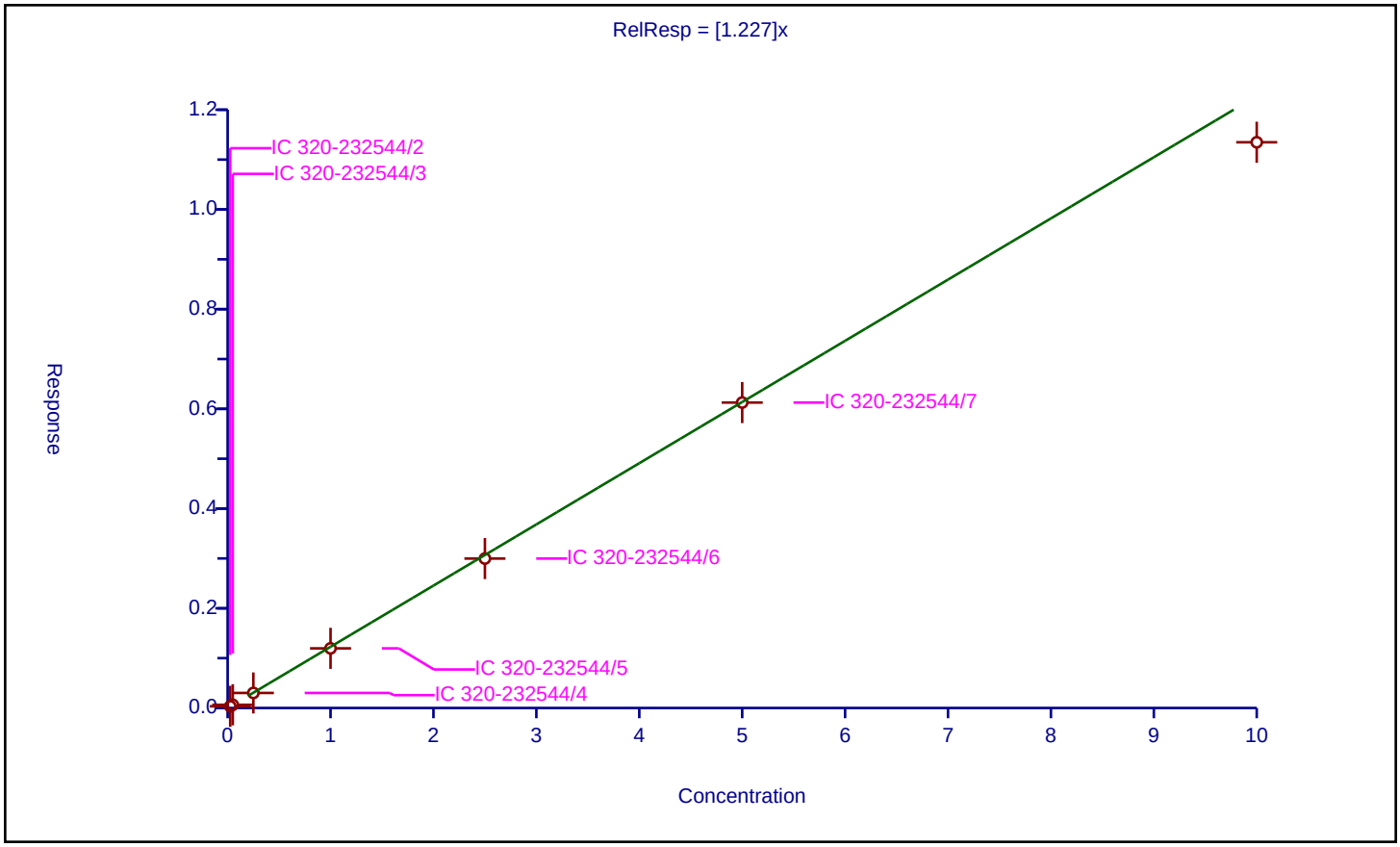
Curve Coefficients

Intercept:	0
Slope:	1.227

Error Coefficients

Standard Error:	5780000
Relative Standard Error:	5.5
Correlation Coefficient:	1.000
Coefficient of Determination (Adjusted):	0.996

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-232544/2	0.025	0.033596	2.5	2722317.0	1.343855	Y
2	IC 320-232544/3	0.05	0.064259	2.5	3012454.0	1.285181	Y
3	IC 320-232544/4	0.25	0.302003	2.5	2846137.0	1.208013	Y
4	IC 320-232544/5	1.0	1.196324	2.5	2839357.0	1.196324	Y
5	IC 320-232544/6	2.5	2.997333	2.5	2616078.0	1.198933	Y
6	IC 320-232544/7	5.0	6.126801	2.5	2595125.0	1.22536	Y
7	IC 320-232544/8	10.0	11.347564	2.5	2682397.0	1.134756	Y



Calibration / Perfluorotetradecanoic acid

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

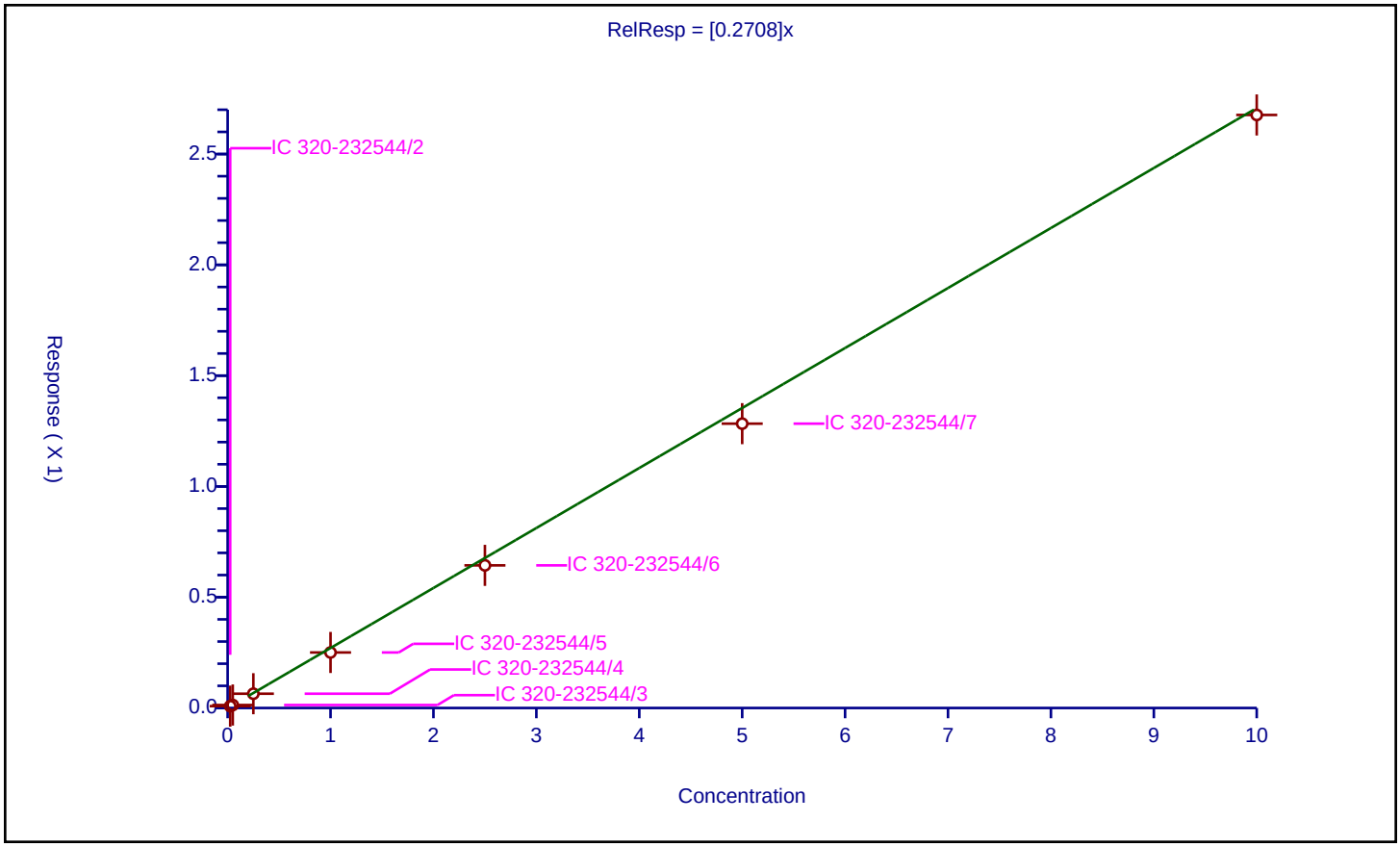
Curve Coefficients

Intercept:	0
Slope:	0.2708

Error Coefficients

Standard Error:	1580000
Relative Standard Error:	11.0
Correlation Coefficient:	1.000
Coefficient of Determination (Adjusted):	0.983

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-232544/2	0.025	0.008412	2.5	3451656.0	0.336476	Y
2	IC 320-232544/3	0.05	0.013443	2.5	3501728.0	0.268853	Y
3	IC 320-232544/4	0.25	0.064426	2.5	3422283.0	0.257705	Y
4	IC 320-232544/5	1.0	0.250579	2.5	3418156.0	0.250579	Y
5	IC 320-232544/6	2.5	0.643729	2.5	3283601.0	0.257492	Y
6	IC 320-232544/7	5.0	1.283241	2.5	3317852.0	0.256648	Y
7	IC 320-232544/8	10.0	2.676453	2.5	3133566.0	0.267645	Y



Calibration / Perfluorohexadecanoic acid

Curve Type:	Linear
Weighting:	Conc_Sq
Origin:	None
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

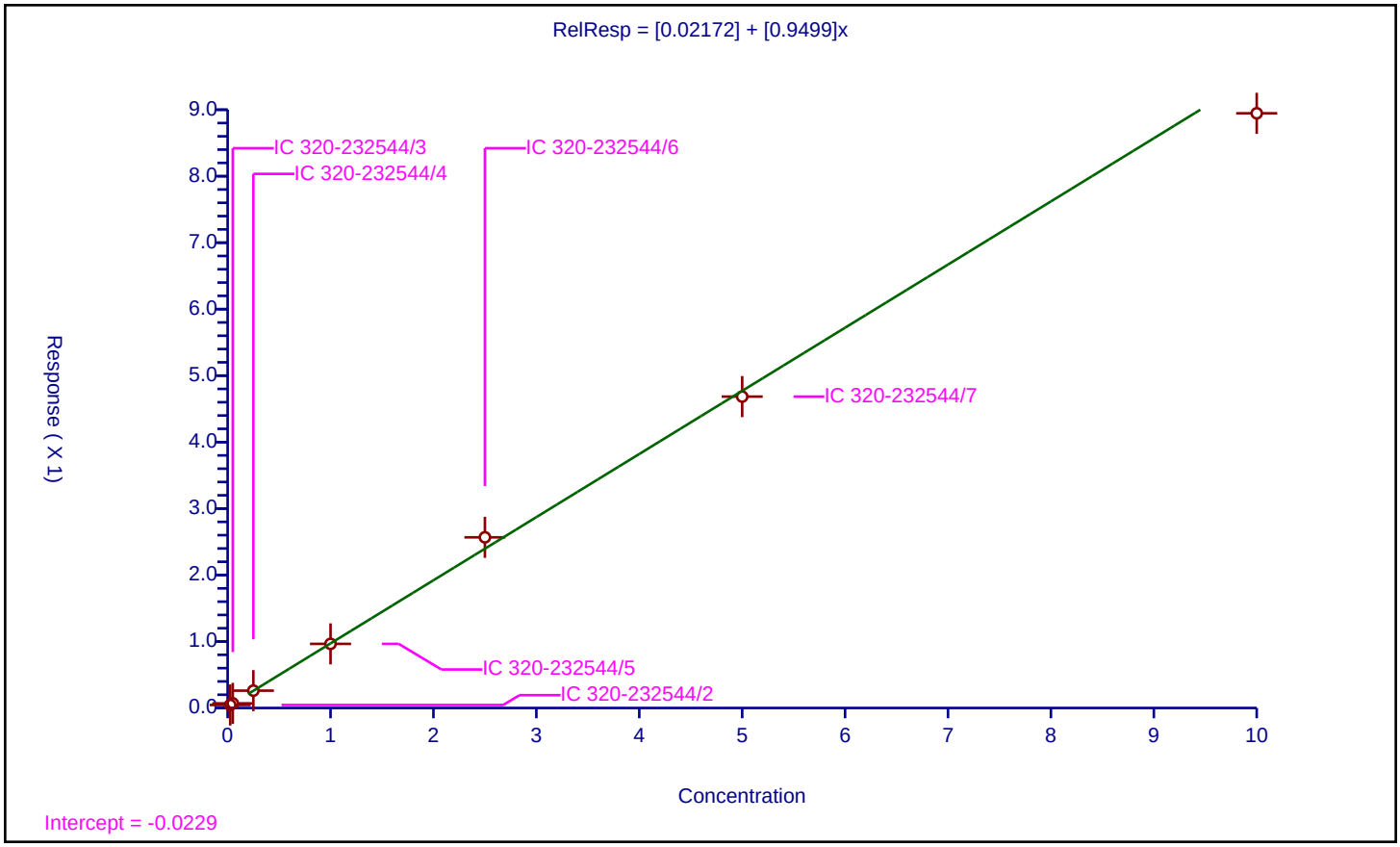
Curve Coefficients

Intercept:	0.02172
Slope:	0.9499

Error Coefficients

Standard Error:	11000000
Relative Standard Error:	4.4
Correlation Coefficient:	0.996
Coefficient of Determination (Adjusted):	0.998

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-232544/2	0.025	0.045279	2.5	6135017.0	1.811177	Y
2	IC 320-232544/3	0.05	0.069871	2.5	6624124.0	1.397415	Y
3	IC 320-232544/4	0.25	0.261135	2.5	6313503.0	1.044539	Y
4	IC 320-232544/5	1.0	0.964677	2.5	6551380.0	0.964677	Y
5	IC 320-232544/6	2.5	2.567388	2.5	6019047.0	1.026955	Y
6	IC 320-232544/7	5.0	4.684678	2.5	6127474.0	0.936936	Y
7	IC 320-232544/8	10.0	8.946563	2.5	5779000.0	0.894656	Y



Calibration / Perfluorooctadecanoic acid

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

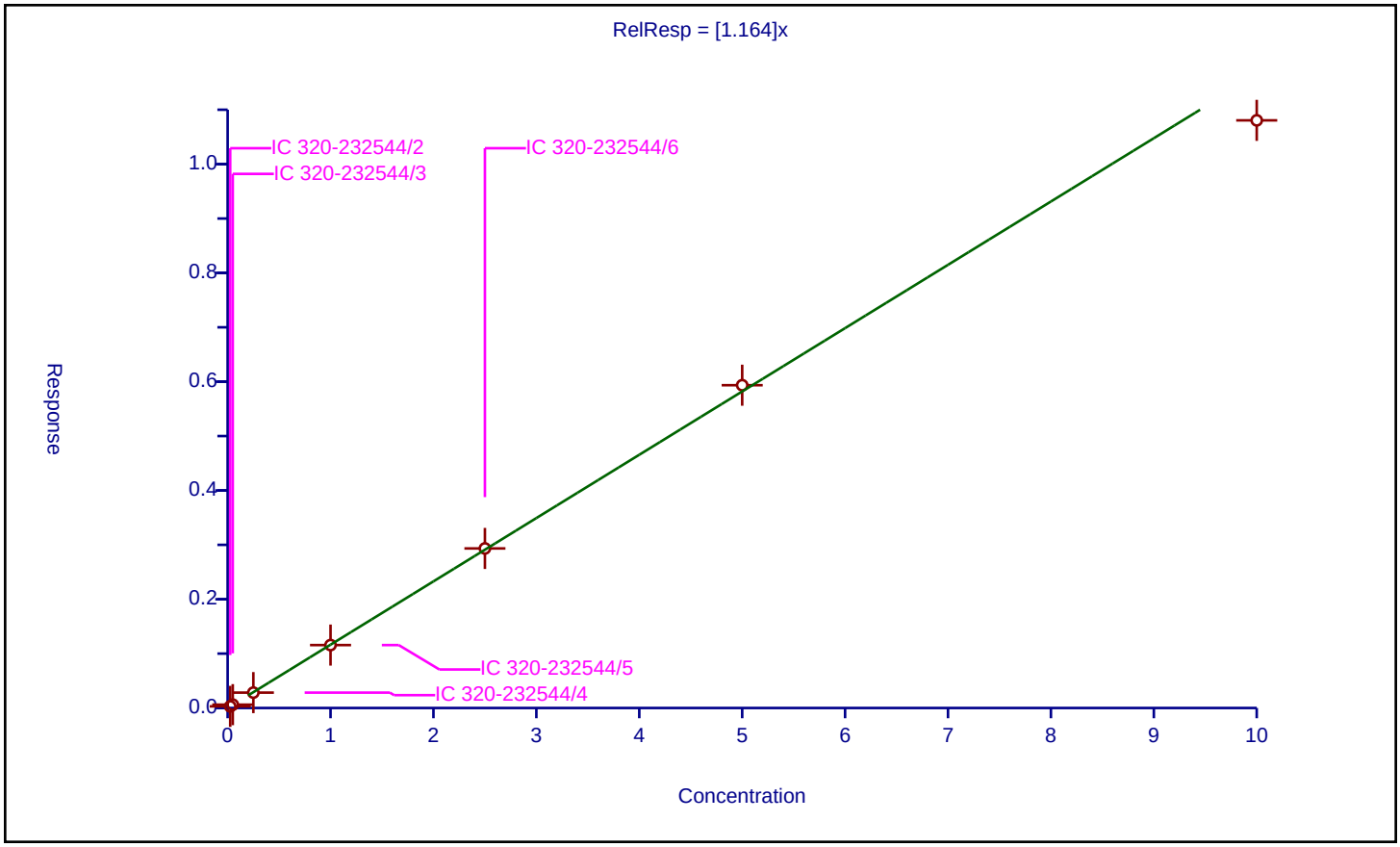
Curve Coefficients

Intercept:	0
Slope:	1.164

Error Coefficients

Standard Error:	12200000
Relative Standard Error:	4.1
Correlation Coefficient:	0.994
Coefficient of Determination (Adjusted):	0.998

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-232544/2	0.025	0.029762	2.5	6135017.0	1.190478	Y
2	IC 320-232544/3	0.05	0.061418	2.5	6624124.0	1.228366	Y
3	IC 320-232544/4	0.25	0.282926	2.5	6313503.0	1.131703	Y
4	IC 320-232544/5	1.0	1.156909	2.5	6551380.0	1.156909	Y
5	IC 320-232544/6	2.5	2.933787	2.5	6019047.0	1.173515	Y
6	IC 320-232544/7	5.0	5.935201	2.5	6127474.0	1.18704	Y
7	IC 320-232544/8	10.0	10.804785	2.5	5779000.0	1.080478	Y



FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1 Analy Batch No.: 233476

SDG No.:

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 07/11/2018 14:48 Calibration End Date: 07/11/2018 15:38 Calibration ID: 39998

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-233476/2	2018.07.11LLICALA_002.d
Level 2	IC 320-233476/3	2018.07.11LLICALA_003.d
Level 3	IC 320-233476/4	2018.07.11LLICALA_004.d
Level 4	IC 320-233476/5	2018.07.11LLICALA_005.d
Level 5	IC 320-233476/6	2018.07.11LLICALA_006.d
Level 6	IC 320-233476/7	2018.07.11LLICALA_007.d
Level 7	IC 320-233476/8	2018.07.11LLICALA_008.d

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5		B	M1	M2								
Perfluorobutanoic acid (PFBA)	+++++ 1.0129	0.9718 0.9875	0.9741	0.9685	0.9987	AveID		0.9856				1.8		35.0			
Perfluoropentanoic acid (PFPeA)	1.3707 1.1646	1.3311 1.1446	1.1808	1.1434	1.1567	AveID		1.2131				7.9		35.0			
Perfluorobutanesulfonic acid (PFBS)	79.113 76.960	76.692 70.480	75.620	75.784	80.820	AveID		76.496				4.2		50.0			
4:2 FTS	13.538 13.122	12.667 12.442	13.653	12.881	12.690	AveID		12.999				3.5		50.0			
Perfluorohexanoic acid (PFHxA)	1.0307 1.0261	1.1305 0.9984	0.9842	1.0000	1.0353	AveID		1.0293				4.7		35.0			
Perfluoropentanesulfonic acid (PFPeS)	73.006 70.441	70.339 63.345	65.432	72.240	73.667	AveID		69.781				5.6		50.0			
HFPO-DA (GenX)	2.5472 2.8353	2.7762 2.6352	2.8143	2.4733	2.4973	AveID		2.6541				5.8		35.0			
Perfluoroheptanoic acid (PFHpA)	1.2918 1.1087	1.2500 1.0814	1.1033	1.0989	1.1620	AveID		1.1566				7.2		35.0			
Perfluorohexanesulfonic acid (PFHxS)	1.3490 1.1211	1.1536 1.1001	1.1020	1.0938	1.1158	AveID		1.1479				7.9		35.0			
ADONA	3.3185 3.1056	3.2281 2.4104	3.4906	3.4928	3.4845	AveID		3.2186				12.0		50.0			
6:2 FTS	1.4307 1.5705	1.5312 1.6799	1.5392	1.5534	1.6458	AveID		1.5644				5.2		35.0			
Perfluorooctanoic acid (PFOA)	1.4929 1.1887	1.3327 1.1135	1.2003	1.1335	1.1592	AveID		1.2315				11.0		35.0			
Perfluoroheptanesulfonic Acid (PFHpS)	1.3509 1.3688	1.2372 1.2042	1.2775	1.3810	1.4032	AveID		1.3175				5.9		50.0			
Perfluorooctanesulfonic acid (PFOS)	1.1761 1.1316	1.1320 1.0970	1.1094	1.1393	1.1467	AveID		1.1332				2.3		35.0			

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1 Analy Batch No.: 233476

SDG No.:

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 07/11/2018 14:48 Calibration End Date: 07/11/2018 15:38 Calibration ID: 39998

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5		B	M1	M2								
Perfluorononanoic acid (PFNA)	1.1492 1.1085	1.1038 1.0564	1.1540	1.0890	1.1045	AveID		1.1093				3.0		35.0			
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonate	1.7713 1.8430	1.8507 1.6493	1.7942	1.9392	2.0023	AveID		1.8357				6.3		50.0			
Perfluorooctane Sulfonamide (FOSA)	0.9447 1.0010	1.0015 0.9523	0.9424	1.0155	1.0419	AveID		0.9856				4.0		35.0			
Perfluorononanesulfonic acid (PFNS)	0.8131 0.8121	0.7419 0.7503	0.7613	0.7781	0.7695	AveID		0.7752				3.6		50.0			
8:2 FTS	1.4047 1.2898	1.2049 1.3194	1.2351	1.2424	1.3334	AveID		1.2900				5.3		35.0			
Perfluorodecanoic acid (PFDA)	0.9467 1.0931	1.1302 1.0145	1.0491	1.0636	1.0484	AveID		1.0494				5.6		35.0			
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	1.0236 0.9755	0.9472 1.0328	0.9128	0.9868	1.0221	AveID		0.9858				4.5		35.0			
Perfluorodecanesulfonic acid (PFDS)	0.6225 0.6912	0.6387 0.6423	0.6832	0.7141	0.7080	AveID		0.6714				5.4		50.0			
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	0.6464 0.9255	0.9301 0.9261	1.0028	0.8322	0.9253	AveID		0.8840				13.1		35.0			
Perfluoroundecanoic acid (PFUnA)	0.9434 0.7821	0.8699 0.8018	0.7503	0.7522	0.8365	AveID		0.8195				8.5		35.0			
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonate	2.7019 2.5867	2.6130 2.1488	2.8873	2.8652	2.7717	AveID		2.6535				9.4		50.0			
Perfluorododecanoic acid (PFDoA)	1.1376 1.0839	0.9975 1.0907	1.0746	1.1154	1.1433	AveID		1.0919				4.5		35.0			
Perfluorotridecanoic Acid (PFTriA)	0.9687 1.0789	1.0292 1.0500	1.0796	1.0816	1.1857	AveID		1.0677				6.2		50.0			
Perfluorotetradecanoic acid (PFTeA)	0.2555 0.2589	0.2919 0.2636	0.2453	0.2569	0.2491	AveID		0.2602				5.9		50.0			
Perfluoro-n-hexadecanoic acid (PFHxDA)	1.7653 0.9715	1.3648 0.9014	1.0483	0.9956	0.9507	L2ID	0.0205	0.9502							0.9990		0.9900
Perfluoro-n-octadecanoic acid (PFODA)	1.1475 1.1370	1.1984 1.0684	1.1770	1.1295	1.1425	AveID		1.1429				3.6		50.0			
13C4 PFBA	+++++ 1.4117	1.2696 1.5420	1.3076	1.2987	1.3059	Ave		1.3559				7.6		50.0			
13C5 PFPeA	0.9124 1.0054	0.8821 1.0349	0.9316	0.8944	0.9368	Ave		0.9425				6.0		50.0			
13C3-PFBS	0.0220 0.0248	0.0229 0.0269	0.0230	0.0231	0.0231	Ave		0.0237				6.9		50.0			
M2-4:2FTS	0.1330 0.1293	0.1232 0.1362	0.1169	0.1268	0.1254	Ave		0.1273				5.0		50.0			

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1 Analy Batch No.: 233476

SDG No.:

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 07/11/2018 14:48 Calibration End Date: 07/11/2018 15:38 Calibration ID: 39998

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5		B	M1	M2								
13C2 PFHxA	0.9821 1.0465	0.9787 1.1049	0.9969	1.0174	0.9938	Ave		1.0172				4.4		50.0			
13C3 HFPO-DA	0.0673 0.0738	0.0643 0.0829	0.0677	0.0735	0.0771	Ave		0.0724				8.9		50.0			
13C4-PFHpA	0.9006 0.9748	0.8952 0.9872	0.9277	0.9373	0.9365	Ave		0.9371				3.7		50.0			
18O2 PFHxS	1.3480 1.3594	1.2940 1.3736	1.3258	1.2974	1.2946	Ave		1.3275				2.5		50.0			
M2-6:2FTS	0.2035 0.2073	0.1985 0.1979	0.2090	0.1987	0.1914	Ave		0.2009				3.0		50.0			
13C4 PFOA	0.9476 0.9571	0.9504 0.9746	0.9553	0.9586	0.9488	Ave		0.9560				1.0		50.0			
13C4 PFOS	0.9448 1.0026	0.9615 1.0887	0.9374	0.9230	0.9612	Ave		0.9742				5.8		50.0			
13C5 PFNA	0.8507 0.8495	0.8673 0.8781	0.8351	0.8465	0.8552	Ave		0.8546				1.7		50.0			
13C8 FOSA	1.4178 1.4370	1.3891 1.3807	1.4145	1.3980	1.3958	Ave		1.4047				1.4		50.0			
M2-8:2FTS	0.3145 0.2790	0.3204 0.2470	0.3241	0.2983	0.2738	Ave		0.2939				9.7		50.0			
13C2 PFDA	0.7752 0.7109	0.7395 0.7327	0.7855	0.7427	0.7657	Ave		0.7503				3.5		50.0			
d3-NMeFOSAA	0.2939 0.3280	0.2883 0.3404	0.2973	0.3039	0.3008	Ave		0.3075				6.3		50.0			
d5-NEtFOSAA	0.3122 0.3175	0.3225 0.3114	0.3121	0.3252	0.3044	Ave		0.3150				2.3		50.0			
13C2 PFUnA	0.6068 0.6358	0.6382 0.6158	0.6383	0.6306	0.6206	Ave		0.6266				2.0		50.0			
13C2 PFDoA	0.6316 0.6752	0.6317 0.6905	0.6629	0.6311	0.6243	Ave		0.6496				4.0		50.0			
13C2-PFTeDA	0.6485 0.6992	0.6025 0.7344	0.7008	0.6559	0.6769	Ave		0.6740				6.4		50.0			
13C2-PFHxDA	1.0898 1.0988	0.9225 1.1203	1.0956	1.0747	1.1137	Ave		1.0736				6.4		50.0			

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1 Analy Batch No.: 233476

SDG No.:

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 07/11/2018 14:48 Calibration End Date: 07/11/2018 15:38 Calibration ID: 39998

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-233476/2	2018.07.11LLICALA_002.d
Level 2	IC 320-233476/3	2018.07.11LLICALA_003.d
Level 3	IC 320-233476/4	2018.07.11LLICALA_004.d
Level 4	IC 320-233476/5	2018.07.11LLICALA_005.d
Level 5	IC 320-233476/6	2018.07.11LLICALA_006.d
Level 6	IC 320-233476/7	2018.07.11LLICALA_007.d
Level 7	IC 320-233476/8	2018.07.11LLICALA_008.d

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
Perfluorobutanoic acid (PFBA)		AveID	+++++ 10623913	109256 22835400	529569	2185459	5273443	+++++ 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluoropentanoic acid (PFPeA)		AveID	51727 8699476	103977 17766142	457354	1776986	4381627	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorobutanesulfonic acid (PFBS)		AveID	63723 12546505	137206 25119744	638814	2692471	6674181	0.0221 4.42	0.0442 8.84	0.221	0.884	2.21
4:2 FTS		AveID	11521 2260293	23943 4685101	121859	483517	1107254	0.0234 4.67	0.0467 9.34	0.234	0.934	2.34
Perfluorohexanoic acid (PFHxA)		AveID	41864 7978958	97977 16543784	407905	1767805	4160132	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluoropentanesulfonic acid (PFPeS)		AveID	62396 12185262	133528 23955798	586514	2723317	6455101	0.0235 4.69	0.0469 9.38	0.235	0.938	2.35
HFPO-DA (GenX)		AveID	7091 1554085	15816 3276527	79161	316075	778109	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluoroheptanoic acid (PFHpA)		AveID	48115 8030466	99091 16011091	425549	1789760	4400212	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorohexanesulfonic acid (PFHxS)		AveID	68440 10305090	120291 20622639	552716	2243830	5315063	0.0228 4.55	0.0455 9.10	0.228	0.910	2.28
ADONA		AveID	122149 21793498	258910 37073934	1281398	5276511	12756974	0.0236 4.71	0.0471 9.42	0.236	0.942	2.36
6:2 FTS		AveID	11415 2292840	25517 4726825	126798	508387	1207511	0.0237 4.74	0.0474 9.48	0.237	0.948	2.37
Perfluorooctanoic acid (PFOA)		AveID	58566 8461263	112267 16291262	477183	1889955	4451468	0.0250 5.01	0.0501 10.0	0.250	1.00	2.50
Perfluoroheptanesulfonic Acid (PFHpS)		AveID	50252 9707552	100280 18718055	473940	2108438	5191820	0.0238 4.76	0.0476 9.52	0.238	0.952	2.38
Perfluorooctanesulfonic acid (PFOS)		AveID	42647 7822689	89440 16622900	401226	1695511	4135858	0.0232 4.64	0.0464 9.28	0.232	0.928	2.32
Perfluorononanoic acid (PFNA)		AveID	40436 6996919	84772 13910795	400644	1601728	3819652	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1 Analy Batch No.: 233476

SDG No.:

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 07/11/2018 14:48 Calibration End Date: 07/11/2018 15:38 Calibration ID: 39998

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonate		AveID	64507 12796083	146856 25098628	651675	2898434	7252582	0.0233 4.66	0.0466 9.32	0.233	0.932	2.33
Perfluorooctane Sulfonamide (FOSA)		AveID	55398 10688141	123192 19718955	554186	2466657	5880155	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorononanesulfonic acid (PFNS)		AveID	30501 5807858	60641 11760635	284813	1198001	2871112	0.0240 4.80	0.0480 9.60	0.240	0.960	2.40
8:2 FTS		AveID	17506 2561237	32747 4682146	159408	616956	1414341	0.0240 4.79	0.0479 9.58	0.240	0.958	2.40
Perfluorodecanoic acid (PFDA)		AveID	30353 5773802	74013 11148372	342607	1372481	3246129	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)		AveID	12441 2377396	24180 5272635	112830	521077	1243187	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorodecanesulfonic acid (PFDS)		AveID	23450 4963395	52427 10109747	256645	1104012	2652406	0.0241 4.82	0.0482 9.64	0.241	0.964	2.41
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)		AveID	8347 2183486	26557 4325460	130099	470221	1138694	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluoroundecanoic acid (PFUnA)		AveID	23675 3694320	49158 7405393	199100	824114	2099121	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonate		AveID	99455 18152128	209574 33050828	1059951	4328485	10147290	0.0236 4.71	0.0471 9.42	0.236	0.942	2.36
Perfluorododecanoic acid (PFDoA)		AveID	29719 5437907	55796 11295646	296160	1222974	2886271	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorotridecanoic Acid (PFTriA)		AveID	25307 5412702	57570 10874073	297546	1185888	2993320	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorotetradecanoic acid (PFTeA)		AveID	6854 1344804	15573 2903345	71477	292793	681755	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluoro-n-hexadecanoic acid (PFHxDA)		L2ID	79574 7932024	111481 15144158	477512	1859123	4281172	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluoro-n-octadecanoic acid (PFODA)		AveID	51724 9282794	97895 17950029	536098	2109156	5144900	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
13C4 PFBA	13PF OA	Ave	+++++ 5244451	5621166 5781235	5436336	5641372	5280540	+++++ 2.50	2.50 2.50	2.50	2.50	2.50
13C5 PFPeA	13PF OA	Ave	3773636 3734969	3905774 3880280	3873105	3885306	3788119	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C3-PFBS	13PF OA	Ave	84738 85755	94108 93739	88873	93442	86878	2.33 2.33	2.33 2.33	2.33	2.33	2.33
M2-4:2FTS	13PF OA	Ave	513760 448621	509407 476788	453992	514423	473738	2.34 2.34	2.34 2.34	2.34	2.34	2.34
13C2 PFHxA	13PF OA	Ave	4061845 3887868	4333312 4142603	4144632	4419532	4018475	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C3 HFPO-DA	13PF OA	Ave	278389 274060	284852 310846	281279	319484	311580	2.50 2.50	2.50 2.50	2.50	2.50	2.50

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1 Analy Batch No.: 233476

SDG No.:

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 07/11/2018 14:48 Calibration End Date: 07/11/2018 15:38 Calibration ID: 39998

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
13C4-PFHpA	13PF OA	Ave	3724726 3621431	3963601 3701454	3856910	4071620	3786835	2.50 2.50	2.50 2.50	2.50	2.50	2.50
18O2 PFHxS	13PF OA	Ave	5274150 4777689	5419785 4872001	5214223	5331177	4952007	2.37 2.37	2.37 2.37	2.37	2.37	2.37
M2-6:2FTS	13PF OA	Ave	799554 731524	834970 704932	825525	819911	735229	2.38 2.38	2.38 2.38	2.38	2.38	2.38
13C4 PFOA	13PF OA	Ave	3919080 3555536	4207903 3653899	3971401	4164105	3836329	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C4 PFOS	13PF OA	Ave	3735610 3560852	4069838 3902400	3725581	3832872	3715442	2.39 2.39	2.39 2.39	2.39	2.39	2.39
13C5 PFNA	13PF OA	Ave	3518663 3155893	3839924 3292167	3471672	3677166	3458178	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C8 FOSA	13PF OA	Ave	5863894 5338756	6150410 5176580	5880733	6072674	5643811	2.50 2.50	2.50 2.50	2.50	2.50	2.50
M2-8:2FTS	13PF OA	Ave	1246262 992916	1358867 887172	1290698	1241456	1060685	2.40 2.40	2.40 2.40	2.40	2.40	2.40
13C2 PFDA	13PF OA	Ave	3206069 2641138	3274309 2747254	3265845	3225992	3096188	2.50 2.50	2.50 2.50	2.50	2.50	2.50
d3-NMeFOSAA	13PF OA	Ave	1215393 1218514	1276369 1276287	1236119	1320092	1216339	2.50 2.50	2.50 2.50	2.50	2.50	2.50
d5-NEtFOSAA	13PF OA	Ave	1291362 1179674	1427681 1167600	1297377	1412562	1230676	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C2 PFUnA	13PF OA	Ave	2509506 2361908	2825527 2308936	2653699	2739039	2509304	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C2 PFDoA	13PF OA	Ave	2612394 2508500	2796780 2588991	2756034	2741167	2524421	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C2-PFTeDA	13PF OA	Ave	2682209 2597628	2667637 2753301	2913500	2848985	2737226	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C2-PFHxDA	13PF OA	Ave	4507577 4082261	4084288 4200183	4554944	4668246	4503233	2.50 2.50	2.50 2.50	2.50	2.50	2.50

Curve Type Legend:

Ave = Average ISTD
AveID = Average isotope dilution
L2ID = Linear 1/conc^2 IsoDil

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_002.d
Lims ID: IC L1 Full
Client ID:
Sample Type: IC Calib Level: 1
Inject. Date: 11-Jul-2018 14:48:59 ALS Bottle#: 10 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L1-FULL
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-A8_N*sub32

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180711-60919.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 11-Jul-2018 16:33:18 Calib Date: 11-Jul-2018 15:38:42
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK024

First Level Reviewer: westendorfc Date: 11-Jul-2018 16:13:57

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
4 Perfluoropentanoic acid										M
262.90 > 219.00	1.625	1.702	-0.077	1.000	51727	0.0282		113	15.3	M
D 3 13C5-PFPeA										
267.90 > 223.00	1.625	1.702	-0.077	0.607	3773636	2.42		96.8	38740	
D 47 13C3-PFBS										
301.90 > 83.00	1.712	1.748	-0.036	0.640	84738	2.16		93.0	494	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.721	1.751	-0.030	1.005	63723	0.0229		103	788	
298.90 > 99.00	1.721	1.751	-0.030	1.005	27608		2.31(1.25-3.74)	103	308	
61 1H,1H,2H,2H-perfluorohexanesulfoni										
327.00 > 307.00	1.949	1.962	-0.013	1.139	11521	0.0243		104	1016	
D 60 M2-4:2FTS										
329.00 > 81.00	1.949	1.962	-0.013	0.728	513760	2.44		105	5378	
D 7 13C2 PFHxA										
315.00 > 270.00	1.982	1.996	-0.014	0.741	4061845	2.41		96.5	70891	
6 Perfluorohexanoic acid										M
313.00 > 269.00	1.982	1.998	-0.016	1.000	41864	0.0250		100	67.8	
313.00 > 119.00	1.971	1.998	-0.027	0.995	4020		10.41(5.03-15.10)	100	87.3	M
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.016	2.022	-0.006	1.178	62396	0.0245		105	1542	
349.00 > 99.00	2.016	2.022	-0.006	1.178	24140		2.58(1.36-4.07)	105	480	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.083	2.093	-0.010	0.779	278389	2.33		93.0	7110	
67 Perfluoro(2-propoxypropanoic) acid										
329.10 > 285.00	2.083	2.095	-0.012	1.000	7091	0.0240		96.0	35.0	
D 9 13C4-PFHpA										
367.00 > 322.00	2.321	2.319	0.002	0.867	3724726	2.40		96.1	36311	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.321	2.319	0.002	1.000	48115	0.0279		112	80.2	
363.00 > 169.00	2.321	2.319	0.002	1.000	20821		2.31(1.13-3.40)	112	195	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.334	2.332	0.002	1.000	68440	0.0267		118	687	
399.00 > 99.00	2.334	2.332	0.002	1.000	26424		2.59(1.50-4.49)	118	180	
D 11 18O2 PFHxS										
403.00 > 84.00	2.334	2.334	0.0	0.872	5274150	2.40		102	31468	
65 Adona										
377.00 > 251.00	2.360	2.360	0.0	0.775	122149	0.0243		103	1762	
377.00 > 85.00	2.360	2.360	0.0	0.775	66967		1.82(0.84-2.53)	103	350	
D 12 M2-6:2FTS										
429.00 > 81.00	2.654	2.645	0.009	0.992	799554	2.41		101	15699	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.654	2.648	0.006	1.000	11415	0.0217		91.5	214	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.676	2.672	0.004	1.000	58566	0.0303		121	42.3	
413.00 > 169.00	2.676	2.672	0.004	1.000	29579		1.98(0.84-2.52)	121	150	
* 62 13C2-PFOA										
415.00 > 370.00	2.676	2.672	0.004		4135961	2.50			25214	
D 14 13C4 PFOA										
417.00 > 372.00	2.676	2.672	0.004	1.000	3919080	2.48		99.1	39083	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.684	2.678	0.006	0.882	50252	0.0244		103	1356	
449.00 > 99.00	2.684	2.678	0.006	0.882	13998		3.59(1.94-5.82)	103	336	
D 18 13C4 PFOS										
503.00 > 80.00	3.044	3.034	0.010	1.137	3735610	2.32		97.0	38404	
D 19 13C5 PFNA										
468.00 > 423.00	3.044	3.035	0.009	1.137	3518663	2.49		99.5	37505	
17 Perfluorooctane sulfonic acid										M
499.00 > 80.00	3.044	3.035	0.009	1.000	42647	0.0241		104	1040	
499.00 > 99.00	3.044	3.035	0.009	1.000	6341		6.73(2.31-6.93)	104	76.8	M
20 Perfluorononanoic acid										
463.00 > 419.00	3.044	3.036	0.008	1.000	40436	0.0259		104	86.6	
463.00 > 169.00	3.044	3.036	0.008	1.000	8246		4.90(1.90-5.69)	104	386	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.252	3.245	0.007	1.068	64507	0.0225		96.5	738	
D 21 13C8 FOSA										
506.00 > 78.00	3.368	3.367	0.001	1.259	5863894	2.52		101	37744	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.378	3.371	0.007	1.003	55398	0.0240		95.9	895	
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.387	3.377	0.010	1.113	30501	0.0252		105	977	
549.00 > 99.00	3.387	3.377	0.010	1.113	11187		2.73(1.33-3.97)	105	183	
25 1H,1H,2H,2H-perfluorodecanesulfoni										
527.00 > 507.00	3.387	3.380	0.007	1.000	17506	0.0261		109	392	
D 26 M2-8:2FTS										
529.00 > 81.00	3.387	3.380	0.007	1.266	1246262	2.56		107	13304	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 23 13C2 PFDA										
515.00 > 470.00	3.396	3.391	0.005	1.269	3206069	2.58		103	42082	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.396	3.392	0.004	1.000	30353	0.0226		90.2	167	
513.00 > 169.00	3.406	3.392	0.014	1.003	5842		5.20(2.36-7.09)	90.2	176	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.555	3.544	0.011	1.328	1215393	2.39		95.6	18900	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.555	3.548	0.007	1.000	12441	0.0260		104	107	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.707	3.701	0.006	1.218	23450	0.0223		92.7	612	
599.00 > 99.00	3.707	3.701	0.006	1.218	7239		3.24(1.39-4.16)	92.7	219	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.717	3.710	0.007	1.389	1291362	2.48		99.1	3190	
D 30 13C2 PFUnA										
565.00 > 520.00	3.728	3.716	0.012	1.393	2509506	2.42		96.8	51439	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.728	3.718	0.010	1.003	8347	0.0183		73.1	145	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.728	3.718	0.010	1.000	23675	0.0288		115	106	
563.00 > 169.00	3.717	3.718	-0.001	0.997	8021		2.95(2.12-6.36)	115	436	
66 11-Chloroeicosafluoro-3-oxaundecan										
631.00 > 451.00	3.885	3.874	0.011	1.276	99455	0.0240		102	2626	
D 36 13C2 PFDoA										
615.00 > 570.00	4.018	4.009	0.009	1.501	2612394	2.43		97.2	20487	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.018	4.011	0.007	1.000	29719	0.0260		104	16.6	
613.00 > 169.00	4.018	4.011	0.007	1.000	7194		4.13(2.13-6.40)	104	142	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.280	4.273	0.007	1.065	25307	0.0227		90.7	12.3	
663.00 > 169.00	4.280	4.273	0.007	1.065	8824		2.87(1.25-3.76)	90.7	172	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.520	4.508	0.012	1.689	2682209	2.41		96.2	12372	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.520	4.508	0.012	1.000	6854	0.0246		98.2	111	
713.00 > 219.00	4.520	4.508	0.012	1.000	5713		1.20(0.71-2.13)	98.2	153	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.930	4.918	0.012	1.842	4507577	2.54		102	13270	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.930	4.918	0.012	1.000	79574	0.0249		99.5	20.2	
813.00 > 169.00	4.930	4.918	0.012	1.000	12790		6.22(2.86-8.58)	99.5	144	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.283	5.271	0.012	1.072	51724	0.0251		100	11.3	
913.00 > 169.00	5.283	5.271	0.012	1.072	7005		7.38(3.83-11.48)	100	122	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

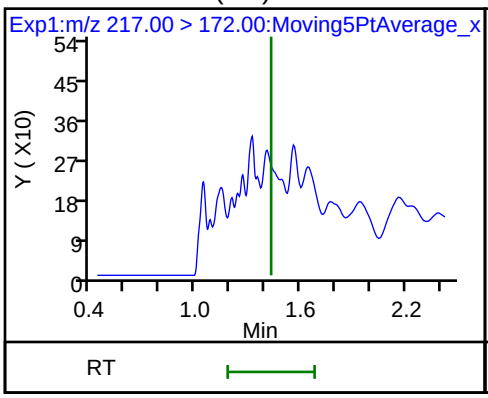
LCPFC_LL1_00006 Amount Added: 1.00 Units: mL

Report Date: 11-Jul-2018 16:33:20 Chrom Revision: 2.2 07-Jun-2018 07:41:54

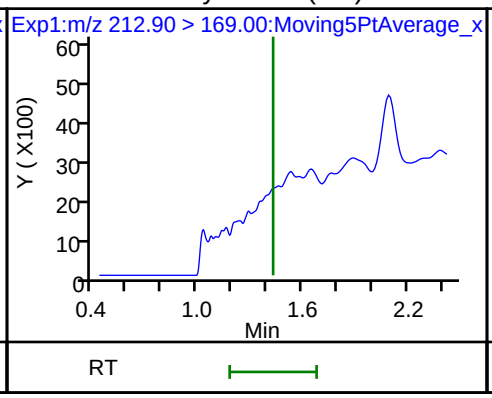
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_002.d
Injection Date: 11-Jul-2018 14:48:59 Instrument ID: A8_N
Lims ID: IC L1 Full
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 10 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC ICAL

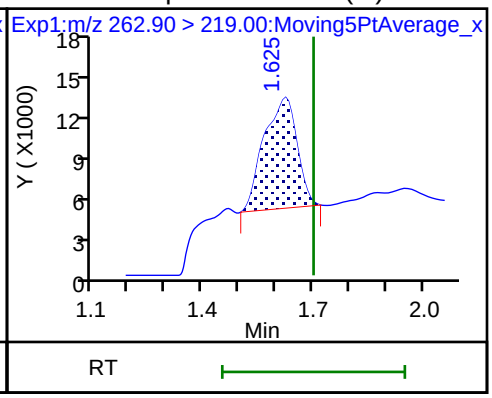
D 1 13C4 PFBA (ND)



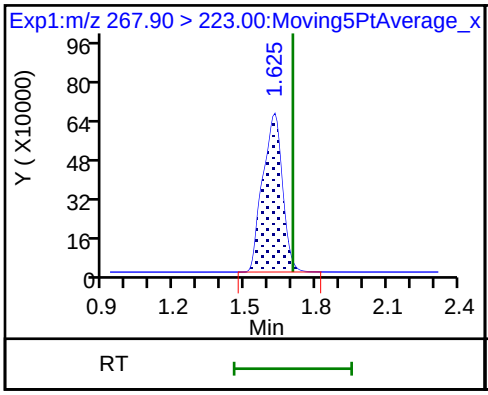
2 Perfluorobutyric acid (ND)



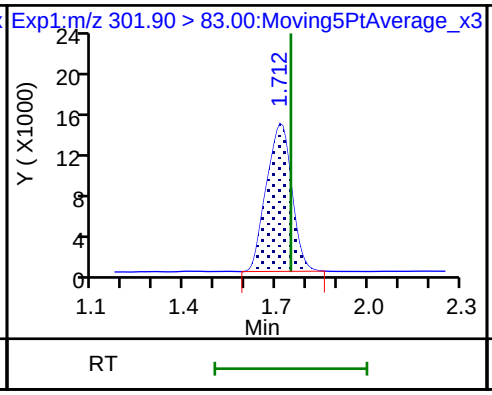
4 Perfluoropentanoic acid (M)



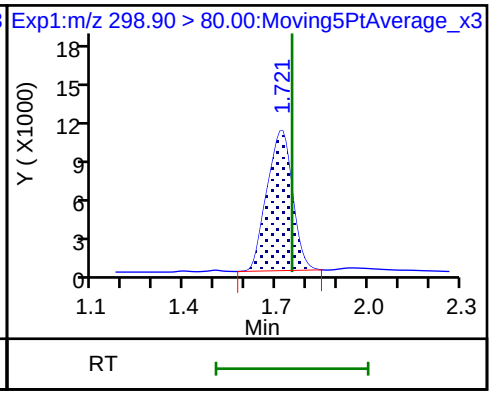
D 3 13C5-PFPeA



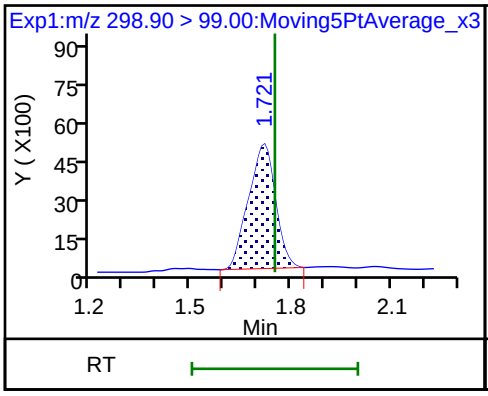
D 47 13C3-PFBS



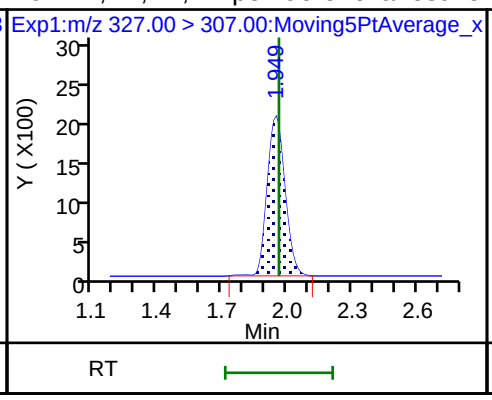
5 Perfluorobutanesulfonic acid



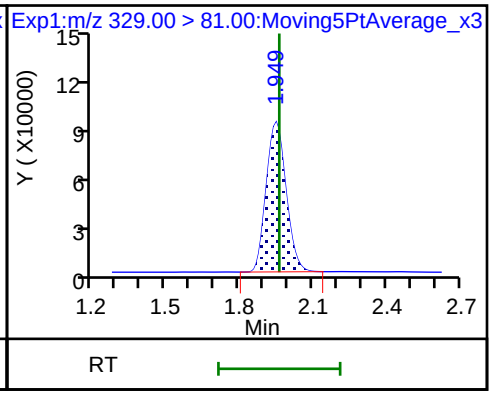
5 Perfluorobutanesulfonic acid



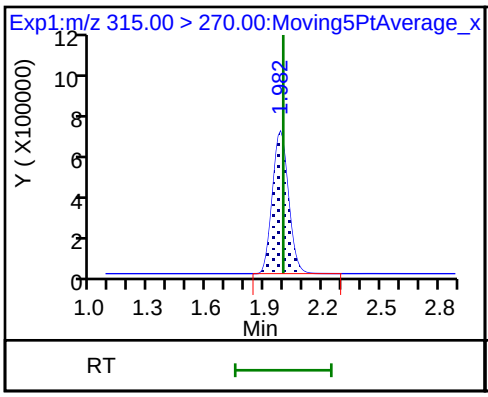
61 1H,1H,2H,2H-perfluorohexanesulfon



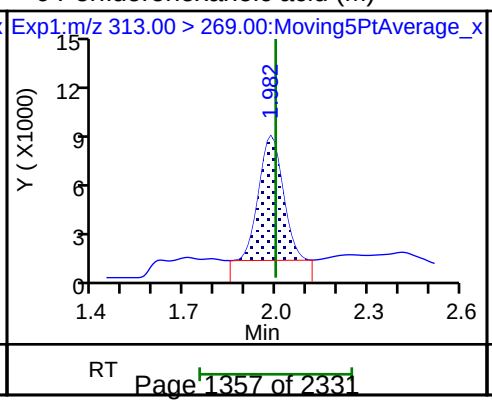
D 60 M2-4:2FTS



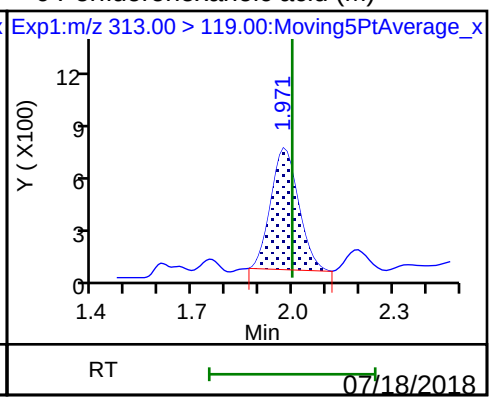
D 7 13C2 PFHxA



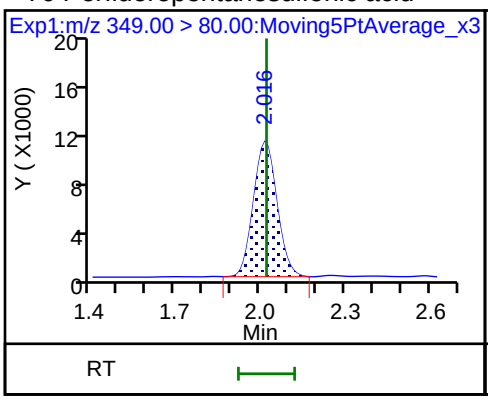
6 Perfluorohexanoic acid (M)



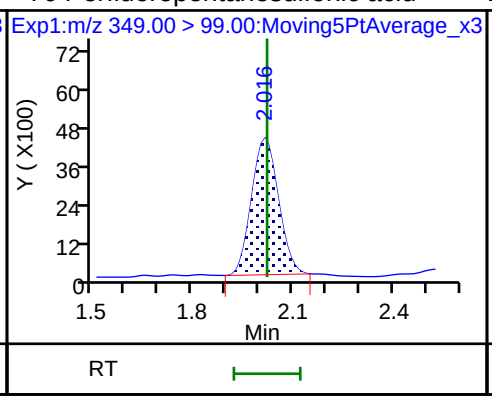
6 Perfluorohexanoic acid (M)



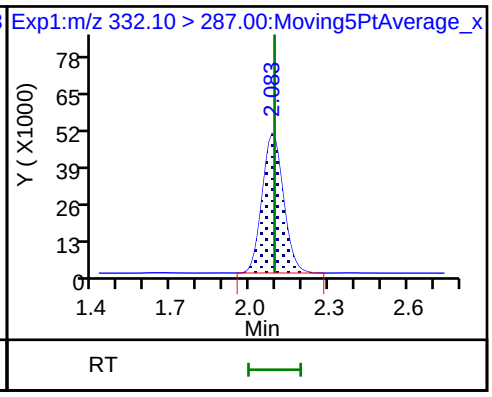
70 Perfluoropentanesulfonic acid



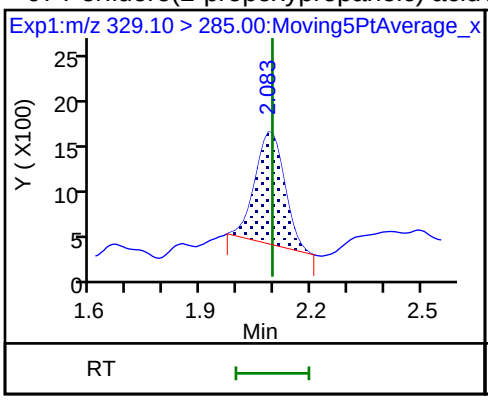
70 Perfluoropentanesulfonic acid



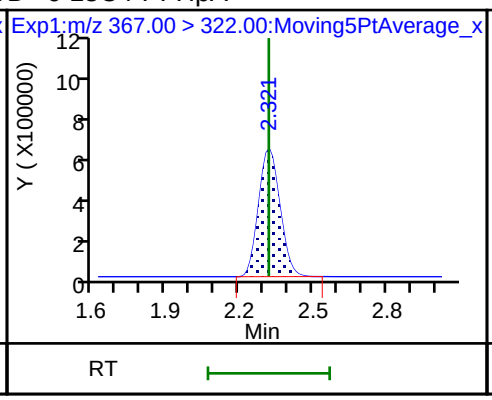
D 64 13C3 HFPO-DA



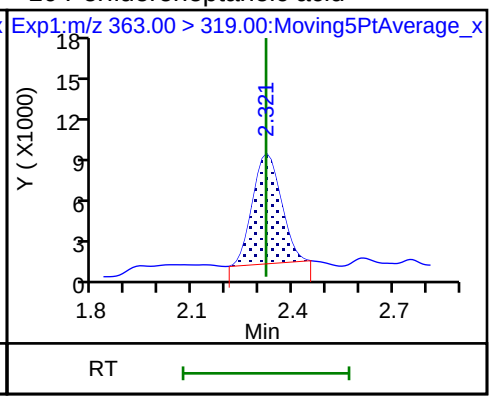
67 Perfluoro(2-propoxypropanoic) acid



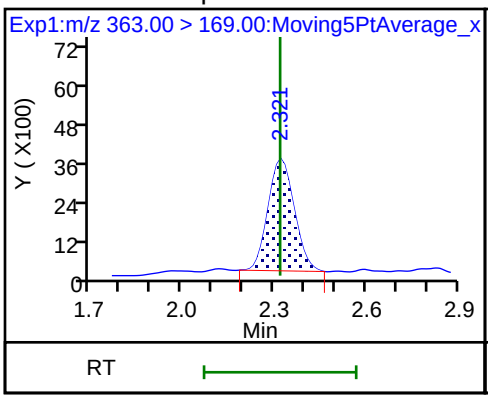
D 9 13C4-PFHpA



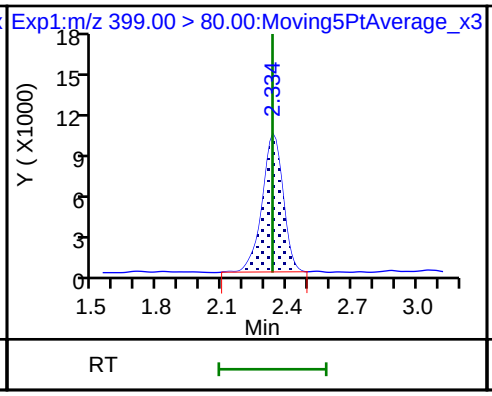
10 Perfluoroheptanoic acid



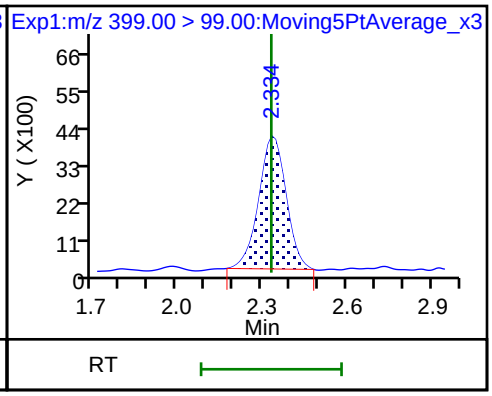
10 Perfluoroheptanoic acid



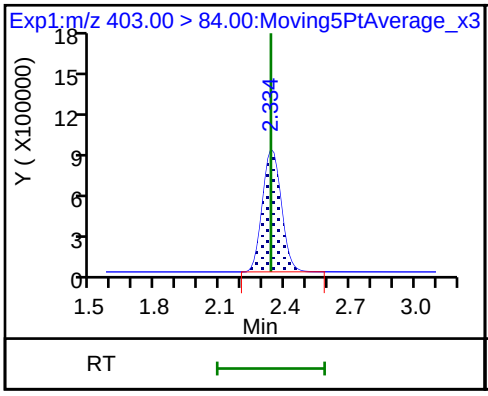
8 Perfluorohexanesulfonic acid



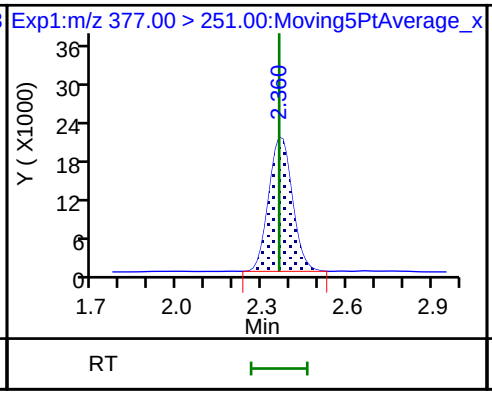
8 Perfluorohexanesulfonic acid



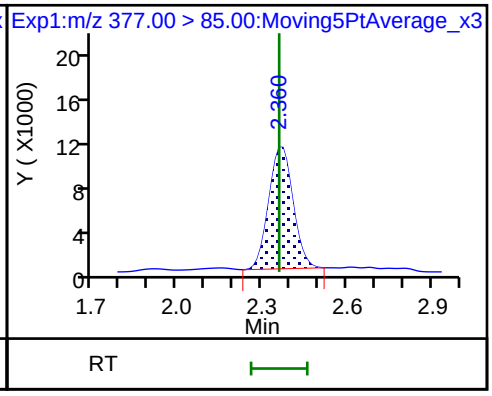
D 11 18O2 PFHxS



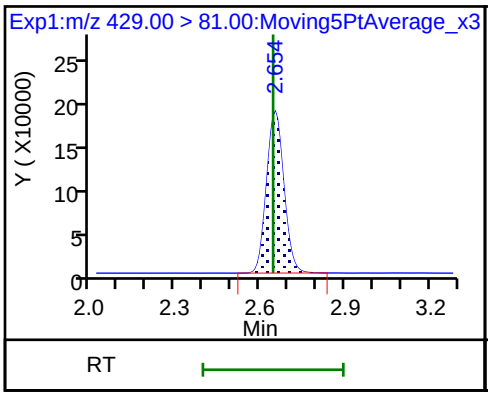
65 Adona



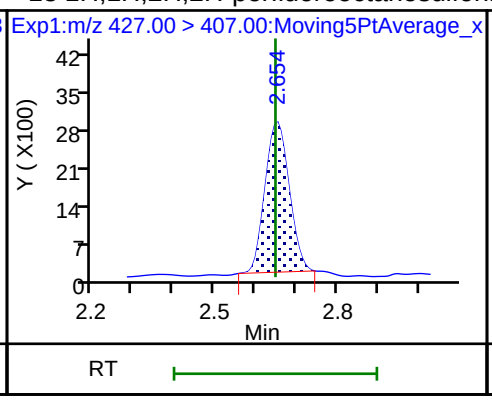
65 Adona



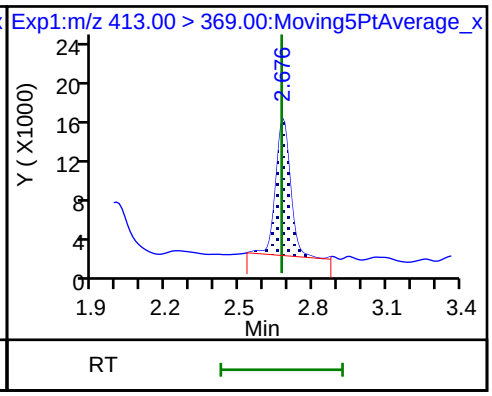
D 12 M2-6:2FTS



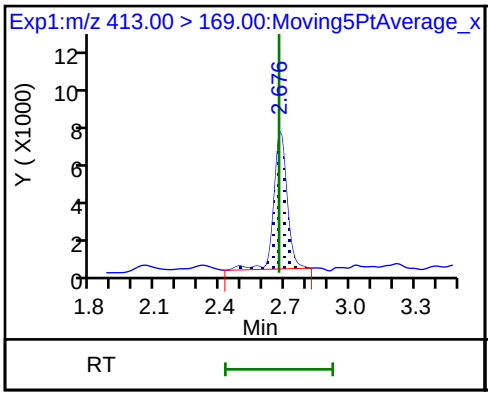
13 1H,1H,2H,2H-perfluorooctanesulfoni



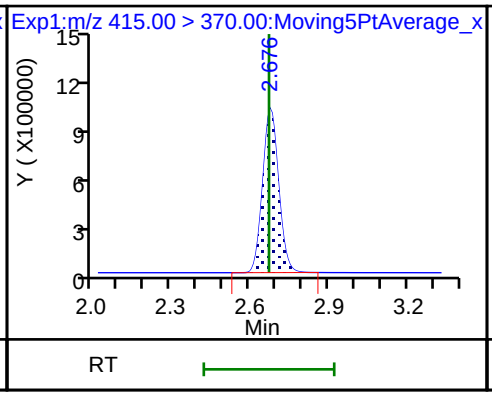
15 Perfluorooctanoic acid



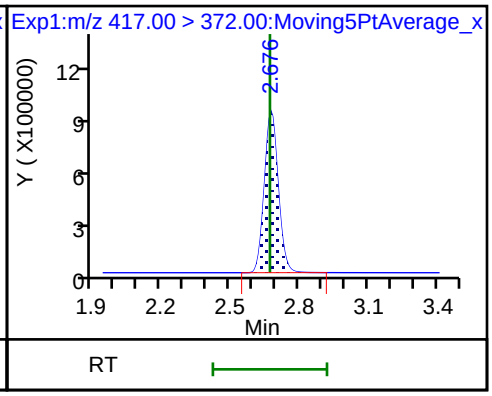
15 Perfluorooctanoic acid



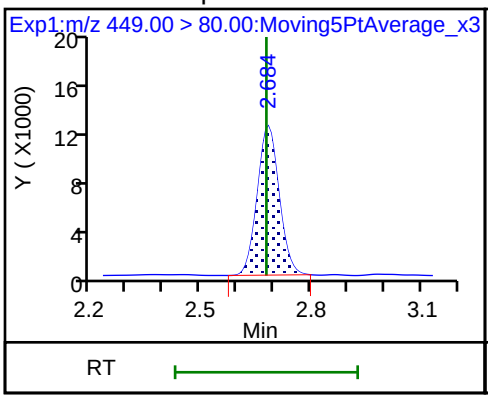
* 62 13C2-PFOA



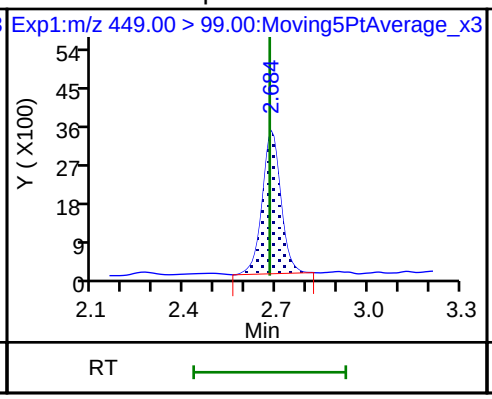
D 14 13C4 PFOA



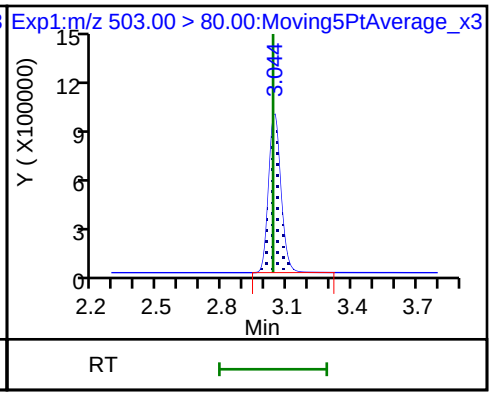
16 Perfluoroheptanesulfonic acid



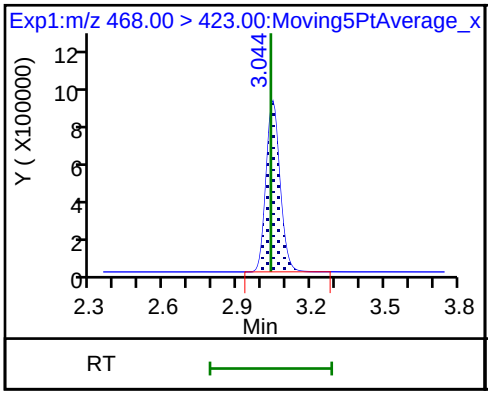
16 Perfluoroheptanesulfonic acid



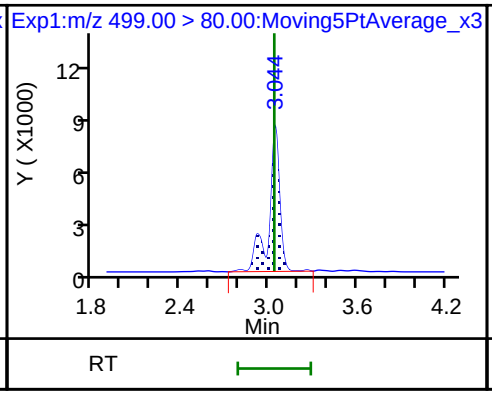
D 18 13C4 PFOS



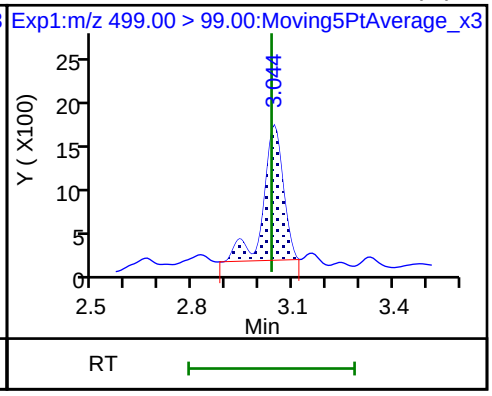
D 19 13C5 PFNA



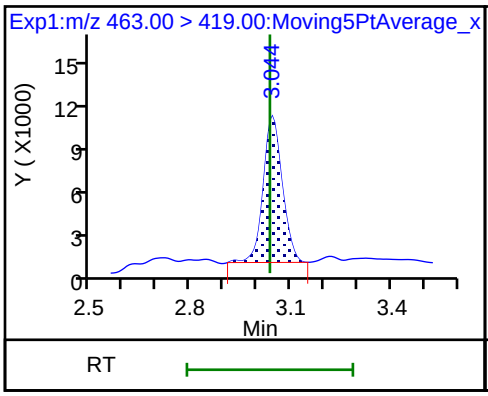
17 Perfluorooctane sulfonic acid



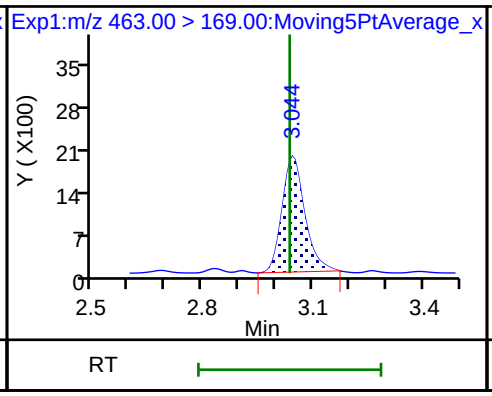
17 Perfluorooctane sulfonic acid (M)



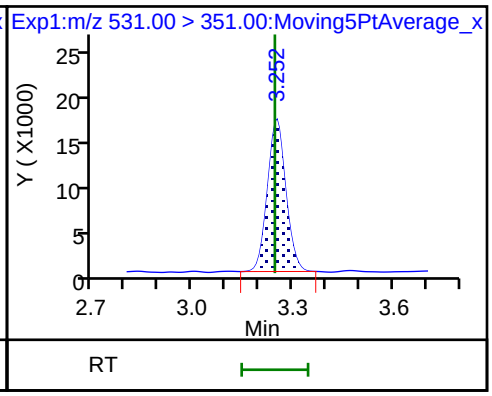
20 Perfluorononanoic acid



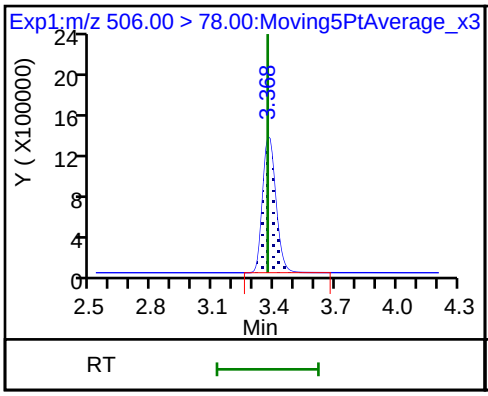
20 Perfluorononanoic acid



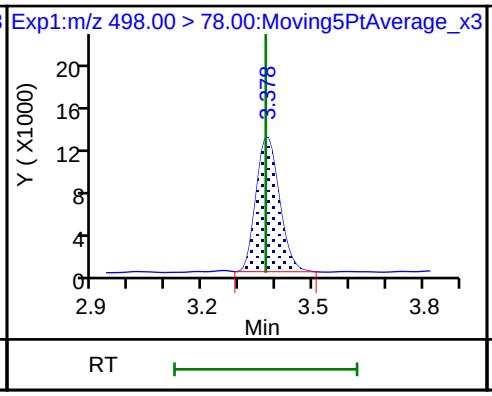
69 9-Chlorohexadecafluoro-3-oxanonane



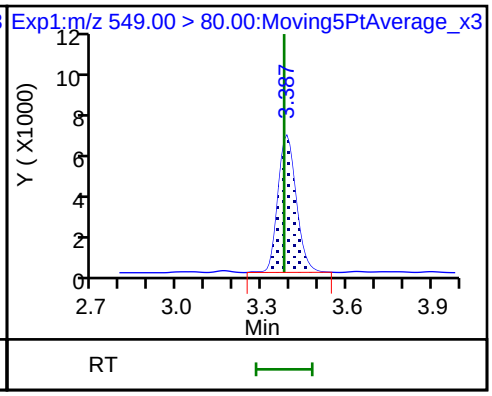
D 21 13C8 FOSA



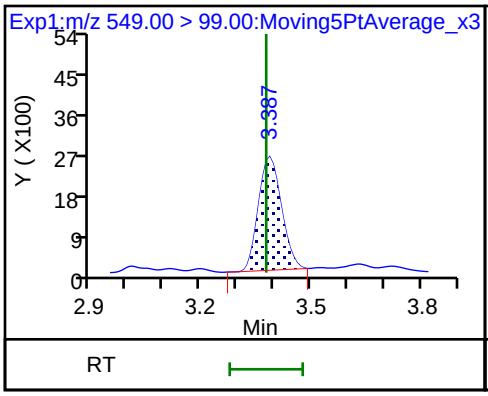
22 Perfluorooctane Sulfonamide



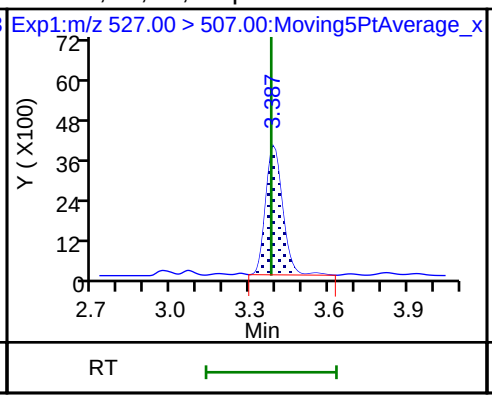
68 Perfluorononanesulfonic acid



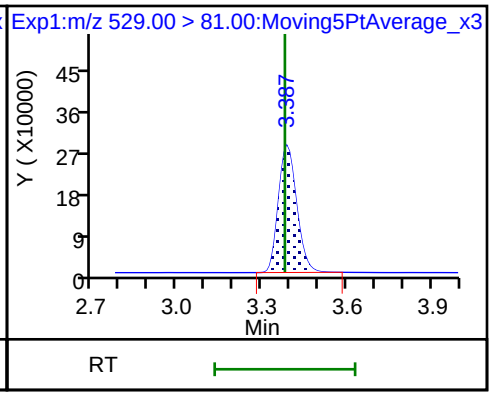
68 Perfluorononanesulfonic acid



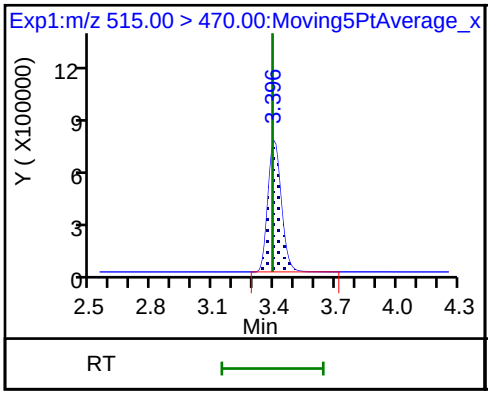
25 1H,1H,2H,2H-perfluorodecanesulfon



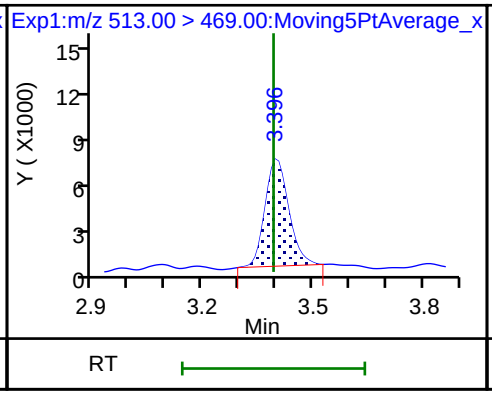
D 26 M2-8:2FTS



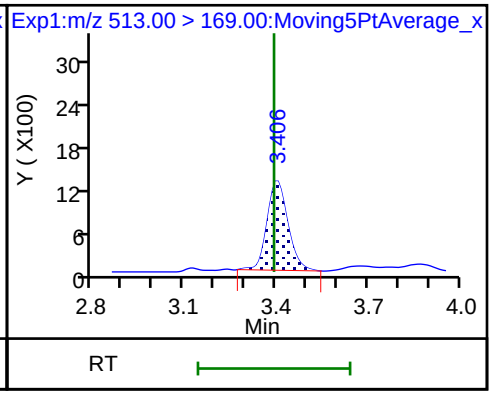
D 23 13C2 PFDA



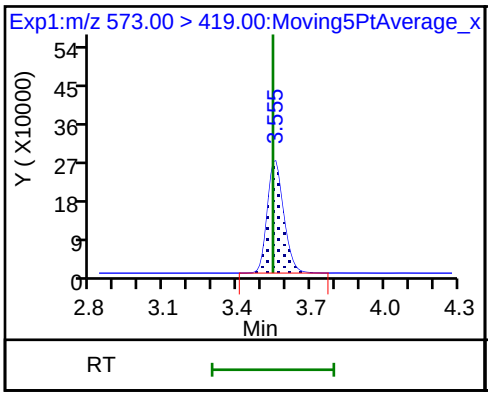
24 Perfluorodecanoic acid



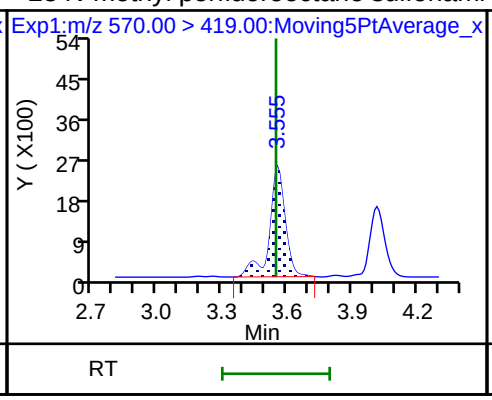
24 Perfluorodecanoic acid



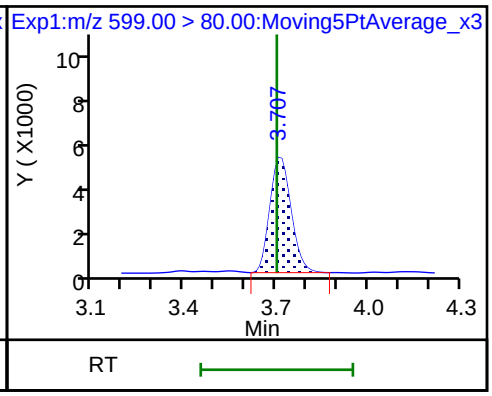
D 27 d3-NMeFOSAA



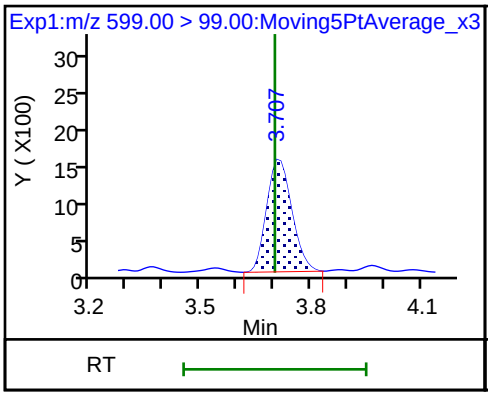
28 N-methyl perfluorooctane sulfonami



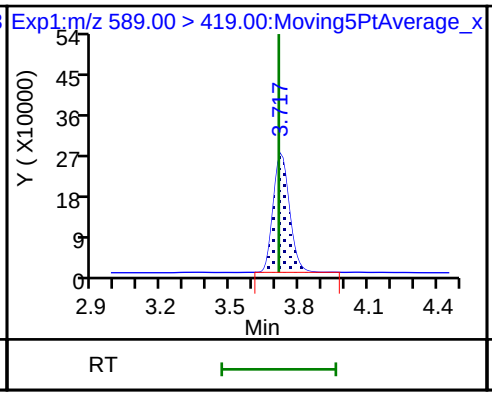
29 Perfluorodecane Sulfonic acid



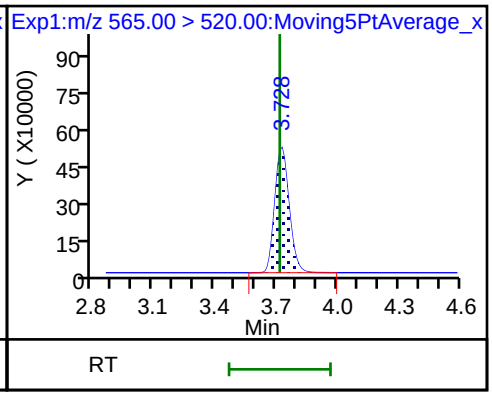
29 Perfluorodecane Sulfonic acid



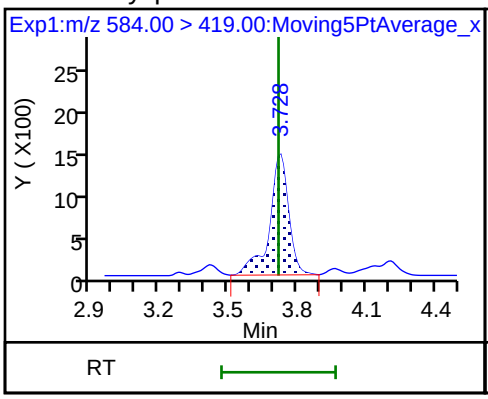
D 32 d5-NEtFOSAA



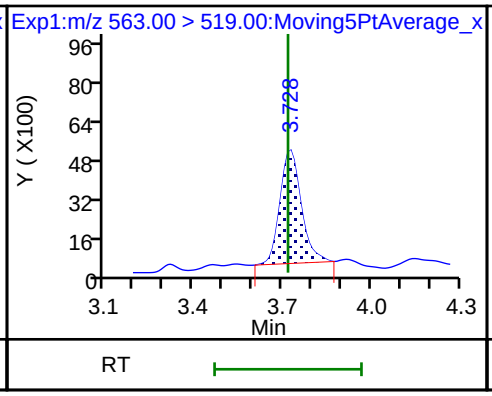
D 30 13C2 PFUnA



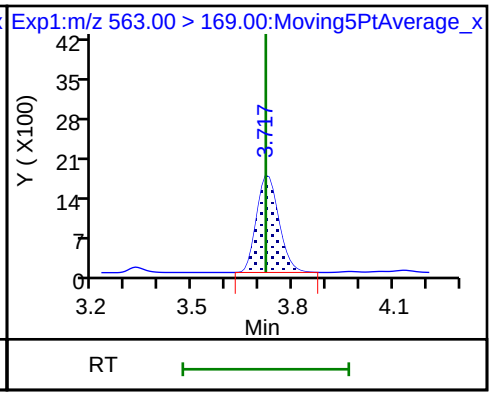
33 N-ethyl perfluorooctane sulfonamid



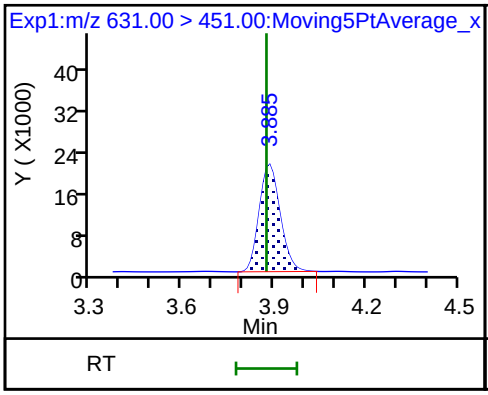
31 Perfluoroundecanoic acid



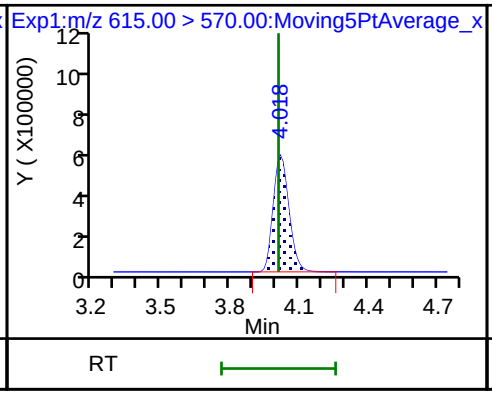
31 Perfluoroundecanoic acid



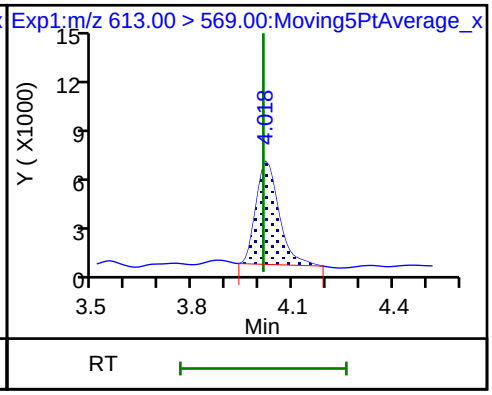
66 11-Chloroeicosafluoro-3-oxaundecan



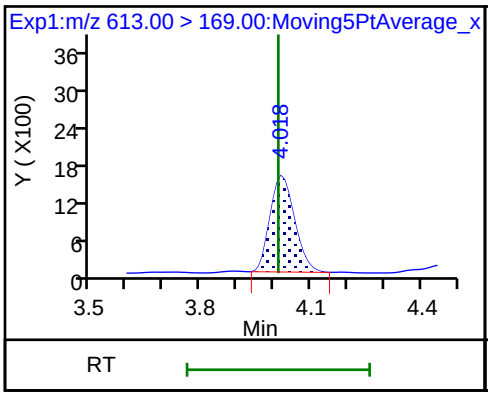
D 36 13C2 PFDoA



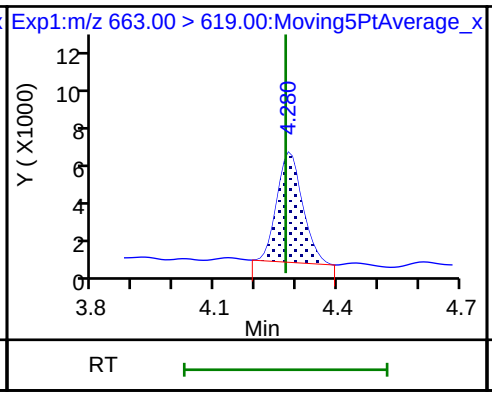
37 Perfluorododecanoic acid



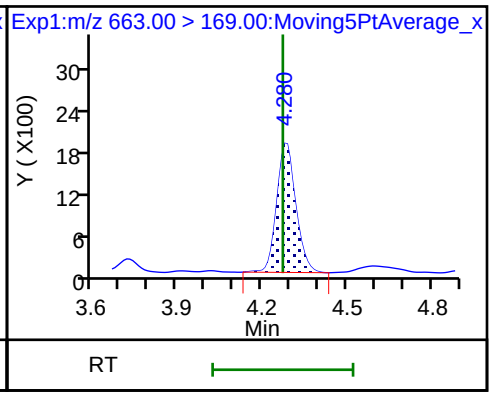
37 Perfluorododecanoic acid



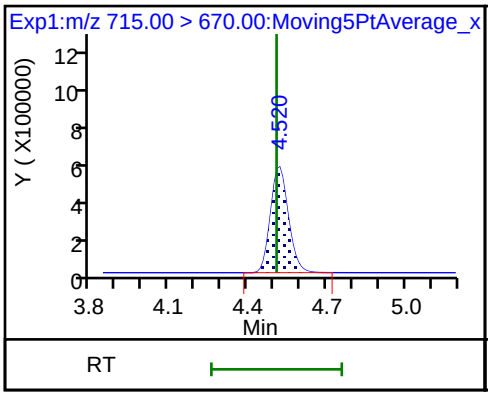
41 Perfluorotridecanoic acid



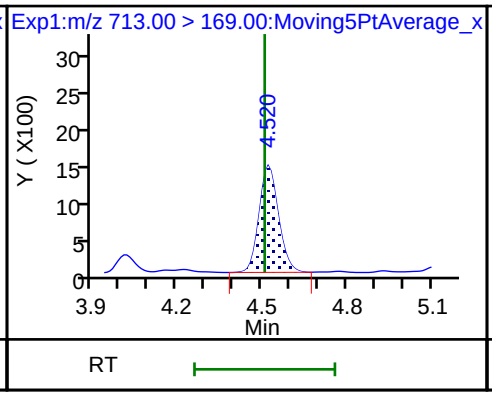
41 Perfluorotridecanoic acid



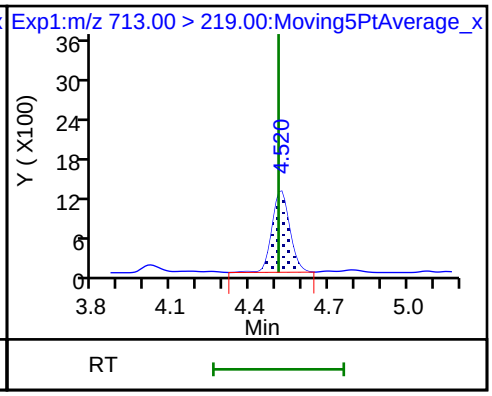
D 43 13C2-PFTeDA



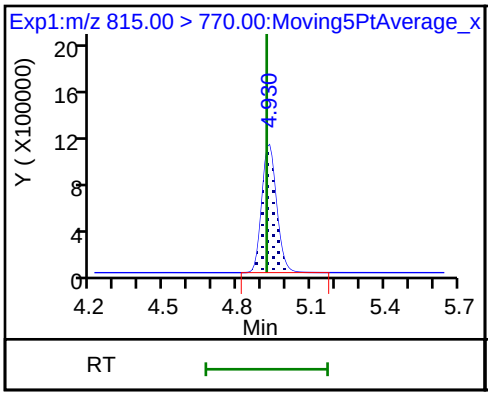
42 Perfluorotetradecanoic acid



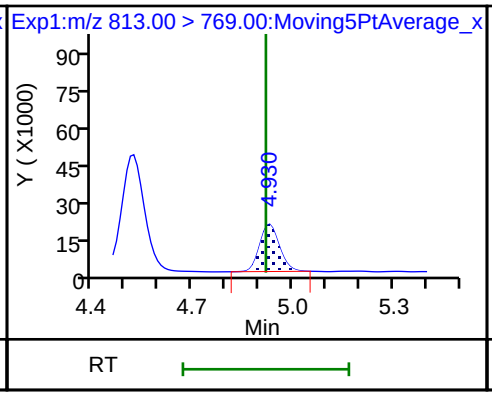
42 Perfluorotetradecanoic acid



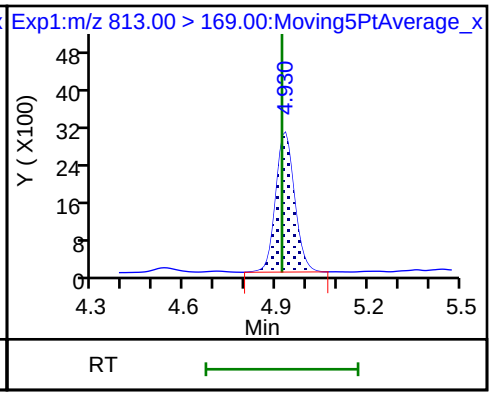
D 44 13C2-PFHxDA



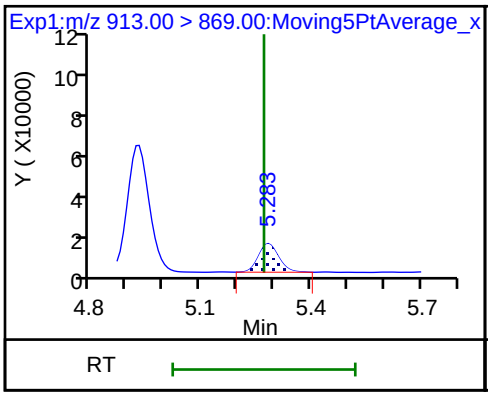
45 Perfluorohexadecanoic acid



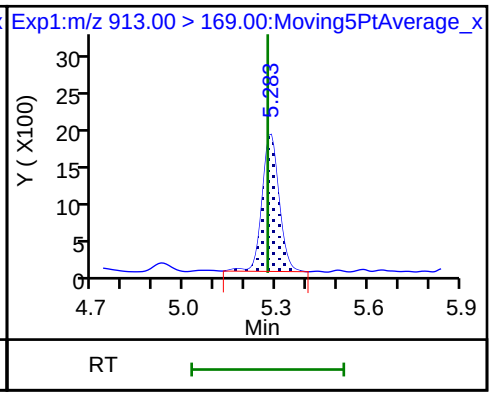
45 Perfluorohexadecanoic acid



46 Perfluorooctadecanoic acid



46 Perfluorooctadecanoic acid



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

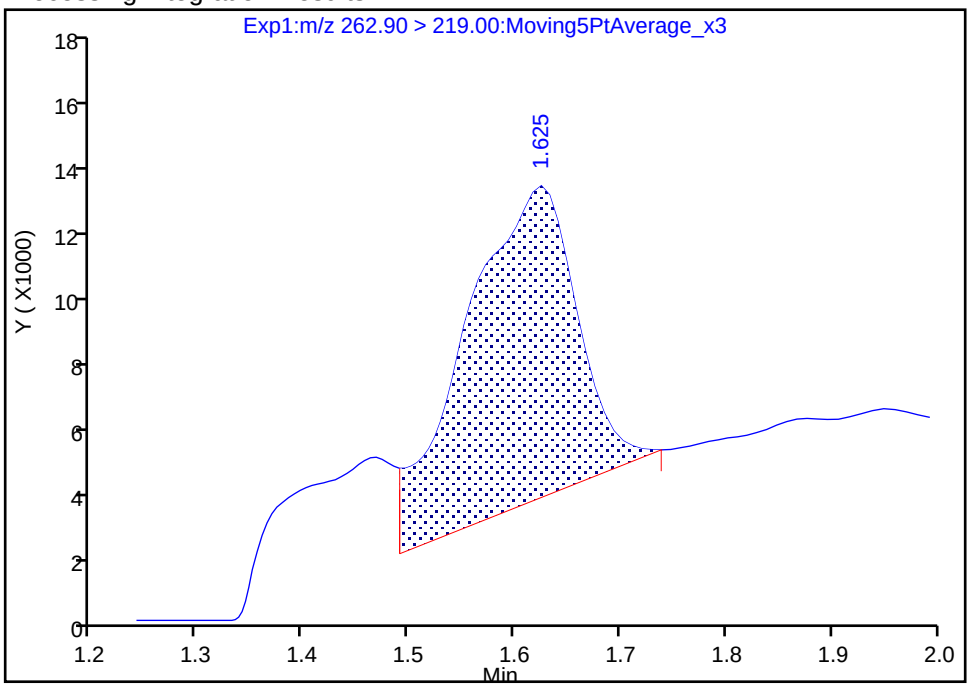
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_002.d				
Injection Date:	11-Jul-2018 14:48:59	Instrument ID:	A8_N		
Lims ID:	IC L1 Full				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	10	Worklist Smp#:	2
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

4 Perfluoropentanoic acid, CAS: 2706-90-3

Signal: 1

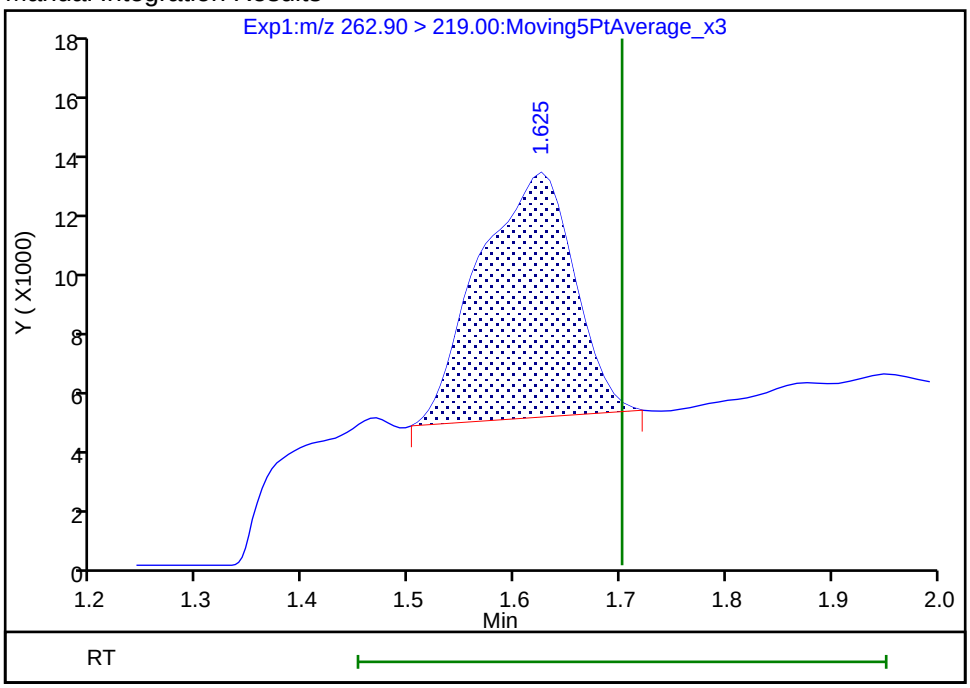
Processing Integration Results

RT: 1.63
Area: 71978
Amount: 0.036924
Amount Units: ng/ml



Manual Integration Results

RT: 1.63
Area: 51727
Amount: 0.028248
Amount Units: ng/ml



Reviewer: westendorfc, 11-Jul-2018 16:13:06
Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

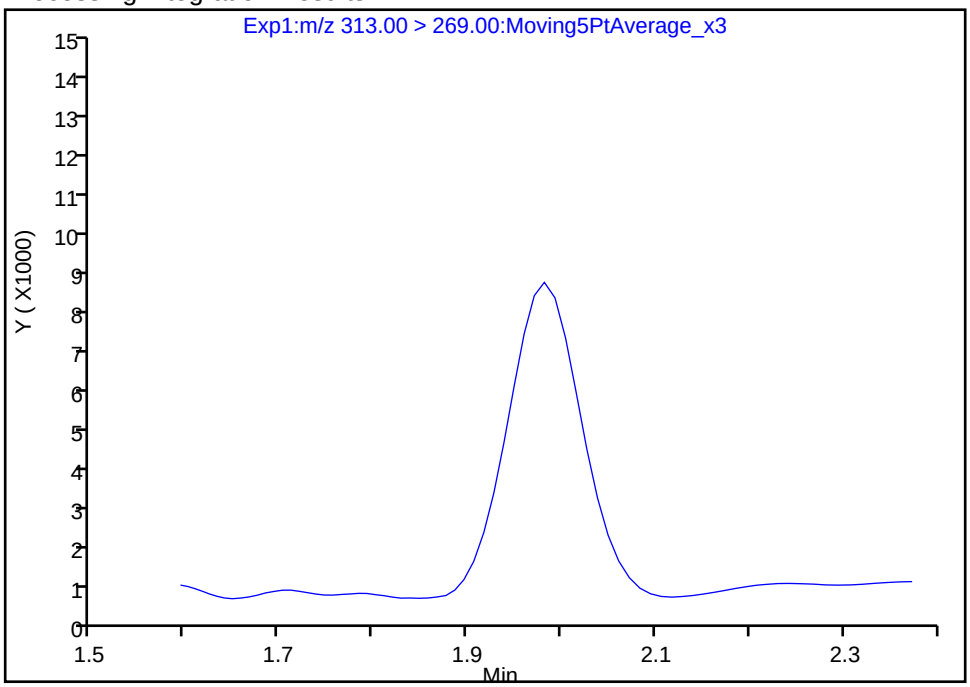
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_002.d				
Injection Date:	11-Jul-2018 14:48:59	Instrument ID:	A8_N		
Lims ID:	IC L1 Full				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	10	Worklist Smp#:	2
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

6 Perfluorohexanoic acid, CAS: 307-24-4

Signal: 1

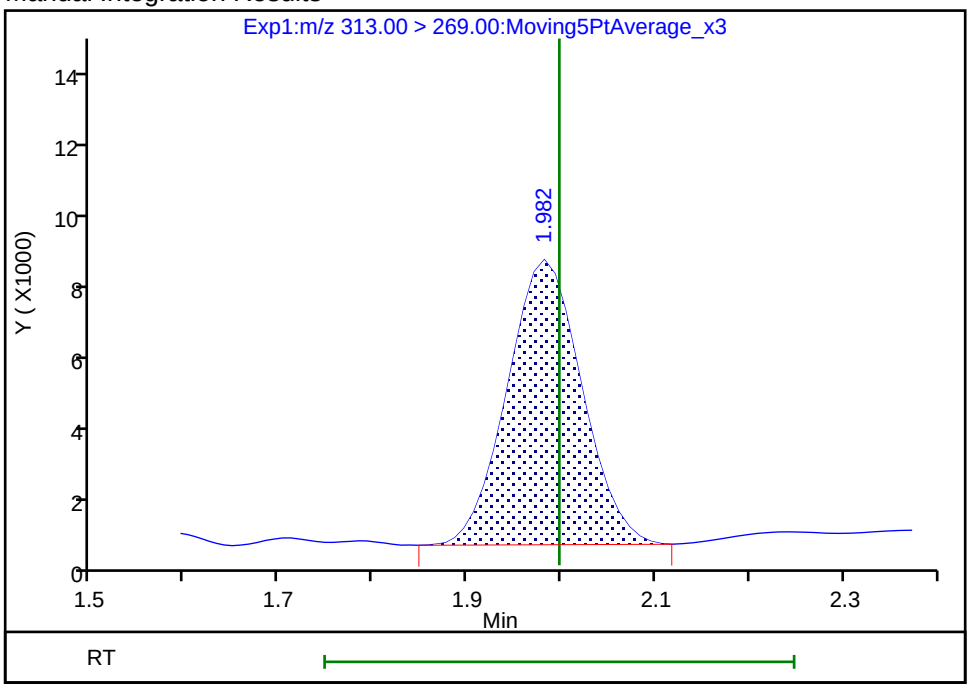
Not Detected
Expected RT: 2.00

Processing Integration Results



Manual Integration Results

RT: 1.98
Area: 41864
Amount: 0.025033
Amount Units: ng/ml



Reviewer: westendorfc, 11-Jul-2018 16:13:15
Audit Action: Assigned Compound ID Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

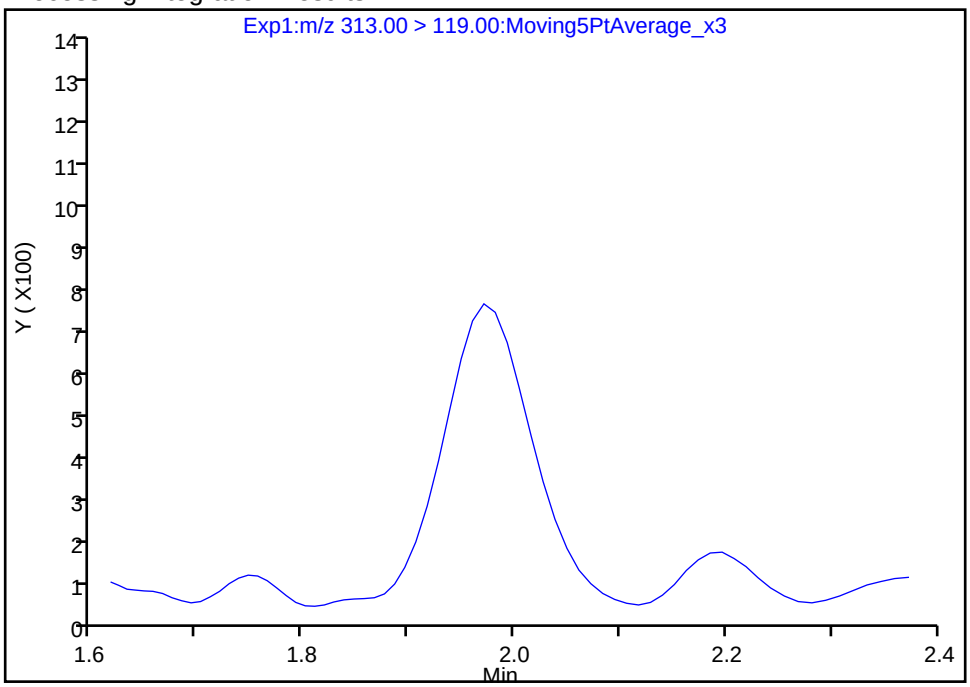
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_002.d				
Injection Date:	11-Jul-2018 14:48:59	Instrument ID:	A8_N		
Lims ID:	IC L1 Full				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	10	Worklist Smp#:	2
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

6 Perfluorohexanoic acid, CAS: 307-24-4

Signal: 2

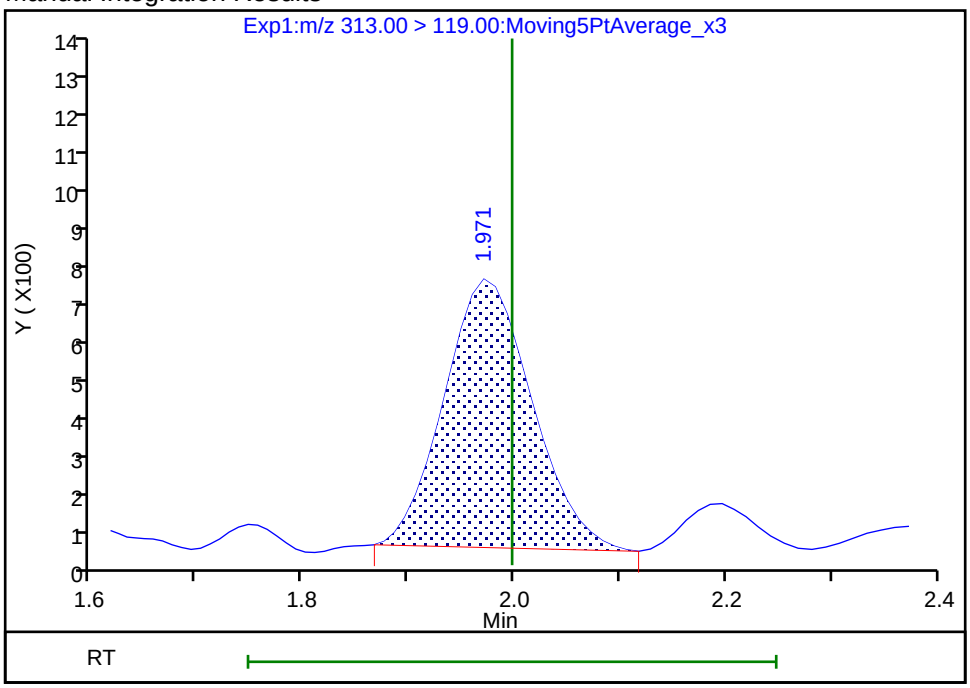
Processing Integration Results

Not Detected
Expected RT: 2.00



Manual Integration Results

RT: 1.97
Area: 4020
Amount: 0.025033
Amount Units: ng/ml



Reviewer: westendorfc, 11-Jul-2018 16:13:17
Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

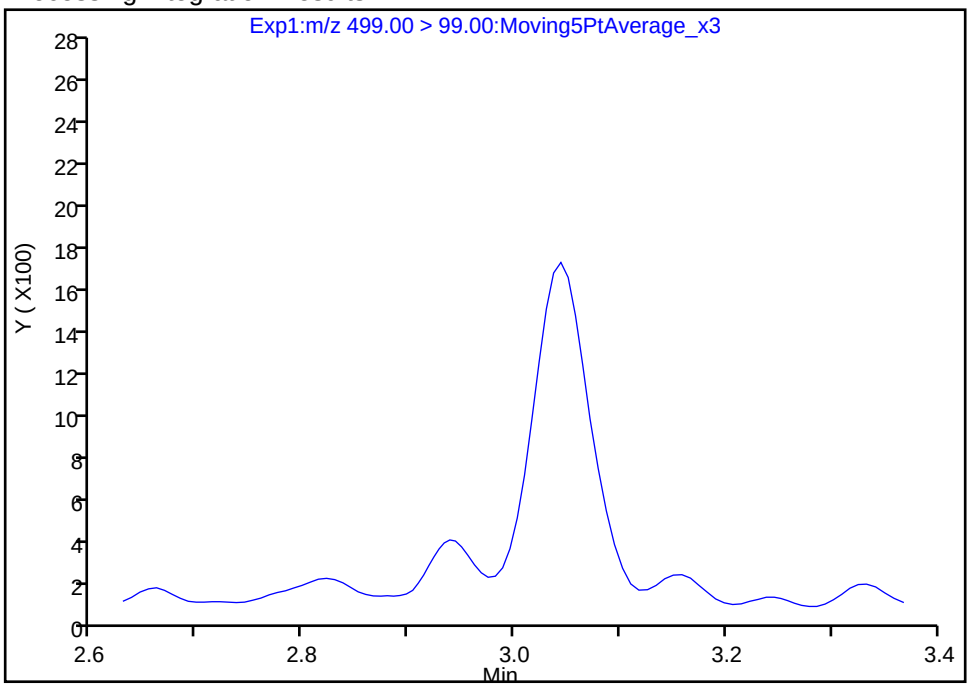
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_002.d				
Injection Date:	11-Jul-2018 14:48:59	Instrument ID:	A8_N		
Lims ID:	IC L1 Full				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	10	Worklist Smp#:	2
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

17 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 2

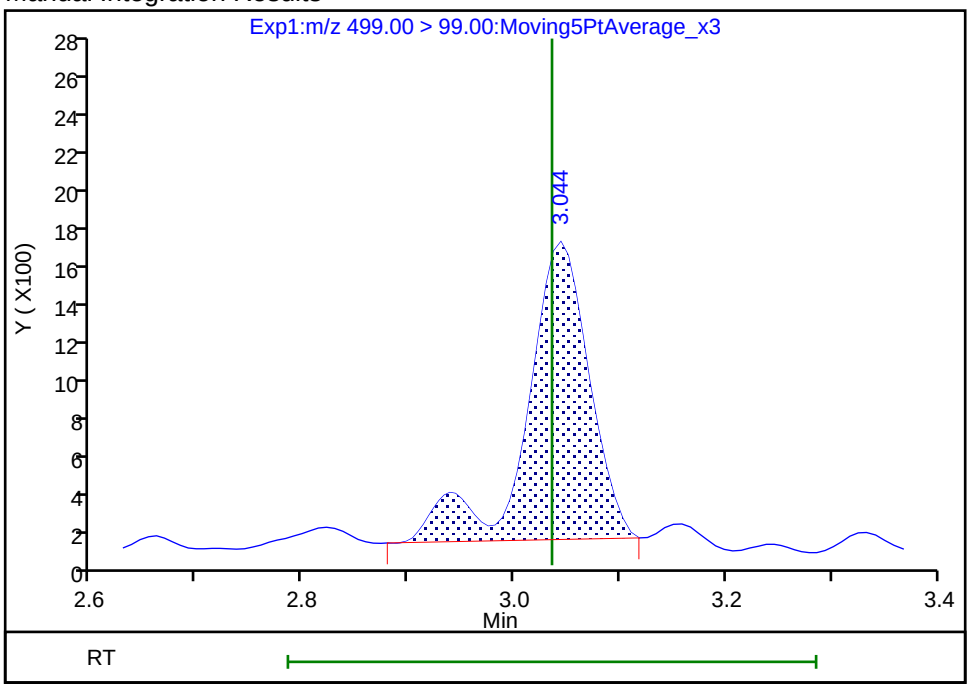
Processing Integration Results

RT: 3.03
Area: 0
Amount: 0.025719
Amount Units: ng/ml



Manual Integration Results

RT: 3.04
Area: 6341
Amount: 0.024079
Amount Units: ng/ml



Reviewer: westendorfc, 11-Jul-2018 16:13:33

Audit Action: Manually Integrated Audit Reason: Baseline

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_003.d
Lims ID: IC L2 Full
Client ID:
Sample Type: IC Calib Level: 2
Inject. Date: 11-Jul-2018 14:59:35 ALS Bottle#: 11 Worklist Smp#: 3
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L2-FULL
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-A8_N*sub32

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180711-60919.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 11-Jul-2018 16:33:24 Calib Date: 11-Jul-2018 15:38:42
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK024

First Level Reviewer: westendorfc Date: 11-Jul-2018 16:14:17

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.428	1.431	-0.003	0.534	5621166	2.34		93.6	27203	
2 Perfluorobutyric acid										
212.90 > 169.00	1.428	1.431	-0.003	1.000	109256	0.0493		98.6	39.2	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.716	1.702	0.014	1.005	103977	0.0549		110	36.1	
D 3 13C5-PFPeA										
267.90 > 223.00	1.707	1.702	0.005	0.639	3905774	2.34		93.6	45504	
D 47 13C3-PFBS										
301.90 > 83.00	1.752	1.748	0.004	0.656	94108	2.24		96.5	592	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.752	1.751	0.001	1.000	137206	0.0443		100	2151	
298.90 > 99.00	1.752	1.751	0.001	1.000	53563		2.56(1.25-3.74)	100	710	
61 1H,1H,2H,2H-perfluorohexanesulfoni										
327.00 > 307.00	1.966	1.962	0.004	1.122	23943	0.0455		97.4	1421	
D 60 M2-4:2FTS										
329.00 > 81.00	1.966	1.962	0.004	0.736	509407	2.26		96.8	8344	
D 7 13C2 PFHxA										
315.00 > 270.00	1.999	1.996	0.003	0.748	4333312	2.41		96.2	64902	
6 Perfluorohexanoic acid										M
313.00 > 269.00	1.999	1.998	0.001	1.000	97977	0.0549		110	183	M
313.00 > 119.00	1.999	1.998	0.001	1.000	6918		14.16(5.03-15.10)	110	125	
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.022	2.022	0.0	1.154	133528	0.0473		101	2986	
349.00 > 99.00	2.022	2.022	0.0	1.154	49366		2.70(1.36-4.07)	101	988	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.090	2.093	-0.003	0.782	284852	2.22		88.9	8528	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
67 Perfluoro(2-propoxypropanoic) acid										M
329.10 > 285.00	2.090	2.095	-0.005	1.000	15816	0.0523		105	83.0	M
D 9 13C4-PFHpA										
367.00 > 322.00	2.315	2.319	-0.004	0.866	3963601	2.39		95.5	39266	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.315	2.319	-0.004	1.000	99091	0.0540		108	190	
363.00 > 169.00	2.315	2.319	-0.004	1.000	33565		2.95(1.13-3.40)	108	294	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.329	2.332	-0.004	1.000	120291	0.0457		100	1829	
399.00 > 99.00	2.329	2.332	-0.004	1.000	39862		3.02(1.50-4.49)	100	297	
D 11 18O2 PFHxS										
403.00 > 84.00	2.329	2.334	-0.006	0.871	5419785	2.31		97.5	38199	
65 Adona										
377.00 > 251.00	2.355	2.360	-0.005	0.777	258910	0.0472		100	3460	
377.00 > 85.00	2.355	2.360	-0.005	0.777	138046		1.88(0.84-2.53)	100	781	
D 12 M2-6:2FTS										
429.00 > 81.00	2.642	2.645	-0.003	0.989	834970	2.35		98.8	12376	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.650	2.648	0.002	1.003	25517	0.0464		97.9	550	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.673	2.672	0.001	1.000	112267	0.0542		108	71.2	
413.00 > 169.00	2.665	2.672	-0.007	0.997	54050		2.08(0.84-2.52)	108	261	
* 62 13C2-PFOA										
415.00 > 370.00	2.673	2.672	0.001		4427596	2.50			33183	
D 14 13C4 PFOA										
417.00 > 372.00	2.673	2.672	0.001	1.000	4207903	2.49		99.4	45634	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.673	2.678	-0.005	0.882	100280	0.0447		93.9	3509	
449.00 > 99.00	2.673	2.678	-0.005	0.882	27817		3.60(1.94-5.82)	93.9	749	
D 18 13C4 PFOS										
503.00 > 80.00	3.032	3.034	-0.002	1.134	4069838	2.36		98.7	38607	
D 19 13C5 PFNA										
468.00 > 423.00	3.032	3.035	-0.003	1.134	3839924	2.54		101	39904	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.032	3.035	-0.003	1.000	89440	0.0464		99.9	2154	
499.00 > 99.00	3.032	3.035	-0.003	1.000	18719		4.78(2.31-6.93)	99.9	310	
20 Perfluorononanoic acid										
463.00 > 419.00	3.039	3.036	0.003	1.002	84772	0.0498		99.5	213	
463.00 > 169.00	3.032	3.036	-0.004	1.000	19632		4.32(1.90-5.69)	99.5	740	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.247	3.245	0.002	1.071	146856	0.0470		101	1774	
D 21 13C8 FOSA										
506.00 > 78.00	3.370	3.367	0.003	1.261	6150410	2.47		98.9	32394	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.370	3.371	-0.001	1.000	123192	0.0508		102	2778	
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.379	3.377	0.002	1.114	60641	0.0459		95.7	2262	
549.00 > 99.00	3.379	3.377	0.002	1.114	24151		2.51(1.33-3.97)	95.7	351	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
25 1H,1H,2H,2H-perfluorodecanesulfoni										
527.00 > 507.00	3.379	3.380	-0.001	1.000	32747	0.0447		93.4	733	
D 26 M2-8:2FTS										
529.00 > 81.00	3.379	3.380	-0.001	1.264	1358867	2.61		109	17826	
D 23 13C2 PFDA										
515.00 > 470.00	3.388	3.391	-0.003	1.268	3274309	2.46		98.6	32070	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.388	3.392	-0.004	1.000	74013	0.0539		108	406	
513.00 > 169.00	3.388	3.392	-0.004	1.000	10870		6.81(2.36-7.09)	108	412	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.547	3.544	0.003	1.327	1276369	2.34		93.7	19760	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.547	3.548	-0.001	1.000	24180	0.0480		96.1	215	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.697	3.701	-0.004	1.219	52427	0.0459		95.1	1367	
599.00 > 99.00	3.697	3.701	-0.004	1.219	18077		2.90(1.39-4.16)	95.1	758	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.708	3.710	-0.002	1.387	1427681	2.56		102	4014	
D 30 13C2 PFUnA										
565.00 > 520.00	3.719	3.716	0.003	1.391	2825527	2.55		102	42065	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.719	3.718	0.001	1.003	26557	0.0526		105	439	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.719	3.718	0.001	1.000	49158	0.0531		106	200	
563.00 > 169.00	3.719	3.718	0.001	1.000	14212		3.46(2.12-6.36)	106	596	
66 11-Chloroeicosafluoro-3-oxaundecan										
631.00 > 451.00	3.876	3.874	0.002	1.278	209574	0.0464		98.5	6254	
D 36 13C2 PFDoA										
615.00 > 570.00	4.008	4.009	-0.001	1.500	2796780	2.43		97.2	22020	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.008	4.011	-0.003	1.000	55796	0.0457		91.4	28.2	
613.00 > 169.00	4.008	4.011	-0.003	1.000	12342		4.52(2.13-6.40)	91.4	363	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.271	4.273	-0.002	1.066	57570	0.0482		96.4	22.2	
663.00 > 169.00	4.271	4.273	-0.002	1.066	17855		3.22(1.25-3.76)	96.4	396	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.511	4.508	0.003	1.688	2667637	2.23		89.4	13833	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.511	4.508	0.003	1.000	15573	0.0561		112	297	
713.00 > 219.00	4.500	4.508	-0.008	0.998	10316		1.51(0.71-2.13)	112	235	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.921	4.918	0.003	1.841	4084288	2.15		85.9	10856	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.921	4.918	0.003	1.000	111481	0.0502		100	26.1	
813.00 > 169.00	4.921	4.918	0.003	1.000	18505		6.02(2.86-8.58)	100	203	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.276	5.271	0.005	1.072	97895	0.0524		105	20.7	
913.00 > 169.00	5.269	5.271	-0.002	1.071	11669		8.39(3.83-11.48)	105	192	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

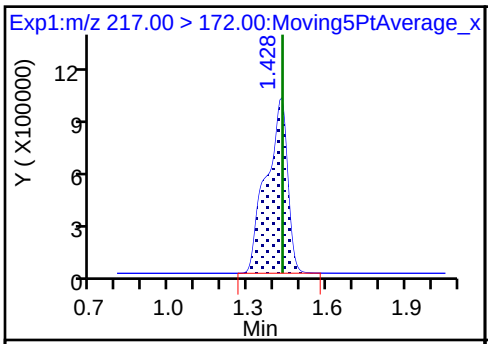
LCPFC_LL2_00005 Amount Added: 1.00 Units: mL

Report Date: 11-Jul-2018 16:33:26 Chrom Revision: 2.2 07-Jun-2018 07:41:54

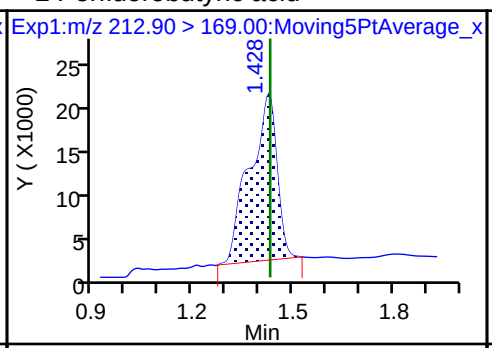
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_003.d
Injection Date: 11-Jul-2018 14:59:35 Instrument ID: A8_N
Lims ID: IC L2 Full
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 11 Worklist Smp#: 3
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC ICAL

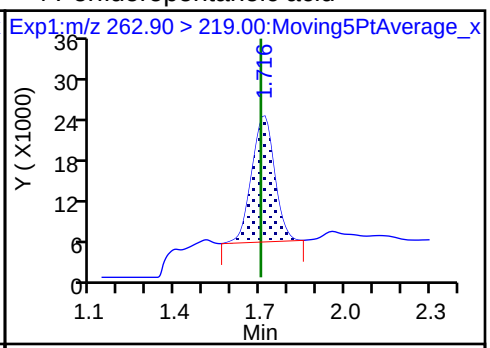
D 1 13C4 PFBA



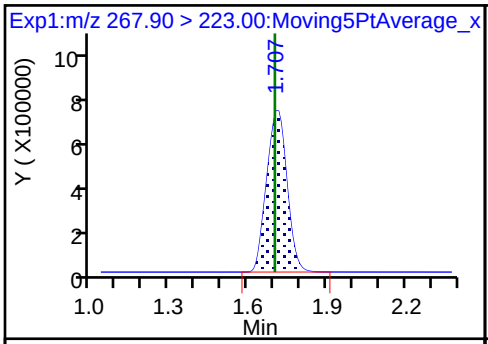
2 Perfluorobutyric acid



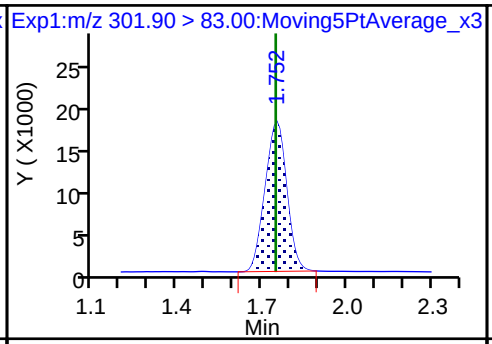
4 Perfluoropentanoic acid



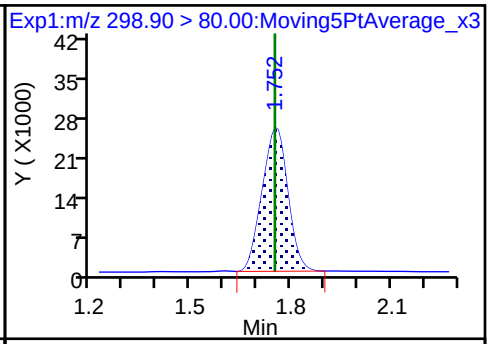
D 3 13C5-PFPeA



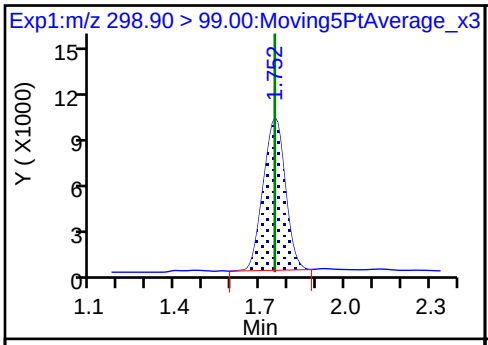
D 47 13C3-PFBS



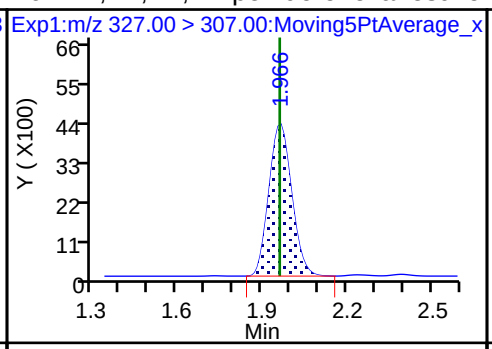
5 Perfluorobutanesulfonic acid



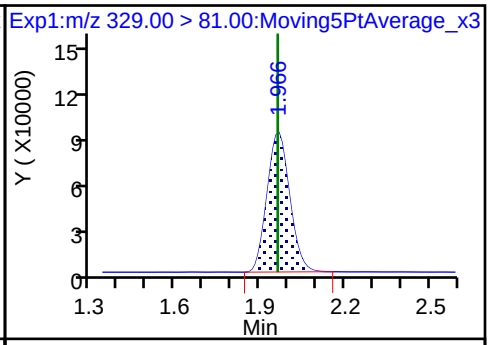
5 Perfluorobutanesulfonic acid



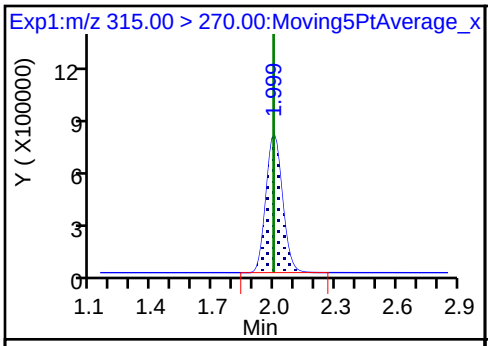
61 1H,1H,2H,2H-perfluorohexanesulfon



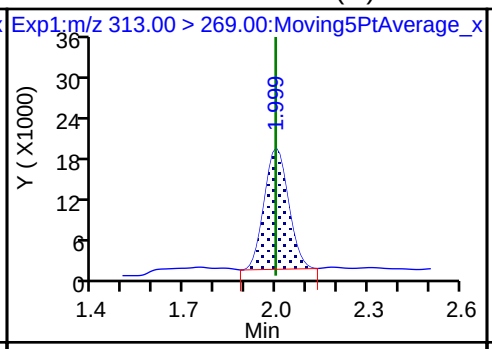
D 60 M2-4:2FTS



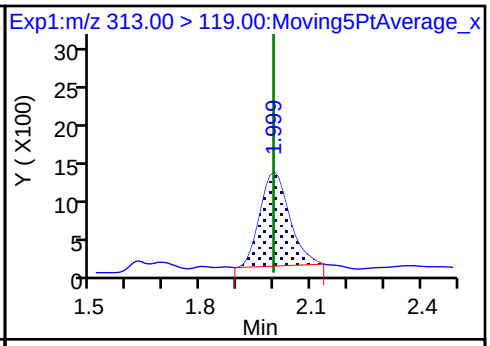
D 7 13C2 PFHxA



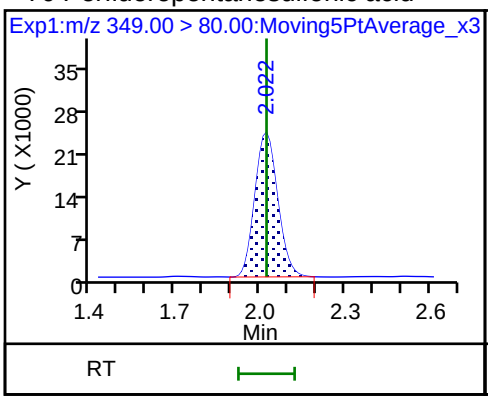
6 Perfluorohexanoic acid (M)



6 Perfluorohexanoic acid



70 Perfluoropentanesulfonic acid



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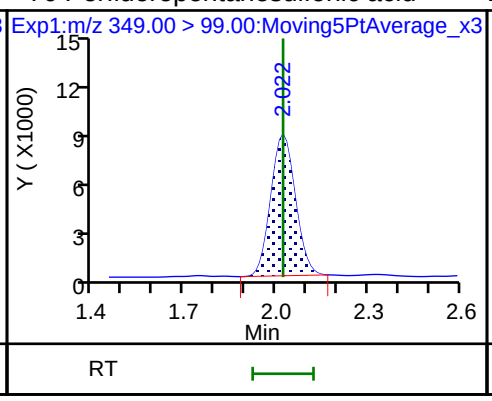
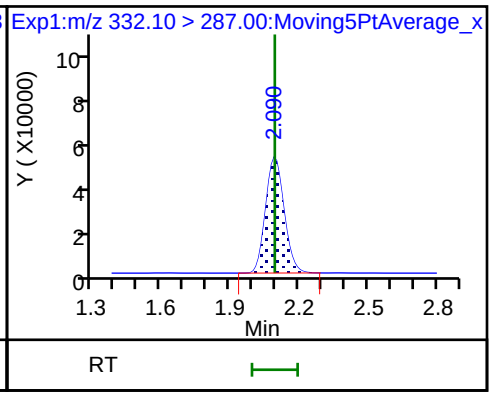
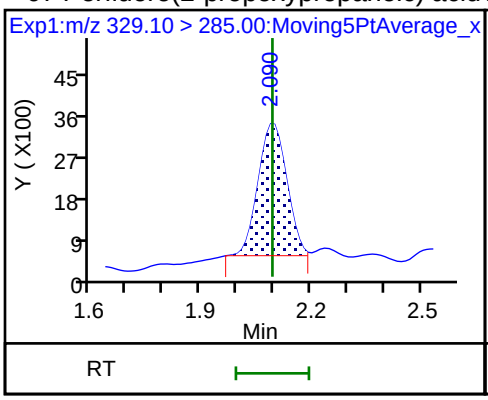


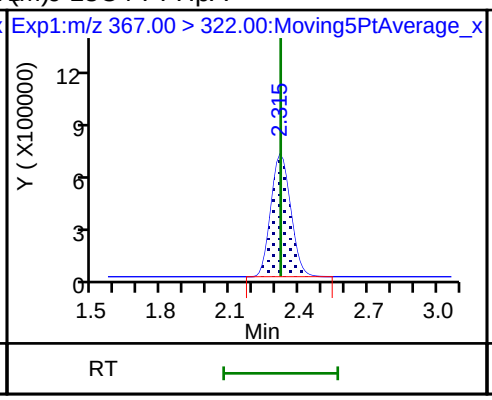
D 64 13C3 HFPO-DA



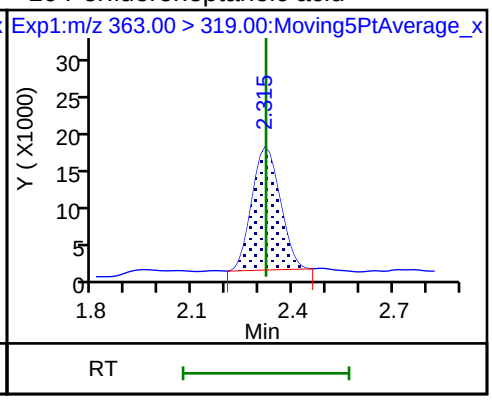
67 Perfluoro(2-propoxypropanoic) acid (M)



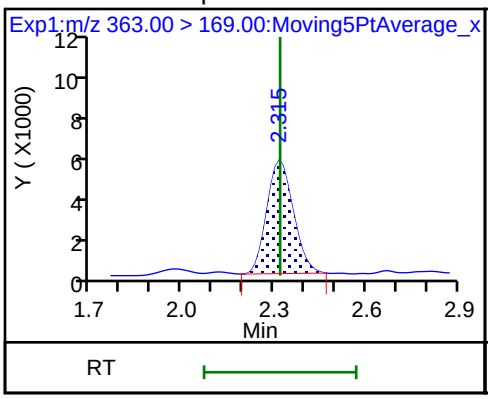
D 9 13C4-PFHpA



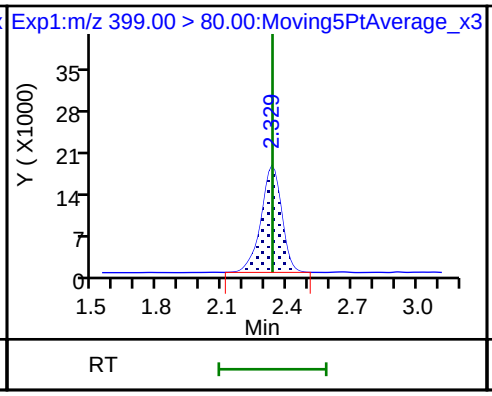
10 Perfluoroheptanoic acid



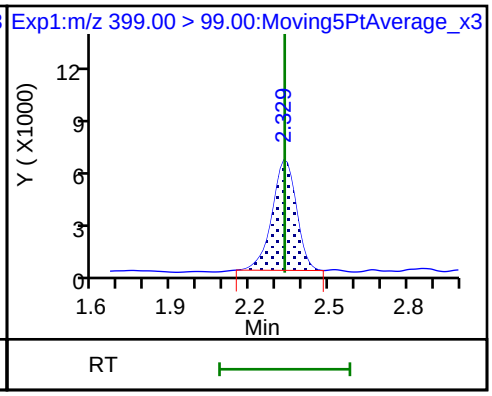
10 Perfluoroheptanoic acid



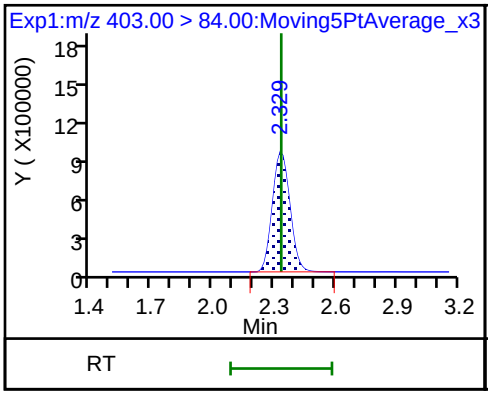
8 Perfluorohexanesulfonic acid



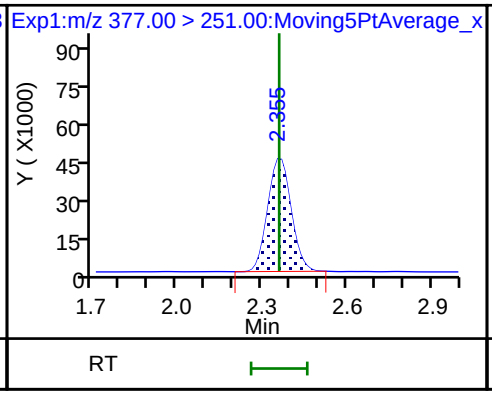
8 Perfluorohexanesulfonic acid



D 11 18O2 PFHxS



65 Adona



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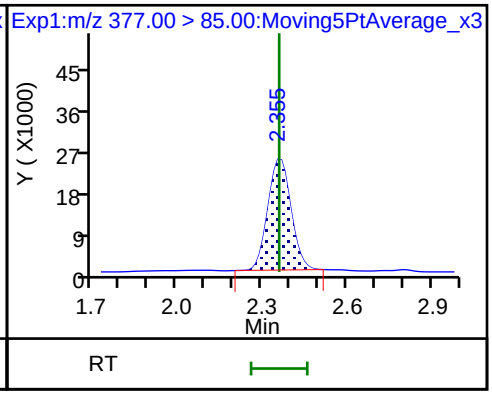
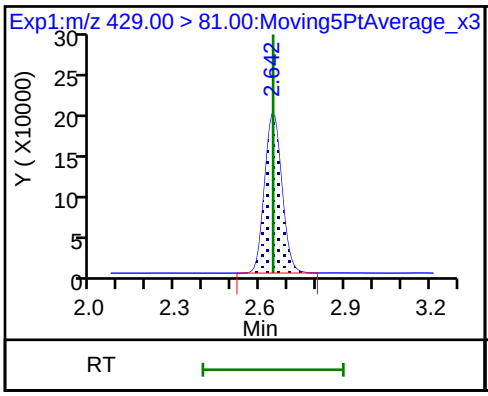
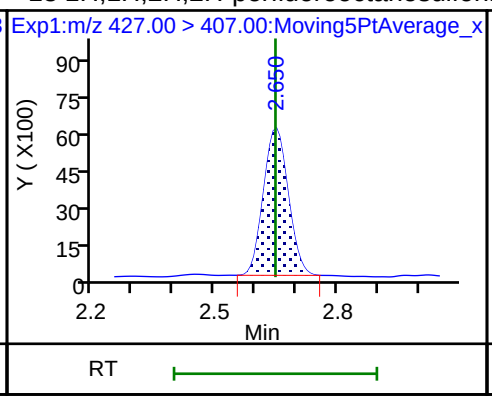


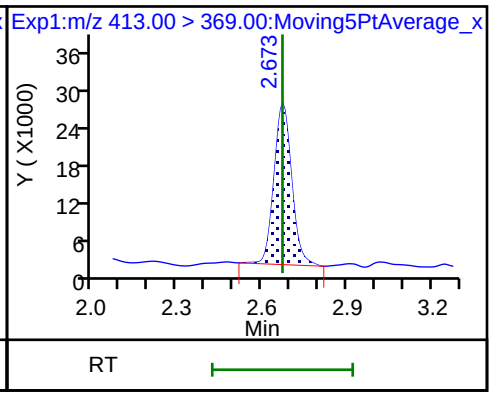
D 12 M2-6:2FTS



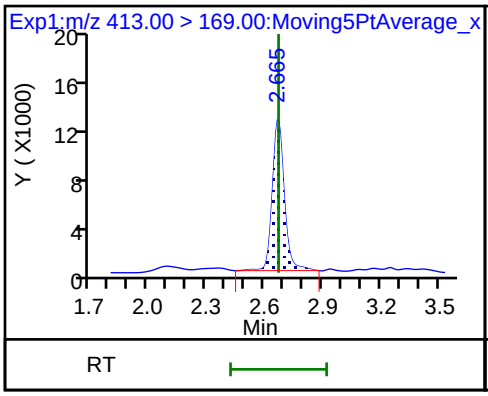
13 1H,1H,2H,2H-perfluorooctanesulfoni



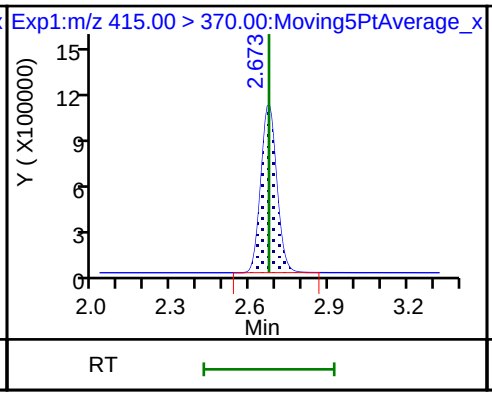
15 Perfluorooctanoic acid



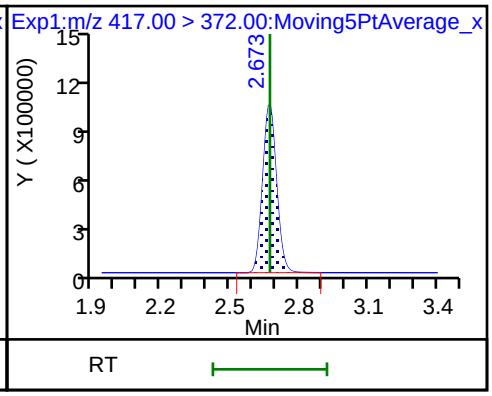
15 Perfluorooctanoic acid



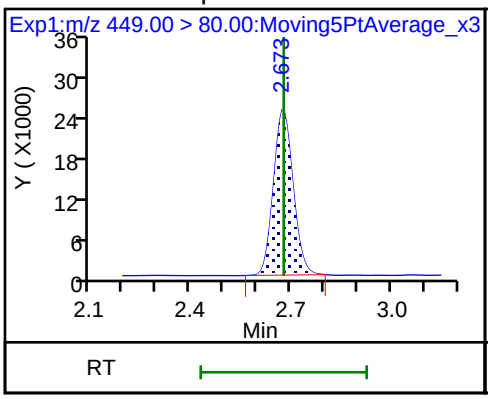
* 62 13C2-PFOA



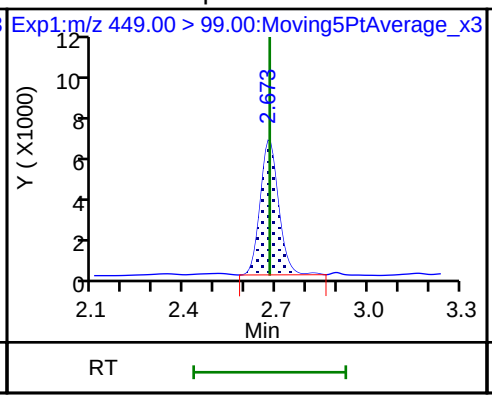
D 14 13C4 PFOA



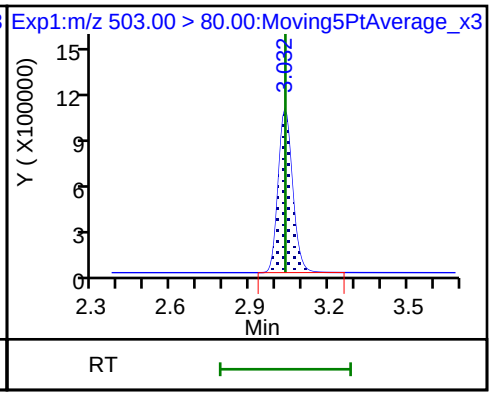
16 Perfluoroheptanesulfonic acid



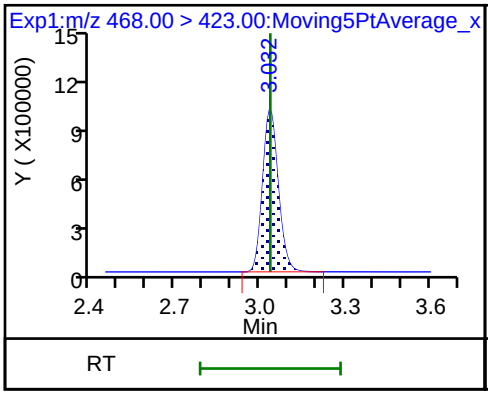
16 Perfluoroheptanesulfonic acid



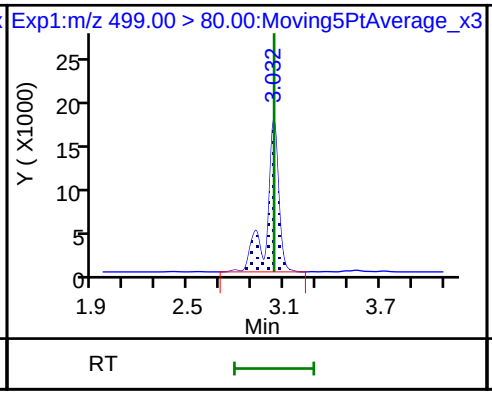
D 18 13C4 PFOS



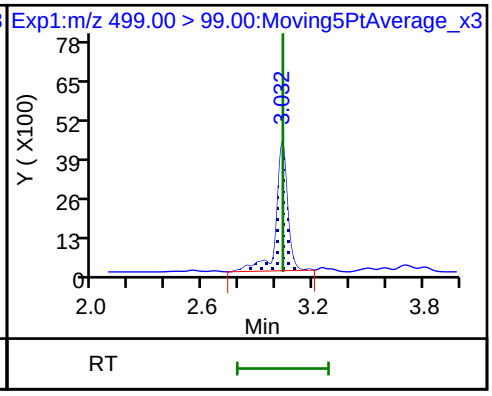
D 19 13C5 PFNA



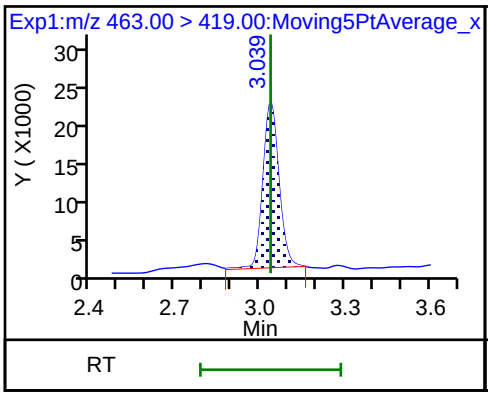
17 Perfluorooctane sulfonic acid



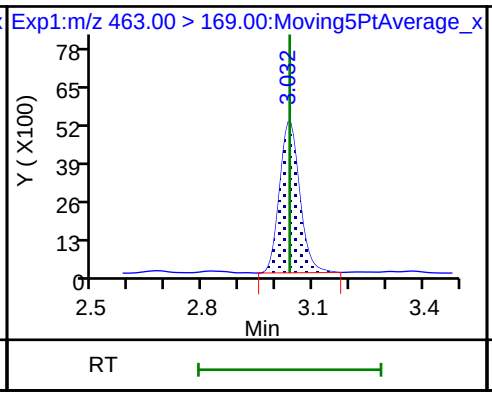
17 Perfluorooctane sulfonic acid



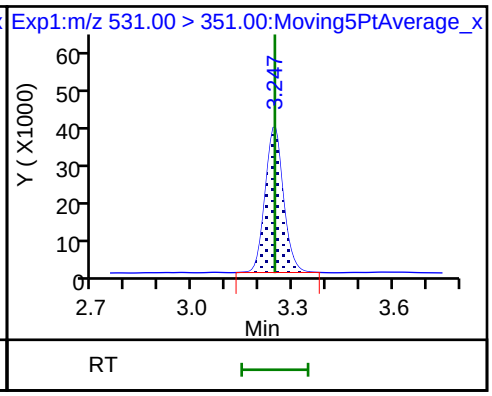
20 Perfluorononanoic acid



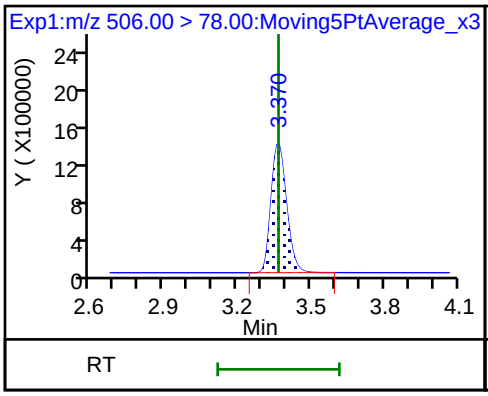
20 Perfluorononanoic acid



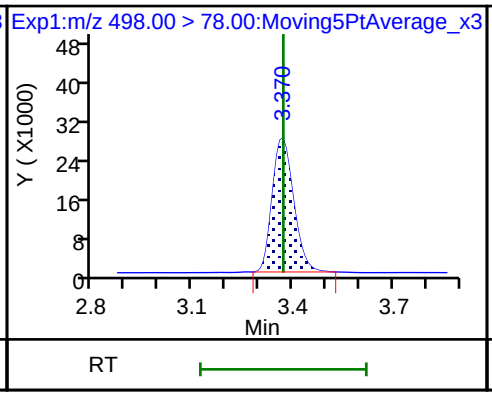
69 9-Chlorohexadecafluoro-3-oxanonane



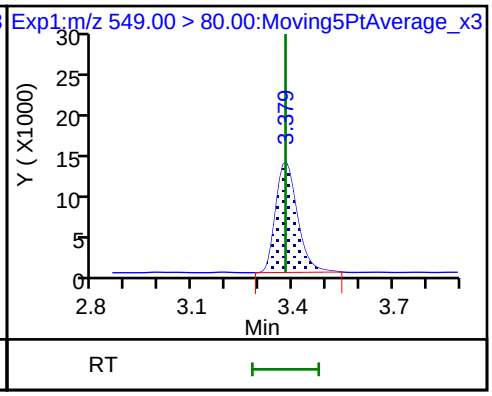
D 21 13C8 FOSA



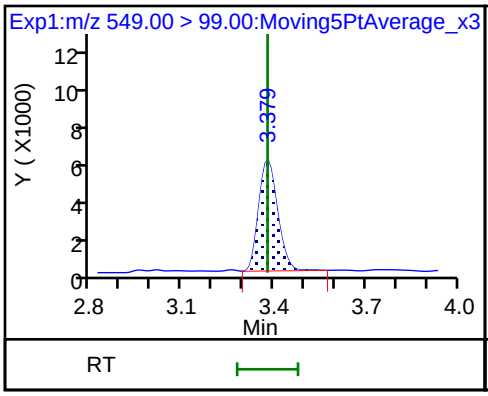
22 Perfluorooctane Sulfonamide



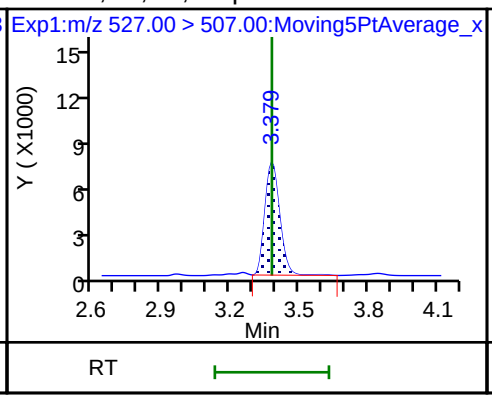
68 Perfluorononanesulfonic acid



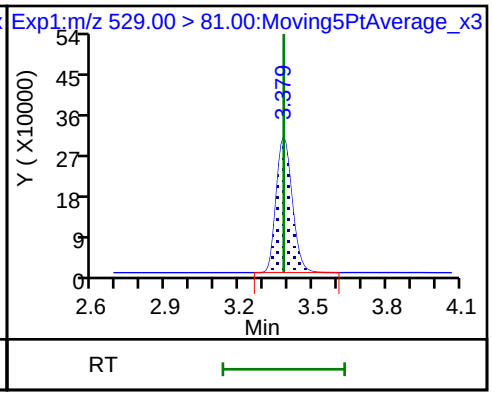
68 Perfluorononanesulfonic acid



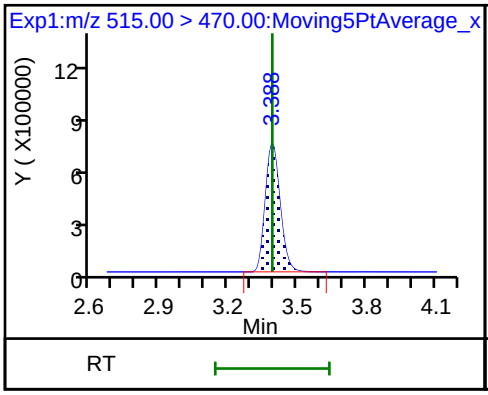
25 1H,1H,2H,2H-perfluorodecanesulfon



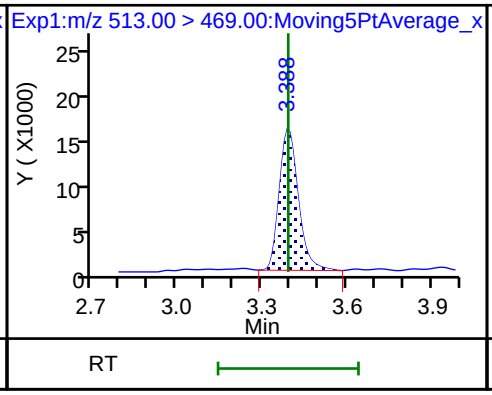
D 26 M2-8:2FTS



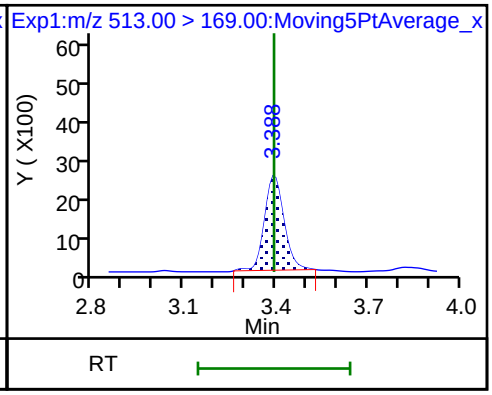
D 23 13C2 PFDA



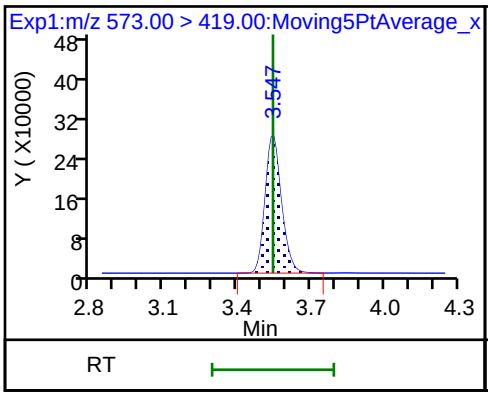
24 Perfluorodecanoic acid



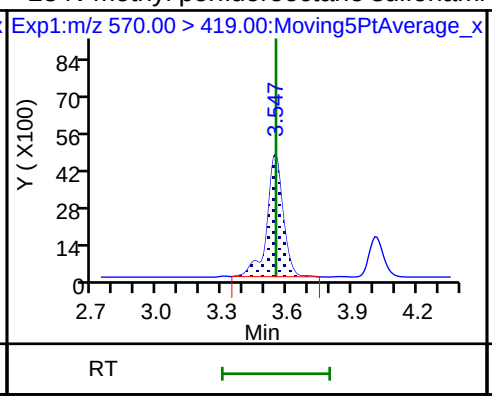
24 Perfluorodecanoic acid



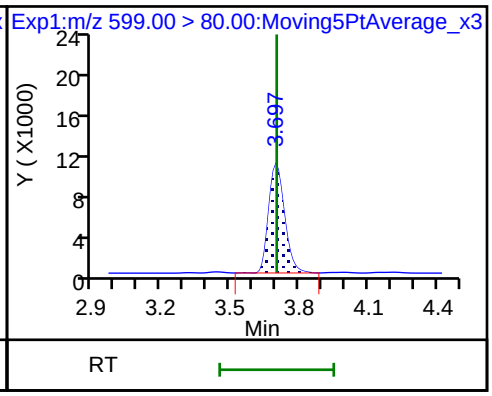
D 27 d3-NMeFOSAA



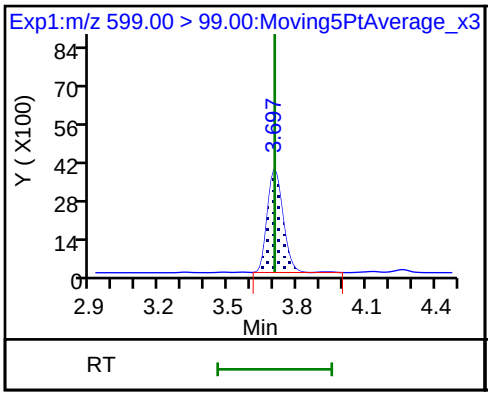
28 N-methyl perfluorooctane sulfonami



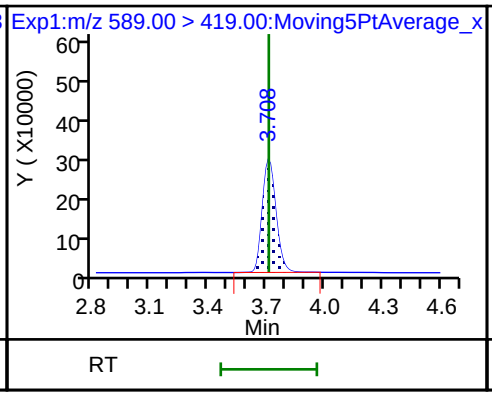
29 Perfluorodecane Sulfonic acid



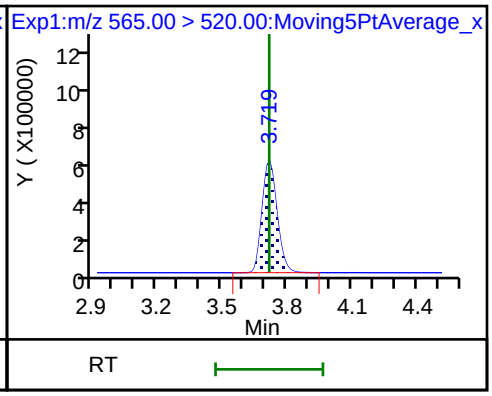
29 Perfluorodecane Sulfonic acid



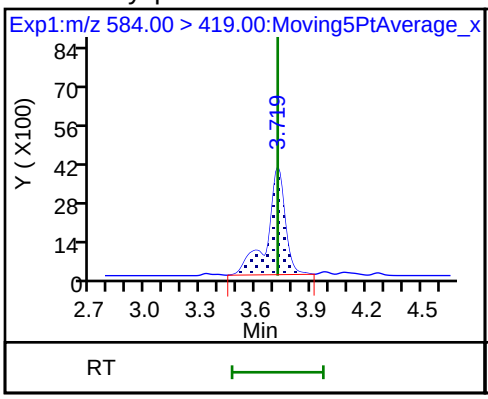
D 32 d5-NEtFOSAA



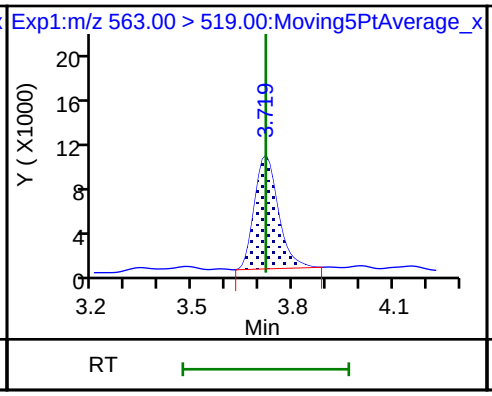
D 30 13C2 PFUnA



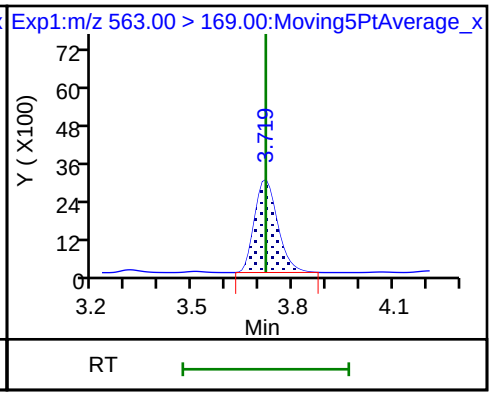
33 N-ethyl perfluorooctane sulfonamid



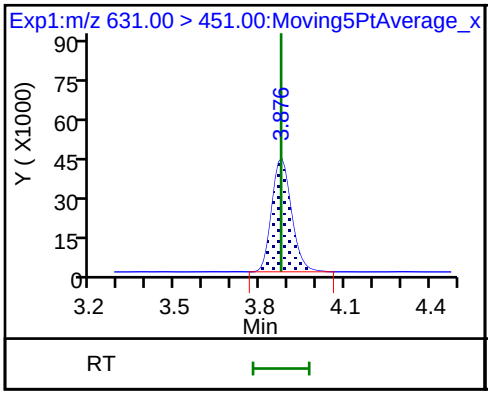
31 Perfluoroundecanoic acid



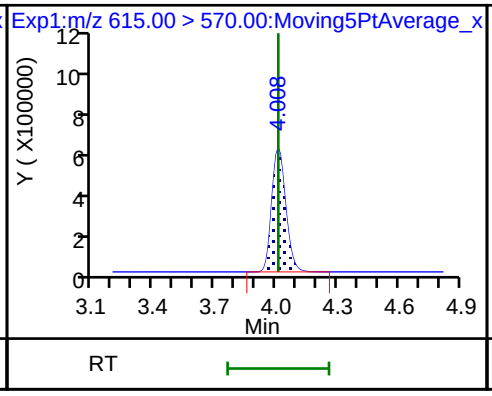
31 Perfluoroundecanoic acid



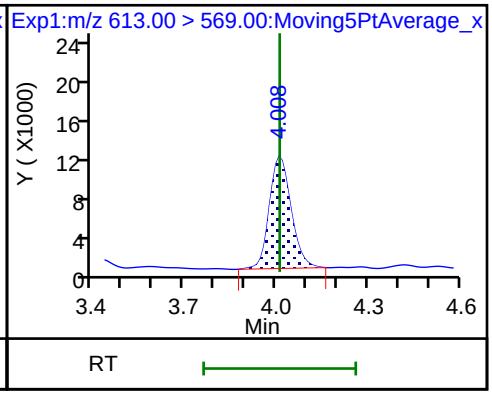
66 11-Chloroeicosafluoro-3-oxaundecan



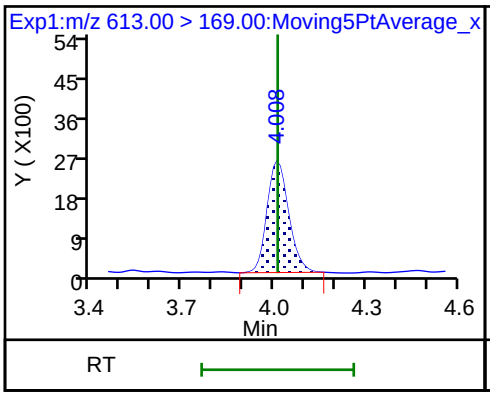
D 36 13C2 PFDoA



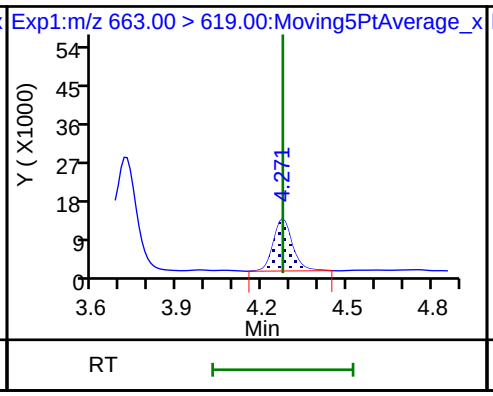
37 Perfluorododecanoic acid



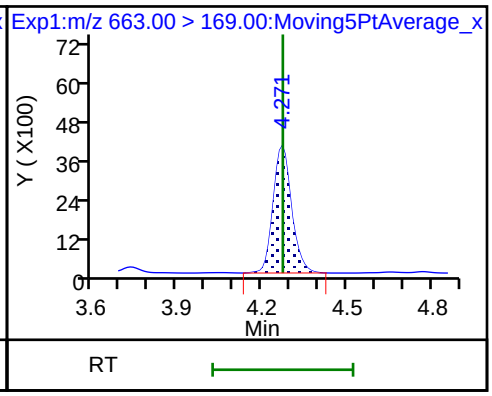
37 Perfluorododecanoic acid



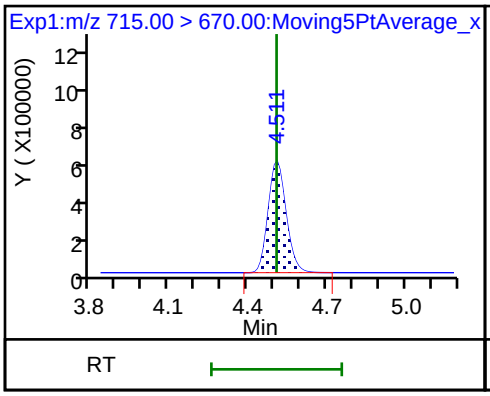
41 Perfluorotridecanoic acid



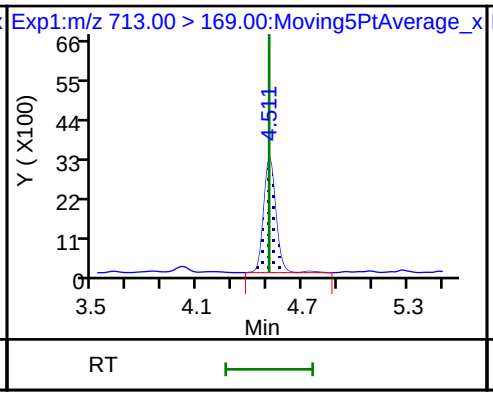
41 Perfluorotridecanoic acid



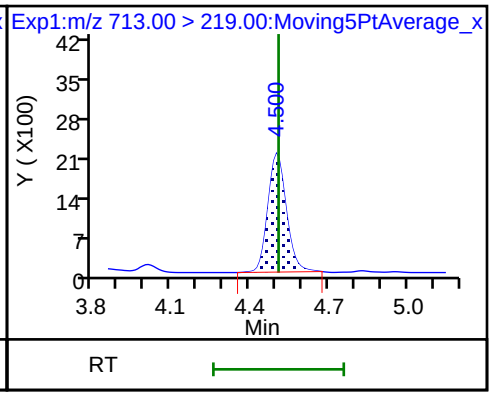
D 43 13C2-PFTeDA



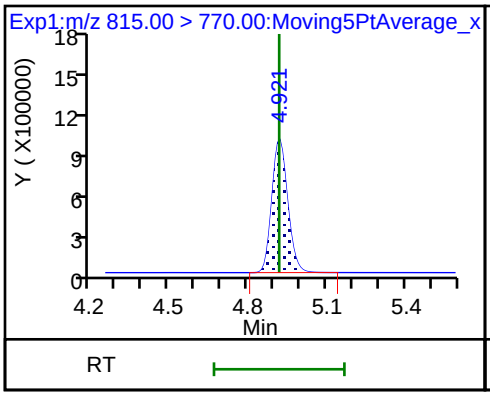
42 Perfluorotetradecanoic acid



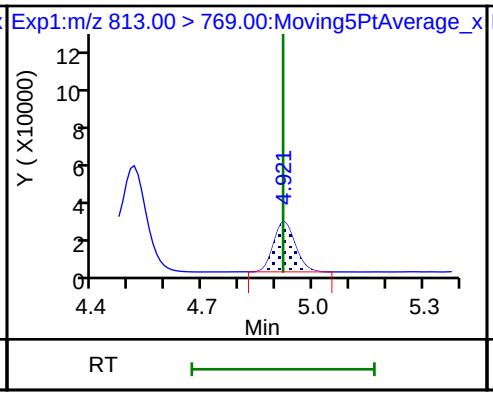
42 Perfluorotetradecanoic acid



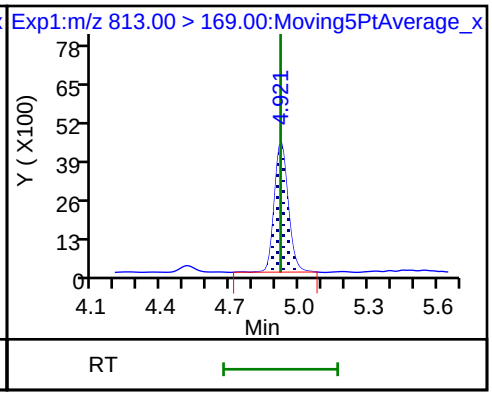
D 44 13C2-PFHxDA



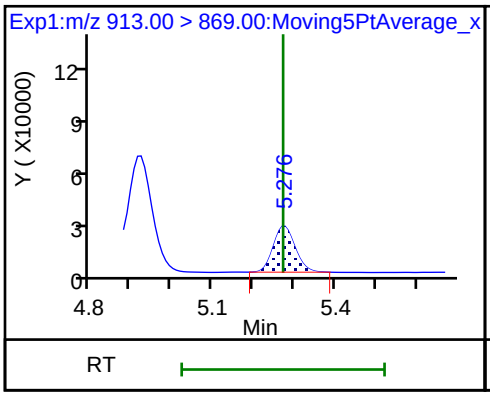
45 Perfluorohexadecanoic acid



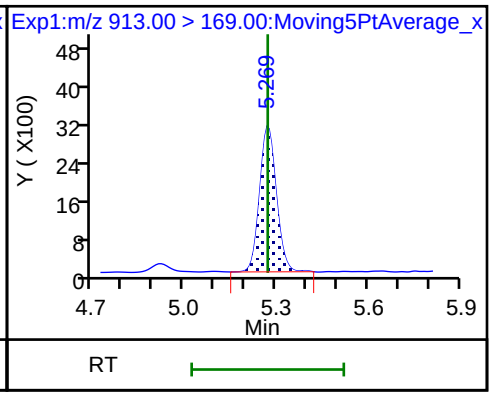
45 Perfluorohexadecanoic acid



46 Perfluorooctadecanoic acid



46 Perfluorooctadecanoic acid



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

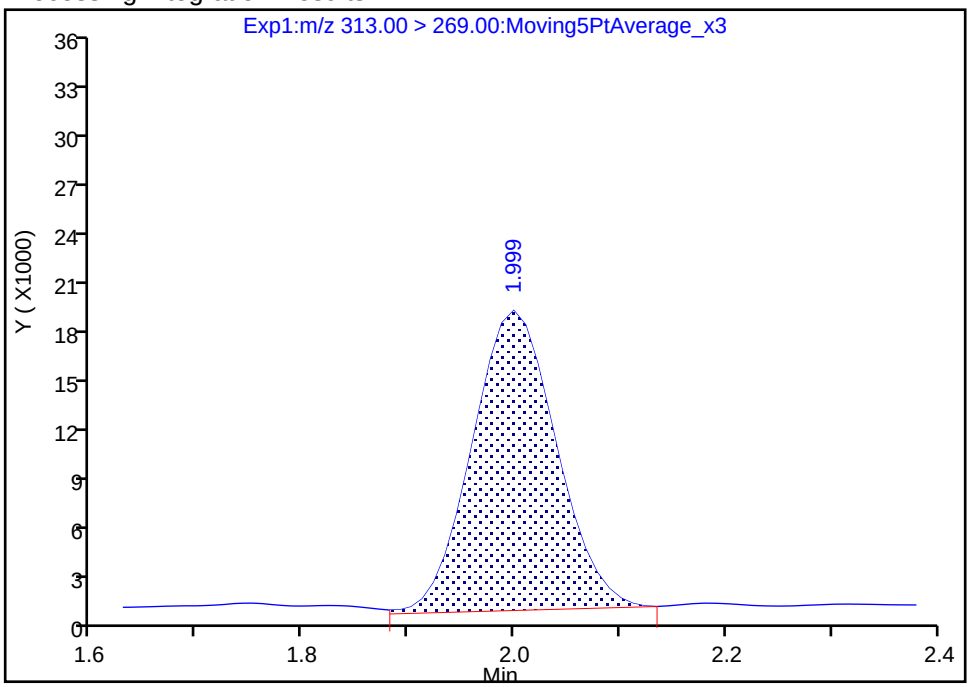
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_003.d				
Injection Date:	11-Jul-2018 14:59:35	Instrument ID:	A8_N		
Lims ID:	IC L2 Full				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	11	Worklist Smp#:	3
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

6 Perfluorohexanoic acid, CAS: 307-24-4

Signal: 1

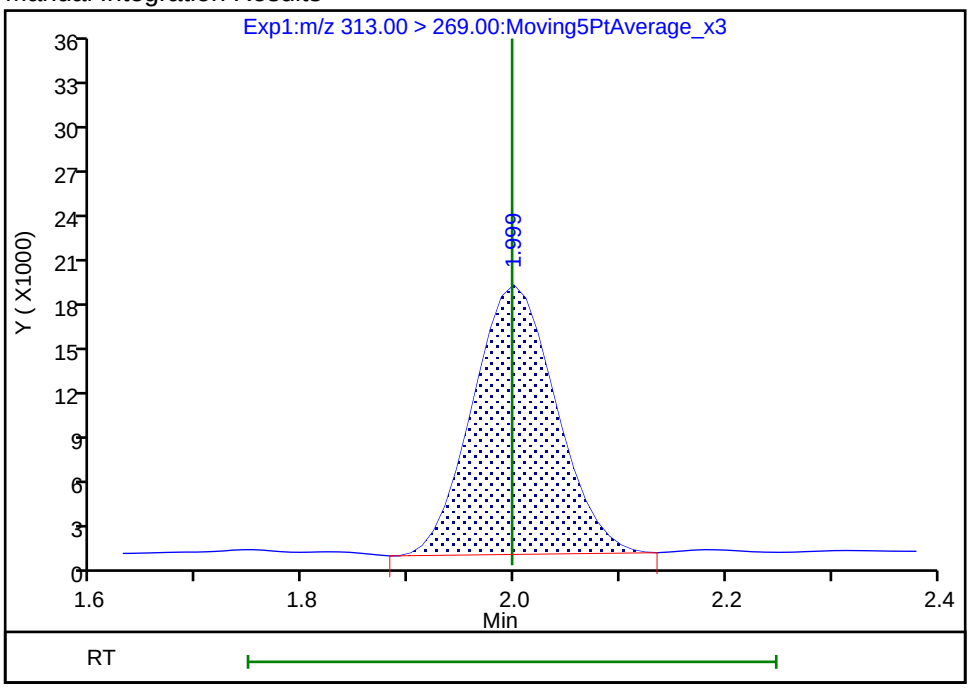
Processing Integration Results

RT: 2.00
Area: 99760
Amount: 0.055756
Amount Units: ng/ml



Manual Integration Results

RT: 2.00
Area: 97977
Amount: 0.054916
Amount Units: ng/ml



Reviewer: westendorfc, 11-Jul-2018 16:14:11
Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

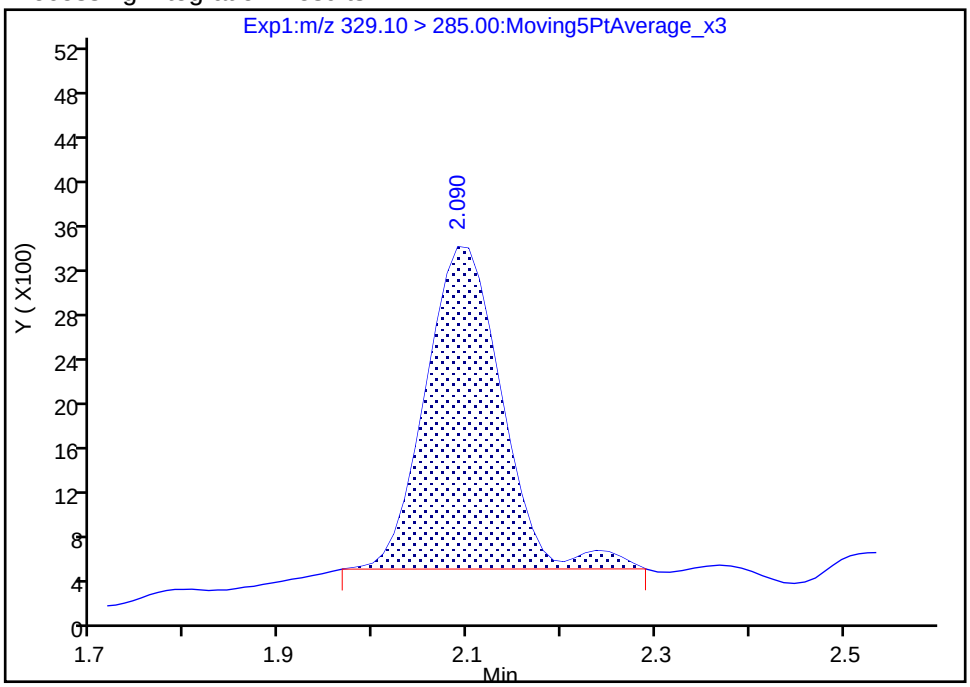
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_003.d				
Injection Date:	11-Jul-2018 14:59:35	Instrument ID:	A8_N		
Lims ID:	IC L2 Full				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	11	Worklist Smp#:	3
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

67 Perfluoro(2-propoxypropanoic) acid, CAS: 13252-13-6

Signal: 1

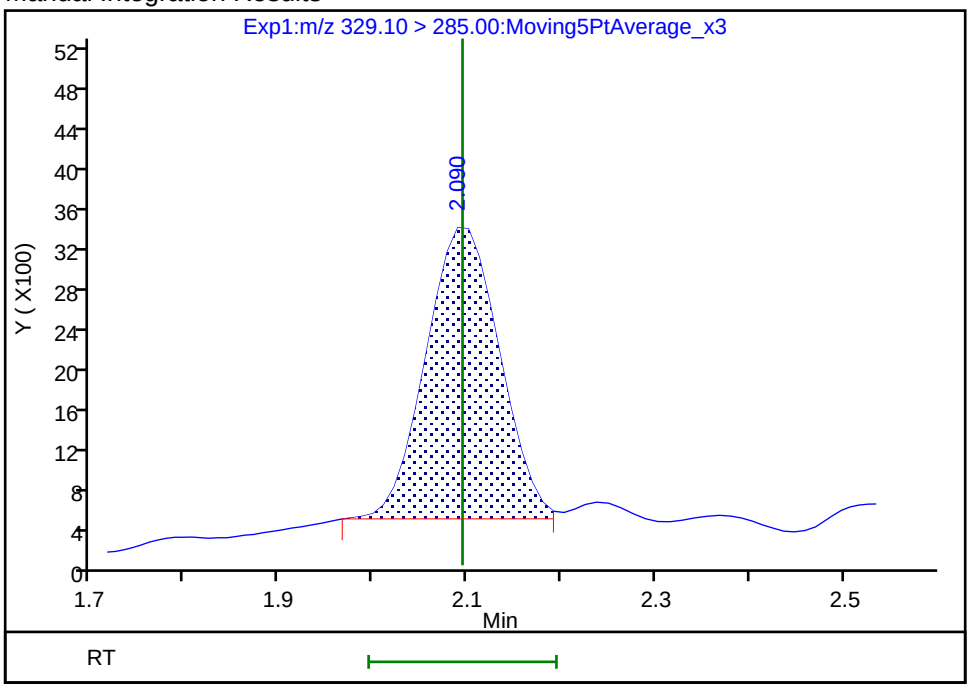
Processing Integration Results

RT: 2.09
Area: 16416
Amount: 0.053978
Amount Units: ng/ml



Manual Integration Results

RT: 2.09
Area: 15816
Amount: 0.052300
Amount Units: ng/ml



Reviewer: westendorfc, 11-Jul-2018 16:14:48

Audit Action: Manually Integrated Audit Reason: Split Peak

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_004.d
Lims ID: IC L3 Full
Client ID:
Sample Type: IC Calib Level: 3
Inject. Date: 11-Jul-2018 15:07:23 ALS Bottle#: 12 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L3-FULL
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-A8_N*sub32

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180711-60919.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 11-Jul-2018 16:33:30 Calib Date: 11-Jul-2018 15:38:42
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK024

First Level Reviewer: westendorfc Date: 11-Jul-2018 16:15:40

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.433	1.431	0.002	0.536	5436336	2.41		96.4	24567	
2 Perfluorobutyric acid										
212.90 > 169.00	1.433	1.431	0.002	1.000	529569	0.2471		98.8	202	
4 Perfluoropentanoic acid										M
262.90 > 219.00	1.717	1.702	0.015	1.000	457354	0.2433		97.3	160	M
D 3 13C5-PFPeA										
267.90 > 223.00	1.717	1.702	0.015	0.642	3873105	2.47		98.8	42101	
D 47 13C3-PFBS										
301.90 > 83.00	1.753	1.748	0.005	0.656	88873	2.26		97.0	524	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.762	1.751	0.011	1.005	638814	0.2185		98.9	8863	
298.90 > 99.00	1.762	1.751	0.011	1.005	266379		2.40(1.25-3.74)	98.9	3761	
61 1H,1H,2H,2H-perfluorohexanesulfoni										
327.00 > 307.00	1.967	1.962	0.005	1.122	121859	0.2452		105	7228	
D 60 M2-4:2FTS										
329.00 > 81.00	1.967	1.962	0.005	0.736	453992	2.15		91.9	6280	
D 7 13C2 PFHxA										
315.00 > 270.00	2.000	1.996	0.004	0.748	4144632	2.45		98.0	56089	
6 Perfluorohexanoic acid										
313.00 > 269.00	2.000	1.998	0.002	1.000	407905	0.2390		95.6	865	
313.00 > 119.00	2.011	1.998	0.013	1.006	41779		9.76(5.03-15.10)	95.6	715	
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.022	2.022	0.0	1.154	586514	0.2199		93.8	12660	
349.00 > 99.00	2.022	2.022	0.0	1.154	229923		2.55(1.36-4.07)	93.8	4978	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.101	2.093	0.008	0.786	281279	2.34		93.5	7182	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
67 Perfluoro(2-propoxypropanoic) acid										
329.10 > 285.00	2.101	2.095	0.006	1.000	79161	0.2651		106	493	
D 9 13C4-PFHpA										
367.00 > 322.00	2.316	2.319	-0.003	0.866	3856910	2.48		99.0	30519	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.316	2.319	-0.003	1.000	425549	0.2385		95.4	899	
363.00 > 169.00	2.329	2.319	0.010	1.006	165310		2.57(1.13-3.40)	95.4	1725	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.329	2.332	-0.003	0.994	552716	0.2184		96.0	6193	
399.00 > 99.00	2.329	2.332	-0.003	0.994	175761		3.14(1.50-4.49)	96.0	1241	
D 11 18O2 PFHxS										
403.00 > 84.00	2.342	2.334	0.008	0.876	5214223	2.36		99.9	45677	
65 Adona										
377.00 > 251.00	2.369	2.360	0.009	0.779	1281398	0.2554		108	20243	
377.00 > 85.00	2.369	2.360	0.009	0.779	705403		1.82(0.84-2.53)	108	4501	
D 12 M2-6:2FTS										
429.00 > 81.00	2.651	2.645	0.006	0.992	825525	2.47		104	16673	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.651	2.648	0.003	1.000	126798	0.2332		98.4	3070	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.673	2.672	0.001	1.000	477183	0.2439		97.5	300	
413.00 > 169.00	2.673	2.672	0.001	1.000	243974		1.96(0.84-2.52)	97.5	1162	
* 62 13C2-PFOA										
415.00 > 370.00	2.673	2.672	0.001		4157437	2.50			35542	
D 14 13C4 PFOA										
417.00 > 372.00	2.673	2.672	0.001	1.000	3971401	2.50		99.9	35256	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.681	2.678	0.003	0.882	473940	0.2308		97.0	10273	
449.00 > 99.00	2.681	2.678	0.003	0.882	132840		3.57(1.94-5.82)	97.0	3201	
D 18 13C4 PFOS										
503.00 > 80.00	3.041	3.034	0.006	1.137	3725581	2.30		96.2	37410	
D 19 13C5 PFNA										
468.00 > 423.00	3.041	3.035	0.005	1.137	3471672	2.44		97.7	33386	
17 Perfluorooctane sulfonic acid										M
499.00 > 80.00	3.041	3.035	0.005	1.000	401226	0.2271		97.9	16115	M
499.00 > 99.00	3.041	3.035	0.005	1.000	96776		4.15(2.31-6.93)	97.9	1665	
20 Perfluorononanoic acid										
463.00 > 419.00	3.041	3.036	0.004	1.000	400644	0.2601		104	1028	
463.00 > 169.00	3.041	3.036	0.004	1.000	95787		4.18(1.90-5.69)	104	4136	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.248	3.245	0.003	1.068	651675	0.2277		97.7	6549	
D 21 13C8 FOSA										
506.00 > 78.00	3.372	3.367	0.005	1.261	5880733	2.52		101	49438	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.372	3.371	0.001	1.000	554186	0.2390		95.6	12564	
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.382	3.377	0.005	1.112	284813	0.2357		98.2	7165	
549.00 > 99.00	3.382	3.377	0.005	1.112	107969		2.64(1.33-3.97)	98.2	2059	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
25 1H,1H,2H,2H-perfluorodecanesulfoni										
527.00 > 507.00	3.382	3.380	0.002	1.000	159408	0.2293		95.7	3552	
D 26 M2-8:2FTS										
529.00 > 81.00	3.382	3.380	0.002	1.265	1290698	2.64		110	16986	
D 23 13C2 PFDA										
515.00 > 470.00	3.391	3.391	0.0	1.268	3265845	2.62		105	29557	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.400	3.392	0.008	1.003	342607	0.2499		100.0	1591	
513.00 > 169.00	3.391	3.392	-0.001	1.000	61738		5.55(2.36-7.09)	100.0	2779	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.549	3.544	0.005	1.328	1236119	2.42		96.7	19234	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.549	3.548	0.001	1.000	112830	0.2315		92.6	886	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.711	3.701	0.010	1.220	256645	0.2452		102	8829	
599.00 > 99.00	3.711	3.701	0.010	1.220	89186		2.88(1.39-4.16)	102	1861	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.711	3.710	0.001	1.388	1297377	2.48		99.1	3280	
D 30 13C2 PFUnA										
565.00 > 520.00	3.721	3.716	0.005	1.392	2653699	2.55		102	34580	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.721	3.718	0.003	1.003	130099	0.2836		113	3716	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.721	3.718	0.003	1.000	199100	0.2289		91.6	1135	
563.00 > 169.00	3.721	3.718	0.003	1.000	53794		3.70(2.12-6.36)	91.6	2788	
66 11-Chloroeicosafluoro-3-oxaundecan										
631.00 > 451.00	3.878	3.874	0.004	1.275	1059951	0.2563		109	31878	
D 36 13C2 PFDoA										
615.00 > 570.00	4.009	4.009	0.0	1.500	2756034	2.55		102	18796	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.019	4.011	0.008	1.003	296160	0.2460		98.4	160	
613.00 > 169.00	4.019	4.011	0.008	1.003	71984		4.11(2.13-6.40)	98.4	2474	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.272	4.273	-0.001	1.066	297546	0.2528		101	132	
663.00 > 169.00	4.272	4.273	-0.001	1.066	94397		3.15(1.25-3.76)	101	1582	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.511	4.508	0.003	1.687	2913500	2.60		104	13512	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.511	4.508	0.003	1.000	71477	0.2357		94.3	1159	
713.00 > 219.00	4.511	4.508	0.003	1.000	50792		1.41(0.71-2.13)	94.3	1208	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.922	4.918	0.004	1.841	4554944	2.55		102	11164	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.922	4.918	0.004	1.000	477512	0.2543		102	115	
813.00 > 169.00	4.922	4.918	0.004	1.000	73483		6.50(2.86-8.58)	102	773	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.276	5.271	0.005	1.072	536098	0.2575		103	109	
913.00 > 169.00	5.276	5.271	0.005	1.072	65383		8.20(3.83-11.48)	103	956	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

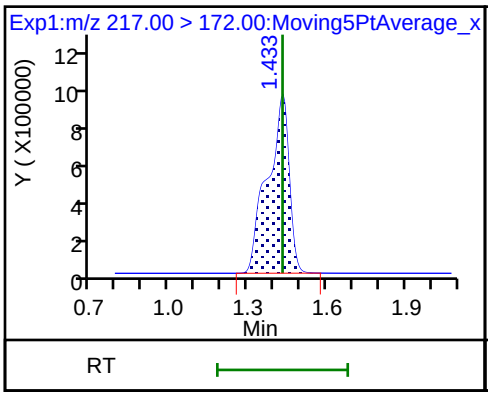
LCPFC_LL3_00005 Amount Added: 1.00 Units: mL

Report Date: 11-Jul-2018 16:33:32 Chrom Revision: 2.2 07-Jun-2018 07:41:54

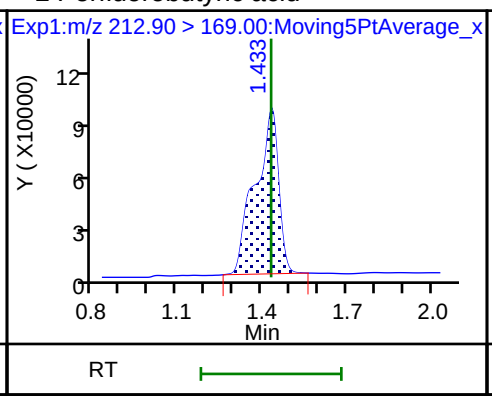
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_004.d
Injection Date: 11-Jul-2018 15:07:23 Instrument ID: A8_N
Lims ID: IC L3 Full
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 12 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC ICAL

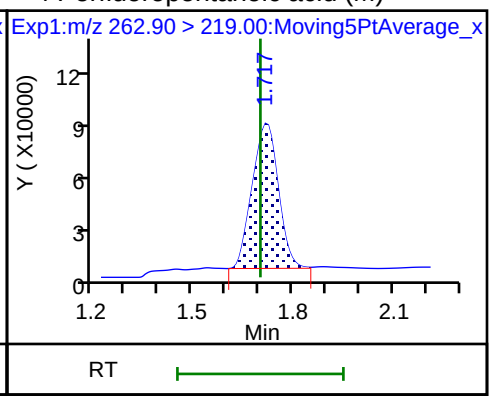
D 1 13C4 PFBA



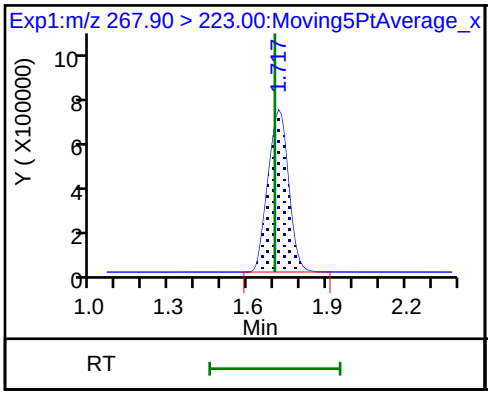
2 Perfluorobutyric acid



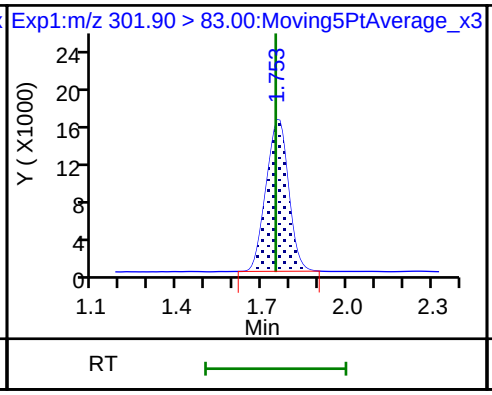
4 Perfluoropentanoic acid (M)



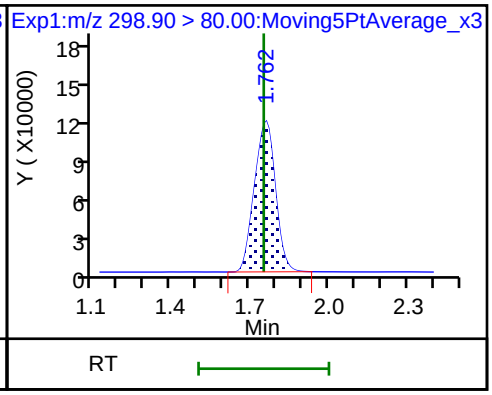
D 3 13C5-PFPeA



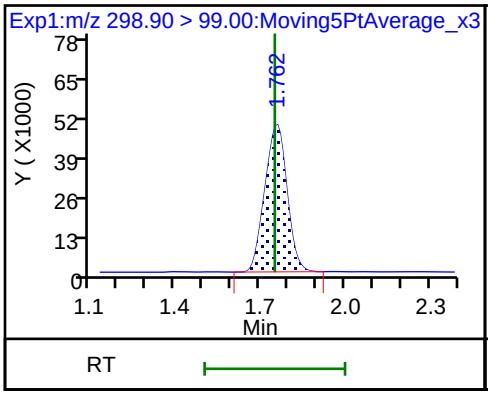
D 47 13C3-PFBS



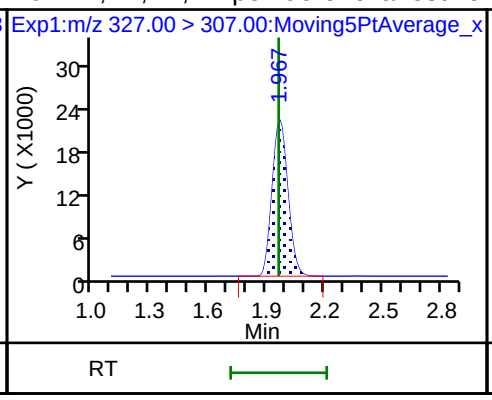
5 Perfluorobutanesulfonic acid



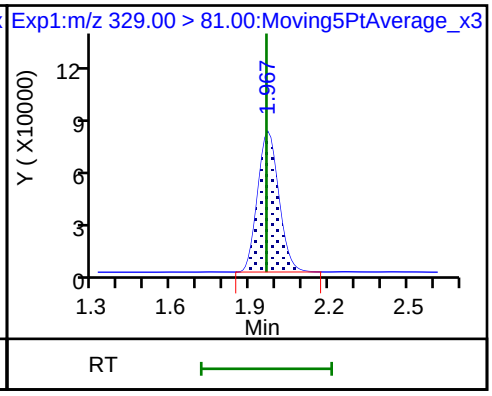
5 Perfluorobutanesulfonic acid



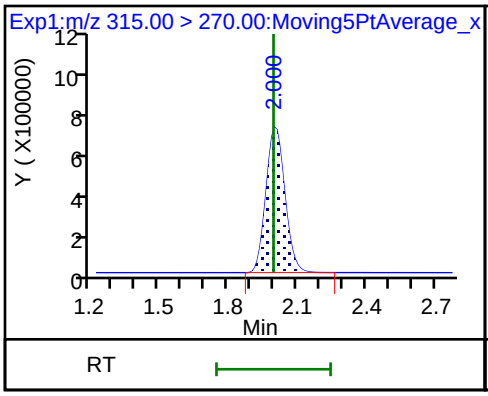
61 1H,1H,2H,2H-perfluorohexanesulfon



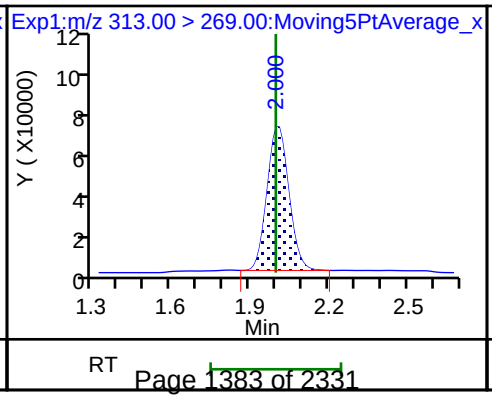
D 60 M2-4:2FTS



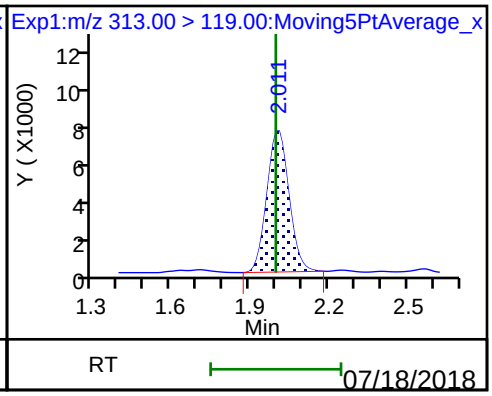
D 7 13C2 PFHxA



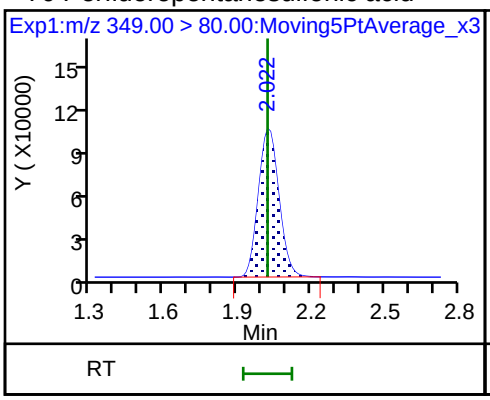
6 Perfluorohexanoic acid



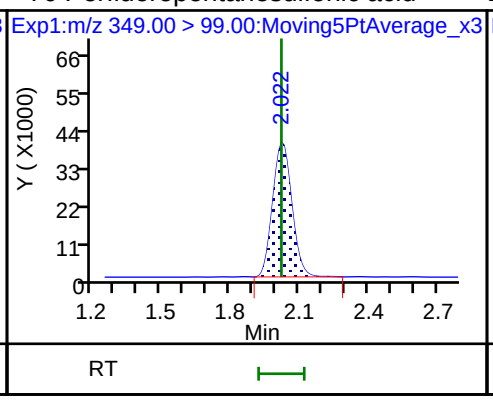
6 Perfluorohexanoic acid



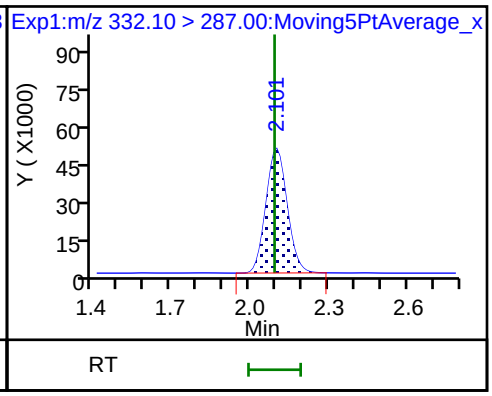
70 Perfluoropentanesulfonic acid



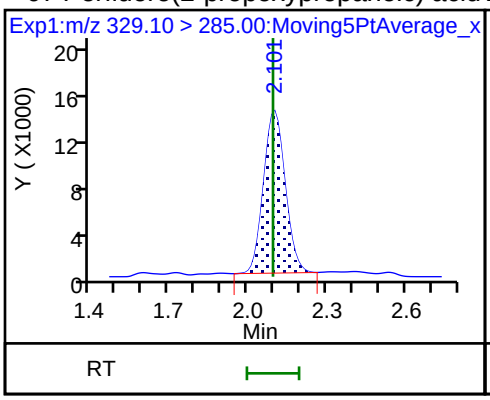
70 Perfluoropentanesulfonic acid



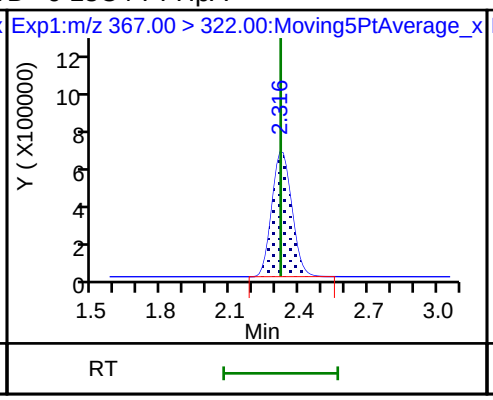
D 64 13C3 HFPO-DA



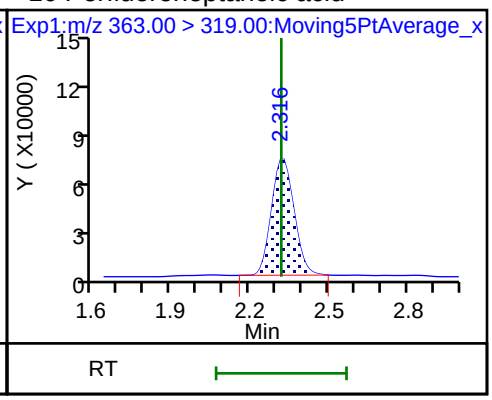
67 Perfluoro(2-propoxypropanoic) acid



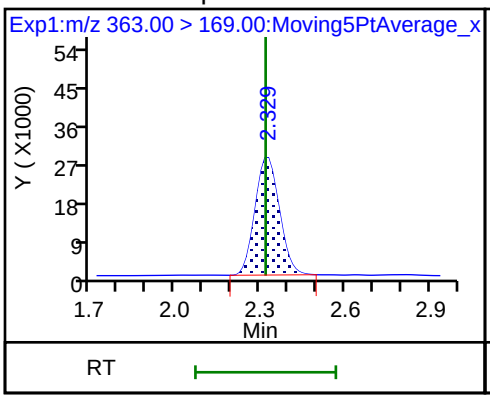
D 9 13C4-PFHpA



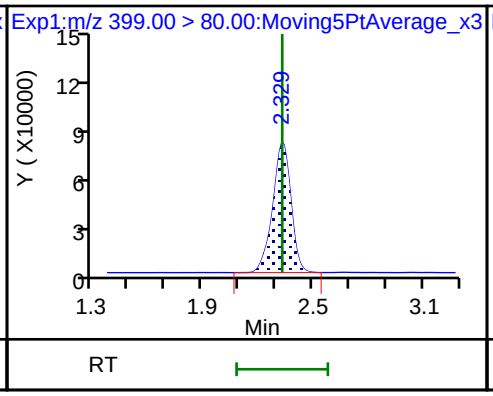
10 Perfluoroheptanoic acid



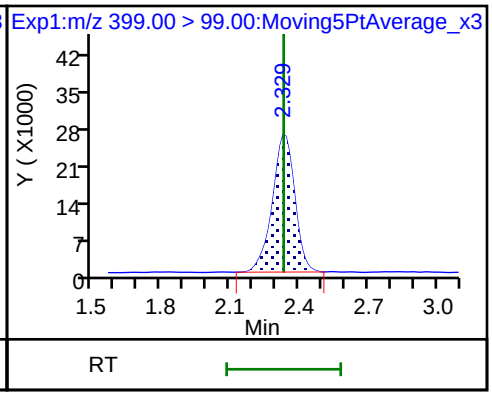
10 Perfluoroheptanoic acid



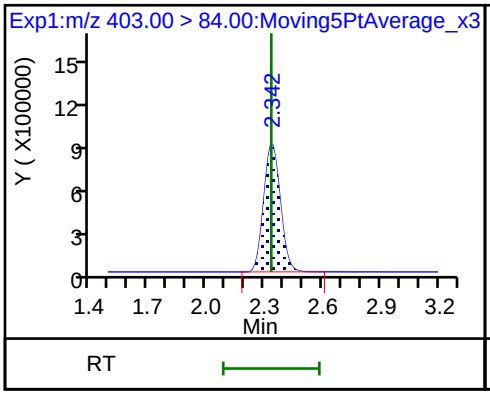
8 Perfluorohexanesulfonic acid



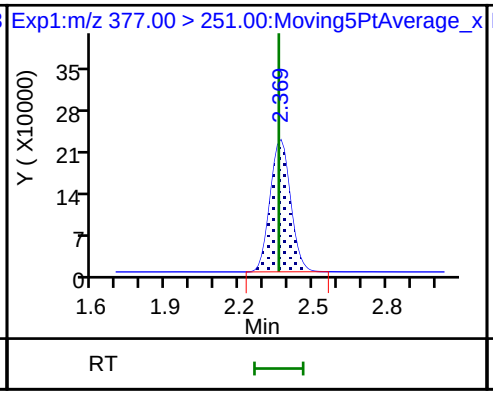
8 Perfluorohexanesulfonic acid



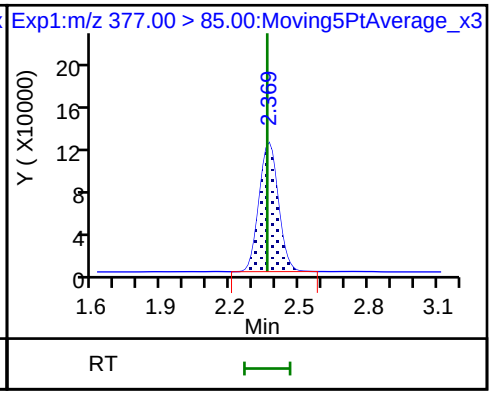
D 11 18O2 PFHxS



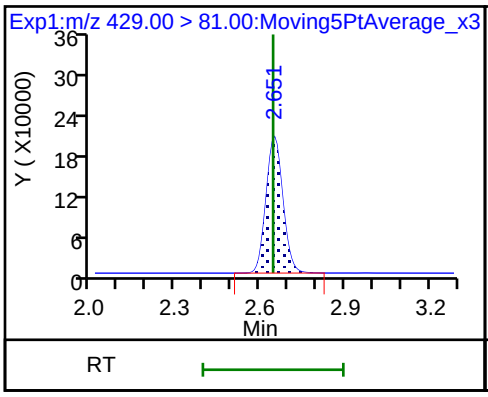
65 Adona



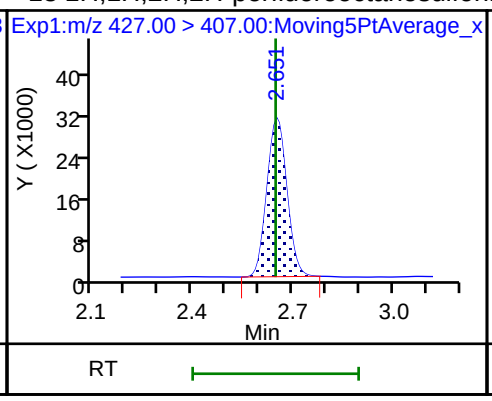
65 Adona



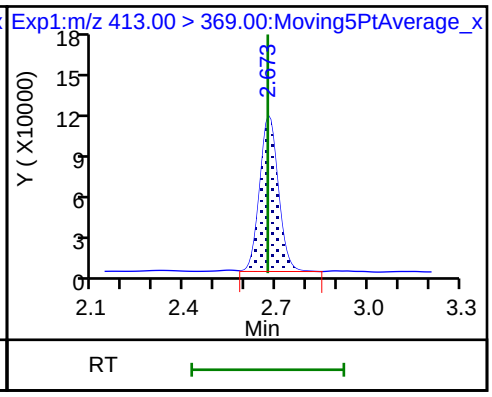
D 12 M2-6:2FTS



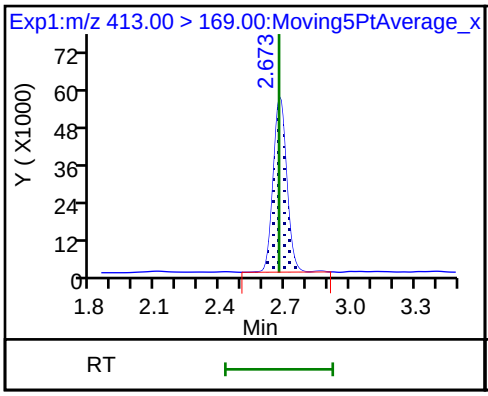
13 1H,1H,2H,2H-perfluorooctanesulfoni



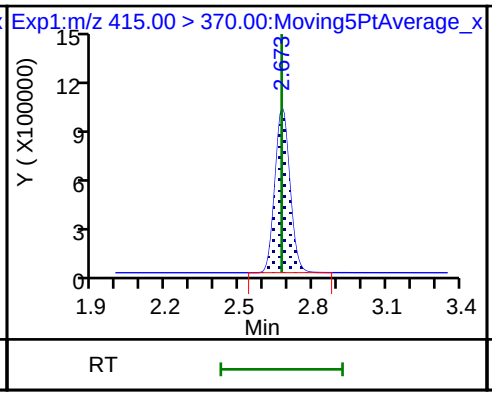
15 Perfluorooctanoic acid



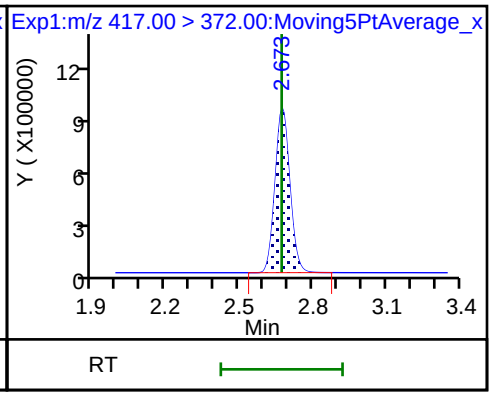
15 Perfluorooctanoic acid



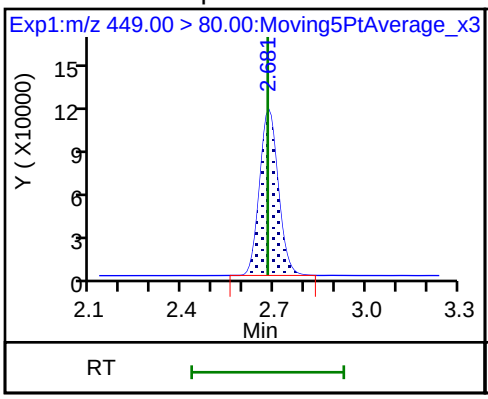
* 62 13C2-PFOA



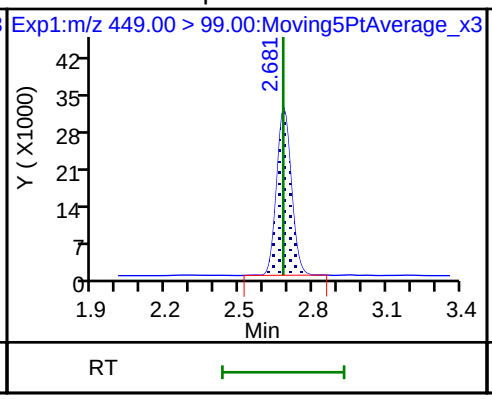
D 14 13C4 PFOA



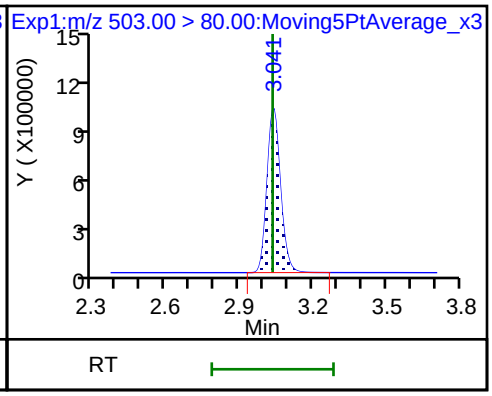
16 Perfluoroheptanesulfonic acid



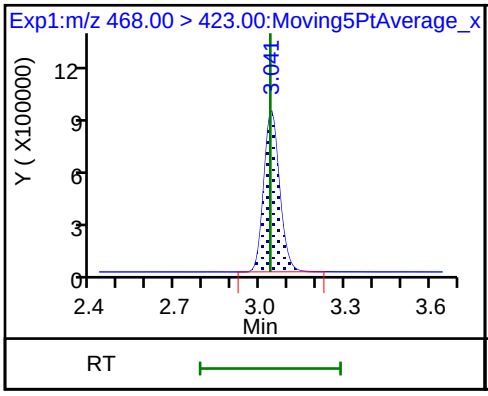
16 Perfluoroheptanesulfonic acid



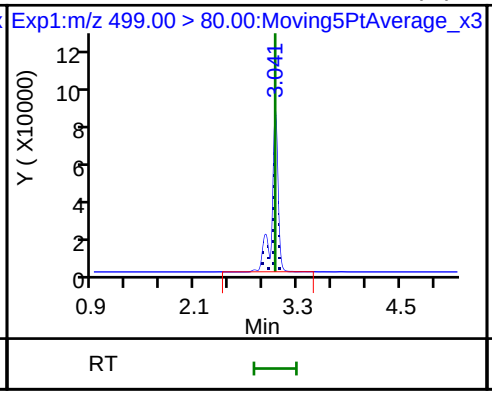
D 18 13C4 PFOS



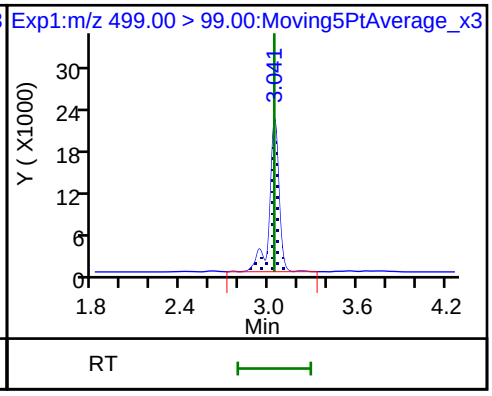
D 19 13C5 PFNA



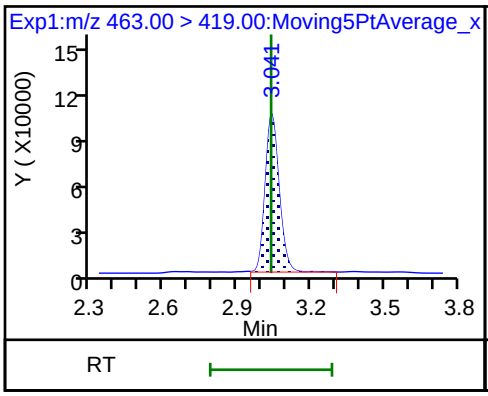
17 Perfluorooctane sulfonic acid (M)



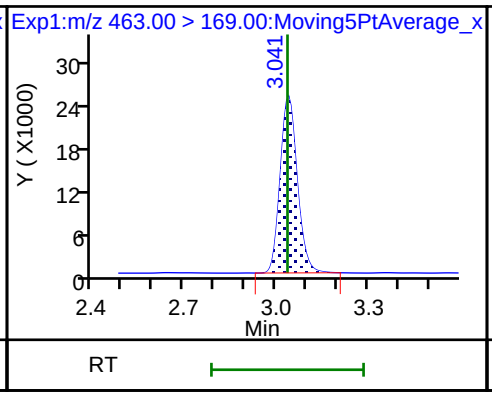
17 Perfluorooctane sulfonic acid



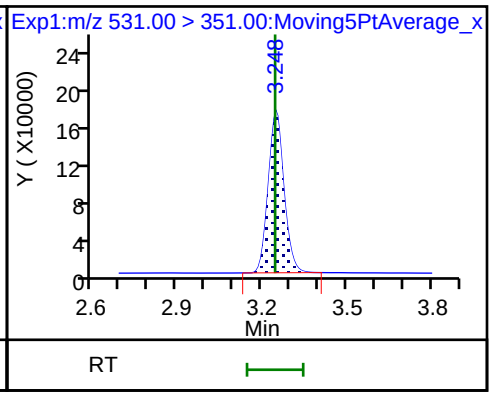
20 Perfluorononanoic acid



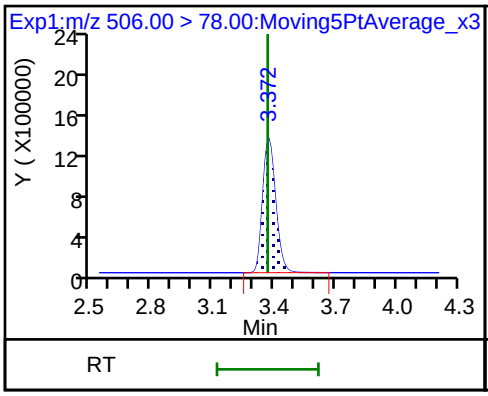
20 Perfluorononanoic acid



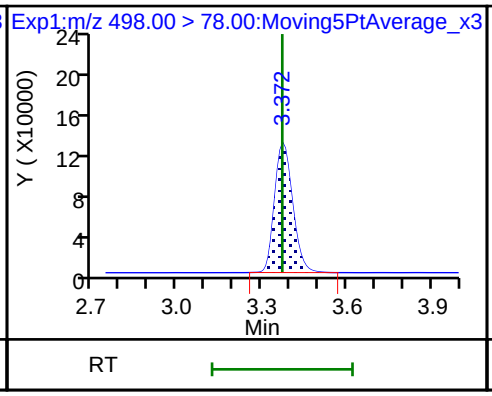
69 9-Chlorohexadecafluoro-3-oxanonane



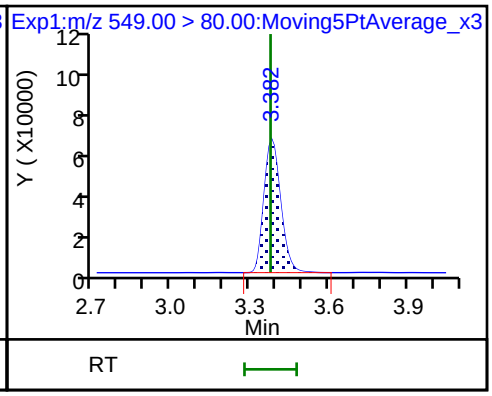
D 21 13C8 FOSA



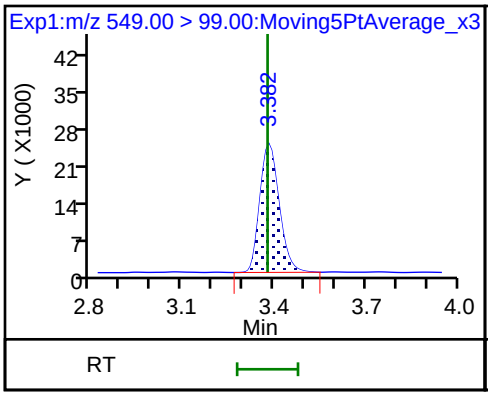
22 Perfluorooctane Sulfonamide



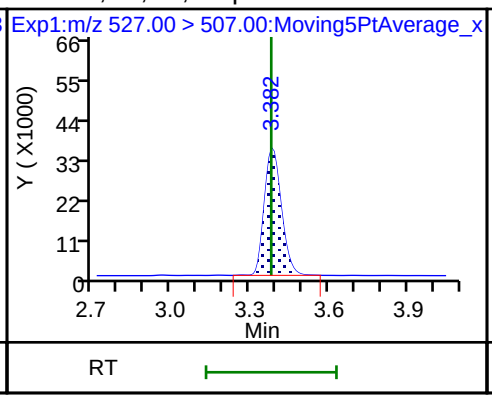
68 Perfluorononanesulfonic acid



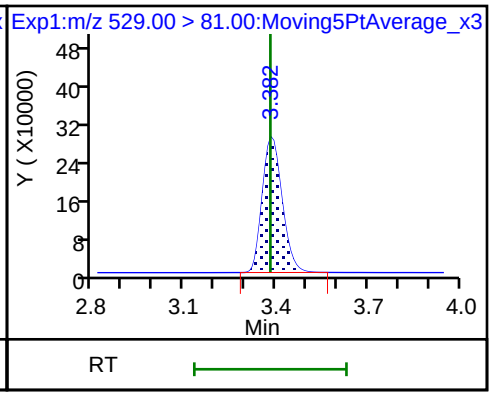
68 Perfluorononanesulfonic acid



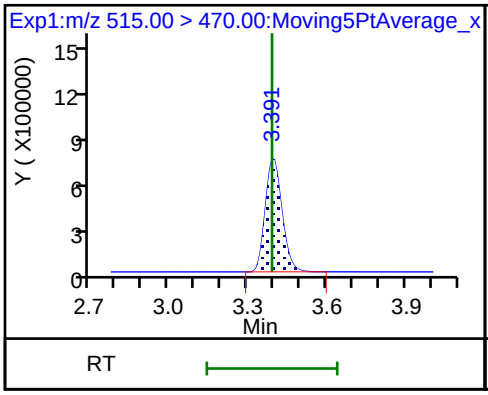
25 1H,1H,2H,2H-perfluorodecanesulfon



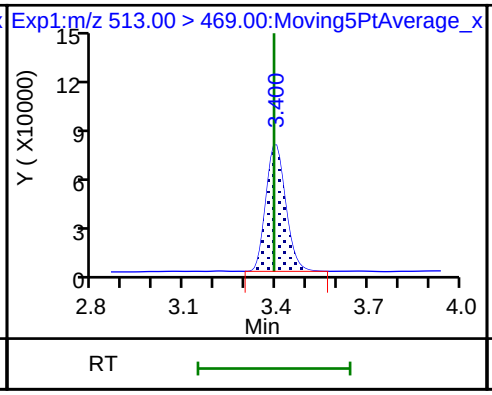
D 26 M2-8:2FTS



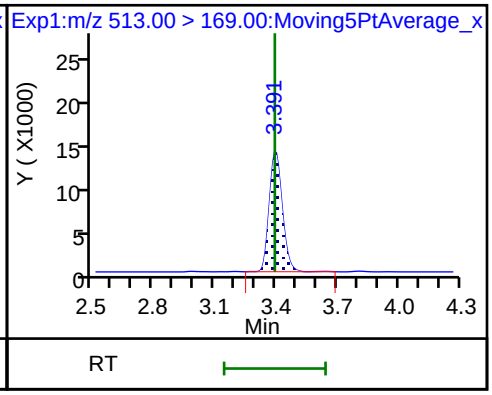
D 23 13C2 PFDA



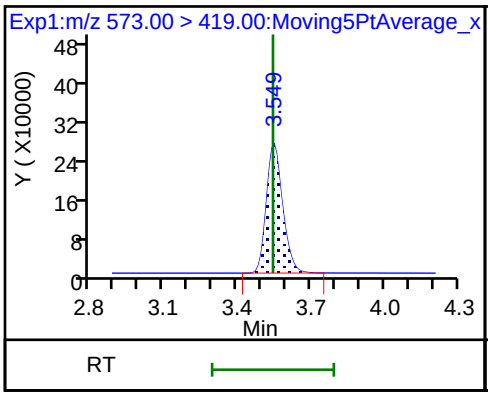
24 Perfluorodecanoic acid



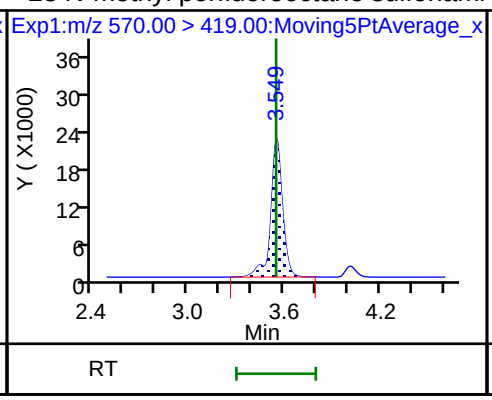
24 Perfluorodecanoic acid



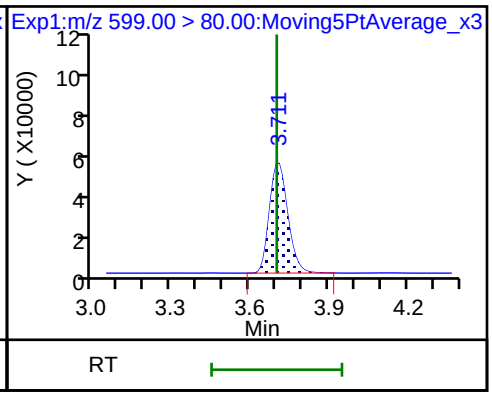
D 27 d3-NMeFOSAA



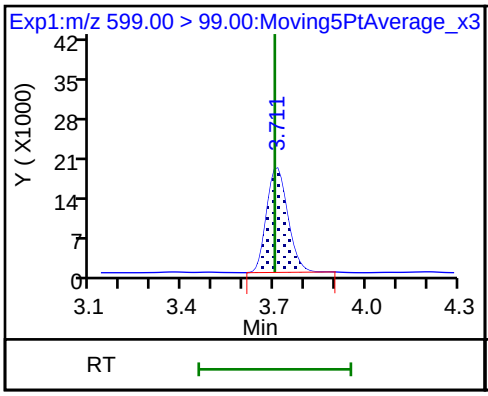
28 N-methyl perfluorooctane sulfonami



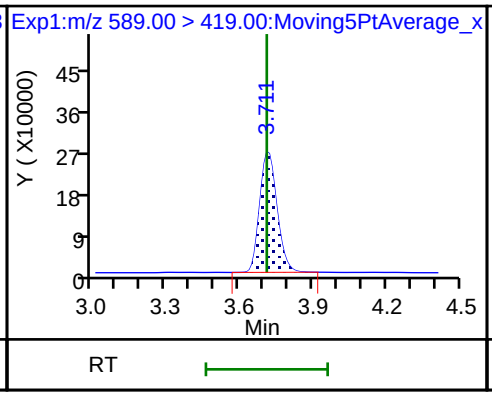
29 Perfluorodecane Sulfonic acid



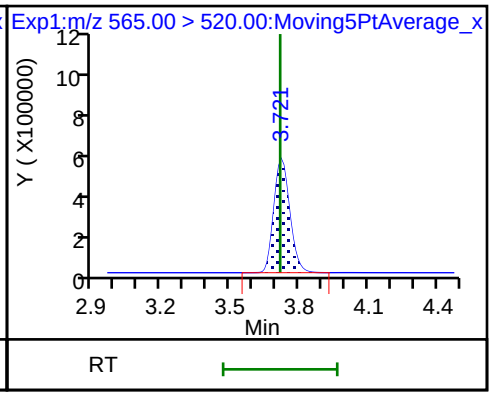
29 Perfluorodecane Sulfonic acid



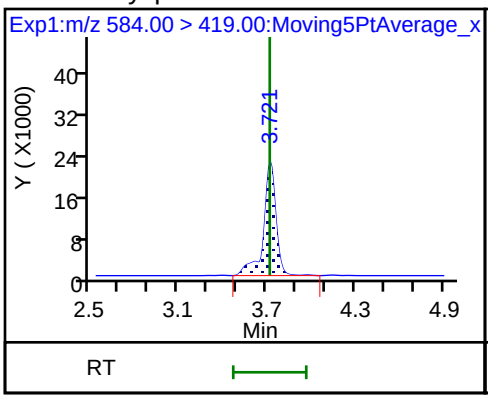
D 32 d5-NEtFOSAA



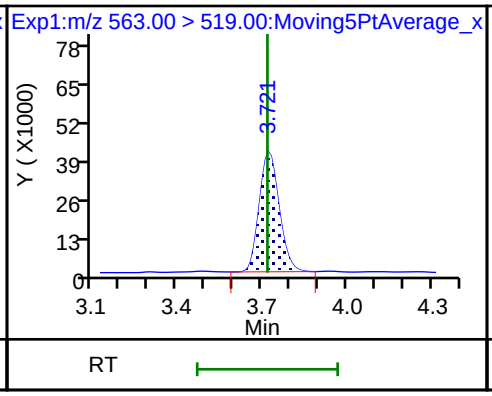
D 30 13C2 PFUnA



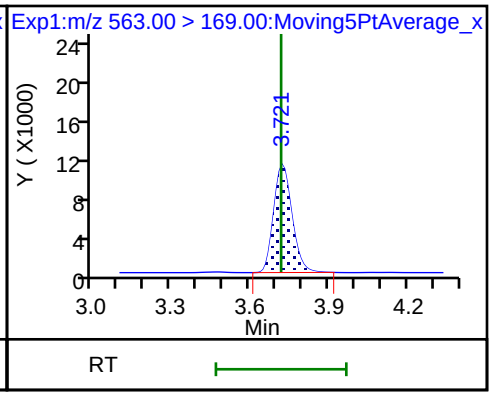
33 N-ethyl perfluorooctane sulfonamid



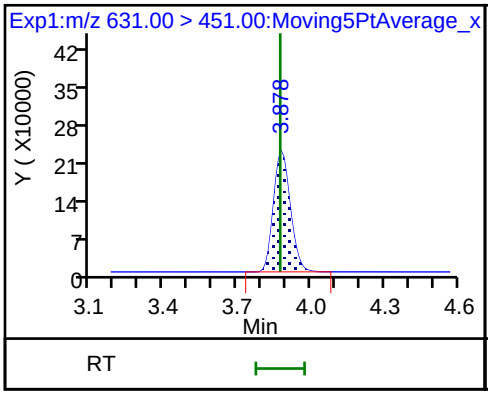
31 Perfluoroundecanoic acid



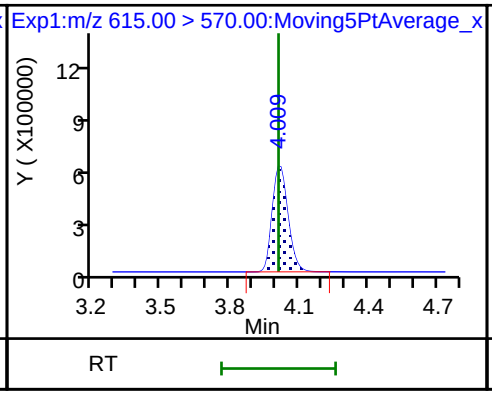
31 Perfluoroundecanoic acid



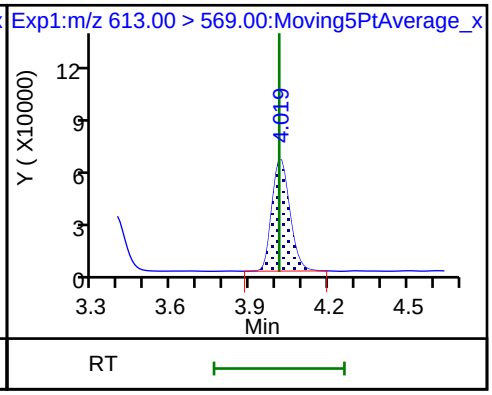
66 11-Chloroeicosafluoro-3-oxaundecan



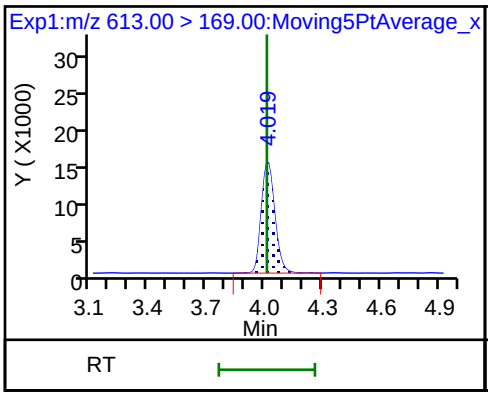
D 36 13C2 PFDoA



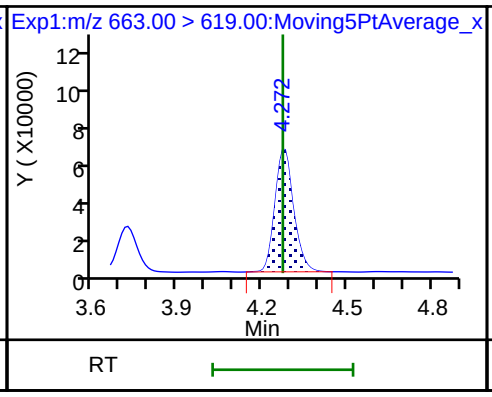
37 Perfluorododecanoic acid



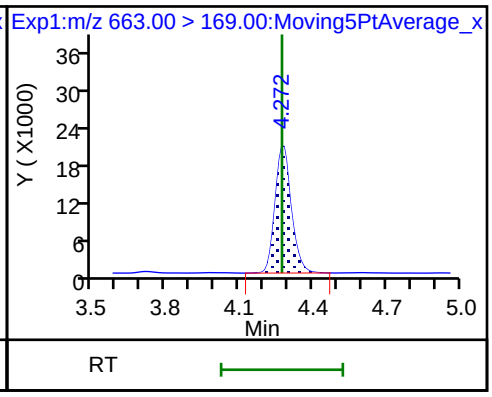
37 Perfluorododecanoic acid



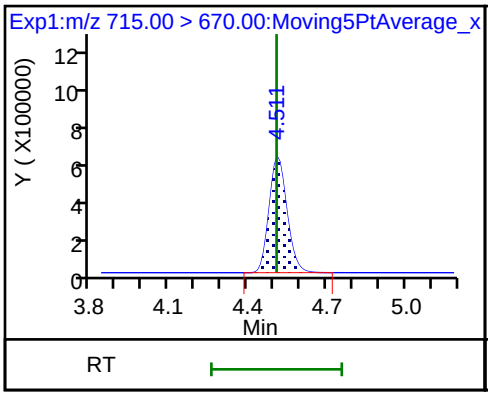
41 Perfluorotridecanoic acid



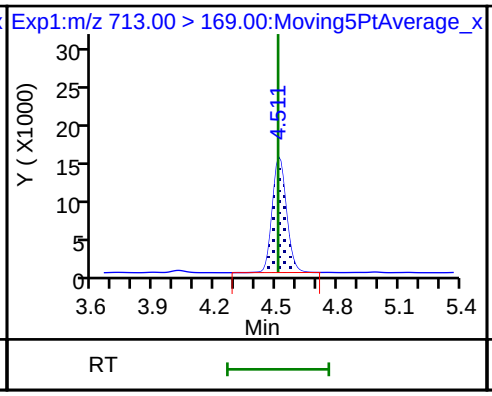
41 Perfluorotridecanoic acid



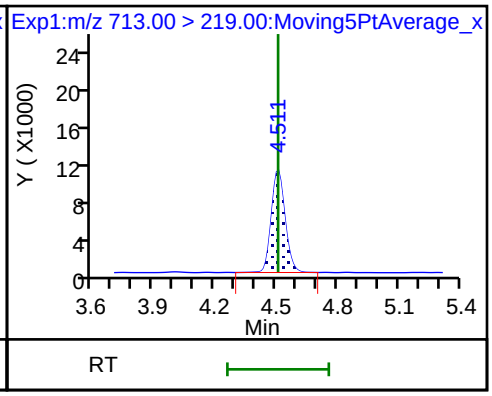
D 43 13C2-PFTeDA



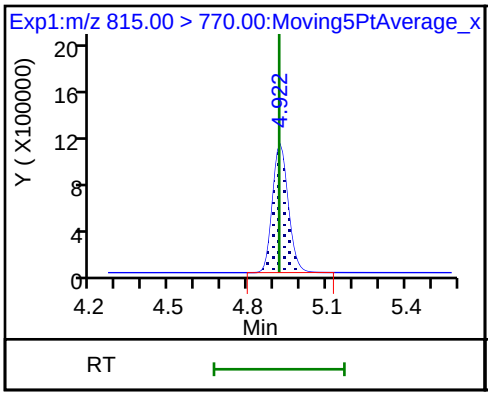
42 Perfluorotetradecanoic acid



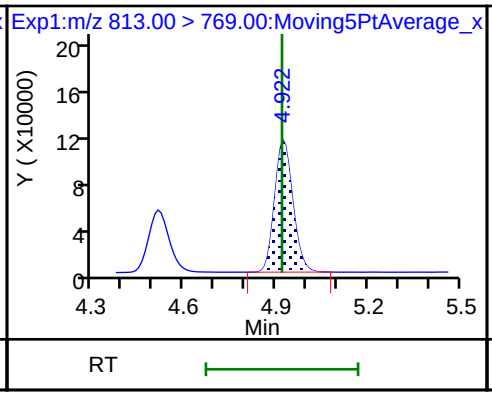
42 Perfluorotetradecanoic acid



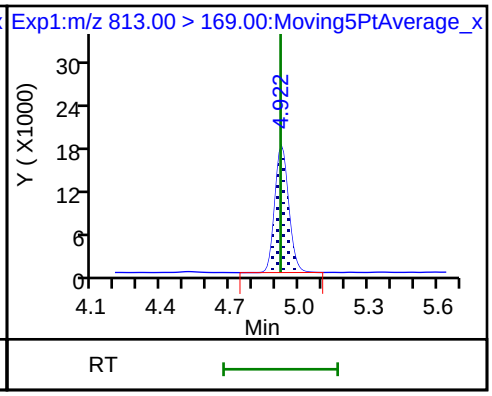
D 44 13C2-PFHxDA



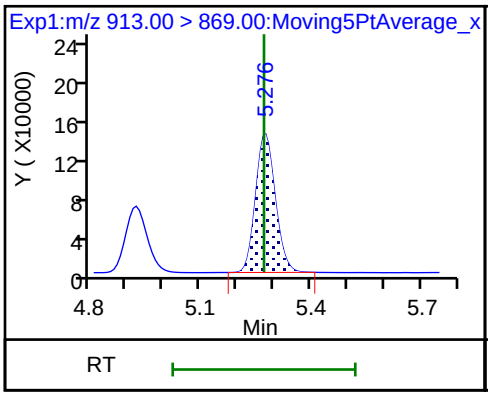
45 Perfluorohexadecanoic acid



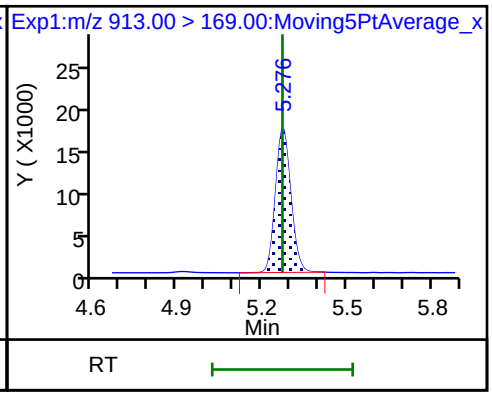
45 Perfluorohexadecanoic acid



46 Perfluorooctadecanoic acid



46 Perfluorooctadecanoic acid



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

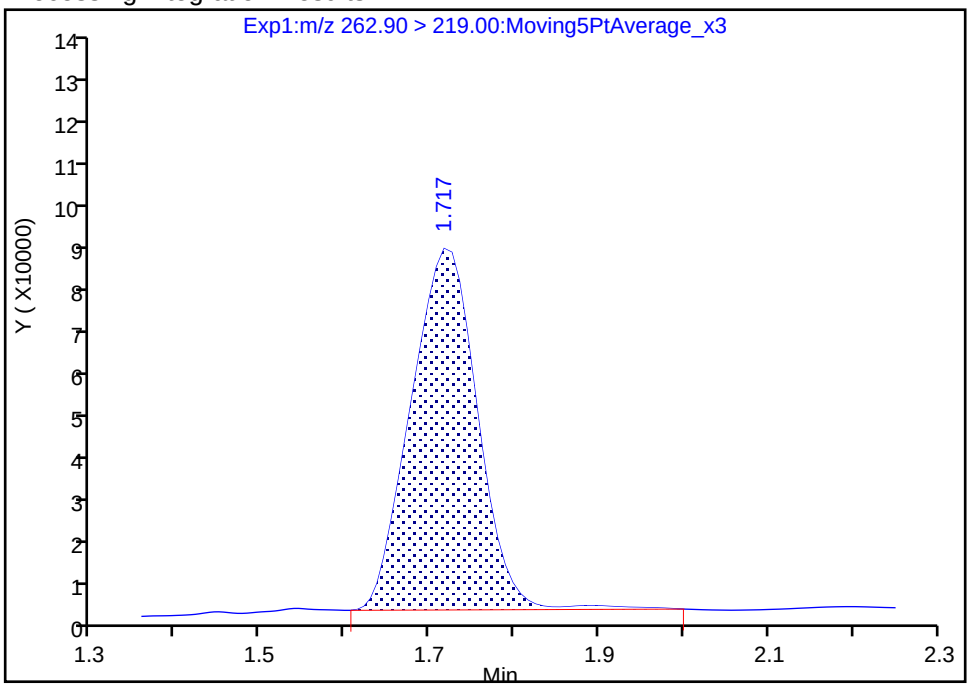
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_004.d				
Injection Date:	11-Jul-2018 15:07:23	Instrument ID:	A8_N		
Lims ID:	IC L3 Full				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	12	Worklist Smp#:	4
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

4 Perfluoropentanoic acid, CAS: 2706-90-3

Signal: 1

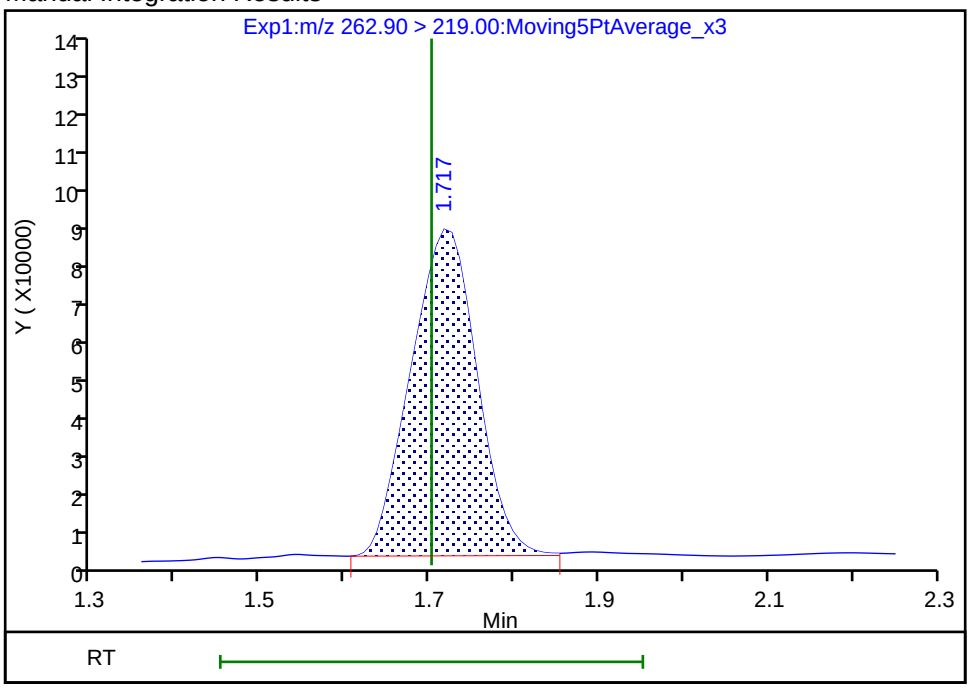
Processing Integration Results

RT: 1.72
Area: 461795
Amount: 0.245377
Amount Units: ng/ml



Manual Integration Results

RT: 1.72
Area: 457354
Amount: 0.243345
Amount Units: ng/ml



Reviewer: westendorfc, 11-Jul-2018 16:15:17

Audit Action: Manually Integrated Audit Reason: Split Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

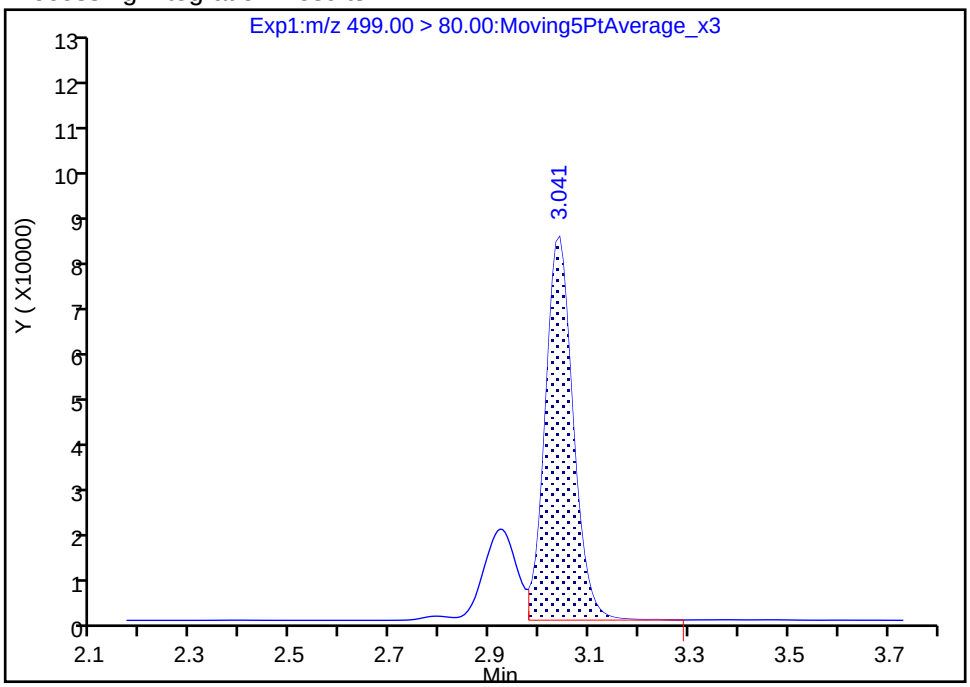
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_004.d				
Injection Date:	11-Jul-2018 15:07:23	Instrument ID:	A8_N		
Lims ID:	IC L3 Full				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	12	Worklist Smp#:	4
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

17 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

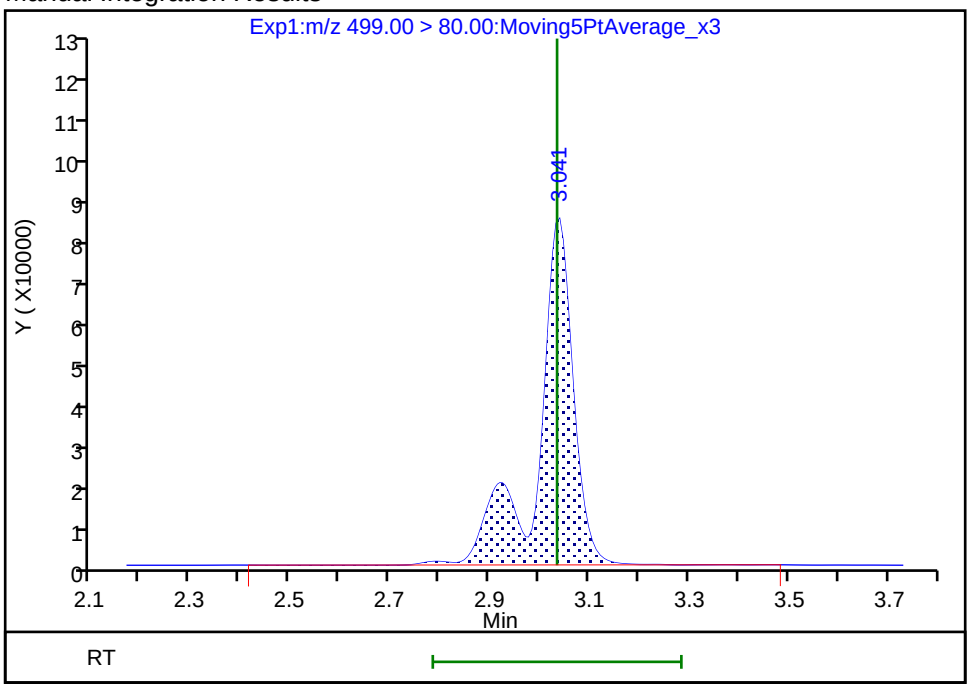
Processing Integration Results

RT: 3.04
Area: 311512
Amount: 0.188367
Amount Units: ng/ml



Manual Integration Results

RT: 3.04
Area: 401226
Amount: 0.227144
Amount Units: ng/ml



Reviewer: westendorfc, 11-Jul-2018 16:15:30

Audit Action: Manually Integrated Audit Reason: Isomers

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_005.d
Lims ID: IC L4 Full
Client ID:
Sample Type: ICIS Calib Level: 4
Inject. Date: 11-Jul-2018 15:15:12 ALS Bottle#: 13 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L4-FULL
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-A8_N*sub32

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180711-60919.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 11-Jul-2018 16:33:36 Calib Date: 11-Jul-2018 15:38:42
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK024

First Level Reviewer: westendorfc Date: 11-Jul-2018 16:24:01

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										M
217.00 > 172.00	1.430	1.431	-0.001	0.536	5641372	2.39		95.8	40771	M
2 Perfluorobutyric acid										
212.90 > 169.00	1.430	1.431	-0.001	1.000	2185459	0.9827		98.3	851	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.711	1.702	0.009	1.000	1776986	0.9425		94.3	671	
D 3 13C5-PFPeA										
267.90 > 223.00	1.711	1.702	0.009	0.641	3885306	2.37		94.9	40286	
D 47 13C3-PFBS										
301.90 > 83.00	1.747	1.748	-0.001	0.655	93442	2.27		97.7	588	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.756	1.751	0.005	1.005	2692471	0.8758		99.1	30936	
298.90 > 99.00	1.756	1.751	0.005	1.005	1106046		2.43(1.25-3.74)	99.1	13599	
61 1H,1H,2H,2H-perfluorohexanesulfoni										
327.00 > 307.00	1.959	1.962	-0.003	1.122	483517	0.9255		99.1	21926	
D 60 M2-4:2FTS										
329.00 > 81.00	1.959	1.962	-0.003	0.735	514423	2.33		99.6	6719	
D 7 13C2 PFHxA										
315.00 > 270.00	1.992	1.996	-0.004	0.747	4419532	2.50		100	65585	
6 Perfluorohexanoic acid										
313.00 > 269.00	2.003	1.998	0.005	1.006	1767805	0.9715		97.2	3644	
313.00 > 119.00	1.992	1.998	-0.006	1.000	160752		11.00(5.03-15.10)	97.2	3583	
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.014	2.022	-0.008	1.153	2723317	0.9710		104	43344	
349.00 > 99.00	2.014	2.022	-0.008	1.153	946475		2.88(1.36-4.07)	104	15143	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.093	2.093	0.0	0.785	319484	2.54		102	9570	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
67 Perfluoro(2-propoxypropanoic) acid										
329.10 > 285.00	2.093	2.095	-0.002	1.000	316075	0.9319		93.2	2022	
D 9 13C4-PFHpA										
367.00 > 322.00	2.319	2.319	0.0	0.870	4071620	2.50		100	45788	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.319	2.319	0.0	1.000	1789760	0.9501		95.0	3577	
363.00 > 169.00	2.319	2.319	0.0	1.000	672034		2.66(1.13-3.40)	95.0	5658	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.332	2.332	0.0	1.000	2243830	0.8671		95.3	14079	
399.00 > 99.00	2.332	2.332	0.0	1.000	719470		3.12(1.50-4.49)	95.3	5193	
D 11 18O2 PFHxS										
403.00 > 84.00	2.332	2.334	-0.002	0.874	5331177	2.31		97.7	64328	
65 Adona										
377.00 > 251.00	2.358	2.360	-0.002	0.778	5276511	1.02		109	43654	
377.00 > 85.00	2.358	2.360	-0.002	0.778	3115019		1.69(0.84-2.53)	109	15440	
D 12 M2-6:2FTS										
429.00 > 81.00	2.644	2.645	-0.001	0.991	819911	2.35		98.9	15077	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.644	2.648	-0.004	1.000	508387	0.9413		99.3	9201	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.667	2.672	-0.005	1.000	1889955	0.9213		92.0	1333	
413.00 > 169.00	2.667	2.672	-0.005	1.000	984662		1.92(0.84-2.52)	92.0	4771	
* 62 13C2-PFOA										
415.00 > 370.00	2.667	2.672	-0.005		4343809	2.50			41821	
D 14 13C4 PFOA										
417.00 > 372.00	2.667	2.672	-0.005	1.000	4164105	2.51		100	36459	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.675	2.678	-0.003	0.882	2108438	1.00		105	20636	
449.00 > 99.00	2.675	2.678	-0.003	0.882	541631		3.89(1.94-5.82)	105	8815	
D 18 13C4 PFOS										
503.00 > 80.00	3.032	3.034	-0.002	1.137	3832872	2.26		94.7	26005	
D 19 13C5 PFNA										
468.00 > 423.00	3.032	3.035	-0.003	1.137	3677166	2.48		99.1	48144	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.032	3.035	-0.003	1.000	1695511	0.9330		101	22959	
499.00 > 99.00	3.032	3.035	-0.003	1.000	381272		4.45(2.31-6.93)	101	5451	
20 Perfluorononanoic acid										
463.00 > 419.00	3.032	3.036	-0.004	1.000	1601728	0.9816		98.2	3653	
463.00 > 169.00	3.032	3.036	-0.004	1.000	393341		4.07(1.90-5.69)	98.2	12806	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.240	3.245	-0.005	1.069	2898434	0.9845		106	26398	
D 21 13C8 FOSA										
506.00 > 78.00	3.361	3.367	-0.007	1.260	6072674	2.49		99.5	32206	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.370	3.371	-0.001	1.003	2466657	1.03		103	23348	
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.370	3.377	-0.007	1.111	1198001	0.9637		100	24931	
549.00 > 99.00	3.370	3.377	-0.007	1.111	448683		2.67(1.33-3.97)	100	5683	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
25 1H,1H,2H,2H-perfluorodecanesulfoni										
527.00 > 507.00	3.379	3.380	-0.001	1.000	616956	0.9227		96.3	9759	
D 26 M2-8:2FTS										
529.00 > 81.00	3.379	3.380	-0.001	1.267	1241456	2.43		102	20973	
D 23 13C2 PFDA										
515.00 > 470.00	3.388	3.391	-0.003	1.270	3225992	2.47		99.0	36283	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.388	3.392	-0.004	1.000	1372481	1.01		101	7780	
513.00 > 169.00	3.388	3.392	-0.004	1.000	234993		5.84(2.36-7.09)	101	7483	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.538	3.544	-0.006	1.326	1320092	2.47		98.8	18113	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.547	3.548	-0.001	1.003	521077	1.00		100	4163	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.697	3.701	-0.004	1.219	1104012	1.03		106	33210	
599.00 > 99.00	3.697	3.701	-0.004	1.219	381155		2.90(1.39-4.16)	106	11450	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.708	3.710	-0.002	1.390	1412562	2.58		103	3578	
D 30 13C2 PFUnA										
565.00 > 520.00	3.708	3.716	-0.008	1.390	2739039	2.52		101	37242	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.708	3.718	-0.010	1.000	470221	0.9414		94.1	11298	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.708	3.718	-0.010	1.000	824114	0.9179		91.8	4935	
563.00 > 169.00	3.708	3.718	-0.010	1.000	230560		3.57(2.12-6.36)	91.8	9451	
66 11-Chloroeicosafluoro-3-oxaundecan										
631.00 > 451.00	3.865	3.874	-0.009	1.275	4328485	1.02		108	56110	
D 36 13C2 PFDoA										
615.00 > 570.00	4.009	4.009	0.0	1.503	2741167	2.43		97.1	17529	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.009	4.011	-0.002	1.000	1222974	1.02		102	655	
613.00 > 169.00	4.009	4.011	-0.002	1.000	295938		4.13(2.13-6.40)	102	6196	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.272	4.273	-0.001	1.066	1185888	1.01		101	495	
663.00 > 169.00	4.272	4.273	-0.001	1.066	360583		3.29(1.25-3.76)	101	5237	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.501	4.508	-0.007	1.688	2848985	2.43		97.3	14593	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.501	4.508	-0.007	1.000	292793	0.9875		98.8	5119	
713.00 > 219.00	4.501	4.508	-0.007	1.000	204434		1.43(0.71-2.13)	98.8	4812	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.913	4.918	-0.005	1.842	4668246	2.50		100	12029	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.913	4.918	-0.005	1.000	1859123	1.03		103	407	
813.00 > 169.00	4.913	4.918	-0.005	1.000	288685		6.44(2.86-8.58)	103	2770	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.269	5.271	-0.002	1.072	2109156	0.9883		98.8	376	
913.00 > 169.00	5.262	5.271	-0.009	1.071	260420		8.10(3.83-11.48)	98.8	3637	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

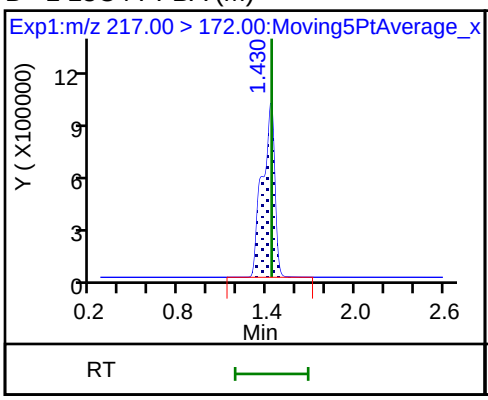
LCPFC_LL4_00005 Amount Added: 1.00 Units: mL

Report Date: 11-Jul-2018 16:33:38 Chrom Revision: 2.2 07-Jun-2018 07:41:54

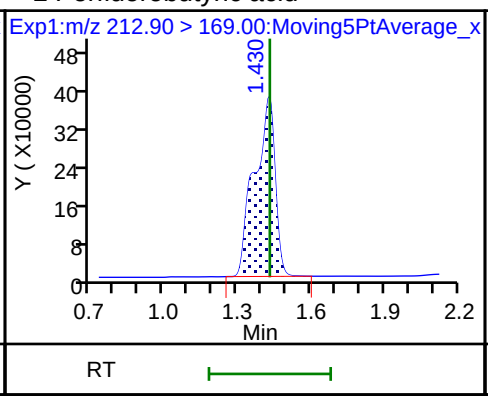
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_005.d
Injection Date: 11-Jul-2018 15:15:12 Instrument ID: A8_N
Lims ID: IC L4 Full
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 13 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC ICAL

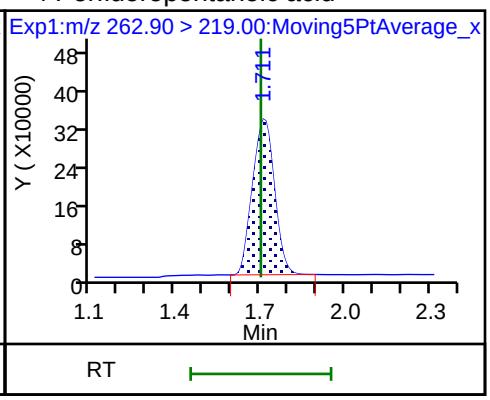
D 1 13C4 PFBA (M)



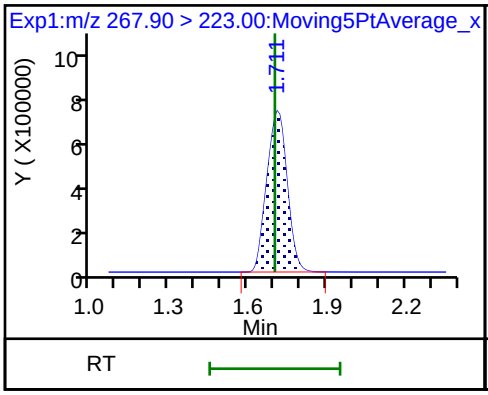
2 Perfluorobutyric acid



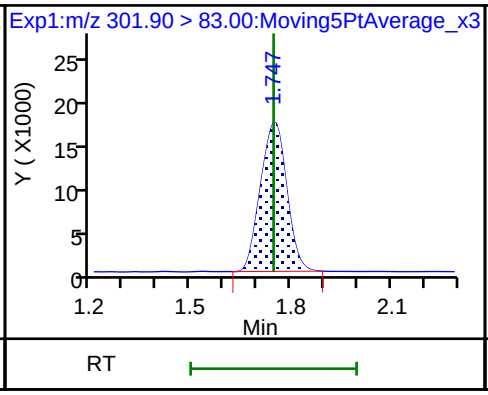
4 Perfluoropentanoic acid



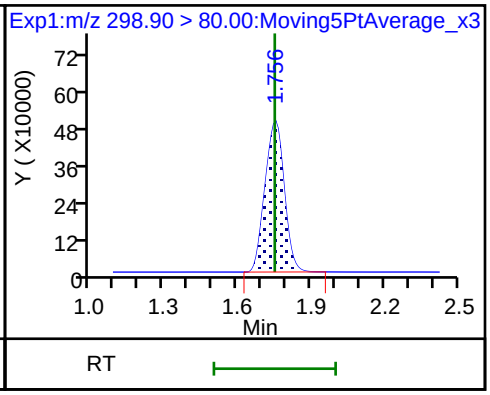
D 3 13C5-PFPeA



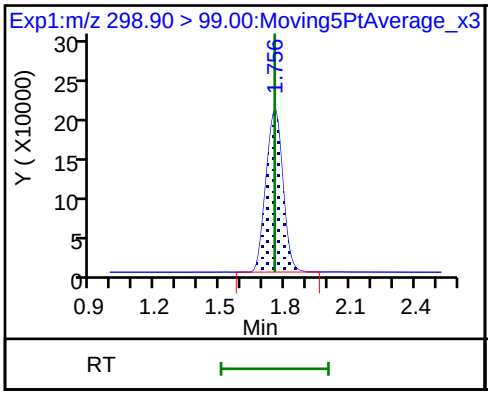
D 47 13C3-PFBS



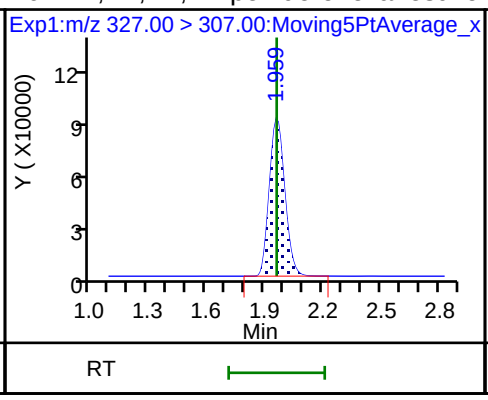
5 Perfluorobutanesulfonic acid



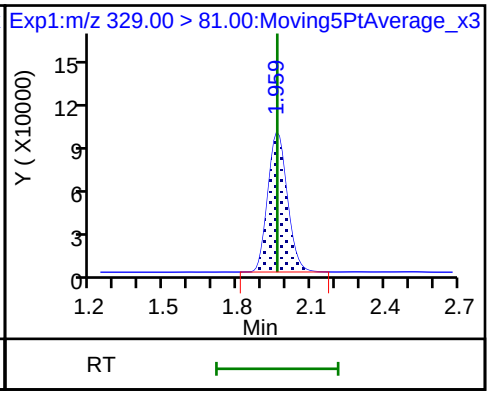
5 Perfluorobutanesulfonic acid



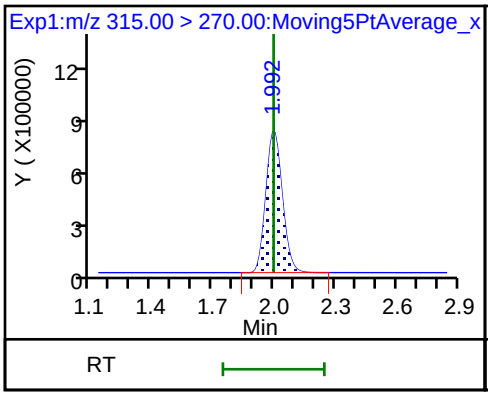
61 1H,1H,2H,2H-perfluorohexanesulfon



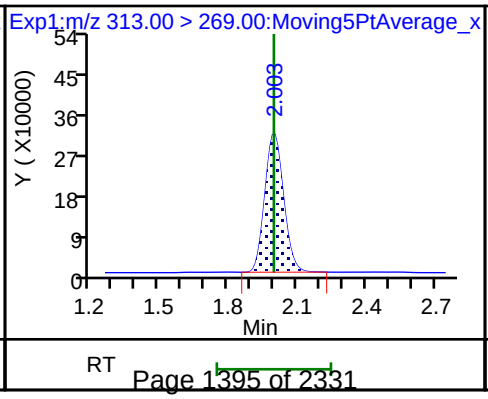
D 60 M2-4:2FTS



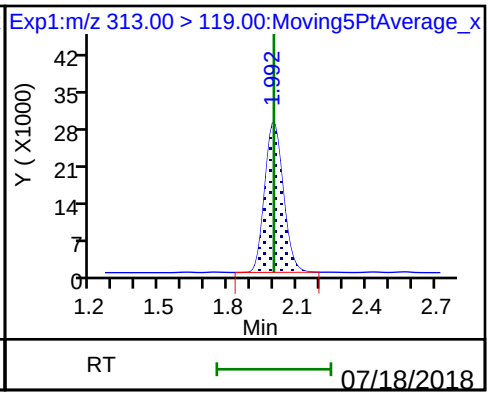
D 7 13C2 PFHxA



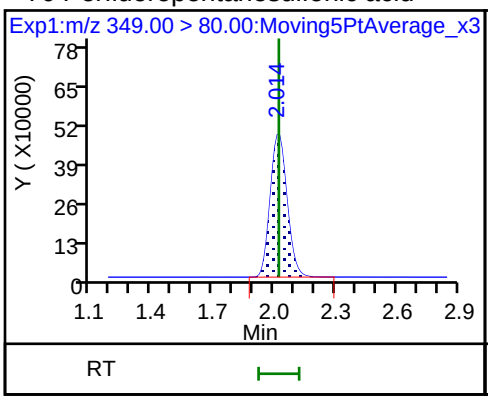
6 Perfluorohexanoic acid



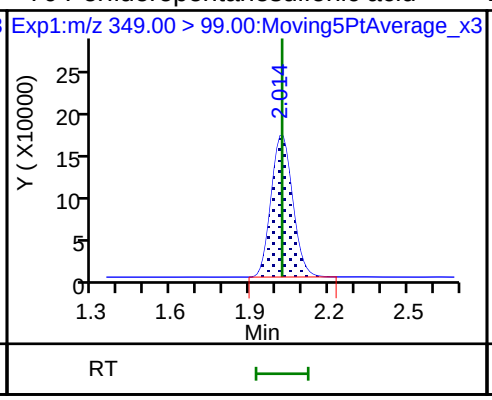
6 Perfluorohexanoic acid



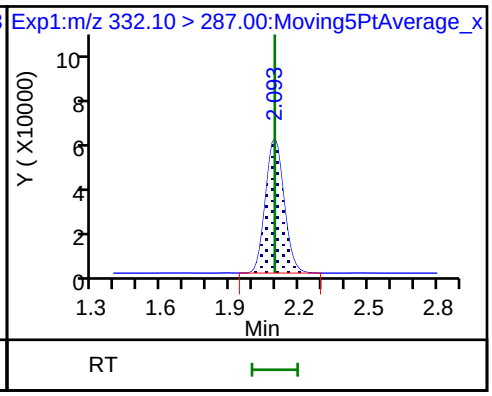
70 Perfluoropentanesulfonic acid



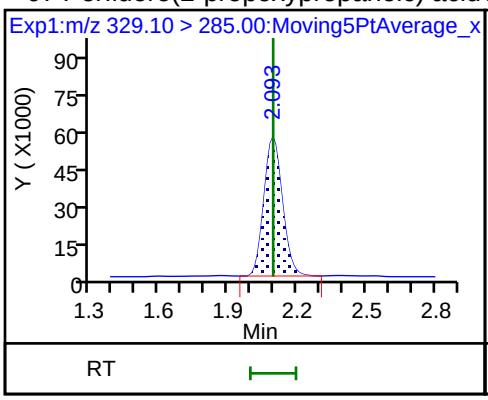
70 Perfluoropentanesulfonic acid



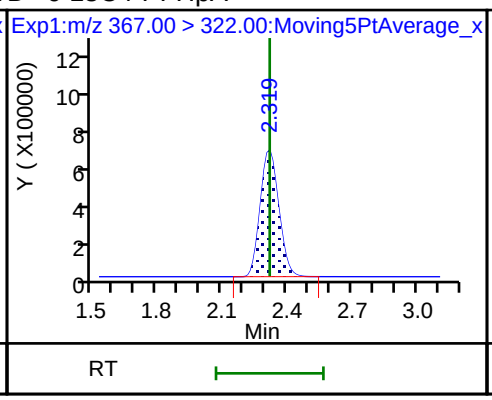
D 64 13C3 HFPO-DA



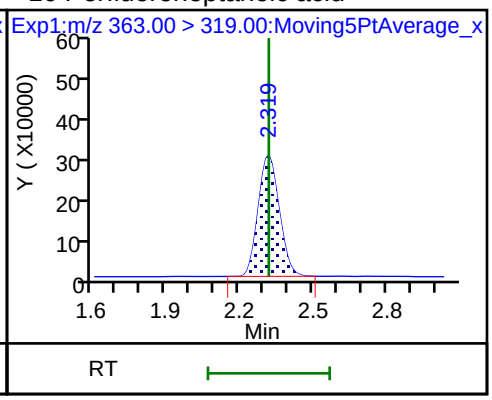
67 Perfluoro(2-propoxypropanoic) acid



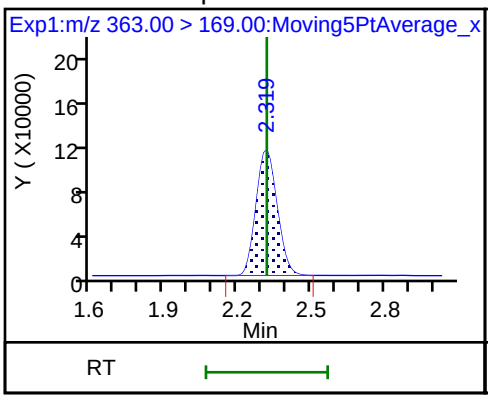
D 9 13C4-PFHpA



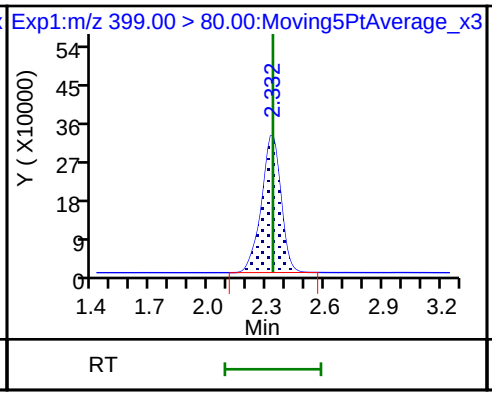
10 Perfluoroheptanoic acid



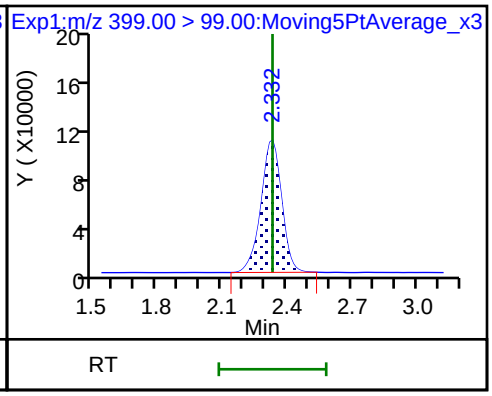
10 Perfluoroheptanoic acid



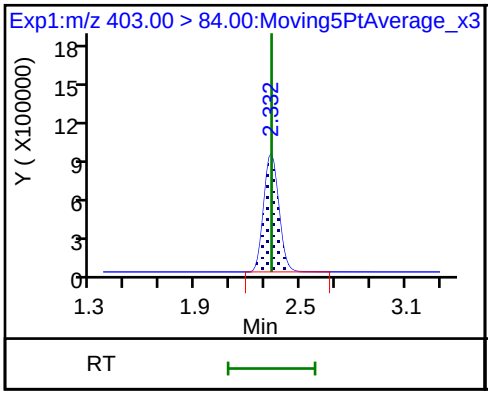
8 Perfluorohexanesulfonic acid



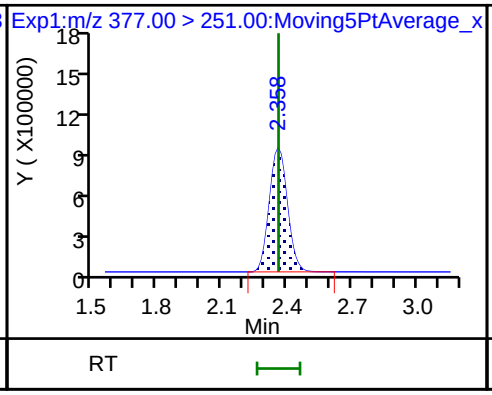
8 Perfluorohexanesulfonic acid



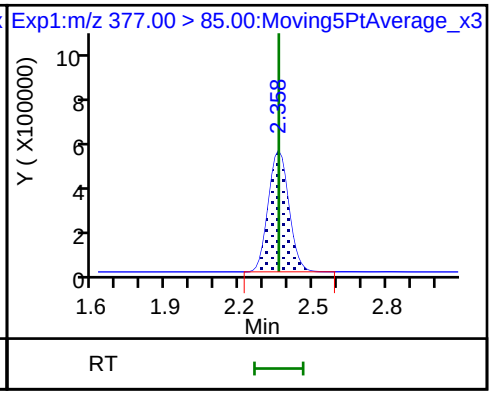
D 11 18O2 PFHxS



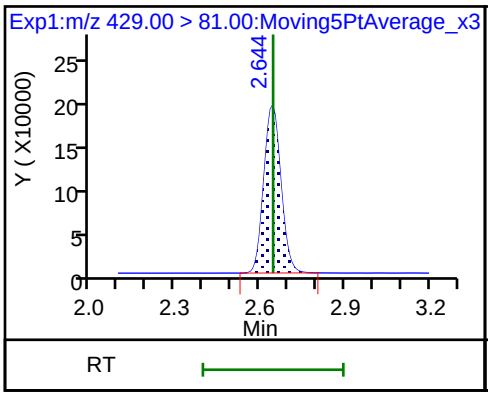
65 Adona



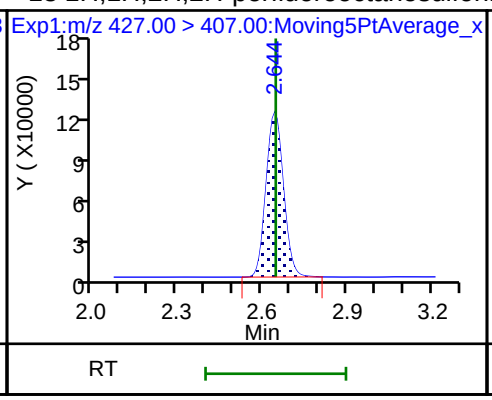
65 Adona



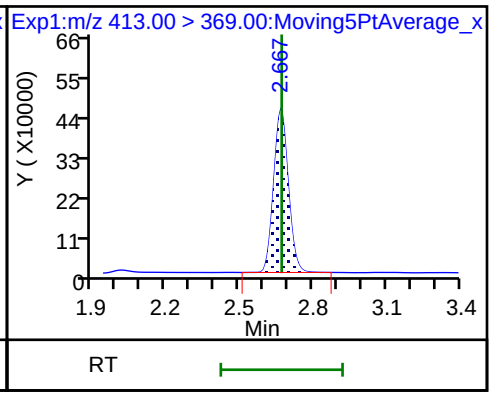
D 12 M2-6:2FTS



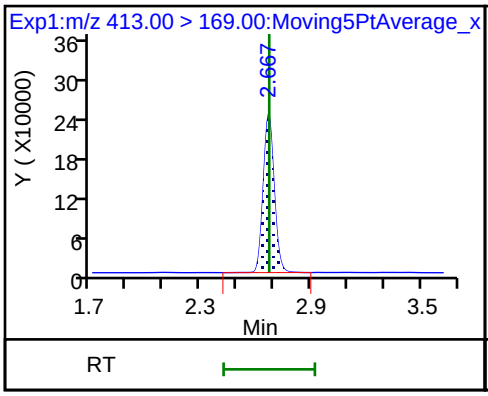
13 1H,1H,2H,2H-perfluorooctanesulfoni



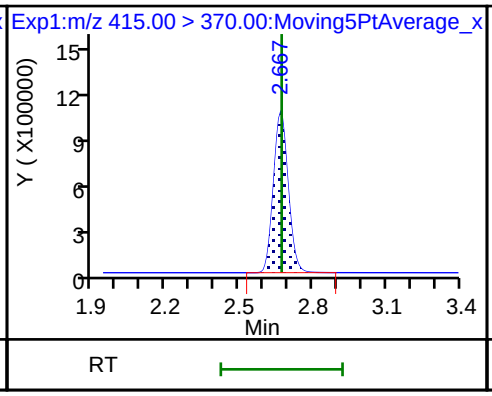
15 Perfluorooctanoic acid



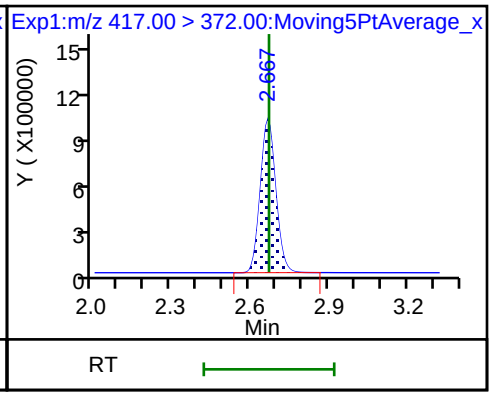
15 Perfluorooctanoic acid



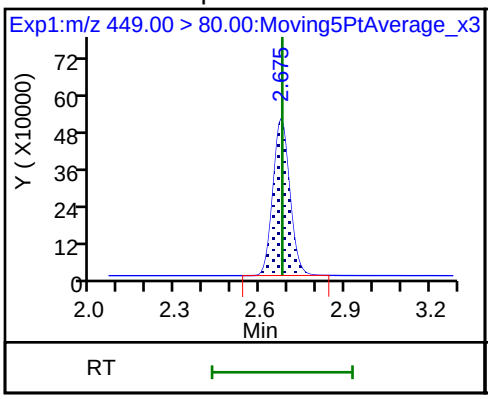
* 62 13C2-PFOA



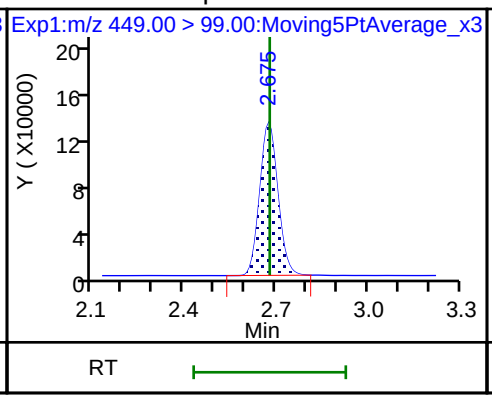
D 14 13C4 PFOA



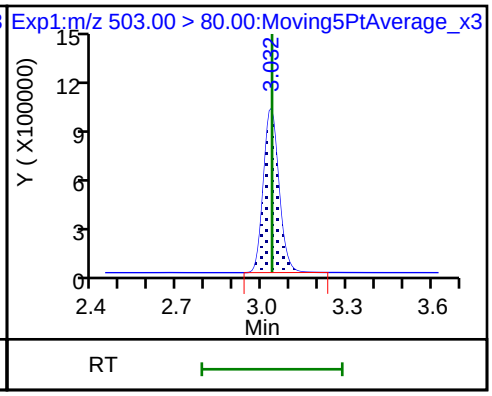
16 Perfluoroheptanesulfonic acid



16 Perfluoroheptanesulfonic acid



D 18 13C4 PFOS



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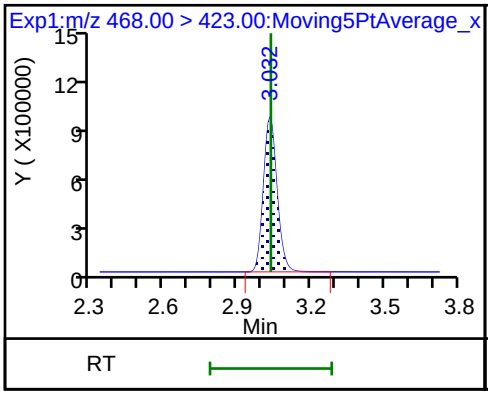
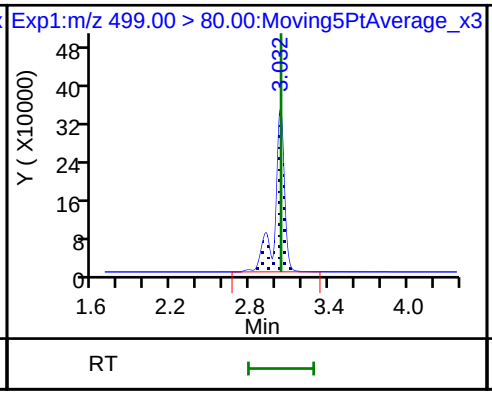
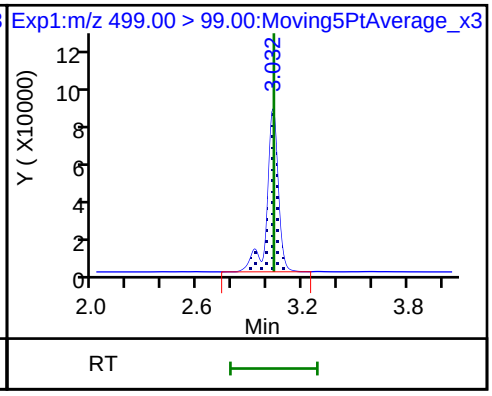


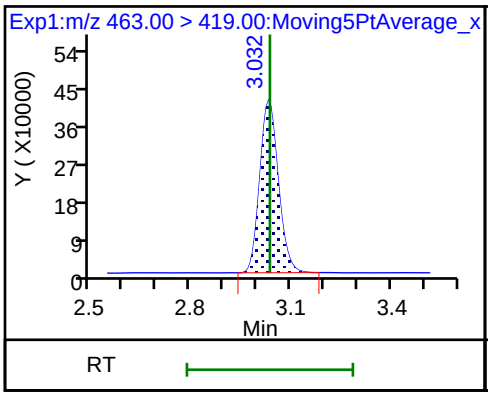
17 Perfluorooctane sulfonic acid



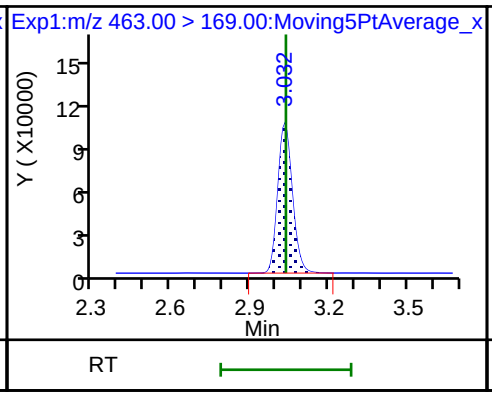
17 Perfluorooctane sulfonic acid



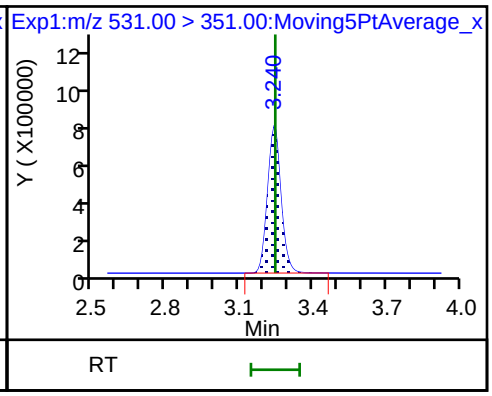
20 Perfluorononanoic acid



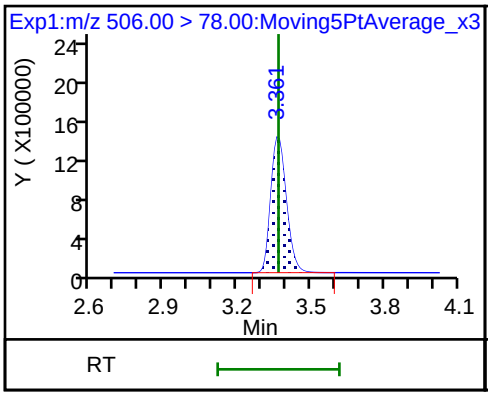
20 Perfluorononanoic acid



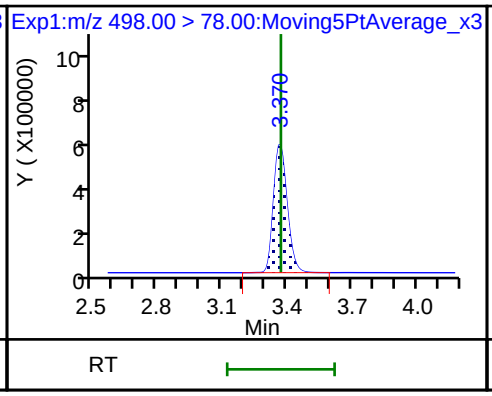
69 9-Chlorohexadecafluoro-3-oxanonane



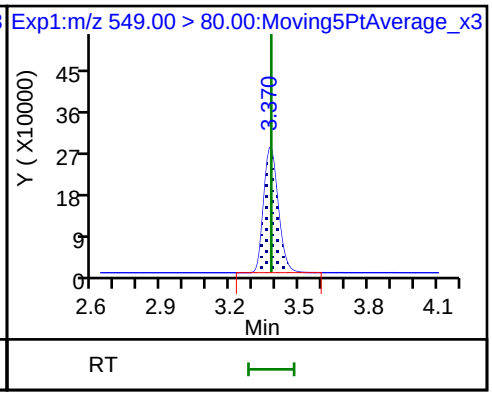
D 21 13C8 FOSA



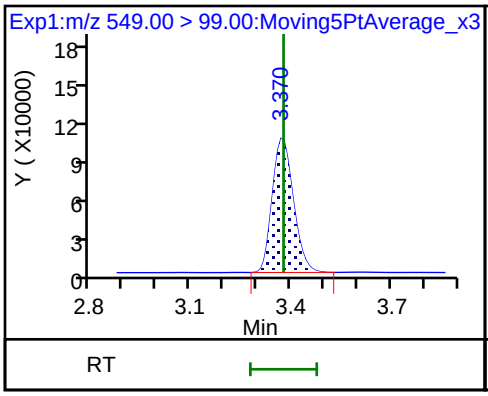
22 Perfluorooctane Sulfonamide



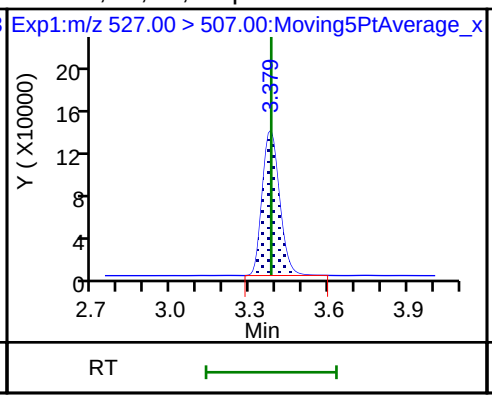
68 Perfluorononanesulfonic acid



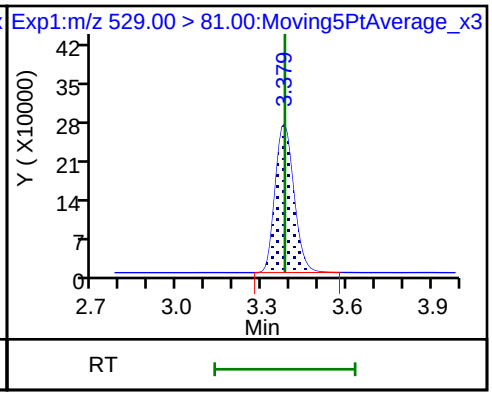
68 Perfluorononanesulfonic acid



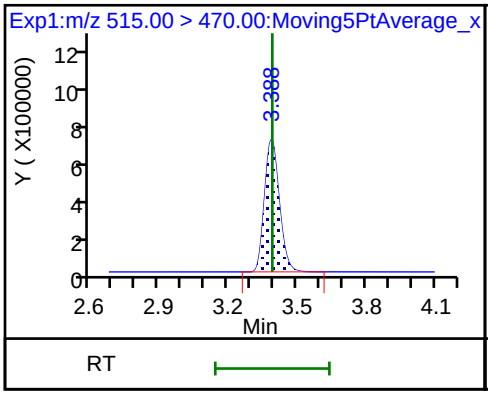
25 1H,1H,2H,2H-perfluorodecanesulfon



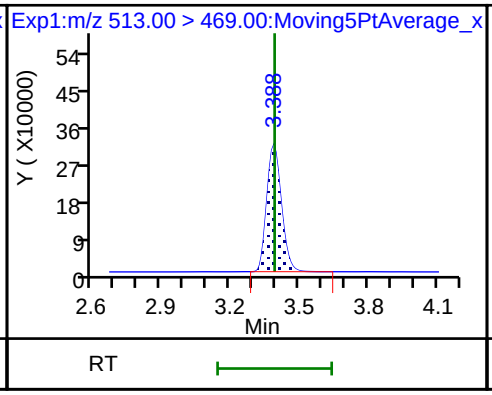
D 26 M2-8:2FTS



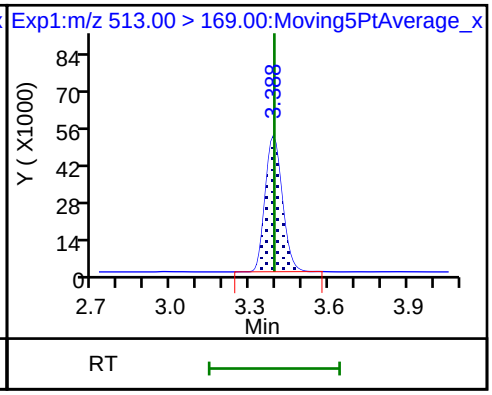
D 23 13C2 PFDA



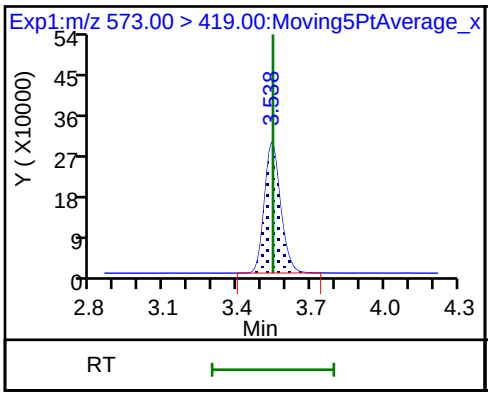
24 Perfluorodecanoic acid



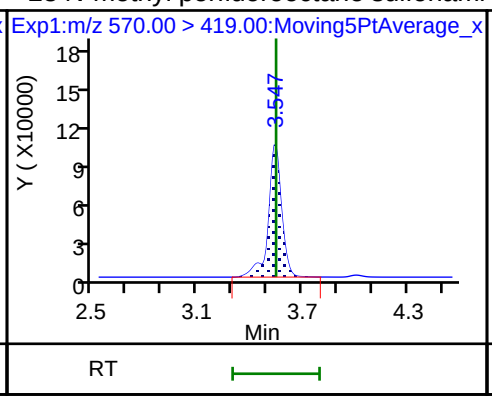
24 Perfluorodecanoic acid



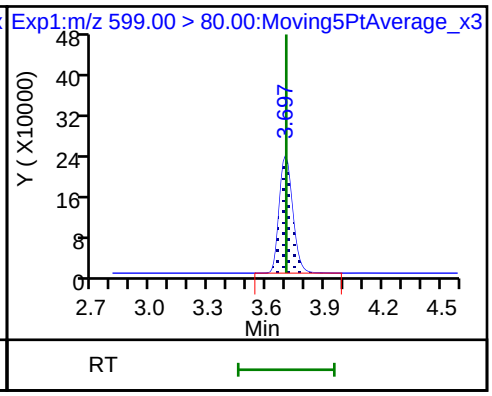
D 27 d3-NMeFOSAA



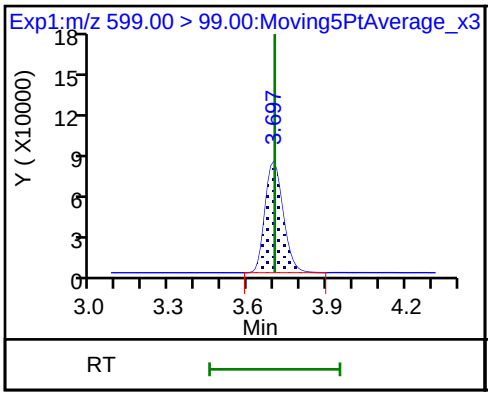
28 N-methyl perfluorooctane sulfonami



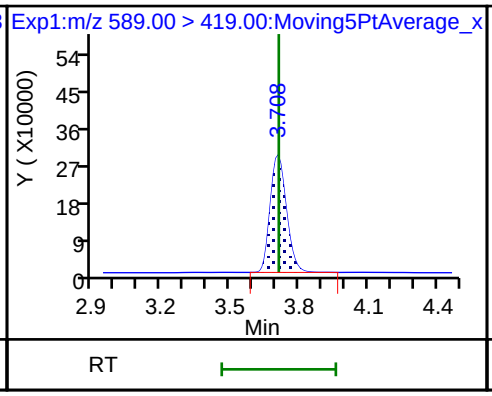
29 Perfluorodecane Sulfonic acid



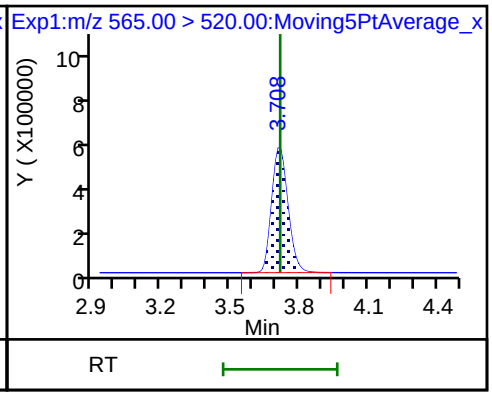
29 Perfluorodecane Sulfonic acid



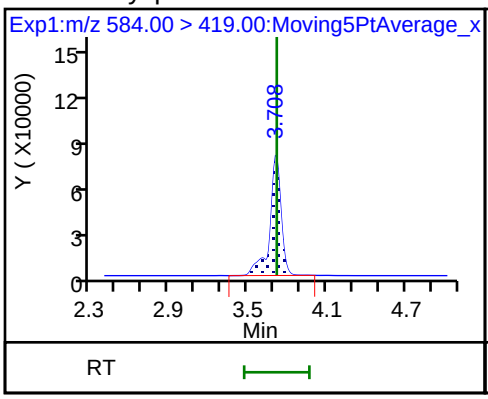
D 32 d5-NEtFOSAA



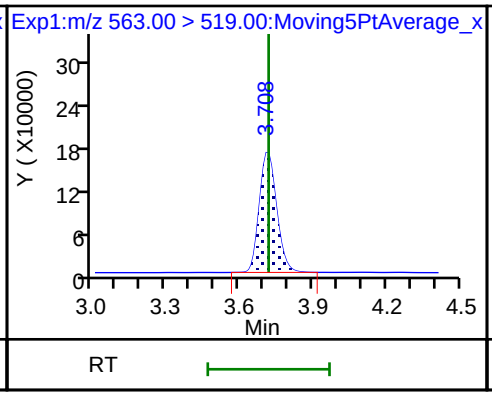
D 30 13C2 PFUnA



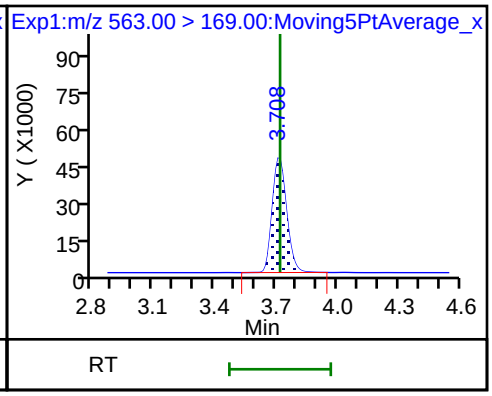
33 N-ethyl perfluorooctane sulfonamid



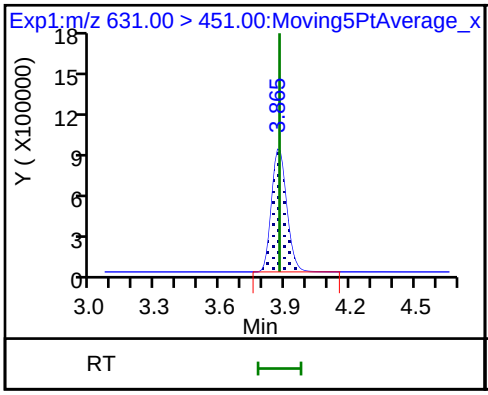
31 Perfluoroundecanoic acid



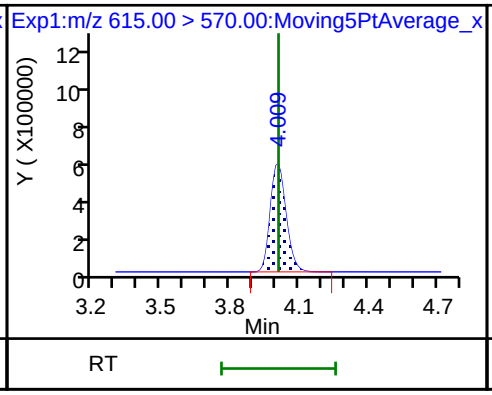
31 Perfluoroundecanoic acid



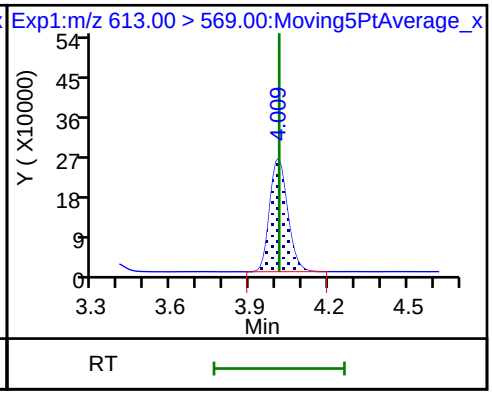
66 11-Chloroeicosafluoro-3-oxaundecan



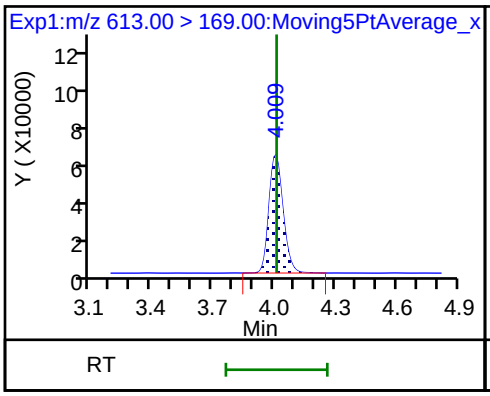
D 36 13C2 PFDoA



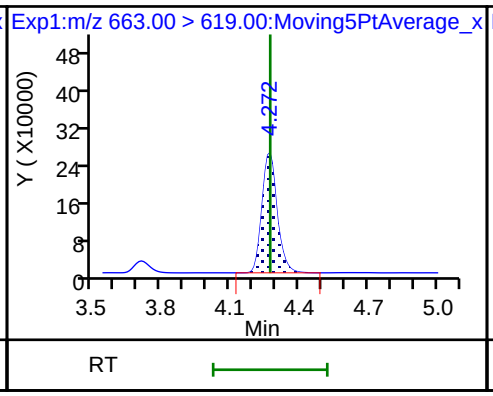
37 Perfluorododecanoic acid



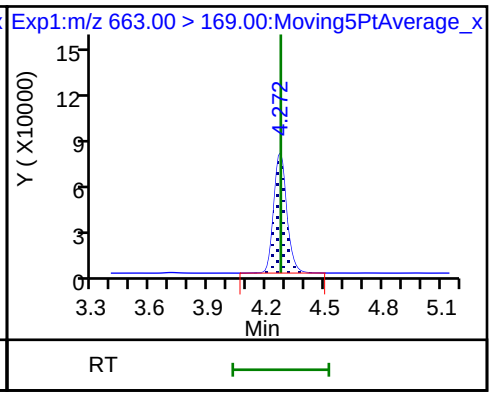
37 Perfluorododecanoic acid



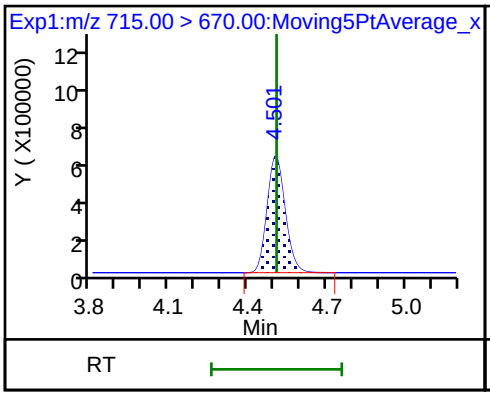
41 Perfluorotridecanoic acid



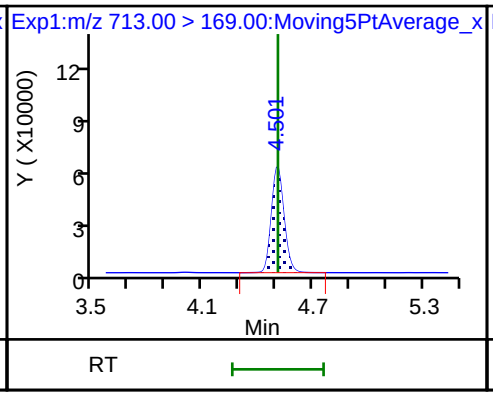
41 Perfluorotridecanoic acid



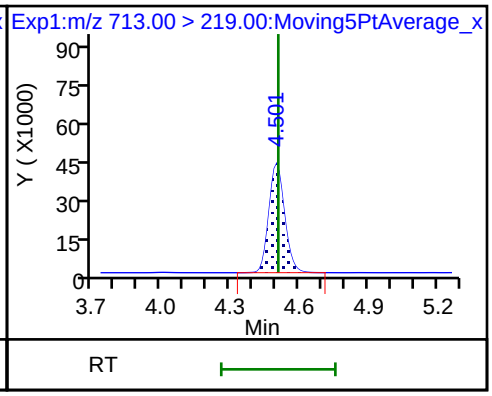
D 43 13C2-PFTeDA



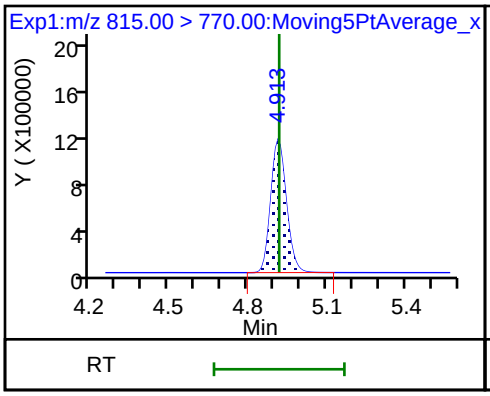
42 Perfluorotetradecanoic acid



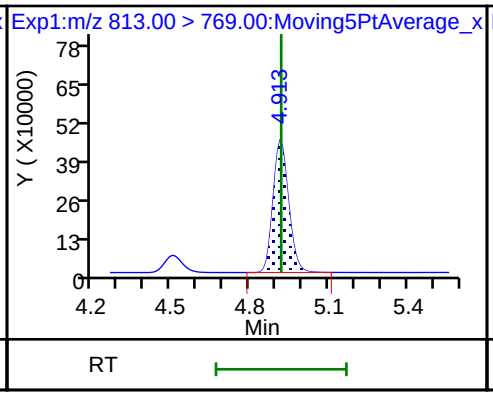
42 Perfluorotetradecanoic acid



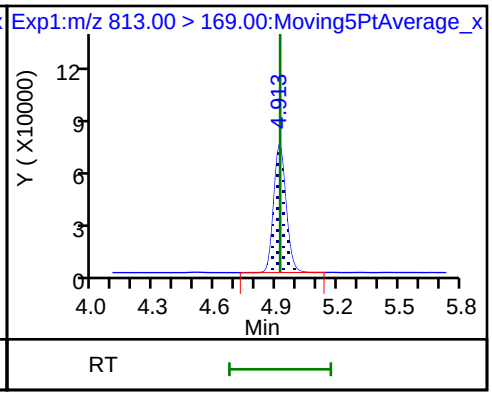
D 44 13C2-PFHxDA



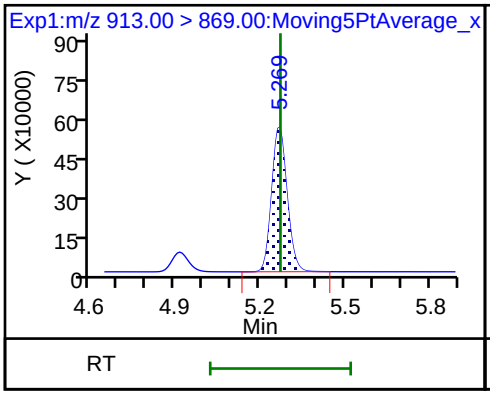
45 Perfluorohexadecanoic acid



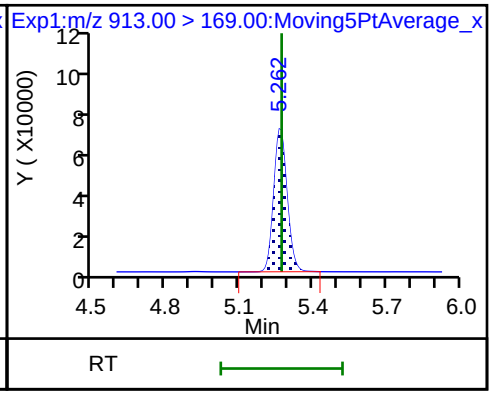
45 Perfluorohexadecanoic acid



46 Perfluorooctadecanoic acid



46 Perfluorooctadecanoic acid



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

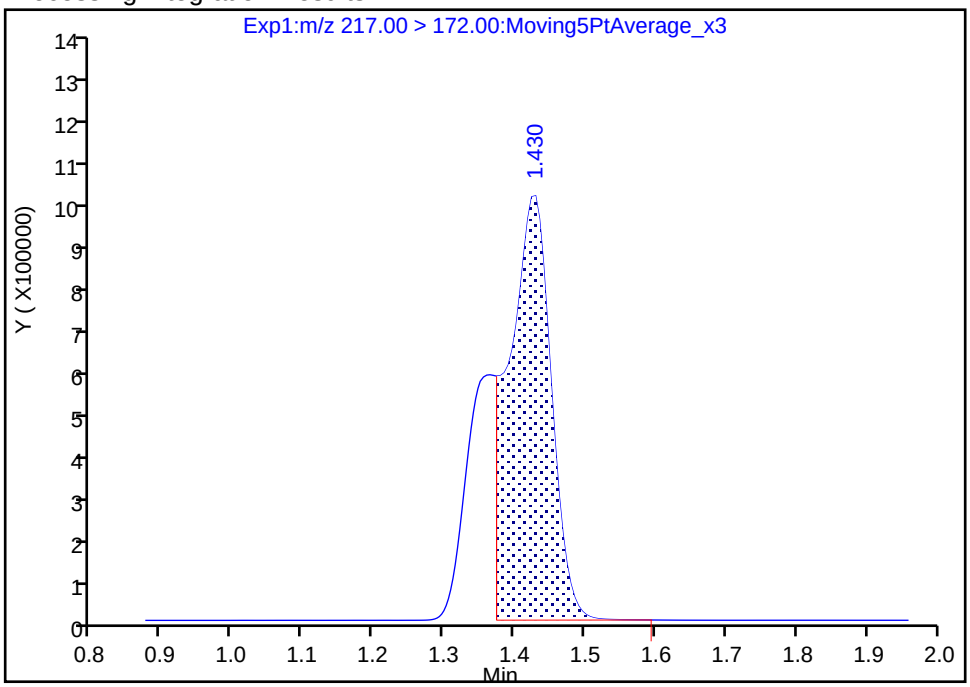
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_005.d				
Injection Date:	11-Jul-2018 15:15:12	Instrument ID:	A8_N		
Lims ID:	IC L4 Full				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	13	Worklist Smp#:	5
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

D 1 13C4 PFBA, CAS: STL00992

Signal: 1

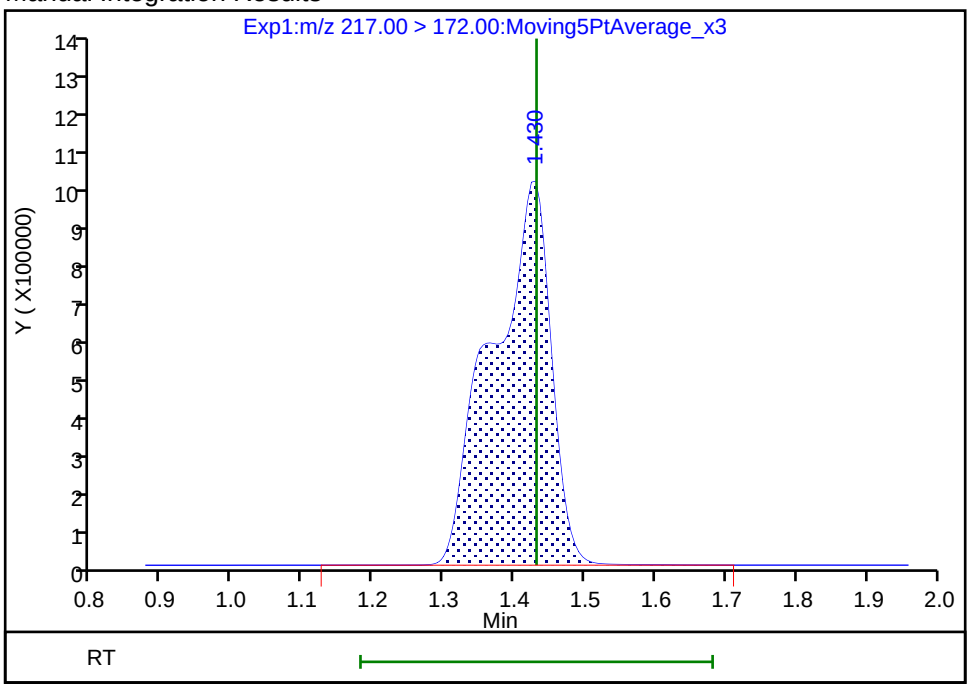
Processing Integration Results

RT: 1.43
Area: 3994583
Amount: 1.883793
Amount Units: ng/ml



Manual Integration Results

RT: 1.43
Area: 5641372
Amount: 2.394547
Amount Units: ng/ml



Reviewer: westendorfc, 11-Jul-2018 16:16:12

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_006.d
Lims ID: IC L5 Full
Client ID:
Sample Type: IC Calib Level: 5
Inject. Date: 11-Jul-2018 15:23:01 ALS Bottle#: 14 Worklist Smp#: 6
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L5-FULL
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-A8_N*sub32

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180711-60919.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 11-Jul-2018 16:33:43 Calib Date: 11-Jul-2018 15:38:42
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK024

First Level Reviewer: westendorfc Date: 11-Jul-2018 16:16:35

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.435	1.431	0.004	0.537	5280540	2.41		96.3	25331	
2 Perfluorobutyric acid										
212.90 > 169.00	1.435	1.431	0.004	1.000	5273443	2.53		101	2281	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.719	1.702	0.017	1.000	4381627	2.38		95.3	2113	
D 3 13C5-PFPeA										
267.90 > 223.00	1.719	1.702	0.017	0.643	3788119	2.48		99.4	51157	
D 47 13C3-PFBS										
301.90 > 83.00	1.755	1.748	0.007	0.656	86878	2.27		97.5	540	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.755	1.751	0.004	1.000	6674181	2.33		106	61281	
298.90 > 99.00	1.764	1.751	0.013	1.005	2645946		2.52(1.25-3.74)	106	30456	
61 1H,1H,2H,2H-perfluorohexanesulfoni										
327.00 > 307.00	1.969	1.962	0.007	1.122	1107254	2.28		97.6	50198	
D 60 M2-4:2FTS										
329.00 > 81.00	1.969	1.962	0.007	0.737	473738	2.30		98.6	7088	
D 7 13C2 PFHxA										
315.00 > 270.00	2.002	1.996	0.006	0.749	4018475	2.44		97.7	79463	
6 Perfluorohexanoic acid										
313.00 > 269.00	2.002	1.998	0.004	1.000	4160132	2.51		101	10856	
313.00 > 119.00	2.002	1.998	0.004	1.000	388380		10.71(5.03-15.10)	101	9906	
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.025	2.022	0.003	1.154	6455101	2.48		106	54556	
349.00 > 99.00	2.025	2.022	0.003	1.154	2229345		2.90(1.36-4.07)	106	35942	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.093	2.093	0.0	0.783	311580	2.66		106	7946	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
67 Perfluoro(2-propoxypropanoic) acid										
329.10 > 285.00	2.104	2.095	0.009	1.005	778109	2.35		94.1	4944	
D 9 13C4-PFHpA										
367.00 > 322.00	2.319	2.319	0.0	0.867	3786835	2.50		99.9	33591	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.319	2.319	0.0	1.000	4400212	2.51		100	8612	
363.00 > 169.00	2.319	2.319	0.0	1.000	1670402		2.63(1.13-3.40)	100	14099	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.332	2.332	0.0	1.000	5315063	2.21		97.2	20906	
399.00 > 99.00	2.332	2.332	0.0	1.000	1742127		3.05(1.50-4.49)	97.2	10227	
D 11 18O2 PFHxS										
403.00 > 84.00	2.332	2.334	-0.002	0.872	4952007	2.31		97.5	38010	
65 Adona										
377.00 > 251.00	2.358	2.360	-0.002	0.777	12756974	2.55		108	64864	
377.00 > 85.00	2.358	2.360	-0.002	0.777	7312674		1.74(0.84-2.53)	108	31574	
D 12 M2-6:2FTS										
429.00 > 81.00	2.643	2.645	-0.002	0.989	735229	2.26		95.3	14601	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.651	2.648	0.003	1.003	1207511	2.49		105	19337	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.674	2.672	0.002	1.000	4451468	2.36		94.1	3343	
413.00 > 169.00	2.674	2.672	0.002	1.000	2330707		1.91(0.84-2.52)	94.1	9438	
* 62 13C2-PFOA										
415.00 > 370.00	2.674	2.672	0.002		4043518	2.50			48829	
D 14 13C4 PFOA										
417.00 > 372.00	2.674	2.672	0.002	1.000	3836329	2.48		99.2	36799	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.682	2.678	0.004	0.884	5191820	2.53		107	34935	
449.00 > 99.00	2.682	2.678	0.004	0.884	1323329		3.92(1.94-5.82)	107	17676	
D 18 13C4 PFOS										
503.00 > 80.00	3.034	3.034	0.0	1.135	3715442	2.36		98.7	27307	
D 19 13C5 PFNA										
468.00 > 423.00	3.034	3.035	-0.001	1.135	3458178	2.50		100	35610	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.034	3.035	-0.001	1.000	4135858	2.35		101	37972	
499.00 > 99.00	3.034	3.035	-0.001	1.000	892390		4.63(2.31-6.93)	101	14610	
20 Perfluorononanoic acid										
463.00 > 419.00	3.034	3.036	-0.002	1.000	3819652	2.49		99.6	8703	
463.00 > 169.00	3.034	3.036	-0.002	1.000	918661		4.16(1.90-5.69)	99.6	19742	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.248	3.245	0.003	1.071	7252582	2.54		109	52779	
D 21 13C8 FOSA										
506.00 > 78.00	3.372	3.367	0.005	1.261	5643811	2.48		99.4	47295	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.372	3.371	0.001	1.000	5880155	2.64		106	55445	
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.382	3.377	0.005	1.115	2871112	2.38		99.3	46492	
549.00 > 99.00	3.372	3.377	-0.005	1.112	1101132		2.61(1.33-3.97)	99.3	15623	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
25 1H,1H,2H,2H-perfluorodecanesulfoni										
527.00 > 507.00	3.382	3.380	0.002	1.000	1414341	2.48		103	28571	
D 26 M2-8:2FTS										
529.00 > 81.00	3.382	3.380	0.002	1.265	1060685	2.23		93.2	19616	
D 23 13C2 PFDA										
515.00 > 470.00	3.391	3.391	0.0	1.268	3096188	2.55		102	36882	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.391	3.392	-0.001	1.000	3246129	2.50		99.9	19256	
513.00 > 169.00	3.391	3.392	-0.001	1.000	556303		5.84(2.36-7.09)	99.9	17777	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.540	3.544	-0.004	1.324	1216339	2.45		97.8	19061	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.550	3.548	0.002	1.003	1243187	2.59		104	9167	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.700	3.701	-0.001	1.220	2652406	2.54		105	55532	
599.00 > 99.00	3.700	3.701	-0.001	1.220	845113		3.14(1.39-4.16)	105	44197	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.711	3.710	0.001	1.388	1230676	2.42		96.6	2971	
D 30 13C2 PFUnA										
565.00 > 520.00	3.711	3.716	-0.005	1.388	2509304	2.48		99.0	34202	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.721	3.718	0.003	1.003	1138694	2.62		105	27224	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.721	3.718	0.003	1.003	2099121	2.55		102	10965	
563.00 > 169.00	3.721	3.718	0.003	1.003	516328		4.07(2.12-6.36)	102	21072	
66 11-Chloroeicosafluoro-3-oxaundecan										
631.00 > 451.00	3.879	3.874	0.005	1.279	10147290	2.46		104	87741	
D 36 13C2 PFDoA										
615.00 > 570.00	4.010	4.009	0.001	1.500	2524421	2.40		96.1	15731	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.010	4.011	-0.001	1.000	2886271	2.62		105	1721	
613.00 > 169.00	4.010	4.011	-0.001	1.000	674369		4.28(2.13-6.40)	105	13057	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.273	4.273	0.0	1.066	2993320	2.78		111	1323	
663.00 > 169.00	4.273	4.273	0.0	1.066	854966		3.50(1.25-3.76)	111	11132	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.513	4.508	0.005	1.688	2737226	2.51		100	14031	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.513	4.508	0.005	1.000	681755	2.39		95.7	9488	
713.00 > 219.00	4.502	4.508	-0.006	0.998	464264		1.47(0.71-2.13)	95.7	8850	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.915	4.918	-0.003	1.838	4503233	2.59		104	13280	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.915	4.918	-0.003	1.000	4281172	2.48		99.2	858	
813.00 > 169.00	4.915	4.918	-0.003	1.000	687117		6.23(2.86-8.58)	99.2	5691	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.270	5.271	-0.001	1.072	5144900	2.50		100.0	916	
913.00 > 169.00	5.270	5.271	-0.001	1.072	608942		8.45(3.83-11.48)	100.0	5777	

Reagents:

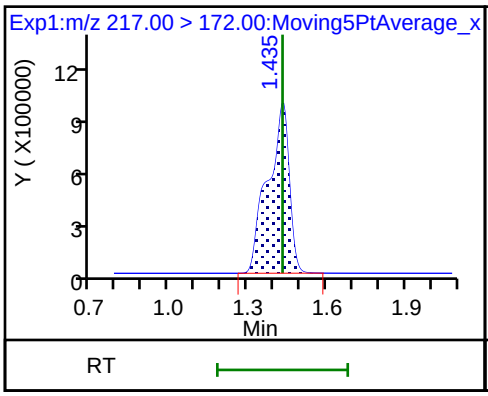
LCPFC_LL5_00005 Amount Added: 1.00 Units: mL

Report Date: 11-Jul-2018 16:33:45 Chrom Revision: 2.2 07-Jun-2018 07:41:54

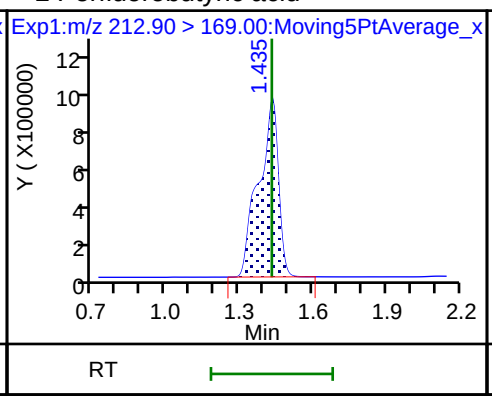
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_006.d
Injection Date: 11-Jul-2018 15:23:01 Instrument ID: A8_N
Lims ID: IC L5 Full
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 14 Worklist Smp#: 6
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC ICAL

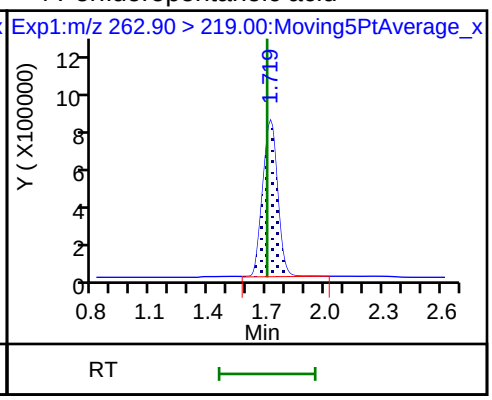
D 1 13C4 PFBA



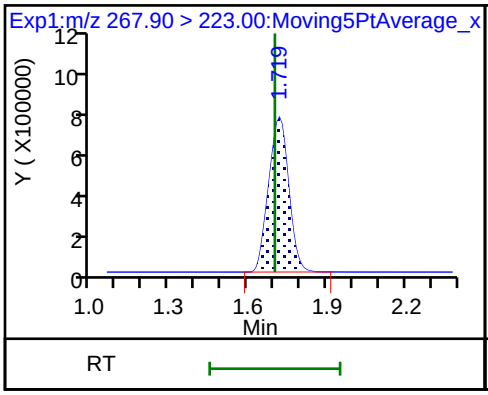
2 Perfluorobutyric acid



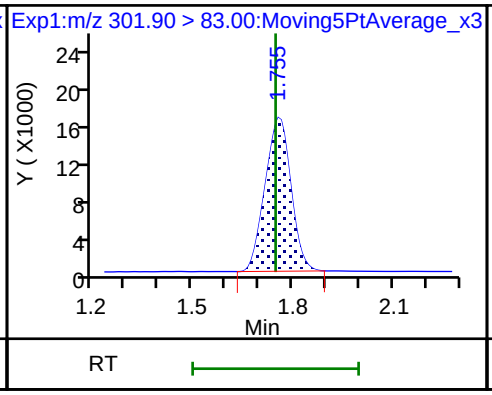
4 Perfluoropentanoic acid



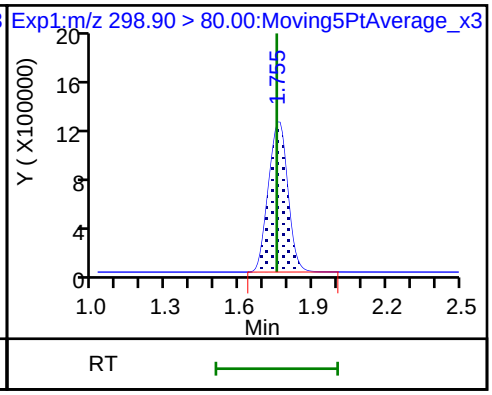
D 3 13C5-PFPeA



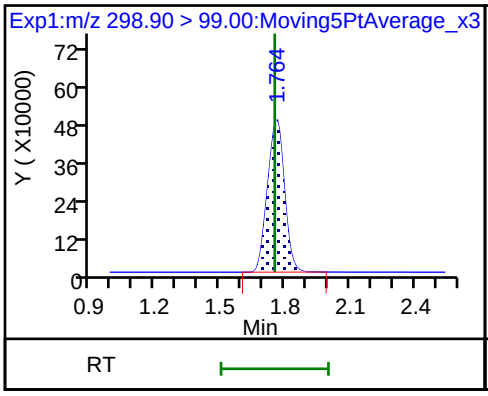
D 47 13C3-PFBS



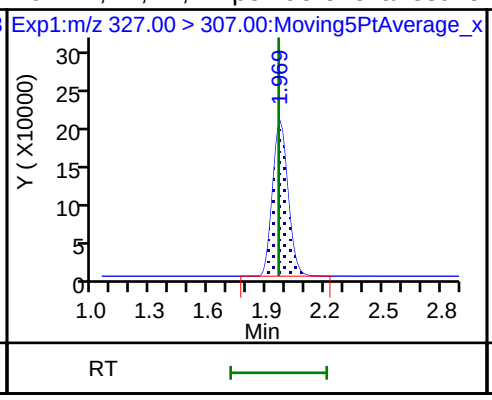
5 Perfluorobutanesulfonic acid



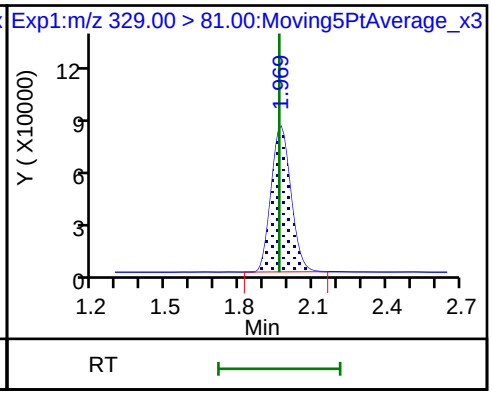
5 Perfluorobutanesulfonic acid



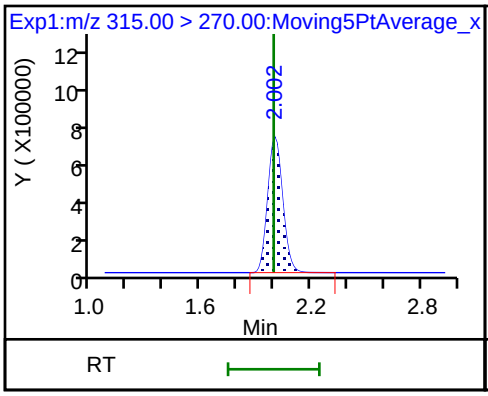
61 1H,1H,2H,2H-perfluorohexanesulfon



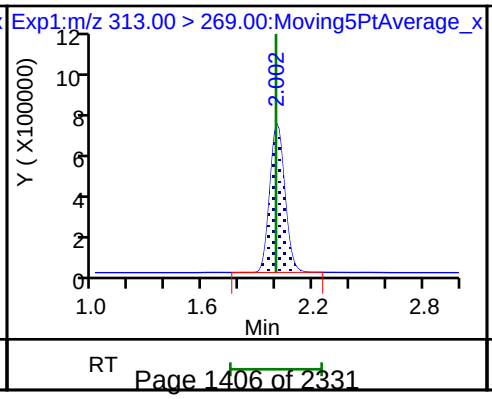
D 60 M2-4:2FTS



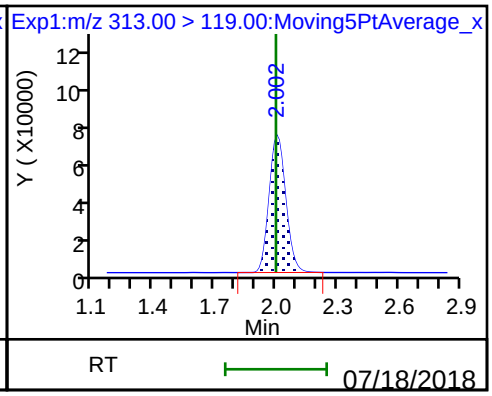
D 7 13C2 PFHxA



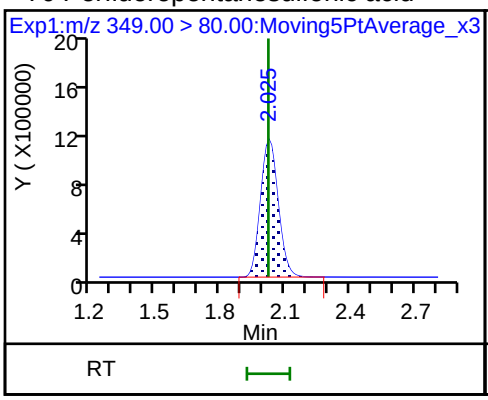
6 Perfluorohexanoic acid



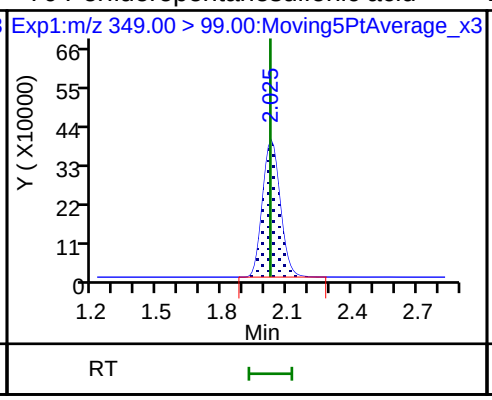
6 Perfluorohexanoic acid



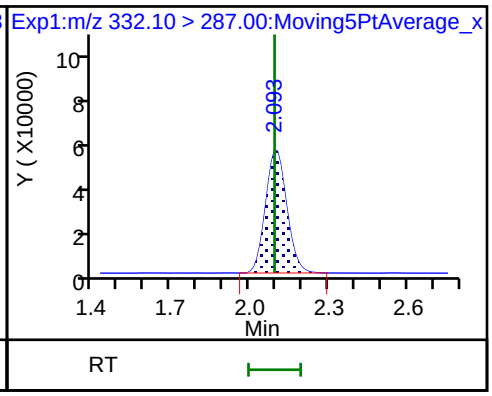
70 Perfluoropentanesulfonic acid



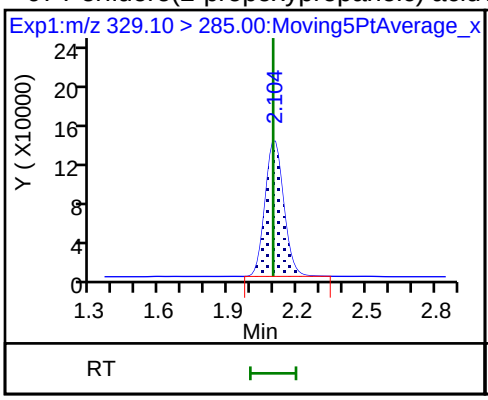
70 Perfluoropentanesulfonic acid



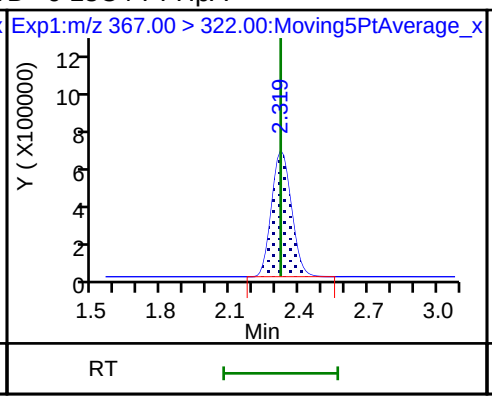
D 64 13C3 HFPO-DA



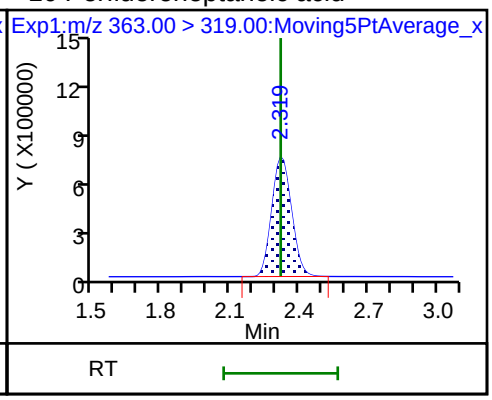
67 Perfluoro(2-propoxypropanoic) acid



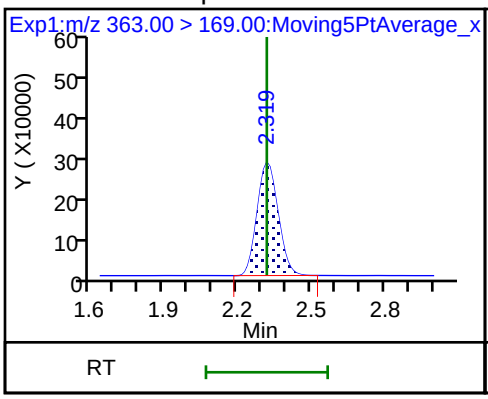
D 9 13C4-PFHpA



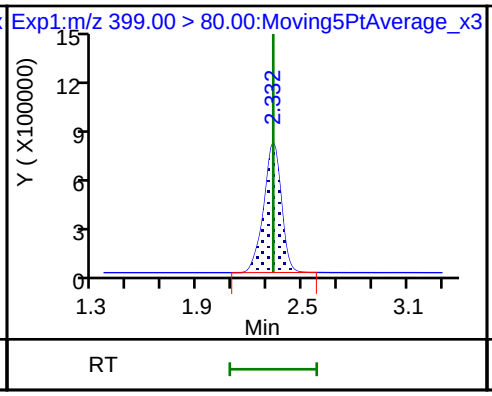
10 Perfluoroheptanoic acid



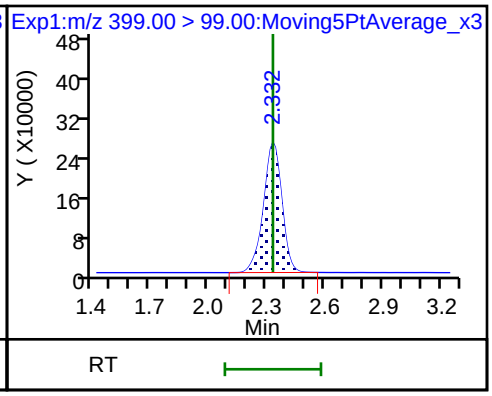
10 Perfluoroheptanoic acid



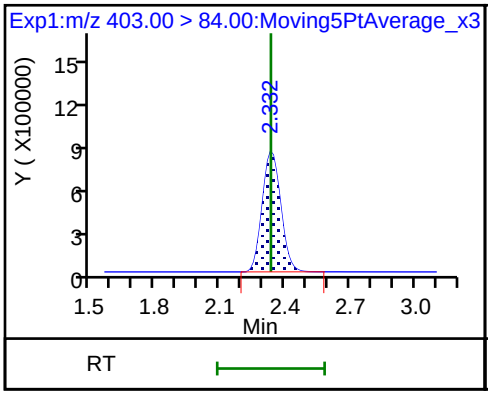
8 Perfluorohexanesulfonic acid



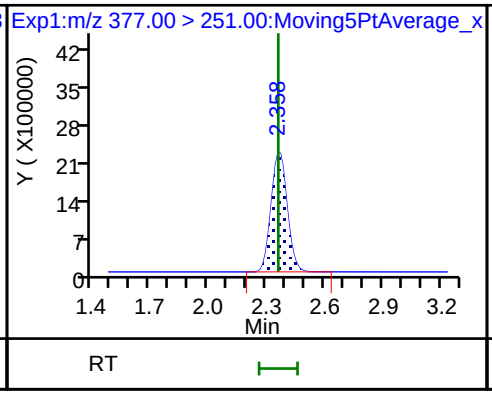
8 Perfluorohexanesulfonic acid



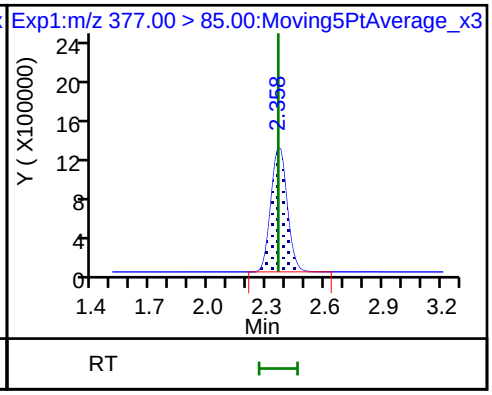
D 11 18O2 PFHxS



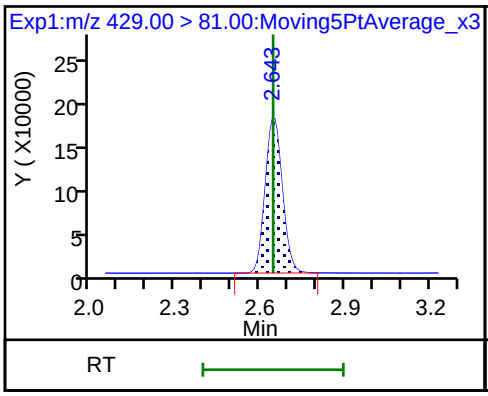
65 Adona



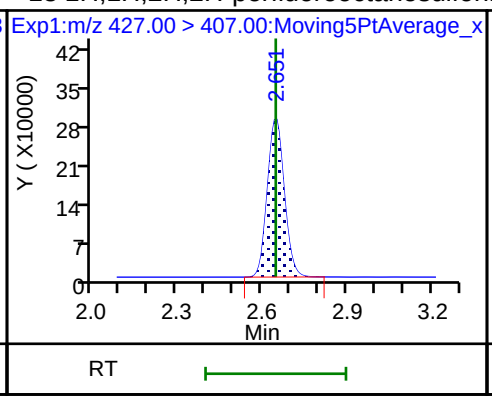
65 Adona



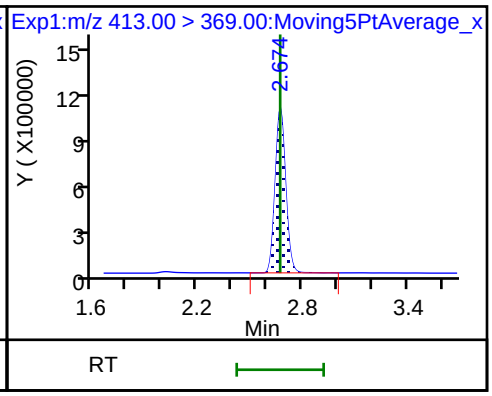
D 12 M2-6:2FTS



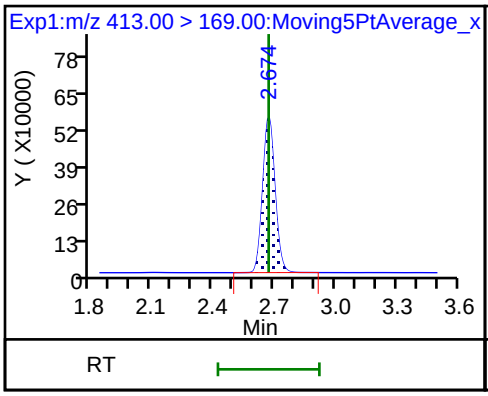
13 1H,1H,2H,2H-perfluorooctanesulfoni



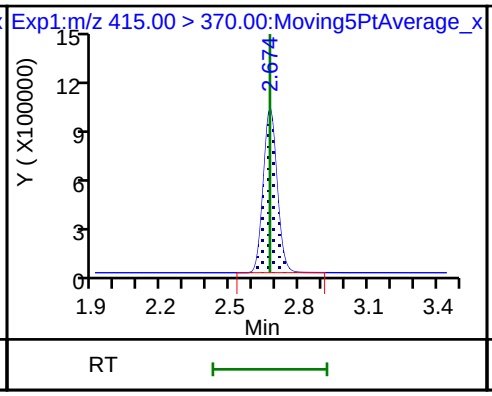
15 Perfluorooctanoic acid



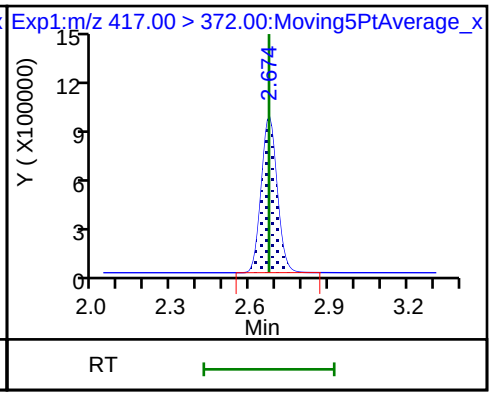
15 Perfluorooctanoic acid



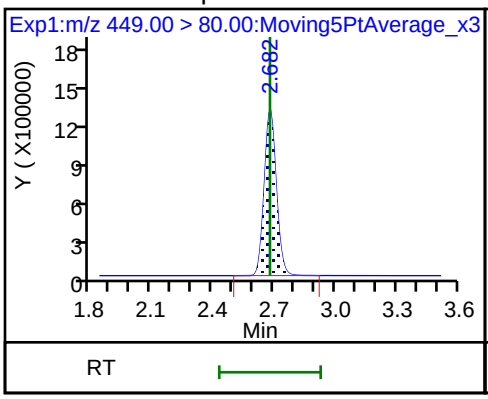
* 62 13C2-PFOA



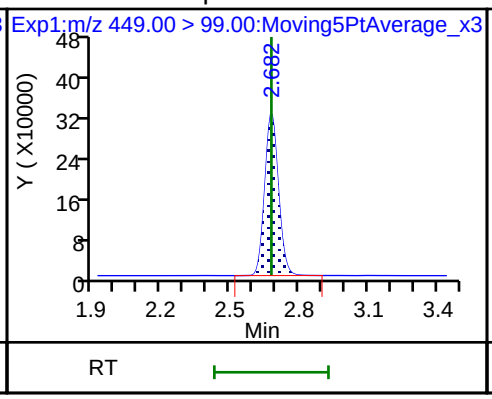
D 14 13C4 PFOA



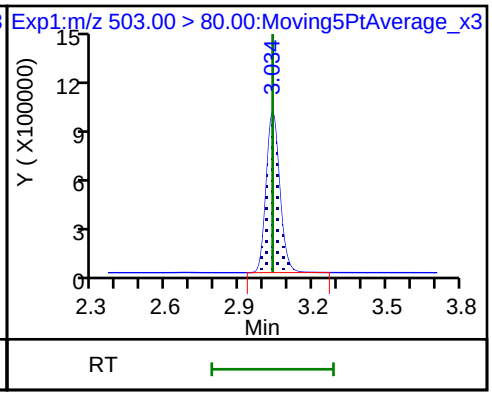
16 Perfluoroheptanesulfonic acid



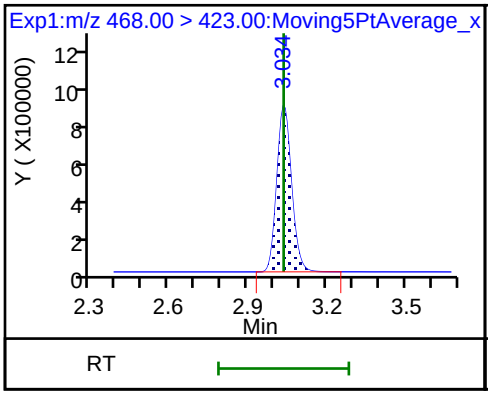
16 Perfluoroheptanesulfonic acid



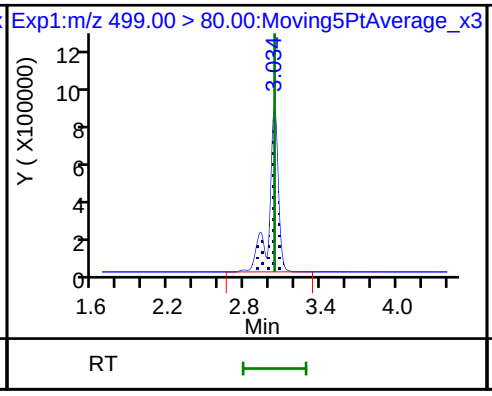
D 18 13C4 PFOS



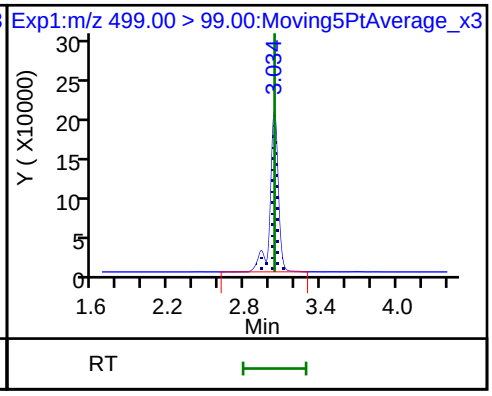
D 19 13C5 PFNA



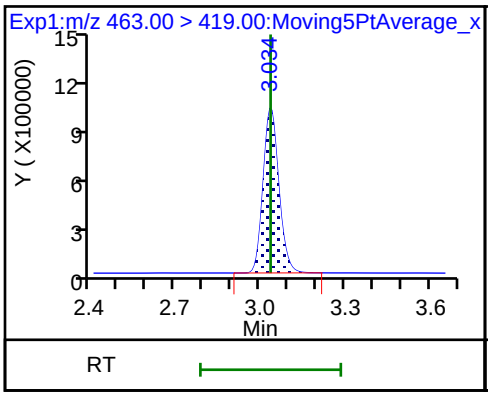
17 Perfluorooctane sulfonic acid



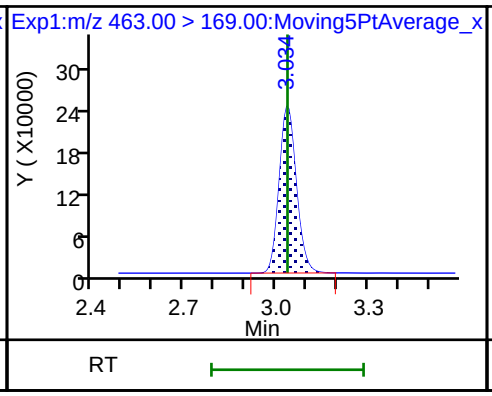
17 Perfluorooctane sulfonic acid



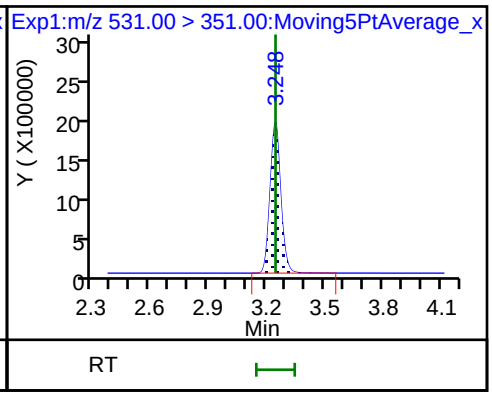
20 Perfluorononanoic acid



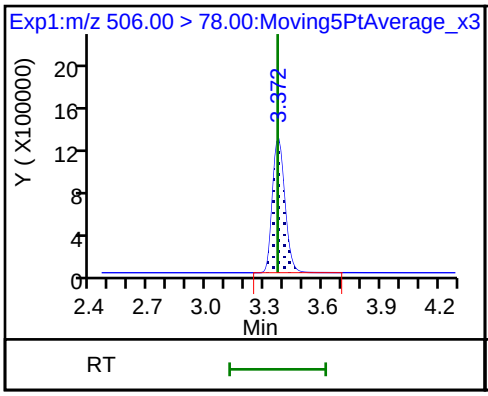
20 Perfluorononanoic acid



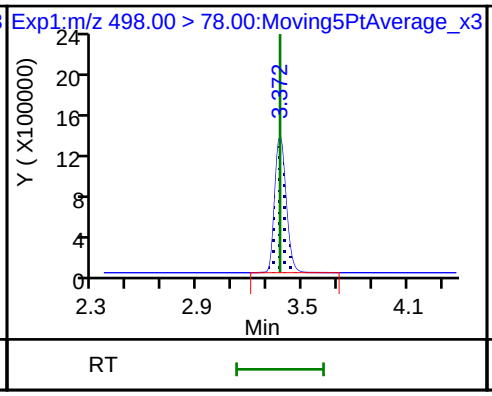
69 9-Chlorohexadecafluoro-3-oxanonane



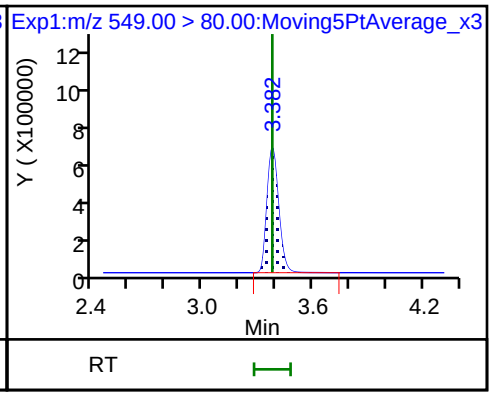
D 21 13C8 FOSA



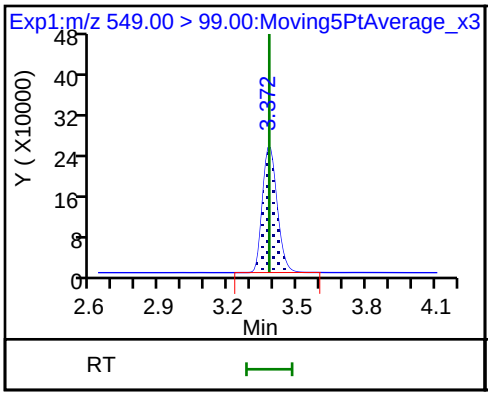
22 Perfluorooctane Sulfonamide



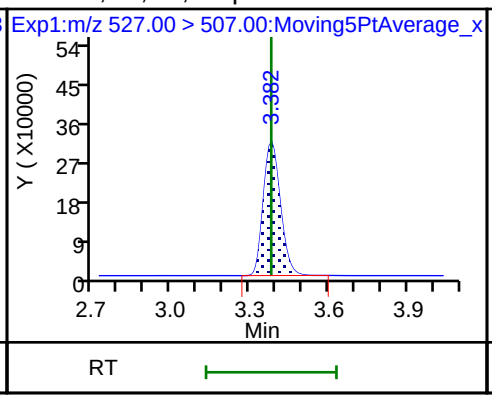
68 Perfluorononanesulfonic acid



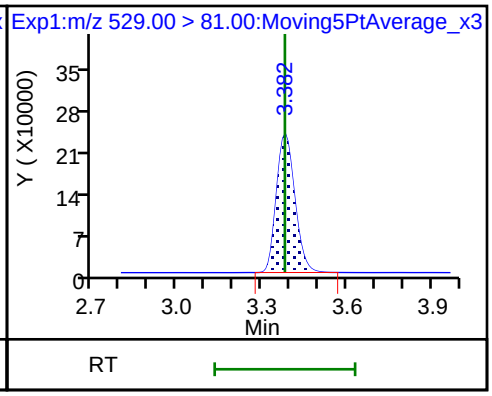
68 Perfluorononanesulfonic acid



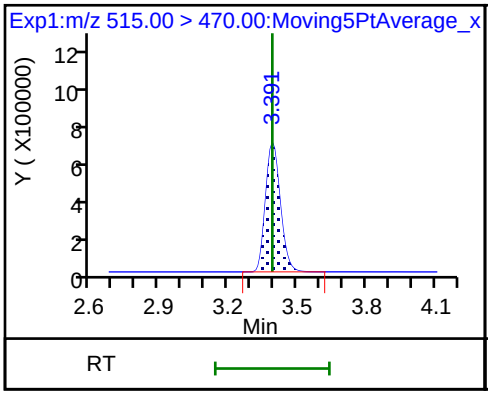
25 1H,1H,2H,2H-perfluorodecanesulfon



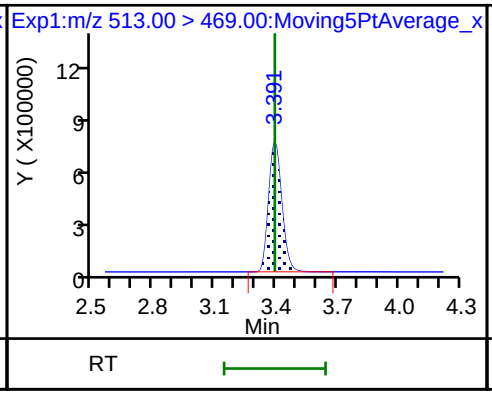
D 26 M2-8:2FTS



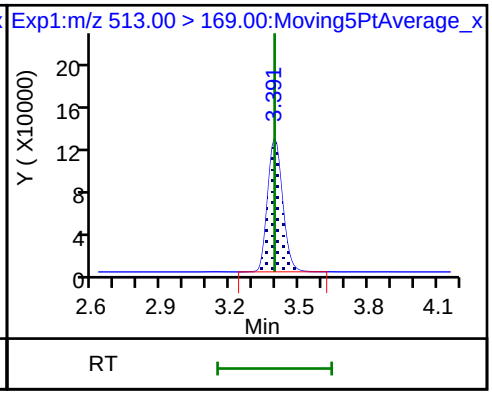
D 23 13C2 PFDA



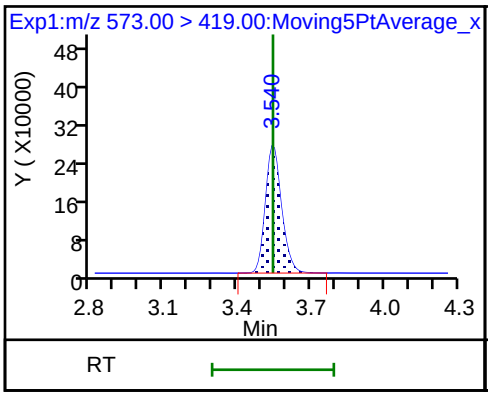
24 Perfluorodecanoic acid



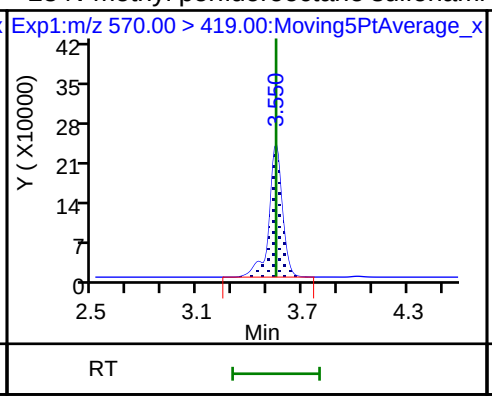
24 Perfluorodecanoic acid



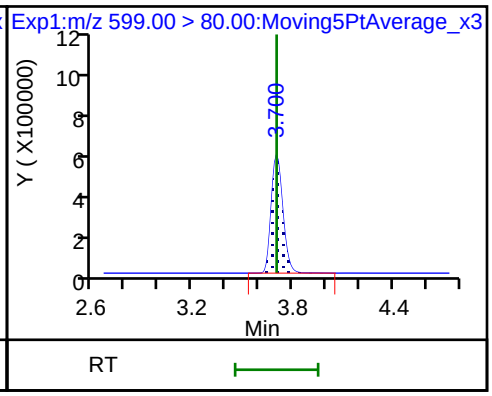
D 27 d3-NMeFOSAA



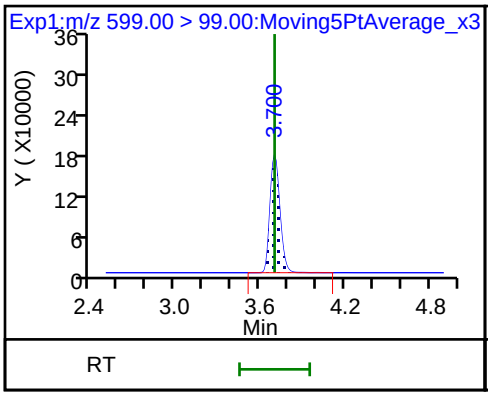
28 N-methyl perfluorooctane sulfonami



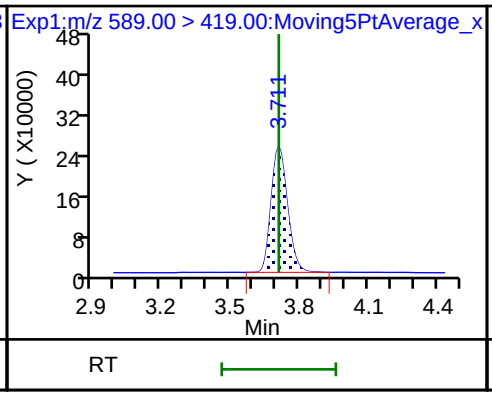
29 Perfluorodecane Sulfonic acid



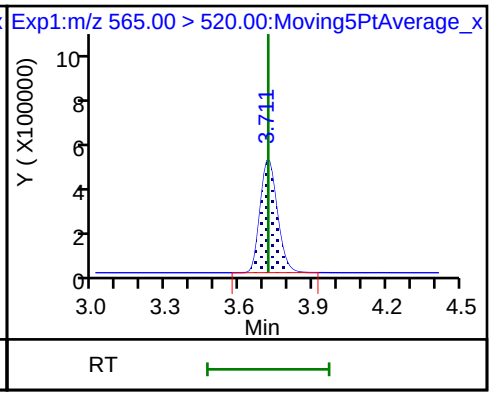
29 Perfluorodecane Sulfonic acid



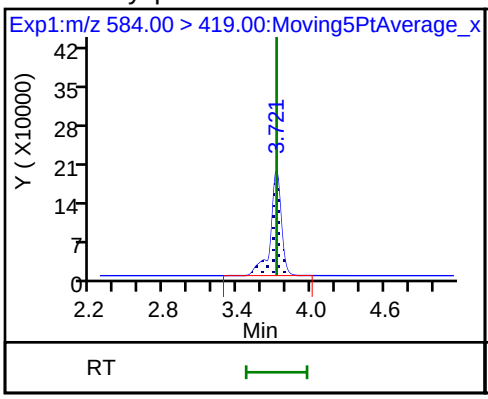
D 32 d5-NEtFOSAA



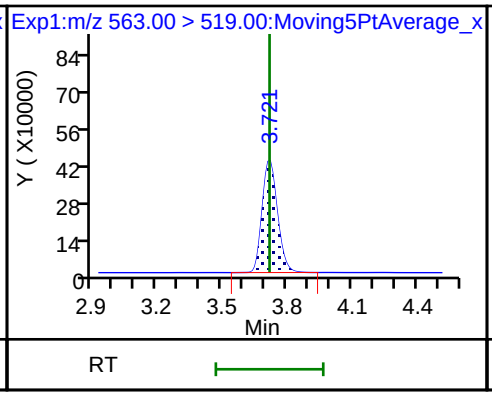
D 30 13C2 PFUnA



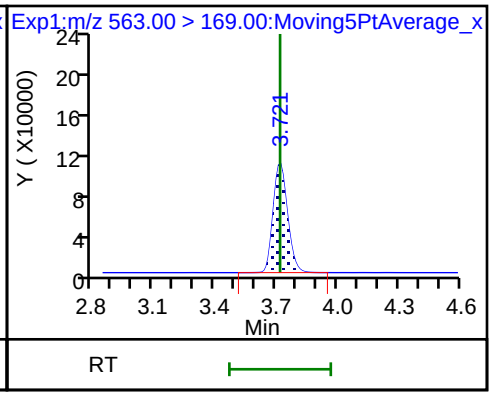
33 N-ethyl perfluorooctane sulfonamid



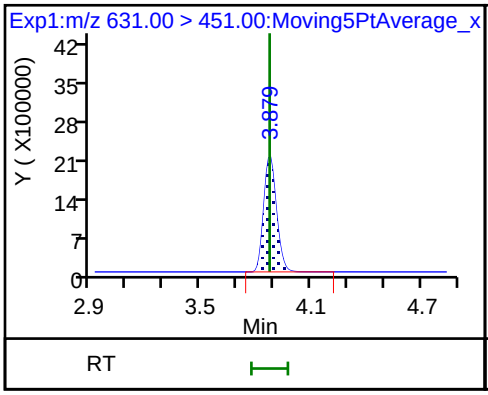
31 Perfluoroundecanoic acid



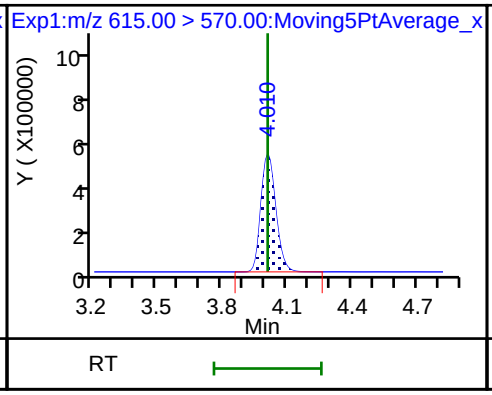
31 Perfluoroundecanoic acid



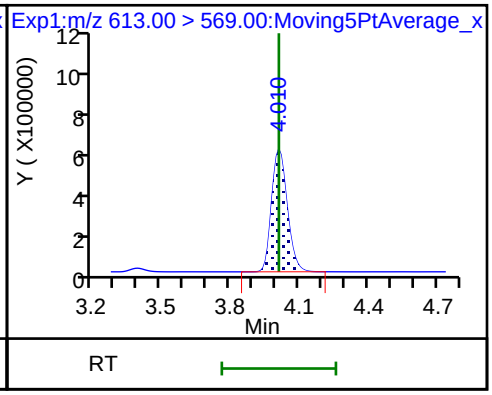
66 11-Chloroeicosafluoro-3-oxaundecan



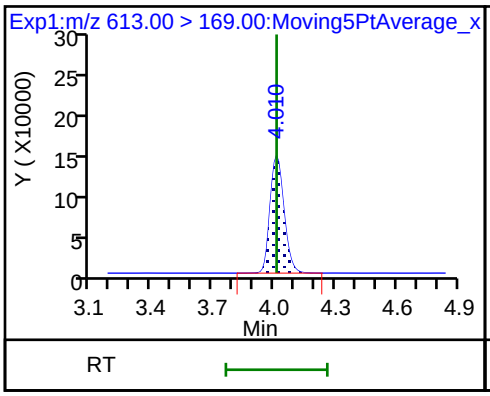
D 36 13C2 PFDoA



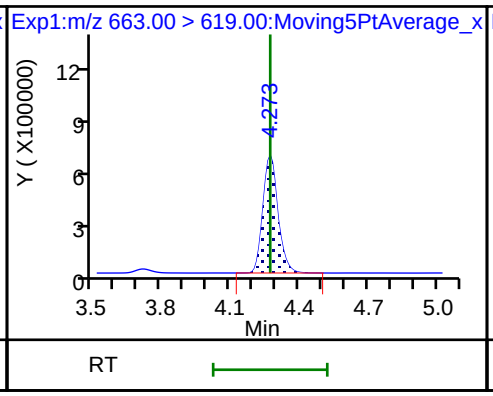
37 Perfluorododecanoic acid



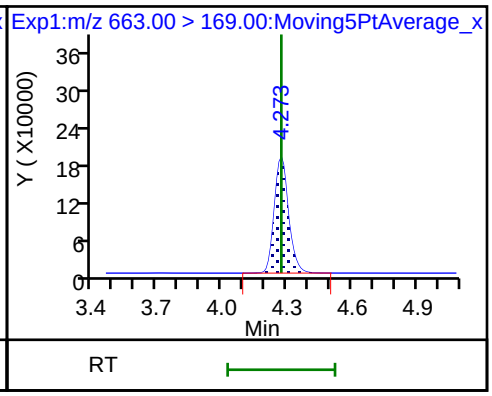
37 Perfluorododecanoic acid



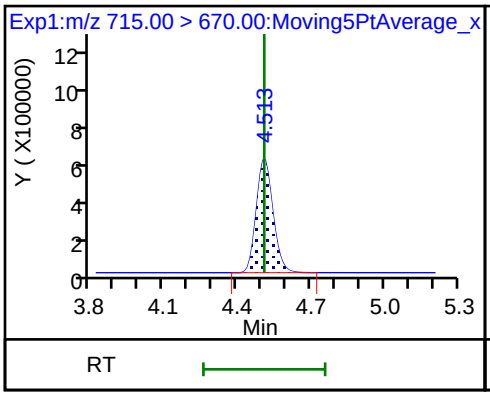
41 Perfluorotridecanoic acid



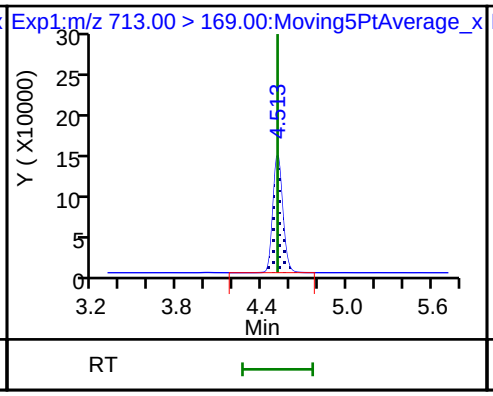
41 Perfluorotridecanoic acid



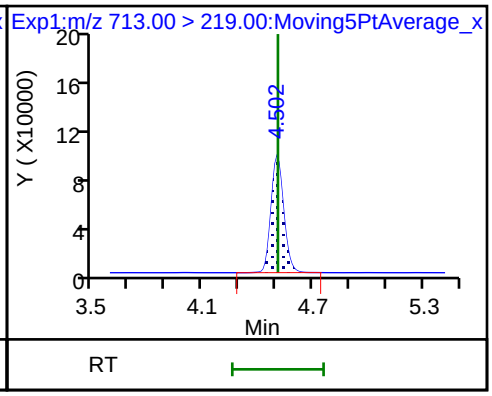
D 43 13C2-PFTeDA



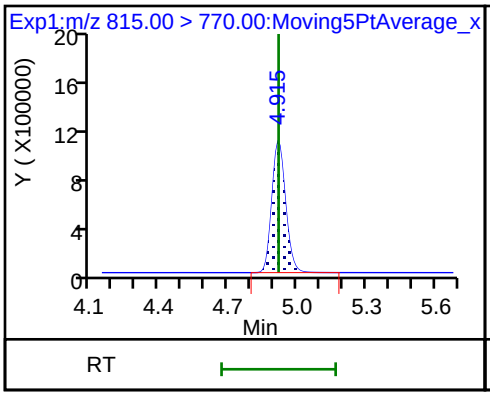
42 Perfluorotetradecanoic acid



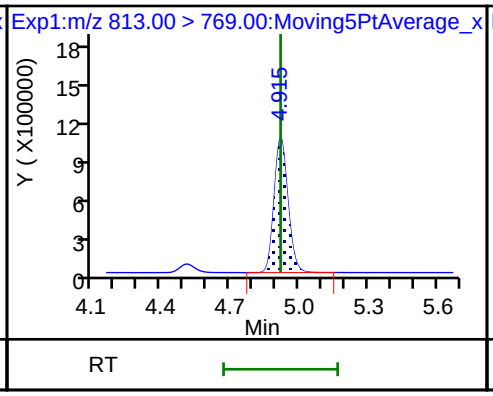
42 Perfluorotetradecanoic acid



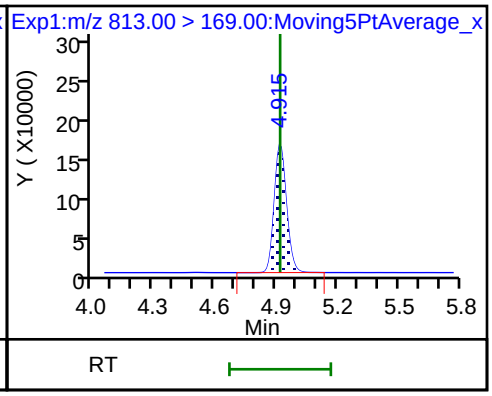
D 44 13C2-PFHxDA



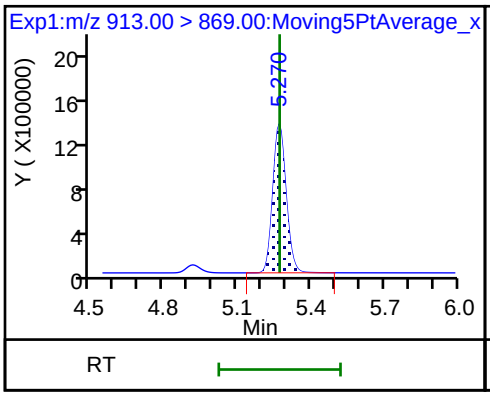
45 Perfluorohexadecanoic acid



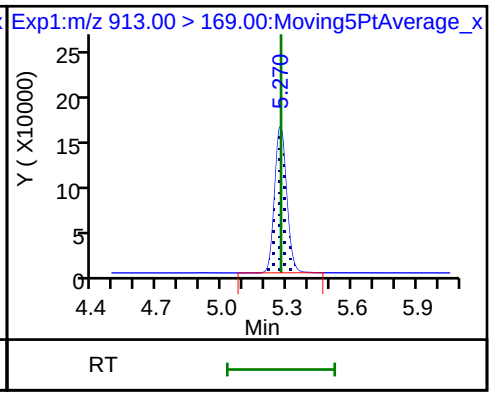
45 Perfluorohexadecanoic acid



46 Perfluorooctadecanoic acid



46 Perfluorooctadecanoic acid



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_007.d
Lims ID: IC L6 Full
Client ID:
Sample Type: IC Calib Level: 6
Inject. Date: 11-Jul-2018 15:30:51 ALS Bottle#: 15 Worklist Smp#: 7
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L6-FULL
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-A8_N*sub32

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180711-60919.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 11-Jul-2018 16:33:48 Calib Date: 11-Jul-2018 15:38:42
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK024

First Level Reviewer: westendorfc Date: 11-Jul-2018 16:16:59

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.430	1.431	-0.001	0.536	5244451	2.60		104	26067	
2 Perfluorobutyric acid										
212.90 > 169.00	1.430	1.431	-0.001	1.000	10623913	5.14		103	4269	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.712	1.702	0.010	0.995	8699476	4.80		96.0	3536	
D 3 13C5-PFPeA										
267.90 > 223.00	1.721	1.702	0.019	0.645	3734969	2.67		107	45652	
D 47 13C3-PFBS										
301.90 > 83.00	1.757	1.748	0.009	0.659	85755	2.44		105	556	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.757	1.751	0.006	1.000	12546505	4.45		101	80798	
298.90 > 99.00	1.757	1.751	0.006	1.000	5222453		2.40(1.25-3.74)	101	56269	
61 1H,1H,2H,2H-perfluorohexanesulfoni										
327.00 > 307.00	1.960	1.962	-0.002	1.116	2260293	4.71		101	66860	
D 60 M2-4:2FTS										
329.00 > 81.00	1.960	1.962	-0.002	0.735	448621	2.37		102	7916	
D 7 13C2 PFHxA										
315.00 > 270.00	2.005	1.996	0.009	0.751	3887868	2.57		103	56861	
6 Perfluorohexanoic acid										
313.00 > 269.00	2.005	1.998	0.007	1.000	7978958	4.98		99.7	16483	
313.00 > 119.00	2.005	1.998	0.007	1.000	733692		10.88(5.03-15.10)	99.7	14111	
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.027	2.022	0.005	1.154	12185262	4.73		101	130724	
349.00 > 99.00	2.027	2.022	0.005	1.154	4447227		2.74(1.36-4.07)	101	59105	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.095	2.093	0.002	0.785	274060	2.55		102	6131	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
67 Perfluoro(2-propoxypropanoic) acid										
329.10 > 285.00	2.095	2.095	0.0	1.000	1554085	5.34		107	9565	
D 9 13C4-PFHpA										
367.00 > 322.00	2.321	2.319	0.002	0.870	3621431	2.60		104	50151	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.321	2.319	0.002	1.000	8030466	4.79		95.9	13754	
363.00 > 169.00	2.321	2.319	0.002	1.000	3099430		2.59(1.13-3.40)	95.9	28534	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.334	2.332	0.002	1.000	10305090	4.44		97.7	24644	
399.00 > 99.00	2.334	2.332	0.002	1.000	3360883		3.07(1.50-4.49)	97.7	16838	
D 11 18O2 PFHxS										
403.00 > 84.00	2.334	2.334	0.0	0.875	4777689	2.42		102	31887	
65 Adona										
377.00 > 251.00	2.360	2.360	0.0	0.779	21793498	4.54		96.5	93035	
377.00 > 85.00	2.360	2.360	0.0	0.779	13380474		1.63(0.84-2.53)	96.5	38099	
D 12 M2-6:2FTS										
429.00 > 81.00	2.645	2.645	0.0	0.991	731524	2.45		103	13338	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.645	2.648	-0.003	1.000	2292840	4.76		100	23614	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.668	2.672	-0.004	1.000	8461263	4.83		96.5	5834	
413.00 > 169.00	2.668	2.672	-0.004	1.000	4348670		1.95(0.84-2.52)	96.5	14778	
* 62 13C2-PFOA										
415.00 > 370.00	2.668	2.672	-0.004		3715082	2.50			46614	
D 14 13C4 PFOA										
417.00 > 372.00	2.668	2.672	-0.004	1.000	3555536	2.50		100	32718	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.675	2.678	-0.003	0.883	9707552	4.95		104	57797	
449.00 > 99.00	2.675	2.678	-0.003	0.883	2601931		3.73(1.94-5.82)	104	34929	
D 18 13C4 PFOS										
503.00 > 80.00	3.028	3.034	-0.006	1.135	3560852	2.46		103	16573	
D 19 13C5 PFNA										
468.00 > 423.00	3.035	3.035	0.0	1.138	3155893	2.48		99.4	35122	
17 Perfluorooctane sulfonic acid										M
499.00 > 80.00	3.035	3.035	0.0	1.002	7822689	4.63		99.9	47978	M
499.00 > 99.00	3.028	3.035	-0.007	1.000	1713466		4.57(2.31-6.93)	99.9	18530	
20 Perfluorononanoic acid										
463.00 > 419.00	3.035	3.036	-0.001	1.000	6996919	5.00		99.9	14728	
463.00 > 169.00	3.035	3.036	-0.001	1.000	1776453		3.94(1.90-5.69)	99.9	57242	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.244	3.245	-0.001	1.071	12796083	4.68		100	60061	
D 21 13C8 FOSA										
506.00 > 78.00	3.365	3.367	-0.002	1.261	5338756	2.56		102	42112	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.365	3.371	-0.006	1.000	10688141	5.08		102	53820	
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.374	3.377	-0.003	1.114	5807858	5.03		105	55859	
549.00 > 99.00	3.374	3.377	-0.003	1.114	2044157		2.84(1.33-3.97)	105	26141	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
25 1H,1H,2H,2H-perfluorodecanesulfoni										
527.00 > 507.00	3.374	3.380	-0.006	1.000	2561237	4.79		100.0	42774	
D 26 M2-8:2FTS										
529.00 > 81.00	3.374	3.380	-0.006	1.265	992916	2.27		94.9	10859	
D 23 13C2 PFDA										
515.00 > 470.00	3.393	3.391	0.002	1.272	2641138	2.37		94.7	24430	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.393	3.392	0.001	1.000	5773802	5.21		104	35658	
513.00 > 169.00	3.393	3.392	0.001	1.000	975368		5.92(2.36-7.09)	104	36128	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.542	3.544	-0.002	1.328	1218514	2.67		107	18907	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.542	3.548	-0.006	1.000	2377396	4.95		99.0	15134	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.701	3.701	0.0	1.222	4963395	4.96		103	171868	
599.00 > 99.00	3.701	3.701	0.0	1.222	1591413		3.12(1.39-4.16)	103	25545	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.712	3.710	0.002	1.391	1179674	2.52		101	2782	
D 30 13C2 PFUnA										
565.00 > 520.00	3.712	3.716	-0.004	1.391	2361908	2.54		101	30441	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.712	3.718	-0.006	1.000	2183486	5.23		105	52082	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.712	3.718	-0.006	1.000	3694320	4.77		95.4	15018	
563.00 > 169.00	3.712	3.718	-0.006	1.000	987463		3.74(2.12-6.36)	95.4	29138	
66 11-Chloroeicosafluoro-3-oxaundecan										
631.00 > 451.00	3.869	3.874	-0.005	1.278	18152128	4.59		97.5	108382	
D 36 13C2 PFDoA										
615.00 > 570.00	4.002	4.009	-0.007	1.500	2508500	2.60		104	17566	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.002	4.011	-0.009	1.000	5437907	4.96		99.3	3341	
613.00 > 169.00	4.002	4.011	-0.009	1.000	1255499		4.33(2.13-6.40)	99.3	21823	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.271	4.273	-0.002	1.067	5412702	5.05		101	2553	
663.00 > 169.00	4.271	4.273	-0.002	1.067	1682812		3.22(1.25-3.76)	101	21504	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.501	4.508	-0.007	1.687	2597628	2.59		104	14814	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.501	4.508	-0.007	1.000	1344804	4.97		99.5	16596	
713.00 > 219.00	4.501	4.508	-0.007	1.000	959226		1.40(0.71-2.13)	99.5	12659	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.914	4.918	-0.004	1.842	4082261	2.56		102	14471	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.914	4.918	-0.004	1.000	7932024	5.09		102	1899	
813.00 > 169.00	4.914	4.918	-0.004	1.000	1261923		6.29(2.86-8.58)	102	9525	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.262	5.271	-0.009	1.071	9282794	4.97		99.5	1626	
913.00 > 169.00	5.262	5.271	-0.009	1.071	1136842		8.17(3.83-11.48)	99.5	7354	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

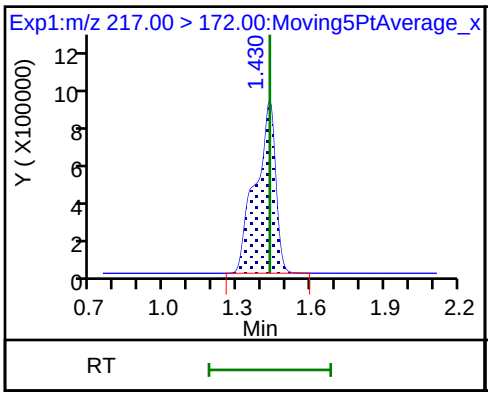
LCPFC_LL6_00006 Amount Added: 1.00 Units: mL

Report Date: 11-Jul-2018 16:33:50 Chrom Revision: 2.2 07-Jun-2018 07:41:54

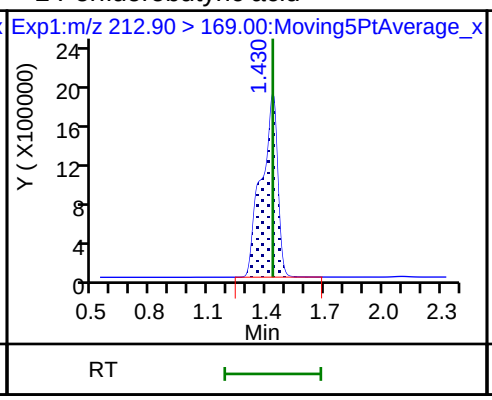
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_007.d
Injection Date: 11-Jul-2018 15:30:51 Instrument ID: A8_N
Lims ID: IC L6 Full
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 15 Worklist Smp#: 7
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC ICAL

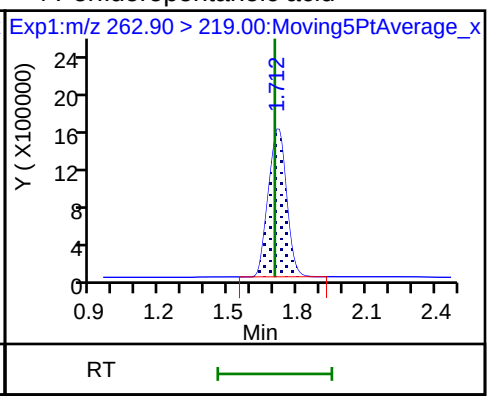
D 1 13C4 PFBA



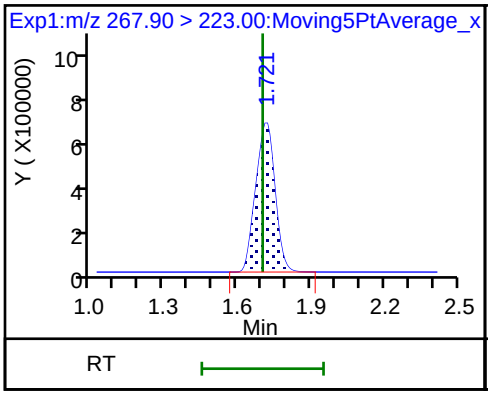
2 Perfluorobutyric acid



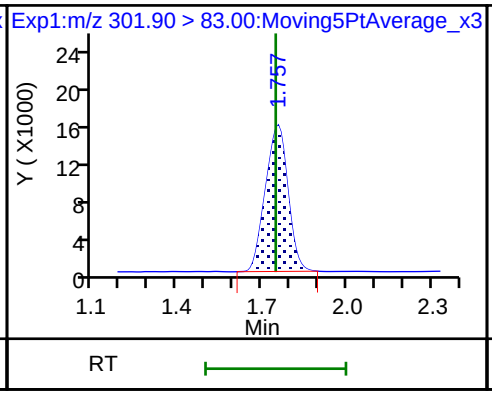
4 Perfluoropentanoic acid



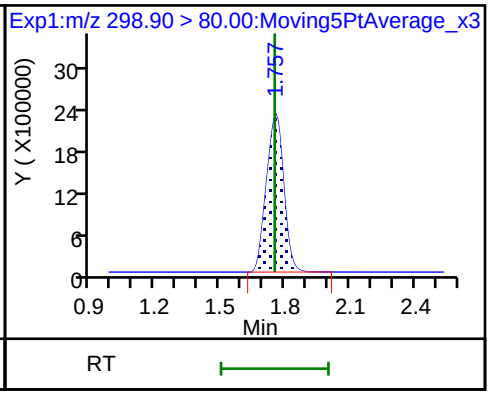
D 3 13C5-PFPeA



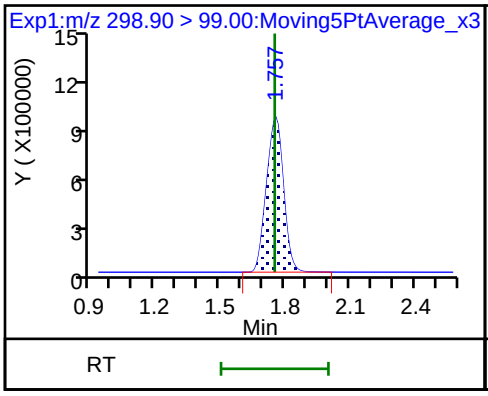
D 47 13C3-PFBS



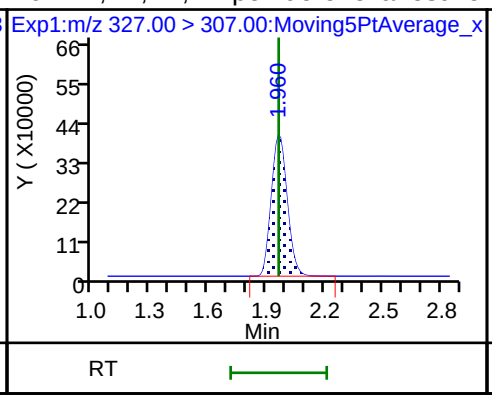
5 Perfluorobutanesulfonic acid



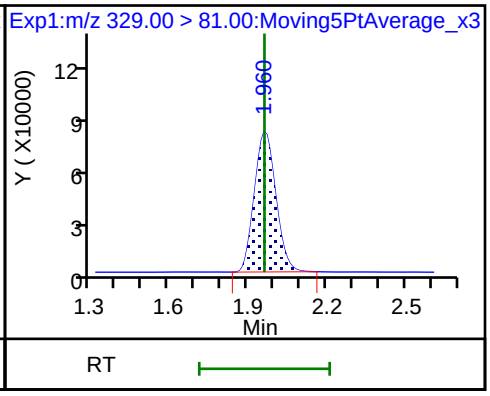
5 Perfluorobutanesulfonic acid



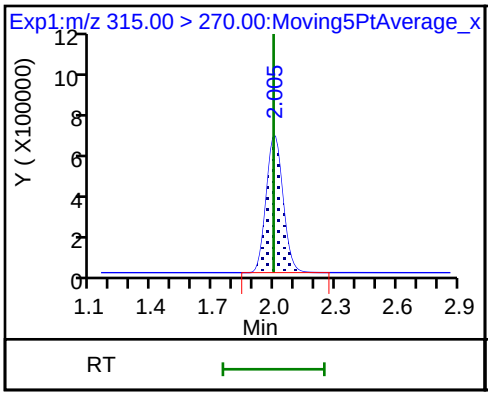
61 1H,1H,2H,2H-perfluorohexanesulfon



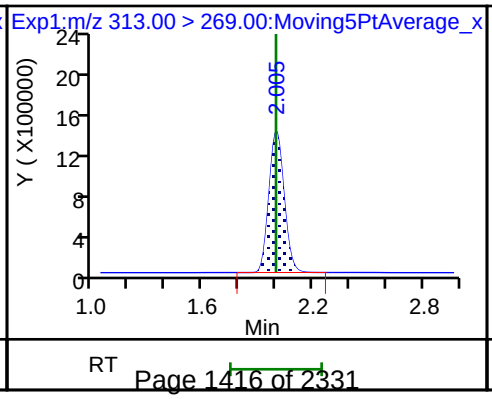
D 60 M2-4:2FTS



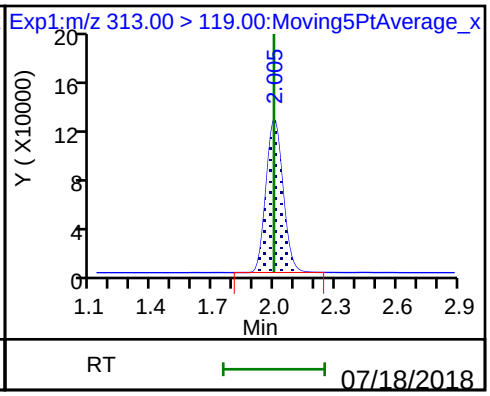
D 7 13C2 PFHxA



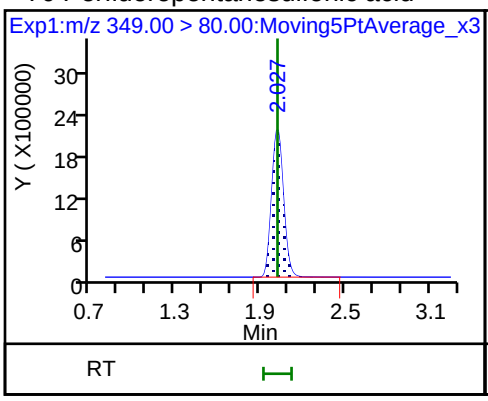
6 Perfluorohexanoic acid



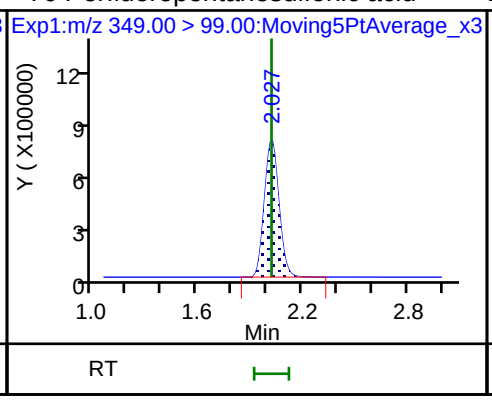
6 Perfluorohexanoic acid



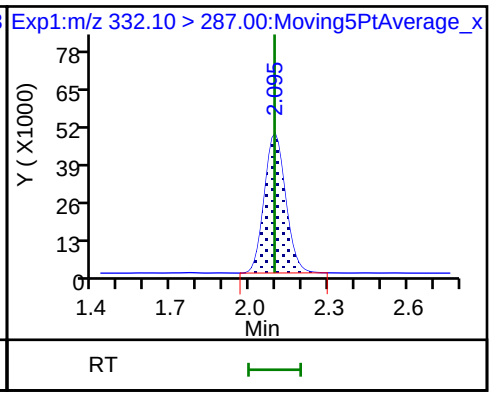
70 Perfluoropentanesulfonic acid



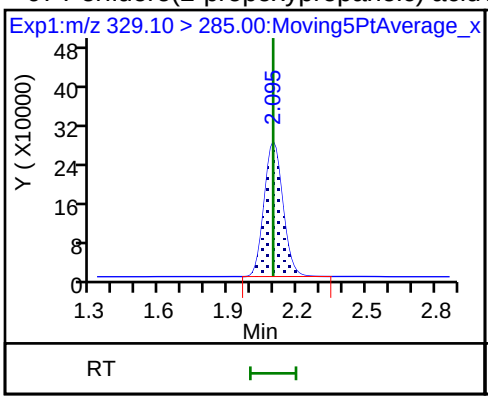
70 Perfluoropentanesulfonic acid



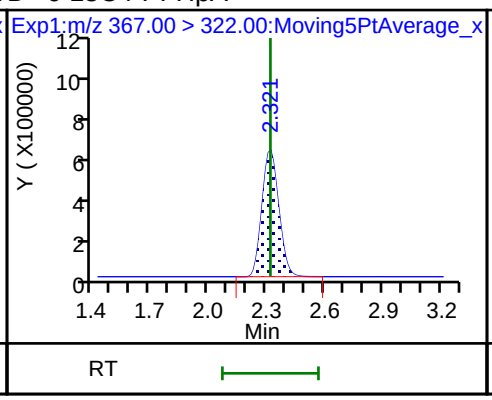
D 64 13C3 HFPO-DA



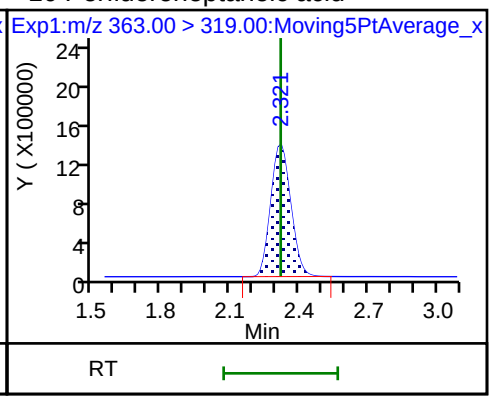
67 Perfluoro(2-propoxypropanoic) acid



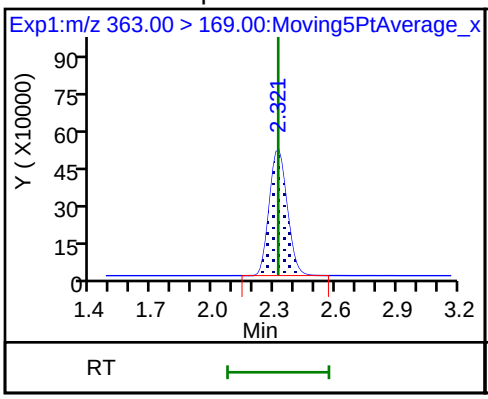
D 9 13C4-PFHpA



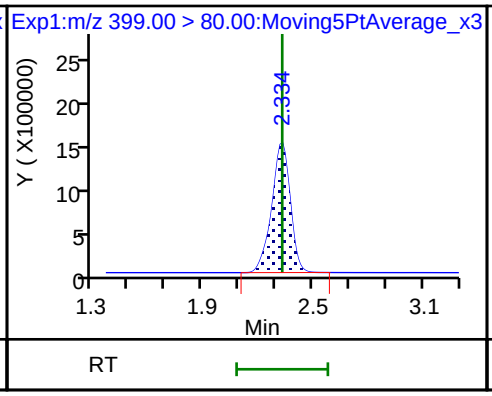
10 Perfluoroheptanoic acid



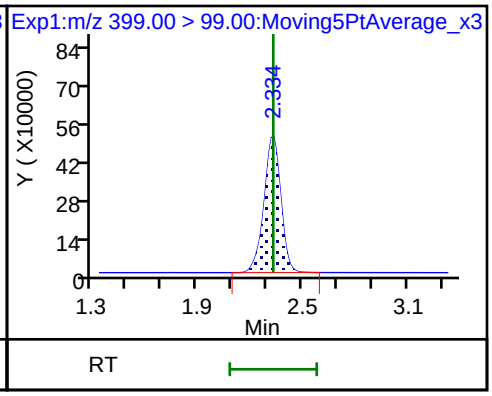
10 Perfluoroheptanoic acid



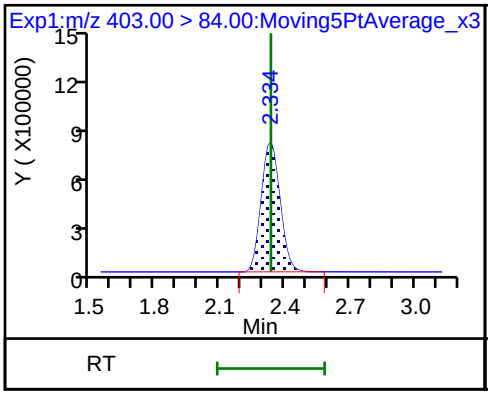
8 Perfluorohexanesulfonic acid



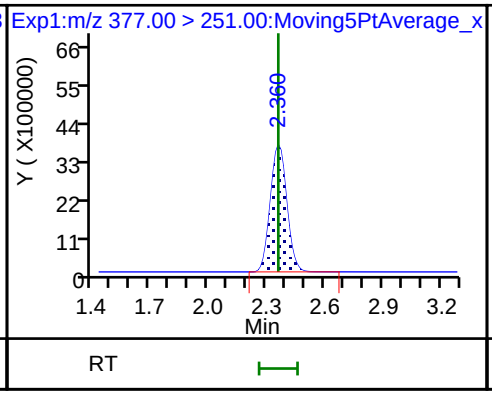
8 Perfluorohexanesulfonic acid



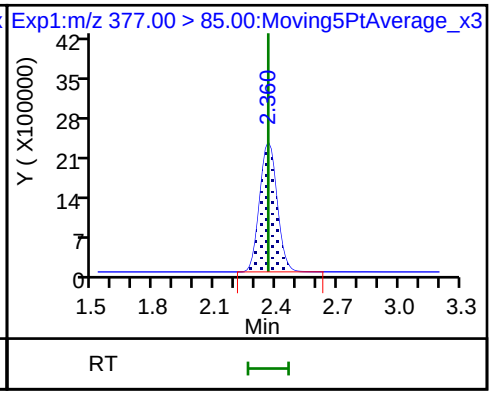
D 11 18O2 PFHxS



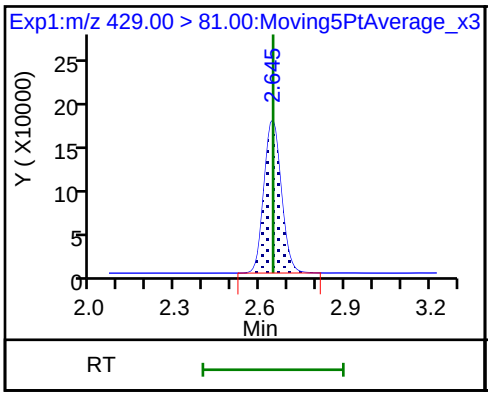
65 Adona



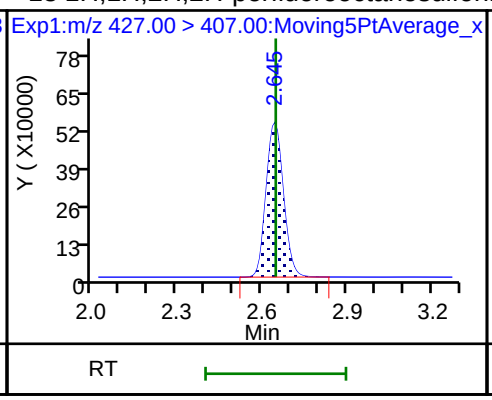
65 Adona



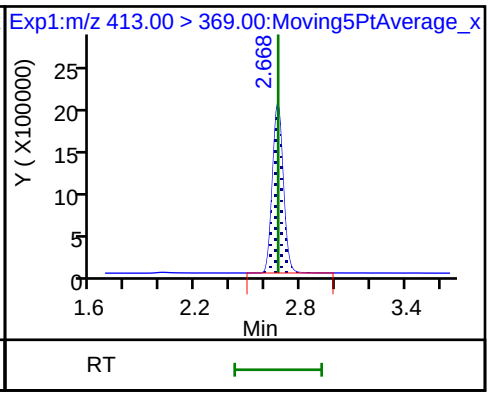
D 12 M2-6:2FTS



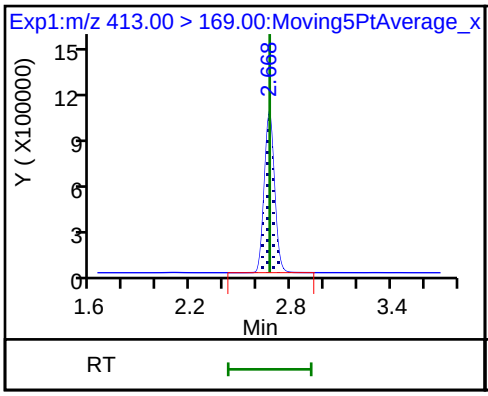
13 1H,1H,2H,2H-perfluorooctanesulfoni



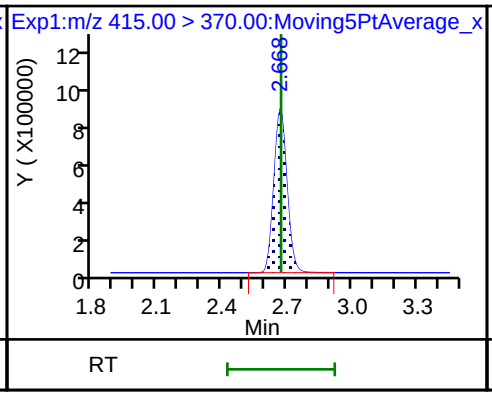
15 Perfluorooctanoic acid



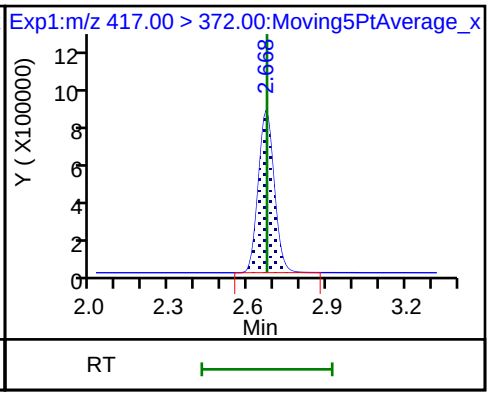
15 Perfluorooctanoic acid



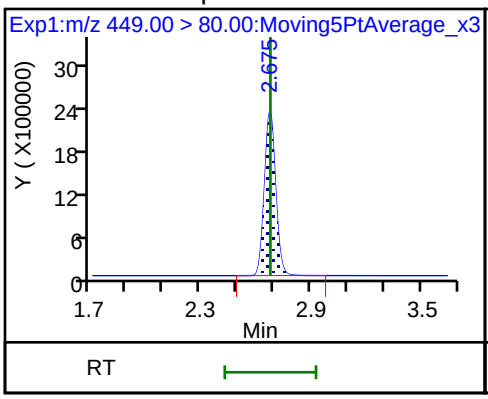
* 62 13C2-PFOA



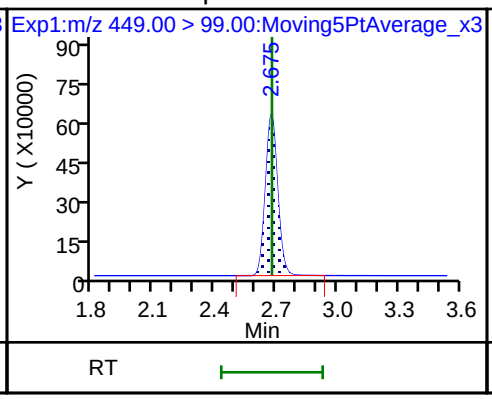
D 14 13C4 PFOA



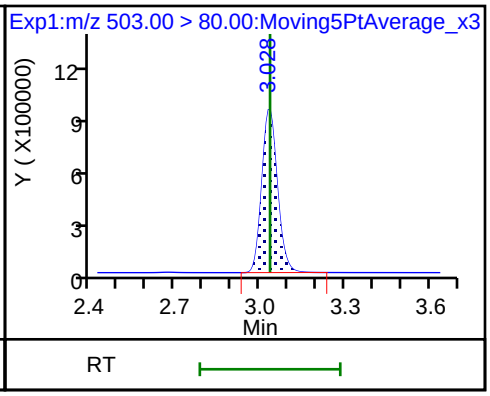
16 Perfluoroheptanesulfonic acid



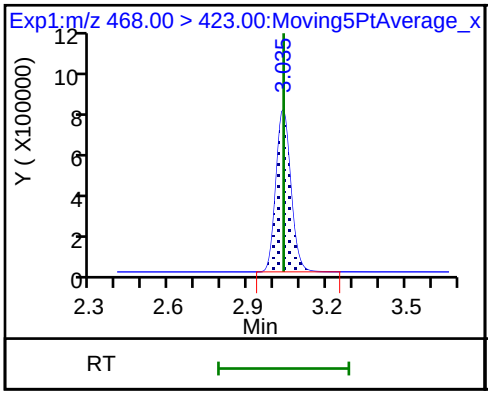
16 Perfluoroheptanesulfonic acid



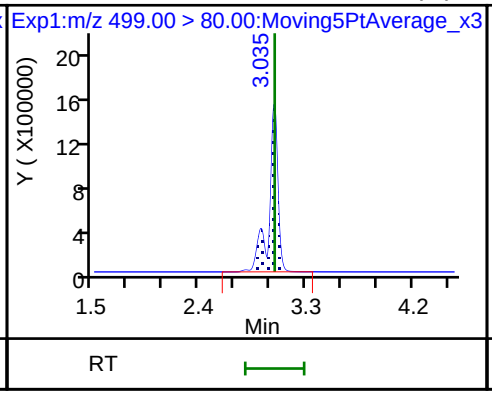
D 18 13C4 PFOS



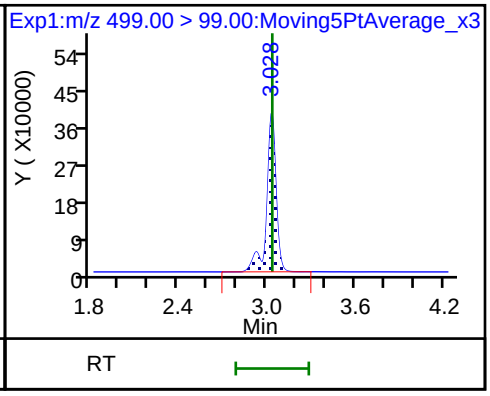
D 19 13C5 PFNA



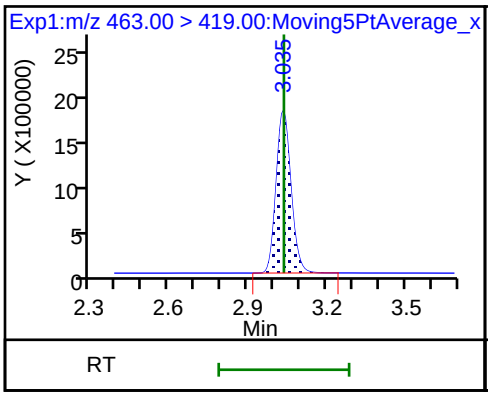
17 Perfluorooctane sulfonic acid (M)



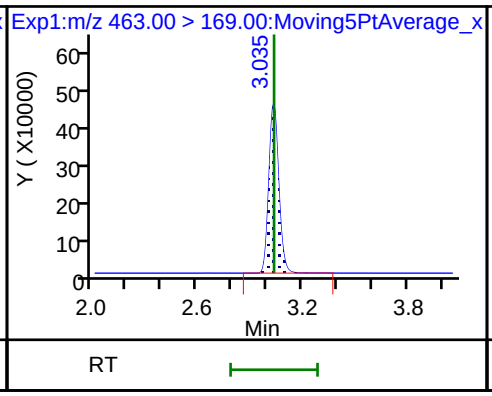
17 Perfluorooctane sulfonic acid



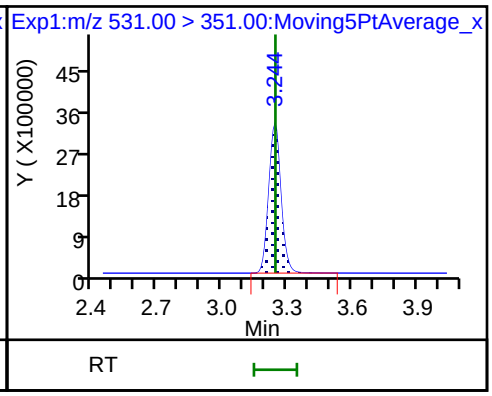
20 Perfluorononanoic acid



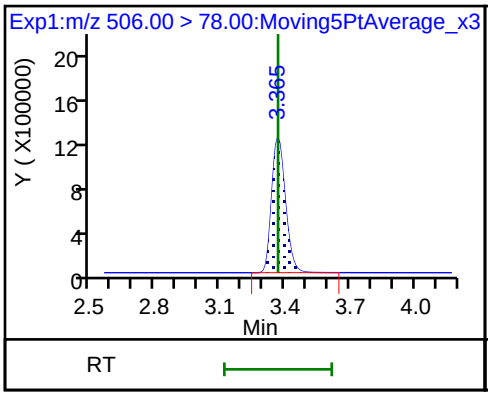
20 Perfluorononanoic acid



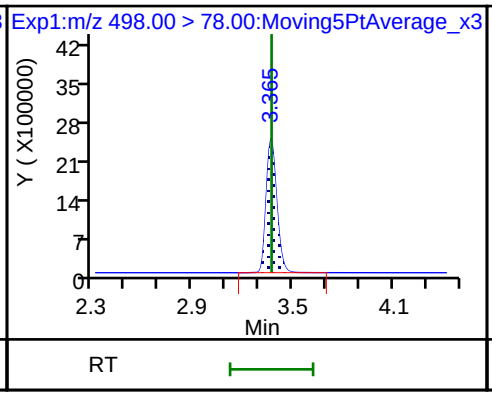
69 9-Chlorohexadecafluoro-3-oxanonane



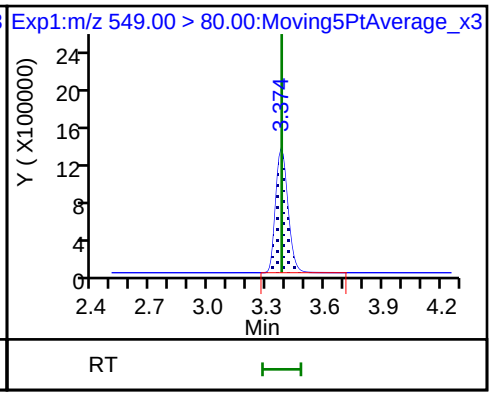
D 21 13C8 FOSA



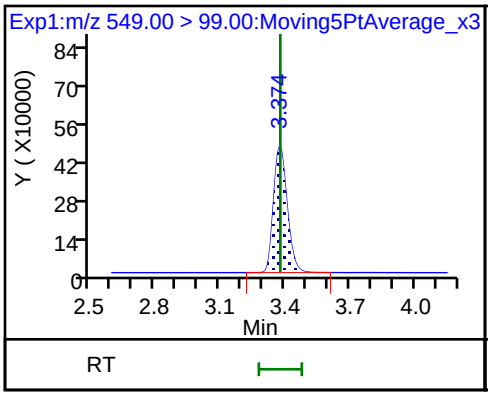
22 Perfluorooctane Sulfonamide



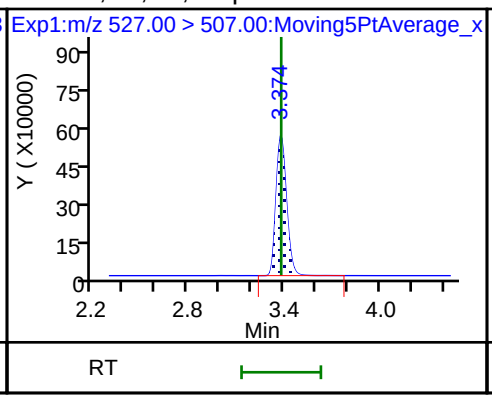
68 Perfluorononanesulfonic acid



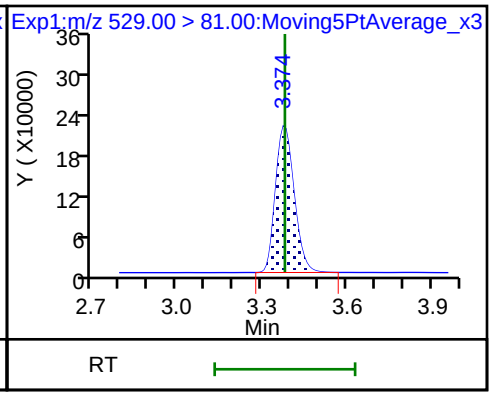
68 Perfluorononanesulfonic acid



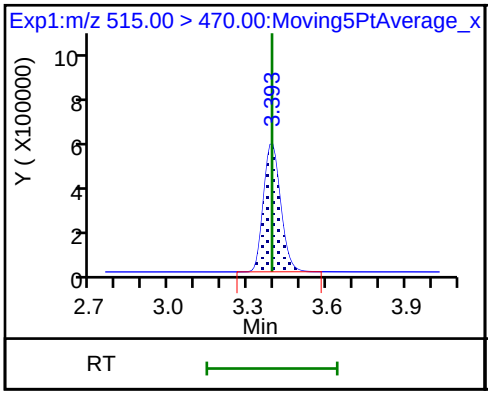
25 1H,1H,2H,2H-perfluorodecanesulfon



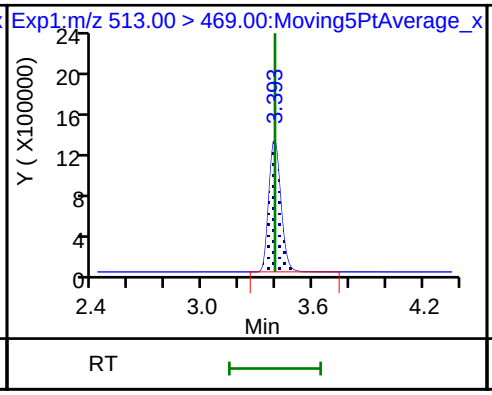
D 26 M2-8:2FTS



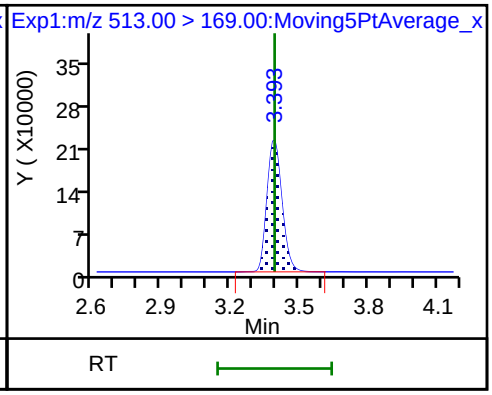
D 23 13C2 PFDA



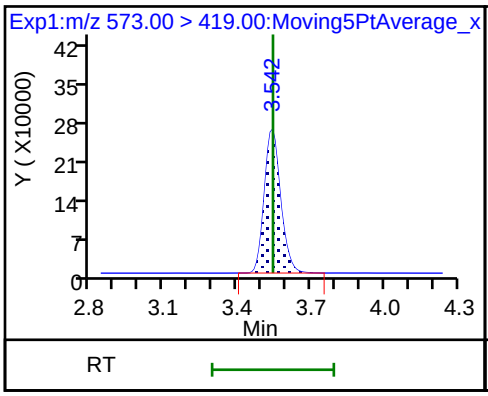
24 Perfluorodecanoic acid



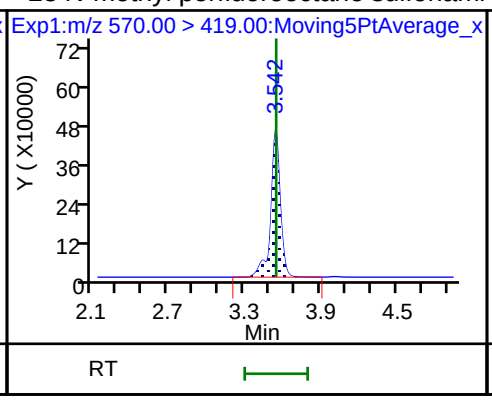
24 Perfluorodecanoic acid



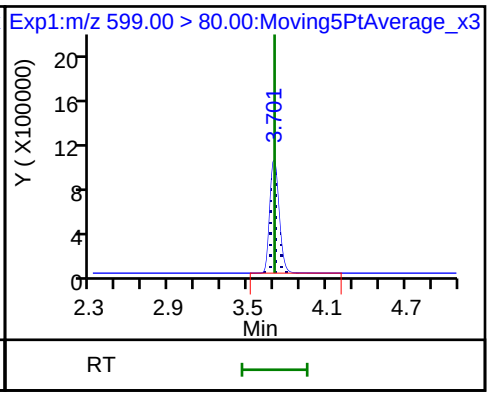
D 27 d3-NMeFOSAA



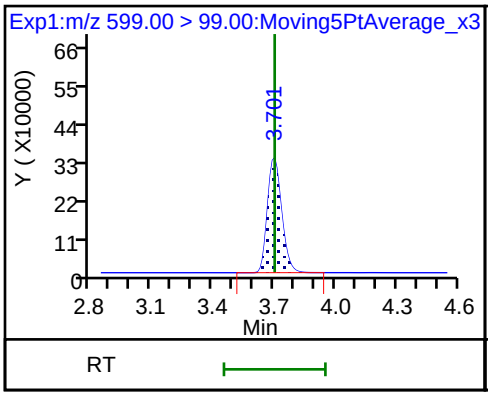
28 N-methyl perfluorooctane sulfonami



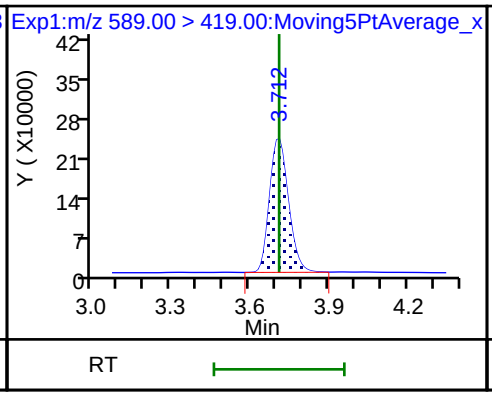
29 Perfluorodecane Sulfonic acid



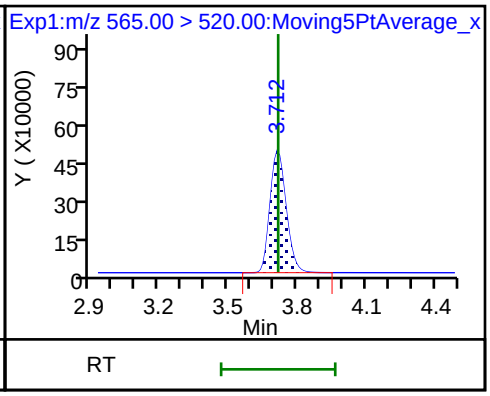
29 Perfluorodecane Sulfonic acid



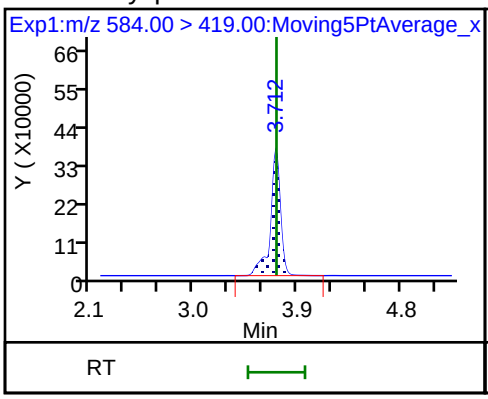
D 32 d5-NEtFOSAA



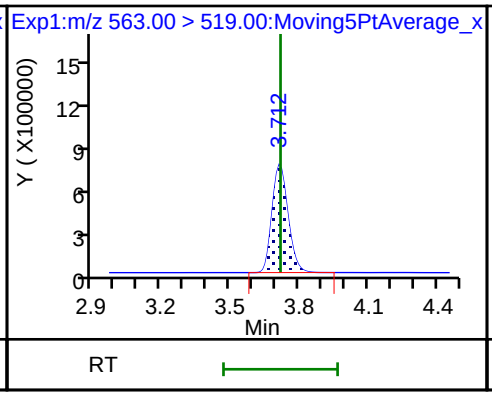
D 30 13C2 PFUnA



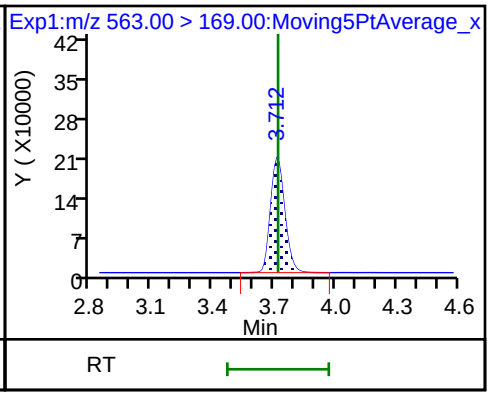
33 N-ethyl perfluorooctane sulfonamid



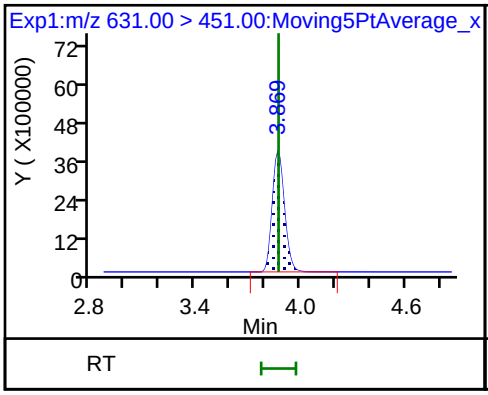
31 Perfluoroundecanoic acid



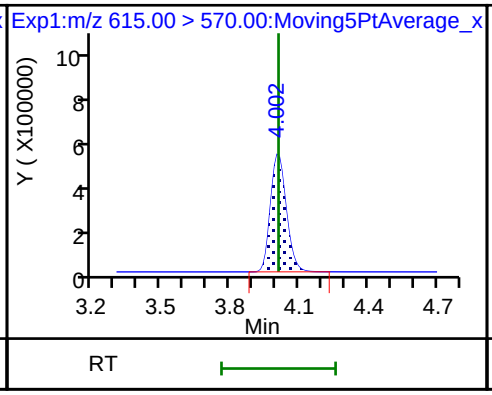
31 Perfluoroundecanoic acid



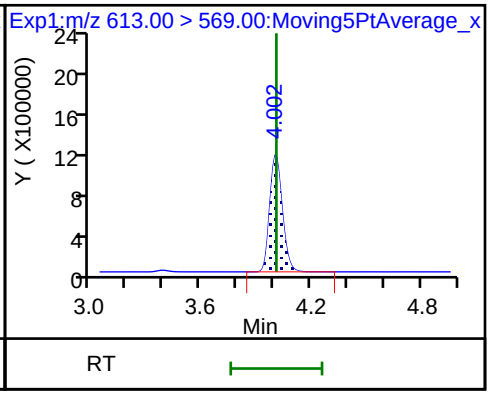
66 11-Chloroeicosafluoro-3-oxaundecan



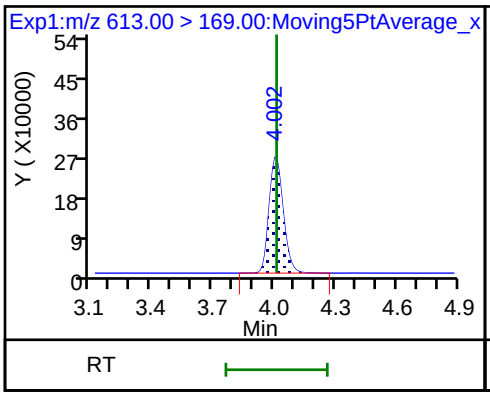
D 36 13C2 PFDoA



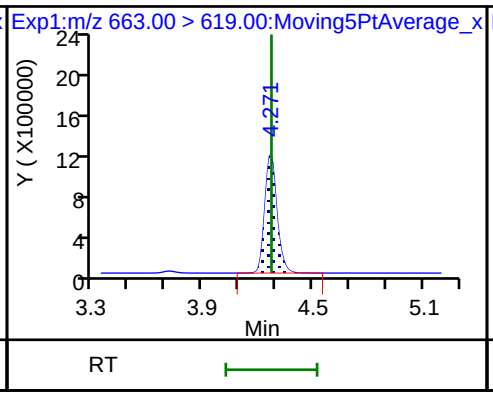
37 Perfluorododecanoic acid



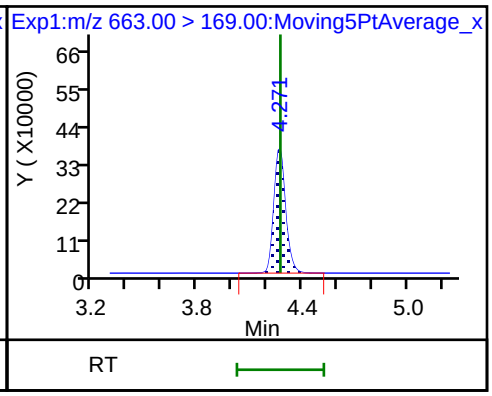
37 Perfluorododecanoic acid



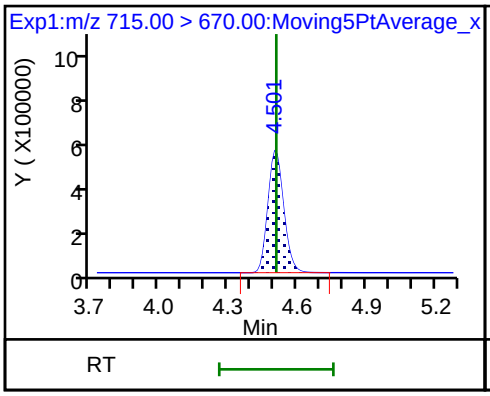
41 Perfluorotridecanoic acid



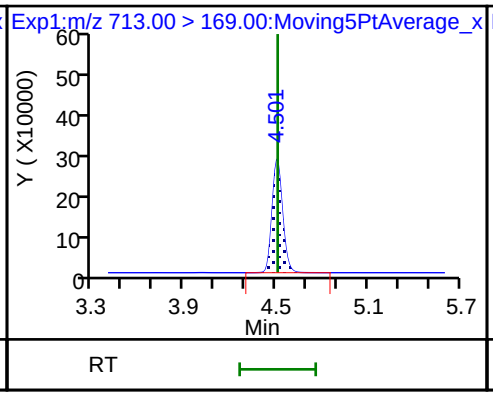
41 Perfluorotridecanoic acid



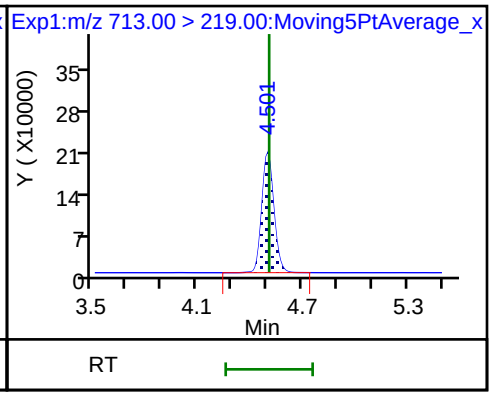
D 43 13C2-PFTeDA



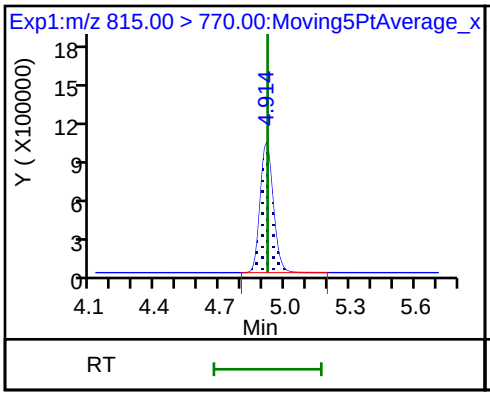
42 Perfluorotetradecanoic acid



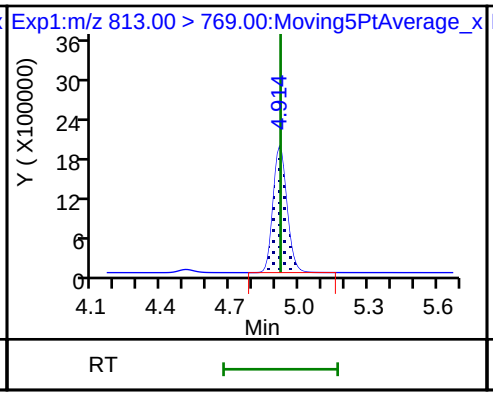
42 Perfluorotetradecanoic acid



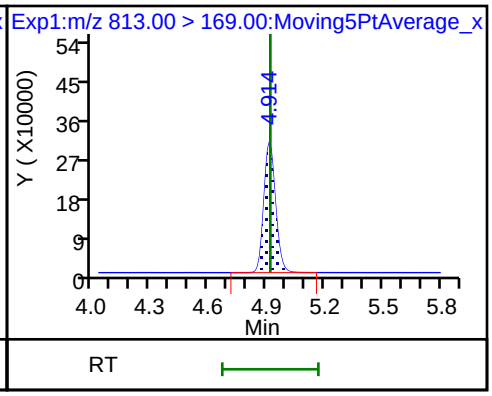
D 44 13C2-PFHxDA



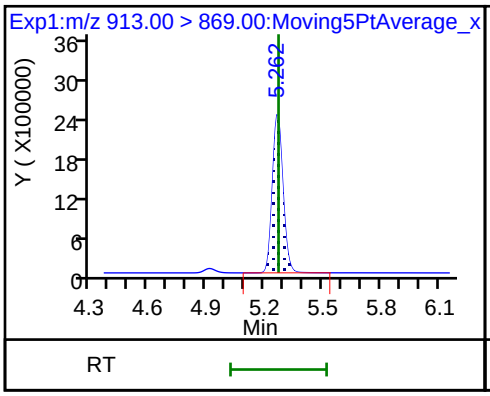
45 Perfluorohexadecanoic acid



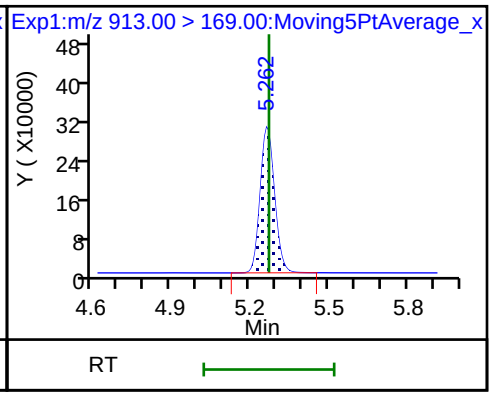
45 Perfluorohexadecanoic acid



46 Perfluorooctadecanoic acid



46 Perfluorooctadecanoic acid



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

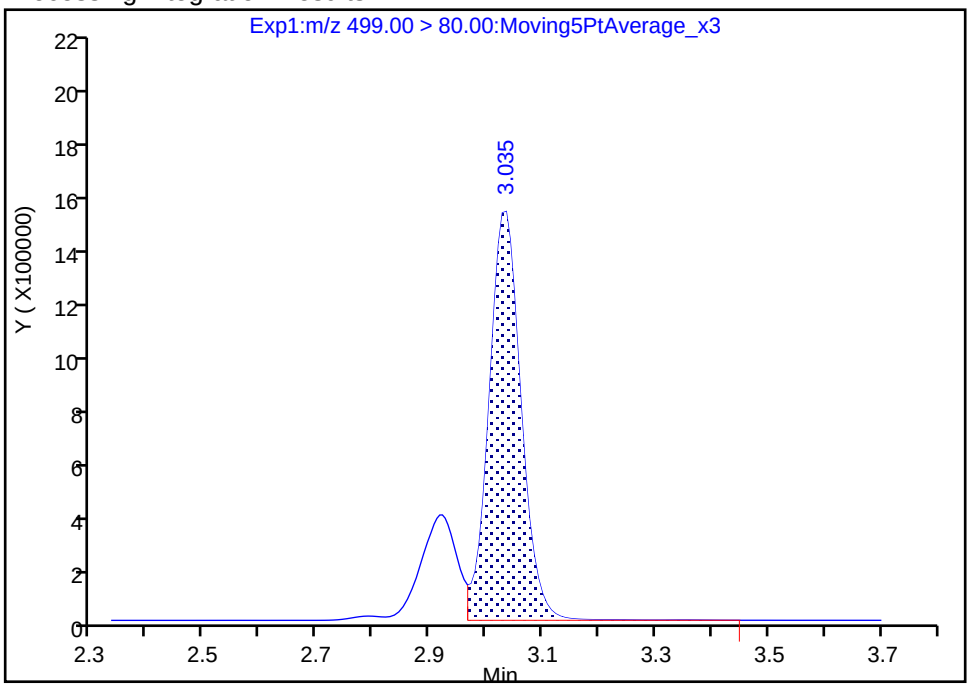
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_007.d				
Injection Date:	11-Jul-2018 15:30:51	Instrument ID:	A8_N		
Lims ID:	IC L6 Full				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	15	Worklist Smp#:	7
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

17 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

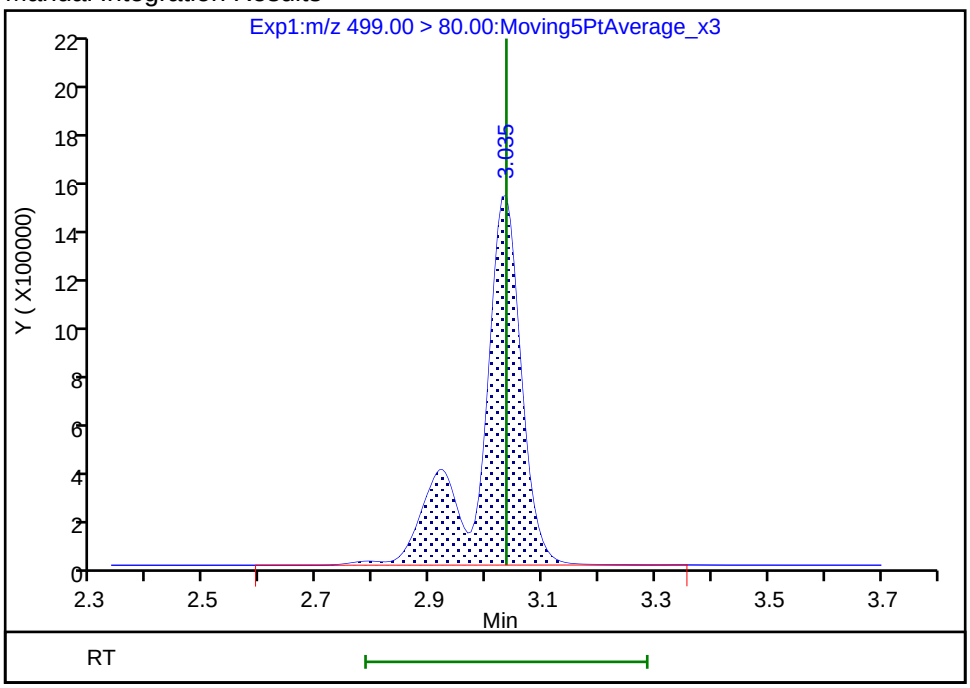
Processing Integration Results

RT: 3.04
Area: 6040692
Amount: 3.698173
Amount Units: ng/ml



Manual Integration Results

RT: 3.04
Area: 7822689
Amount: 4.633497
Amount Units: ng/ml



Reviewer: westendorfc, 11-Jul-2018 16:16:50

Audit Action: Manually Integrated Audit Reason: Isomers

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d
Lims ID: IC L7 Full
Client ID:
Sample Type: IC Calib Level: 7
Inject. Date: 11-Jul-2018 15:38:42 ALS Bottle#: 16 Worklist Smp#: 8
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L7-FULL
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-A8_N*sub32

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180711-60919.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 11-Jul-2018 16:33:54 Calib Date: 11-Jul-2018 15:38:42
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK024

First Level Reviewer: westendorfc Date: 11-Jul-2018 16:17:28

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										M
217.00 > 172.00	1.430	1.431	-0.001	0.536	5781235	2.84		114	46738	M
2 Perfluorobutyric acid										
212.90 > 169.00	1.430	1.431	-0.001	1.000	22835400	10.0		100	8382	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.712	1.702	0.010	1.000	17766142	9.44		94.4	8701	
D 3 13C5-PFPeA										
267.90 > 223.00	1.712	1.702	0.010	0.641	3880280	2.75		110	51803	
D 47 13C3-PFBS										
301.90 > 83.00	1.757	1.748	0.009	0.658	93739	2.64		113	603	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.757	1.751	0.006	1.000	25119744	8.14		92.1	143878	
298.90 > 99.00	1.757	1.751	0.006	1.000	11268668		2.23(1.25-3.74)	92.1	90842	
61 1H,1H,2H,2H-perfluorohexanesulfoni										
327.00 > 307.00	1.960	1.962	-0.002	1.116	4685101	8.94		95.7	120229	
D 60 M2-4:2FTS										
329.00 > 81.00	1.960	1.962	-0.002	0.734	476788	2.50		107	7861	
D 7 13C2 PFHxA										
315.00 > 270.00	1.993	1.996	-0.003	0.747	4142603	2.72		109	52582	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.993	1.998	-0.005	1.000	16543784	9.70		97.0	39030	
313.00 > 119.00	1.993	1.998	-0.005	1.000	1555324		10.64(5.03-15.10)	97.0	39292	
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.027	2.022	0.005	1.154	23955798	8.51		90.8	231016	
349.00 > 99.00	2.016	2.022	-0.006	1.147	9657203		2.48(1.36-4.07)	90.8	85549	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.095	2.093	0.002	0.785	310846	2.86		115	9564	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
67 Perfluoro(2-propoxypropanoic) acid										
329.10 > 285.00	2.095	2.095	0.0	1.000	3276527	9.93		99.3	16809	
D 9 13C4-PFHpA										
367.00 > 322.00	2.321	2.319	0.002	0.869	3701454	2.63		105	41327	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.321	2.319	0.002	1.000	16011091	9.35		93.5	22967	
363.00 > 169.00	2.321	2.319	0.002	1.000	6469605		2.47(1.13-3.40)	93.5	37203	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.334	2.332	0.002	1.000	20622639	8.72		95.8	27789	
399.00 > 99.00	2.334	2.332	0.002	1.000	7136072		2.89(1.50-4.49)	95.8	21998	
D 11 18O2 PFHxS										
403.00 > 84.00	2.334	2.334	0.0	0.874	4872001	2.45		103	48134	
65 Adona										
377.00 > 251.00	2.360	2.360	0.0	0.779	37073934	7.05		74.9	260552	
377.00 > 85.00	2.360	2.360	0.0	0.779	24804188		1.49(0.84-2.53)	74.9	72896	
D 12 M2-6:2FTS										
429.00 > 81.00	2.638	2.645	-0.007	0.988	704932	2.34		98.5	9224	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.638	2.648	-0.010	1.000	4726825	10.2		107	43601	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.670	2.672	-0.002	1.000	16291262	9.05		90.4	9267	
413.00 > 169.00	2.670	2.672	-0.002	1.000	8897459		1.83(0.84-2.52)	90.4	24139	
* 62 13C2-PFOA										
415.00 > 370.00	2.670	2.672	-0.002		3749283	2.50			40966	
D 14 13C4 PFOA										
417.00 > 372.00	2.670	2.672	-0.002	1.000	3653899	2.55		102	33275	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.677	2.678	-0.001	0.883	18718055	8.70		91.4	123136	
449.00 > 99.00	2.677	2.678	-0.001	0.883	5255453		3.56(1.94-5.82)	91.4	44840	
D 18 13C4 PFOS										
503.00 > 80.00	3.030	3.034	-0.004	1.135	3902400	2.67		112	14520	
D 19 13C5 PFNA										
468.00 > 423.00	3.030	3.035	-0.005	1.135	3292167	2.57		103	44769	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.030	3.035	-0.005	1.000	16622900	8.98		96.8	45805	
499.00 > 99.00	3.030	3.035	-0.005	1.000	3752707		4.43(2.31-6.93)	96.8	30387	
20 Perfluorononanoic acid										
463.00 > 419.00	3.030	3.036	-0.006	1.000	13910795	9.52		95.2	26218	
463.00 > 169.00	3.030	3.036	-0.006	1.000	3390503		4.10(1.90-5.69)	95.2	43123	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.239	3.245	-0.006	1.069	25098628	8.37		89.8	130574	
D 21 13C8 FOSA										
506.00 > 78.00	3.359	3.367	-0.008	1.258	5176580	2.46		98.3	36605	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.369	3.371	-0.002	1.003	19718955	9.66		96.6	48650	
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.369	3.377	-0.008	1.112	11760635	9.29		96.8	59229	
549.00 > 99.00	3.369	3.377	-0.008	1.112	4506833		2.61(1.33-3.97)	96.8	46788	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
25 1H,1H,2H,2H-perfluorodecanesulfoni										
527.00 > 507.00	3.378	3.380	-0.002	1.000	4682146	9.80		102	45616	
D 26 M2-8:2FTS										
529.00 > 81.00	3.378	3.380	-0.002	1.265	887172	2.01		84.1	13566	
D 23 13C2 PFDA										
515.00 > 470.00	3.387	3.391	-0.004	1.269	2747254	2.44		97.7	29354	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.387	3.392	-0.005	1.000	11148372	9.67		96.7	46551	
513.00 > 169.00	3.387	3.392	-0.005	1.000	2093801		5.32(2.36-7.09)	96.7	35818	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.537	3.544	-0.007	1.325	1276287	2.77		111	18519	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.546	3.548	-0.002	1.003	5272635	10.5		105	26104	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.696	3.701	-0.005	1.220	10109747	9.22		95.7	233743	
599.00 > 99.00	3.696	3.701	-0.005	1.220	3655780		2.77(1.39-4.16)	95.7	30607	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.707	3.710	-0.003	1.389	1167600	2.47		98.9	3307	
D 30 13C2 PFUnA										
565.00 > 520.00	3.718	3.716	0.002	1.393	2308936	2.46		98.3	35962	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.718	3.718	0.0	1.003	4325460	10.5		105	77837	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.718	3.718	0.0	1.000	7405393	9.78		97.8	31141	
563.00 > 169.00	3.718	3.718	0.0	1.000	1896631		3.90(2.12-6.36)	97.8	38242	
66 11-Chloroeicosafluoro-3-oxaundecan										
631.00 > 451.00	3.865	3.874	-0.009	1.275	33050828	7.63		81.0	319283	
D 36 13C2 PFDoA										
615.00 > 570.00	4.008	4.009	-0.001	1.501	2588991	2.66		106	20112	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.008	4.011	-0.003	1.000	11295646	9.99		99.9	7110	
613.00 > 169.00	4.008	4.011	-0.003	1.000	2749190		4.11(2.13-6.40)	99.9	27189	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.271	4.273	-0.002	1.066	10874073	9.83		98.3	5262	
663.00 > 169.00	4.271	4.273	-0.002	1.066	3405769		3.19(1.25-3.76)	98.3	29341	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.501	4.508	-0.007	1.686	2753301	2.72		109	11657	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.501	4.508	-0.007	1.000	2903345	10.1		101	18043	
713.00 > 219.00	4.501	4.508	-0.007	1.000	2052712		1.41(0.71-2.13)	101	16519	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.914	4.918	-0.004	1.841	4200183	2.61		104	13126	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.914	4.918	-0.004	1.000	15144158	9.46		94.6	3241	
813.00 > 169.00	4.914	4.918	-0.004	1.000	2640854		5.73(2.86-8.58)	94.6	12585	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.263	5.271	-0.008	1.071	17950029	9.35		93.5	2884	
913.00 > 169.00	5.263	5.271	-0.008	1.071	2356290		7.62(3.83-11.48)	93.5	10762	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

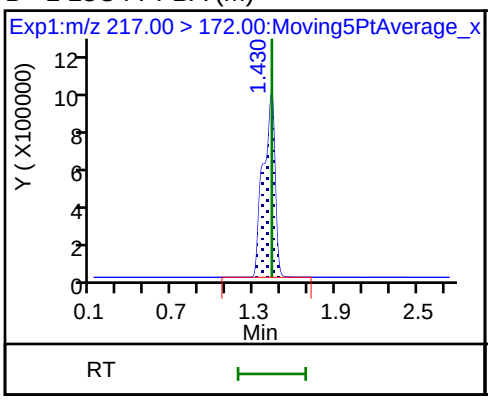
LCPFC_LL7_00005 Amount Added: 1.00 Units: mL

Report Date: 11-Jul-2018 16:33:56 Chrom Revision: 2.2 07-Jun-2018 07:41:54

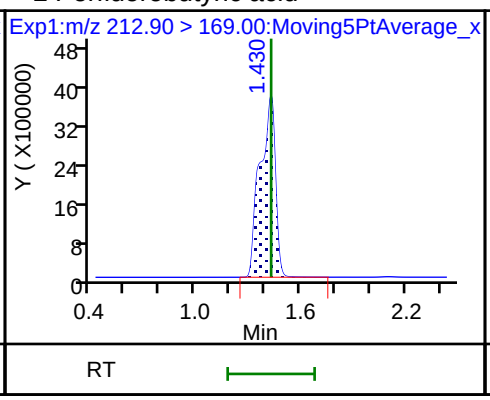
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d
Injection Date: 11-Jul-2018 15:38:42 Instrument ID: A8_N
Lims ID: IC L7 Full
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 16 Worklist Smp#: 8
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC ICAL

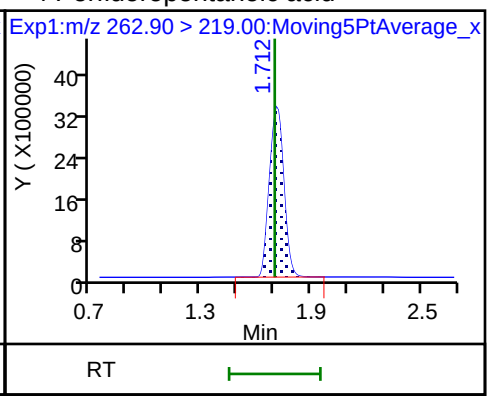
D 1 13C4 PFBA (M)



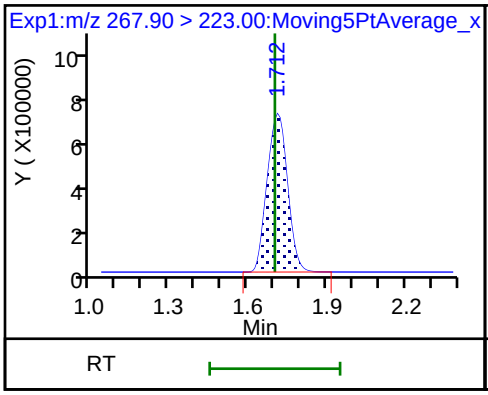
2 Perfluorobutyric acid



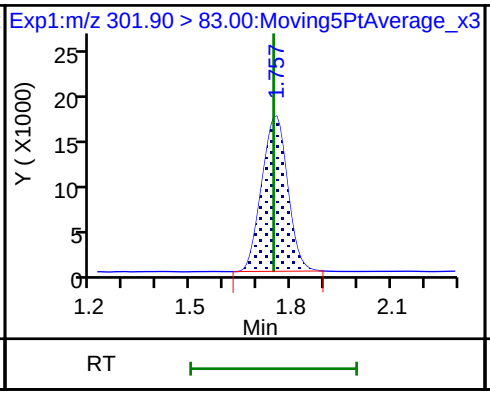
4 Perfluoropentanoic acid



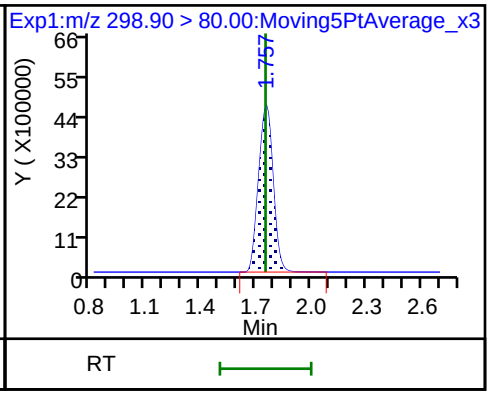
D 3 13C5-PFPeA



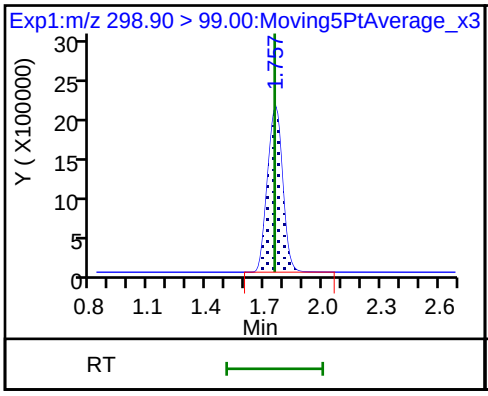
D 47 13C3-PFBS



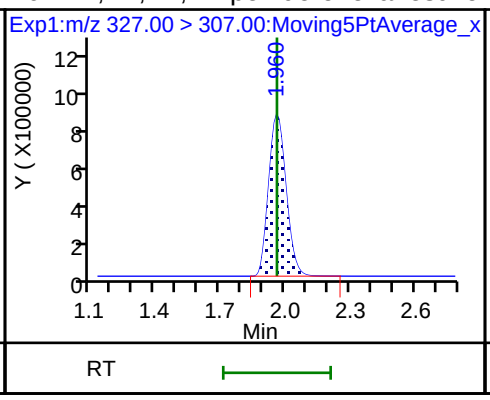
5 Perfluorobutanesulfonic acid



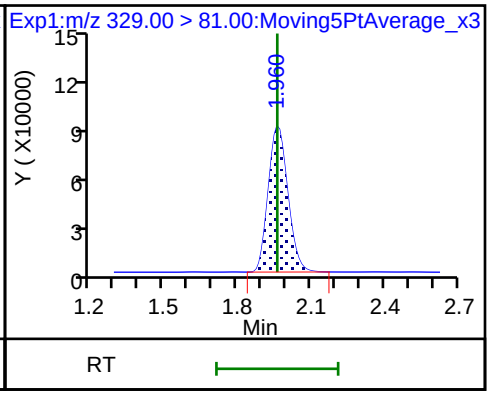
5 Perfluorobutanesulfonic acid



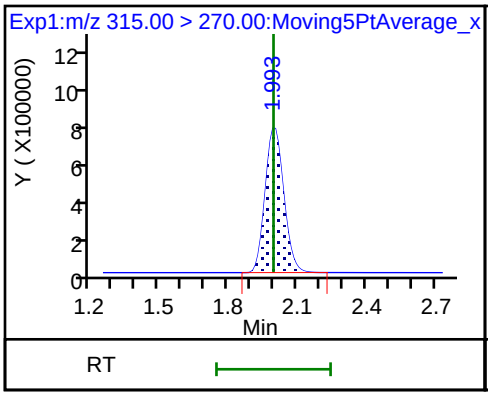
61 1H,1H,2H,2H-perfluorohexanesulfon



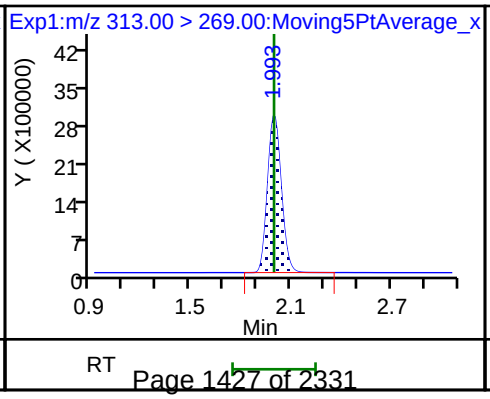
D 60 M2-4:2FTS



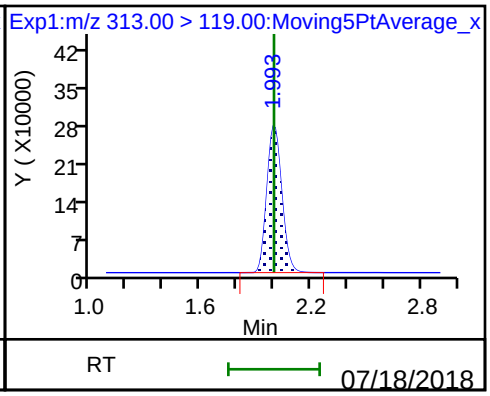
D 7 13C2 PFHxA



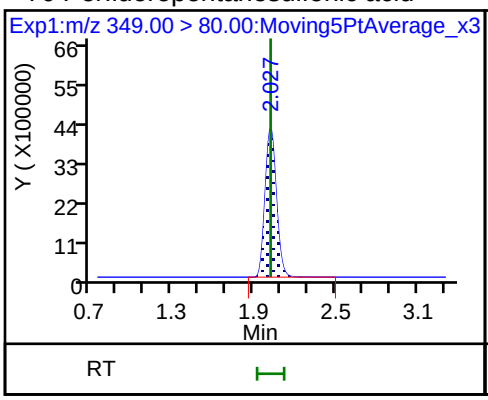
6 Perfluorohexanoic acid



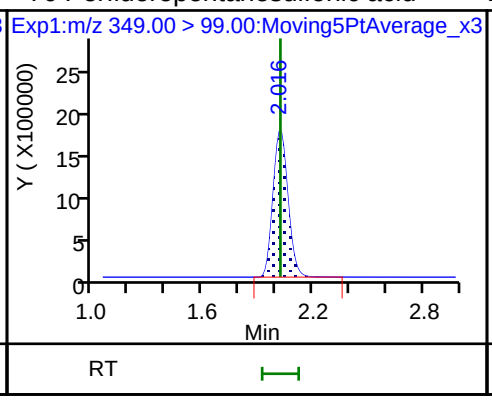
6 Perfluorohexanoic acid



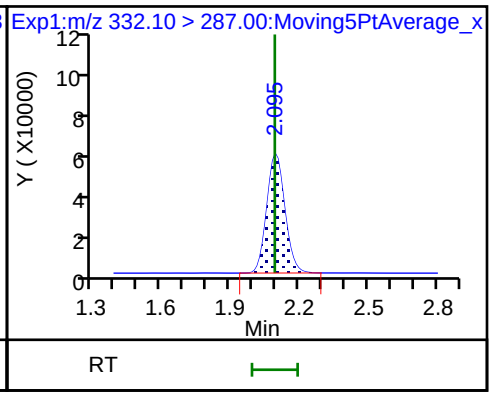
70 Perfluoropentanesulfonic acid



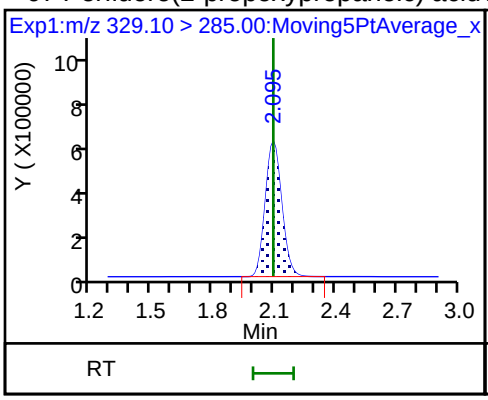
70 Perfluoropentanesulfonic acid



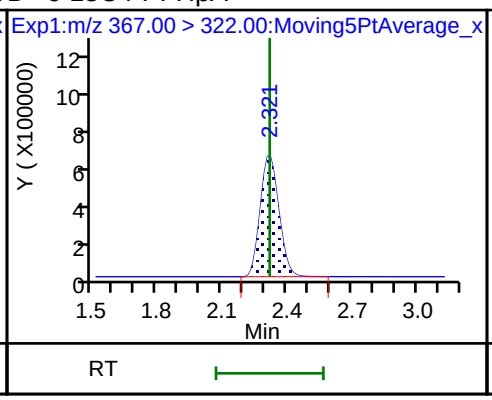
D 64 13C3 HFPO-DA



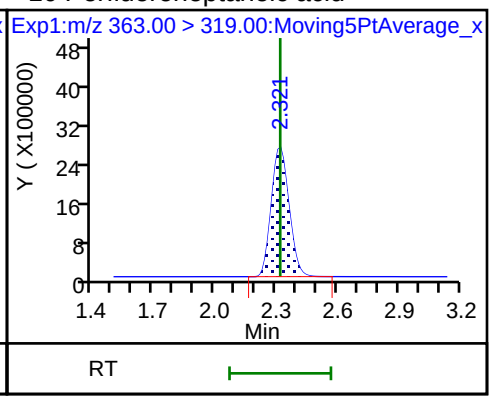
67 Perfluoro(2-propoxypropanoic) acid



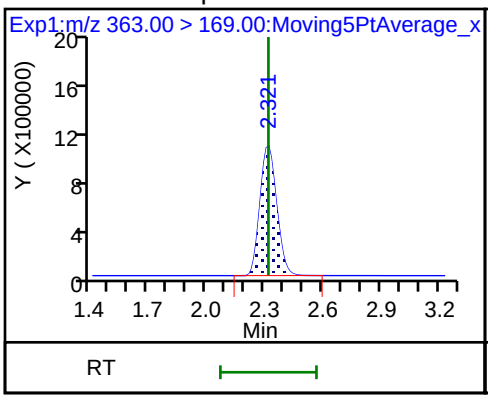
D 9 13C4-PFHpA



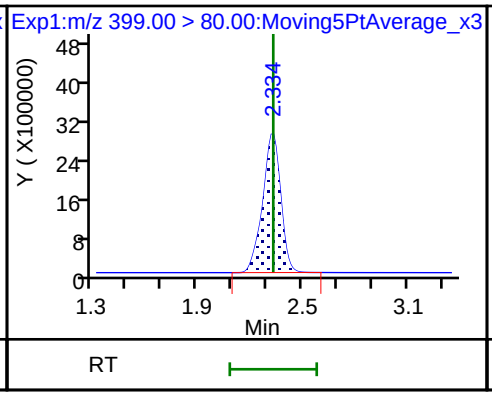
10 Perfluoroheptanoic acid



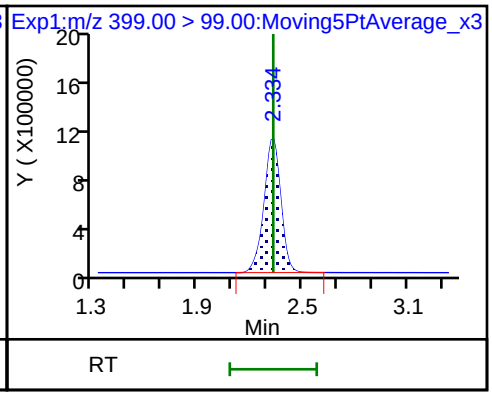
10 Perfluoroheptanoic acid



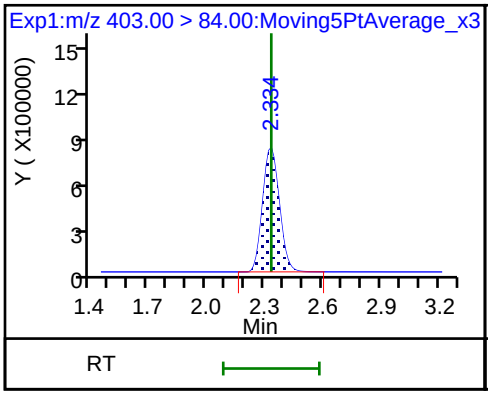
8 Perfluorohexanesulfonic acid



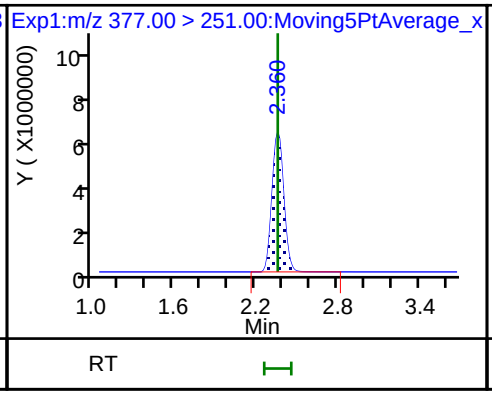
8 Perfluorohexanesulfonic acid



D 11 18O2 PFHxS



65 Adona



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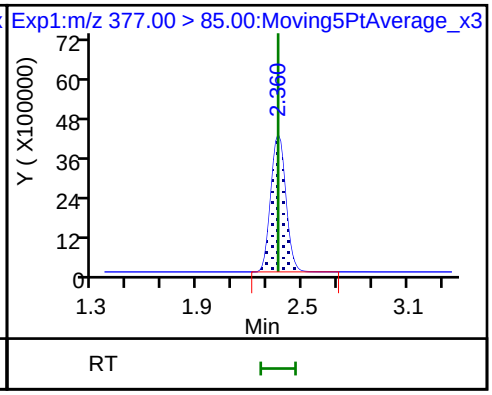
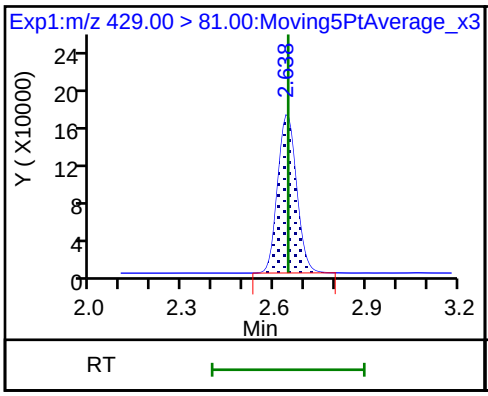
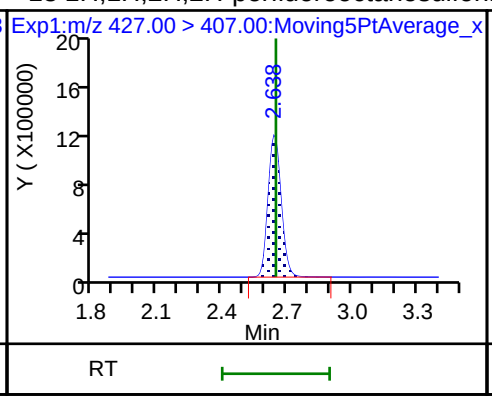


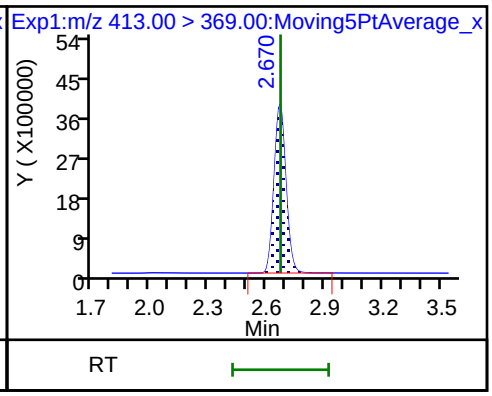
D 12 M2-6:2FTS



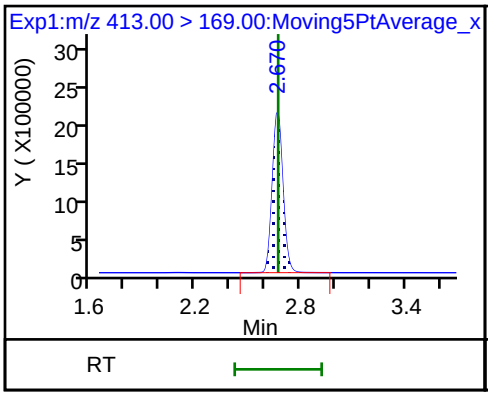
13 1H,1H,2H,2H-perfluorooctanesulfoni



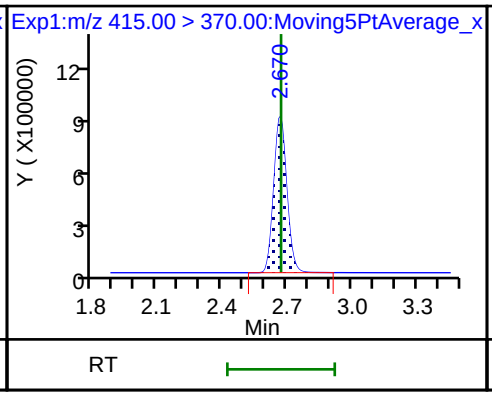
15 Perfluorooctanoic acid



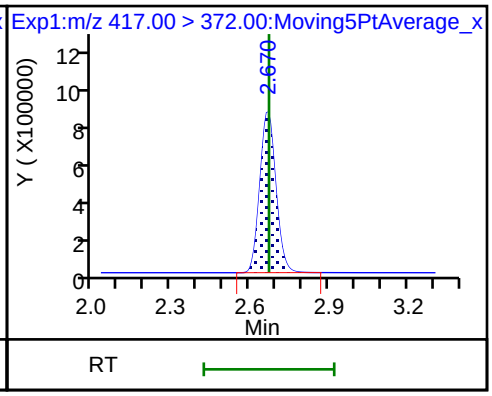
15 Perfluorooctanoic acid



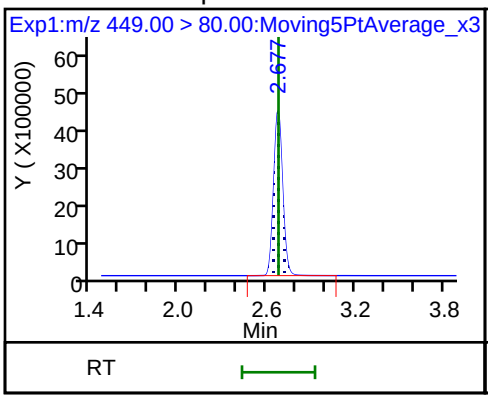
* 62 13C2-PFOA



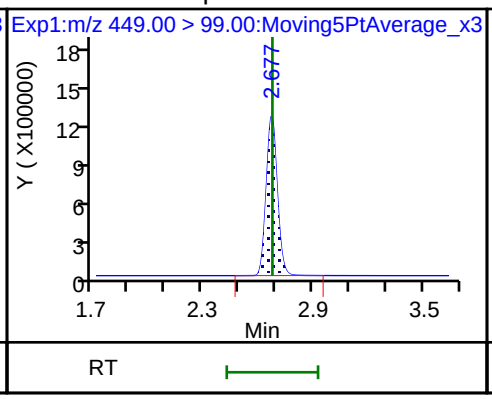
D 14 13C4 PFOA



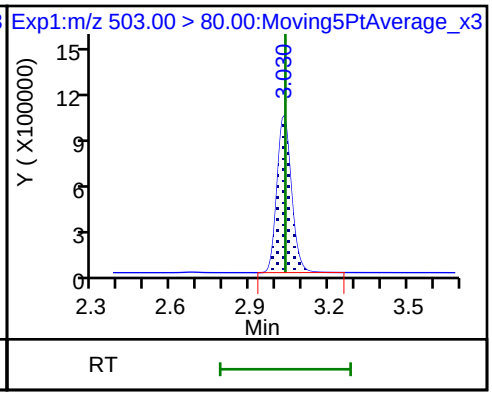
16 Perfluoroheptanesulfonic acid



16 Perfluoroheptanesulfonic acid



D 18 13C4 PFOS



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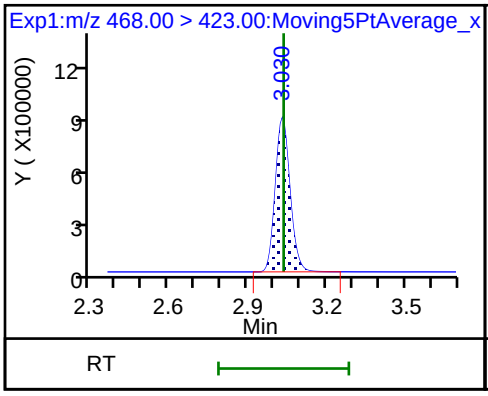
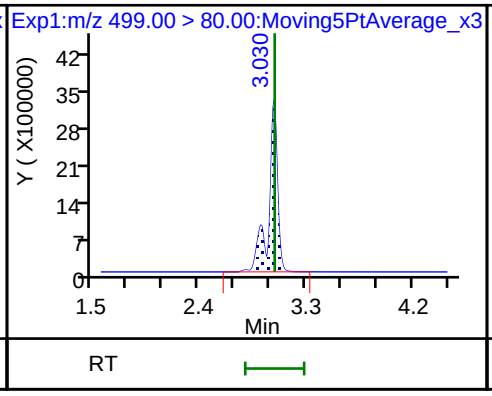
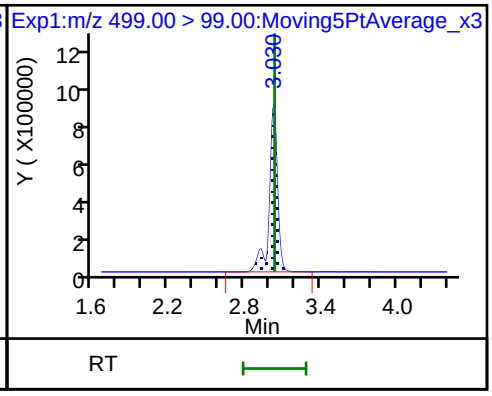


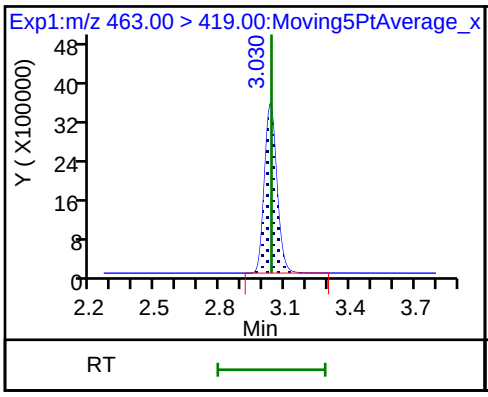
17 Perfluorooctane sulfonic acid



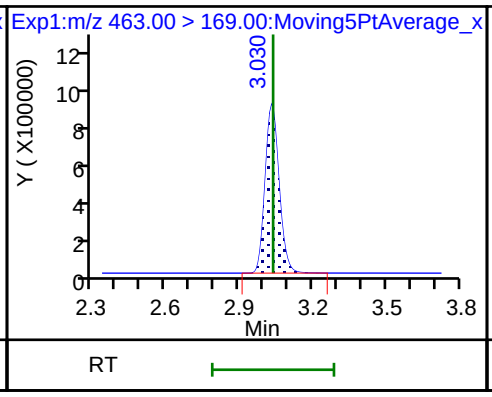
17 Perfluorooctane sulfonic acid



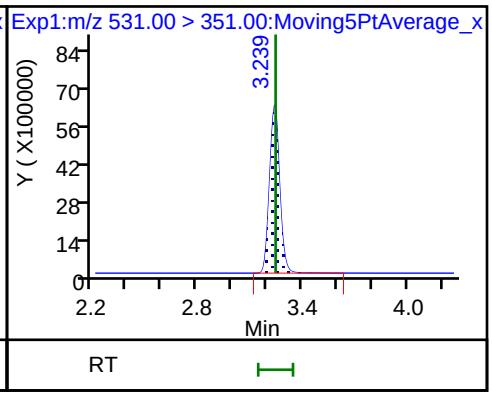
20 Perfluorononanoic acid



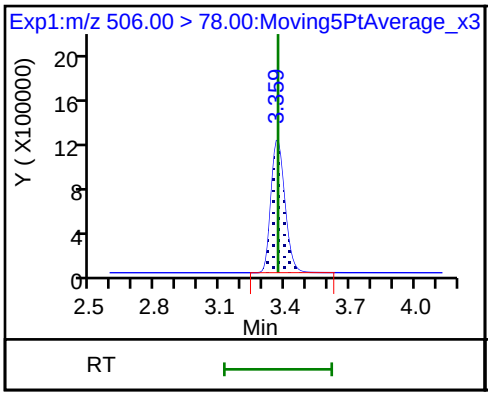
20 Perfluorononanoic acid



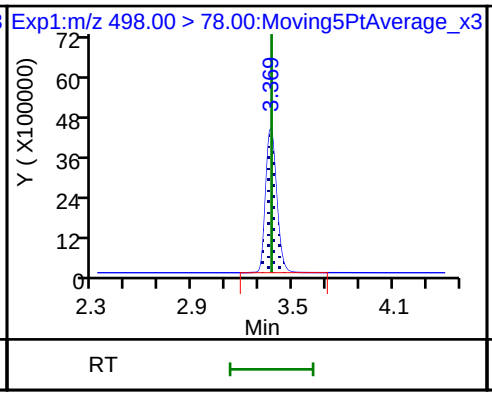
69 9-Chlorohexadecafluoro-3-oxanonane



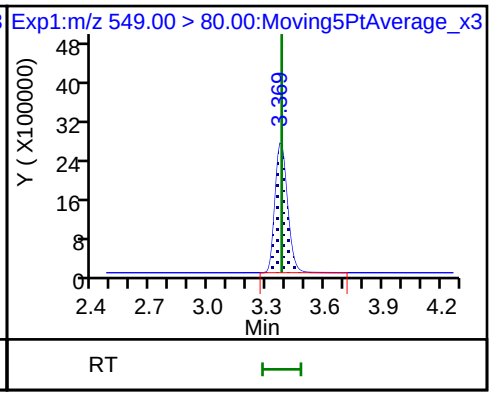
D 21 13C8 FOSA



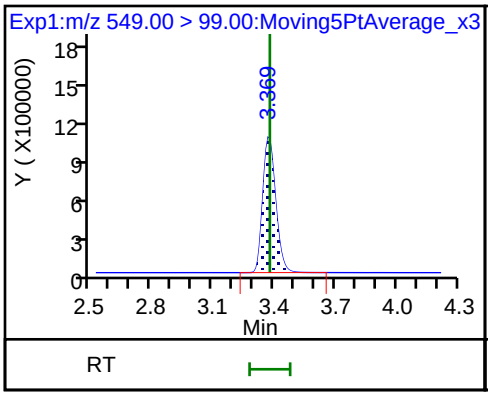
22 Perfluorooctane Sulfonamide



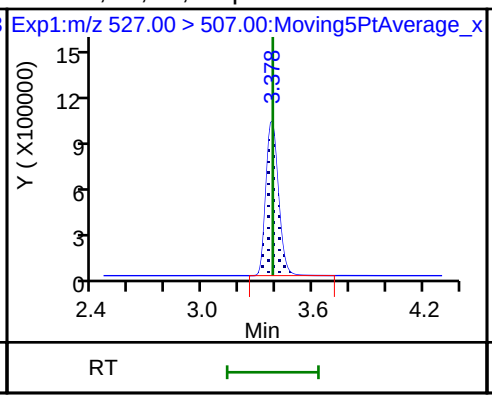
68 Perfluorononanesulfonic acid



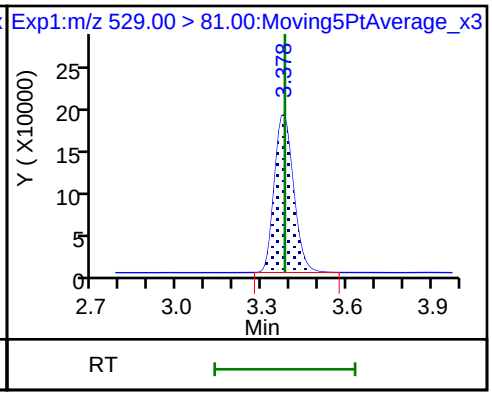
68 Perfluorononanesulfonic acid



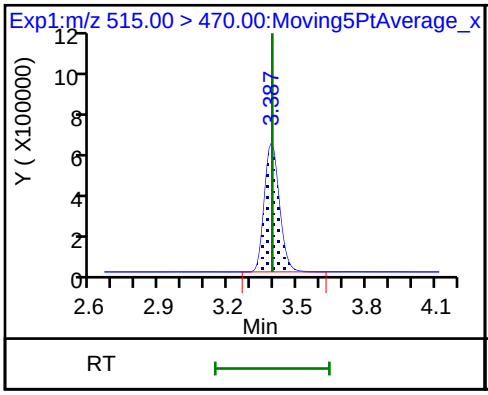
25 1H,1H,2H,2H-perfluorodecanesulfon



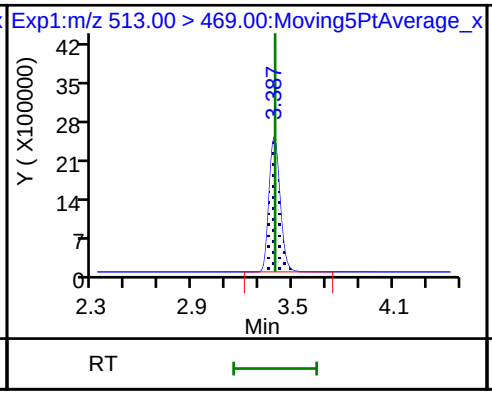
D 26 M2-8:2FTS



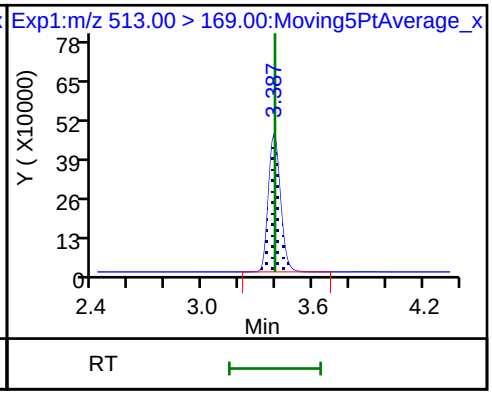
D 23 13C2 PFDA



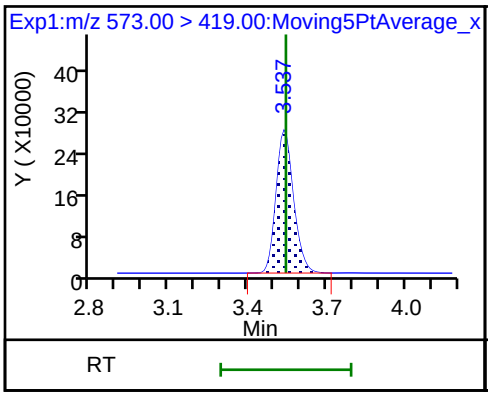
24 Perfluorodecanoic acid



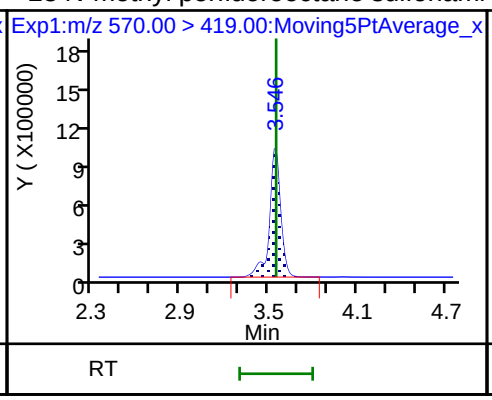
24 Perfluorodecanoic acid



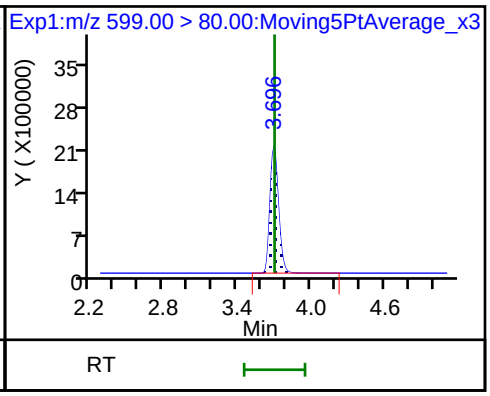
D 27 d3-NMeFOSAA



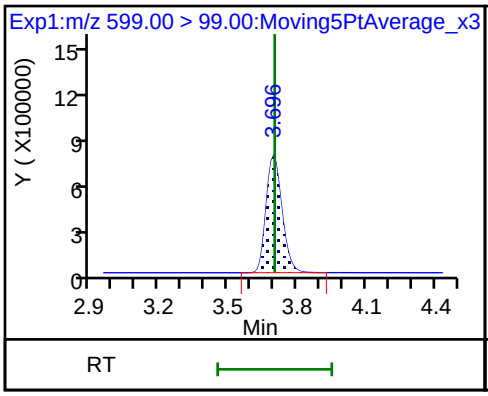
28 N-methyl perfluorooctane sulfonami



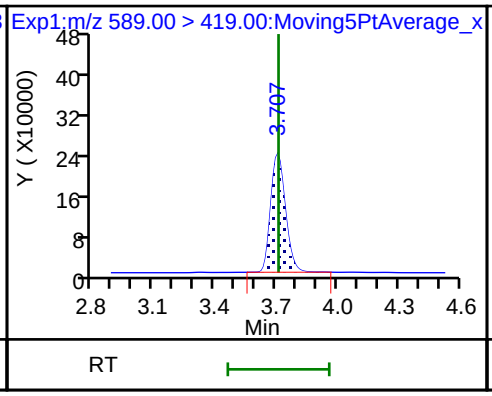
29 Perfluorodecane Sulfonic acid



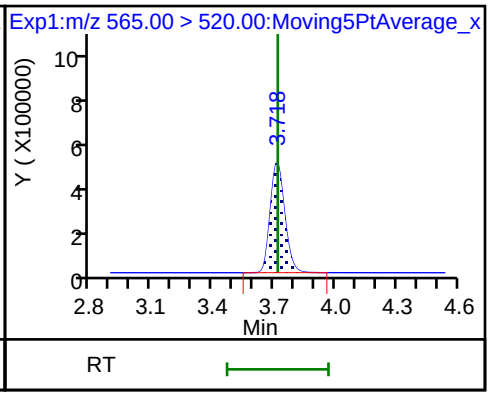
29 Perfluorodecane Sulfonic acid



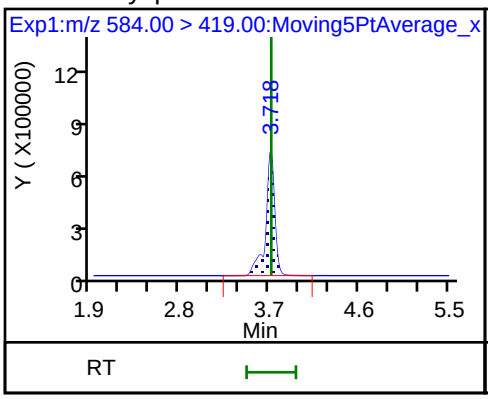
D 32 d5-NEtFOSAA



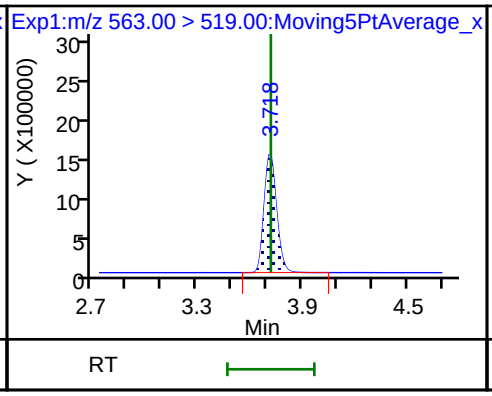
D 30 13C2 PFUnA



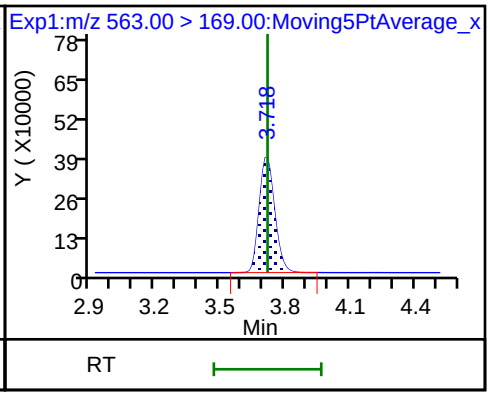
33 N-ethyl perfluorooctane sulfonamid



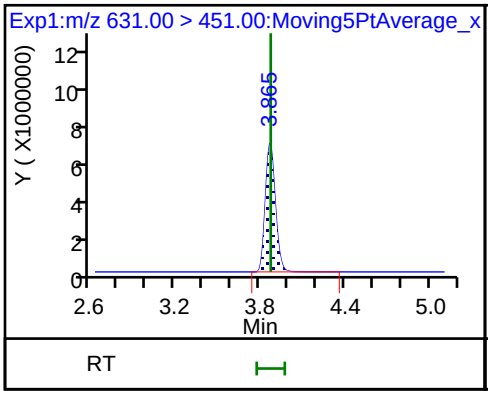
31 Perfluoroundecanoic acid



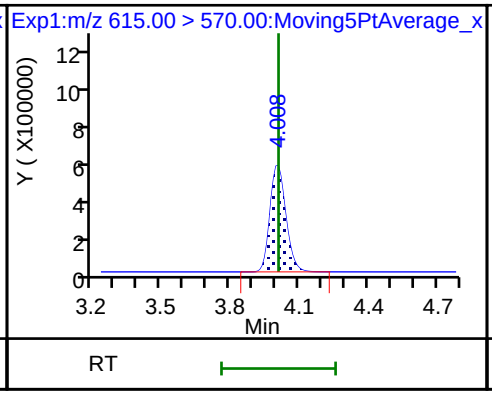
31 Perfluoroundecanoic acid



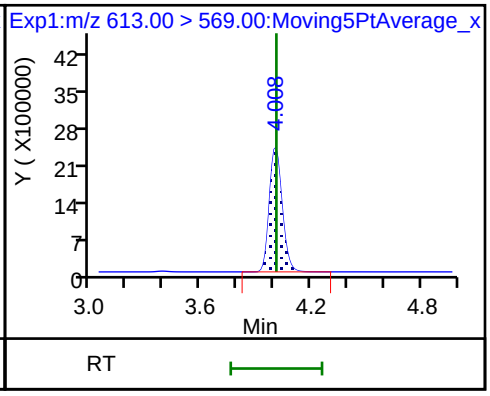
66 11-Chloroeicosafluoro-3-oxaundecan



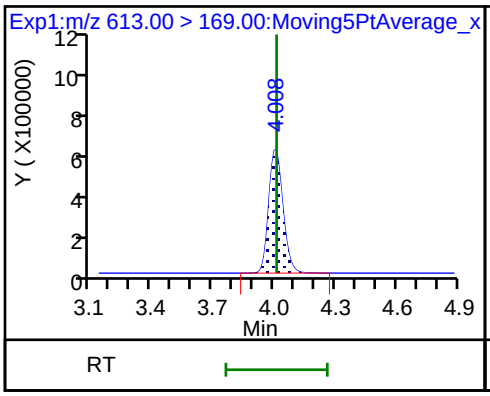
D 36 13C2 PFDoA



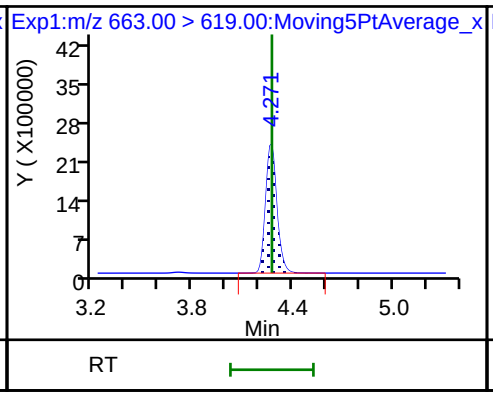
37 Perfluorododecanoic acid



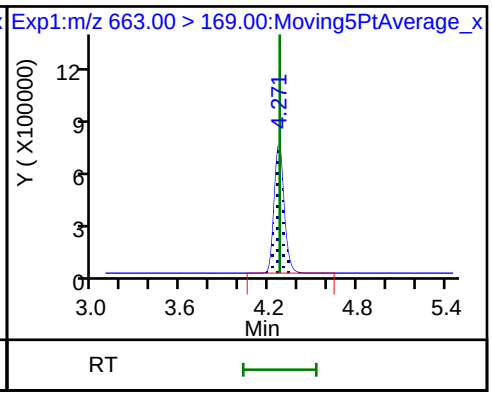
37 Perfluorododecanoic acid



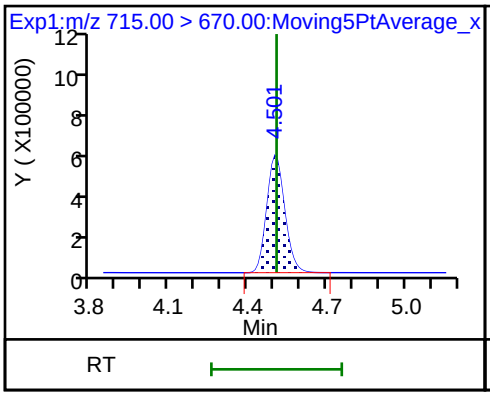
41 Perfluorotridecanoic acid



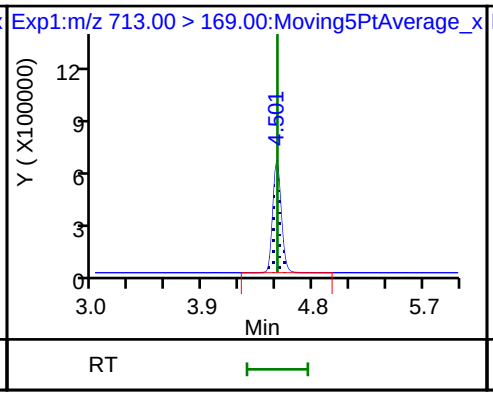
41 Perfluorotridecanoic acid



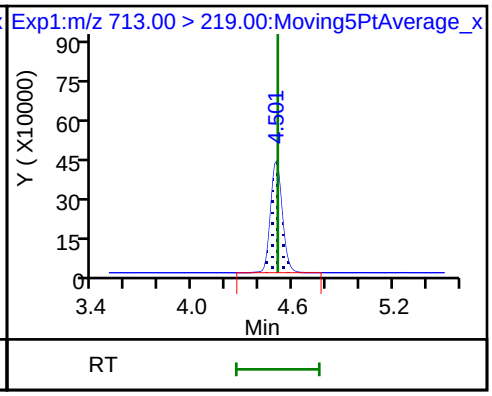
D 43 13C2-PFTeDA



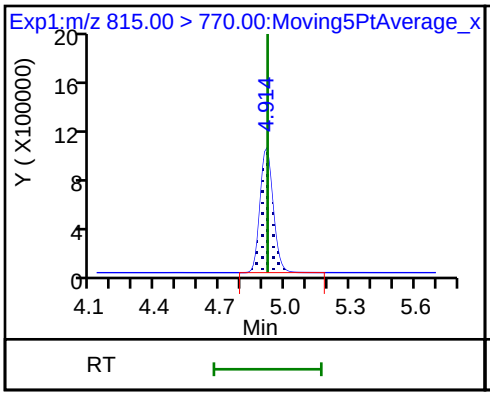
42 Perfluorotetradecanoic acid



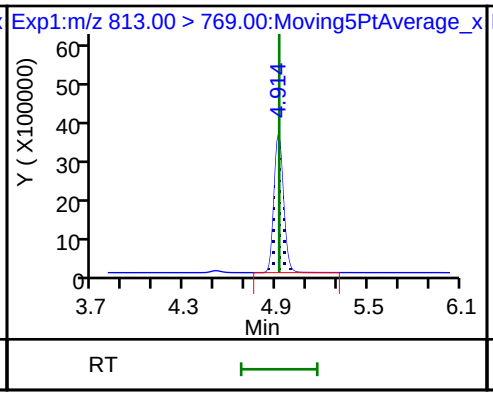
42 Perfluorotetradecanoic acid



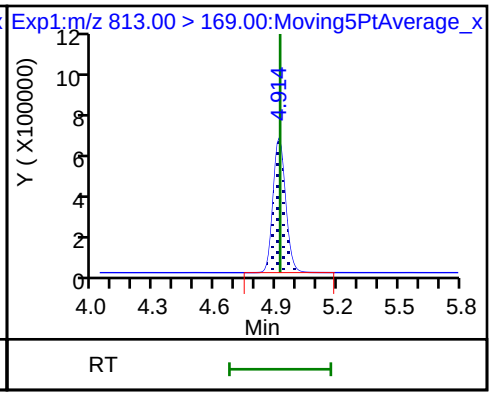
D 44 13C2-PFHxDA



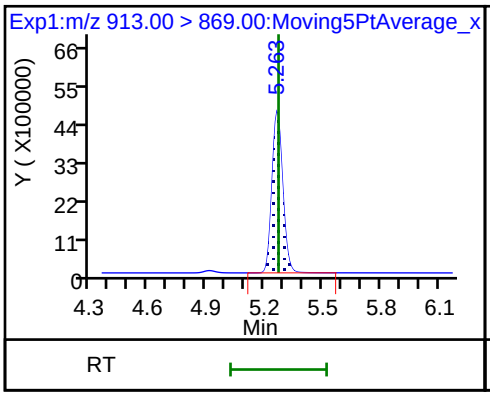
45 Perfluorohexadecanoic acid



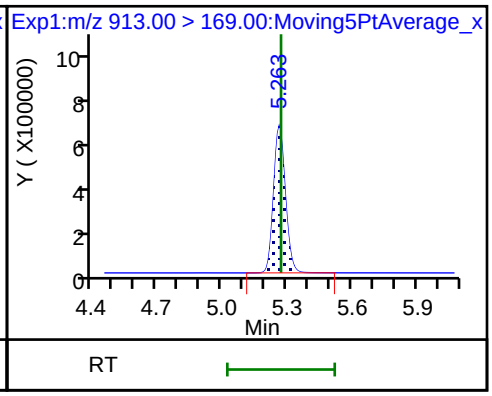
45 Perfluorohexadecanoic acid



46 Perfluorooctadecanoic acid



46 Perfluorooctadecanoic acid



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

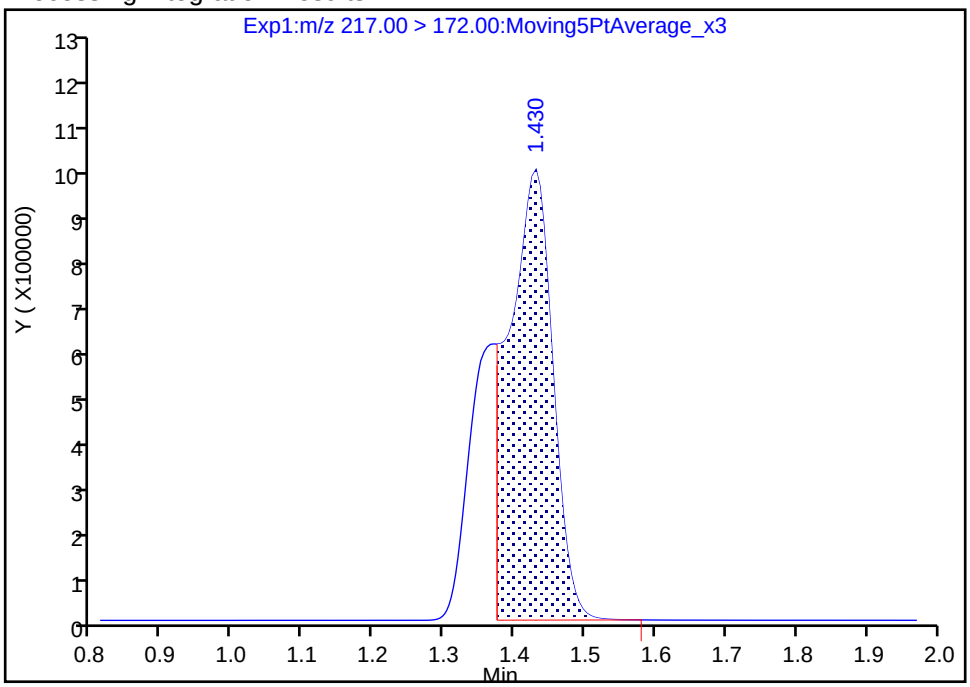
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d				
Injection Date:	11-Jul-2018 15:38:42	Instrument ID:	A8_N		
Lims ID:	IC L7 Full				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	16	Worklist Smp#:	8
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

D 1 13C4 PFBA, CAS: STL00992

Signal: 1

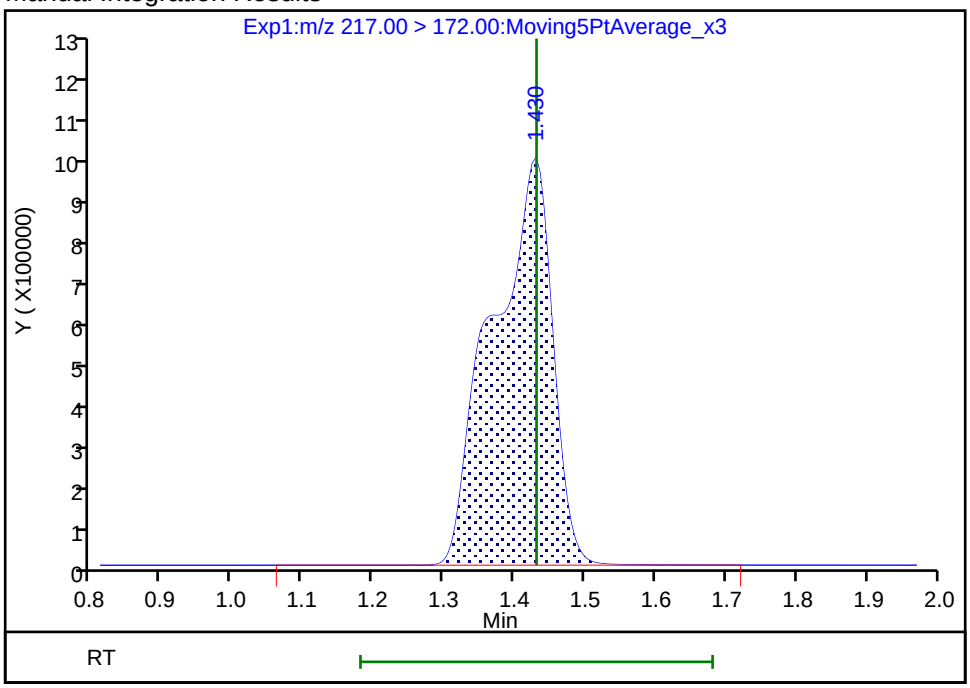
Processing Integration Results

RT: 1.43
Area: 4154586
Amount: 2.158190
Amount Units: ng/ml



Manual Integration Results

RT: 1.43
Area: 5781235
Amount: 2.843032
Amount Units: ng/ml



Reviewer: westendorfc, 11-Jul-2018 16:17:11

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Calibration / Perfluorobutyric acid

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

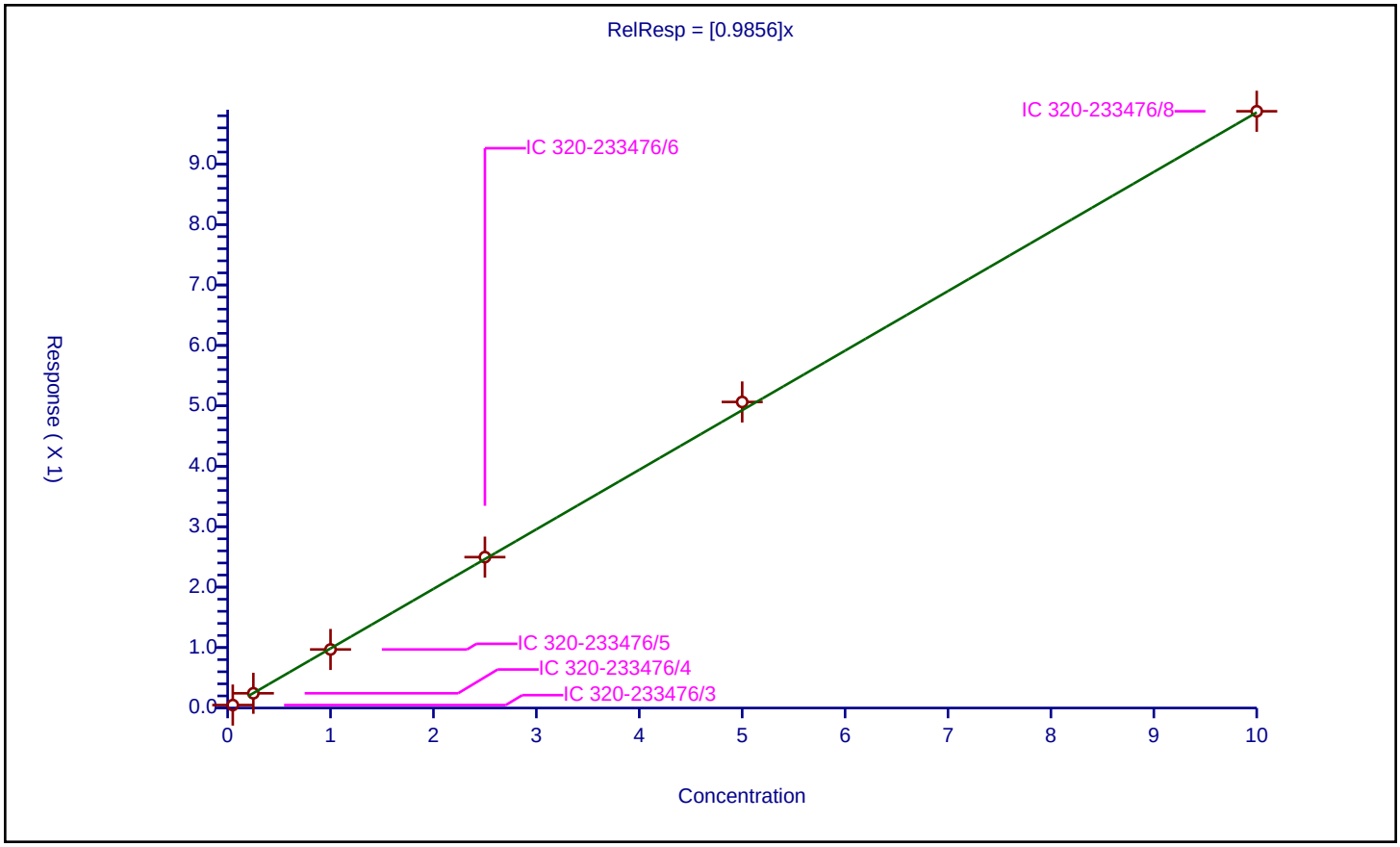
Curve Coefficients

Intercept:	0
Slope:	0.9856

Error Coefficients

Standard Error:	11600000
Relative Standard Error:	1.8
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	1.000

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-233476/3	0.05	0.048591	2.5	5621166.0	0.971827	Y
2	IC 320-233476/4	0.25	0.243532	2.5	5436336.0	0.974129	Y
3	IC 320-233476/5	1.0	0.968496	2.5	5641372.0	0.968496	Y
4	IC 320-233476/6	2.5	2.49664	2.5	5280540.0	0.998656	Y
5	IC 320-233476/7	5.0	5.064359	2.5	5244451.0	1.012872	Y
6	IC 320-233476/8	10.0	9.874793	2.5	5781235.0	0.987479	Y



Calibration / Perfluoropentanoic acid

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

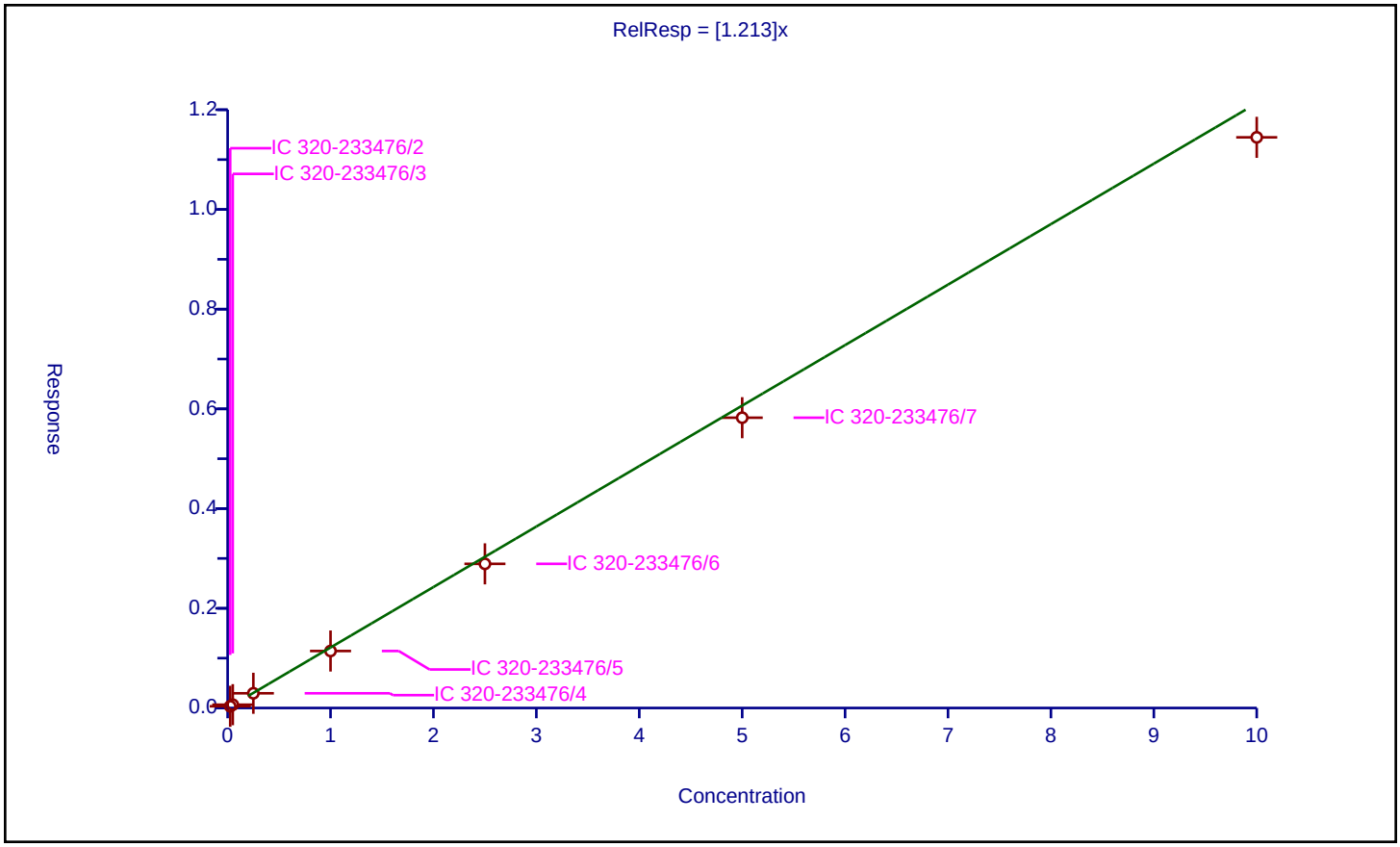
Curve Coefficients

Intercept:	0
Slope:	1.213

Error Coefficients

Standard Error:	8310000
Relative Standard Error:	7.9
Correlation Coefficient:	1.000
Coefficient of Determination (Adjusted):	0.992

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-233476/2	0.025	0.034269	2.5	3773636.0	1.370747	Y
2	IC 320-233476/3	0.05	0.066553	2.5	3905774.0	1.331068	Y
3	IC 320-233476/4	0.25	0.295211	2.5	3873105.0	1.180846	Y
4	IC 320-233476/5	1.0	1.143402	2.5	3885306.0	1.143402	Y
5	IC 320-233476/6	2.5	2.89169	2.5	3788119.0	1.156676	Y
6	IC 320-233476/7	5.0	5.822991	2.5	3734969.0	1.164598	Y
7	IC 320-233476/8	10.0	11.44643	2.5	3880280.0	1.144643	Y



Calibration / Perfluorobutanesulfonic acid

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

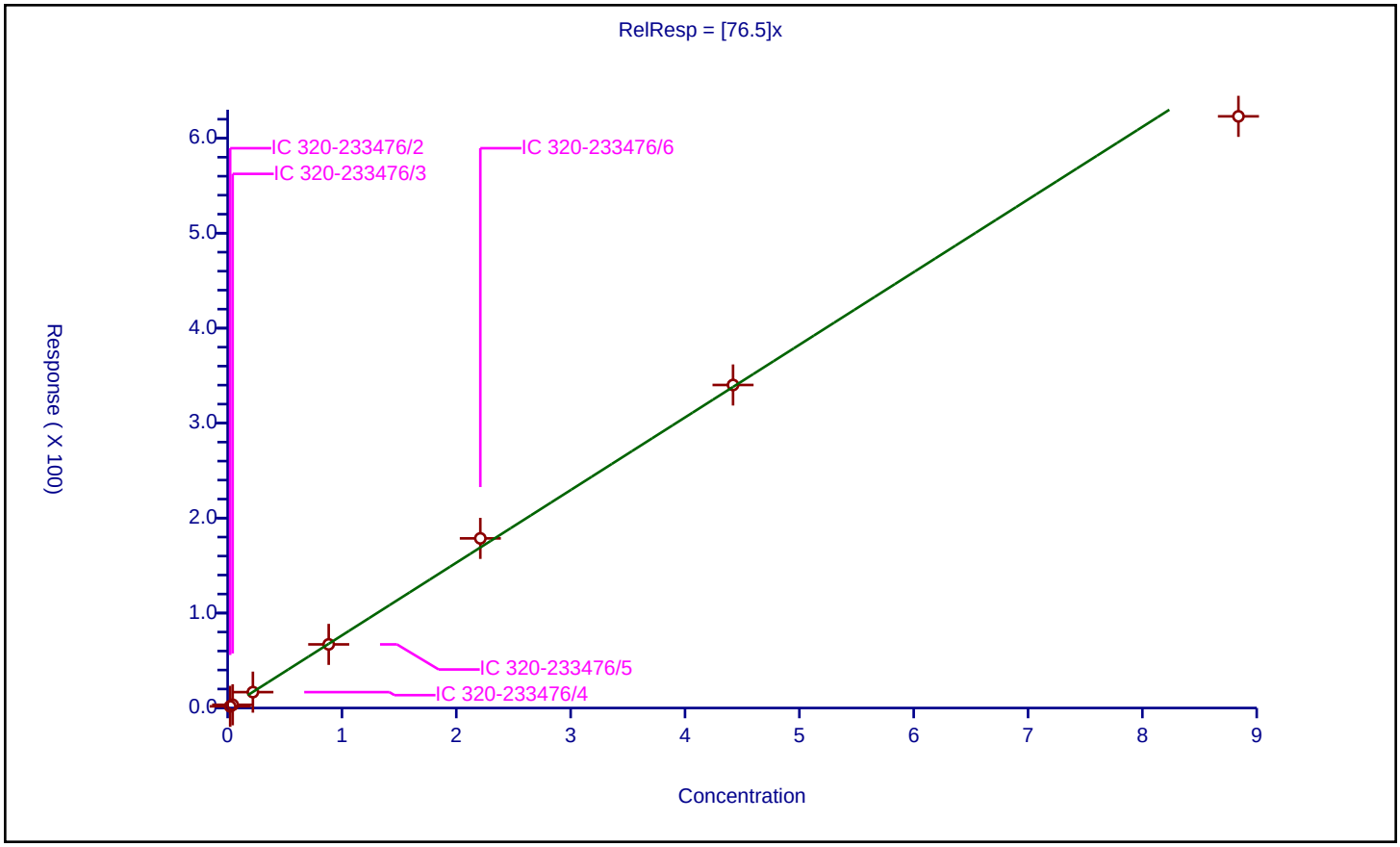
Curve Coefficients

Intercept:	0
Slope:	76.5

Error Coefficients

Standard Error:	11800000
Relative Standard Error:	4.2
Correlation Coefficient:	1.000
Coefficient of Determination (Adjusted):	0.998

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-233476/2	0.0221	1.748401	2.325	84738.0	79.113152	Y
2	IC 320-233476/3	0.0442	3.389764	2.325	94108.0	76.691503	Y
3	IC 320-233476/4	0.221	16.711966	2.325	88873.0	75.619755	Y
4	IC 320-233476/5	0.884	66.993376	2.325	93442.0	75.784362	Y
5	IC 320-233476/6	2.21	178.612201	2.325	86878.0	80.820001	Y
6	IC 320-233476/7	4.42	340.162371	2.325	85755.0	76.959812	Y
7	IC 320-233476/8	8.84	623.042755	2.325	93739.0	70.47995	Y



Calibration / 1H,1H,2H,2H-perfluorohexanesulfonic acid (4:2)

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

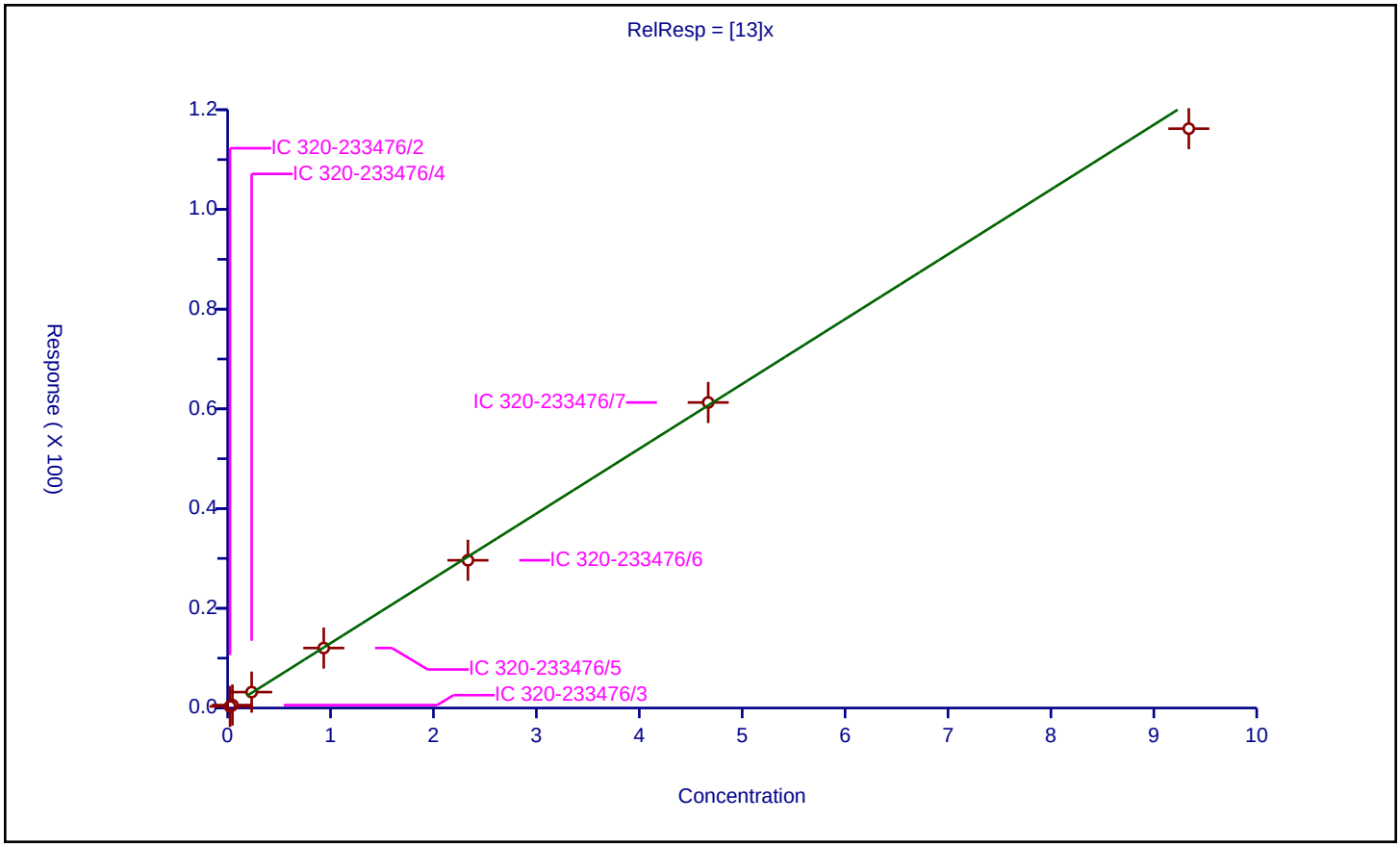
Curve Coefficients

Intercept:	0
Slope:	13

Error Coefficients

Standard Error:	2180000
Relative Standard Error:	3.5
Correlation Coefficient:	1.000
Coefficient of Determination (Adjusted):	0.998

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-233476/2	0.02335	0.316108	2.325	84738.0	13.537798	Y
2	IC 320-233476/3	0.0467	0.591528	2.325	94108.0	12.666543	Y
3	IC 320-233476/4	0.2335	3.187944	2.325	88873.0	13.652866	Y
4	IC 320-233476/5	0.934	12.030747	2.325	93442.0	12.880885	Y
5	IC 320-233476/6	2.335	29.631961	2.325	86878.0	12.690348	Y
6	IC 320-233476/7	4.67	61.281339	2.325	85755.0	13.122342	Y
7	IC 320-233476/8	9.34	116.204139	2.325	93739.0	12.441557	Y



Calibration / Perfluorohexanoic acid

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

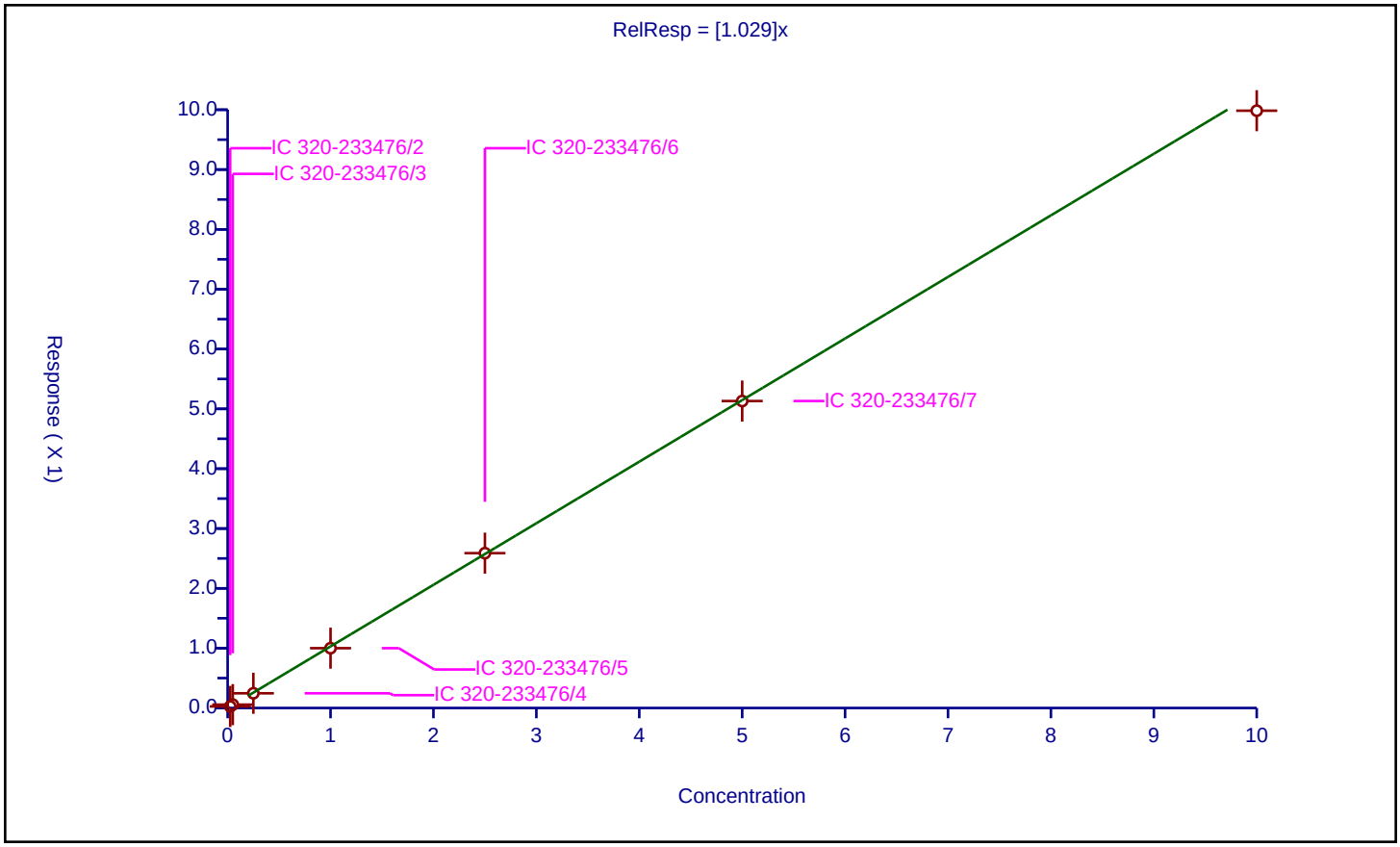
Curve Coefficients

Intercept:	0
Slope:	1.029

Error Coefficients

Standard Error:	7720000
Relative Standard Error:	4.7
Correlation Coefficient:	1.000
Coefficient of Determination (Adjusted):	0.997

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-233476/2	0.025	0.025767	2.5	4061845.0	1.030665	Y
2	IC 320-233476/3	0.05	0.056525	2.5	4333312.0	1.130509	Y
3	IC 320-233476/4	0.25	0.246044	2.5	4144632.0	0.984177	Y
4	IC 320-233476/5	1.0	0.999996	2.5	4419532.0	0.999996	Y
5	IC 320-233476/6	2.5	2.588129	2.5	4018475.0	1.035251	Y
6	IC 320-233476/7	5.0	5.130677	2.5	3887868.0	1.026135	Y
7	IC 320-233476/8	10.0	9.98393	2.5	4142603.0	0.998393	Y



Calibration / Perfluoropentanesulfonic acid

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

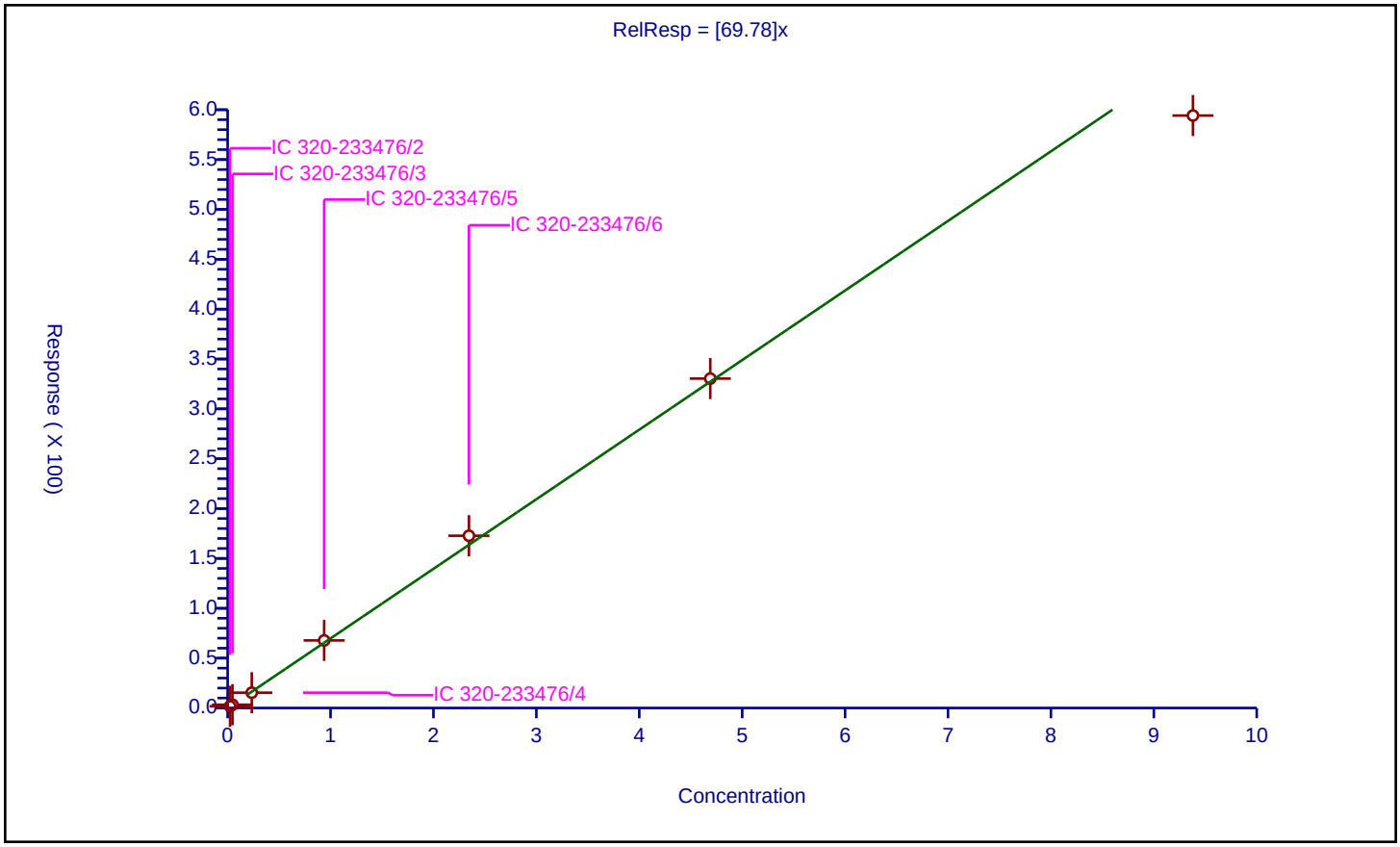
Curve Coefficients

Intercept:	0
Slope:	69.78

Error Coefficients

Standard Error:	11300000
Relative Standard Error:	5.6
Correlation Coefficient:	1.000
Coefficient of Determination (Adjusted):	0.996

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-233476/2	0.02345	1.711991	2.325	84738.0	73.006016	Y
2	IC 320-233476/3	0.0469	3.298897	2.325	94108.0	70.338955	Y
3	IC 320-233476/4	0.2345	15.34375	2.325	88873.0	65.431768	Y
4	IC 320-233476/5	0.938	67.760879	2.325	93442.0	72.239743	Y
5	IC 320-233476/6	2.345	172.749256	2.325	86878.0	73.66706	Y
6	IC 320-233476/7	4.69	330.368307	2.325	85755.0	70.441004	Y
7	IC 320-233476/8	9.38	594.173507	2.325	93739.0	63.344724	Y



Calibration / Perfluoro(2-propoxypropanoic) acid

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

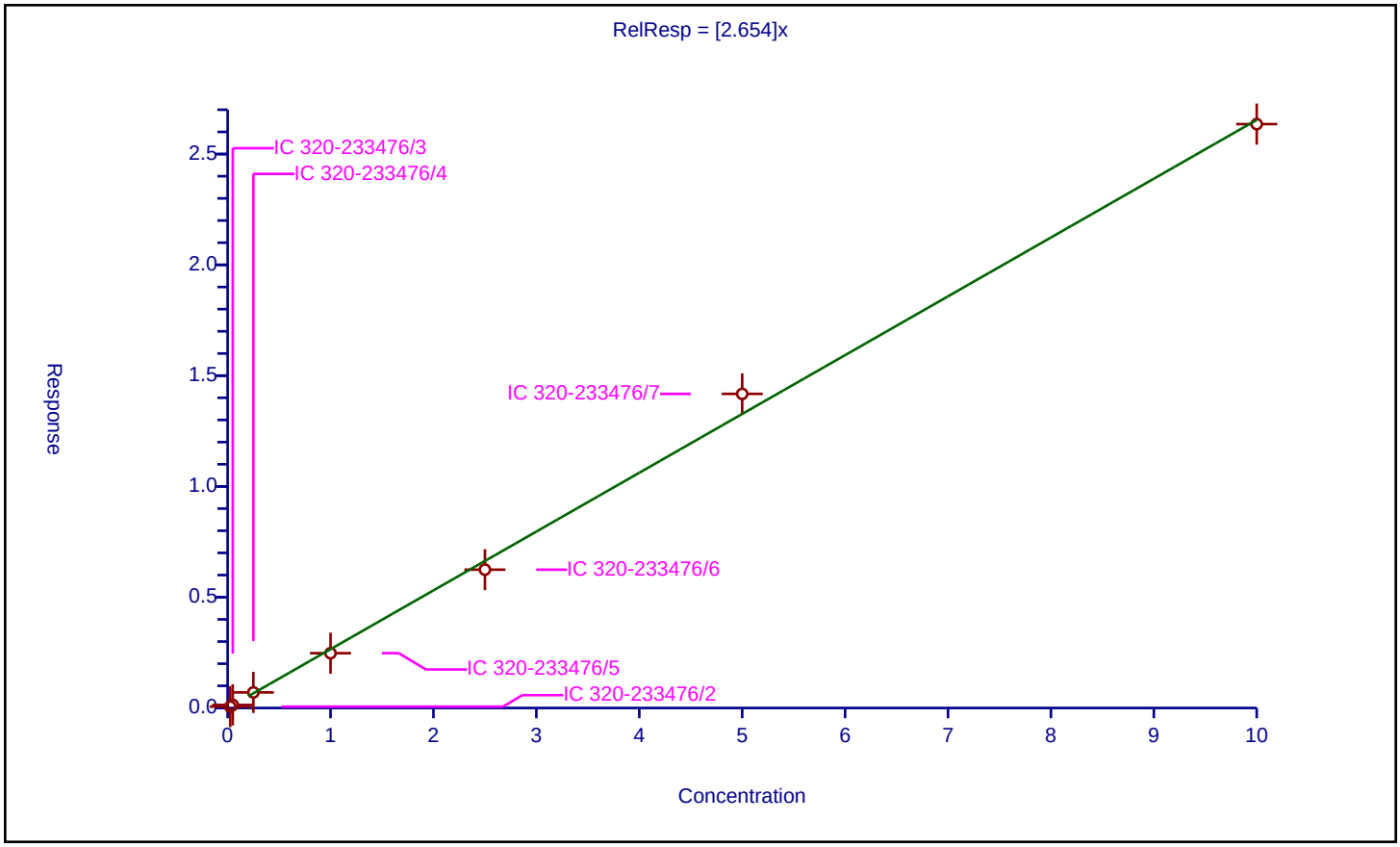
Curve Coefficients

Intercept:	0
Slope:	2.654

Error Coefficients

Standard Error:	1520000
Relative Standard Error:	5.8
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.996

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-233476/2	0.025	0.063679	2.5	278389.0	2.547155	Y
2	IC 320-233476/3	0.05	0.138809	2.5	284852.0	2.776179	Y
3	IC 320-233476/4	0.25	0.703581	2.5	281279.0	2.814323	Y
4	IC 320-233476/5	1.0	2.473324	2.5	319484.0	2.473324	Y
5	IC 320-233476/6	2.5	6.243252	2.5	311580.0	2.497301	Y
6	IC 320-233476/7	5.0	14.176503	2.5	274060.0	2.835301	Y
7	IC 320-233476/8	10.0	26.35169	2.5	310846.0	2.635169	Y



Calibration / Perfluoroheptanoic acid

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

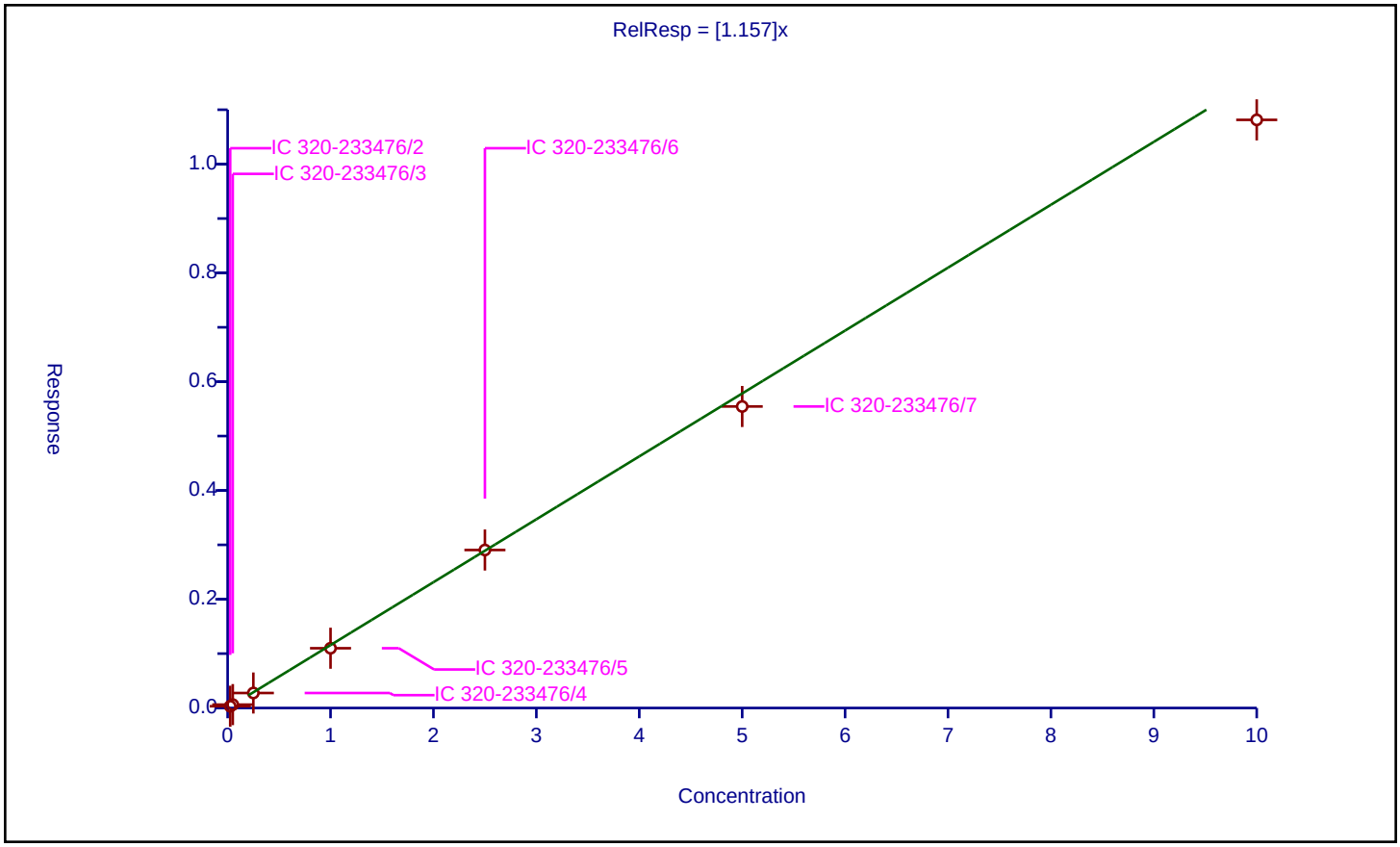
Curve Coefficients

Intercept:	0
Slope:	1.157

Error Coefficients

Standard Error:	7570000
Relative Standard Error:	7.2
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.993

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-233476/2	0.025	0.032294	2.5	3724726.0	1.291773	Y
2	IC 320-233476/3	0.05	0.062501	2.5	3963601.0	1.250012	Y
3	IC 320-233476/4	0.25	0.275835	2.5	3856910.0	1.103342	Y
4	IC 320-233476/5	1.0	1.098924	2.5	4071620.0	1.098924	Y
5	IC 320-233476/6	2.5	2.90494	2.5	3786835.0	1.161976	Y
6	IC 320-233476/7	5.0	5.54371	2.5	3621431.0	1.108742	Y
7	IC 320-233476/8	10.0	10.814055	2.5	3701454.0	1.081406	Y



Calibration / Perfluorohexanesulfonic acid

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

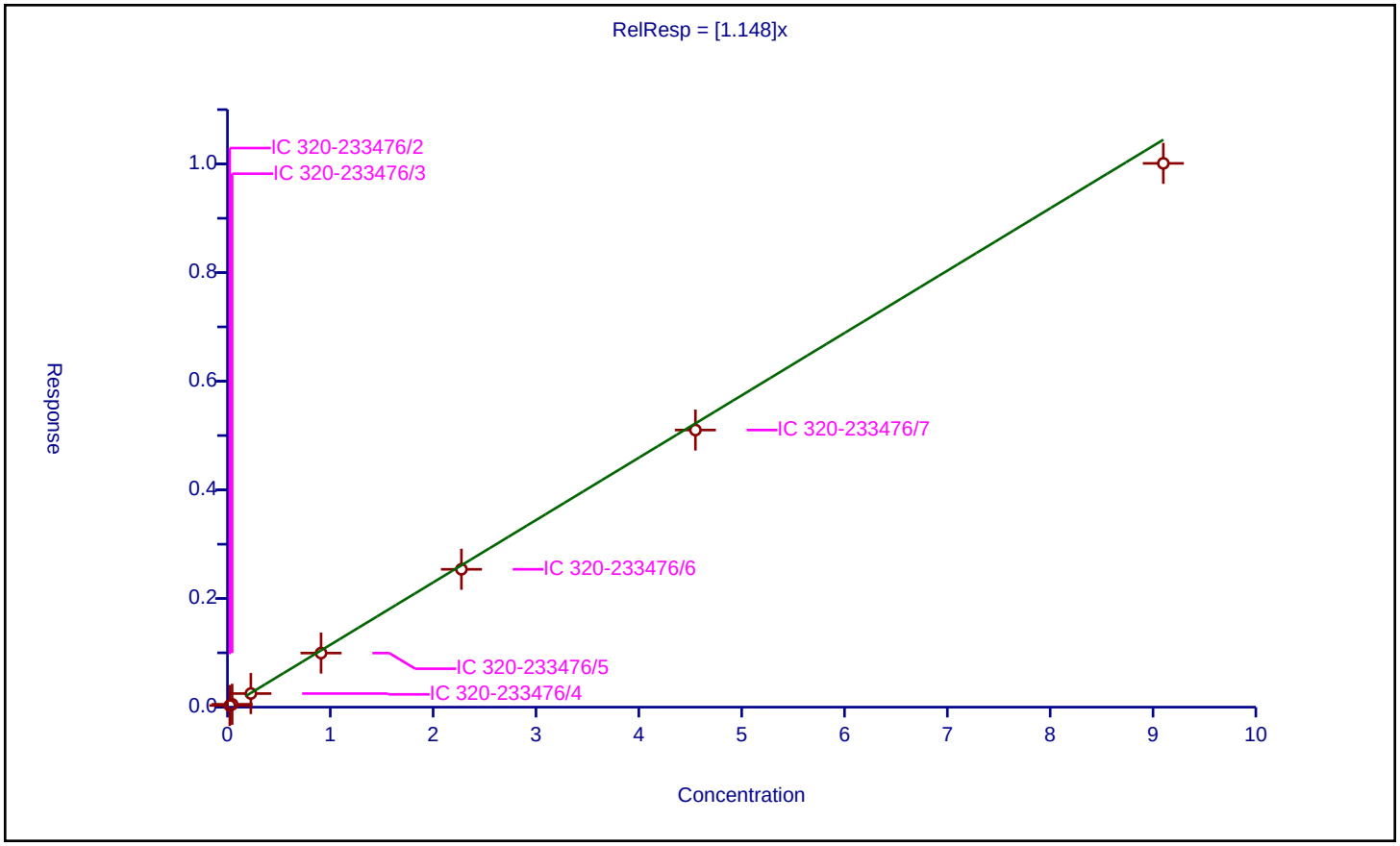
Curve Coefficients

Intercept:	0
Slope:	1.148

Error Coefficients

Standard Error:	9700000
Relative Standard Error:	7.9
Correlation Coefficient:	1.000
Coefficient of Determination (Adjusted):	0.992

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-233476/2	0.02275	0.030689	2.365	5274150.0	1.348985	Y
2	IC 320-233476/3	0.0455	0.052491	2.365	5419785.0	1.153641	Y
3	IC 320-233476/4	0.2275	0.250694	2.365	5214223.0	1.101951	Y
4	IC 320-233476/5	0.91	0.995401	2.365	5331177.0	1.093847	Y
5	IC 320-233476/6	2.275	2.53839	2.365	4952007.0	1.115776	Y
6	IC 320-233476/7	4.55	5.101114	2.365	4777689.0	1.121124	Y
7	IC 320-233476/8	9.1	10.010782	2.365	4872001.0	1.100086	Y



Calibration

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

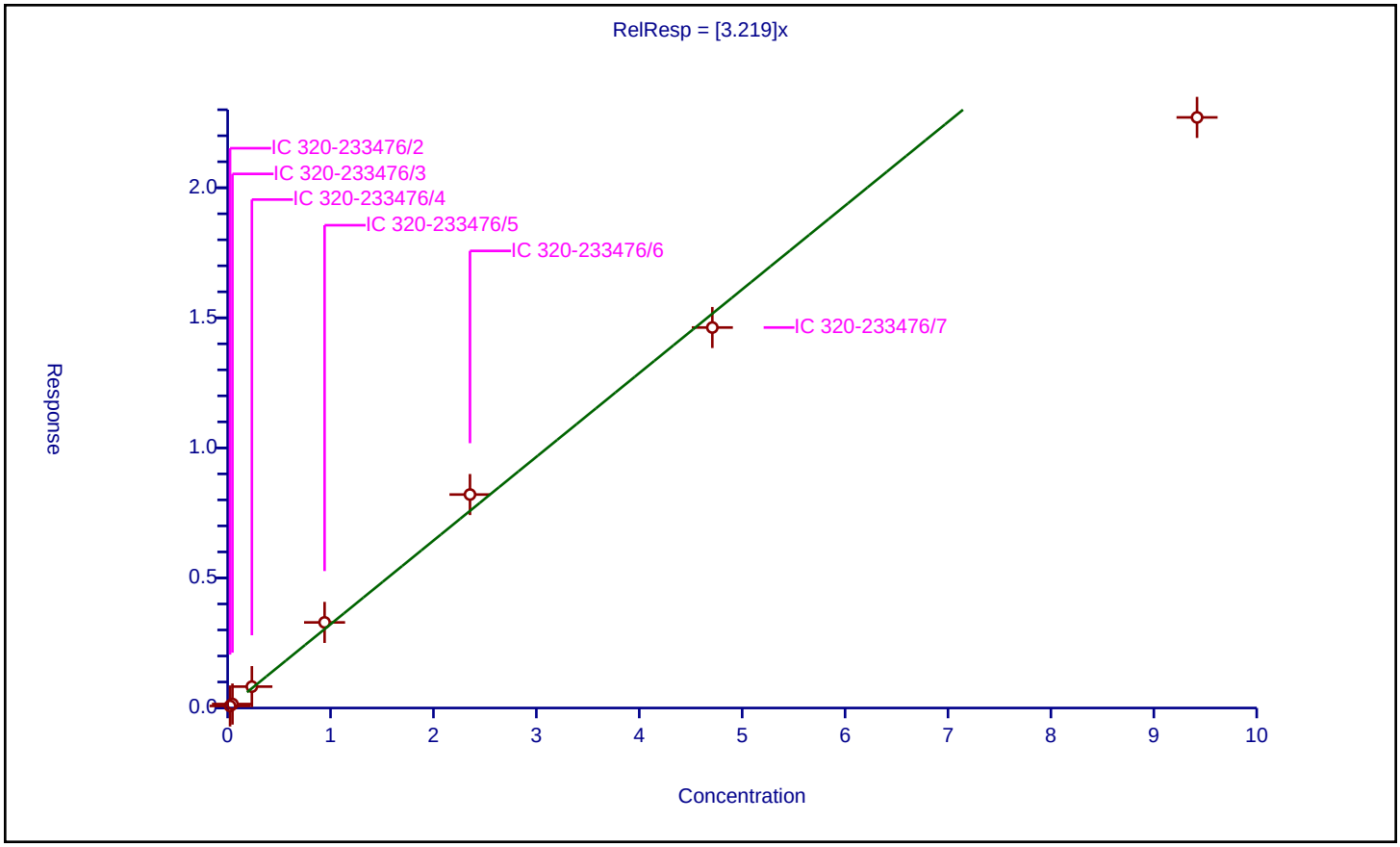
Curve Coefficients

Intercept:	0
Slope:	3.219

Error Coefficients

Standard Error:	18400000
Relative Standard Error:	12.0
Correlation Coefficient:	0.988
Coefficient of Determination (Adjusted):	0.982

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-233476/2	0.02355	0.07815	2.39	3735610.0	3.318451	Y
2	IC 320-233476/3	0.0471	0.152044	2.39	4069838.0	3.228113	Y
3	IC 320-233476/4	0.2355	0.822031	2.39	3725581.0	3.490575	Y
4	IC 320-233476/5	0.942	3.290186	2.39	3832872.0	3.492766	Y
5	IC 320-233476/6	2.355	8.206068	2.39	3715442.0	3.48453	Y
6	IC 320-233476/7	4.71	14.627527	2.39	3560852.0	3.105632	Y
7	IC 320-233476/8	9.42	22.705695	2.39	3902400.0	2.410371	Y



Calibration / 1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

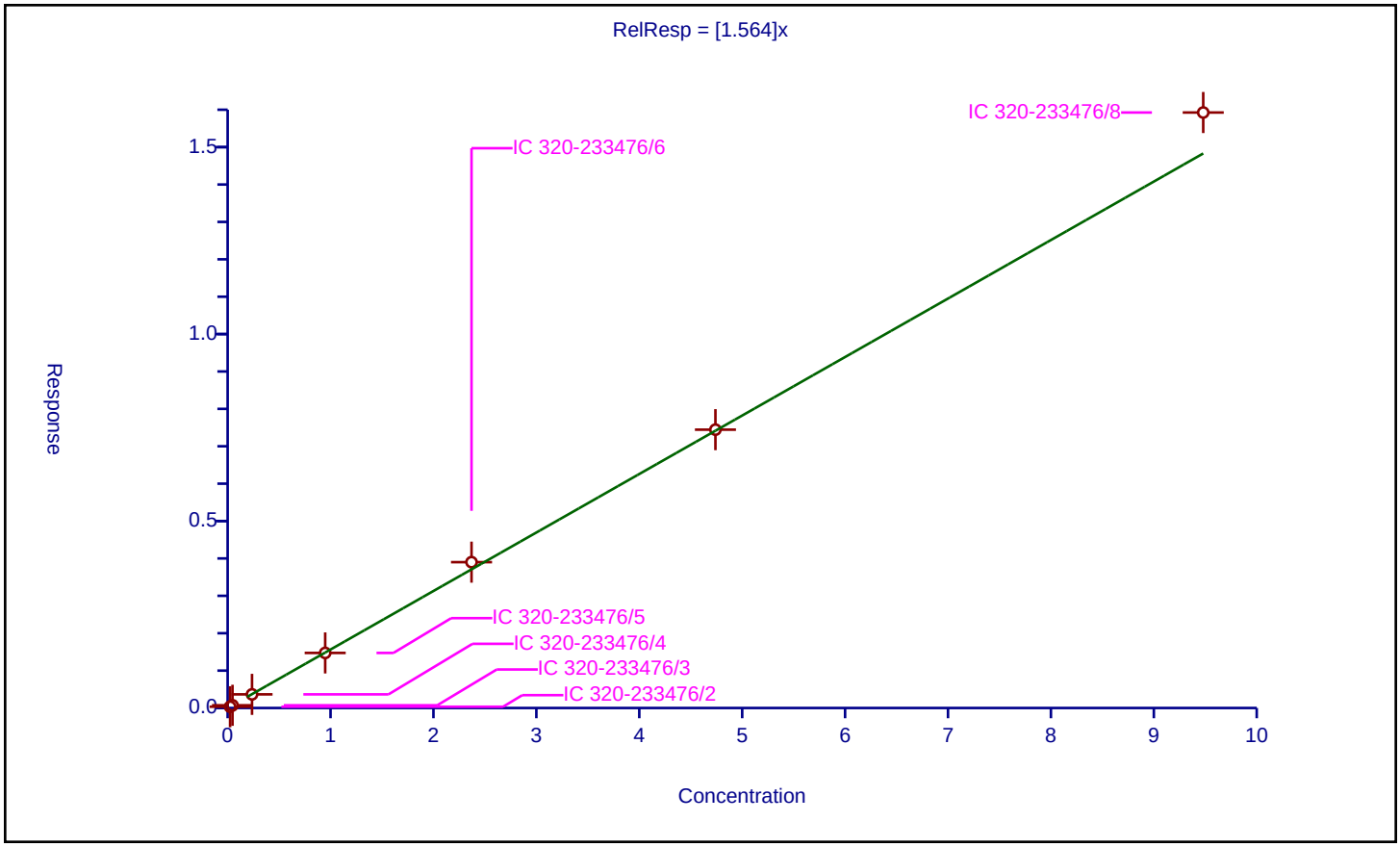
Curve Coefficients

Intercept:	0
Slope:	1.564

Error Coefficients

Standard Error:	2210000
Relative Standard Error:	5.2
Correlation Coefficient:	1.000
Coefficient of Determination (Adjusted):	0.997

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-233476/2	0.0237	0.033907	2.375	799554.0	1.430683	Y
2	IC 320-233476/3	0.0474	0.072581	2.375	834970.0	1.531243	Y
3	IC 320-233476/4	0.237	0.364792	2.375	825525.0	1.539208	Y
4	IC 320-233476/5	0.948	1.472622	2.375	819911.0	1.553399	Y
5	IC 320-233476/6	2.37	3.900606	2.375	735229.0	1.645825	Y
6	IC 320-233476/7	4.74	7.444041	2.375	731524.0	1.570473	Y
7	IC 320-233476/8	9.48	15.925237	2.375	704932.0	1.679877	Y



Calibration / Perfluorooctanoic acid

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

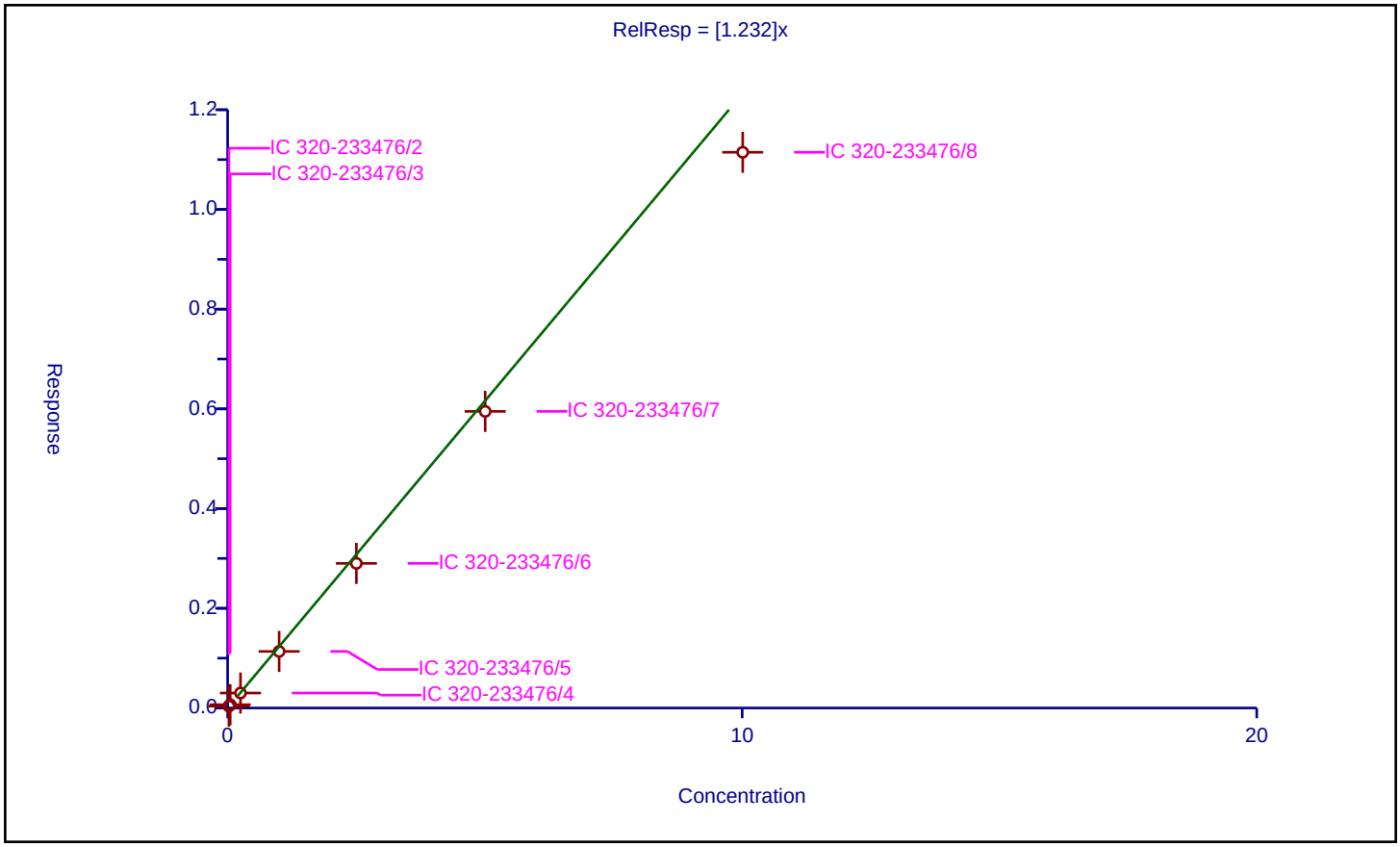
Curve Coefficients

Intercept:	0
Slope:	1.232

Error Coefficients

Standard Error:	7750000
Relative Standard Error:	11.0
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.983

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-233476/2	0.025025	0.03736	2.5	3919080.0	1.492888	Y
2	IC 320-233476/3	0.05005	0.0667	2.5	4207903.0	1.332669	Y
3	IC 320-233476/4	0.25025	0.300387	2.5	3971401.0	1.200348	Y
4	IC 320-233476/5	1.001	1.134671	2.5	4164105.0	1.133537	Y
5	IC 320-233476/6	2.5025	2.900864	2.5	3836329.0	1.159187	Y
6	IC 320-233476/7	5.005	5.949358	2.5	3555536.0	1.188683	Y
7	IC 320-233476/8	10.01	11.146492	2.5	3653899.0	1.113536	Y



Calibration / Perfluoroheptanesulfonic acid

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

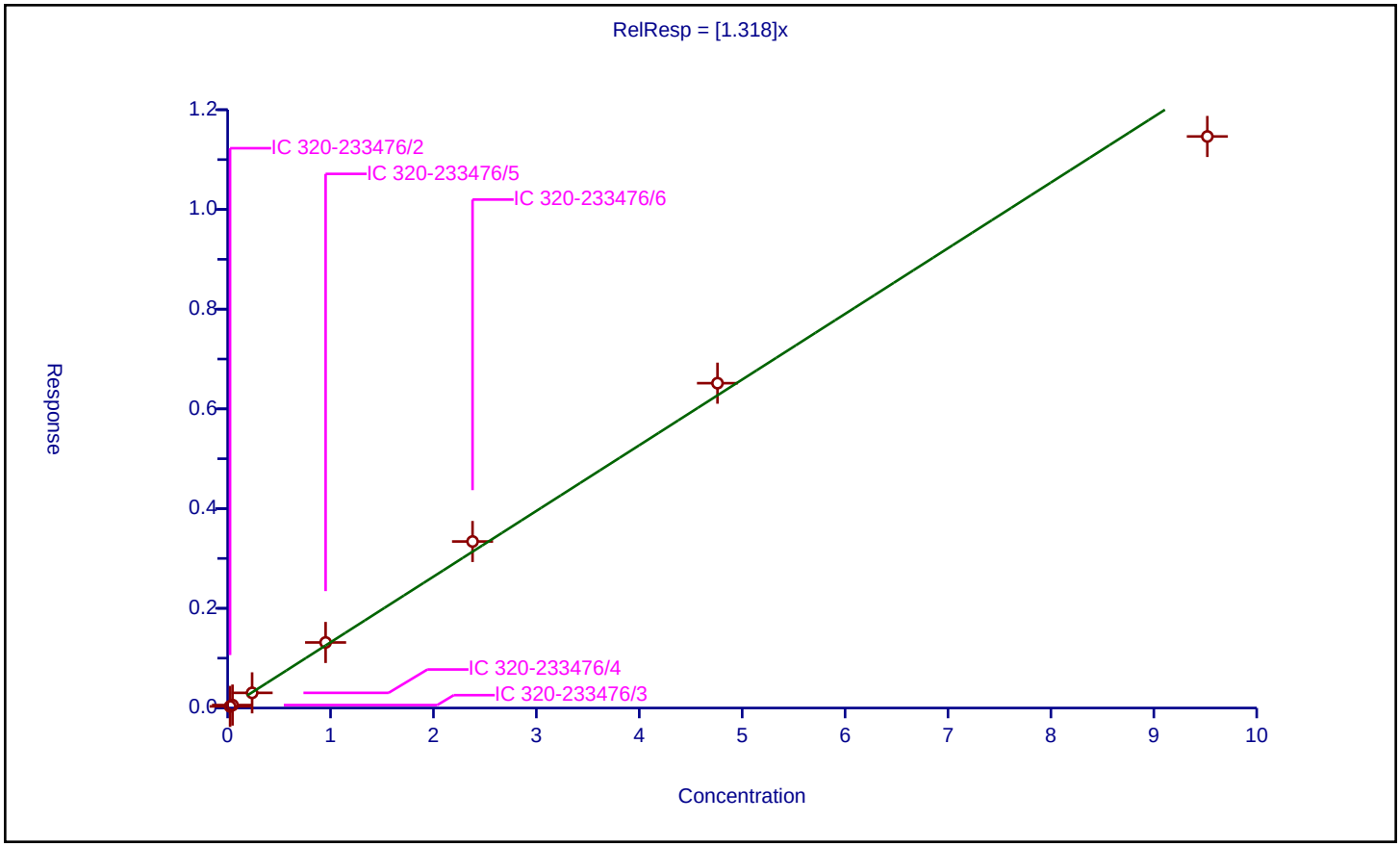
Curve Coefficients

Intercept:	0
Slope:	1.318

Error Coefficients

Standard Error:	8910000
Relative Standard Error:	5.9
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.996

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-233476/2	0.0238	0.032151	2.39	3735610.0	1.350868	Y
2	IC 320-233476/3	0.0476	0.058889	2.39	4069838.0	1.237166	Y
3	IC 320-233476/4	0.238	0.304038	2.39	3725581.0	1.277469	Y
4	IC 320-233476/5	0.952	1.314723	2.39	3832872.0	1.381012	Y
5	IC 320-233476/6	2.38	3.339697	2.39	3715442.0	1.403234	Y
6	IC 320-233476/7	4.76	6.515589	2.39	3560852.0	1.368821	Y
7	IC 320-233476/8	9.52	11.463753	2.39	3902400.0	1.204176	Y



Calibration / Perfluorononanoic acid

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

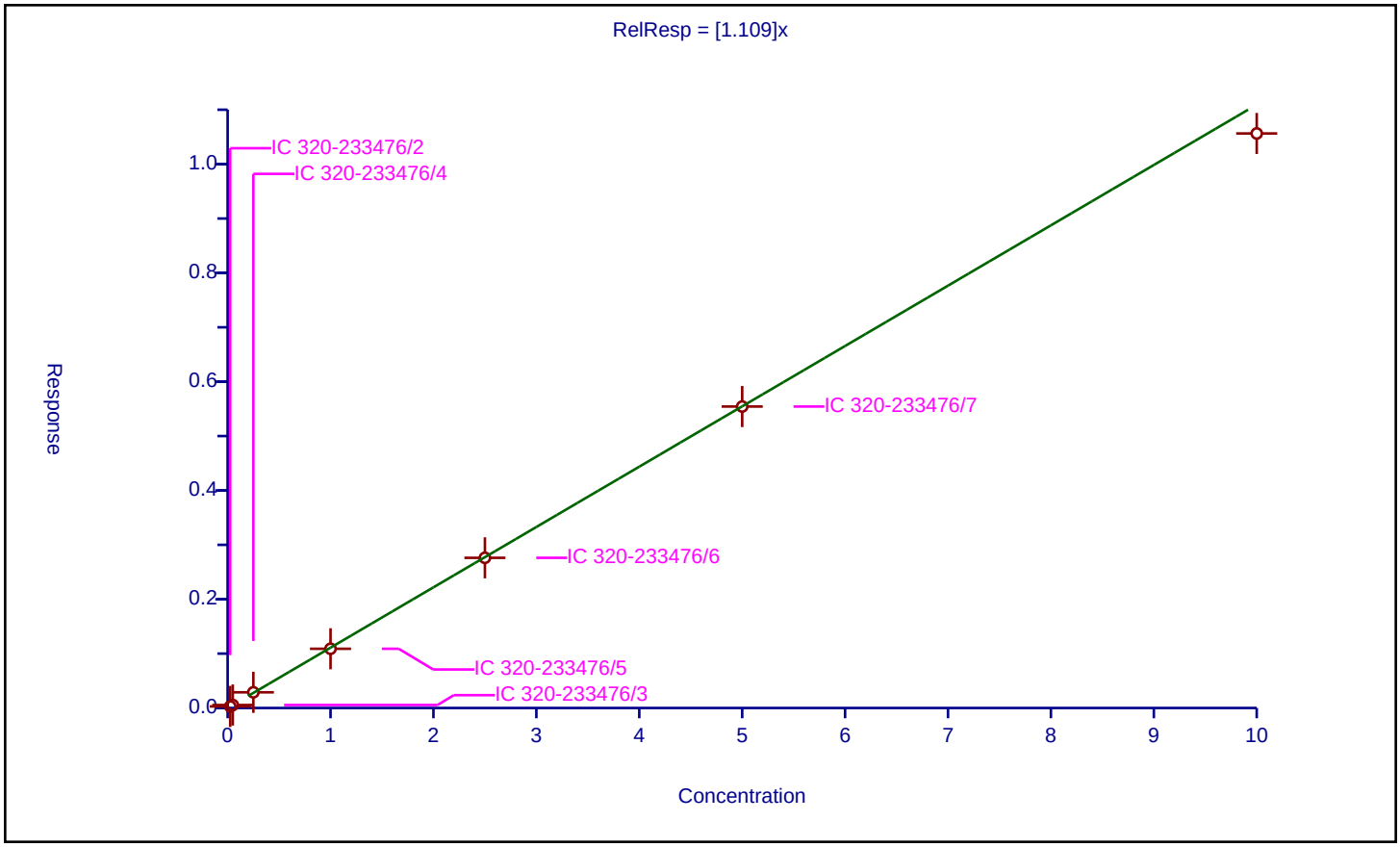
Curve Coefficients

Intercept:	0
Slope:	1.109

Error Coefficients

Standard Error:	6580000
Relative Standard Error:	3.0
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-233476/2	0.025	0.02873	2.5	3518663.0	1.149186	Y
2	IC 320-233476/3	0.05	0.055191	2.5	3839924.0	1.103824	Y
3	IC 320-233476/4	0.25	0.288509	2.5	3471672.0	1.154038	Y
4	IC 320-233476/5	1.0	1.088969	2.5	3677166.0	1.088969	Y
5	IC 320-233476/6	2.5	2.761318	2.5	3458178.0	1.104527	Y
6	IC 320-233476/7	5.0	5.542741	2.5	3155893.0	1.108548	Y
7	IC 320-233476/8	10.0	10.563555	2.5	3292167.0	1.056356	Y



Calibration / Perfluorooctane sulfonic acid

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

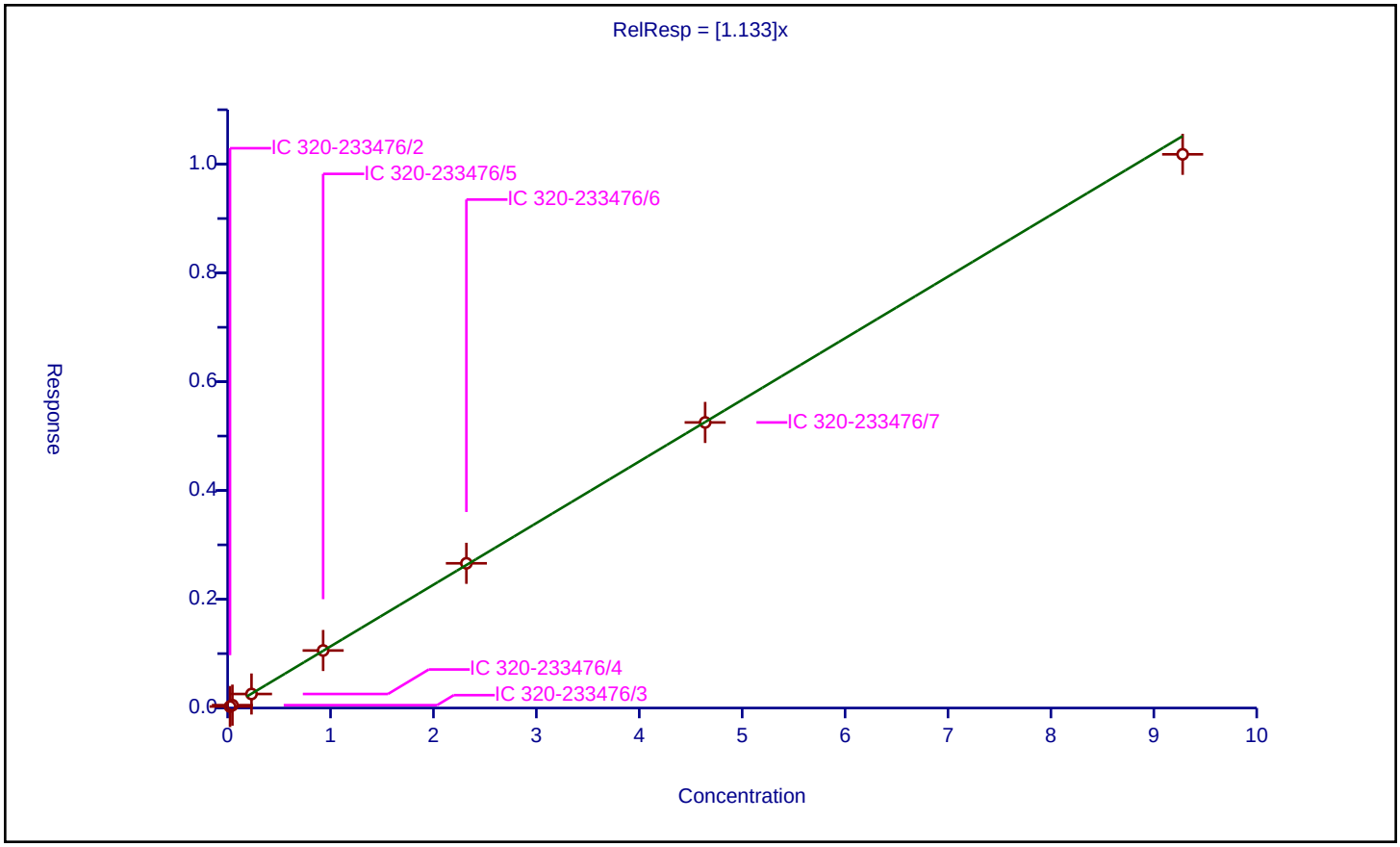
Curve Coefficients

Intercept:	0
Slope:	1.133

Error Coefficients

Standard Error:	7720000
Relative Standard Error:	2.3
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-233476/2	0.0232	0.027285	2.39	3735610.0	1.17608	Y
2	IC 320-233476/3	0.0464	0.052523	2.39	4069838.0	1.131969	Y
3	IC 320-233476/4	0.232	0.257391	2.39	3725581.0	1.109443	Y
4	IC 320-233476/5	0.928	1.057241	2.39	3832872.0	1.139269	Y
5	IC 320-233476/6	2.32	2.660437	2.39	3715442.0	1.14674	Y
6	IC 320-233476/7	4.64	5.250492	2.39	3560852.0	1.131572	Y
7	IC 320-233476/8	9.28	10.180589	2.39	3902400.0	1.097046	Y



Calibration / 9-Chlorohexadecafluoro-3-oxanonane-1-sulfonate

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

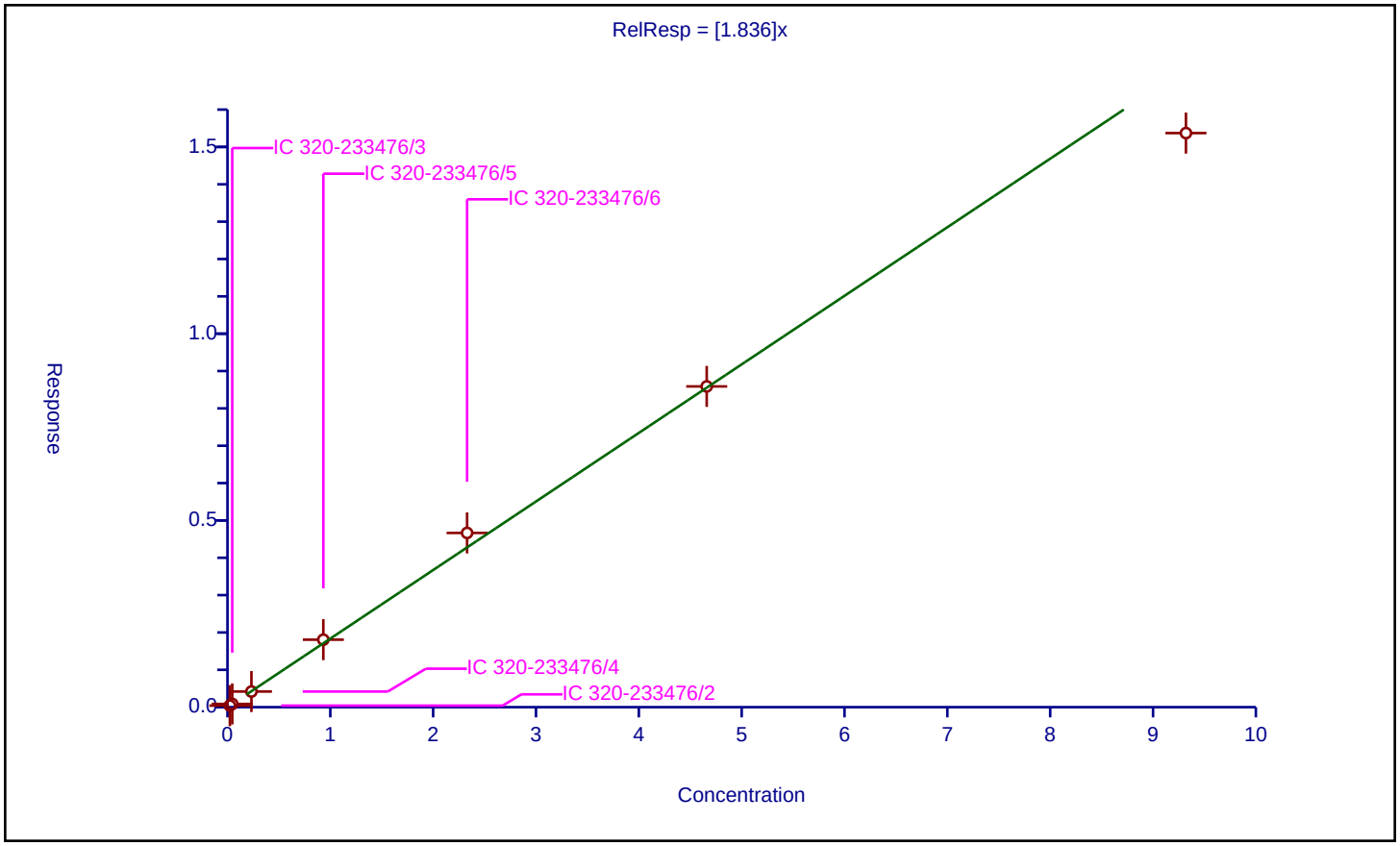
Curve Coefficients

Intercept:	0
Slope:	1.836

Error Coefficients

Standard Error:	11900000
Relative Standard Error:	6.3
Correlation Coefficient:	0.998
Coefficient of Determination (Adjusted):	0.995

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-233476/2	0.0233	0.041271	2.39	3735610.0	1.77128	Y
2	IC 320-233476/3	0.0466	0.086241	2.39	4069838.0	1.85066	Y
3	IC 320-233476/4	0.233	0.418056	2.39	3725581.0	1.794234	Y
4	IC 320-233476/5	0.932	1.807328	2.39	3832872.0	1.939193	Y
5	IC 320-233476/6	2.33	4.665305	2.39	3715442.0	2.002277	Y
6	IC 320-233476/7	4.66	8.588573	2.39	3560852.0	1.843041	Y
7	IC 320-233476/8	9.32	15.371495	2.39	3902400.0	1.649302	Y



Calibration / Perfluorooctane Sulfonamide

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

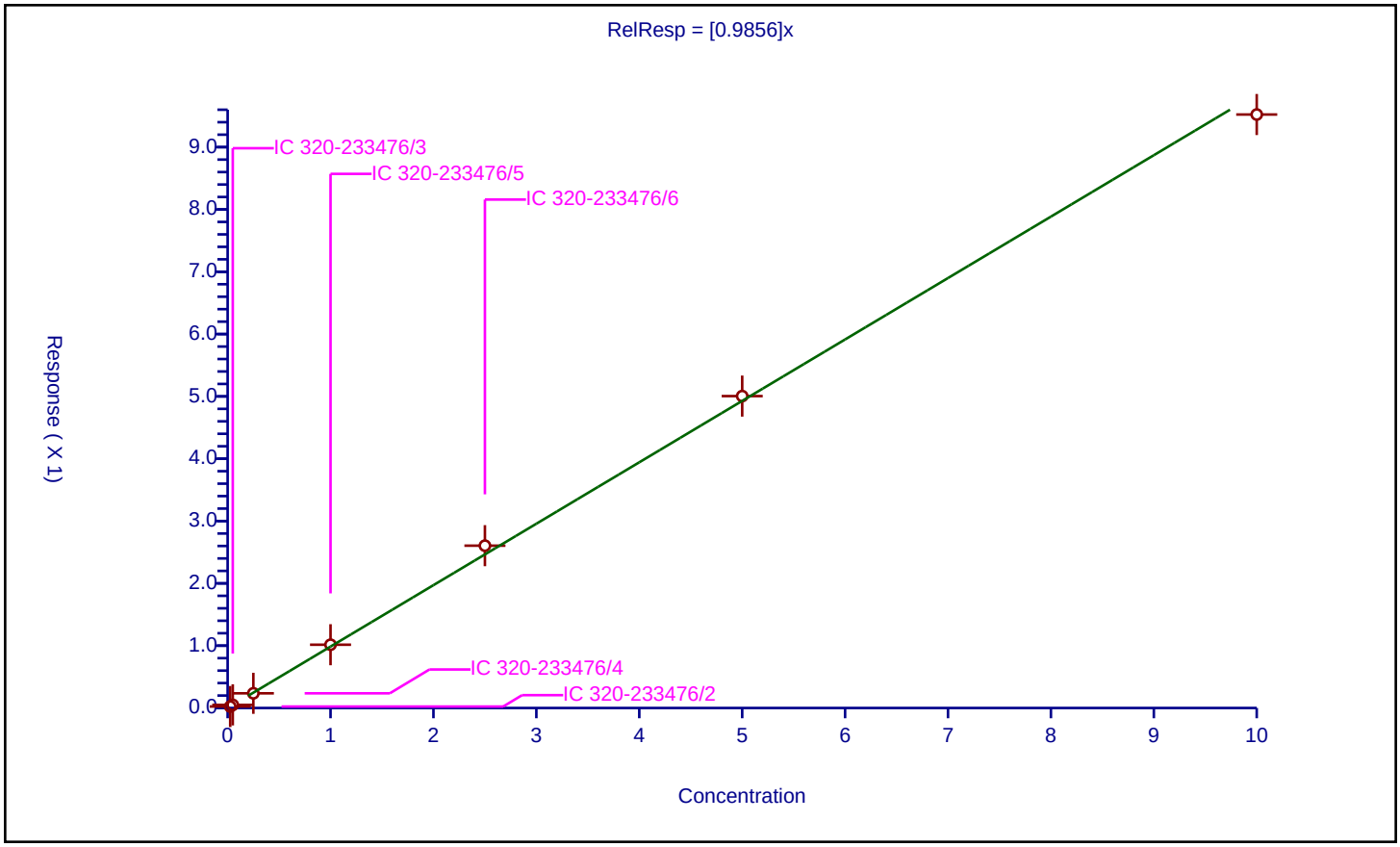
Curve Coefficients

Intercept:	0
Slope:	0.9856

Error Coefficients

Standard Error:	9520000
Relative Standard Error:	4.0
Correlation Coefficient:	0.997
Coefficient of Determination (Adjusted):	0.998

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-233476/2	0.025	0.023618	2.5	5863894.0	0.944731	Y
2	IC 320-233476/3	0.05	0.050075	2.5	6150410.0	1.001494	Y
3	IC 320-233476/4	0.25	0.235594	2.5	5880733.0	0.942376	Y
4	IC 320-233476/5	1.0	1.015474	2.5	6072674.0	1.015474	Y
5	IC 320-233476/6	2.5	2.604692	2.5	5643811.0	1.041877	Y
6	IC 320-233476/7	5.0	5.004977	2.5	5338756.0	1.000995	Y
7	IC 320-233476/8	10.0	9.523158	2.5	5176580.0	0.952316	Y



Calibration / Perfluorononanesulfonic acid

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

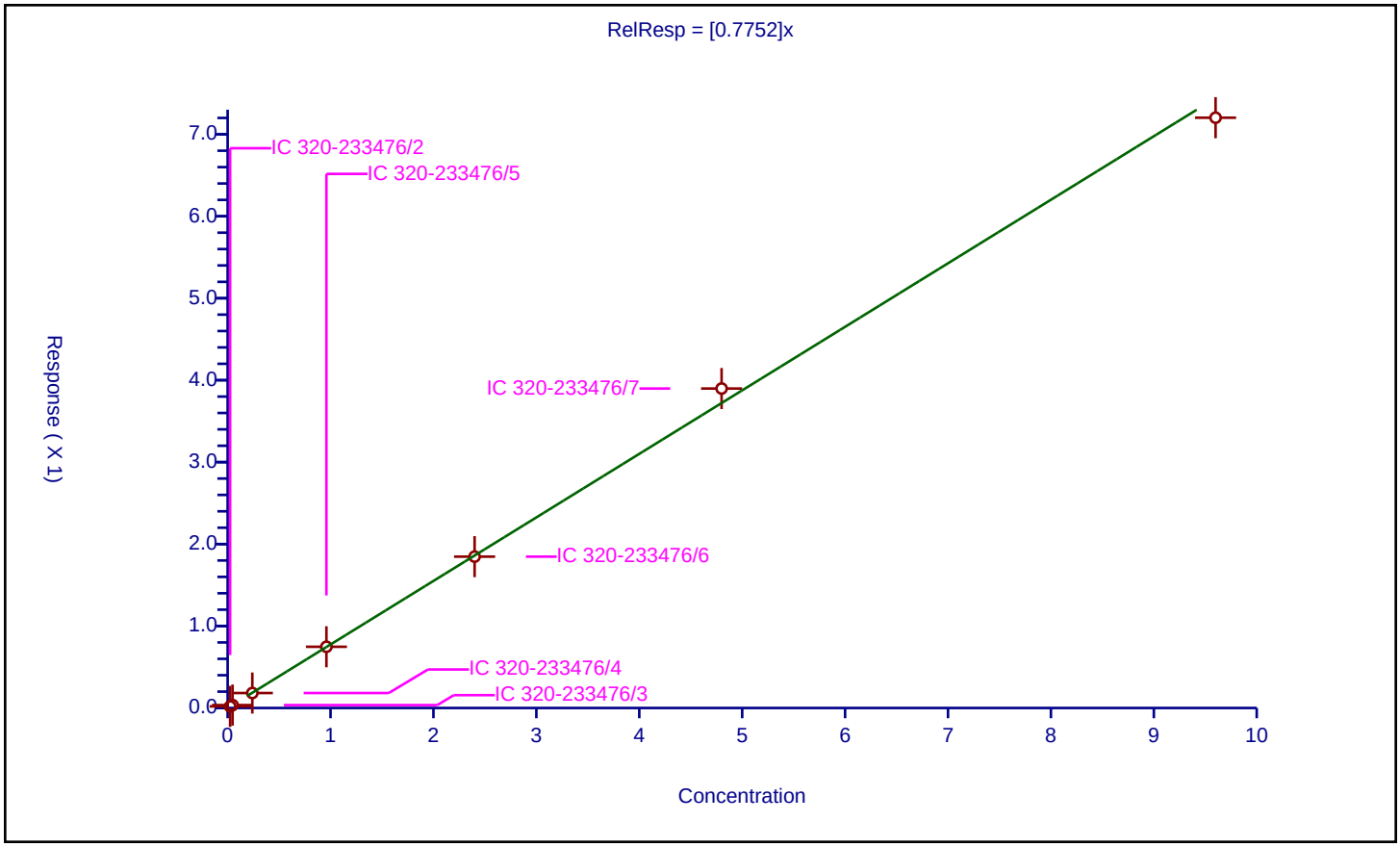
Curve Coefficients

Intercept:	0
Slope:	0.7752

Error Coefficients

Standard Error:	5500000
Relative Standard Error:	3.6
Correlation Coefficient:	1.000
Coefficient of Determination (Adjusted):	0.998

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-233476/2	0.024	0.019514	2.39	3735610.0	0.813091	Y
2	IC 320-233476/3	0.048	0.035611	2.39	4069838.0	0.741901	Y
3	IC 320-233476/4	0.24	0.182711	2.39	3725581.0	0.761294	Y
4	IC 320-233476/5	0.96	0.747017	2.39	3832872.0	0.778143	Y
5	IC 320-233476/6	2.4	1.846875	2.39	3715442.0	0.769531	Y
6	IC 320-233476/7	4.8	3.898163	2.39	3560852.0	0.812117	Y
7	IC 320-233476/8	9.6	7.202726	2.39	3902400.0	0.750284	Y



Calibration / 1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

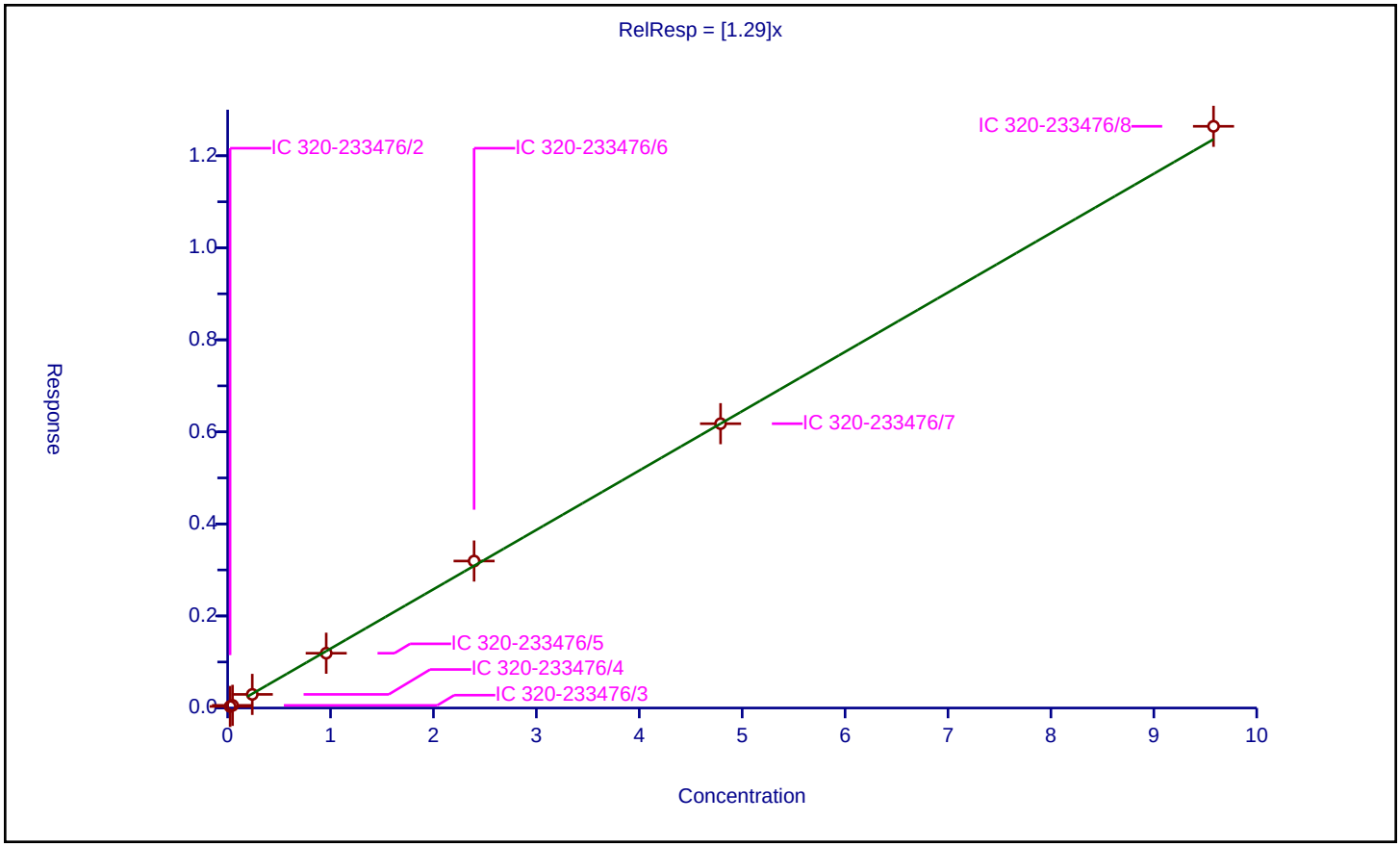
Curve Coefficients

Intercept:	0
Slope:	1.29

Error Coefficients

Standard Error:	2270000
Relative Standard Error:	5.3
Correlation Coefficient:	0.996
Coefficient of Determination (Adjusted):	0.996

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-233476/2	0.02395	0.033642	2.395	1246262.0	1.404681	Y
2	IC 320-233476/3	0.0479	0.057717	2.395	1358867.0	1.204938	Y
3	IC 320-233476/4	0.2395	0.295795	2.395	1290698.0	1.235053	Y
4	IC 320-233476/5	0.958	1.190223	2.395	1241456.0	1.242404	Y
5	IC 320-233476/6	2.395	3.193546	2.395	1060685.0	1.333422	Y
6	IC 320-233476/7	4.79	6.177927	2.395	992916.0	1.289755	Y
7	IC 320-233476/8	9.58	12.639871	2.395	887172.0	1.319402	Y



Calibration / Perfluorodecanoic acid

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

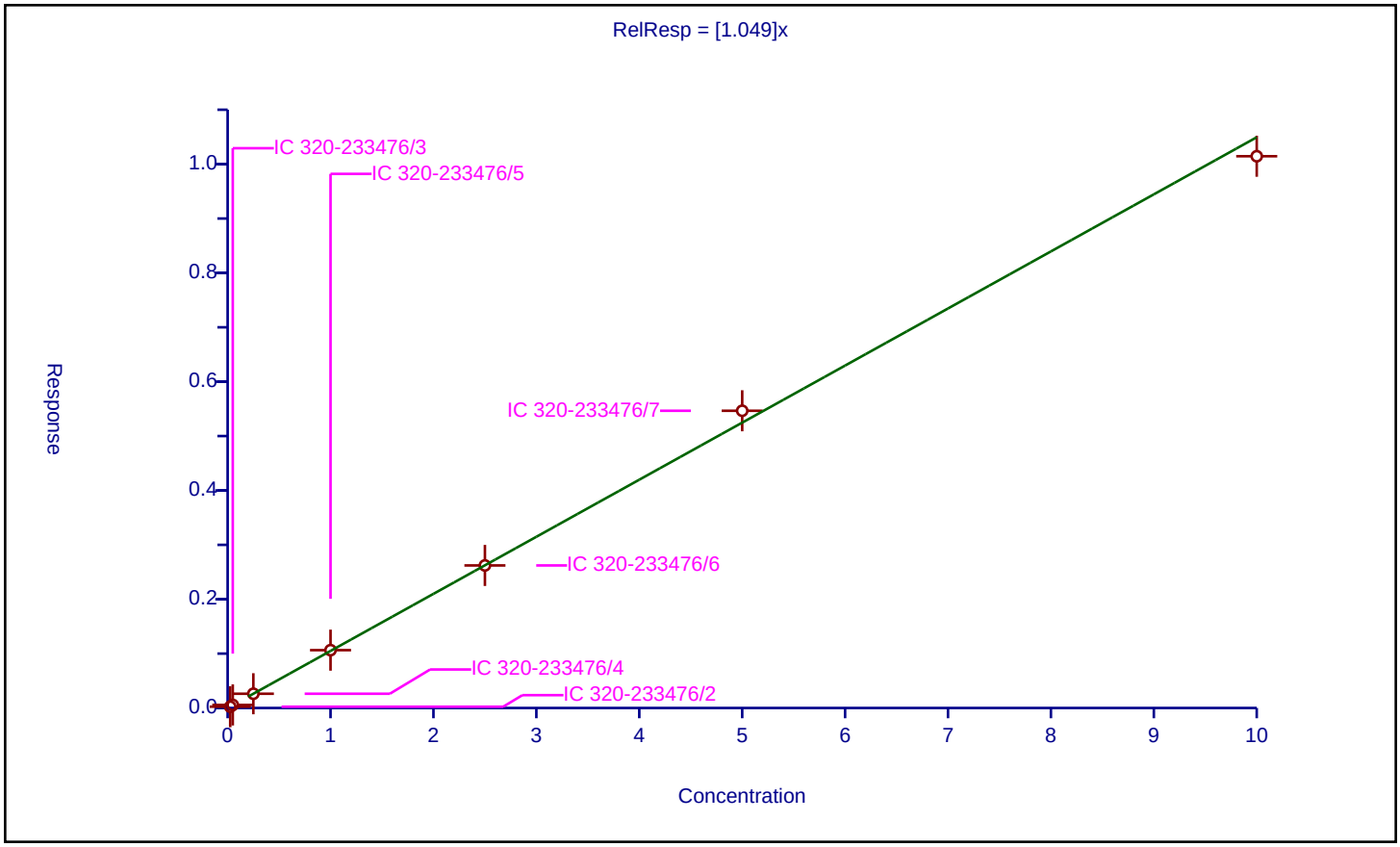
Curve Coefficients

Intercept:	0
Slope:	1.049

Error Coefficients

Standard Error:	5330000
Relative Standard Error:	5.6
Correlation Coefficient:	0.998
Coefficient of Determination (Adjusted):	0.996

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-233476/2	0.025	0.023668	2.5	3206069.0	0.946736	Y
2	IC 320-233476/3	0.05	0.05651	2.5	3274309.0	1.130208	Y
3	IC 320-233476/4	0.25	0.262265	2.5	3265845.0	1.049061	Y
4	IC 320-233476/5	1.0	1.063612	2.5	3225992.0	1.063612	Y
5	IC 320-233476/6	2.5	2.621069	2.5	3096188.0	1.048428	Y
6	IC 320-233476/7	5.0	5.46526	2.5	2641138.0	1.093052	Y
7	IC 320-233476/8	10.0	10.145014	2.5	2747254.0	1.014501	Y



Calibration / N-methyl perfluorooctane sulfonamidoacetic acid

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

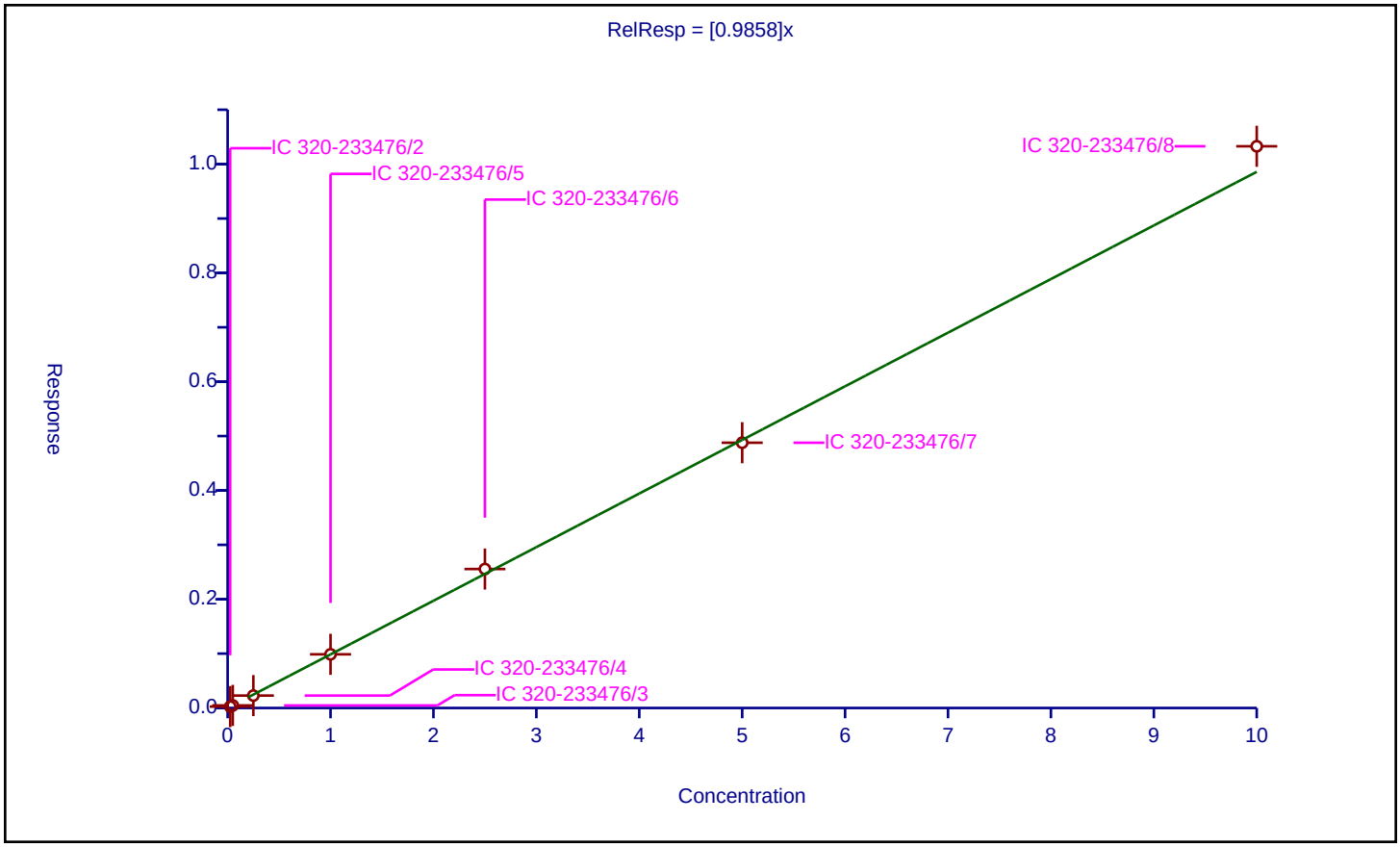
Curve Coefficients

Intercept:	0
Slope:	0.9858

Error Coefficients

Standard Error:	2420000
Relative Standard Error:	4.5
Correlation Coefficient:	0.998
Coefficient of Determination (Adjusted):	0.997

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-233476/2	0.025	0.02559	2.5	1215393.0	1.02362	Y
2	IC 320-233476/3	0.05	0.047361	2.5	1276369.0	0.947218	Y
3	IC 320-233476/4	0.25	0.228194	2.5	1236119.0	0.912776	Y
4	IC 320-233476/5	1.0	0.986819	2.5	1320092.0	0.986819	Y
5	IC 320-233476/6	2.5	2.555182	2.5	1216339.0	1.022073	Y
6	IC 320-233476/7	5.0	4.877654	2.5	1218514.0	0.975531	Y
7	IC 320-233476/8	10.0	10.328075	2.5	1276287.0	1.032807	Y



Calibration / Perfluorodecane Sulfonic acid

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

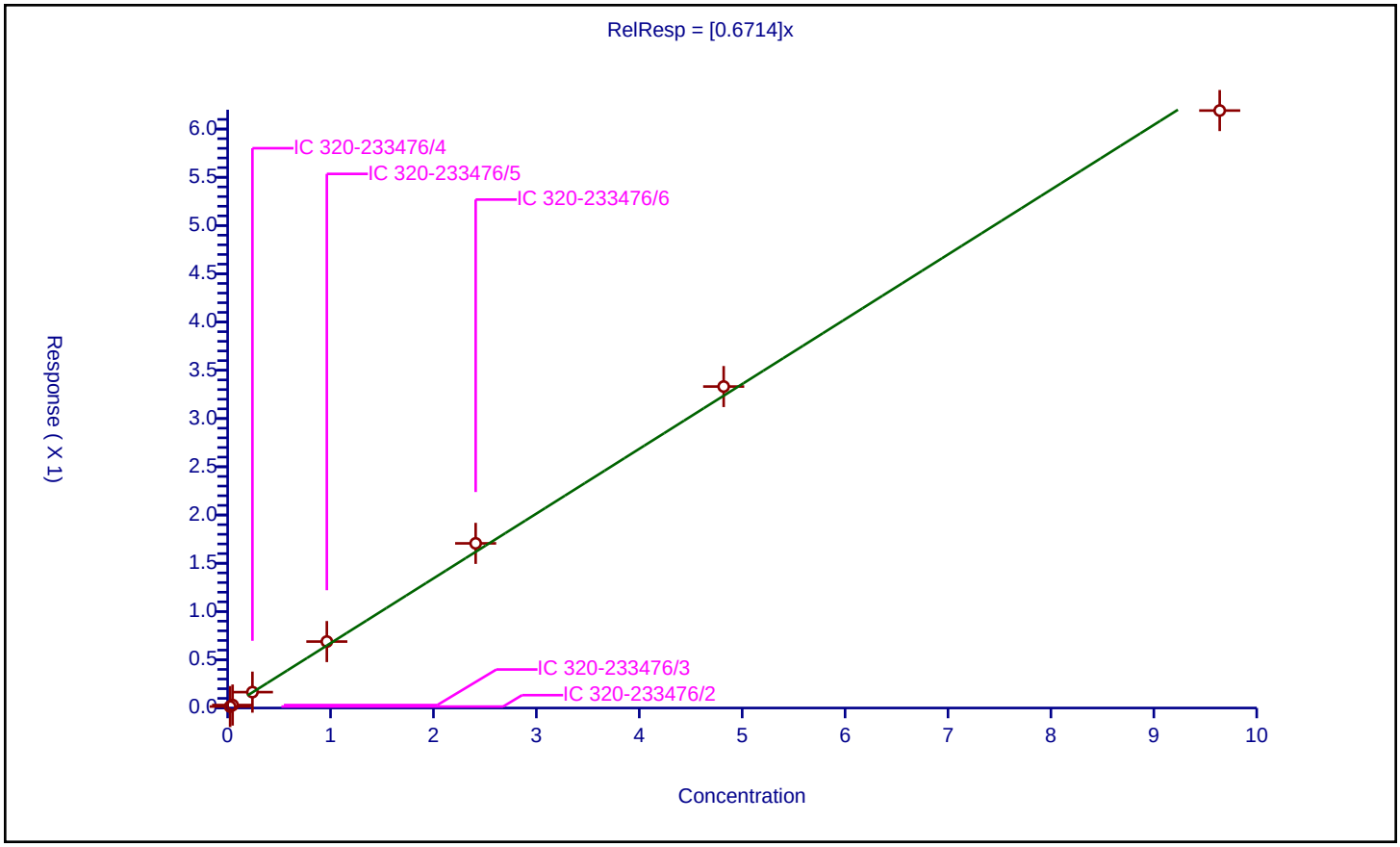
Curve Coefficients

Intercept:	0
Slope:	0.6714

Error Coefficients

Standard Error:	4750000
Relative Standard Error:	5.4
Correlation Coefficient:	1.000
Coefficient of Determination (Adjusted):	0.997

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-233476/2	0.0241	0.015003	2.39	3735610.0	0.622533	Y
2	IC 320-233476/3	0.0482	0.030788	2.39	4069838.0	0.638747	Y
3	IC 320-233476/4	0.241	0.164641	2.39	3725581.0	0.683156	Y
4	IC 320-233476/5	0.964	0.68841	2.39	3832872.0	0.714119	Y
5	IC 320-233476/6	2.41	1.70619	2.39	3715442.0	0.707963	Y
6	IC 320-233476/7	4.82	3.33137	2.39	3560852.0	0.691156	Y
7	IC 320-233476/8	9.64	6.19165	2.39	3902400.0	0.642287	Y



Calibration / N-ethyl perfluorooctane sulfonamidoacetic acid

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

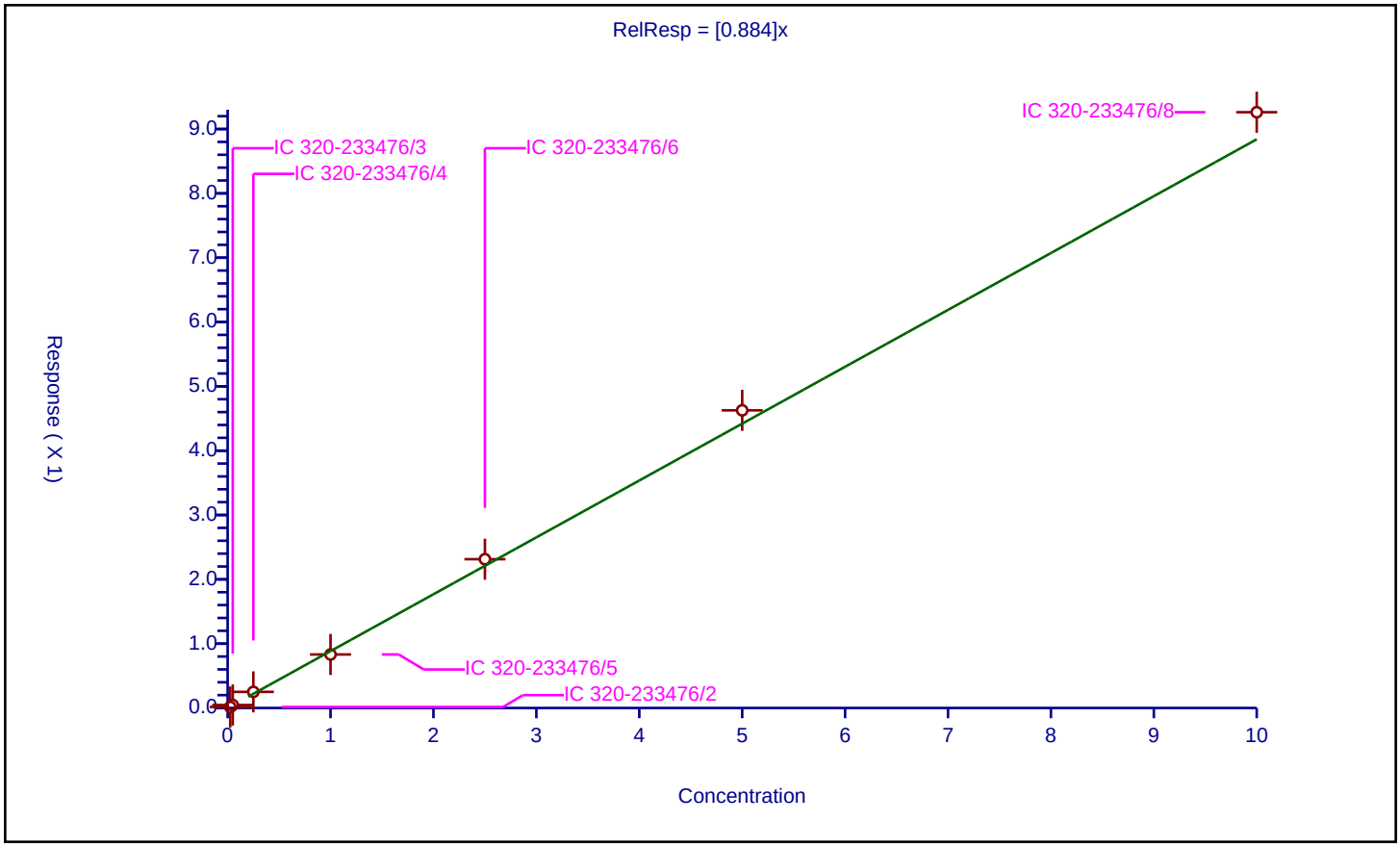
Curve Coefficients

Intercept:	0
Slope:	0.884

Error Coefficients

Standard Error:	2040000
Relative Standard Error:	13.1
Correlation Coefficient:	1.000
Coefficient of Determination (Adjusted):	0.981

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-233476/2	0.025	0.016159	2.5	1291362.0	0.646372	Y
2	IC 320-233476/3	0.05	0.046504	2.5	1427681.0	0.930075	Y
3	IC 320-233476/4	0.25	0.250696	2.5	1297377.0	1.002785	Y
4	IC 320-233476/5	1.0	0.832213	2.5	1412562.0	0.832213	Y
5	IC 320-233476/6	2.5	2.313147	2.5	1230676.0	0.925259	Y
6	IC 320-233476/7	5.0	4.627308	2.5	1179674.0	0.925462	Y
7	IC 320-233476/8	10.0	9.261434	2.5	1167600.0	0.926143	Y



Calibration / Perfluoroundecanoic acid

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

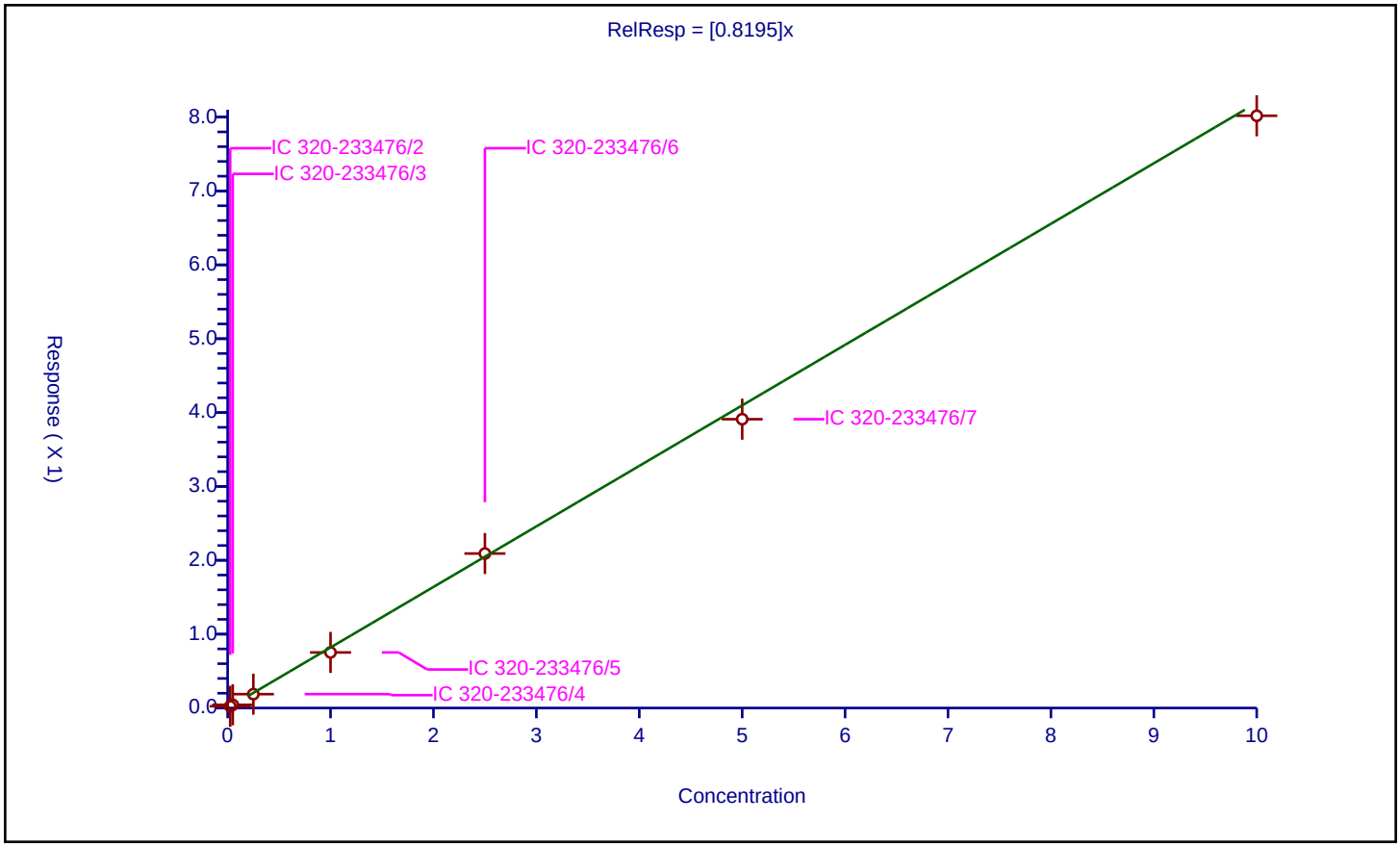
Curve Coefficients

Intercept:	0
Slope:	0.8195

Error Coefficients

Standard Error:	3500000
Relative Standard Error:	8.5
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.990

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-233476/2	0.025	0.023585	2.5	2509506.0	0.943413	Y
2	IC 320-233476/3	0.05	0.043495	2.5	2825527.0	0.869891	Y
3	IC 320-233476/4	0.25	0.187568	2.5	2653699.0	0.750273	Y
4	IC 320-233476/5	1.0	0.752193	2.5	2739039.0	0.752193	Y
5	IC 320-233476/6	2.5	2.091338	2.5	2509304.0	0.836535	Y
6	IC 320-233476/7	5.0	3.910313	2.5	2361908.0	0.782063	Y
7	IC 320-233476/8	10.0	8.018188	2.5	2308936.0	0.801819	Y



Calibration / 11-Chloroeicosafluoro-3-oxaundecane-1-sulfonate

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

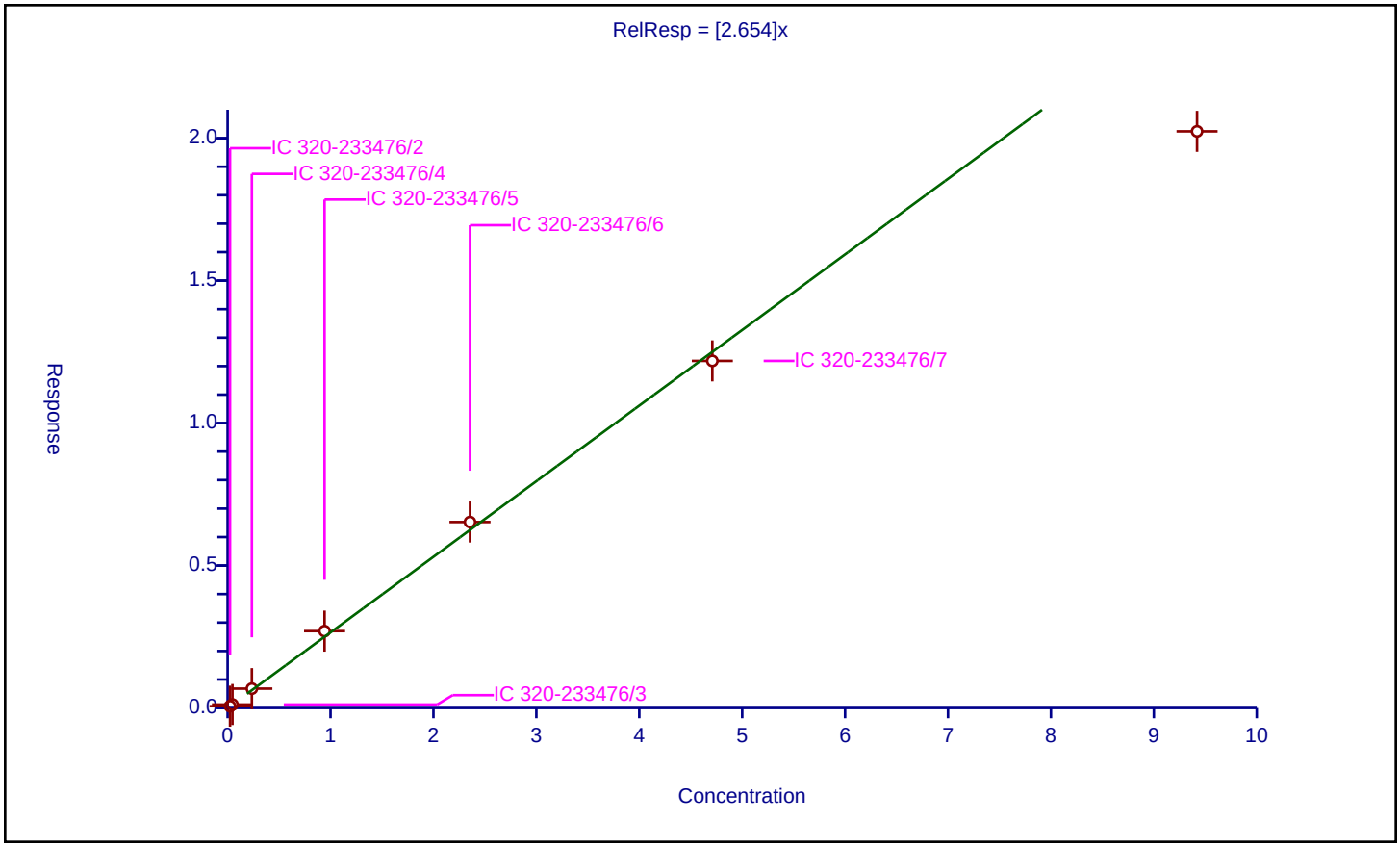
Curve Coefficients

Intercept:	0
Slope:	2.654

Error Coefficients

Standard Error:	16000000
Relative Standard Error:	9.4
Correlation Coefficient:	0.996
Coefficient of Determination (Adjusted):	0.989

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-233476/2	0.02355	0.06363	2.39	3735610.0	2.701917	Y
2	IC 320-233476/3	0.0471	0.123072	2.39	4069838.0	2.612987	Y
3	IC 320-233476/4	0.2355	0.67997	2.39	3725581.0	2.887346	Y
4	IC 320-233476/5	0.942	2.699041	2.39	3832872.0	2.865224	Y
5	IC 320-233476/6	2.355	6.527359	2.39	3715442.0	2.771702	Y
6	IC 320-233476/7	4.71	12.183485	2.39	3560852.0	2.586727	Y
7	IC 320-233476/8	9.42	20.241769	2.39	3902400.0	2.148808	Y



Calibration / Perfluorododecanoic acid

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

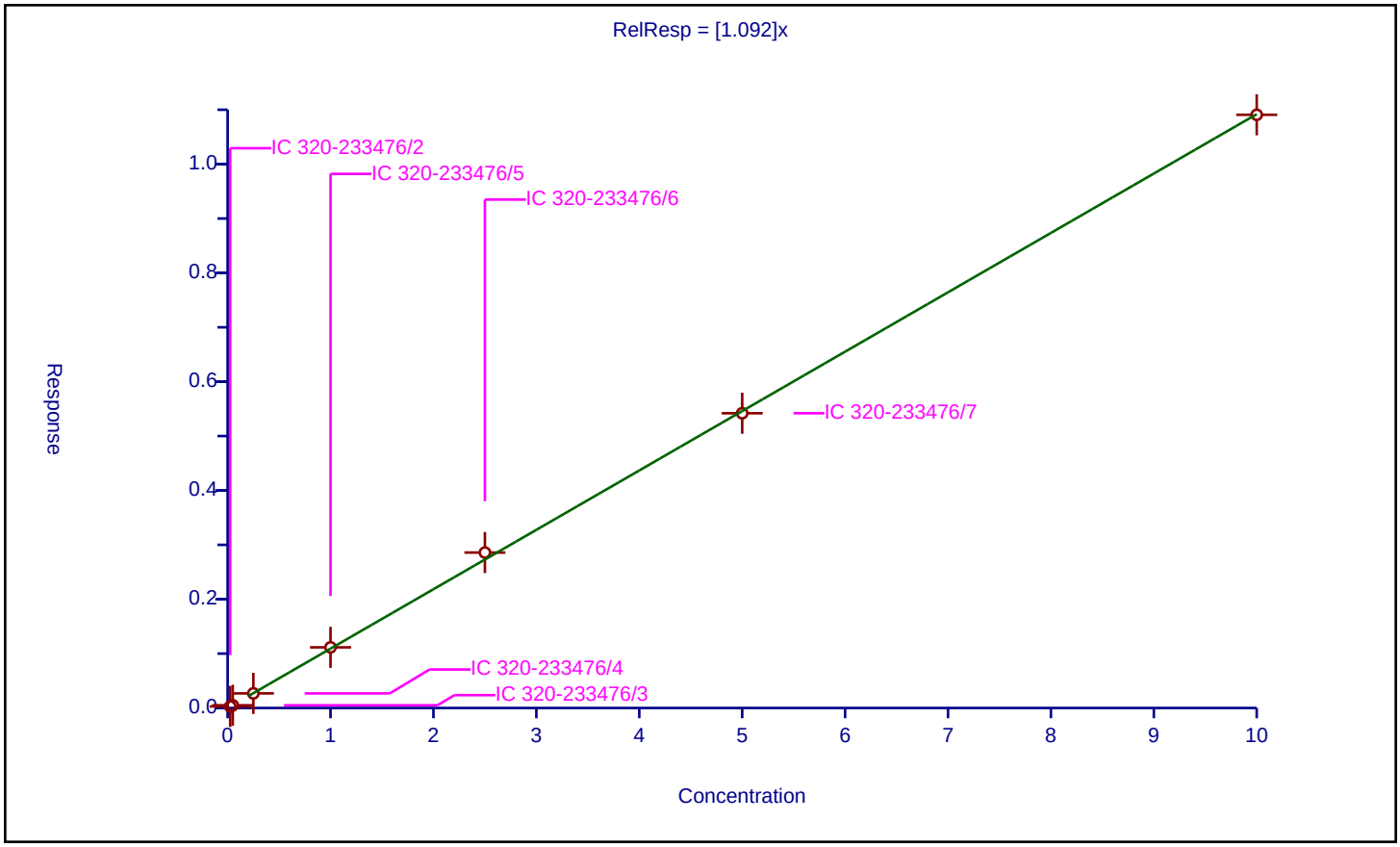
Curve Coefficients

Intercept:	0
Slope:	1.092

Error Coefficients

Standard Error:	5280000
Relative Standard Error:	4.5
Correlation Coefficient:	1.000
Coefficient of Determination (Adjusted):	0.997

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-233476/2	0.025	0.02844	2.5	2612394.0	1.137616	Y
2	IC 320-233476/3	0.05	0.049875	2.5	2796780.0	0.997504	Y
3	IC 320-233476/4	0.25	0.268647	2.5	2756034.0	1.074588	Y
4	IC 320-233476/5	1.0	1.115377	2.5	2741167.0	1.115377	Y
5	IC 320-233476/6	2.5	2.858349	2.5	2524421.0	1.14334	Y
6	IC 320-233476/7	5.0	5.419481	2.5	2508500.0	1.083896	Y
7	IC 320-233476/8	10.0	10.907382	2.5	2588991.0	1.090738	Y



Calibration / Perfluorotridecanoic acid

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

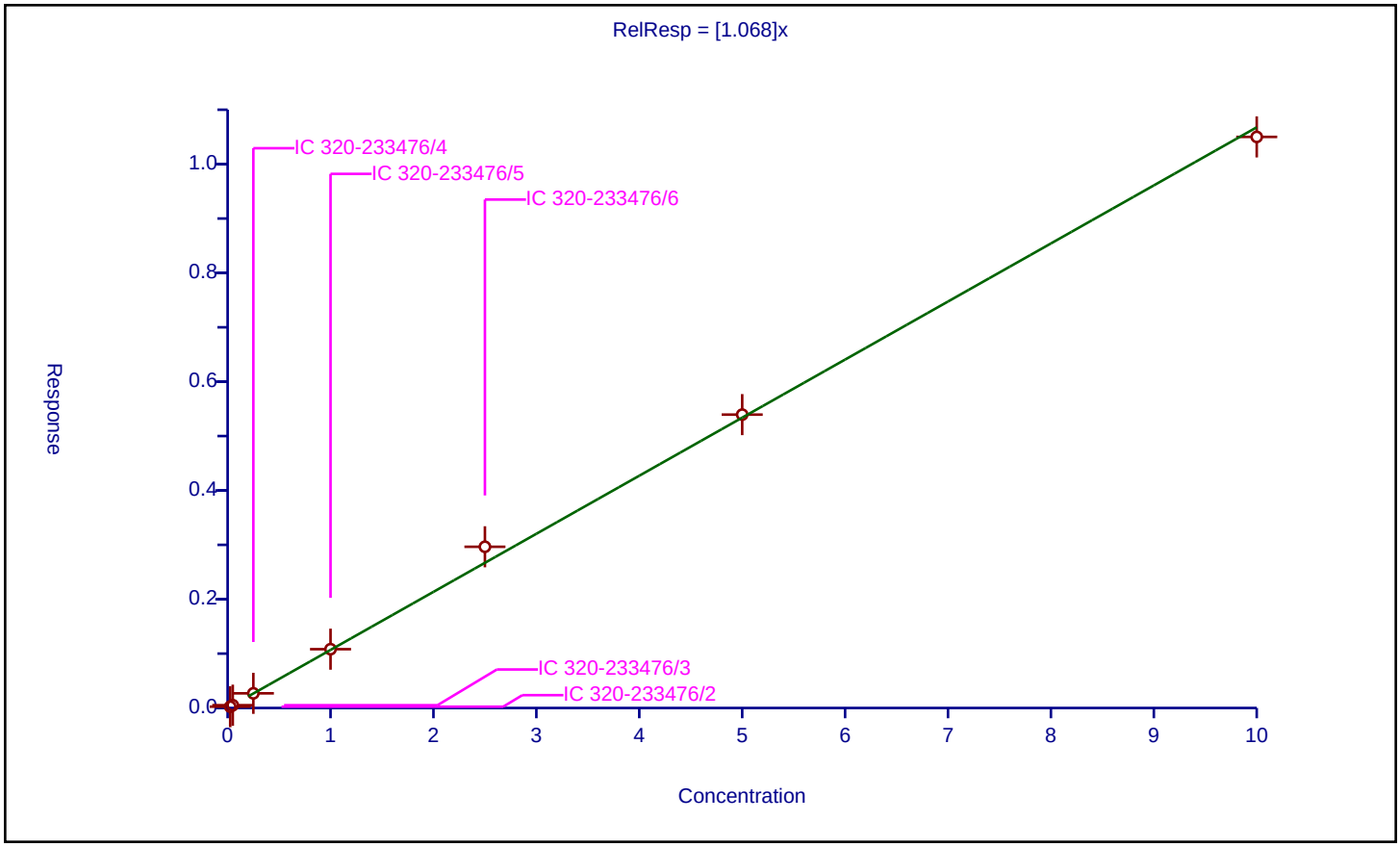
Curve Coefficients

Intercept:	0
Slope:	1.068

Error Coefficients

Standard Error:	5130000
Relative Standard Error:	6.2
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.996

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-233476/2	0.025	0.024218	2.5	2612394.0	0.968728	Y
2	IC 320-233476/3	0.05	0.051461	2.5	2796780.0	1.029219	Y
3	IC 320-233476/4	0.25	0.269904	2.5	2756034.0	1.079617	Y
4	IC 320-233476/5	1.0	1.081554	2.5	2741167.0	1.081554	Y
5	IC 320-233476/6	2.5	2.964363	2.5	2524421.0	1.185745	Y
6	IC 320-233476/7	5.0	5.394361	2.5	2508500.0	1.078872	Y
7	IC 320-233476/8	10.0	10.5003	2.5	2588991.0	1.05003	Y



Calibration / Perfluorotetradecanoic acid

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

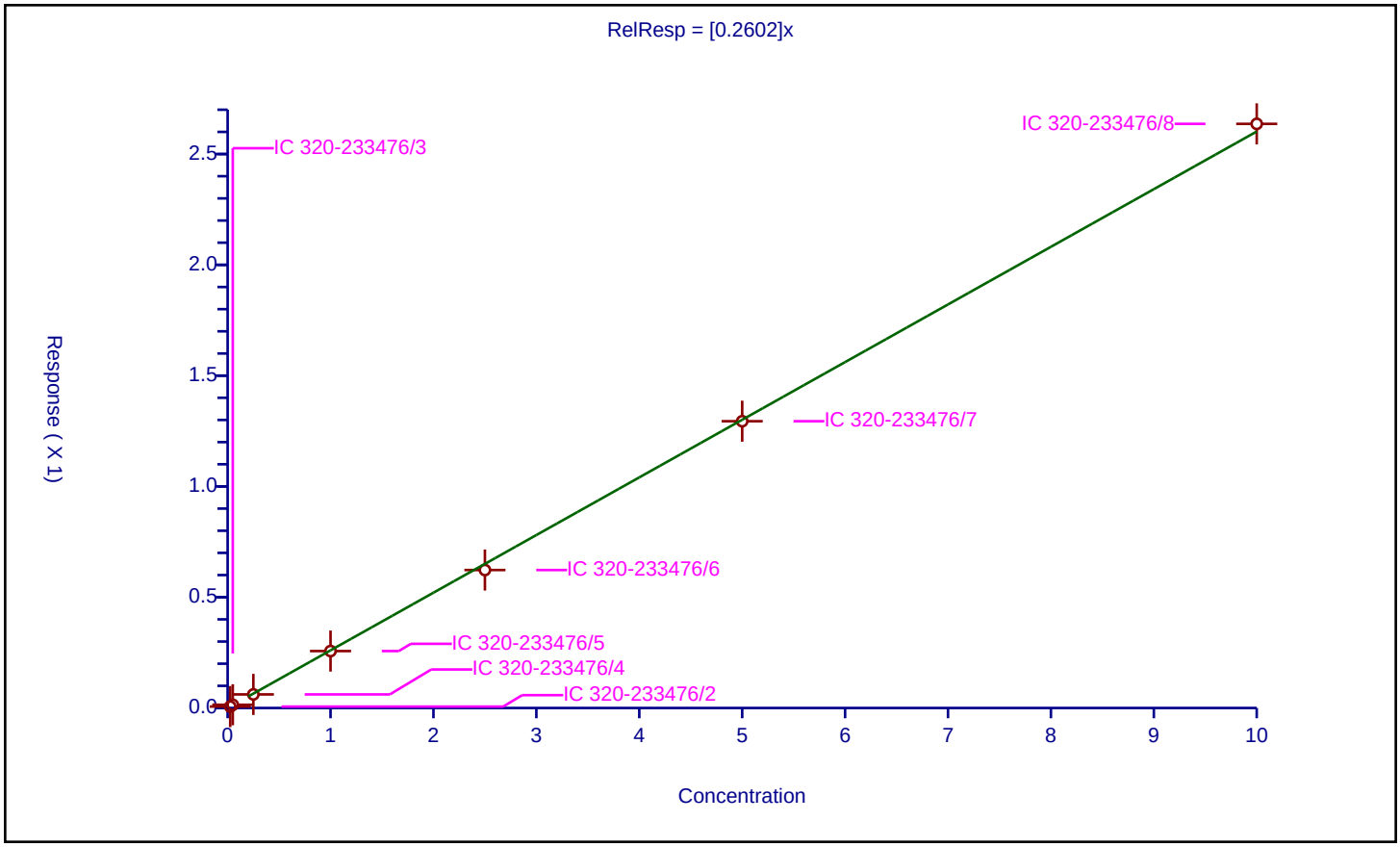
Curve Coefficients

Intercept:	0
Slope:	0.2602

Error Coefficients

Standard Error:	1340000
Relative Standard Error:	5.9
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.996

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-233476/2	0.025	0.006388	2.5	2682209.0	0.255536	Y
2	IC 320-233476/3	0.05	0.014594	2.5	2667637.0	0.291888	Y
3	IC 320-233476/4	0.25	0.061333	2.5	2913500.0	0.24533	Y
4	IC 320-233476/5	1.0	0.256927	2.5	2848985.0	0.256927	Y
5	IC 320-233476/6	2.5	0.62267	2.5	2737226.0	0.249068	Y
6	IC 320-233476/7	5.0	1.294262	2.5	2597628.0	0.258852	Y
7	IC 320-233476/8	10.0	2.63624	2.5	2753301.0	0.263624	Y



Calibration / Perfluorohexadecanoic acid

Curve Type:	Linear
Weighting:	Conc_Sq
Origin:	None
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

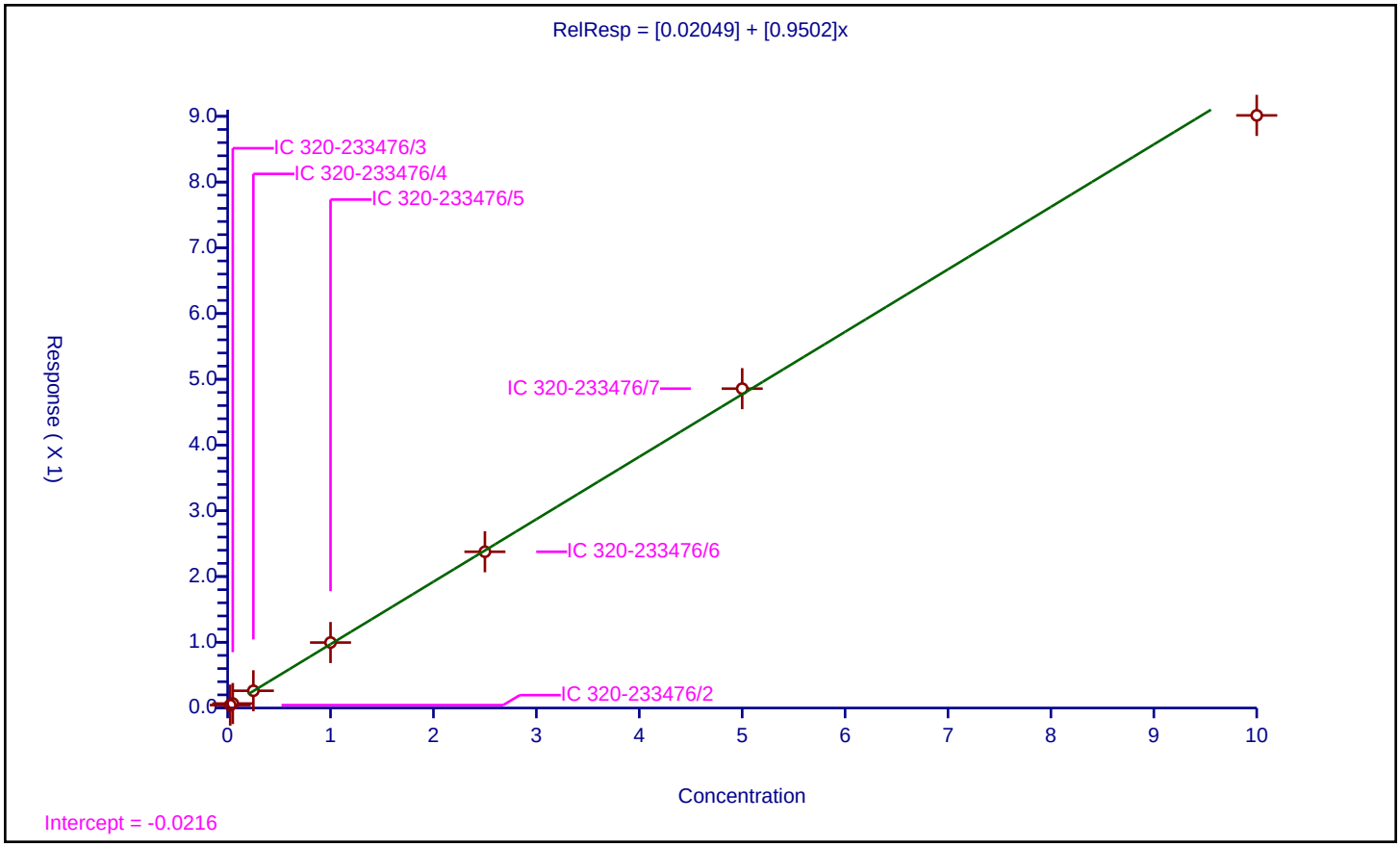
Curve Coefficients

Intercept:	0.02049
Slope:	0.9502

Error Coefficients

Standard Error:	7930000
Relative Standard Error:	2.9
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-233476/2	0.025	0.044133	2.5	4507577.0	1.765339	Y
2	IC 320-233476/3	0.05	0.068238	2.5	4084288.0	1.364754	Y
3	IC 320-233476/4	0.25	0.262084	2.5	4554944.0	1.048338	Y
4	IC 320-233476/5	1.0	0.995622	2.5	4668246.0	0.995622	Y
5	IC 320-233476/6	2.5	2.376721	2.5	4503233.0	0.950689	Y
6	IC 320-233476/7	5.0	4.857617	2.5	4082261.0	0.971523	Y
7	IC 320-233476/8	10.0	9.013987	2.5	4200183.0	0.901399	Y



Calibration / Perfluorooctadecanoic acid

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	IsoDil
Response Base:	
RF Rounding:	0

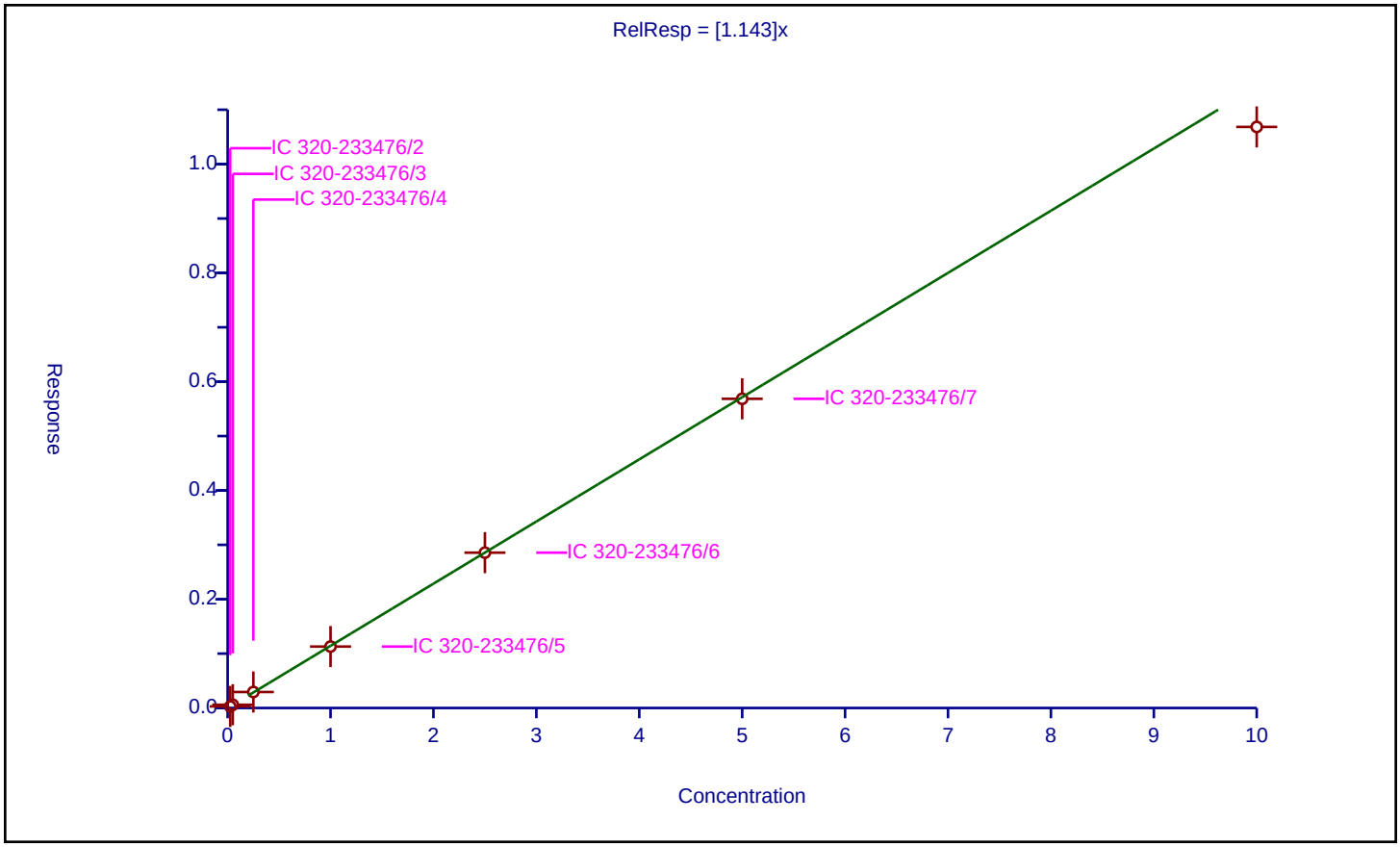
Curve Coefficients

Intercept:	0
Slope:	1.143

Error Coefficients

Standard Error:	8560000
Relative Standard Error:	3.6
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.998

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-233476/2	0.025	0.028687	2.5	4507577.0	1.14749	Y
2	IC 320-233476/3	0.05	0.059922	2.5	4084288.0	1.198434	Y
3	IC 320-233476/4	0.25	0.29424	2.5	4554944.0	1.176958	Y
4	IC 320-233476/5	1.0	1.129523	2.5	4668246.0	1.129523	Y
5	IC 320-233476/6	2.5	2.856226	2.5	4503233.0	1.14249	Y
6	IC 320-233476/7	5.0	5.684836	2.5	4082261.0	1.136967	Y
7	IC 320-233476/8	10.0	10.684076	2.5	4200183.0	1.068408	Y



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Lab Sample ID: ICV 320-232544/10 Calibration Date: 07/05/2018 12:02

Instrument ID: A8_N Calib Start Date: 07/05/2018 08:51

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 07/05/2018 09:38

Lab File ID: 2018.07.05LLICALAAA_010.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	1.021	1.001		2.45	2.50	-2.0	40.0
Perfluoropentanoic acid (PFPeA)	AveID	1.191	1.184		2.49	2.50	-0.6	40.0
Perfluorobutanesulfonic acid (PFBS)	AveID	75.80	76.74		2.24	2.21	1.2	50.0
4:2 FTS	AveID	15.68	16.31		2.43	2.34	4.0	50.0
Perfluorohexanoic acid (PFHxA)	AveID	1.018	1.050		2.58	2.50	3.2	40.0
Perfluoropentanesulfonic acid (PFPeS)	AveID	64.85	65.82		2.38	2.35	1.5	50.0
HFPO-DA (GenX)	AveID	2.299	2.197		2.39	2.50	-4.4	40.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.130	1.075		2.38	2.50	-4.9	40.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.156	1.048		2.06	2.28	-9.4	40.0
ADONA	AveID	3.706	3.546		2.39	2.50	-4.3	50.0
6:2 FTS	AveID	1.567	1.416		2.14	2.37	-9.6	40.0
Perfluorooctanoic acid (PFOA)	AveID	1.186	1.151		2.43	2.50	-2.9	40.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.339	1.361		2.42	2.38	1.6	50.0
Perfluorononanoic acid (PFNA)	AveID	1.078	1.041		2.41	2.50	-3.4	40.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.168	1.149		2.28	2.32	-1.6	40.0
9-Chlorohexadecafluoro-3-oxa nonane-1-sulfonate	AveID	1.891	1.920		2.37	2.33	1.6	50.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9917	0.9655		2.43	2.50	-2.6	40.0
8:2 FTS	AveID	1.321	1.229		2.23	2.40	-7.0	40.0
Perfluorononanesulfonic acid (PFNS)	AveID	0.8126	0.7722		2.28	2.40	-5.0	50.0
Perfluorodecanoic acid (PFDA)	AveID	1.042	1.069		2.57	2.50	2.6	40.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	1.029	1.023		2.49	2.50	-0.6	40.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.7195	0.7288		2.44	2.41	1.3	50.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.9017	0.8710		2.42	2.50	-3.4	40.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.8501	0.8752		2.57	2.50	3.0	40.0
11-Chloroeicosafluoro-3-oxau ndecane-1-sulfonate	AveID	2.884	3.013		2.46	2.36	4.5	50.0
Perfluorododecanoic acid (PFDoA)	AveID	1.102	1.060		2.40	2.50	-3.8	40.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.227	1.075		2.19	2.50	-12.4	50.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2708	0.2671		2.47	2.50	-1.4	50.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		0.9846		2.57	2.50	2.7	50.0

FORM VII 537 (modified)

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Lab Sample ID: ICV 320-232544/10 Calibration Date: 07/05/2018 12:02

Instrument ID: A8_N Calib Start Date: 07/05/2018 08:51

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 07/05/2018 09:38

Lab File ID: 2018.07.05LLICALAAA_010.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.164	1.146		2.46	2.50	-1.5	50.0
13C4 PFBA	Ave	1.384	1.368		2.47	2.50	-1.2	50.0
13C5 PFPeA	Ave	1.025	0.9902		2.42	2.50	-3.3	50.0
13C3-PFBS	Ave	0.0245	0.0242		2.30	2.33	-1.1	50.0
M2-4:2FTS	Ave	0.1575	0.1616		2.39	2.34	2.6	50.0
13C2 PFHxA	Ave	1.097	1.083		2.47	2.50	-1.2	50.0
13C3 HFPO-DA	Ave	0.0899	0.0889		2.47	2.50	-1.1	50.0
13C4-PFHpA	Ave	0.9735	1.039		2.67	2.50	6.7	50.0
18O2 PFHxS	Ave	1.198	1.278		2.52	2.37	6.7	50.0
M2-6:2FTS	Ave	0.2186	0.2216		2.41	2.38	1.4	40.0
13C4 PFOA	Ave	0.9539	0.9766		2.56	2.50	2.4	50.0
13C4 PFOS	Ave	0.8551	0.8610		2.41	2.39	0.7	50.0
13C5 PFNA	Ave	0.8109	0.8487		2.62	2.50	4.7	50.0
13C8 FOSA	Ave	1.187	1.178		2.48	2.50	-0.8	50.0
M2-8:2FTS	Ave	0.2431	0.2416		2.38	2.40	-0.6	40.0
13C2 PFDA	Ave	0.6992	0.6855		2.45	2.50	-2.0	50.0
d3-NMeFOSAA	Ave	0.4120	0.3877		2.35	2.50	-5.9	50.0
d5-NEtFOSAA	Ave	0.4070	0.4020		2.47	2.50	-1.2	50.0
13C2 PFUnA	Ave	0.5873	0.5641		2.40	2.50	-4.0	50.0
13C2 PFDoA	Ave	0.6294	0.6275		2.49	2.50	-0.3	50.0
13C2-PFTeDA	Ave	0.7673	0.7108		2.32	2.50	-7.4	50.0
13C2-PFHxDA	Ave	1.420	1.436		2.53	2.50	1.2	50.0

FORM VII 537 (modified)

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180705-60684.b\2018.07.05LLICALAAA_010.d
Lims ID: ICV Full
Client ID:
Sample Type: ICV
Inject. Date: 05-Jul-2018 12:02:30 ALS Bottle#: 17 Worklist Smp#: 10
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: ICV
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist:

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180705-60684.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 05-Jul-2018 12:40:52 Calib Date: 05-Jul-2018 09:38:17
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180705-60684.b\2018.07.05LLICALAA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK035

First Level Reviewer: hannigana Date: 05-Jul-2018 12:15:22

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.435	1.432	0.003	0.540	6131064	2.47		98.8	24367	
2 Perfluorobutyric acid										
212.90 > 169.00	1.435	1.434	0.001	1.000	6136981	2.45			1903	
D 3 13C5-PFPeA										
267.90 > 223.00	1.719	1.716	0.003	0.647	4438344	2.42		96.7	41768	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.719	1.719	0.0	1.000	5256136	2.49			3641	
D 47 13C3-PFBS										
301.90 > 83.00	1.755	1.756	-0.001	0.660	101047	2.30		98.9	711	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.755	1.760	-0.005	1.000	7370326	2.24			41967	
298.90 > 99.00	1.755	1.760	-0.005	1.000	3028131		2.43(1.25-3.74)		18538	
D 60 M2-4:2FTS										
329.00 > 81.00	1.959	1.966	-0.007	0.737	676447	2.39		103	7641	
61 1H,1H,2H,2H-perfluorohexanesulfoni										
327.00 > 307.00	1.969	1.966	0.003	1.122	1654822	2.43			50158	
D 7 13C2 PFHxA										
315.00 > 270.00	2.002	2.000	0.002	0.753	4854949	2.47		98.8	51160	
6 Perfluorohexanoic acid										
313.00 > 269.00	2.002	2.002	0.0	1.000	5099825	2.58			8587	
313.00 > 119.00	2.002	2.002	0.0	1.000	456216		11.18(5.03-15.10)		8100	
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.025	2.025	0.0	1.154	6708088	2.38			62413	
349.00 > 99.00	2.014	2.025	-0.011	1.147	2422162		2.77(1.36-4.07)		22579	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.093	2.099	-0.006	0.787	398332	2.47		98.9	7993	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
67 Perfluoro(2-propoxypropanoic) acid										
329.10 > 285.00	2.093	2.099	-0.006	1.000	875056	2.39			4845	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.318	2.318	0.0	1.000	5003851	2.38			6366	
363.00 > 169.00	2.318	2.318	0.0	1.000	1874930		2.67(1.13-3.40)		12052	
D 9 13C4-PFHpA										
367.00 > 322.00	2.318	2.318	0.0	0.872	4656296	2.67		107	41039	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.318	2.331	-0.013	0.994	5461859	2.06			18927	
399.00 > 99.00	2.318	2.331	-0.013	0.994	1784835		3.06(1.50-4.49)		7949	
D 11 18O2 PFHxS										
403.00 > 84.00	2.332	2.333	-0.001	0.877	5420046	2.52		107	39724	
65 Adona										
377.00 > 251.00	2.358	2.365	-0.007	0.779	13686036	2.39			71323	
377.00 > 85.00	2.358	2.365	-0.007	0.779	8337865		1.64(0.84-2.53)		53282	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.635	2.645	-0.010	1.000	1333122	2.14			8063	
D 12 M2-6:2FTS										
429.00 > 81.00	2.635	2.645	-0.010	0.991	943359	2.41		101	12034	
D 14 13C4 PFOA										
417.00 > 372.00	2.659	2.670	-0.011	1.000	4377398	2.56		102	50629	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.659	2.671	-0.012	1.000	5044620	2.43			1817	
413.00 > 169.00	2.659	2.671	-0.012	1.000	2587826		1.95(0.84-2.52)		12854	
* 62 13C2-PFOA										
415.00 > 370.00	2.659	2.671	-0.012		4482111	2.50			39137	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.666	2.678	-0.012	0.881	5002055	2.42			24929	
449.00 > 99.00	2.666	2.678	-0.012	0.881	1268205		3.94(1.94-5.82)		17204	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.025	3.034	-0.009	1.000	4114457	2.28			26454	
499.00 > 99.00	3.025	3.034	-0.009	1.000	952789		4.32(2.31-6.93)		15874	
D 19 13C5 PFNA										
468.00 > 423.00	3.025	3.034	-0.009	1.138	3804115	2.62		105	42092	
D 18 13C4 PFOS										
503.00 > 80.00	3.025	3.034	-0.009	1.138	3689440	2.41		101	25424	
20 Perfluorononanoic acid										
463.00 > 419.00	3.025	3.036	-0.011	1.000	3959979	2.41			9180	
463.00 > 169.00	3.025	3.036	-0.011	1.000	980675		4.04(1.90-5.69)		28876	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.233	3.246	-0.013	1.069	6907503	2.37			68780	
D 21 13C8 FOSA										
506.00 > 78.00	3.360	3.357	0.003	1.264	5279917	2.48		99.2	41968	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.360	3.358	0.002	1.000	5097528	2.43			34528	
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.370	3.379	-0.009	1.114	2860785	2.28			32480	
549.00 > 99.00	3.370	3.379	-0.009	1.114	1098082		2.61(1.33-3.97)		17909	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 26 M2-8:2FTS										
529.00 > 81.00	3.370	3.382	-0.012	1.267	1037484	2.38		99.4	18107	
25 1H,1H,2H,2H-perfluorodecanesulfoni										
527.00 > 507.00	3.370	3.383	-0.013	1.000	1275212	2.23			28766	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.379	3.393	-0.014	1.000	3285706	2.57			11443	
513.00 > 169.00	3.379	3.393	-0.014	1.000	550350		5.97(2.36-7.09)		15589	
D 23 13C2 PFDA										
515.00 > 470.00	3.379	3.393	-0.014	1.271	3072360	2.45		98.0	43459	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.528	3.543	-0.015	1.327	1737728	2.35		94.1	19084	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.538	3.551	-0.013	1.003	1778042	2.49			9882	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.687	3.702	-0.015	1.219	2711359	2.44			47459	
599.00 > 99.00	3.687	3.702	-0.015	1.219	892646		3.04(1.39-4.16)		17035	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.697	3.713	-0.016	1.391	1801704	2.47		98.8	12323	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.708	3.721	-0.013	1.000	2212866	2.57			7822	
563.00 > 169.00	3.708	3.721	-0.013	1.000	520962		4.25(2.12-6.36)		13424	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.708	3.721	-0.013	1.003	1569355	2.42			38323	
D 30 13C2 PFUnA										
565.00 > 520.00	3.708	3.721	-0.013	1.395	2528432	2.40		96.0	23769	
66 11-Chloroeicosafluoro-3-oxaundecan										
631.00 > 451.00	3.866	3.879	-0.013	1.278	10951949	2.46			104128	
37 Perfluorododecanoic acid										
613.00 > 569.00	3.999	4.016	-0.017	1.000	2981159	2.40			3399	
613.00 > 169.00	3.999	4.016	-0.017	1.000	739488		4.03(2.13-6.40)		9228	
D 36 13C2 PFDoA										
615.00 > 570.00	3.999	4.016	-0.017	1.504	2812645	2.49		99.7	14618	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.262	4.284	-0.022	1.066	3024032	2.19			3178	
663.00 > 169.00	4.262	4.284	-0.022	1.066	955670		3.16(1.25-3.76)		14135	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.501	4.524	-0.023	1.693	3185648	2.32		92.6	13201	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.501	4.524	-0.023	1.000	850833	2.47			7855	
713.00 > 219.00	4.491	4.524	-0.033	0.998	598270		1.42(0.71-2.13)		9582	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.913	4.940	-0.027	1.848	6436277	2.53		101	15738	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.913	4.941	-0.028	1.000	6336870	2.57			2687	
813.00 > 169.00	4.913	4.941	-0.028	1.000	983566		6.44(2.86-8.58)		7867	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.270	5.302	-0.032	1.072	7377474	2.46			2173	
913.00 > 169.00	5.270	5.302	-0.032	1.072	857374		8.60(3.83-11.48)		6319	

Reagents:

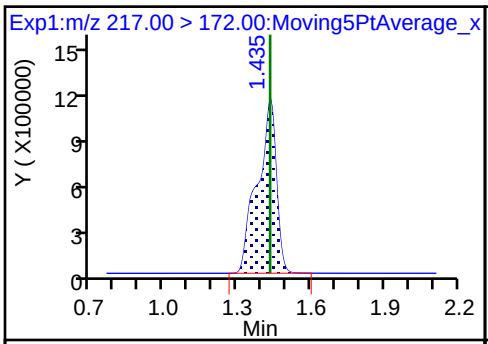
LCPFCIC_FULL_00012 Amount Added: 1.00 Units: mL

Report Date: 05-Jul-2018 12:40:53 Chrom Revision: 2.2 07-Jun-2018 07:41:54

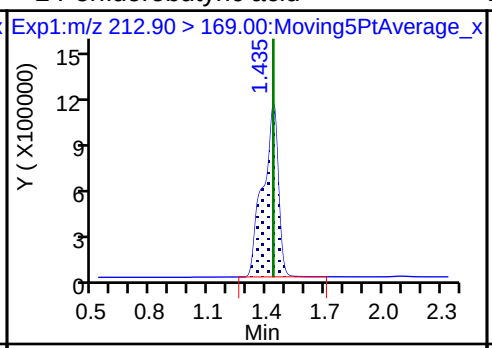
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180705-60684.b\2018.07.05LLICALAAA_010.d
Injection Date: 05-Jul-2018 12:02:30 Instrument ID: A8_N
Lims ID: ICV Full
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 17 Worklist Smp#: 10
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC ICAL

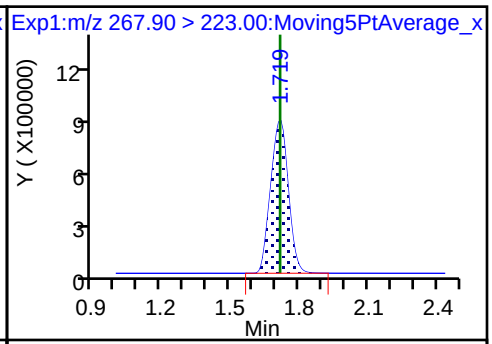
D 1 13C4 PFBA



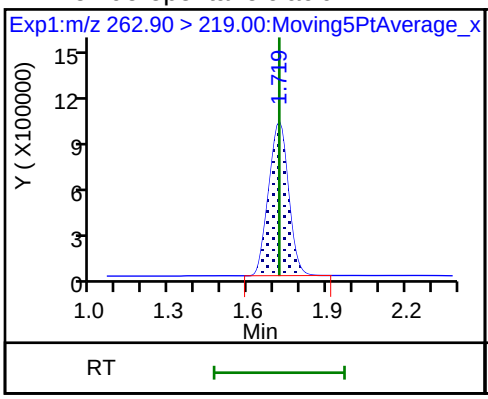
2 Perfluorobutyric acid



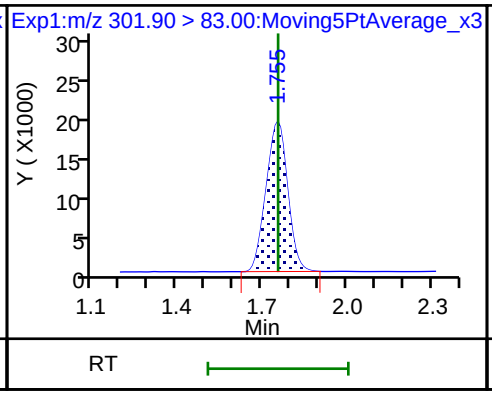
D 3 13C5-PFPeA



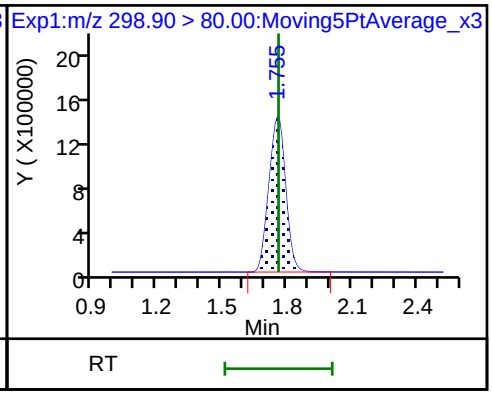
4 Perfluoropentanoic acid



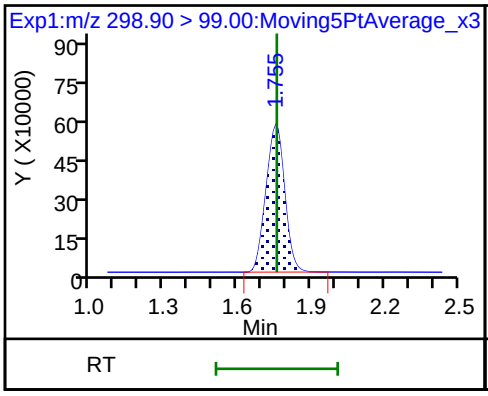
D 47 13C3-PFBS



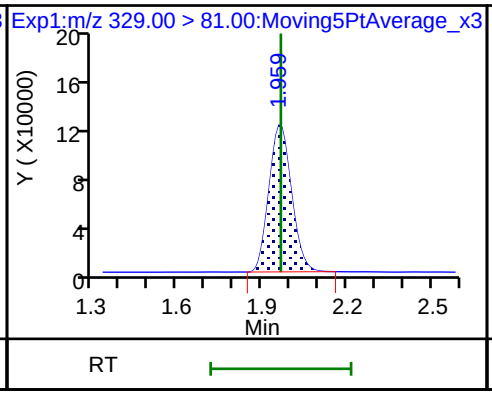
5 Perfluorobutanesulfonic acid



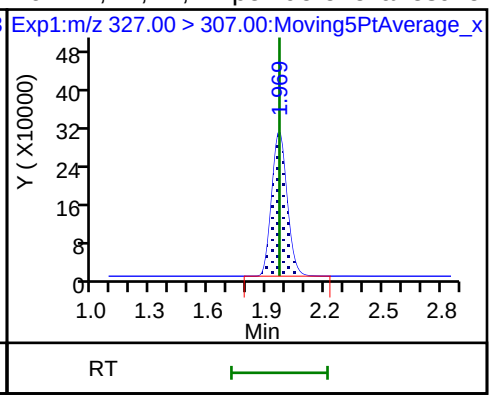
5 Perfluorobutanesulfonic acid



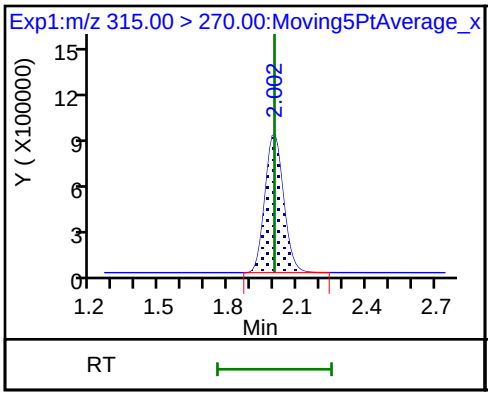
D 60 M2-4:2FTS



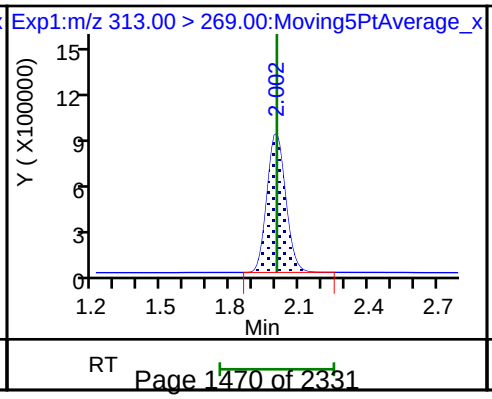
61 1H,1H,2H,2H-perfluorohexanesulfoni



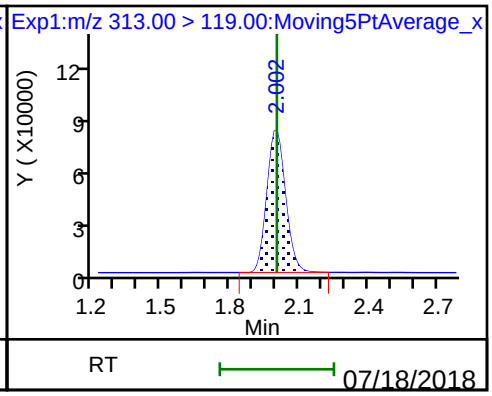
D 7 13C2 PFHxA



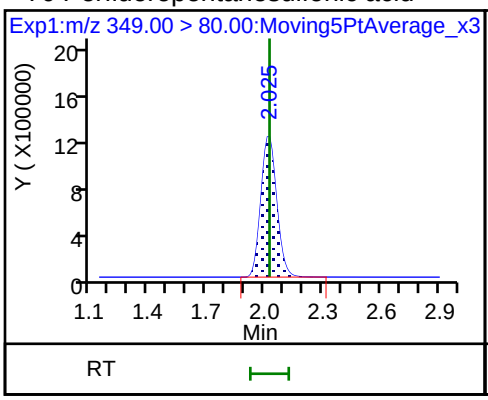
6 Perfluorohexanoic acid



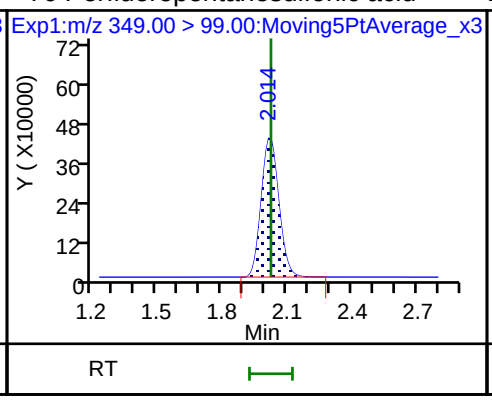
6 Perfluorohexanoic acid



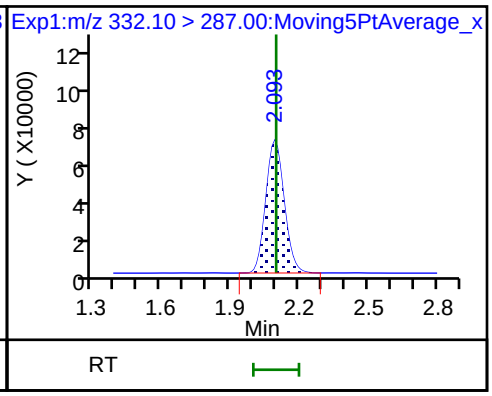
70 Perfluoropentanesulfonic acid



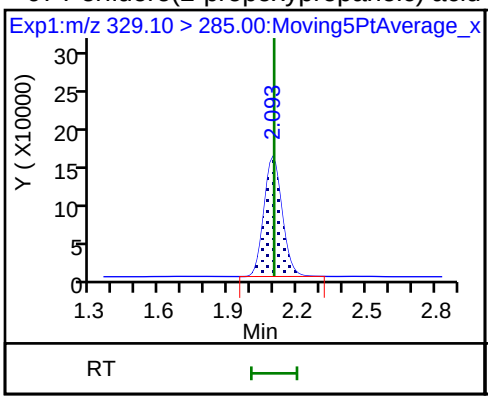
70 Perfluoropentanesulfonic acid



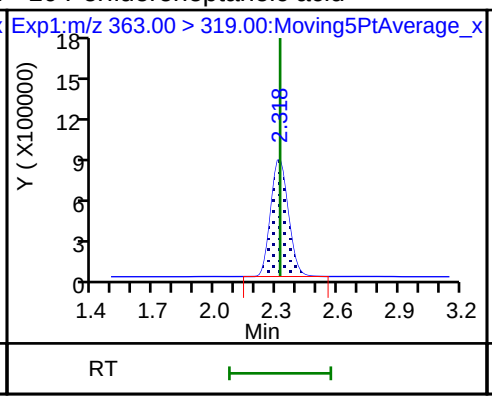
D 64 13C3 HFPO-DA



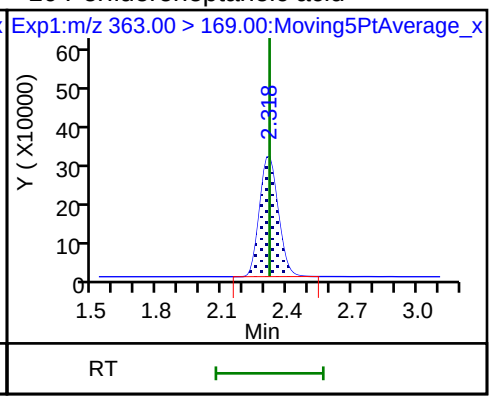
67 Perfluoro(2-propoxypropanoic) acid



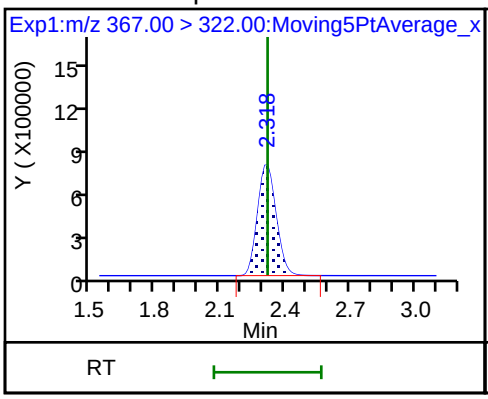
10 Perfluoroheptanoic acid



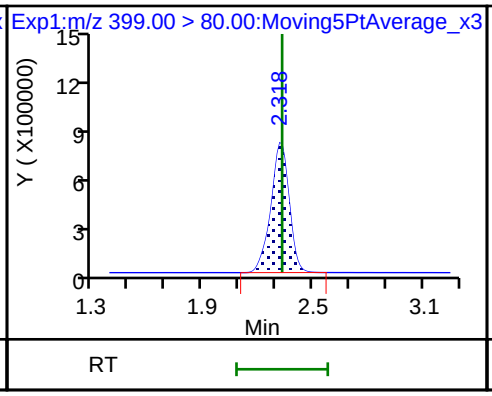
10 Perfluoroheptanoic acid



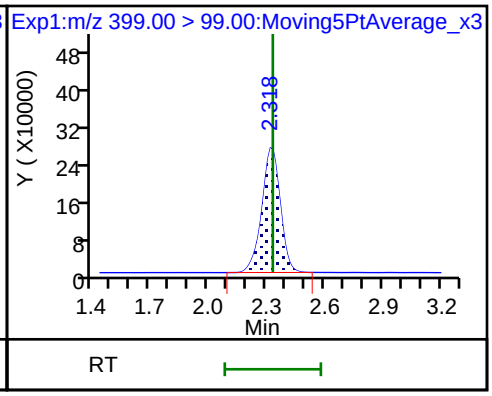
D 9 13C4-PFHpA



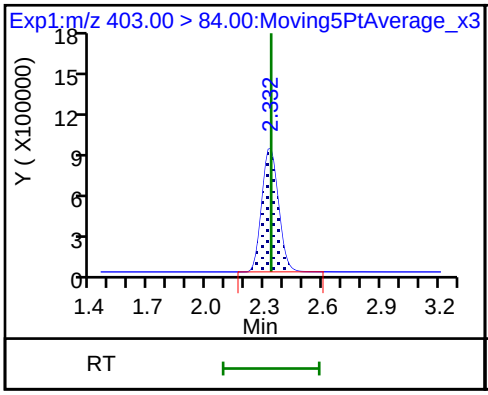
8 Perfluorohexanesulfonic acid



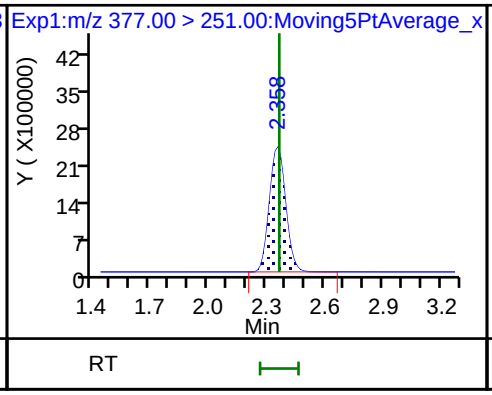
8 Perfluorohexanesulfonic acid



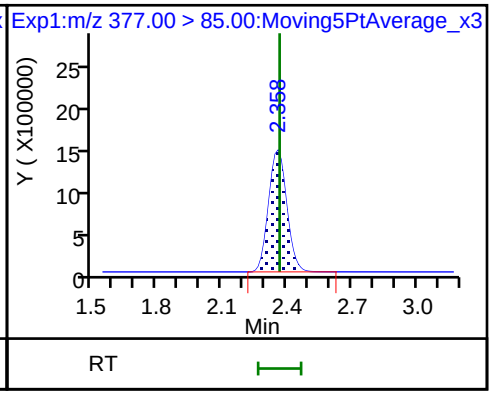
D 11 18O2 PFHxS



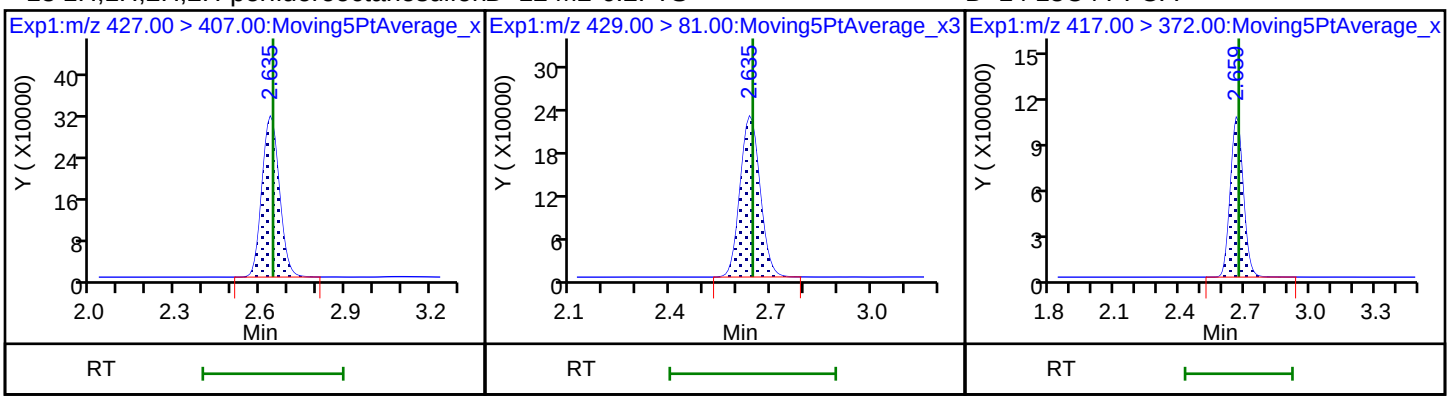
65 Adona



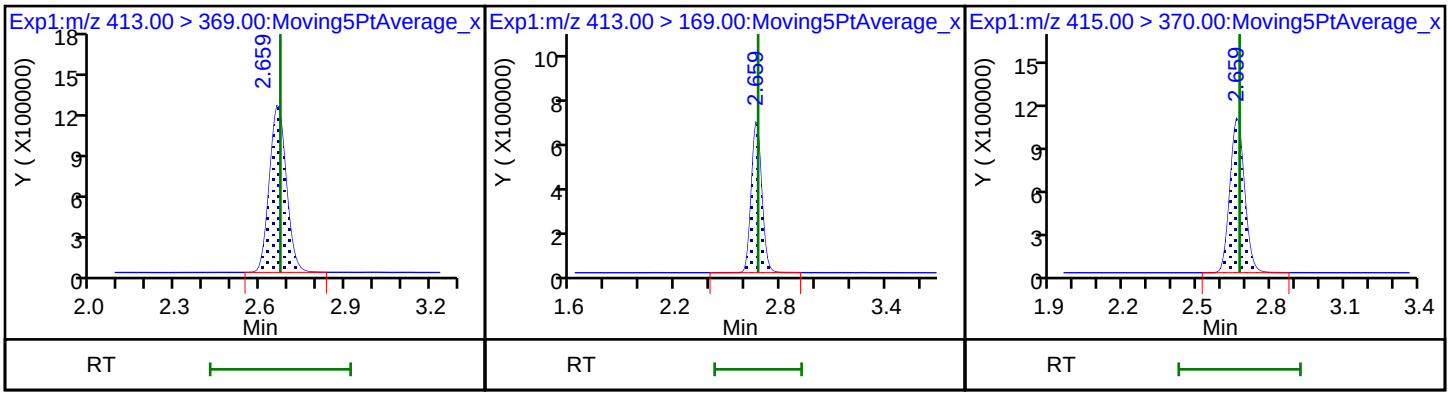
65 Adona



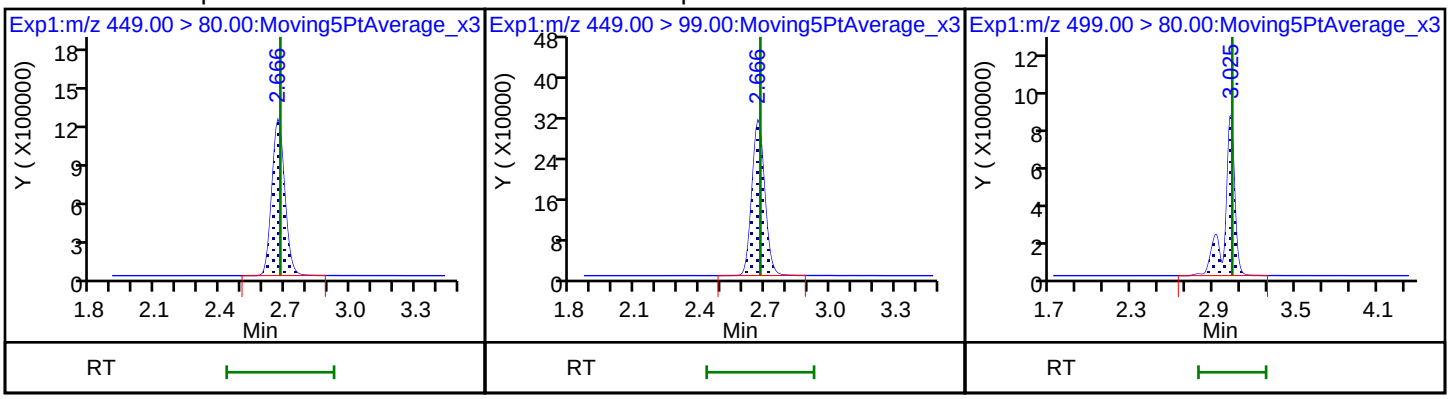
13 1H,1H,2H,2H-perfluorooctanesulfonD 12 M2-6:2FTS D 14 13C4 PFOA



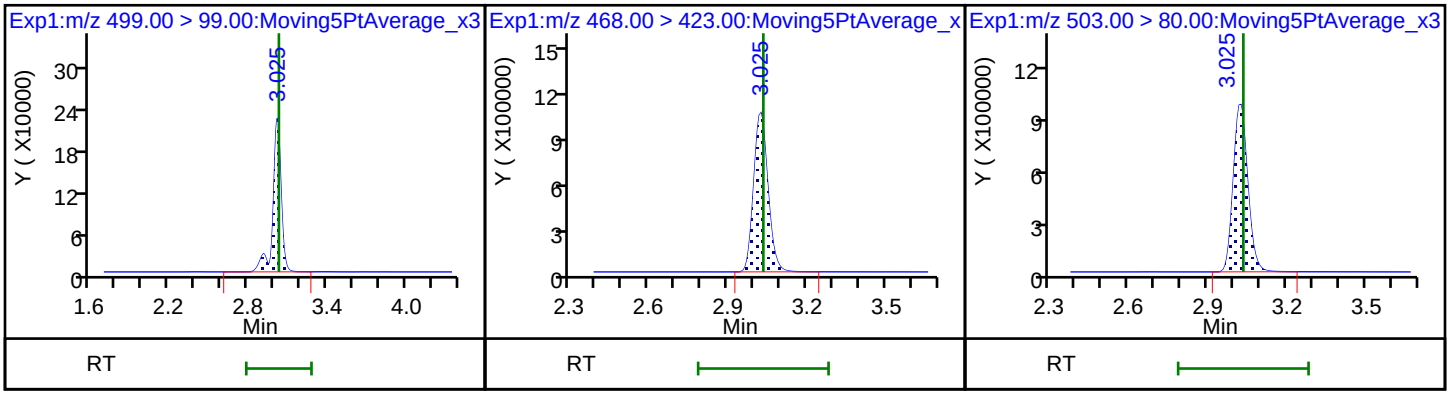
15 Perfluorooctanoic acid 15 Perfluorooctanoic acid * 62 13C2-PFOA



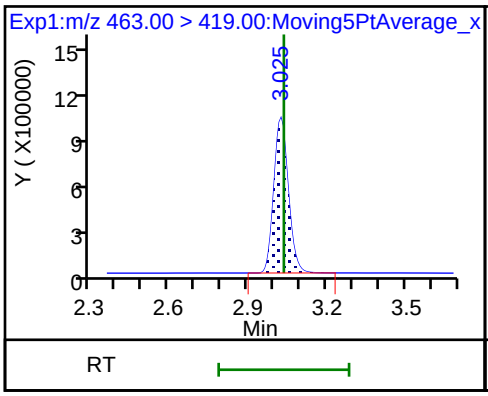
16 Perfluoroheptanesulfonic acid 16 Perfluoroheptanesulfonic acid 17 Perfluorooctane sulfonic acid



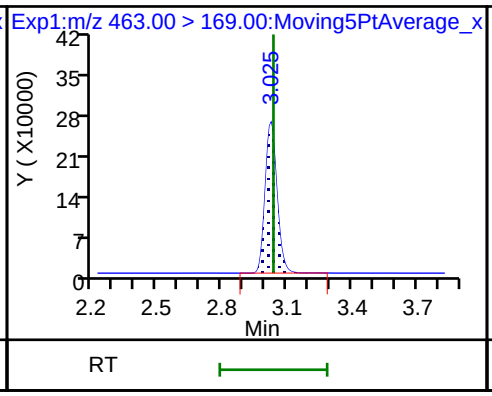
17 Perfluorooctane sulfonic acid D 19 13C5 PFNA D 18 13C4 PFOS



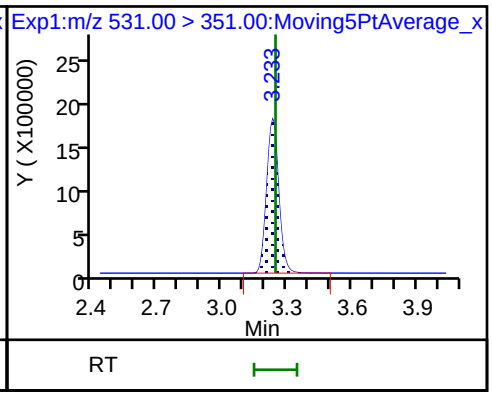
20 Perfluorononanoic acid



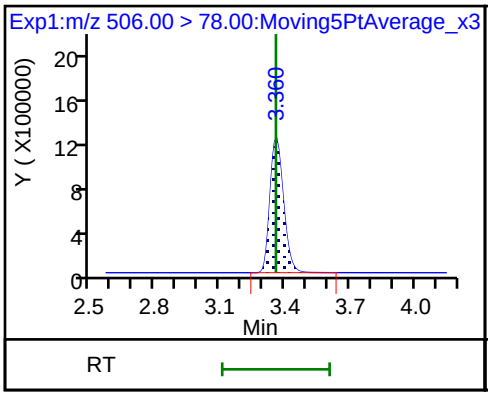
20 Perfluorononanoic acid



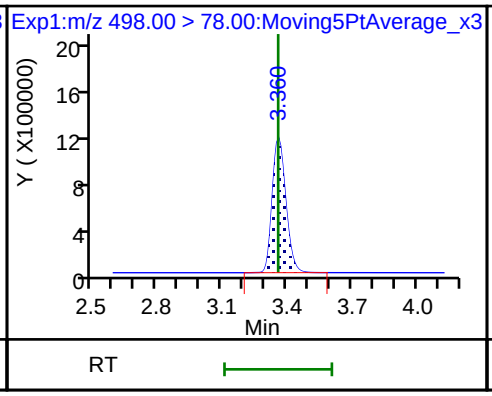
69 9-Chlorohexadecafluoro-3-oxanonane



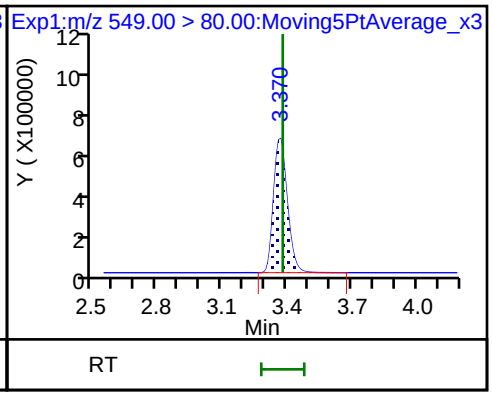
D 21 13C8 FOSA



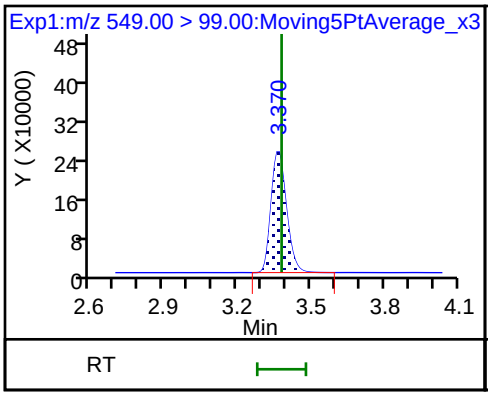
22 Perfluorooctane Sulfonamide



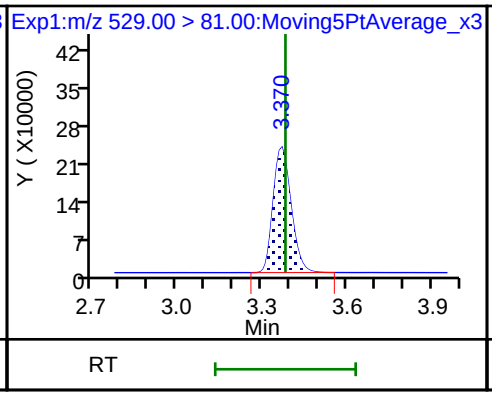
68 Perfluorononanesulfonic acid



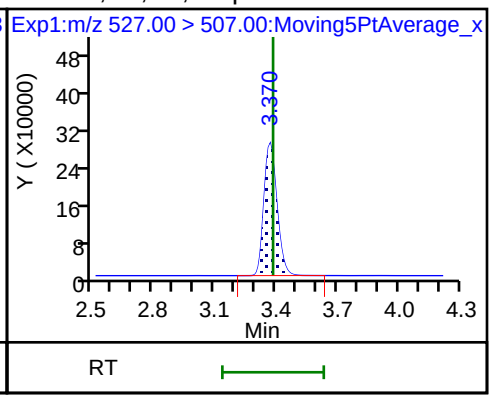
68 Perfluorononanesulfonic acid



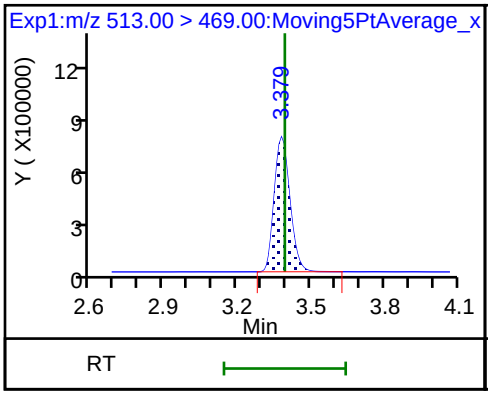
D 26 M2-8:2FTS



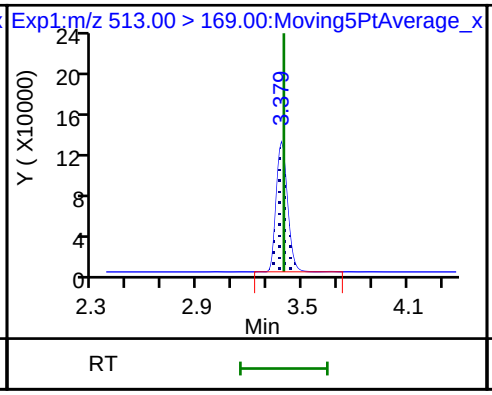
25 1H,1H,2H,2H-perfluorodecanesulfoni



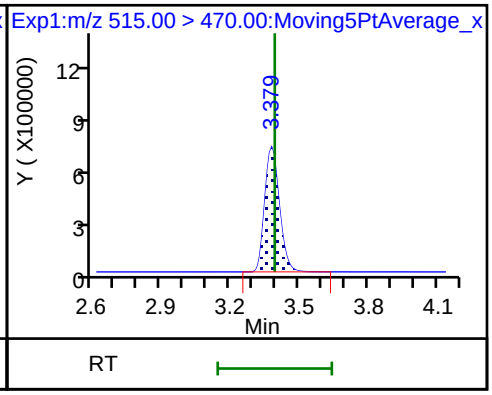
24 Perfluorodecanoic acid



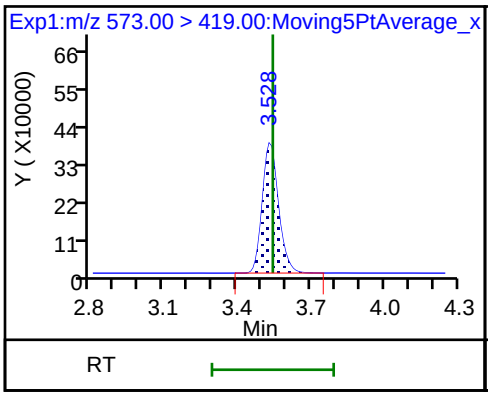
24 Perfluorodecanoic acid



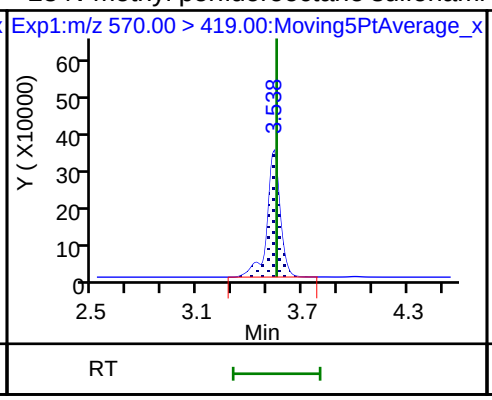
D 23 13C2 PFDA



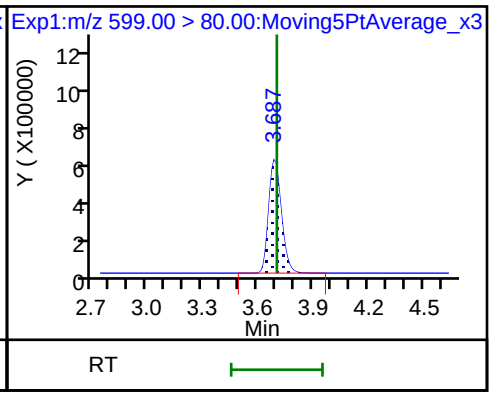
D 27 d3-NMeFOSAA



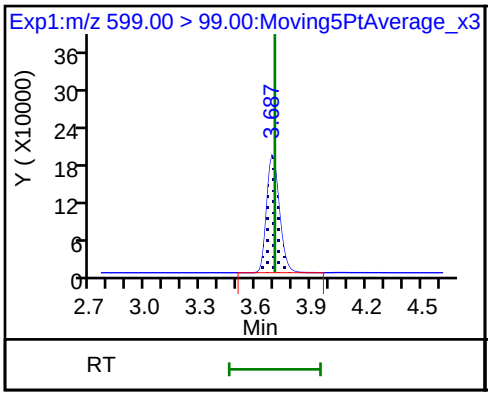
28 N-methyl perfluorooctane sulfonami



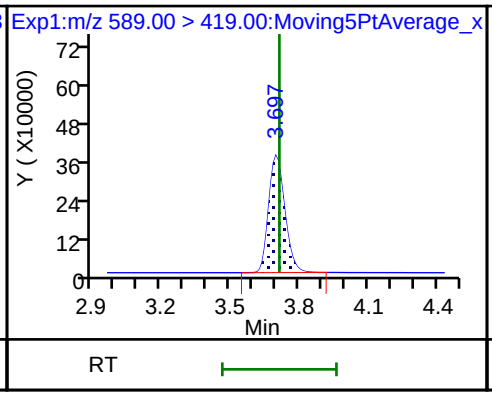
29 Perfluorodecane Sulfonic acid



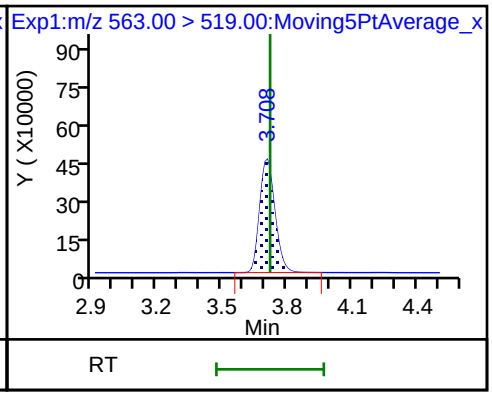
29 Perfluorodecane Sulfonic acid



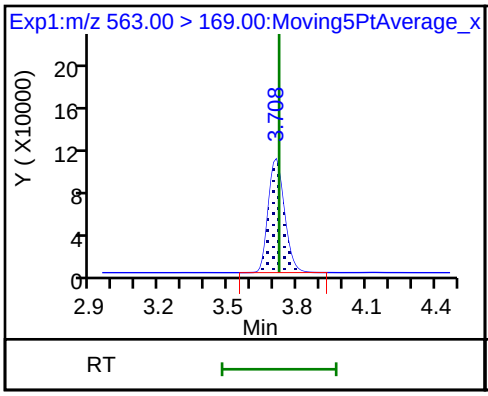
D 32 d5-NEtFOSAA



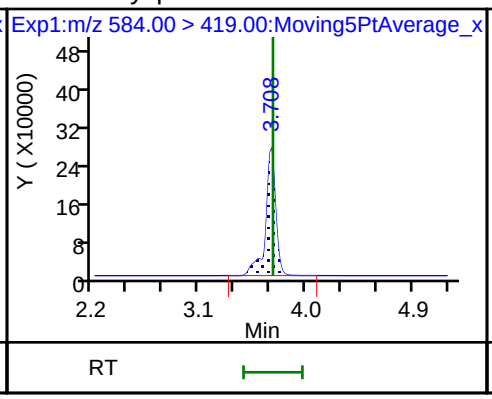
31 Perfluoroundecanoic acid



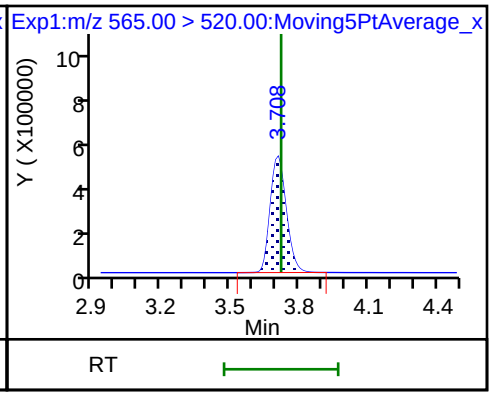
31 Perfluoroundecanoic acid



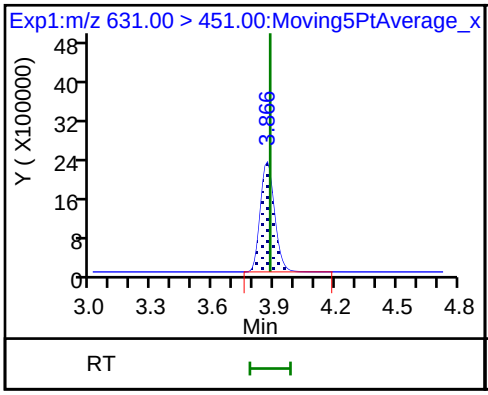
33 N-ethyl perfluorooctane sulfonamid



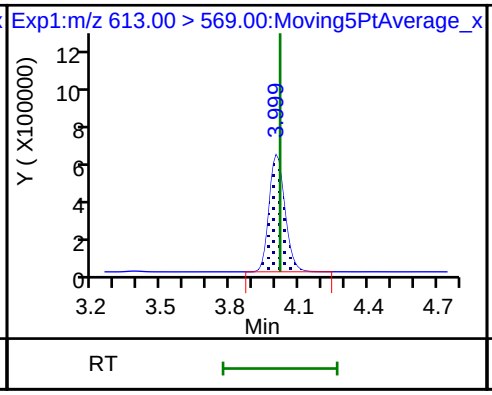
D 30 13C2 PFUnA



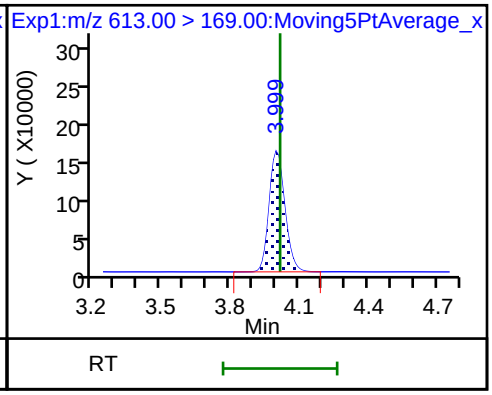
66 11-Chloroeicosafluoro-3-oxaundecan



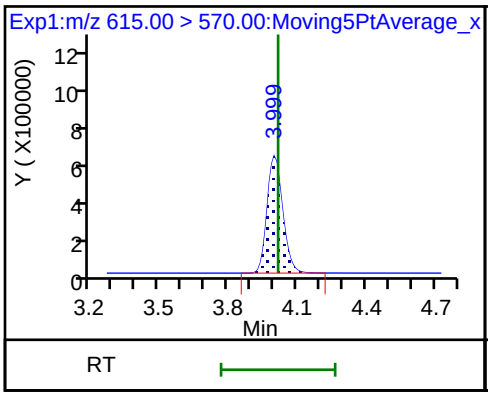
37 Perfluorododecanoic acid



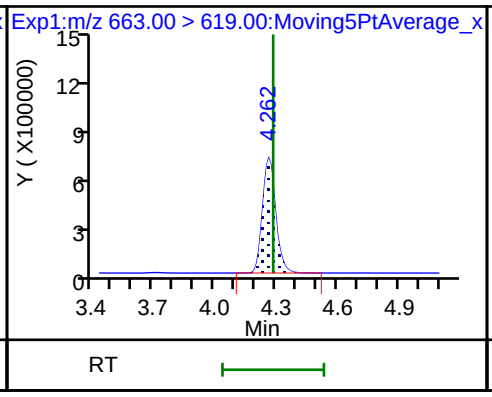
37 Perfluorododecanoic acid



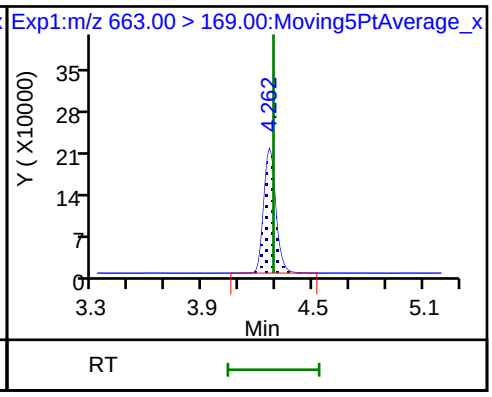
D 36 13C2 PFDoA



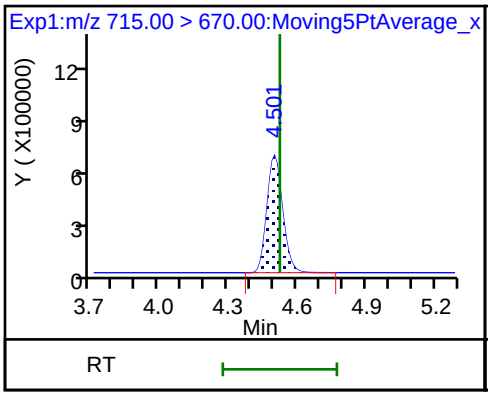
41 Perfluorotridecanoic acid



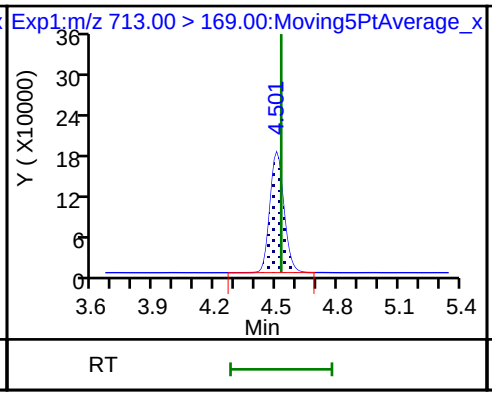
41 Perfluorotridecanoic acid



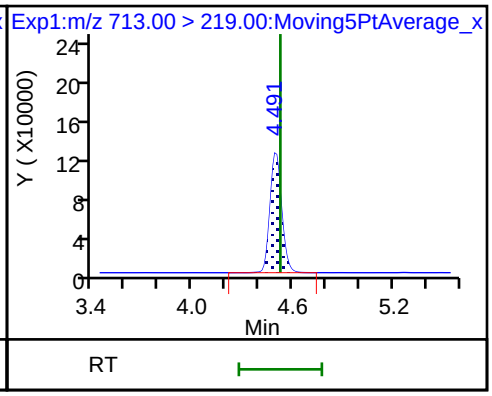
D 43 13C2-PFTeDA



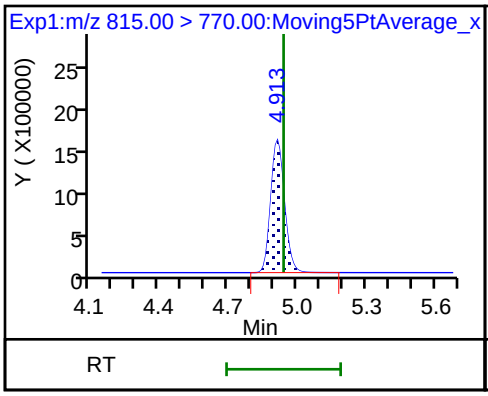
42 Perfluorotetradecanoic acid



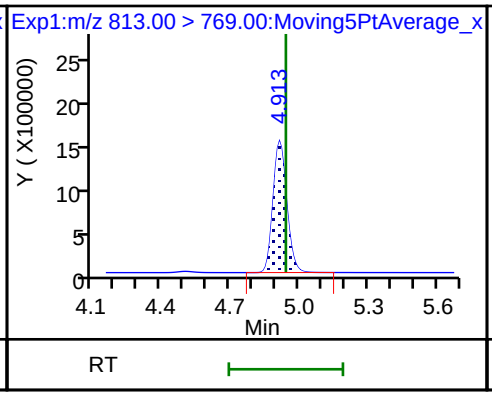
42 Perfluorotetradecanoic acid



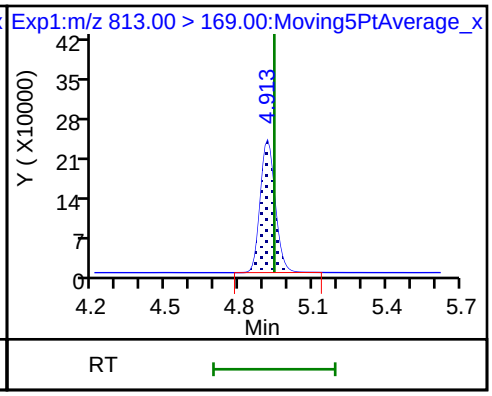
D 44 13C2-PFHxDA



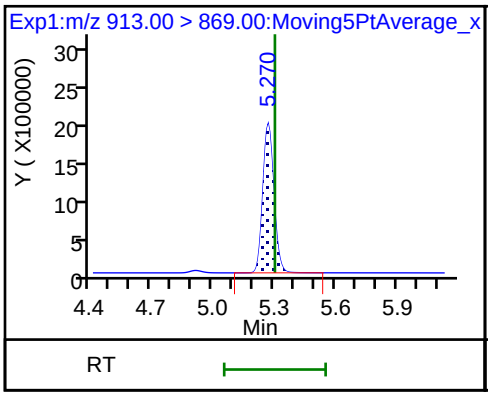
45 Perfluorohexadecanoic acid



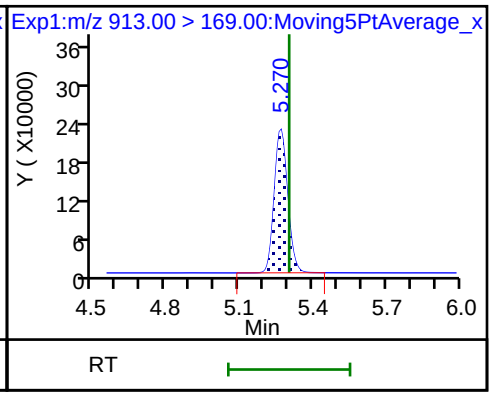
45 Perfluorohexadecanoic acid



46 Perfluorooctadecanoic acid



46 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Lab Sample ID: CCVL 320-232772/2 Calibration Date: 07/06/2018 15:48

Instrument ID: A8_N Calib Start Date: 07/05/2018 08:51

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 07/05/2018 09:38

Lab File ID: 2018.07.06LLAAA_004.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	1.021	1.083		0.0530	0.0500	6.0	50.0
Perfluoropentanoic acid (PFPeA)	AveID	1.191	1.226		0.0515	0.0500	2.9	50.0
Perfluorobutanesulfonic acid (PFBS)	AveID	75.80	76.50		0.0446	0.0442	0.9	50.0
4:2 FTS	AveID	15.68	17.63		0.0525	0.0467	12.4	50.0
Perfluorohexanoic acid (PFHxA)	AveID	1.018	1.057		0.0519	0.0500	3.8	50.0
Perfluoropentanesulfonic acid (PFPeS)	AveID	64.85	66.20		0.0479	0.0469	2.1	50.0
HFPO-DA (GenX)	AveID	2.299	2.465		0.0536	0.0500	7.2	50.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.130	1.138		0.0504	0.0500	0.7	50.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.156	1.265		0.0498	0.0455	9.4	50.0
ADONA	AveID	3.706	3.827		0.0486	0.0471	3.3	50.0
6:2 FTS	AveID	1.567	1.503			0.0474	-4.0	50.0
Perfluorooctanoic acid (PFOA)	AveID	1.186	1.208		0.0510	0.0501	1.9	50.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.339	1.262		0.0448	0.0476	-5.8	50.0
Perfluorononanoic acid (PFNA)	AveID	1.078	1.103		0.0512	0.0500	2.3	50.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.168	1.189		0.0472	0.0464	1.8	50.0
9-Chlorohexadecafluoro-3-oxa nonane-1-sulfonate	AveID	1.891	1.822		0.0449	0.0466	-3.6	50.0
8:2 FTS	AveID	1.321	1.502		0.0545	0.0479	13.7	50.0
Perfluorononanesulfonic acid (PFNS)	AveID	0.8126	0.8863		0.0524	0.0480	9.1	50.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9917	0.9549		0.0481	0.0500	-3.7	50.0
Perfluorodecanoic acid (PFDA)	AveID	1.042	1.049		0.0503	0.0500	0.6	50.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	1.029	0.9143			0.0500	-11.2	50.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.7195	0.6662		0.0446	0.0482	-7.4	50.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.9017	0.9387		0.0521	0.0500	4.1	50.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.8501	1.016		0.0598	0.0500	19.5	50.0
11-Chloroeicosafluoro-3-oxau ndecane-1-sulfonate	AveID	2.884	2.880		0.0470	0.0471	-0.1	50.0
Perfluorododecanoic acid (PFDoA)	AveID	1.102	1.016		0.0461	0.0500	-7.8	50.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.227	1.124		0.0458	0.0500	-8.5	50.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2708	0.2663		0.0492	0.0500	-1.7	50.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		1.431		0.0525	0.0500	4.9	50.0

FORM VII 537 (modified)

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Lab Sample ID: CCVL 320-232772/2 Calibration Date: 07/06/2018 15:48

Instrument ID: A8_N Calib Start Date: 07/05/2018 08:51

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 07/05/2018 09:38

Lab File ID: 2018.07.06LLAAA_004.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.164	1.123		0.0482	0.0500	-3.6	50.0
13C4 PFBA	Ave	1.384	1.327		2.40	2.50	-4.1	50.0
13C5 PFPeA	Ave	1.025	0.9790		2.39	2.50	-4.4	50.0
13C3-PFBS	Ave	0.0245	0.0242		2.29	2.33	-1.3	50.0
M2-4:2FTS	Ave	0.1575	0.1744		2.59	2.34	10.7	50.0
13C2 PFHxA	Ave	1.097	1.116		2.54	2.50	1.7	50.0
13C3 HFPO-DA	Ave	0.0899	0.0734		2.04	2.50	-18.3	50.0
13C4-PFHpA	Ave	0.9735	1.057		2.72	2.50	8.6	50.0
18O2 PFHxS	Ave	1.198	1.232		2.43	2.37	2.8	50.0
M2-6:2FTS	Ave	0.2186	0.2382		2.59	2.38	9.0	50.0
13C4 PFOA	Ave	0.9539	1.014		2.66	2.50	6.2	50.0
13C4 PFOS	Ave	0.8551	0.8751		2.45	2.39	2.3	50.0
13C5 PFNA	Ave	0.8109	0.8387		2.59	2.50	3.4	50.0
13C8 FOSA	Ave	1.187	1.193		2.51	2.50	0.5	50.0
M2-8:2FTS	Ave	0.2431	0.2587		2.55	2.40	6.4	50.0
13C2 PFDA	Ave	0.6992	0.7610		2.72	2.50	8.8	50.0
d3-NMeFOSAA	Ave	0.4120	0.4343		2.64	2.50	5.4	50.0
13C2 PFUnA	Ave	0.5873	0.5954		2.53	2.50	1.4	50.0
d5-NEtFOSAA	Ave	0.4070	0.4520		2.78	2.50	11.1	50.0
13C2 PFDoA	Ave	0.6294	0.6478		2.57	2.50	2.9	50.0
13C2-PFTeDA	Ave	0.7673	0.7694		2.51	2.50	0.3	50.0
13C2-PFHxDA	Ave	1.420	1.429		2.52	2.50	0.7	50.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180706-60746.b\2018.07.06LLAAA_004.d
Lims ID: CCVL
Client ID:
Sample Type: CCVL
Inject. Date: 06-Jul-2018 15:48:26 ALS Bottle#: 21 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCVL
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-A8_N*sub32

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180706-60746.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 09-Jul-2018 08:48:02 Calib Date: 05-Jul-2018 09:38:17
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180705-60684.b\2018.07.05LLICALAA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK010

First Level Reviewer: mongkols Date: 09-Jul-2018 08:48:02

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.428	1.424	0.004	0.537	5498806	2.40		95.9	22675	
2 Perfluorobutyric acid										M
212.90 > 169.00	1.433	1.430	0.003	1.004	119090	0.0530		106	48.6	M
D 3 13C5-PFPeA										
267.90 > 223.00	1.707	1.701	0.006	0.642	4055879	2.39		95.6	41781	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.707	1.702	0.005	1.000	99415	0.0515		103	69.5	
D 47 13C3-PFBS										
301.90 > 83.00	1.744	1.746	-0.002	0.656	93138	2.29		98.7	751	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.753	1.747	0.006	1.005	135455	0.0446		101	1032	
298.90 > 99.00	1.753	1.747	0.006	1.005	57242		2.37(1.25-3.74)		619	
D 60 M2-4:2FTS										
329.00 > 81.00	1.956	1.948	0.008	0.736	674868	2.59		111	8053	
61 1H,1H,2H,2H-perfluorohexanesulfoni										
327.00 > 307.00	1.956	1.948	0.008	1.122	32987	0.0525		112	1927	
D 7 13C2 PFHxA										
315.00 > 270.00	1.988	1.980	0.008	0.748	4622270	2.54		102	53950	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.988	1.981	0.007	1.000	97674	0.0519		104	217	
313.00 > 119.00	1.988	1.981	0.007	1.000	9557		10.22(5.03-15.10)		140	
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.011	2.003	0.008	1.153	124368	0.0479		102	1982	
349.00 > 99.00	2.011	2.003	0.008	1.153	43716		2.84(1.36-4.07)		865	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.079	2.082	-0.003	0.782	304012	2.04		81.7	4321	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
67 Perfluoro(2-propoxypropanoic) acid										
329.10 > 285.00	2.079	2.082	-0.003	1.000	14987	0.0536		107	95.3	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.303	2.293	0.010	1.000	99695	0.0504		101	127	
363.00 > 169.00	2.303	2.293	0.010	1.000	36527		2.73(1.13-3.40)		284	
D 9 13C4-PFHpA										
367.00 > 322.00	2.303	2.306	-0.003	0.866	4379825	2.72		109	38422	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.316	2.306	0.010	1.000	117461	0.0498		109	1010	
399.00 > 99.00	2.316	2.306	0.010	1.000	43020		2.73(1.50-4.49)		293	
D 11 18O2 PFHxS										
403.00 > 84.00	2.316	2.319	-0.003	0.871	4826573	2.43		103	30628	
65 Adona										
377.00 > 251.00	2.342	2.345	-0.003	0.776	261412	0.0486		103	3671	
377.00 > 85.00	2.342	2.345	-0.003	0.776	148790		1.76(0.84-2.53)		2507	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.635	2.627	0.007	1.000	28131	0.0455		96.0	183	
D 12 M2-6:2FTS										
429.00 > 81.00	2.635	2.627	0.007	0.991	937604	2.59		109	13658	
* 62 13C2-PFOA										
415.00 > 370.00	2.658	2.652	0.006		4142718	2.50			34259	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.658	2.652	0.006	1.000	101546	0.0510		102	32.4	
413.00 > 169.00	2.658	2.652	0.006	1.000	55469		1.83(0.84-2.52)		307	
D 14 13C4 PFOA										
417.00 > 372.00	2.658	2.652	0.006	1.000	4198678	2.66		106	34518	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.666	2.659	0.007	0.883	87113	0.0448		94.2	1718	
449.00 > 99.00	2.666	2.659	0.007	0.883	22879		3.81(1.94-5.82)		672	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.019	3.009	0.010	1.000	79980	0.0472		102	1000	
499.00 > 99.00	3.019	3.009	0.010	1.000	17520		4.57(2.31-6.93)		300	
20 Perfluorononanoic acid										
463.00 > 419.00	3.019	3.016	0.003	1.000	76612	0.0512		102	218	
463.00 > 169.00	3.019	3.016	0.003	1.000	19941		3.84(1.90-5.69)		834	
D 18 13C4 PFOS										
503.00 > 80.00	3.019	3.017	0.002	1.136	3465929	2.45		102	32630	
D 19 13C5 PFNA										
468.00 > 423.00	3.019	3.017	0.002	1.136	3474426	2.59		103	54003	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.225	3.222	0.003	1.068	123142	0.0449		96.4	2889	
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.361	3.350	0.011	1.113	61692	0.0524		109	1546	
549.00 > 99.00	3.361	3.350	0.011	1.113	19303		3.20(1.33-3.97)		491	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.370	3.359	0.011	1.003	94404	0.0481		96.3	1956	
25 1H,1H,2H,2H-perfluorodecanesulfoni										
527.00 > 507.00	3.361	3.359	0.002	1.000	30836	0.0545		114	696	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 26 M2-8:2FTS										
529.00 > 81.00	3.361	3.359	0.002	1.264	1026558	2.55		106	17798	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.380	3.368	0.012	1.003	66141	0.0503		101	274	
513.00 > 169.00	3.370	3.368	0.002	1.000	11301		5.85(2.36-7.09)		224	
D 21 13C8 FOSA										
506.00 > 78.00	3.361	3.369	-0.008	1.264	4943402	2.51		101	31967	
D 23 13C2 PFDA										
515.00 > 470.00	3.370	3.378	-0.008	1.268	3152661	2.72		109	35538	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.529	3.527	0.002	1.000	32897	0.0444		88.8	311	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.529	3.527	0.002	1.328	1798972	2.64		105	28452	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.687	3.674	0.013	1.221	46565	0.0446		92.6	1115	
599.00 > 99.00	3.687	3.674	0.013	1.221	17236		2.70(1.39-4.16)		752	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.698	3.696	0.002	1.000	35151	0.0521		104	606	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.698	3.696	0.002	1.000	50130	0.0598		120	194	
563.00 > 169.00	3.708	3.696	0.012	1.003	13821		3.63(2.12-6.36)		666	
D 30 13C2 PFUnA										
565.00 > 520.00	3.698	3.696	0.002	1.391	2466638	2.53		101	21306	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.698	3.696	0.002	1.391	1872408	2.78		111	19360	
66 11-Chloroeicosafluoro-3-oxaundecan										
631.00 > 451.00	3.865	3.852	0.013	1.281	196740	0.0470		99.9	2913	
37 Perfluorododecanoic acid										
613.00 > 569.00	3.998	3.986	0.012	1.000	54526	0.0461		92.2	68.2	
613.00 > 169.00	3.988	3.986	0.002	0.997	14550		3.75(2.13-6.40)		381	
D 36 13C2 PFDoA										
615.00 > 570.00	3.998	3.987	0.011	1.504	2683745	2.57		103	16211	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.262	4.250	0.012	1.066	60317	0.0458		91.5	67.5	
663.00 > 169.00	4.262	4.250	0.012	1.066	19689		3.06(1.25-3.76)		257	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.490	4.479	0.011	1.000	16975	0.0492		98.3	319	
713.00 > 219.00	4.490	4.479	0.011	1.000	12262		1.38(0.71-2.13)		367	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.490	4.490	0.0	1.689	3187582	2.51		100	13376	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.904	4.896	0.008	1.000	169454	0.0525		105	81.6	
813.00 > 169.00	4.904	4.896	0.008	1.000	28187		6.01(2.86-8.58)		270	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.904	4.896	0.008	1.845	5920664	2.52		101	14413	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.255	5.240	0.015	1.071	132937	0.0482		96.4	45.9	
913.00 > 169.00	5.247	5.240	0.007	1.070	17950		7.41(3.83-11.48)		280	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

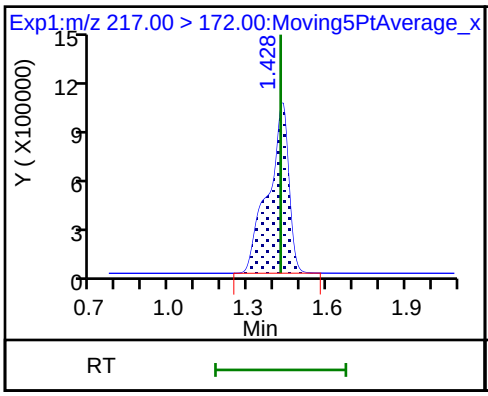
LCPFC_LL2_00005 Amount Added: 1.00 Units: mL

Report Date: 09-Jul-2018 08:48:03 Chrom Revision: 2.2 07-Jun-2018 07:41:54

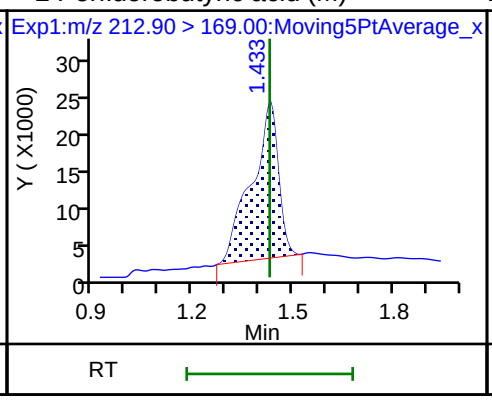
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180706-60746.b\2018.07.06LLAAA_004.d
Injection Date: 06-Jul-2018 15:48:26 Instrument ID: A8_N
Lims ID: CCVL
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 21 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC ICAL

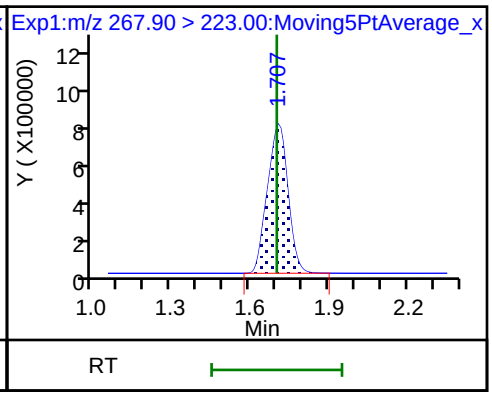
D 1 13C4 PFBA



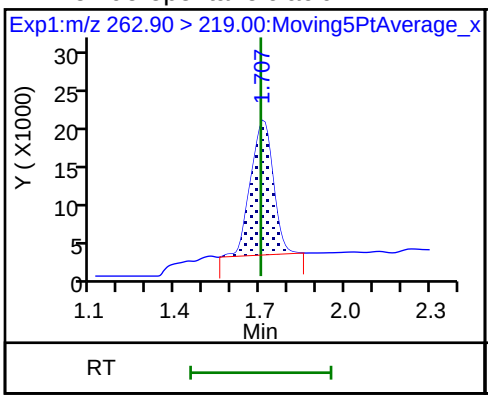
2 Perfluorobutyric acid (M)



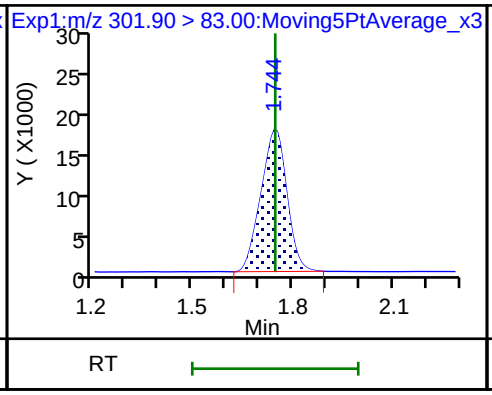
D 3 13C5-PFPeA



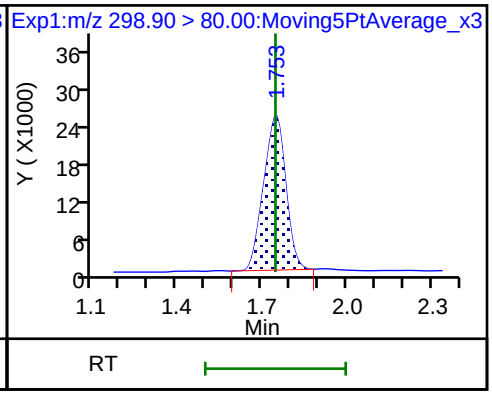
4 Perfluoropentanoic acid



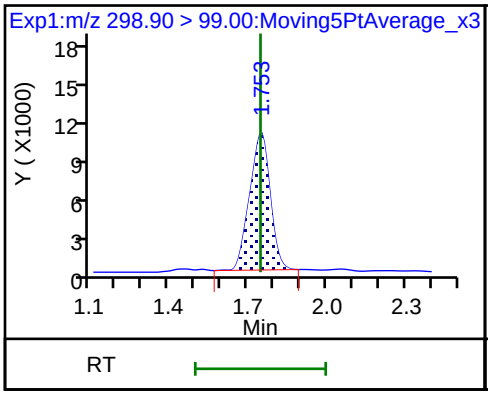
D 47 13C3-PFBS



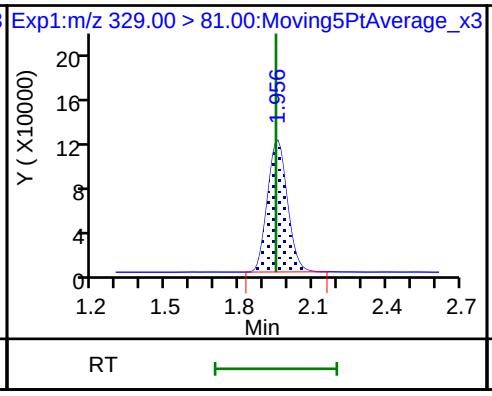
5 Perfluorobutanesulfonic acid



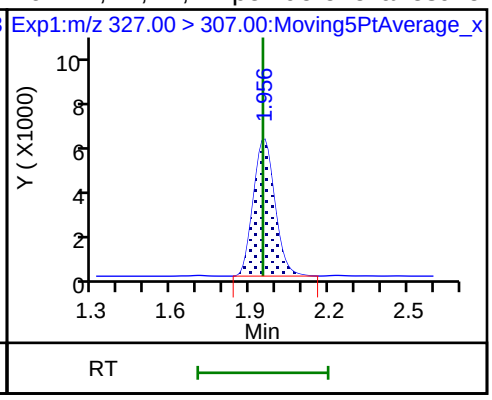
5 Perfluorobutanesulfonic acid



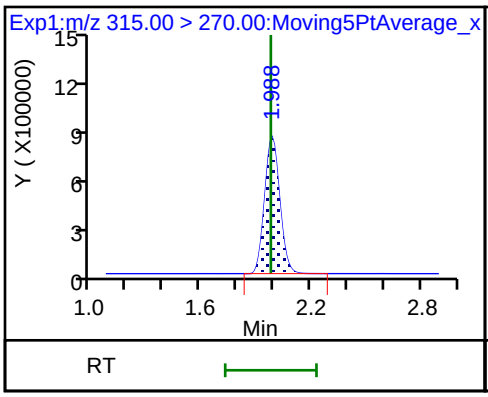
D 60 M2-4:2FTS



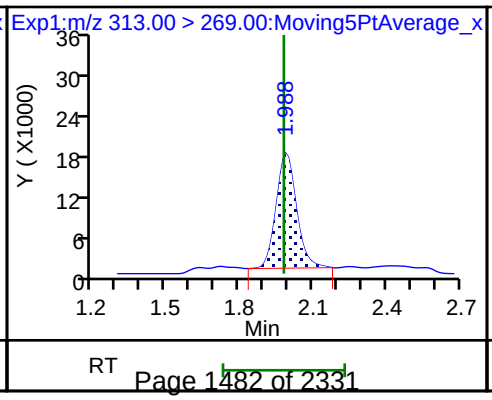
61 1H,1H,2H,2H-perfluorohexanesulfoni



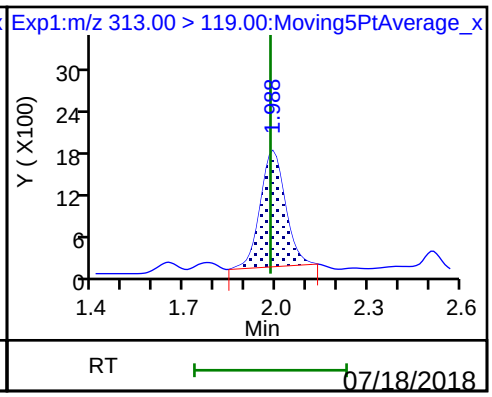
D 7 13C2 PFHxA



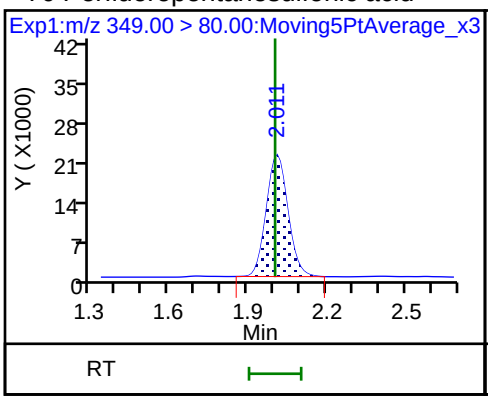
6 Perfluorohexanoic acid



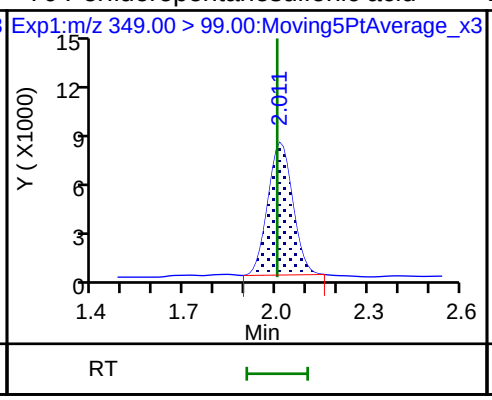
6 Perfluorohexanoic acid



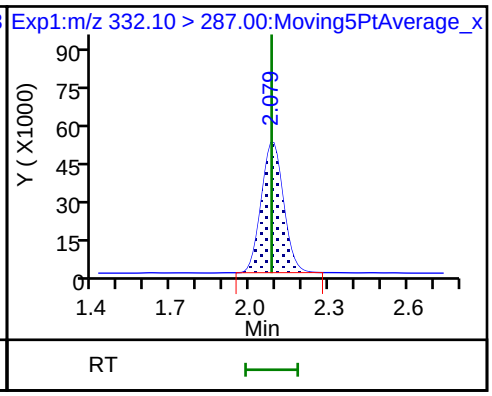
70 Perfluoropentanesulfonic acid



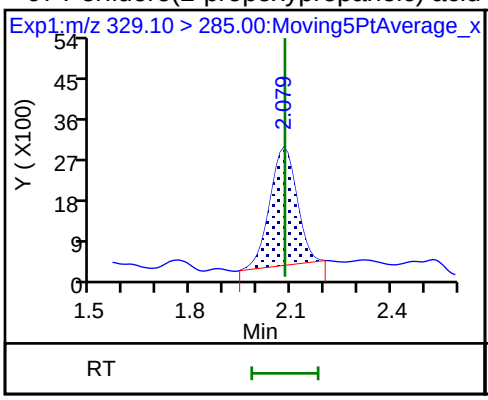
70 Perfluoropentanesulfonic acid



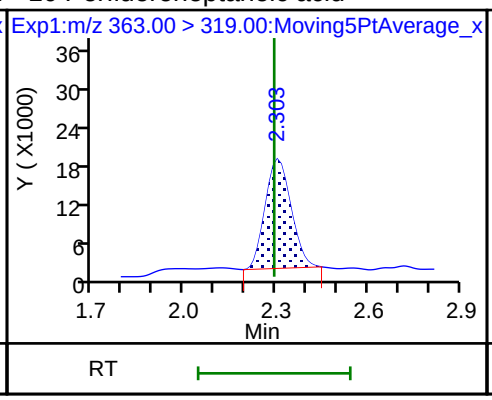
D 64 13C3 HFPO-DA



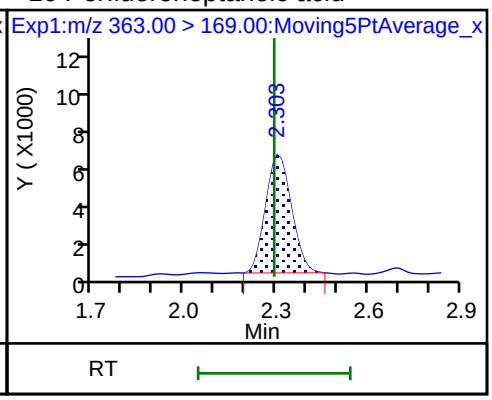
67 Perfluoro(2-propoxypropanoic) acid



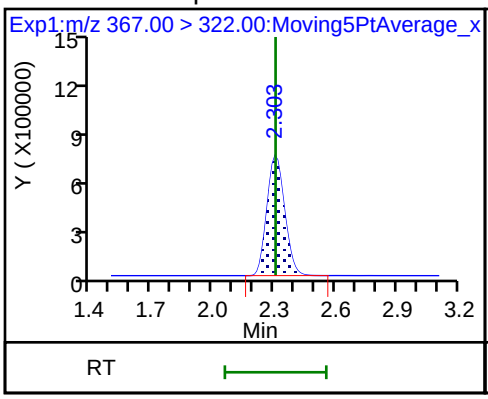
10 Perfluoroheptanoic acid



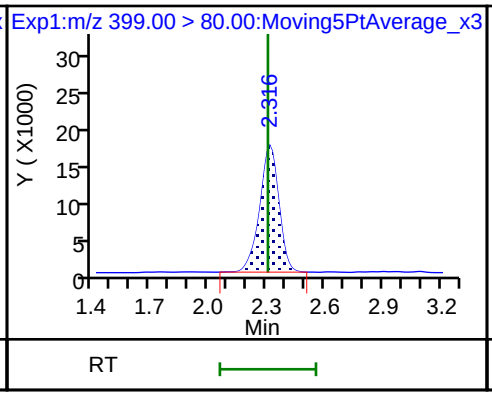
10 Perfluoroheptanoic acid



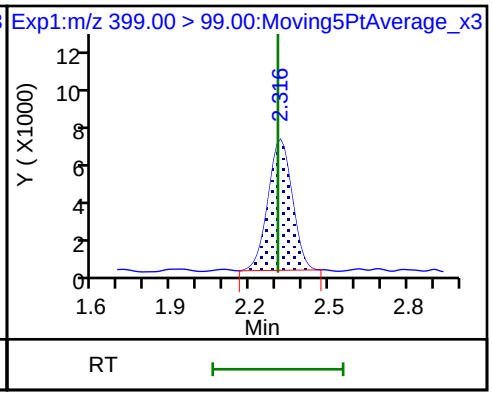
D 9 13C4-PFHpA



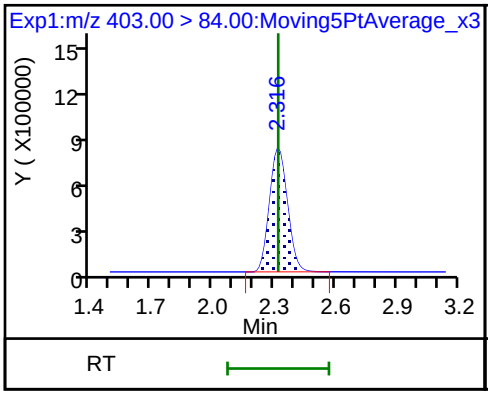
8 Perfluorohexanesulfonic acid



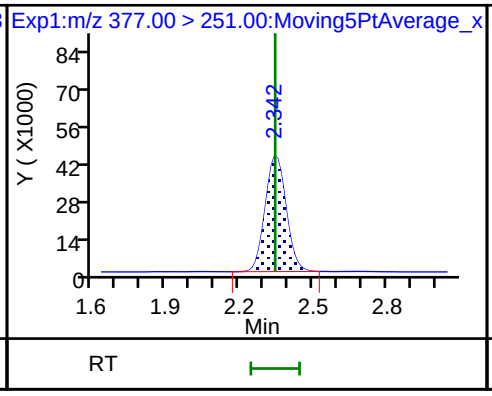
8 Perfluorohexanesulfonic acid



D 11 18O2 PFHxS



65 Adona



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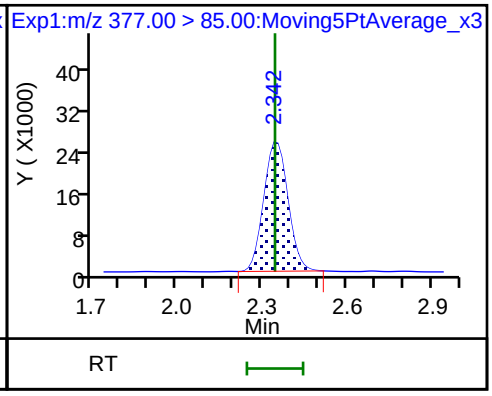
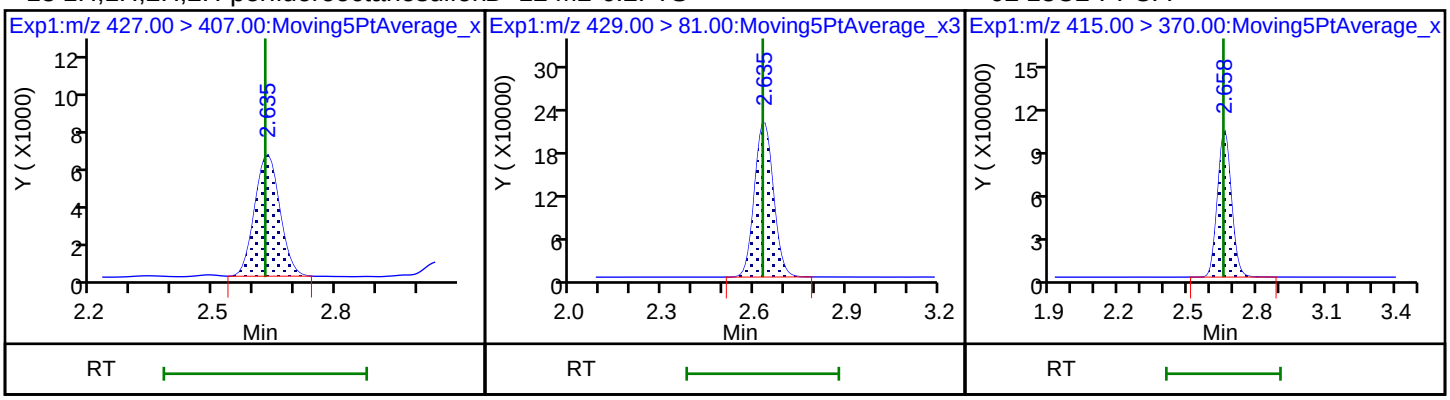
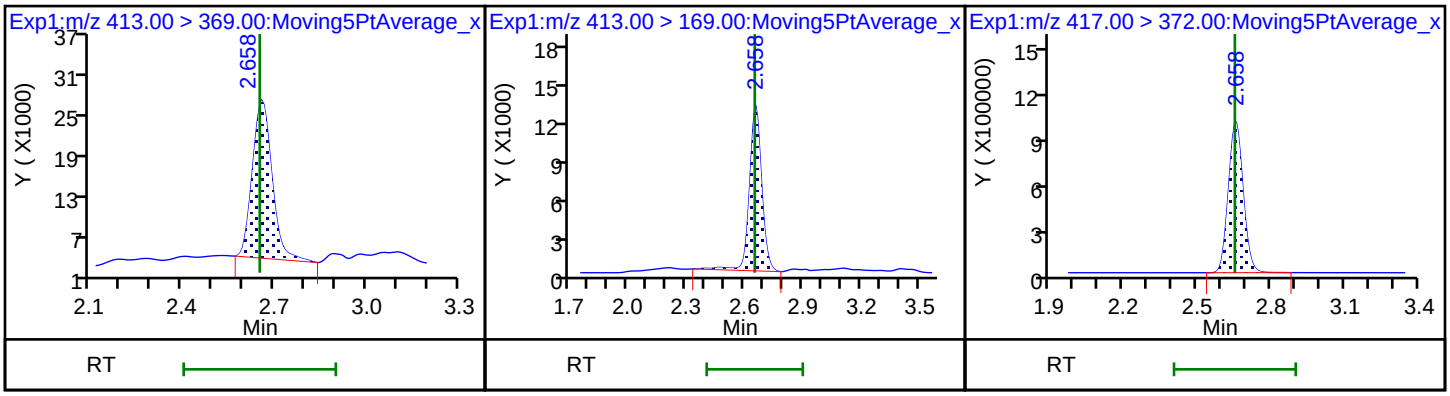


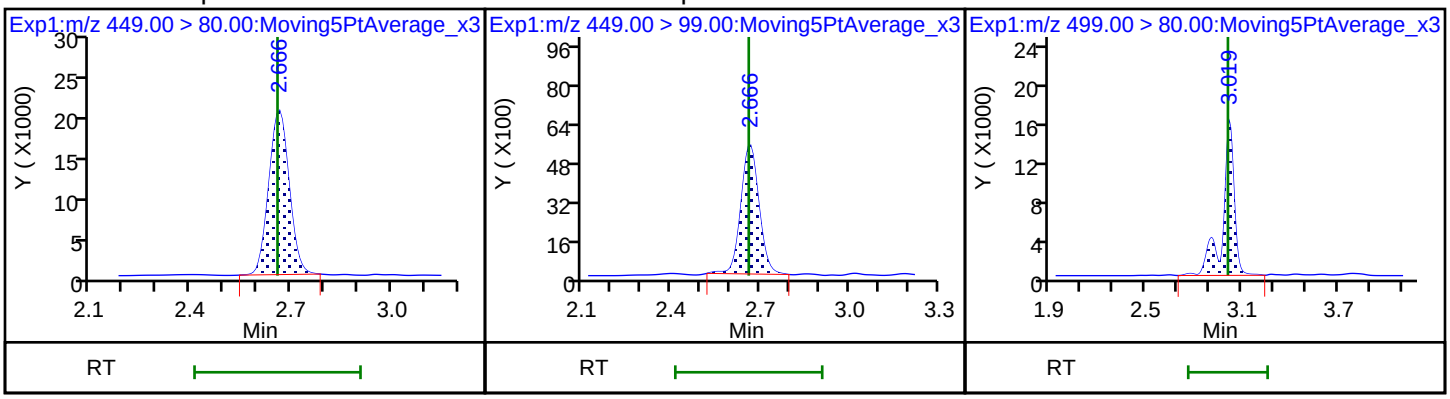
13 1H,1H,2H,2H-perfluorooctanesulfonD 12 M2-6:2FTS * 62 13C2-PFOA



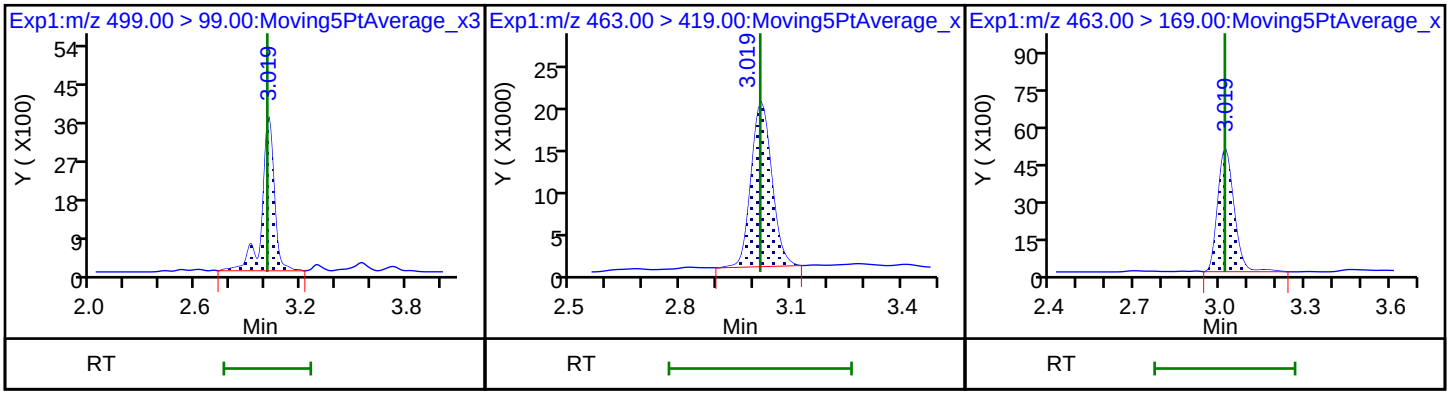
15 Perfluorooctanoic acid 15 Perfluorooctanoic acid D 14 13C4 PFOA



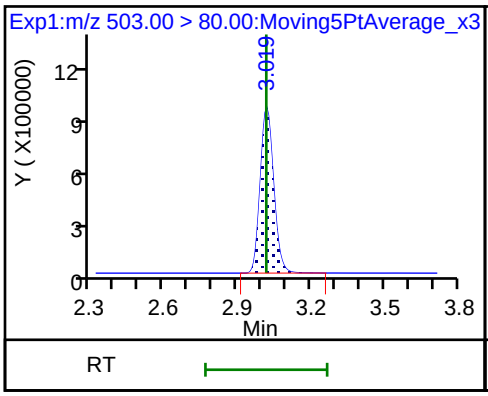
16 Perfluoroheptanesulfonic acid 16 Perfluoroheptanesulfonic acid 17 Perfluorooctane sulfonic acid



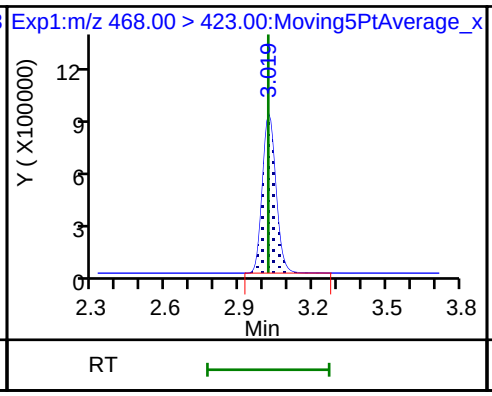
17 Perfluorooctane sulfonic acid 20 Perfluorononanoic acid 20 Perfluorononanoic acid



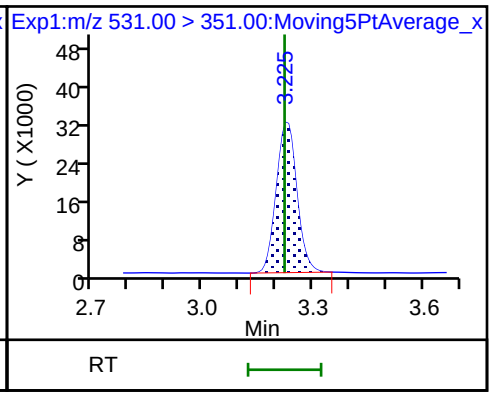
D 18 13C4 PFOS



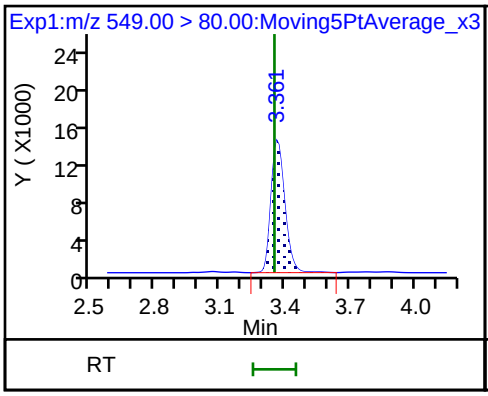
D 19 13C5 PFNA



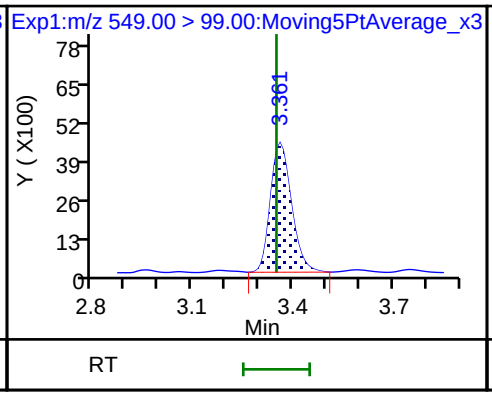
69 9-Chlorohexadecafluoro-3-oxanonane



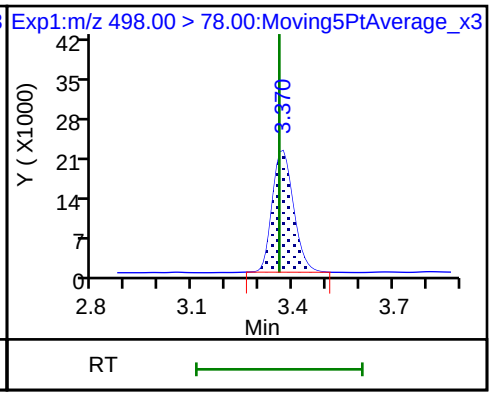
68 Perfluorononanesulfonic acid



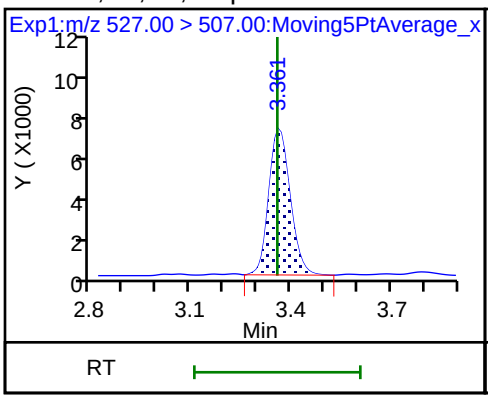
68 Perfluorononanesulfonic acid



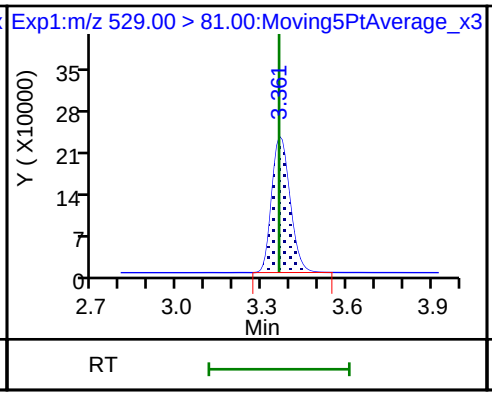
22 Perfluorooctane Sulfonamide



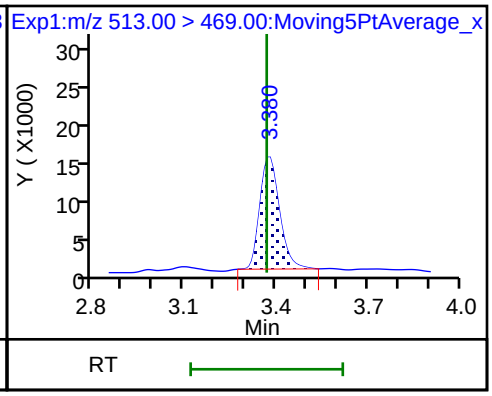
25 1H,1H,2H,2H-perfluorodecanesulfon



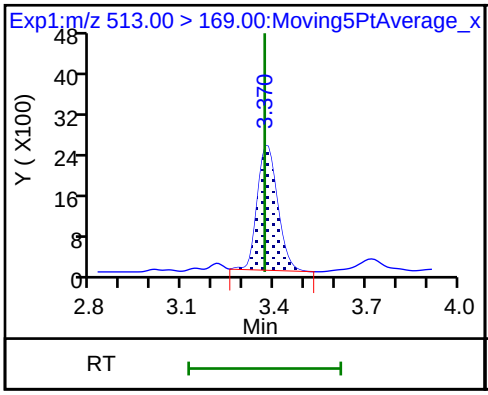
D 26 M2-8:2FTS



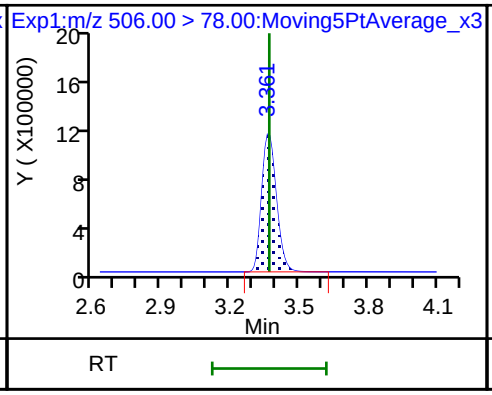
24 Perfluorodecanoic acid



24 Perfluorodecanoic acid



D 21 13C8 FOSA



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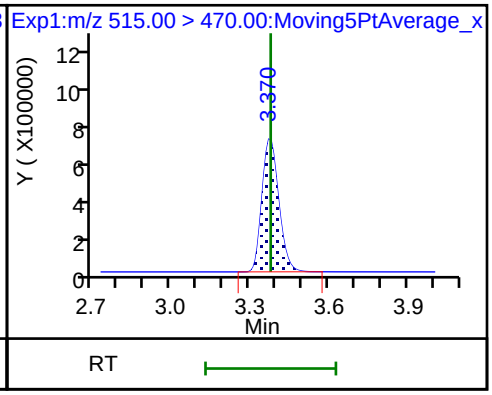
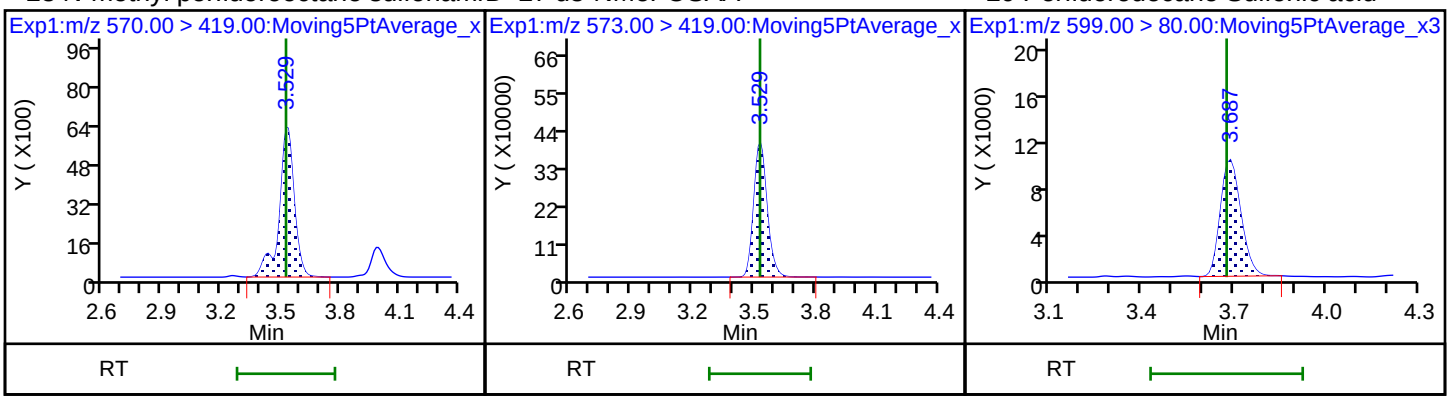
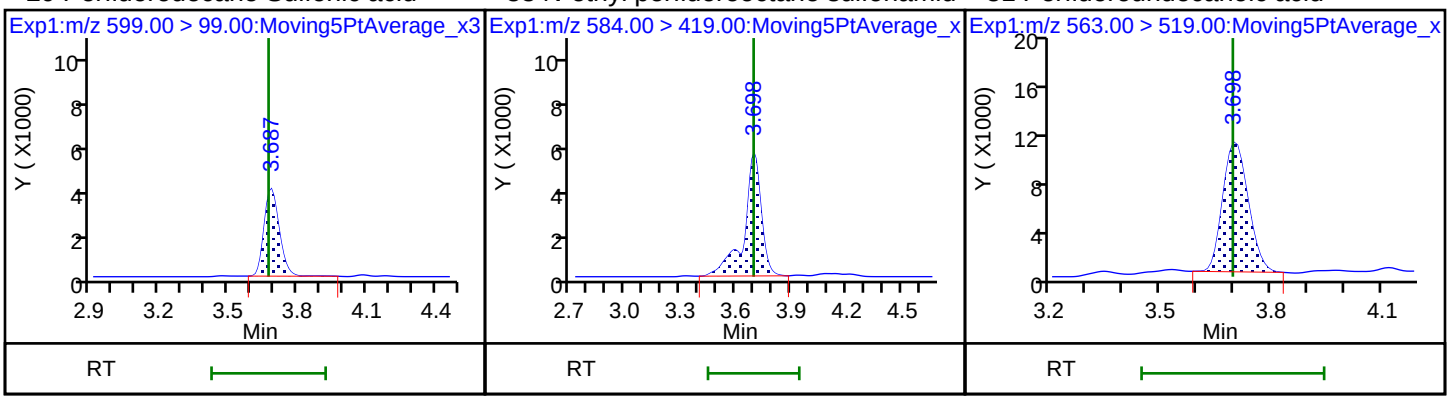


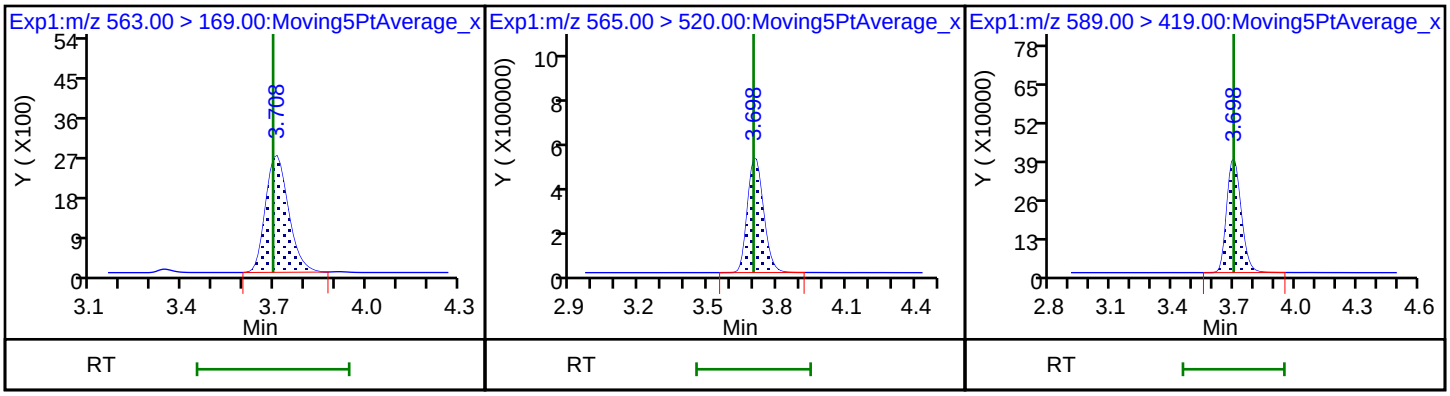
28 N-methyl perfluorooctane sulfonamiD 27 d3-NMeFOSAA 29 Perfluorodecane Sulfonic acid



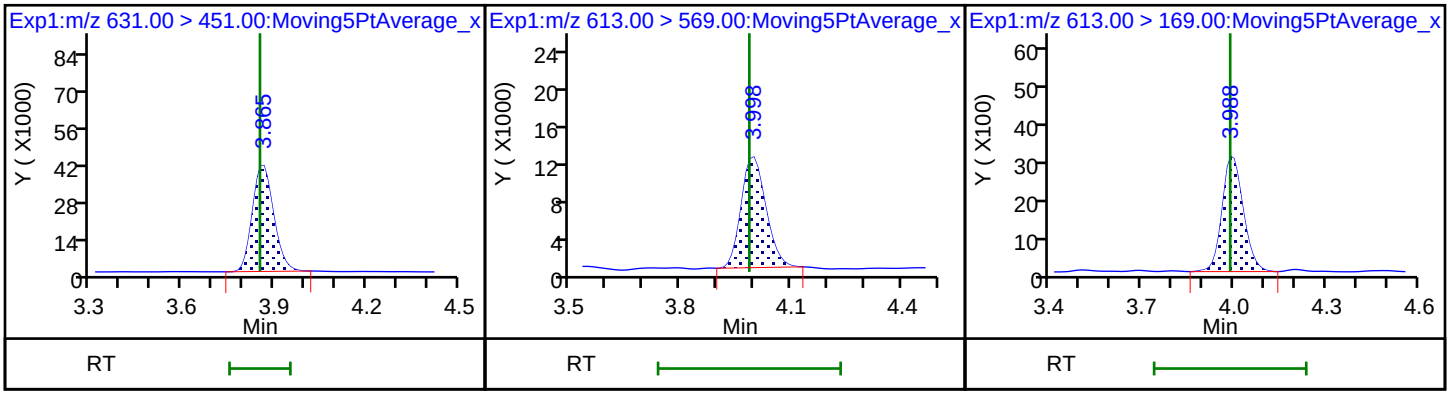
29 Perfluorodecane Sulfonic acid 33 N-ethyl perfluorooctane sulfonamid 31 Perfluoroundecanoic acid



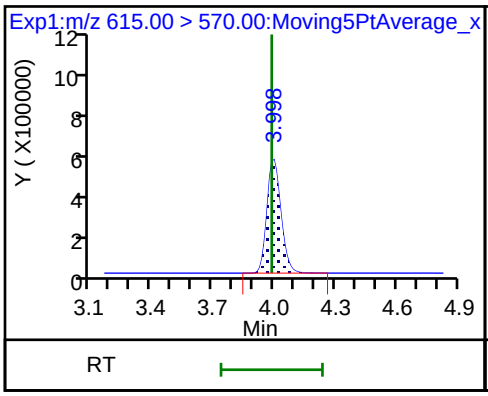
31 Perfluoroundecanoic acid D 30 13C2 PFUnA D 32 d5-NEtFOSAA



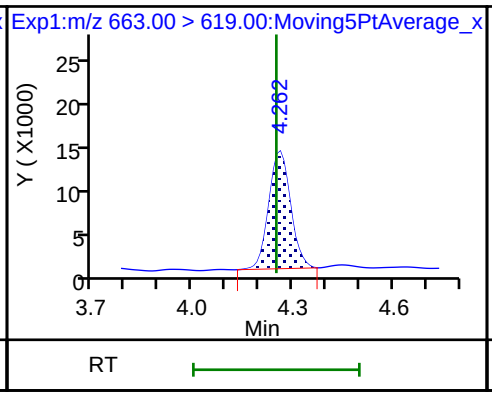
66 11-Chloroeicosafluoro-3-oxaundecan 37 Perfluorododecanoic acid 37 Perfluorododecanoic acid



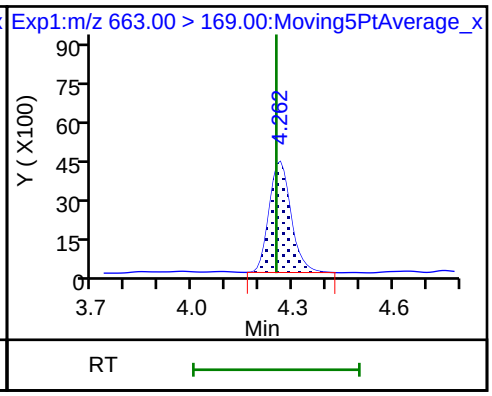
D 36 13C2 PFDoA



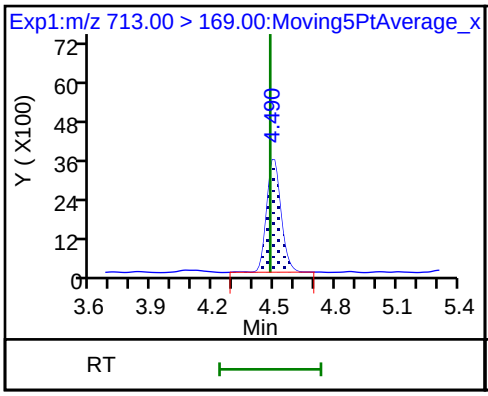
41 Perfluorotridecanoic acid



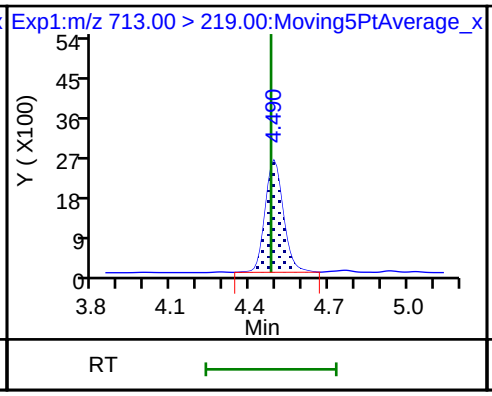
41 Perfluorotridecanoic acid



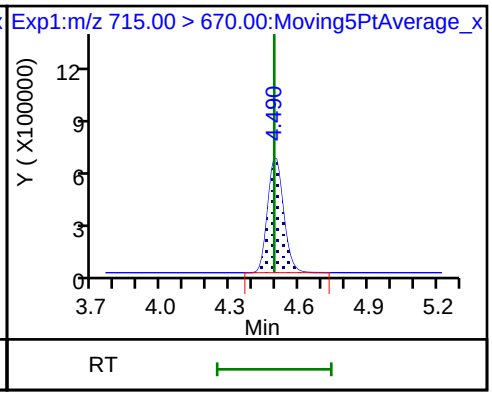
42 Perfluorotetradecanoic acid



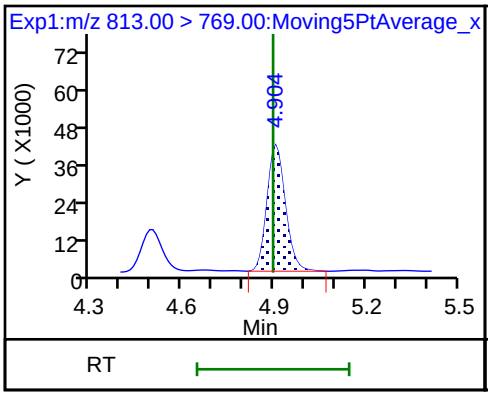
42 Perfluorotetradecanoic acid



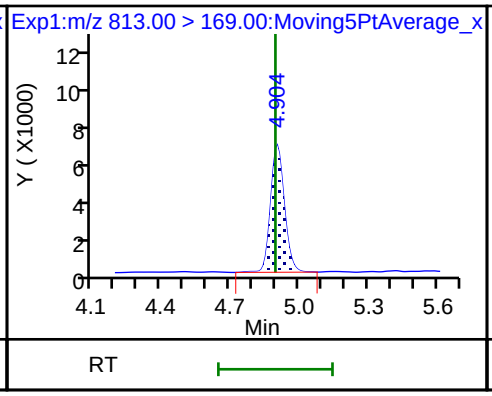
D 43 13C2-PFTeDA



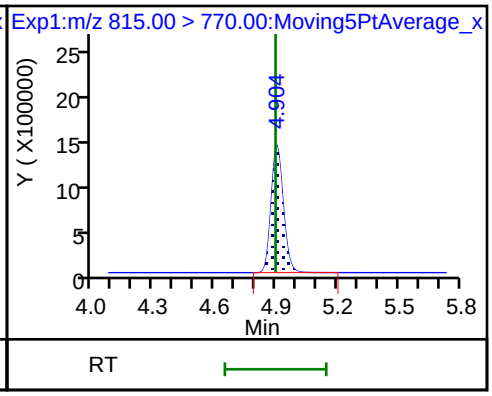
45 Perfluorohexadecanoic acid



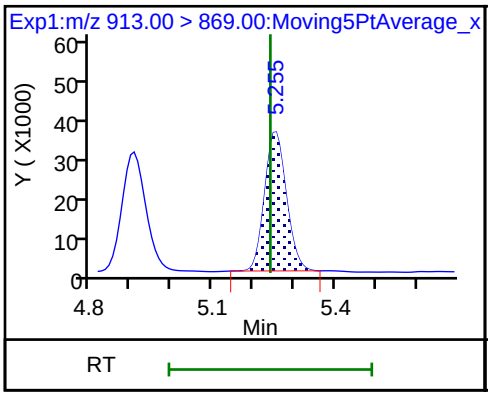
45 Perfluorohexadecanoic acid



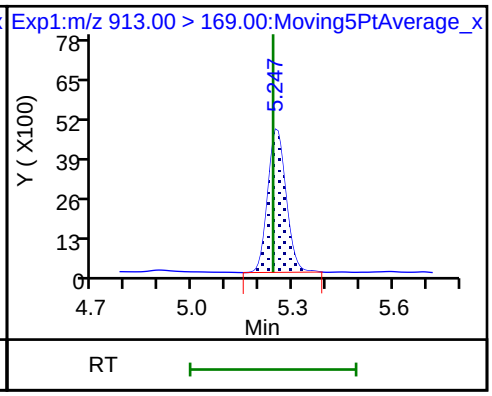
D 44 13C2-PFHxDA



46 Perfluorooctadecanoic acid



46 Perfluorooctadecanoic acid



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

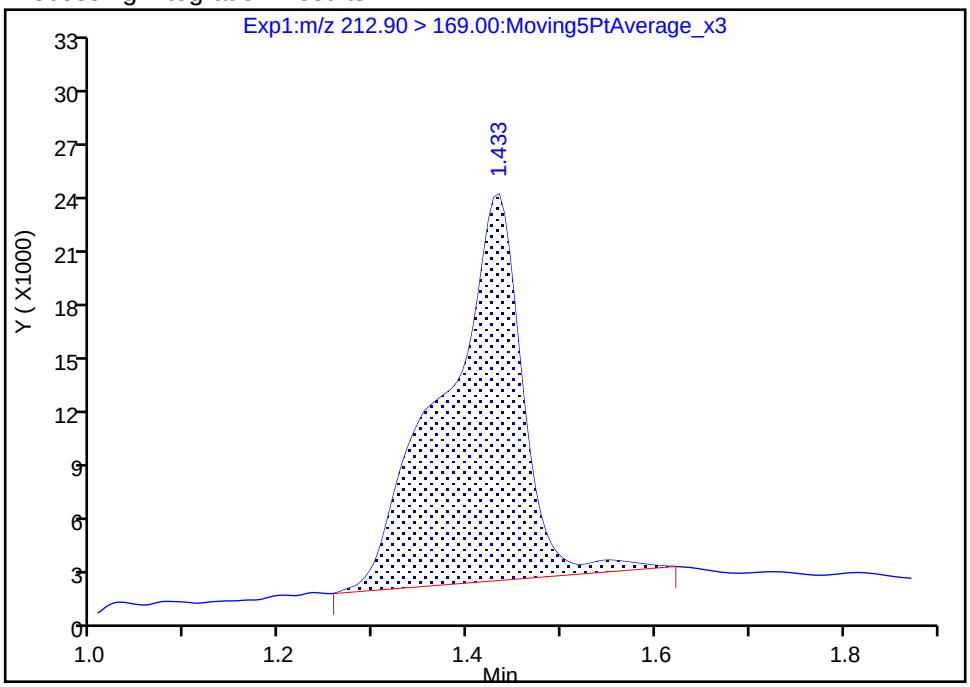
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180706-60746.b\2018.07.06LLAAA_004.d				
Injection Date:	06-Jul-2018 15:48:26	Instrument ID:	A8_N		
Lims ID:	CCVL				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	21	Worklist Smp#:	2
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

2 Perfluorobutyric acid, CAS: 375-22-4

Signal: 1

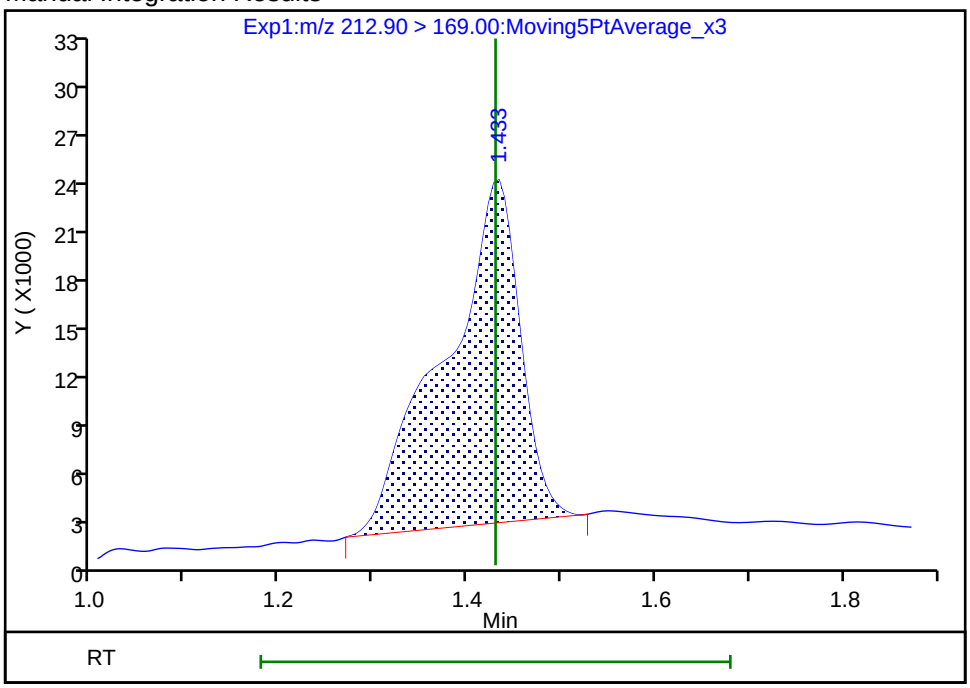
Processing Integration Results

RT: 1.43
Area: 126899
Amount: 0.056483
Amount Units: ng/ml



Manual Integration Results

RT: 1.43
Area: 119090
Amount: 0.053008
Amount Units: ng/ml



Reviewer: mongkols, 09-Jul-2018 08:47:48

Audit Action: Manually Integrated Audit Reason: Baseline

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Lab Sample ID: CCV 320-232772/3 Calibration Date: 07/06/2018 15:56

Instrument ID: A8_N Calib Start Date: 07/05/2018 08:51

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 07/05/2018 09:38

Lab File ID: 2018.07.06LLAAA_019.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	1.021	1.009		0.988	1.00	-1.2	40.0
Perfluoropentanoic acid (PFPeA)	AveID	1.191	1.155		0.970	1.00	-3.0	40.0
Perfluorobutanesulfonic acid (PFBS)	AveID	75.80	78.07		0.910	0.884	3.0	50.0
4:2 FTS	AveID	15.68	15.97		0.951	0.934	1.9	50.0
Perfluorohexanoic acid (PFHxA)	AveID	1.018	1.039		1.02	1.00	2.0	40.0
Perfluoropentanesulfonic acid (PFPeS)	AveID	64.85	68.29		0.988	0.938	5.3	50.0
HFPO-DA (GenX)	AveID	2.299	2.301		1.00	1.00	0.0	40.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.130	1.084		0.959	1.00	-4.1	40.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.156	1.079		0.849	0.910	-6.7	40.0
ADONA	AveID	3.706	3.915		0.995	0.942	5.6	50.0
6:2 FTS	AveID	1.567	1.502		0.909	0.948	-4.1	40.0
Perfluorooctanoic acid (PFOA)	AveID	1.186	1.140		0.963	1.00	-3.8	40.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.339	1.361		0.967	0.952	1.6	50.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.168	1.166		0.927	0.928	-0.1	40.0
Perfluorononanoic acid (PFNA)	AveID	1.078	1.067		0.990	1.00	-1.0	40.0
9-Chlorohexadecafluoro-3-oxa nonane-1-sulfonate	AveID	1.891	1.816		0.895	0.932	-3.9	50.0
Perfluorononanesulfonic acid (PFNS)	AveID	0.8126	0.8357		0.987	0.960	2.8	50.0
8:2 FTS	AveID	1.321	1.314		0.953	0.958	-0.5	40.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9917	1.002		1.01	1.00	1.0	40.0
Perfluorodecanoic acid (PFDA)	AveID	1.042	1.027		0.985	1.00	-1.5	40.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	1.029	0.9696		0.942	1.00	-5.8	40.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.7195	0.6939		0.930	0.964	-3.6	50.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.9017	0.8602		0.954	1.00	-4.6	40.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.8501	0.8747		1.03	1.00	2.9	40.0
11-Chloroeicosafluoro-3-oxau ndecane-1-sulfonate	AveID	2.884	3.103		1.01	0.942	7.6	50.0
Perfluorododecanoic acid (PFDoA)	AveID	1.102	1.122		1.02	1.00	1.8	40.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.227	1.048		0.853	1.00	-14.7	50.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2708	0.2625		0.969	1.00	-3.1	50.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		0.9926		1.02	1.00	2.2	50.0

FORM VII 537 (modified)

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Lab Sample ID: CCV 320-232772/3 Calibration Date: 07/06/2018 15:56

Instrument ID: A8_N Calib Start Date: 07/05/2018 08:51

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 07/05/2018 09:38

Lab File ID: 2018.07.06LLAAA_019.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.164	1.094		0.940	1.00	-6.0	50.0
13C4 PFBA	Ave	1.384	1.275		2.30	2.50	-7.9	50.0
13C5 PFPeA	Ave	1.025	0.9528		2.32	2.50	-7.0	50.0
13C3-PFBS	Ave	0.0245	0.0232		2.20	2.33	-5.2	50.0
M2-4:2FTS	Ave	0.1575	0.1673		2.48	2.34	6.2	50.0
13C2 PFHxA	Ave	1.097	1.059		2.42	2.50	-3.4	50.0
13C3 HFPO-DA	Ave	0.0899	0.0782		2.17	2.50	-13.0	50.0
13C4-PFHpA	Ave	0.9735	0.9824		2.52	2.50	0.9	50.0
18O2 PFHxS	Ave	1.198	1.235		2.44	2.37	3.1	50.0
M2-6:2FTS	Ave	0.2186	0.2428		2.64	2.38	11.1	40.0
13C4 PFOA	Ave	0.9539	0.9434		2.47	2.50	-1.1	50.0
13C4 PFOS	Ave	0.8551	0.8236		2.30	2.39	-3.7	50.0
13C5 PFNA	Ave	0.8109	0.7810		2.41	2.50	-3.7	50.0
13C8 FOSA	Ave	1.187	1.123		2.37	2.50	-5.4	50.0
M2-8:2FTS	Ave	0.2431	0.2555		2.52	2.40	5.1	40.0
13C2 PFDA	Ave	0.6992	0.7262		2.60	2.50	3.9	50.0
d3-NMeFOSAA	Ave	0.4120	0.4097		2.49	2.50	-0.6	50.0
d5-NEtFOSAA	Ave	0.4070	0.4228		2.60	2.50	3.9	50.0
13C2 PFUnA	Ave	0.5873	0.5709		2.43	2.50	-2.8	50.0
13C2 PFDoA	Ave	0.6294	0.6204		2.46	2.50	-1.4	50.0
13C2-PFTeDA	Ave	0.7673	0.7129		2.32	2.50	-7.1	50.0
13C2-PFHxDA	Ave	1.420	1.325		2.33	2.50	-6.7	50.0

FORM VII 537 (modified)

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180706-60746.b\2018.07.06LLAAA_019.d
Lims ID: CCV L4
Client ID:
Sample Type: CCVIS
Inject. Date: 06-Jul-2018 15:56:14 ALS Bottle#: 30 Worklist Smp#: 3
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV L4
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-A8_N*sub32

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180706-60746.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 09-Jul-2018 08:48:29 Calib Date: 05-Jul-2018 09:38:17
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180705-60684.b\2018.07.05LLICALAA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK010

First Level Reviewer: mongkols Date: 09-Jul-2018 08:48:29

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.424	1.424	0.0	0.537	5269220	2.30		92.1	23255	
2 Perfluorobutyric acid										
212.90 > 169.00	1.430	1.430	0.0	1.004	2127581	0.9883		98.8	989	
D 3 13C5-PFPeA										
267.90 > 223.00	1.702	1.701	0.001	0.642	3937921	2.32		93.0	37735	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.702	1.702	0.0	1.000	1819893	0.9702		97.0	1390	
D 47 13C3-PFBS										
301.90 > 83.00	1.738	1.746	-0.008	0.655	89261	2.20		94.8	620	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.747	1.747	0.0	1.005	2649720	0.9105		103	17976	
298.90 > 99.00	1.747	1.747	0.0	1.005	1048788		2.53(1.25-3.74)		12542	
D 60 M2-4:2FTS										
329.00 > 81.00	1.948	1.948	0.0	0.735	645895	2.48		106	8194	
61 1H,1H,2H,2H-perfluorohexanesulfoni										
327.00 > 307.00	1.948	1.948	0.0	1.121	572811	0.9514		102	33642	
D 7 13C2 PFHxA										
315.00 > 270.00	1.981	1.980	0.001	0.747	4378656	2.42		96.6	69126	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.981	1.981	0.0	1.000	1819048	1.02		102	4099	
313.00 > 119.00	1.981	1.981	0.0	1.000	170740		10.65(5.03-15.10)		2905	
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.003	2.003	0.0	1.153	2459311	0.9878		105	28104	
349.00 > 99.00	2.003	2.003	0.0	1.153	877770		2.80(1.36-4.07)		18995	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.070	2.082	-0.012	0.781	323025	2.17		87.0	4640	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
67 Perfluoro(2-propoxypropanoic) acid										
329.10 > 285.00	2.082	2.082	0.0	1.005	297308	1.00		100	1923	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.293	2.293	0.0	1.000	1760556	0.9595		95.9	2314	
363.00 > 169.00	2.293	2.293	0.0	1.000	697024		2.53(1.13-3.40)		4935	
D 9 13C4-PFHpA										
367.00 > 322.00	2.293	2.306	-0.013	0.865	4060522	2.52		101	34993	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.306	2.306	0.0	1.000	2004357	0.8492		93.3	10109	
399.00 > 99.00	2.306	2.306	0.0	1.000	660489		3.03(1.50-4.49)		5148	
D 11 18O2 PFHxS										
403.00 > 84.00	2.306	2.319	-0.013	0.870	4827939	2.44		103	34100	
65 Adona										
377.00 > 251.00	2.345	2.345	0.0	0.779	5021251	1.00		106	34801	
377.00 > 85.00	2.345	2.345	0.0	0.779	3096269		1.62(0.84-2.53)		34558	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.627	2.627	0.0	1.000	571575	0.9089		95.9	3428	
D 12 M2-6:2FTS										
429.00 > 81.00	2.627	2.627	0.0	0.991	953437	2.64		111	17956	
* 62 13C2-PFOA										
415.00 > 370.00	2.652	2.652	0.0		4133089	2.50			31064	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.652	2.652	0.0	1.000	1780146	0.9626		96.2	591	
413.00 > 169.00	2.652	2.652	0.0	1.000	924604		1.93(0.84-2.52)		3711	
D 14 13C4 PFOA										
417.00 > 372.00	2.652	2.652	0.0	1.000	3898941	2.47		98.9	43377	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.659	2.659	0.0	0.884	1763521	0.9670		102	16482	
449.00 > 99.00	2.659	2.659	0.0	0.884	473375		3.73(1.94-5.82)		10042	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.009	3.009	0.0	1.000	1473718	0.9266		99.9	10547	
499.00 > 99.00	3.009	3.009	0.0	1.000	336788		4.38(2.31-6.93)		8540	
20 Perfluorononanoic acid										
463.00 > 419.00	3.016	3.016	0.0	1.002	1377911	0.99		99.0	3022	
463.00 > 169.00	3.016	3.016	0.0	1.002	349297		3.94(1.90-5.69)		12788	
D 18 13C4 PFOS										
503.00 > 80.00	3.009	3.017	-0.008	1.135	3254116	2.30		96.3	22887	
D 19 13C5 PFNA										
468.00 > 423.00	3.009	3.017	-0.008	1.135	3227718	2.41		96.3	52355	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.222	3.222	0.0	1.071	2304294	0.8952		96.1	25047	
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.350	3.350	0.0	1.113	1092344	0.9873		103	21238	
549.00 > 99.00	3.359	3.350	0.009	1.116	407010		2.68(1.33-3.97)		13303	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.359	3.359	0.0	1.000	1860061	1.01		101	23632	
25 1H,1H,2H,2H-perfluorodecanesulfoni										
527.00 > 507.00	3.359	3.359	0.0	1.000	531780	0.9529		99.5	13786	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 26 M2-8:2FTS										
529.00 > 81.00	3.359	3.359	0.0	1.267	1011691	2.52		105	15220	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.368	3.368	0.0	1.000	1233173	0.9855		98.5	4072	
513.00 > 169.00	3.368	3.368	0.0	1.000	218833		5.64(2.36-7.09)		8279	
D 21 13C8 FOSA										
506.00 > 78.00	3.359	3.369	-0.010	1.267	4641820	2.37		94.6	53086	
D 23 13C2 PFDA										
515.00 > 470.00	3.368	3.378	-0.010	1.270	3001371	2.60		104	45977	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.527	3.527	0.0	1.003	656681	0.9421		94.2	5468	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.518	3.527	-0.009	1.327	1693231	2.49		99.4	33570	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.674	3.674	0.0	1.221	910821	0.9297		96.4	27263	
599.00 > 99.00	3.674	3.674	0.0	1.221	318805		2.86(1.39-4.16)		13453	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.696	3.696	0.0	1.003	601216	0.9540		95.4	12971	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.696	3.696	0.0	1.000	825502	1.03		103	3557	
563.00 > 169.00	3.696	3.696	0.0	1.000	211214		3.91(2.12-6.36)		7314	
D 30 13C2 PFUnA										
565.00 > 520.00	3.696	3.696	0.0	1.394	2359524	2.43		97.2	32883	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.685	3.696	-0.011	1.390	1747395	2.60		104	11585	
66 11-Chloroeicosafluoro-3-oxaundecan										
631.00 > 451.00	3.852	3.852	0.0	1.280	3979327	1.01		108	39854	
37 Perfluorododecanoic acid										
613.00 > 569.00	3.986	3.986	0.0	1.000	1151053	1.02		102	1462	
613.00 > 169.00	3.986	3.986	0.0	1.000	271143		4.25(2.13-6.40)		4849	
D 36 13C2 PFDoA										
615.00 > 570.00	3.986	3.987	-0.001	1.503	2564353	2.46		98.6	13348	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.250	4.250	0.0	1.066	1074529	0.8534		85.3	1202	
663.00 > 169.00	4.250	4.250	0.0	1.066	364476		2.95(1.25-3.76)		5723	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.479	4.479	0.0	1.000	309368	0.9695		96.9	5799	
713.00 > 219.00	4.479	4.479	0.0	1.000	215402		1.44(0.71-2.13)		4472	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.479	4.490	-0.011	1.689	2946286	2.32		92.9	12836	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.896	4.896	0.0	1.000	2174429	1.02		102	978	
813.00 > 169.00	4.896	4.896	0.0	1.000	367864		5.91(2.86-8.58)		3155	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.896	4.896	0.0	1.846	5476678	2.33		93.3	12639	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.240	5.240	0.0	1.070	2396714	0.9399		94.0	824	
913.00 > 169.00	5.240	5.240	0.0	1.070	310365		7.72(3.83-11.48)		3622	

Reagents:

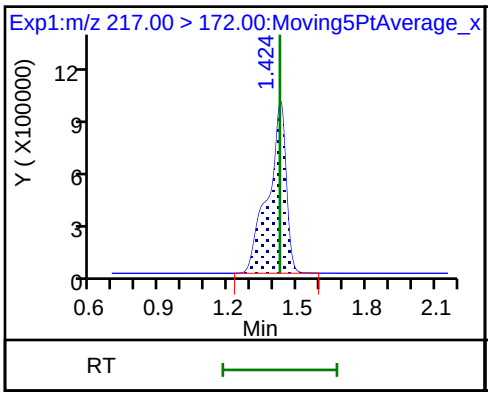
LCPFC_LL4_00005 Amount Added: 1.00 Units: mL

Report Date: 09-Jul-2018 08:48:30 Chrom Revision: 2.2 07-Jun-2018 07:41:54

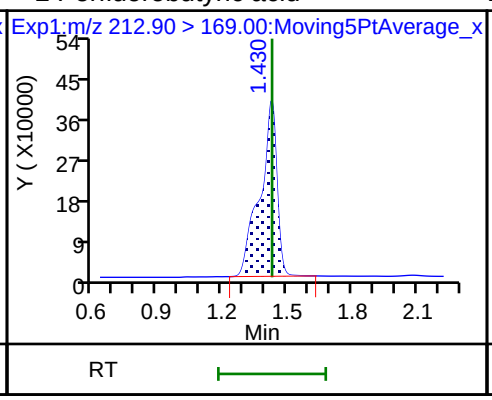
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180706-60746.b\2018.07.06LLAAA_019.d
Injection Date: 06-Jul-2018 15:56:14 Instrument ID: A8_N
Lims ID: CCV L4
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 30 Worklist Smp#: 3
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC ICAL

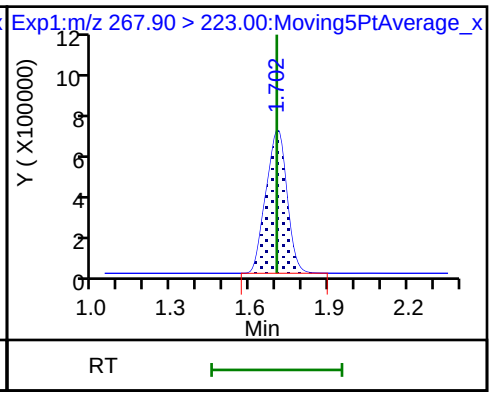
D 1 13C4 PFBA



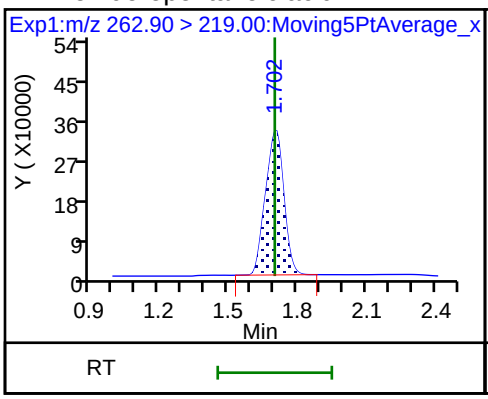
2 Perfluorobutyric acid



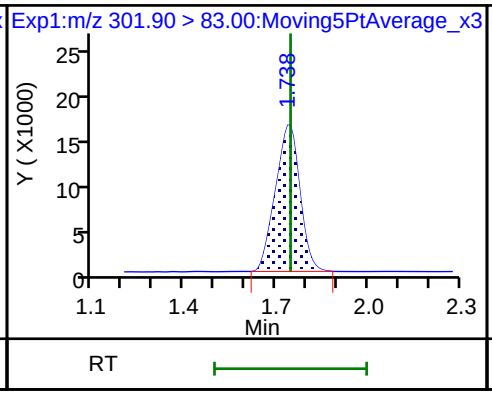
D 3 13C5-PFPeA



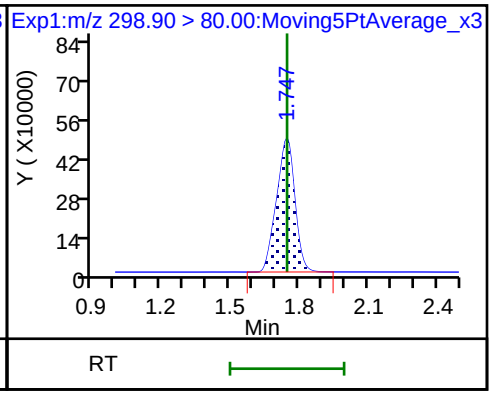
4 Perfluoropentanoic acid



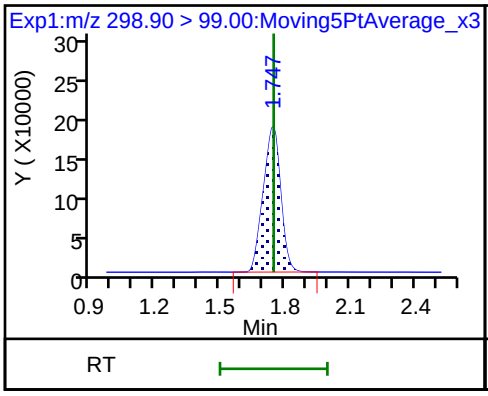
D 47 13C3-PFBS



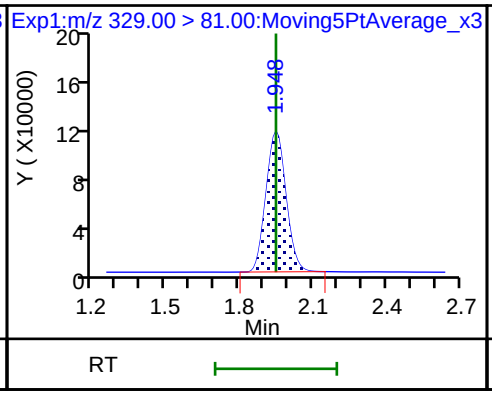
5 Perfluorobutanesulfonic acid



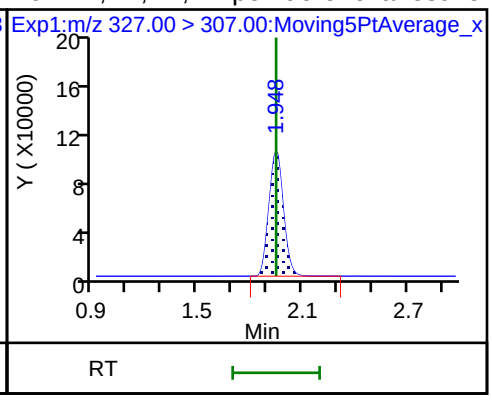
5 Perfluorobutanesulfonic acid



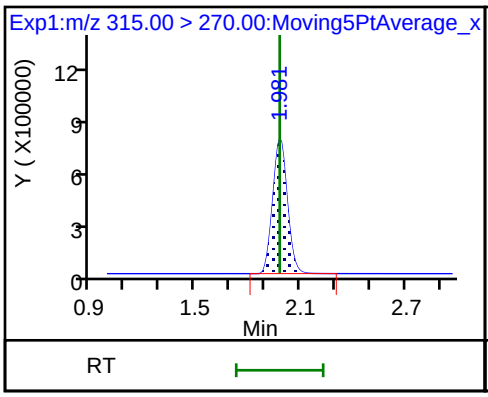
D 60 M2-4:2FTS



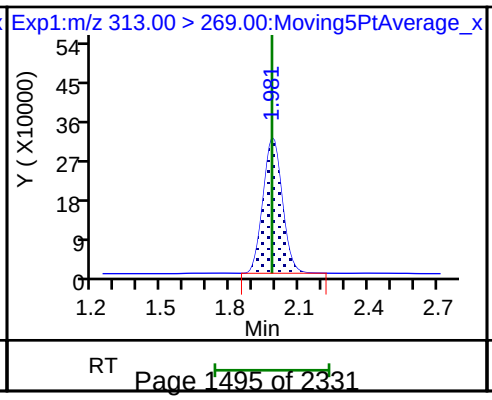
61 1H,1H,2H,2H-perfluorohexanesulfoni



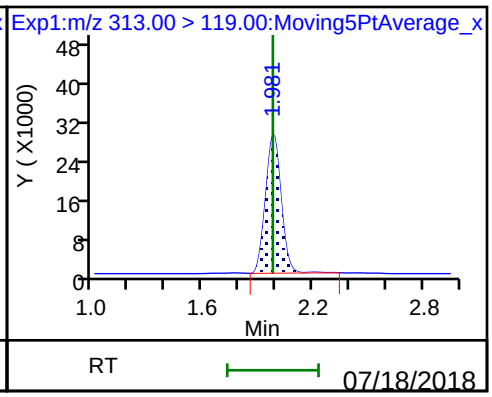
D 7 13C2 PFHxA



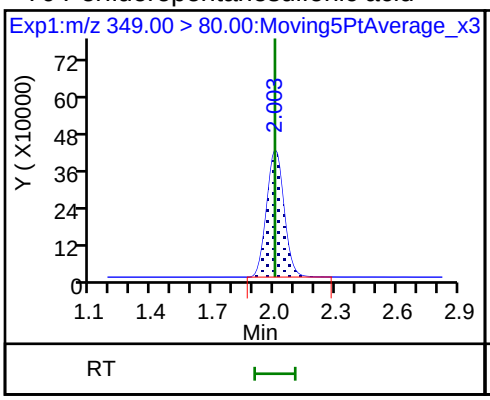
6 Perfluorohexanoic acid



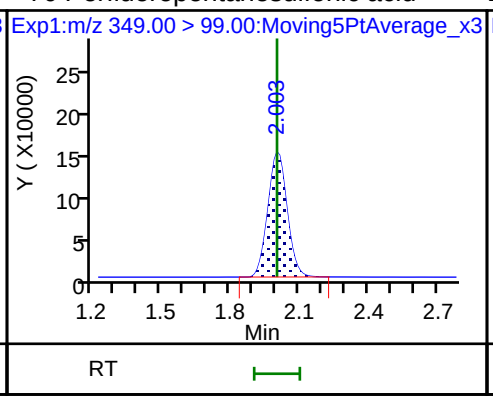
6 Perfluorohexanoic acid



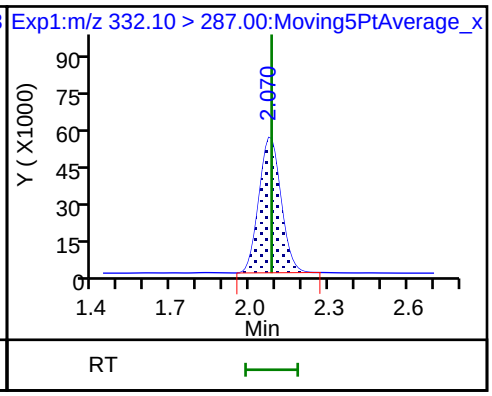
70 Perfluoropentanesulfonic acid



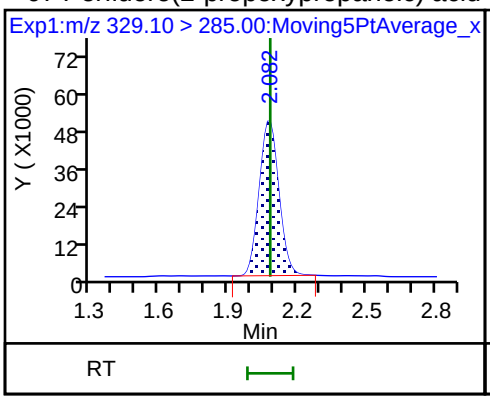
70 Perfluoropentanesulfonic acid



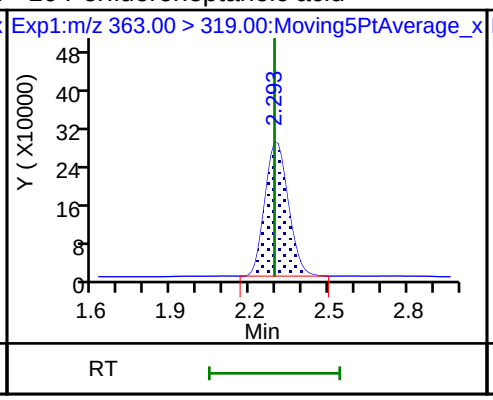
D 64 13C3 HFPO-DA



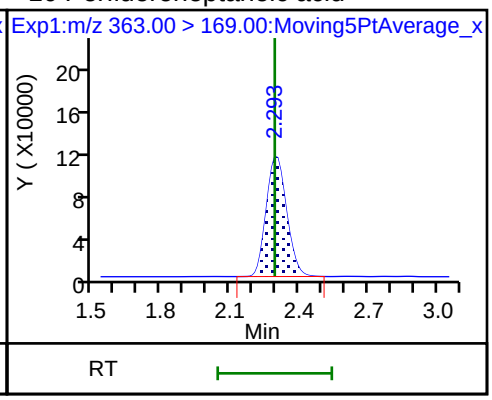
67 Perfluoro(2-propoxypropanoic) acid



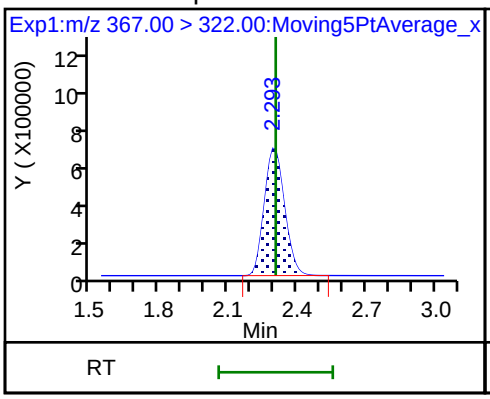
10 Perfluoroheptanoic acid



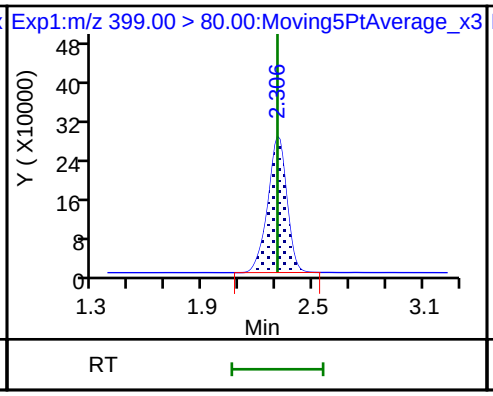
10 Perfluoroheptanoic acid



D 9 13C4-PFHpA



8 Perfluorohexanesulfonic acid



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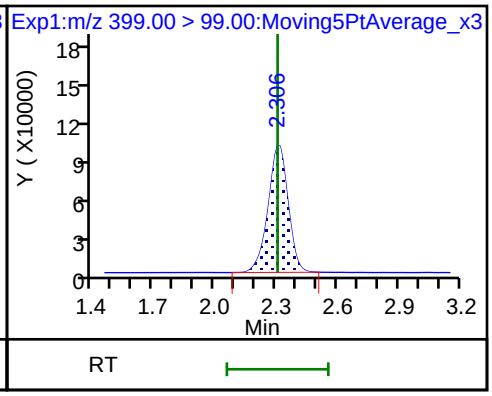
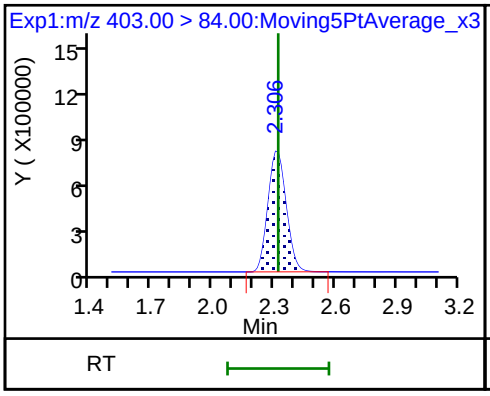
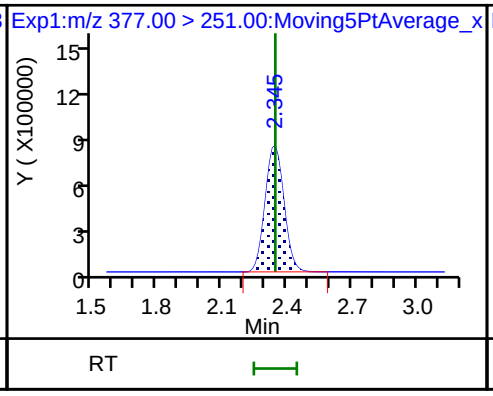


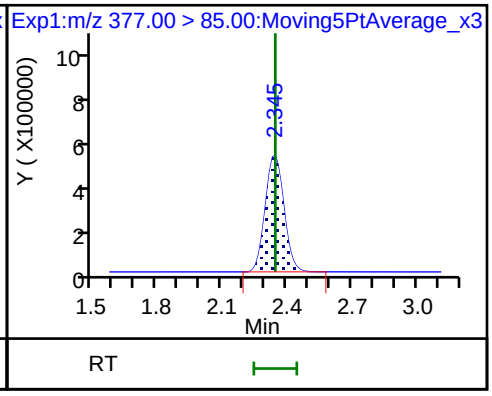
D 11 18O2 PFHxS



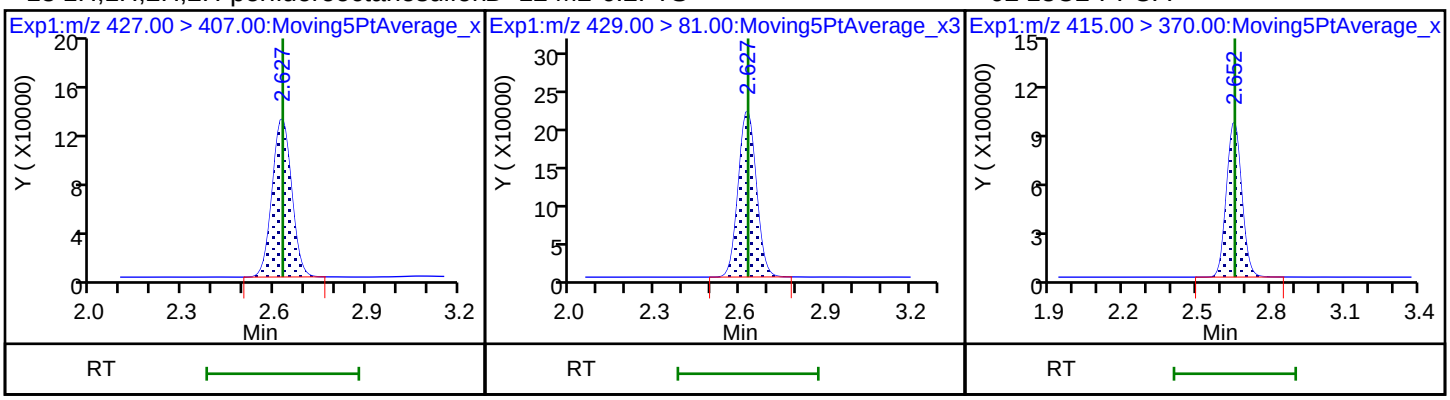
65 Adona



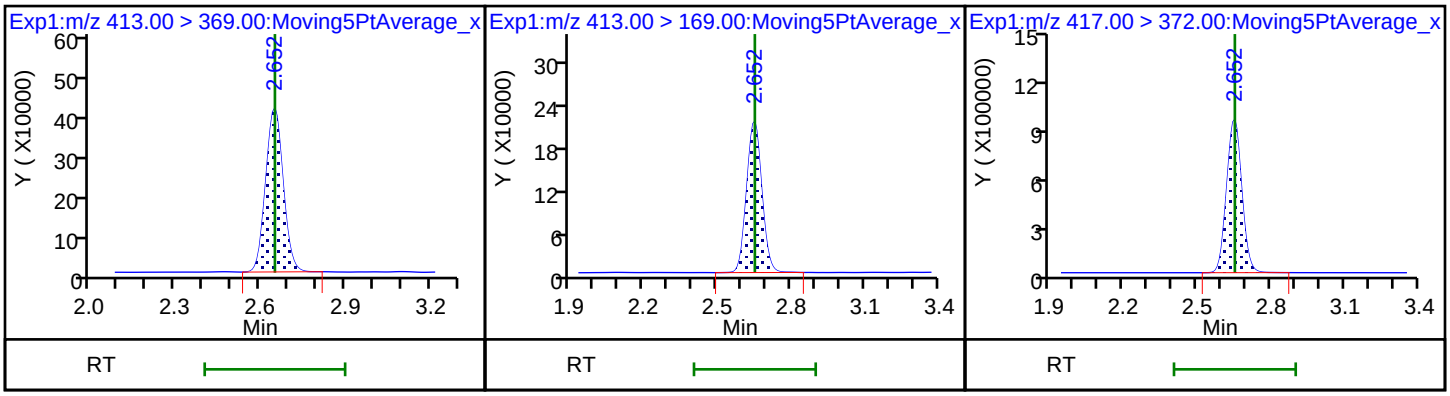
65 Adona



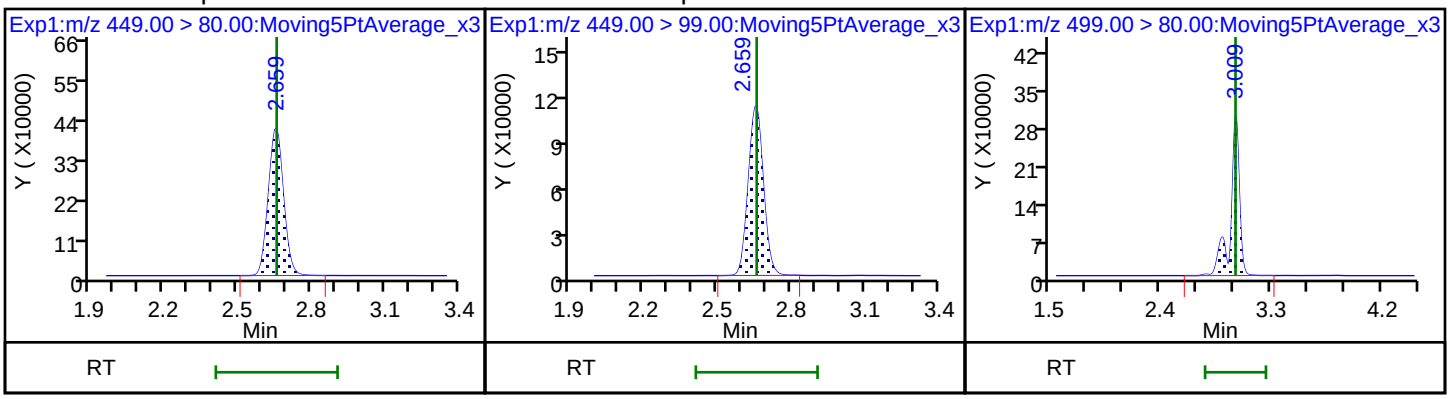
13 1H,1H,2H,2H-perfluorooctanesulfonD 12 M2-6:2FTS * 62 13C2-PFOA



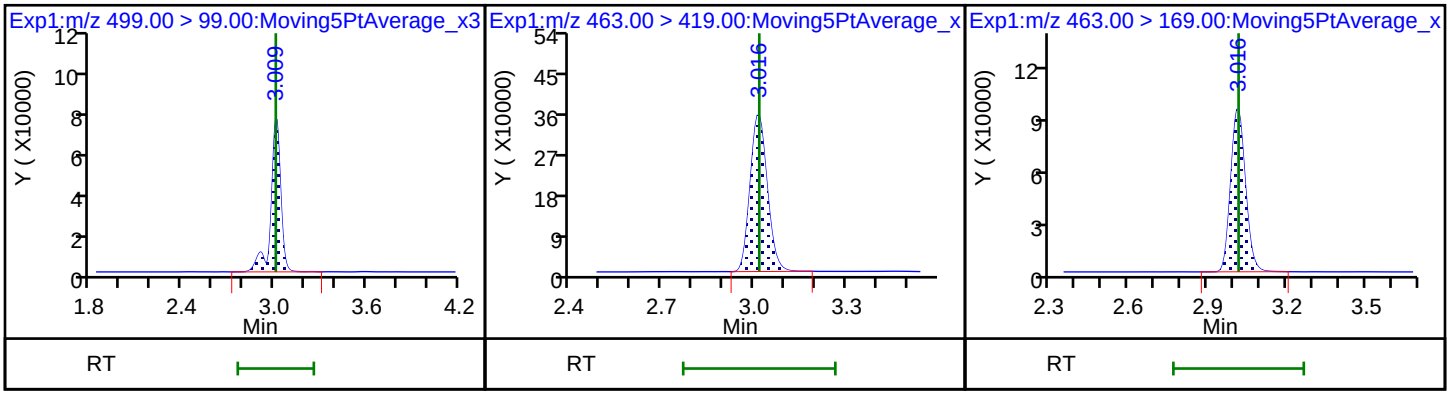
15 Perfluorooctanoic acid 15 Perfluorooctanoic acid D 14 13C4 PFOA



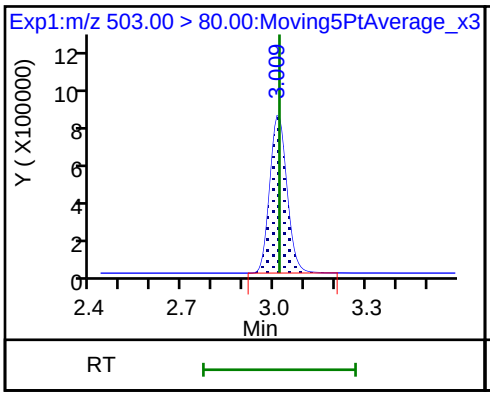
16 Perfluoroheptanesulfonic acid 16 Perfluoroheptanesulfonic acid 17 Perfluorooctane sulfonic acid



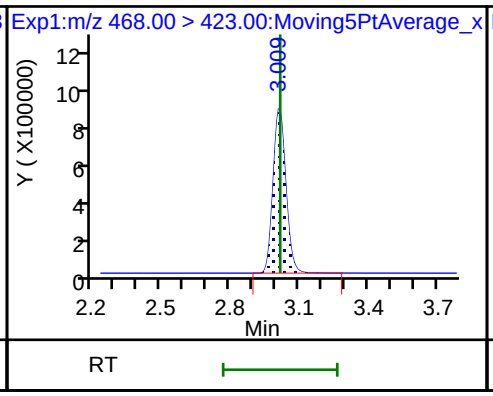
17 Perfluorooctane sulfonic acid 20 Perfluorononanoic acid 20 Perfluorononanoic acid



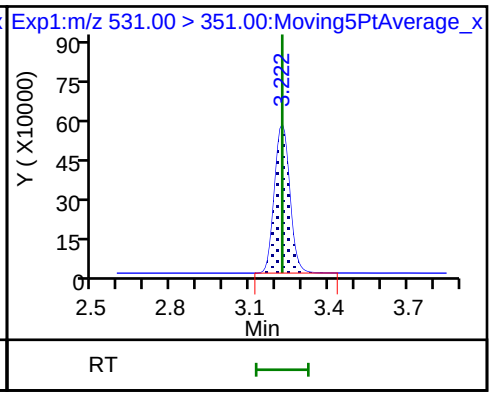
D 18 13C4 PFOS



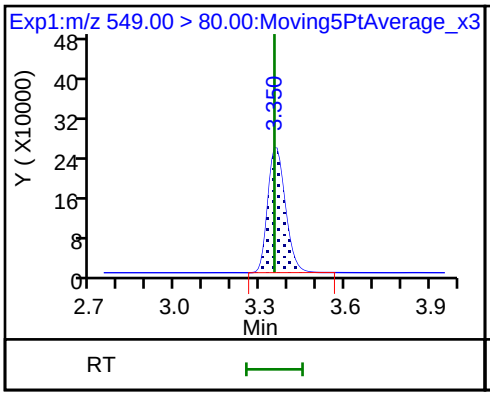
D 19 13C5 PFNA



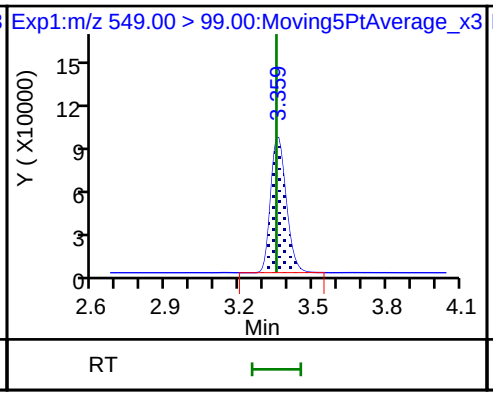
69 9-Chlorohexadecafluoro-3-oxanonane



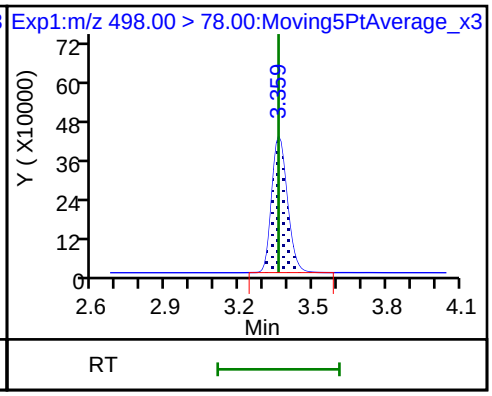
68 Perfluorononanesulfonic acid



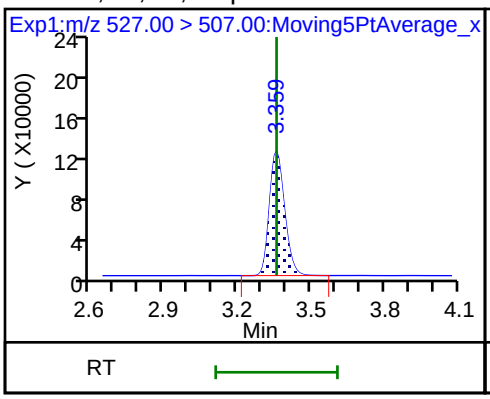
68 Perfluorononanesulfonic acid



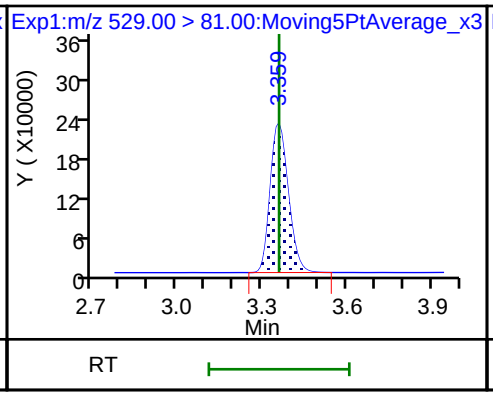
22 Perfluorooctane Sulfonamide



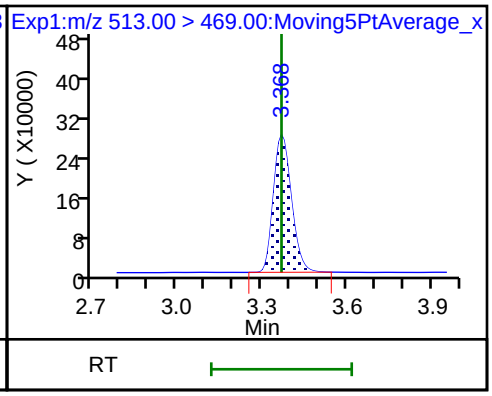
25 1H,1H,2H,2H-perfluorodecanesulfon



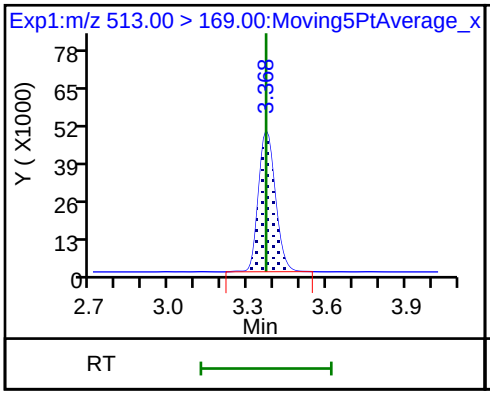
D 26 M2-8:2FTS



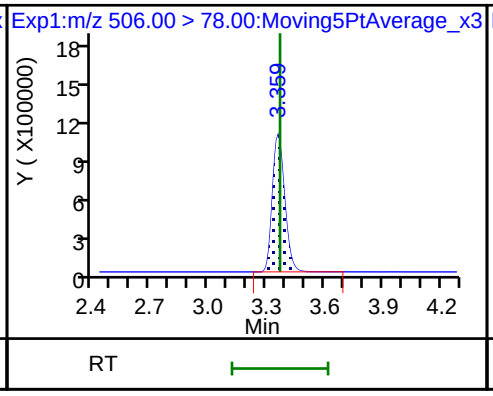
24 Perfluorodecanoic acid



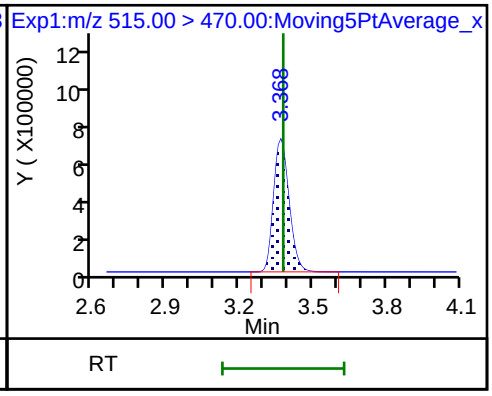
24 Perfluorodecanoic acid



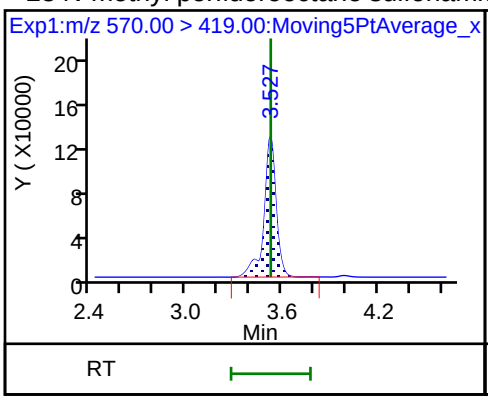
D 21 13C8 FOSA



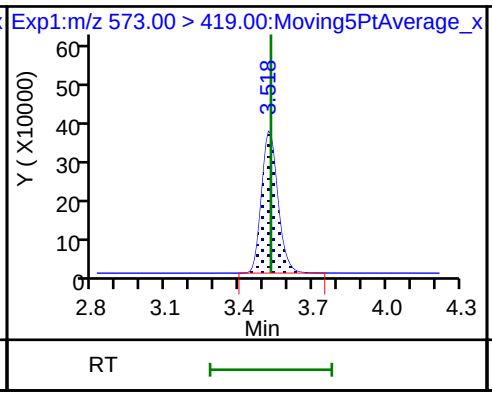
D 23 13C2 PFDA



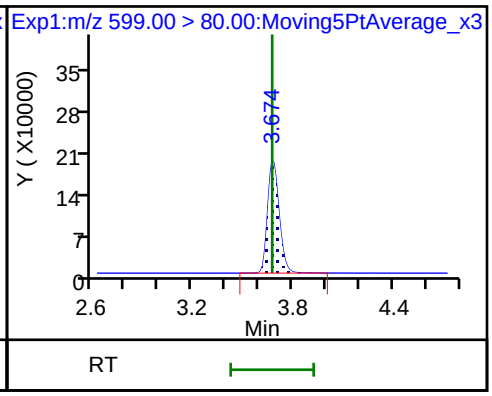
28 N-methyl perfluorooctane sulfonami



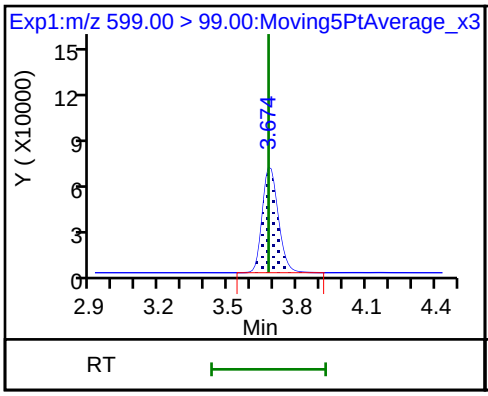
D 27 d3-NMeFOSAA



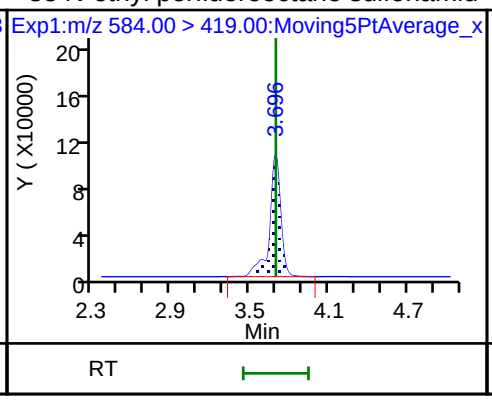
29 Perfluorodecane Sulfonic acid



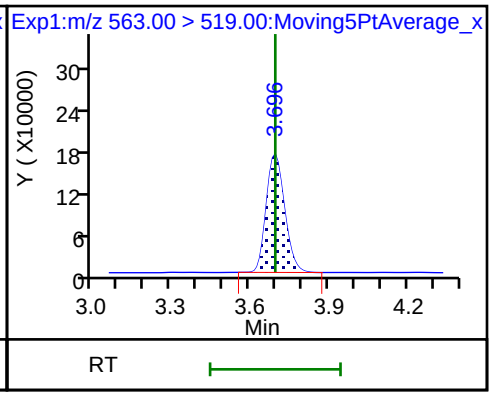
29 Perfluorodecane Sulfonic acid



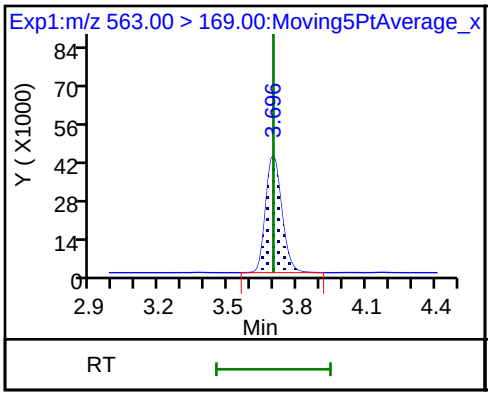
33 N-ethyl perfluorooctane sulfonamid



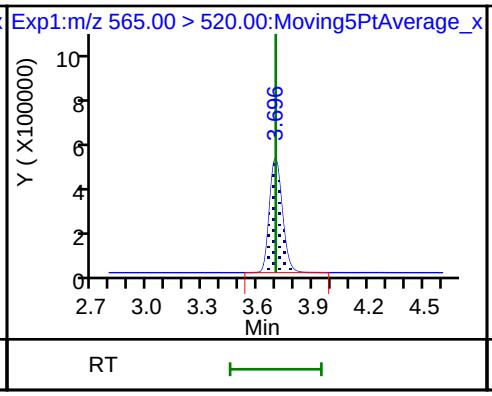
31 Perfluoroundecanoic acid



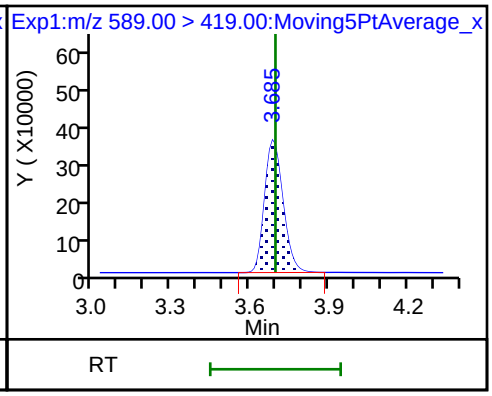
31 Perfluoroundecanoic acid



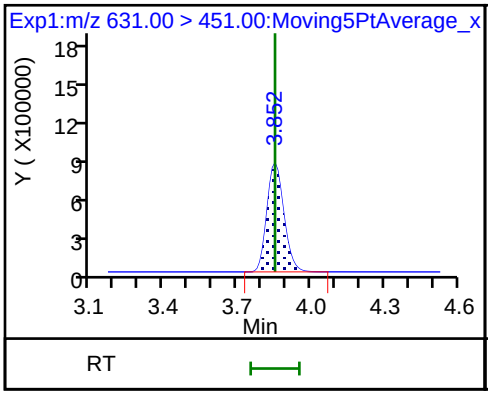
D 30 13C2 PFUnA



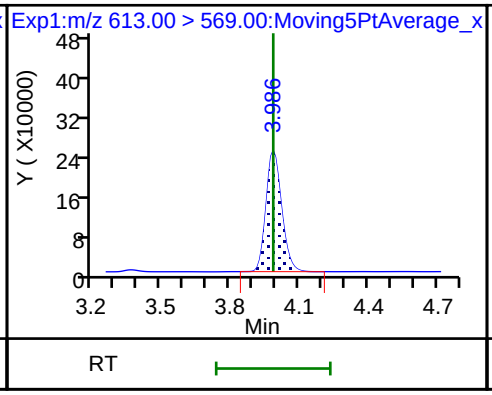
D 32 d5-NEtFOSAA



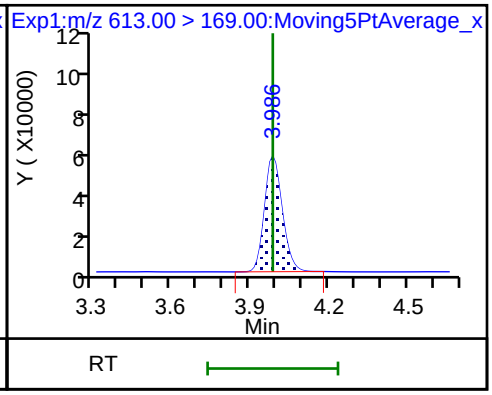
66 11-Chloroeicosafluoro-3-oxaundecan



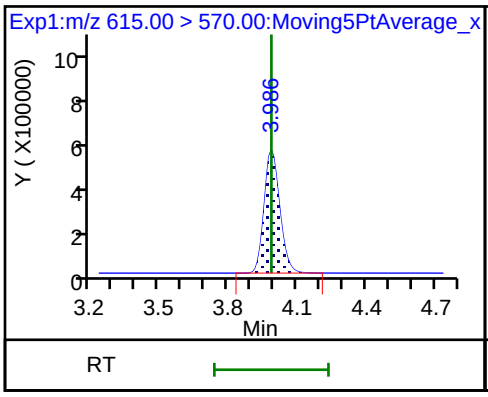
37 Perfluorododecanoic acid



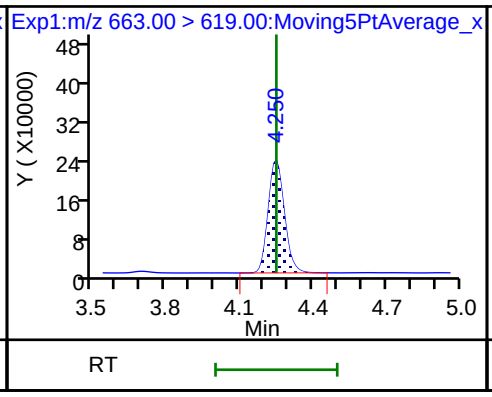
37 Perfluorododecanoic acid



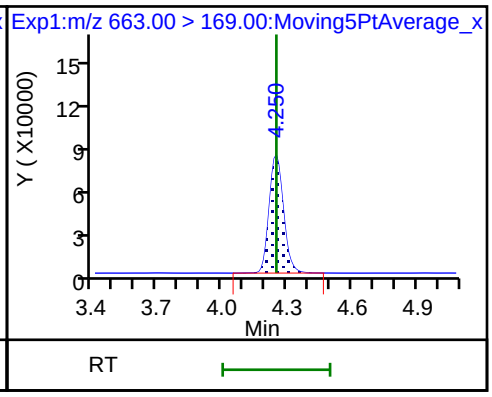
D 36 13C2 PFDoA



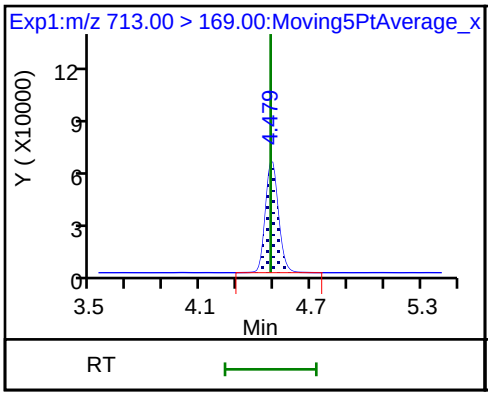
41 Perfluorotridecanoic acid



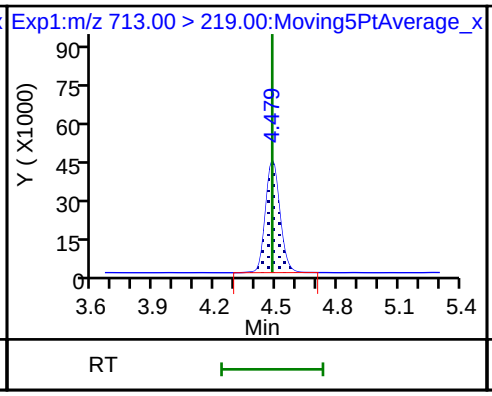
41 Perfluorotridecanoic acid



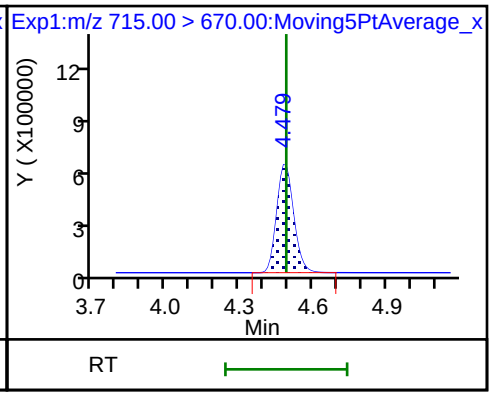
42 Perfluorotetradecanoic acid



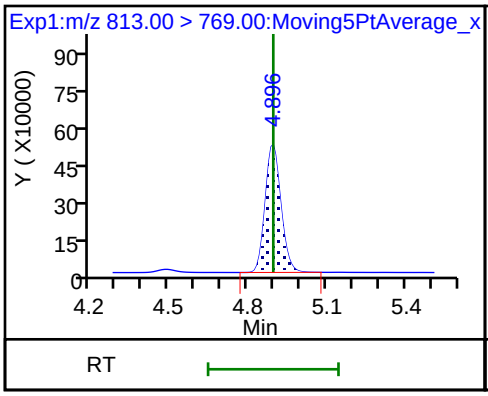
42 Perfluorotetradecanoic acid



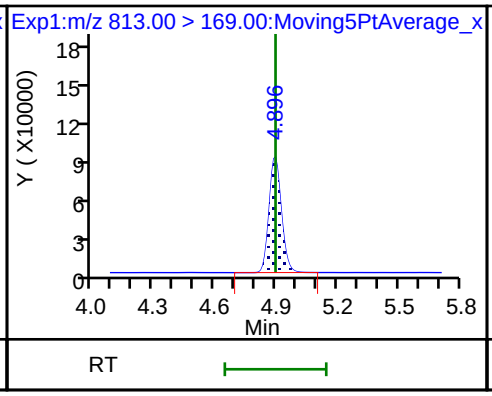
D 43 13C2-PFTeDA



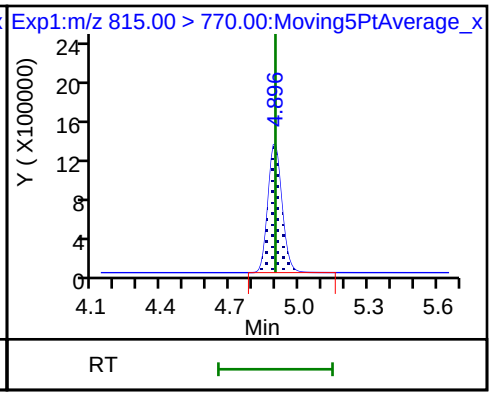
45 Perfluorohexadecanoic acid



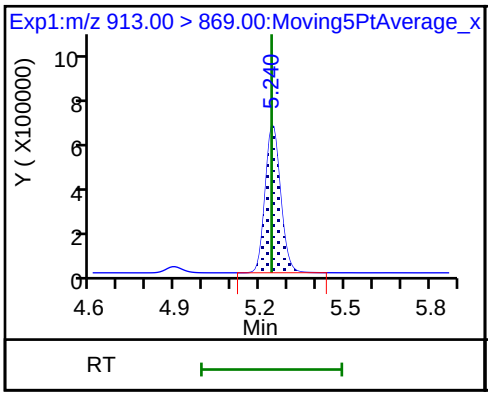
45 Perfluorohexadecanoic acid



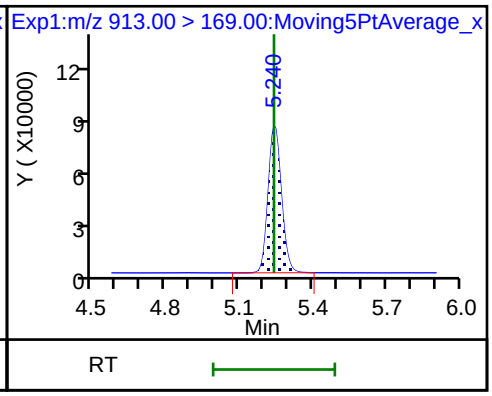
D 44 13C2-PFHxDA



46 Perfluorooctadecanoic acid



46 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Lab Sample ID: CCV 320-232788/1 Calibration Date: 07/06/2018 17:30

Instrument ID: A8_N Calib Start Date: 07/05/2018 08:51

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 07/05/2018 09:38

Lab File ID: 2018.07.06LLAAA_031.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	1.021	1.001		2.45	2.50	-2.0	40.0
Perfluoropentanoic acid (PFPeA)	AveID	1.191	1.208		2.54	2.50	1.4	40.0
Perfluorobutanesulfonic acid (PFBS)	AveID	75.80	78.41		2.29	2.21	3.4	50.0
4:2 FTS	AveID	15.68	16.14		2.40	2.34	2.9	50.0
Perfluorohexanoic acid (PFHxA)	AveID	1.018	1.028		2.52	2.50	1.0	40.0
Perfluoropentanesulfonic acid (PFPeS)	AveID	64.85	66.98		2.42	2.35	3.3	50.0
HFPO-DA (GenX)	AveID	2.299	2.365		2.57	2.50	2.9	40.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.130	1.109		2.45	2.50	-1.9	40.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.156	1.069		2.10	2.28	-7.5	40.0
ADONA	AveID	3.706	4.049		2.57	2.36	9.3	50.0
6:2 FTS	AveID	1.567	1.556		2.35	2.37	-0.6	40.0
Perfluorooctanoic acid (PFOA)	AveID	1.186	1.186		2.50	2.50	0.0	40.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.339	1.396		2.48	2.38	4.2	50.0
Perfluorononanoic acid (PFNA)	AveID	1.078	1.097		2.54	2.50	1.8	40.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.168	1.181		2.35	2.32	1.1	40.0
9-Chlorohexadecafluoro-3-oxa nonane-1-sulfonate	AveID	1.891	1.955		2.41	2.33	3.4	50.0
8:2 FTS	AveID	1.321	1.265		2.29	2.40	-4.3	40.0
Perfluorononanesulfonic acid (PFNS)	AveID	0.8126	0.7920		2.34	2.40	-2.5	50.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9917	1.035		2.61	2.50	4.4	40.0
Perfluorodecanoic acid (PFDA)	AveID	1.042	1.045		2.51	2.50	0.3	40.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	1.029	1.066		2.59	2.50	3.6	40.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.7195	0.7204		2.41	2.41	0.1	50.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.9017	0.8819		2.45	2.50	-2.2	40.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.8501	0.8196		2.41	2.50	-3.6	40.0
11-Chloroeicosafluoro-3-oxau ndecane-1-sulfonate	AveID	2.884	3.089		2.52	2.36	7.1	50.0
Perfluorododecanoic acid (PFDoA)	AveID	1.102	1.149		2.61	2.50	4.3	40.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.227	1.178		2.40	2.50	-4.0	50.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2708	0.2634		2.43	2.50	-2.7	50.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		0.9727		2.54	2.50	1.5	50.0

FORM VII 537 (modified)

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Lab Sample ID: CCV 320-232788/1 Calibration Date: 07/06/2018 17:30

Instrument ID: A8_N Calib Start Date: 07/05/2018 08:51

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 07/05/2018 09:38

Lab File ID: 2018.07.06LLAAA_031.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.164	1.157		2.48	2.50	-0.6	50.0
13C4 PFBA	Ave	1.384	1.373		2.48	2.50	-0.8	50.0
13C5 PFPeA	Ave	1.025	0.9934		2.42	2.50	-3.0	50.0
13C3-PFBS	Ave	0.0245	0.0242		2.30	2.33	-1.2	50.0
M2-4:2FTS	Ave	0.1575	0.1595		2.36	2.34	1.2	50.0
13C2 PFHxA	Ave	1.097	1.114		2.54	2.50	1.6	50.0
13C3 HFPO-DA	Ave	0.0899	0.0860		2.39	2.50	-4.4	50.0
13C4-PFHpA	Ave	0.9735	0.9945		2.55	2.50	2.2	50.0
18O2 PFHxS	Ave	1.198	1.278		2.52	2.37	6.7	50.0
M2-6:2FTS	Ave	0.2186	0.2310		2.51	2.38	5.7	40.0
13C4 PFOA	Ave	0.9539	0.9596		2.52	2.50	0.6	50.0
13C4 PFOS	Ave	0.8551	0.8437		2.36	2.39	-1.3	50.0
13C5 PFNA	Ave	0.8109	0.8333		2.57	2.50	2.8	50.0
13C8 FOSA	Ave	1.187	1.156		2.44	2.50	-2.6	50.0
M2-8:2FTS	Ave	0.2431	0.2517		2.48	2.40	3.5	40.0
13C2 PFDA	Ave	0.6992	0.6991		2.50	2.50	-0.0	50.0
d3-NMeFOSAA	Ave	0.4120	0.3898		2.37	2.50	-5.4	50.0
d5-NEtFOSAA	Ave	0.4070	0.3903		2.40	2.50	-4.1	50.0
13C2 PFUnA	Ave	0.5873	0.5971		2.54	2.50	1.7	50.0
13C2 PFDoA	Ave	0.6294	0.6263		2.49	2.50	-0.5	50.0
13C2-PFTeDA	Ave	0.7673	0.7503		2.44	2.50	-2.2	50.0
13C2-PFHxDA	Ave	1.420	1.559		2.75	2.50	9.8	50.0

FORM VII 537 (modified)

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180706-60751.b\2018.07.06LLAAA_031.d
Lims ID: CCV L5
Client ID:
Sample Type: CCV
Inject. Date: 06-Jul-2018 17:30:10 ALS Bottle#: 31 Worklist Smp#: 1
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV L5
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-A8_N*sub32

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180706-60751.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 09-Jul-2018 10:11:36 Calib Date: 05-Jul-2018 09:38:17
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180705-60684.b\2018.07.05LLICALAA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK010

First Level Reviewer: mongkols Date: 09-Jul-2018 10:11:36

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.430	1.424	0.006	0.539	5486698	2.48		99.2	23621	
2 Perfluorobutyric acid										
212.90 > 169.00	1.430	1.433	-0.003	1.000	5492945	2.45		98.0	2542	
D 3 13C5-PFPeA										
267.90 > 223.00	1.712	1.702	0.010	0.645	3970239	2.42		97.0	40325	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.712	1.707	0.005	1.000	4796467	2.54		101	3367	
D 47 13C3-PFBS										
301.90 > 83.00	1.748	1.738	0.010	0.659	89990	2.30		98.8	585	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.748	1.752	-0.004	1.000	6706726	2.29		103	26567	
298.90 > 99.00	1.748	1.752	-0.004	1.000	2635561		2.54(1.25-3.74)		17046	
D 60 M2-4:2FTS										
329.00 > 81.00	1.949	1.948	0.001	0.735	595177	2.36		101	7497	
61 1H,1H,2H,2H-perfluorohexanesulfoni										
327.00 > 307.00	1.949	1.956	-0.007	1.115	1458634	2.40		103	51614	
D 7 13C2 PFHxA										
315.00 > 270.00	1.982	1.981	0.001	0.747	4451255	2.54		102	45788	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.993	1.988	0.005	1.006	4577763	2.52		101	10922	
313.00 > 119.00	1.982	1.988	-0.006	1.000	421304		10.87(5.03-15.10)		6019	
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.004	2.010	-0.006	1.147	6079761	2.42		103	54856	
349.00 > 99.00	2.004	2.010	-0.006	1.147	2221073		2.74(1.36-4.07)		25377	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.083	2.070	0.013	0.785	343537	2.39		95.6	7584	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
67 Perfluoro(2-propoxypropanoic) acid										
329.10 > 285.00	2.083	2.078	0.005	1.000	812592	2.57		103	4951	
D 9 13C4-PFHpA										
367.00 > 322.00	2.307	2.293	0.014	0.870	3974552	2.55		102	43604	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.307	2.302	0.005	1.000	4406332	2.45		98.1	6095	
363.00 > 169.00	2.307	2.302	0.005	1.000	1774882		2.48(1.13-3.40)		12139	
D 11 18O2 PFHxS										
403.00 > 84.00	2.321	2.306	0.014	0.875	4830578	2.52		107	39536	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.321	2.315	0.005	1.000	4967205	2.10		92.5	16994	
399.00 > 99.00	2.321	2.315	0.005	1.000	1697640		2.93(1.50-4.49)		6806	
65 Adona										
377.00 > 251.00	2.347	2.355	-0.008	0.777	12860664	2.57		109	74675	
377.00 > 85.00	2.347	2.355	-0.008	0.777	7716302		1.67(0.84-2.53)		50118	
D 12 M2-6:2FTS										
429.00 > 81.00	2.629	2.627	0.002	0.991	876949	2.51		106	14429	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.629	2.634	-0.005	1.000	1362021	2.35		99.4	6074	
D 14 13C4 PFOA										
417.00 > 372.00	2.653	2.652	0.001	1.000	3835134	2.52		101	37484	
* 62 13C2-PFOA										
415.00 > 370.00	2.653	2.658	-0.005		3996449	2.50			34675	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.653	2.658	-0.005	1.000	4553862	2.50		100	2043	
413.00 > 169.00	2.653	2.658	-0.005	1.000	2402986		1.90(0.84-2.52)		10249	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.661	2.665	-0.004	0.881	4479809	2.48		104	23090	
449.00 > 99.00	2.661	2.665	-0.004	0.881	1164160		3.85(1.94-5.82)		18139	
D 19 13C5 PFNA										
468.00 > 423.00	3.019	3.009	0.010	1.138	3330261	2.57		103	53948	
D 18 13C4 PFOS										
503.00 > 80.00	3.019	3.009	0.010	1.138	3223315	2.36		98.7	22665	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.019	3.022	-0.003	1.000	3694691	2.35		101	25146	
499.00 > 99.00	3.019	3.022	-0.003	1.000	813988		4.54(2.31-6.93)		12334	
20 Perfluorononanoic acid										
463.00 > 419.00	3.019	3.022	-0.003	1.000	3652495	2.54		102	7354	
463.00 > 169.00	3.019	3.022	-0.003	1.000	869866		4.20(1.90-5.69)		25073	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.225	3.237	-0.012	1.068	6142100	2.41		103	68061	
D 21 13C8 FOSA										
506.00 > 78.00	3.361	3.359	0.002	1.267	4621558	2.44		97.4	43593	
D 26 M2-8:2FTS										
529.00 > 81.00	3.361	3.359	0.002	1.267	963736	2.48		104	16647	
25 1H,1H,2H,2H-perfluorodecanesulfoni										
527.00 > 507.00	3.361	3.367	-0.006	1.000	1219019	2.29		95.7	30381	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.361	3.367	-0.006	1.000	4784359	2.61		104	37284	
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.361	3.367	-0.006	1.113	2563413	2.34		97.5	49189	
549.00 > 99.00	3.361	3.367	-0.006	1.113	939132		2.73(1.33-3.97)		21580	
D 23 13C2 PFDA										
515.00 > 470.00	3.370	3.368	0.002	1.270	2793951	2.50		100	44939	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.370	3.376	-0.006	1.000	2920261	2.51		100	11313	
513.00 > 169.00	3.370	3.376	-0.006	1.000	507553		5.75(2.36-7.09)		12727	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.529	3.518	0.011	1.330	1557976	2.37		94.6	15722	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.529	3.535	-0.006	1.000	1661381	2.59		104	10840	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.687	3.684	0.003	1.221	2341600	2.41		100	37838	
599.00 > 99.00	3.687	3.684	0.003	1.221	790426		2.96(1.39-4.16)		27474	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.687	3.685	0.002	1.390	1559811	2.40		95.9	14260	
D 30 13C2 PFUnA										
565.00 > 520.00	3.698	3.696	0.002	1.394	2386311	2.54		102	26147	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.698	3.705	-0.007	1.000	1955760	2.41		96.4	6711	
563.00 > 169.00	3.698	3.705	-0.007	1.000	503718		3.88(2.12-6.36)		11600	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.698	3.705	-0.007	1.003	1375605	2.45		97.8	23238	
66 11-Chloroeicosafluoro-3-oxaundecan										
631.00 > 451.00	3.855	3.862	-0.007	1.277	9809763	2.52		107	78714	
D 36 13C2 PFDoA										
615.00 > 570.00	3.988	3.986	0.002	1.503	2503064	2.49		99.5	13575	
37 Perfluorododecanoic acid										
613.00 > 569.00	3.988	3.995	-0.007	1.000	2876645	2.61		104	3337	
613.00 > 169.00	3.988	3.995	-0.007	1.000	693125		4.15(2.13-6.40)		10395	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.252	4.259	-0.007	1.066	2949650	2.40		96.0	3242	
663.00 > 169.00	4.252	4.259	-0.007	1.066	879204		3.35(1.25-3.76)		12081	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.491	4.479	0.012	1.692	2998701	2.44		97.8	12677	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.491	4.491	0.0	1.000	789740	2.43		97.3	9797	
713.00 > 219.00	4.491	4.491	0.0	1.000	544093		1.45(0.71-2.13)		8745	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.905	4.896	0.009	1.848	6230818	2.75		110	14645	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.905	4.905	0.0	1.000	6060832	2.54		101	2538	
813.00 > 169.00	4.905	4.905	0.0	1.000	1018162		5.95(2.86-8.58)		7720	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.248	5.247	0.001	1.070	7207093	2.48		99.4	2172	
913.00 > 169.00	5.248	5.247	0.001	1.070	887637		8.12(3.83-11.48)		6454	

Reagents:

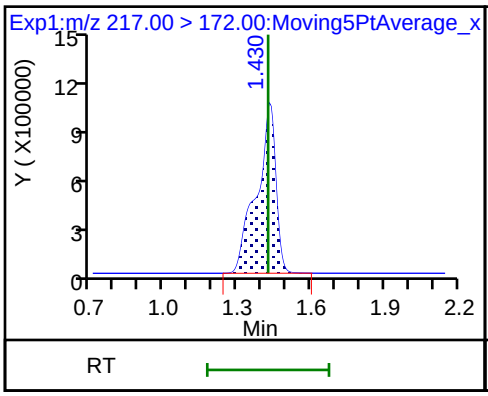
LCPFC_LL5_00005 Amount Added: 1.00 Units: mL

Report Date: 09-Jul-2018 10:11:37 Chrom Revision: 2.2 07-Jun-2018 07:41:54

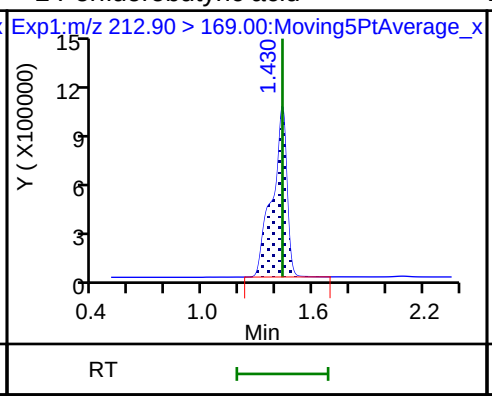
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180706-60751.b\2018.07.06LLAAA_031.d
Injection Date: 06-Jul-2018 17:30:10 Instrument ID: A8_N
Lims ID: CCV L5
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 31 Worklist Smp#: 1
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC ICAL

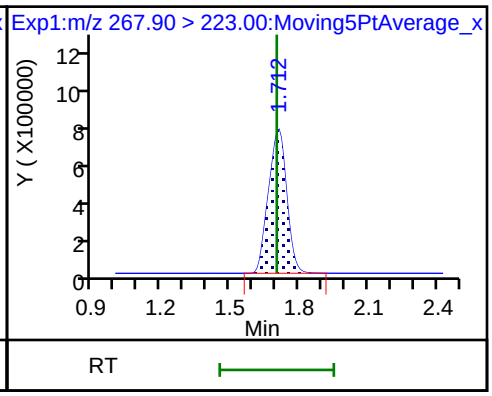
D 1 13C4 PFBA



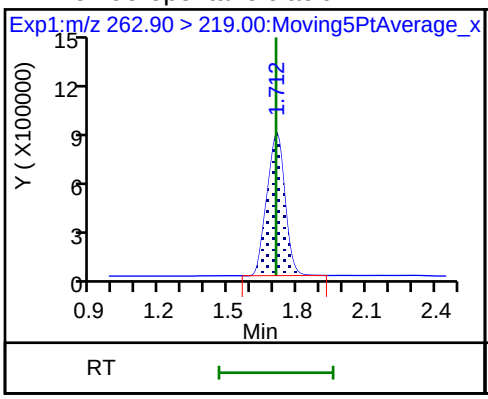
2 Perfluorobutyric acid



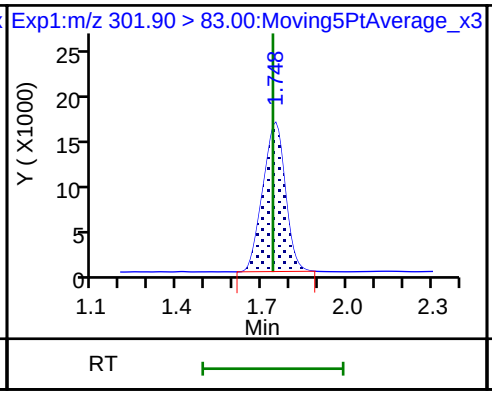
D 3 13C5-PFPeA



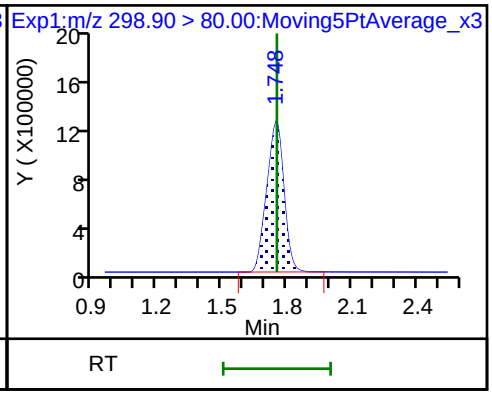
4 Perfluoropentanoic acid



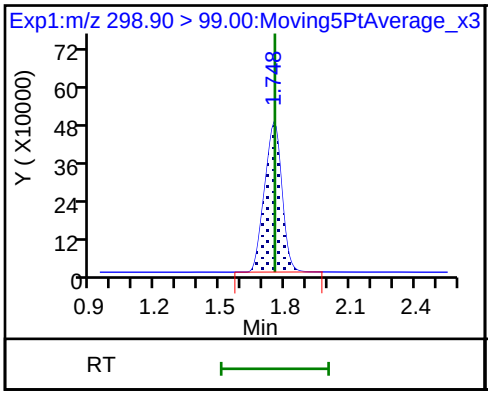
D 47 13C3-PFBS



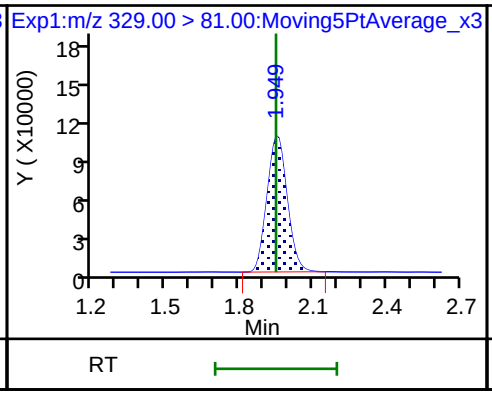
5 Perfluorobutanesulfonic acid



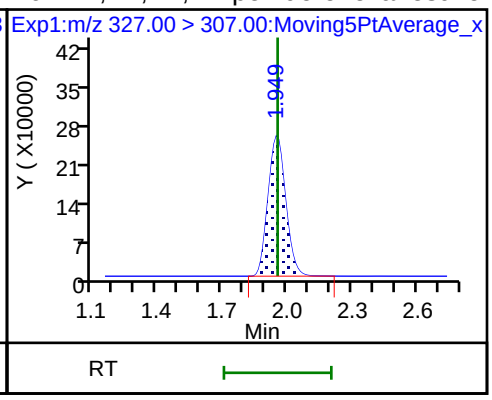
5 Perfluorobutanesulfonic acid



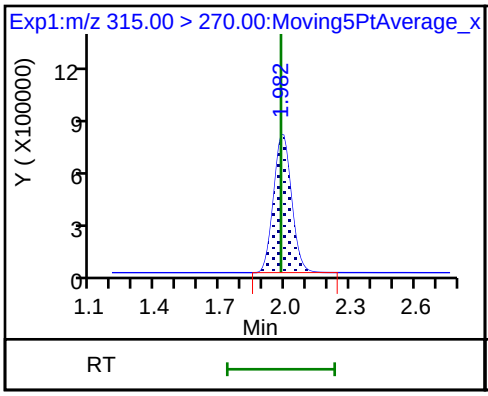
D 60 M2-4:2FTS



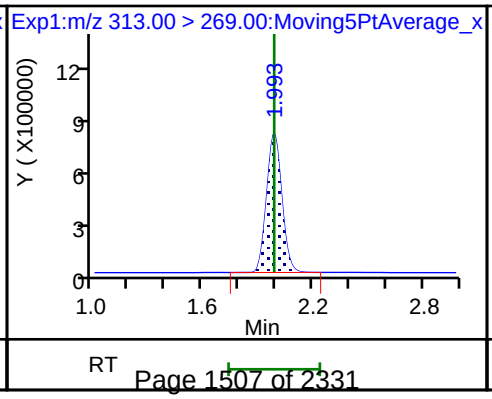
61 1H,1H,2H,2H-perfluorohexanesulfoni



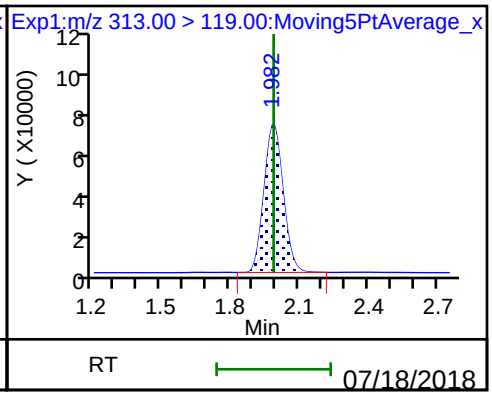
D 7 13C2 PFHxA



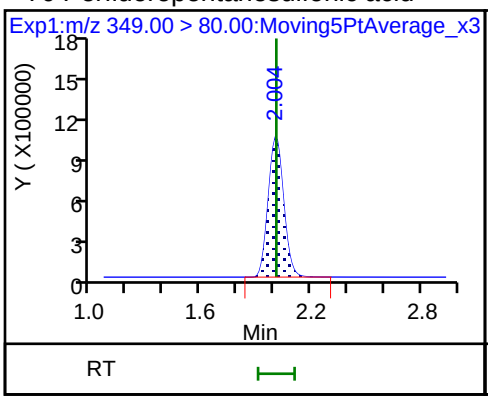
6 Perfluorohexanoic acid



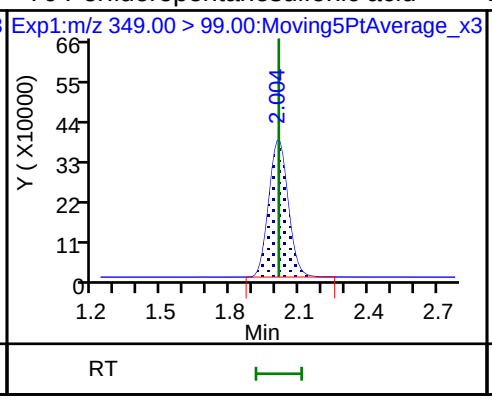
6 Perfluorohexanoic acid



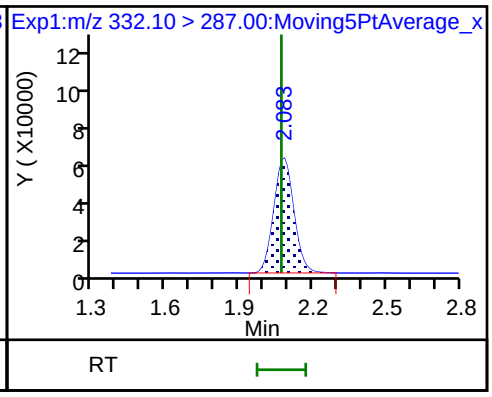
70 Perfluoropentanesulfonic acid



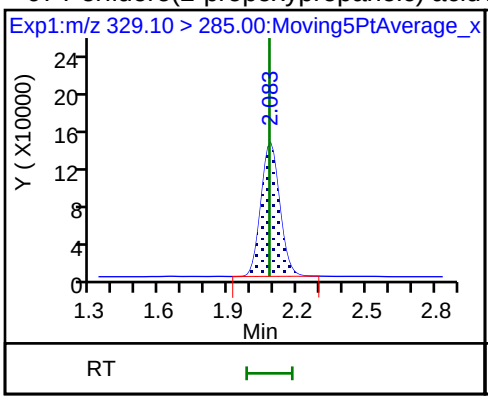
70 Perfluoropentanesulfonic acid



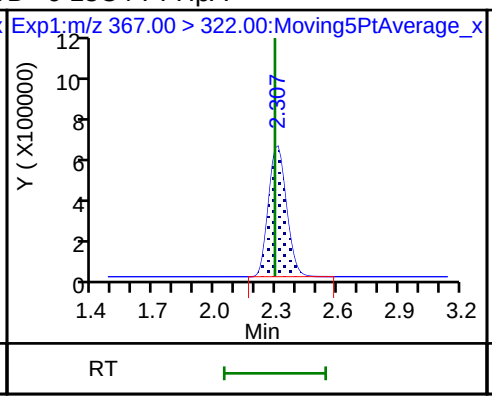
D 64 13C3 HFPO-DA



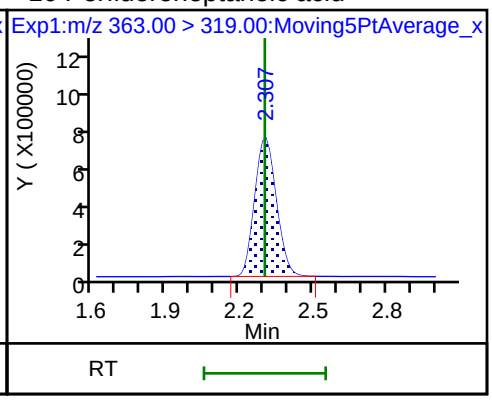
67 Perfluoro(2-propoxypropanoic) acid



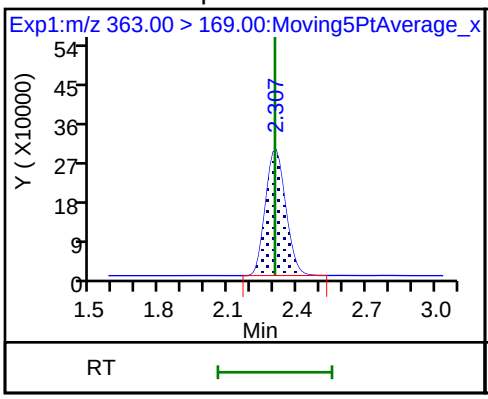
D 9 13C4-PFHpA



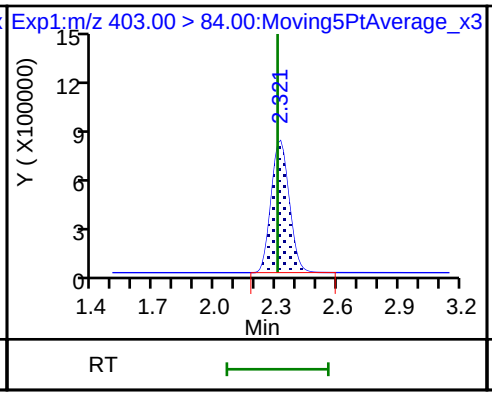
10 Perfluoroheptanoic acid



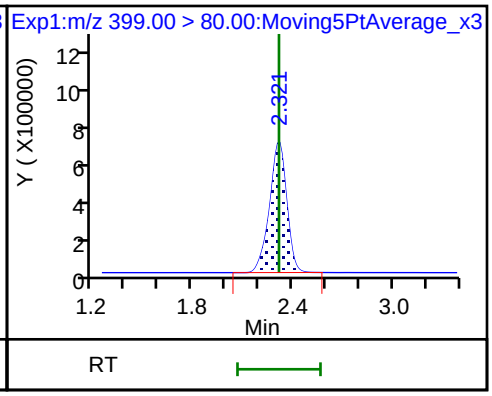
10 Perfluoroheptanoic acid



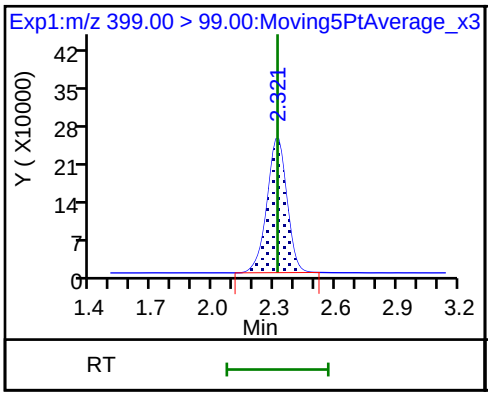
D 11 18O2 PFHxS



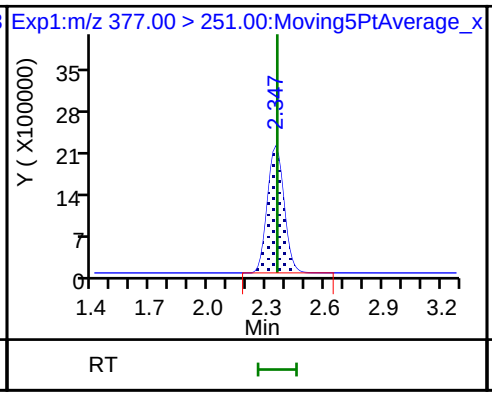
8 Perfluorohexanesulfonic acid



8 Perfluorohexanesulfonic acid



65 Adona



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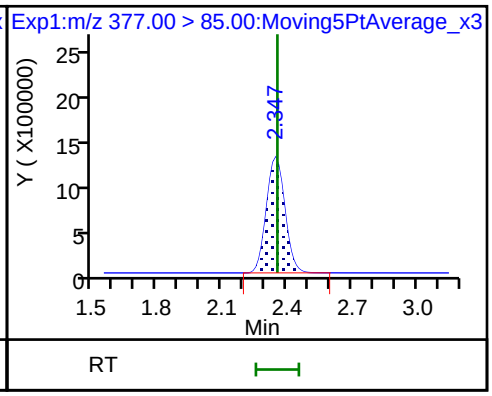
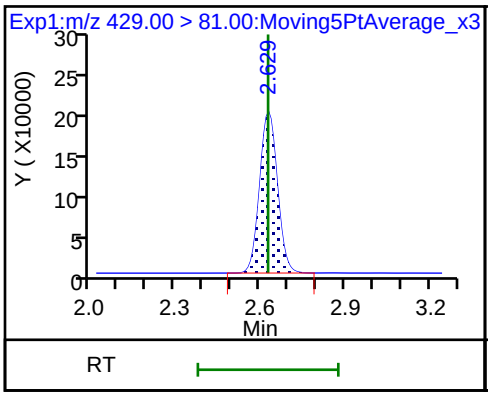
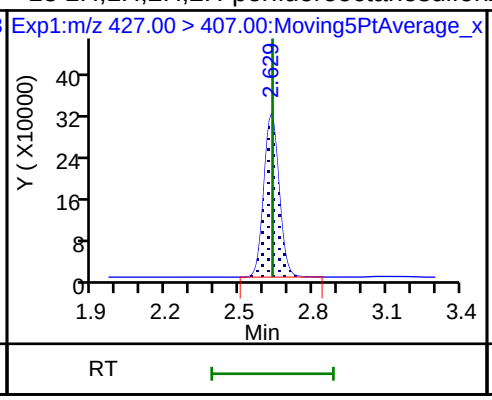


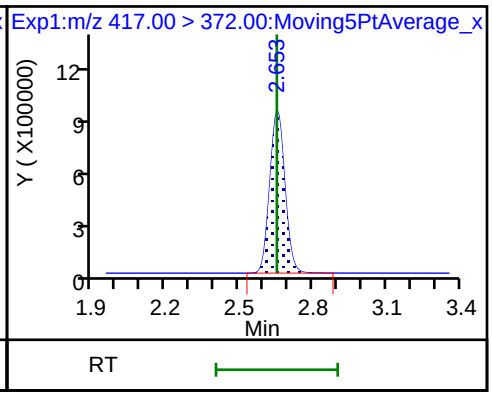
D 12 M2-6:2FTS



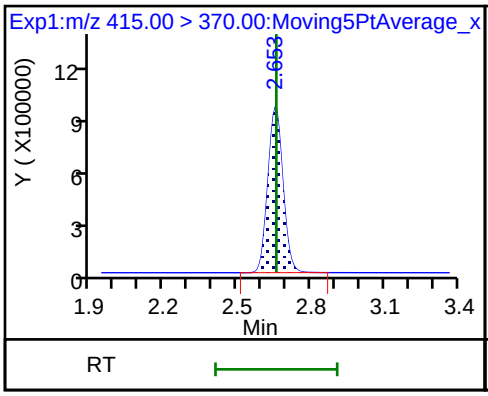
13 1H,1H,2H,2H-perfluorooctanesulfon



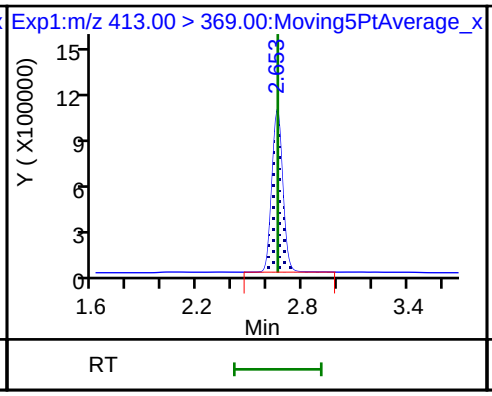
D 14 13C4 PFOA



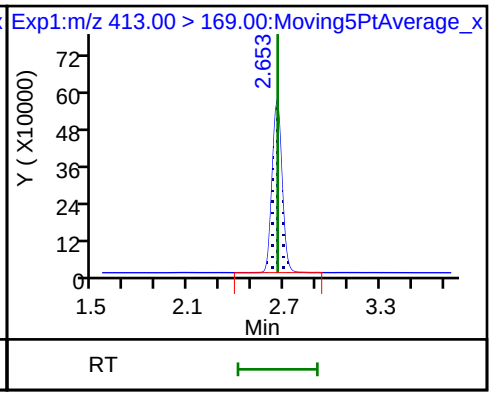
* 62 13C2-PFOA



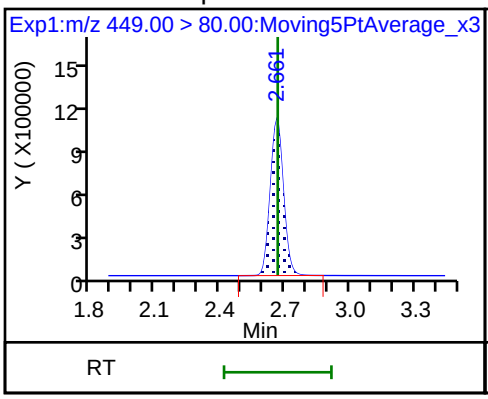
15 Perfluorooctanoic acid



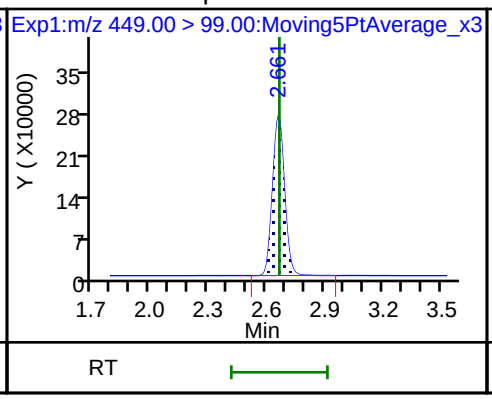
15 Perfluorooctanoic acid



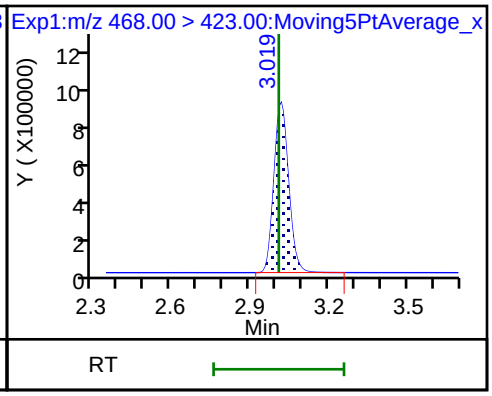
16 Perfluoroheptanesulfonic acid



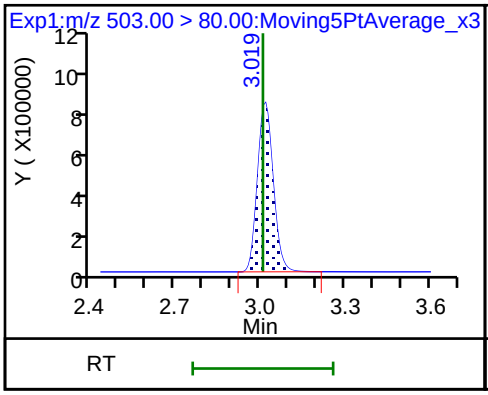
16 Perfluoroheptanesulfonic acid



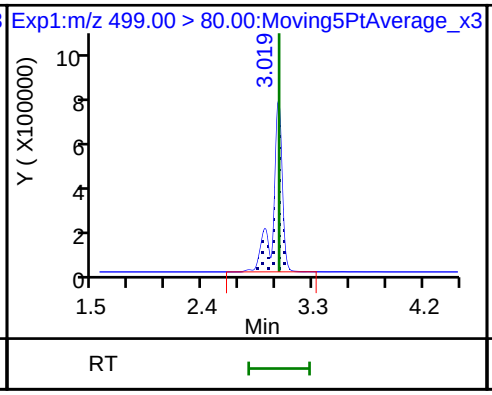
D 19 13C5 PFNA



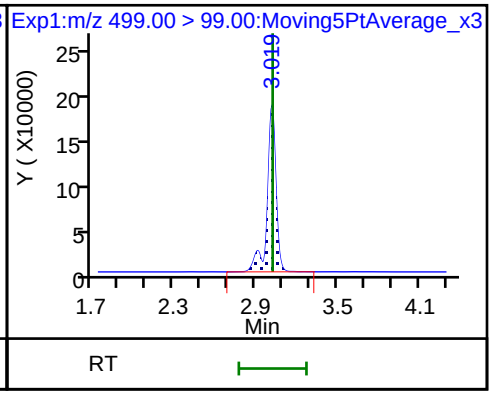
D 18 13C4 PFOS



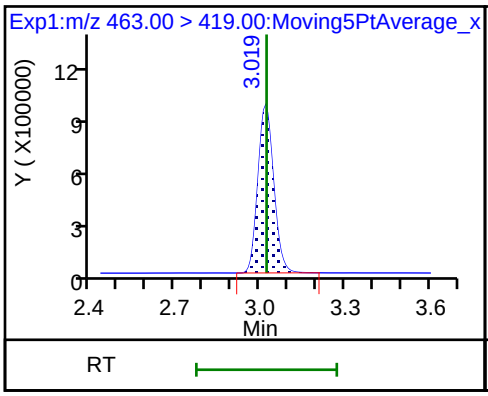
17 Perfluorooctane sulfonic acid



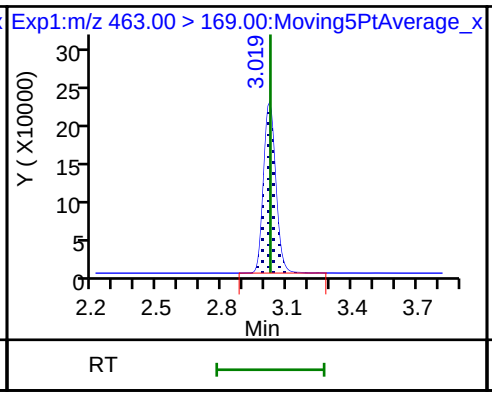
17 Perfluorooctane sulfonic acid



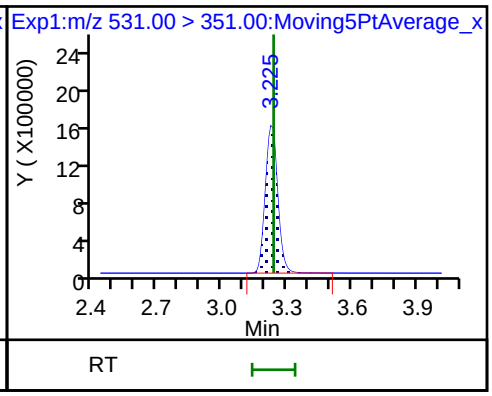
20 Perfluorononanoic acid



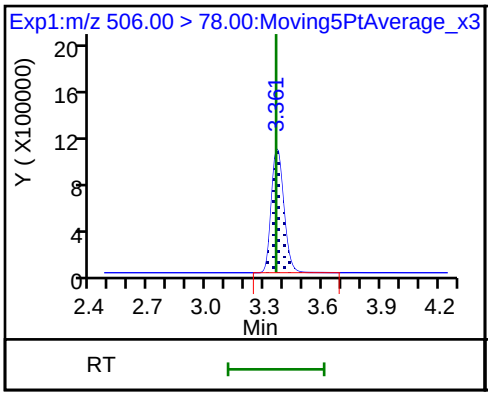
20 Perfluorononanoic acid



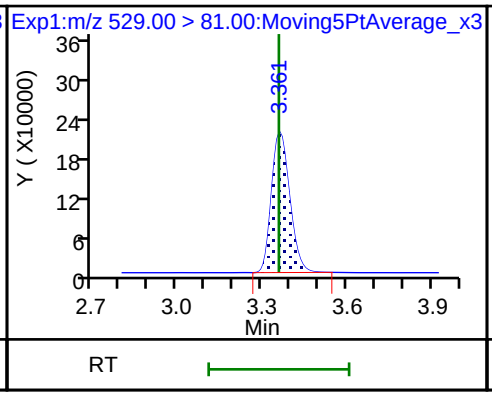
69 9-Chlorohexadecafluoro-3-oxanonane



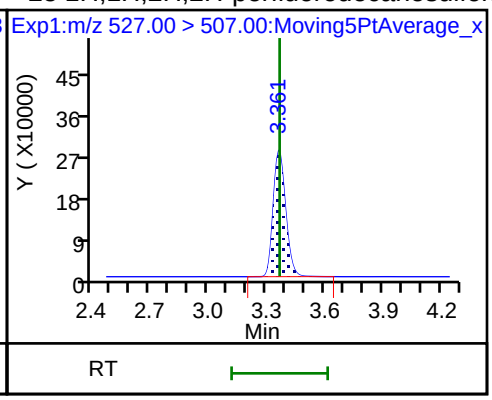
D 21 13C8 FOSA



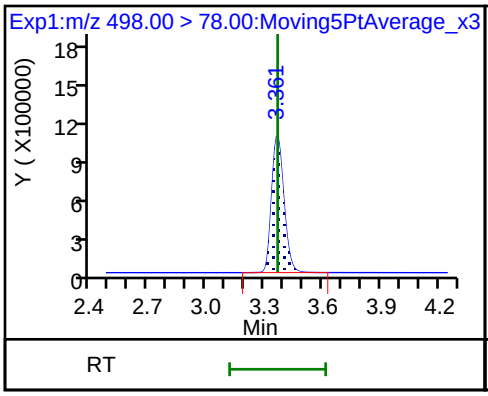
D 26 M2-8:2FTS



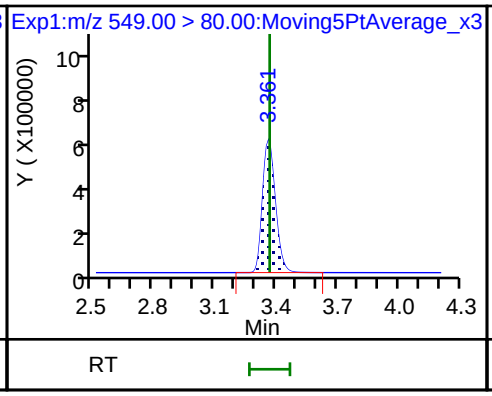
25 1H,1H,2H,2H-perfluorodecanesulfoni



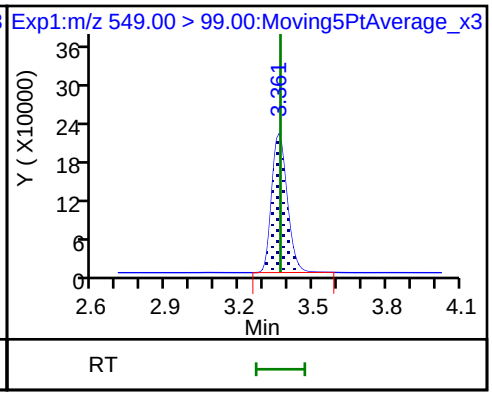
22 Perfluorooctane Sulfonamide



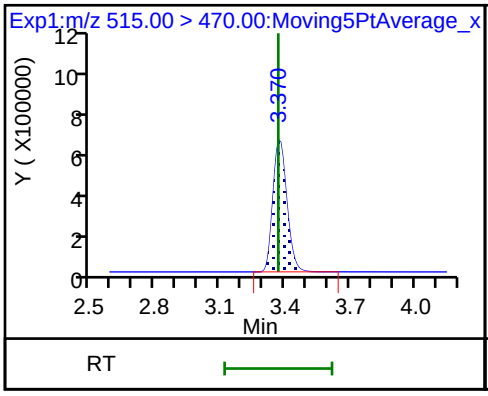
68 Perfluorononanesulfonic acid



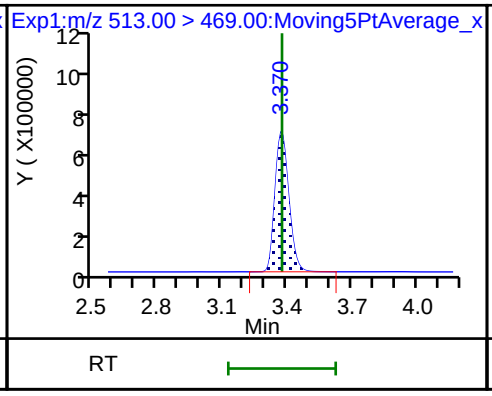
68 Perfluorononanesulfonic acid



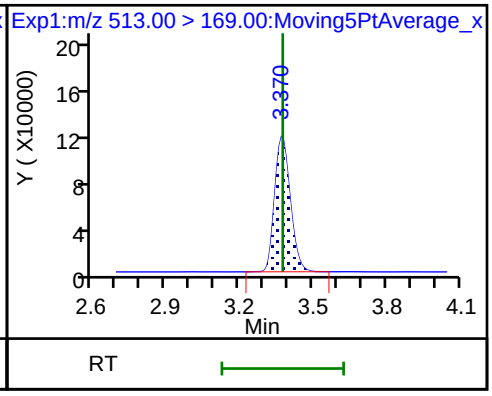
D 23 13C2 PFDA



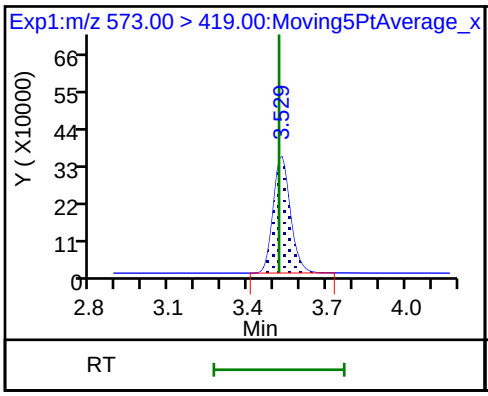
24 Perfluorodecanoic acid



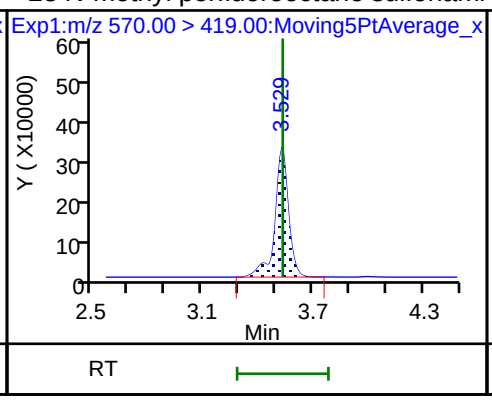
24 Perfluorodecanoic acid



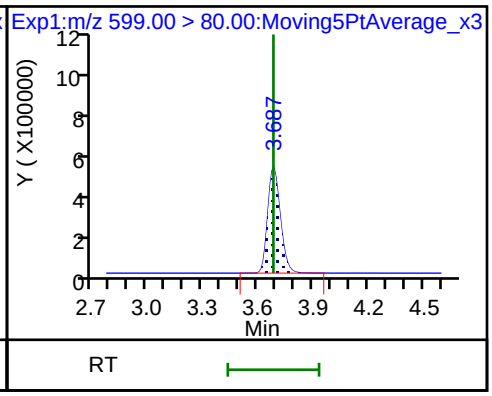
D 27 d3-NMeFOSAA



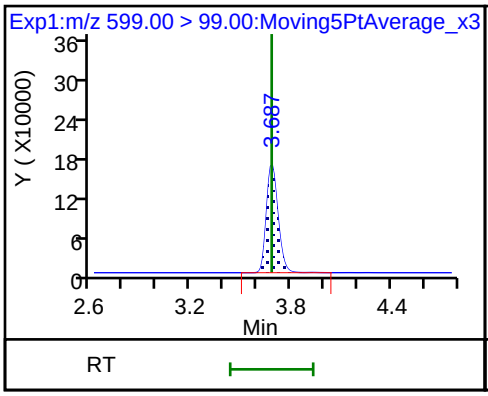
28 N-methyl perfluorooctane sulfonami



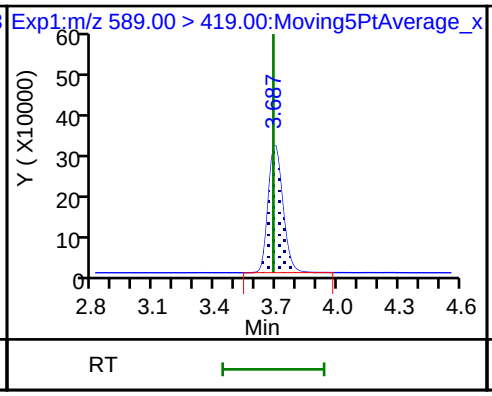
29 Perfluorodecane Sulfonic acid



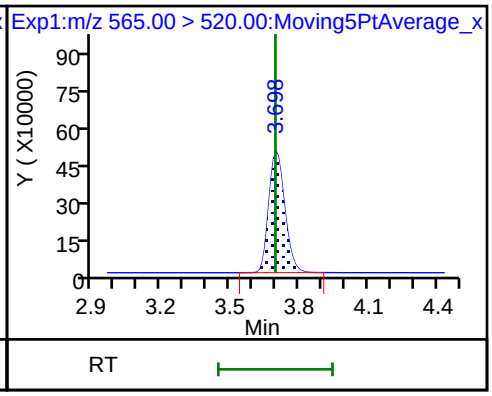
29 Perfluorodecane Sulfonic acid



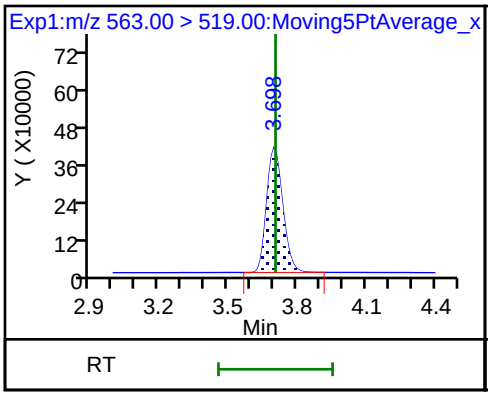
D 32 d5-NEtFOSAA



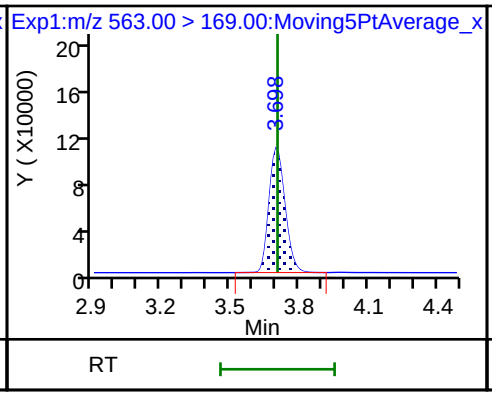
D 30 13C2 PFUnA



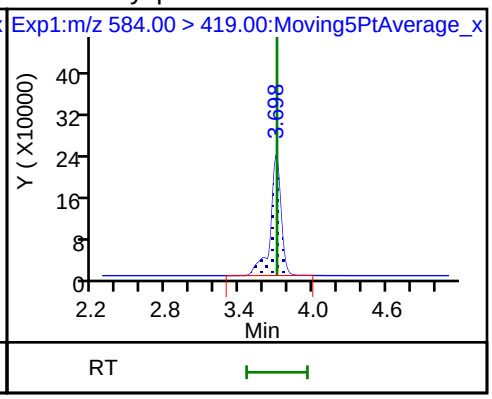
31 Perfluoroundecanoic acid



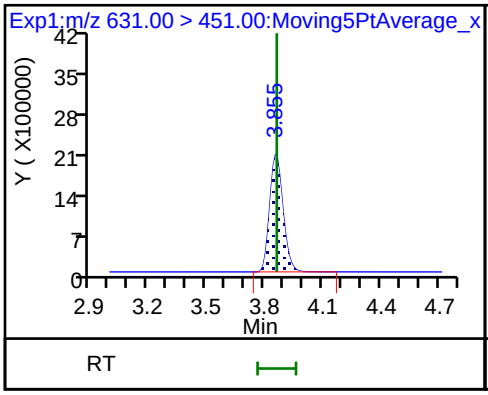
31 Perfluoroundecanoic acid



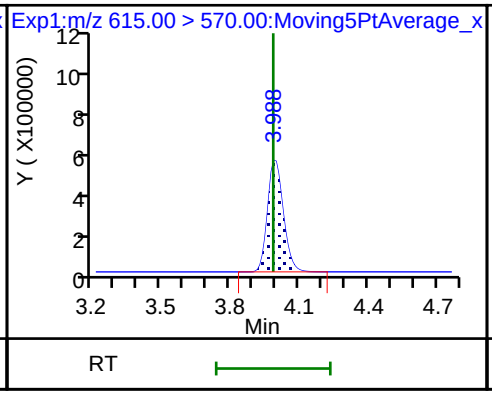
33 N-ethyl perfluorooctane sulfonamid



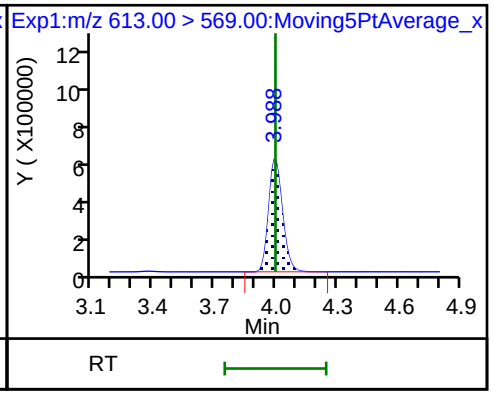
66 11-Chloroeicosafluoro-3-oxaundecan



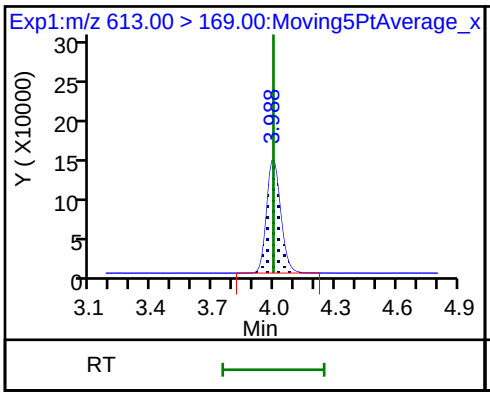
D 36 13C2 PFDoA



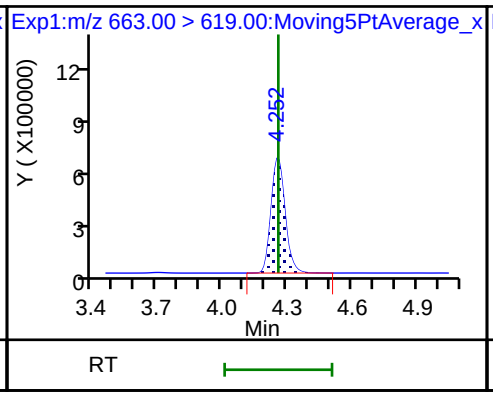
37 Perfluorododecanoic acid



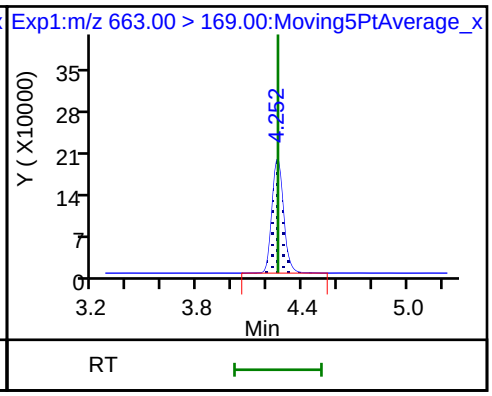
37 Perfluorododecanoic acid



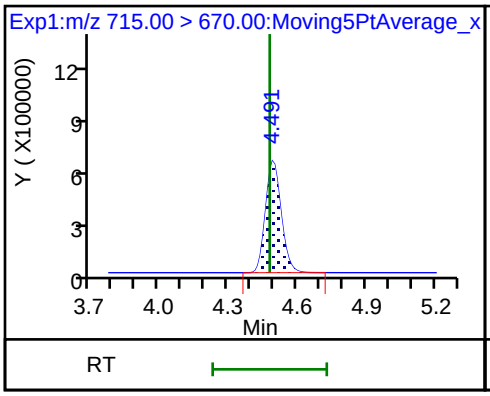
41 Perfluorotridecanoic acid



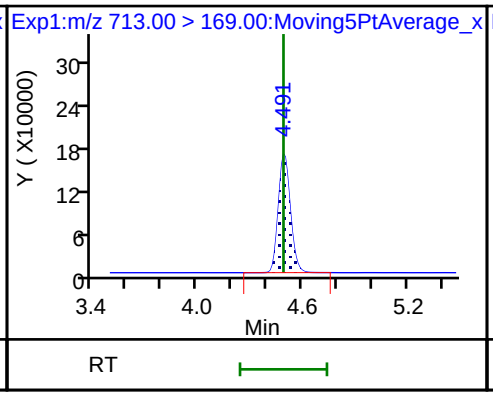
41 Perfluorotridecanoic acid



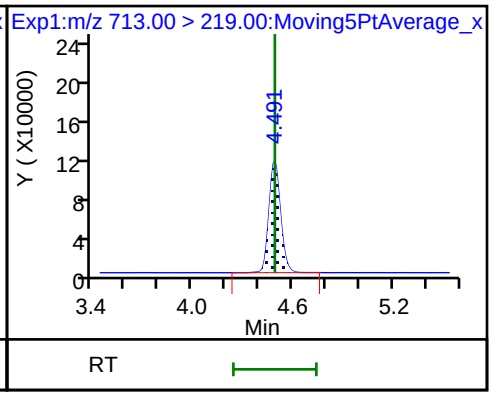
D 43 13C2-PFTeDA



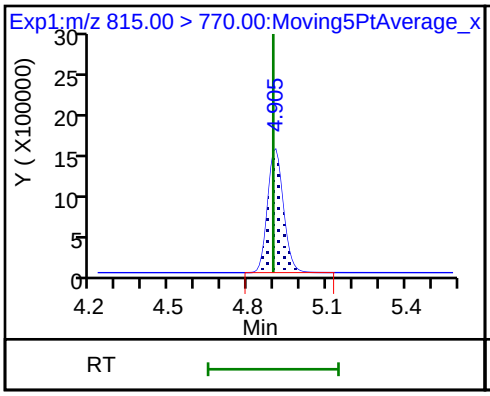
42 Perfluorotetradecanoic acid



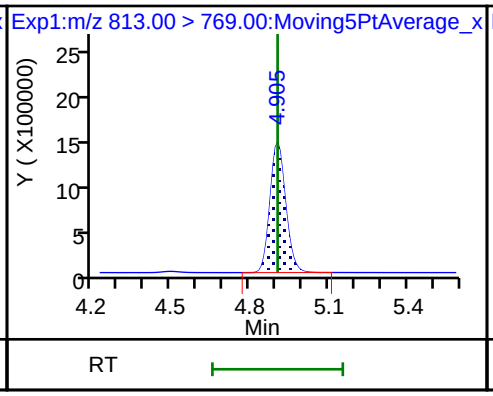
42 Perfluorotetradecanoic acid



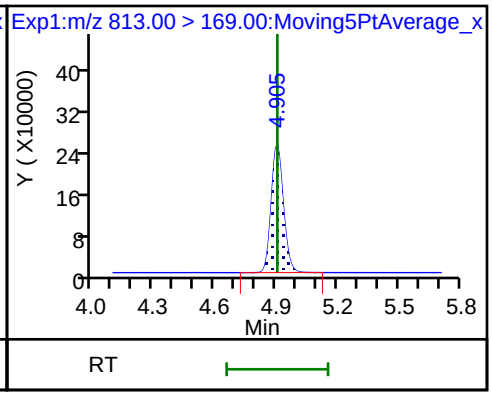
D 44 13C2-PFHxDA



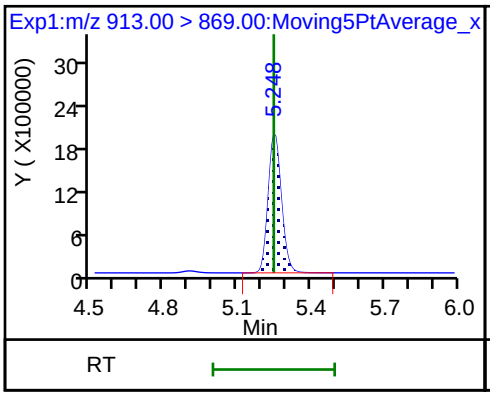
45 Perfluorohexadecanoic acid



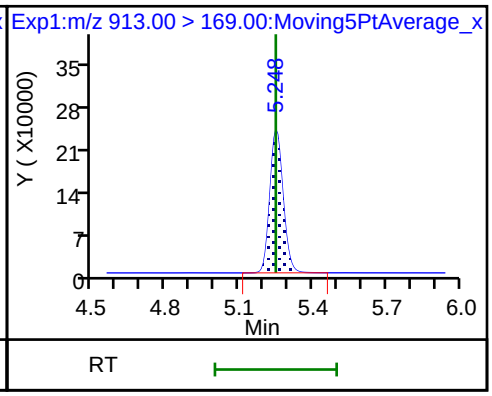
45 Perfluorohexadecanoic acid



46 Perfluorooctadecanoic acid



46 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Lab Sample ID: CCV 320-232788/11 Calibration Date: 07/06/2018 18:48

Instrument ID: A8_N Calib Start Date: 07/05/2018 08:51

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 07/05/2018 09:38

Lab File ID: 2018.07.06LLAAA_041.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	1.021	0.9755		0.955	1.00	-4.5	40.0
Perfluoropentanoic acid (PFPeA)	AveID	1.191	1.154		0.969	1.00	-3.1	40.0
Perfluorobutanesulfonic acid (PFBS)	AveID	75.80	74.46		0.868	0.884	-1.8	50.0
4:2 FTS	AveID	15.68	15.95		0.950	0.934	1.7	50.0
Perfluorohexanoic acid (PFHxA)	AveID	1.018	1.013		0.995	1.00	-0.5	40.0
Perfluoropentanesulfonic acid (PFPeS)	AveID	64.85	64.60		0.934	0.938	-0.4	50.0
HFPO-DA (GenX)	AveID	2.299	2.194		0.955	1.00	-4.5	40.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.130	1.062		0.940	1.00	-6.0	40.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.156	1.067		0.840	0.910	-7.7	40.0
ADONA	AveID	3.706	4.172		1.06	0.942	12.6	50.0
6:2 FTS	AveID	1.567	1.611		0.975	0.948	2.8	40.0
Perfluorooctanoic acid (PFOA)	AveID	1.186	1.192		1.01	1.00	0.5	40.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.339	1.411		1.00	0.952	5.3	50.0
Perfluorononanoic acid (PFNA)	AveID	1.078	1.156		1.07	1.00	7.3	40.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.168	1.185		0.941	0.928	1.4	40.0
9-Chlorohexadecafluoro-3-oxa nonane-1-sulfonate	AveID	1.891	1.906		0.940	0.932	0.8	50.0
8:2 FTS	AveID	1.321	1.206		0.875	0.958	-8.7	40.0
Perfluorononanesulfonic acid (PFNS)	AveID	0.8126	0.8095		0.956	0.960	-0.4	50.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9917	1.011		1.02	1.00	1.9	40.0
Perfluorodecanoic acid (PFDA)	AveID	1.042	1.058		1.01	1.00	1.5	40.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	1.029	1.003		0.975	1.00	-2.5	40.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.7195	0.7123		0.954	0.964	-1.0	50.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.9017	0.9130		1.01	1.00	1.3	40.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.8501	0.8711		1.02	1.00	2.5	40.0
11-Chloroeicosafluoro-3-oxau ndecane-1-sulfonate	AveID	2.884	3.009		0.983	0.942	4.3	50.0
Perfluorododecanoic acid (PFDoA)	AveID	1.102	1.076		0.976	1.00	-2.4	40.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.227	1.082		0.881	1.00	-11.9	50.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2708	0.2630		0.971	1.00	-2.9	50.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		0.9413		0.968	1.00	-3.2	50.0

FORM VII 537 (modified)

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Lab Sample ID: CCV 320-232788/11 Calibration Date: 07/06/2018 18:48

Instrument ID: A8_N Calib Start Date: 07/05/2018 08:51

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 07/05/2018 09:38

Lab File ID: 2018.07.06LLAAA_041.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.164	1.122		0.964	1.00	-3.6	50.0
13C4 PFBA	Ave	1.384	1.360		2.46	2.50	-1.8	50.0
13C5 PFPeA	Ave	1.025	0.9832		2.40	2.50	-4.0	50.0
13C3-PFBS	Ave	0.0245	0.0244		2.31	2.33	-0.4	50.0
M2-4:2FTS	Ave	0.1575	0.1613		2.39	2.34	2.4	50.0
13C2 PFHxA	Ave	1.097	1.121		2.56	2.50	2.2	50.0
13C3 HFPO-DA	Ave	0.0899	0.0846		2.35	2.50	-5.8	50.0
13C4-PFHpA	Ave	0.9735	1.032		2.65	2.50	6.0	50.0
18O2 PFHxS	Ave	1.198	1.259		2.49	2.37	5.1	50.0
M2-6:2FTS	Ave	0.2186	0.2308		2.51	2.38	5.6	40.0
13C4 PFOA	Ave	0.9539	0.9630		2.52	2.50	1.0	50.0
13C4 PFOS	Ave	0.8551	0.8342		2.33	2.39	-2.4	50.0
13C5 PFNA	Ave	0.8109	0.7996		2.47	2.50	-1.4	50.0
13C8 FOSA	Ave	1.187	1.158		2.44	2.50	-2.4	50.0
M2-8:2FTS	Ave	0.2431	0.2458		2.42	2.40	1.1	40.0
13C2 PFDA	Ave	0.6992	0.7056		2.52	2.50	0.9	50.0
d3-NMeFOSAA	Ave	0.4120	0.4034		2.45	2.50	-2.1	50.0
d5-NEtFOSAA	Ave	0.4070	0.3947		2.42	2.50	-3.0	50.0
13C2 PFUnA	Ave	0.5873	0.5499		2.34	2.50	-6.4	50.0
13C2 PFDoA	Ave	0.6294	0.6330		2.51	2.50	0.6	50.0
13C2-PFTeDA	Ave	0.7673	0.7420		2.42	2.50	-3.3	50.0
13C2-PFHxDA	Ave	1.420	1.533		2.70	2.50	8.0	50.0

FORM VII 537 (modified)

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180706-60751.b\2018.07.06LLAAA_041.d
Lims ID: CCV L4
Client ID:
Sample Type: CCV
Inject. Date: 06-Jul-2018 18:48:29 ALS Bottle#: 30 Worklist Smp#: 11
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV L4
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-A8_N*sub32

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180706-60751.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 09-Jul-2018 10:20:40 Calib Date: 05-Jul-2018 09:38:17
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180705-60684.b\2018.07.05LLICALAA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK010

First Level Reviewer: mongkols Date: 09-Jul-2018 10:20:40

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.433	1.424	0.009	0.539	5850511	2.46		98.2	25343	
2 Perfluorobutyric acid										
212.90 > 169.00	1.433	1.433	0.0	1.000	2282928	0.9551		95.5	953	
D 3 13C5-PFPeA										
267.90 > 223.00	1.707	1.702	0.005	0.642	4229597	2.40		96.0	36756	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.707	1.707	0.0	1.000	1952731	0.9692		96.9	1433	
D 47 13C3-PFBS										
301.90 > 83.00	1.743	1.738	0.005	0.656	97604	2.31		99.6	681	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.752	1.752	0.0	1.005	2763331	0.8683		98.2	12201	
298.90 > 99.00	1.752	1.752	0.0	1.005	1100442		2.51(1.25-3.74)		7322	
D 60 M2-4:2FTS										
329.00 > 81.00	1.956	1.948	0.008	0.736	648001	2.39		102	9529	
61 1H,1H,2H,2H-perfluorohexanesulfoni										
327.00 > 307.00	1.956	1.956	0.0	1.122	625511	0.9501		102	27740	
D 7 13C2 PFHxA										
315.00 > 270.00	1.988	1.981	0.007	0.748	4821601	2.56		102	56491	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.988	1.988	0.0	1.000	1953752	0.99		99.5	4370	
313.00 > 119.00	1.988	1.988	0.0	1.000	171993		11.36(5.03-15.10)		2520	
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.010	2.010	0.0	1.153	2543946	0.9345		99.6	27434	
349.00 > 99.00	2.010	2.010	0.0	1.153	953638		2.67(1.36-4.07)		11893	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.078	2.070	0.008	0.782	364106	2.35		94.2	5918	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
67 Perfluoro(2-propoxypropanoic) acid										
329.10 > 285.00	2.078	2.078	0.0	1.000	319596	0.9545		95.5	1744	
D 9 13C4-PFHpA										
367.00 > 322.00	2.302	2.293	0.009	0.866	4440217	2.65		106	40781	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.302	2.302	0.0	1.000	1887068	0.9405		94.0	2461	
363.00 > 169.00	2.302	2.302	0.0	1.000	756852		2.49(1.13-3.40)		5924	
D 11 18O2 PFHxS										
403.00 > 84.00	2.315	2.306	0.009	0.871	5123474	2.49		105	44682	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.315	2.315	0.0	1.000	2104091	0.8400		92.3	11174	
399.00 > 99.00	2.315	2.315	0.0	1.000	719404		2.92(1.50-4.49)		4493	
65 Adona										
377.00 > 251.00	2.355	2.355	0.0	0.779	5640879	1.06		113	35327	
377.00 > 85.00	2.341	2.355	-0.014	0.775	3246158		1.74(0.84-2.53)		27206	
D 12 M2-6:2FTS										
429.00 > 81.00	2.634	2.627	0.007	0.991	943373	2.51		106	14691	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.634	2.634	0.0	1.000	606578	0.9748		103	3164	
D 14 13C4 PFOA										
417.00 > 372.00	2.658	2.652	0.006	1.000	4142488	2.52		101	44867	
* 62 13C2-PFOA										
415.00 > 370.00	2.658	2.658	0.0		4301824	2.50			31159	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.658	2.658	0.0	1.000	1977231	1.01		101	733	
413.00 > 169.00	2.658	2.658	0.0	1.000	974662		2.03(0.84-2.52)		4183	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.665	2.665	0.0	0.882	1927578	1.00		105	16956	
449.00 > 99.00	2.665	2.665	0.0	0.882	508348		3.79(1.94-5.82)		8022	
D 19 13C5 PFNA										
468.00 > 423.00	3.022	3.009	0.013	1.137	3439541	2.47		98.6	42741	
D 18 13C4 PFOS										
503.00 > 80.00	3.022	3.009	0.013	1.137	3430675	2.33		97.6	28844	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.022	3.022	0.0	1.000	1578512	0.9414		101	12081	
499.00 > 99.00	3.022	3.022	0.0	1.000	347916		4.54(2.31-6.93)		6563	
20 Perfluorononanoic acid										
463.00 > 419.00	3.022	3.022	0.0	1.000	1591055	1.07		107	3732	
463.00 > 169.00	3.022	3.022	0.0	1.000	381440		4.17(1.90-5.69)		10089	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.237	3.237	0.0	1.071	2550317	0.9398		101	30731	
D 21 13C8 FOSA										
506.00 > 78.00	3.367	3.359	0.008	1.267	4982251	2.44		97.6	47249	
D 26 M2-8:2FTS										
529.00 > 81.00	3.367	3.359	0.008	1.267	1012805	2.42		101	20957	
25 1H,1H,2H,2H-perfluorodecanesulfoni										
527.00 > 507.00	3.367	3.367	0.0	1.000	488674	0.8747		91.3	8457	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.367	3.367	0.0	1.000	2014670	1.02		102	25468	
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.367	3.367	0.0	1.114	1115503	0.9563		99.6	19709	
549.00 > 99.00	3.367	3.367	0.0	1.114	432065		2.58(1.33-3.97)		9963	
D 23 13C2 PFDA										
515.00 > 470.00	3.376	3.368	0.008	1.270	3035519	2.52		101	34570	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.376	3.376	0.0	1.000	1284238	1.01		101	5215	
513.00 > 169.00	3.376	3.376	0.0	1.000	220095		5.83(2.36-7.09)		5534	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.535	3.518	0.017	1.330	1735504	2.45		97.9	21101	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.535	3.535	0.0	1.000	696485	0.9748		97.5	5258	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.684	3.684	0.0	1.219	985576	0.9543		99.0	20417	
599.00 > 99.00	3.694	3.684	0.010	1.222	352366		2.80(1.39-4.16)		14491	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.694	3.685	0.009	1.390	1697702	2.42		97.0	9166	
D 30 13C2 PFUnA										
565.00 > 520.00	3.705	3.696	0.009	1.394	2365578	2.34		93.6	30502	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.705	3.705	0.0	1.000	824300	1.02		102	2898	
563.00 > 169.00	3.705	3.705	0.0	1.000	203571		4.05(2.12-6.36)		10433	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.705	3.705	0.0	1.003	619965	1.01		101	11781	
66 11-Chloroeicosafluoro-3-oxaundecan										
631.00 > 451.00	3.862	3.862	0.0	1.278	4068238	0.9827		104	39145	
D 36 13C2 PFDoA										
615.00 > 570.00	3.995	3.986	0.009	1.503	2723105	2.51		101	18122	
37 Perfluorododecanoic acid										
613.00 > 569.00	3.995	3.995	0.0	1.000	1171986	0.9764		97.6	1324	
613.00 > 169.00	3.995	3.995	0.0	1.000	275469		4.25(2.13-6.40)		5330	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.259	4.259	0.0	1.066	1178197	0.8812		88.1	1231	
663.00 > 169.00	4.259	4.259	0.0	1.066	353125		3.34(1.25-3.76)		5525	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.491	4.479	0.012	1.690	3191737	2.42		96.7	13295	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.491	4.491	0.0	1.000	335720	0.9712		97.1	6348	
713.00 > 219.00	4.491	4.491	0.0	1.000	236781		1.42(0.71-2.13)		4134	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.905	4.896	0.009	1.845	6592789	2.70		108	15631	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.905	4.905	0.0	1.000	2482275	0.9681		96.8	1135	
813.00 > 169.00	4.905	4.905	0.0	1.000	422634		5.87(2.86-8.58)		3620	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.247	5.247	0.0	1.070	2959771	0.9642		96.4	928	
913.00 > 169.00	5.247	5.247	0.0	1.070	362556		8.16(3.83-11.48)		4450	

Reagents:

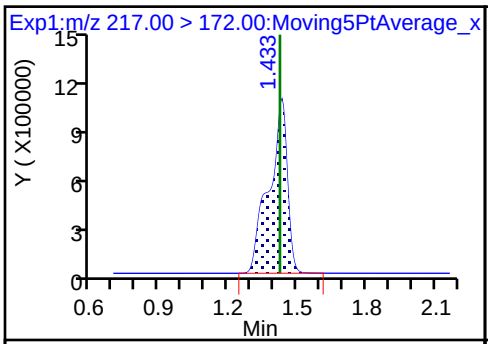
LCPFC_LL4_00005 Amount Added: 1.00 Units: mL

Report Date: 09-Jul-2018 10:20:43 Chrom Revision: 2.2 07-Jun-2018 07:41:54

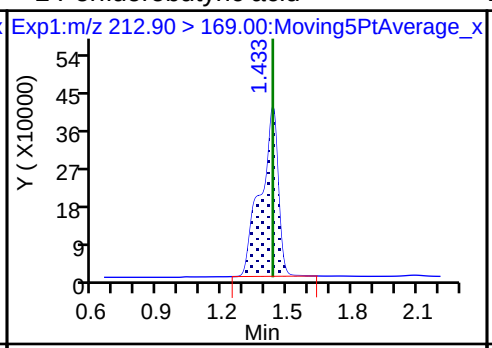
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180706-60751.b\2018.07.06LLAAA_041.d
Injection Date: 06-Jul-2018 18:48:29 Instrument ID: A8_N
Lims ID: CCV L4
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 30 Worklist Smp#: 11
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC ICAL

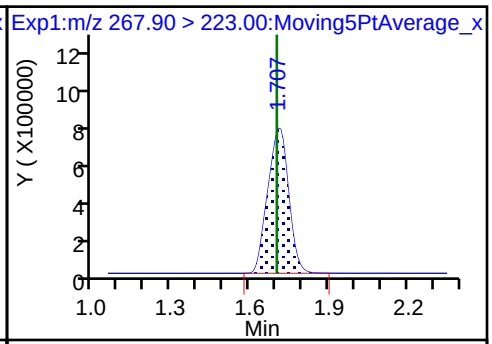
D 1 13C4 PFBA



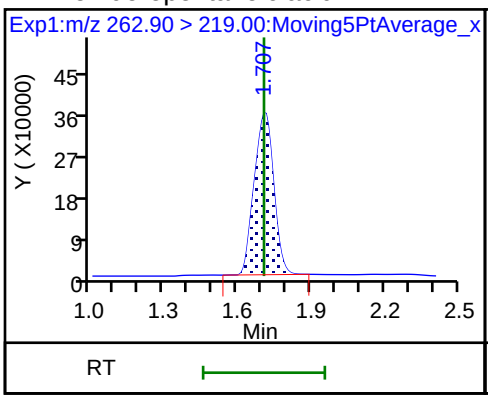
2 Perfluorobutyric acid



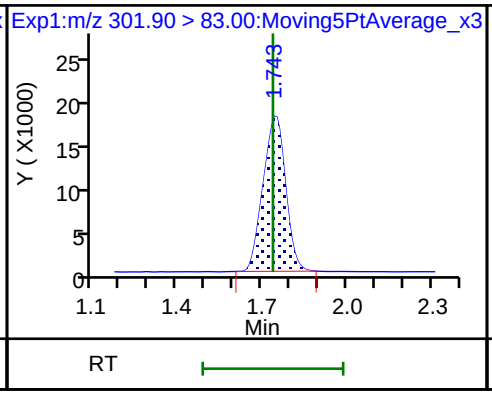
D 3 13C5-PFPeA



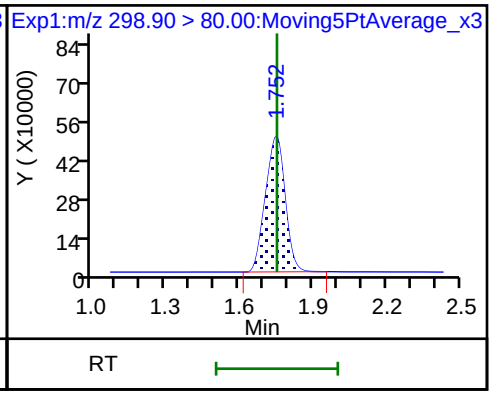
4 Perfluoropentanoic acid



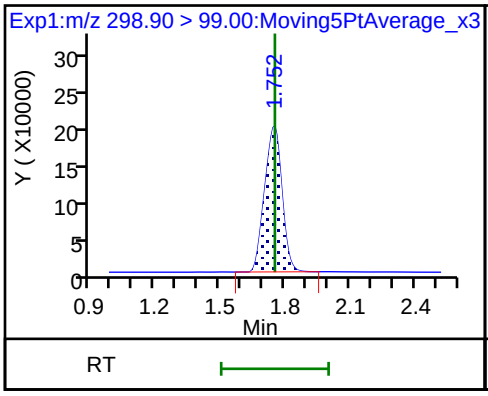
D 47 13C3-PFBS



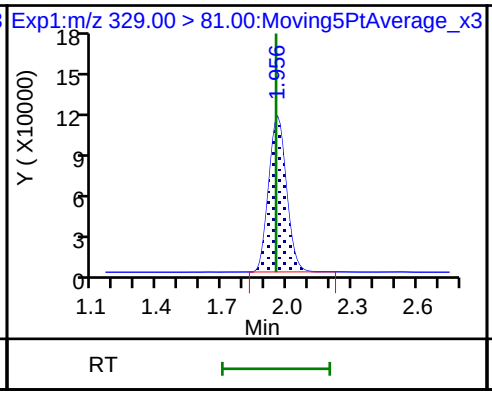
5 Perfluorobutanesulfonic acid



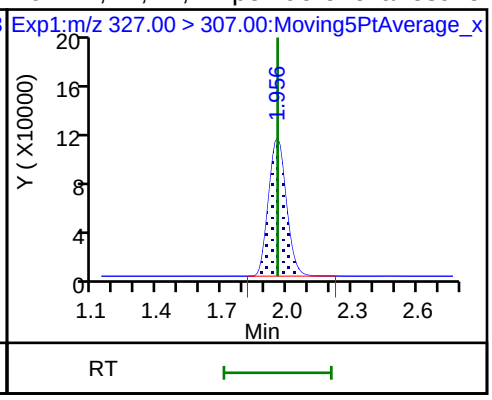
5 Perfluorobutanesulfonic acid



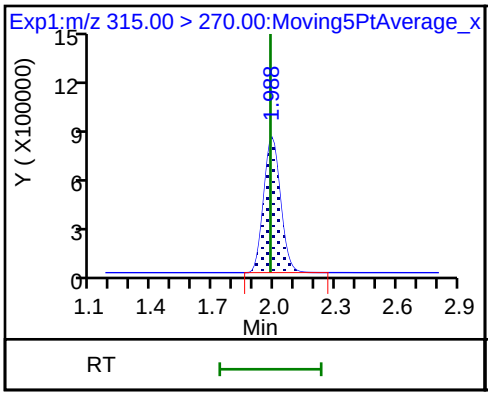
D 60 M2-4:2FTS



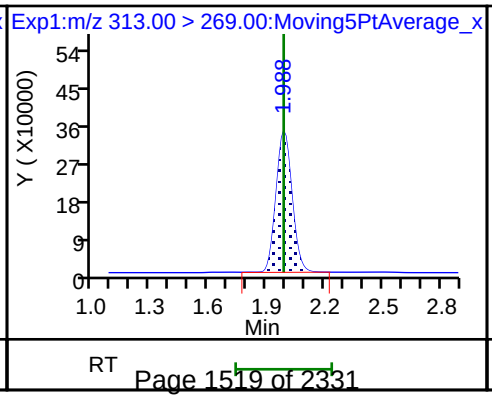
61 1H,1H,2H,2H-perfluorohexanesulfoni



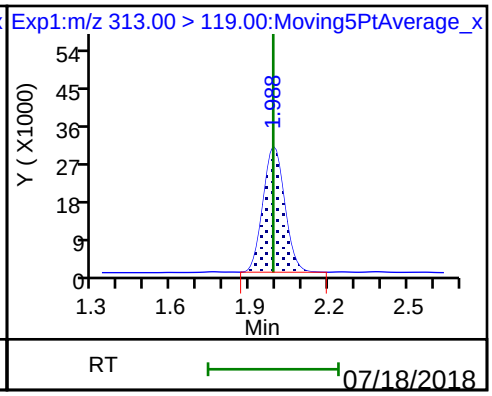
D 7 13C2 PFHxA



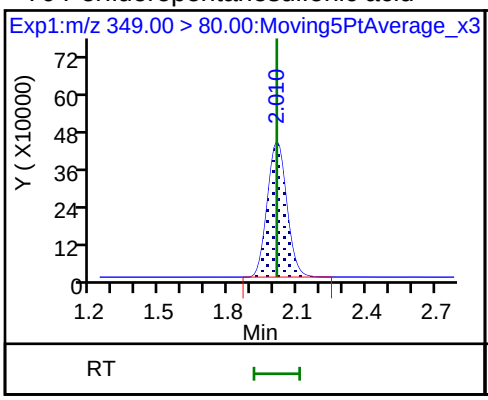
6 Perfluorohexanoic acid



6 Perfluorohexanoic acid



70 Perfluoropentanesulfonic acid



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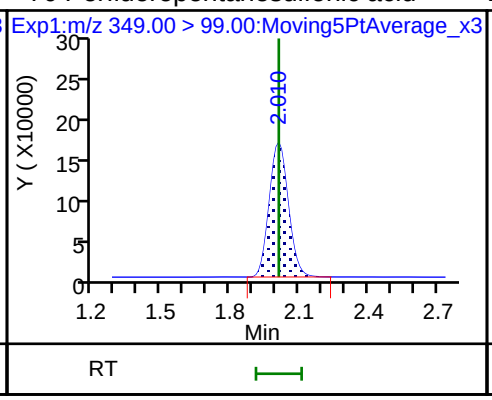
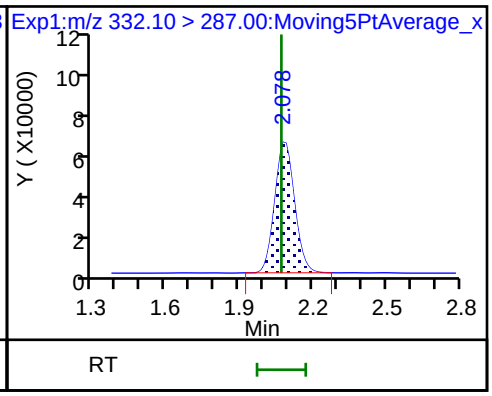
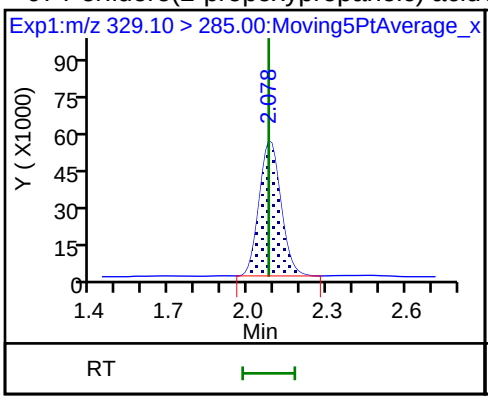


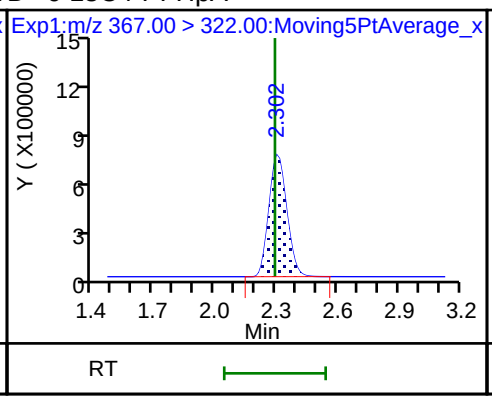
D 64 13C3 HFPO-DA



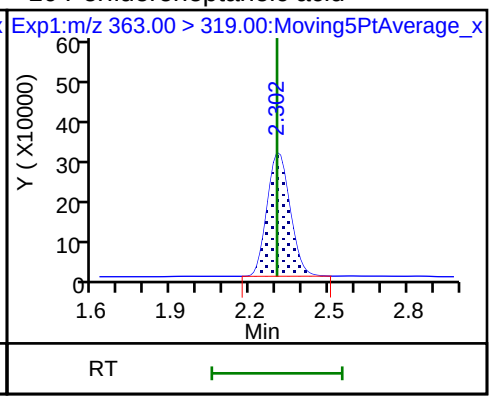
67 Perfluoro(2-propoxypropanoic) acid



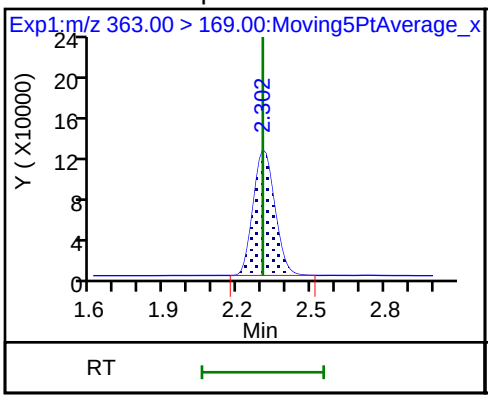
D 9 13C4-PFHpA



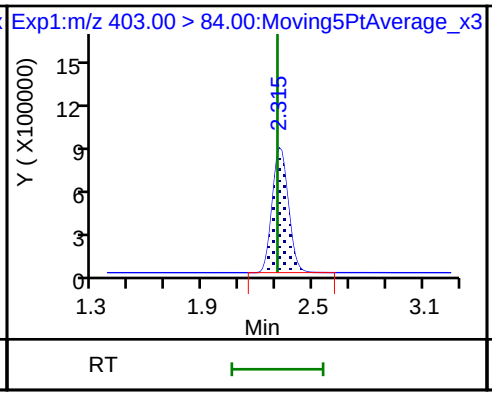
10 Perfluoroheptanoic acid



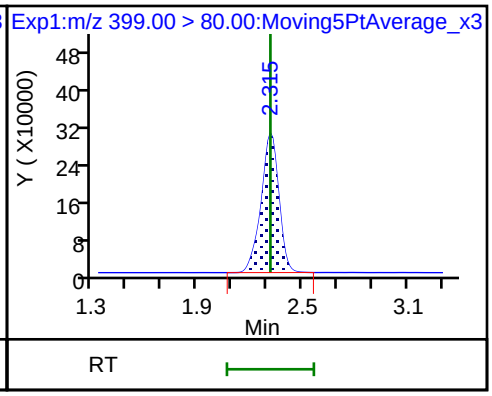
10 Perfluoroheptanoic acid



D 11 18O2 PFHxS



8 Perfluorohexanesulfonic acid



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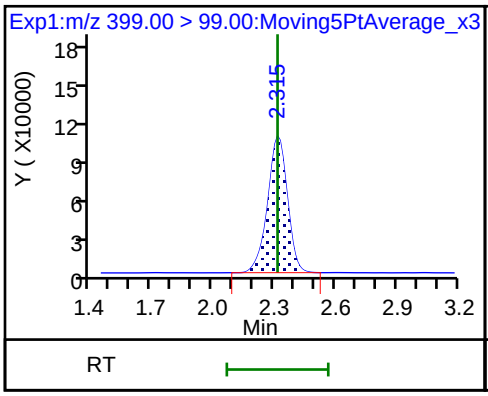
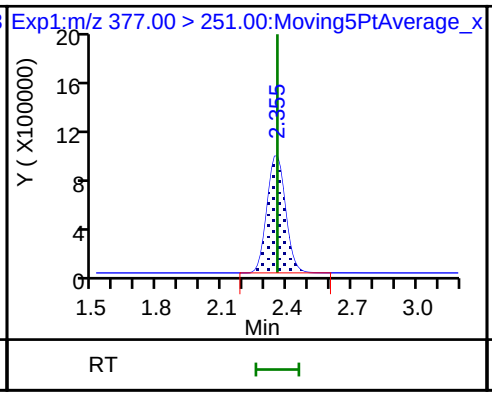


65 Adona



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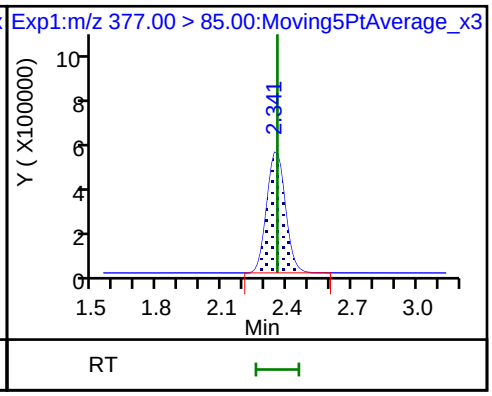
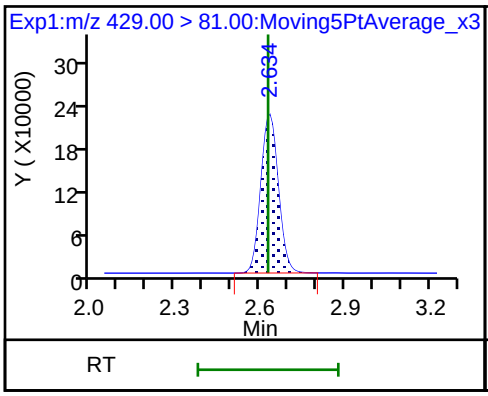
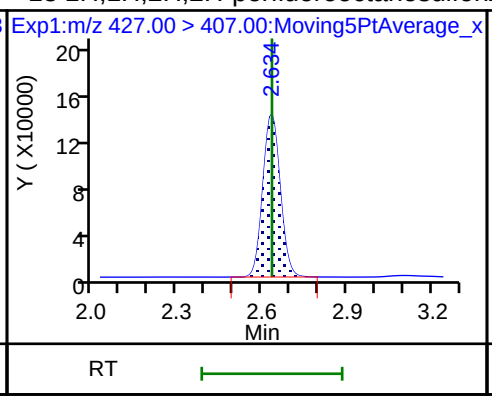


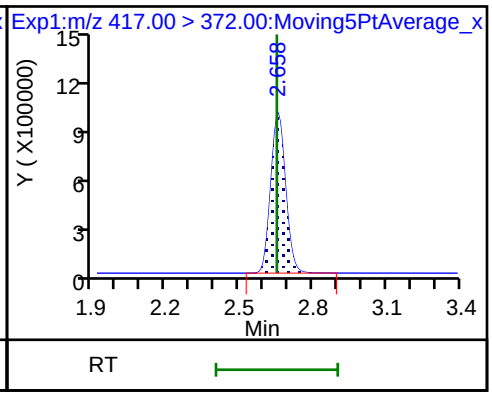
D 12 M2-6:2FTS



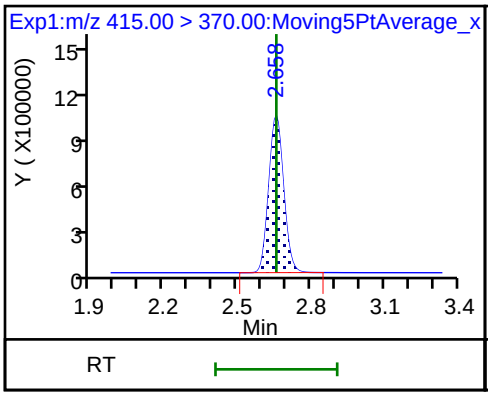
13 1H,1H,2H,2H-perfluorooctanesulfon



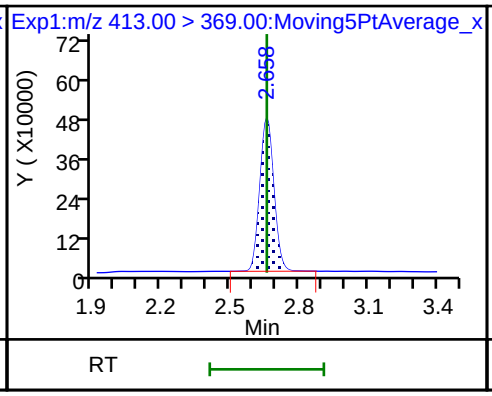
D 14 13C4 PFOA



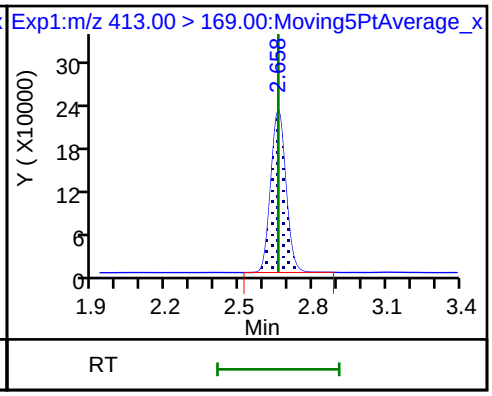
* 62 13C2-PFOA



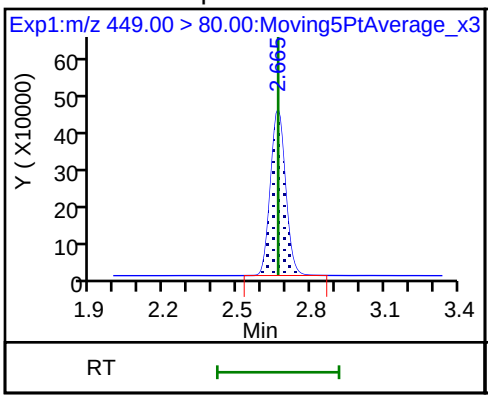
15 Perfluorooctanoic acid



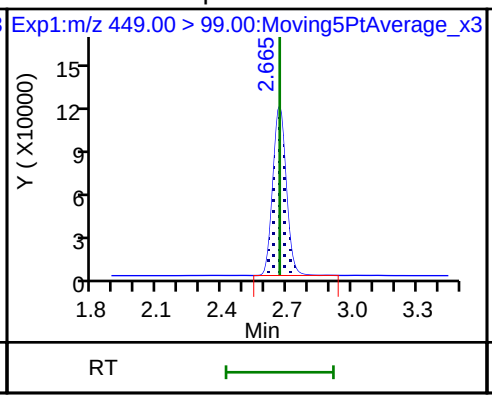
15 Perfluorooctanoic acid



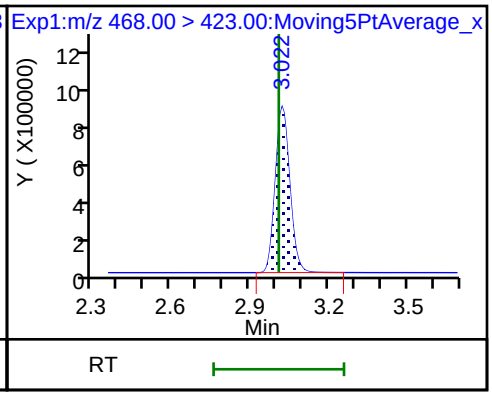
16 Perfluoroheptanesulfonic acid



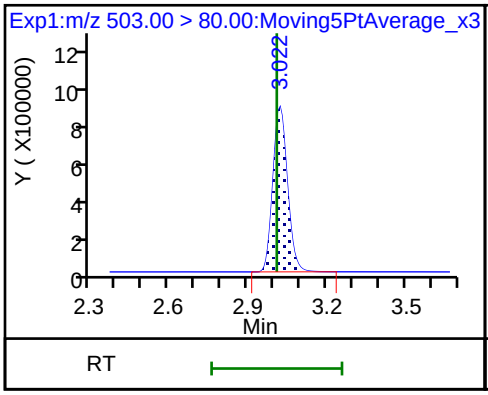
16 Perfluoroheptanesulfonic acid



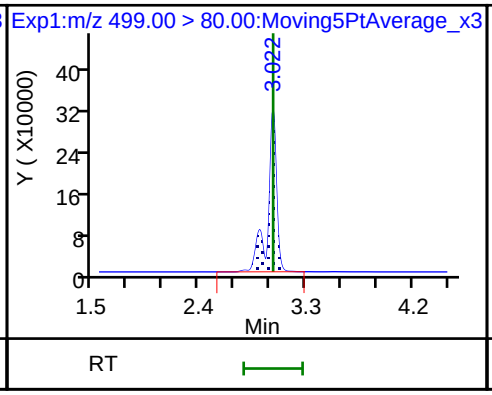
D 19 13C5 PFNA



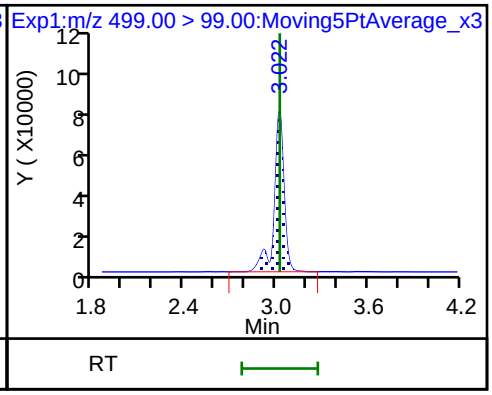
D 18 13C4 PFOS



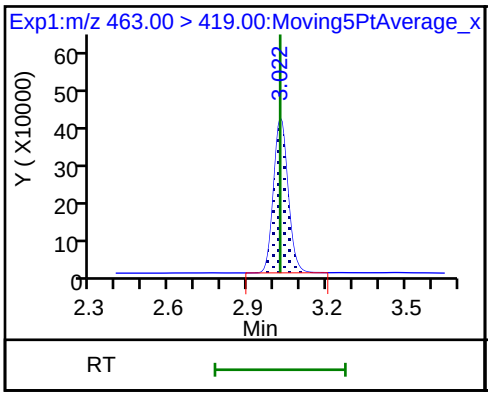
17 Perfluorooctane sulfonic acid



17 Perfluorooctane sulfonic acid



20 Perfluorononanoic acid



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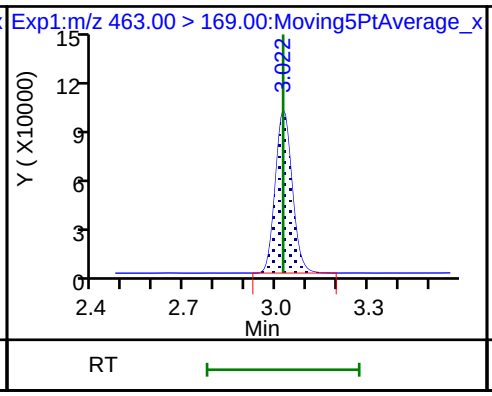
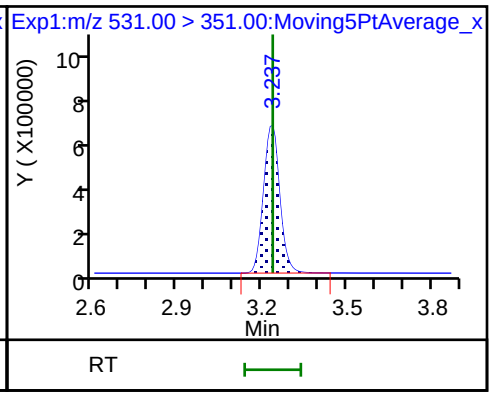
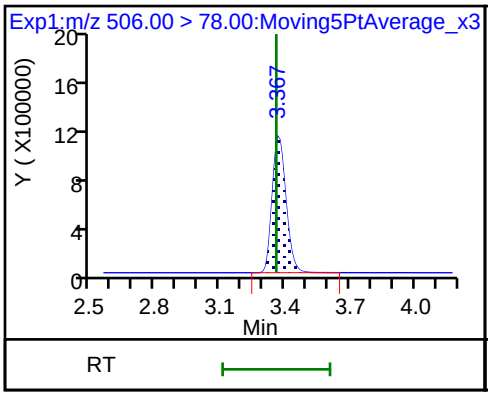


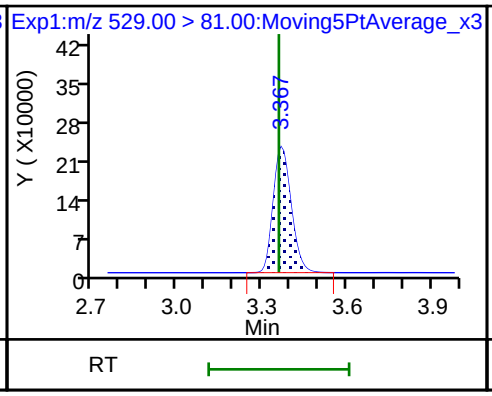
69 9-Chlorohexadecafluoro-3-oxanonane



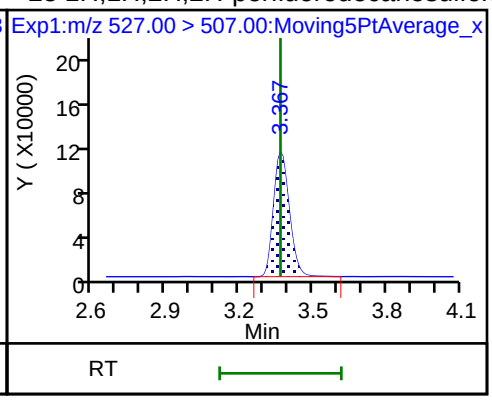
D 21 13C8 FOSA



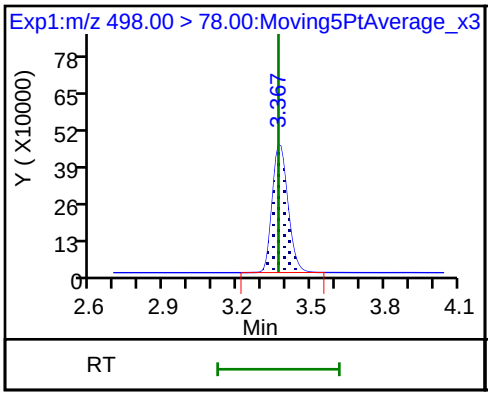
D 26 M2-8:2FTS



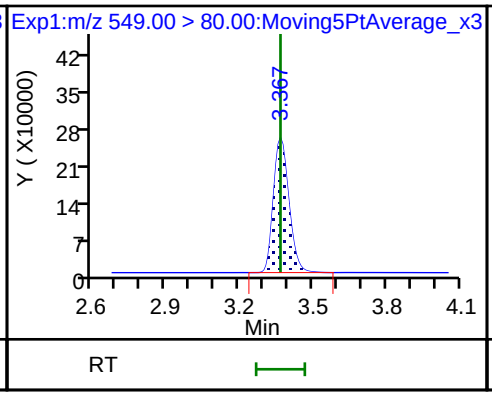
25 1H,1H,2H,2H-perfluorodecanesulfoni



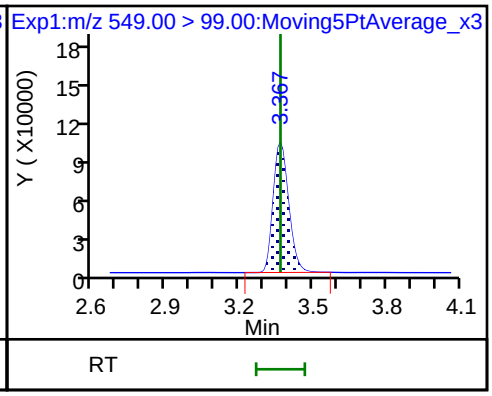
22 Perfluorooctane Sulfonamide



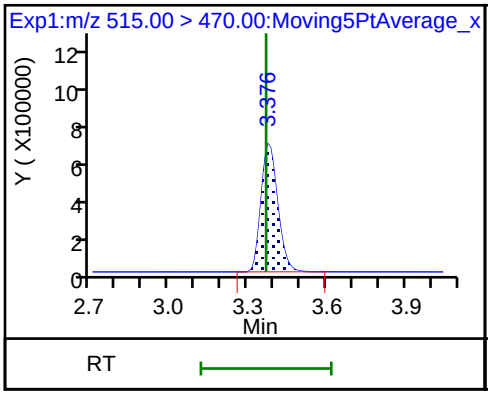
68 Perfluorononanesulfonic acid



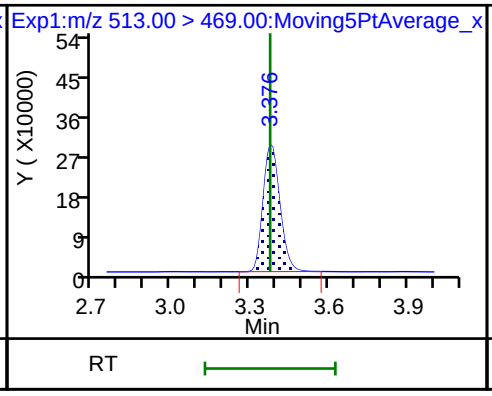
68 Perfluorononanesulfonic acid



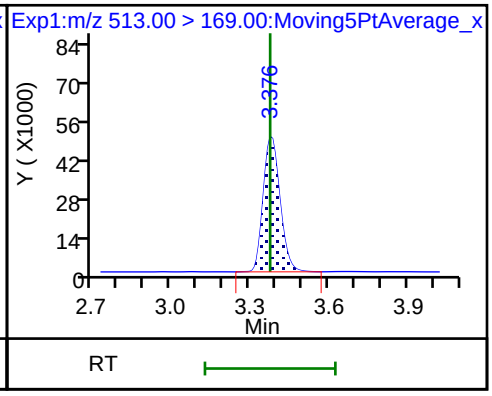
D 23 13C2 PFDA



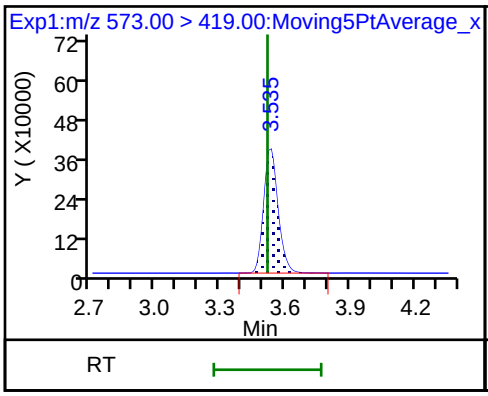
24 Perfluorodecanoic acid



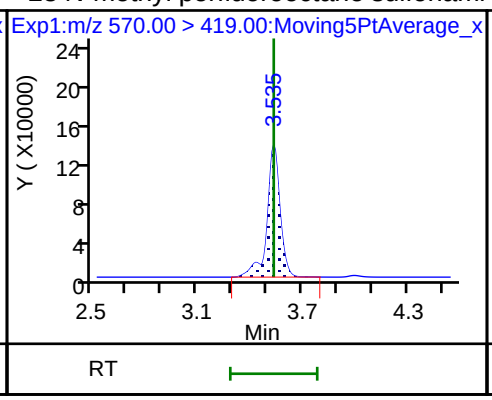
24 Perfluorodecanoic acid



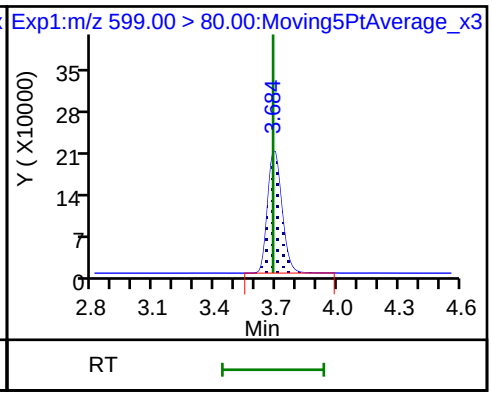
D 27 d3-NMeFOSAA



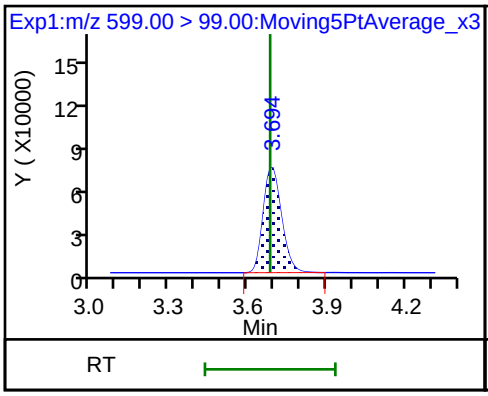
28 N-methyl perfluorooctane sulfonami



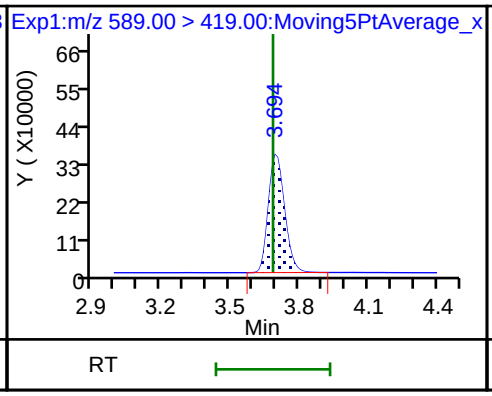
29 Perfluorodecane Sulfonic acid



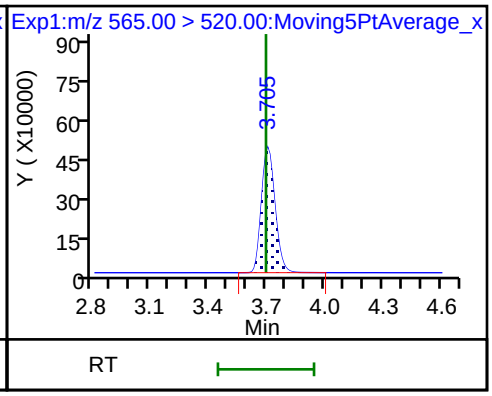
29 Perfluorodecane Sulfonic acid



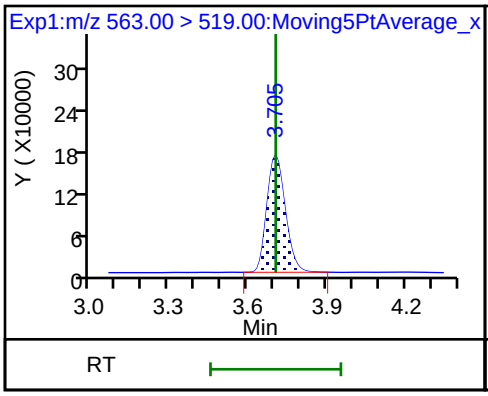
D 32 d5-NEtFOSAA



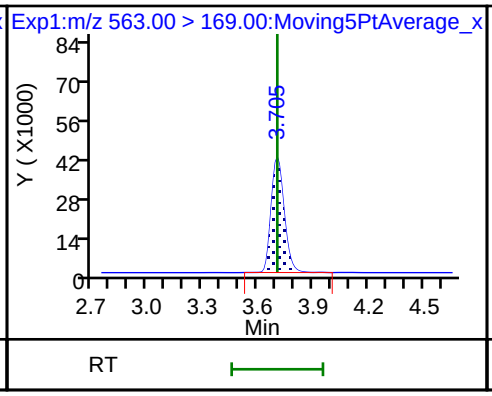
D 30 13C2 PFUnA



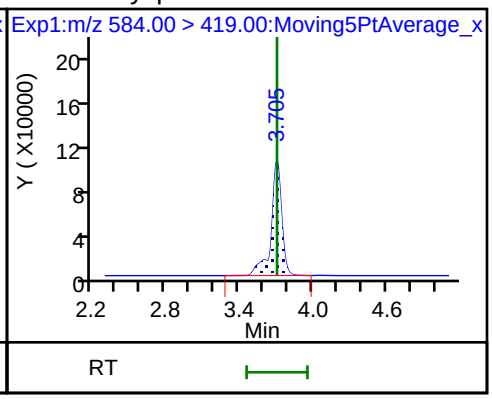
31 Perfluoroundecanoic acid



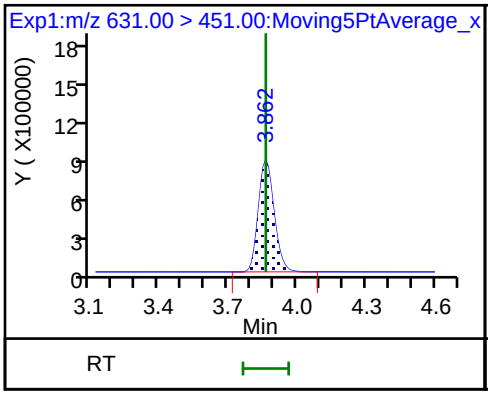
31 Perfluoroundecanoic acid



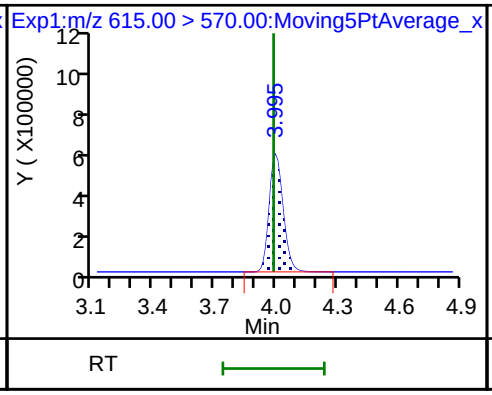
33 N-ethyl perfluorooctane sulfonamid



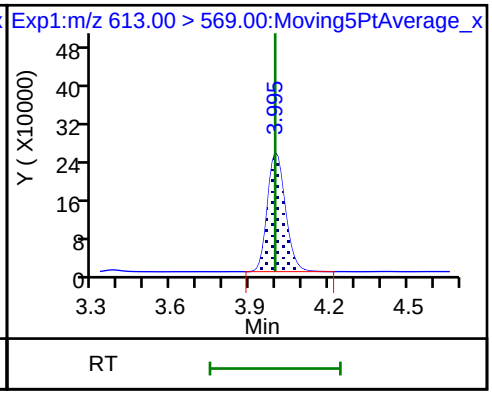
66 11-Chloroeicosafluoro-3-oxaundecan



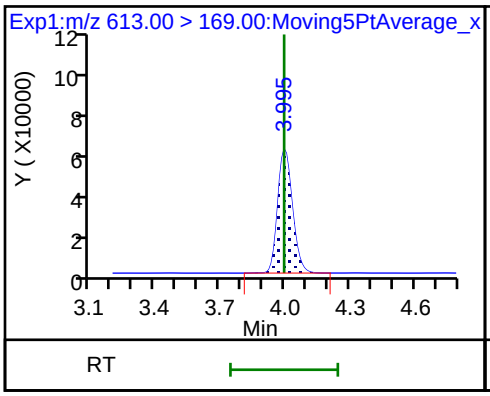
D 36 13C2 PFDoA



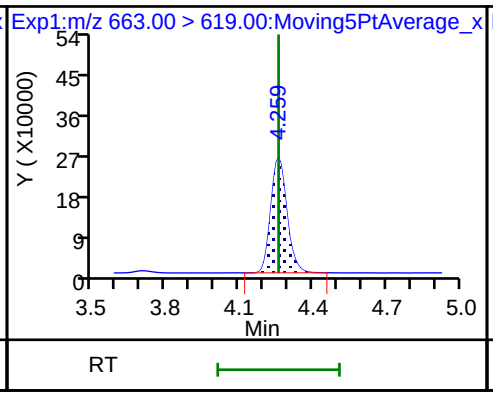
37 Perfluorododecanoic acid



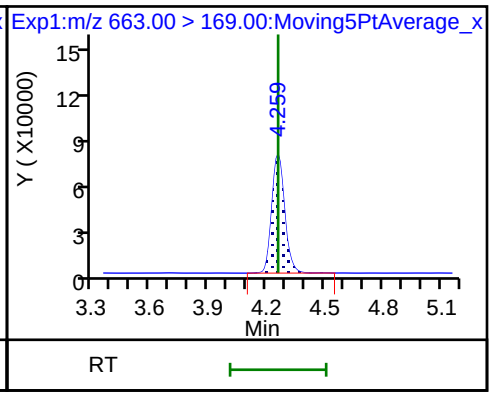
37 Perfluorododecanoic acid



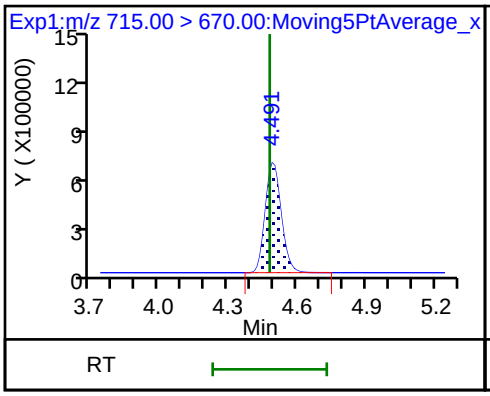
41 Perfluorotridecanoic acid



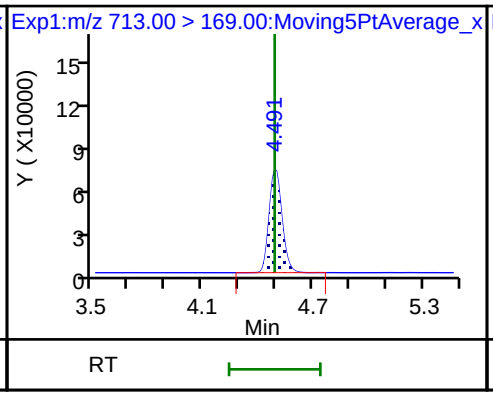
41 Perfluorotridecanoic acid



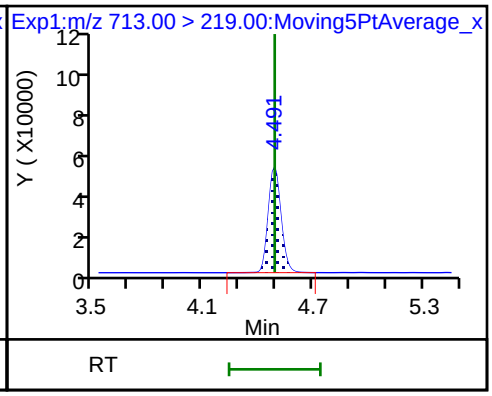
D 43 13C2-PFTeDA



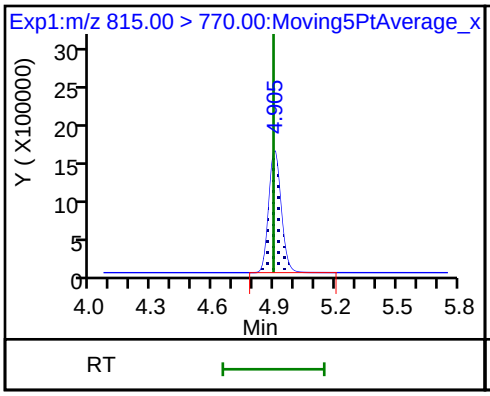
42 Perfluorotetradecanoic acid



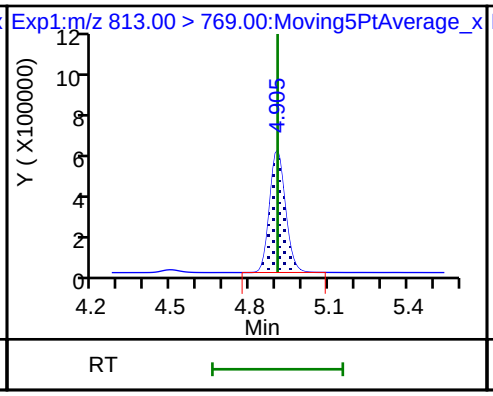
42 Perfluorotetradecanoic acid



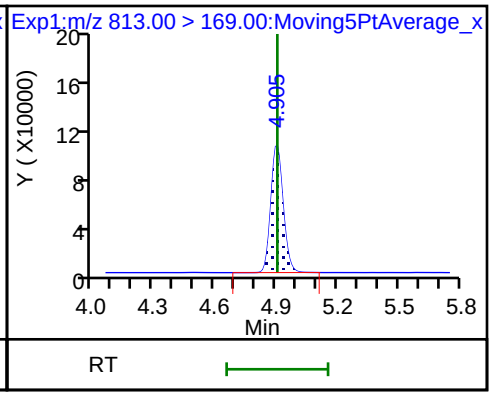
D 44 13C2-PFHxDA



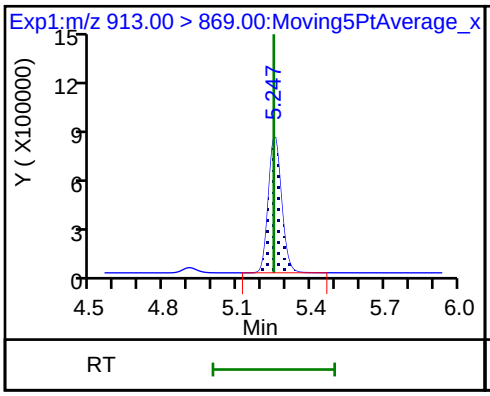
45 Perfluorohexadecanoic acid



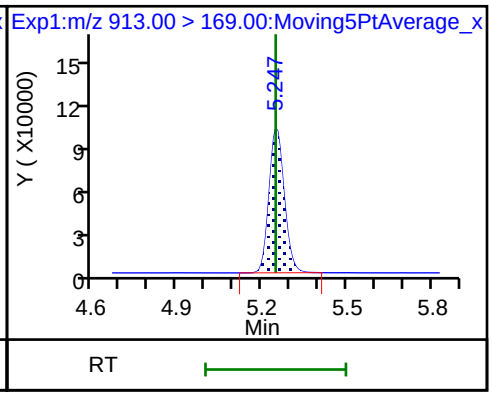
45 Perfluorohexadecanoic acid



46 Perfluorooctadecanoic acid



46 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Lab Sample ID: CCV 320-232788/19 Calibration Date: 07/06/2018 19:51

Instrument ID: A8_N Calib Start Date: 07/05/2018 08:51

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 07/05/2018 09:38

Lab File ID: 2018.07.06LLAAA_049.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	1.021	1.022		2.50	2.50	0.0	40.0
Perfluoropentanoic acid (PFPeA)	AveID	1.191	1.194		2.51	2.50	0.3	40.0
Perfluorobutanesulfonic acid (PFBS)	AveID	75.80	78.97		2.30	2.21	4.2	50.0
4:2 FTS	AveID	15.68	16.72		2.49	2.34	6.6	50.0
Perfluorohexanoic acid (PFHxA)	AveID	1.018	1.082		2.66	2.50	6.3	40.0
Perfluoropentanesulfonic acid (PFPeS)	AveID	64.85	68.91		2.49	2.35	6.3	50.0
HFPO-DA (GenX)	AveID	2.299	2.553		2.78	2.50	11.0	40.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.130	1.110		2.46	2.50	-1.8	40.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.156	1.137		2.24	2.28	-1.6	40.0
ADONA	AveID	3.706	3.962		2.52	2.36	6.9	50.0
6:2 FTS	AveID	1.567	1.617		2.45	2.37	3.2	40.0
Perfluorooctanoic acid (PFOA)	AveID	1.186	1.167		2.46	2.50	-1.6	40.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.339	1.388		2.47	2.38	3.6	50.0
Perfluorononanoic acid (PFNA)	AveID	1.078	1.094		2.54	2.50	1.5	40.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.168	1.118		2.22	2.32	-4.3	40.0
9-Chlorohexadecafluoro-3-oxa nonane-1-sulfonate	AveID	1.891	1.965		2.42	2.33	3.9	50.0
8:2 FTS	AveID	1.321	1.374		2.49	2.40	4.0	40.0
Perfluorononanesulfonic acid (PFNS)	AveID	0.8126	0.7957		2.35	2.40	-2.1	50.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9917	1.027		2.59	2.50	3.6	40.0
Perfluorodecanoic acid (PFDA)	AveID	1.042	1.009		2.42	2.50	-3.2	40.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	1.029	0.9621		2.34	2.50	-6.5	40.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.7195	0.6946		2.33	2.41	-3.5	50.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.9017	0.8958		2.48	2.50	-0.6	40.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.8501	0.8349		2.46	2.50	-1.8	40.0
11-Chloroeicosafluoro-3-oxau ndecane-1-sulfonate	AveID	2.884	3.010		2.46	2.36	4.4	50.0
Perfluorododecanoic acid (PFDoA)	AveID	1.102	1.127		2.56	2.50	2.3	40.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.227	1.116		2.27	2.50	-9.1	50.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2708	0.2432		2.25	2.50	-10.2	50.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		0.9804		2.56	2.50	2.3	50.0

FORM VII 537 (modified)

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Lab Sample ID: CCV 320-232788/19 Calibration Date: 07/06/2018 19:51

Instrument ID: A8_N Calib Start Date: 07/05/2018 08:51

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 07/05/2018 09:38

Lab File ID: 2018.07.06LLAAA_049.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.164	1.167		2.51	2.50	0.3	50.0
13C4 PFBA	Ave	1.384	1.408		2.54	2.50	1.7	50.0
13C5 PFPeA	Ave	1.025	1.027		2.50	2.50	0.2	50.0
13C3-PFBS	Ave	0.0245	0.0245		2.33	2.33	0.0	50.0
M2-4:2FTS	Ave	0.1575	0.1646		2.44	2.34	4.5	50.0
13C2 PFHxA	Ave	1.097	1.099		2.51	2.50	0.2	50.0
13C3 HFPO-DA	Ave	0.0899	0.0813		2.26	2.50	-9.6	50.0
13C4-PFHpA	Ave	0.9735	1.034		2.65	2.50	6.2	50.0
18O2 PFHxS	Ave	1.198	1.286		2.54	2.37	7.3	50.0
M2-6:2FTS	Ave	0.2186	0.2283		2.48	2.38	4.4	40.0
13C4 PFOA	Ave	0.9539	1.015		2.66	2.50	6.4	50.0
13C4 PFOS	Ave	0.8551	0.8923		2.49	2.39	4.4	50.0
13C5 PFNA	Ave	0.8109	0.8812		2.72	2.50	8.7	50.0
13C8 FOSA	Ave	1.187	1.179		2.48	2.50	-0.7	50.0
M2-8:2FTS	Ave	0.2431	0.2381		2.35	2.40	-2.1	40.0
13C2 PFDA	Ave	0.6992	0.7352		2.63	2.50	5.2	50.0
d3-NMeFOSAA	Ave	0.4120	0.4188		2.54	2.50	1.6	50.0
d5-NEtFOSAA	Ave	0.4070	0.4096		2.52	2.50	0.6	50.0
13C2 PFUnA	Ave	0.5873	0.5848		2.49	2.50	-0.4	50.0
13C2 PFDoA	Ave	0.6294	0.6574		2.61	2.50	4.4	50.0
13C2-PFTeDA	Ave	0.7673	0.8129		2.65	2.50	5.9	50.0
13C2-PFHxDA	Ave	1.420	1.537		2.71	2.50	8.3	50.0

FORM VII 537 (modified)

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180706-60751.b\2018.07.06LLAAA_049.d
Lims ID: CCV L5
Client ID:
Sample Type: CCV
Inject. Date: 06-Jul-2018 19:51:14 ALS Bottle#: 31 Worklist Smp#: 19
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV L5
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-A8_N*sub32

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180706-60751.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 09-Jul-2018 10:28:30 Calib Date: 05-Jul-2018 09:38:17
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180705-60684.b\2018.07.05LLICALAA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK010

First Level Reviewer: mongkols Date: 09-Jul-2018 10:28:29

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.425	1.424	0.001	0.537	5389194	2.54		102	22270	
2 Perfluorobutyric acid										
212.90 > 169.00	1.430	1.433	-0.003	1.004	5508446	2.50		100	2674	
D 3 13C5-PFPeA										
267.90 > 223.00	1.702	1.702	0.0	0.642	3930016	2.50		100	36038	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.702	1.707	-0.005	1.000	4692218	2.51		100	3192	
D 47 13C3-PFBS										
301.90 > 83.00	1.738	1.738	0.0	0.655	87259	2.33		100	572	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.747	1.752	-0.005	1.005	6550361	2.30		104	26053	
298.90 > 99.00	1.747	1.752	-0.005	1.005	2672882		2.45(1.25-3.74)		18781	
D 60 M2-4:2FTS										
329.00 > 81.00	1.949	1.948	0.001	0.735	588627	2.44		104	8097	
61 1H,1H,2H,2H-perfluorohexanesulfoni										
327.00 > 307.00	1.949	1.956	-0.007	1.121	1465444	2.49		107	51496	
D 7 13C2 PFHxA										
315.00 > 270.00	1.981	1.981	0.0	0.747	4208433	2.51		100	60303	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.981	1.988	-0.007	1.000	4554335	2.66		106	10995	
313.00 > 119.00	1.981	1.988	-0.007	1.000	405939		11.22(5.03-15.10)		5828	
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.004	2.010	-0.006	1.153	6065052	2.49		106	52202	
349.00 > 99.00	2.004	2.010	-0.006	1.153	2184019		2.78(1.36-4.07)		24922	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.083	2.070	0.013	0.785	311063	2.26		90.4	4954	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
67 Perfluoro(2-propoxypropanoic) acid										
329.10 > 285.00	2.083	2.078	0.005	1.000	794026	2.78		111	4741	
D 9 13C4-PFHpA										
367.00 > 322.00	2.294	2.293	0.001	0.865	3957266	2.65		106	40273	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.294	2.302	-0.008	1.000	4391791	2.46		98.2	6209	
363.00 > 169.00	2.294	2.302	-0.008	1.000	1664944		2.64(1.13-3.40)		10873	
D 11 18O2 PFHxS										
403.00 > 84.00	2.320	2.306	0.014	0.874	4656379	2.54		107	37920	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.307	2.315	-0.008	0.994	5094338	2.24		98.4	16768	
399.00 > 99.00	2.307	2.315	-0.008	0.994	1635938		3.11(1.50-4.49)		8272	
65 Adona										
377.00 > 251.00	2.346	2.355	-0.009	0.779	12748747	2.52		107	71315	
377.00 > 85.00	2.346	2.355	-0.009	0.779	7833526		1.63(0.84-2.53)		50470	
D 12 M2-6:2FTS										
429.00 > 81.00	2.628	2.627	0.001	0.991	830355	2.48		104	12751	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.628	2.634	-0.006	1.000	1340028	2.45		103	5739	
D 14 13C4 PFOA										
417.00 > 372.00	2.653	2.652	0.001	1.000	3887326	2.66		106	34063	
* 62 13C2-PFOA										
415.00 > 370.00	2.653	2.658	-0.005		3828485	2.50			35541	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.653	2.658	-0.005	1.000	4541115	2.46		98.4	1800	
413.00 > 169.00	2.653	2.658	-0.005	1.000	2321492		1.96(0.84-2.52)		8427	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.660	2.665	-0.005	0.883	4512819	2.47		104	35231	
449.00 > 99.00	2.660	2.665	-0.005	0.883	1168226		3.86(1.94-5.82)		14486	
D 19 13C5 PFNA										
468.00 > 423.00	3.019	3.009	0.010	1.138	3373822	2.72		109	34858	
D 18 13C4 PFOS										
503.00 > 80.00	3.012	3.009	0.003	1.135	3265969	2.49		104	21455	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.012	3.022	-0.010	1.000	3543814	2.22		95.7	28552	
499.00 > 99.00	3.012	3.022	-0.010	1.000	791609		4.48(2.31-6.93)		10370	
20 Perfluorononanoic acid										
463.00 > 419.00	3.012	3.022	-0.010	0.998	3691110	2.54		102	7375	
463.00 > 169.00	3.019	3.022	-0.003	1.000	866057		4.26(1.90-5.69)		24627	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.225	3.237	-0.012	1.071	6256757	2.42		104	68840	
D 21 13C8 FOSA										
506.00 > 78.00	3.361	3.359	0.002	1.267	4513311	2.48		99.3	29970	
D 26 M2-8:2FTS										
529.00 > 81.00	3.361	3.359	0.002	1.267	873206	2.35		97.9	15208	
25 1H,1H,2H,2H-perfluorodecanesulfoni										
527.00 > 507.00	3.361	3.367	-0.006	1.000	1199423	2.49		104	33504	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.361	3.367	-0.006	1.000	4636629	2.59		104	37307	
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.361	3.367	-0.006	1.116	2609539	2.35		97.9	40075	
549.00 > 99.00	3.361	3.367	-0.006	1.116	988068		2.64(1.33-3.97)		22741	
D 23 13C2 PFDA										
515.00 > 470.00	3.370	3.368	0.002	1.270	2814588	2.63		105	42358	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.370	3.376	-0.006	1.000	2839177	2.42		96.8	8716	
513.00 > 169.00	3.370	3.376	-0.006	1.000	542014		5.24(2.36-7.09)		10257	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.529	3.518	0.011	1.330	1603182	2.54		102	18506	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.529	3.535	-0.006	1.000	1542450	2.34		93.5	12499	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.676	3.684	-0.008	1.221	2287668	2.33		96.5	36146	
599.00 > 99.00	3.676	3.684	-0.008	1.221	778666		2.94(1.39-4.16)		19868	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.687	3.685	0.002	1.390	1568063	2.52		101	8602	
D 30 13C2 PFUnA										
565.00 > 520.00	3.700	3.696	0.004	1.395	2238972	2.49		99.6	35188	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.700	3.705	-0.005	1.000	1869298	2.46		98.2	8164	
563.00 > 169.00	3.700	3.705	-0.005	1.000	457605		4.08(2.12-6.36)		10382	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.700	3.705	-0.005	1.003	1404675	2.48		99.4	29296	
66 11-Chloroeicosafluoro-3-oxaundecan										
631.00 > 451.00	3.857	3.862	-0.005	1.281	9686577	2.46		104	53747	
D 36 13C2 PFDoA										
615.00 > 570.00	3.989	3.986	0.003	1.504	2516640	2.61		104	15903	
37 Perfluorododecanoic acid										
613.00 > 569.00	3.989	3.995	-0.006	1.000	2836822	2.56		102	3070	
613.00 > 169.00	3.989	3.995	-0.006	1.000	682334		4.16(2.13-6.40)		10392	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.252	4.259	-0.007	1.066	2809500	2.27		90.9	3290	
663.00 > 169.00	4.252	4.259	-0.007	1.066	859273		3.27(1.25-3.76)		12674	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.491	4.479	0.012	1.693	3112041	2.65		106	14071	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.491	4.491	0.0	1.000	756894	2.25		89.8	12245	
713.00 > 219.00	4.481	4.491	-0.010	0.998	581366		1.30(0.71-2.13)		10030	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.896	4.896	0.0	1.846	5885799	2.71		108	12054	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.896	4.905	-0.009	1.000	5770687	2.56		102	2457	
813.00 > 169.00	4.896	4.905	-0.009	1.000	947778		6.09(2.86-8.58)		7899	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.248	5.247	0.001	1.072	6869426	2.51		100	2128	
913.00 > 169.00	5.240	5.247	-0.007	1.070	820738		8.37(3.83-11.48)		7083	

Reagents:

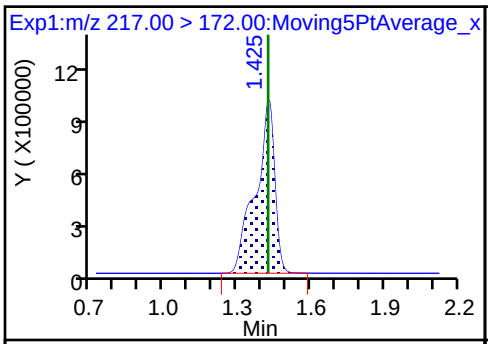
LCPFC_LL5_00005 Amount Added: 1.00 Units: mL

Report Date: 09-Jul-2018 10:28:31 Chrom Revision: 2.2 07-Jun-2018 07:41:54

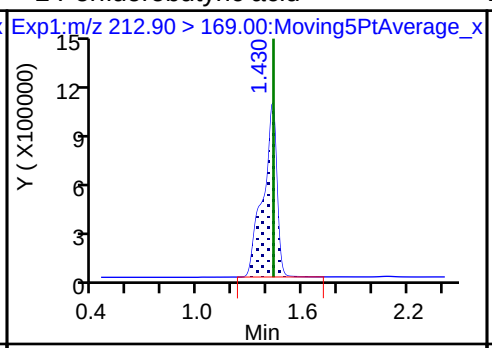
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180706-60751.b\2018.07.06LLAAA_049.d
Injection Date: 06-Jul-2018 19:51:14 Instrument ID: A8_N
Lims ID: CCV L5
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 31 Worklist Smp#: 19
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC ICAL

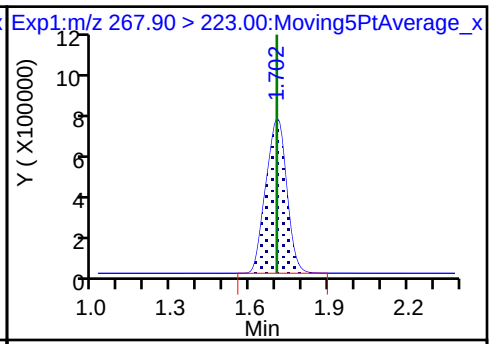
D 1 13C4 PFBA



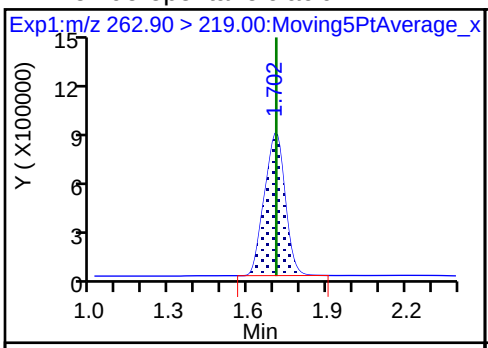
2 Perfluorobutyric acid



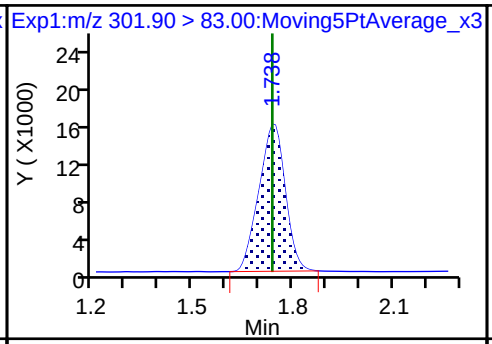
D 3 13C5-PFPeA



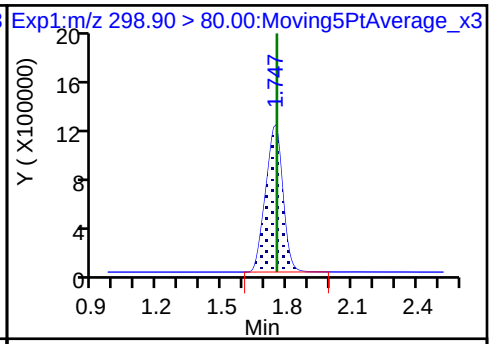
4 Perfluoropentanoic acid



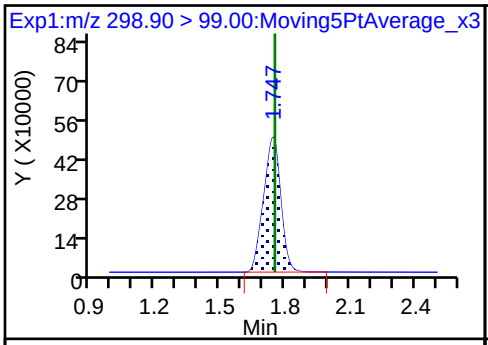
D 47 13C3-PFBS



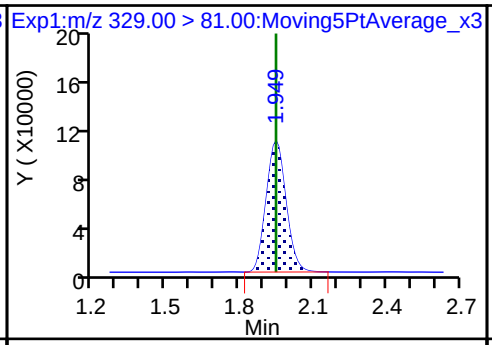
5 Perfluorobutanesulfonic acid



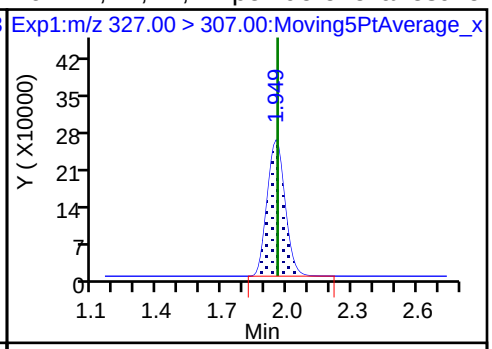
5 Perfluorobutanesulfonic acid



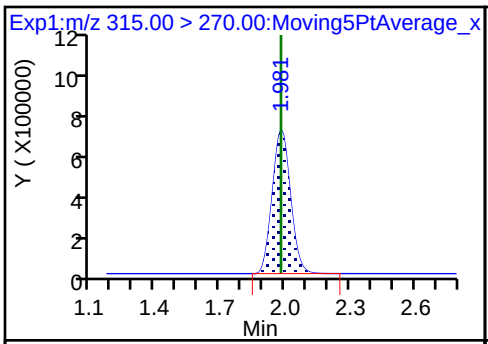
D 60 M2-4:2FTS



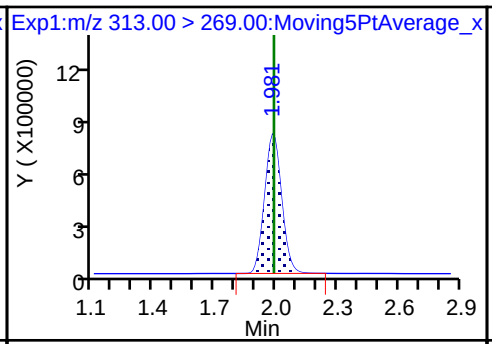
61 1H,1H,2H,2H-perfluorohexanesulfoni



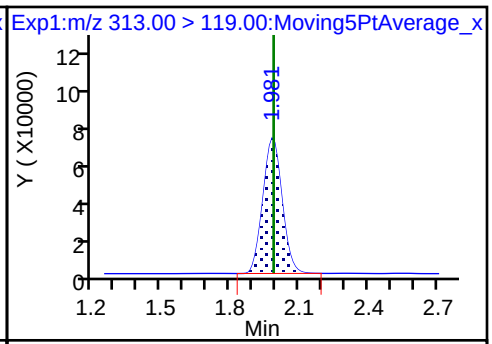
D 7 13C2 PFHxA



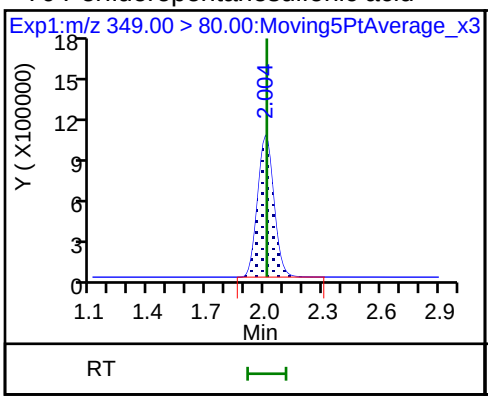
6 Perfluorohexanoic acid



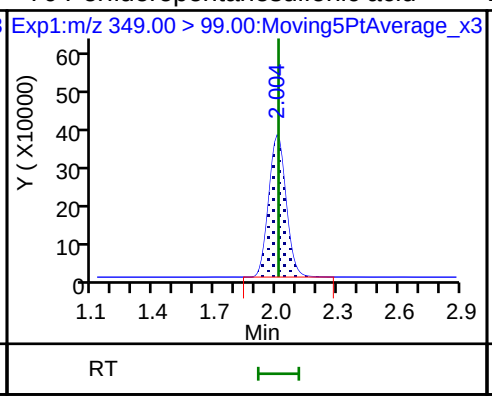
6 Perfluorohexanoic acid



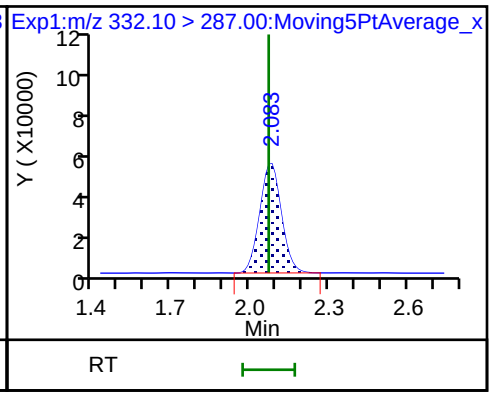
70 Perfluoropentanesulfonic acid



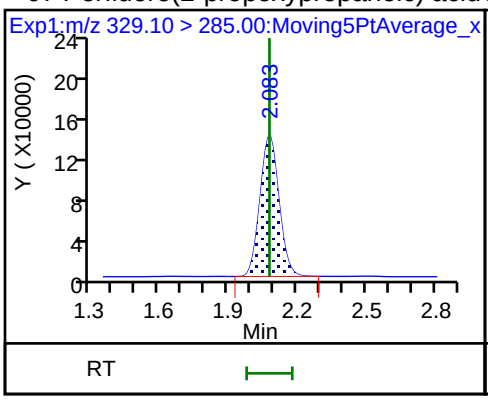
70 Perfluoropentanesulfonic acid



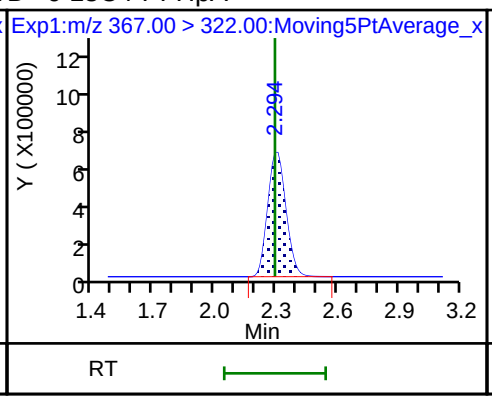
D 64 13C3 HFPO-DA



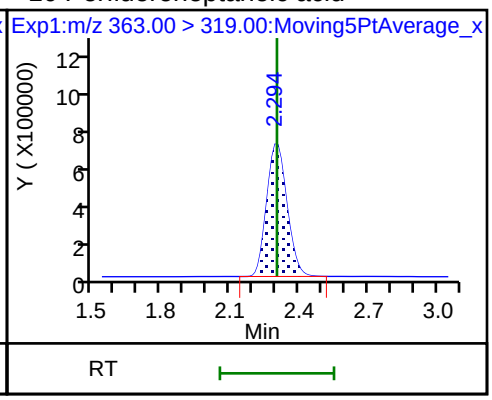
67 Perfluoro(2-propoxypropanoic) acid



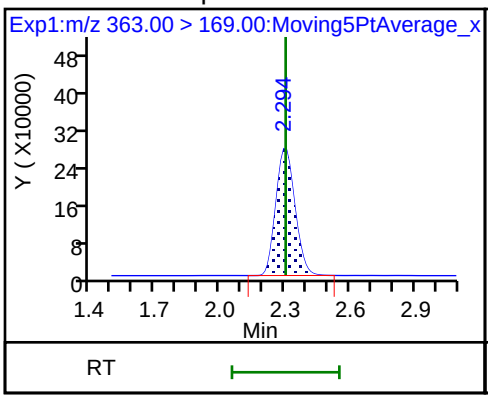
D 9 13C4-PFHpA



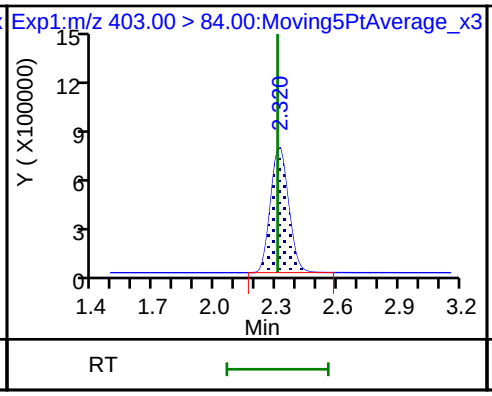
10 Perfluoroheptanoic acid



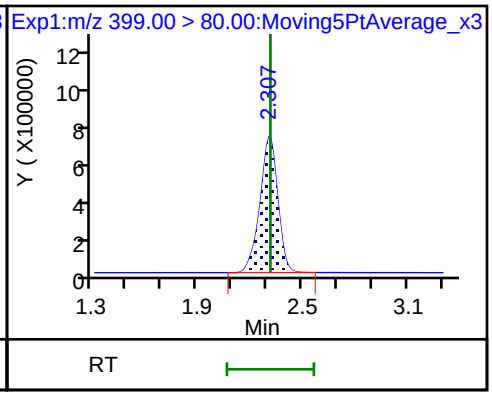
10 Perfluoroheptanoic acid



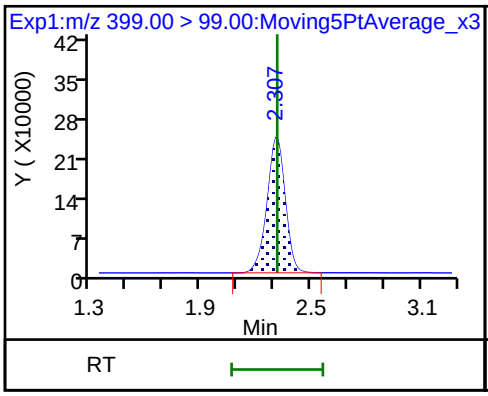
D 11 18O2 PFHxS



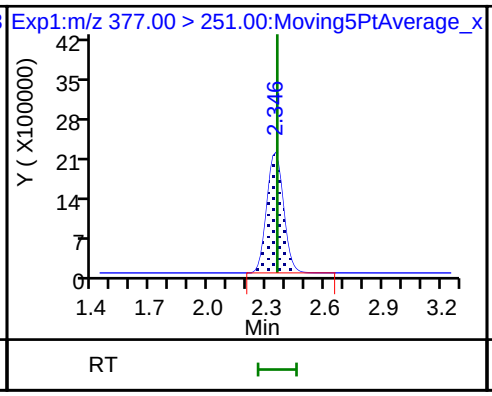
8 Perfluorohexanesulfonic acid



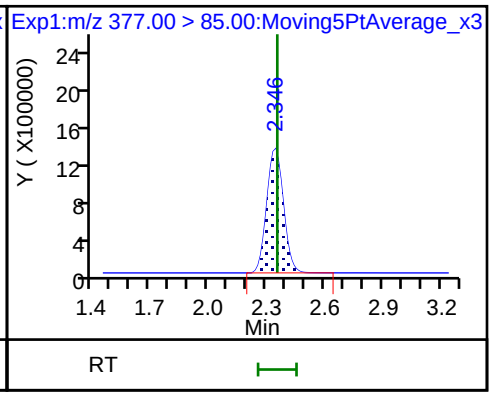
8 Perfluorohexanesulfonic acid



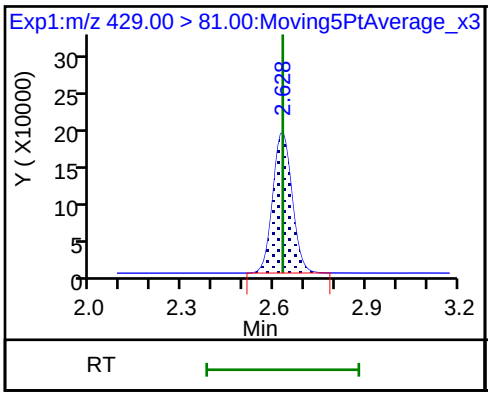
65 Adona



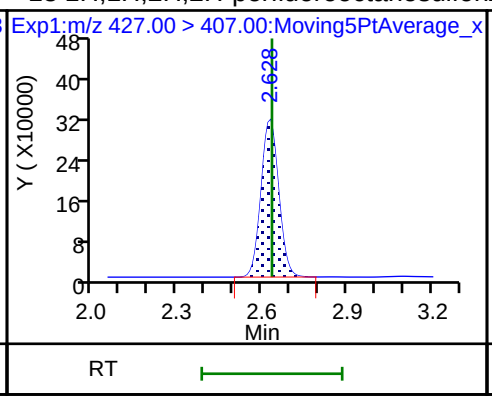
65 Adona



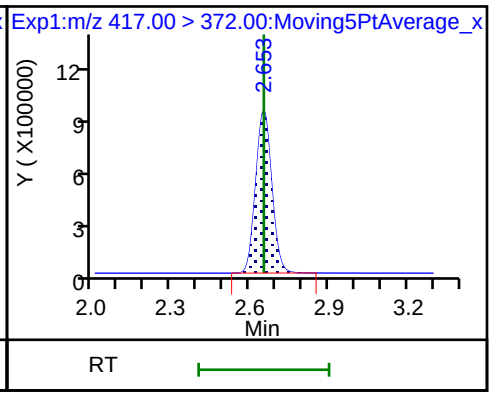
D 12 M2-6:2FTS



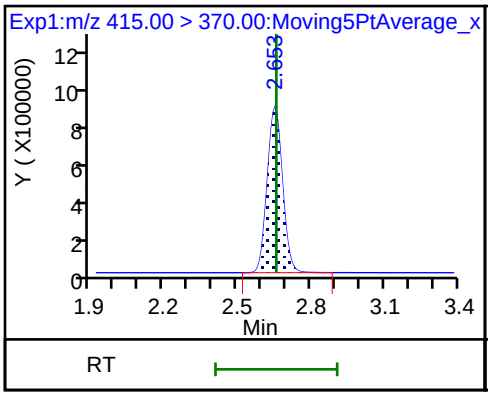
13 1H,1H,2H,2H-perfluorooctanesulfon



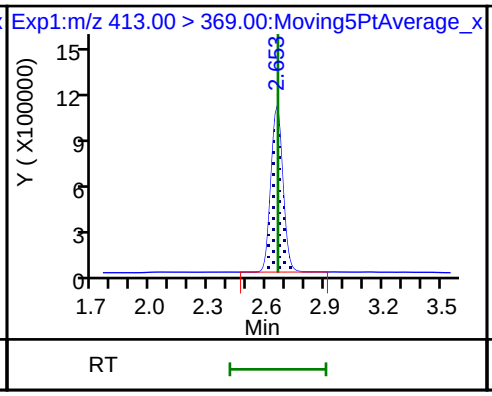
D 14 13C4 PFOA



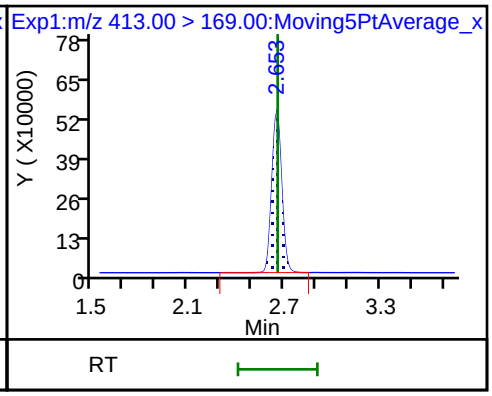
* 62 13C2-PFOA



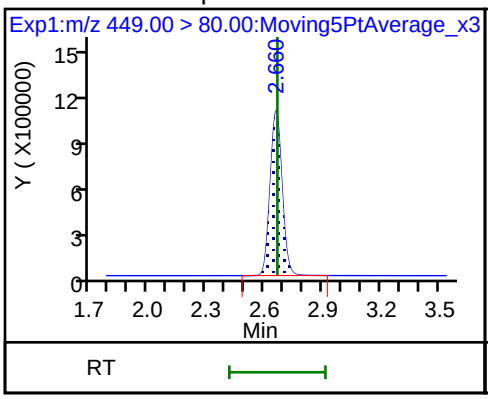
15 Perfluorooctanoic acid



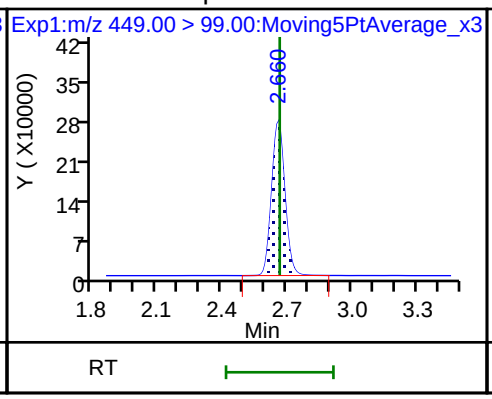
15 Perfluorooctanoic acid



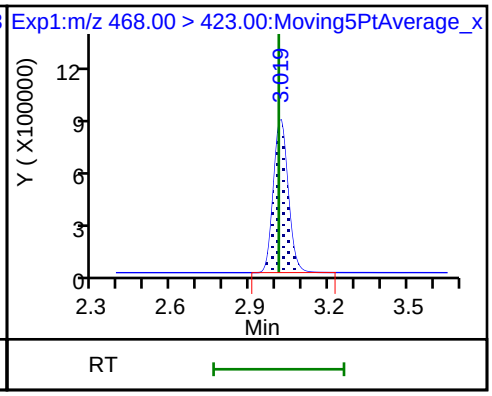
16 Perfluoroheptanesulfonic acid



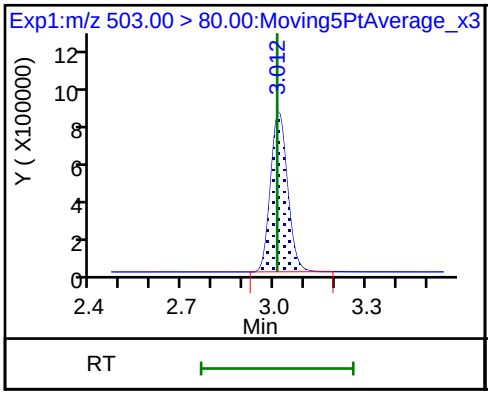
16 Perfluoroheptanesulfonic acid



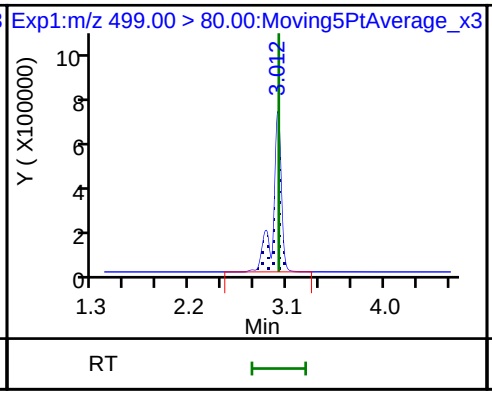
D 19 13C5 PFNA



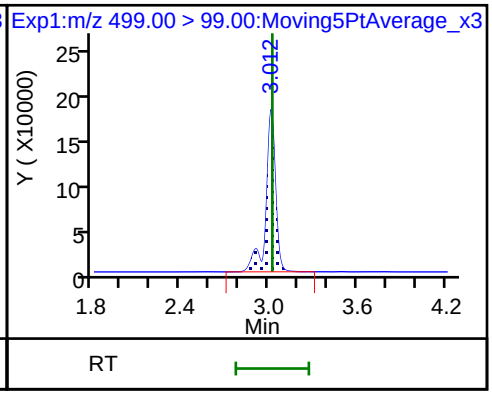
D 18 13C4 PFOS



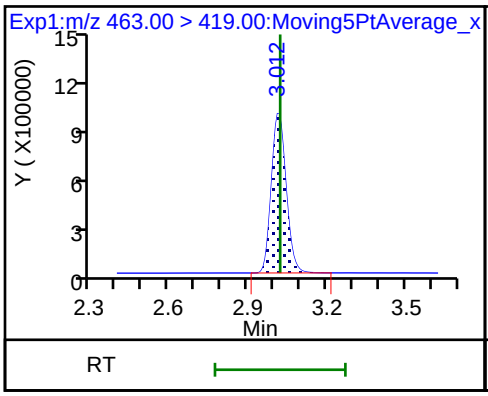
17 Perfluorooctane sulfonic acid



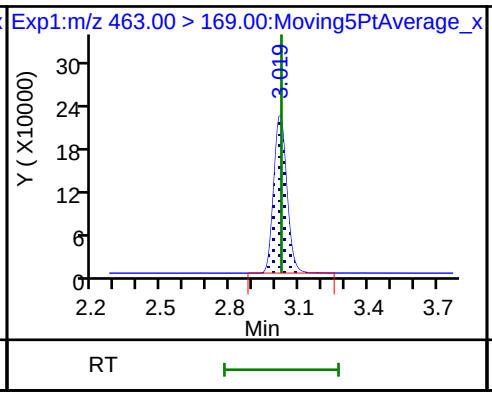
17 Perfluorooctane sulfonic acid



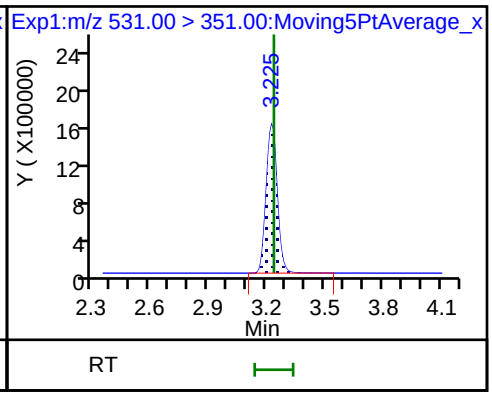
20 Perfluorononanoic acid



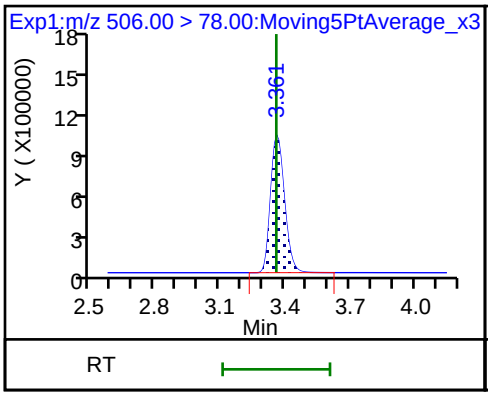
20 Perfluorononanoic acid



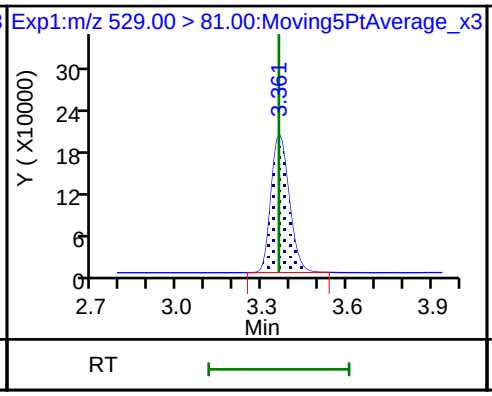
69 9-Chlorohexadecafluoro-3-oxanonane



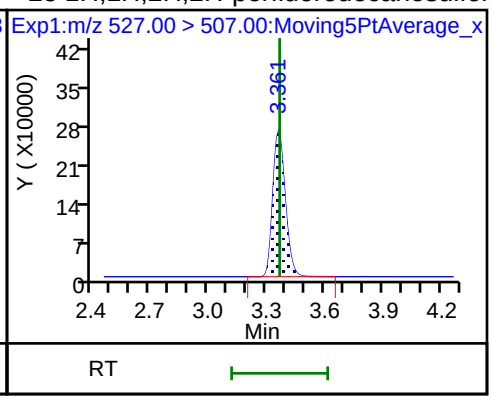
D 21 13C8 FOSA



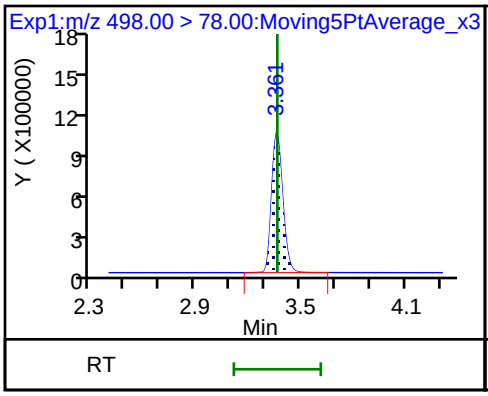
D 26 M2-8:2FTS



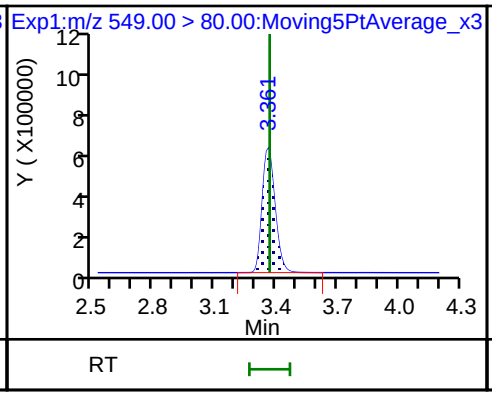
25 1H,1H,2H,2H-perfluorodecanesulfoni



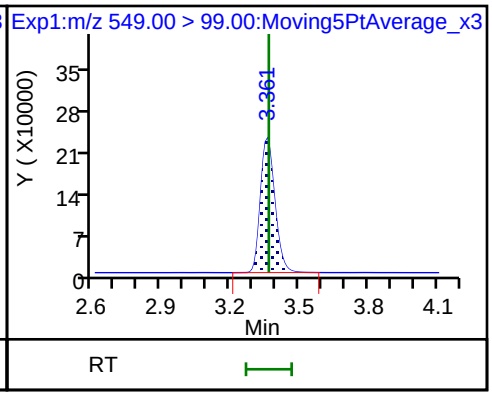
22 Perfluorooctane Sulfonamide



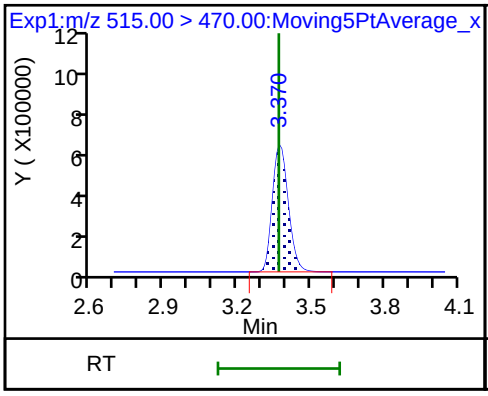
68 Perfluorononanesulfonic acid



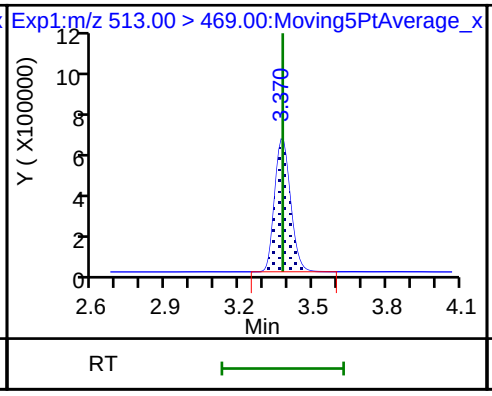
68 Perfluorononanesulfonic acid



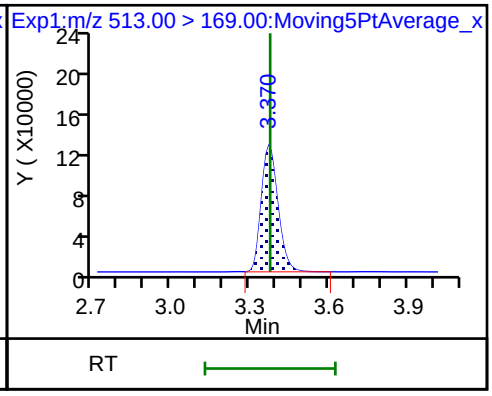
D 23 13C2 PFDA



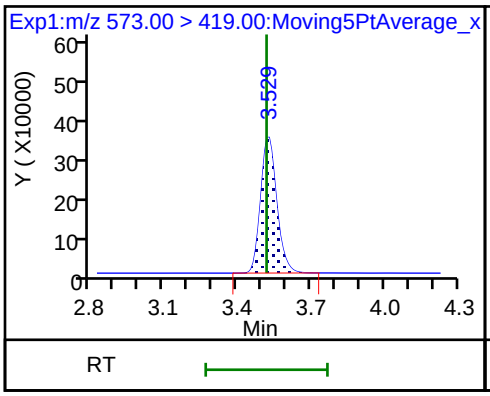
24 Perfluorodecanoic acid



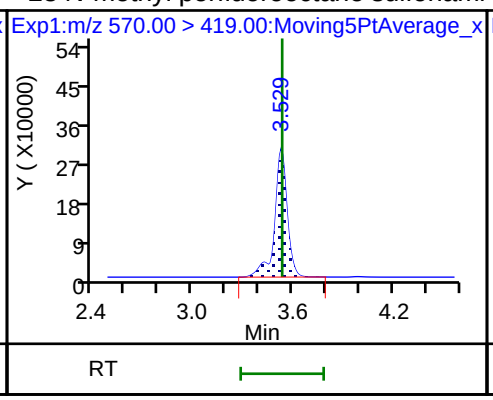
24 Perfluorodecanoic acid



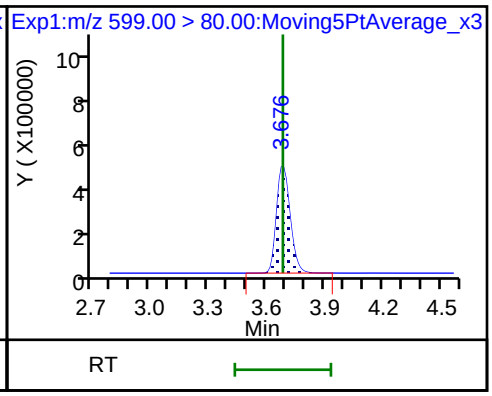
D 27 d3-NMeFOSAA



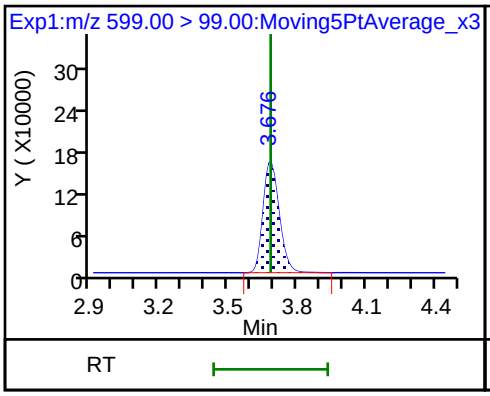
28 N-methyl perfluorooctane sulfonami



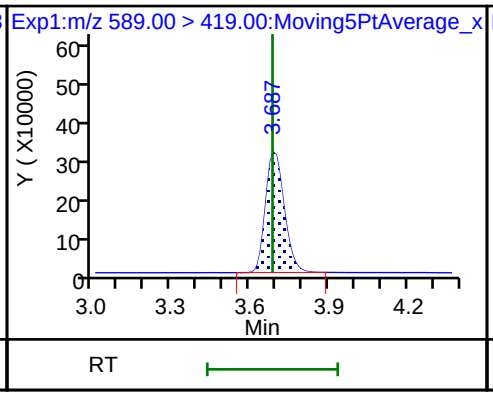
29 Perfluorodecane Sulfonic acid



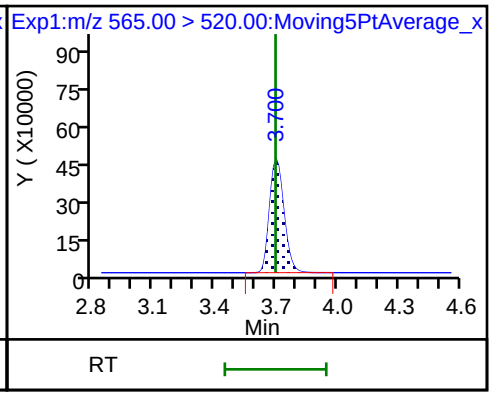
29 Perfluorodecane Sulfonic acid



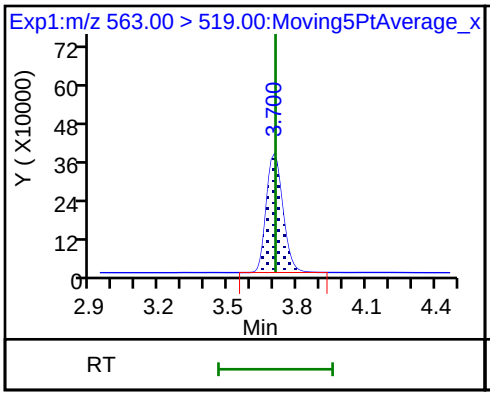
D 32 d5-NEtFOSAA



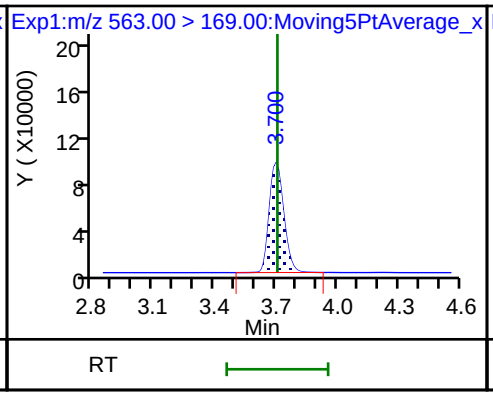
D 30 13C2 PFUnA



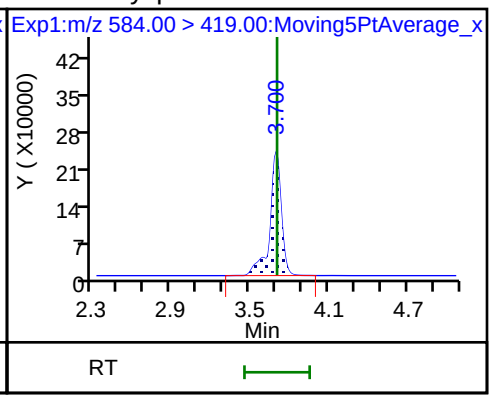
31 Perfluoroundecanoic acid



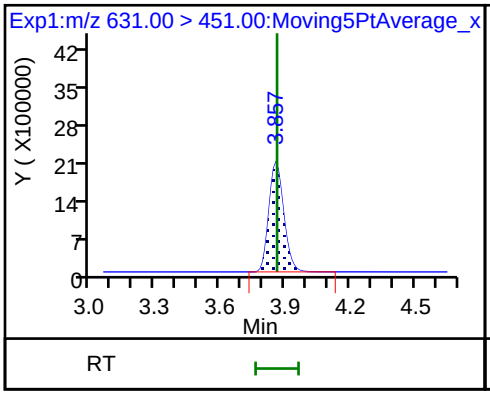
31 Perfluoroundecanoic acid



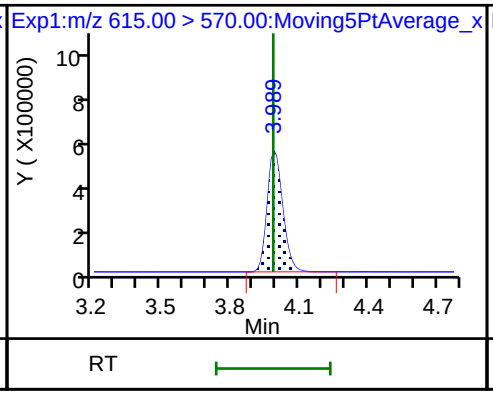
33 N-ethyl perfluorooctane sulfonamid



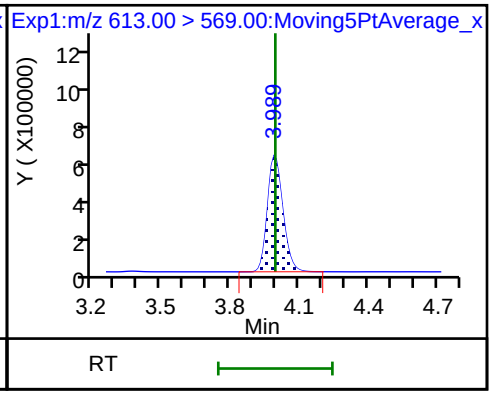
66 11-Chloroeicosafluoro-3-oxaundecan



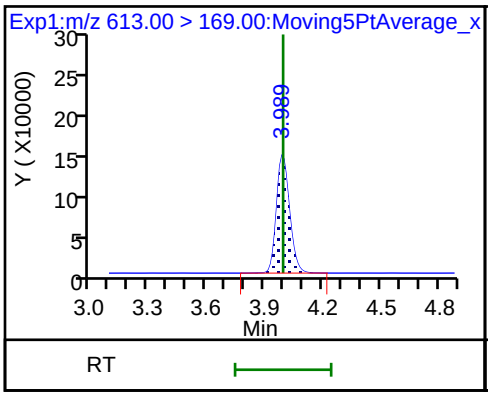
D 36 13C2 PFDoA



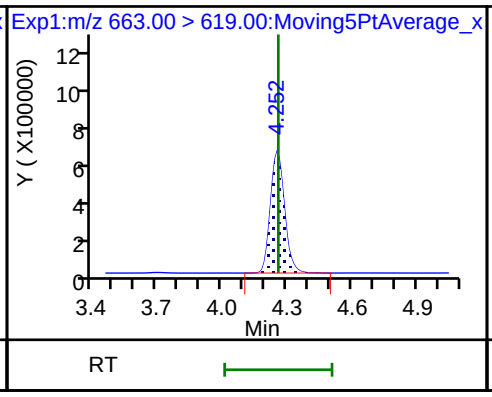
37 Perfluorododecanoic acid



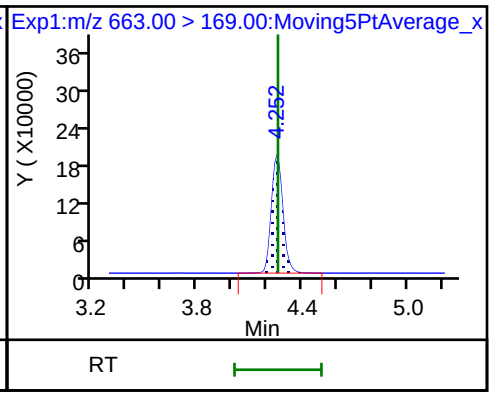
37 Perfluorododecanoic acid



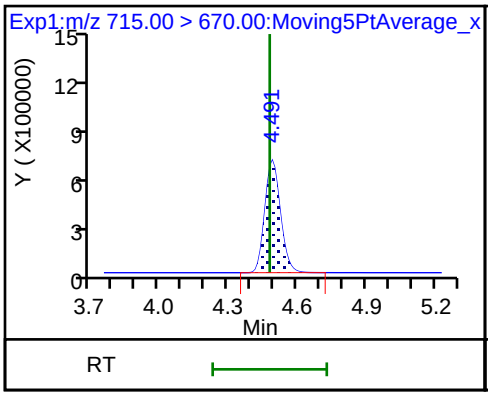
41 Perfluorotridecanoic acid



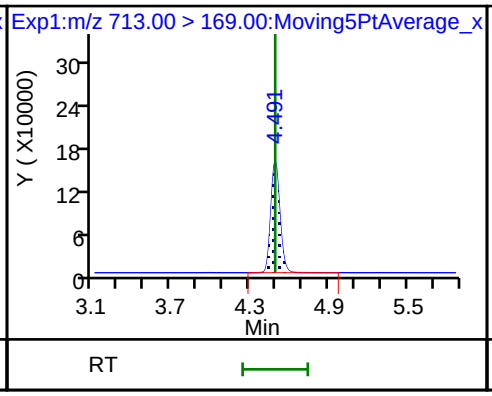
41 Perfluorotridecanoic acid



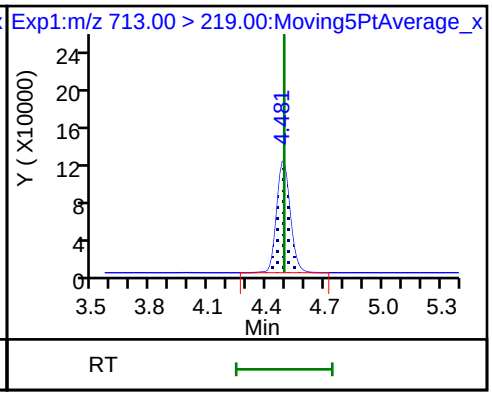
D 43 13C2-PFTeDA



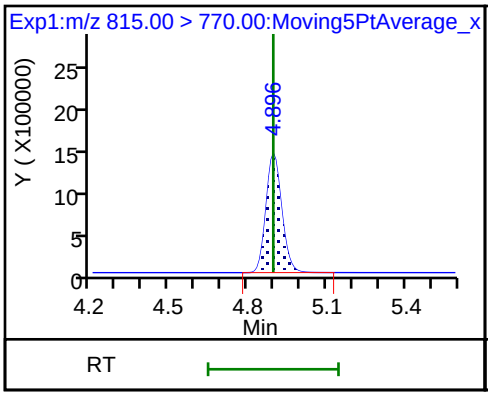
42 Perfluorotetradecanoic acid



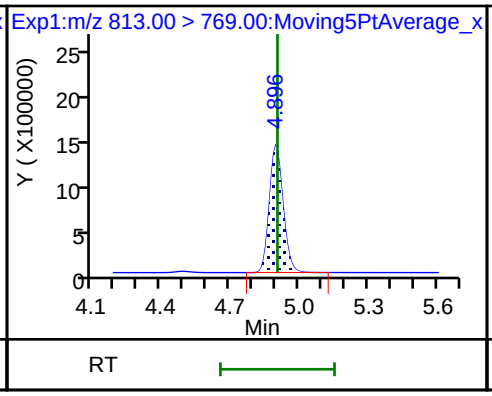
42 Perfluorotetradecanoic acid



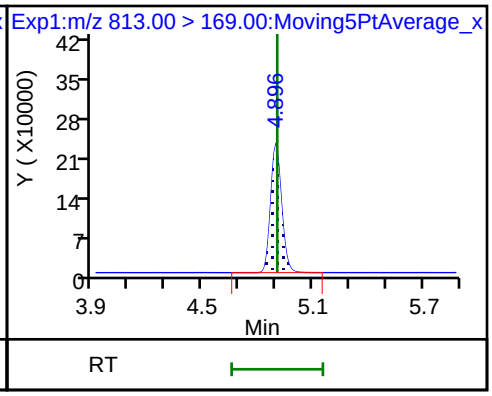
D 44 13C2-PFHxDA



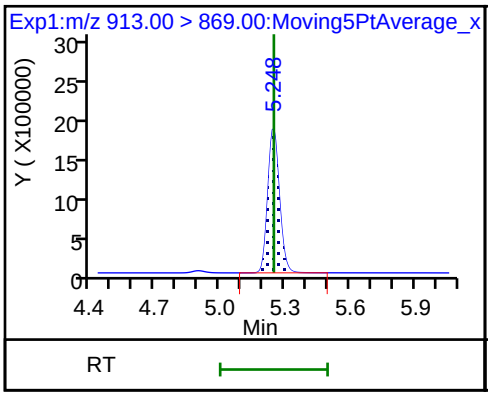
45 Perfluorohexadecanoic acid



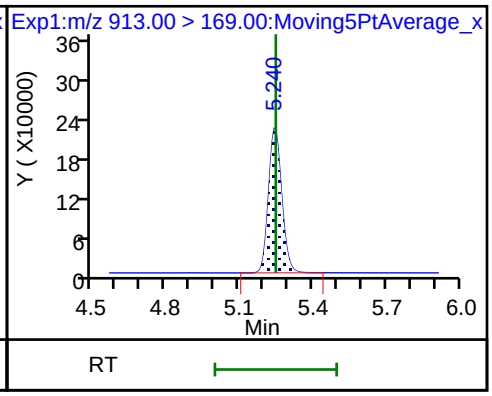
45 Perfluorohexadecanoic acid



46 Perfluorooctadecanoic acid



46 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Lab Sample ID: CCVL 320-232797/2 Calibration Date: 07/06/2018 23:45

Instrument ID: A8_N Calib Start Date: 07/05/2018 08:51

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 07/05/2018 09:38

Lab File ID: 2018.07.06LLC_004.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	1.021	0.9796		0.0480	0.0500	-4.1	50.0
Perfluoropentanoic acid (PFPeA)	AveID	1.191	1.234		0.0518	0.0500	3.6	50.0
Perfluorobutanesulfonic acid (PFBS)	AveID	75.80	74.66		0.0435	0.0442	-1.5	50.0
4:2 FTS	AveID	15.68	14.38			0.0467	-8.3	50.0
Perfluorohexanoic acid (PFHxA)	AveID	1.018	1.130		0.0555	0.0500	11.0	50.0
Perfluoropentanesulfonic acid (PFPeS)	AveID	64.85	67.00		0.0485	0.0469	3.3	50.0
HFPO-DA (GenX)	AveID	2.299	2.531		0.0551	0.0500	10.1	50.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.130	1.140		0.0505	0.0500	0.9	50.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.156	1.205		0.0474	0.0455	4.2	50.0
ADONA	AveID	3.706	3.878		0.0493	0.0471	4.6	50.0
6:2 FTS	AveID	1.567	1.669		0.0505	0.0474	6.5	50.0
Perfluorooctanoic acid (PFOA)	AveID	1.186	1.312		0.0554	0.0501	10.6	50.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.339	1.341		0.0476	0.0476	0.1	50.0
Perfluorononanoic acid (PFNA)	AveID	1.078	1.129		0.0524	0.0500	4.8	50.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.168	1.189		0.0472	0.0464	1.8	50.0
9-Chlorohexadecafluoro-3-oxa nonane-1-sulfonate	AveID	1.891	1.698		0.0418	0.0466	-10.2	50.0
8:2 FTS	AveID	1.321	1.186			0.0479	-10.2	50.0
Perfluorononanesulfonic acid (PFNS)	AveID	0.8126	0.7101		0.0419	0.0480	-12.6	50.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9917	0.9776		0.0493	0.0500	-1.4	50.0
Perfluorodecanoic acid (PFDA)	AveID	1.042	1.012		0.0485	0.0500	-2.9	50.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	1.029	1.089			0.0500	5.8	50.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.7195	0.6310		0.0423	0.0482	-12.3	50.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.9017	0.9058		0.0502	0.0500	0.5	50.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.8501	0.9431		0.0555	0.0500	10.9	50.0
11-Chloroeicosafluoro-3-oxau ndecane-1-sulfonate	AveID	2.884	3.013		0.0492	0.0471	4.5	50.0
Perfluorododecanoic acid (PFDoA)	AveID	1.102	1.199		0.0544	0.0500	8.8	50.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.227	1.114		0.0454	0.0500	-9.2	50.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2708	0.2219		0.0410	0.0500	-18.1	50.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		1.352		0.0483	0.0500	-3.4	50.0

FORM VII 537 (modified)

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Lab Sample ID: CCVL 320-232797/2 Calibration Date: 07/06/2018 23:45

Instrument ID: A8_N Calib Start Date: 07/05/2018 08:51

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 07/05/2018 09:38

Lab File ID: 2018.07.06LLC_004.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.164	1.123		0.0482	0.0500	-3.5	50.0
13C4 PFBA	Ave	1.384	1.279		2.31	2.50	-7.6	50.0
13C5 PFPeA	Ave	1.025	0.9385		2.29	2.50	-8.4	50.0
13C3-PFBS	Ave	0.0245	0.0224		2.13	2.33	-8.5	50.0
M2-4:2FTS	Ave	0.1575	0.1509		2.24	2.34	-4.2	50.0
13C2 PFHxA	Ave	1.097	1.020		2.32	2.50	-7.0	50.0
13C3 HFPO-DA	Ave	0.0899	0.0697		1.94	2.50	-22.5	50.0
13C4-PFHpA	Ave	0.9735	0.9685		2.49	2.50	-0.5	50.0
18O2 PFHxS	Ave	1.198	1.165		2.30	2.37	-2.7	50.0
M2-6:2FTS	Ave	0.2186	0.2173		2.36	2.38	-0.6	50.0
13C4 PFOA	Ave	0.9539	0.9528		2.50	2.50	-0.1	50.0
13C4 PFOS	Ave	0.8551	0.8225		2.30	2.39	-3.8	50.0
13C5 PFNA	Ave	0.8109	0.8179		2.52	2.50	0.9	50.0
13C8 FOSA	Ave	1.187	1.114		2.35	2.50	-6.1	50.0
M2-8:2FTS	Ave	0.2431	0.2456		2.42	2.40	1.0	50.0
13C2 PFDA	Ave	0.6992	0.7242		2.59	2.50	3.6	50.0
d3-NMeFOSAA	Ave	0.4120	0.3769		2.29	2.50	-8.5	50.0
13C2 PFUnA	Ave	0.5873	0.5797		2.47	2.50	-1.3	50.0
d5-NEtFOSAA	Ave	0.4070	0.3814		2.34	2.50	-6.3	50.0
13C2 PFDoA	Ave	0.6294	0.6116		2.43	2.50	-2.8	50.0
13C2-PFTeDA	Ave	0.7673	0.7418		2.42	2.50	-3.3	50.0
13C2-PFHxDA	Ave	1.420	1.396		2.46	2.50	-1.7	50.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180706-60754.b\2018.07.06LLC_004.d
Lims ID: CCVL
Client ID:
Sample Type: CCVL
Inject. Date: 06-Jul-2018 23:45:53 ALS Bottle#: 21 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCVL
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-A8_N*sub32

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180706-60754.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 09-Jul-2018 12:49:28 Calib Date: 05-Jul-2018 09:38:17
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180705-60684.b\2018.07.05LLICALAA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK010

First Level Reviewer: mongkols Date: 09-Jul-2018 12:49:28

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.430	1.430	0.0	0.539	5923520	2.31		92.4	22177	
2 Perfluorobutyric acid										
212.90 > 169.00	1.430	1.433	-0.003	1.000	116055	0.0480		95.9	35.9	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.712	1.707	0.005	1.005	107246	0.0518		104	62.6	
D 3 13C5-PFPeA										
267.90 > 223.00	1.703	1.711	-0.008	0.642	4345829	2.29		91.6	40247	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.748	1.743	0.005	1.005	137106	0.0435		98.5	552	
298.90 > 99.00	1.748	1.743	0.005	1.005	63141		2.17(1.25-3.74)		384	
D 47 13C3-PFBS										
301.90 > 83.00	1.739	1.747	-0.008	0.655	96595	2.13		91.5	700	
61 1H,1H,2H,2H-perfluorohexanesulfoni										
327.00 > 307.00	1.949	1.945	0.004	1.121	27902	0.0428		91.7	1252	
D 60 M2-4:2FTS										
329.00 > 81.00	1.949	1.949	0.0	0.735	652644	2.24		95.8	8994	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.982	1.988	-0.006	1.000	106723	0.0555		111	93.5	
313.00 > 119.00	1.993	1.988	0.005	1.006	9678		11.03(5.03-15.10)		74.3	
D 7 13C2 PFHxA										
315.00 > 270.00	1.982	1.992	-0.010	0.747	4722005	2.32		93.0	49135	
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.004	2.010	-0.006	1.153	130560	0.0485		103	2094	
349.00 > 99.00	2.004	2.010	-0.006	1.153	46956		2.78(1.36-4.07)		730	
67 Perfluoro(2-propoxypropanoic) acid										
329.10 > 285.00	2.083	2.078	0.005	1.000	16338	0.0551		110	77.8	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.083	2.083	0.0	0.785	322699	1.94		77.5	6299	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.308	2.302	0.006	1.000	102254	0.0505		101	121	
363.00 > 169.00	2.308	2.302	0.006	1.000	40126		2.55(1.13-3.40)		245	
D 9 13C4-PFHpA										
367.00 > 322.00	2.308	2.307	0.001	0.870	4484830	2.49		99.5	30980	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.321	2.315	0.006	1.000	118347	0.0474		104	961	
399.00 > 99.00	2.308	2.315	-0.007	0.994	37175		3.18(1.50-4.49)		266	
D 11 18O2 PFHxS										
403.00 > 84.00	2.321	2.320	0.001	0.875	5105166	2.30		97.3	38470	
65 Adona										
377.00 > 251.00	2.347	2.341	0.006	0.778	278266	0.0493		105	3626	
377.00 > 85.00	2.347	2.341	0.006	0.778	162384		1.71(0.84-2.53)		3047	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.629	2.626	0.003	1.000	31843	0.0505		107	164	
D 12 M2-6:2FTS										
429.00 > 81.00	2.629	2.628	0.001	0.991	955948	2.36		99.4	18821	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.654	2.650	0.004	1.000	115868	0.0554		111	38.3	
413.00 > 169.00	2.654	2.650	0.004	1.000	59849		1.94(0.84-2.52)		229	
* 62 13C2-PFOA										
415.00 > 370.00	2.654	2.650	0.004		4630864	2.50			34438	
D 14 13C4 PFOA										
417.00 > 372.00	2.654	2.653	0.001	1.000	4412379	2.50		99.9	35119	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.661	2.658	0.003	0.882	97240	0.0476		100	2150	
449.00 > 99.00	2.661	2.658	0.003	0.882	27885		3.49(1.94-5.82)		612	
20 Perfluorononanoic acid										
463.00 > 419.00	3.016	3.015	0.001	1.000	85544	0.0524		105	186	
463.00 > 169.00	3.023	3.015	0.008	1.002	18566		4.61(1.90-5.69)		986	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.016	3.015	0.001	1.000	84091	0.0472		102	680	
499.00 > 99.00	3.016	3.015	0.001	1.000	15517		5.42(2.31-6.93)		221	
D 18 13C4 PFOS										
503.00 > 80.00	3.016	3.018	-0.002	1.137	3641400	2.30		96.2	30319	
D 19 13C5 PFNA										
468.00 > 423.00	3.016	3.018	-0.002	1.137	3787455	2.52		101	43104	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.231	3.229	0.002	1.071	120537	0.0418		89.8	2498	
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.359	3.357	0.002	1.114	51930	0.0419		87.4	1345	
549.00 > 99.00	3.359	3.357	0.002	1.114	23548		2.21(1.33-3.97)		1102	
25 1H,1H,2H,2H-perfluorodecanesulfoni										
527.00 > 507.00	3.359	3.357	0.002	1.000	25845	0.0430		89.8	931	
D 26 M2-8:2FTS										
529.00 > 81.00	3.359	3.361	-0.002	1.266	1089560	2.42		101	14702	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.368	3.367	0.001	1.003	100865	0.0493		98.6	2886	
D 21 13C8 FOSA										
506.00 > 78.00	3.359	3.371	-0.012	1.266	5159006	2.35		93.9	30224	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.378	3.376	0.002	1.003	67862	0.0485		97.1	224	
513.00 > 169.00	3.378	3.376	0.002	1.003	15209		4.46(2.36-7.09)		334	
D 23 13C2 PFDA										
515.00 > 470.00	3.368	3.380	-0.012	1.269	3353585	2.59		104	58521	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.527	3.529	-0.002	1.329	1745138	2.29		91.5	25627	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.527	3.535	-0.008	1.000	38002	0.0529		106	286	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.685	3.684	0.001	1.222	46339	0.0423		87.7	704	
599.00 > 99.00	3.685	3.684	0.001	1.222	16542		2.80(1.39-4.16)		830	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.696	3.694	0.002	1.000	31997	0.0502		100	745	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.696	3.694	0.002	1.000	50633	0.0555		111	200	
563.00 > 169.00	3.707	3.694	0.013	1.003	13998		3.62(2.12-6.36)		484	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.696	3.698	-0.002	1.393	1766296	2.34		93.7	15123	
D 30 13C2 PFUnA										
565.00 > 520.00	3.696	3.698	-0.002	1.393	2684362	2.47		98.7	37353	
66 11-Chloroeicosafluoro-3-oxaundecan										
631.00 > 451.00	3.853	3.862	-0.009	1.277	216235	0.0492		104	4127	
D 36 13C2 PFDoA										
615.00 > 570.00	3.987	3.989	-0.002	1.502	2832064	2.43		97.2	18709	
37 Perfluorododecanoic acid										
613.00 > 569.00	3.987	3.995	-0.008	1.000	67933	0.0544		109	75.4	
613.00 > 169.00	3.987	3.995	-0.008	1.000	16558		4.10(2.13-6.40)		454	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.250	4.259	-0.009	1.066	63111	0.0454		90.8	80.7	
663.00 > 169.00	4.250	4.259	-0.009	1.066	24327		2.59(1.25-3.76)		600	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.490	4.489	0.001	1.000	15243	0.0410		81.9	246	
713.00 > 219.00	4.479	4.489	-0.010	0.998	14080		1.08(0.71-2.13)		481	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.490	4.491	-0.001	1.692	3434957	2.42		96.7	16504	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.895	4.896	-0.001	1.845	6464598	2.46		98.3	14351	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.895	4.904	-0.009	1.000	174811	0.0483		96.6	81.8	
813.00 > 169.00	4.895	4.904	-0.009	1.000	27714		6.31(2.86-8.58)		373	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.247	5.254	-0.007	1.072	145227	0.0482		96.5	52.6	
913.00 > 169.00	5.247	5.254	-0.007	1.072	18597		7.81(3.83-11.48)		355	

Reagents:

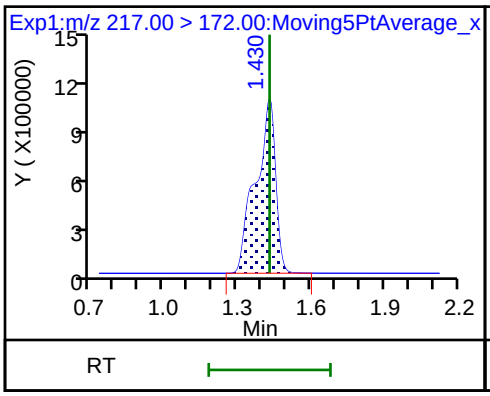
LCPFC_LL2_00005 Amount Added: 1.00 Units: mL

Report Date: 09-Jul-2018 12:49:29 Chrom Revision: 2.2 07-Jun-2018 07:41:54

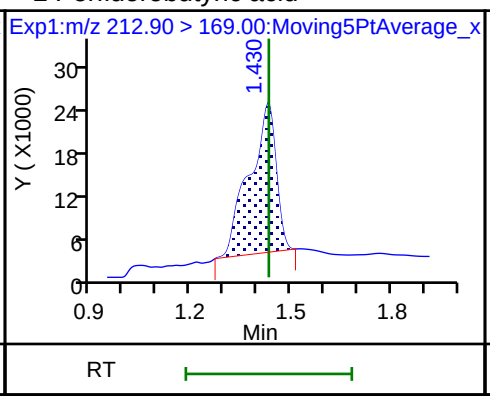
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180706-60754.b\2018.07.06LLC_004.d
Injection Date: 06-Jul-2018 23:45:53 Instrument ID: A8_N
Lims ID: CCVL
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 21 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC ICAL

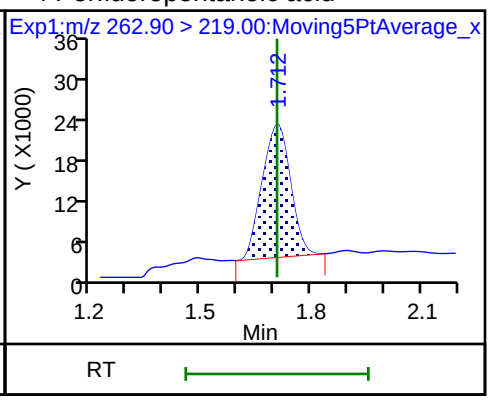
D 1 13C4 PFBA



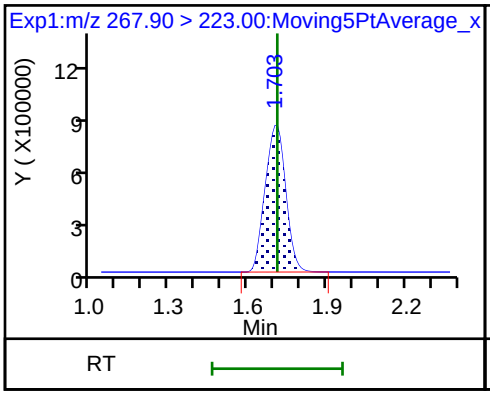
2 Perfluorobutyric acid



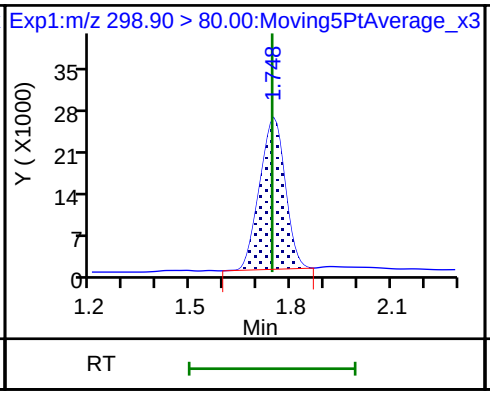
4 Perfluoropentanoic acid



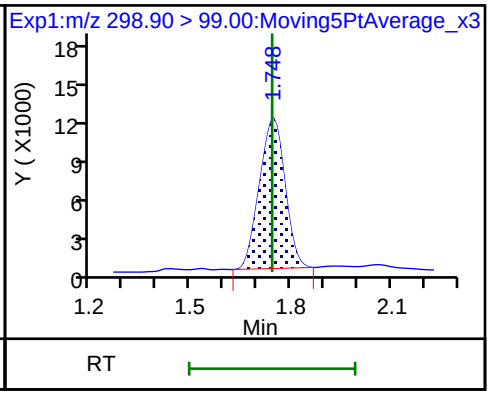
D 3 13C5-PFPeA



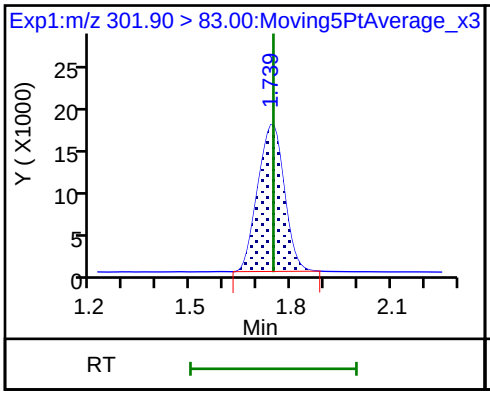
5 Perfluorobutanesulfonic acid



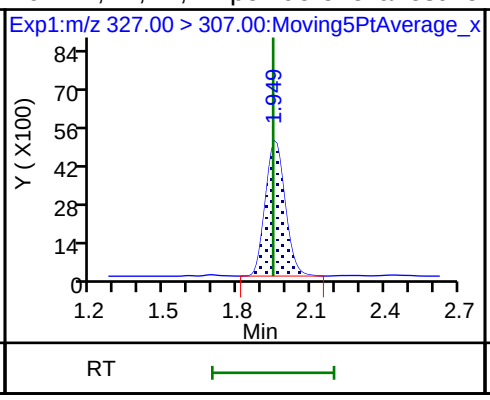
5 Perfluorobutanesulfonic acid



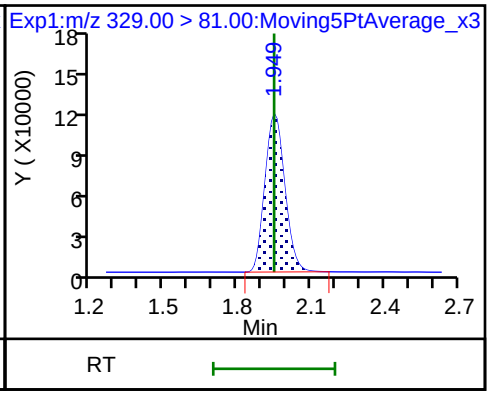
D 47 13C3-PFBS



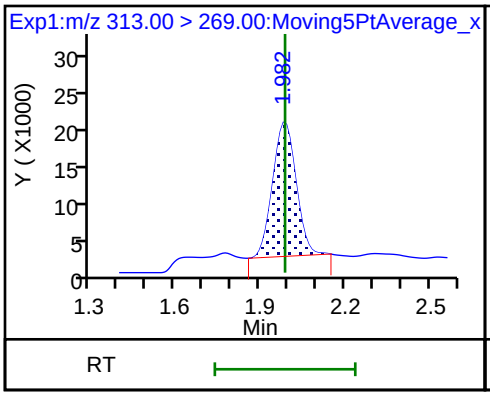
61 1H,1H,2H,2H-perfluorohexanesulfon



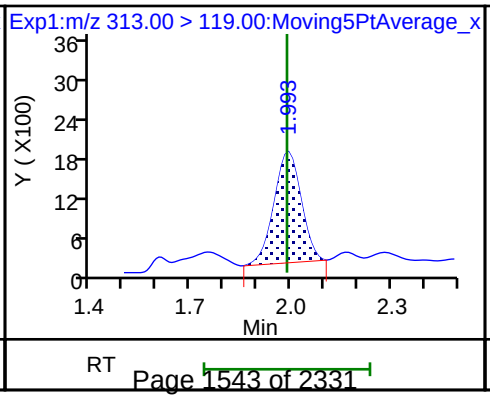
D 60 M2-4:2FTS



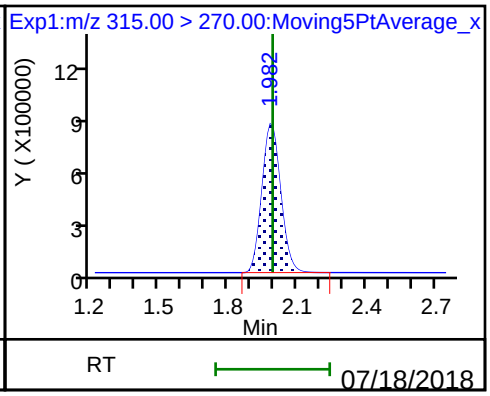
6 Perfluorohexanoic acid



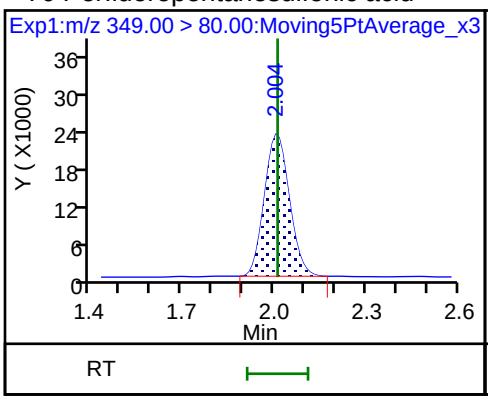
6 Perfluorohexanoic acid



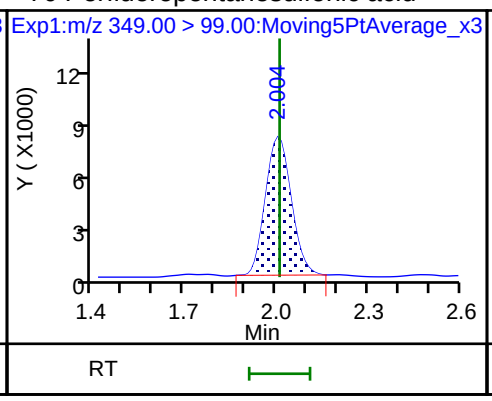
D 7 13C2 PFHxA



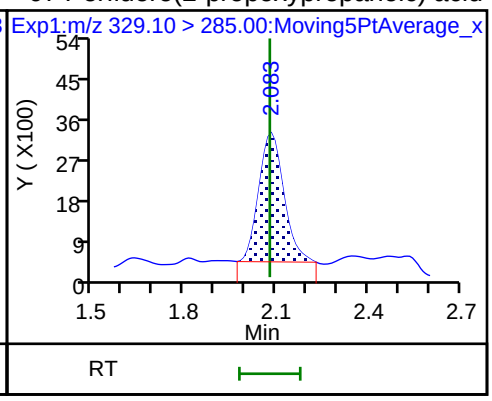
70 Perfluoropentanesulfonic acid



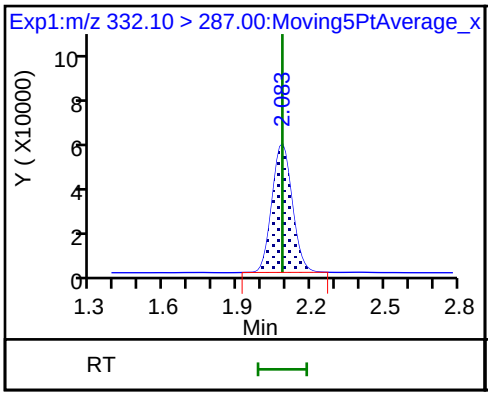
70 Perfluoropentanesulfonic acid



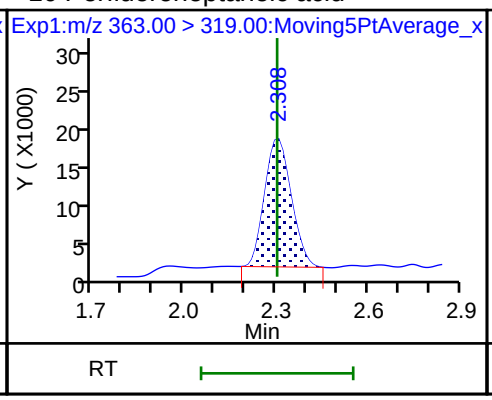
67 Perfluoro(2-propoxypropanoic) acid



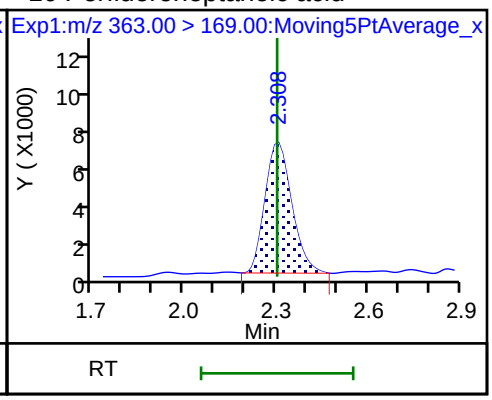
D 64 13C3 HFPO-DA



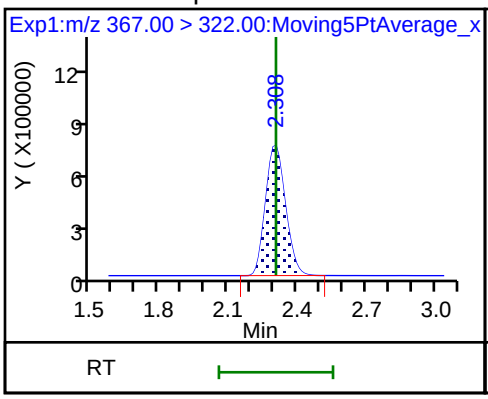
10 Perfluoroheptanoic acid



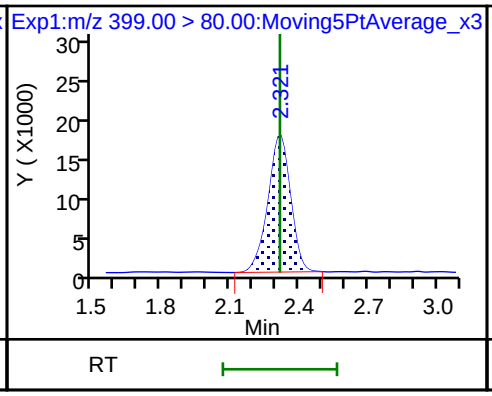
10 Perfluoroheptanoic acid



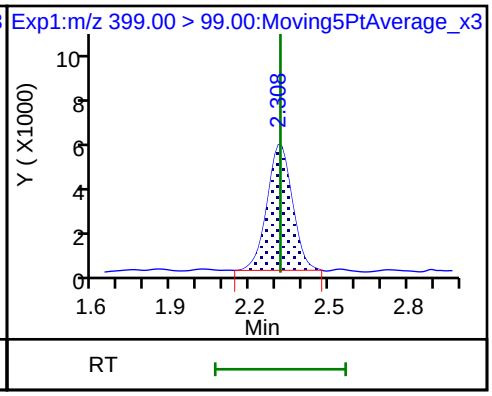
D 9 13C4-PFHpA



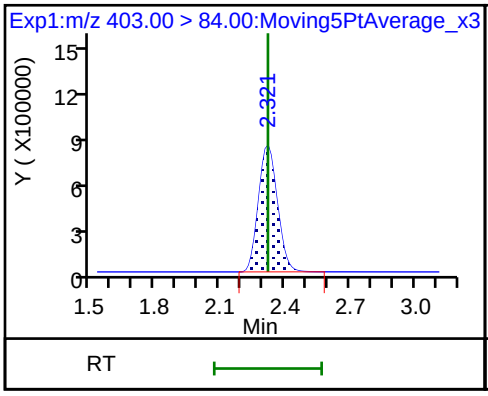
8 Perfluorohexanesulfonic acid



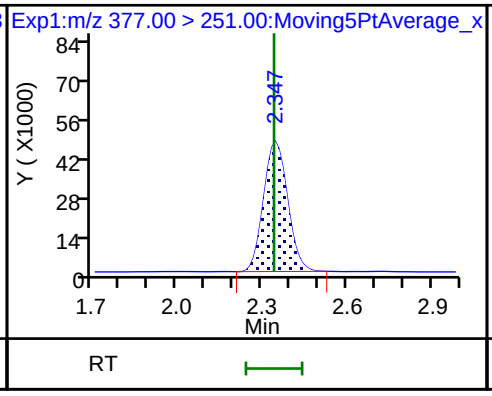
8 Perfluorohexanesulfonic acid



D 11 18O2 PFHxS



65 Adona



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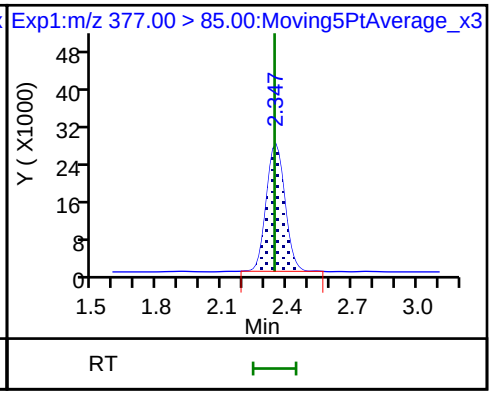
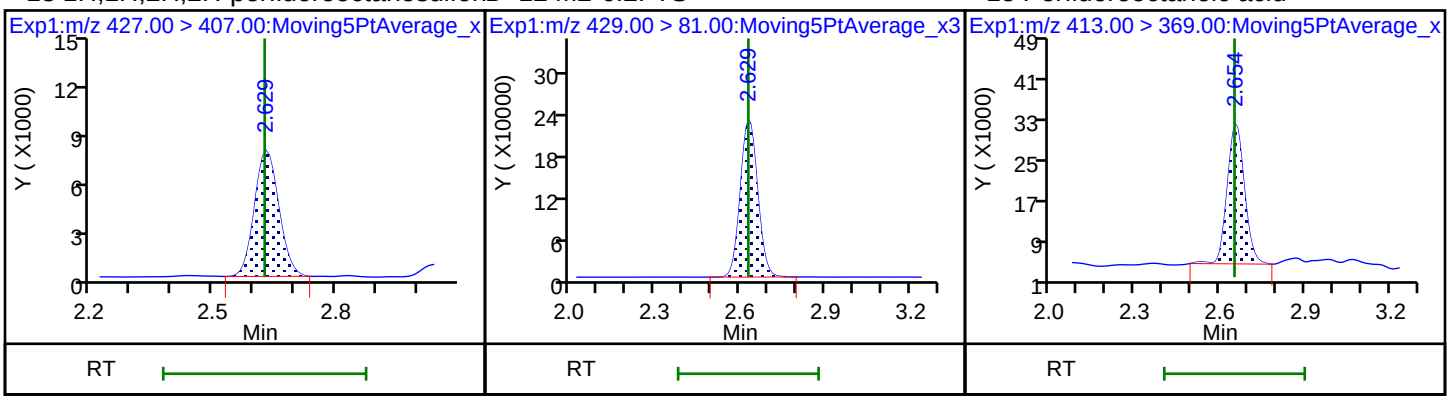
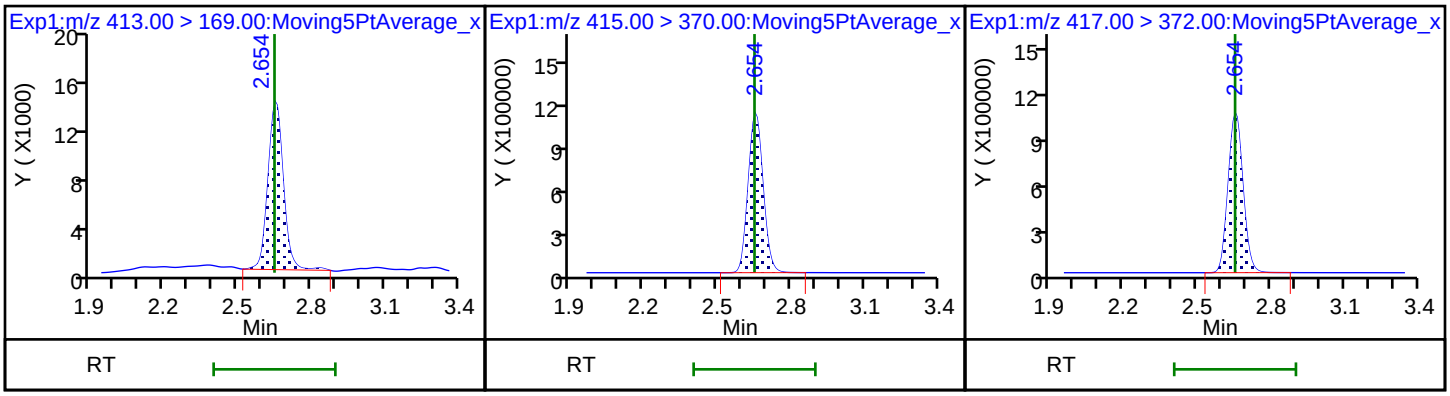


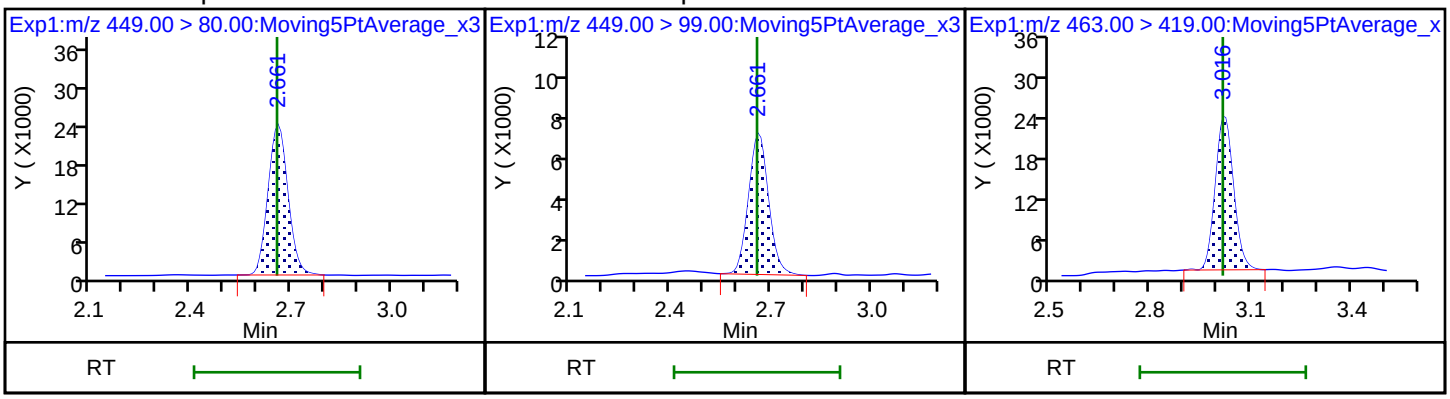
13 1H,1H,2H,2H-perfluorooctanesulfon D 12 M2-6:2FTS 15 Perfluorooctanoic acid



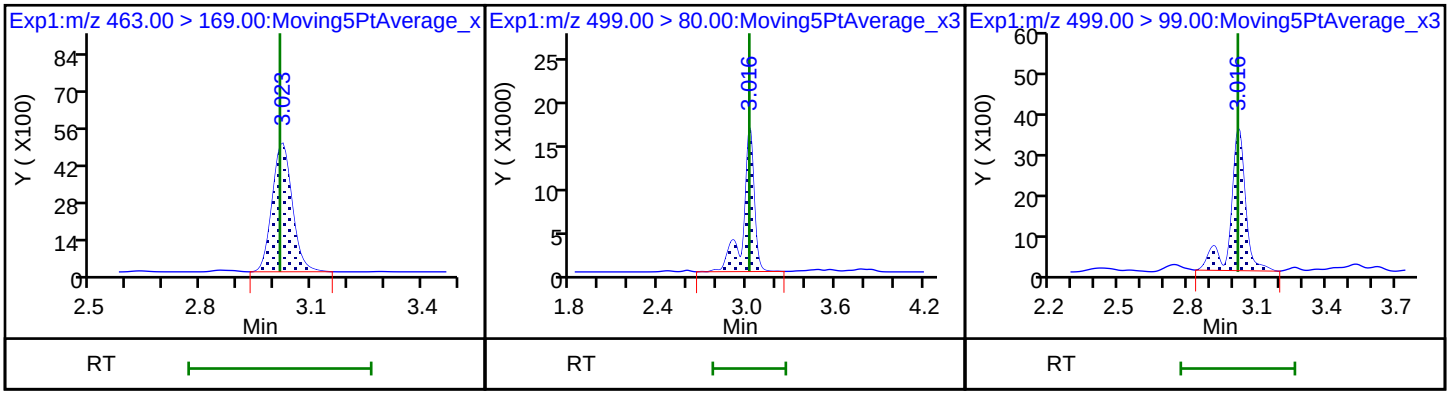
15 Perfluorooctanoic acid * 62 13C2-PFOA D 14 13C4 PFOA



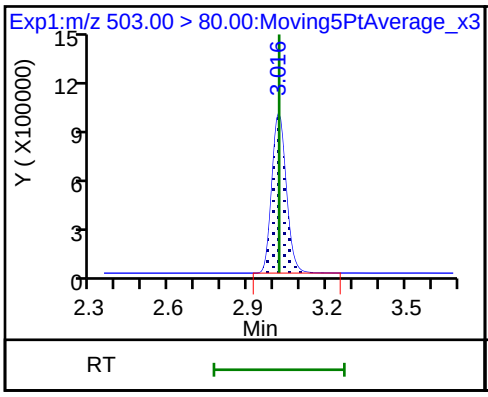
16 Perfluoroheptanesulfonic acid 16 Perfluoroheptanesulfonic acid 20 Perfluorononanoic acid



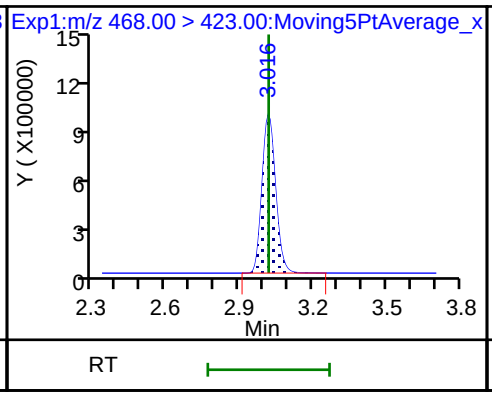
20 Perfluorononanoic acid 17 Perfluorooctane sulfonic acid 17 Perfluorooctane sulfonic acid



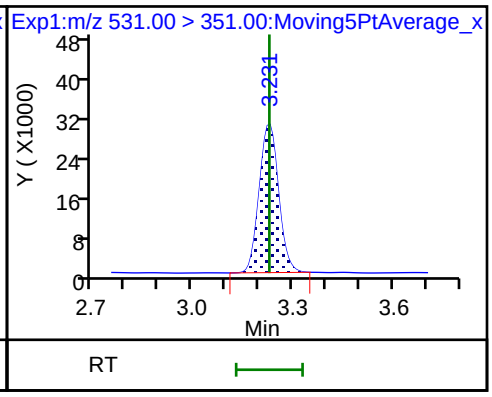
D 18 13C4 PFOS



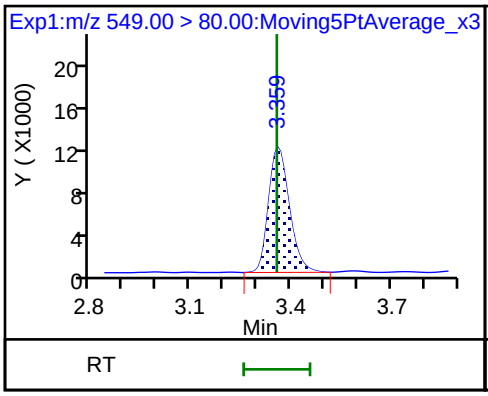
D 19 13C5 PFNA



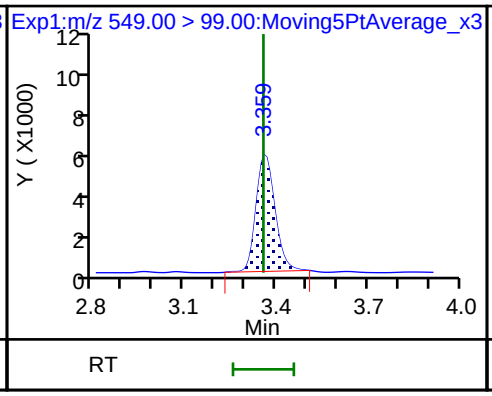
69 9-Chlorohexadecafluoro-3-oxanonane



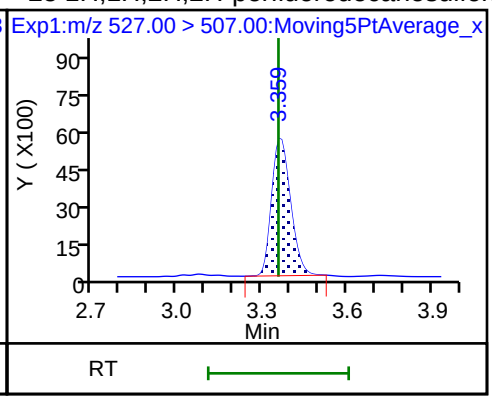
68 Perfluorononanesulfonic acid



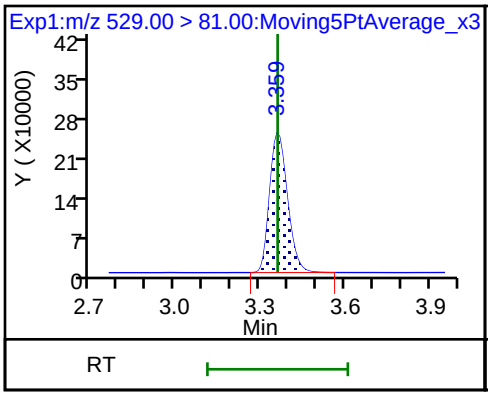
68 Perfluorononanesulfonic acid



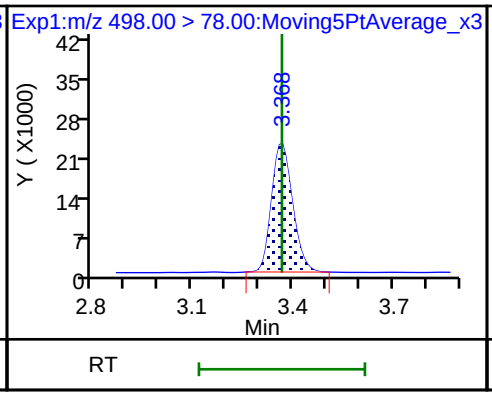
25 1H,1H,2H,2H-perfluorodecanesulfoni



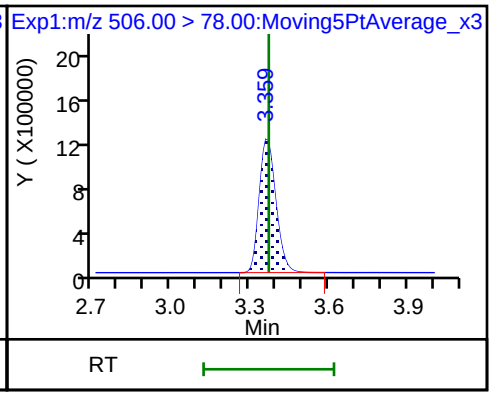
D 26 M2-8:2FTS



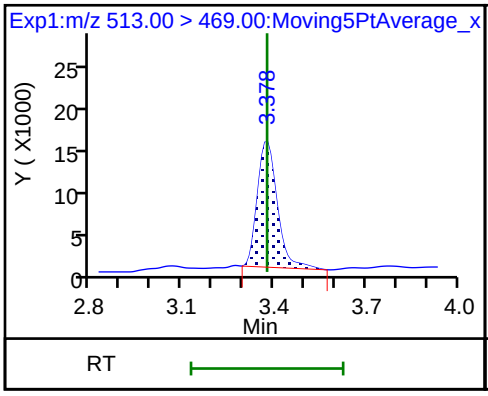
22 Perfluorooctane Sulfonamide



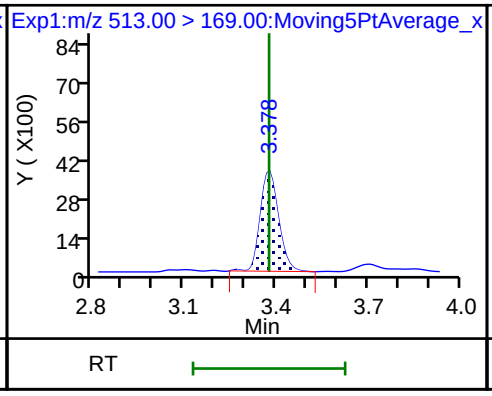
D 21 13C8 FOSA



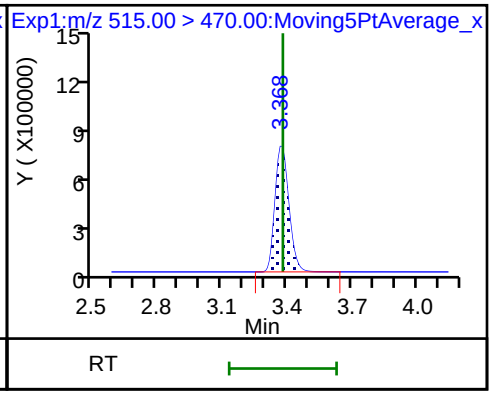
24 Perfluorodecanoic acid



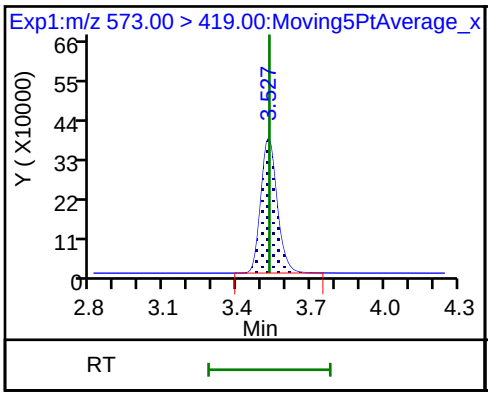
24 Perfluorodecanoic acid



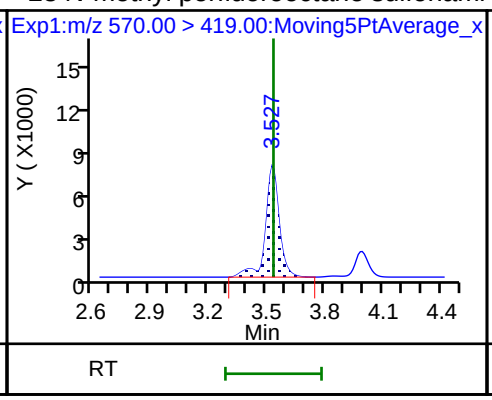
D 23 13C2 PFDA



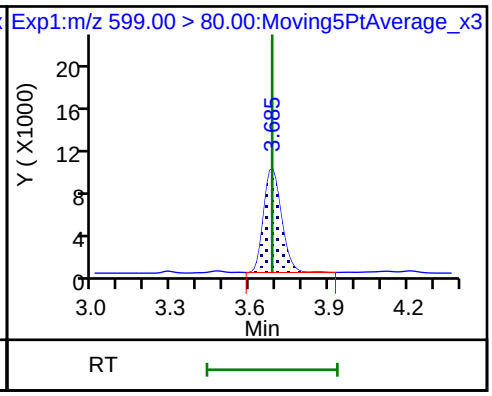
D 27 d3-NMeFOSAA



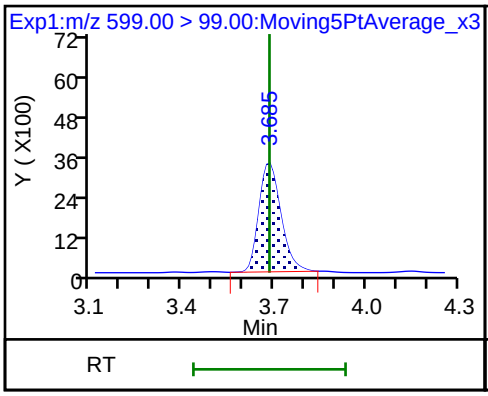
28 N-methyl perfluorooctane sulfonami



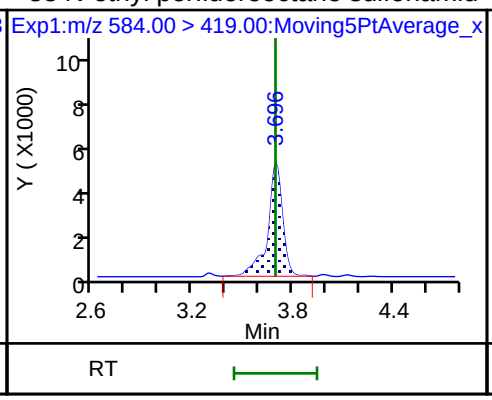
29 Perfluorodecane Sulfonic acid



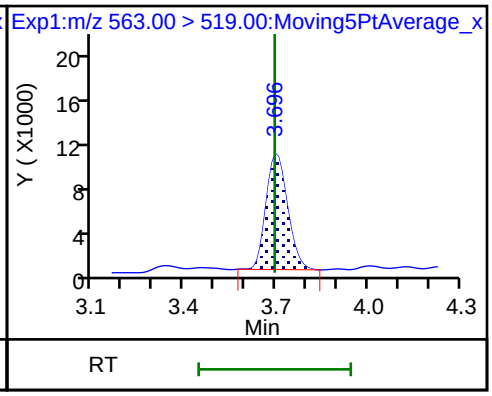
29 Perfluorodecane Sulfonic acid



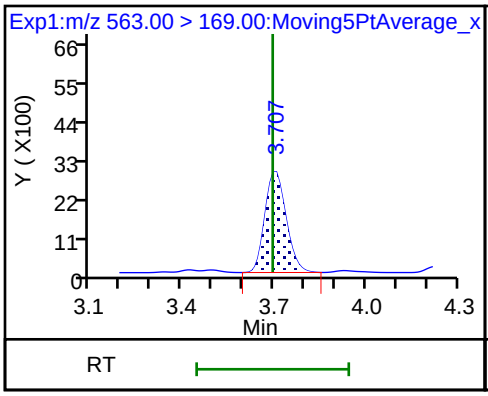
33 N-ethyl perfluorooctane sulfonamid



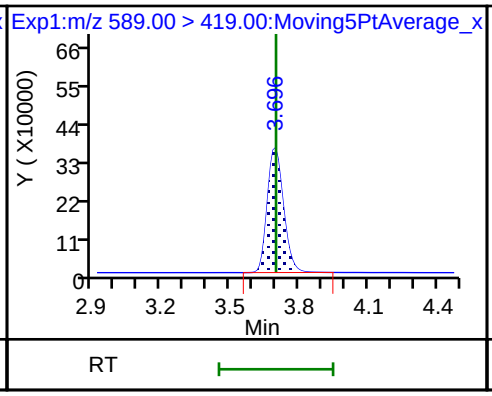
31 Perfluoroundecanoic acid



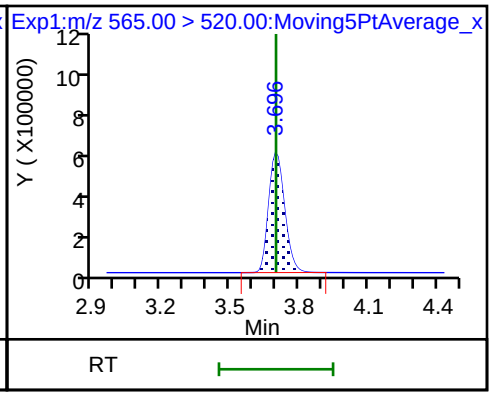
31 Perfluoroundecanoic acid



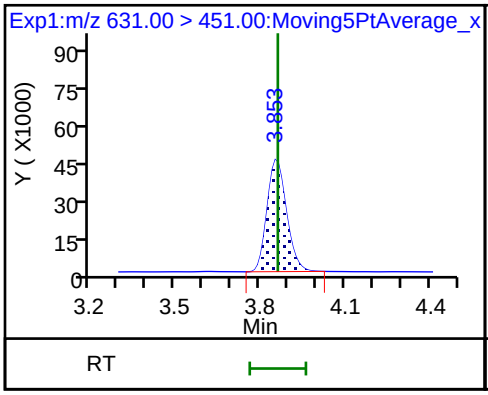
D 32 d5-NEtFOSAA



D 30 13C2 PFUnA



66 11-Chloroeicosafluoro-3-oxaundecan



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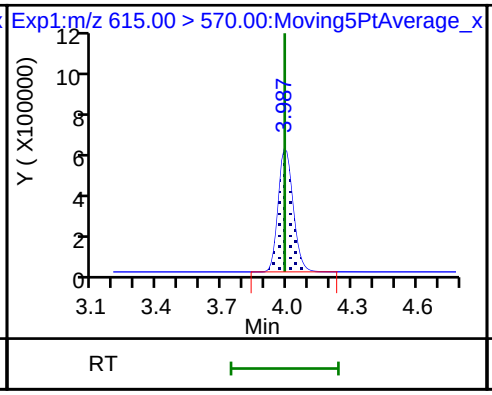
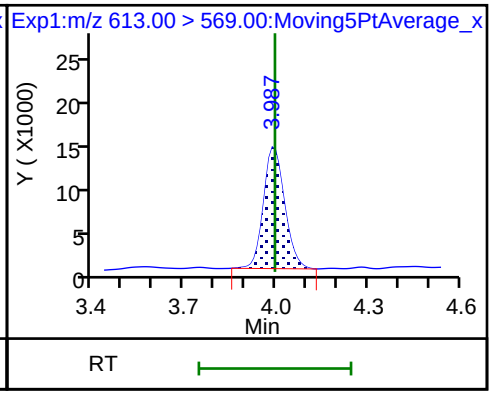
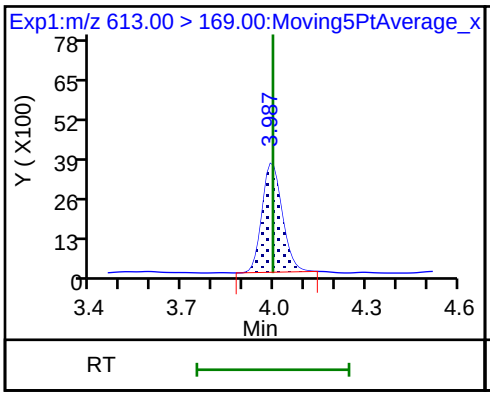


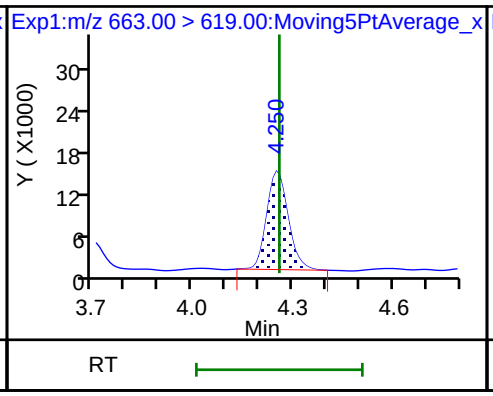
37 Perfluorododecanoic acid



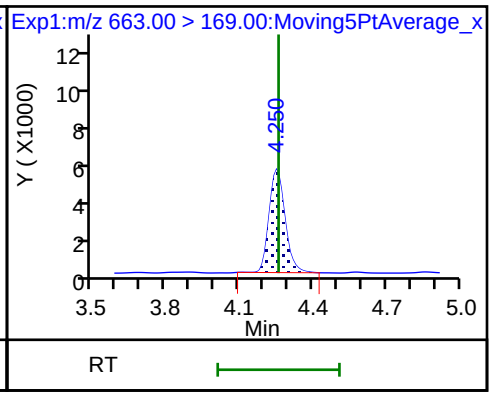
37 Perfluorododecanoic acid



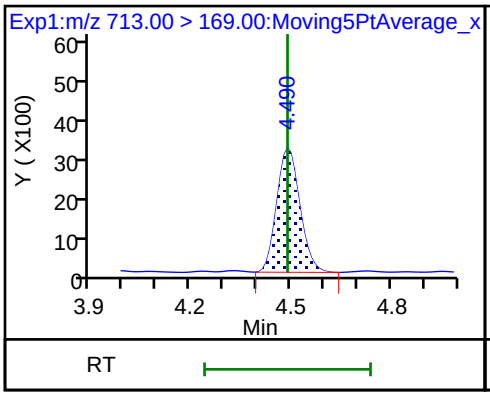
41 Perfluorotridecanoic acid



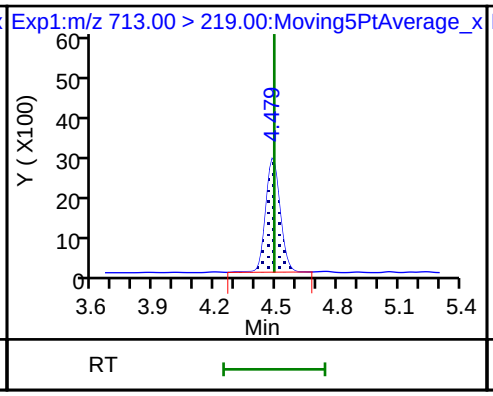
41 Perfluorotridecanoic acid



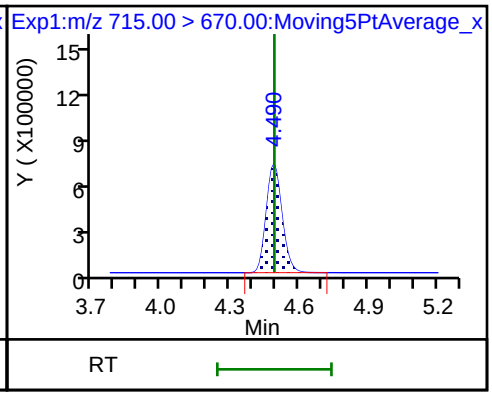
42 Perfluorotetradecanoic acid



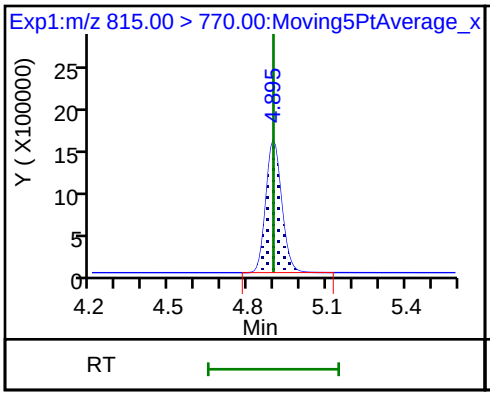
42 Perfluorotetradecanoic acid



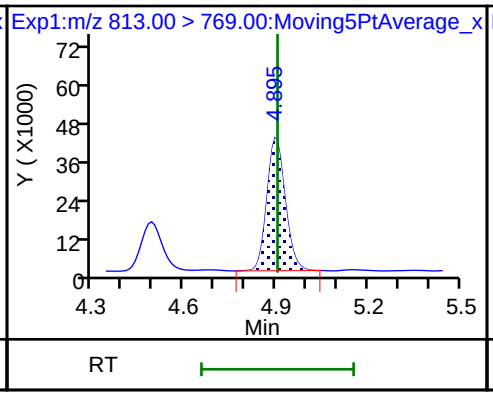
D 43 13C2-PFTeDA



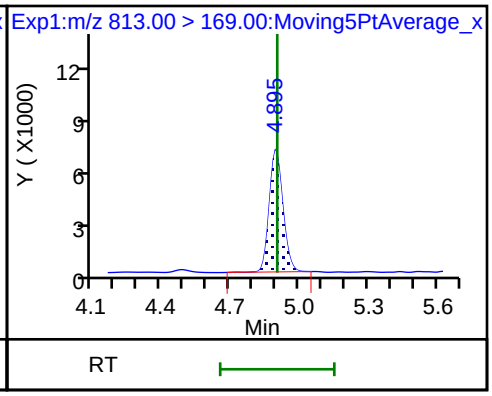
D 44 13C2-PFHxDA



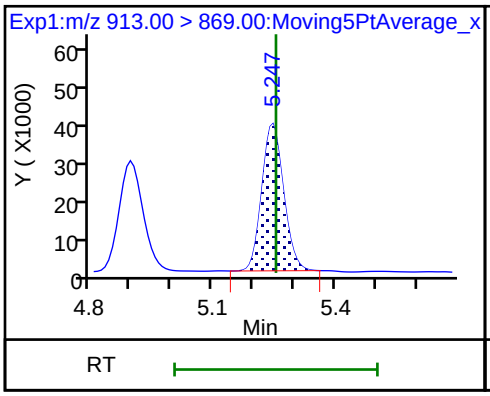
45 Perfluorohexadecanoic acid



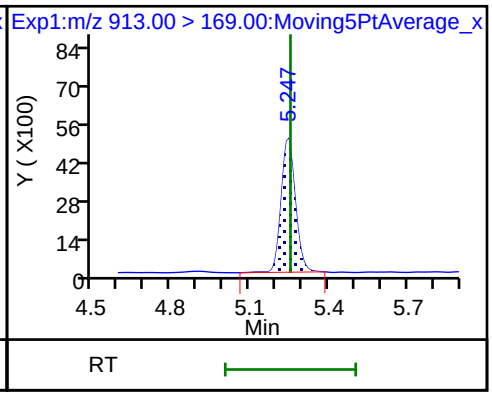
45 Perfluorohexadecanoic acid



46 Perfluorooctadecanoic acid



46 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Lab Sample ID: CCV 320-232797/3 Calibration Date: 07/06/2018 23:53

Instrument ID: A8_N Calib Start Date: 07/05/2018 08:51

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 07/05/2018 09:38

Lab File ID: 2018.07.06LLC_005.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	1.021	0.9890		0.968	1.00	-3.2	40.0
Perfluoropentanoic acid (PFPeA)	AveID	1.191	1.165		0.978	1.00	-2.2	40.0
Perfluorobutanesulfonic acid (PFBS)	AveID	75.80	76.05		0.887	0.884	0.3	50.0
4:2 FTS	AveID	15.68	16.04		0.956	0.934	2.3	50.0
Perfluorohexanoic acid (PFHxA)	AveID	1.018	1.065		1.05	1.00	4.6	40.0
Perfluoropentanesulfonic acid (PFPeS)	AveID	64.85	68.07		0.985	0.938	5.0	50.0
HFPO-DA (GenX)	AveID	2.299	2.610		1.14	1.00	13.5	40.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.130	1.108		0.981	1.00	-1.9	40.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.156	1.139		0.897	0.910	-1.5	40.0
ADONA	AveID	3.706	3.904		0.992	0.942	5.3	50.0
6:2 FTS	AveID	1.567	1.548		0.937	0.948	-1.2	40.0
Perfluorooctanoic acid (PFOA)	AveID	1.186	1.101		0.930	1.00	-7.1	40.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.339	1.373		0.976	0.952	2.5	50.0
Perfluorononanoic acid (PFNA)	AveID	1.078	1.053		0.977	1.00	-2.3	40.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.168	1.142		0.907	0.928	-2.3	40.0
9-Chlorohexadecafluoro-3-oxa nonane-1-sulfonate	AveID	1.891	1.901		0.937	0.932	0.5	50.0
8:2 FTS	AveID	1.321	1.379		1.00	0.958	4.4	40.0
Perfluorononanesulfonic acid (PFNS)	AveID	0.8126	0.7897		0.933	0.960	-2.8	50.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9917	1.026		1.03	1.00	3.5	40.0
Perfluorodecanoic acid (PFDA)	AveID	1.042	0.9779		0.938	1.00	-6.2	40.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	1.029	1.040		1.01	1.00	1.0	40.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.7195	0.7236		0.969	0.964	0.6	50.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.9017	0.8608		0.955	1.00	-4.5	40.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.8501	0.8762		1.03	1.00	3.1	40.0
11-Chloroeicosafluoro-3-oxau ndecane-1-sulfonate	AveID	2.884	3.106		1.01	0.942	7.7	50.0
Perfluorododecanoic acid (PFDoA)	AveID	1.102	1.107		1.00	1.00	0.4	40.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.227	1.043		0.850	1.00	-15.0	50.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2708	0.2398		0.886	1.00	-11.4	50.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		1.038		1.07	1.00	7.0	50.0

FORM VII 537 (modified)

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Lab Sample ID: CCV 320-232797/3 Calibration Date: 07/06/2018 23:53

Instrument ID: A8_N Calib Start Date: 07/05/2018 08:51

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 07/05/2018 09:38

Lab File ID: 2018.07.06LLC_005.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.164	1.184		1.02	1.00	1.7	50.0
13C4 PFBA	Ave	1.384	1.309		2.36	2.50	-5.4	50.0
13C5 PFPeA	Ave	1.025	0.9526		2.32	2.50	-7.0	50.0
13C3-PFBS	Ave	0.0245	0.0231		2.19	2.33	-5.9	50.0
M2-4:2FTS	Ave	0.1575	0.1559		2.31	2.34	-1.1	50.0
13C2 PFHxA	Ave	1.097	1.047		2.39	2.50	-4.5	50.0
13C3 HFPO-DA	Ave	0.0899	0.0790		2.20	2.50	-12.1	50.0
13C4-PFHpA	Ave	0.9735	0.9824		2.52	2.50	0.9	50.0
18O2 PFHxS	Ave	1.198	1.185		2.34	2.37	-1.1	50.0
M2-6:2FTS	Ave	0.2186	0.2201		2.39	2.38	0.7	40.0
13C4 PFOA	Ave	0.9539	0.9587		2.51	2.50	0.5	50.0
13C4 PFOS	Ave	0.8551	0.8348		2.33	2.39	-2.4	50.0
13C5 PFNA	Ave	0.8109	0.8437		2.60	2.50	4.0	50.0
13C8 FOSA	Ave	1.187	1.113		2.34	2.50	-6.2	50.0
M2-8:2FTS	Ave	0.2431	0.2309		2.27	2.40	-5.0	40.0
13C2 PFDA	Ave	0.6992	0.7348		2.63	2.50	5.1	50.0
d3-NMeFOSAA	Ave	0.4120	0.4024		2.44	2.50	-2.3	50.0
d5-NEtFOSAA	Ave	0.4070	0.4020		2.47	2.50	-1.2	50.0
13C2 PFUnA	Ave	0.5873	0.5581		2.38	2.50	-5.0	50.0
13C2 PFDoA	Ave	0.6294	0.6418		2.55	2.50	2.0	50.0
13C2-PFTeDA	Ave	0.7673	0.7454		2.43	2.50	-2.8	50.0
13C2-PFHxDA	Ave	1.420	1.434		2.53	2.50	1.0	50.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180706-60754.b\2018.07.06LLC_005.d
Lims ID: CCV L4
Client ID:
Sample Type: CCVIS
Inject. Date: 06-Jul-2018 23:53:43 ALS Bottle#: 13 Worklist Smp#: 3
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV L4
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-A8_N*sub32

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180706-60754.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 09-Jul-2018 12:49:50 Calib Date: 05-Jul-2018 09:38:17
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180705-60684.b\2018.07.05LLICALAA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK010

First Level Reviewer: mongkols Date: 09-Jul-2018 12:49:50

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.428	1.430	-0.002	0.539	5829537	2.36		94.6	20684	
2 Perfluorobutyric acid										
212.90 > 169.00	1.433	1.433	0.0	1.004	2306268	0.9683		96.8	830	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.707	1.707	0.0	1.000	1976231	0.9779		97.8	1364	
D 3 13C5-PFPeA										
267.90 > 223.00	1.707	1.711	-0.004	0.644	4242590	2.32		93.0	43415	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.743	1.743	0.0	1.000	2760822	0.8869		100	10342	
298.90 > 99.00	1.743	1.743	0.0	1.000	1125211		2.45(1.25-3.74)		8472	
D 47 13C3-PFBS										
301.90 > 83.00	1.743	1.747	-0.004	0.658	95479	2.19		94.1	719	
61 1H,1H,2H,2H-perfluorohexanesulfoni										
327.00 > 307.00	1.945	1.945	0.0	1.116	615374	0.9556		102	21596	
D 60 M2-4:2FTS										
329.00 > 81.00	1.956	1.949	0.007	0.738	648364	2.31		98.9	7150	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.988	1.988	0.0	1.000	1987207	1.05		105	2264	
313.00 > 119.00	1.988	1.988	0.0	1.000	172120		11.55(5.03-15.10)		1411	
D 7 13C2 PFHxA										
315.00 > 270.00	1.988	1.992	-0.004	0.750	4664456	2.39		95.5	45164	
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.010	2.010	0.0	1.153	2622192	0.9846		105	30117	
349.00 > 99.00	2.010	2.010	0.0	1.153	981643		2.67(1.36-4.07)		14076	
67 Perfluoro(2-propoxypropanoic) acid										
329.10 > 285.00	2.078	2.078	0.0	1.000	367341	1.14		114	2154	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.078	2.083	-0.005	0.784	351808	2.20		87.9	6198	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.302	2.302	0.0	1.000	1939432	0.9809		98.1	2725	
363.00 > 169.00	2.302	2.302	0.0	1.000	739950		2.62(1.13-3.40)		4907	
D 9 13C4-PFHpA										
367.00 > 322.00	2.302	2.307	-0.005	0.869	4375390	2.52		101	45460	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.315	2.315	0.0	1.000	2187974	0.8967		98.5	10440	
399.00 > 99.00	2.315	2.315	0.0	1.000	699657		3.13(1.50-4.49)		4192	
D 11 18O2 PFHxS										
403.00 > 84.00	2.315	2.320	-0.005	0.874	4991039	2.34		98.9	45930	
65 Adona										
377.00 > 251.00	2.341	2.341	0.0	0.777	5468646	0.99		105	36926	
377.00 > 85.00	2.341	2.341	0.0	0.777	3184884		1.72(0.84-2.53)		24501	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.626	2.626	0.0	1.000	575463	0.9369		98.8	2984	
D 12 M2-6:2FTS										
429.00 > 81.00	2.626	2.628	-0.002	0.991	931202	2.39		101	21482	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.650	2.650	0.0	1.000	1882869	0.9298		92.9	630	
413.00 > 169.00	2.650	2.650	0.0	1.000	1047489		1.80(0.84-2.52)		4922	
* 62 13C2-PFOA										
415.00 > 370.00	2.650	2.650	0.0		4453728	2.50			43270	
D 14 13C4 PFOA										
417.00 > 372.00	2.650	2.653	-0.003	1.000	4269549	2.51		100	38610	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.658	2.658	0.0	0.882	1943544	0.9757		102	24114	
449.00 > 99.00	2.658	2.658	0.0	0.882	501356		3.88(1.94-5.82)		8373	
20 Perfluorononanoic acid										
463.00 > 419.00	3.015	3.015	0.0	1.000	1582210	0.9769		97.7	4094	
463.00 > 169.00	3.015	3.015	0.0	1.000	384994		4.11(1.90-5.69)		12370	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.015	3.015	0.0	1.000	1575757	0.9071		97.7	11582	
499.00 > 99.00	3.015	3.015	0.0	1.000	362039		4.35(2.31-6.93)		8214	
D 18 13C4 PFOS										
503.00 > 80.00	3.015	3.018	-0.003	1.138	3554195	2.33		97.6	32030	
D 19 13C5 PFNA										
468.00 > 423.00	3.015	3.018	-0.003	1.138	3757383	2.60		104	70150	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.229	3.229	0.0	1.071	2634562	0.9371		101	35103	
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.357	3.357	0.0	1.114	1127418	0.9329		97.2	14478	
549.00 > 99.00	3.357	3.357	0.0	1.114	434119		2.60(1.33-3.97)		14142	
25 1H,1H,2H,2H-perfluorodecanesulfoni										
527.00 > 507.00	3.357	3.357	0.0	0.997	543448	1.00		104	11122	
D 26 M2-8:2FTS										
529.00 > 81.00	3.367	3.361	0.006	1.270	985160	2.27		95.0	15705	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.367	3.367	0.0	1.000	2034997	1.03		103	18583	
D 21 13C8 FOSA										
506.00 > 78.00	3.367	3.371	-0.004	1.270	4956811	2.34		93.8	33952	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.376	3.376	0.0	1.000	1279994	0.9382		93.8	5239	
513.00 > 169.00	3.376	3.376	0.0	1.000	226173		5.66(2.36-7.09)		3685	
D 23 13C2 PFDA										
515.00 > 470.00	3.376	3.380	-0.004	1.274	3272358	2.63		105	52938	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.525	3.529	-0.004	1.330	1792099	2.44		97.7	18823	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.535	3.535	0.0	1.003	745438	1.01		101	5580	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.684	3.684	0.0	1.222	1037281	0.9694		101	24359	
599.00 > 99.00	3.684	3.684	0.0	1.222	342866		3.03(1.39-4.16)		12080	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.694	3.694	0.0	1.000	616372	0.9547		95.5	10507	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.694	3.694	0.0	0.997	871148	1.03		103	4072	
563.00 > 169.00	3.705	3.694	0.011	1.000	206320		4.22(2.12-6.36)		7026	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.694	3.698	-0.004	1.394	1790166	2.47		98.8	13727	
D 30 13C2 PFUnA										
565.00 > 520.00	3.705	3.698	0.007	1.398	2485643	2.38		95.0	28440	
66 11-Chloroeicosafluoro-3-oxaundecan										
631.00 > 451.00	3.862	3.862	0.0	1.281	4351199	1.01		108	39509	
D 36 13C2 PFDoA										
615.00 > 570.00	3.995	3.989	0.006	1.507	2858562	2.55		102	16028	
37 Perfluorododecanoic acid										
613.00 > 569.00	3.995	3.995	0.0	1.000	1265347	1.00		100	1475	
613.00 > 169.00	3.995	3.995	0.0	1.000	300736		4.21(2.13-6.40)		5826	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.259	4.259	0.0	1.066	1192890	0.8499		85.0	1415	
663.00 > 169.00	4.259	4.259	0.0	1.066	366345		3.26(1.25-3.76)		8794	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.489	4.489	0.0	1.000	318477	0.8857		88.6	5546	
713.00 > 219.00	4.489	4.489	0.0	1.000	238651		1.33(0.71-2.13)		6192	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.489	4.491	-0.002	1.694	3319864	2.43		97.2	12967	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.895	4.896	-0.001	1.847	6388341	2.53		101	12769	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.904	4.904	0.0	1.002	2652129	1.07		107	1220	
813.00 > 169.00	4.895	4.904	-0.009	1.000	406313		6.53(2.86-8.58)		4615	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.254	5.254	0.0	1.073	3024899	1.02		102	1008	
913.00 > 169.00	5.247	5.254	-0.007	1.072	346352		8.73(3.83-11.48)		3984	

Reagents:

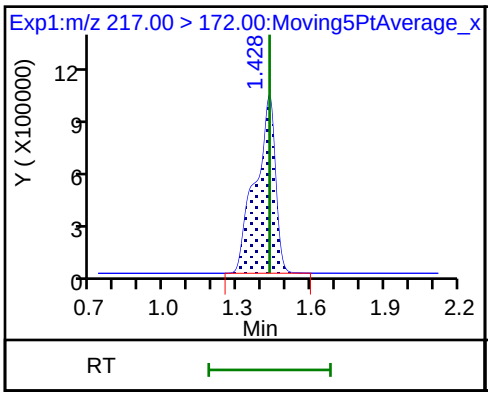
LCPFC_LL4_00005 Amount Added: 1.00 Units: mL

Report Date: 09-Jul-2018 12:49:51 Chrom Revision: 2.2 07-Jun-2018 07:41:54

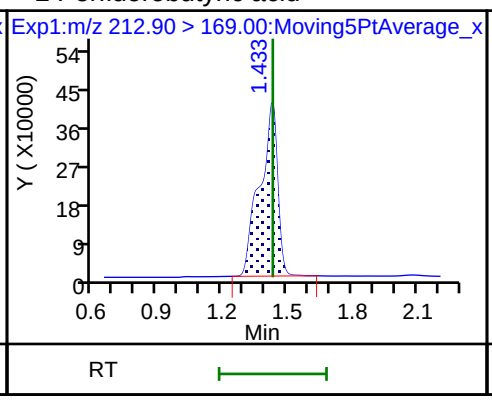
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180706-60754.b\2018.07.06LLC_005.d
Injection Date: 06-Jul-2018 23:53:43 Instrument ID: A8_N
Lims ID: CCV L4
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 13 Worklist Smp#: 3
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC ICAL

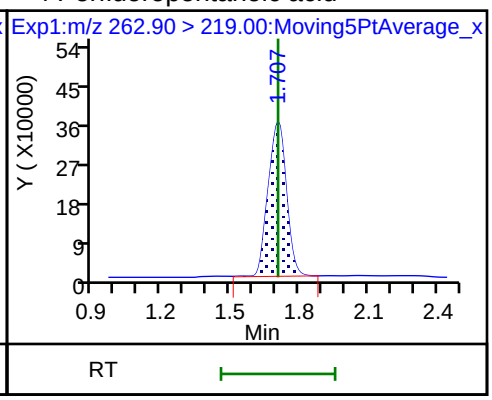
D 1 13C4 PFBA



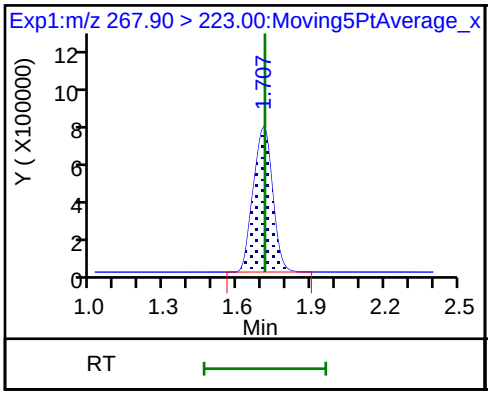
2 Perfluorobutyric acid



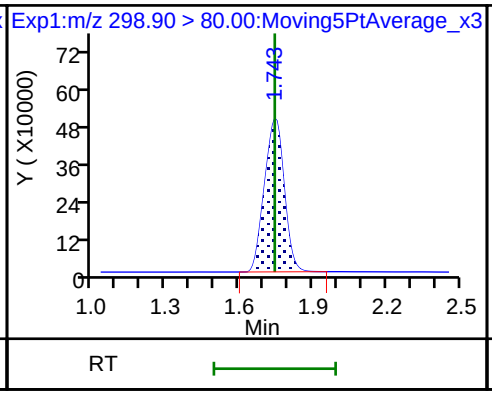
4 Perfluoropentanoic acid



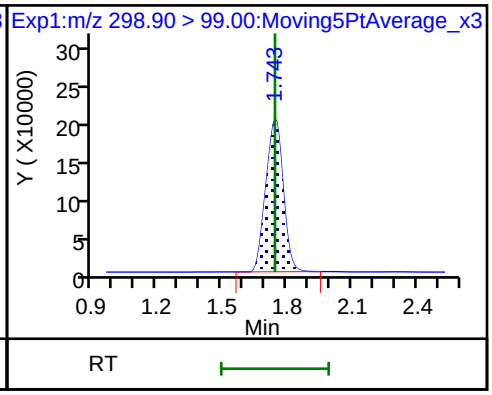
D 3 13C5-PFPeA



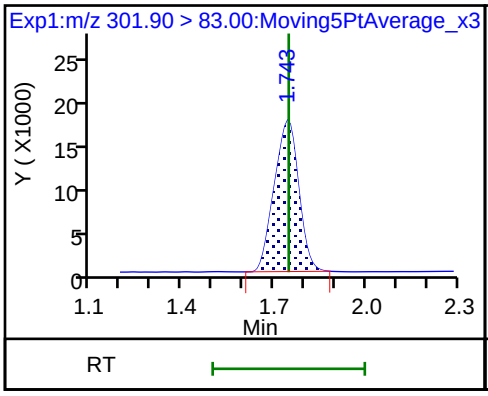
5 Perfluorobutanesulfonic acid



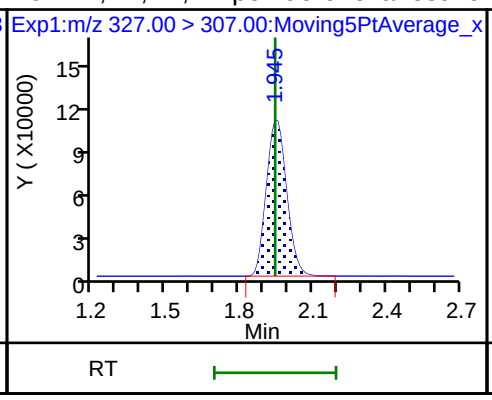
5 Perfluorobutanesulfonic acid



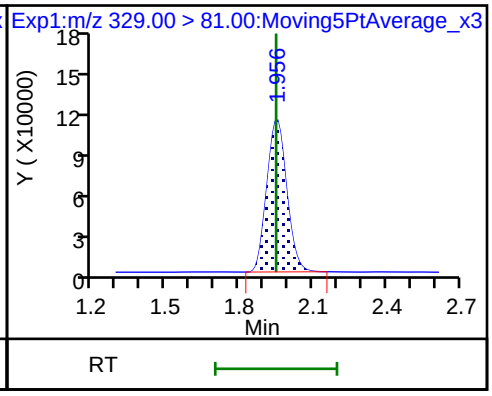
D 47 13C3-PFBS



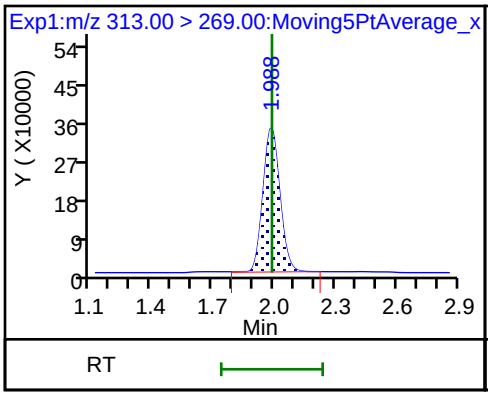
61 1H,1H,2H,2H-perfluorohexanesulfon



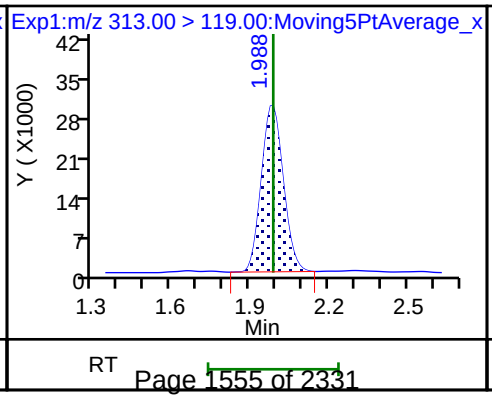
D 60 M2-4:2FTS



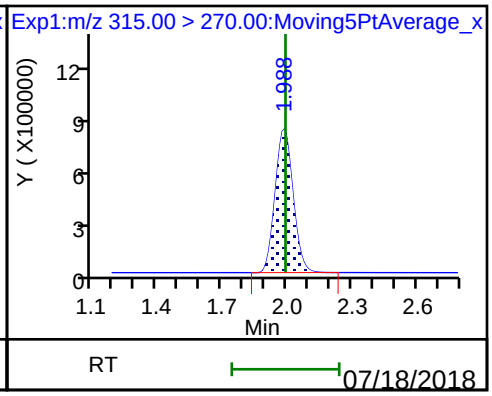
6 Perfluorohexanoic acid



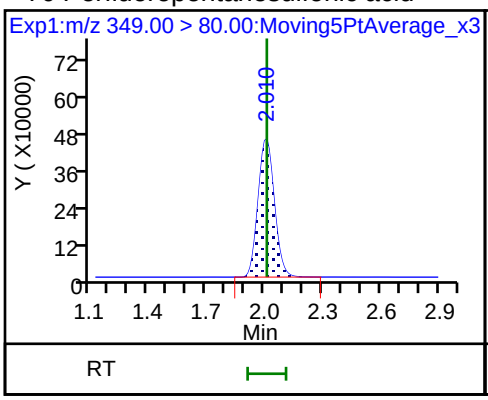
6 Perfluorohexanoic acid



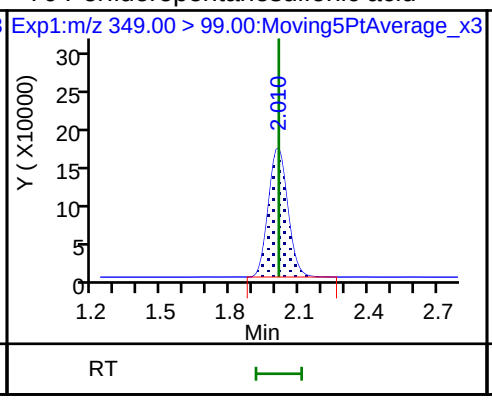
D 7 13C2 PFHxA



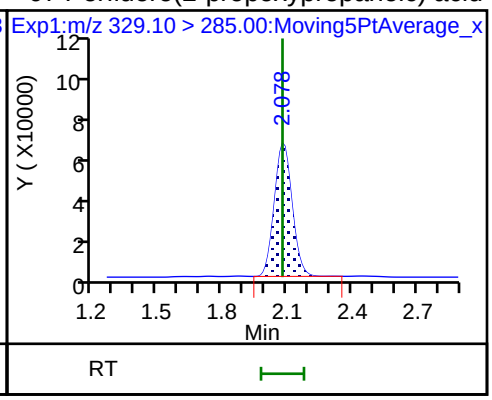
70 Perfluoropentanesulfonic acid



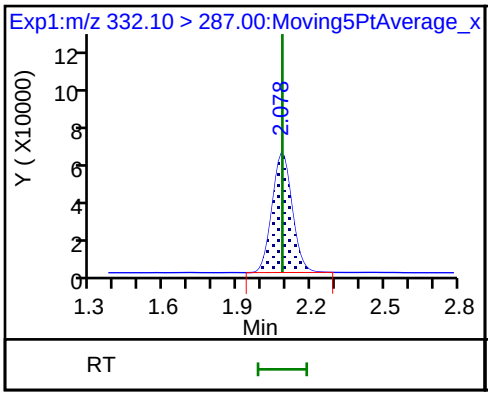
70 Perfluoropentanesulfonic acid



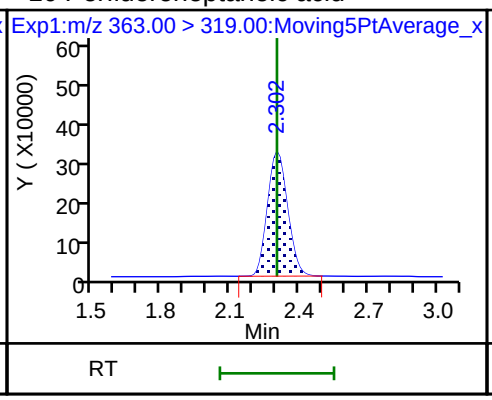
67 Perfluoro(2-propoxypropanoic) acid



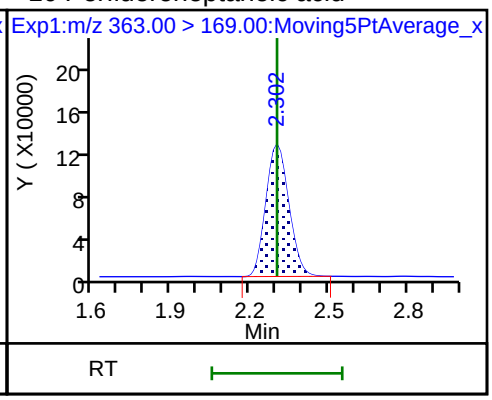
D 64 13C3 HFPO-DA



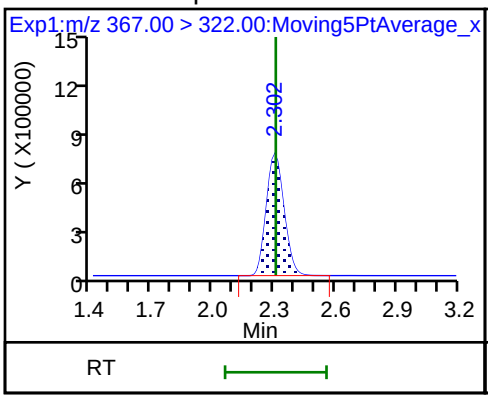
10 Perfluoroheptanoic acid



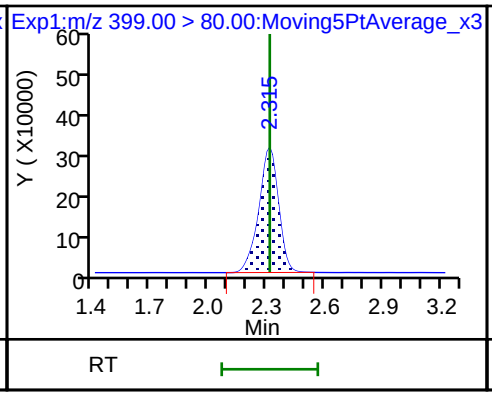
10 Perfluoroheptanoic acid



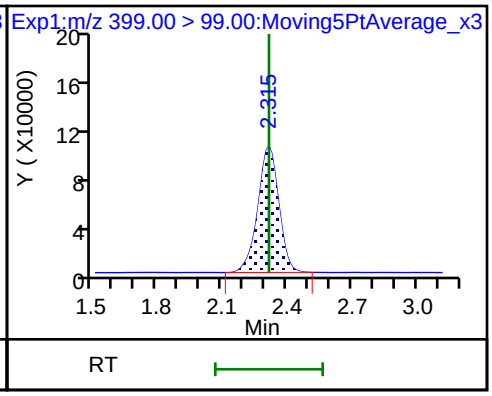
D 9 13C4-PFHpA



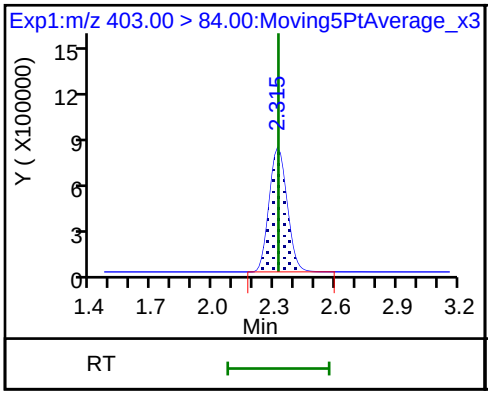
8 Perfluorohexanesulfonic acid



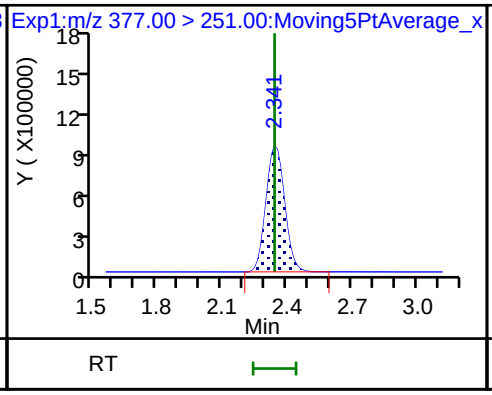
8 Perfluorohexanesulfonic acid



D 11 18O2 PFHxS



65 Adona



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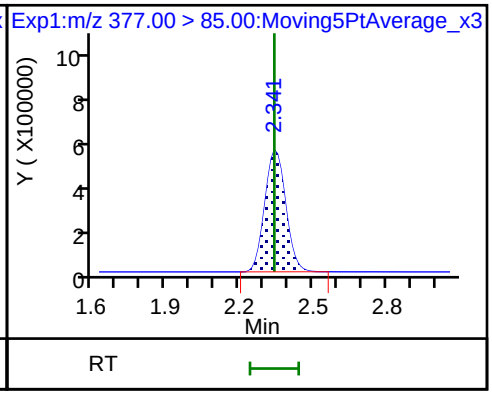
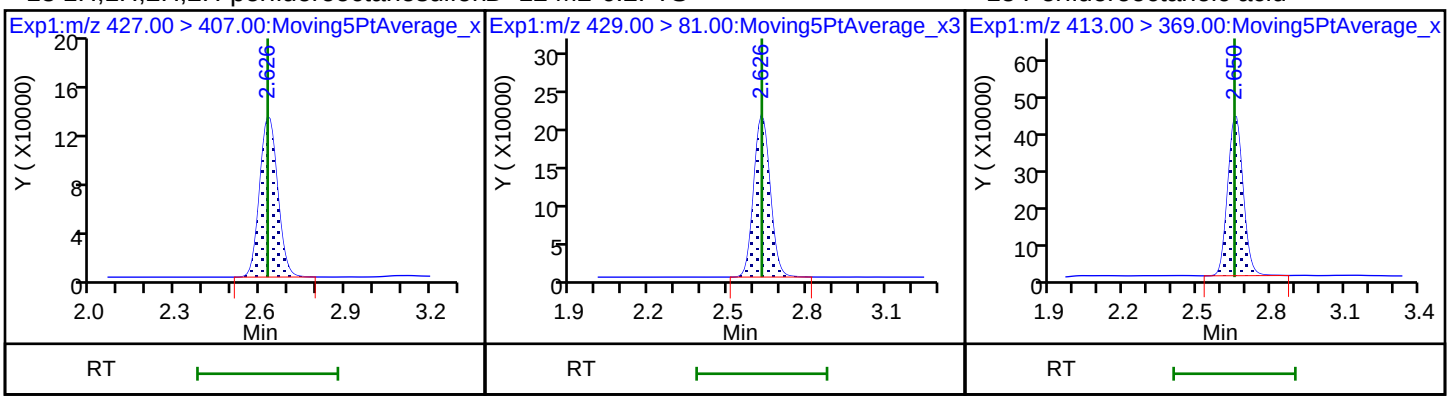
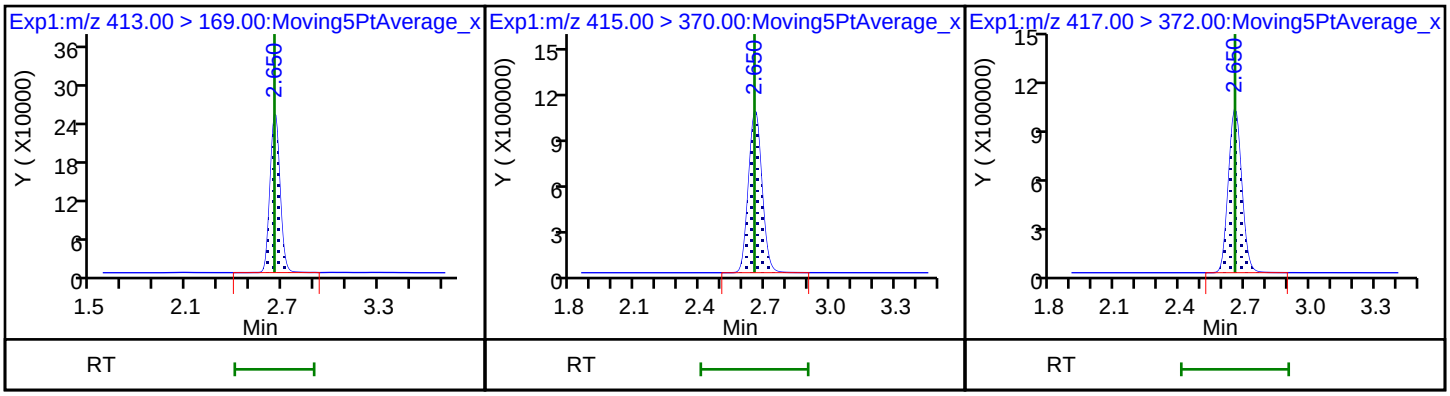


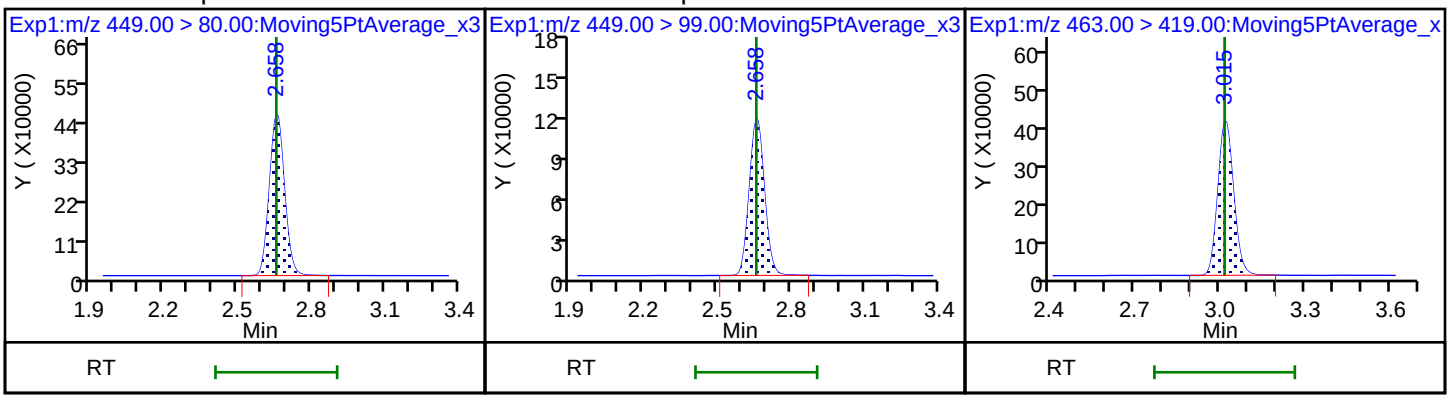
13 1H,1H,2H,2H-perfluorooctanesulfonD 12 M2-6:2FTS 15 Perfluorooctanoic acid



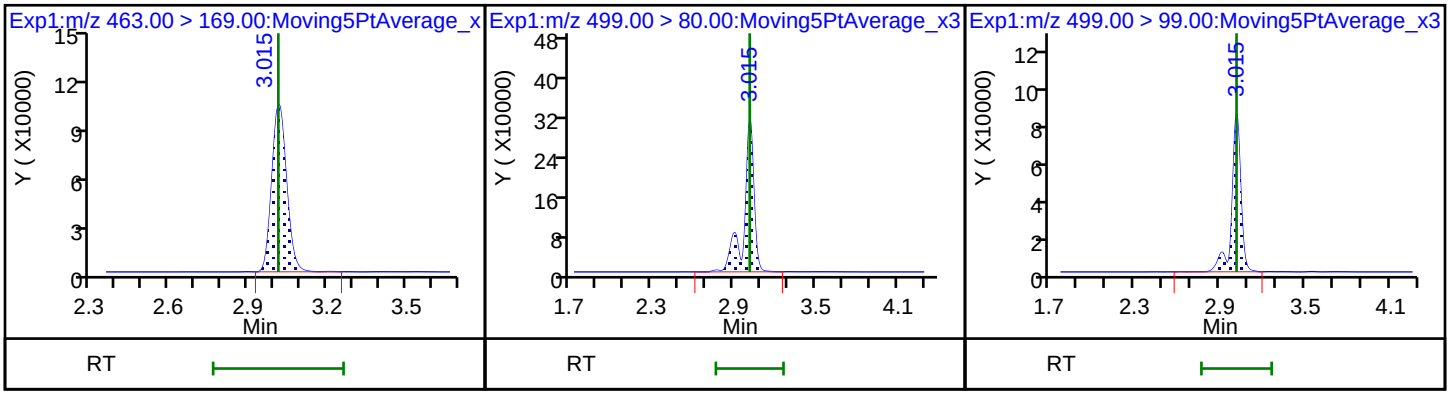
15 Perfluorooctanoic acid * 62 13C2-PFOA D 14 13C4 PFOA



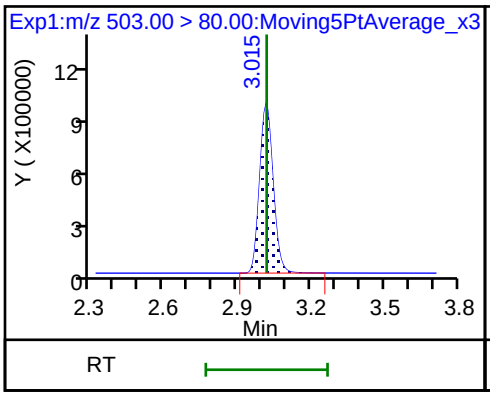
16 Perfluoroheptanesulfonic acid 16 Perfluoroheptanesulfonic acid 20 Perfluorononanoic acid



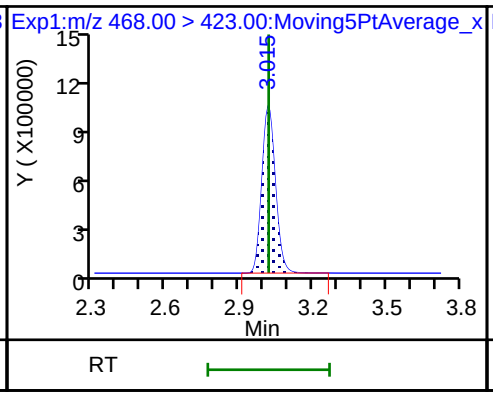
20 Perfluorononanoic acid 17 Perfluorooctane sulfonic acid 17 Perfluorooctane sulfonic acid



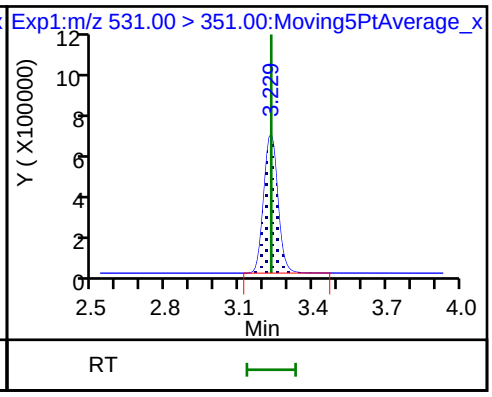
D 18 13C4 PFOS



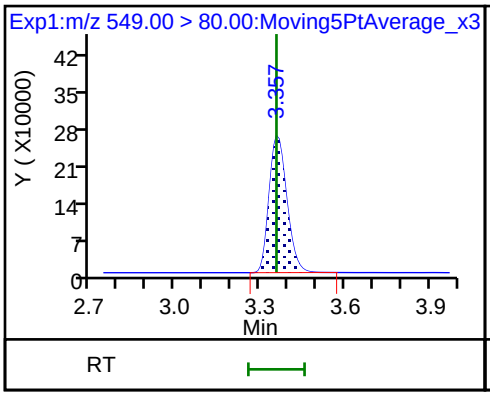
D 19 13C5 PFNA



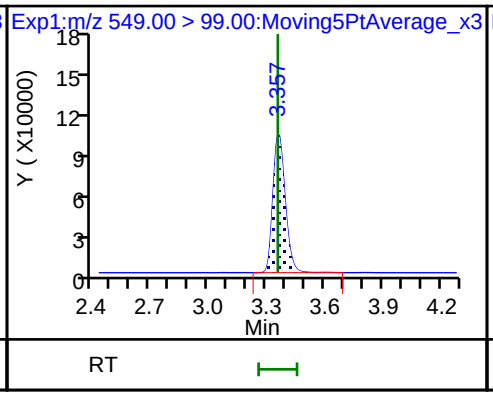
69 9-Chlorohexadecafluoro-3-oxanonane



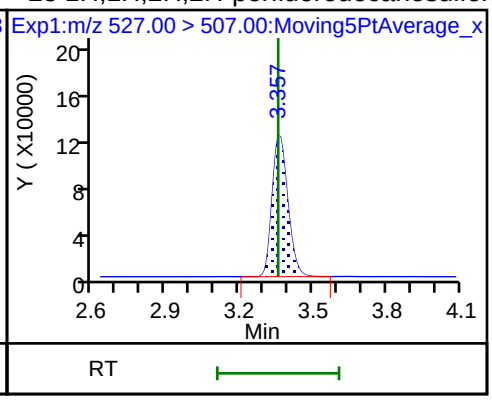
68 Perfluorononanesulfonic acid



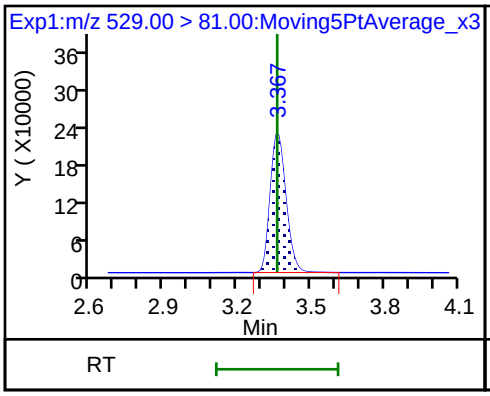
68 Perfluorononanesulfonic acid



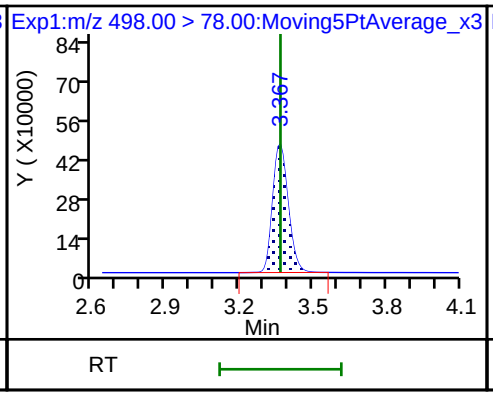
25 1H,1H,2H,2H-perfluorodecanesulfoni



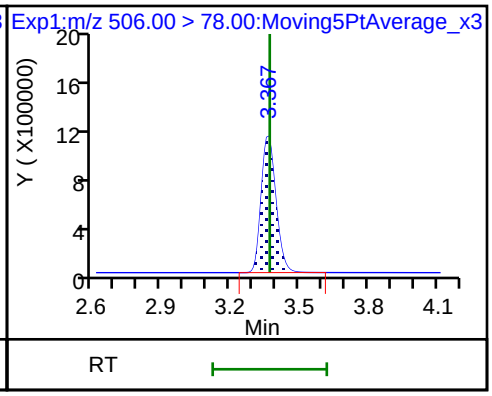
D 26 M2-8:2FTS



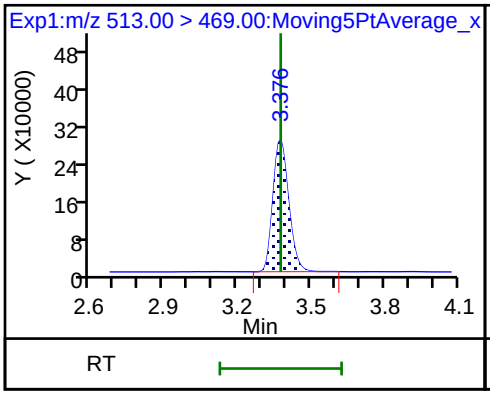
22 Perfluorooctane Sulfonamide



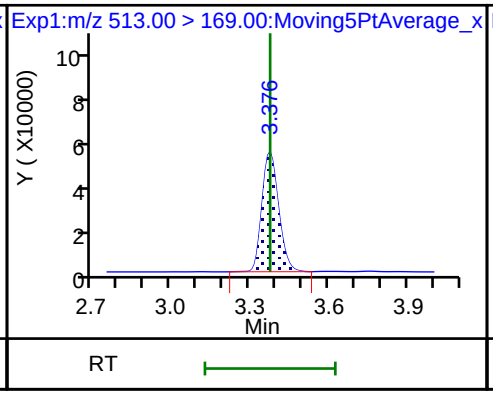
D 21 13C8 FOSA



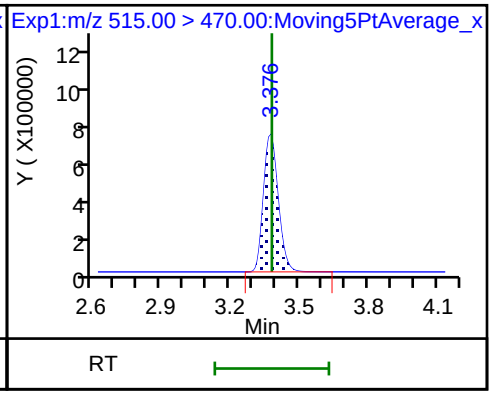
24 Perfluorodecanoic acid



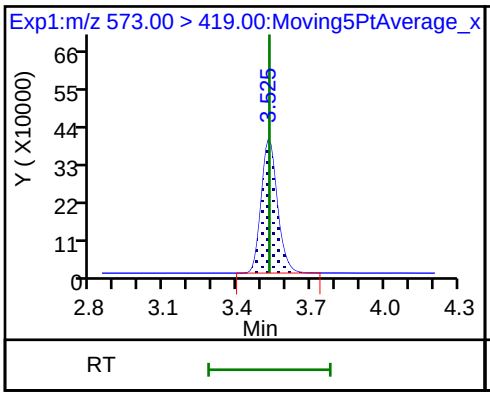
24 Perfluorodecanoic acid



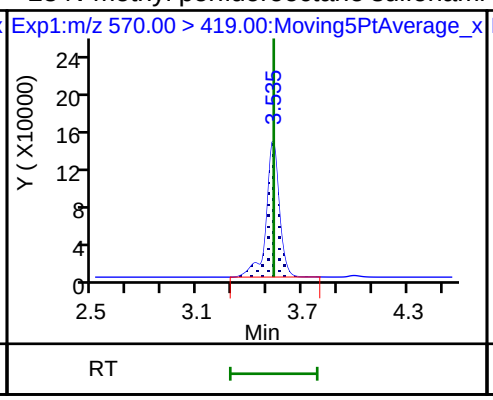
D 23 13C2 PFDA



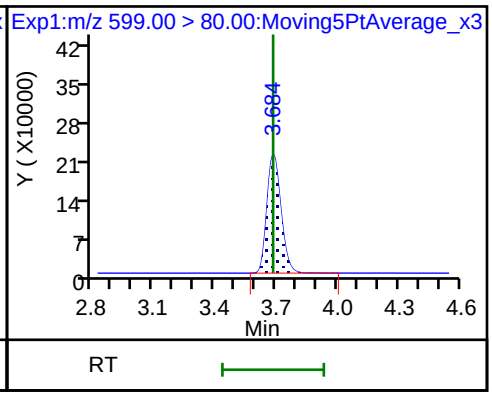
D 27 d3-NMeFOSAA



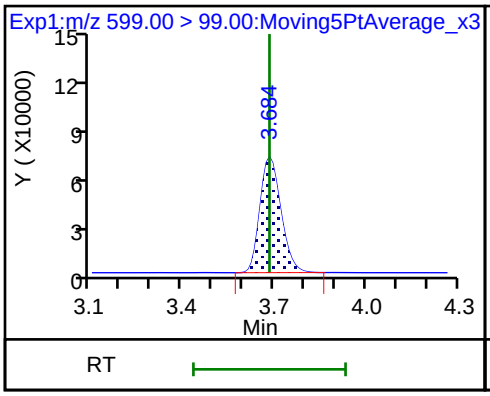
28 N-methyl perfluorooctane sulfonami



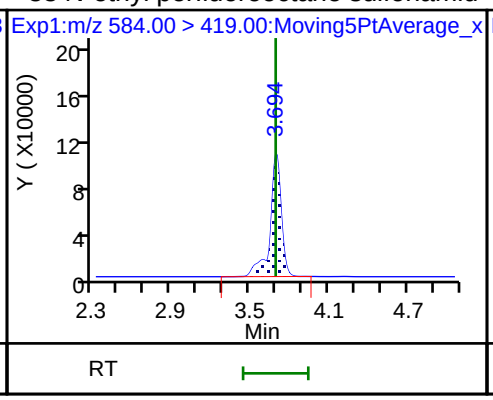
29 Perfluorodecane Sulfonic acid



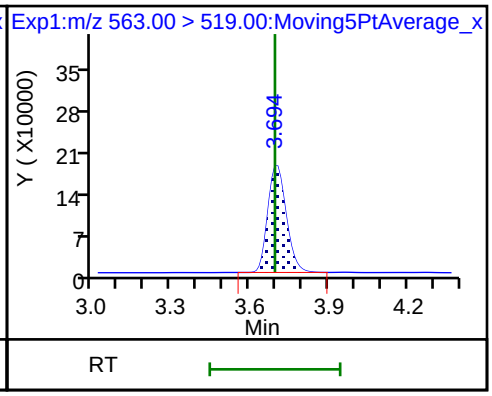
29 Perfluorodecane Sulfonic acid



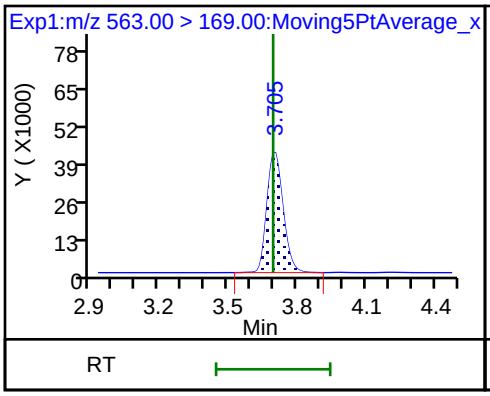
33 N-ethyl perfluorooctane sulfonamid



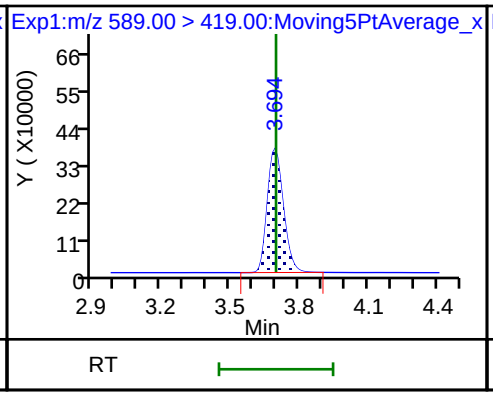
31 Perfluoroundecanoic acid



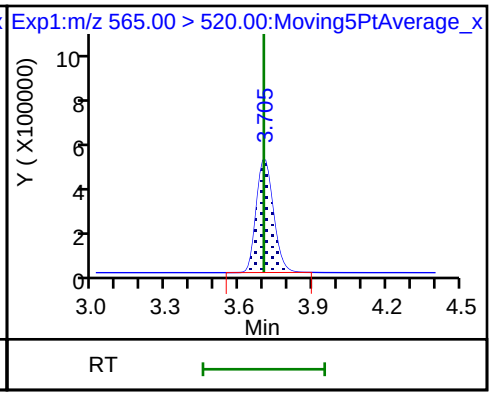
31 Perfluoroundecanoic acid



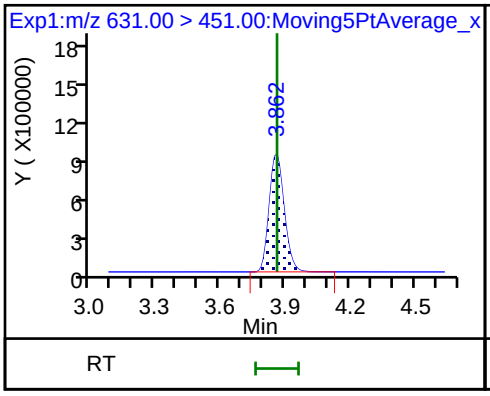
D 32 d5-NEtFOSAA



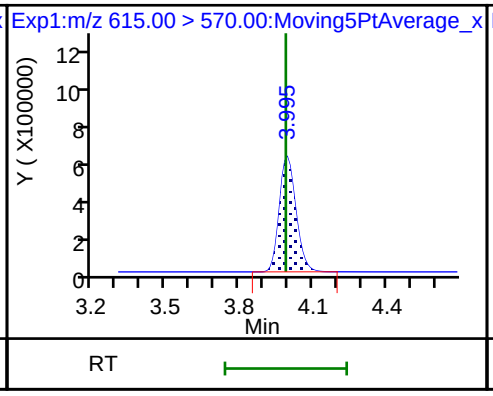
D 30 13C2 PFUnA



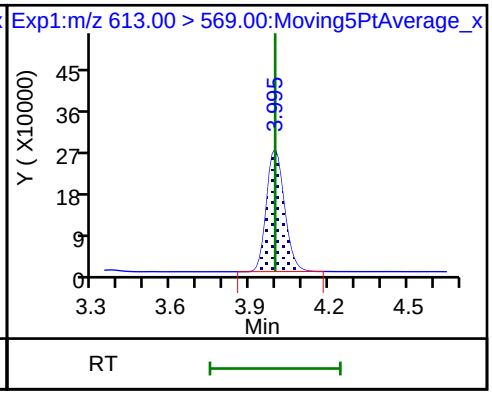
66 11-Chloroeicosafluoro-3-oxaundecan



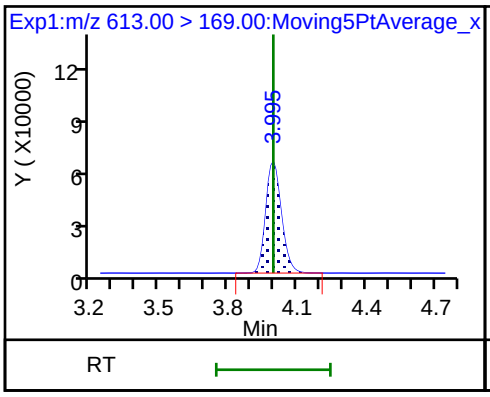
D 36 13C2 PFDoA



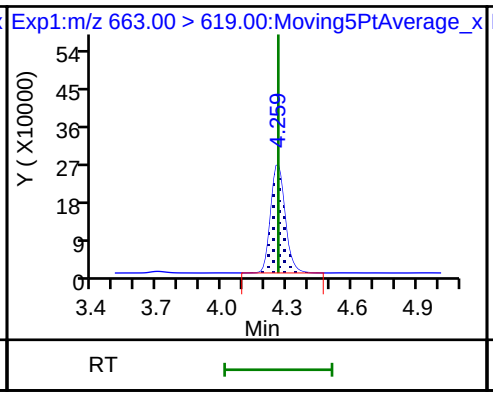
37 Perfluorododecanoic acid



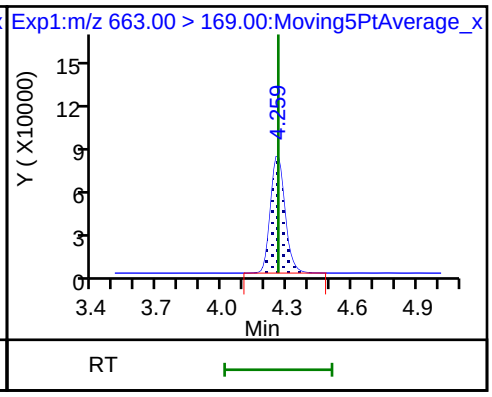
37 Perfluorododecanoic acid



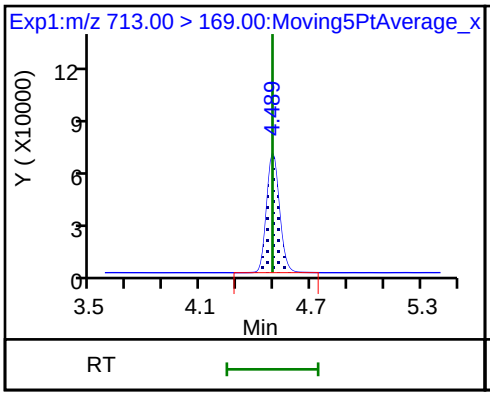
41 Perfluorotridecanoic acid



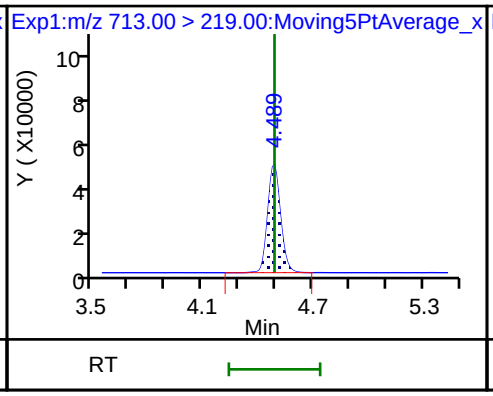
41 Perfluorotridecanoic acid



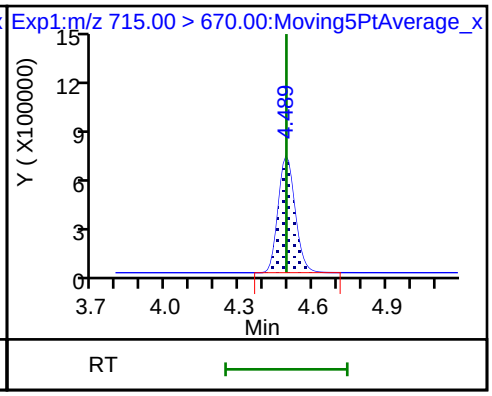
42 Perfluorotetradecanoic acid



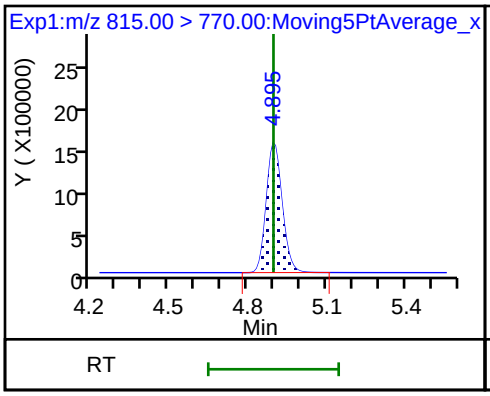
42 Perfluorotetradecanoic acid



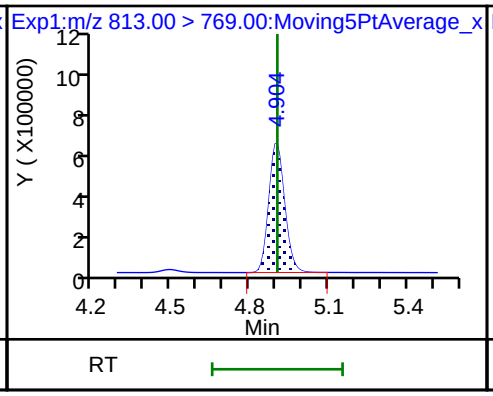
D 43 13C2-PFTeDA



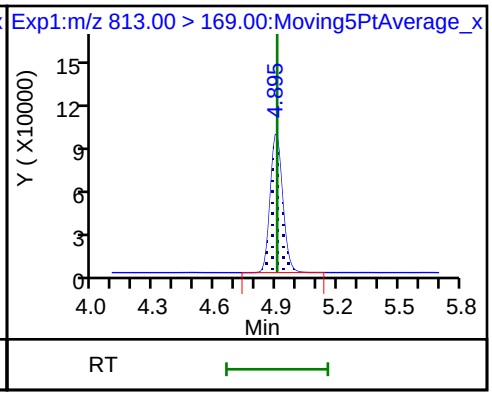
D 44 13C2-PFHxDA



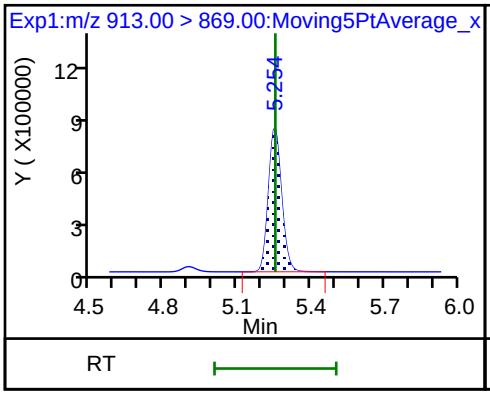
45 Perfluorohexadecanoic acid



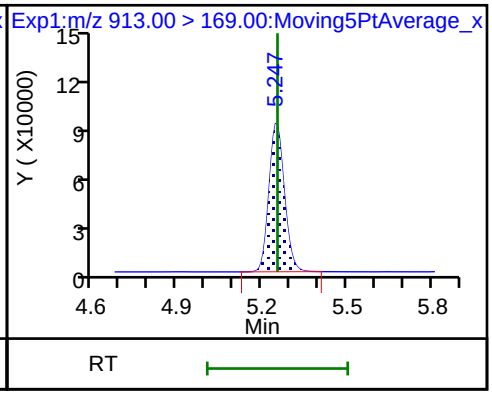
45 Perfluorohexadecanoic acid



46 Perfluorooctadecanoic acid



46 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Lab Sample ID: CCV 320-232800/1 Calibration Date: 07/07/2018 00:56

Instrument ID: A8_N Calib Start Date: 07/05/2018 08:51

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 07/05/2018 09:38

Lab File ID: 2018.07.06LLC_013.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	1.021	1.002		2.45	2.50	-1.9	40.0
Perfluoropentanoic acid (PFPeA)	AveID	1.191	1.197		2.51	2.50	0.5	40.0
Perfluorobutanesulfonic acid (PFBS)	AveID	75.80	80.33		2.34	2.21	6.0	50.0
4:2 FTS	AveID	15.68	17.60		2.62	2.34	12.2	50.0
Perfluorohexanoic acid (PFHxA)	AveID	1.018	1.043		2.56	2.50	2.4	40.0
Perfluoropentanesulfonic acid (PFPeS)	AveID	64.85	68.78		2.49	2.35	6.1	50.0
HFPO-DA (GenX)	AveID	2.299	2.413		2.62	2.50	4.9	40.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.130	1.133		2.51	2.50	0.3	40.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.156	1.071		2.11	2.28	-7.4	40.0
ADONA	AveID	3.706	4.107		2.61	2.36	10.8	50.0
6:2 FTS	AveID	1.567	1.600		2.42	2.37	2.1	40.0
Perfluorooctanoic acid (PFOA)	AveID	1.186	1.192		2.52	2.50	0.5	40.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.339	1.437		2.55	2.38	7.3	50.0
Perfluorononanoic acid (PFNA)	AveID	1.078	1.162		2.70	2.50	7.8	40.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.168	1.182		2.35	2.32	1.2	40.0
9-Chlorohexadecafluoro-3-oxa nonane-1-sulfonate	AveID	1.891	2.038		2.51	2.33	7.8	50.0
8:2 FTS	AveID	1.321	1.227		2.22	2.40	-7.2	40.0
Perfluorononanesulfonic acid (PFNS)	AveID	0.8126	0.8224		2.43	2.40	1.2	50.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9917	1.029		2.59	2.50	3.8	40.0
Perfluorodecanoic acid (PFDA)	AveID	1.042	1.091		2.62	2.50	4.6	40.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	1.029	1.023		2.48	2.50	-0.6	40.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.7195	0.7169		2.40	2.41	-0.4	50.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.9017	0.8705		2.41	2.50	-3.5	40.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.8501	0.996		2.93	2.50	17.2	40.0
11-Chloroeicosafluoro-3-oxau ndecane-1-sulfonate	AveID	2.884	3.120		2.55	2.36	8.2	50.0
Perfluorododecanoic acid (PFDoA)	AveID	1.102	1.110		2.52	2.50	0.7	40.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.227	1.022		2.08	2.50	-16.7	50.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2708	0.2578		2.38	2.50	-4.8	50.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		1.006		2.63	2.50	5.0	50.0

FORM VII 537 (modified)

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Lab Sample ID: CCV 320-232800/1 Calibration Date: 07/07/2018 00:56

Instrument ID: A8_N Calib Start Date: 07/05/2018 08:51

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 07/05/2018 09:38

Lab File ID: 2018.07.06LLC_013.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.164	1.159		2.49	2.50	-0.4	50.0
13C4 PFBA	Ave	1.384	1.292		2.33	2.50	-6.6	50.0
13C5 PFPeA	Ave	1.025	0.9273		2.26	2.50	-9.5	50.0
13C3-PFBS	Ave	0.0245	0.0221		2.10	2.33	-9.6	50.0
M2-4:2FTS	Ave	0.1575	0.1428		2.12	2.34	-9.4	50.0
13C2 PFHxA	Ave	1.097	1.045		2.38	2.50	-4.7	50.0
13C3 HFPO-DA	Ave	0.0899	0.0807		2.24	2.50	-10.3	50.0
13C4-PFHpA	Ave	0.9735	0.9104		2.34	2.50	-6.5	50.0
18O2 PFHxS	Ave	1.198	1.212		2.39	2.37	1.2	50.0
M2-6:2FTS	Ave	0.2186	0.2172		2.36	2.38	-0.6	40.0
13C4 PFOA	Ave	0.9539	0.9190		2.41	2.50	-3.7	50.0
13C4 PFOS	Ave	0.8551	0.7887		2.20	2.39	-7.8	50.0
13C5 PFNA	Ave	0.8109	0.7639		2.36	2.50	-5.8	50.0
13C8 FOSA	Ave	1.187	1.097		2.31	2.50	-7.6	50.0
M2-8:2FTS	Ave	0.2431	0.2455		2.42	2.40	1.0	40.0
13C2 PFDA	Ave	0.6992	0.6798		2.43	2.50	-2.8	50.0
d3-NMeFOSAA	Ave	0.4120	0.3774		2.29	2.50	-8.4	50.0
13C2 PFUnA	Ave	0.5873	0.5162		2.20	2.50	-12.1	50.0
d5-NEtFOSAA	Ave	0.4070	0.3983		2.45	2.50	-2.1	50.0
13C2 PFDoA	Ave	0.6294	0.6322		2.51	2.50	0.4	50.0
13C2-PFTeDA	Ave	0.7673	0.7109		2.32	2.50	-7.3	50.0
13C2-PFHxDA	Ave	1.420	1.446		2.55	2.50	1.8	50.0

FORM VII 537 (modified)

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\2018.07.06LLC_013.d
Lims ID: CCV L5
Client ID:
Sample Type: CCV
Inject. Date: 07-Jul-2018 00:56:21 ALS Bottle#: 14 Worklist Smp#: 1
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV L5
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-A8_N*sub32

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 09-Jul-2018 13:01:04 Calib Date: 05-Jul-2018 09:38:17
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180705-60684.b\2018.07.05LLICALAA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK010

First Level Reviewer: mongkols Date: 09-Jul-2018 13:01:04

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.425	1.428	-0.003	0.539	5546409	2.33		93.4	24485	
2 Perfluorobutyric acid										
212.90 > 169.00	1.425	1.428	-0.003	1.000	5555283	2.45		98.1	2482	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.703	1.698	0.005	1.000	4762307	2.51		100	3278	
D 3 13C5-PFPeA										
267.90 > 223.00	1.703	1.707	-0.004	0.644	3979620	2.26		90.5	36399	
D 47 13C3-PFBS										
301.90 > 83.00	1.739	1.743	-0.004	0.657	88369	2.10		90.4	652	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.739	1.743	-0.004	1.000	6747268	2.34		106	24626	
298.90 > 99.00	1.739	1.743	-0.004	1.000	2725971		2.48(1.25-3.74)		17293	
61 1H,1H,2H,2H-perfluorohexanesulfoni										
327.00 > 307.00	1.950	1.945	0.005	1.121	1561851	2.62		112	93429	
D 60 M2-4:2FTS										
329.00 > 81.00	1.950	1.956	-0.006	0.737	572393	2.12		90.6	7868	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.982	1.978	0.004	1.000	4675188	2.56		102	7935	
313.00 > 119.00	1.982	1.978	0.004	1.000	404021		11.57(5.03-15.10)		5025	
D 7 13C2 PFHxA										
315.00 > 270.00	1.982	1.988	-0.006	0.749	4483144	2.38		95.3	65340	
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.004	2.000	0.004	1.153	6130485	2.49		106	50724	
349.00 > 99.00	2.004	2.000	0.004	1.153	2273637		2.70(1.36-4.07)		26059	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.072	2.078	-0.006	0.783	346100	2.24		89.7	5168	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
67 Perfluoro(2-propoxypropanoic) acid										
329.10 > 285.00	2.072	2.079	-0.007	1.000	834974	2.62		105	6098	
D 9 13C4-PFHpA										
367.00 > 322.00	2.295	2.302	-0.007	0.867	3907154	2.34		93.5	29565	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.295	2.303	-0.008	1.000	4425548	2.51		100	5378	
363.00 > 169.00	2.295	2.303	-0.008	1.000	1735145		2.55(1.13-3.40)		14459	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.308	2.303	0.005	1.000	5069522	2.11		92.6	20012	
399.00 > 99.00	2.308	2.303	0.005	1.000	1701265		2.98(1.50-4.49)		9376	
D 11 18O2 PFHxS										
403.00 > 84.00	2.308	2.315	-0.007	0.872	4922408	2.39		101	45304	
65 Adona										
377.00 > 251.00	2.334	2.342	-0.008	0.776	13093351	2.61		111	88014	
377.00 > 85.00	2.334	2.342	-0.008	0.776	7869580		1.66(0.84-2.53)		42740	
D 12 M2-6:2FTS										
429.00 > 81.00	2.621	2.626	-0.005	0.991	885411	2.36		99.4	12723	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.621	2.627	-0.005	1.000	1413485	2.42		102	6031	
D 14 13C4 PFOA										
417.00 > 372.00	2.645	2.650	-0.005	1.000	3944009	2.41		96.3	38761	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.645	2.651	-0.006	1.000	4705255	2.52		101	1568	
413.00 > 169.00	2.645	2.651	-0.006	1.000	2464349		1.91(0.84-2.52)		9960	
* 62 13C2-PFOA										
415.00 > 370.00	2.645	2.651	-0.006		4291508	2.50			32762	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.654	2.658	-0.004	0.883	4629698	2.55		107	37495	
449.00 > 99.00	2.654	2.658	-0.004	0.883	1216953		3.80(1.94-5.82)		25781	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.006	3.008	-0.002	1.000	3712307	2.35		101	28448	
499.00 > 99.00	3.006	3.008	-0.002	1.000	820787		4.52(2.31-6.93)		18707	
20 Perfluorononanoic acid										
463.00 > 419.00	3.006	3.015	-0.009	1.000	3808813	2.70		108	9209	
463.00 > 169.00	3.006	3.015	-0.009	1.000	912945		4.17(1.90-5.69)		23756	
D 18 13C4 PFOS										
503.00 > 80.00	3.006	3.015	-0.009	1.136	3235626	2.20		92.2	25597	
D 19 13C5 PFNA										
468.00 > 423.00	3.006	3.015	-0.009	1.136	3278143	2.36		94.2	37172	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.217	3.221	-0.004	1.070	6428293	2.51		108	81394	
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.352	3.357	-0.005	1.115	2672210	2.43		101	25955	
549.00 > 99.00	3.352	3.357	-0.005	1.115	988737		2.70(1.33-3.97)		19037	
25 1H,1H,2H,2H-perfluorodecanesulfoni										
527.00 > 507.00	3.352	3.357	-0.005	1.000	1238146	2.22		92.8	20168	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.352	3.357	-0.005	1.000	4842324	2.59		104	31830	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
24 Perfluorodecanoic acid										
513.00 > 469.00	3.361	3.367	-0.006	1.000	3181281	2.62		105	12530	
513.00 > 169.00	3.361	3.367	-0.006	1.000	523178		6.08(2.36-7.09)		11971	
D 26 M2-8:2FTS										
529.00 > 81.00	3.352	3.367	-0.015	1.267	1009459	2.42		101	17771	
D 21 13C8 FOSA										
506.00 > 78.00	3.352	3.367	-0.015	1.267	4706245	2.31		92.4	32915	
D 23 13C2 PFDA										
515.00 > 470.00	3.361	3.376	-0.015	1.271	2917167	2.43		97.2	37121	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.520	3.525	-0.005	1.000	1656047	2.48		99.4	10774	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.520	3.525	-0.005	1.331	1619427	2.29		91.6	29412	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.677	3.683	-0.006	1.223	2338866	2.40		99.6	81986	
599.00 > 99.00	3.677	3.683	-0.006	1.223	803480		2.91(1.39-4.16)		42377	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.688	3.694	-0.006	1.000	1487999	2.41		96.5	25548	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.688	3.694	-0.006	1.000	2207334	2.93		117	10178	
563.00 > 169.00	3.688	3.694	-0.006	1.000	475298		4.64(2.12-6.36)		11015	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.688	3.694	-0.006	1.394	1709349	2.45		97.9	23248	
D 30 13C2 PFUnA										
565.00 > 520.00	3.688	3.705	-0.017	1.394	2215391	2.20		87.9	25571	
66 11-Chloroeicosafluoro-3-oxaundecan										
631.00 > 451.00	3.845	3.851	-0.006	1.279	9947077	2.55		108	69094	
37 Perfluorododecanoic acid										
613.00 > 569.00	3.978	3.984	-0.006	1.000	3011726	2.52		101	3366	
613.00 > 169.00	3.978	3.984	-0.006	1.000	697309		4.32(2.13-6.40)		16291	
D 36 13C2 PFDoA										
615.00 > 570.00	3.978	3.995	-0.017	1.504	2712968	2.51		100	16861	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.243	4.249	-0.007	1.067	2772906	2.08		83.3	2952	
663.00 > 169.00	4.243	4.249	-0.007	1.067	874310		3.17(1.25-3.76)		17537	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.481	4.489	-0.008	1.000	786681	2.38		95.2	9110	
713.00 > 219.00	4.481	4.489	-0.008	1.000	551272		1.43(0.71-2.13)		9557	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.481	4.489	-0.008	1.694	3051002	2.32		92.7	12192	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.896	4.895	0.001	1.000	6243658	2.63		105	2757	
813.00 > 169.00	4.896	4.895	0.001	1.000	985837		6.33(2.86-8.58)		7604	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.896	4.895	0.001	1.851	6203476	2.55		102	13647	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.241	5.246	-0.005	1.070	7190400	2.49		99.6	2150	
913.00 > 169.00	5.241	5.246	-0.005	1.070	862217		8.34(3.83-11.48)		7009	

Reagents:

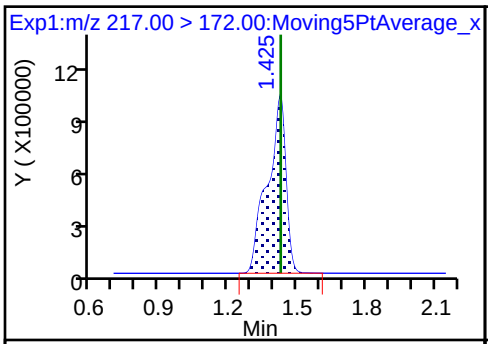
LCPFC_LL5_00005 Amount Added: 1.00 Units: mL

Report Date: 09-Jul-2018 13:01:05 Chrom Revision: 2.2 07-Jun-2018 07:41:54

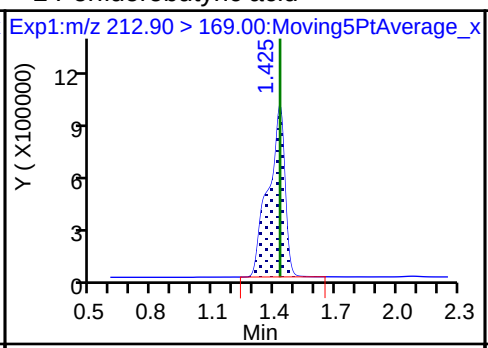
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\2018.07.06LLC_013.d
Injection Date: 07-Jul-2018 00:56:21 Instrument ID: A8_N
Lims ID: CCV L5
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 14 Worklist Smp#: 1
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC ICAL

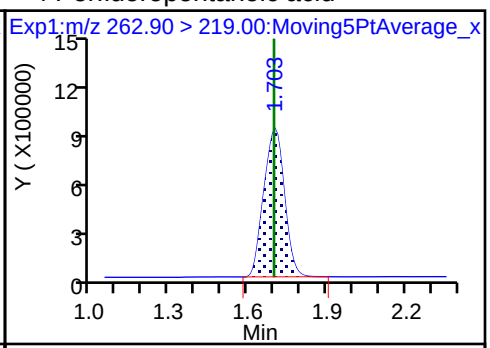
D 1 13C4 PFBA



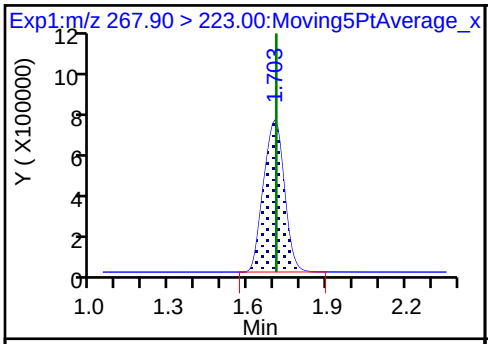
2 Perfluorobutyric acid



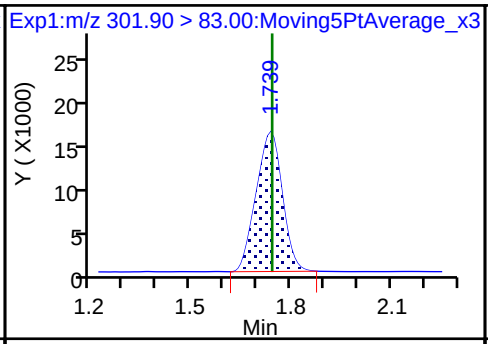
4 Perfluoropentanoic acid



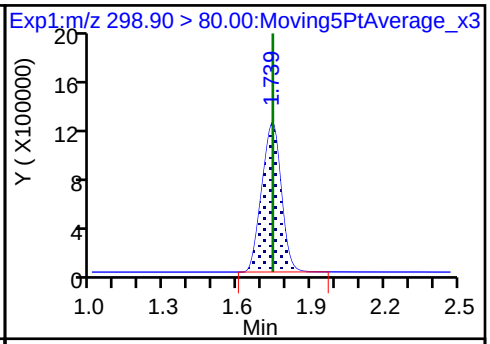
D 3 13C5-PFPeA



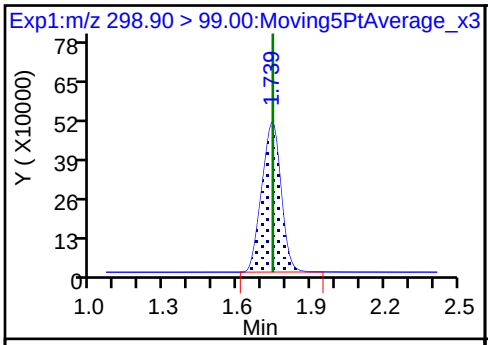
D 47 13C3-PFBS



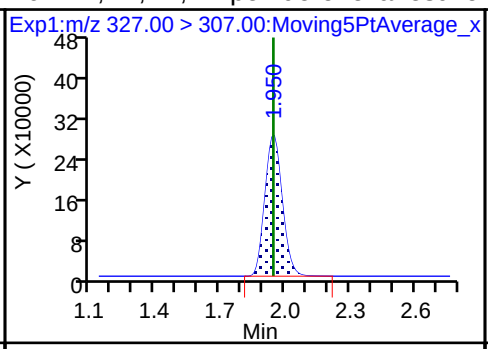
5 Perfluorobutanesulfonic acid



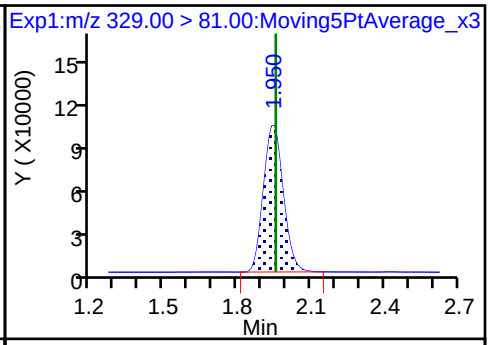
5 Perfluorobutanesulfonic acid



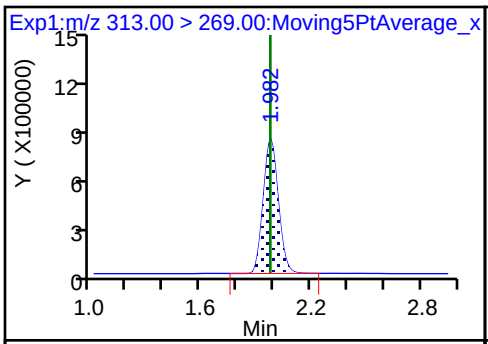
61 1H,1H,2H,2H-perfluorohexanesulfon



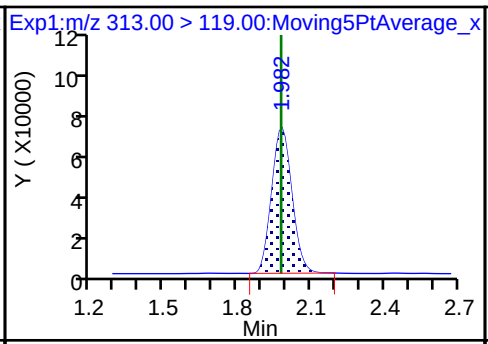
D 60 M2-4:2FTS



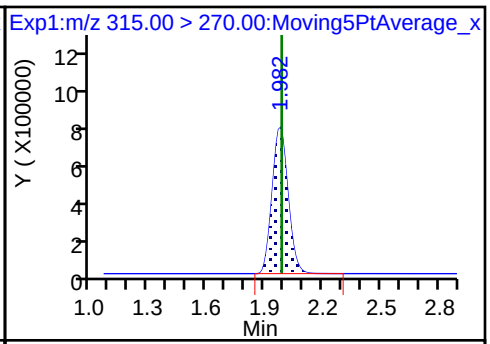
6 Perfluorohexanoic acid



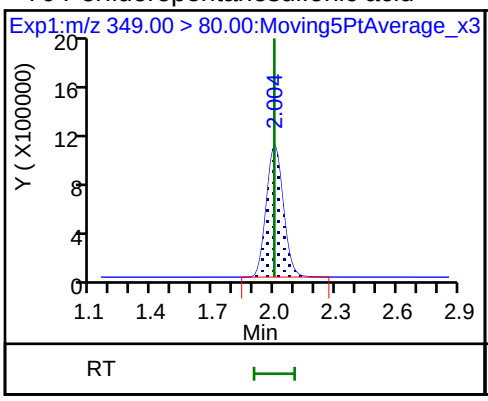
6 Perfluorohexanoic acid



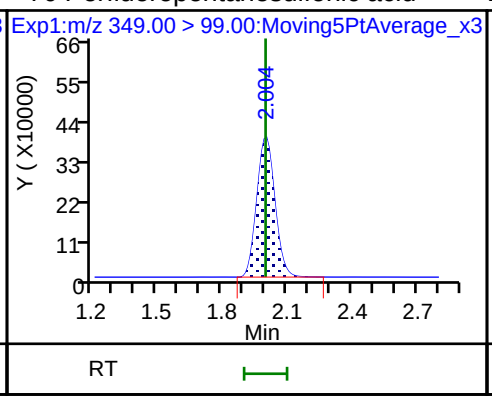
D 7 13C2 PFHxA



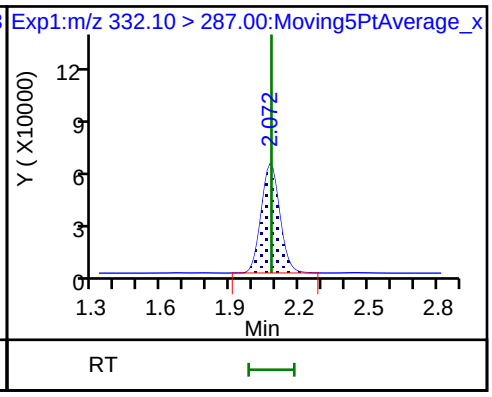
70 Perfluoropentanesulfonic acid



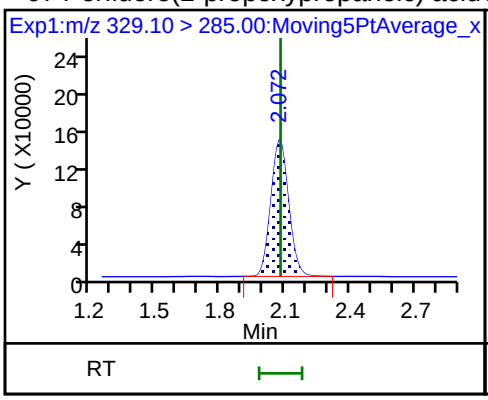
70 Perfluoropentanesulfonic acid



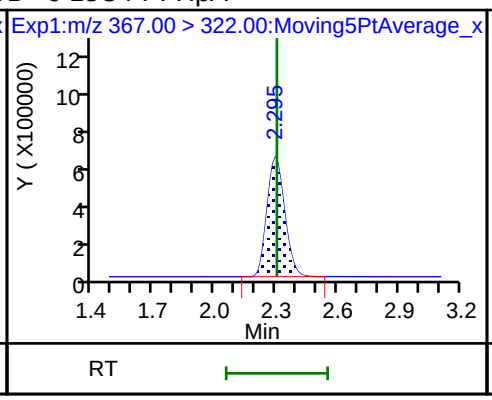
D 64 13C3 HFPO-DA



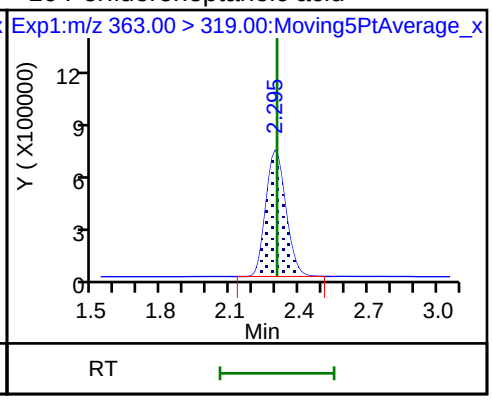
67 Perfluoro(2-propoxypropanoic) acid



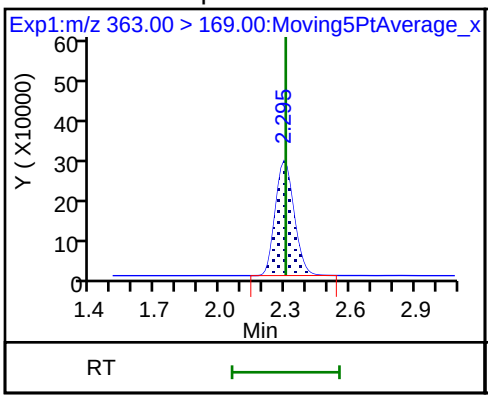
D 9 13C4-PFHpA



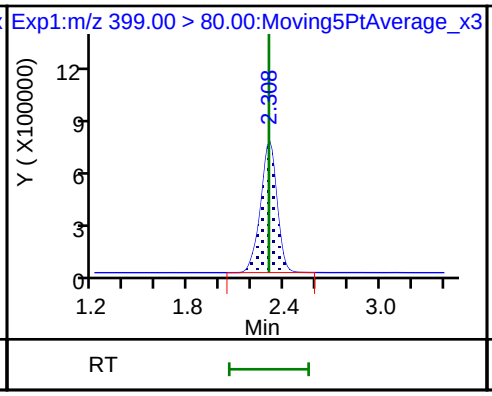
10 Perfluoroheptanoic acid



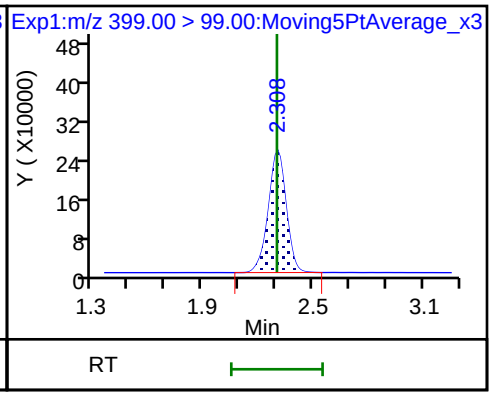
10 Perfluoroheptanoic acid



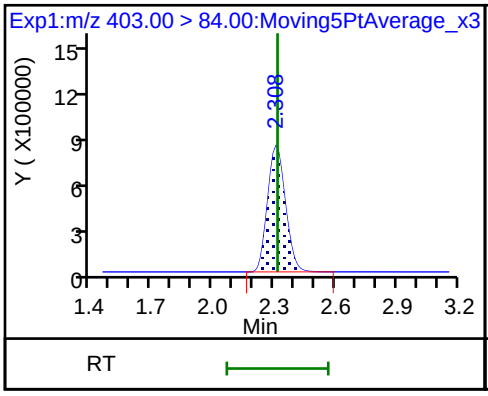
8 Perfluorohexanesulfonic acid



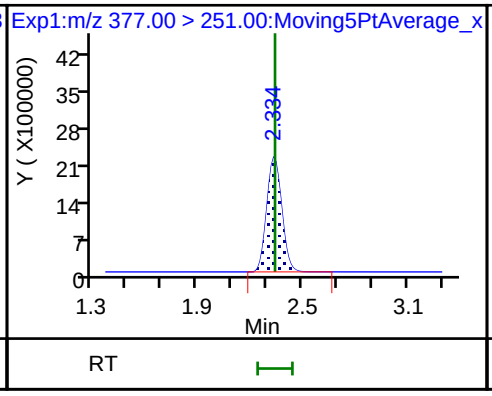
8 Perfluorohexanesulfonic acid



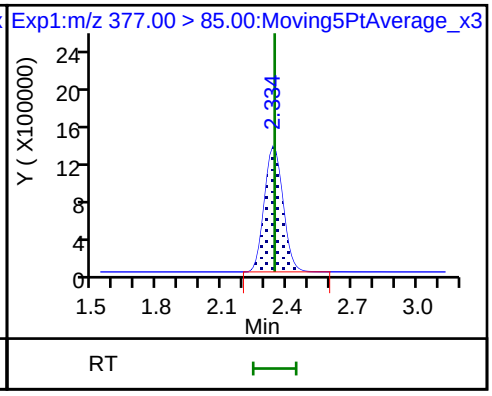
D 11 18O2 PFHxS



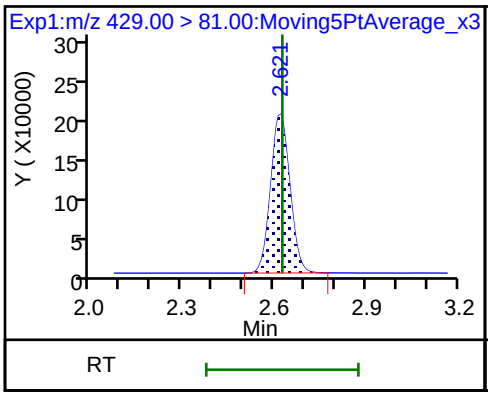
65 Adona



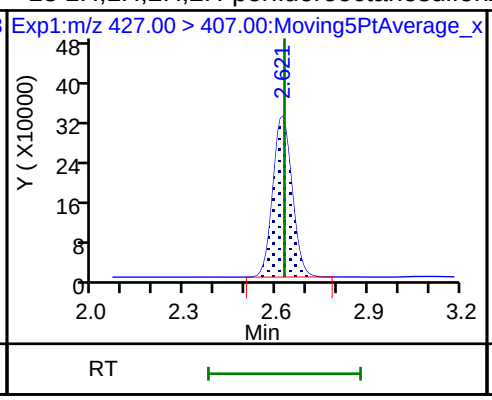
65 Adona



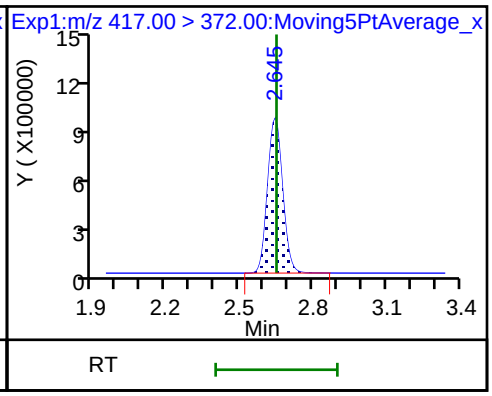
D 12 M2-6:2FTS



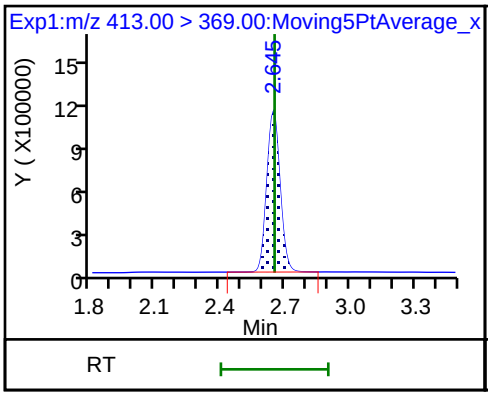
13 1H,1H,2H,2H-perfluorooctanesulfon



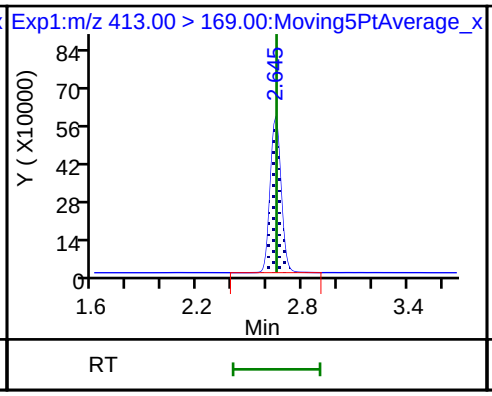
D 14 13C4 PFOA



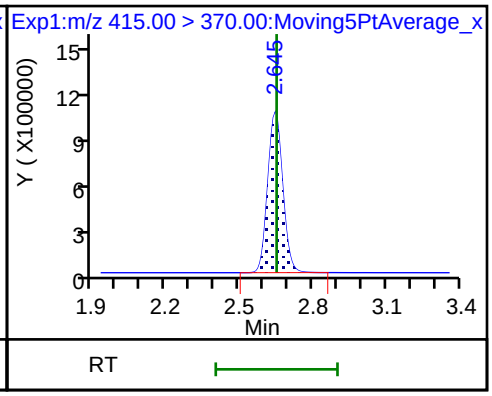
15 Perfluorooctanoic acid



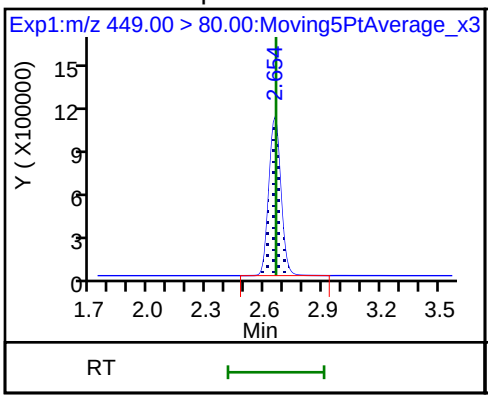
15 Perfluorooctanoic acid



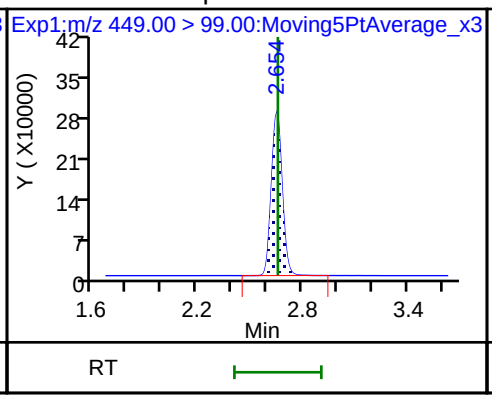
* 62 13C2-PFOA



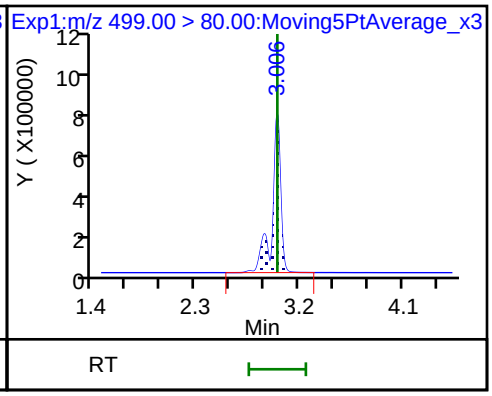
16 Perfluoroheptanesulfonic acid



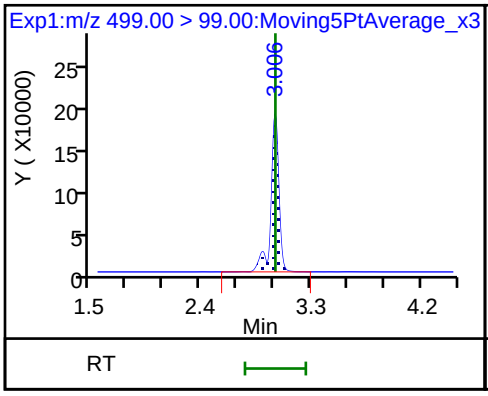
16 Perfluoroheptanesulfonic acid



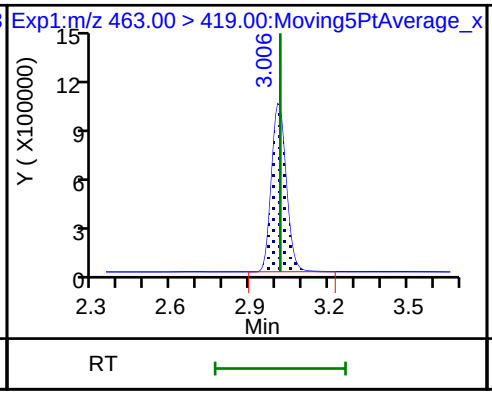
17 Perfluorooctane sulfonic acid



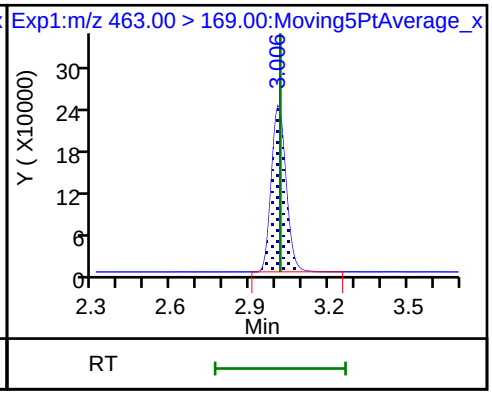
17 Perfluorooctane sulfonic acid



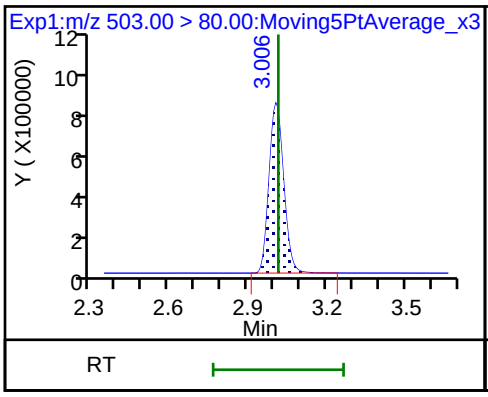
20 Perfluorononanoic acid



20 Perfluorononanoic acid



D 18 13C4 PFOS



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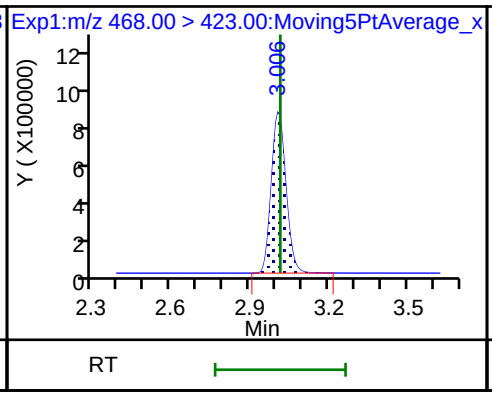
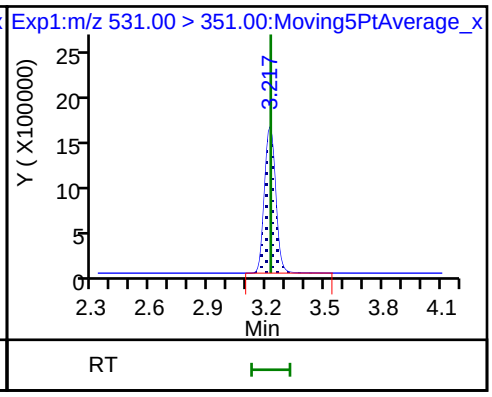
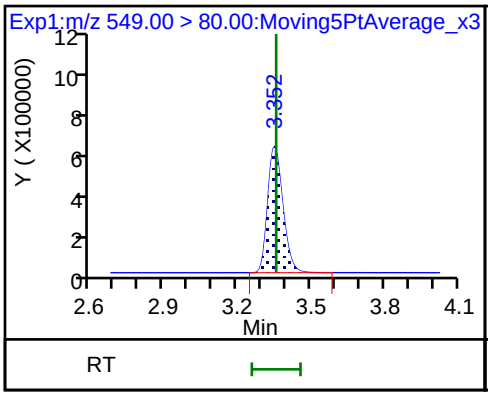


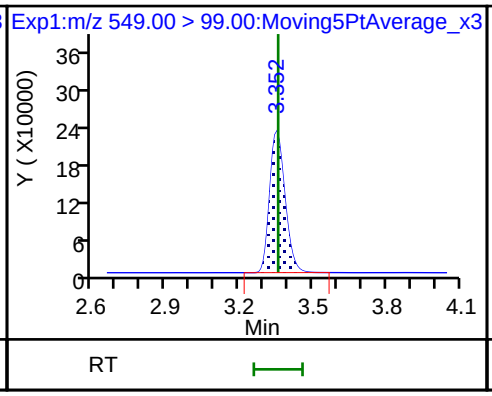
69 9-Chlorohexadecafluoro-3-oxanonane



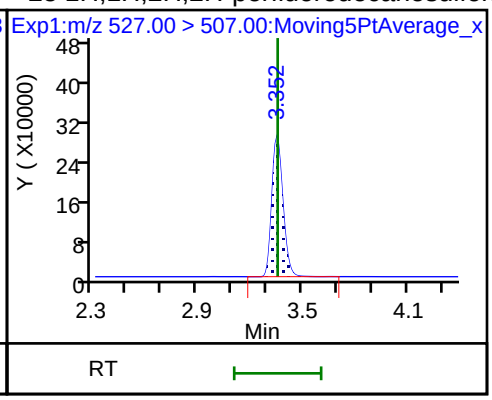
68 Perfluorononanesulfonic acid



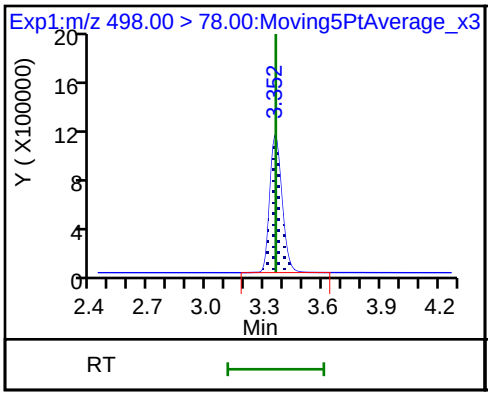
68 Perfluorononanesulfonic acid



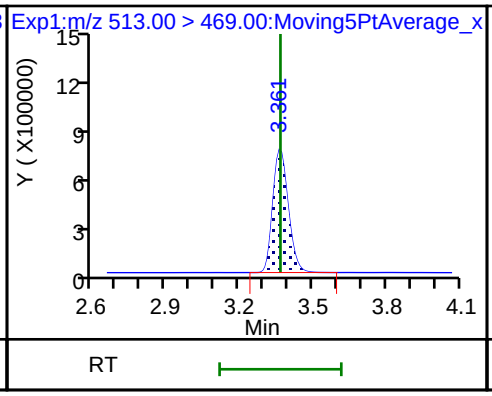
25 1H,1H,2H,2H-perfluorodecanesulfoni



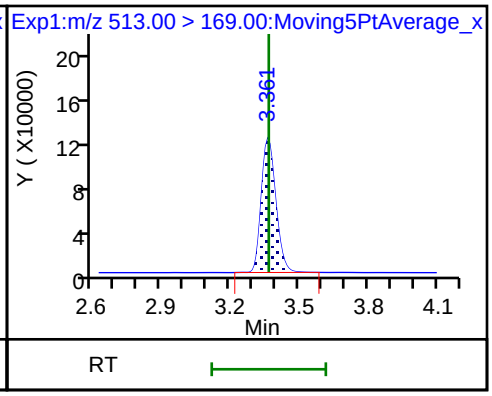
22 Perfluorooctane Sulfonamide



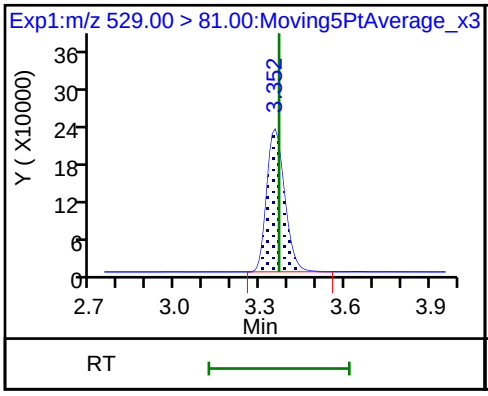
24 Perfluorodecanoic acid



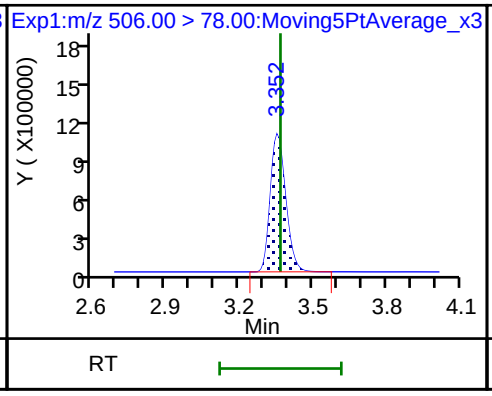
24 Perfluorodecanoic acid



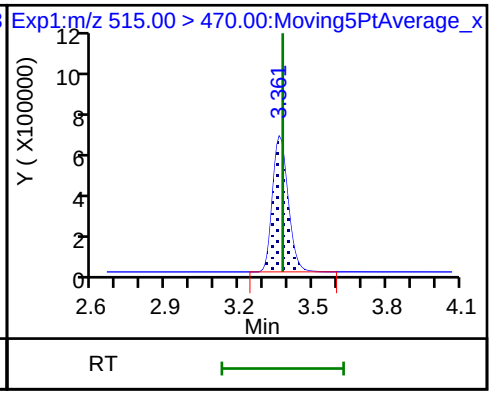
D 26 M2-8:2FTS



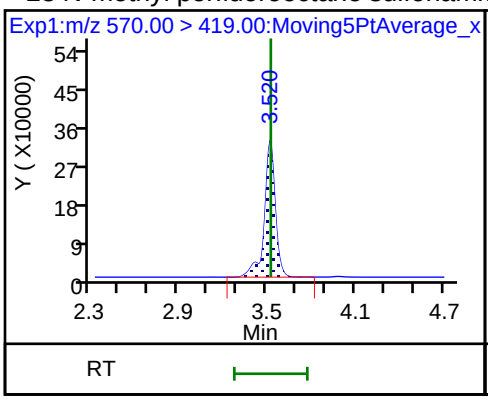
D 21 13C8 FOSA



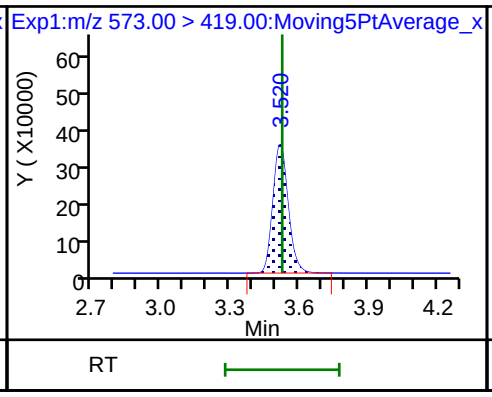
D 23 13C2 PFDA



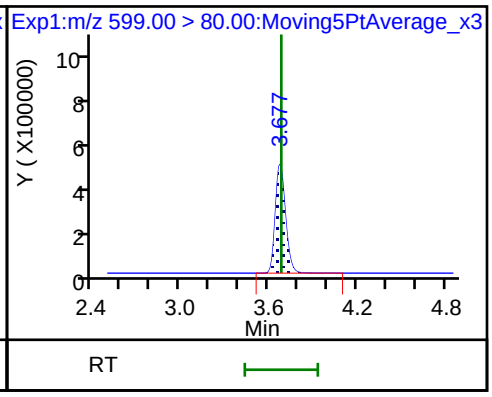
28 N-methyl perfluorooctane sulfonami



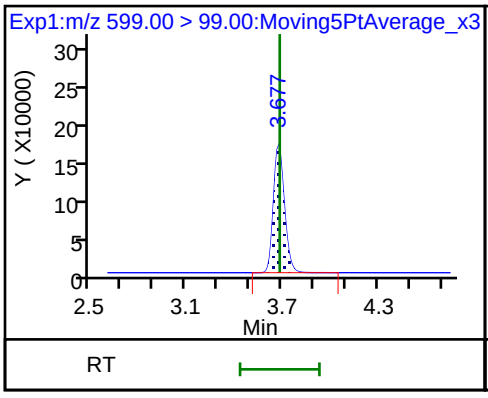
D 27 d3-NMeFOSAA



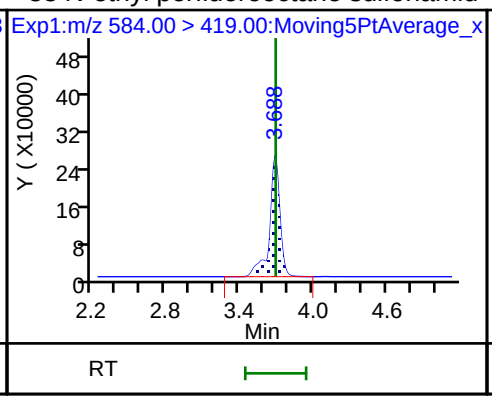
29 Perfluorodecane Sulfonic acid



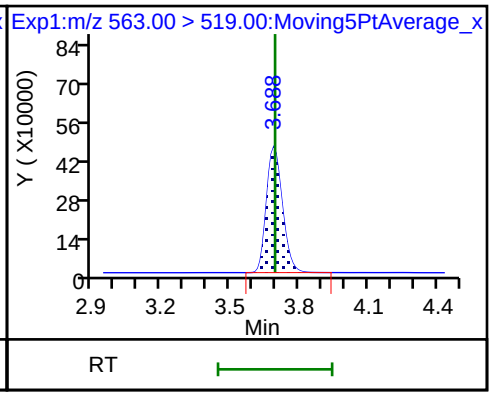
29 Perfluorodecane Sulfonic acid



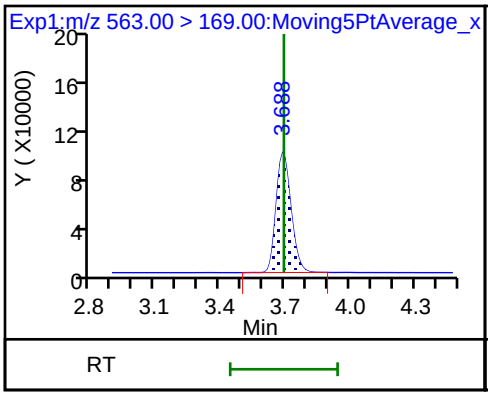
33 N-ethyl perfluorooctane sulfonamid



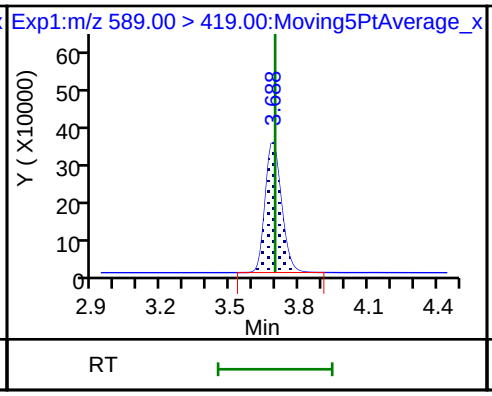
31 Perfluoroundecanoic acid



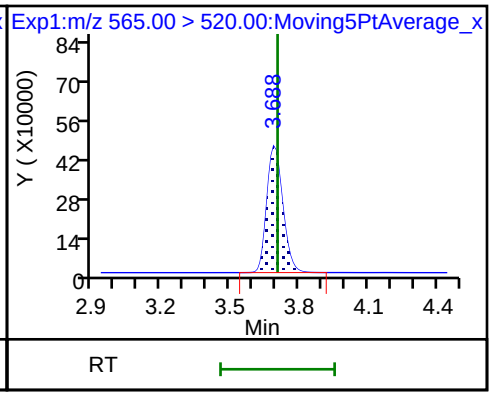
31 Perfluoroundecanoic acid



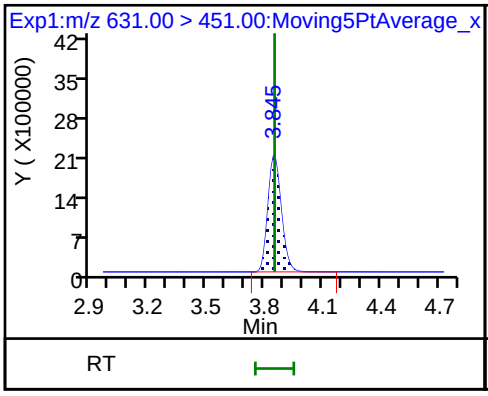
D 32 d5-NEtFOSAA



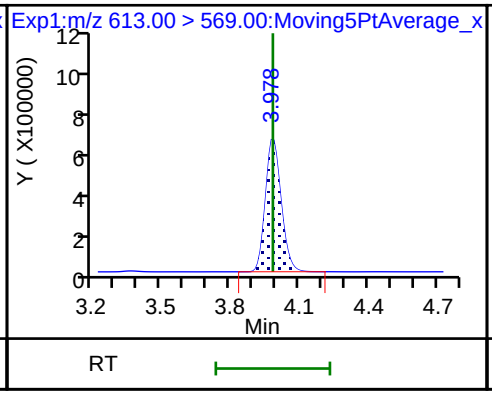
D 30 13C2 PFUnA



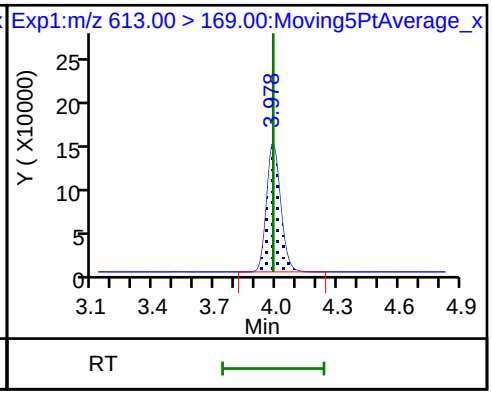
66 11-Chloroeicosafluoro-3-oxaundecan



37 Perfluorododecanoic acid



37 Perfluorododecanoic acid



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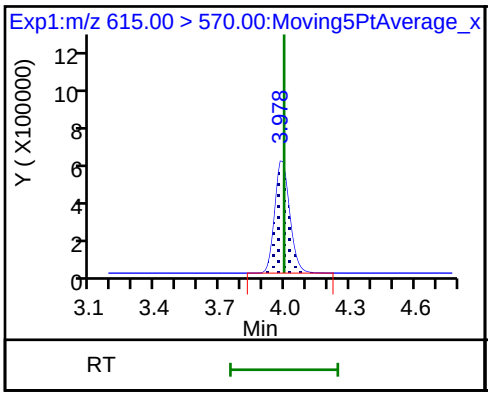
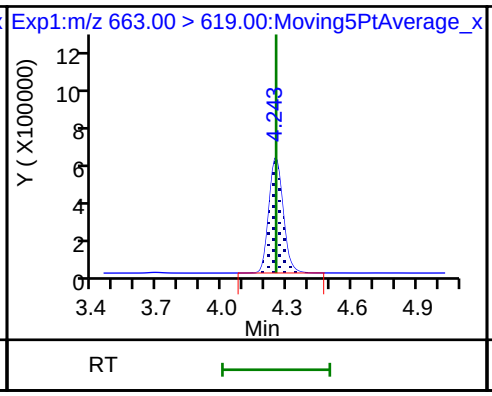
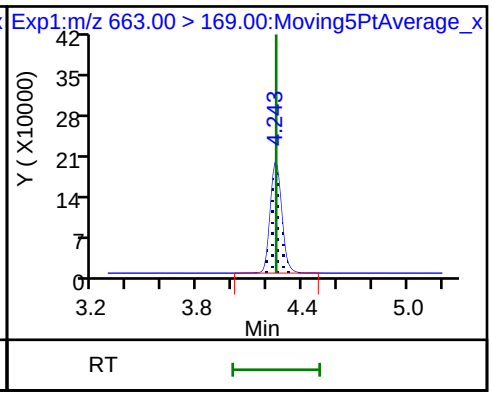
D 36 13C2 PFDoA



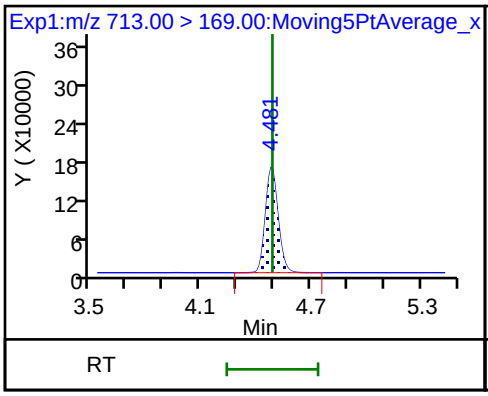
41 Perfluorotridecanoic acid



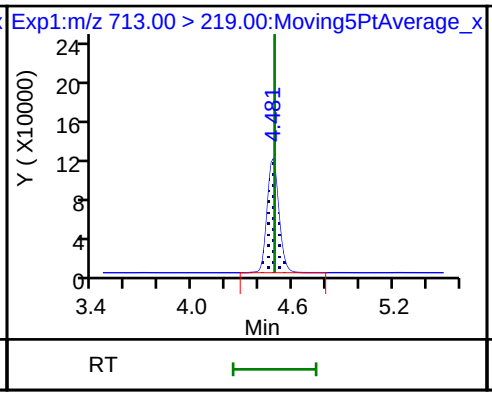
41 Perfluorotridecanoic acid



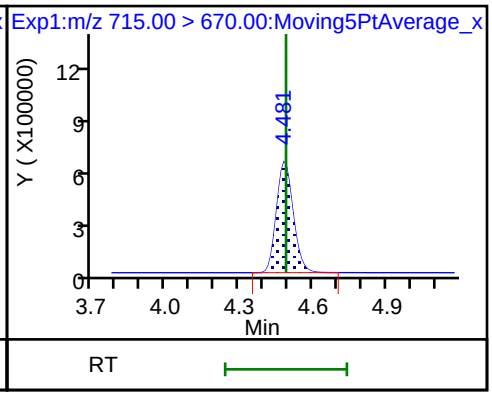
42 Perfluorotetradecanoic acid



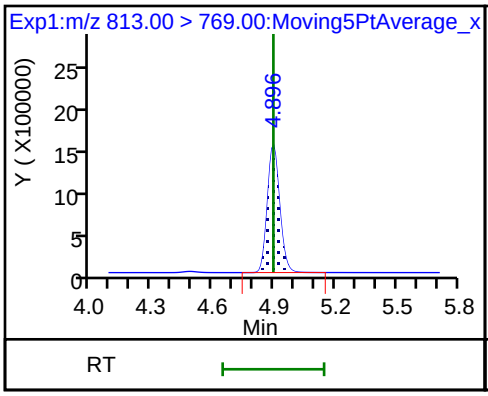
42 Perfluorotetradecanoic acid



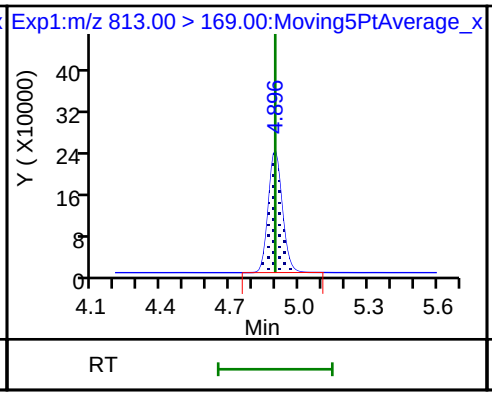
D 43 13C2-PFTeDA



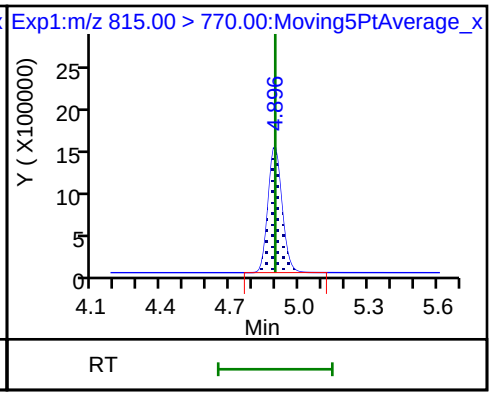
45 Perfluorohexadecanoic acid



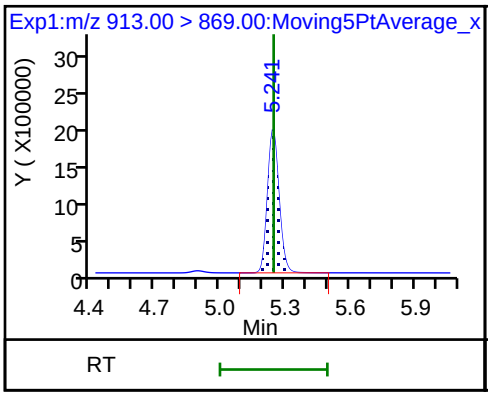
45 Perfluorohexadecanoic acid



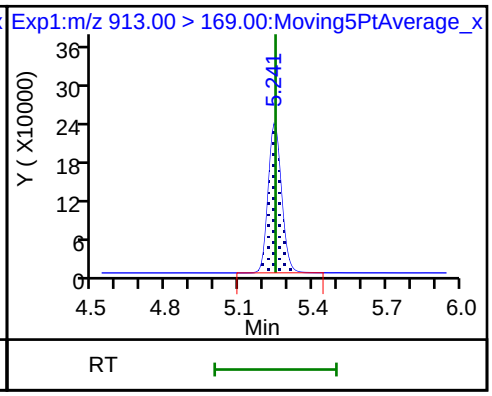
D 44 13C2-PFHxDA



46 Perfluorooctadecanoic acid



46 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Lab Sample ID: CCV 320-232800/12 Calibration Date: 07/07/2018 02:22

Instrument ID: A8_N Calib Start Date: 07/05/2018 08:51

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 07/05/2018 09:38

Lab File ID: 2018.07.06LLC_024.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	1.021	0.9764		0.956	1.00	-4.4	40.0
Perfluoropentanoic acid (PFPeA)	AveID	1.191	1.173		0.985	1.00	-1.5	40.0
Perfluorobutanesulfonic acid (PFBS)	AveID	75.80	76.13		0.888	0.884	0.4	50.0
4:2 FTS	AveID	15.68	15.37		0.915	0.934	-2.0	50.0
Perfluorohexanoic acid (PFHxA)	AveID	1.018	1.061		1.04	1.00	4.1	40.0
Perfluoropentanesulfonic acid (PFPeS)	AveID	64.85	68.50		0.991	0.938	5.6	50.0
HFPO-DA (GenX)	AveID	2.299	2.474		1.08	1.00	7.6	40.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.130	1.048		0.928	1.00	-7.2	40.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.156	1.109		0.872	0.910	-4.1	40.0
ADONA	AveID	3.706	3.906		0.993	0.942	5.4	50.0
6:2 FTS	AveID	1.567	1.585		0.959	0.948	1.2	40.0
Perfluorooctanoic acid (PFOA)	AveID	1.186	1.151		0.972	1.00	-2.9	40.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.339	1.357		0.965	0.952	1.3	50.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.168	1.099		0.873	0.928	-5.9	40.0
Perfluorononanoic acid (PFNA)	AveID	1.078	1.058		0.982	1.00	-1.8	40.0
9-Chlorohexadecafluoro-3-oxa nonane-1-sulfonate	AveID	1.891	1.791		0.883	0.932	-5.2	50.0
8:2 FTS	AveID	1.321	1.253		0.909	0.958	-5.2	40.0
Perfluorononanesulfonic acid (PFNS)	AveID	0.8126	0.7751		0.916	0.960	-4.6	50.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9917	0.9769		0.985	1.00	-1.5	40.0
Perfluorodecanoic acid (PFDA)	AveID	1.042	1.052		1.01	1.00	0.9	40.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	1.029	0.9075		0.882	1.00	-11.8	40.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.7195	0.6693		0.897	0.964	-7.0	50.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.9017	0.8512		0.944	1.00	-5.6	40.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.8501	0.7788		0.916	1.00	-8.4	40.0
11-Chloroeicosafluoro-3-oxau ndecane-1-sulfonate	AveID	2.884	2.819		0.921	0.942	-2.3	50.0
Perfluorododecanoic acid (PFDoA)	AveID	1.102	1.048		0.951	1.00	-4.9	40.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.227	1.081		0.881	1.00	-11.9	50.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2708	0.2693		0.995	1.00	-0.5	50.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		0.9620		0.990	1.00	-1.0	50.0

FORM VII 537 (modified)

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Lab Sample ID: CCV 320-232800/12 Calibration Date: 07/07/2018 02:22

Instrument ID: A8_N Calib Start Date: 07/05/2018 08:51

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 07/05/2018 09:38

Lab File ID: 2018.07.06LLC_024.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.164	1.138		0.977	1.00	-2.3	50.0
13C4 PFBA	Ave	1.384	1.306		2.36	2.50	-5.7	50.0
13C5 PFPeA	Ave	1.025	0.9508		2.32	2.50	-7.2	50.0
13C3-PFBS	Ave	0.0245	0.0235		2.23	2.33	-4.0	50.0
M2-4:2FTS	Ave	0.1575	0.1610		2.39	2.34	2.2	50.0
13C2 PFHxA	Ave	1.097	1.045		2.38	2.50	-4.7	50.0
13C3 HFPO-DA	Ave	0.0899	0.0746		2.07	2.50	-17.0	50.0
13C4-PFHpA	Ave	0.9735	0.9923		2.55	2.50	1.9	50.0
18O2 PFHxS	Ave	1.198	1.200		2.37	2.37	0.2	50.0
M2-6:2FTS	Ave	0.2186	0.2192		2.38	2.38	0.3	40.0
13C4 PFOA	Ave	0.9539	0.9650		2.53	2.50	1.2	50.0
13C4 PFOS	Ave	0.8551	0.8551		2.39	2.39	0.0	50.0
13C5 PFNA	Ave	0.8109	0.8183		2.52	2.50	0.9	50.0
13C8 FOSA	Ave	1.187	1.163		2.45	2.50	-2.0	50.0
M2-8:2FTS	Ave	0.2431	0.2643		2.60	2.40	8.7	40.0
13C2 PFDA	Ave	0.6992	0.7074		2.53	2.50	1.2	50.0
d3-NMeFOSAA	Ave	0.4120	0.4231		2.57	2.50	2.7	50.0
d5-NEtFOSAA	Ave	0.4070	0.4100		2.52	2.50	0.7	50.0
13C2 PFUnA	Ave	0.5873	0.6104		2.60	2.50	3.9	50.0
13C2 PFDoA	Ave	0.6294	0.6204		2.46	2.50	-1.4	50.0
13C2-PFTeDA	Ave	0.7673	0.7228		2.35	2.50	-5.8	50.0
13C2-PFHxDA	Ave	1.420	1.474		2.60	2.50	3.8	50.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\2018.07.06LLC_024.d
Lims ID: CCV L4
Client ID:
Sample Type: CCV
Inject. Date: 07-Jul-2018 02:22:32 ALS Bottle#: 13 Worklist Smp#: 12
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV L4
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-A8_N*sub32

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 09-Jul-2018 14:06:48 Calib Date: 05-Jul-2018 09:38:17
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180705-60684.b\2018.07.05LLICALAA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK010

First Level Reviewer: mongkols Date: 09-Jul-2018 14:06:48

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.422	1.428	-0.006	0.537	5753162	2.36		94.3	25656	
2 Perfluorobutyric acid										
212.90 > 169.00	1.428	1.428	0.0	1.004	2246972	0.9559		95.6	1079	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.698	1.698	0.0	1.000	1965281	0.9849		98.5	1427	
D 3 13C5-PFPeA										
267.90 > 223.00	1.698	1.707	-0.009	0.641	4188826	2.32		92.8	45155	
D 47 13C3-PFBS										
301.90 > 83.00	1.734	1.743	-0.009	0.654	96417	2.23		96.0	733	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.743	1.743	0.0	1.005	2790737	0.8878		100	11582	
298.90 > 99.00	1.743	1.743	0.0	1.005	1126012		2.48(1.25-3.74)		8162	
61 1H,1H,2H,2H-perfluorohexanesulfoni										
327.00 > 307.00	1.945	1.945	0.0	1.121	595336	0.9154		98.0	35882	
D 60 M2-4:2FTS										
329.00 > 81.00	1.945	1.956	-0.011	0.734	662586	2.39		102	9223	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.978	1.978	0.0	1.000	1952868	1.04		104	4329	
313.00 > 119.00	1.978	1.978	0.0	1.000	171474		11.39(5.03-15.10)		3046	
D 7 13C2 PFHxA										
315.00 > 270.00	1.978	1.988	-0.010	0.746	4603631	2.38		95.3	50451	
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.000	2.000	0.0	1.153	2664532	0.99		106	33036	
349.00 > 99.00	2.000	2.000	0.0	1.153	965869		2.76(1.36-4.07)		11929	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.079	2.078	0.001	0.784	328478	2.07		83.0	5165	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
67 Perfluoro(2-propoxypropanoic) acid										
329.10 > 285.00	2.079	2.079	0.0	1.000	325080	1.08		108	2205	
D 9 13C4-PFHpA										
367.00 > 322.00	2.290	2.302	-0.012	0.864	4371875	2.55		102	35961	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.303	2.303	0.0	1.006	1832482	0.9276		92.8	2616	
363.00 > 169.00	2.303	2.303	0.0	1.006	734117		2.50(1.13-3.40)		6381	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.303	2.303	0.0	0.994	2133656	0.8725		95.9	11276	
399.00 > 99.00	2.303	2.303	0.0	0.994	710855		3.00(1.50-4.49)		4393	
D 11 18O2 PFHxS										
403.00 > 84.00	2.316	2.315	0.001	0.874	5002105	2.37		100	31659	
65 Adona										
377.00 > 251.00	2.342	2.342	0.0	0.779	5545568	0.99		105	47162	
377.00 > 85.00	2.342	2.342	0.0	0.779	3381092		1.64(0.84-2.53)		31773	
D 12 M2-6:2FTS										
429.00 > 81.00	2.627	2.626	0.0	0.991	917479	2.38		100	16230	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.627	2.627	0.0	1.000	580309	0.9589		101	2525	
D 14 13C4 PFOA										
417.00 > 372.00	2.651	2.650	0.001	1.000	4251604	2.53		101	48542	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.651	2.651	0.0	1.000	1959955	0.9719		97.1	646	
413.00 > 169.00	2.651	2.651	0.0	1.000	993410		1.97(0.84-2.52)		4631	
* 62 13C2-PFOA										
415.00 > 370.00	2.651	2.651	0.0		4405819	2.50			33762	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.658	2.658	0.0	0.884	1947563	0.9648		101	14144	
449.00 > 99.00	2.658	2.658	0.0	0.884	508127		3.83(1.94-5.82)		11941	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.008	3.008	0.0	1.000	1536502	0.8728		94.1	16037	
499.00 > 99.00	3.008	3.008	0.0	1.000	345292		4.45(2.31-6.93)		8649	
20 Perfluorononanoic acid										
463.00 > 419.00	3.015	3.015	0.0	1.000	1525498	0.9817		98.2	3750	
463.00 > 169.00	3.015	3.015	0.0	1.000	380576		4.01(1.90-5.69)		14356	
D 18 13C4 PFOS										
503.00 > 80.00	3.008	3.015	-0.007	1.135	3601813	2.39		100	24018	
D 19 13C5 PFNA										
468.00 > 423.00	3.015	3.015	0.0	1.137	3605174	2.52		101	44781	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.221	3.221	0.0	1.071	2516019	0.8831		94.8	24511	
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.357	3.357	0.0	1.116	1121371	0.9157		95.4	18519	
549.00 > 99.00	3.357	3.357	0.0	1.116	423630		2.65(1.33-3.97)		10923	
25 1H,1H,2H,2H-perfluorodecanesulfoni										
527.00 > 507.00	3.357	3.357	0.0	1.000	559102	0.9086		94.8	14189	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.357	3.357	0.0	1.000	2001863	0.9850		98.5	25485	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
24 Perfluorodecanoic acid										
513.00 > 469.00	3.367	3.367	0.0	1.000	1310887	1.01		101	4819	
513.00 > 169.00	3.367	3.367	0.0	1.000	227099		5.77(2.36-7.09)		7339	
D 26 M2-8:2FTS										
529.00 > 81.00	3.357	3.367	-0.010	1.266	1115529	2.60		109	25653	
D 21 13C8 FOSA										
506.00 > 78.00	3.357	3.367	-0.010	1.266	5123202	2.45		98.0	43703	
D 23 13C2 PFDA										
515.00 > 470.00	3.367	3.376	-0.009	1.270	3116657	2.53		101	41775	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.525	3.525	0.0	1.000	676658	0.8817		88.2	7216	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.525	3.525	0.0	1.330	1864158	2.57		103	22814	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.683	3.683	0.0	1.225	972303	0.8967		93.0	20373	
599.00 > 99.00	3.683	3.683	0.0	1.225	320024		3.04(1.39-4.16)		11186	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.694	3.694	0.0	1.003	615043	0.9441		94.4	9598	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.694	3.694	0.0	1.000	837799	0.9161		91.6	4246	
563.00 > 169.00	3.694	3.694	0.0	1.000	217057		3.86(2.12-6.36)		6388	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.683	3.694	-0.011	1.390	1806374	2.52		101	14230	
D 30 13C2 PFUnA										
565.00 > 520.00	3.694	3.705	-0.011	1.394	2689485	2.60		104	33242	
66 11-Chloroeicosafluoro-3-oxaundecan										
631.00 > 451.00	3.851	3.851	0.0	1.280	4001479	0.9206		97.7	41931	
37 Perfluorododecanoic acid										
613.00 > 569.00	3.984	3.984	0.0	1.000	1145443	0.9507		95.1	1230	
613.00 > 169.00	3.984	3.984	0.0	1.000	306559		3.74(2.13-6.40)		6485	
D 36 13C2 PFDoA										
615.00 > 570.00	3.984	3.995	-0.011	1.503	2733400	2.46		98.6	15265	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.249	4.249	0.0	1.066	1181760	0.8805		88.1	1380	
663.00 > 169.00	4.249	4.249	0.0	1.066	387890		3.05(1.25-3.76)		8576	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.489	4.489	0.0	1.000	343037	0.99		99.5	5558	
713.00 > 219.00	4.478	4.489	-0.011	0.998	228157		1.50(0.71-2.13)		5970	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.489	4.489	0.0	1.693	3184342	2.35		94.2	14934	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.895	4.895	0.0	1.000	2498830	0.9898		99.0	1117	
813.00 > 169.00	4.895	4.895	0.0	1.000	411932		6.07(2.86-8.58)		4503	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.895	4.895	0.0	1.847	6494154	2.60		104	13821	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.246	5.246	0.0	1.072	2955243	0.9773		97.7	969	
913.00 > 169.00	5.246	5.246	0.0	1.072	348882		8.47(3.83-11.48)		4482	

Reagents:

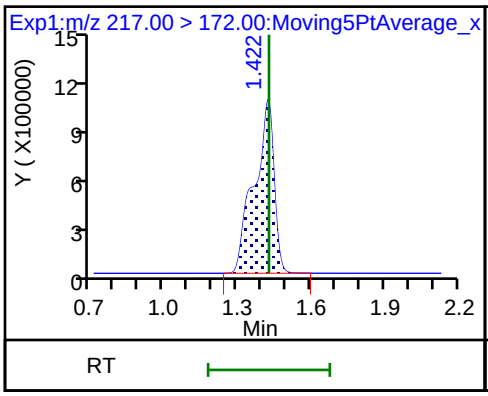
LCPFC_LL4_00005 Amount Added: 1.00 Units: mL

Report Date: 09-Jul-2018 14:06:49 Chrom Revision: 2.2 07-Jun-2018 07:41:54

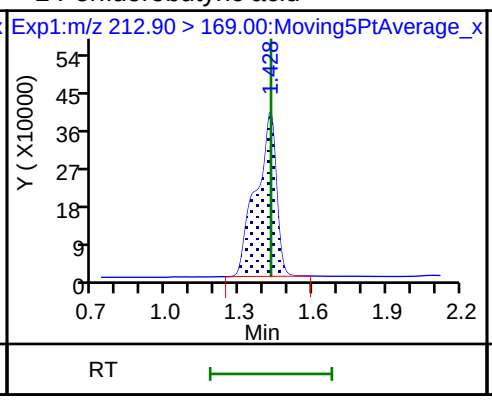
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\2018.07.06LLC_024.d
Injection Date: 07-Jul-2018 02:22:32 Instrument ID: A8_N
Lims ID: CCV L4
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 13 Worklist Smp#: 12
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC ICAL

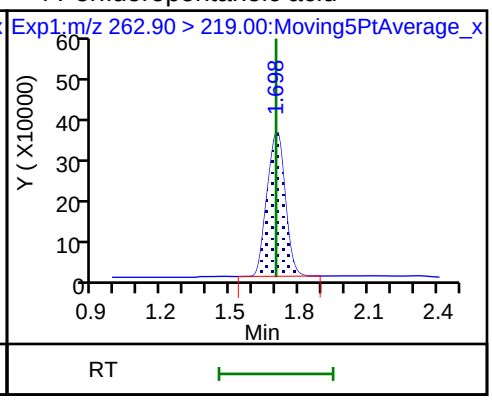
D 1 13C4 PFBA



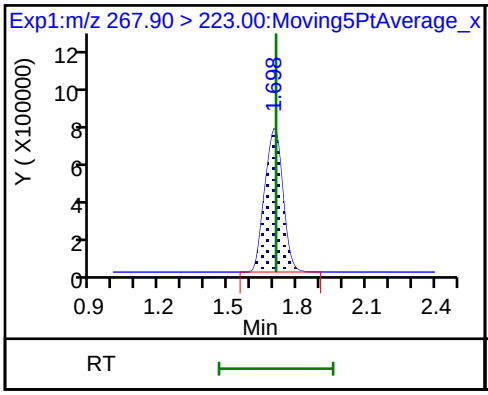
2 Perfluorobutyric acid



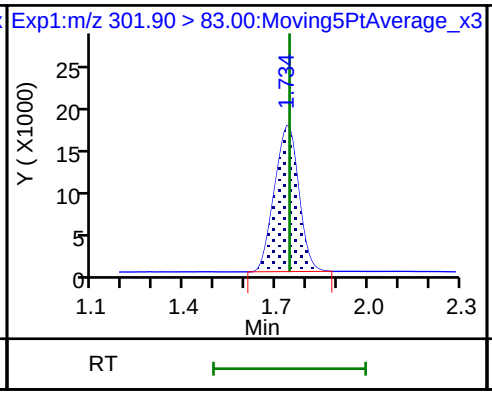
4 Perfluoropentanoic acid



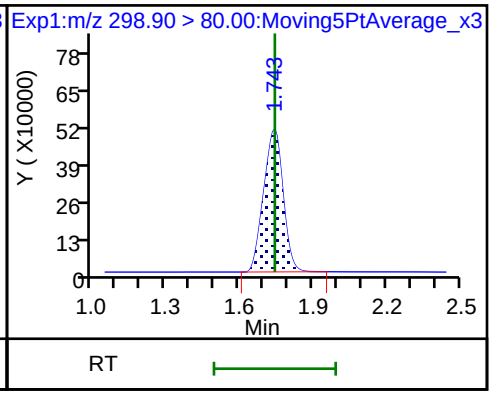
D 3 13C5-PFPeA



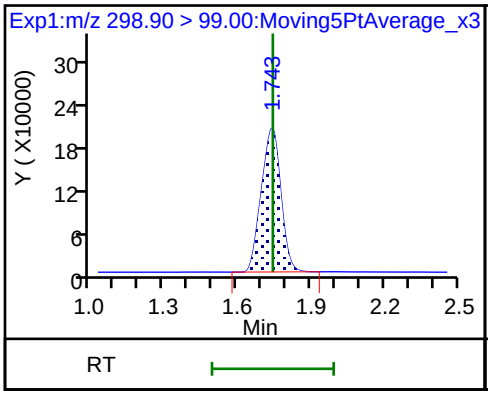
D 47 13C3-PFBS



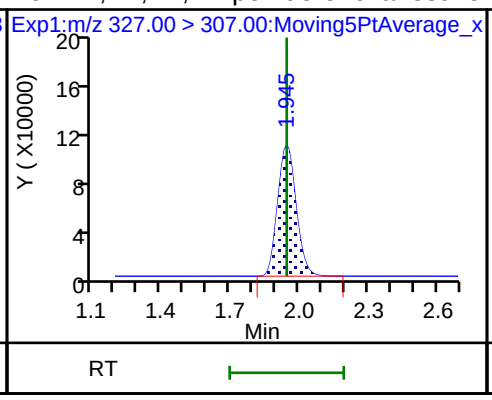
5 Perfluorobutanesulfonic acid



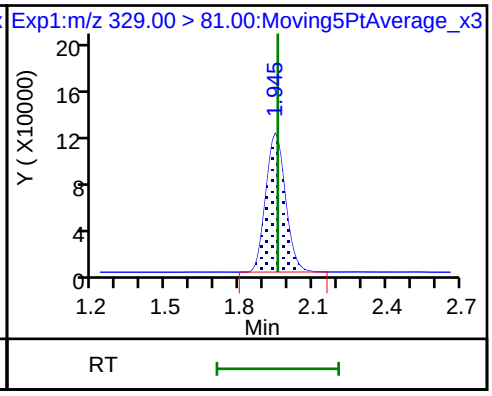
5 Perfluorobutanesulfonic acid



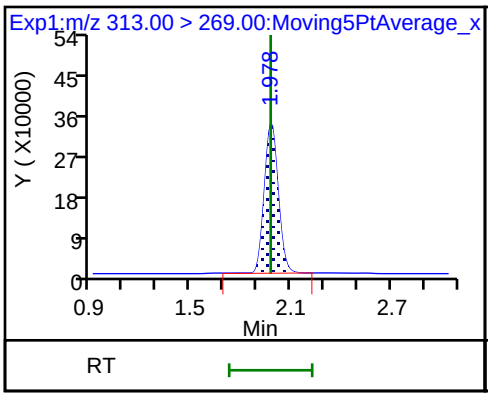
61 1H,1H,2H,2H-perfluorohexanesulfon



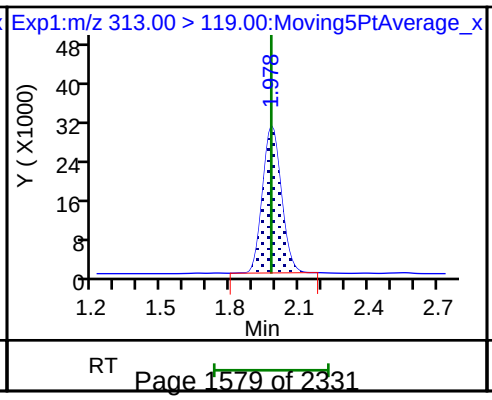
D 60 M2-4:2FTS



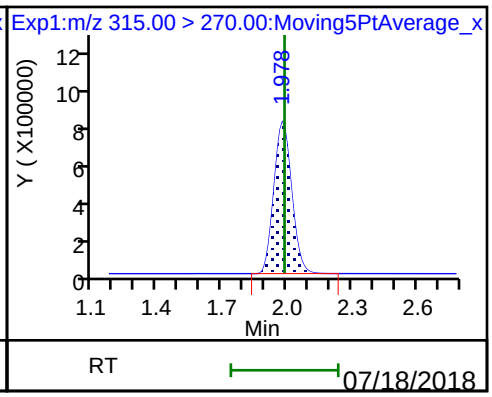
6 Perfluorohexanoic acid



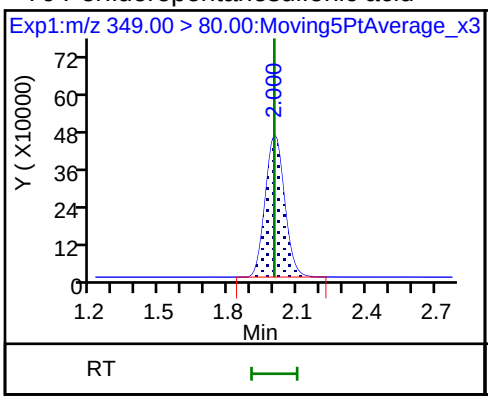
6 Perfluorohexanoic acid



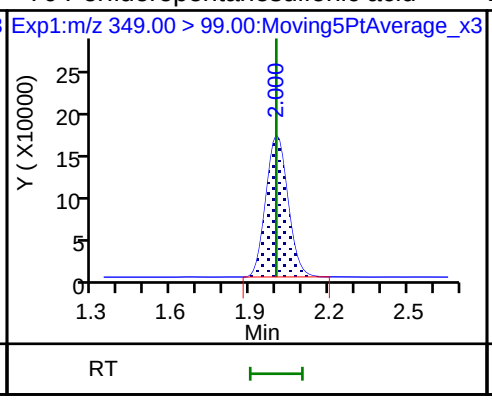
D 7 13C2 PFHxA



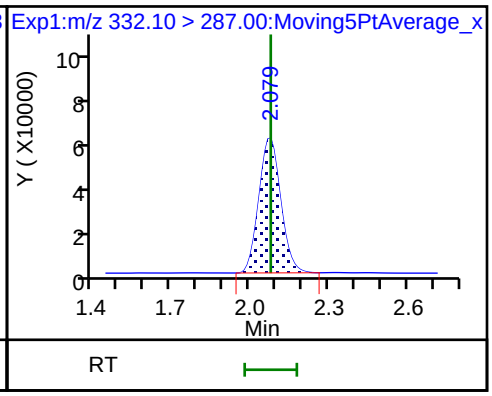
70 Perfluoropentanesulfonic acid



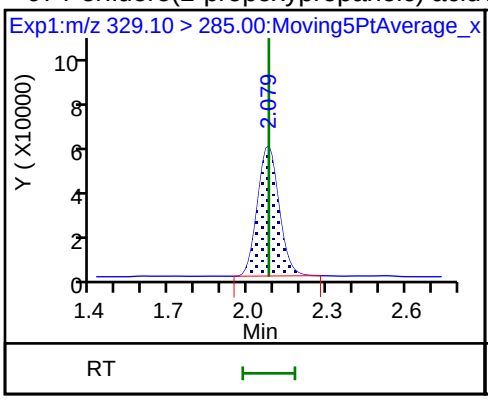
70 Perfluoropentanesulfonic acid



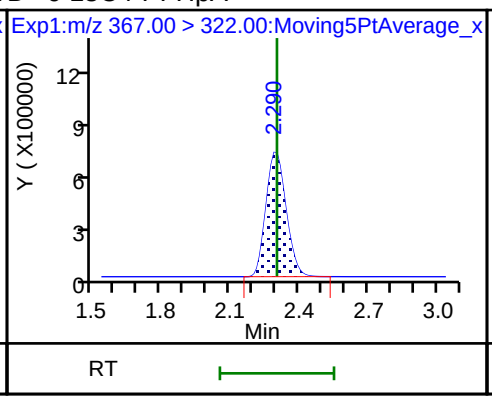
D 64 13C3 HFPO-DA



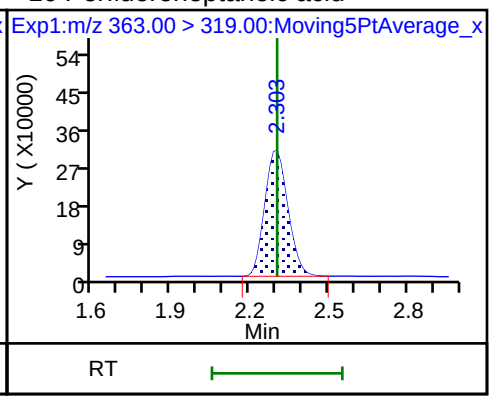
67 Perfluoro(2-propoxypropanoic) acid



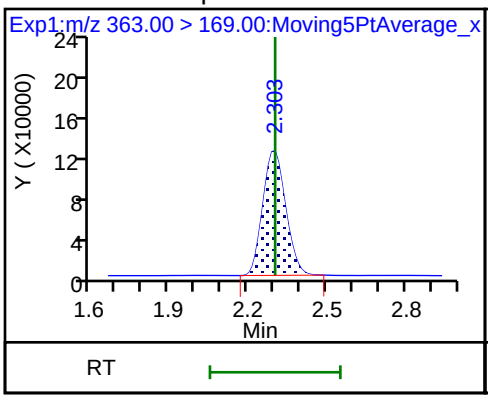
D 9 13C4-PFHpA



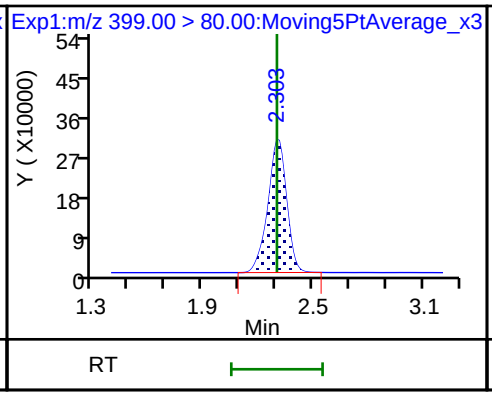
10 Perfluoroheptanoic acid



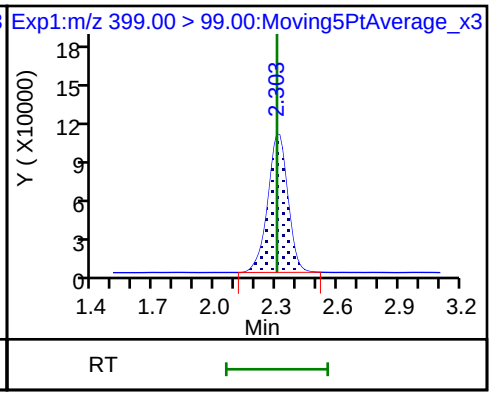
10 Perfluoroheptanoic acid



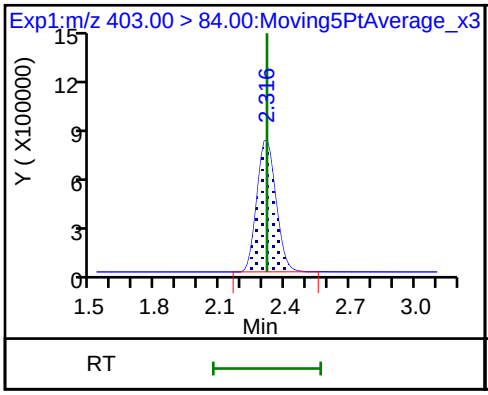
8 Perfluorohexanesulfonic acid



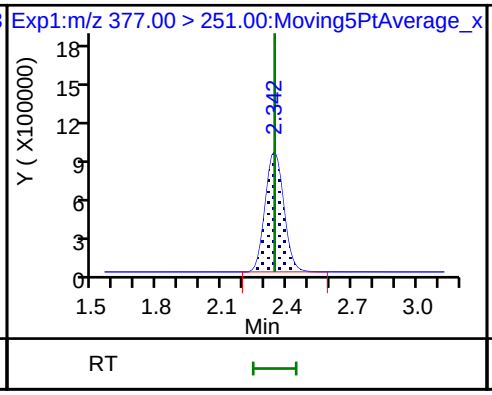
8 Perfluorohexanesulfonic acid



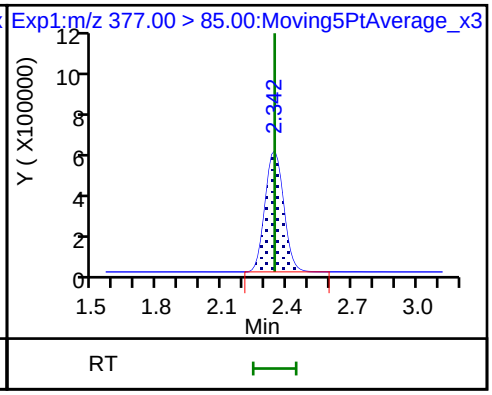
D 11 18O2 PFHxS



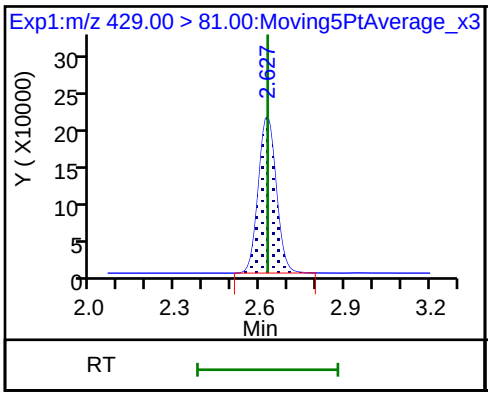
65 Adona



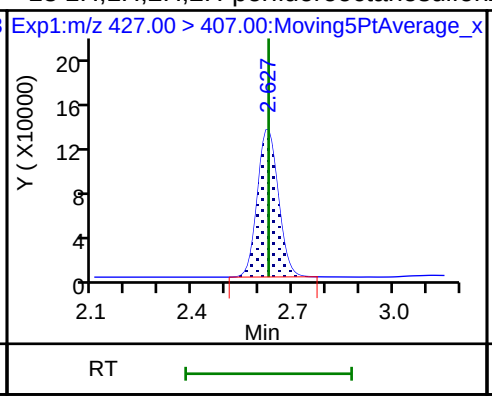
65 Adona



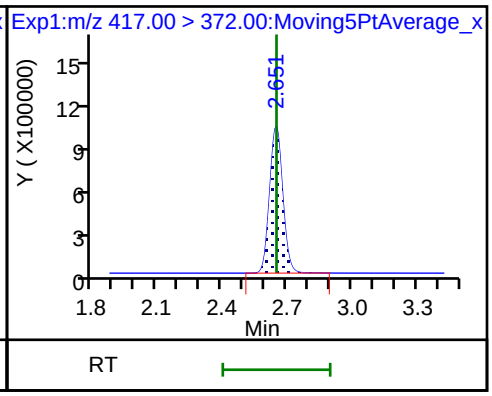
D 12 M2-6:2FTS



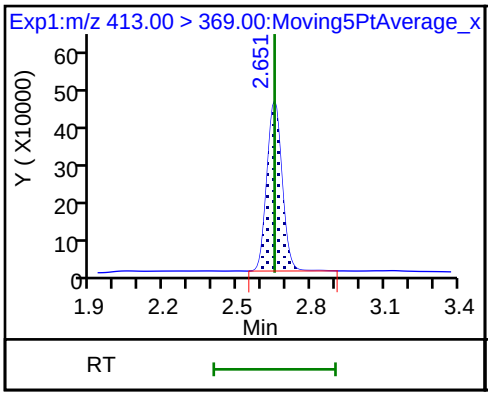
13 1H,1H,2H,2H-perfluorooctanesulfon



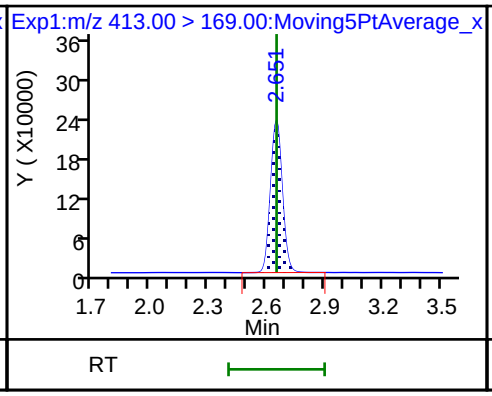
D 14 13C4 PFOA



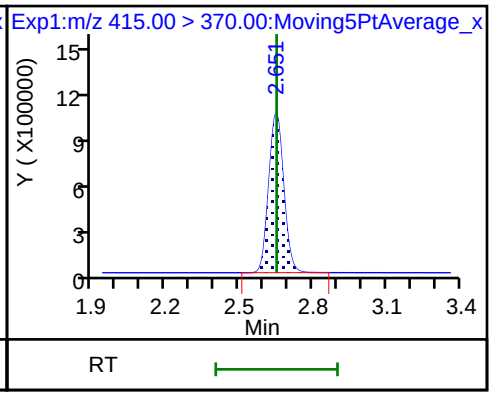
15 Perfluorooctanoic acid



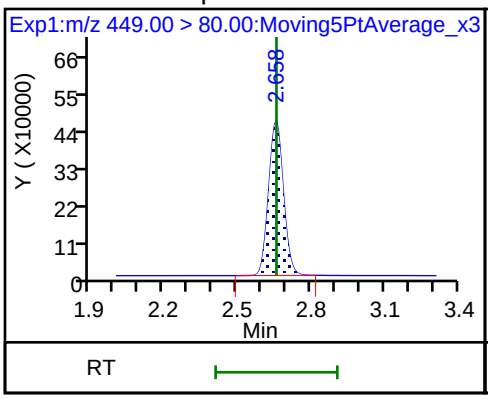
15 Perfluorooctanoic acid



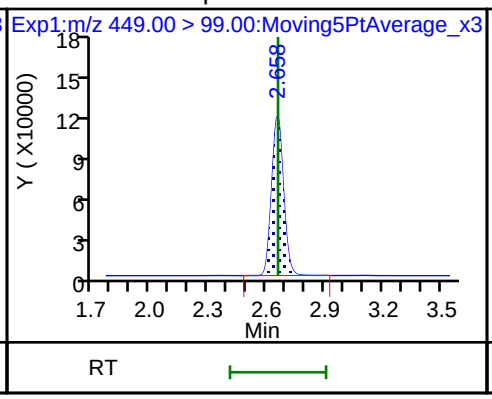
* 62 13C2-PFOA



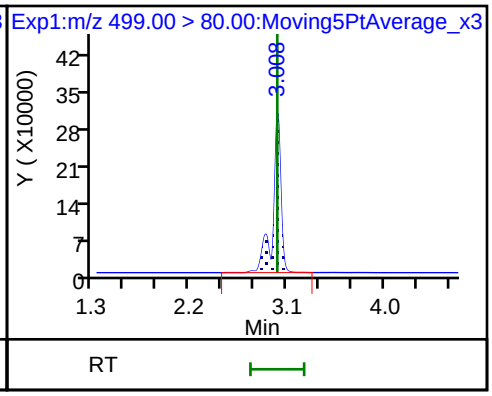
16 Perfluoroheptanesulfonic acid



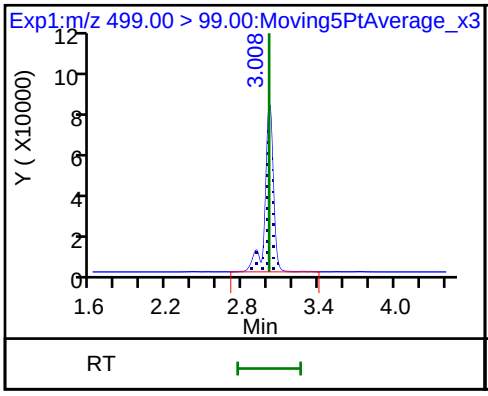
16 Perfluoroheptanesulfonic acid



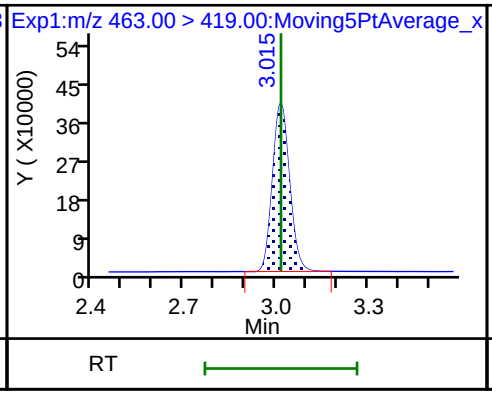
17 Perfluorooctane sulfonic acid



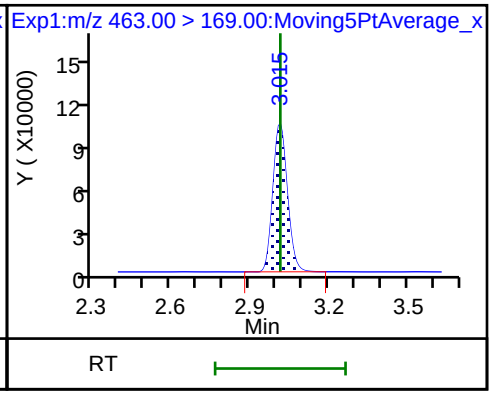
17 Perfluorooctane sulfonic acid



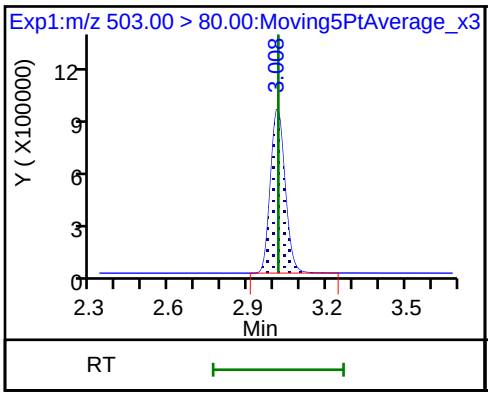
20 Perfluorononanoic acid



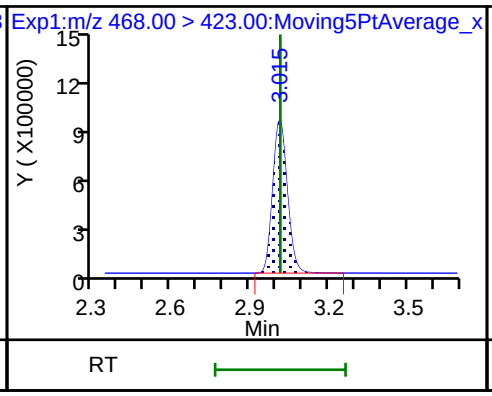
20 Perfluorononanoic acid



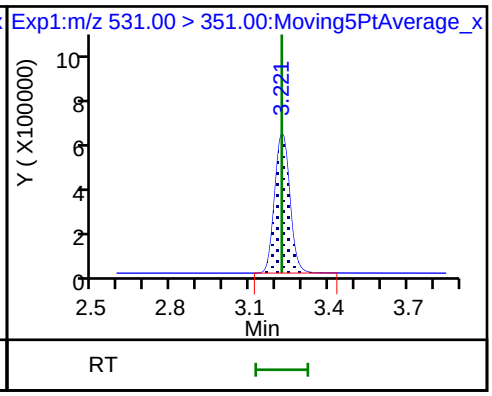
D 18 13C4 PFOS



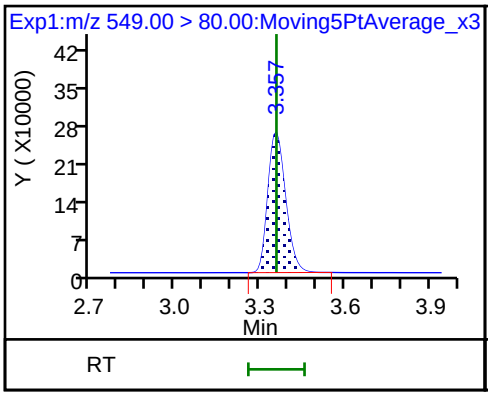
D 19 13C5 PFNA



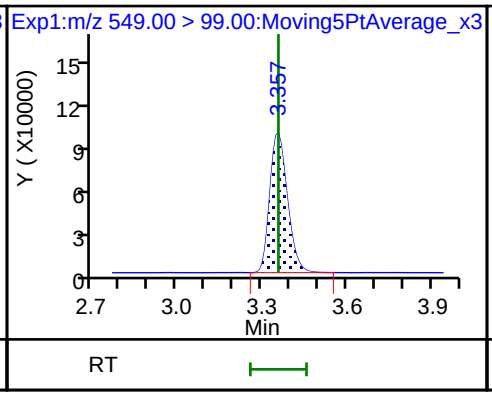
69 9-Chlorohexadecafluoro-3-oxanonane



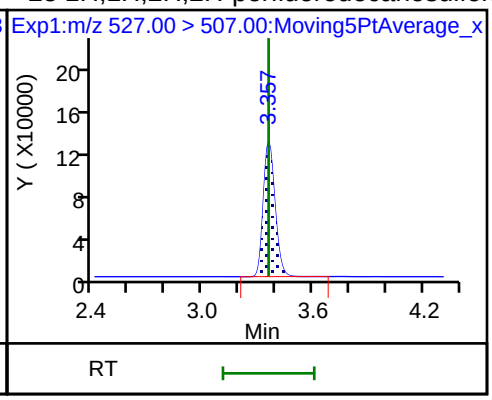
68 Perfluorononanesulfonic acid



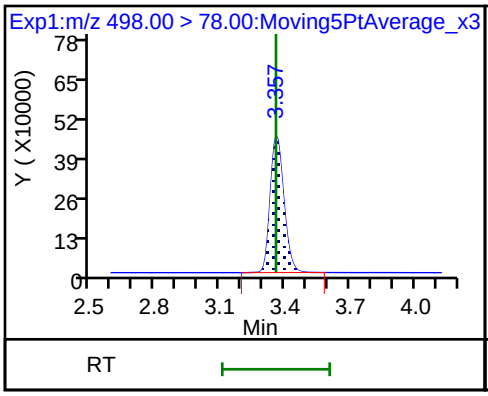
68 Perfluorononanesulfonic acid



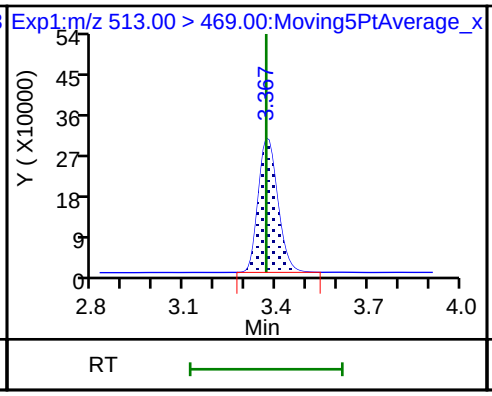
25 1H,1H,2H,2H-perfluorodecanesulfoni



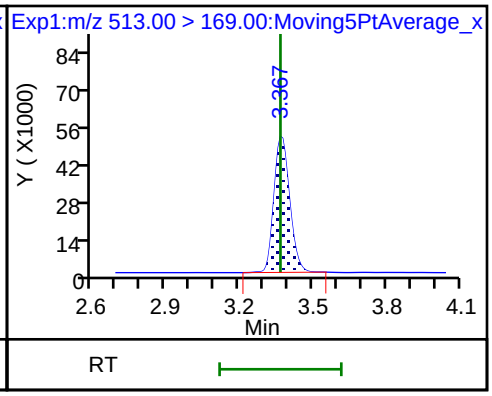
22 Perfluorooctane Sulfonamide



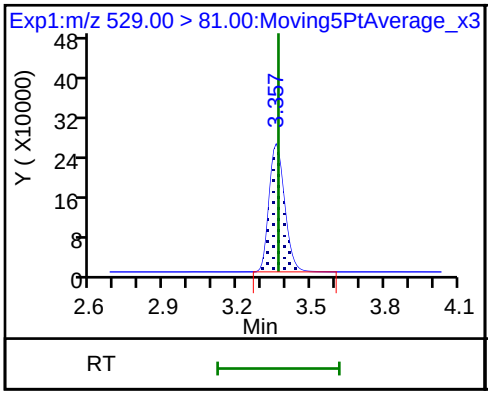
24 Perfluorodecanoic acid



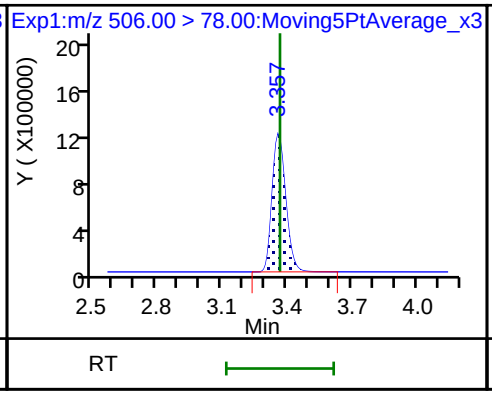
24 Perfluorodecanoic acid



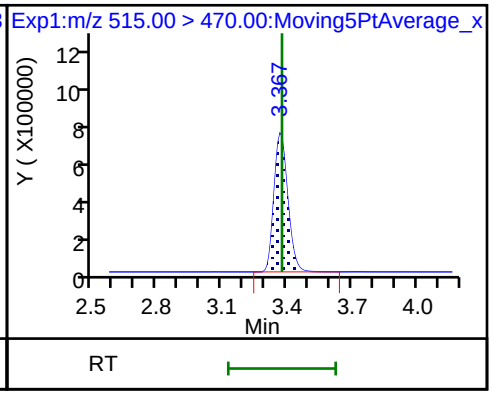
D 26 M2-8:2FTS



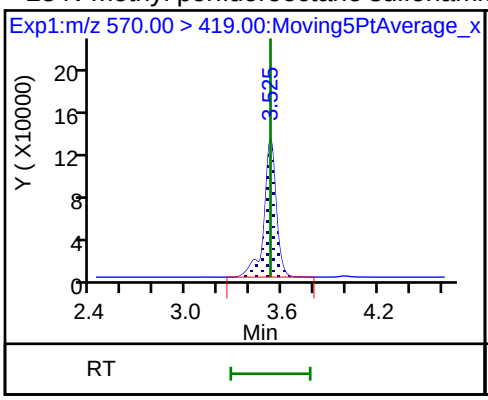
D 21 13C8 FOSA



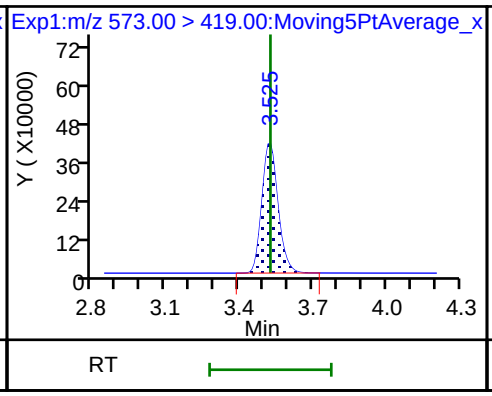
D 23 13C2 PFDA



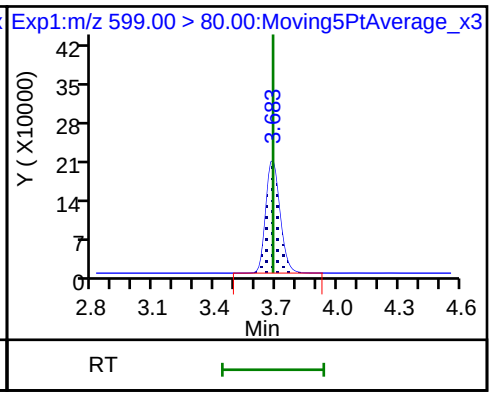
28 N-methyl perfluorooctane sulfonami



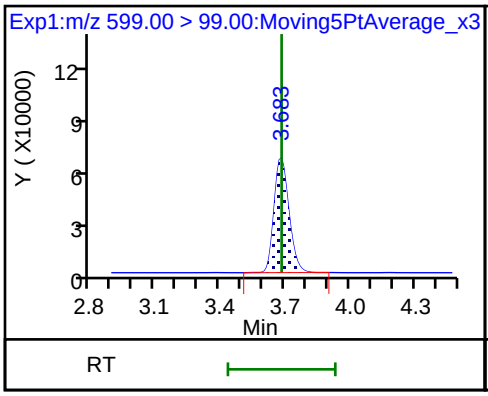
D 27 d3-NMeFOSAA



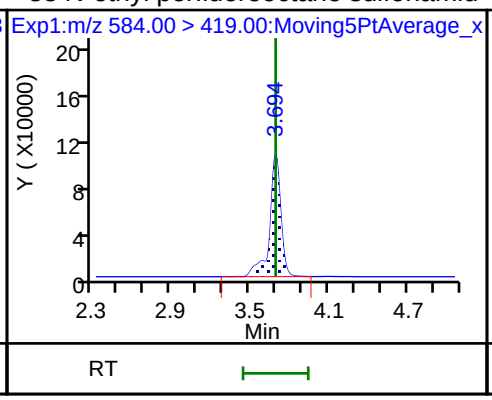
29 Perfluorodecane Sulfonic acid



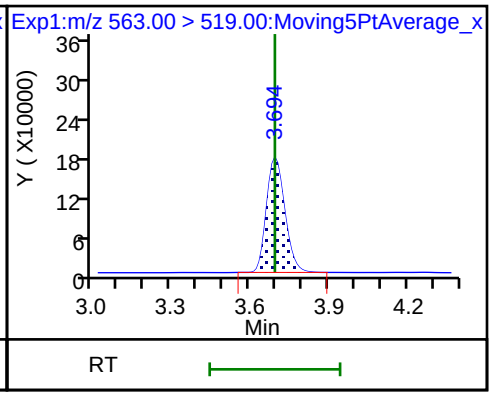
29 Perfluorodecane Sulfonic acid



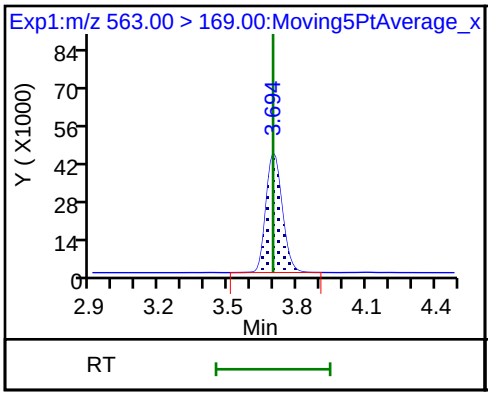
33 N-ethyl perfluorooctane sulfonamid



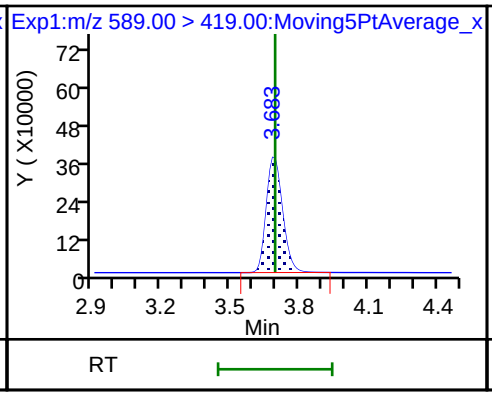
31 Perfluoroundecanoic acid



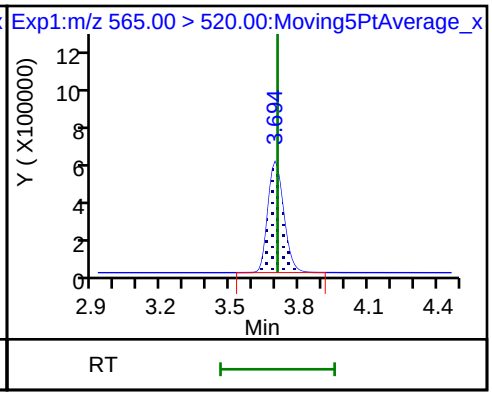
31 Perfluoroundecanoic acid



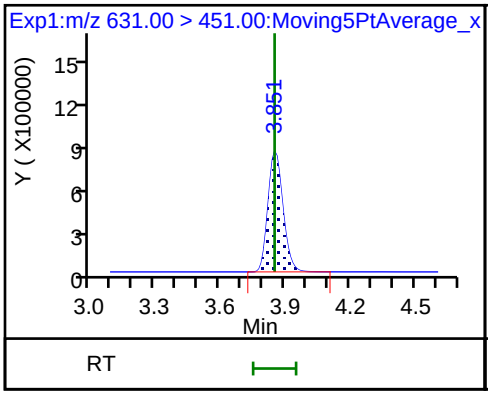
D 32 d5-NEtFOSAA



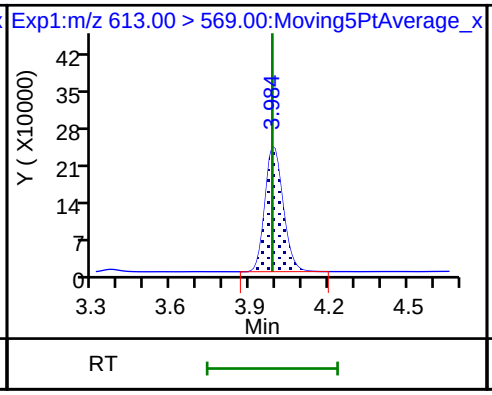
D 30 13C2 PFUnA



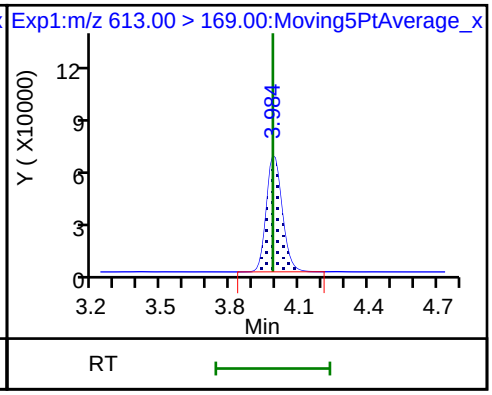
66 11-Chloroeicosafluoro-3-oxaundecan



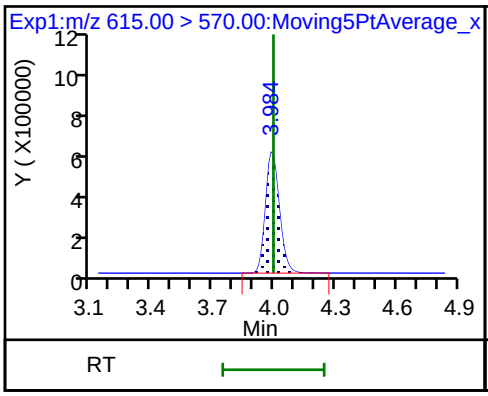
37 Perfluorododecanoic acid



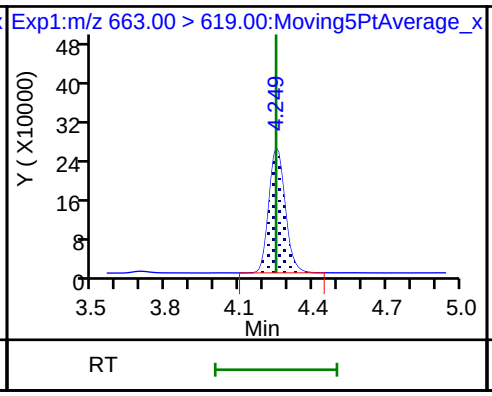
37 Perfluorododecanoic acid



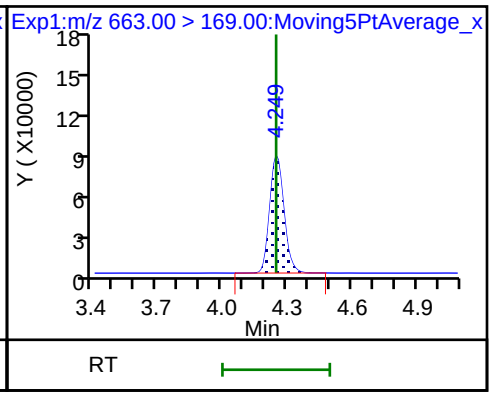
D 36 13C2 PFDoA



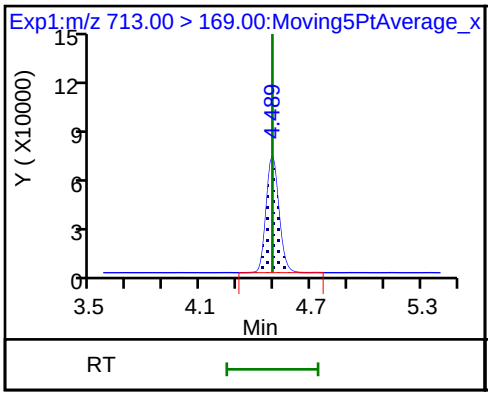
41 Perfluorotridecanoic acid



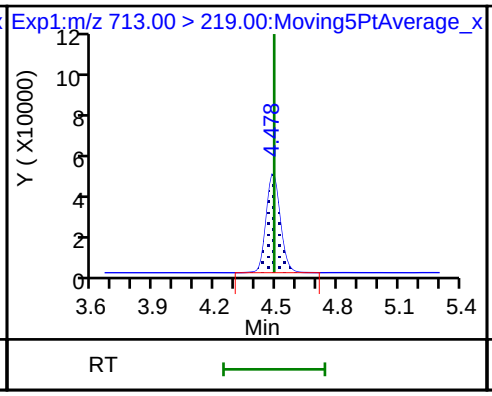
41 Perfluorotridecanoic acid



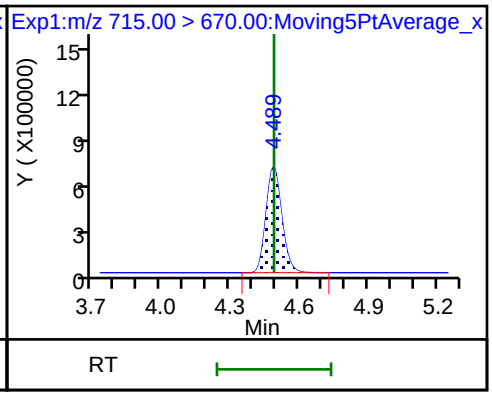
42 Perfluorotetradecanoic acid



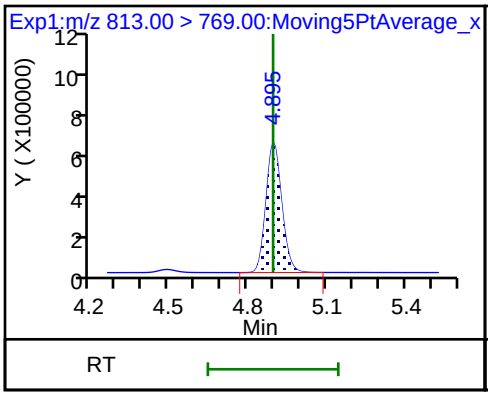
42 Perfluorotetradecanoic acid



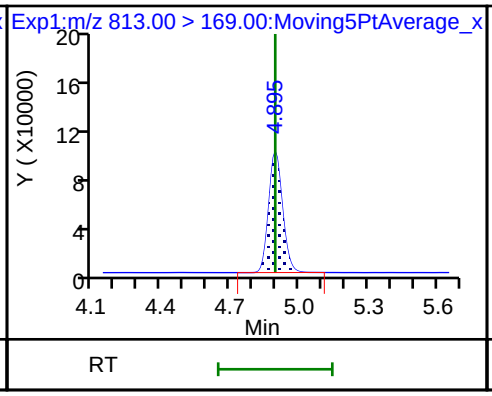
D 43 13C2-PFTeDA



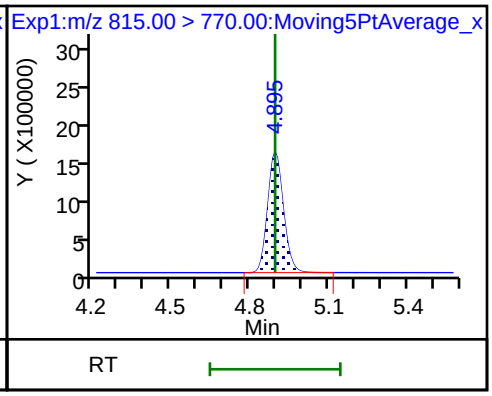
45 Perfluorohexadecanoic acid



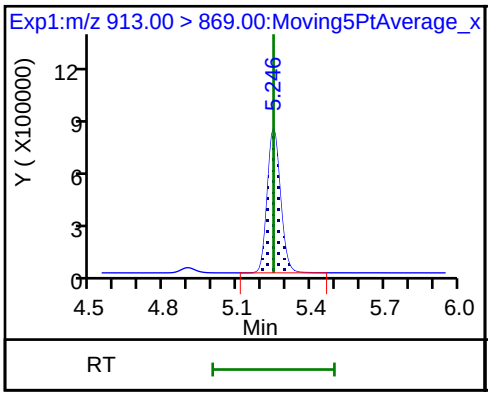
45 Perfluorohexadecanoic acid



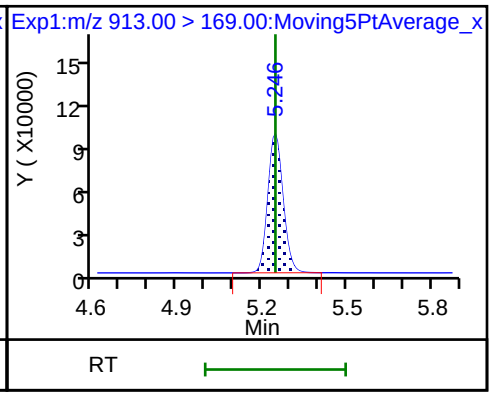
D 44 13C2-PFHxDA



46 Perfluorooctadecanoic acid



46 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Lab Sample ID: CCV 320-232800/23 Calibration Date: 07/07/2018 03:48

Instrument ID: A8_N Calib Start Date: 07/05/2018 08:51

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 07/05/2018 09:38

Lab File ID: 2018.07.06LLC_035.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	1.021	1.003		2.45	2.50	-1.8	40.0
Perfluoropentanoic acid (PFPeA)	AveID	1.191	1.231		2.59	2.50	3.4	40.0
Perfluorobutanesulfonic acid (PFBS)	AveID	75.80	79.34		2.31	2.21	4.7	50.0
4:2 FTS	AveID	15.68	16.18		2.41	2.34	3.2	50.0
Perfluorohexanoic acid (PFHxA)	AveID	1.018	1.069		2.62	2.50	4.9	40.0
Perfluoropentanesulfonic acid (PFPeS)	AveID	64.85	68.73		2.49	2.35	6.0	50.0
HFPO-DA (GenX)	AveID	2.299	2.645		2.88	2.50	15.0	40.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.130	1.115		2.47	2.50	-1.3	40.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.156	1.097		2.16	2.28	-5.2	40.0
ADONA	AveID	3.706	3.965		2.52	2.36	7.0	50.0
6:2 FTS	AveID	1.567	1.697		2.57	2.37	8.3	40.0
Perfluorooctanoic acid (PFOA)	AveID	1.186	1.181		2.49	2.50	-0.4	40.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.339	1.381		2.45	2.38	3.1	50.0
Perfluorononanoic acid (PFNA)	AveID	1.078	1.091		2.53	2.50	1.2	40.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.168	1.163		2.31	2.32	-0.5	40.0
9-Chlorohexadecafluoro-3-oxa nonane-1-sulfonate	AveID	1.891	1.912		2.36	2.33	1.2	50.0
8:2 FTS	AveID	1.321	1.211		2.20	2.40	-8.3	40.0
Perfluorononanesulfonic acid (PFNS)	AveID	0.8126	0.7685		2.27	2.40	-5.4	50.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9917	1.009		2.54	2.50	1.8	40.0
Perfluorodecanoic acid (PFDA)	AveID	1.042	1.071		2.57	2.50	2.7	40.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	1.029	1.019		2.48	2.50	-0.9	40.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.7195	0.6767		2.27	2.41	-5.9	50.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.9017	0.8983		2.49	2.50	-0.4	40.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.8501	0.8879		2.61	2.50	4.4	40.0
11-Chloroeicosafluoro-3-oxau ndecane-1-sulfonate	AveID	2.884	2.867		2.34	2.36	-0.6	50.0
Perfluorododecanoic acid (PFDoA)	AveID	1.102	1.121		2.54	2.50	1.7	40.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.227	1.096		2.23	2.50	-10.7	50.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2708	0.2570		2.37	2.50	-5.1	50.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		0.9723		2.54	2.50	1.4	50.0

FORM VII 537 (modified)

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Lab Sample ID: CCV 320-232800/23 Calibration Date: 07/07/2018 03:48

Instrument ID: A8_N Calib Start Date: 07/05/2018 08:51

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 07/05/2018 09:38

Lab File ID: 2018.07.06LLC_035.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.164	1.139		2.45	2.50	-2.2	50.0
13C4 PFBA	Ave	1.384	1.350		2.44	2.50	-2.5	50.0
13C5 PFPeA	Ave	1.025	0.9662		2.36	2.50	-5.7	50.0
13C3-PFBS	Ave	0.0245	0.0246		2.33	2.33	0.3	50.0
M2-4:2FTS	Ave	0.1575	0.1605		2.38	2.34	1.9	50.0
13C2 PFHxA	Ave	1.097	1.081		2.47	2.50	-1.4	50.0
13C3 HFPO-DA	Ave	0.0899	0.0803		2.23	2.50	-10.6	50.0
13C4-PFHpA	Ave	0.9735	1.004		2.58	2.50	3.1	50.0
18O2 PFHxS	Ave	1.198	1.269		2.51	2.37	6.0	50.0
M2-6:2FTS	Ave	0.2186	0.2234		2.43	2.38	2.2	40.0
13C4 PFOA	Ave	0.9539	0.9944		2.61	2.50	4.2	50.0
13C4 PFOS	Ave	0.8551	0.8796		2.46	2.39	2.9	50.0
13C5 PFNA	Ave	0.8109	0.8669		2.67	2.50	6.9	50.0
13C8 FOSA	Ave	1.187	1.168		2.46	2.50	-1.6	50.0
M2-8:2FTS	Ave	0.2431	0.2680		2.64	2.40	10.2	40.0
13C2 PFDA	Ave	0.6992	0.7172		2.56	2.50	2.6	50.0
d3-NMeFOSAA	Ave	0.4120	0.4060		2.46	2.50	-1.5	50.0
13C2 PFUnA	Ave	0.5873	0.5623		2.39	2.50	-4.3	50.0
d5-NEtFOSAA	Ave	0.4070	0.4095		2.52	2.50	0.6	50.0
13C2 PFDoA	Ave	0.6294	0.6345		2.52	2.50	0.8	50.0
13C2-PFTeDA	Ave	0.7673	0.7609		2.48	2.50	-0.8	50.0
13C2-PFHxDA	Ave	1.420	1.503		2.65	2.50	5.9	50.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\2018.07.06LLC_035.d
Lims ID: CCV L5
Client ID:
Sample Type: CCV
Inject. Date: 07-Jul-2018 03:48:37 ALS Bottle#: 14 Worklist Smp#: 23
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV L5
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-A8_N*sub32

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 09-Jul-2018 14:33:39 Calib Date: 05-Jul-2018 09:38:17
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180705-60684.b\2018.07.05LLICALAA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK010

First Level Reviewer: mongkols Date: 09-Jul-2018 14:33:39

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.430	1.428	0.002	0.538	5536160	2.44		97.5	23274	
2 Perfluorobutyric acid										
212.90 > 169.00	1.430	1.428	0.002	1.000	5552913	2.45		98.2	3252	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.711	1.698	0.013	1.000	4878349	2.59		103	3840	
D 3 13C5-PFPeA										
267.90 > 223.00	1.711	1.707	0.004	0.643	3961667	2.36		94.3	42956	
D 47 13C3-PFBS										
301.90 > 83.00	1.747	1.743	0.004	0.657	93750	2.33		100	772	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.747	1.743	0.004	1.000	7070565	2.31		105	27119	
298.90 > 99.00	1.747	1.743	0.004	1.000	2778702		2.54(1.25-3.74)		21230	
61 1H,1H,2H,2H-perfluorohexanesulfoni										
327.00 > 307.00	1.949	1.945	0.004	1.115	1523495	2.41		103	54267	
D 60 M2-4:2FTS										
329.00 > 81.00	1.949	1.956	-0.007	0.733	614662	2.38		102	9186	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.992	1.978	0.014	1.000	4737629	2.62		105	11721	
313.00 > 119.00	1.992	1.978	0.014	1.000	420529		11.27(5.03-15.10)		6722	
D 7 13C2 PFHxA										
315.00 > 270.00	1.992	1.988	0.004	0.749	4433705	2.47		98.6	51653	
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.014	2.000	0.014	1.153	6498853	2.49		106	69690	
349.00 > 99.00	2.014	2.000	0.014	1.153	2321427		2.80(1.36-4.07)		30850	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.082	2.078	0.004	0.783	329374	2.23		89.4	4937	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
67 Perfluoro(2-propoxypropanoic) acid										
329.10 > 285.00	2.082	2.079	0.003	1.000	871128	2.88		115	5464	
D 9 13C4-PFHpA										
367.00 > 322.00	2.306	2.302	0.004	0.867	4117142	2.58		103	32678	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.306	2.303	0.003	1.000	4592501	2.47		98.7	6324	
363.00 > 169.00	2.306	2.303	0.003	1.000	1754215		2.62(1.13-3.40)		12121	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.319	2.303	0.016	1.000	5193085	2.16		94.8	17320	
399.00 > 99.00	2.319	2.303	0.016	1.000	1708268		3.04(1.50-4.49)		10294	
D 11 18O2 PFHxS										
403.00 > 84.00	2.319	2.315	0.004	0.872	4923294	2.51		106	48257	
65 Adona										
377.00 > 251.00	2.345	2.342	0.003	0.777	13470776	2.52		107	84873	
377.00 > 85.00	2.345	2.342	0.003	0.777	8263333		1.63(0.84-2.53)		73855	
D 12 M2-6:2FTS										
429.00 > 81.00	2.628	2.626	0.002	0.988	870366	2.43		102	15392	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.628	2.627	0.002	1.000	1473527	2.57		108	6620	
D 14 13C4 PFOA										
417.00 > 372.00	2.660	2.650	0.010	1.000	4077237	2.61		104	31219	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.660	2.651	0.009	1.000	4821555	2.49		99.6	1828	
413.00 > 169.00	2.660	2.651	0.009	1.000	2479646		1.94(0.84-2.52)		12343	
* 62 13C2-PFOA										
415.00 > 370.00	2.660	2.651	0.009		4100346	2.50			33360	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.667	2.658	0.009	0.884	4740379	2.45		103	29452	
449.00 > 99.00	2.660	2.658	0.002	0.881	1215186		3.90(1.94-5.82)		14252	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.018	3.008	0.010	1.000	3891361	2.31		99.5	22084	
499.00 > 99.00	3.018	3.008	0.010	1.000	834073		4.67(2.31-6.93)		14448	
20 Perfluorononanoic acid										
463.00 > 419.00	3.018	3.015	0.003	1.000	3876825	2.53		101	9011	
463.00 > 169.00	3.018	3.015	0.003	1.000	919564		4.22(1.90-5.69)		34326	
D 18 13C4 PFOS										
503.00 > 80.00	3.018	3.015	0.003	1.135	3447803	2.46		103	32435	
D 19 13C5 PFNA										
468.00 > 423.00	3.018	3.015	0.003	1.135	3554568	2.67		107	44389	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.233	3.221	0.012	1.071	6427842	2.36		101	56162	
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.361	3.357	0.003	1.113	2660788	2.27		94.6	36154	
549.00 > 99.00	3.361	3.357	0.003	1.113	1016635		2.62(1.33-3.97)		19343	
25 1H,1H,2H,2H-perfluorodecanesulfoni										
527.00 > 507.00	3.361	3.357	0.003	1.000	1275191	2.20		91.7	19051	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.361	3.357	0.003	1.000	4834880	2.54		102	63894	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
24 Perfluorodecanoic acid										
513.00 > 469.00	3.370	3.367	0.003	1.000	3148938	2.57		103	12811	
513.00 > 169.00	3.370	3.367	0.003	1.000	548448		5.74(2.36-7.09)		17458	
D 26 M2-8:2FTS										
529.00 > 81.00	3.361	3.367	-0.007	1.264	1052774	2.64		110	18445	
D 21 13C8 FOSA										
506.00 > 78.00	3.361	3.367	-0.007	1.264	4789451	2.46		98.4	40337	
D 23 13C2 PFDA										
515.00 > 470.00	3.370	3.376	-0.006	1.267	2940933	2.56		103	21957	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.529	3.525	0.004	1.000	1697079	2.48		99.1	15678	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.529	3.525	0.004	1.327	1664710	2.46		98.5	24557	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.687	3.683	0.004	1.221	2352763	2.27		94.1	55101	
599.00 > 99.00	3.687	3.683	0.004	1.221	770423		3.05(1.39-4.16)		27160	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.697	3.694	0.003	1.000	1508368	2.49		99.6	19793	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.697	3.694	0.003	1.000	2047158	2.61		104	9412	
563.00 > 169.00	3.697	3.694	0.003	1.000	473603		4.32(2.12-6.36)		14059	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.697	3.694	0.003	1.390	1679233	2.52		101	19046	
D 30 13C2 PFUnA										
565.00 > 520.00	3.697	3.705	-0.008	1.390	2305743	2.39		95.7	29708	
66 11-Chloroeicosafluoro-3-oxaundecan										
631.00 > 451.00	3.854	3.851	0.003	1.277	9738968	2.34		99.4	67394	
37 Perfluorododecanoic acid										
613.00 > 569.00	3.998	3.984	0.014	1.003	2915894	2.54		102	3475	
613.00 > 169.00	3.998	3.984	0.014	1.003	699852		4.17(2.13-6.40)		14734	
D 36 13C2 PFDoA										
615.00 > 570.00	3.988	3.995	-0.007	1.499	2601610	2.52		101	13713	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.252	4.249	0.003	1.066	2851748	2.23		89.3	3200	
663.00 > 169.00	4.252	4.249	0.003	1.066	898418		3.17(1.25-3.76)		15195	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.490	4.489	0.001	1.000	801890	2.37		94.9	9395	
713.00 > 219.00	4.490	4.489	0.001	1.000	578866		1.39(0.71-2.13)		9309	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.490	4.489	0.001	1.688	3119950	2.48		99.2	15693	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.904	4.895	0.009	1.002	5993051	2.54		101	2566	
813.00 > 169.00	4.904	4.895	0.009	1.002	975156		6.15(2.86-8.58)		8978	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.896	4.895	0.001	1.841	6163692	2.65		106	13089	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.247	5.246	0.001	1.072	7018648	2.45		97.8	2068	
913.00 > 169.00	5.247	5.246	0.001	1.072	842846		8.33(3.83-11.48)		7241	

Reagents:

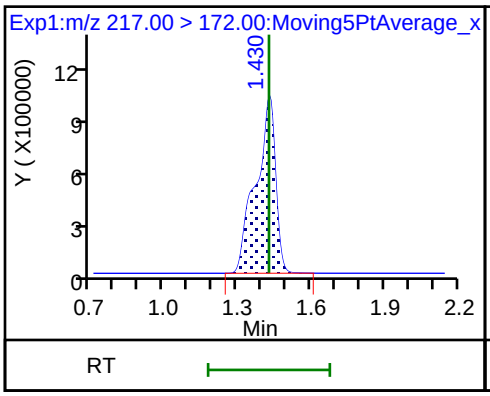
LCPFC_LL5_00005 Amount Added: 1.00 Units: mL

Report Date: 09-Jul-2018 14:33:41 Chrom Revision: 2.2 07-Jun-2018 07:41:54

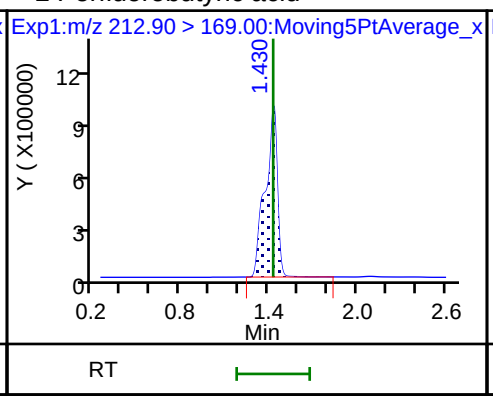
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\2018.07.06LLC_035.d
Injection Date: 07-Jul-2018 03:48:37 Instrument ID: A8_N
Lims ID: CCV L5
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 14 Worklist Smp#: 23
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC ICAL

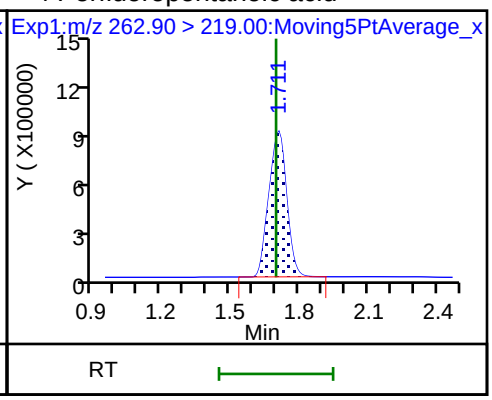
D 1 13C4 PFBA



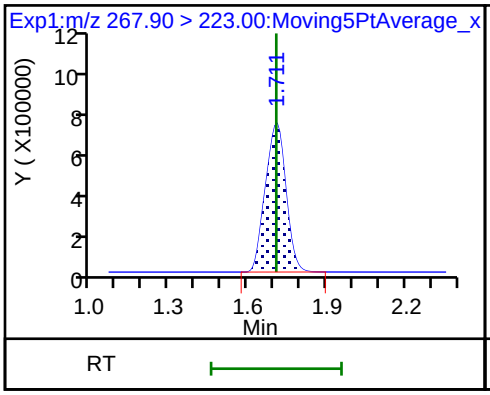
2 Perfluorobutyric acid



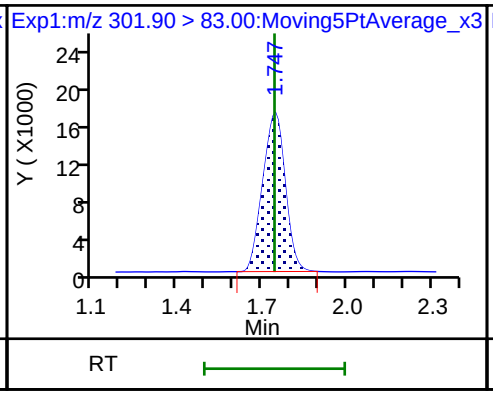
4 Perfluoropentanoic acid



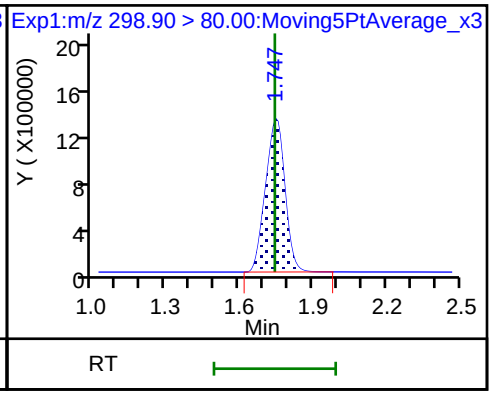
D 3 13C5-PFPeA



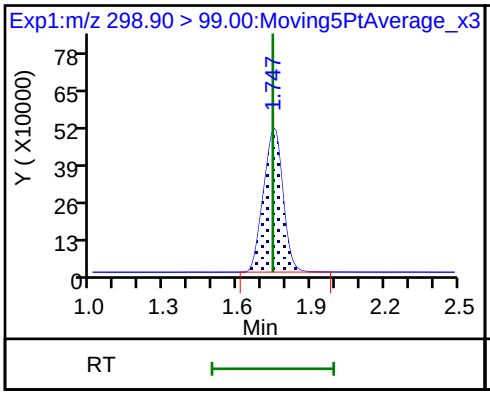
D 47 13C3-PFBS



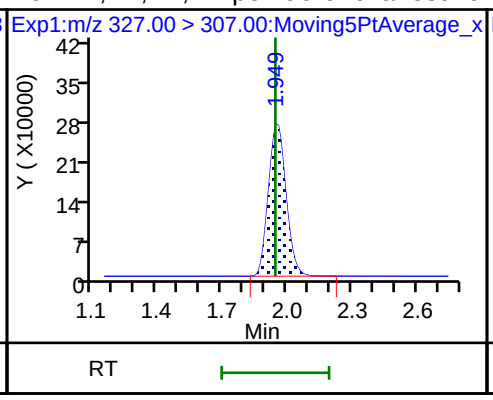
5 Perfluorobutanesulfonic acid



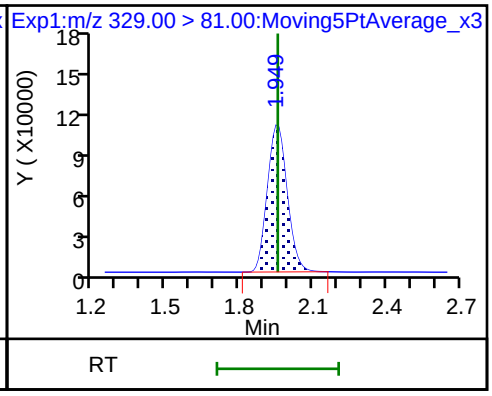
5 Perfluorobutanesulfonic acid



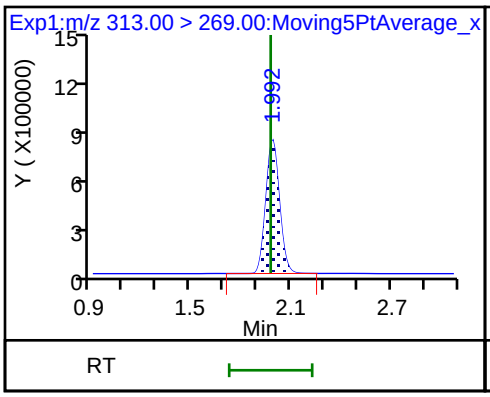
61 1H,1H,2H,2H-perfluorohexanesulfon



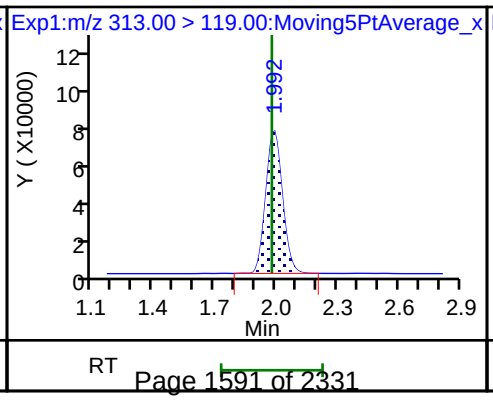
D 60 M2-4:2FTS



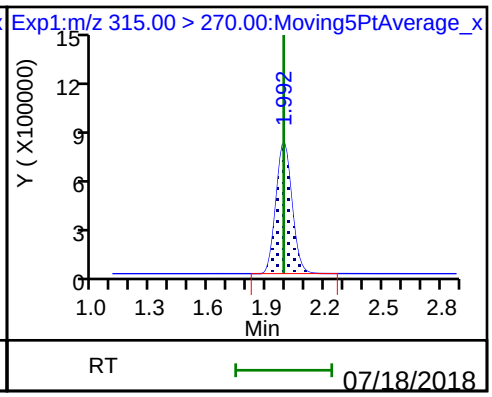
6 Perfluorohexanoic acid



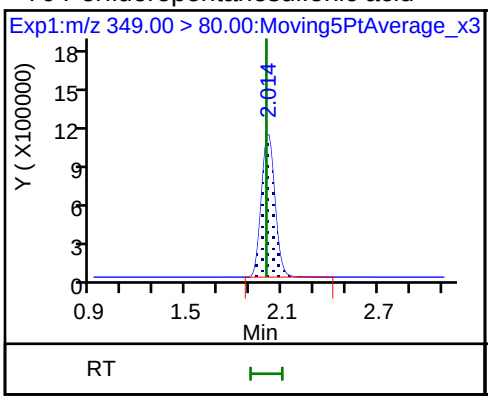
6 Perfluorohexanoic acid



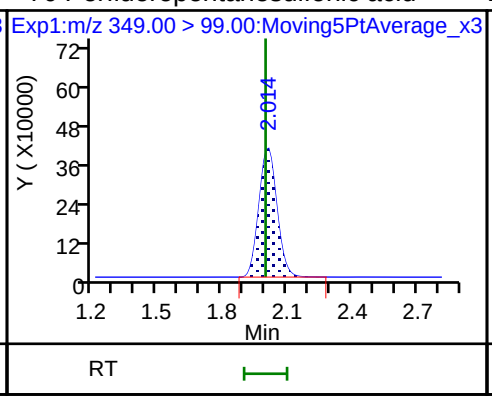
D 7 13C2 PFHxA



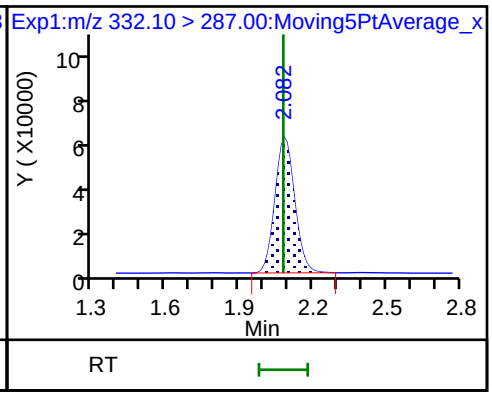
70 Perfluoropentanesulfonic acid



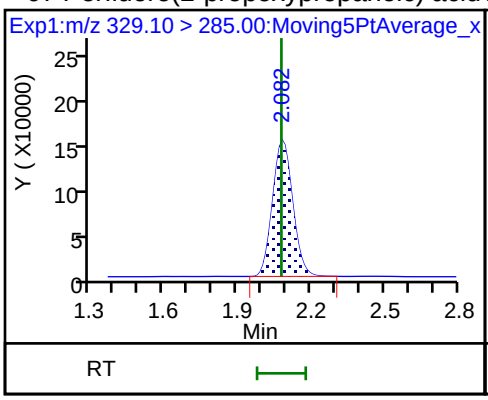
70 Perfluoropentanesulfonic acid



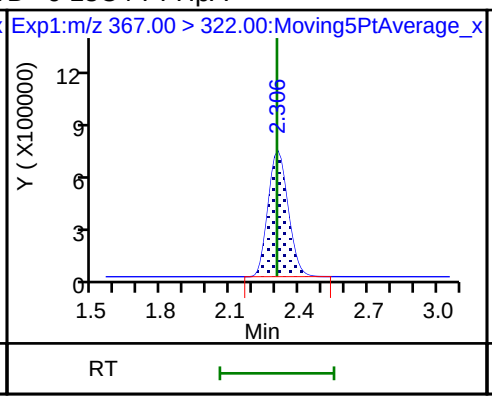
D 64 13C3 HFPO-DA



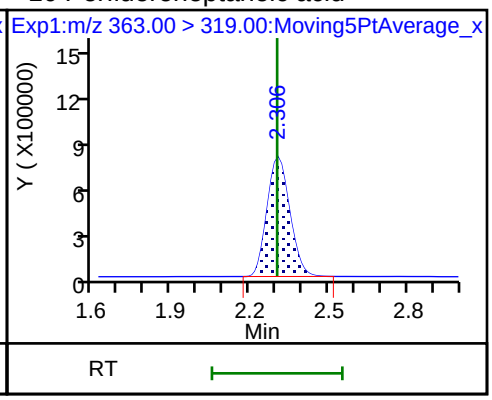
67 Perfluoro(2-propoxypropanoic) acid



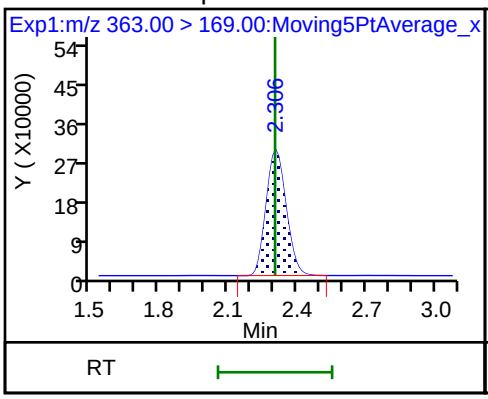
D 9 13C4-PFHpA



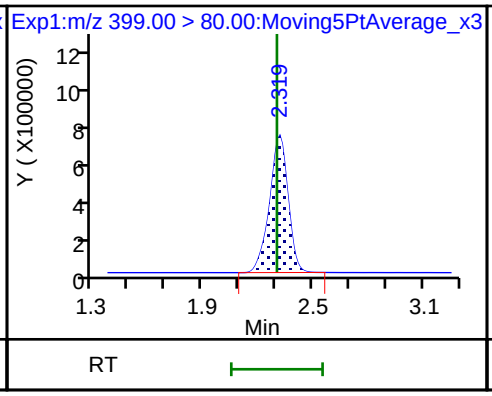
10 Perfluoroheptanoic acid



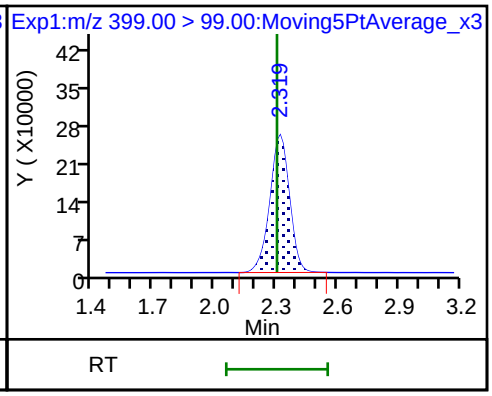
10 Perfluoroheptanoic acid



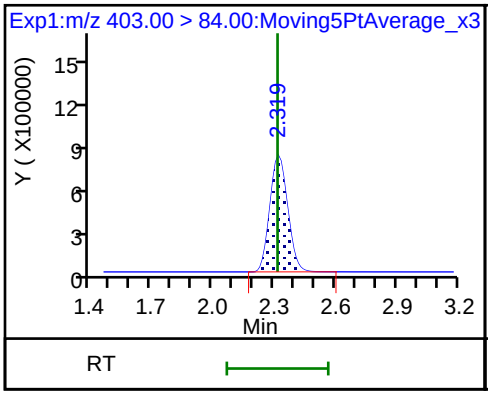
8 Perfluorohexanesulfonic acid



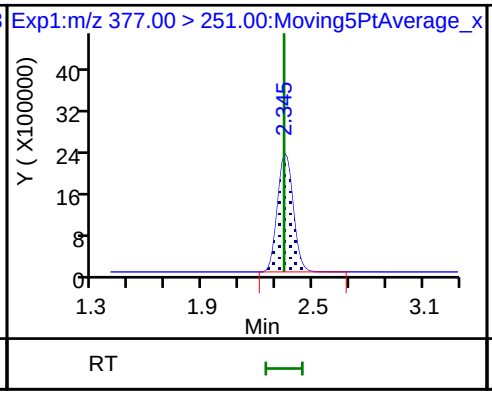
8 Perfluorohexanesulfonic acid



D 11 18O2 PFHxS



65 Adona



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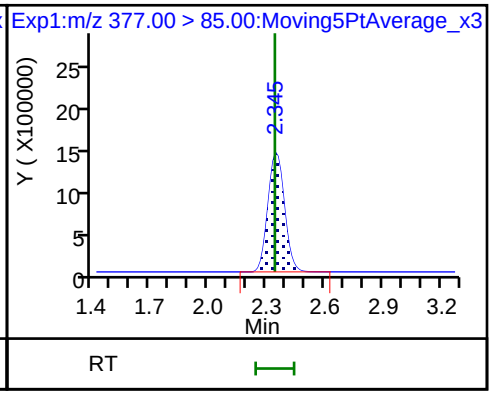
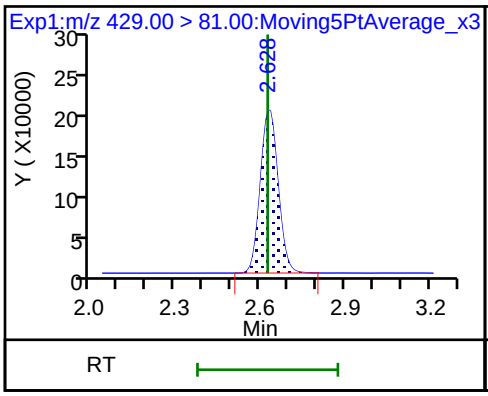
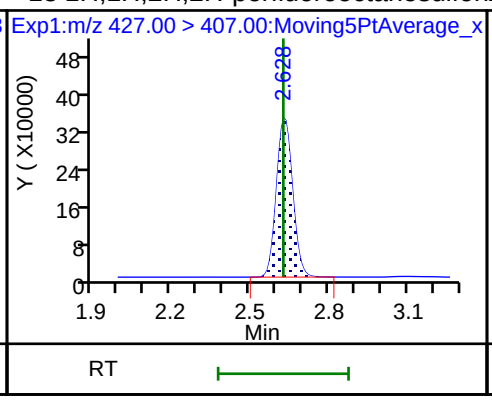


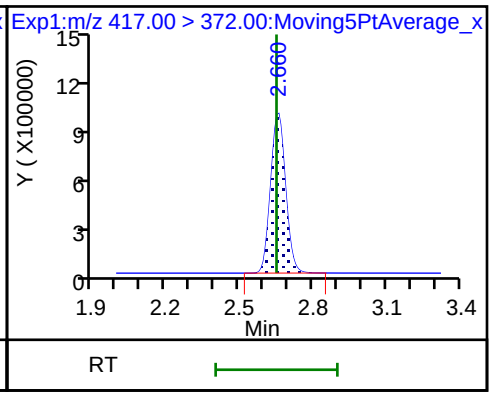
D 12 M2-6:2FTS



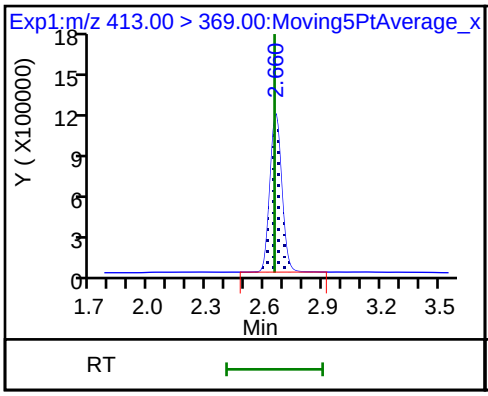
13 1H,1H,2H,2H-perfluorooctanesulfon



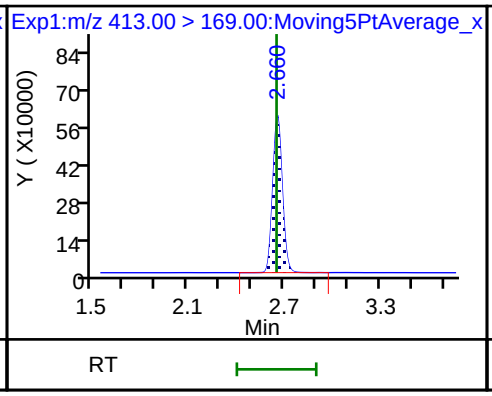
D 14 13C4 PFOA



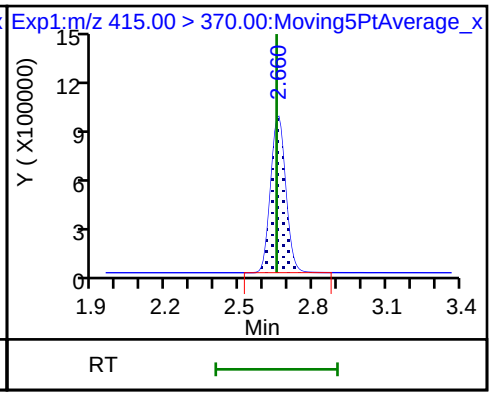
15 Perfluorooctanoic acid



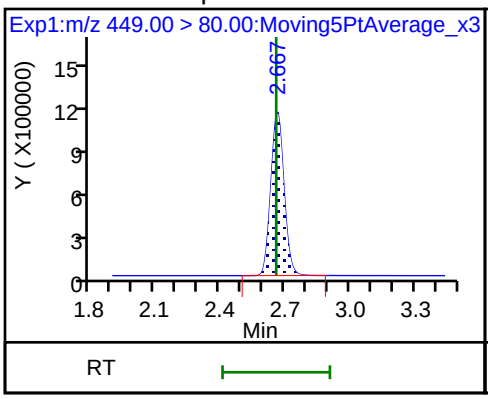
15 Perfluorooctanoic acid



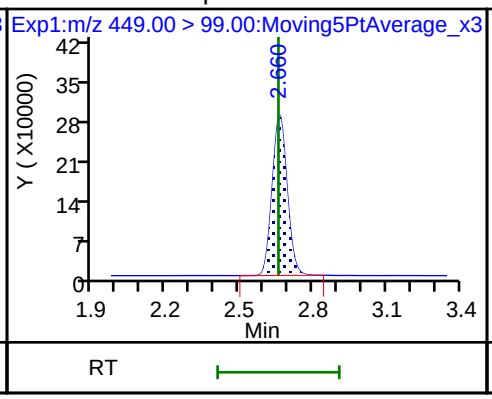
* 62 13C2-PFOA



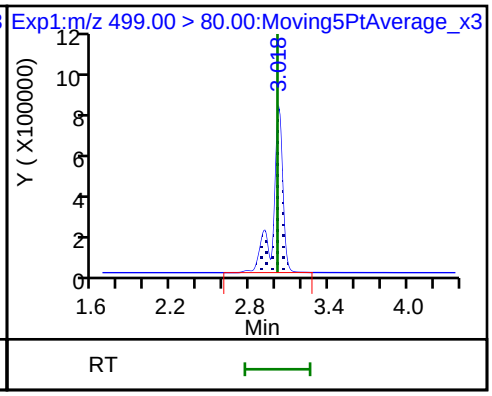
16 Perfluoroheptanesulfonic acid



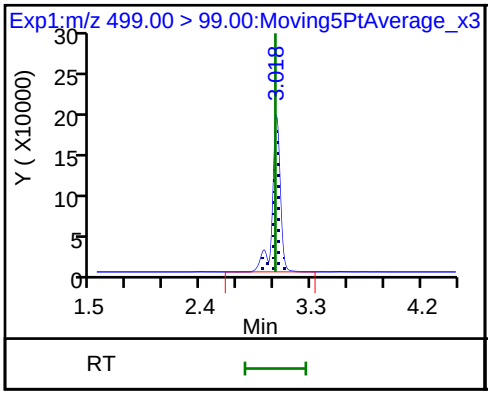
16 Perfluoroheptanesulfonic acid



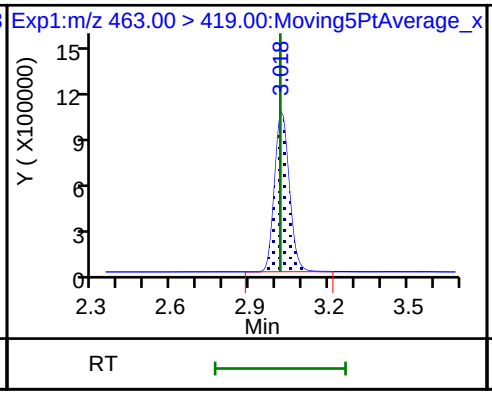
17 Perfluorooctane sulfonic acid



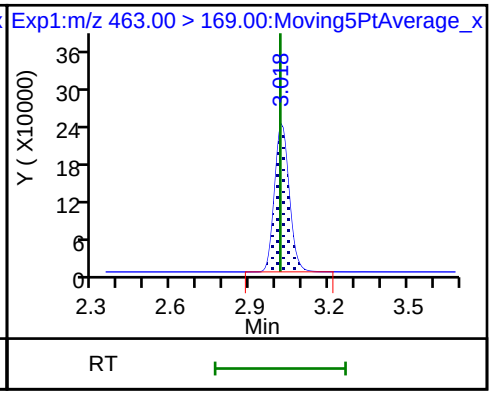
17 Perfluorooctane sulfonic acid



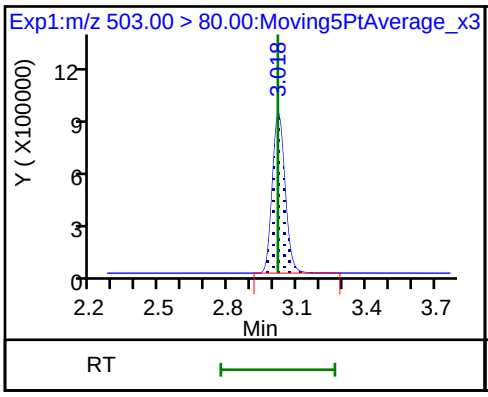
20 Perfluorononanoic acid



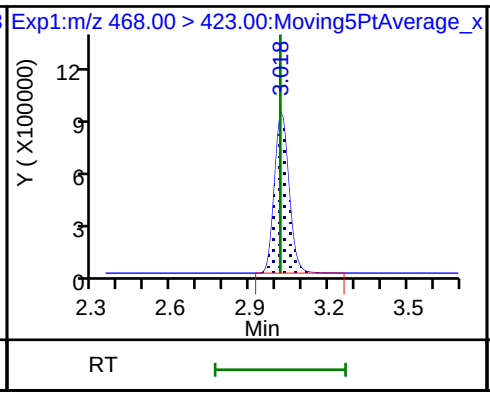
20 Perfluorononanoic acid



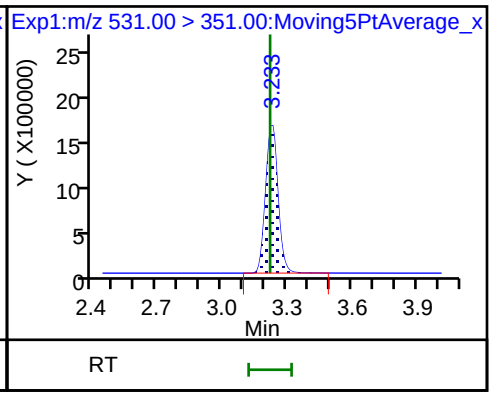
D 18 13C4 PFOS



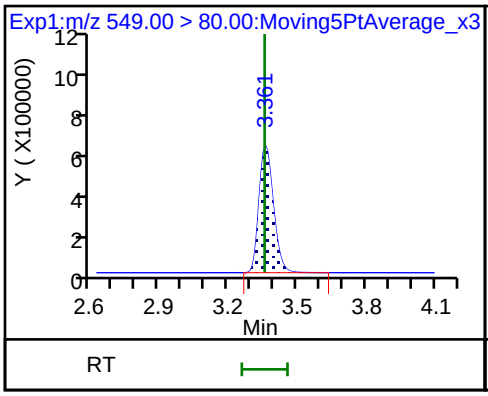
D 19 13C5 PFNA



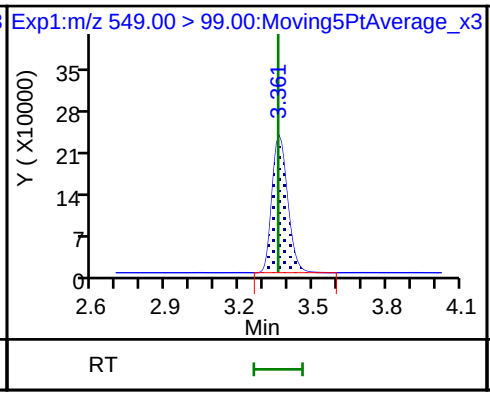
69 9-Chlorohexadecafluoro-3-oxanonane



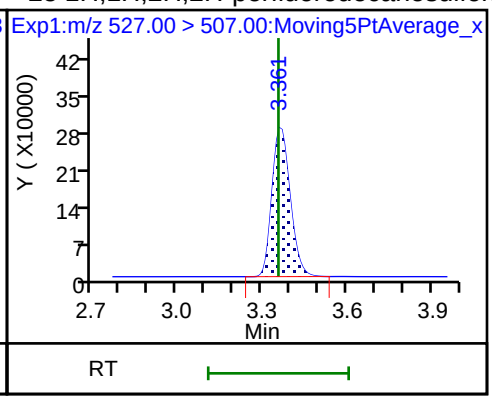
68 Perfluorononanesulfonic acid



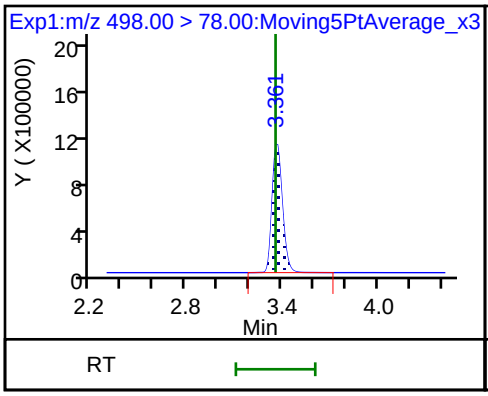
68 Perfluorononanesulfonic acid



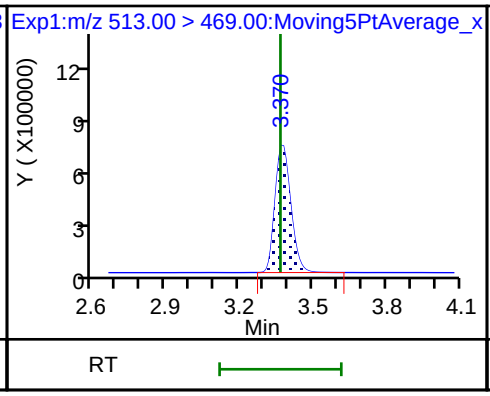
25 1H,1H,2H,2H-perfluorodecanesulfoni



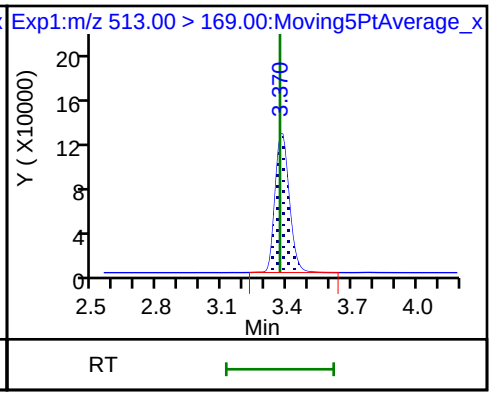
22 Perfluorooctane Sulfonamide



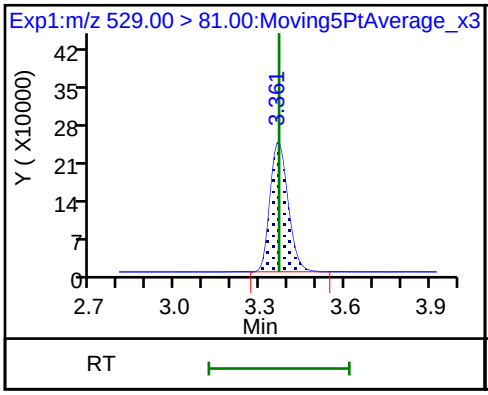
24 Perfluorodecanoic acid



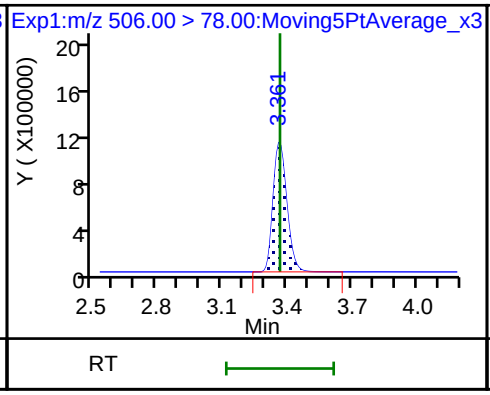
24 Perfluorodecanoic acid



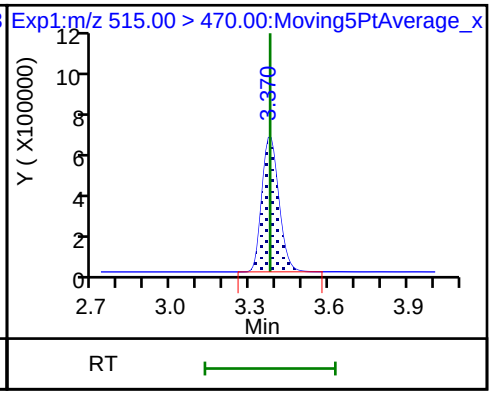
D 26 M2-8:2FTS



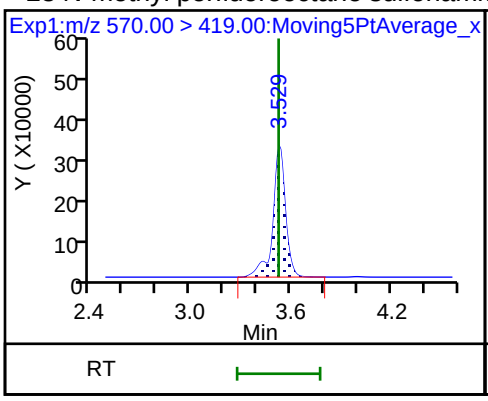
D 21 13C8 FOSA



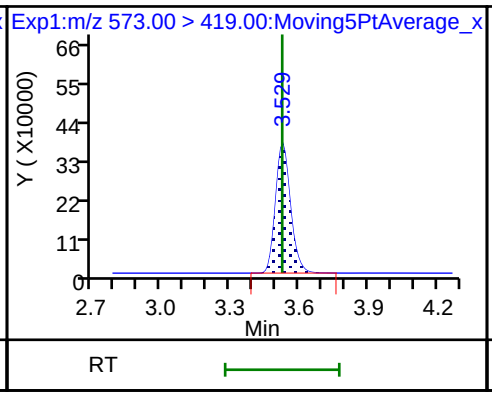
D 23 13C2 PFDA



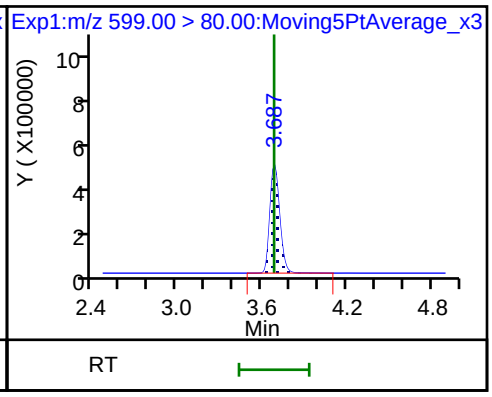
28 N-methyl perfluorooctane sulfonami



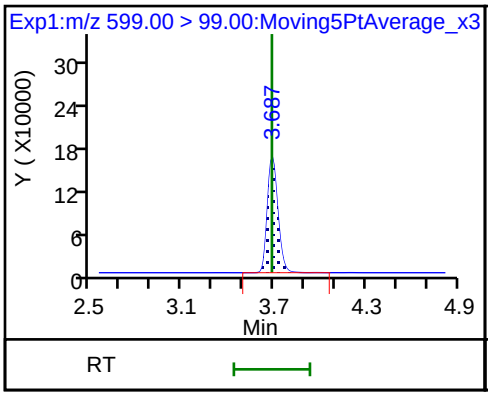
D 27 d3-NMeFOSAA



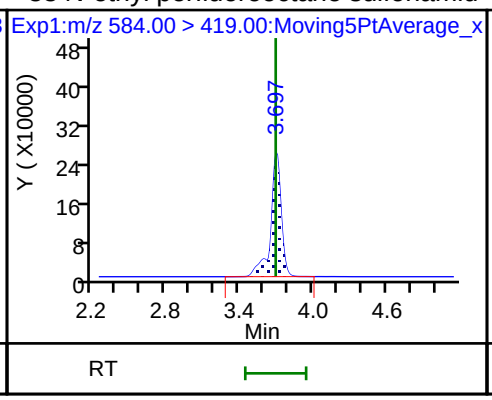
29 Perfluorodecane Sulfonic acid



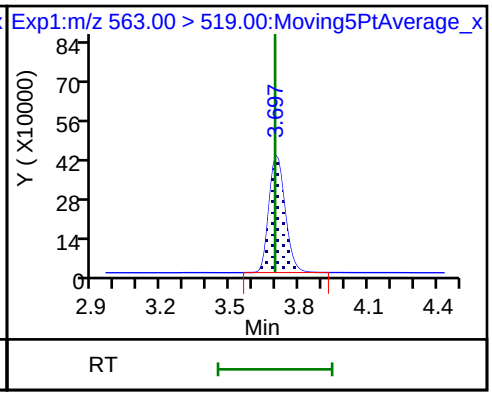
29 Perfluorodecane Sulfonic acid



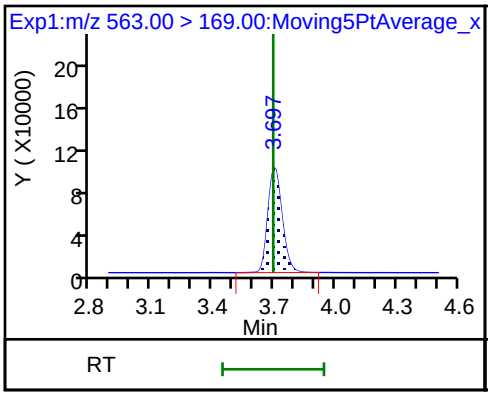
33 N-ethyl perfluorooctane sulfonamid



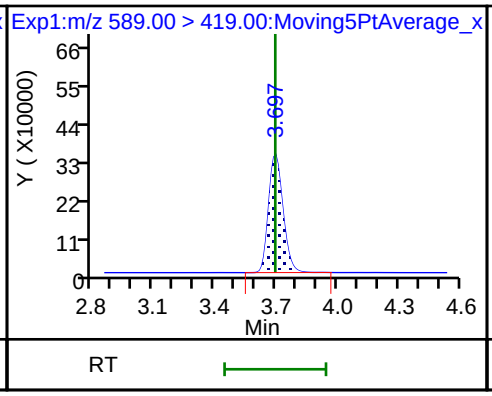
31 Perfluoroundecanoic acid



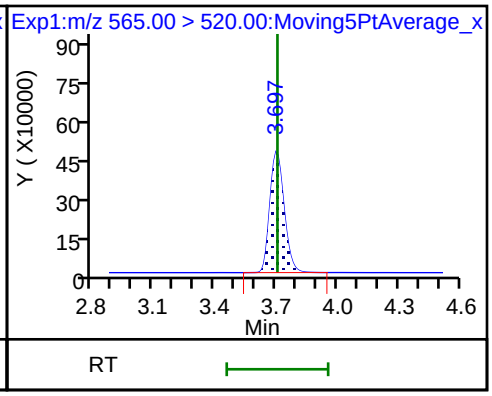
31 Perfluoroundecanoic acid



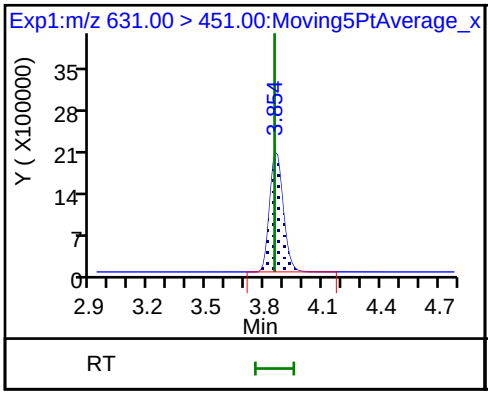
D 32 d5-NEtFOSAA



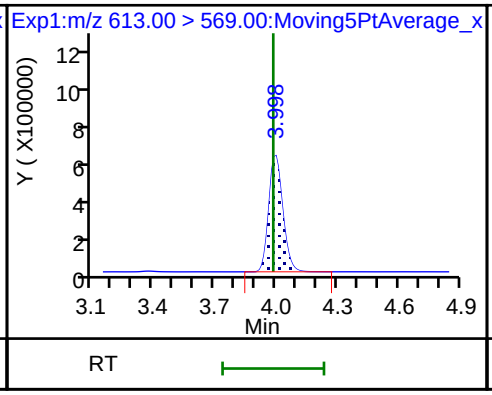
D 30 13C2 PFUnA



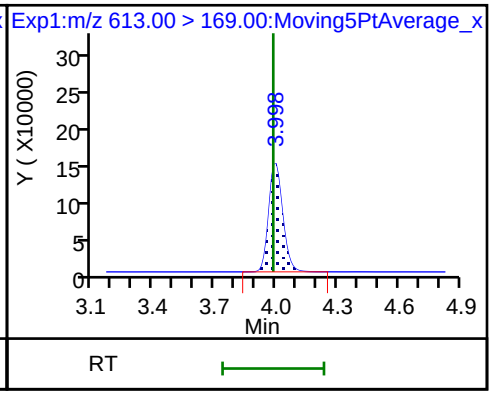
66 11-Chloroeicosafluoro-3-oxaundecan



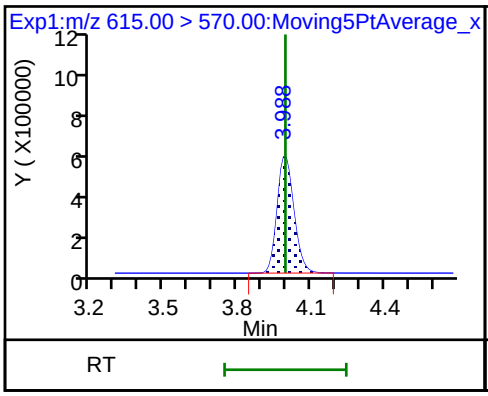
37 Perfluorododecanoic acid



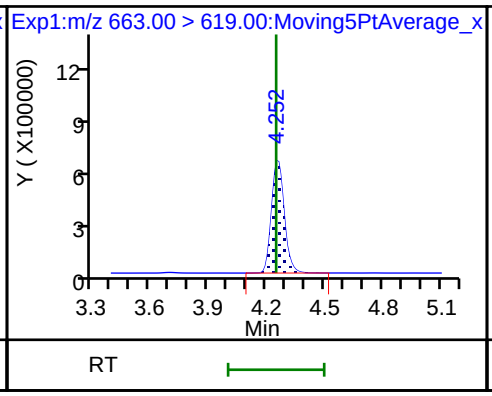
37 Perfluorododecanoic acid



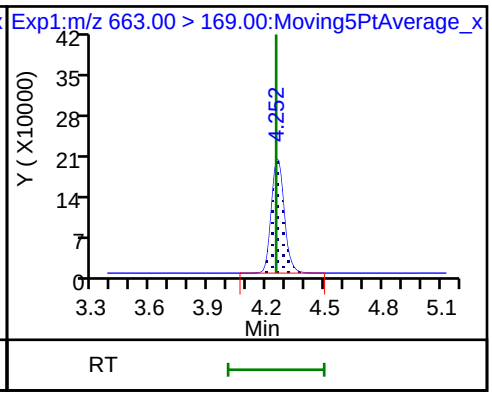
D 36 13C2 PFDoA



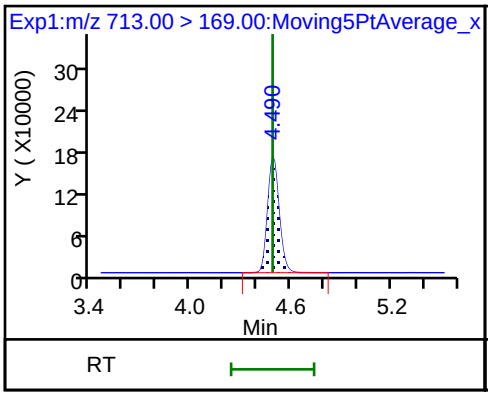
41 Perfluorotridecanoic acid



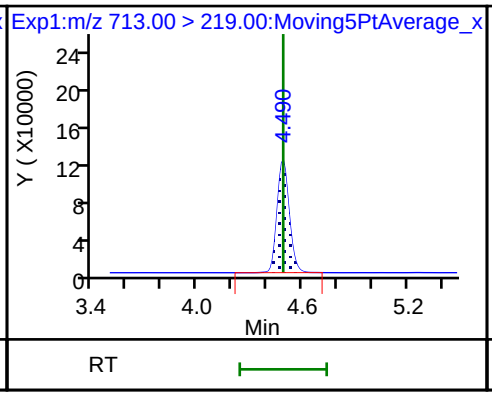
41 Perfluorotridecanoic acid



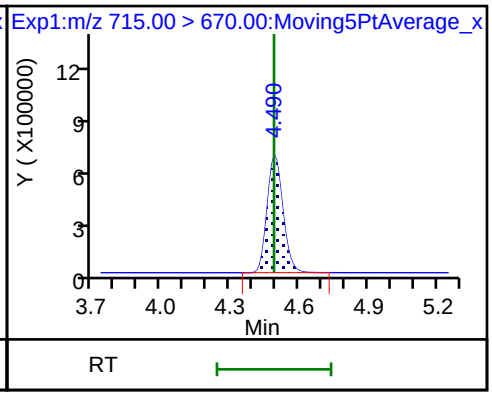
42 Perfluorotetradecanoic acid



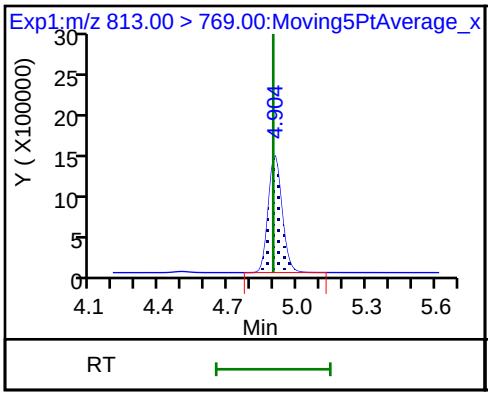
42 Perfluorotetradecanoic acid



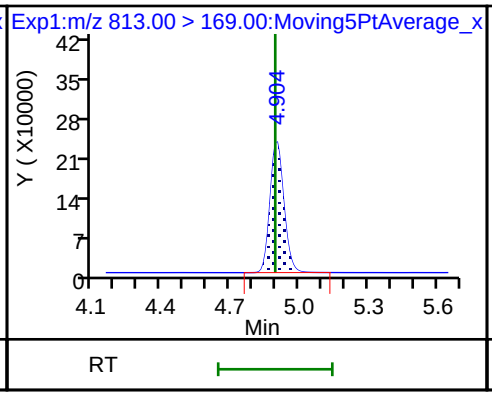
D 43 13C2-PFTeDA



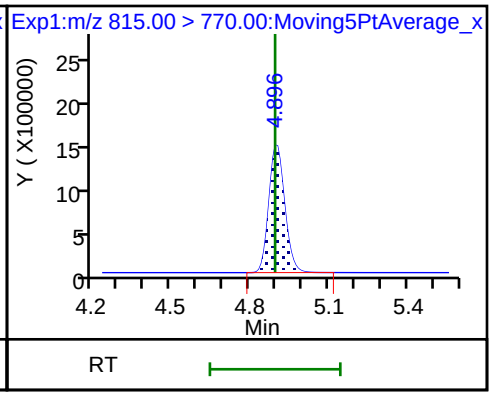
45 Perfluorohexadecanoic acid



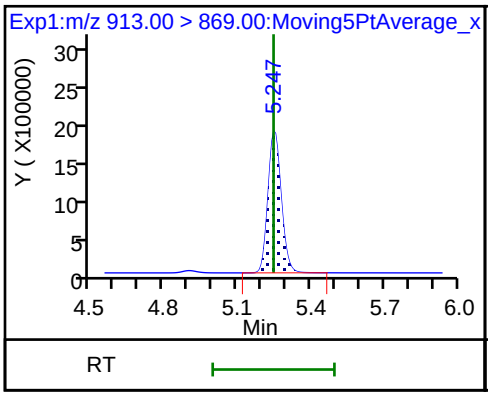
45 Perfluorohexadecanoic acid



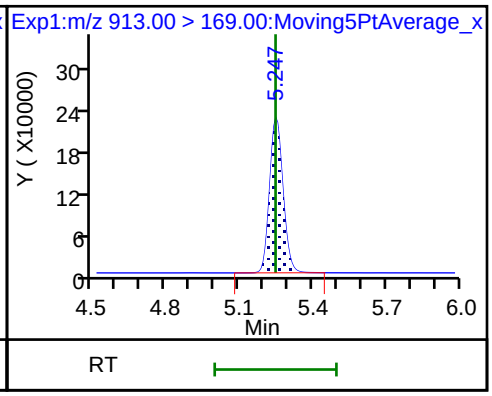
D 44 13C2-PFHxDA



46 Perfluorooctadecanoic acid



46 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Lab Sample ID: CCV 320-232800/33 Calibration Date: 07/07/2018 05:07

Instrument ID: A8_N Calib Start Date: 07/05/2018 08:51

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 07/05/2018 09:38

Lab File ID: 2018.07.06LLC_045.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	1.021	0.9736		0.953	1.00	-4.7	40.0
Perfluoropentanoic acid (PFPeA)	AveID	1.191	1.127		0.946	1.00	-5.4	40.0
Perfluorobutanesulfonic acid (PFBS)	AveID	75.80	76.57		0.893	0.884	1.0	50.0
4:2 FTS	AveID	15.68	16.41		0.978	0.934	4.7	50.0
Perfluorohexanoic acid (PFHxA)	AveID	1.018	1.028		1.01	1.00	0.9	40.0
Perfluoropentanesulfonic acid (PFPeS)	AveID	64.85	67.48		0.976	0.938	4.1	50.0
HFPO-DA (GenX)	AveID	2.299	2.647		1.15	1.00	15.2	40.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.130	1.087		0.962	1.00	-3.8	40.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.156	1.063		0.836	0.910	-8.1	40.0
ADONA	AveID	3.706	3.960		1.01	0.942	6.8	50.0
6:2 FTS	AveID	1.567	1.594		0.965	0.948	1.8	40.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.339	1.362		0.968	0.952	1.7	50.0
Perfluorooctanoic acid (PFOA)	AveID	1.186	1.206		1.02	1.00	1.7	40.0
Perfluorononanoic acid (PFNA)	AveID	1.078	1.077		1.00	1.00	-0.0	40.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.168	1.158		0.920	0.928	-0.8	40.0
9-Chlorohexadecafluoro-3-oxa nonane-1-sulfonate	AveID	1.891	1.855		0.914	0.932	-1.9	50.0
8:2 FTS	AveID	1.321	1.185		0.859	0.958	-10.3	40.0
Perfluorononanesulfonic acid (PFNS)	AveID	0.8126	0.7812		0.923	0.960	-3.9	50.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9917	0.9854		0.994	1.00	-0.6	40.0
Perfluorodecanoic acid (PFDA)	AveID	1.042	1.037		0.994	1.00	-0.6	40.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	1.029	0.9470		0.920	1.00	-8.0	40.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.7195	0.6809		0.912	0.964	-5.4	50.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.9017	0.9246		1.03	1.00	2.5	40.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.8501	0.8232		0.968	1.00	-3.2	40.0
11-Chloroeicosafluoro-3-oxau ndecane-1-sulfonate	AveID	2.884	3.011		0.983	0.942	4.4	50.0
Perfluorododecanoic acid (PFDoA)	AveID	1.102	1.030		0.935	1.00	-6.5	40.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.227	1.043		0.850	1.00	-15.0	50.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2708	0.2582		0.953	1.00	-4.7	50.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		0.9821		1.01	1.00	1.1	50.0

FORM VII 537 (modified)

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Lab Sample ID: CCV 320-232800/33 Calibration Date: 07/07/2018 05:07

Instrument ID: A8_N Calib Start Date: 07/05/2018 08:51

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 07/05/2018 09:38

Lab File ID: 2018.07.06LLC_045.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.164	1.184		1.02	1.00	1.7	50.0
13C4 PFBA	Ave	1.384	1.324		2.39	2.50	-4.3	50.0
13C5 PFPeA	Ave	1.025	0.9846		2.40	2.50	-3.9	50.0
13C3-PFBS	Ave	0.0245	0.0232		2.20	2.33	-5.4	50.0
M2-4:2FTS	Ave	0.1575	0.1576		2.34	2.34	0.0	50.0
13C2 PFHxA	Ave	1.097	1.074		2.45	2.50	-2.0	50.0
13C3 HFPO-DA	Ave	0.0899	0.0751		2.09	2.50	-16.4	50.0
13C4-PFHpA	Ave	0.9735	0.9922		2.55	2.50	1.9	50.0
18O2 PFHxS	Ave	1.198	1.253		2.47	2.37	4.6	50.0
M2-6:2FTS	Ave	0.2186	0.2271		2.47	2.38	3.9	40.0
13C4 PFOA	Ave	0.9539	0.9412		2.47	2.50	-1.3	50.0
13C4 PFOS	Ave	0.8551	0.8441		2.36	2.39	-1.3	50.0
13C5 PFNA	Ave	0.8109	0.8244		2.54	2.50	1.7	50.0
13C8 FOSA	Ave	1.187	1.158		2.44	2.50	-2.5	50.0
M2-8:2FTS	Ave	0.2431	0.2525		2.49	2.40	3.9	40.0
13C2 PFDA	Ave	0.6992	0.7047		2.52	2.50	0.8	50.0
d3-NMeFOSAA	Ave	0.4120	0.4012		2.43	2.50	-2.6	50.0
13C2 PFUnA	Ave	0.5873	0.5765		2.45	2.50	-1.8	50.0
d5-NEtFOSAA	Ave	0.4070	0.3950		2.43	2.50	-2.9	50.0
13C2 PFDoA	Ave	0.6294	0.6323		2.51	2.50	0.5	50.0
13C2-PFTeDA	Ave	0.7673	0.7213		2.35	2.50	-6.0	50.0
13C2-PFHxDA	Ave	1.420	1.434		2.52	2.50	1.0	50.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\2018.07.06LLC_045.d
Lims ID: CCV L4
Client ID:
Sample Type: CCV
Inject. Date: 07-Jul-2018 05:07:02 ALS Bottle#: 13 Worklist Smp#: 33
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV L4
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-A8_N*sub32

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 09-Jul-2018 14:50:22 Calib Date: 05-Jul-2018 09:38:17
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180705-60684.b\2018.07.05LLICALAA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK010

First Level Reviewer: mongkols Date: 09-Jul-2018 14:50:21

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.428	1.428	0.0	0.539	5791864	2.39		95.7	22001	
2 Perfluorobutyric acid										
212.90 > 169.00	1.428	1.428	0.0	1.000	2255471	0.9531		95.3	1169	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.708	1.708	0.0	1.000	1941181	0.9463		94.6	1452	
D 3 13C5-PFPeA										
267.90 > 223.00	1.708	1.707	0.001	0.644	4306340	2.40		96.1	41789	
D 47 13C3-PFBS										
301.90 > 83.00	1.744	1.743	0.001	0.658	94265	2.20		94.6	621	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.744	1.744	0.0	1.000	2744417	0.8930		101	11305	
298.90 > 99.00	1.744	1.744	0.0	1.000	1113421		2.46(1.25-3.74)		11167	
61 1H,1H,2H,2H-perfluorohexanesulfoni										
327.00 > 307.00	1.956	1.956	0.0	1.122	621529	0.9775		105	27565	
D 60 M2-4:2FTS										
329.00 > 81.00	1.956	1.956	0.0	0.738	643565	2.34		100	7604	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.988	1.988	0.0	1.000	1931420	1.01		101	3505	
313.00 > 119.00	1.988	1.988	0.0	1.000	172779		11.18(5.03-15.10)		2016	
D 7 13C2 PFHxA										
315.00 > 270.00	1.988	1.988	0.0	0.750	4697814	2.45		98.0	45259	
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.011	2.011	0.0	1.153	2566462	0.9761		104	37189	
349.00 > 99.00	2.011	2.011	0.0	1.153	948525		2.71(1.36-4.07)		13640	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.079	2.078	0.001	0.784	328606	2.09		83.6	5765	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
67 Perfluoro(2-propoxypropanoic) acid										
329.10 > 285.00	2.079	2.079	0.0	1.000	347984	1.15		115	2466	
D 9 13C4-PFHpA										
367.00 > 322.00	2.303	2.302	0.001	0.869	4339380	2.55		102	37989	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.303	2.303	0.0	1.000	1887141	0.9624		96.2	2735	
363.00 > 169.00	2.303	2.303	0.0	1.000	708057		2.67(1.13-3.40)		6183	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.316	2.316	0.0	1.000	2119418	0.8365		91.9	11745	
399.00 > 99.00	2.316	2.316	0.0	1.000	728731		2.91(1.50-4.49)		5738	
D 11 18O2 PFHxS										
403.00 > 84.00	2.316	2.315	0.001	0.874	5182640	2.47		105	34464	
65 Adona										
377.00 > 251.00	2.342	2.342	0.0	0.777	5508305	1.01		107	55159	
377.00 > 85.00	2.342	2.342	0.0	0.777	3363890		1.64(0.84-2.53)		35724	
D 12 M2-6:2FTS										
429.00 > 81.00	2.626	2.626	0.0	0.991	943454	2.47		104	15672	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.626	2.626	0.0	1.000	600399	0.9648		102	3038	
D 14 13C4 PFOA										
417.00 > 372.00	2.651	2.650	0.001	1.000	4116511	2.47		98.7	28348	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.658	2.658	0.0	1.003	1987159	1.02		102	613	
413.00 > 169.00	2.651	2.658	-0.007	1.000	991672		2.00(0.84-2.52)		4273	
* 62 13C2-PFOA										
415.00 > 370.00	2.651	2.651	0.0		4373610	2.50			33214	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.658	2.658	0.0	0.882	1915062	0.9683		102	21786	
449.00 > 99.00	2.658	2.658	0.0	0.882	508885		3.76(1.94-5.82)		10103	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.016	3.016	0.0	1.000	1587295	0.9202		99.2	18732	
499.00 > 99.00	3.016	3.016	0.0	1.000	350566		4.53(2.31-6.93)		8861	
20 Perfluorononanoic acid										
463.00 > 419.00	3.016	3.016	0.0	1.000	1553575	1.00		100.0	3852	
463.00 > 169.00	3.016	3.016	0.0	1.000	381678		4.07(1.90-5.69)		9024	
D 18 13C4 PFOS										
503.00 > 80.00	3.016	3.015	0.001	1.138	3529132	2.36		98.7	30694	
D 19 13C5 PFNA										
468.00 > 423.00	3.016	3.015	0.001	1.138	3605494	2.54		102	30937	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.230	3.230	0.0	1.071	2552694	0.9144		98.1	30627	
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.358	3.358	0.0	1.114	1107405	0.9229		96.1	25454	
549.00 > 99.00	3.358	3.358	0.0	1.114	446325		2.48(1.33-3.97)		11561	
25 1H,1H,2H,2H-perfluorodecanesulfoni										
527.00 > 507.00	3.358	3.358	0.0	1.000	501496	0.8593		89.7	12442	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.368	3.368	0.0	1.003	1995833	0.99		99.4	34788	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
24 Perfluorodecanoic acid										
513.00 > 469.00	3.377	3.377	0.0	1.000	1277858	0.99		99.4	5995	
513.00 > 169.00	3.377	3.377	0.0	1.000	244611		5.22(2.36-7.09)		5540	
D 26 M2-8:2FTS										
529.00 > 81.00	3.358	3.367	-0.009	1.267	1057972	2.49		104	18526	
D 21 13C8 FOSA										
506.00 > 78.00	3.358	3.367	-0.009	1.267	5063453	2.44		97.5	35040	
D 23 13C2 PFDA										
515.00 > 470.00	3.377	3.376	0.001	1.274	3081913	2.52		101	30104	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.527	3.527	0.0	1.000	664741	0.9202		92.0	5578	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.527	3.525	0.002	1.330	1754785	2.43		97.4	18270	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.685	3.685	0.0	1.222	969201	0.9122		94.6	17102	
599.00 > 99.00	3.685	3.685	0.0	1.222	327897		2.96(1.39-4.16)		13929	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.695	3.695	0.0	1.000	638931	1.03		103	7892	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.695	3.695	0.0	1.000	830336	0.9684		96.8	3834	
563.00 > 169.00	3.695	3.695	0.0	1.000	197061		4.21(2.12-6.36)		5803	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.695	3.694	0.001	1.394	1727686	2.43		97.1	10740	
D 30 13C2 PFUnA										
565.00 > 520.00	3.695	3.705	-0.010	1.394	2521534	2.45		98.2	34719	
66 11-Chloroeicosafluoro-3-oxaundecan										
631.00 > 451.00	3.852	3.852	0.0	1.277	4188352	0.9835		104	35010	
37 Perfluorododecanoic acid										
613.00 > 569.00	3.996	3.996	0.0	1.000	1139683	0.9350		93.5	1222	
613.00 > 169.00	3.996	3.996	0.0	1.000	275597		4.14(2.13-6.40)		6378	
D 36 13C2 PFDoA										
615.00 > 570.00	3.996	3.995	0.001	1.507	2765264	2.51		100	13583	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.249	4.249	0.0	1.063	1153779	0.8498		85.0	1250	
663.00 > 169.00	4.249	4.249	0.0	1.063	365998		3.15(1.25-3.76)		6185	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.490	4.490	0.0	1.000	325782	0.9535		95.3	4859	
713.00 > 219.00	4.479	4.490	-0.011	0.998	234831		1.39(0.71-2.13)		4894	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.490	4.489	0.001	1.694	3154611	2.35		94.0	12769	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.895	4.895	0.0	1.000	2462934	1.01		101	1108	
813.00 > 169.00	4.895	4.895	0.0	1.000	394910		6.24(2.86-8.58)		5002	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.895	4.895	0.0	1.847	6269824	2.52		101	14114	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.247	5.247	0.0	1.072	2968816	1.02		102	935	
913.00 > 169.00	5.247	5.247	0.0	1.072	347600		8.54(3.83-11.48)		4407	

Reagents:

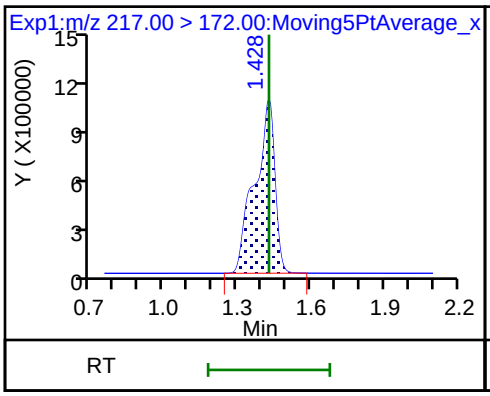
LCPFC_LL4_00005 Amount Added: 1.00 Units: mL

Report Date: 09-Jul-2018 14:50:22 Chrom Revision: 2.2 07-Jun-2018 07:41:54

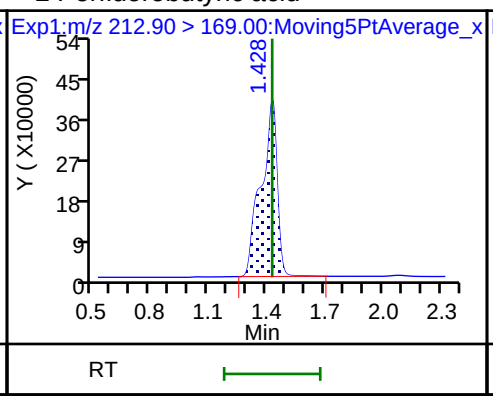
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\2018.07.06LLC_045.d
Injection Date: 07-Jul-2018 05:07:02 Instrument ID: A8_N
Lims ID: CCV L4
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 13 Worklist Smp#: 33
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC ICAL

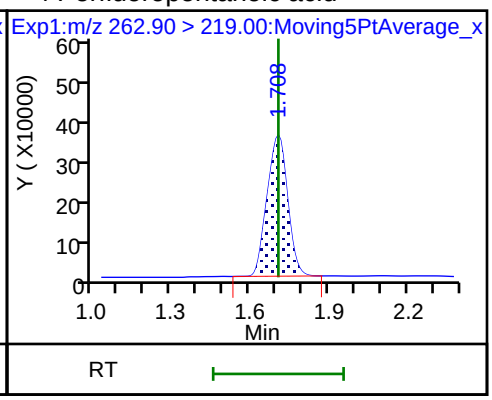
D 1 13C4 PFBA



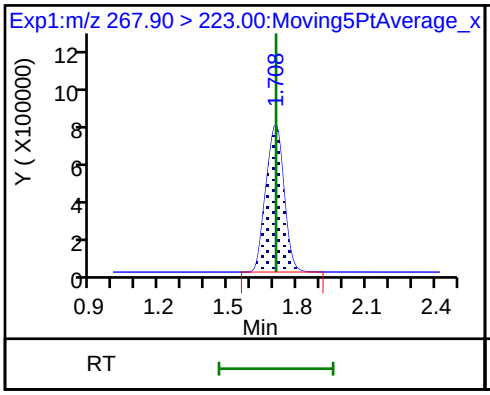
2 Perfluorobutyric acid



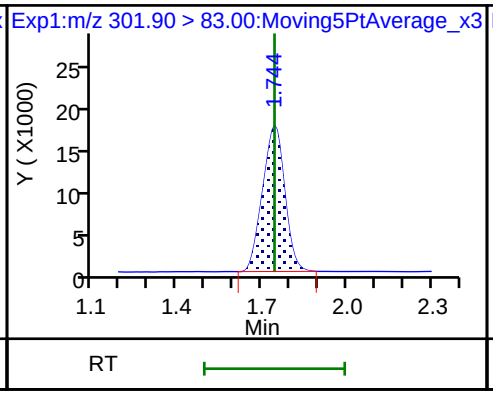
4 Perfluoropentanoic acid



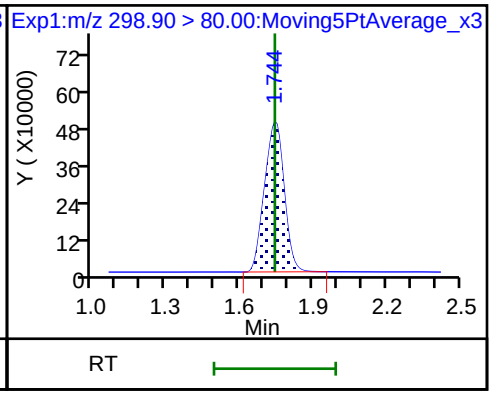
D 3 13C5-PFPeA



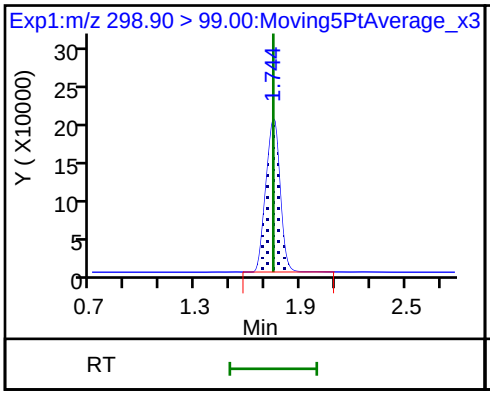
D 47 13C3-PFBS



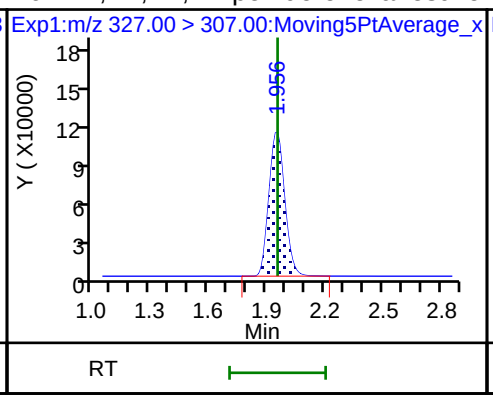
5 Perfluorobutanesulfonic acid



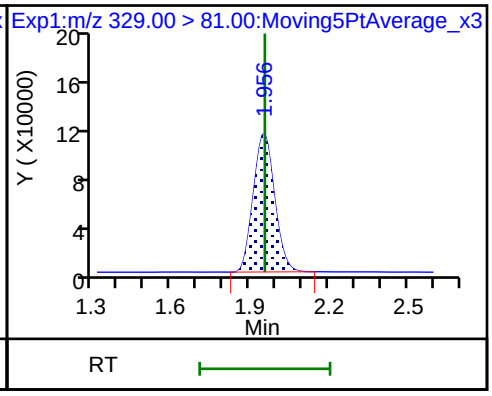
5 Perfluorobutanesulfonic acid



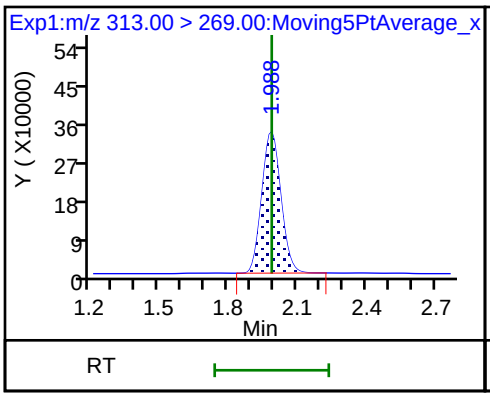
61 1H,1H,2H,2H-perfluorohexanesulfon



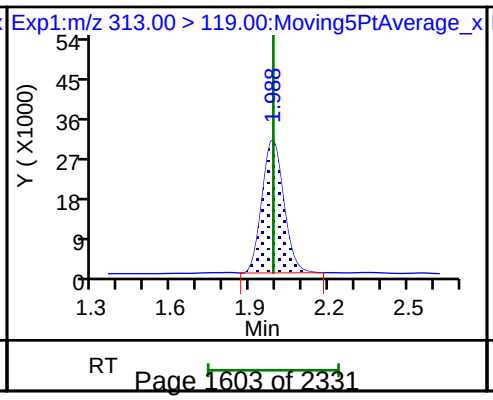
D 60 M2-4:2FTS



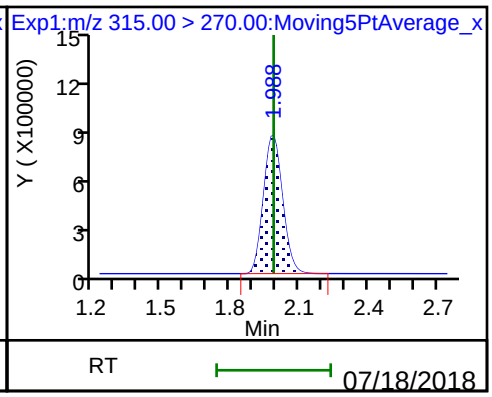
6 Perfluorohexanoic acid



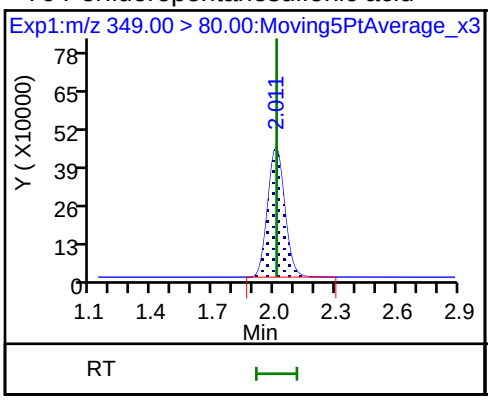
6 Perfluorohexanoic acid



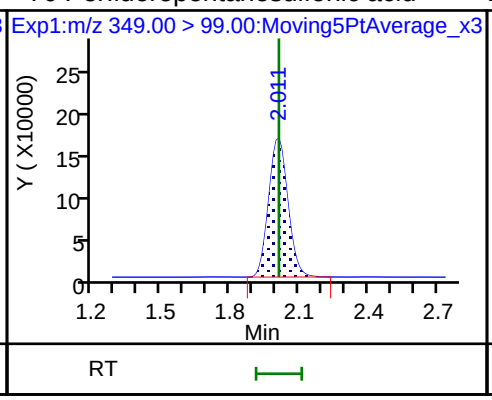
D 7 13C2 PFHxA



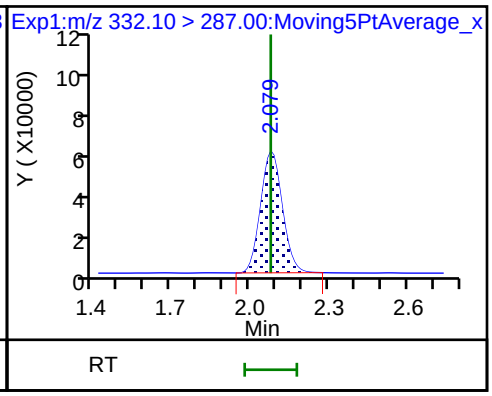
70 Perfluoropentanesulfonic acid



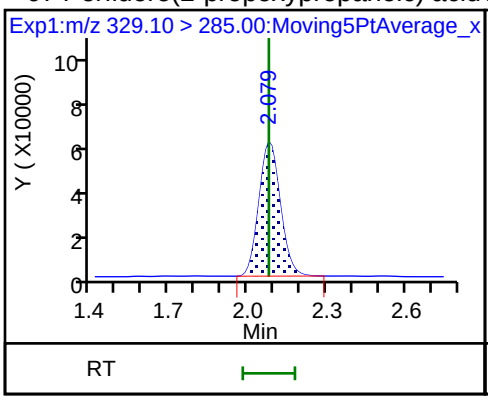
70 Perfluoropentanesulfonic acid



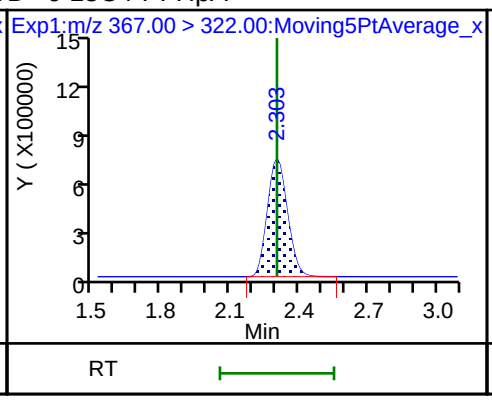
D 64 13C3 HFPO-DA



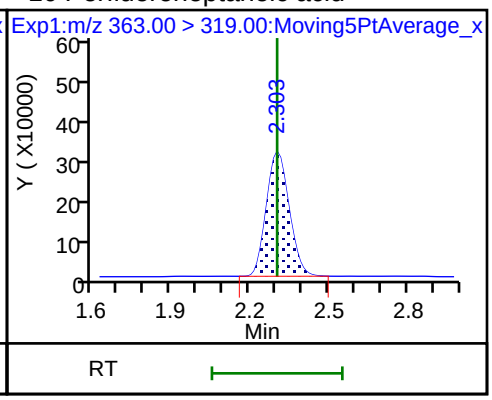
67 Perfluoro(2-propoxypropanoic) acid



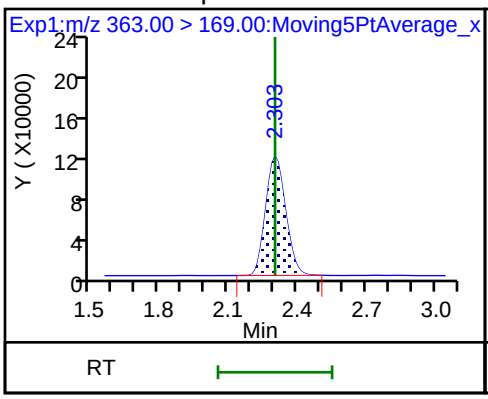
D 9 13C4-PFHpA



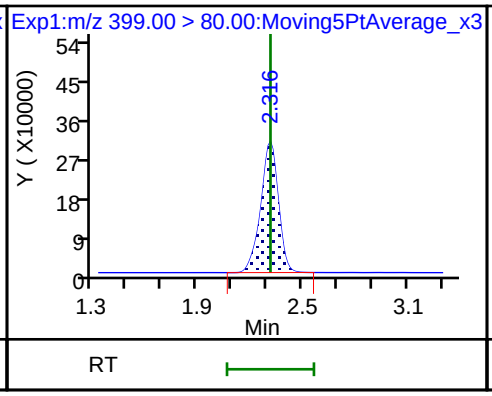
10 Perfluoroheptanoic acid



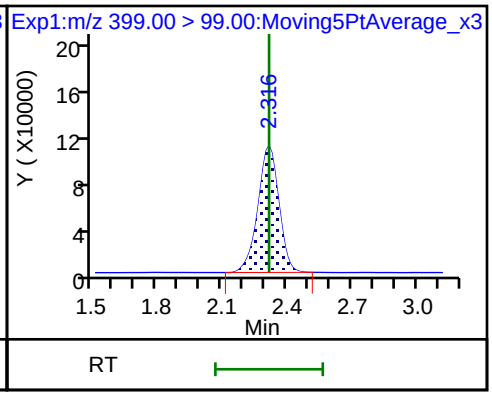
10 Perfluoroheptanoic acid



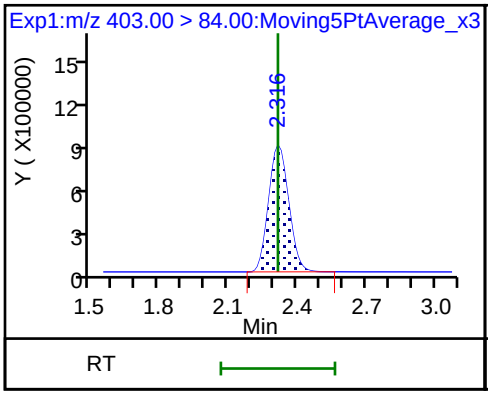
8 Perfluorohexanesulfonic acid



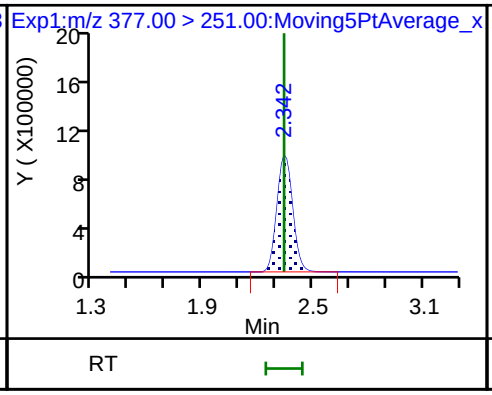
8 Perfluorohexanesulfonic acid



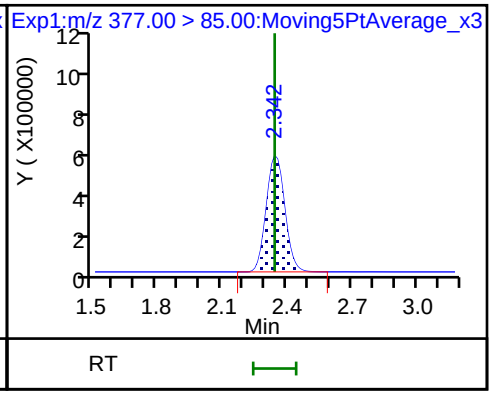
D 11 18O2 PFHxS



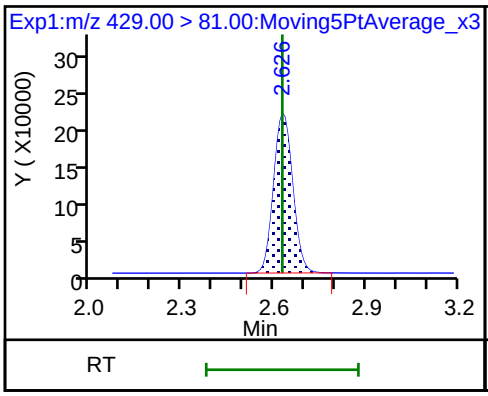
65 Adona



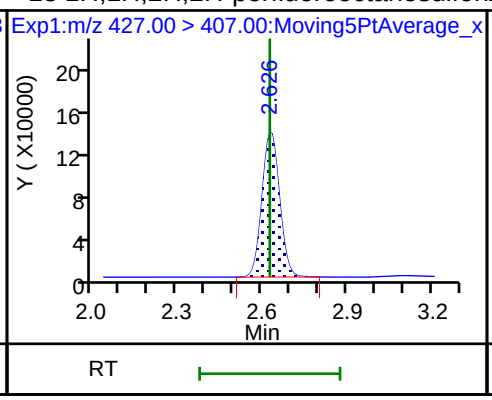
65 Adona



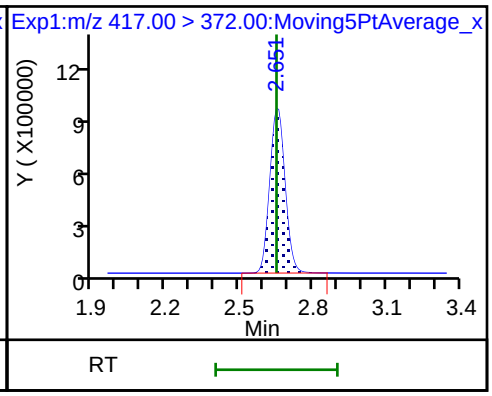
D 12 M2-6:2FTS



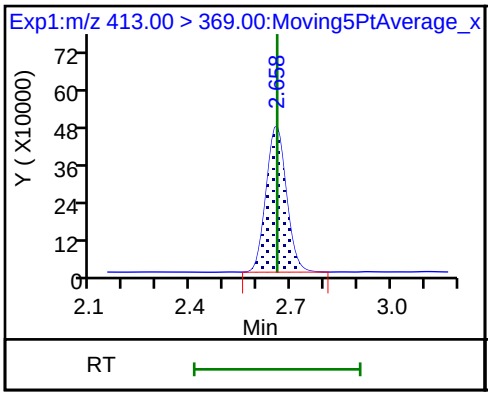
13 1H,1H,2H,2H-perfluorooctanesulfon



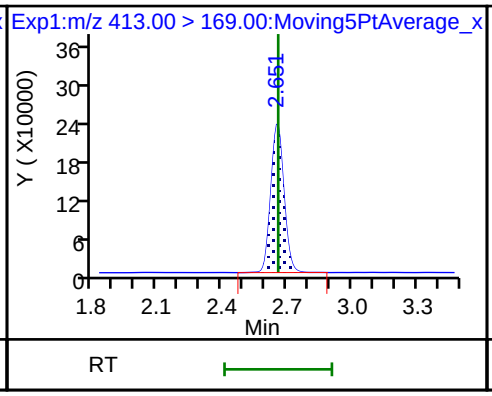
D 14 13C4 PFOA



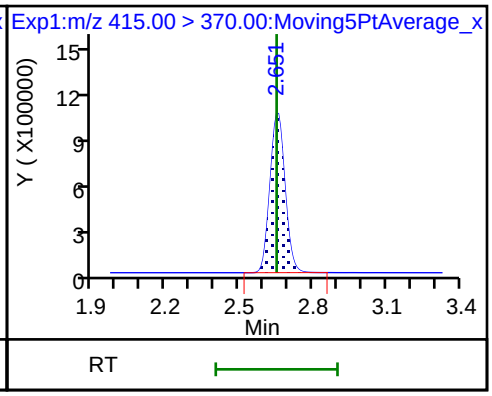
15 Perfluorooctanoic acid



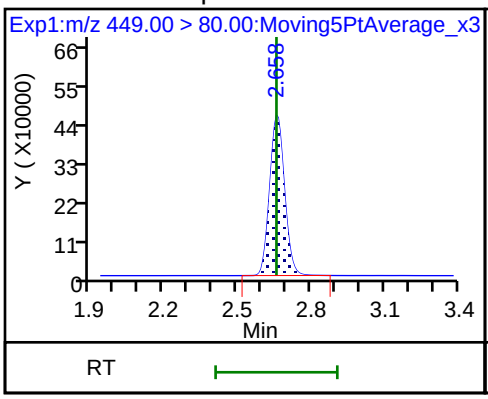
15 Perfluorooctanoic acid



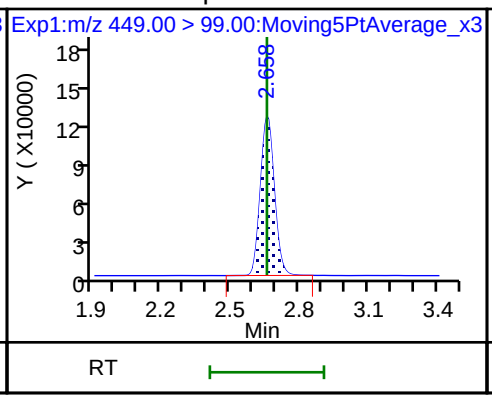
* 62 13C2-PFOA



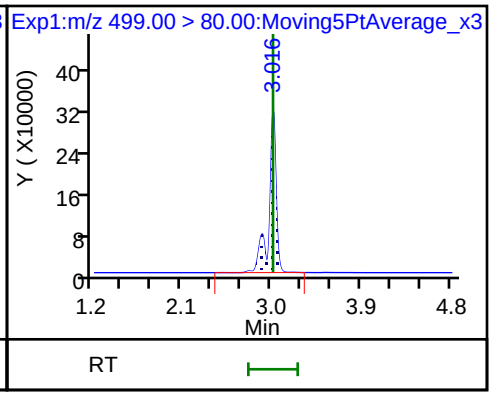
16 Perfluoroheptanesulfonic acid



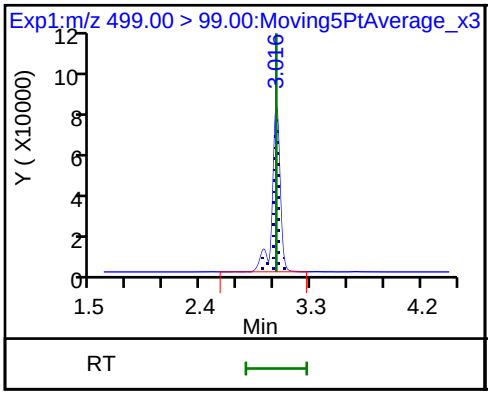
16 Perfluoroheptanesulfonic acid



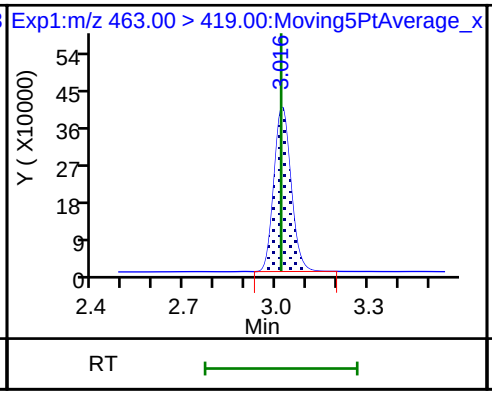
17 Perfluorooctane sulfonic acid



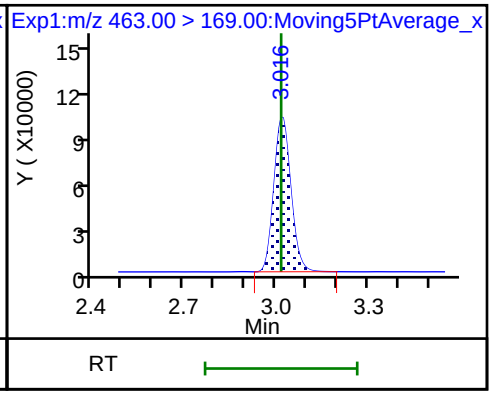
17 Perfluorooctane sulfonic acid



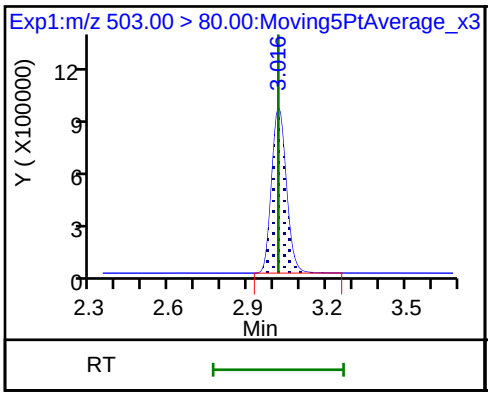
20 Perfluorononanoic acid



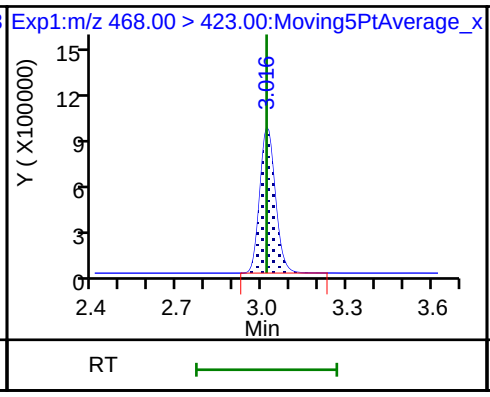
20 Perfluorononanoic acid



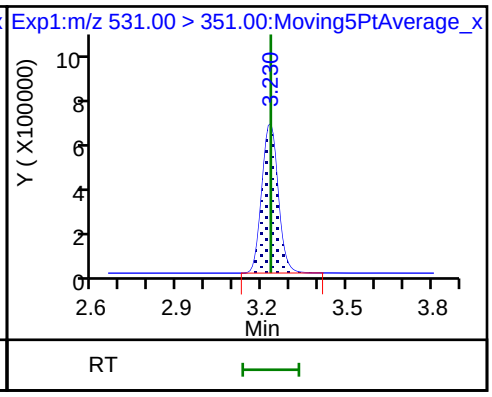
D 18 13C4 PFOS



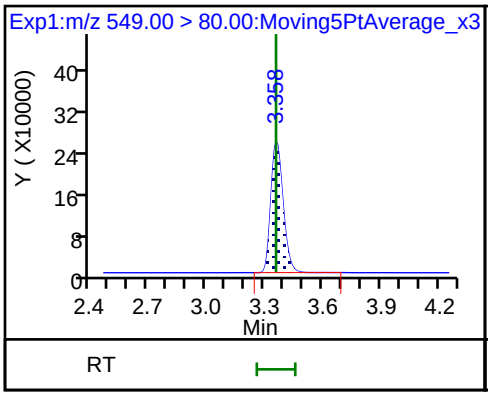
D 19 13C5 PFNA



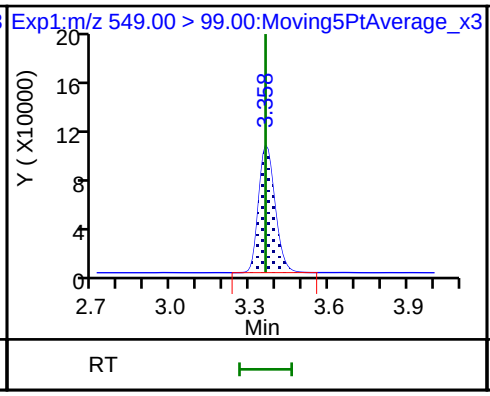
69 9-Chlorohexadecafluoro-3-oxanonane



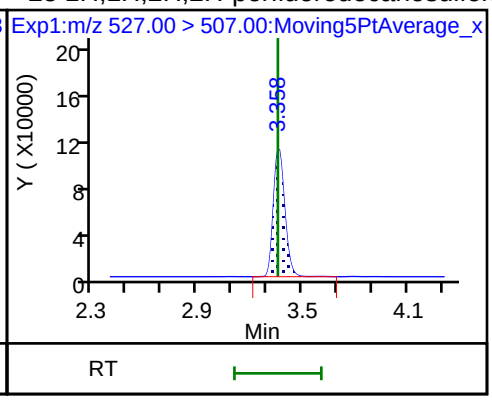
68 Perfluorononanesulfonic acid



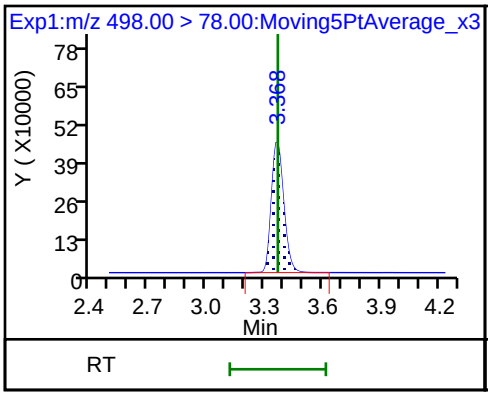
68 Perfluorononanesulfonic acid



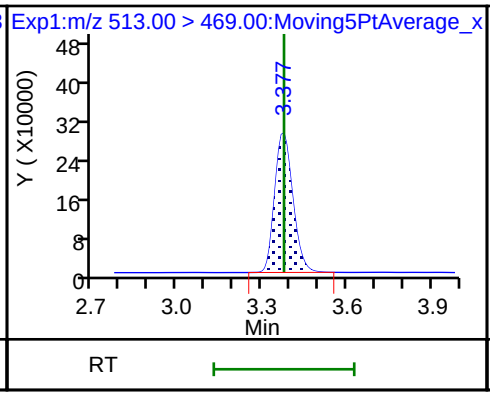
25 1H,1H,2H,2H-perfluorodecanesulfoni



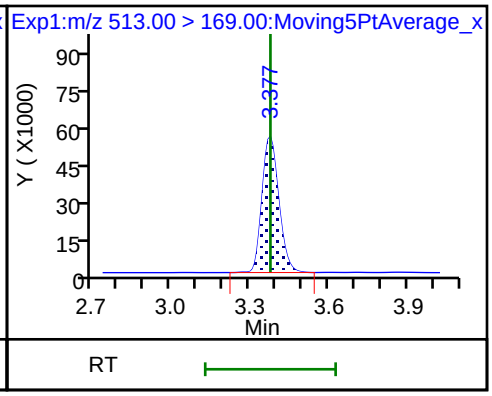
22 Perfluorooctane Sulfonamide



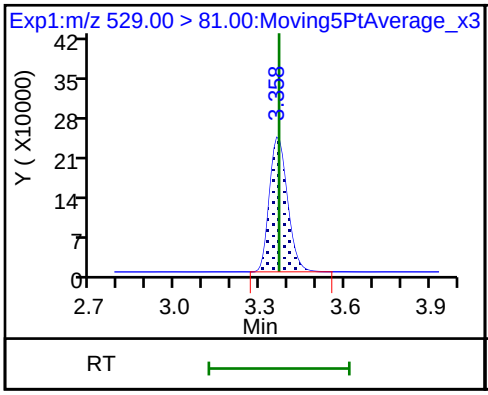
24 Perfluorodecanoic acid



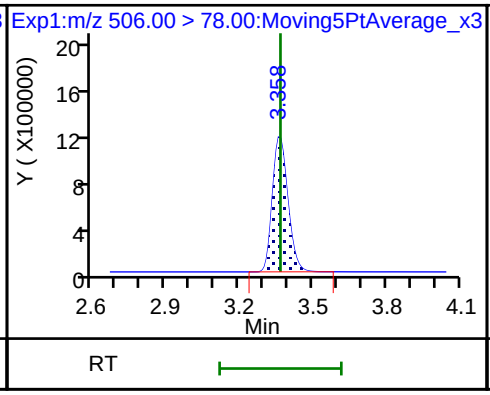
24 Perfluorodecanoic acid



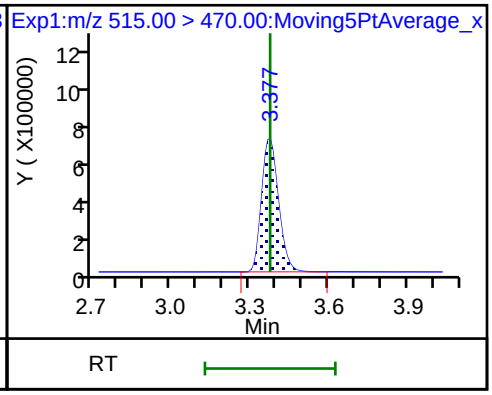
D 26 M2-8:2FTS



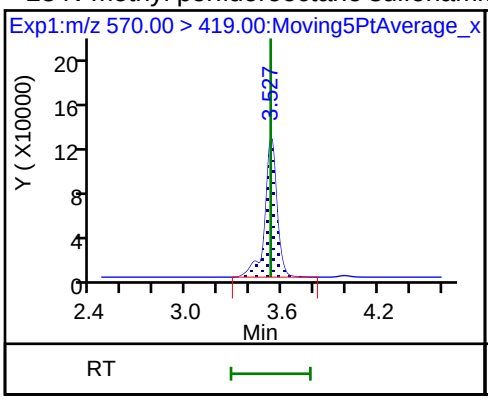
D 21 13C8 FOSA



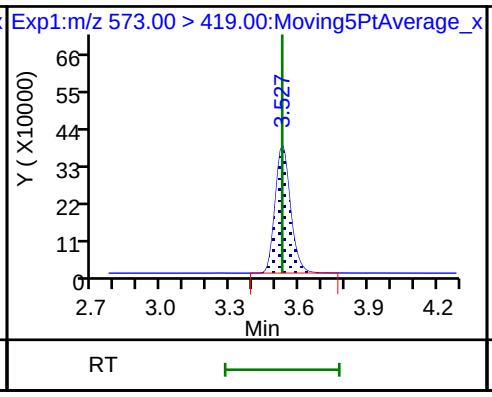
D 23 13C2 PFDA



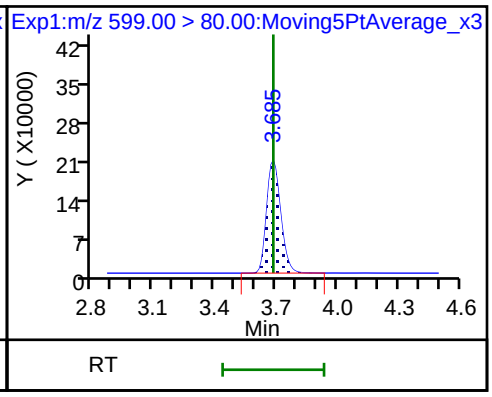
28 N-methyl perfluorooctane sulfonami



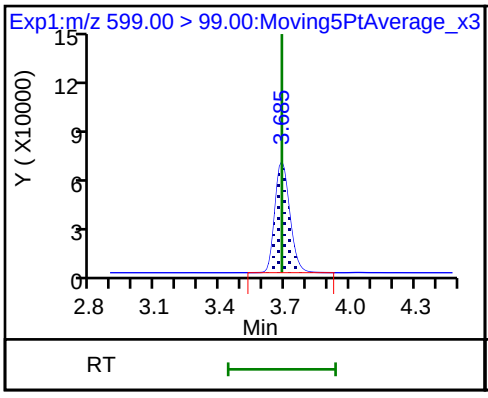
D 27 d3-NMeFOSAA



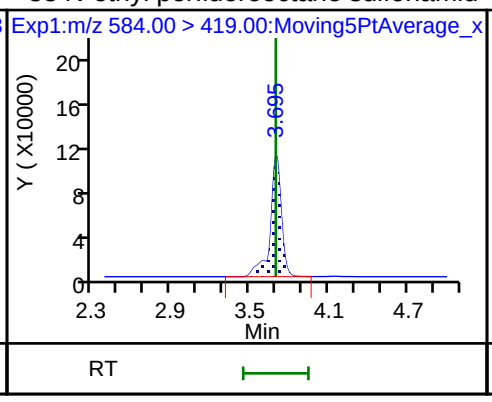
29 Perfluorodecane Sulfonic acid



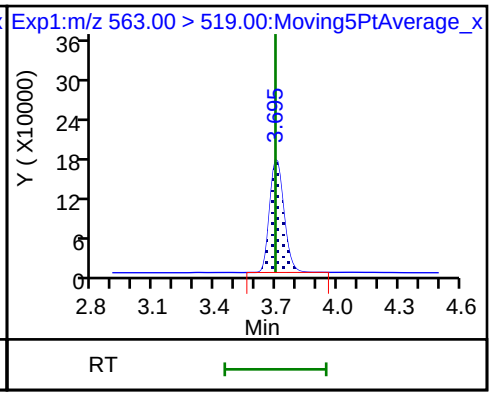
29 Perfluorodecane Sulfonic acid



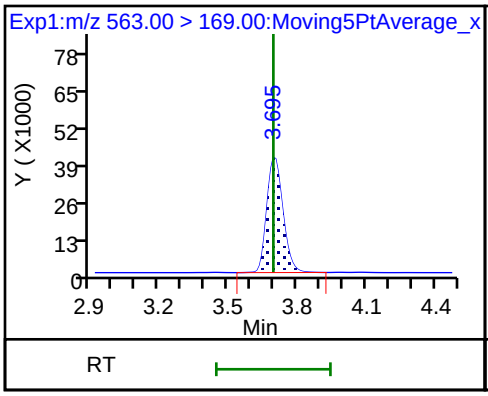
33 N-ethyl perfluorooctane sulfonamid



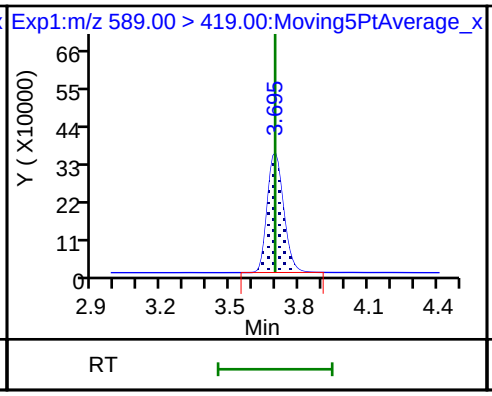
31 Perfluoroundecanoic acid



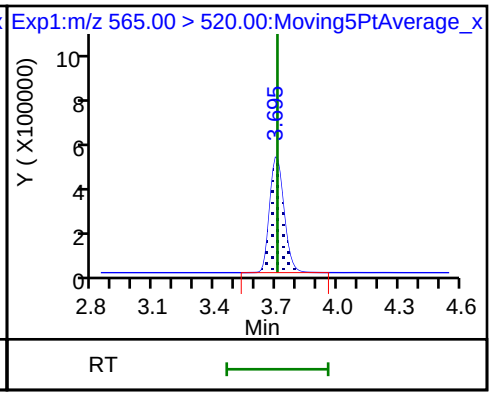
31 Perfluoroundecanoic acid



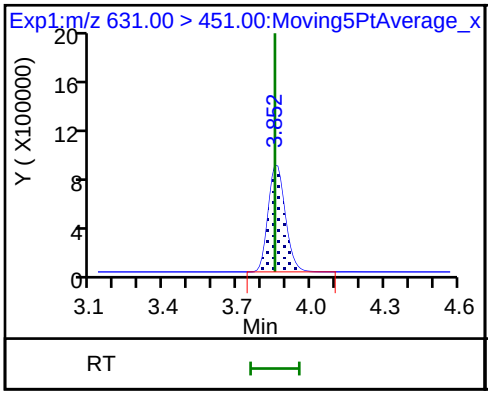
D 32 d5-NEtFOSAA



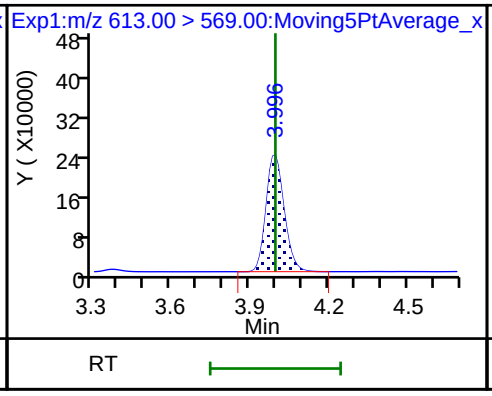
D 30 13C2 PFUnA



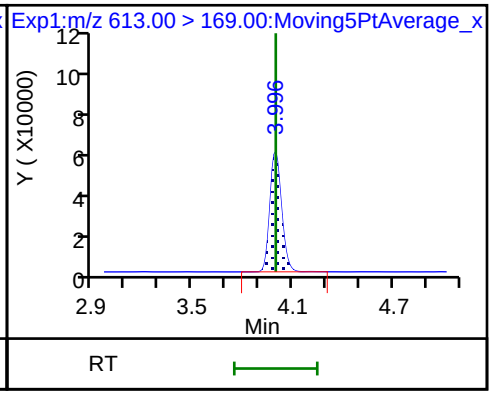
66 11-Chloroeicosafluoro-3-oxaundecan



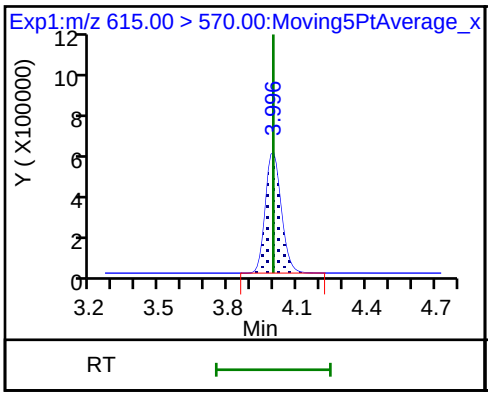
37 Perfluorododecanoic acid



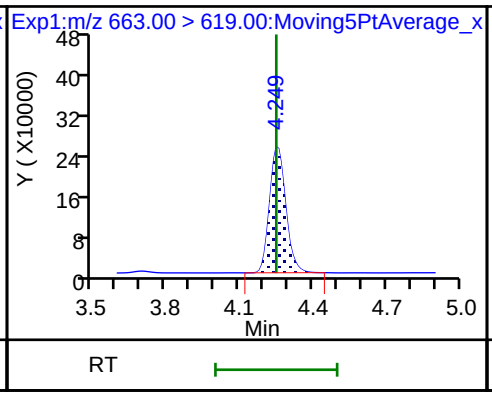
37 Perfluorododecanoic acid



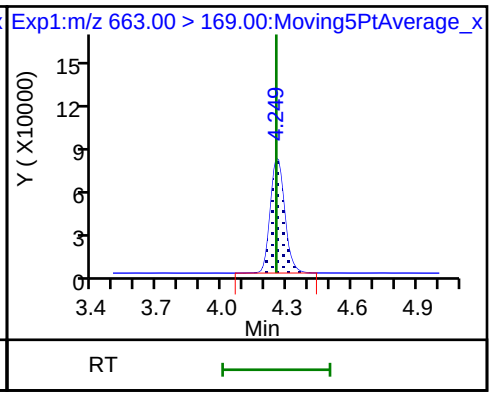
D 36 13C2 PFDoA



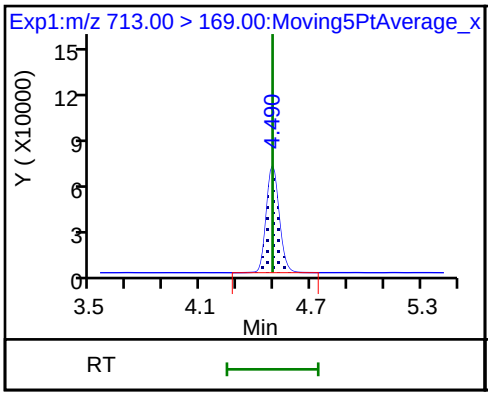
41 Perfluorotridecanoic acid



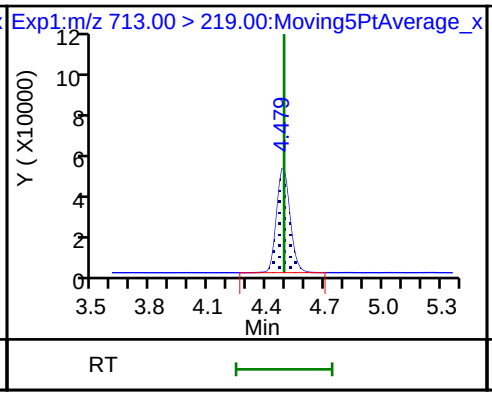
41 Perfluorotridecanoic acid



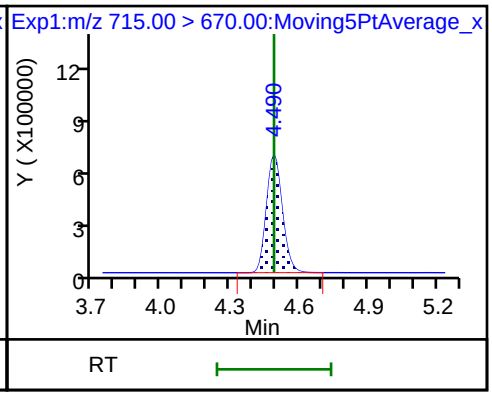
42 Perfluorotetradecanoic acid



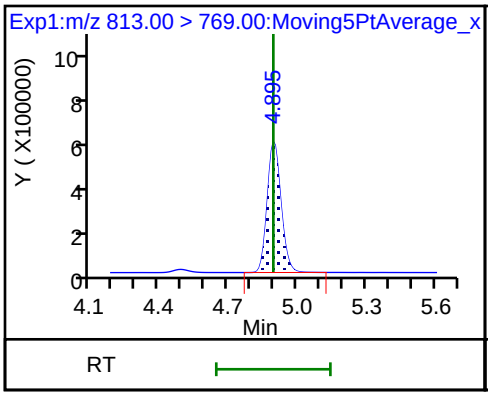
42 Perfluorotetradecanoic acid



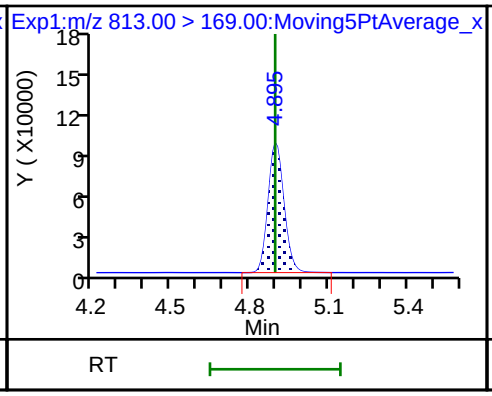
D 43 13C2-PFTeDA



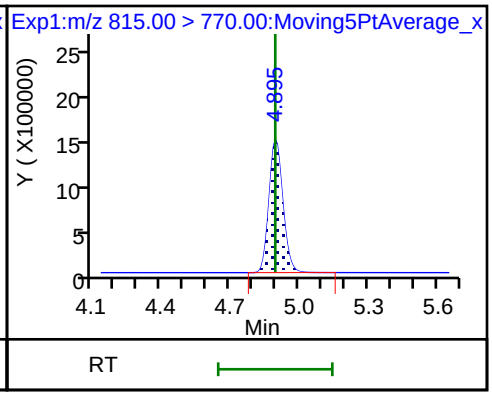
45 Perfluorohexadecanoic acid



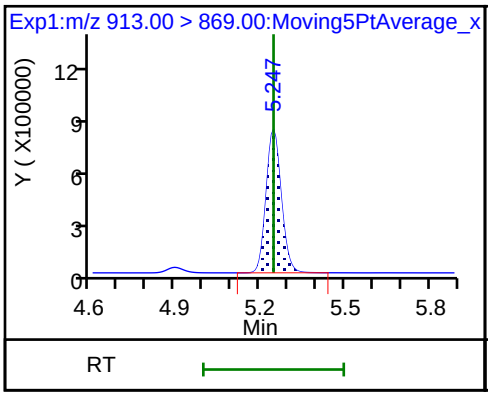
45 Perfluorohexadecanoic acid



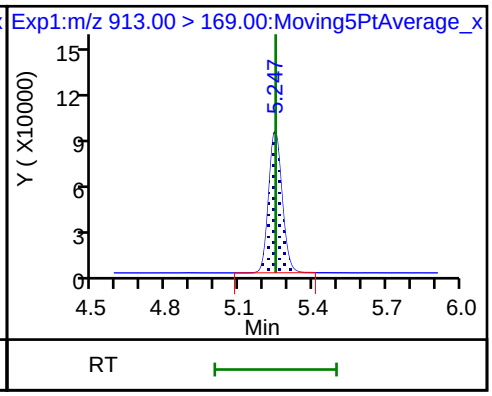
D 44 13C2-PFHxDA



46 Perfluorooctadecanoic acid



46 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Lab Sample ID: ICV 320-233476/10 Calibration Date: 07/11/2018 15:54

Instrument ID: A8_N Calib Start Date: 07/11/2018 14:48

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 07/11/2018 15:38

Lab File ID: 2018.07.11LLICALA_010.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.9856	1.006		2.55	2.50	2.0	40.0
Perfluoropentanoic acid (PFPeA)	AveID	1.213	1.190		2.45	2.50	-1.9	40.0
Perfluorobutanesulfonic acid (PFBS)	AveID	76.50	75.70		2.19	2.21	-1.0	50.0
4:2 FTS	AveID	13.00	12.39		2.23	2.34	-4.7	50.0
Perfluorohexanoic acid (PFHxA)	AveID	1.029	1.045		2.54	2.50	1.6	40.0
Perfluoropentanesulfonic acid (PFPeS)	AveID	69.78	67.50		2.27	2.35	-3.3	50.0
HFPO-DA (GenX)	AveID	2.654	2.929		2.76	2.50	10.3	40.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.157	1.129		2.44	2.50	-2.4	40.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.148	1.139		2.26	2.28	-0.8	40.0
ADONA	AveID	3.219	2.951		2.29	2.50	-8.3	50.0
6:2 FTS	AveID	1.564	1.662		2.52	2.37	6.2	40.0
Perfluorooctanoic acid (PFOA)	AveID	1.232	1.189		2.42	2.50	-3.5	40.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.318	1.338		2.42	2.38	1.5	50.0
Perfluorononanoic acid (PFNA)	AveID	1.109	1.129		2.54	2.50	1.8	40.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.133	1.100		2.25	2.32	-2.9	40.0
9-Chlorohexadecafluoro-3-oxa nonane-1-sulfonate	AveID	1.836	1.803		2.29	2.33	-1.8	50.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9856	0.9614		2.44	2.50	-2.5	40.0
8:2 FTS	AveID	1.290	1.301		2.42	2.40	0.9	40.0
Perfluorononanesulfonic acid (PFNS)	AveID	0.7752	0.7807		2.42	2.40	0.7	50.0
Perfluorodecanoic acid (PFDA)	AveID	1.049	1.088		2.59	2.50	3.7	40.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	0.9858	0.9853		2.50	2.50	-0.0	40.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6714	0.6730		2.42	2.41	0.2	50.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.8840	0.8891		2.51	2.50	0.6	40.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.8195	0.7701		2.35	2.50	-6.0	40.0
11-Chloroeicosafluoro-3-oxau ndecane-1-sulfonate	AveID	2.654	2.758		2.45	2.36	4.0	50.0
Perfluorododecanoic acid (PFDoA)	AveID	1.092	1.087		2.49	2.50	-0.5	40.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.068	1.119		2.62	2.50	4.8	50.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2602	0.2656		2.55	2.50	2.1	50.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		0.9129		2.38	2.50	-4.8	50.0

FORM VII 537 (modified)

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Lab Sample ID: ICV 320-233476/10 Calibration Date: 07/11/2018 15:54

Instrument ID: A8_N Calib Start Date: 07/11/2018 14:48

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 07/11/2018 15:38

Lab File ID: 2018.07.11LLICALA_010.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.143	1.074		2.35	2.50	-6.0	50.0
13C4 PFBA	Ave	1.356	1.378		2.54	2.50	1.6	50.0
13C5 PFPeA	Ave	0.9425	0.9608		2.55	2.50	1.9	50.0
13C3-PFBS	Ave	0.0237	0.0248		2.43	2.33	4.5	50.0
M2-4:2FTS	Ave	0.1273	0.1297		2.38	2.34	1.9	50.0
13C2 PFHxA	Ave	1.017	1.045		2.57	2.50	2.7	50.0
13C3 HFPO-DA	Ave	0.0724	0.0672		2.32	2.50	-7.2	50.0
13C4-PFHpA	Ave	0.9371	0.9594		2.56	2.50	2.4	50.0
18O2 PFHxS	Ave	1.328	1.310		2.33	2.37	-1.3	50.0
M2-6:2FTS	Ave	0.2009	0.1917		2.27	2.38	-4.6	40.0
13C4 PFOA	Ave	0.9560	0.9622		2.52	2.50	0.6	50.0
13C4 PFOS	Ave	0.9742	1.017		2.49	2.39	4.4	50.0
13C5 PFNA	Ave	0.8546	0.8534		2.50	2.50	-0.1	50.0
13C8 FOSA	Ave	1.405	1.507		2.68	2.50	7.3	50.0
M2-8:2FTS	Ave	0.2939	0.2961		2.41	2.40	0.8	40.0
13C2 PFDA	Ave	0.7503	0.7467		2.49	2.50	-0.5	50.0
d3-NMeFOSAA	Ave	0.3075	0.3211		2.61	2.50	4.4	50.0
d5-NEtFOSAA	Ave	0.3150	0.3212		2.55	2.50	1.9	50.0
13C2 PFUnA	Ave	0.6266	0.6524		2.60	2.50	4.1	50.0
13C2 PFDoA	Ave	0.6496	0.6654		2.56	2.50	2.4	50.0
13C2-PFTeDA	Ave	0.6740	0.6932		2.57	2.50	2.8	50.0
13C2-PFHxDA	Ave	1.074	1.173		2.73	2.50	9.3	50.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_010.d
Lims ID: ICV Full
Client ID:
Sample Type: ICV
Inject. Date: 11-Jul-2018 15:54:23 ALS Bottle#: 17 Worklist Smp#: 10
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: ICV
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist:

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180711-60919.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 11-Jul-2018 16:34:22 Calib Date: 11-Jul-2018 15:38:42
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK024

First Level Reviewer: westendorfc Date: 11-Jul-2018 16:22:14

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.430	1.431	-0.001	0.536	5662549	2.54		102	25171	
2 Perfluorobutyric acid										
212.90 > 169.00	1.435	1.431	0.004	1.004	5694181	2.55			2796	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.720	1.702	0.018	1.000	4700361	2.45			1877	
D 3 13C5-PFPeA										
267.90 > 223.00	1.720	1.702	0.018	0.645	3948505	2.55		102	53954	
D 47 13C3-PFBS										
301.90 > 83.00	1.756	1.748	0.008	0.658	94606	2.43		105	643	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.756	1.751	0.005	1.000	6807777	2.19			64304	
298.90 > 99.00	1.756	1.751	0.005	1.000	2776259		2.45(1.25-3.74)		37604	
61 1H,1H,2H,2H-perfluorohexanesulfoni										
327.00 > 307.00	1.970	1.962	0.008	1.122	1177478	2.23			54136	
D 60 M2-4:2FTS										
329.00 > 81.00	1.970	1.962	0.008	0.739	497860	2.38		102	7684	
D 7 13C2 PFHxA										
315.00 > 270.00	2.003	1.996	0.007	0.751	4294759	2.57		103	86055	
6 Perfluorohexanoic acid										
313.00 > 269.00	2.003	1.998	0.005	1.000	4489753	2.54			10643	
313.00 > 119.00	2.003	1.998	0.005	1.000	410563		10.94(5.03-15.10)		9304	
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.025	2.022	0.003	1.154	6440627	2.27			105383	
349.00 > 99.00	2.025	2.022	0.003	1.154	2391078		2.69(1.36-4.07)		30821	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.093	2.093	0.0	0.785	276012	2.32		92.8	6290	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
67 Perfluoro(2-propoxypropanoic) acid										
329.10 > 285.00	2.093	2.095	-0.002	1.000	808359	2.76			4938	
D 9 13C4-PFHpA										
367.00 > 322.00	2.319	2.319	0.0	0.869	3942808	2.56		102	47725	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.319	2.319	0.0	1.000	4451513	2.44			8112	
363.00 > 169.00	2.319	2.319	0.0	1.000	1752355		2.54(1.13-3.40)		16512	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.332	2.332	0.0	1.000	5578276	2.26			27972	
399.00 > 99.00	2.332	2.332	0.0	1.000	1797150		3.10(1.50-4.49)		9813	
D 11 18O2 PFHxS										
403.00 > 84.00	2.332	2.334	-0.002	0.874	5091650	2.33		98.7	57623	
65 Adona										
377.00 > 251.00	2.358	2.360	-0.002	0.779	12331342	2.29			79894	
377.00 > 85.00	2.358	2.360	-0.002	0.779	7454068		1.65(0.84-2.53)		36223	
D 12 M2-6:2FTS										
429.00 > 81.00	2.644	2.645	-0.001	0.991	748501	2.27		95.4	13706	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.644	2.648	-0.004	1.000	1241375	2.52			19833	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.667	2.672	-0.005	1.000	4705604	2.42			3344	
413.00 > 169.00	2.667	2.672	-0.005	1.000	2411704		1.95(0.84-2.52)		11110	
* 62 13C2-PFOA										
415.00 > 370.00	2.667	2.672	-0.005		4109601	2.50			35548	
D 14 13C4 PFOA										
417.00 > 372.00	2.667	2.672	-0.005	1.000	3954191	2.52		101	41673	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.674	2.678	-0.004	0.884	5320943	2.42			32575	
449.00 > 99.00	2.674	2.678	-0.004	0.884	1364302		3.90(1.94-5.82)		18490	
D 18 13C4 PFOS										
503.00 > 80.00	3.026	3.034	-0.008	1.135	3994626	2.49		104	29003	
D 19 13C5 PFNA										
468.00 > 423.00	3.026	3.035	-0.009	1.135	3507198	2.50		99.9	40014	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.026	3.035	-0.009	1.000	4265448	2.25			33190	
499.00 > 99.00	3.026	3.035	-0.009	1.000	948802		4.50(2.31-6.93)		11013	
20 Perfluorononanoic acid										
463.00 > 419.00	3.026	3.036	-0.010	1.000	3959562	2.54			8599	
463.00 > 169.00	3.026	3.036	-0.010	1.000	973781		4.07(1.90-5.69)		31878	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.233	3.245	-0.012	1.069	7020939	2.29			52039	
D 21 13C8 FOSA										
506.00 > 78.00	3.361	3.367	-0.006	1.260	6194047	2.68		107	38519	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.361	3.371	-0.010	1.000	5955013	2.44			31773	
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.371	3.377	-0.006	1.114	3131719	2.42			59993	
549.00 > 99.00	3.371	3.377	-0.006	1.114	1180397		2.65(1.33-3.97)		20818	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
25 1H,1H,2H,2H-perfluorodecanesulfoni										
527.00 > 507.00	3.371	3.380	-0.009	1.000	1516938	2.42			27887	
D 26 M2-8:2FTS										
529.00 > 81.00	3.371	3.380	-0.009	1.264	1165739	2.41		101	17380	
D 23 13C2 PFDA										
515.00 > 470.00	3.380	3.391	-0.011	1.267	3068510	2.49		99.5	30066	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.380	3.392	-0.012	1.000	3338723	2.59			15753	
513.00 > 169.00	3.380	3.392	-0.012	1.000	607336		5.50(2.36-7.09)		15281	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.529	3.544	-0.015	1.323	1319394	2.61		104	32055	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.538	3.548	-0.010	1.003	1299929	2.50			10976	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.687	3.701	-0.014	1.219	2710734	2.42			63426	
599.00 > 99.00	3.687	3.701	-0.014	1.219	896556		3.02(1.39-4.16)		18844	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.698	3.710	-0.012	1.387	1319907	2.55		102	3301	
D 30 13C2 PFUnA										
565.00 > 520.00	3.709	3.716	-0.007	1.391	2681170	2.60		104	30671	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.709	3.718	-0.009	1.003	1173536	2.51			24732	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.709	3.718	-0.009	1.000	2064714	2.35			10830	
563.00 > 169.00	3.709	3.718	-0.009	1.000	560082		3.69(2.12-6.36)		29000	
66 11-Chloroeicosafluoro-3-oxaundecan										
631.00 > 451.00	3.866	3.874	-0.008	1.278	10857363	2.45			103159	
D 36 13C2 PFDoA										
615.00 > 570.00	3.999	4.009	-0.010	1.500	2734442	2.56		102	19970	
37 Perfluorododecanoic acid										
613.00 > 569.00	3.999	4.011	-0.012	1.000	2971924	2.49			1727	
613.00 > 169.00	3.999	4.011	-0.012	1.000	730621		4.07(2.13-6.40)		15446	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.263	4.273	-0.010	1.066	3060870	2.62			1290	
663.00 > 169.00	4.263	4.273	-0.010	1.066	906949		3.37(1.25-3.76)		12570	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.502	4.508	-0.006	1.688	2848581	2.57		103	16350	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.502	4.508	-0.006	1.000	756552	2.55			7628	
713.00 > 219.00	4.491	4.508	-0.017	0.998	522665		1.45(0.71-2.13)		8285	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.914	4.918	-0.004	1.843	4820793	2.73		109	12076	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.914	4.918	-0.004	1.000	4400685	2.38			894	
813.00 > 169.00	4.914	4.918	-0.004	1.000	738640		5.96(2.86-8.58)		6323	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.263	5.271	-0.008	1.071	5178447	2.35			844	
913.00 > 169.00	5.263	5.271	-0.008	1.071	623997		8.30(3.83-11.48)		5178	

Reagents:

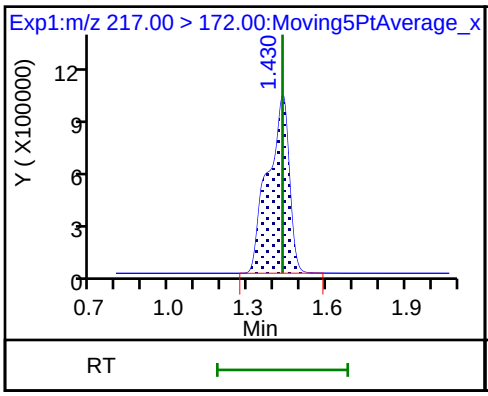
LCPFCIC_FULL_00012 Amount Added: 1.00 Units: mL

Report Date: 11-Jul-2018 16:34:23 Chrom Revision: 2.2 07-Jun-2018 07:41:54

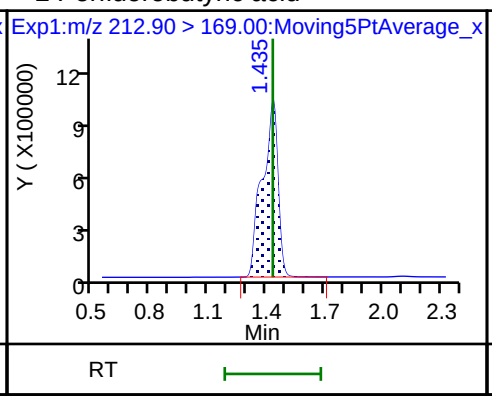
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_010.d
Injection Date: 11-Jul-2018 15:54:23 Instrument ID: A8_N
Lims ID: ICV Full
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 17 Worklist Smp#: 10
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC ICAL

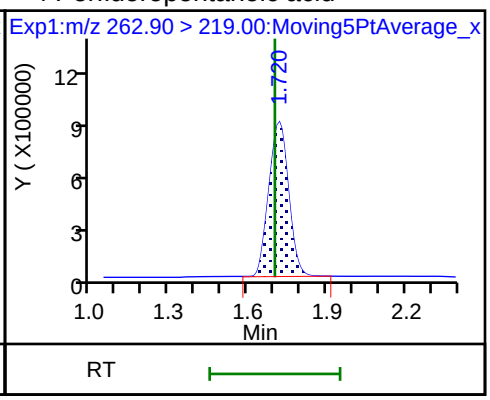
D 1 13C4 PFBA



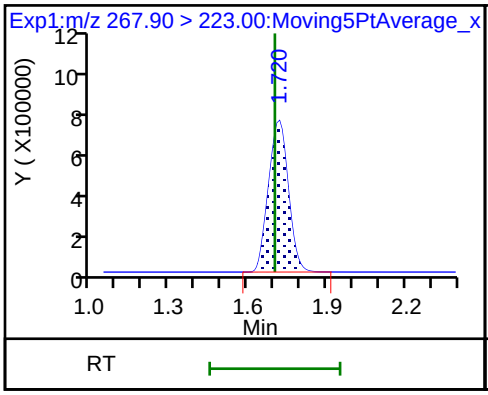
2 Perfluorobutyric acid



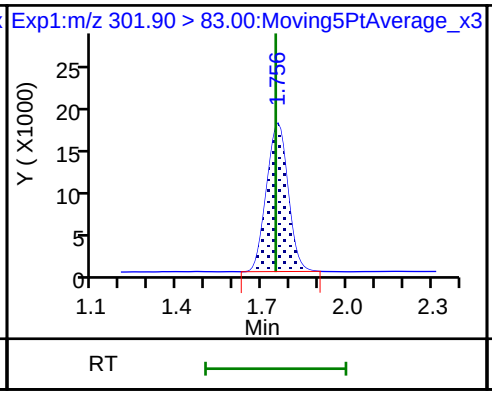
4 Perfluoropentanoic acid



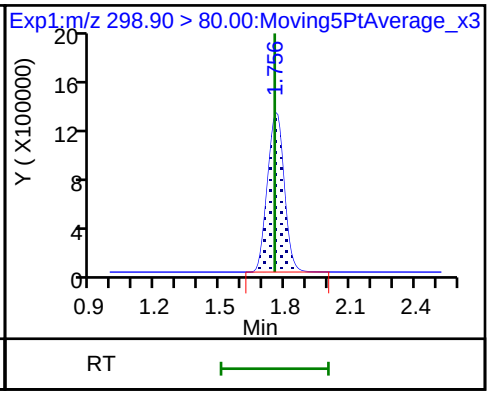
D 3 13C5-PFPeA



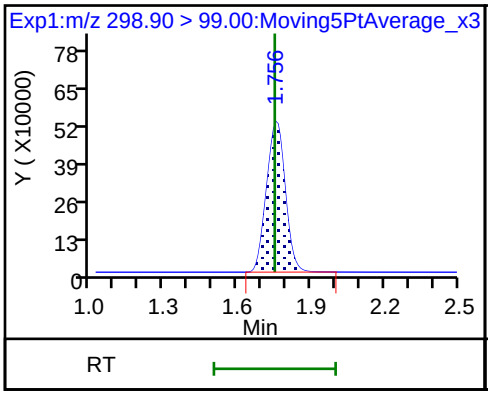
D 47 13C3-PFBS



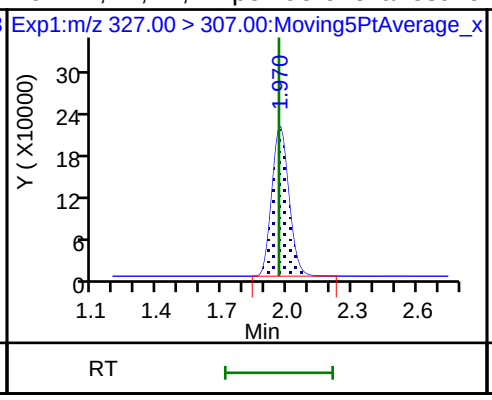
5 Perfluorobutanesulfonic acid



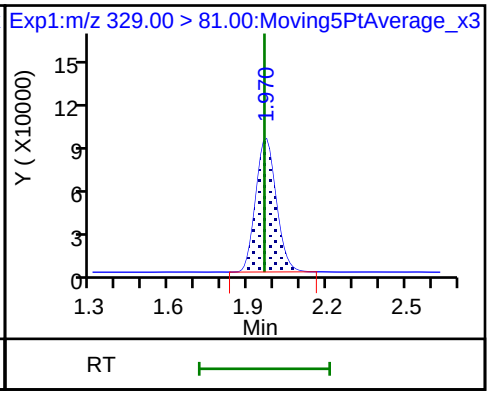
5 Perfluorobutanesulfonic acid



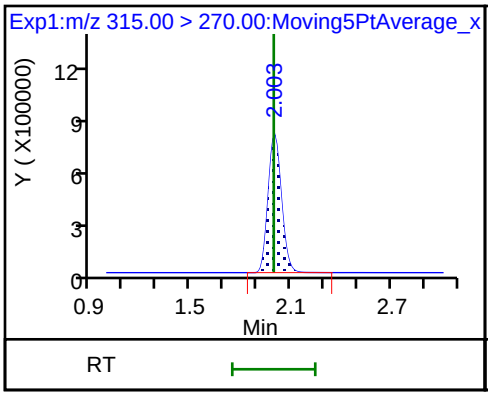
61 1H,1H,2H,2H-perfluorohexanesulfon



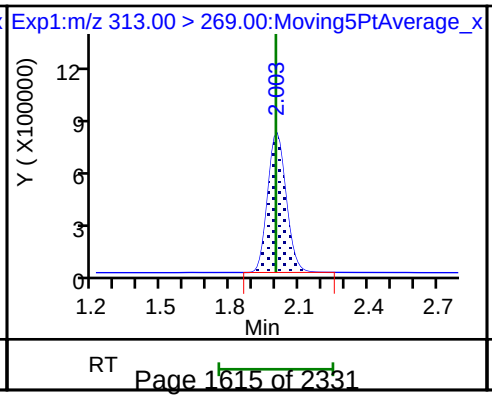
D 60 M2-4:2FTS



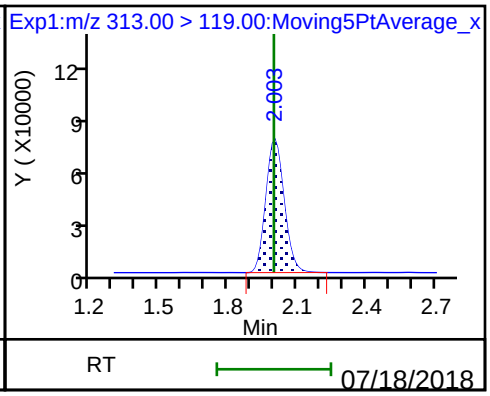
D 7 13C2 PFHxA



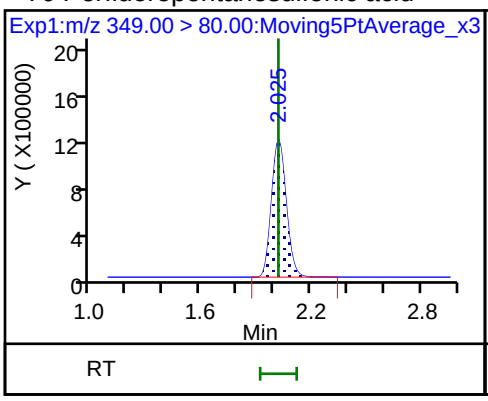
6 Perfluorohexanoic acid



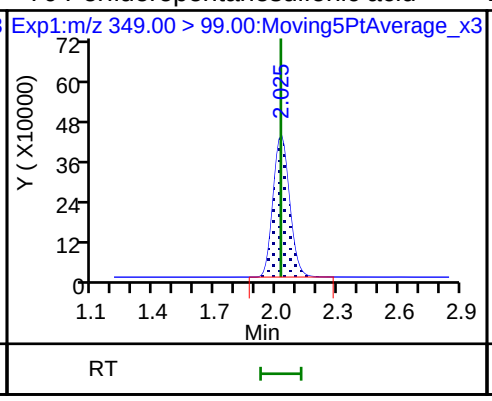
6 Perfluorohexanoic acid



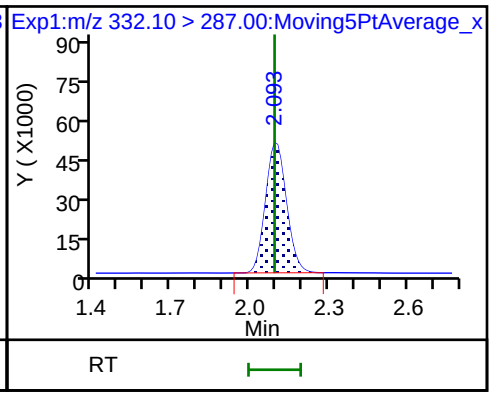
70 Perfluoropentanesulfonic acid



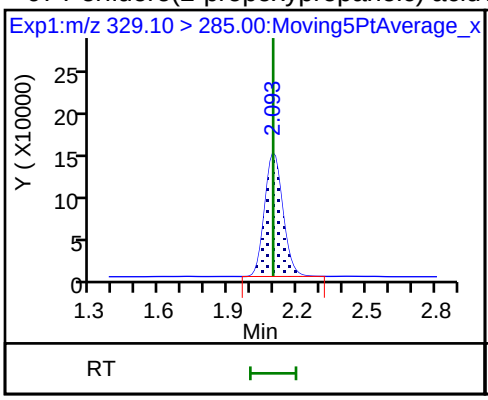
70 Perfluoropentanesulfonic acid



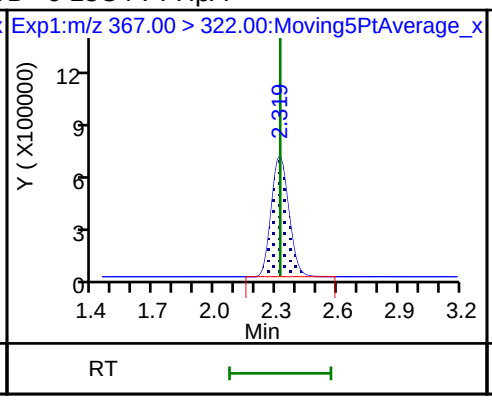
D 64 13C3 HFPO-DA



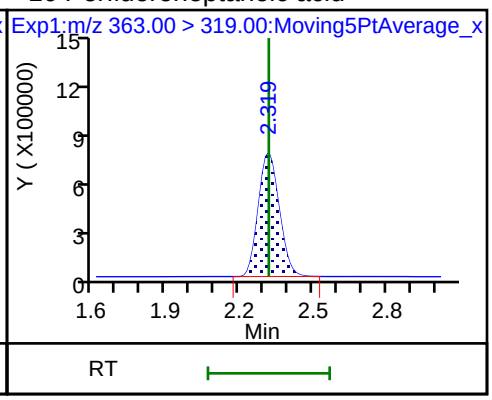
67 Perfluoro(2-propoxypropanoic) acid



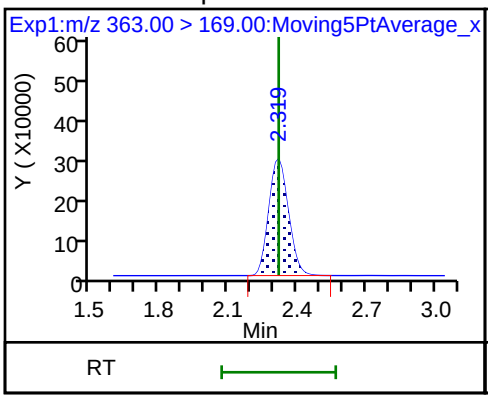
D 9 13C4-PFHpA



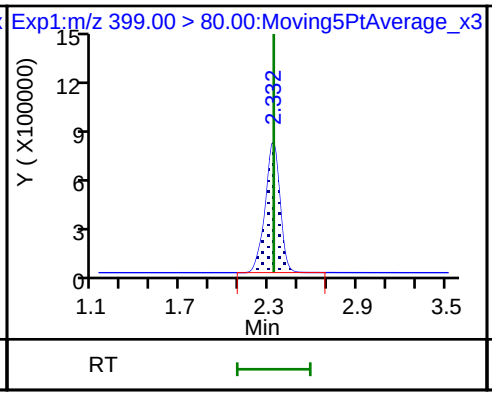
10 Perfluoroheptanoic acid



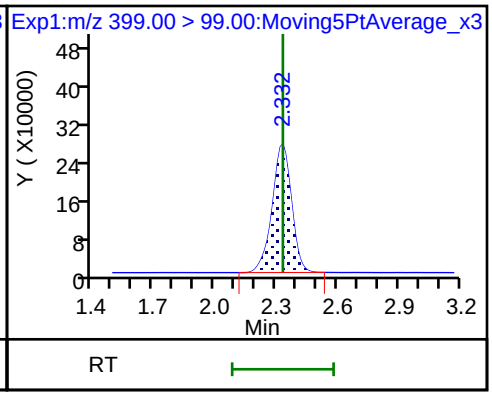
10 Perfluoroheptanoic acid



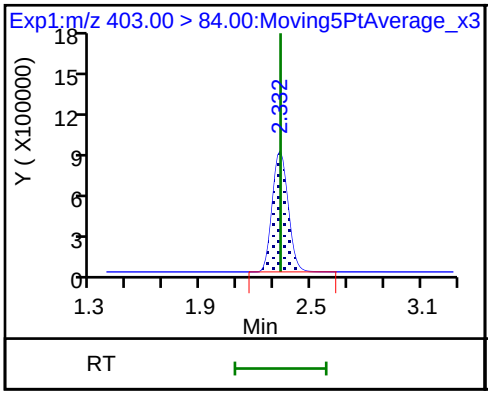
8 Perfluorohexanesulfonic acid



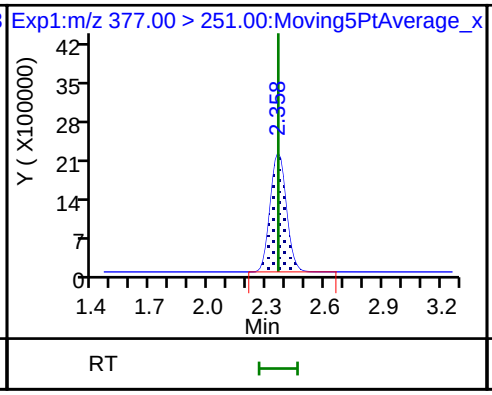
8 Perfluorohexanesulfonic acid



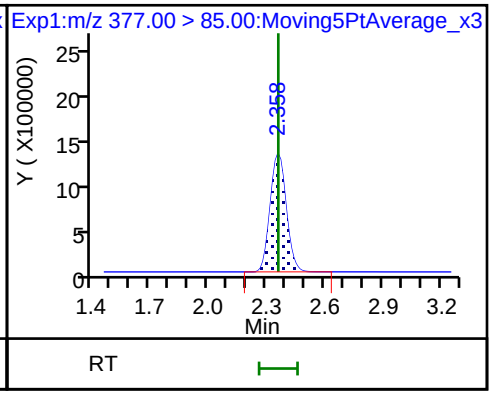
D 11 18O2 PFHxS



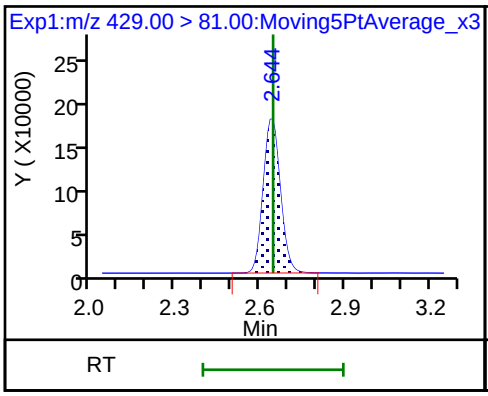
65 Adona



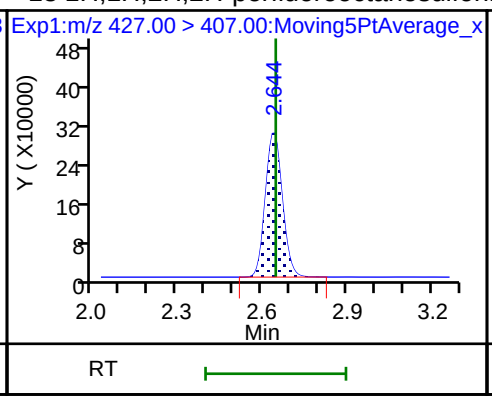
65 Adona



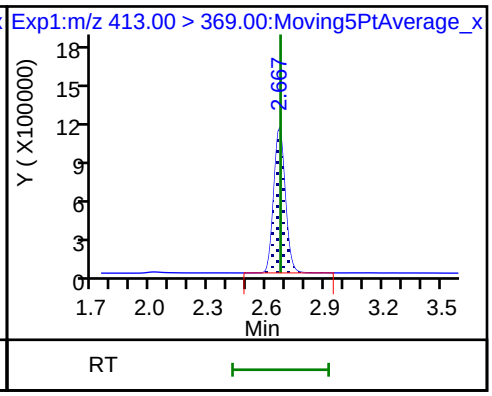
D 12 M2-6:2FTS



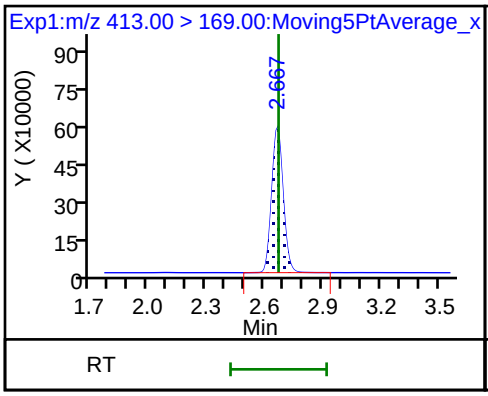
13 1H,1H,2H,2H-perfluorooctanesulfoni



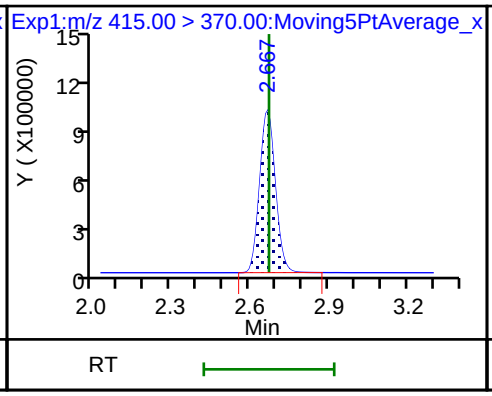
15 Perfluorooctanoic acid



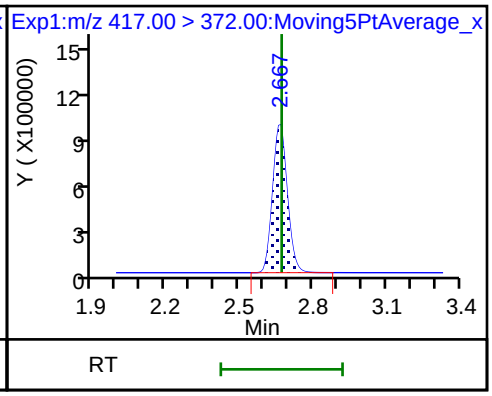
15 Perfluorooctanoic acid



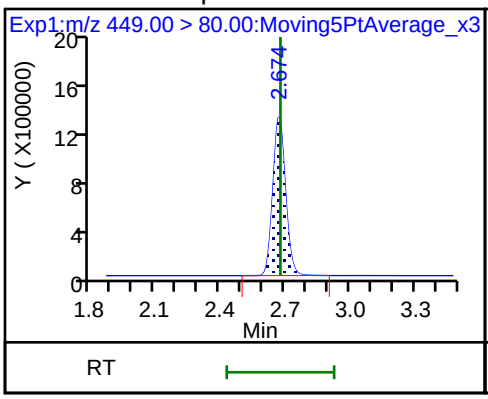
* 62 13C2-PFOA



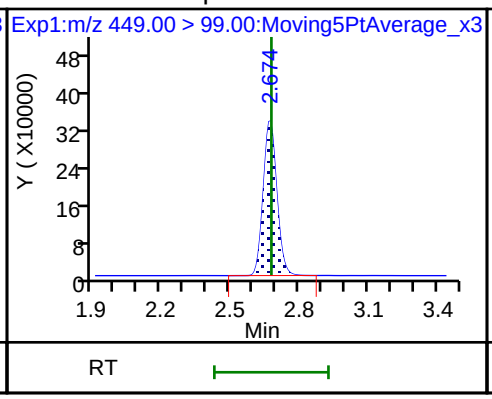
D 14 13C4 PFOA



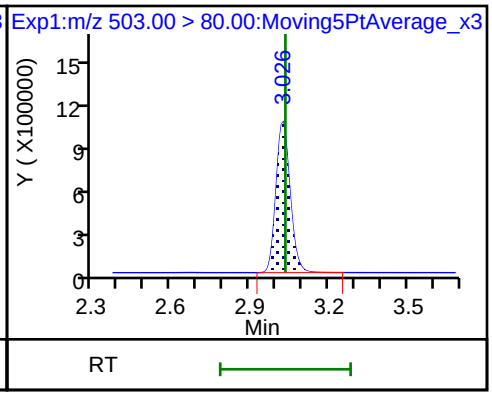
16 Perfluoroheptanesulfonic acid



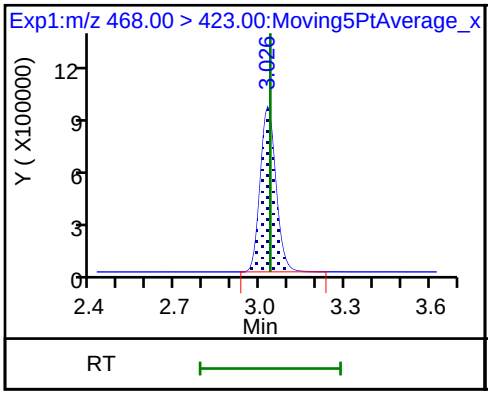
16 Perfluoroheptanesulfonic acid



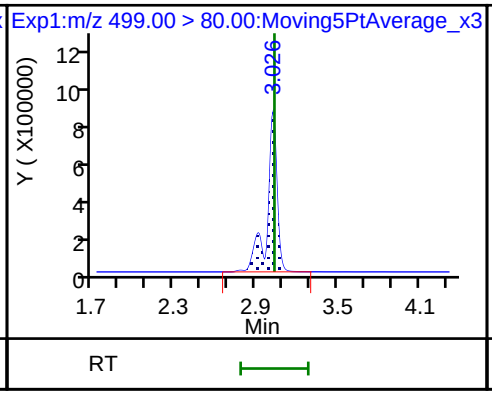
D 18 13C4 PFOS



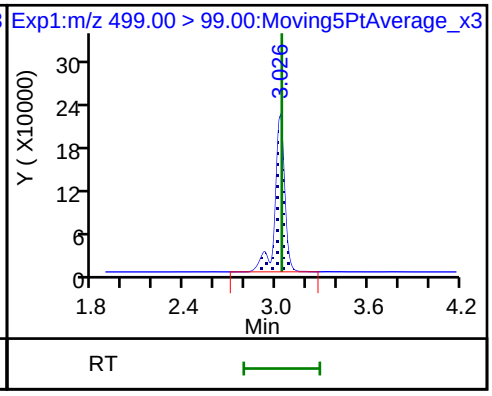
D 19 13C5 PFNA



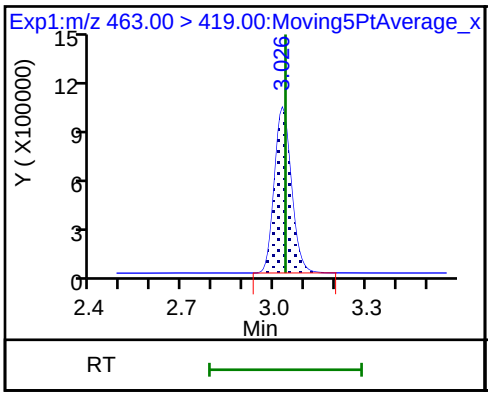
17 Perfluorooctane sulfonic acid



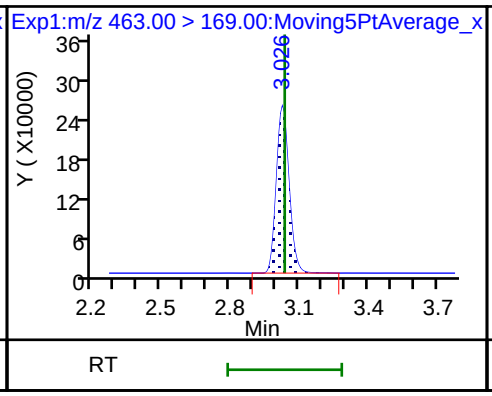
17 Perfluorooctane sulfonic acid



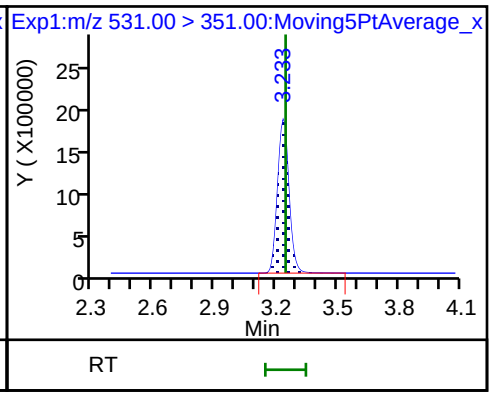
20 Perfluorononanoic acid



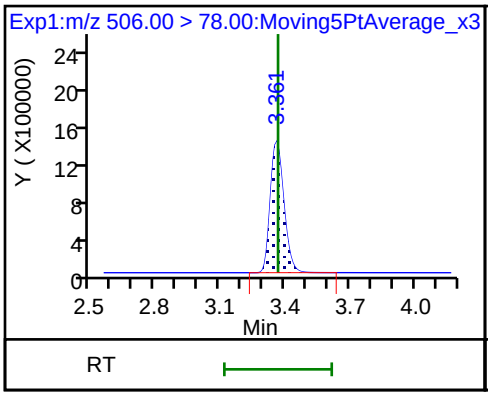
20 Perfluorononanoic acid



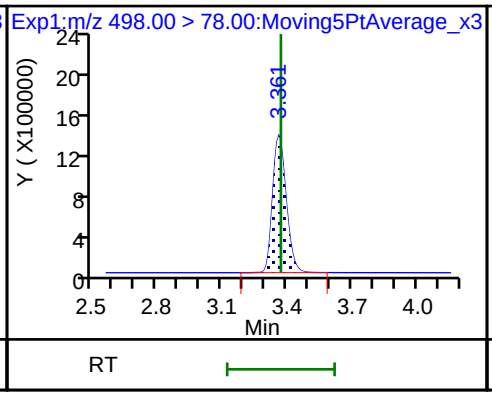
69 9-Chlorohexadecafluoro-3-oxanonane



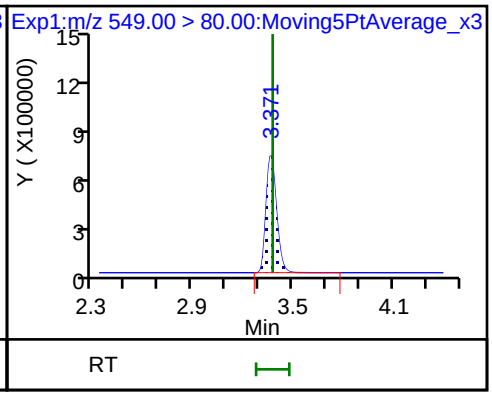
D 21 13C8 FOSA



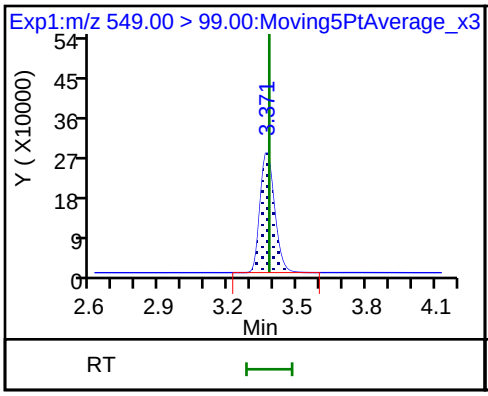
22 Perfluorooctane Sulfonamide



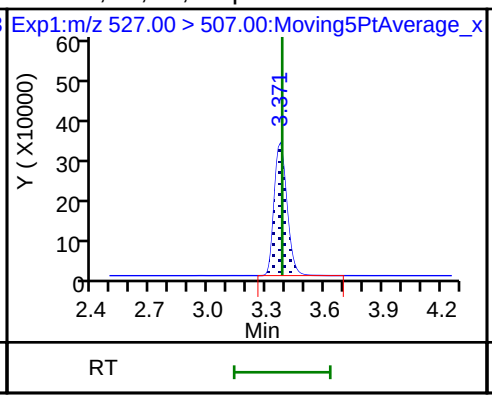
68 Perfluorononanesulfonic acid



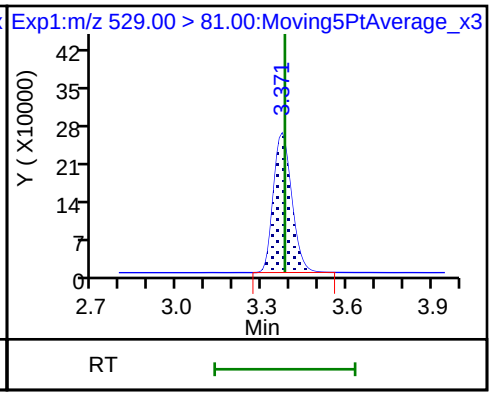
68 Perfluorononanesulfonic acid



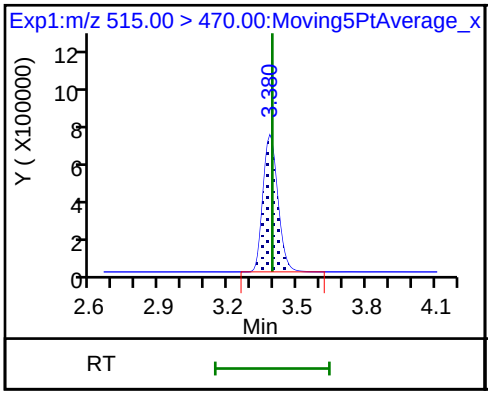
25 1H,1H,2H,2H-perfluorodecanesulfon



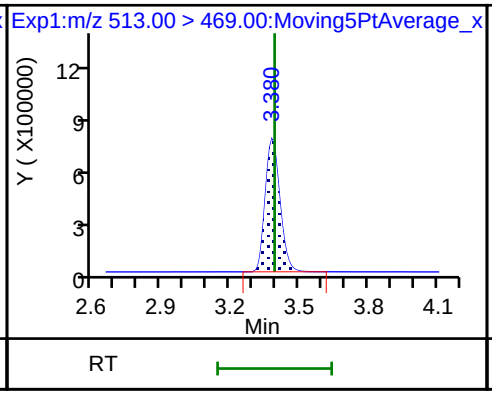
D 26 M2-8:2FTS



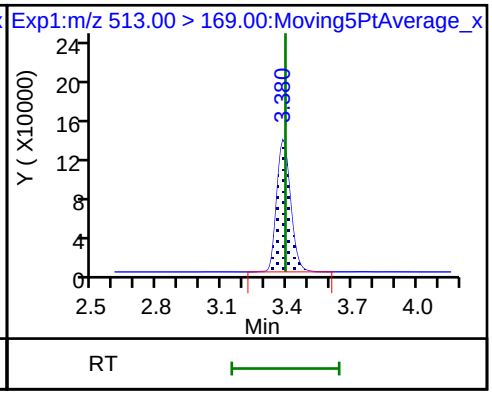
D 23 13C2 PFDA



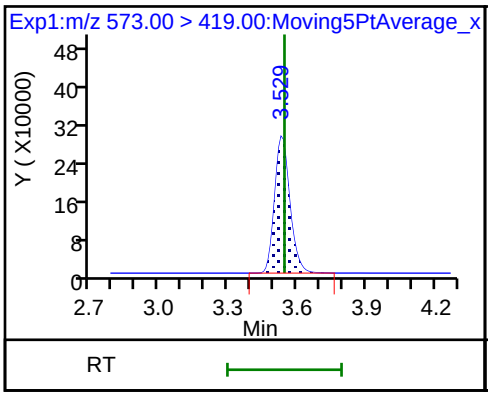
24 Perfluorodecanoic acid



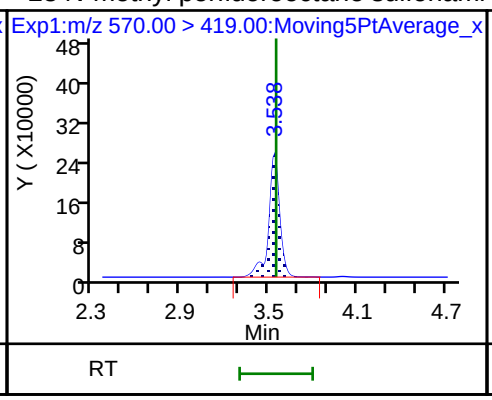
24 Perfluorodecanoic acid



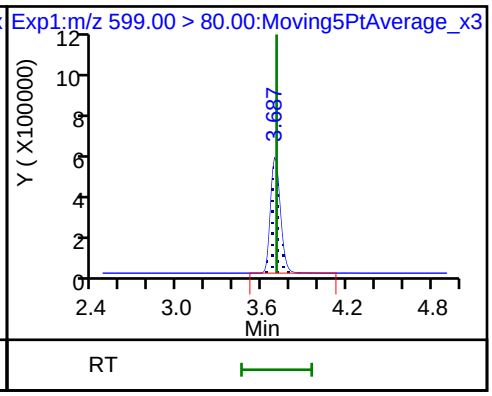
D 27 d3-NMeFOSAA



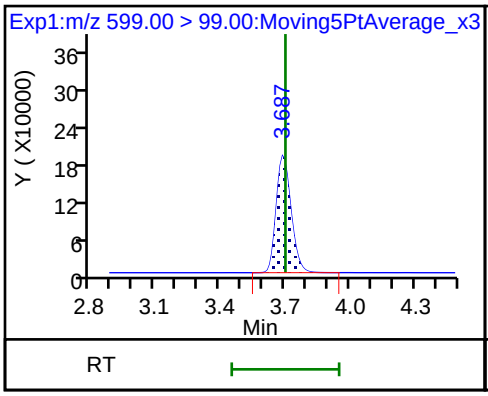
28 N-methyl perfluorooctane sulfonami



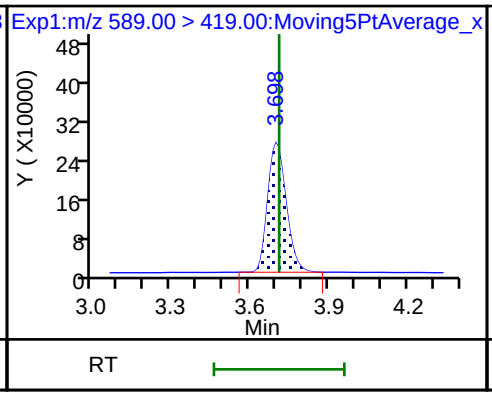
29 Perfluorodecane Sulfonic acid



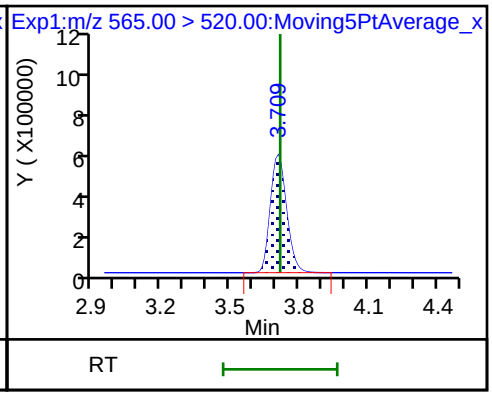
29 Perfluorodecane Sulfonic acid



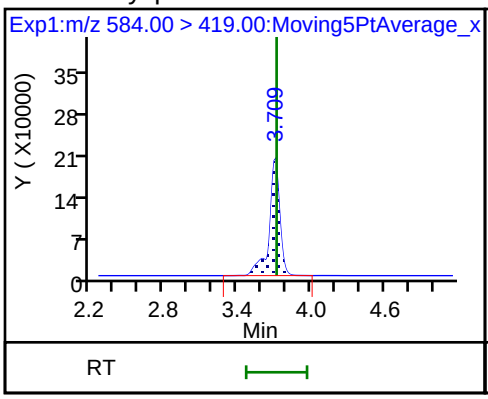
D 32 d5-NEtFOSAA



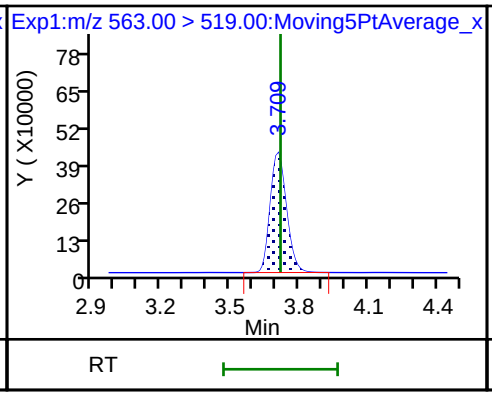
D 30 13C2 PFUnA



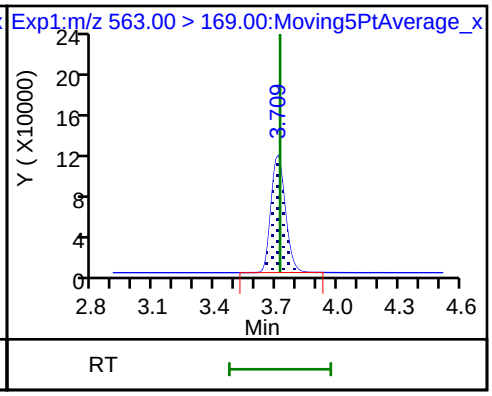
33 N-ethyl perfluorooctane sulfonamid



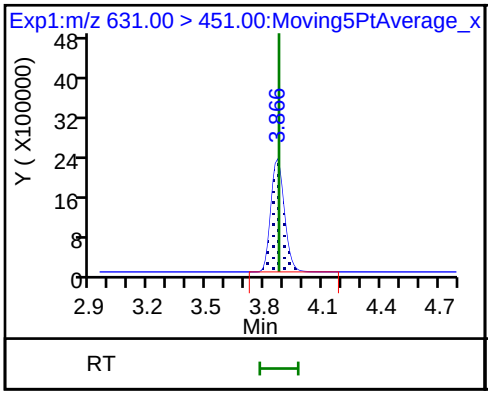
31 Perfluoroundecanoic acid



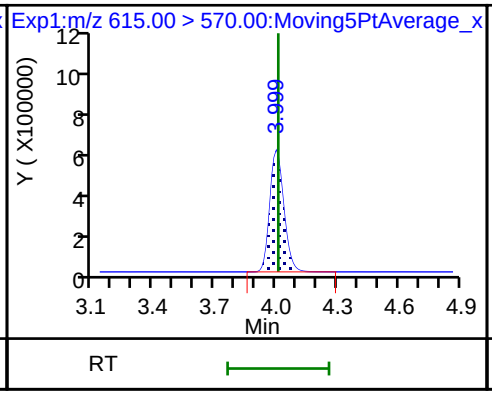
31 Perfluoroundecanoic acid



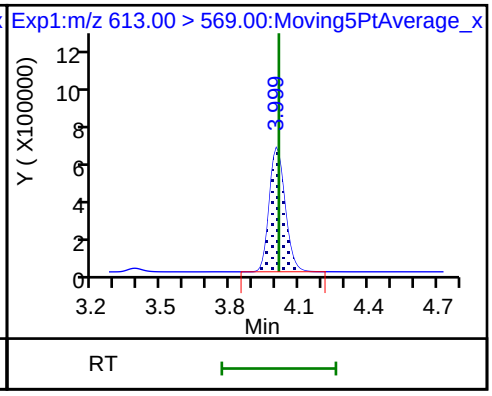
66 11-Chloroeicosafluoro-3-oxaundecan



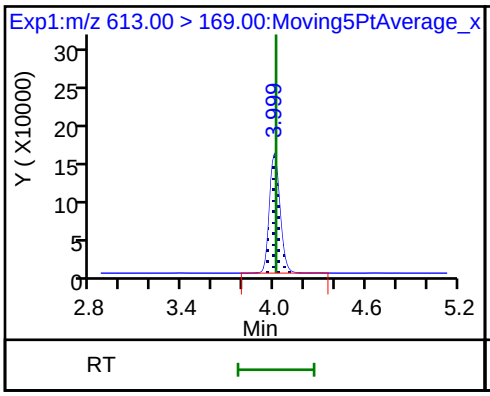
D 36 13C2 PFDoA



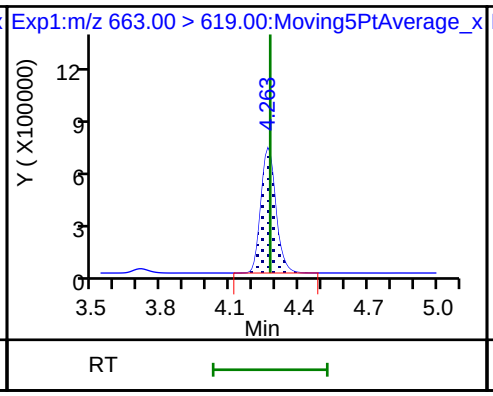
37 Perfluorododecanoic acid



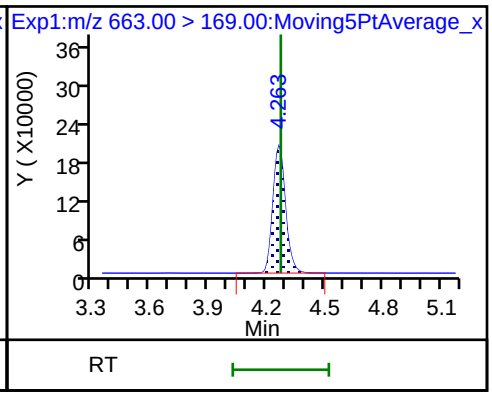
37 Perfluorododecanoic acid



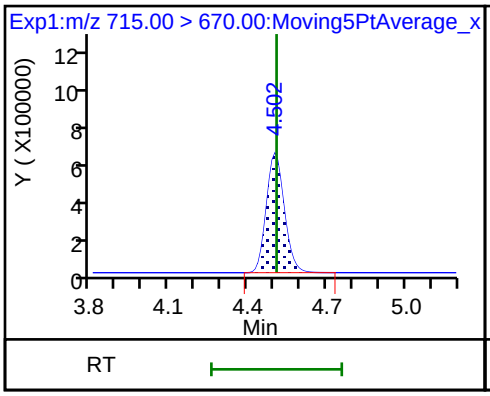
41 Perfluorotridecanoic acid



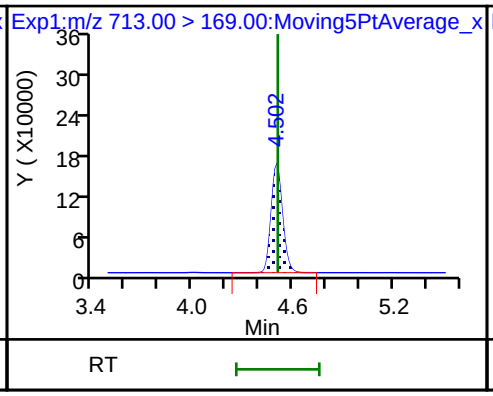
41 Perfluorotridecanoic acid



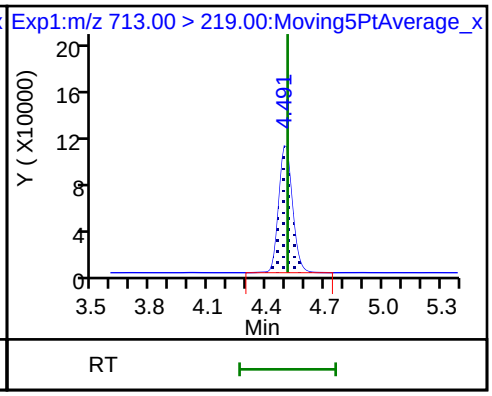
D 43 13C2-PFTeDA



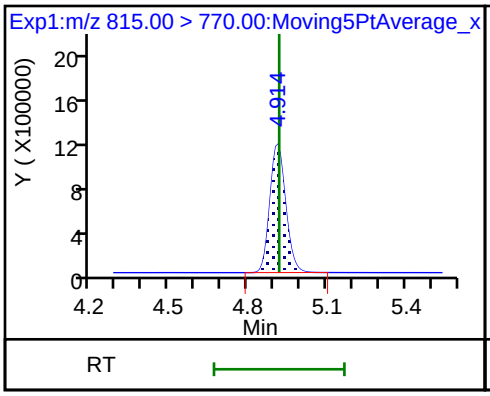
42 Perfluorotetradecanoic acid



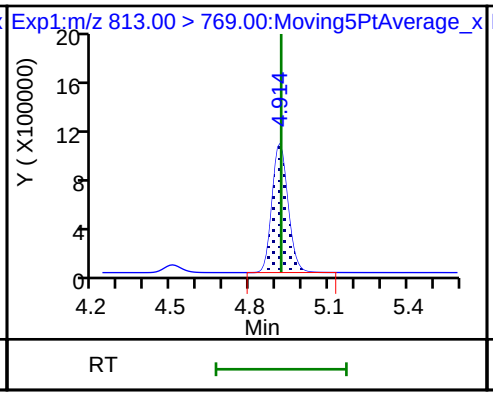
42 Perfluorotetradecanoic acid



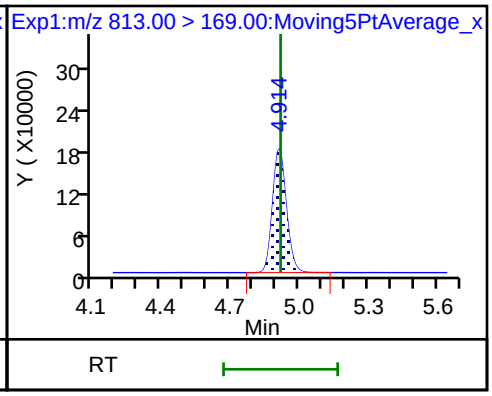
D 44 13C2-PFHxDA



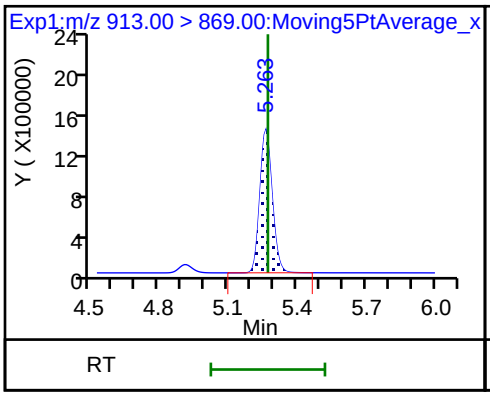
45 Perfluorohexadecanoic acid



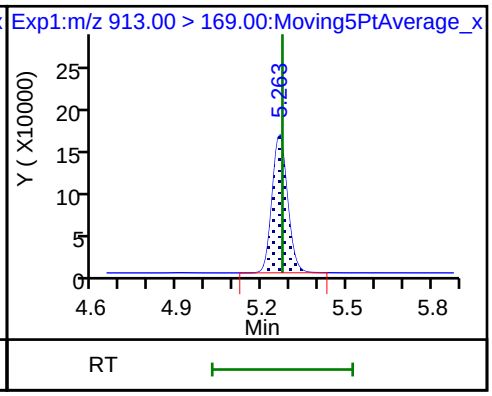
45 Perfluorohexadecanoic acid



46 Perfluorooctadecanoic acid



46 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Lab Sample ID: CCV 320-233511/1 Calibration Date: 07/11/2018 21:38

Instrument ID: A8_N Calib Start Date: 07/11/2018 14:48

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 07/11/2018 15:38

Lab File ID: 2018.07.11LLB_044.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.9856	0.9940		2.52	2.50	0.8	40.0
Perfluoropentanoic acid (PFPeA)	AveID	1.213	1.175		2.42	2.50	-3.2	40.0
Perfluorobutanesulfonic acid (PFBS)	AveID	76.50	78.32		2.26	2.21	2.4	50.0
4:2 FTS	AveID	13.00	11.83		2.13	2.34	-9.0	50.0
Perfluorohexanoic acid (PFHxA)	AveID	1.029	1.033		2.51	2.50	0.4	40.0
Perfluoropentanesulfonic acid (PFPeS)	AveID	69.78	70.72		2.38	2.35	1.3	50.0
HFPO-DA (GenX)	AveID	2.654	2.998		2.82	2.50	12.9	40.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.157	1.170		2.53	2.50	1.2	40.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.148	1.101		2.18	2.28	-4.1	40.0
ADONA	AveID	3.219	3.288		2.41	2.36	2.2	50.0
6:2 FTS	AveID	1.564	1.634		2.48	2.37	4.4	40.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.318	1.355		2.45	2.38	2.8	50.0
Perfluorooctanoic acid (PFOA)	AveID	1.232	1.174		2.39	2.50	-4.7	40.0
Perfluorononanoic acid (PFNA)	AveID	1.109	1.103		2.49	2.50	-0.6	40.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.133	1.124		2.30	2.32	-0.8	40.0
9-Chlorohexadecafluoro-3-oxa nonane-1-sulfonate	AveID	1.836	1.800		2.28	2.33	-1.9	50.0
8:2 FTS	AveID	1.290	1.212		2.25	2.40	-6.0	40.0
Perfluorononanesulfonic acid (PFNS)	AveID	0.7752	0.8091		2.50	2.40	4.4	50.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9856	1.046		2.65	2.50	6.1	40.0
Perfluorodecanoic acid (PFDA)	AveID	1.049	1.053		2.51	2.50	0.3	40.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	0.9858	0.9854		2.50	2.50	-0.0	40.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6714	0.6964		2.50	2.41	3.7	50.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.8840	0.8842		2.50	2.50	0.0	40.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.8195	0.8573		2.62	2.50	4.6	40.0
11-Chloroeicosafluoro-3-oxau ndecane-1-sulfonate	AveID	2.654	2.961		2.63	2.36	11.6	50.0
Perfluorododecanoic acid (PFDoA)	AveID	1.092	1.075		2.46	2.50	-1.5	40.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.068	1.027		2.40	2.50	-3.8	50.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2602	0.2571		2.47	2.50	-1.2	50.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		0.9907		2.59	2.50	3.4	50.0

FORM VII 537 (modified)

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Lab Sample ID: CCV 320-233511/1 Calibration Date: 07/11/2018 21:38

Instrument ID: A8_N Calib Start Date: 07/11/2018 14:48

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 07/11/2018 15:38

Lab File ID: 2018.07.11LLB_044.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.143	1.153		2.52	2.50	0.9	50.0
13C4 PFBA	Ave	1.356	1.402		2.58	2.50	3.4	50.0
13C5 PFPeA	Ave	0.9425	0.9874		2.62	2.50	4.8	50.0
13C3-PFBS	Ave	0.0237	0.0251		2.46	2.33	5.9	50.0
M2-4:2FTS	Ave	0.1273	0.1321		2.42	2.34	3.8	50.0
13C2 PFHxA	Ave	1.017	1.111		2.73	2.50	9.2	50.0
13C3 HFPO-DA	Ave	0.0724	0.0722		2.49	2.50	-0.2	50.0
13C4-PFHpA	Ave	0.9371	0.9836		2.62	2.50	5.0	50.0
18O2 PFHxS	Ave	1.328	1.371		2.44	2.37	3.3	50.0
M2-6:2FTS	Ave	0.2009	0.2001		2.37	2.38	-0.4	40.0
13C4 PFOA	Ave	0.9560	0.9555		2.50	2.50	-0.0	50.0
13C4 PFOS	Ave	0.9742	1.027		2.52	2.39	5.5	50.0
13C5 PFNA	Ave	0.8546	0.8687		2.54	2.50	1.6	50.0
13C8 FOSA	Ave	1.405	1.494		2.66	2.50	6.4	50.0
M2-8:2FTS	Ave	0.2939	0.2921		2.38	2.40	-0.6	40.0
13C2 PFDA	Ave	0.7503	0.7885		2.63	2.50	5.1	50.0
d3-NMeFOSAA	Ave	0.3075	0.3469		2.82	2.50	12.8	50.0
d5-NEtFOSAA	Ave	0.3150	0.3699		2.93	2.50	17.4	50.0
13C2 PFUnA	Ave	0.6266	0.6620		2.64	2.50	5.7	50.0
13C2 PFDoA	Ave	0.6496	0.7249		2.79	2.50	11.6	50.0
13C2-PFTeDA	Ave	0.6740	0.7111		2.64	2.50	5.5	50.0
13C2-PFHxDA	Ave	1.074	1.191		2.77	2.50	10.9	50.0

FORM VII 537 (modified)

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180711-60928.b\2018.07.11LLB_044.d
Lims ID: CCV L5
Client ID:
Sample Type: CCV
Inject. Date: 11-Jul-2018 21:38:17 ALS Bottle#: 14 Worklist Smp#: 1
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV L5
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-A8_N*sub32

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180711-60928.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 13-Jul-2018 08:52:08 Calib Date: 11-Jul-2018 15:38:42
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK010

First Level Reviewer: mongkols Date: 13-Jul-2018 08:52:07

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.424	1.435	-0.011	0.537	4968476	2.58		103	28635	
2 Perfluorobutyric acid										
212.90 > 169.00	1.430	1.436	-0.006	1.004	4938413	2.52		101	1971	
D 3 13C5-PFPeA										
267.90 > 223.00	1.710	1.719	-0.009	0.645	3499862	2.62		105	45885	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.710	1.721	-0.011	1.000	4111547	2.42		96.8	1693	
D 47 13C3-PFBS										
301.90 > 83.00	1.746	1.755	-0.009	0.659	82668	2.46		106	570	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.746	1.766	-0.020	1.000	6154611	2.26		102	56652	
298.90 > 99.00	1.746	1.766	-0.020	1.000	2447205		2.51(1.25-3.74)		31999	
D 60 M2-4:2FTS										
329.00 > 81.00	1.959	1.969	-0.010	0.739	437172	2.42		104	8541	
61 1H,1H,2H,2H-perfluorohexanesulfoni										
327.00 > 307.00	1.959	1.971	-0.012	1.122	982571	2.13		91.0	44183	
D 7 13C2 PFHxA										
315.00 > 270.00	1.991	2.002	-0.011	0.751	3937618	2.73		109	78320	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.991	2.005	-0.014	1.000	4067570	2.51		100	8728	
313.00 > 119.00	1.991	2.005	-0.014	1.000	364030		11.17(5.03-15.10)		5351	
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.014	2.027	-0.013	1.153	5896562	2.38		101	60827	
349.00 > 99.00	2.014	2.027	-0.013	1.153	2080183		2.83(1.36-4.07)		40388	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.082	2.093	-0.011	0.785	255951	2.49		99.8	5723	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
67 Perfluoro(2-propoxypropanoic) acid										
329.10 > 285.00	2.082	2.095	-0.013	1.000	767261	2.82		113	5445	
D 9 13C4-PFHpA										
367.00 > 322.00	2.306	2.319	-0.013	0.869	3486312	2.62		105	34230	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.306	2.321	-0.015	1.000	4079134	2.53		101	6047	
363.00 > 169.00	2.306	2.321	-0.015	1.000	1557223		2.62(1.13-3.40)		9612	
D 11 18O2 PFHxS										
403.00 > 84.00	2.319	2.332	-0.013	0.874	4598753	2.44		103	33535	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.319	2.334	-0.015	1.000	4868924	2.18		95.9	22549	
399.00 > 99.00	2.319	2.334	-0.015	1.000	1601661		3.04(1.50-4.49)		8596	
65 Adona										
377.00 > 251.00	2.345	2.360	-0.015	0.777	11280474	2.41		102	68361	
377.00 > 85.00	2.345	2.360	-0.015	0.777	6862320		1.64(0.84-2.53)		25527	
D 12 M2-6:2FTS										
429.00 > 81.00	2.627	2.643	-0.016	0.991	673861	2.37		99.6	15868	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.627	2.646	-0.019	1.000	1098758	2.48		104	13602	
D 14 13C4 PFOA										
417.00 > 372.00	2.652	2.667	-0.015	1.000	3386845	2.50		99.9	32099	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.659	2.669	-0.010	1.003	3981003	2.39		95.3	2827	
413.00 > 169.00	2.652	2.669	-0.017	1.000	2067739		1.93(0.84-2.52)		8003	
* 62 13C2-PFOA										
415.00 > 370.00	2.652	2.669	-0.017		3544592	2.50			38331	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.659	2.676	-0.017	0.881	4696918	2.45		103	35116	
449.00 > 99.00	2.659	2.676	-0.017	0.881	1228339		3.82(1.94-5.82)		16405	
D 18 13C4 PFOS										
503.00 > 80.00	3.018	3.022	-0.004	1.138	3481737	2.52		105	22113	
D 19 13C5 PFNA										
468.00 > 423.00	3.018	3.029	-0.011	1.138	3079104	2.54		102	38414	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.018	3.032	-0.014	1.000	3800097	2.30		99.2	31929	
499.00 > 99.00	3.018	3.032	-0.014	1.000	872122		4.36(2.31-6.93)		11912	
20 Perfluorononanoic acid										
463.00 > 419.00	3.018	3.032	-0.014	1.000	3396772	2.49		99.4	8221	
463.00 > 169.00	3.018	3.032	-0.014	1.000	823951		4.12(1.90-5.69)		19517	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.224	3.240	-0.016	1.068	6109746	2.28		98.1	41760	
D 21 13C8 FOSA										
506.00 > 78.00	3.351	3.367	-0.016	1.264	5295820	2.66		106	34290	
D 26 M2-8:2FTS										
529.00 > 81.00	3.360	3.367	-0.007	1.267	991818	2.38		99.4	15846	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.360	3.370	-0.010	1.003	5537727	2.65		106	37951	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.360	3.370	-0.010	1.113	2828815	2.50		104	31346	
549.00 > 99.00	3.360	3.370	-0.010	1.113	1047971		2.70(1.33-3.97)		17266	
D 23 13C2 PFDA										
515.00 > 470.00	3.370	3.377	-0.007	1.271	2794725	2.63		105	31376	
25 1H,1H,2H,2H-perfluorodecanesulfoni										
527.00 > 507.00	3.360	3.379	-0.019	1.000	1202552	2.25		94.0	17824	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.370	3.388	-0.018	1.000	2941640	2.51		100	19537	
513.00 > 169.00	3.370	3.388	-0.018	1.000	511556		5.75(2.36-7.09)		22931	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.519	3.535	-0.016	1.327	1229633	2.82		113	27220	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.529	3.547	-0.018	1.003	1211623	2.50		100.0	10174	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.676	3.697	-0.021	1.218	2444894	2.50		104	56858	
599.00 > 99.00	3.676	3.697	-0.021	1.218	810161		3.02(1.39-4.16)		42192	
D 30 13C2 PFUnA										
565.00 > 520.00	3.697	3.706	-0.009	1.394	2346575	2.64		106	30606	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.687	3.706	-0.019	1.390	1310968	2.93		117	3451	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.697	3.708	-0.011	1.003	1159186	2.50		100	39365	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.697	3.719	-0.022	1.000	2011790	2.62		105	9451	
563.00 > 169.00	3.697	3.719	-0.022	1.000	474858		4.24(2.12-6.36)		14086	
66 11-Chloroeicosafluoro-3-oxaundecan										
631.00 > 451.00	3.854	3.875	-0.021	1.277	10159718	2.63		112	69005	
D 36 13C2 PFDoA										
615.00 > 570.00	3.988	3.996	-0.008	1.504	2569280	2.79		112	25952	
37 Perfluorododecanoic acid										
613.00 > 569.00	3.988	4.008	-0.020	1.000	2762325	2.46		98.5	1774	
613.00 > 169.00	3.988	4.008	-0.020	1.000	674910		4.09(2.13-6.40)		20260	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.252	4.271	-0.019	1.066	2638636	2.40		96.2	1408	
663.00 > 169.00	4.252	4.271	-0.019	1.066	841806		3.13(1.25-3.76)		12391	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.490	4.500	-0.010	1.693	2520571	2.64		106	15524	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.490	4.501	-0.011	1.000	648093	2.47		98.8	11284	
713.00 > 219.00	4.480	4.501	-0.021	0.998	452744		1.43(0.71-2.13)		8529	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.895	4.904	-0.009	1.846	4219899	2.77		111	13547	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.895	4.913	-0.018	1.000	4180699	2.59		103	938	
813.00 > 169.00	4.895	4.913	-0.018	1.000	686368		6.09(2.86-8.58)		7479	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.240	5.255	-0.015	1.070	4864736	2.52		101	953	
913.00 > 169.00	5.240	5.255	-0.015	1.070	591140		8.23(3.83-11.48)		5859	

Reagents:

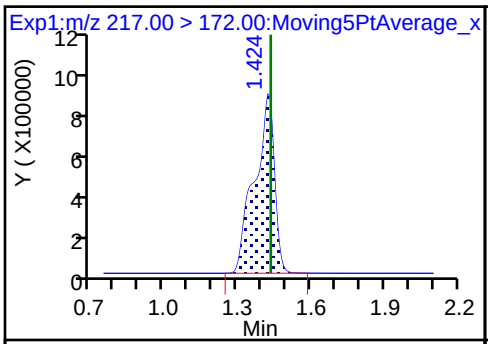
LCPFC_LL5_00005 Amount Added: 1.00 Units: mL

Report Date: 13-Jul-2018 08:52:09 Chrom Revision: 2.2 07-Jun-2018 07:41:54

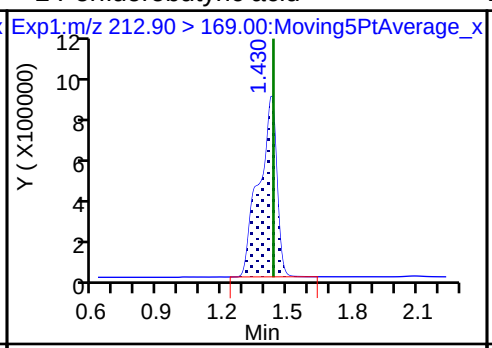
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180711-60928.b\2018.07.11LLB_044.d
Injection Date: 11-Jul-2018 21:38:17 Instrument ID: A8_N
Lims ID: CCV L5
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 14 Worklist Smp#: 1
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC ICAL

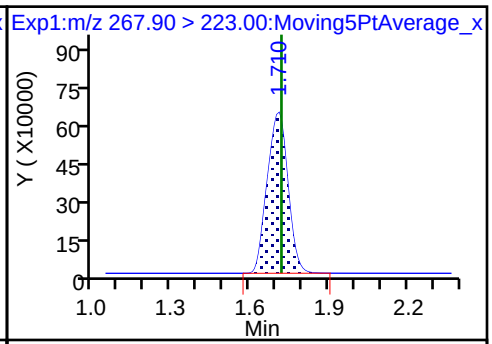
D 1 13C4 PFBA



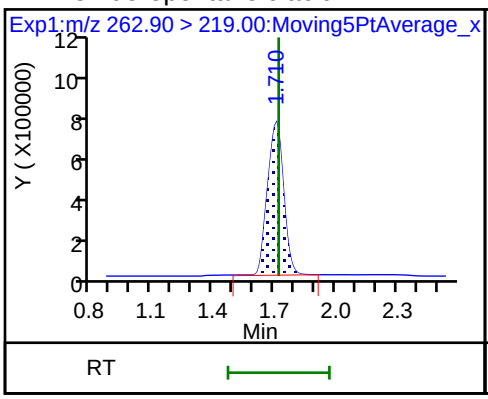
2 Perfluorobutyric acid



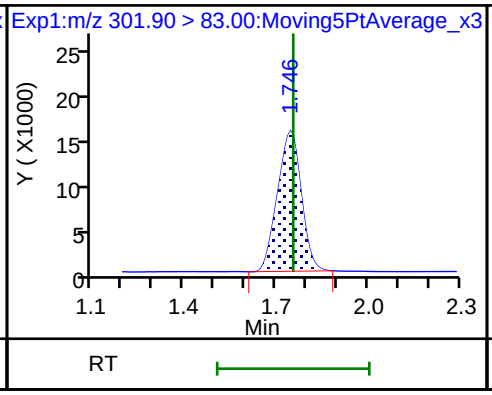
D 3 13C5-PFPeA



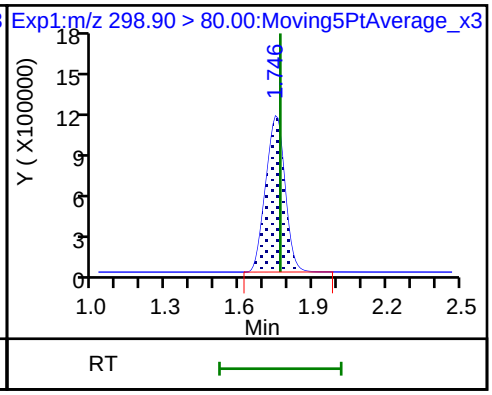
4 Perfluoropentanoic acid



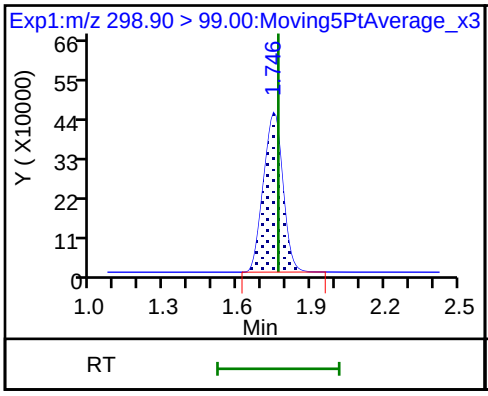
D 47 13C3-PFBS



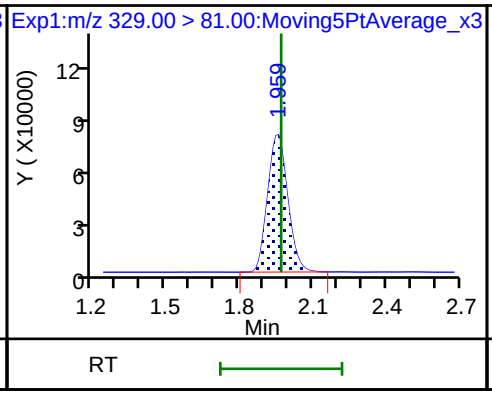
5 Perfluorobutanesulfonic acid



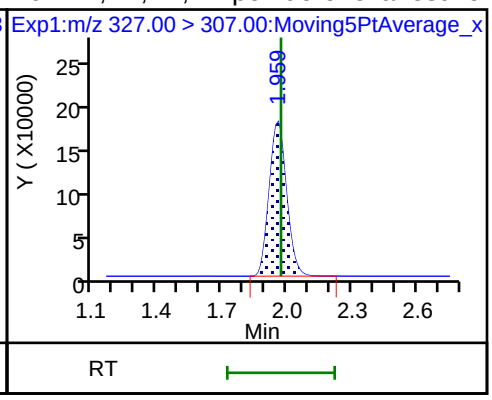
5 Perfluorobutanesulfonic acid



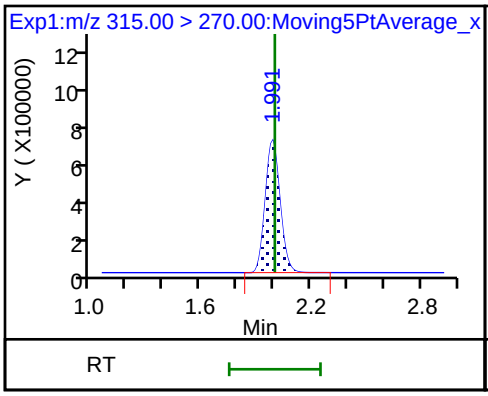
D 60 M2-4:2FTS



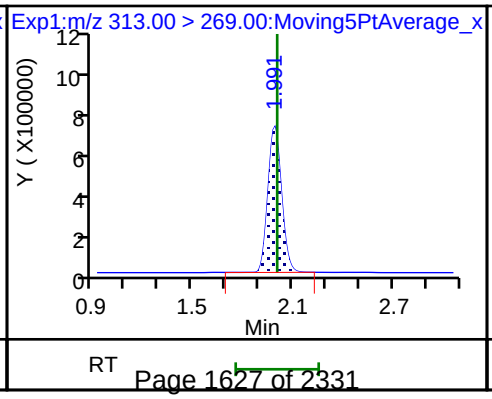
61 1H,1H,2H,2H-perfluorohexanesulfoni



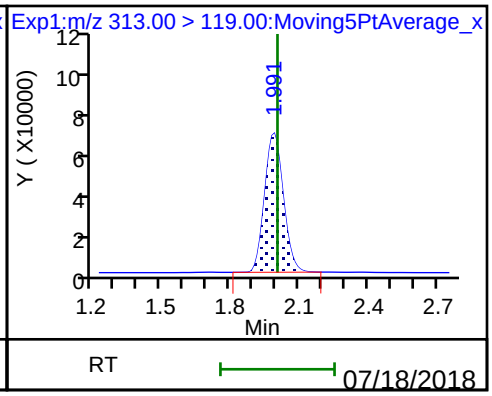
D 7 13C2 PFHxA



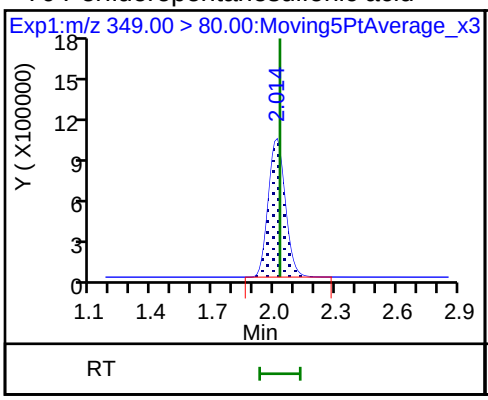
6 Perfluorohexanoic acid



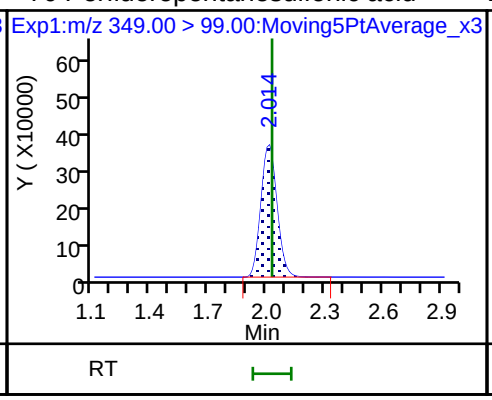
6 Perfluorohexanoic acid



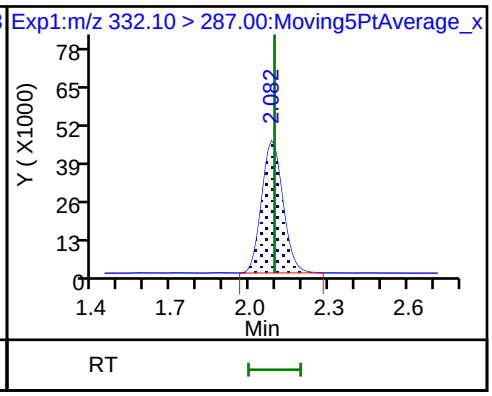
70 Perfluoropentanesulfonic acid



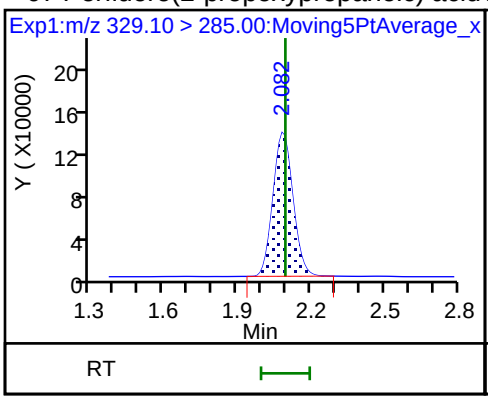
70 Perfluoropentanesulfonic acid



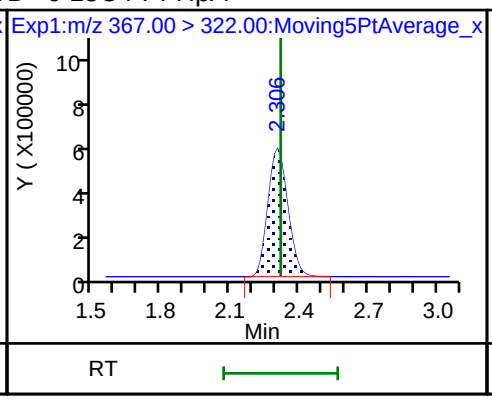
D 64 13C3 HFPO-DA



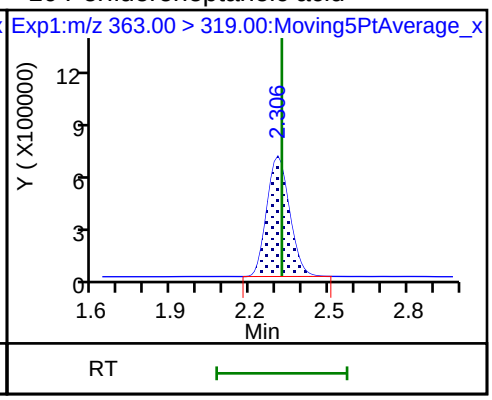
67 Perfluoro(2-propoxypropanoic) acid



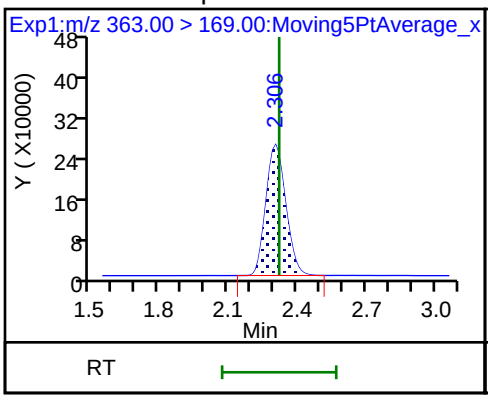
D 9 13C4-PFHpA



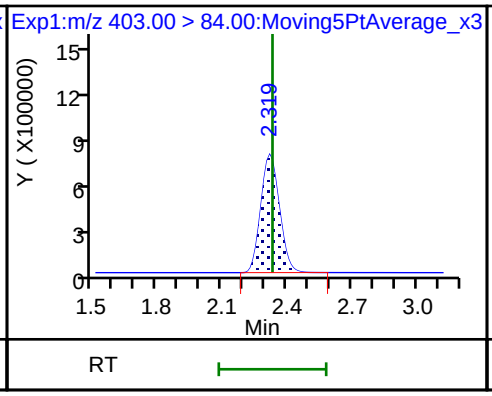
10 Perfluoroheptanoic acid



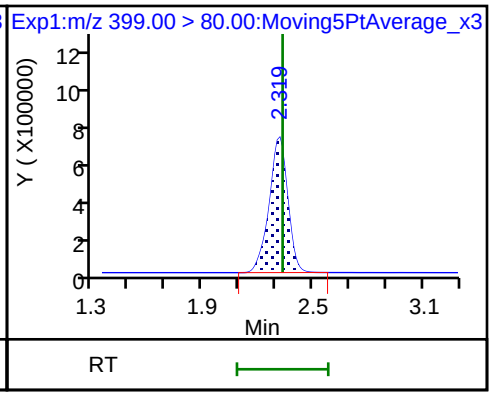
10 Perfluoroheptanoic acid



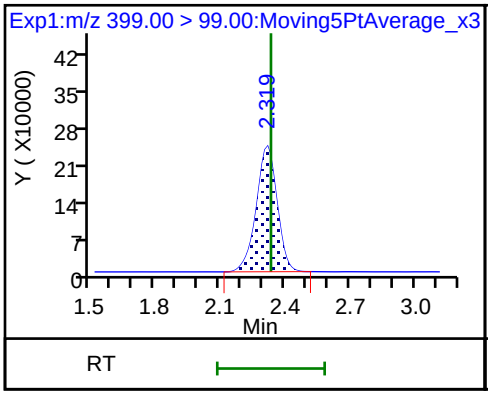
D 11 18O2 PFHxS



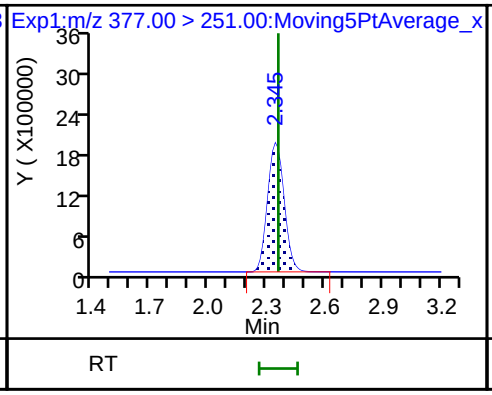
8 Perfluorohexanesulfonic acid



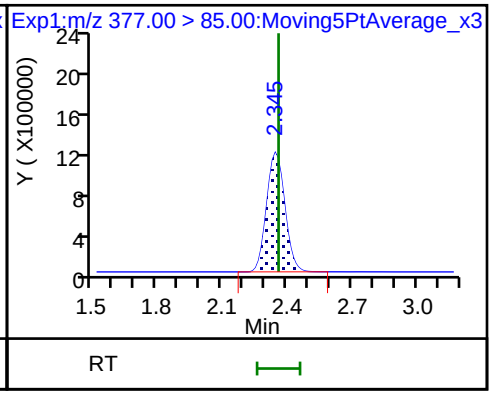
8 Perfluorohexanesulfonic acid



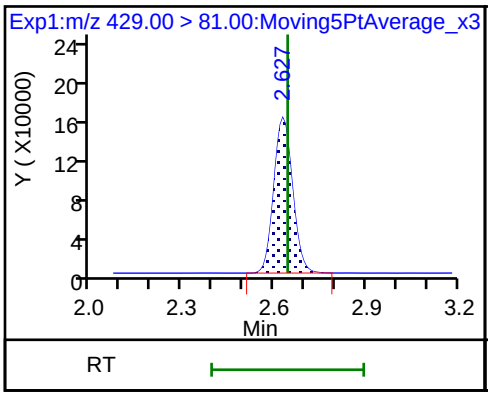
65 Adona



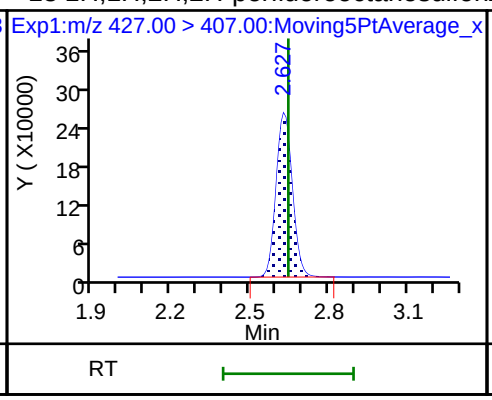
65 Adona



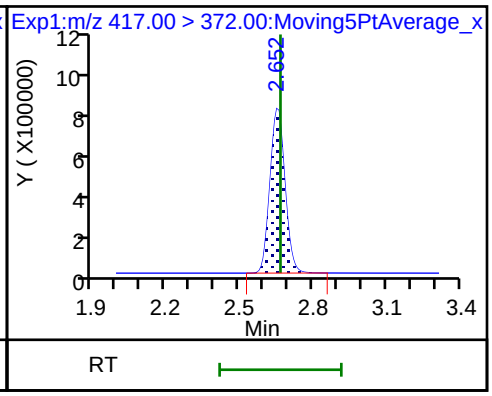
D 12 M2-6:2FTS



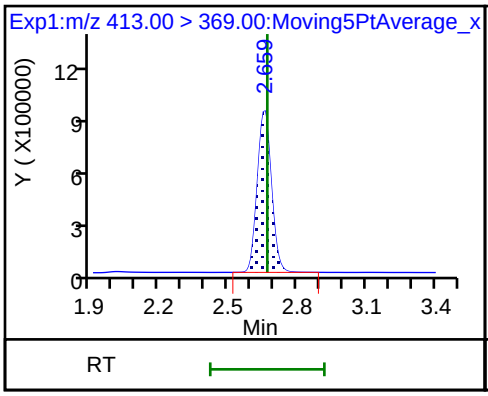
13 1H,1H,2H,2H-perfluorooctanesulfon



D 14 13C4 PFOA



15 Perfluorooctanoic acid



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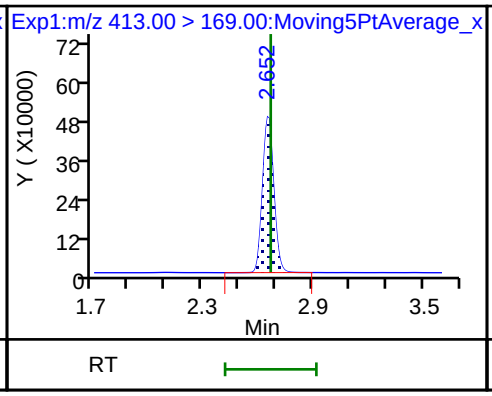
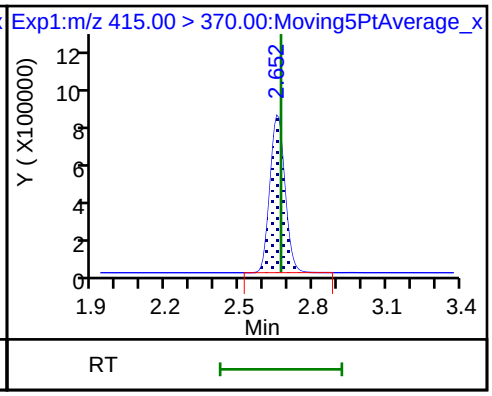
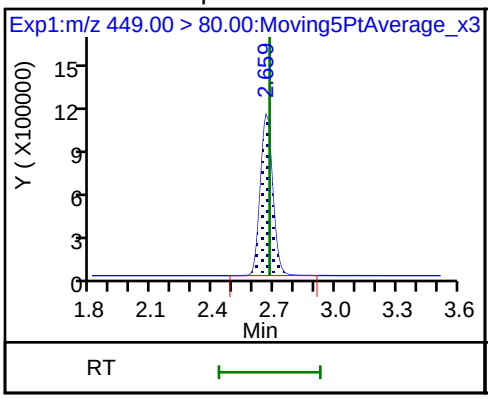


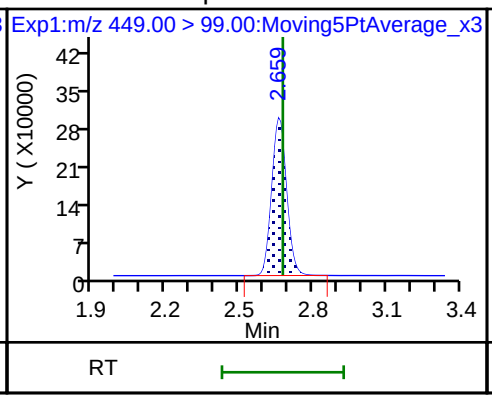
* 62 13C2-PFOA



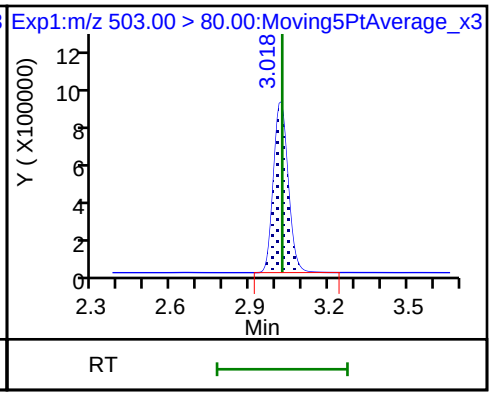
16 Perfluoroheptanesulfonic acid



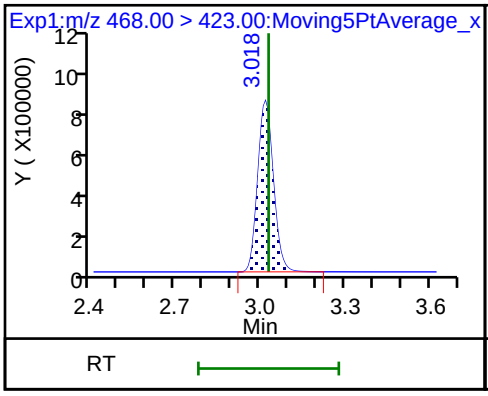
16 Perfluoroheptanesulfonic acid



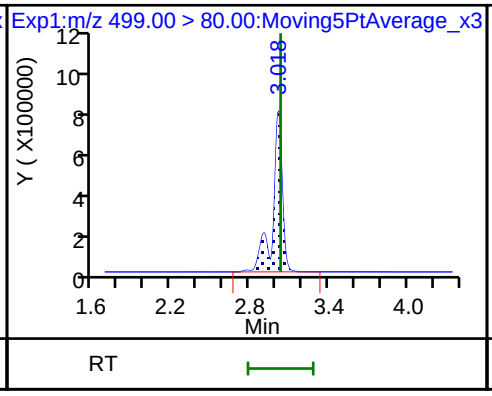
D 18 13C4 PFOS



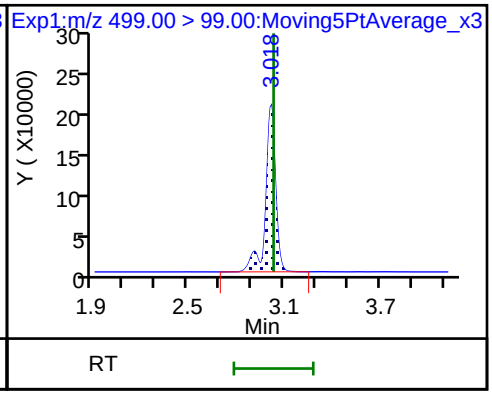
D 19 13C5 PFNA



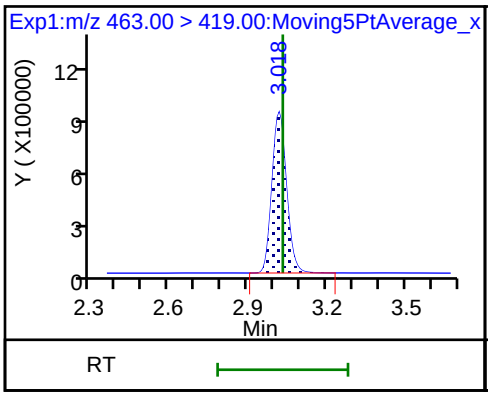
17 Perfluorooctane sulfonic acid



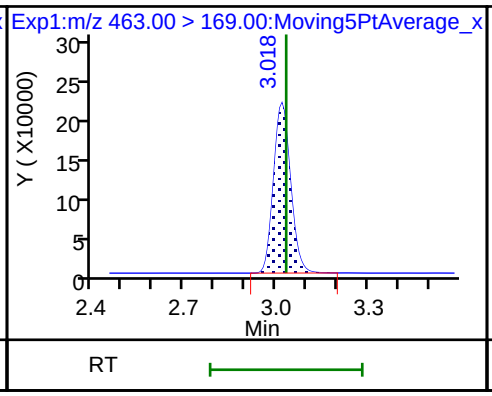
17 Perfluorooctane sulfonic acid



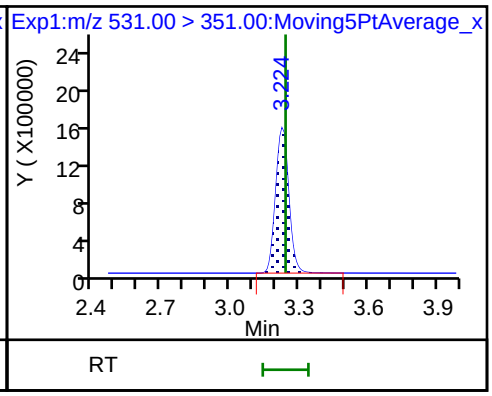
20 Perfluorononanoic acid



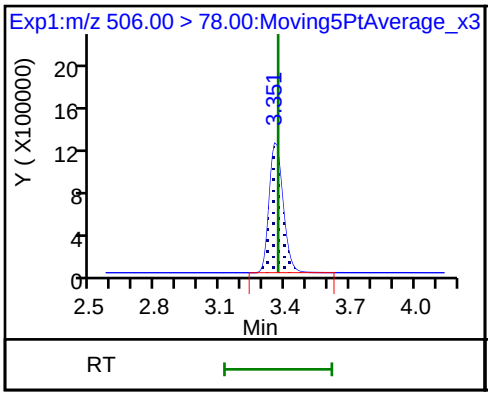
20 Perfluorononanoic acid



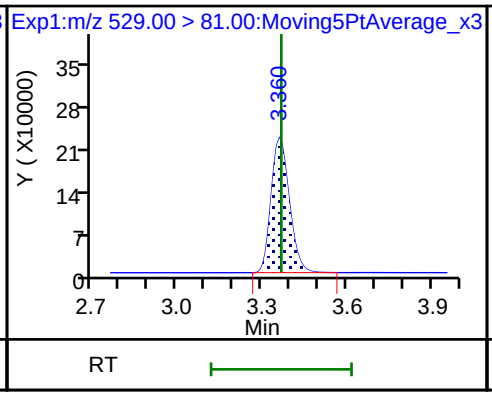
69 9-Chlorohexadecafluoro-3-oxanonane



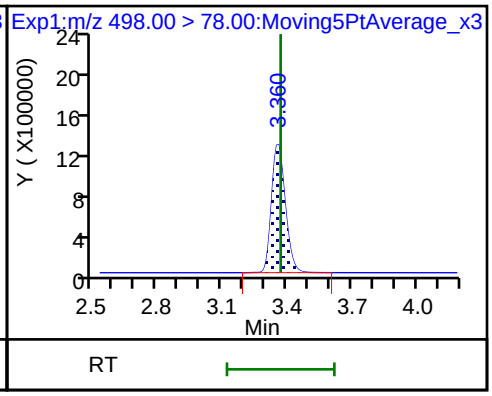
D 21 13C8 FOSA



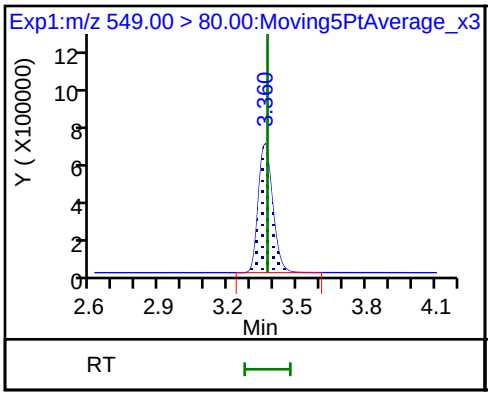
D 26 M2-8:2FTS



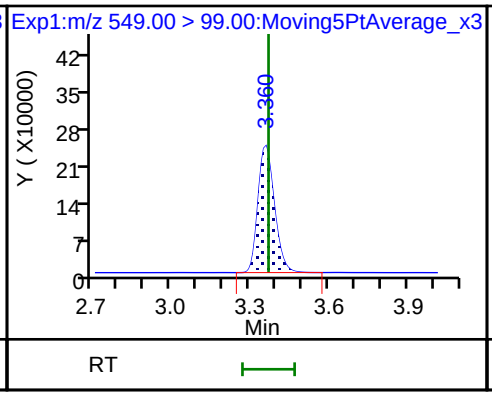
22 Perfluorooctane Sulfonamide



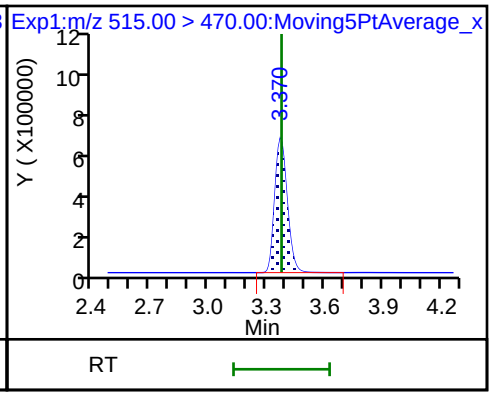
68 Perfluorononanesulfonic acid



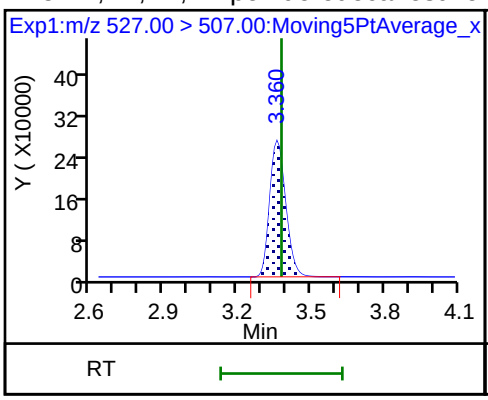
68 Perfluorononanesulfonic acid



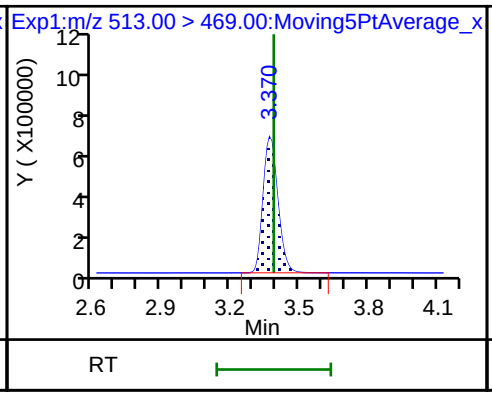
D 23 13C2 PFDA



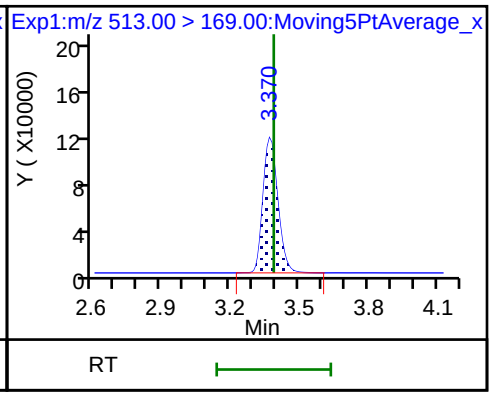
25 1H,1H,2H,2H-perfluorodecanesulfoni



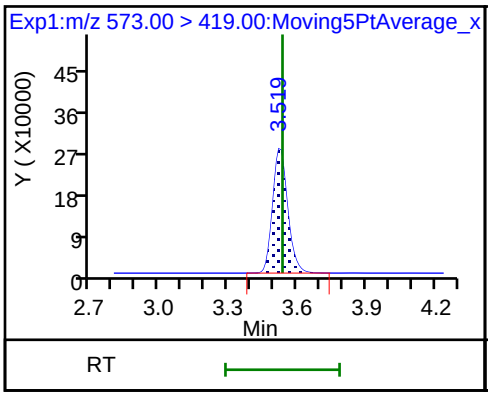
24 Perfluorodecanoic acid



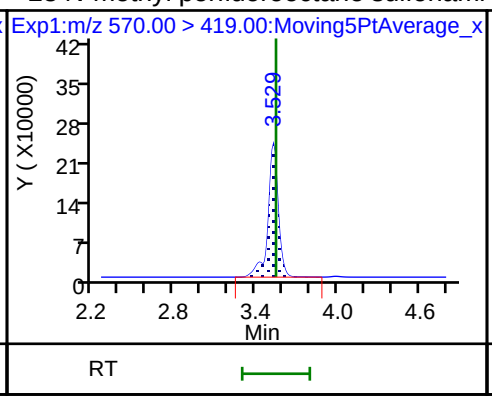
24 Perfluorodecanoic acid



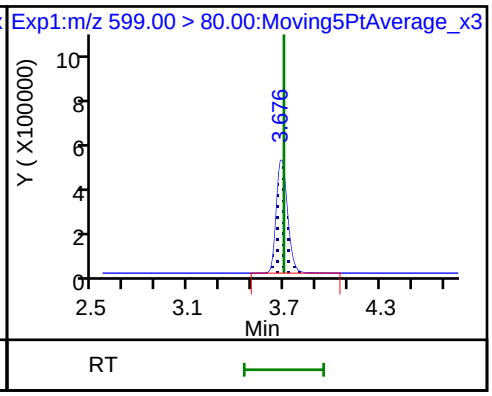
D 27 d3-NMeFOSAA



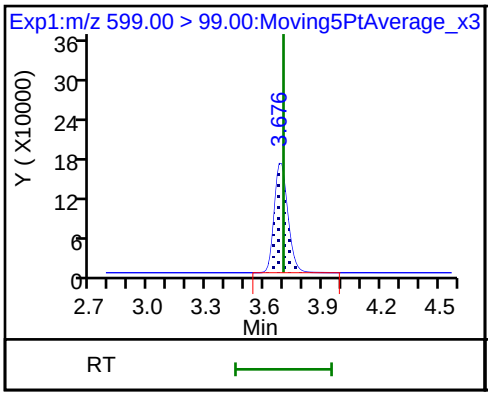
28 N-methyl perfluorooctane sulfonami



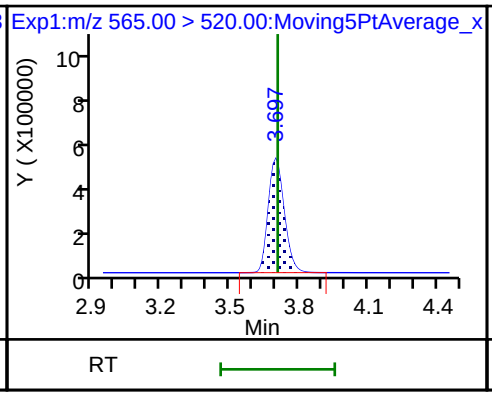
29 Perfluorodecane Sulfonic acid



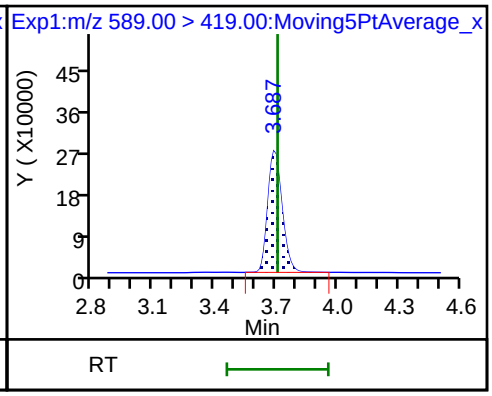
29 Perfluorodecane Sulfonic acid



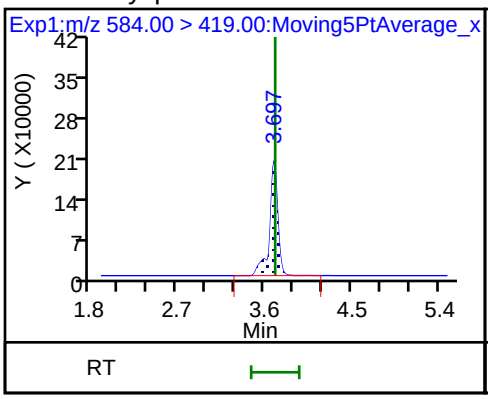
D 30 13C2 PFUnA



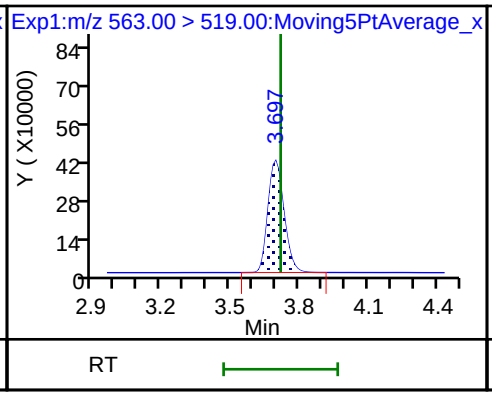
D 32 d5-NEtFOSAA



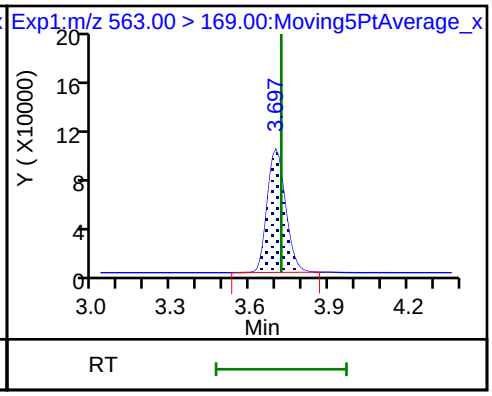
33 N-ethyl perfluorooctane sulfonamid



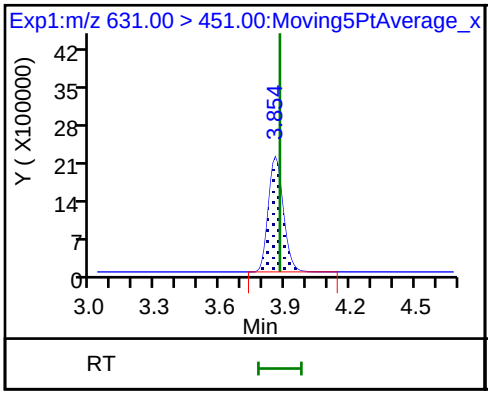
31 Perfluoroundecanoic acid



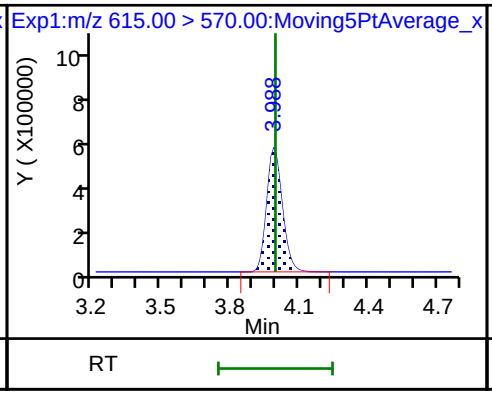
31 Perfluoroundecanoic acid



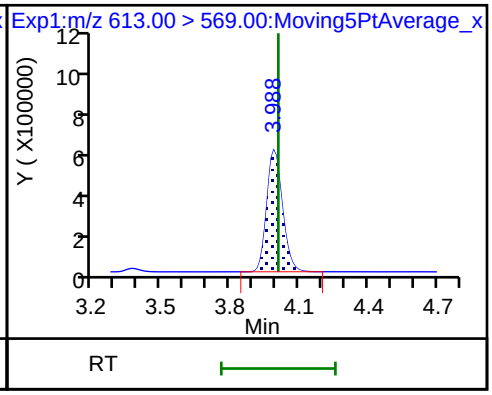
66 11-Chloroeicosafluoro-3-oxaundecan



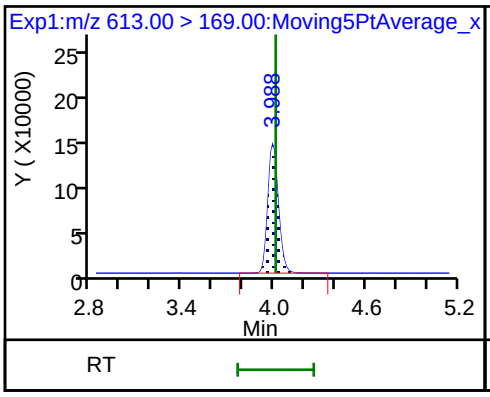
D 36 13C2 PFDoA



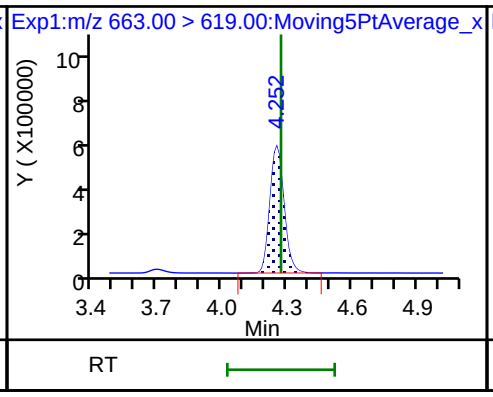
37 Perfluorododecanoic acid



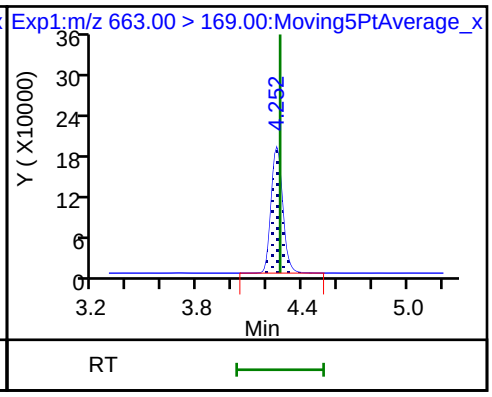
37 Perfluorododecanoic acid



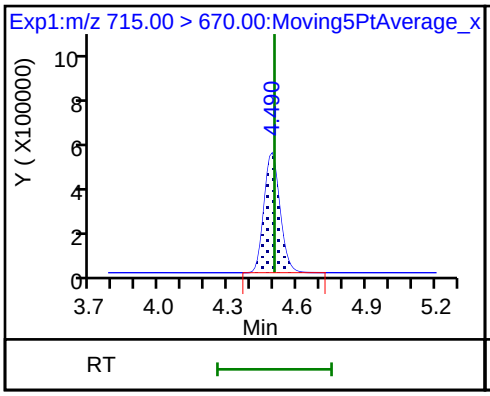
41 Perfluorotridecanoic acid



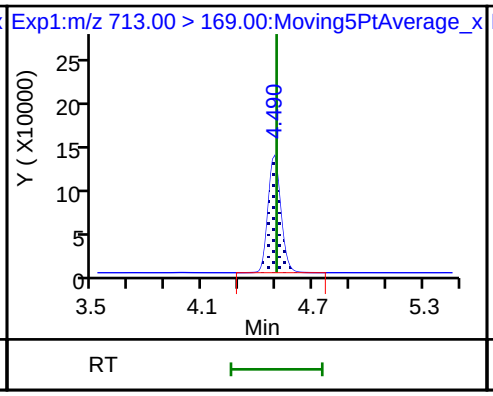
41 Perfluorotridecanoic acid



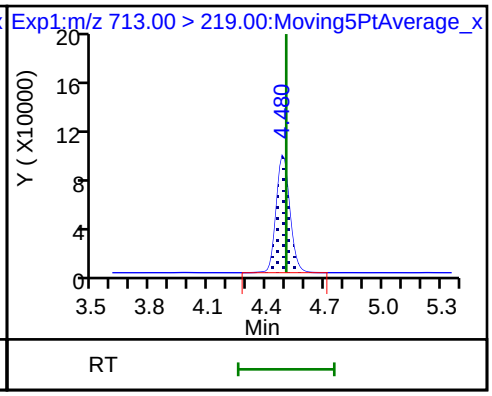
D 43 13C2-PFTeDA



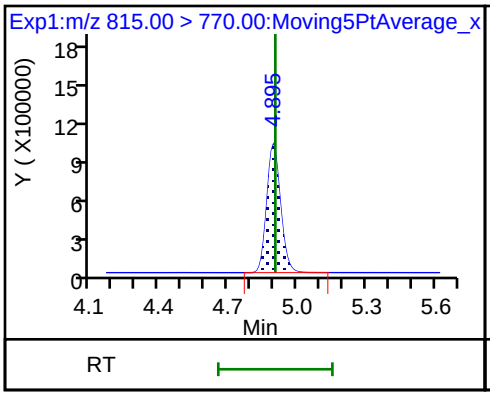
42 Perfluorotetradecanoic acid



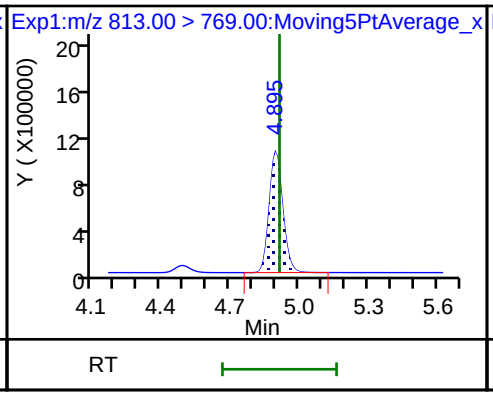
42 Perfluorotetradecanoic acid



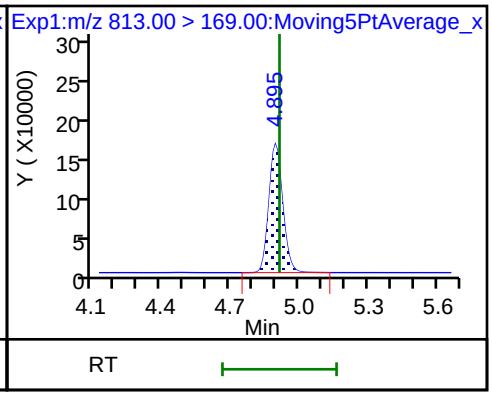
D 44 13C2-PFHxDA



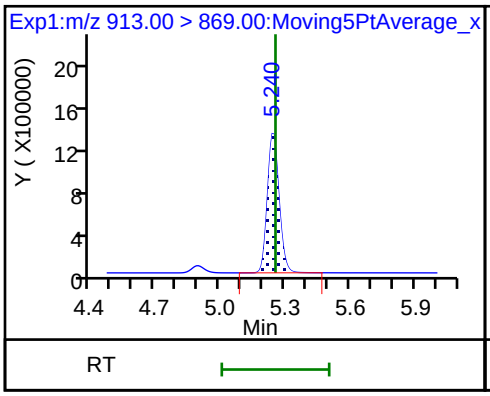
45 Perfluorohexadecanoic acid



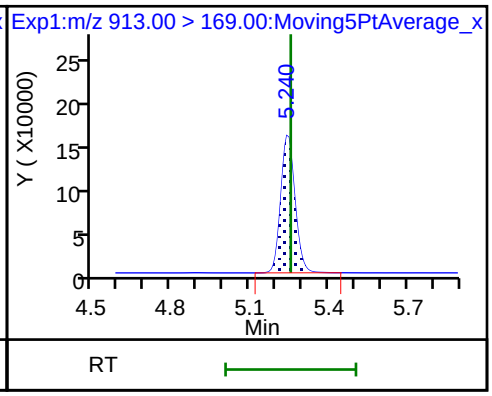
45 Perfluorohexadecanoic acid



46 Perfluorooctadecanoic acid



46 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Lab Sample ID: CCV 320-233511/7 Calibration Date: 07/11/2018 22:25

Instrument ID: A8_N Calib Start Date: 07/11/2018 14:48

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 07/11/2018 15:38

Lab File ID: 2018.07.11LLB_050.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.9856	0.9741		0.988	1.00	-1.2	40.0
Perfluoropentanoic acid (PFPeA)	AveID	1.213	1.161		0.957	1.00	-4.3	40.0
Perfluorobutanesulfonic acid (PFBS)	AveID	76.50	75.78		0.876	0.884	-0.9	50.0
4:2 FTS	AveID	13.00	12.47		0.896	0.934	-4.1	50.0
Perfluorohexanoic acid (PFHxA)	AveID	1.029	1.054		1.02	1.00	2.4	40.0
Perfluoropentanesulfonic acid (PFPeS)	AveID	69.78	68.09		0.915	0.938	-2.4	50.0
HFPO-DA (GenX)	AveID	2.654	2.680		1.01	1.00	1.0	40.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.157	1.044		0.903	1.00	-9.7	40.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.148	1.098		0.870	0.910	-4.4	40.0
ADONA	AveID	3.219	3.501		1.02	0.942	8.8	50.0
6:2 FTS	AveID	1.564	1.510		0.915	0.948	-3.5	40.0
Perfluorooctanoic acid (PFOA)	AveID	1.232	1.107		0.899	1.00	-10.1	40.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.318	1.319		0.953	0.952	0.1	50.0
Perfluorononanoic acid (PFNA)	AveID	1.109	1.071		0.966	1.00	-3.4	40.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.133	1.125		0.922	0.928	-0.7	40.0
9-Chlorohexadecafluoro-3-oxa nonane-1-sulfonate	AveID	1.836	1.930		0.980	0.932	5.1	50.0
Perfluorononanesulfonic acid (PFNS)	AveID	0.7752	0.7731		0.957	0.960	-0.3	50.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9856	1.016		1.03	1.00	3.1	40.0
8:2 FTS	AveID	1.290	1.320		0.980	0.958	2.3	40.0
Perfluorodecanoic acid (PFDA)	AveID	1.049	1.028		0.980	1.00	-2.0	40.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	0.9858	1.059		1.07	1.00	7.4	40.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6714	0.6994		1.00	0.964	4.2	50.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.8840	0.8488		0.960	1.00	-4.0	40.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.8195	0.7594		0.927	1.00	-7.3	40.0
11-Chloroeicosafluoro-3-oxau ndecane-1-sulfonate	AveID	2.654	2.780		0.987	0.942	4.8	50.0
Perfluorododecanoic acid (PFDoA)	AveID	1.092	1.093		1.00	1.00	0.0	40.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.068	1.057		0.990	1.00	-1.0	50.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2602	0.2472		0.950	1.00	-5.0	50.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		0.996		1.03	1.00	2.6	50.0

FORM VII 537 (modified)

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Lab Sample ID: CCV 320-233511/7 Calibration Date: 07/11/2018 22:25

Instrument ID: A8_N Calib Start Date: 07/11/2018 14:48

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 07/11/2018 15:38

Lab File ID: 2018.07.11LLB_050.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.143	1.109		0.970	1.00	-3.0	50.0
13C4 PFBA	Ave	1.356	1.313		2.42	2.50	-3.2	50.0
13C5 PFPeA	Ave	0.9425	0.9332		2.48	2.50	-1.0	50.0
13C3-PFBS	Ave	0.0237	0.0238		2.33	2.33	0.4	50.0
M2-4:2FTS	Ave	0.1273	0.1241		2.28	2.34	-2.5	50.0
13C2 PFHxA	Ave	1.017	1.036		2.55	2.50	1.8	50.0
13C3 HFPO-DA	Ave	0.0724	0.0780		2.70	2.50	7.8	50.0
13C4-PFHpA	Ave	0.9371	1.015		2.71	2.50	8.3	50.0
18O2 PFHxS	Ave	1.328	1.302		2.32	2.37	-1.9	50.0
M2-6:2FTS	Ave	0.2009	0.2023		2.39	2.38	0.7	40.0
13C4 PFOA	Ave	0.9560	0.9688		2.53	2.50	1.3	50.0
13C4 PFOS	Ave	0.9742	0.9645		2.37	2.39	-1.0	50.0
13C5 PFNA	Ave	0.8546	0.8622		2.52	2.50	0.9	50.0
13C8 FOSA	Ave	1.405	1.444		2.57	2.50	2.8	50.0
M2-8:2FTS	Ave	0.2939	0.2720		2.22	2.40	-7.4	40.0
13C2 PFDA	Ave	0.7503	0.7765		2.59	2.50	3.5	50.0
d3-NMeFOSAA	Ave	0.3075	0.3195		2.60	2.50	3.9	50.0
d5-NEtFOSAA	Ave	0.3150	0.3601		2.86	2.50	14.3	50.0
13C2 PFUnA	Ave	0.6266	0.6398		2.55	2.50	2.1	50.0
13C2 PFDoA	Ave	0.6496	0.6651		2.56	2.50	2.4	50.0
13C2-PFTeDA	Ave	0.6740	0.7097		2.63	2.50	5.3	50.0
13C2-PFHxDA	Ave	1.074	1.141		2.66	2.50	6.3	50.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180711-60928.b\2018.07.11LLB_050.d
Lims ID: CCV L4
Client ID:
Sample Type: CCV
Inject. Date: 11-Jul-2018 22:25:22 ALS Bottle#: 13 Worklist Smp#: 7
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV L4
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-A8_N*sub32

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180711-60928.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 13-Jul-2018 09:08:04 Calib Date: 11-Jul-2018 15:38:42
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK010

First Level Reviewer: mongkols Date: 13-Jul-2018 09:08:04

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.436	1.435	0.001	0.538	4153182	2.42		96.8	25938	
2 Perfluorobutyric acid										
212.90 > 169.00	1.436	1.436	0.0	1.000	1618232	0.9883		98.8	739	
D 3 13C5-PFPeA										
267.90 > 223.00	1.721	1.719	0.002	0.645	2952415	2.48		99.0	47813	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.721	1.721	0.0	1.000	1370681	0.9567		95.7	526	
D 47 13C3-PFBS										
301.90 > 83.00	1.757	1.755	0.002	0.658	69968	2.33		100	517	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.766	1.766	0.0	1.005	2015972	0.8757		99.1	27431	
298.90 > 99.00	1.766	1.766	0.0	1.005	832257		2.42(1.25-3.74)		12289	
D 60 M2-4:2FTS										
329.00 > 81.00	1.971	1.969	0.002	0.739	366572	2.28		97.5	5703	
61 1H,1H,2H,2H-perfluorohexanesulfoni										
327.00 > 307.00	1.971	1.971	0.0	1.122	350536	0.8961		95.9	20337	
D 7 13C2 PFHxA										
315.00 > 270.00	2.005	2.002	0.003	0.751	3277016	2.55		102	49758	
6 Perfluorohexanoic acid										
313.00 > 269.00	2.005	2.005	0.0	1.000	1381089	1.02		102	2215	
313.00 > 119.00	2.005	2.005	0.0	1.000	123896		11.15(5.03-15.10)		2282	
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.027	2.027	0.0	1.154	1922060	0.9153		97.6	40007	
349.00 > 99.00	2.027	2.027	0.0	1.154	719649		2.67(1.36-4.07)		13411	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.095	2.093	0.002	0.785	246858	2.70		108	4115	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
67 Perfluoro(2-propoxypropanoic) acid										
329.10 > 285.00	2.095	2.095	0.0	1.000	264588	1.01		101	1636	
D 9 13C4-PFHpA										
367.00 > 322.00	2.321	2.319	0.002	0.870	3211010	2.71		108	34844	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.321	2.321	0.0	1.000	1341438	0.9030		90.3	2411	
363.00 > 169.00	2.321	2.321	0.0	1.000	530631		2.53(1.13-3.40)		4536	
D 11 18O2 PFHxS										
403.00 > 84.00	2.334	2.332	0.002	0.874	3896951	2.32		98.1	37061	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.334	2.334	0.0	1.000	1646141	0.8703		95.6	13633	
399.00 > 99.00	2.334	2.334	0.0	1.000	564168		2.92(1.50-4.49)		4357	
65 Adona										
377.00 > 251.00	2.360	2.360	0.0	0.778	4025568	1.02		109	33804	
377.00 > 85.00	2.360	2.360	0.0	0.778	2327953		1.73(0.84-2.53)		13362	
D 12 M2-6:2FTS										
429.00 > 81.00	2.646	2.643	0.003	0.991	608137	2.39		101	12624	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.646	2.646	0.0	1.000	366437	0.9148		96.5	7677	
D 14 13C4 PFOA										
417.00 > 372.00	2.669	2.667	0.002	1.000	3064965	2.53		101	33564	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.669	2.669	0.0	1.000	1358056	0.8995		89.9	888	
413.00 > 169.00	2.669	2.669	0.0	1.000	713024		1.90(0.84-2.52)		3144	
* 62 13C2-PFOA										
415.00 > 370.00	2.669	2.669	0.0		3163684	2.50			35110	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.676	2.676	0.0	0.883	1533104	0.9534		100	16051	
449.00 > 99.00	2.676	2.676	0.0	0.883	398754		3.84(1.94-5.82)		7664	
D 18 13C4 PFOS										
503.00 > 80.00	3.032	3.022	0.010	1.136	2917096	2.37		99.0	26422	
D 19 13C5 PFNA										
468.00 > 423.00	3.032	3.029	0.003	1.136	2727600	2.52		101	36632	
17 Perfluorooctane sulfonic acid										M
499.00 > 80.00	3.032	3.032	0.0	1.000	1274651	0.9216		99.3	22427	M
499.00 > 99.00	3.032	3.032	0.0	1.000	300557		4.24(2.31-6.93)		5097	
20 Perfluorononanoic acid										
463.00 > 419.00	3.032	3.032	0.0	1.000	1168589	0.9655		96.6	2468	
463.00 > 169.00	3.032	3.032	0.0	1.000	284713		4.10(1.90-5.69)		14057	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.240	3.240	0.0	1.069	2195371	0.9798		105	15068	
D 21 13C8 FOSA										
506.00 > 78.00	3.370	3.367	0.003	1.263	4569243	2.57		103	39066	
D 26 M2-8:2FTS										
529.00 > 81.00	3.379	3.367	0.012	1.266	824467	2.22		92.6	15078	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.370	3.370	0.0	1.000	1856522	1.03		103	25793	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.370	3.370	0.0	1.111	905869	0.9574		99.7	25435	
549.00 > 99.00	3.379	3.370	0.009	1.114	331342		2.73(1.33-3.97)		8196	
D 23 13C2 PFDA										
515.00 > 470.00	3.388	3.377	0.011	1.270	2456491	2.59		103	28718	
25 1H,1H,2H,2H-perfluorodecanesulfoni										
527.00 > 507.00	3.379	3.379	0.0	1.000	435385	0.9805		102	8693	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.388	3.388	0.0	1.000	1010179	0.9797		98.0	7482	
513.00 > 169.00	3.388	3.388	0.0	1.000	181380		5.57(2.36-7.09)		6797	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.538	3.535	0.003	1.326	1010633	2.60		104	16938	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.547	3.547	0.0	1.003	427974	1.07		107	3390	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.697	3.697	0.0	1.219	822884	1.00		104	21559	
599.00 > 99.00	3.697	3.697	0.0	1.219	276507		2.98(1.39-4.16)		14339	
D 30 13C2 PFUnA										
565.00 > 520.00	3.719	3.706	0.013	1.393	2024192	2.55		102	45815	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.708	3.706	0.002	1.389	1139083	2.86		114	3338	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.708	3.708	0.0	1.000	386758	0.9602		96.0	10847	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.719	3.719	0.0	1.000	614903	0.9268		92.7	3429	
563.00 > 169.00	3.719	3.719	0.0	1.000	171056		3.59(2.12-6.36)		11565	
66 11-Chloroeicosafluoro-3-oxaundecan										
631.00 > 451.00	3.875	3.875	0.0	1.278	3196510	0.9870		105	47421	
D 36 13C2 PFDoA										
615.00 > 570.00	4.008	3.996	0.012	1.502	2104029	2.56		102	18402	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.008	4.008	0.0	1.000	919730	1.00		100	618	
613.00 > 169.00	4.008	4.008	0.0	1.000	214921		4.28(2.13-6.40)		5027	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.271	4.271	0.0	1.066	889717	0.99		99.0	491	
663.00 > 169.00	4.271	4.271	0.0	1.066	284072		3.13(1.25-3.76)		4753	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.501	4.500	0.001	1.687	2245312	2.63		105	13632	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.501	4.501	0.0	1.000	221995	0.9500		95.0	3620	
713.00 > 219.00	4.501	4.501	0.0	1.000	160495		1.38(0.71-2.13)		3349	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.905	4.904	0.001	1.838	3611014	2.66		106	11103	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.913	4.913	0.0	1.002	1438149	1.03		103	371	
813.00 > 169.00	4.913	4.913	0.0	1.002	234539		6.13(2.86-8.58)		2833	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.255	5.255	0.0	1.071	1601327	0.9700		97.0	365	
913.00 > 169.00	5.255	5.255	0.0	1.071	200837		7.97(3.83-11.48)		3174	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

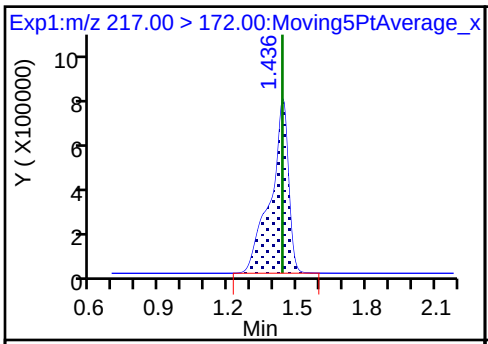
LCPFC_LL4_00005 Amount Added: 1.00 Units: mL

Report Date: 13-Jul-2018 09:08:05 Chrom Revision: 2.2 07-Jun-2018 07:41:54

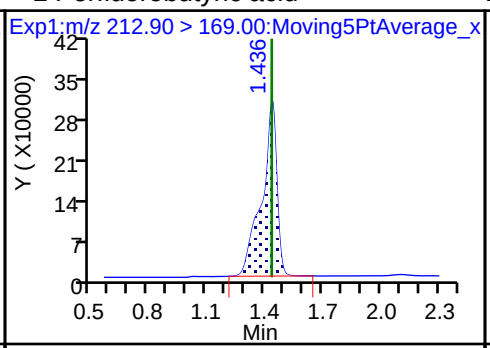
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180711-60928.b\2018.07.11LLB_050.d
Injection Date: 11-Jul-2018 22:25:22 Instrument ID: A8_N
Lims ID: CCV L4
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 13 Worklist Smp#: 7
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC ICAL

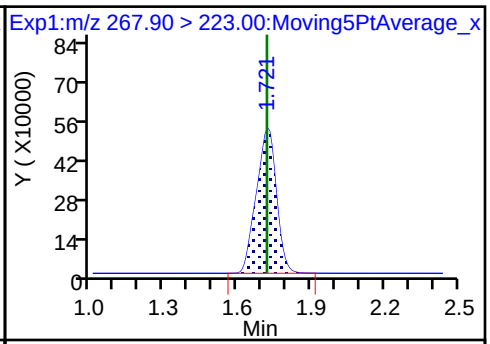
D 1 13C4 PFBA



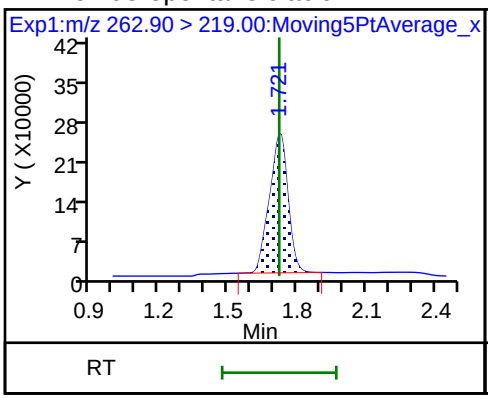
2 Perfluorobutyric acid



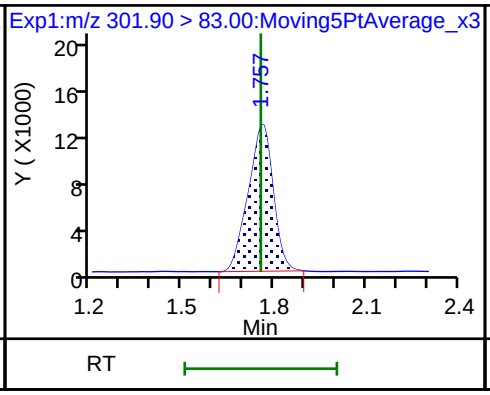
D 3 13C5-PFPeA



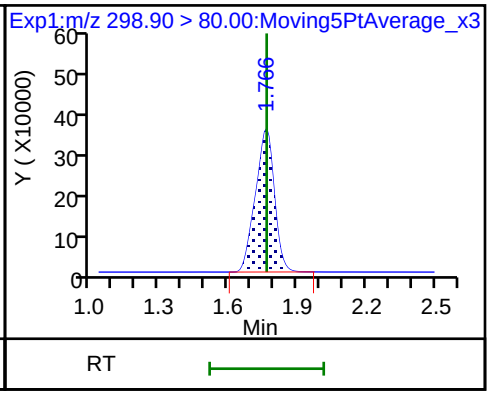
4 Perfluoropentanoic acid



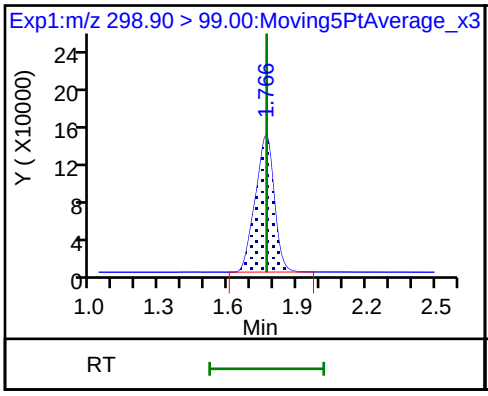
D 47 13C3-PFBS



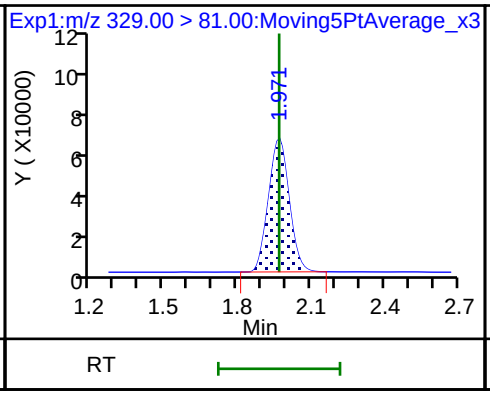
5 Perfluorobutanesulfonic acid



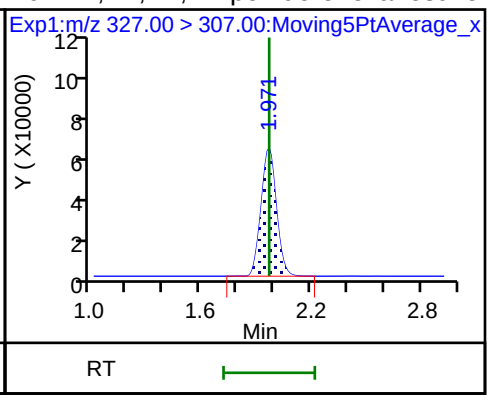
5 Perfluorobutanesulfonic acid



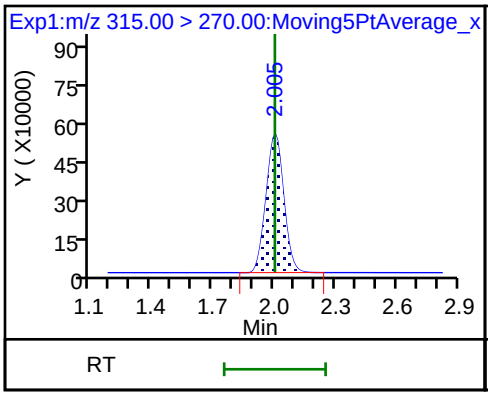
D 60 M2-4:2FTS



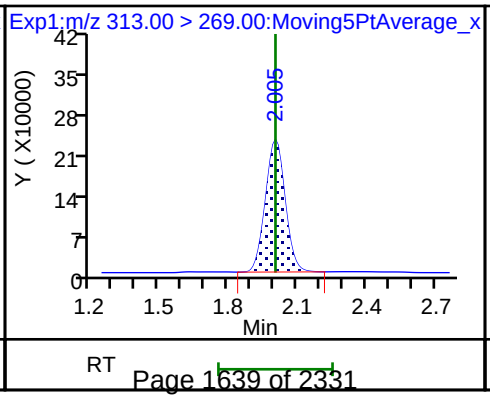
61 1H,1H,2H,2H-perfluorohexanesulfoni



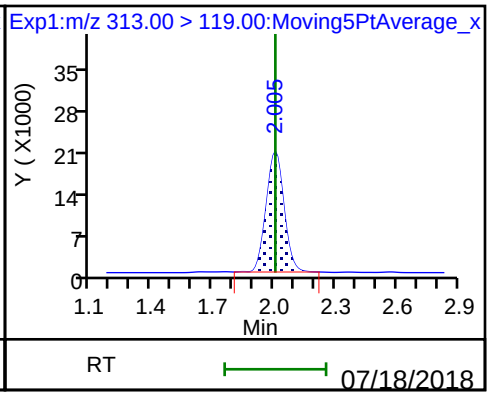
D 7 13C2 PFHxA



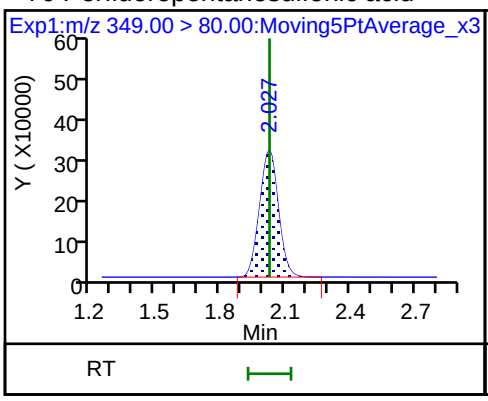
6 Perfluorohexanoic acid



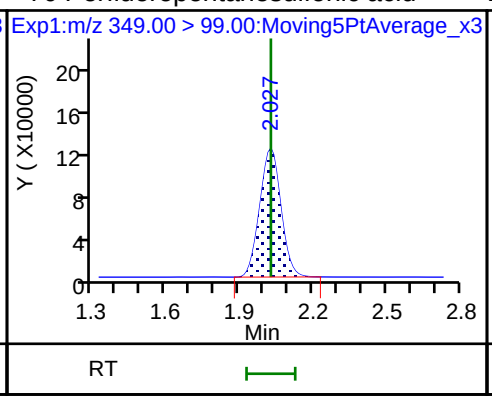
6 Perfluorohexanoic acid



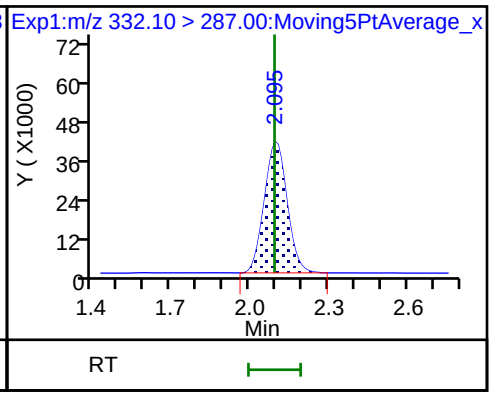
70 Perfluoropentanesulfonic acid



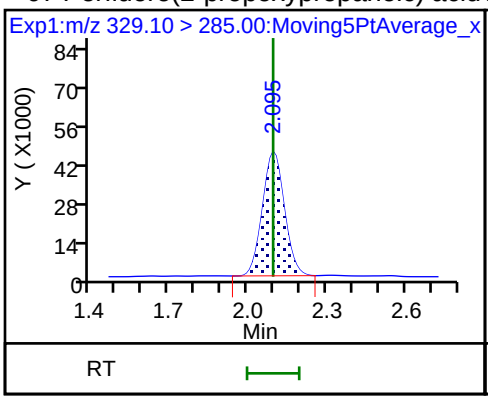
70 Perfluoropentanesulfonic acid



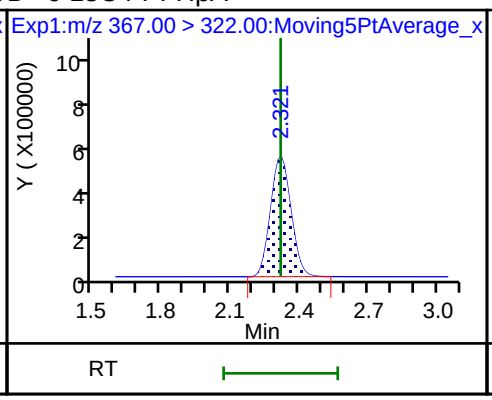
D 64 13C3 HFPO-DA



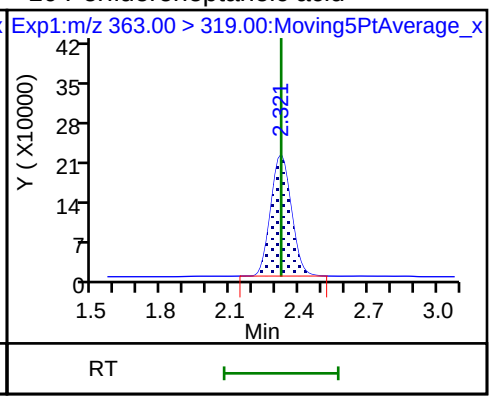
67 Perfluoro(2-propoxypropanoic) acid



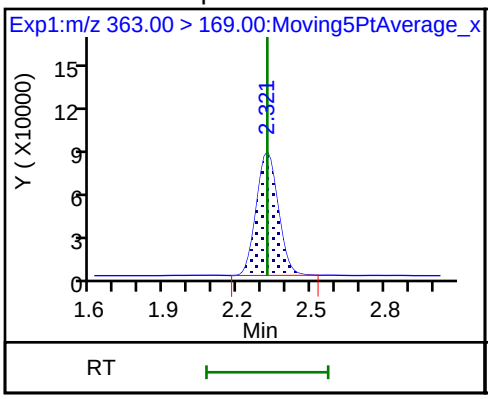
D 9 13C4-PFHpA



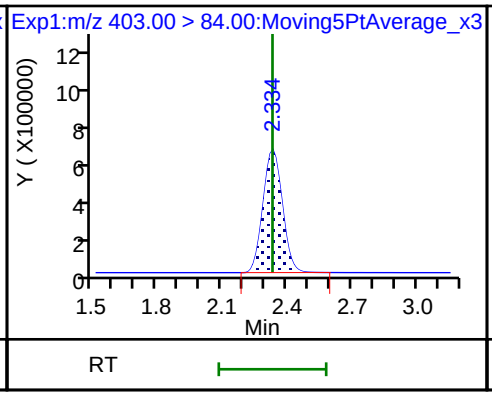
10 Perfluoroheptanoic acid



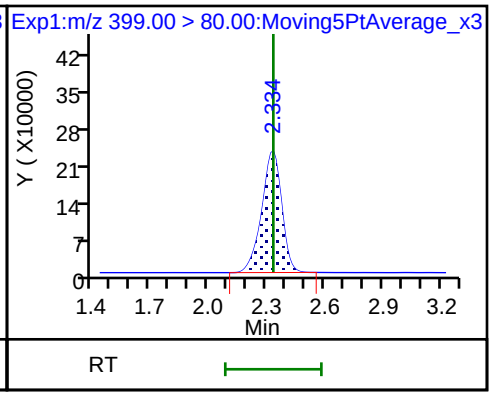
10 Perfluoroheptanoic acid



D 11 18O2 PFHxS



8 Perfluorohexanesulfonic acid



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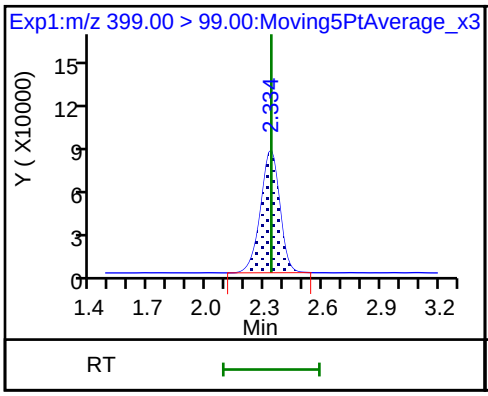
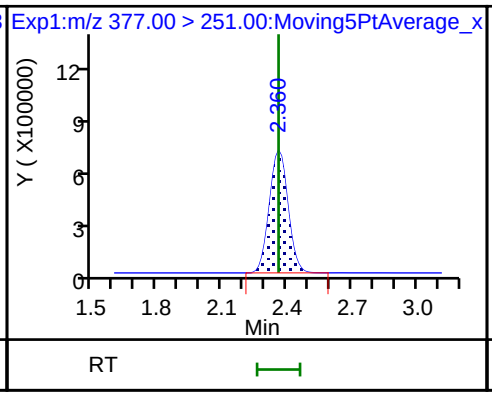


65 Adona



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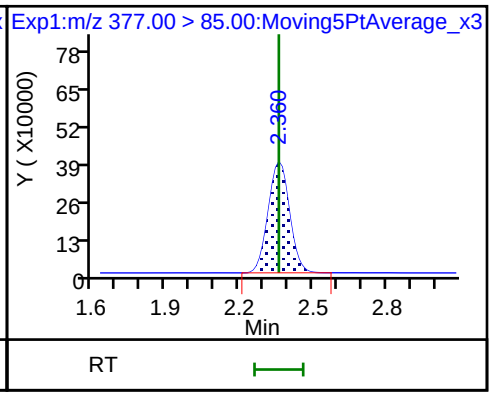
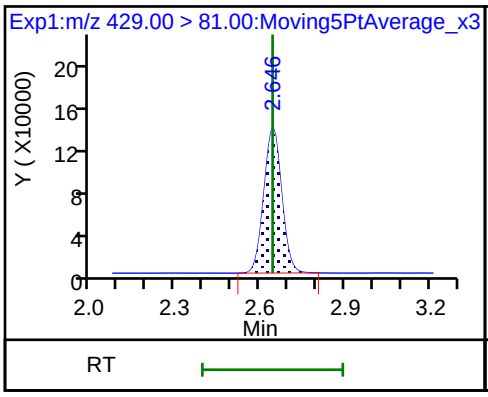
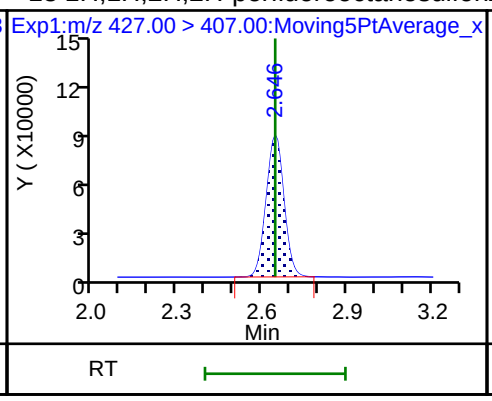


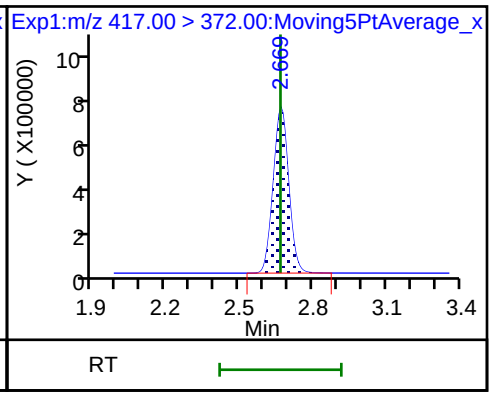
D 12 M2-6:2FTS



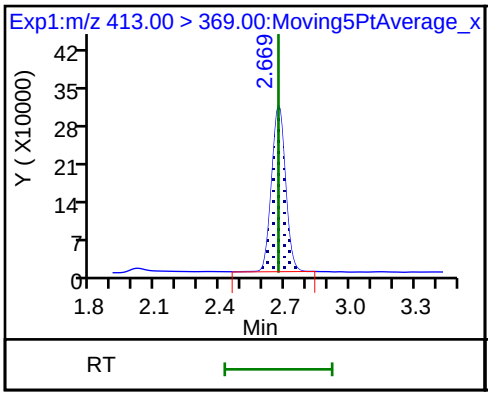
13 1H,1H,2H,2H-perfluorooctanesulfon



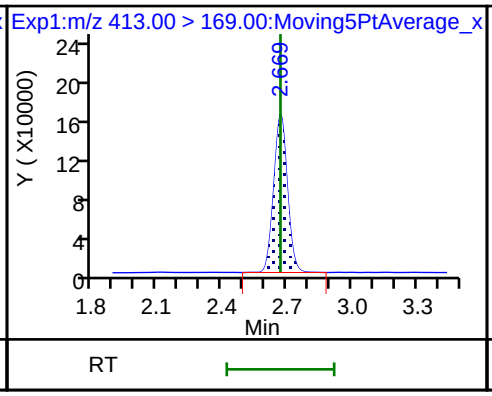
D 14 13C4 PFOA



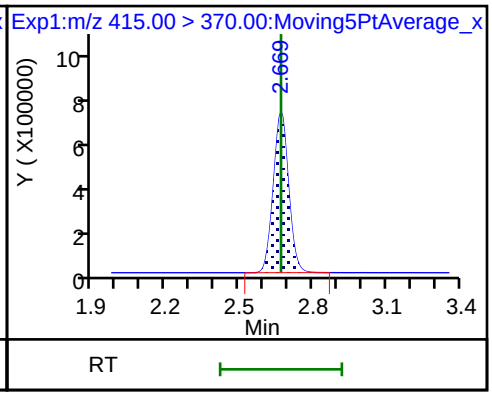
15 Perfluorooctanoic acid



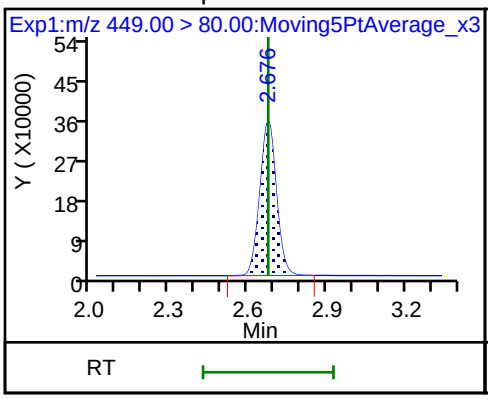
15 Perfluorooctanoic acid



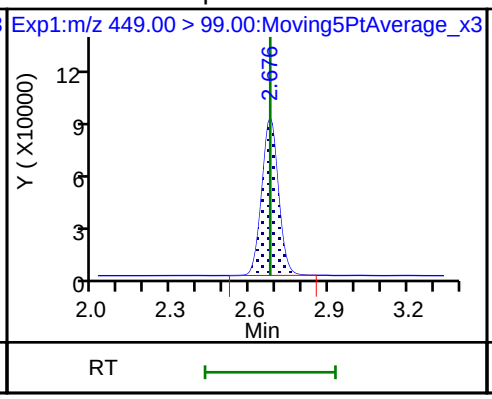
* 62 13C2-PFOA



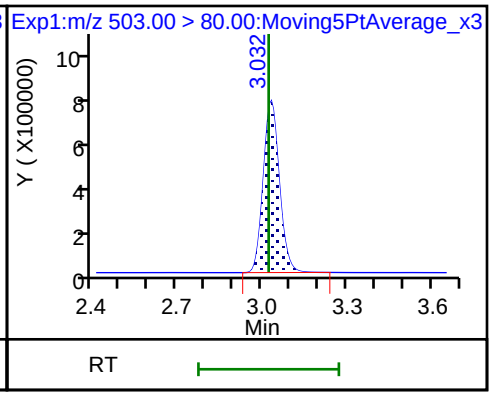
16 Perfluoroheptanesulfonic acid



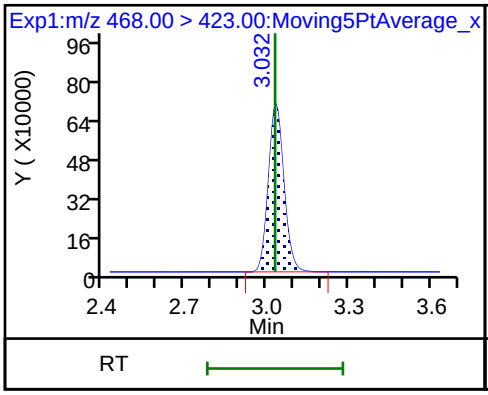
16 Perfluoroheptanesulfonic acid



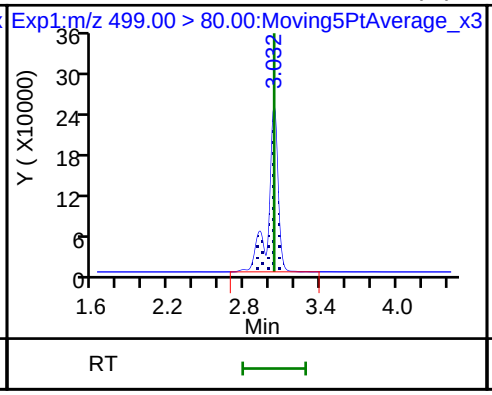
D 18 13C4 PFOS



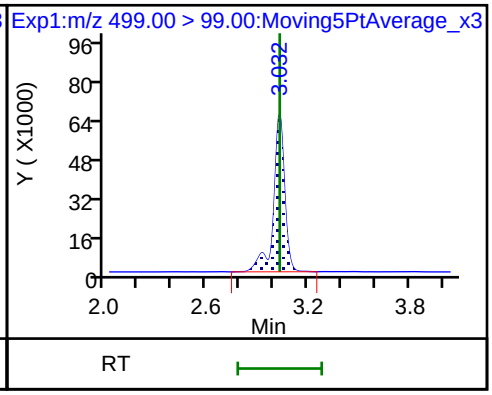
D 19 13C5 PFNA



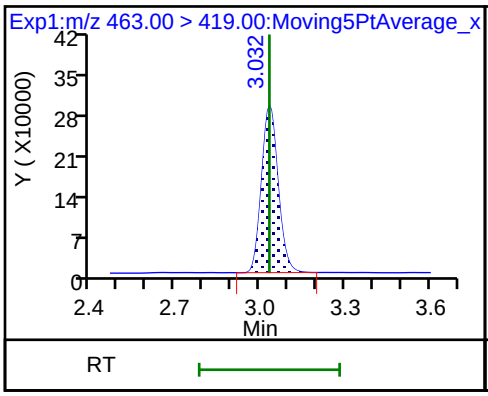
17 Perfluorooctane sulfonic acid (M)



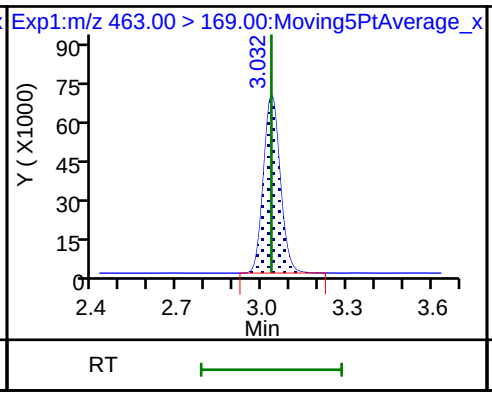
17 Perfluorooctane sulfonic acid



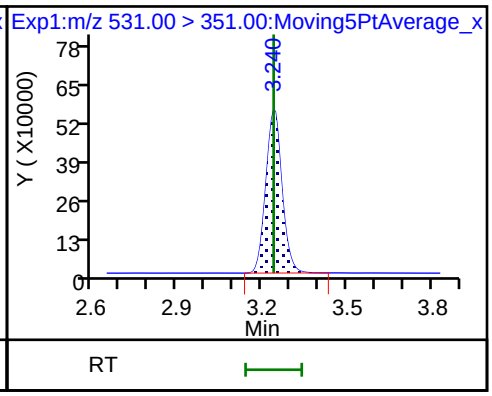
20 Perfluorononanoic acid



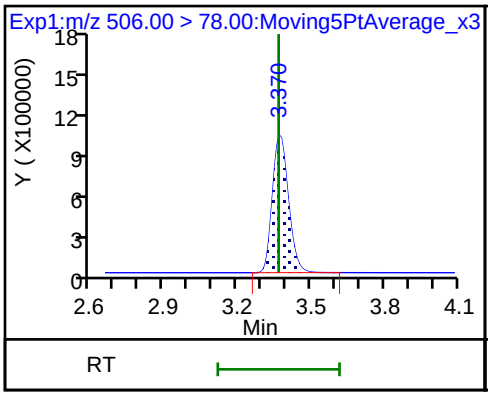
20 Perfluorononanoic acid



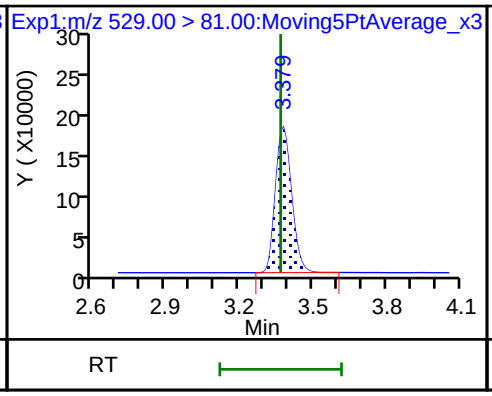
69 9-Chlorohexadecafluoro-3-oxanonane



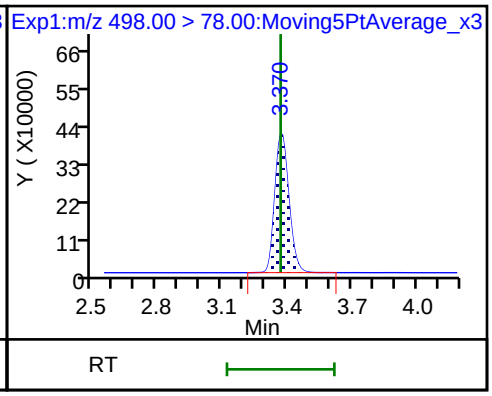
D 21 13C8 FOSA



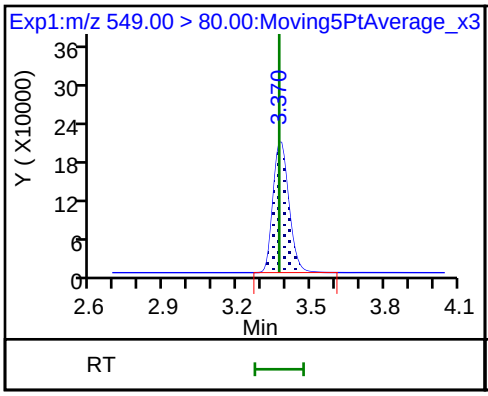
D 26 M2-8:2FTS



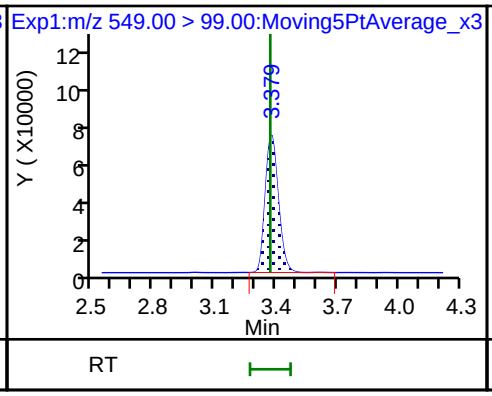
22 Perfluorooctane Sulfonamide



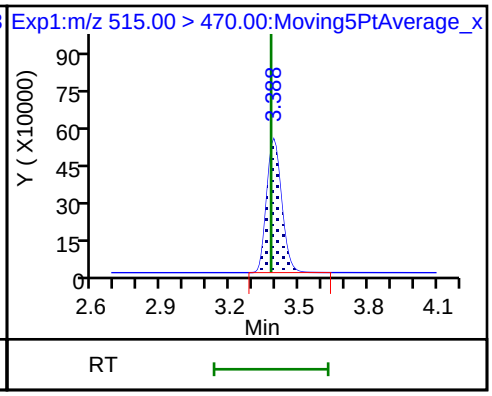
68 Perfluorononanesulfonic acid



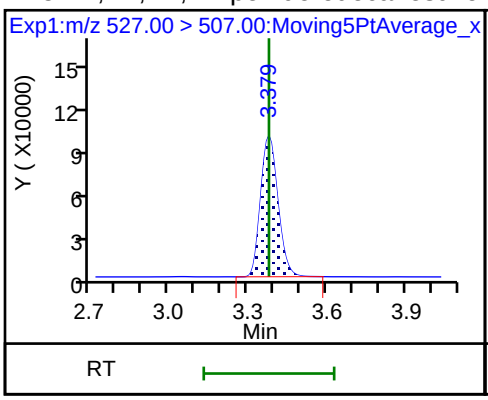
68 Perfluorononanesulfonic acid



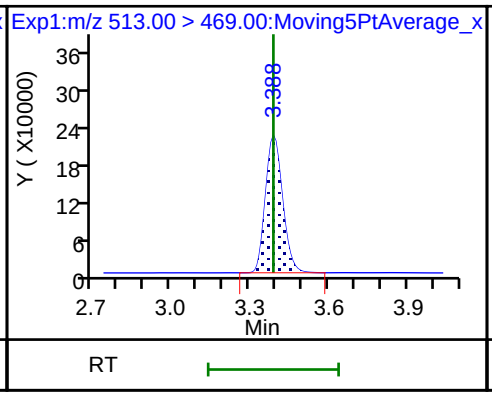
D 23 13C2 PFDA



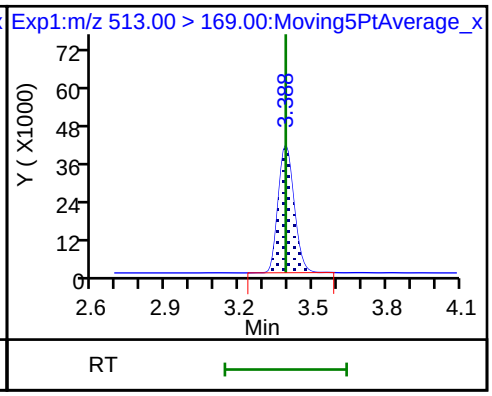
25 1H,1H,2H,2H-perfluorodecanesulfoni



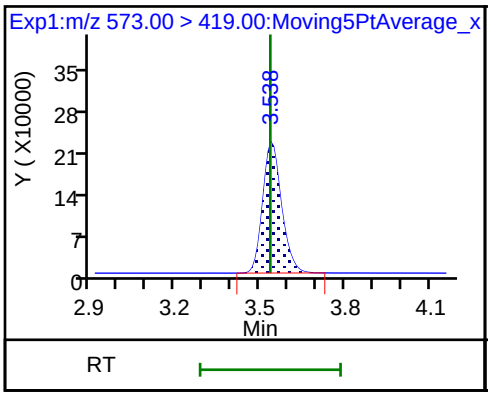
24 Perfluorodecanoic acid



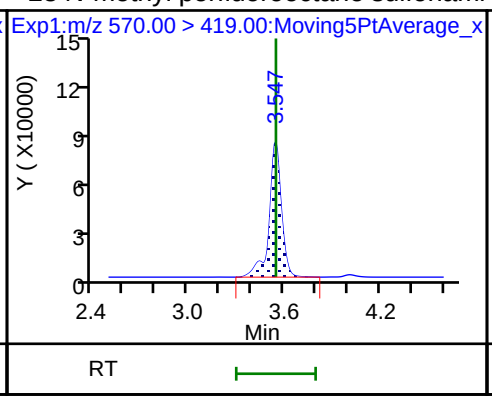
24 Perfluorodecanoic acid



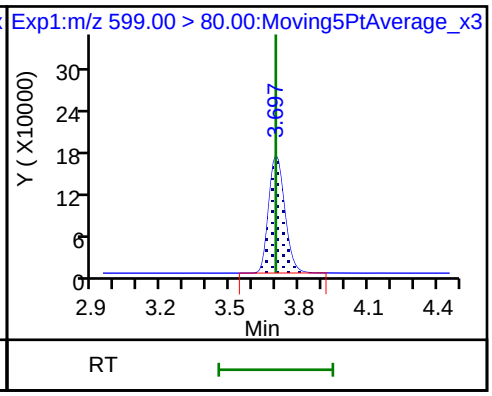
D 27 d3-NMeFOSAA



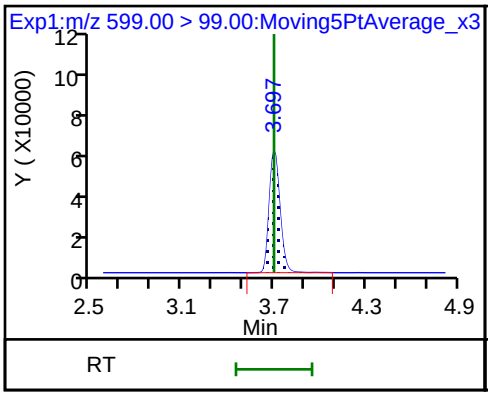
28 N-methyl perfluorooctane sulfonami



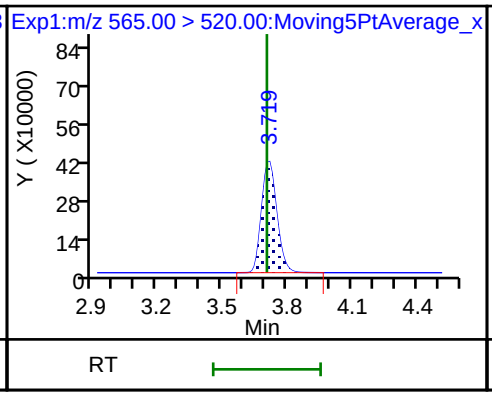
29 Perfluorodecane Sulfonic acid



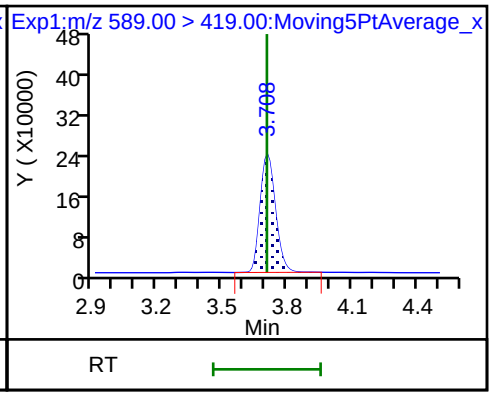
29 Perfluorodecane Sulfonic acid



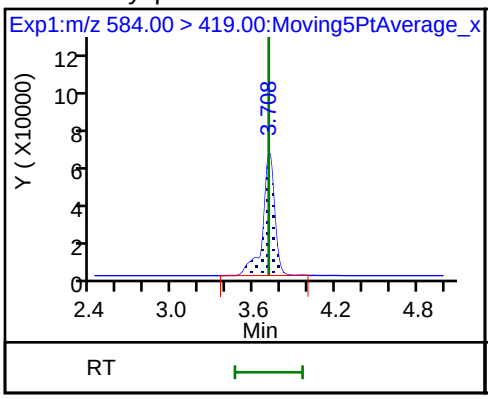
D 30 13C2 PFUnA



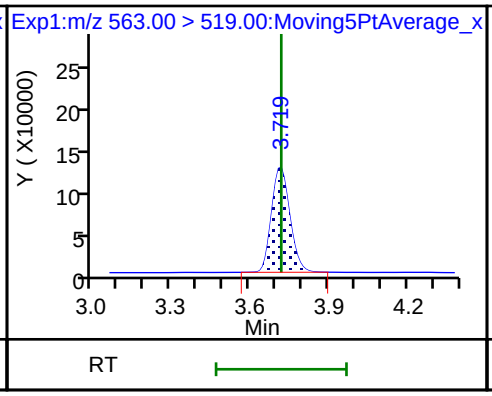
D 32 d5-NEtFOSAA



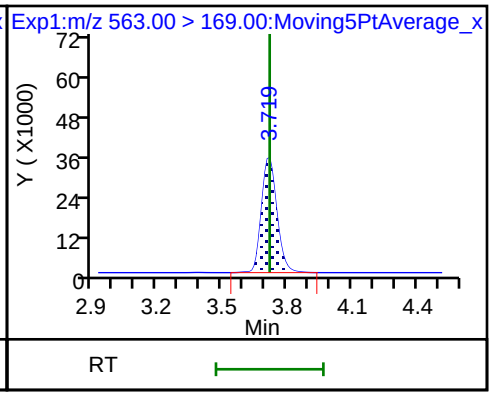
33 N-ethyl perfluorooctane sulfonamid



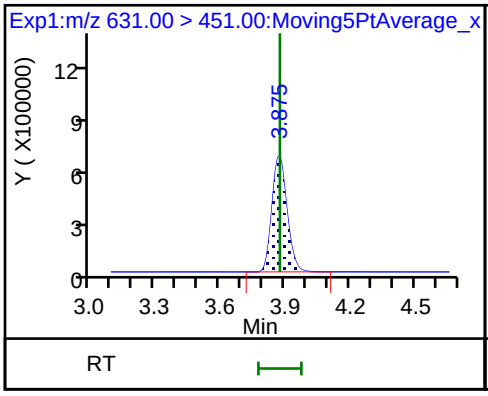
31 Perfluoroundecanoic acid



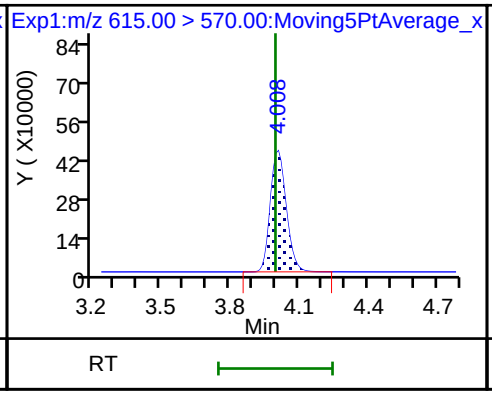
31 Perfluoroundecanoic acid



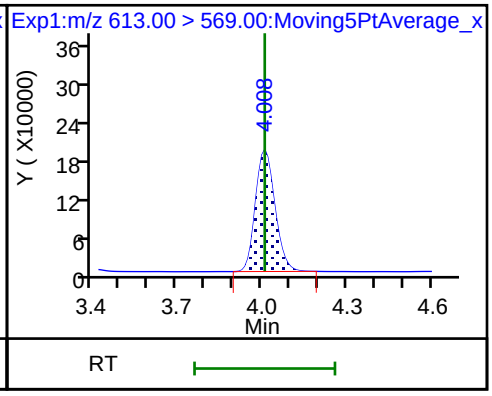
66 11-Chloroeicosafluoro-3-oxaundecan



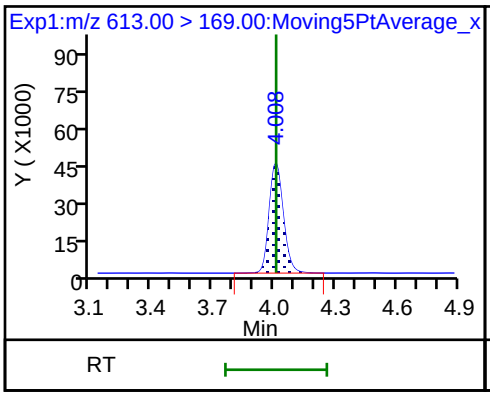
D 36 13C2 PFDoA



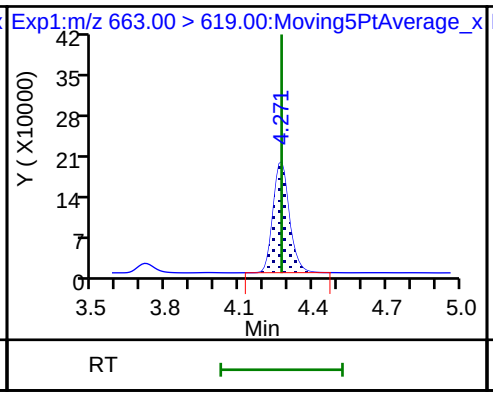
37 Perfluorododecanoic acid



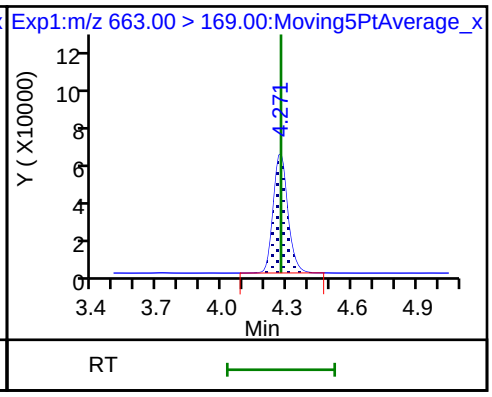
37 Perfluorododecanoic acid



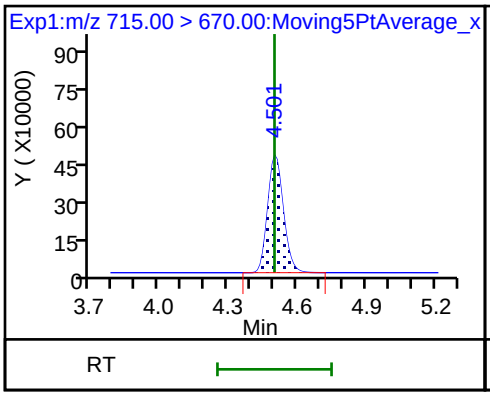
41 Perfluorotridecanoic acid



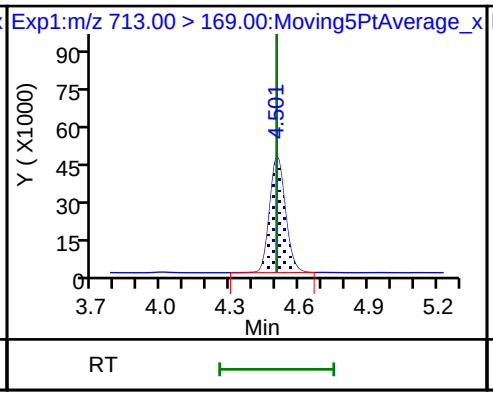
41 Perfluorotridecanoic acid



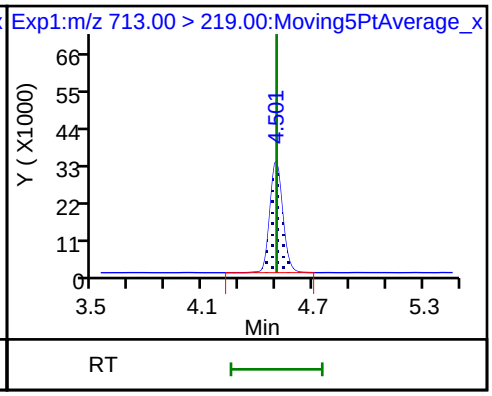
D 43 13C2-PFTeDA



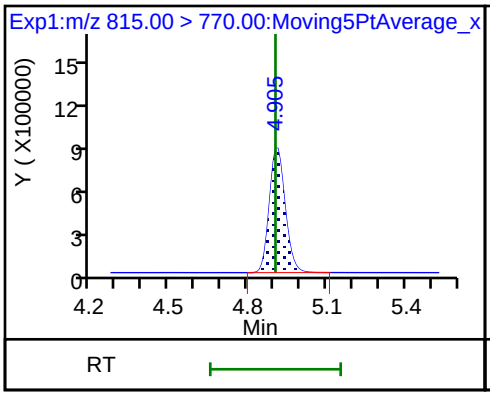
42 Perfluorotetradecanoic acid



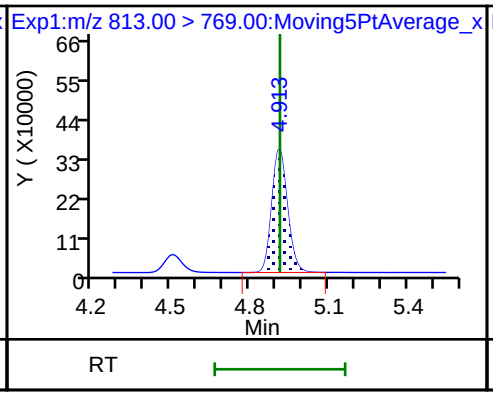
42 Perfluorotetradecanoic acid



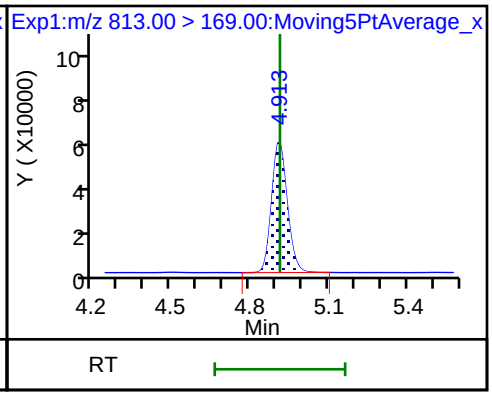
D 44 13C2-PFHxDA



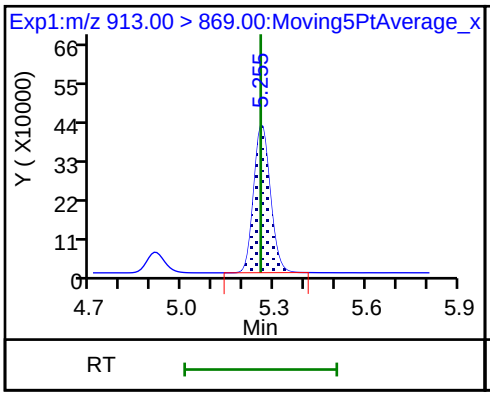
45 Perfluorohexadecanoic acid



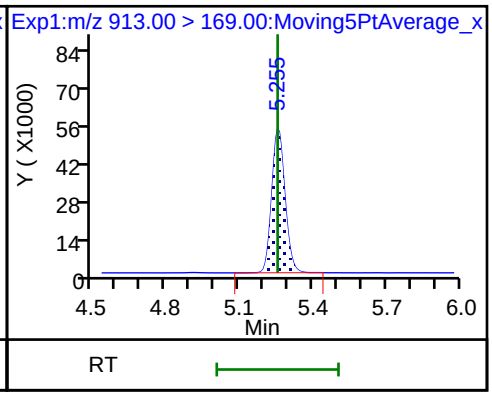
45 Perfluorohexadecanoic acid



46 Perfluorooctadecanoic acid



46 Perfluorooctadecanoic acid



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

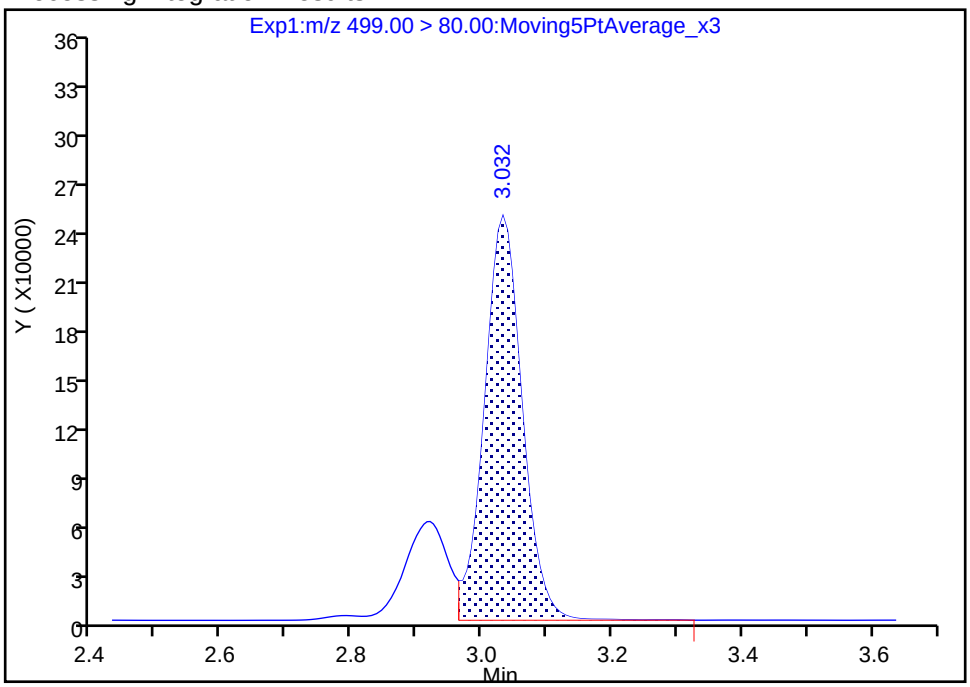
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180711-60928.b\2018.07.11LLB_050.d				
Injection Date:	11-Jul-2018 22:25:22	Instrument ID:	A8_N		
Lims ID:	CCV L4				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	13	Worklist Smp#:	7
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

17 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

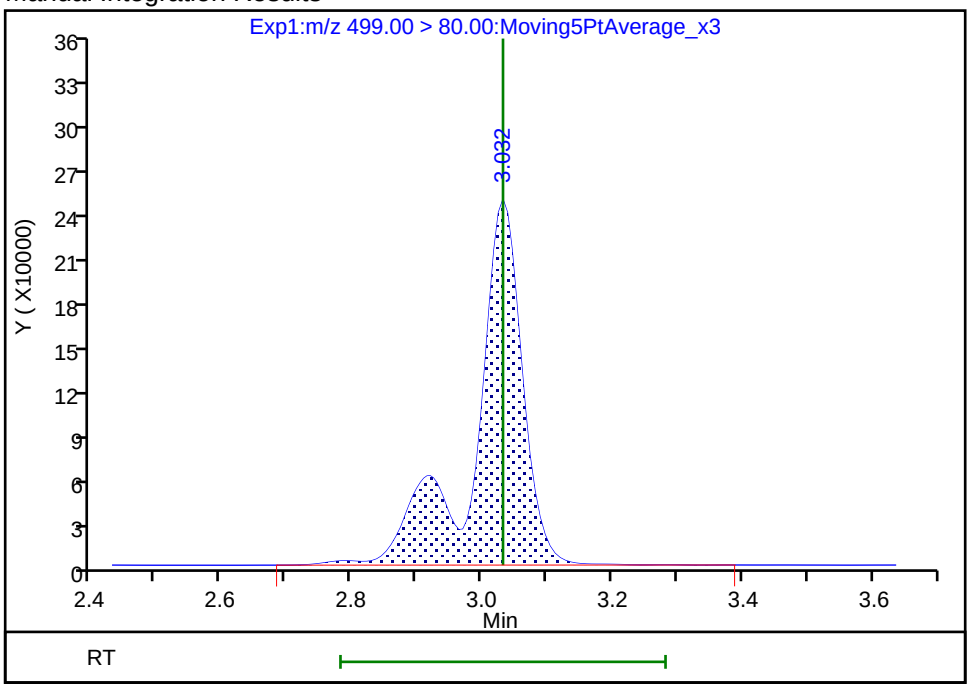
Processing Integration Results

RT: 3.03
Area: 991672
Amount: 0.717008
Amount Units: ng/ml



Manual Integration Results

RT: 3.03
Area: 1274651
Amount: 0.921610
Amount Units: ng/ml



Reviewer: mongkols, 13-Jul-2018 09:07:55

Audit Action: Manually Integrated Audit Reason: Isomers

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Lab Sample ID: CCVL 320-233725/2 Calibration Date: 07/12/2018 15:02

Instrument ID: A8_N Calib Start Date: 07/11/2018 14:48

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 07/11/2018 15:38

Lab File ID: 2018.07.12LLB_QC_002.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.9856	1.056		0.0536	0.0500	7.1	50.0
Perfluoropentanoic acid (PFPeA)	AveID	1.213	1.248		0.0514	0.0500	2.8	50.0
Perfluorobutanesulfonic acid (PFBS)	AveID	76.50	77.51		0.0448	0.0442	1.3	50.0
4:2 FTS	AveID	13.00	12.36			0.0467	-4.9	50.0
Perfluorohexanoic acid (PFHxA)	AveID	1.029	1.062		0.0516	0.0500	3.2	50.0
Perfluoropentanesulfonic acid (PFPeS)	AveID	69.78	69.35		0.0466	0.0469	-0.6	50.0
HFPO-DA (GenX)	AveID	2.654	3.024		0.0570	0.0500	13.9	50.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.157	1.078		0.0466	0.0500	-6.8	50.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.148	1.117		0.0443	0.0455	-2.7	50.0
ADONA	AveID	3.219	3.507		0.0513	0.0471	9.0	50.0
6:2 FTS	AveID	1.564	1.592			0.0474	1.8	50.0
Perfluorooctanoic acid (PFOA)	AveID	1.232	1.258		0.0511	0.0501	2.2	50.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.318	1.307		0.0472	0.0476	-0.8	50.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.133	1.116		0.0457	0.0464	-1.5	50.0
Perfluorononanoic acid (PFNA)	AveID	1.109	1.048		0.0472	0.0500	-5.6	50.0
9-Chlorohexadecafluoro-3-oxa nonane-1-sulfonate	AveID	1.836	1.837		0.0466	0.0466	0.0	50.0
8:2 FTS	AveID	1.290	1.370		0.0509	0.0479	6.2	50.0
Perfluorononanesulfonic acid (PFNS)	AveID	0.7752	0.6985		0.0433	0.0480	-9.9	50.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9856	0.9868		0.0501	0.0500	0.1	50.0
Perfluorodecanoic acid (PFDA)	AveID	1.049	1.092		0.0520	0.0500	4.1	50.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	0.9858	1.029			0.0500	4.4	50.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6714	0.7145		0.0513	0.0482	6.4	50.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.8840	1.012		0.0572	0.0500	14.5	50.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.8195	0.8200		0.0500	0.0500	0.0	50.0
11-Chloroeicosafluoro-3-oxau ndecane-1-sulfonate	AveID	2.654	2.850		0.0506	0.0471	7.4	50.0
Perfluorododecanoic acid (PFDoA)	AveID	1.092	1.124		0.0515	0.0500	3.0	50.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.068	1.233		0.0577	0.0500	15.4	50.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2602	0.2844		0.0546	0.0500	9.3	50.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		1.292		0.0464	0.0500	-7.2	50.0

FORM VII 537 (modified)

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Lab Sample ID: CCVL 320-233725/2 Calibration Date: 07/12/2018 15:02

Instrument ID: A8_N Calib Start Date: 07/11/2018 14:48

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 07/11/2018 15:38

Lab File ID: 2018.07.12LLB_QC_002.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.143	1.072		0.0469	0.0500	-6.2	50.0
13C4 PFBA	Ave	1.356	1.320		2.43	2.50	-2.7	50.0
13C5 PFPeA	Ave	0.9425	0.9161		2.43	2.50	-2.8	50.0
13C3-PFBS	Ave	0.0237	0.0230		2.26	2.33	-2.9	50.0
M2-4:2FTS	Ave	0.1273	0.1276		2.34	2.34	0.3	50.0
13C2 PFHxA	Ave	1.017	1.032		2.54	2.50	1.5	50.0
13C3 HFPO-DA	Ave	0.0724	0.0690		2.38	2.50	-4.6	50.0
13C4-PFHpA	Ave	0.9371	0.9555		2.55	2.50	2.0	50.0
18O2 PFHxS	Ave	1.328	1.344		2.39	2.37	1.3	50.0
M2-6:2FTS	Ave	0.2009	0.1890		2.23	2.38	-5.9	50.0
13C4 PFOA	Ave	0.9560	0.9531		2.49	2.50	-0.3	50.0
13C4 PFOS	Ave	0.9742	0.9505		2.33	2.39	-2.4	50.0
13C5 PFNA	Ave	0.8546	0.8137		2.38	2.50	-4.8	50.0
13C8 FOSA	Ave	1.405	1.461		2.60	2.50	4.0	50.0
M2-8:2FTS	Ave	0.2939	0.2698		2.20	2.40	-8.2	50.0
13C2 PFDA	Ave	0.7503	0.7427		2.47	2.50	-1.0	50.0
d3-NMeFOSAA	Ave	0.3075	0.3386		2.75	2.50	10.1	50.0
13C2 PFUnA	Ave	0.6266	0.6784		2.71	2.50	8.3	50.0
d5-NEtFOSAA	Ave	0.3150	0.3747		2.97	2.50	18.9	50.0
13C2 PFDoA	Ave	0.6496	0.6570		2.53	2.50	1.1	50.0
13C2-PFTeDA	Ave	0.6740	0.7246		2.69	2.50	7.5	50.0
13C2-PFHxDA	Ave	1.074	1.236		2.88	2.50	15.1	50.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180712-60981.b\2018.07.12LLB_QC_002.d
Lims ID: CCVL
Client ID:
Sample Type: CCVL
Inject. Date: 12-Jul-2018 15:02:24 ALS Bottle#: 21 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCVL
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-A8_N*sub32

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180712-60981.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 13-Jul-2018 12:20:23 Calib Date: 11-Jul-2018 15:38:42
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK010

First Level Reviewer: mongkols Date: 13-Jul-2018 12:20:23

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										M
217.00 > 172.00	1.413	1.411	0.002	0.527	5341936	2.43		97.3	23041	M
2 Perfluorobutyric acid										
212.90 > 169.00	1.413	1.419	-0.006	1.000	112804	0.0536		107	62.7	
D 3 13C5-PFPeA										
267.90 > 223.00	1.719	1.717	0.002	0.641	3707811	2.43		97.2	42227	
4 Perfluoropentanoic acid										M
262.90 > 219.00	1.719	1.720	-0.001	1.000	92516	0.0514		103	34.6	M
D 47 13C3-PFBS										
301.90 > 83.00	1.755	1.753	0.002	0.655	86550	2.26		97.1	431	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.764	1.765	-0.001	1.005	127526	0.0448		101	2066	
298.90 > 99.00	1.764	1.765	-0.001	1.005	52474		2.43(1.25-3.74)		949	
D 60 M2-4:2FTS										
329.00 > 81.00	1.980	1.978	0.002	0.738	482419	2.34		100	9608	
61 1H,1H,2H,2H-perfluorohexanesulfoni										
327.00 > 307.00	1.980	1.981	-0.001	1.128	21493	0.0444		95.1	1209	
6 Perfluorohexanoic acid										
313.00 > 269.00	2.014	2.015	-0.001	1.000	88746	0.0516		103	212	
313.00 > 119.00	2.025	2.015	0.010	1.006	7537		11.77(5.03-15.10)		152	
D 7 13C2 PFHxA										
315.00 > 270.00	2.014	2.022	-0.008	0.751	4177252	2.54		101	67112	
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.048	2.049	-0.001	1.166	121083	0.0466		99.4	3477	
349.00 > 99.00	2.048	2.049	-0.001	1.166	46469		2.61(1.36-4.07)		1190	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.115	2.113	0.002	0.789	279336	2.38		95.4	5042	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
67 Perfluoro(2-propoxypropanoic) acid										
329.10 > 285.00	2.115	2.116	-0.001	1.000	16895	0.0570		114	131	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.332	2.333	-0.001	1.000	83379	0.0466		93.2	177	
363.00 > 169.00	2.345	2.333	0.012	1.006	36078		2.31(1.13-3.40)		388	
D 9 13C4-PFHpA										
367.00 > 322.00	2.332	2.342	-0.010	0.869	3867572	2.55		102	36477	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.345	2.346	-0.001	0.994	110578	0.0443		97.3	1851	
399.00 > 99.00	2.345	2.346	-0.001	0.994	43787		2.53(1.50-4.49)		468	
D 11 18O2 PFHxS										
403.00 > 84.00	2.358	2.355	0.003	0.879	5147465	2.39		101	32420	
65 Adona										
377.00 > 251.00	2.384	2.385	-0.001	0.785	254185	0.0513		109	5637	
377.00 > 85.00	2.384	2.385	-0.001	0.785	148927		1.71(0.84-2.53)		1059	
D 12 M2-6:2FTS										
429.00 > 81.00	2.659	2.658	0.001	0.992	726594	2.23		94.1	17703	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.659	2.660	-0.001	1.000	23091	0.0482		102	635	
D 14 13C4 PFOA										
417.00 > 372.00	2.682	2.681	0.001	1.000	3857624	2.49		99.7	39503	
* 62 13C2-PFOA										
415.00 > 370.00	2.682	2.683	-0.001		4047580	2.50			38494	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.682	2.683	-0.001	1.000	97185	0.0511		102	63.8	
413.00 > 169.00	2.682	2.683	-0.001	1.000	56555		1.72(0.84-2.52)		391	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.689	2.690	-0.001	0.886	95740	0.0472		99.2	3363	
449.00 > 99.00	2.689	2.690	-0.001	0.886	25726		3.72(1.94-5.82)		853	
D 18 13C4 PFOS										
503.00 > 80.00	3.035	3.037	-0.002	1.132	3677984	2.33		97.6	35702	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.035	3.039	-0.004	1.000	79667	0.0457		98.5	2227	
499.00 > 99.00	3.042	3.039	0.003	1.002	19508		4.08(2.31-6.93)		533	
20 Perfluorononanoic acid										
463.00 > 419.00	3.042	3.039	0.003	1.000	69003	0.0472		94.4	150	
463.00 > 169.00	3.035	3.039	-0.004	0.998	17333		3.98(1.90-5.69)		736	
D 19 13C5 PFNA										
468.00 > 423.00	3.042	3.044	-0.002	1.134	3293327	2.38		95.2	43223	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.243	3.246	-0.003	1.069	131725	0.0466		100	1731	
D 26 M2-8:2FTS										
529.00 > 81.00	3.383	3.378	0.005	1.262	1046146	2.20		91.8	14719	
D 21 13C8 FOSA										
506.00 > 78.00	3.374	3.378	-0.004	1.258	5914868	2.60		104	42346	
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.374	3.379	-0.005	1.112	51596	0.0433		90.1	1964	
549.00 > 99.00	3.383	3.379	0.004	1.115	24976		2.07(1.33-3.97)		540	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
25 1H,1H,2H,2H-perfluorodecanesulfoni										
527.00 > 507.00	3.374	3.379	-0.005	0.997	28661	0.0509		106	519	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.374	3.379	-0.005	1.000	116733	0.0501		100	2662	
D 23 13C2 PFDA										
515.00 > 470.00	3.393	3.387	0.006	1.265	3005984	2.47		99.0	26066	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.393	3.388	0.005	1.000	65658	0.0520		104	381	
513.00 > 169.00	3.383	3.388	-0.005	0.997	9749		6.73(2.36-7.09)		362	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.542	3.536	0.006	1.321	1370378	2.75		110	33837	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.551	3.547	0.004	1.003	28195	0.0522		104	216	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.700	3.697	0.003	1.219	52995	0.0513		106	1835	
599.00 > 99.00	3.700	3.697	0.003	1.219	19608		2.70(1.39-4.16)		820	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.711	3.706	0.005	1.384	1516527	2.97		119	4141	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.711	3.708	0.003	1.000	30696	0.0572		114	1339	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.722	3.708	0.014	1.003	45029	0.0500		100	259	
563.00 > 169.00	3.711	3.708	0.003	1.000	11676		3.86(2.12-6.36)		408	
D 30 13C2 PFUnA										
565.00 > 520.00	3.711	3.717	-0.006	1.384	2745687	2.71		108	57469	
66 11-Chloroeicosafluoro-3-oxaundecan										
631.00 > 451.00	3.868	3.865	0.003	1.275	206546	0.0506		107	6279	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.010	3.998	0.012	1.003	59787	0.0515		103	38.7	
613.00 > 169.00	3.999	3.998	0.001	1.000	15656		3.82(2.13-6.40)		419	
D 36 13C2 PFDoA										
615.00 > 570.00	3.999	4.007	-0.008	1.491	2659303	2.53		101	19984	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.263	4.262	0.001	1.066	65554	0.0577		115	31.4	
663.00 > 169.00	4.263	4.262	0.001	1.066	19276		3.40(1.25-3.76)		382	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.501	4.500	0.001	1.000	16680	0.0546		109	293	
713.00 > 219.00	4.491	4.500	-0.009	0.998	10976		1.52(0.71-2.13)		295	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.501	4.501	0.0	1.678	2932799	2.69		108	14880	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.904	4.904	0.0	1.829	5003680	2.88		115	14539	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.913	4.913	0.0	1.002	129258	0.0464		92.8	27.2	
813.00 > 169.00	4.904	4.913	-0.009	1.000	23748		5.44(2.86-8.58)		310	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.255	5.262	-0.007	1.071	107275	0.0469		93.8	20.3	
913.00 > 169.00	5.255	5.262	-0.007	1.071	13944		7.69(3.83-11.48)		255	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

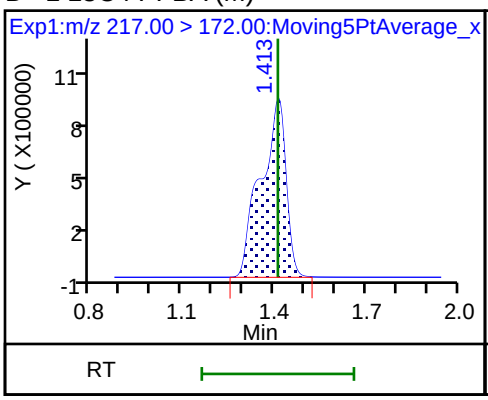
LCPFC_LL2_00005 Amount Added: 1.00 Units: mL

Report Date: 13-Jul-2018 12:20:25 Chrom Revision: 2.2 07-Jun-2018 07:41:54

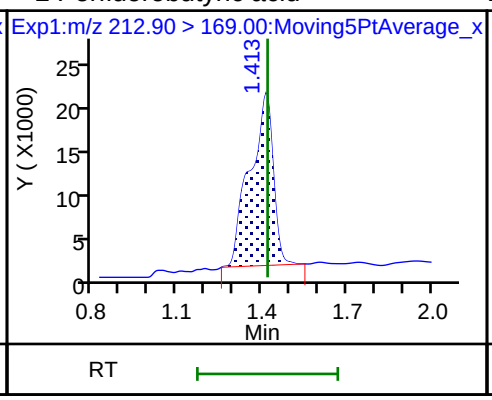
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180712-60981.b\2018.07.12LLB_QC_002.d
Injection Date: 12-Jul-2018 15:02:24 Instrument ID: A8_N
Lims ID: CCVL
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 21 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC ICAL

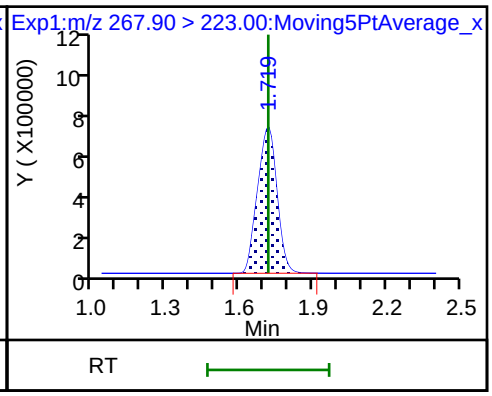
D 1 13C4 PFBA (M)



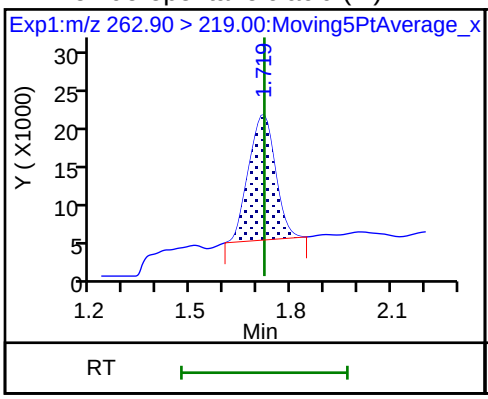
2 Perfluorobutyric acid



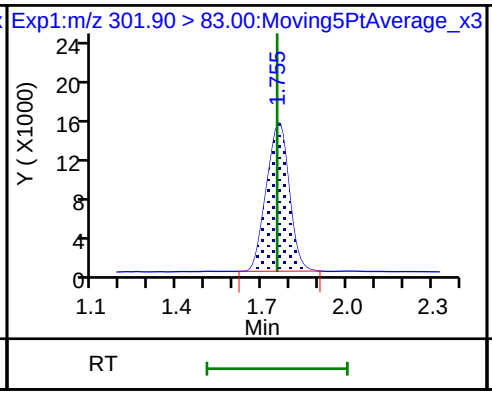
D 3 13C5-PFPeA



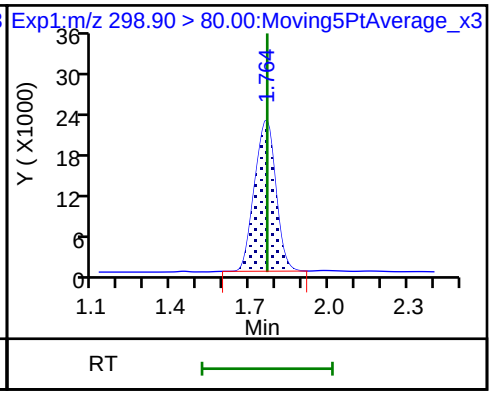
4 Perfluoropentanoic acid (M)



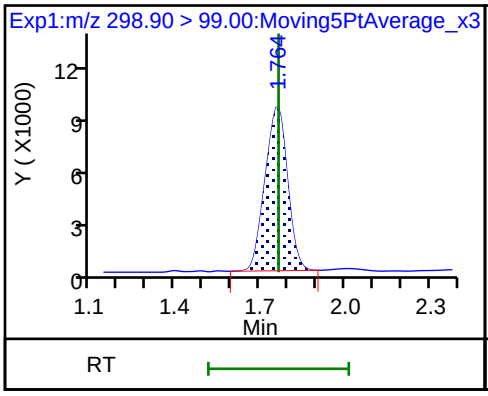
D 47 13C3-PFBS



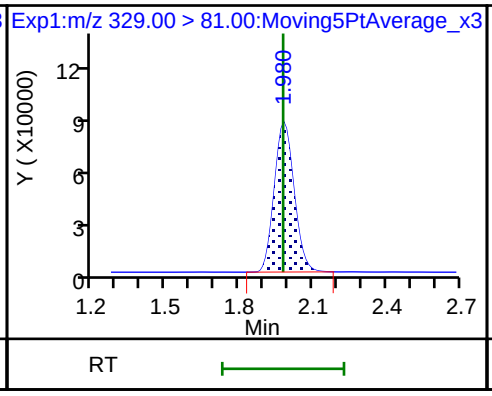
5 Perfluorobutanesulfonic acid



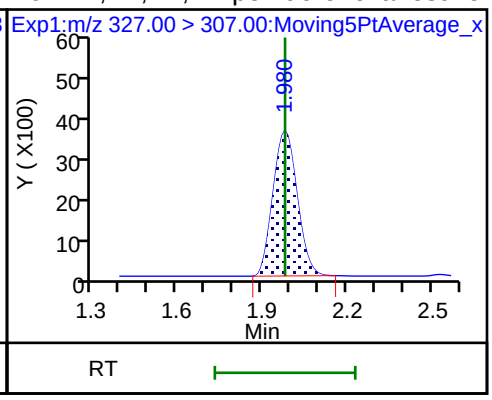
5 Perfluorobutanesulfonic acid



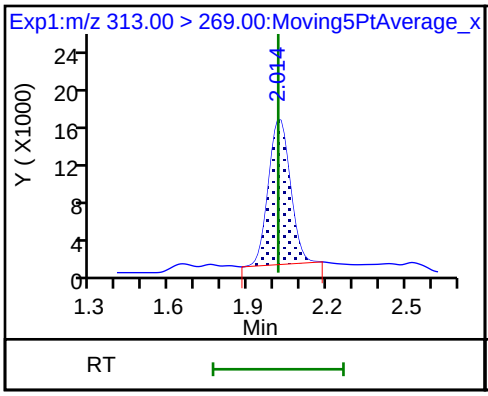
D 60 M2-4:2FTS



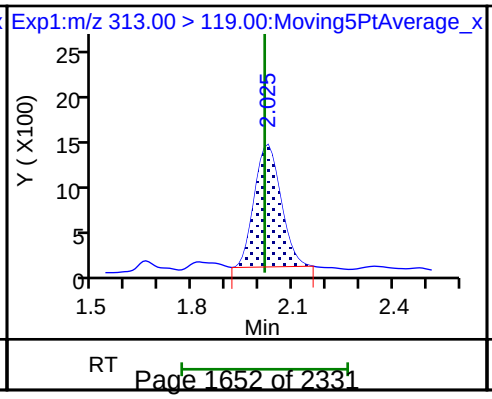
61 1H,1H,2H,2H-perfluorohexanesulfoni



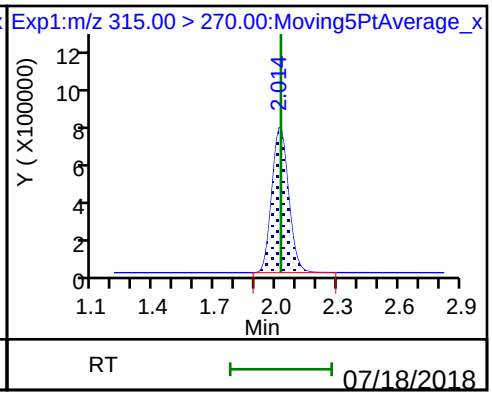
6 Perfluorohexanoic acid



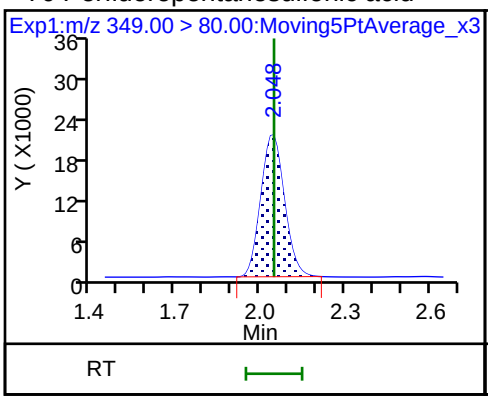
6 Perfluorohexanoic acid



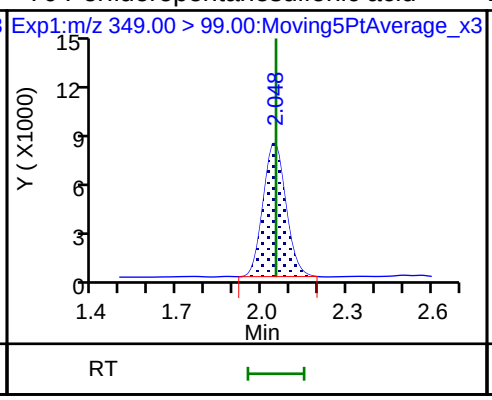
D 7 13C2 PFHxA



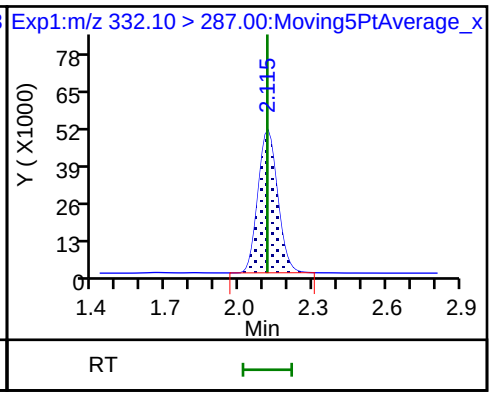
70 Perfluoropentanesulfonic acid



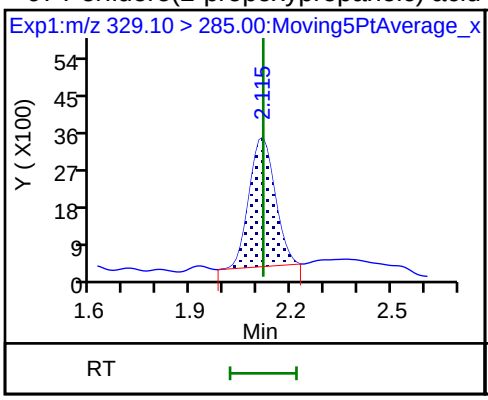
70 Perfluoropentanesulfonic acid



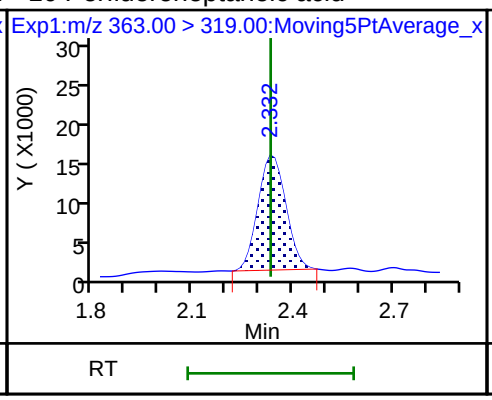
D 64 13C3 HFPO-DA



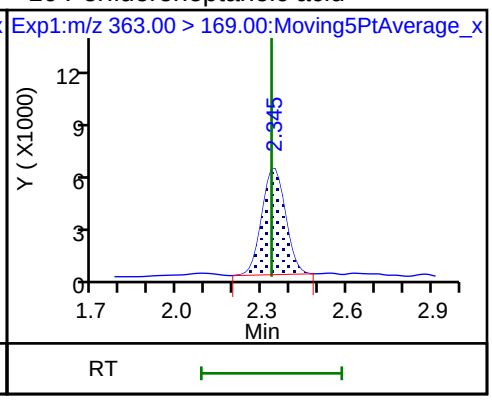
67 Perfluoro(2-propoxypropanoic) acid



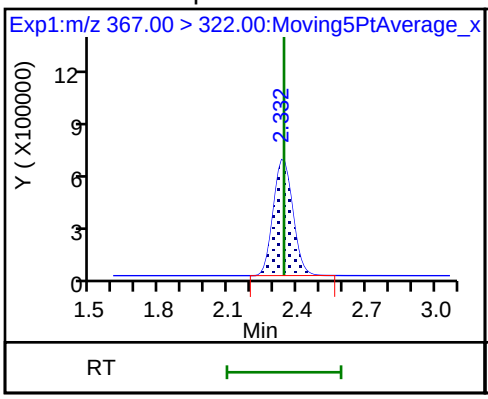
10 Perfluoroheptanoic acid



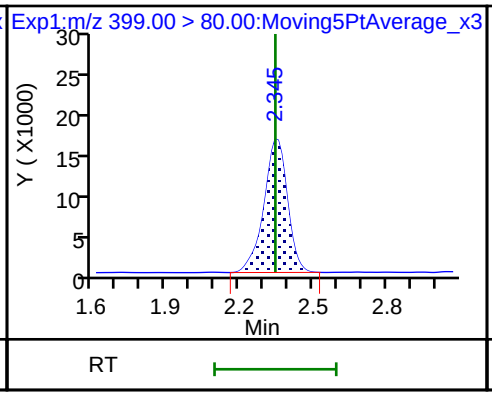
10 Perfluoroheptanoic acid



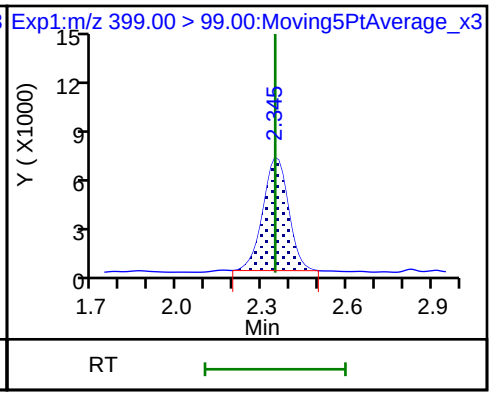
D 9 13C4-PFHpA



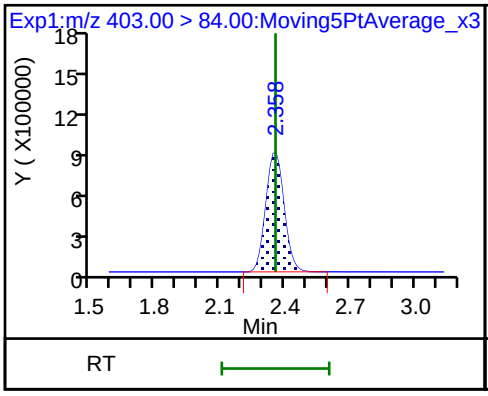
8 Perfluorohexanesulfonic acid



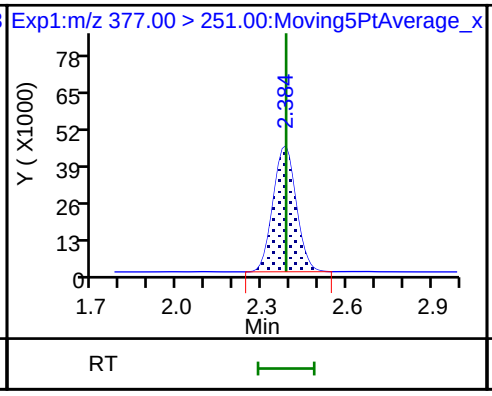
8 Perfluorohexanesulfonic acid



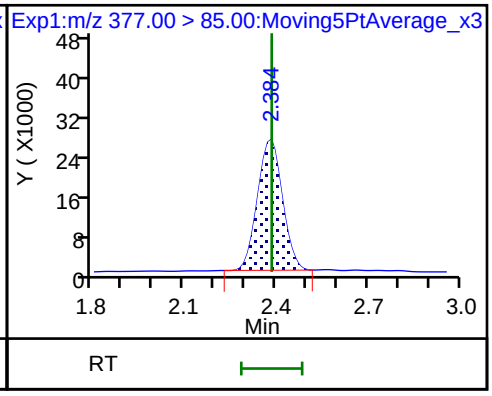
D 11 18O2 PFHxS



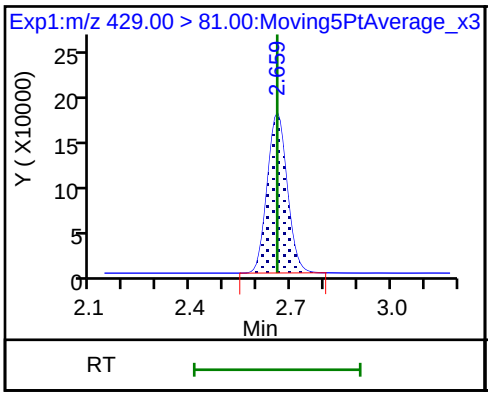
65 Adona



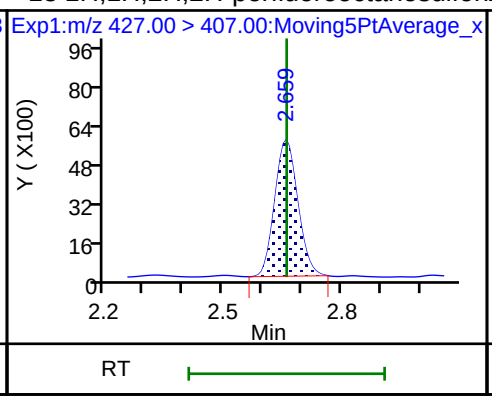
65 Adona



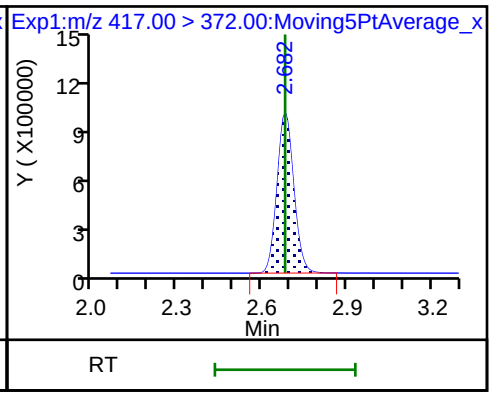
D 12 M2-6:2FTS



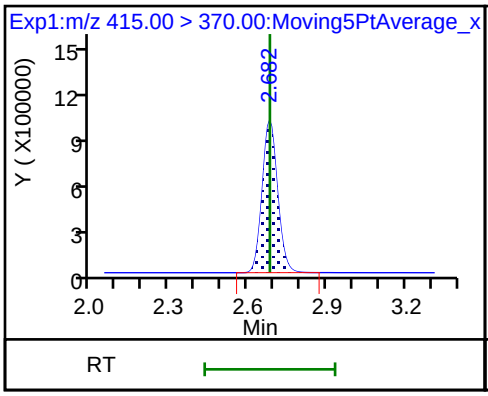
13 1H,1H,2H,2H-perfluorooctanesulfon



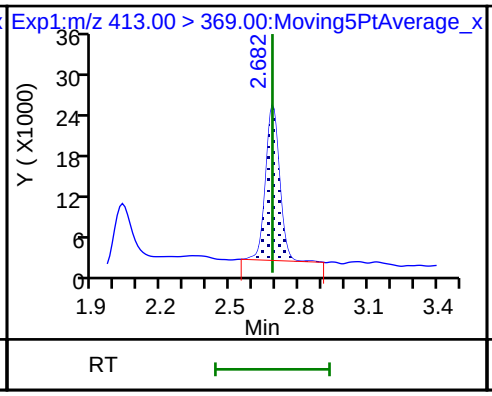
D 14 13C4 PFOA



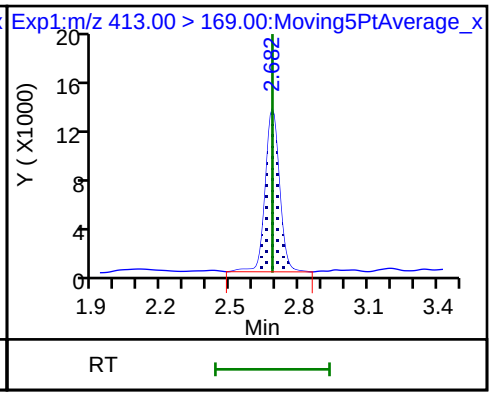
* 62 13C2-PFOA



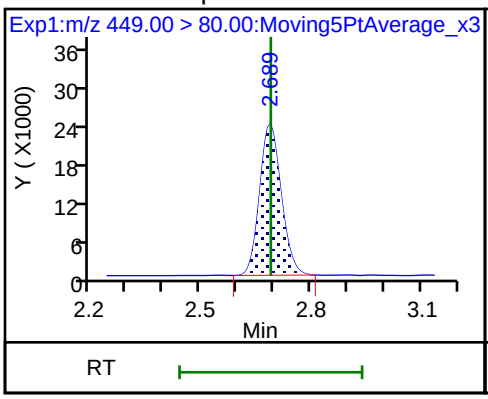
15 Perfluorooctanoic acid



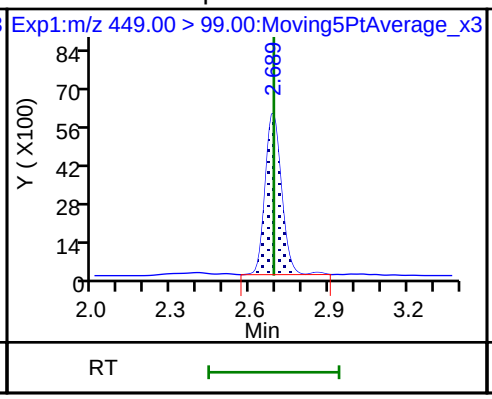
15 Perfluorooctanoic acid



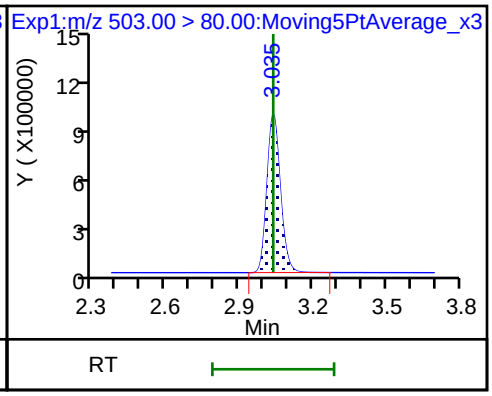
16 Perfluoroheptanesulfonic acid



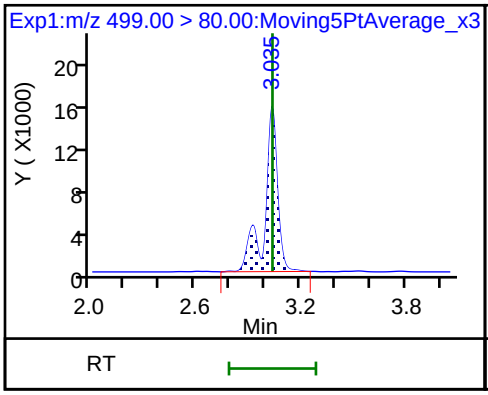
16 Perfluoroheptanesulfonic acid



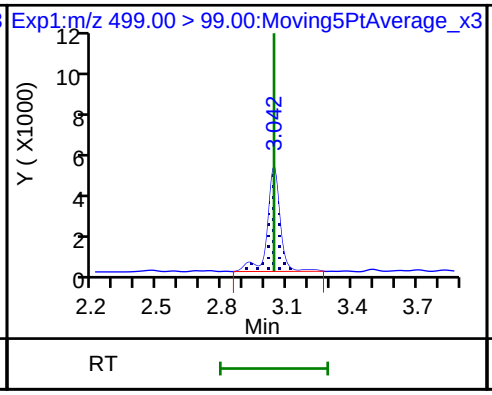
D 18 13C4 PFOS



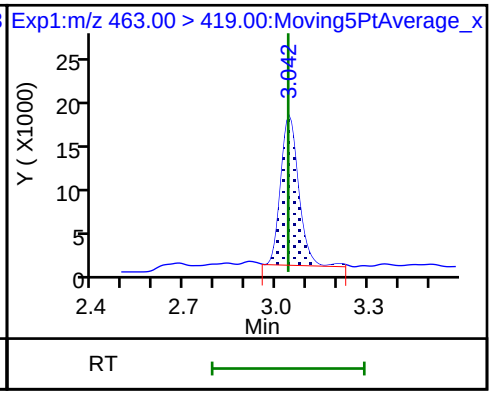
17 Perfluorooctane sulfonic acid



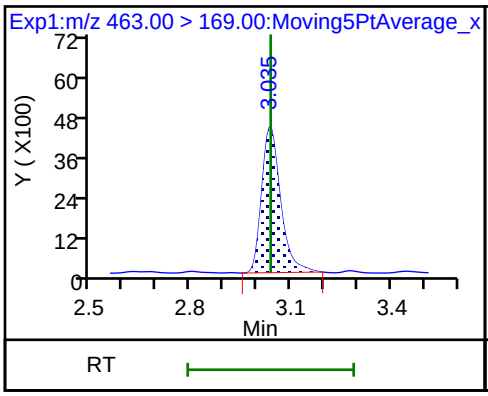
17 Perfluorooctane sulfonic acid



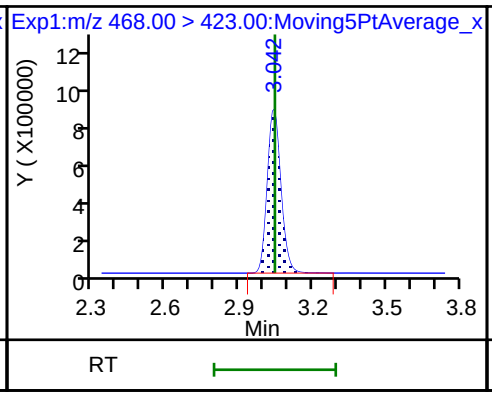
20 Perfluorononanoic acid



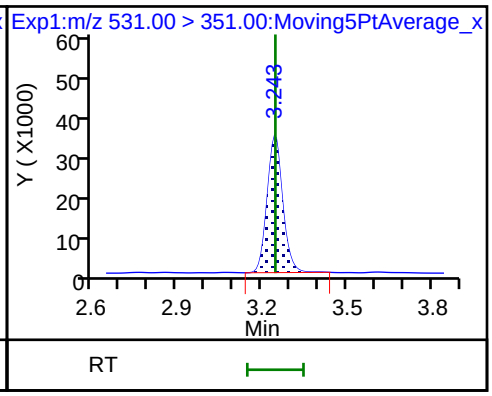
20 Perfluorononanoic acid



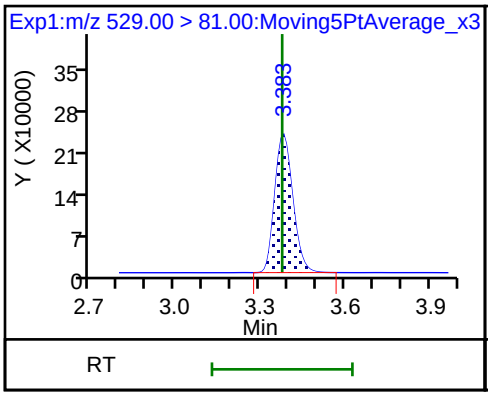
D 19 13C5 PFNA



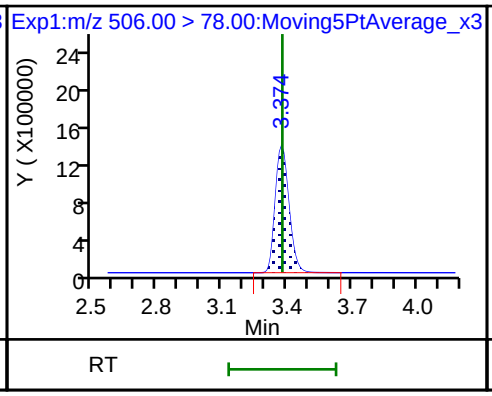
69 9-Chlorohexadecafluoro-3-oxanonane



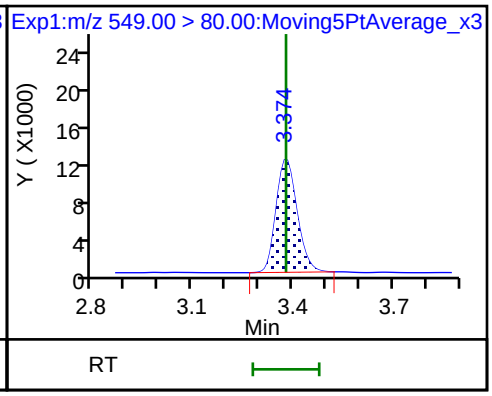
D 26 M2-8:2FTS



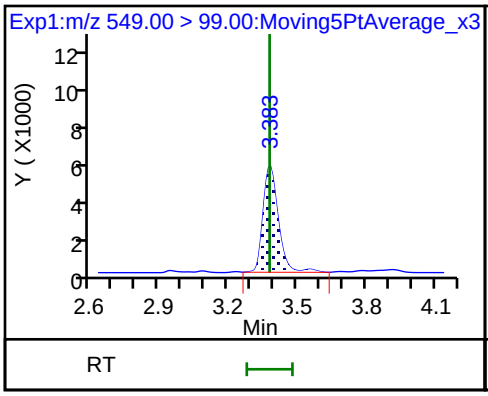
D 21 13C8 FOSA



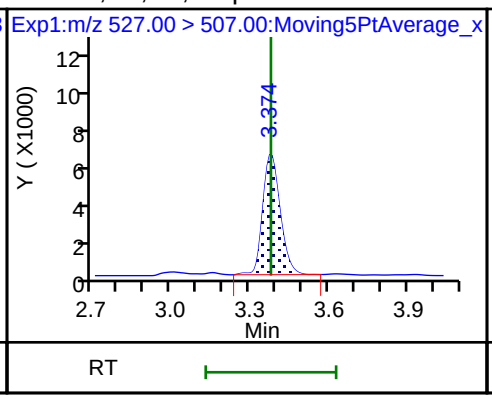
68 Perfluorononanesulfonic acid



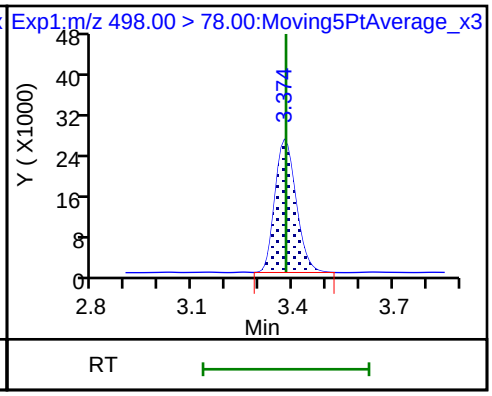
68 Perfluorononanesulfonic acid



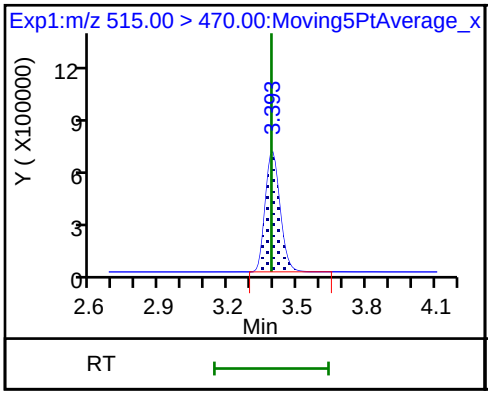
25 1H,1H,2H,2H-perfluorodecanesulfoni



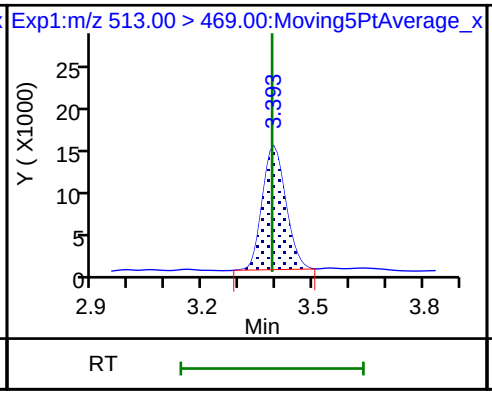
22 Perfluorooctane Sulfonamide



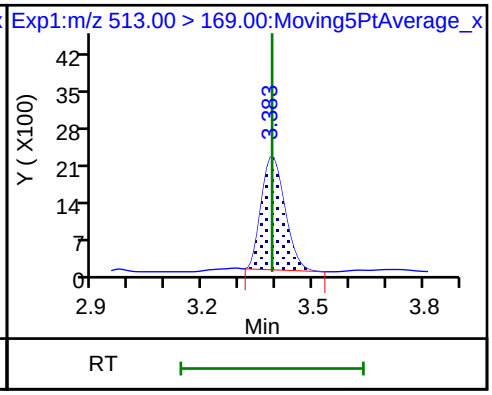
D 23 13C2 PFDA



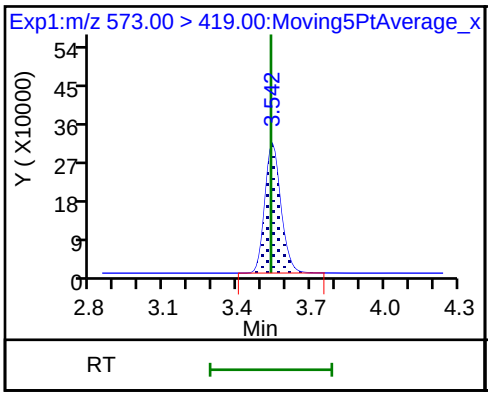
24 Perfluorodecanoic acid



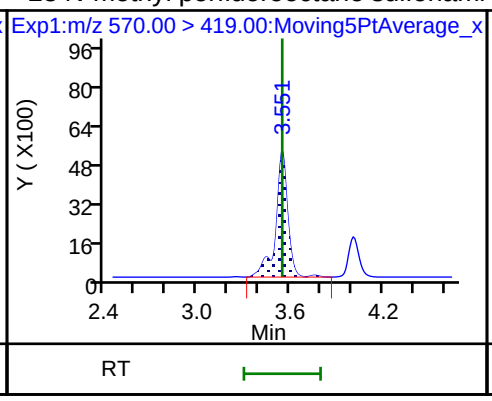
24 Perfluorodecanoic acid



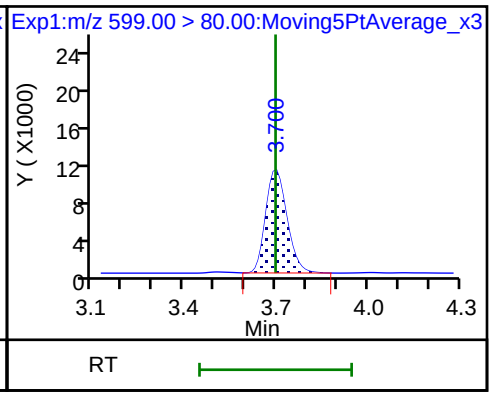
D 27 d3-NMeFOSAA



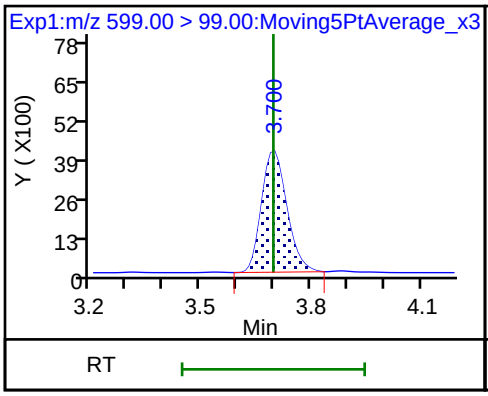
28 N-methyl perfluorooctane sulfonami



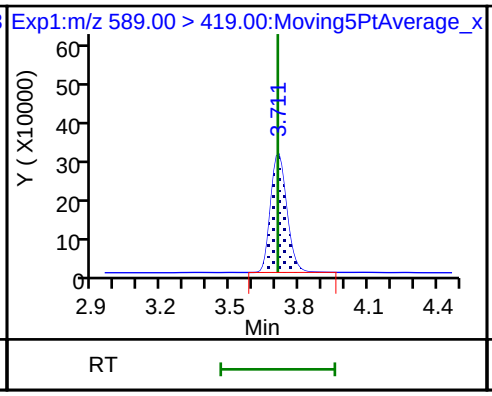
29 Perfluorodecane Sulfonic acid



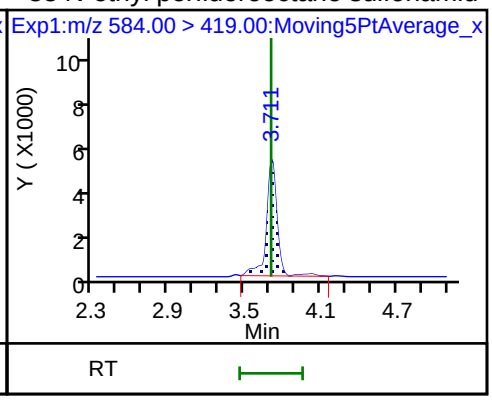
29 Perfluorodecane Sulfonic acid



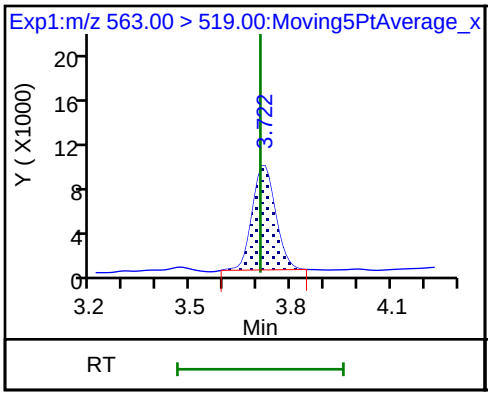
D 32 d5-NEtFOSAA



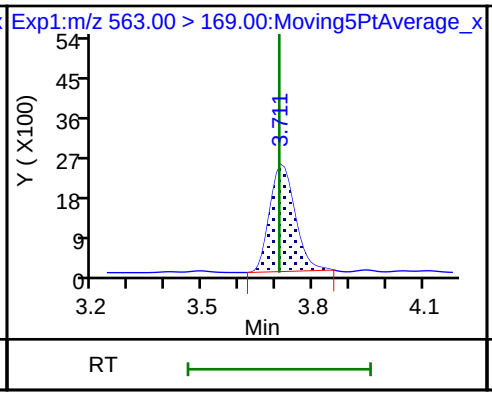
33 N-ethyl perfluorooctane sulfonamid



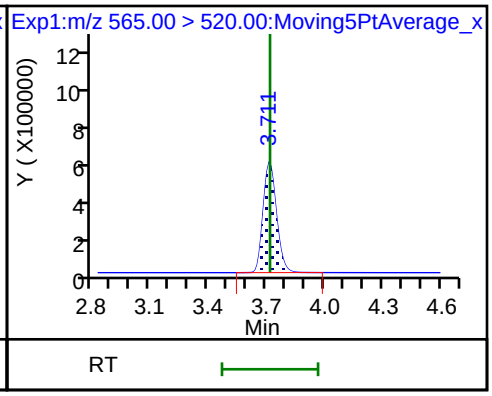
31 Perfluoroundecanoic acid



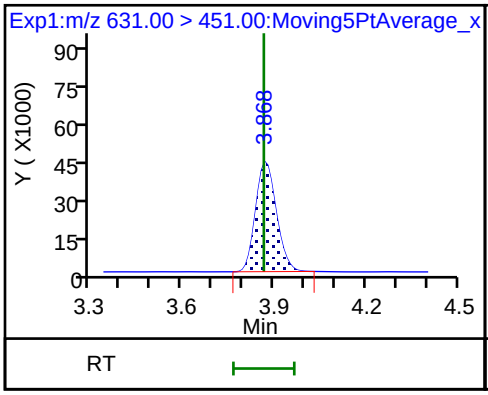
31 Perfluoroundecanoic acid



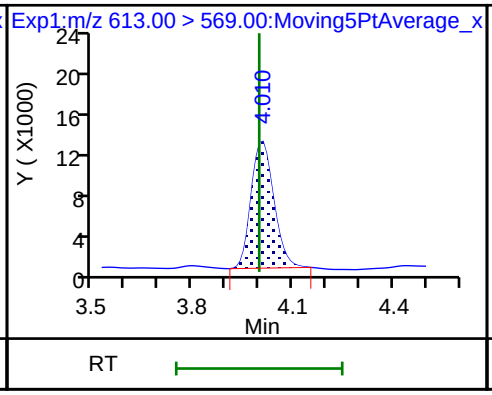
D 30 13C2 PFUnA



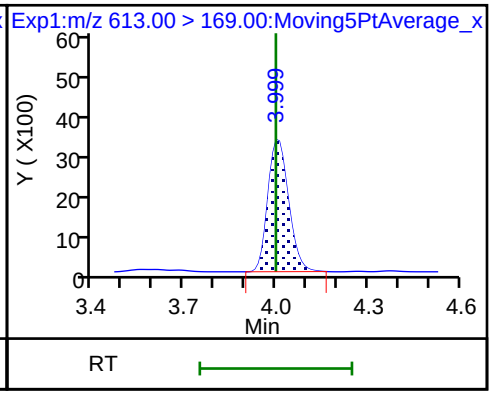
66 11-Chloroeicosafluoro-3-oxaundecan



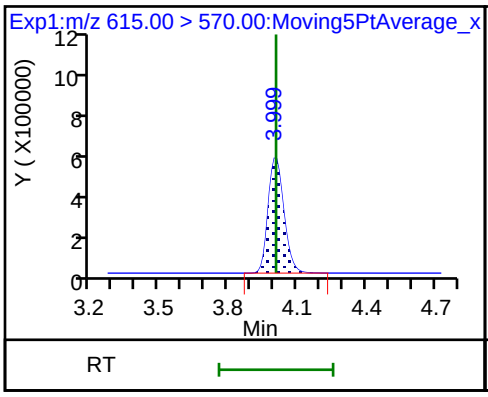
37 Perfluorododecanoic acid



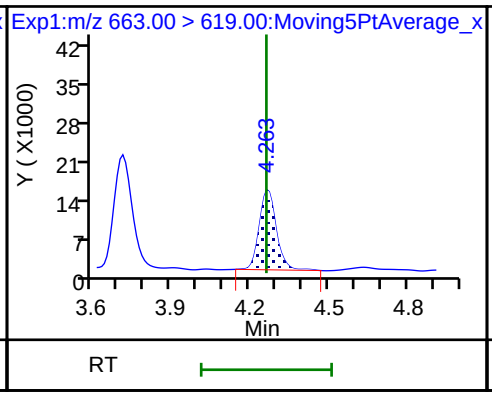
37 Perfluorododecanoic acid



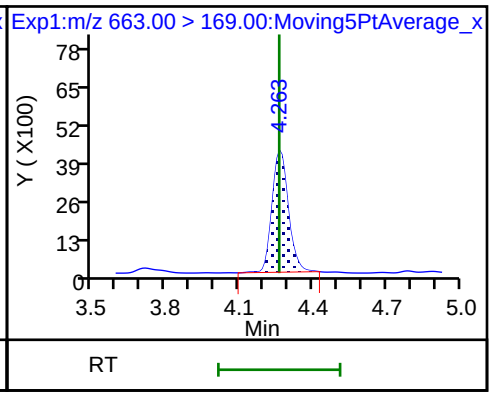
D 36 13C2 PFDoA



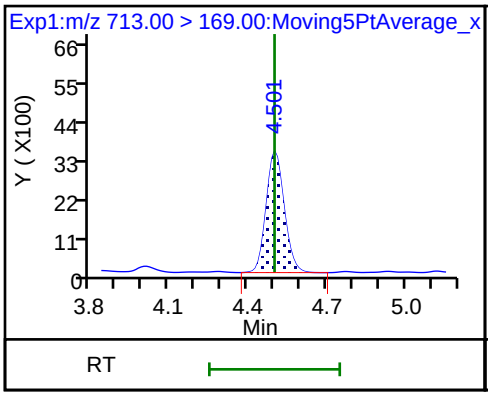
41 Perfluorotridecanoic acid



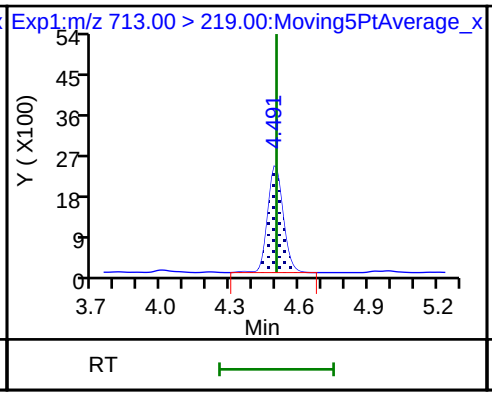
41 Perfluorotridecanoic acid



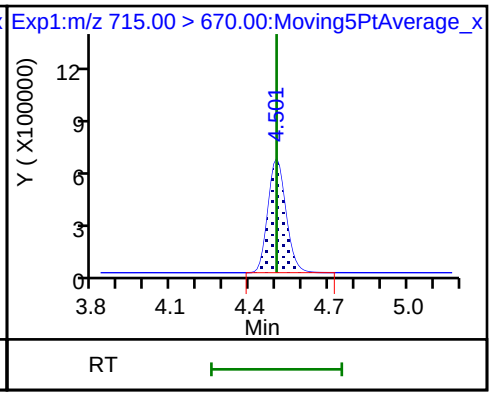
42 Perfluorotetradecanoic acid



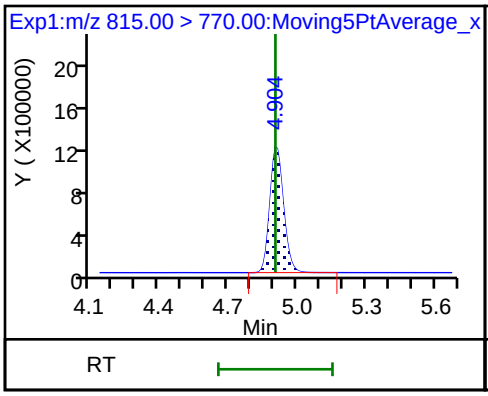
42 Perfluorotetradecanoic acid



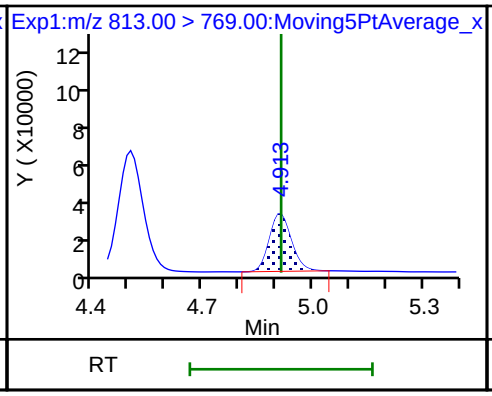
D 43 13C2-PFTeDA



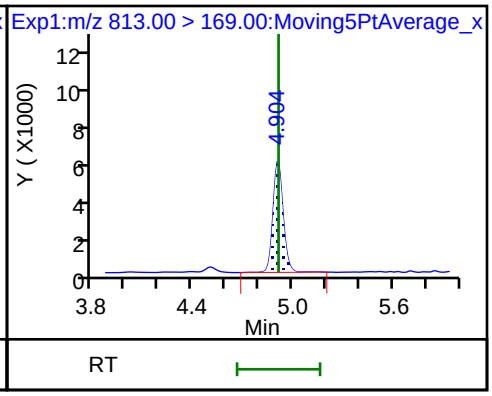
D 44 13C2-PFHxDA



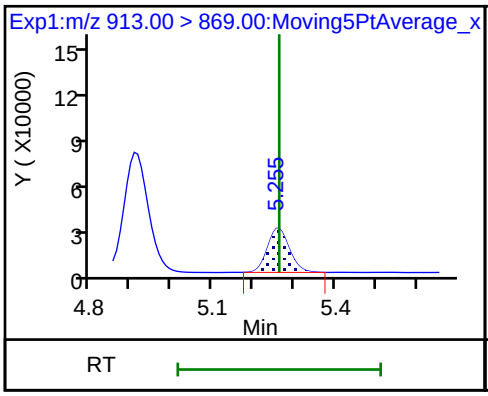
45 Perfluorohexadecanoic acid



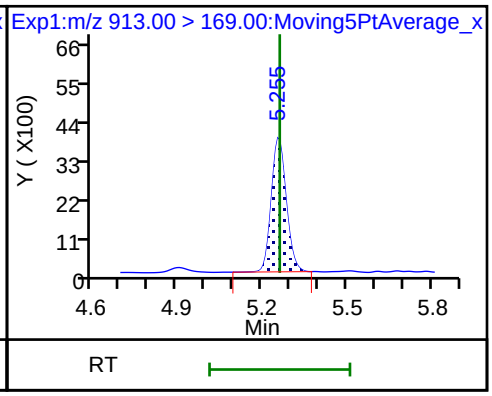
45 Perfluorohexadecanoic acid



46 Perfluorooctadecanoic acid



46 Perfluorooctadecanoic acid



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

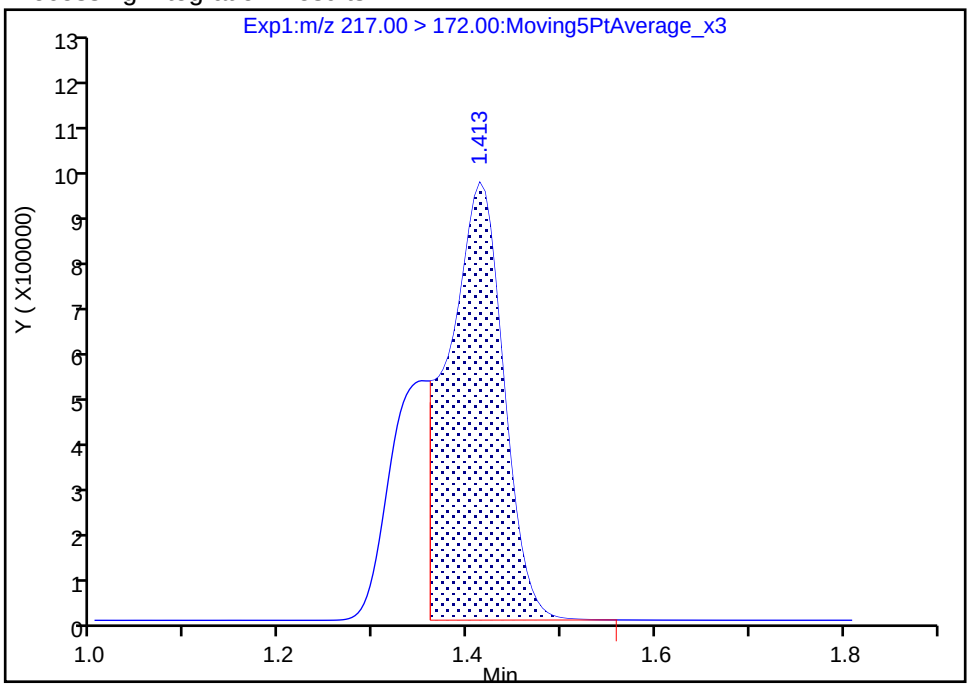
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180712-60981.b\2018.07.12LLB_QC_002.d				
Injection Date:	12-Jul-2018 15:02:24	Instrument ID:	A8_N		
Lims ID:	CCVL				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	21	Worklist Smp#:	2
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

D 1 13C4 PFBA, CAS: STL00992

Signal: 1

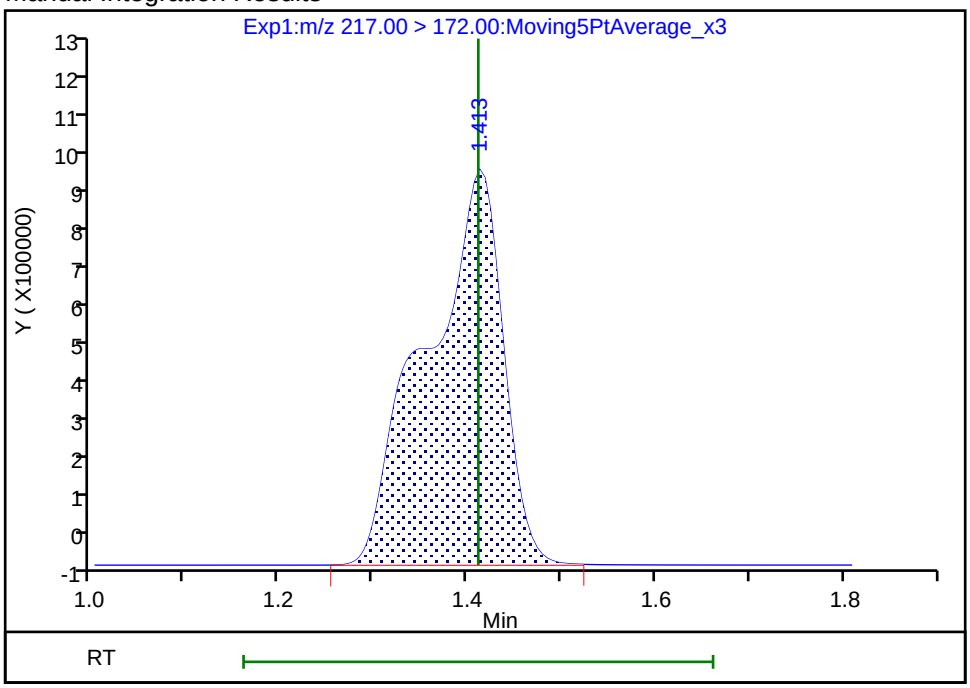
Processing Integration Results

RT: 1.41
Area: 3835231
Amount: 1.747050
Amount Units: ng/ml



Manual Integration Results

RT: 1.41
Area: 5341936
Amount: 2.433394
Amount Units: ng/ml



Reviewer: roycea, 12-Jul-2018 15:30:29

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

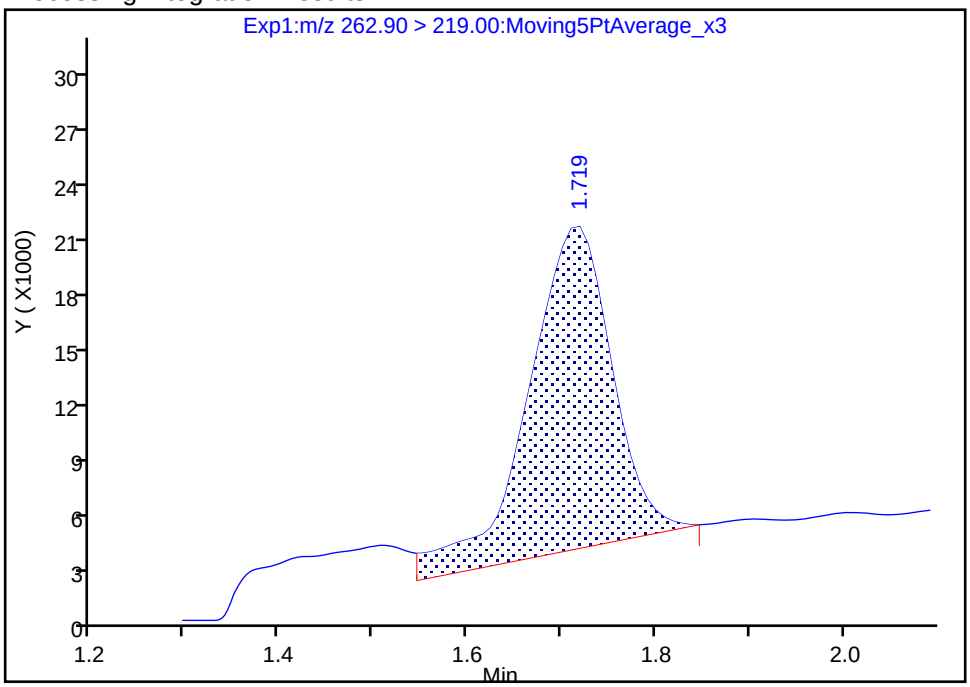
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180712-60981.b\2018.07.12LLB_QC_002.d				
Injection Date:	12-Jul-2018 15:02:24	Instrument ID:	A8_N		
Lims ID:	CCVL				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	21	Worklist Smp#:	2
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

4 Perfluoropentanoic acid, CAS: 2706-90-3

Signal: 1

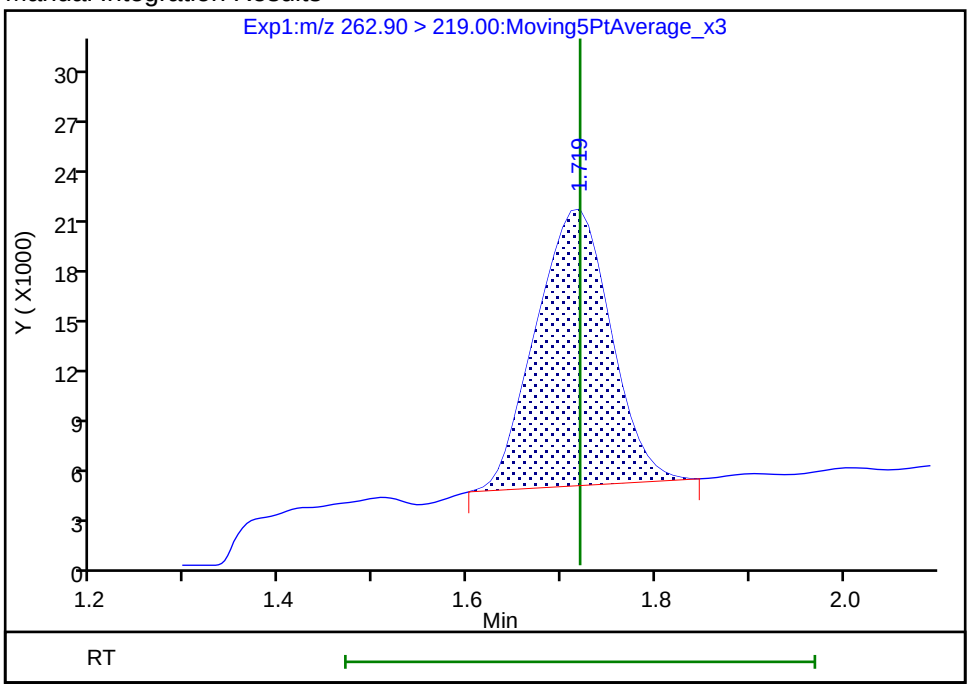
Processing Integration Results

RT: 1.72
Area: 110119
Amount: 0.061203
Amount Units: ng/ml



Manual Integration Results

RT: 1.72
Area: 92516
Amount: 0.051420
Amount Units: ng/ml



Reviewer: mongkols, 13-Jul-2018 11:39:17

Audit Action: Manually Integrated Audit Reason: Baseline

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Lab Sample ID: CCV 320-233725/3 Calibration Date: 07/12/2018 15:18

Instrument ID: A8_N Calib Start Date: 07/11/2018 14:48

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 07/11/2018 15:38

Lab File ID: 2018.07.12LLAAAA_041.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.9856	0.9748		0.989	1.00	-1.1	40.0
Perfluoropentanoic acid (PFPeA)	AveID	1.213	1.166		0.961	1.00	-3.9	40.0
Perfluorobutanesulfonic acid (PFBS)	AveID	76.50	75.58		0.873	0.884	-1.2	50.0
4:2 FTS	AveID	13.00	12.33		0.886	0.934	-5.1	50.0
Perfluorohexanoic acid (PFHxA)	AveID	1.029	1.012		0.983	1.00	-1.7	40.0
Perfluoropentanesulfonic acid (PFPeS)	AveID	69.78	71.95		0.967	0.938	3.1	50.0
HFPO-DA (GenX)	AveID	2.654	2.642		0.996	1.00	-0.4	40.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.157	1.126		0.974	1.00	-2.6	40.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.148	1.040		0.825	0.910	-9.4	40.0
ADONA	AveID	3.219	3.498		1.02	0.942	8.7	50.0
6:2 FTS	AveID	1.564	1.574		0.954	0.948	0.6	40.0
Perfluorooctanoic acid (PFOA)	AveID	1.232	1.182		0.961	1.00	-4.0	40.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.318	1.266		0.915	0.952	-3.9	50.0
Perfluorononanoic acid (PFNA)	AveID	1.109	1.106		0.997	1.00	-0.3	40.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.133	1.091		0.894	0.928	-3.7	40.0
9-Chlorohexadecafluoro-3-oxa nonane-1-sulfonate	AveID	1.836	1.876		0.952	0.932	2.2	50.0
8:2 FTS	AveID	1.290	1.232		0.915	0.958	-4.5	40.0
Perfluorononanesulfonic acid (PFNS)	AveID	0.7752	0.7519		0.931	0.960	-3.0	50.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9856	0.9539		0.968	1.00	-3.2	40.0
Perfluorodecanoic acid (PFDA)	AveID	1.049	1.047		0.998	1.00	-0.2	40.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	0.9858	0.9211		0.934	1.00	-6.6	40.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6714	0.6670		0.958	0.964	-0.7	50.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.8840	0.8753		0.990	1.00	-1.0	40.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.8195	0.7634		0.932	1.00	-6.8	40.0
11-Chloroeicosafluoro-3-oxau ndecane-1-sulfonate	AveID	2.654	2.808		0.997	0.942	5.8	50.0
Perfluorododecanoic acid (PFDoA)	AveID	1.092	1.109		1.02	1.00	1.6	40.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.068	1.051		0.985	1.00	-1.5	50.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2602	0.2666		1.02	1.00	2.5	50.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		0.9562		0.985	1.00	-1.5	50.0

FORM VII 537 (modified)

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Lab Sample ID: CCV 320-233725/3 Calibration Date: 07/12/2018 15:18

Instrument ID: A8_N Calib Start Date: 07/11/2018 14:48

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 07/11/2018 15:38

Lab File ID: 2018.07.12LLAAAA_041.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.143	1.084		0.948	1.00	-5.2	50.0
13C4 PFBA	Ave	1.356	1.325		2.44	2.50	-2.3	50.0
13C5 PFPeA	Ave	0.9425	0.9267		2.46	2.50	-1.7	50.0
13C3-PFBS	Ave	0.0237	0.0233		2.29	2.33	-1.7	50.0
M2-4:2FTS	Ave	0.1273	0.1210		2.22	2.34	-4.9	50.0
13C2 PFHxA	Ave	1.017	1.036		2.55	2.50	1.8	50.0
13C3 HFPO-DA	Ave	0.0724	0.0748		2.58	2.50	3.3	50.0
13C4-PFHpA	Ave	0.9371	0.9449		2.52	2.50	0.8	50.0
18O2 PFHxS	Ave	1.328	1.372		2.44	2.37	3.3	50.0
M2-6:2FTS	Ave	0.2009	0.1956		2.31	2.38	-2.6	40.0
13C4 PFOA	Ave	0.9560	0.9555		2.50	2.50	-0.0	50.0
13C4 PFOS	Ave	0.9742	0.9945		2.44	2.39	2.1	50.0
13C5 PFNA	Ave	0.8546	0.8202		2.40	2.50	-4.0	50.0
13C8 FOSA	Ave	1.405	1.495		2.66	2.50	6.4	50.0
M2-8:2FTS	Ave	0.2939	0.2552		2.08	2.40	-13.2	40.0
13C2 PFDA	Ave	0.7503	0.7391		2.46	2.50	-1.5	50.0
d3-NMeFOSAA	Ave	0.3075	0.3537		2.88	2.50	15.0	50.0
13C2 PFUnA	Ave	0.6266	0.6485		2.59	2.50	3.5	50.0
d5-NEtFOSAA	Ave	0.3150	0.3843		3.05	2.50	22.0	50.0
13C2 PFDoA	Ave	0.6496	0.6790		2.61	2.50	4.5	50.0
13C2-PFTeDA	Ave	0.6740	0.6991		2.59	2.50	3.7	50.0
13C2-PFHxDA	Ave	1.074	1.182		2.75	2.50	10.1	50.0

FORM VII 537 (modified)

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180712-60981.b\2018.07.12LLAAAA_041.d
Lims ID: CCV L4
Client ID:
Sample Type: CCVIS
Inject. Date: 12-Jul-2018 15:18:02 ALS Bottle#: 13 Worklist Smp#: 3
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV L4
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-A8_N*sub32

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180712-60981.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 13-Jul-2018 12:21:11 Calib Date: 11-Jul-2018 15:38:42
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK010

First Level Reviewer: mongkols Date: 13-Jul-2018 12:21:11

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.419	1.411	0.008	0.529	5018364	2.44		97.7	27807	
2 Perfluorobutyric acid										M
212.90 > 169.00	1.419	1.419	0.0	1.000	1956816	0.9891		98.9	1144	M
D 3 13C5-PFPeA										
267.90 > 223.00	1.720	1.717	0.003	0.641	3509743	2.46		98.3	44072	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.720	1.720	0.0	1.000	1637150	0.9613		96.1	624	
D 47 13C3-PFBS										
301.90 > 83.00	1.765	1.753	0.012	0.658	82026	2.29		98.3	574	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.765	1.765	0.0	1.000	2357299	0.8735		98.8	25762	
298.90 > 99.00	1.765	1.765	0.0	1.000	1004650		2.35(1.25-3.74)		19513	
D 60 M2-4:2FTS										
329.00 > 81.00	1.981	1.978	0.003	0.738	427938	2.22		95.1	8154	
61 1H,1H,2H,2H-perfluorohexanesulfoni										
327.00 > 307.00	1.981	1.981	0.0	1.122	406328	0.8860		94.9	23282	
6 Perfluorohexanoic acid										
313.00 > 269.00	2.015	2.015	0.0	1.000	1587130	0.9829		98.3	4596	
313.00 > 119.00	2.015	2.015	0.0	1.000	145966		10.87(5.03-15.10)		3096	
D 7 13C2 PFHxA										
315.00 > 270.00	2.015	2.022	-0.007	0.751	3922029	2.55		102	56132	
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.049	2.049	0.0	1.161	2381167	0.9672		103	36946	
349.00 > 99.00	2.049	2.049	0.0	1.161	863835		2.76(1.36-4.07)		18324	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.116	2.113	0.003	0.789	283156	2.58		103	6199	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
67 Perfluoro(2-propoxypropanoic) acid										
329.10 > 285.00	2.116	2.116	0.0	1.000	299262	1.00		99.6	2398	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.333	2.333	0.0	1.000	1612010	0.9736		97.4	3480	
363.00 > 169.00	2.333	2.333	0.0	1.000	640034		2.52(1.13-3.40)		5926	
D 9 13C4-PFHpA										
367.00 > 322.00	2.333	2.342	-0.009	0.870	3578838	2.52		101	35195	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.346	2.346	0.0	1.000	1967338	0.8247		90.6	14246	
399.00 > 99.00	2.346	2.346	0.0	1.000	673509		2.92(1.50-4.49)		5152	
D 11 18O2 PFHxS										
403.00 > 84.00	2.346	2.355	-0.009	0.874	4914711	2.44		103	31805	
65 Adona										
377.00 > 251.00	2.385	2.385	0.0	0.785	4963887	1.02		109	45542	
377.00 > 85.00	2.385	2.385	0.0	0.785	2987036		1.66(0.84-2.53)		15771	
D 12 M2-6:2FTS										
429.00 > 81.00	2.660	2.658	0.002	0.992	703831	2.31		97.4	16716	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.660	2.660	0.0	1.000	442190	0.9538		101	8900	
D 14 13C4 PFOA										
417.00 > 372.00	2.683	2.681	0.002	1.000	3618843	2.50		99.9	43549	
* 62 13C2-PFOA										
415.00 > 370.00	2.683	2.683	0.0		3787538	2.50			41717	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.683	2.683	0.0	1.000	1712423	0.9606		96.0	994	
413.00 > 169.00	2.683	2.683	0.0	1.000	871554		1.96(0.84-2.52)		6258	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.690	2.690	0.0	0.885	1815928	0.9148		96.1	25602	
449.00 > 99.00	2.690	2.690	0.0	0.885	487943		3.72(1.94-5.82)		12846	
D 18 13C4 PFOS										
503.00 > 80.00	3.039	3.037	0.002	1.133	3600829	2.44		102	26337	
17 Perfluorooctane sulfonic acid										M
499.00 > 80.00	3.039	3.039	0.0	1.000	1525818	0.8937		96.3	16794	M
499.00 > 99.00	3.039	3.039	0.0	1.000	346511		4.40(2.31-6.93)		7133	
20 Perfluorononanoic acid										
463.00 > 419.00	3.039	3.039	0.0	1.000	1374782	1.00		99.7	3451	
463.00 > 169.00	3.039	3.039	0.0	1.000	329420		4.17(1.90-5.69)		12339	
D 19 13C5 PFNA										
468.00 > 423.00	3.039	3.044	-0.005	1.133	3106430	2.40		96.0	32265	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.246	3.246	0.0	1.068	2634333	0.9525		102	25918	
D 26 M2-8:2FTS										
529.00 > 81.00	3.379	3.378	0.001	1.260	925988	2.08		86.8	12977	
D 21 13C8 FOSA										
506.00 > 78.00	3.370	3.378	-0.008	1.256	5662775	2.66		106	63906	
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.379	3.379	0.0	1.112	1087572	0.9312		97.0	34970	
549.00 > 99.00	3.379	3.379	0.0	1.112	426585		2.55(1.33-3.97)		8087	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
25 1H,1H,2H,2H-perfluorodecanesulfoni										
527.00 > 507.00	3.379	3.379	0.0	1.000	456476	0.9153		95.5	7772	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.379	3.379	0.0	1.003	2160737	0.9678		96.8	30126	
D 23 13C2 PFDA										
515.00 > 470.00	3.388	3.387	0.001	1.263	2799171	2.46		98.5	30218	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.388	3.388	0.0	1.000	1172504	1.00		99.8	8207	
513.00 > 169.00	3.388	3.388	0.0	1.000	206613		5.67(2.36-7.09)		7690	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.538	3.536	0.002	1.319	1339769	2.88		115	41822	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.547	3.547	0.0	1.003	493619	0.9343		93.4	3365	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.697	3.697	0.0	1.217	968758	0.9577		99.3	25411	
599.00 > 99.00	3.697	3.697	0.0	1.217	345853		2.80(1.39-4.16)		12040	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.708	3.706	0.002	1.382	1455509	3.05		122	3576	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.708	3.708	0.0	1.000	509617	0.99		99.0	21531	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.708	3.708	0.0	1.000	749965	0.9316		93.2	3433	
563.00 > 169.00	3.708	3.708	0.0	1.000	195508		3.84(2.12-6.36)		13170	
D 30 13C2 PFUnA										
565.00 > 520.00	3.708	3.717	-0.009	1.382	2456019	2.59		103	33923	
66 11-Chloroeicosafluoro-3-oxaundecan										
631.00 > 451.00	3.865	3.865	0.0	1.272	3985860	1.00		106	69972	
37 Perfluorododecanoic acid										
613.00 > 569.00	3.998	3.998	0.0	1.000	1141154	1.02		102	758	
613.00 > 169.00	3.998	3.998	0.0	1.000	265156		4.30(2.13-6.40)		6235	
D 36 13C2 PFDoA										
615.00 > 570.00	3.998	4.007	-0.009	1.490	2571864	2.61		105	19966	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.262	4.262	0.0	1.066	1081471	0.9846		98.5	555	
663.00 > 169.00	4.262	4.262	0.0	1.066	356065		3.04(1.25-3.76)		5573	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.500	4.500	0.0	1.000	282358	1.02		102	4957	
713.00 > 219.00	4.490	4.500	-0.010	0.998	206460		1.37(0.71-2.13)		3585	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.500	4.501	-0.001	1.678	2647789	2.59		104	15640	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.913	4.904	0.009	1.831	4478148	2.75		110	12643	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.913	4.913	0.0	1.000	1712796	0.9847		98.5	376	
813.00 > 169.00	4.913	4.913	0.0	1.000	293938		5.83(2.86-8.58)		2929	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.262	5.262	0.0	1.071	1940864	0.9480		94.8	379	
913.00 > 169.00	5.262	5.262	0.0	1.071	239138		8.12(3.83-11.48)		3176	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

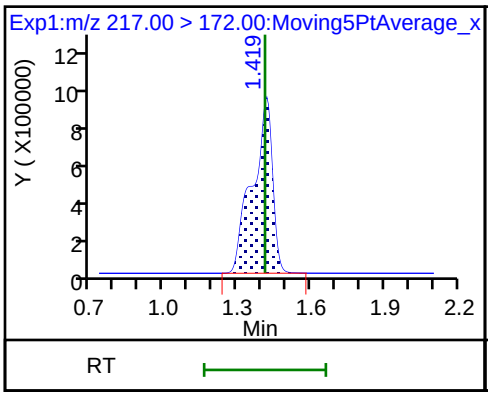
LCPFC_LL4_00005 Amount Added: 1.00 Units: mL

Report Date: 13-Jul-2018 12:21:13 Chrom Revision: 2.2 07-Jun-2018 07:41:54

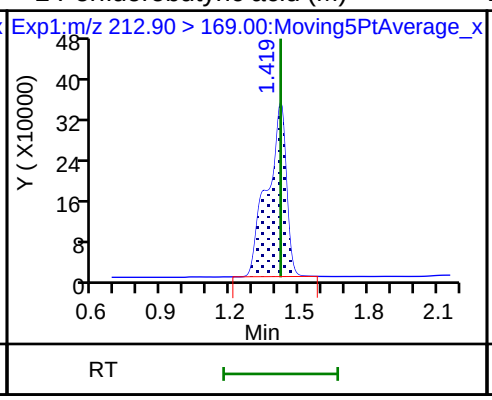
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180712-60981.b\2018.07.12LLAAAA_041.d
Injection Date: 12-Jul-2018 15:18:02 Instrument ID: A8_N
Lims ID: CCV L4
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 13 Worklist Smp#: 3
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC ICAL

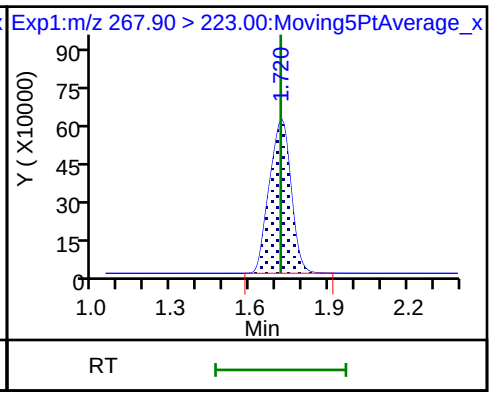
D 1 13C4 PFBA



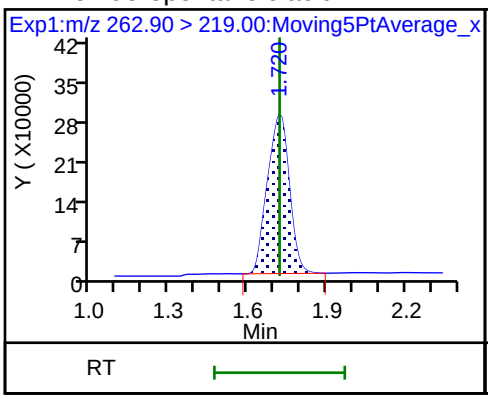
2 Perfluorobutyric acid (M)



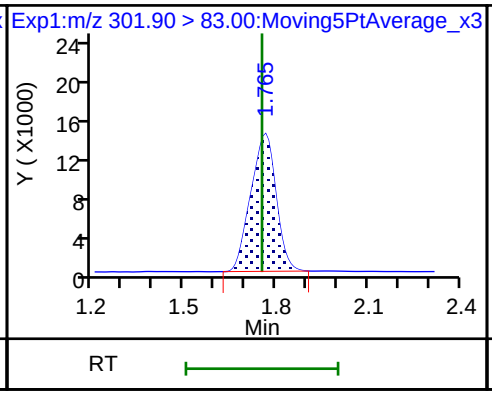
D 3 13C5-PFPeA



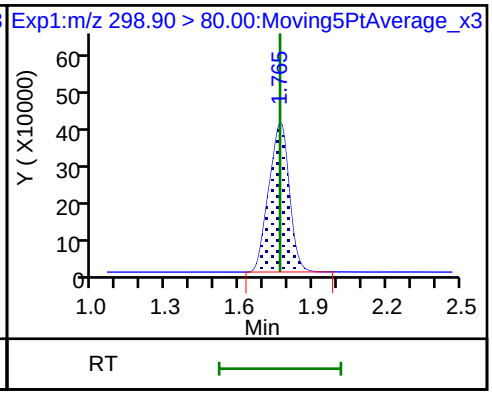
4 Perfluoropentanoic acid



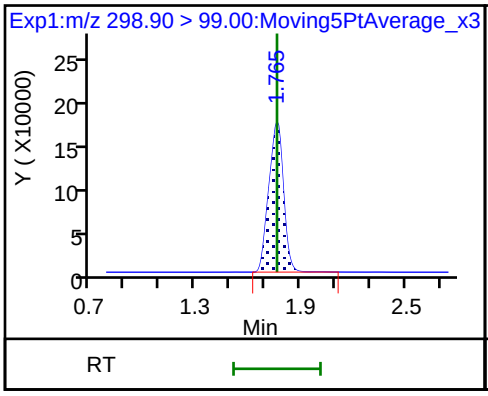
D 47 13C3-PFBS



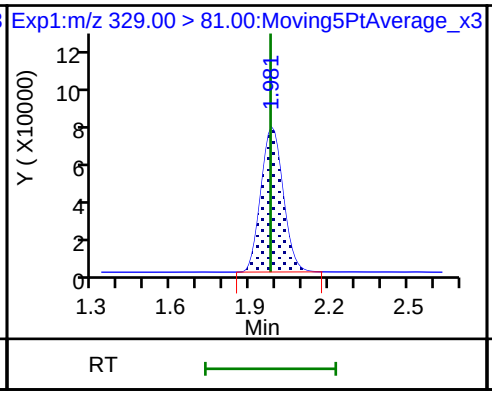
5 Perfluorobutanesulfonic acid



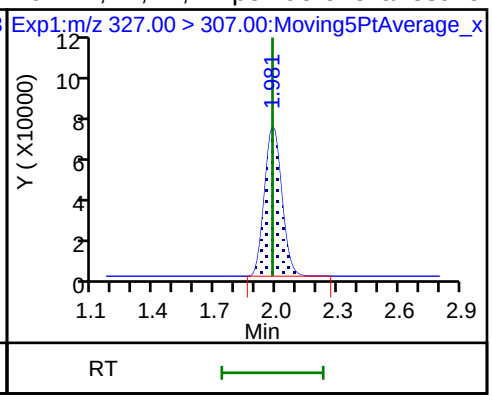
5 Perfluorobutanesulfonic acid



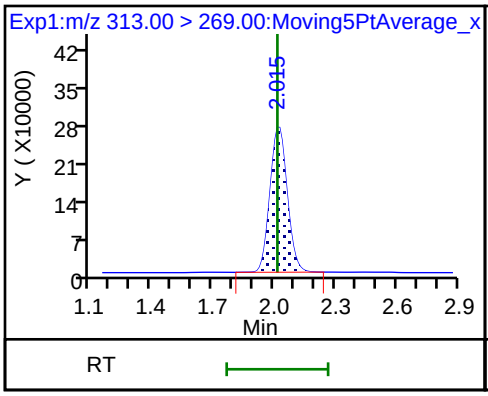
D 60 M2-4:2FTS



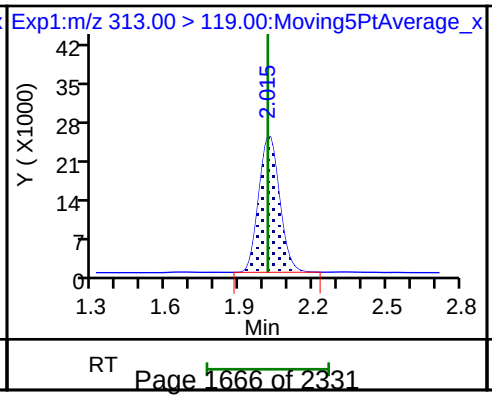
61 1H,1H,2H,2H-perfluorohexanesulfoni



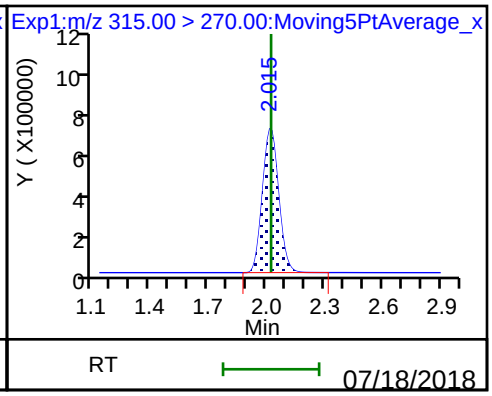
6 Perfluorohexanoic acid



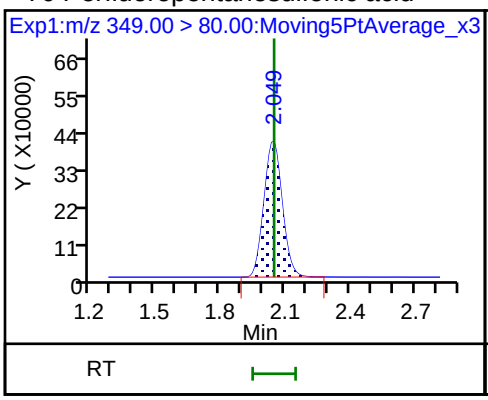
6 Perfluorohexanoic acid



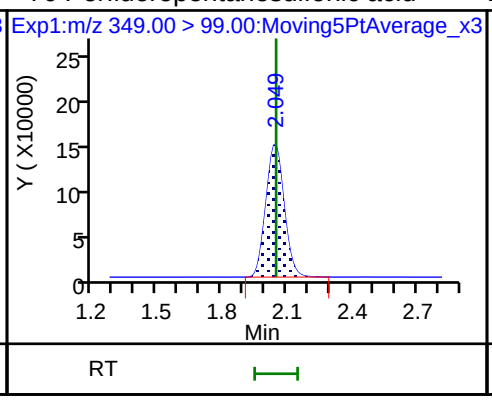
D 7 13C2 PFHxA



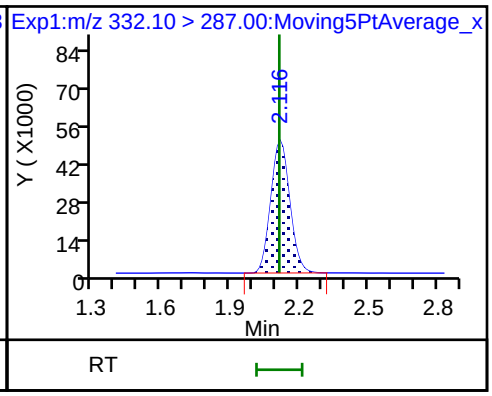
70 Perfluoropentanesulfonic acid



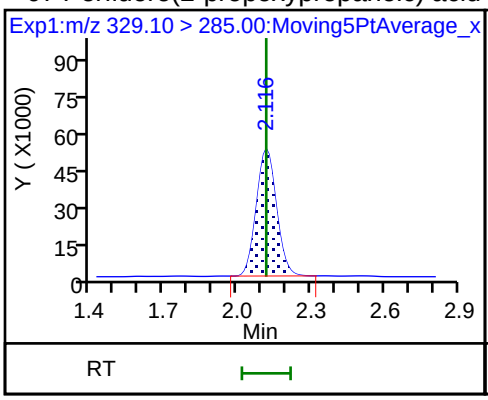
70 Perfluoropentanesulfonic acid



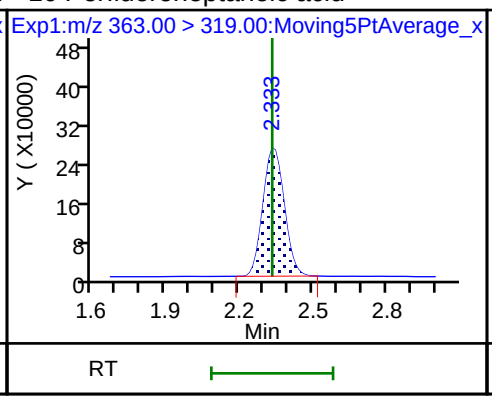
D 64 13C3 HFPO-DA



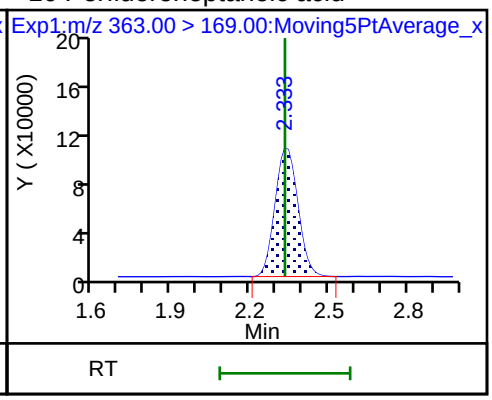
67 Perfluoro(2-propoxypropanoic) acid



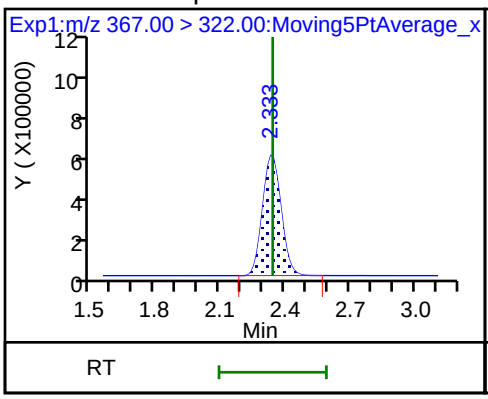
10 Perfluoroheptanoic acid



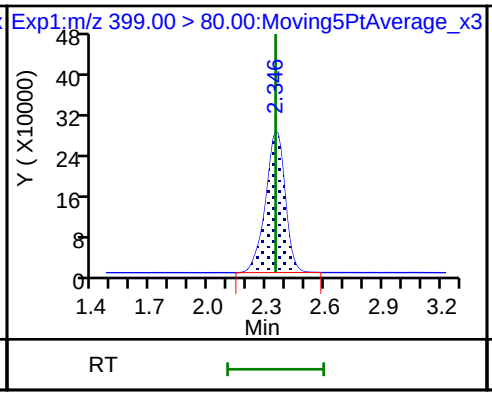
10 Perfluoroheptanoic acid



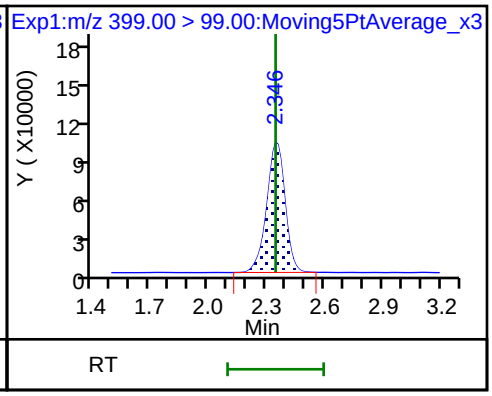
D 9 13C4-PFHpA



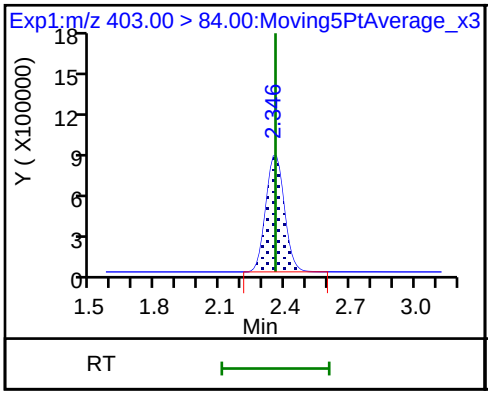
8 Perfluorohexanesulfonic acid



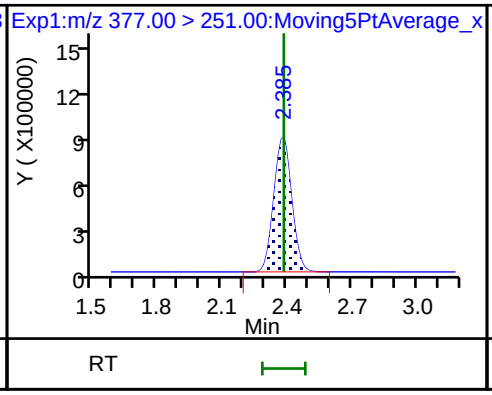
8 Perfluorohexanesulfonic acid



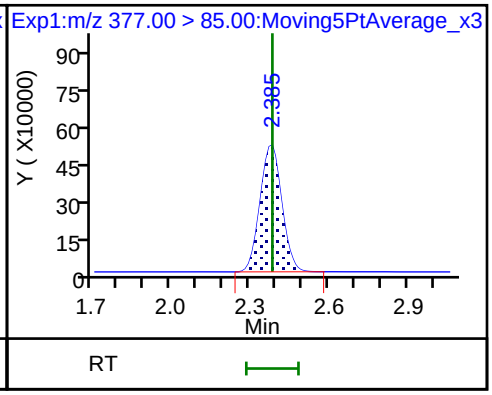
D 11 18O2 PFHxS



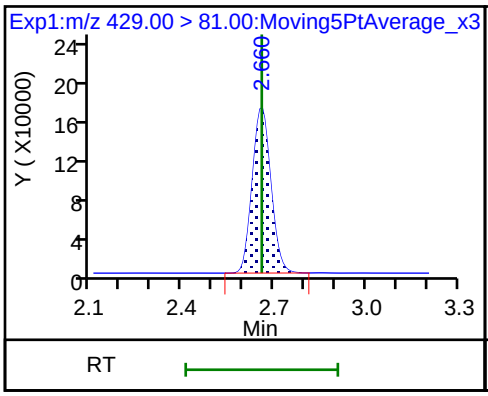
65 Adona



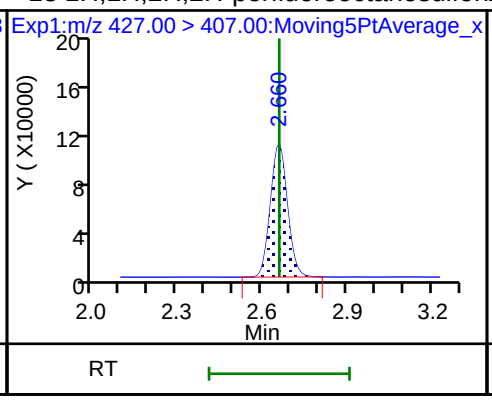
65 Adona



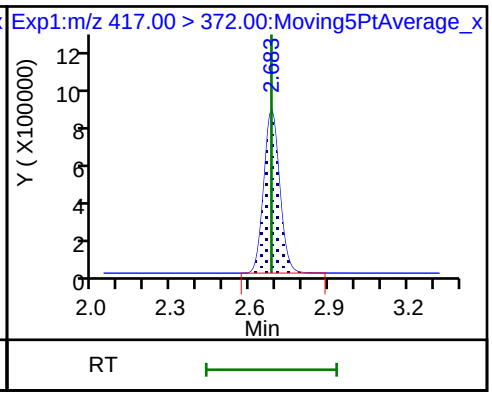
D 12 M2-6:2FTS



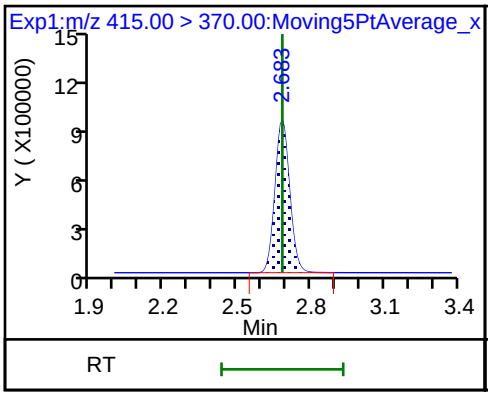
13 1H,1H,2H,2H-perfluorooctanesulfon



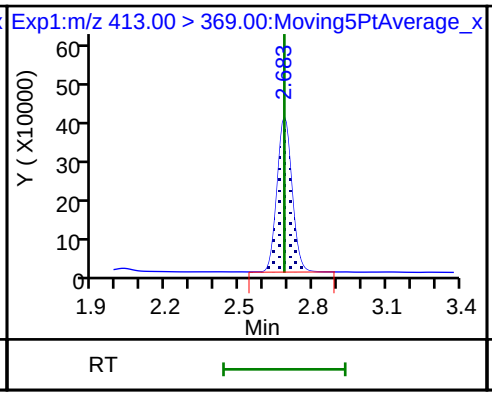
D 14 13C4 PFOA



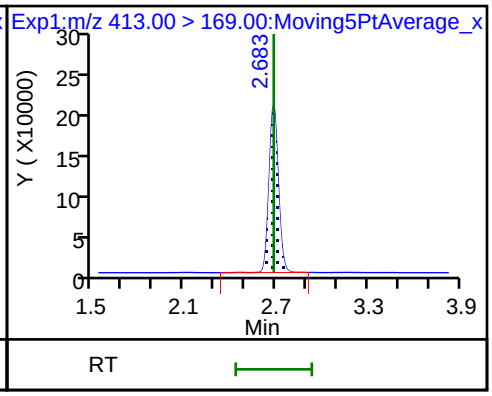
* 62 13C2-PFOA



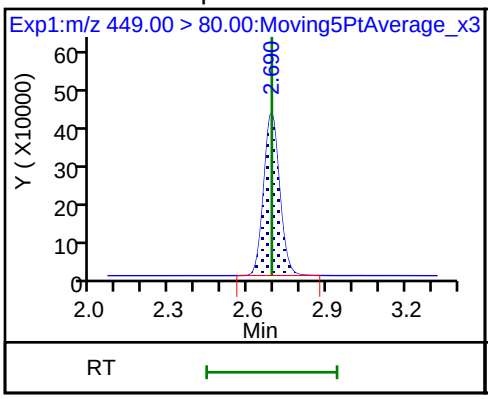
15 Perfluorooctanoic acid



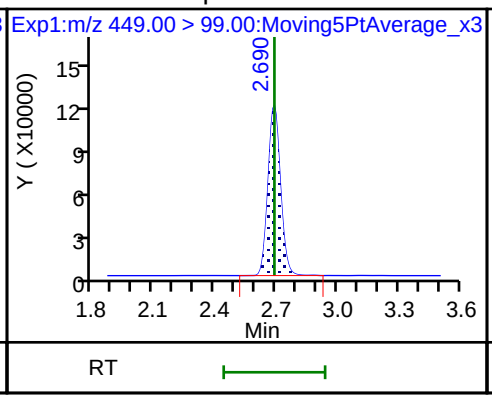
15 Perfluorooctanoic acid



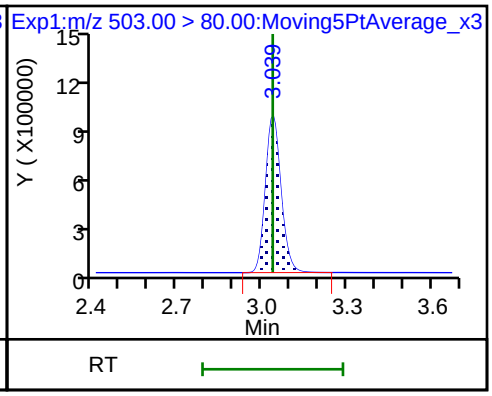
16 Perfluoroheptanesulfonic acid



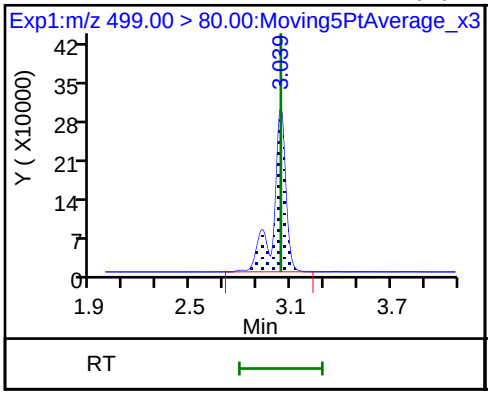
16 Perfluoroheptanesulfonic acid



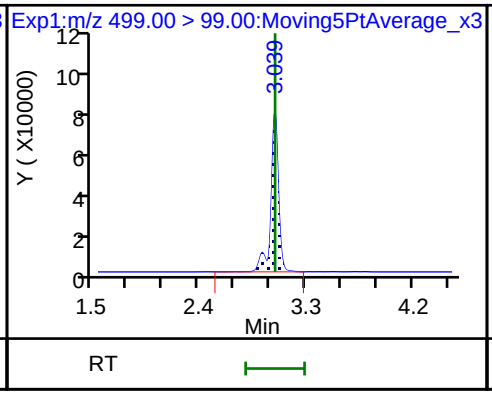
D 18 13C4 PFOS



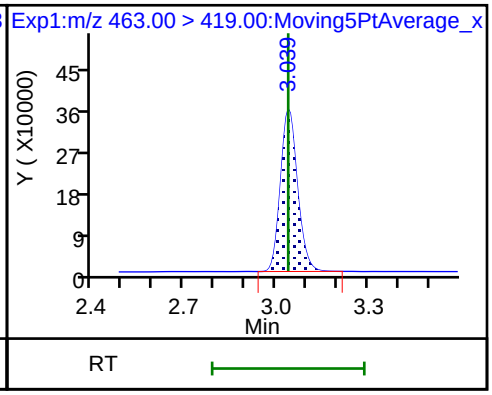
17 Perfluorooctane sulfonic acid (M)



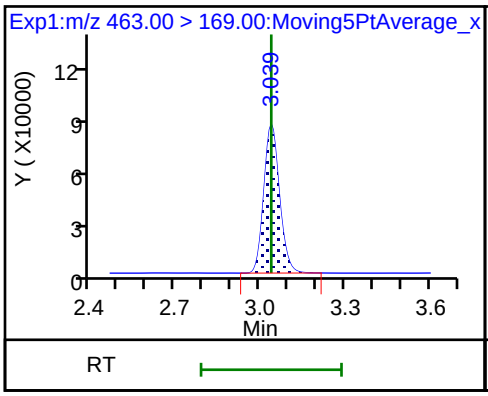
17 Perfluorooctane sulfonic acid



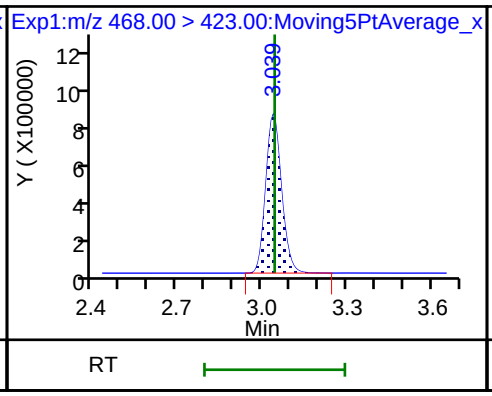
20 Perfluorononanoic acid



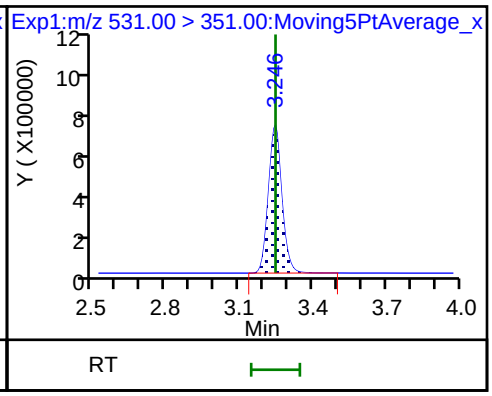
20 Perfluorononanoic acid



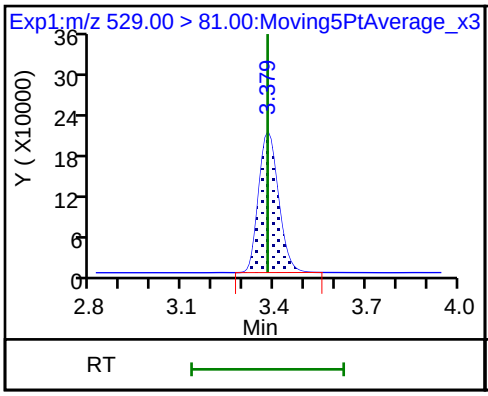
D 19 13C5 PFNA



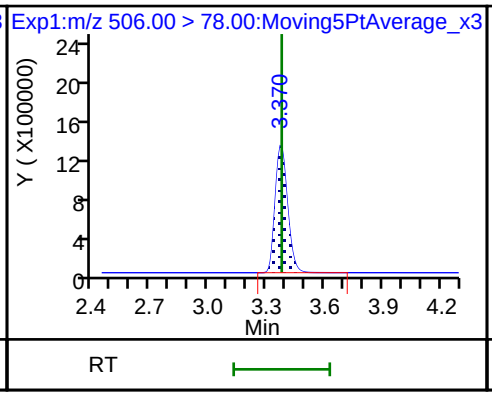
69 9-Chlorohexadecafluoro-3-oxanonane



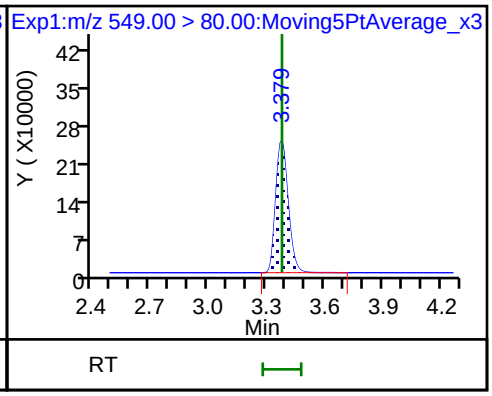
D 26 M2-8:2FTS



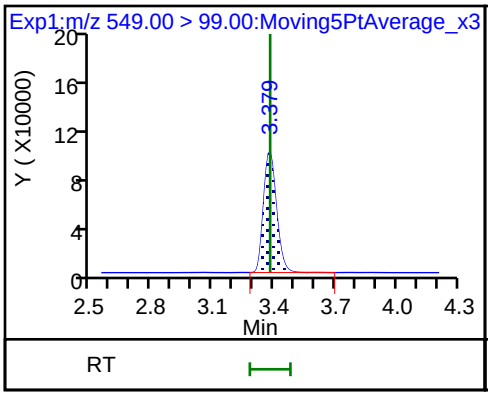
D 21 13C8 FOSA



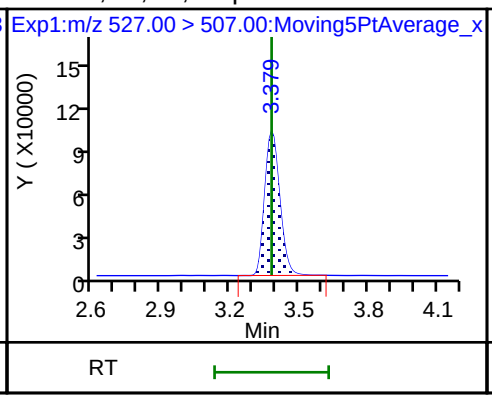
68 Perfluorononanesulfonic acid



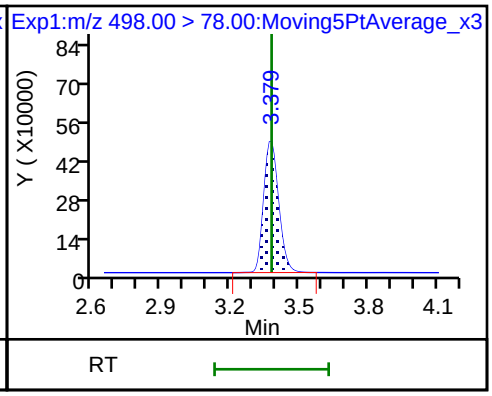
68 Perfluorononanesulfonic acid



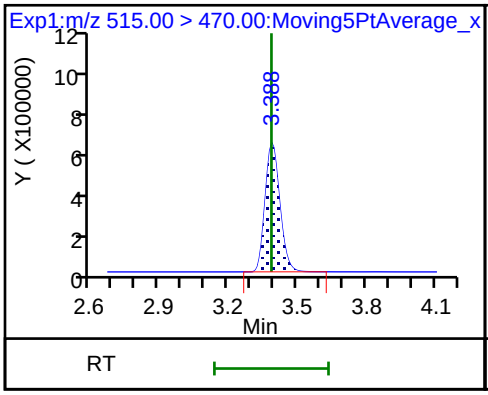
25 1H,1H,2H,2H-perfluorodecanesulfoni



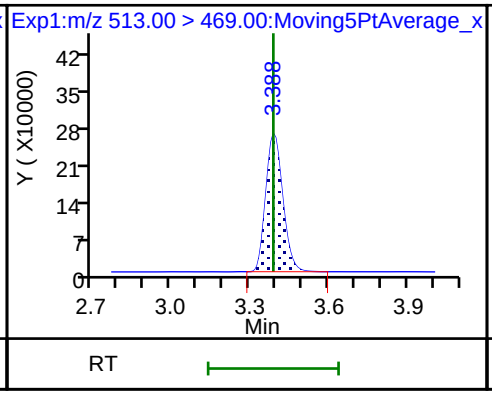
22 Perfluorooctane Sulfonamide



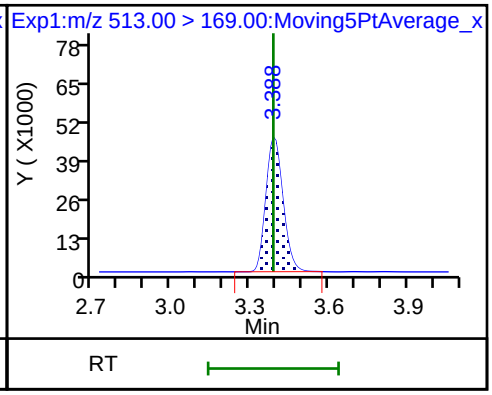
D 23 13C2 PFDA



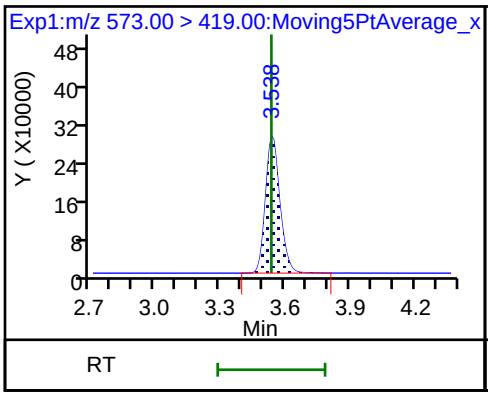
24 Perfluorodecanoic acid



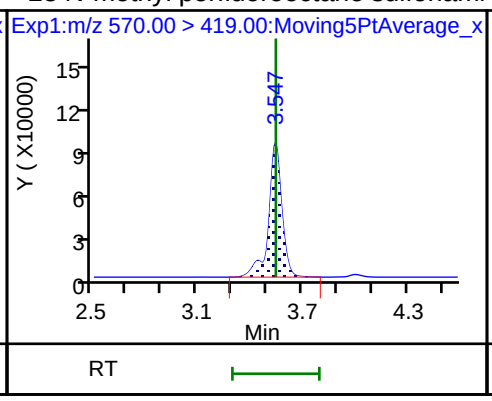
24 Perfluorodecanoic acid



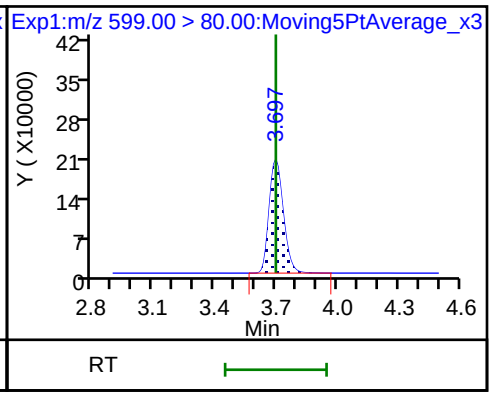
D 27 d3-NMeFOSAA



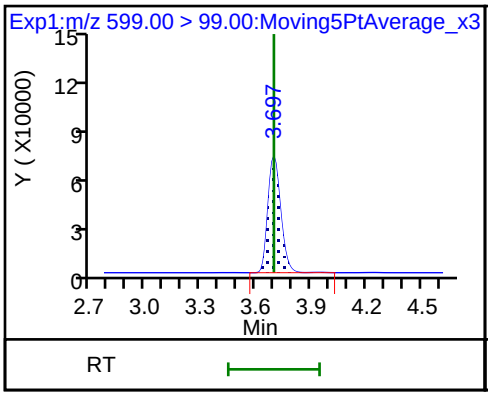
28 N-methyl perfluorooctane sulfonami



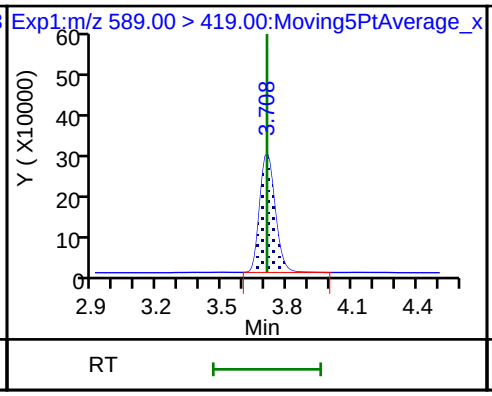
29 Perfluorodecane Sulfonic acid



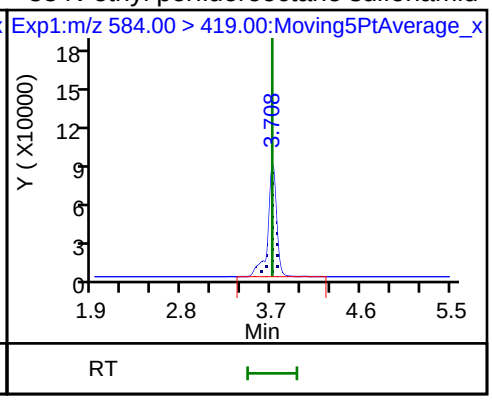
29 Perfluorodecane Sulfonic acid



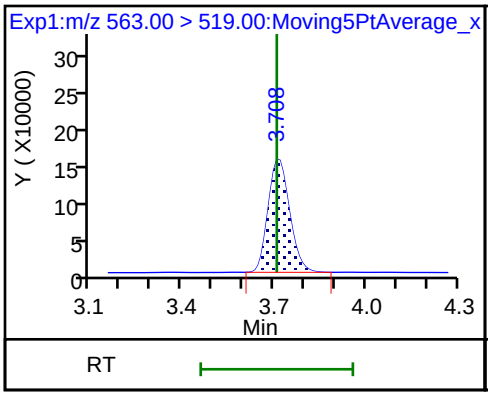
D 32 d5-NEtFOSAA



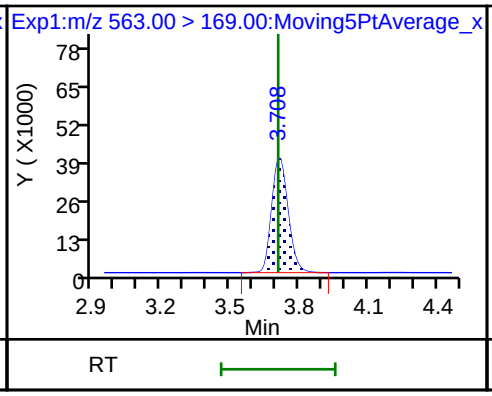
33 N-ethyl perfluorooctane sulfonamid



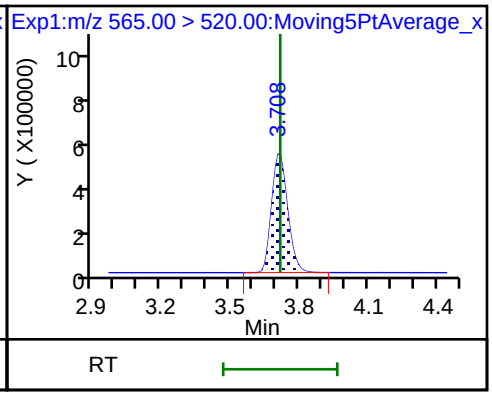
31 Perfluoroundecanoic acid



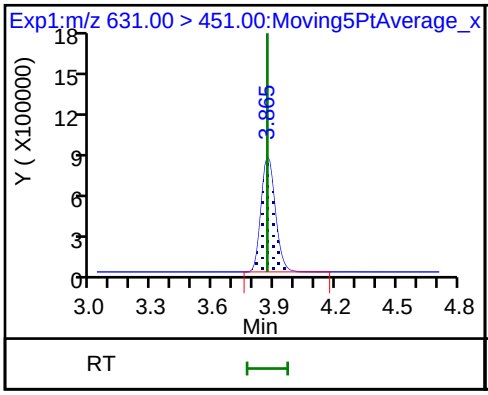
31 Perfluoroundecanoic acid



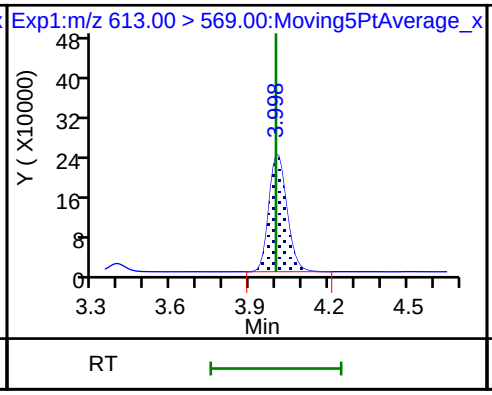
D 30 13C2 PFUnA



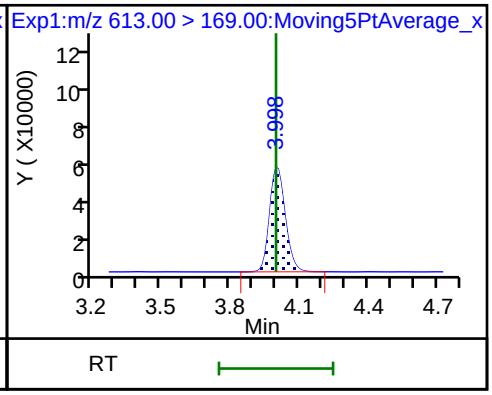
66 11-Chloroeicosafluoro-3-oxaundecan



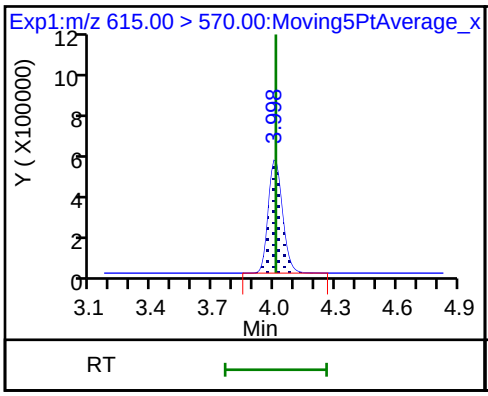
37 Perfluorododecanoic acid



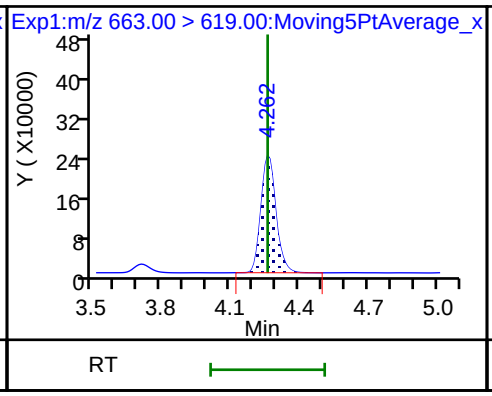
37 Perfluorododecanoic acid



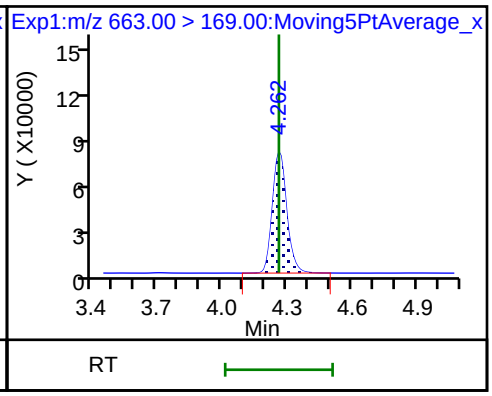
D 36 13C2 PFDoA



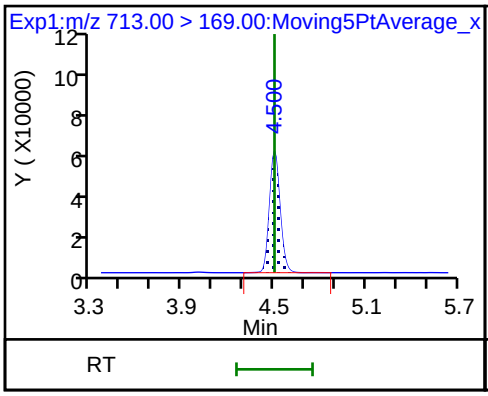
41 Perfluorotridecanoic acid



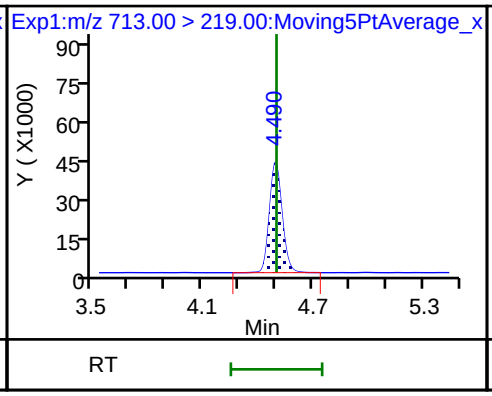
41 Perfluorotridecanoic acid



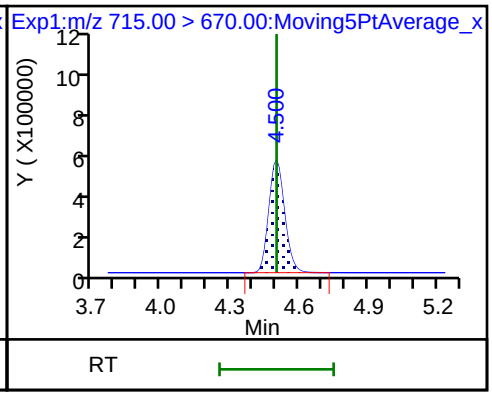
42 Perfluorotetradecanoic acid



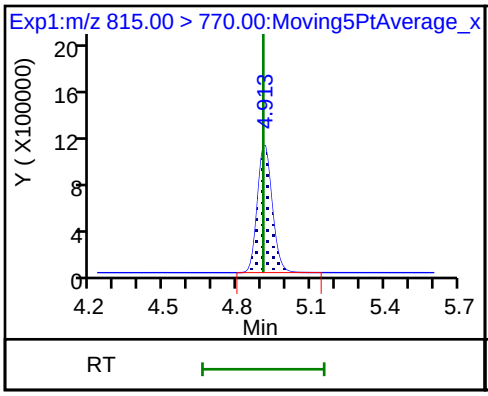
42 Perfluorotetradecanoic acid



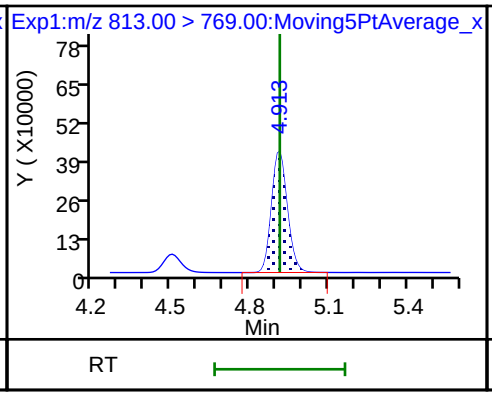
D 43 13C2-PFTeDA



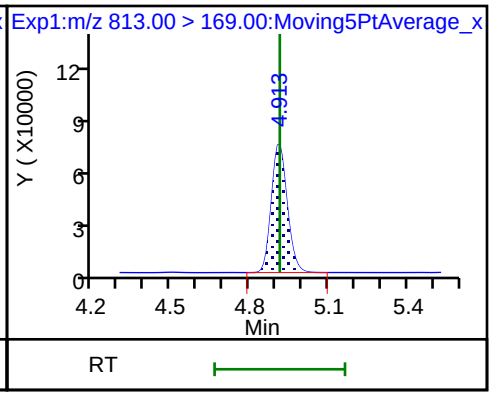
D 44 13C2-PFHxDA



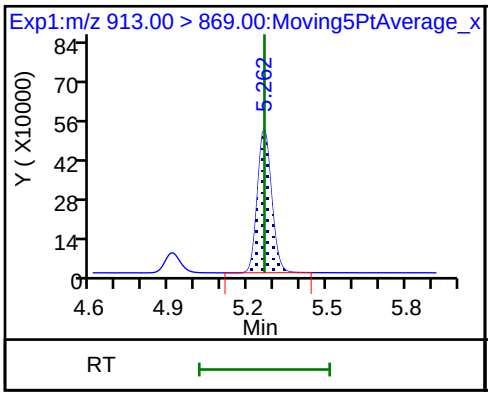
45 Perfluorohexadecanoic acid



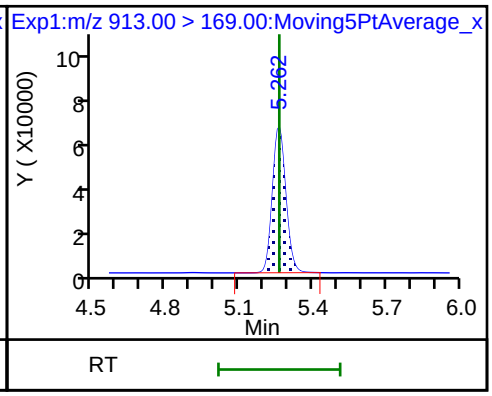
45 Perfluorohexadecanoic acid



46 Perfluorooctadecanoic acid



46 Perfluorooctadecanoic acid



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

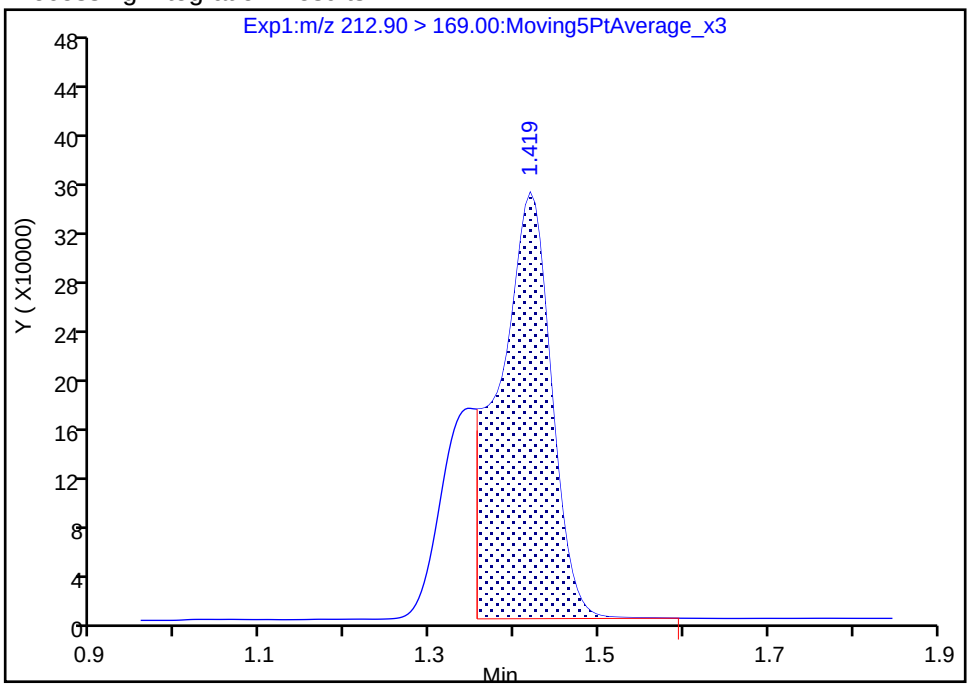
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180712-60981.b\2018.07.12LLAAAA_041.d				
Injection Date:	12-Jul-2018 15:18:02	Instrument ID:	A8_N		
Lims ID:	CCV L4				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	13	Worklist Smp#:	3
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

2 Perfluorobutyric acid, CAS: 375-22-4

Signal: 1

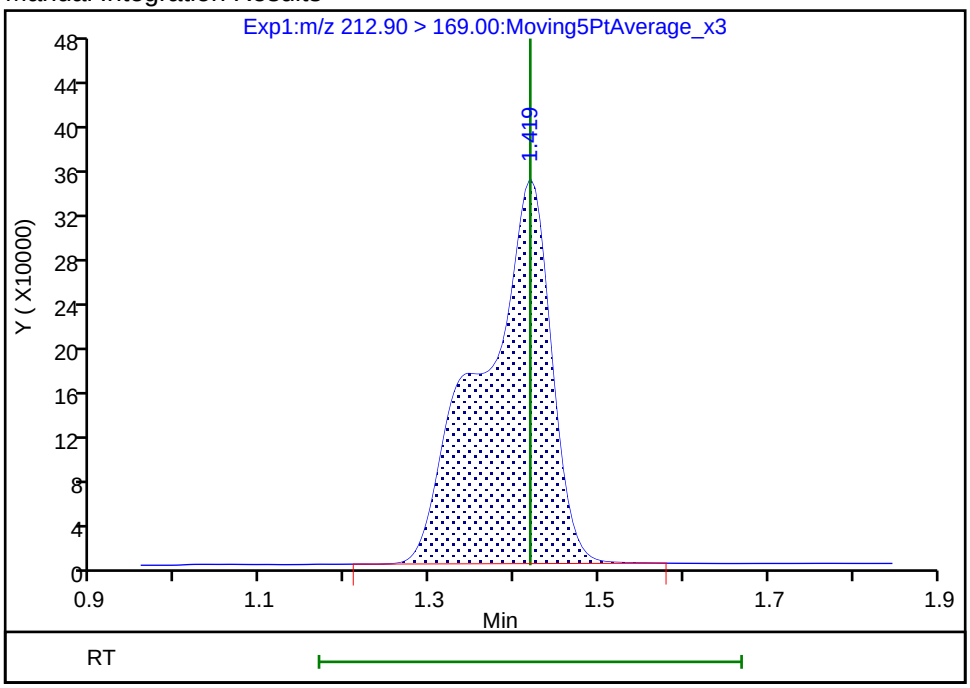
Processing Integration Results

RT: 1.42
Area: 1474002
Amount: 0.745050
Amount Units: ng/ml



Manual Integration Results

RT: 1.42
Area: 1956816
Amount: 0.989094
Amount Units: ng/ml



Reviewer: mongkols, 13-Jul-2018 12:20:51

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

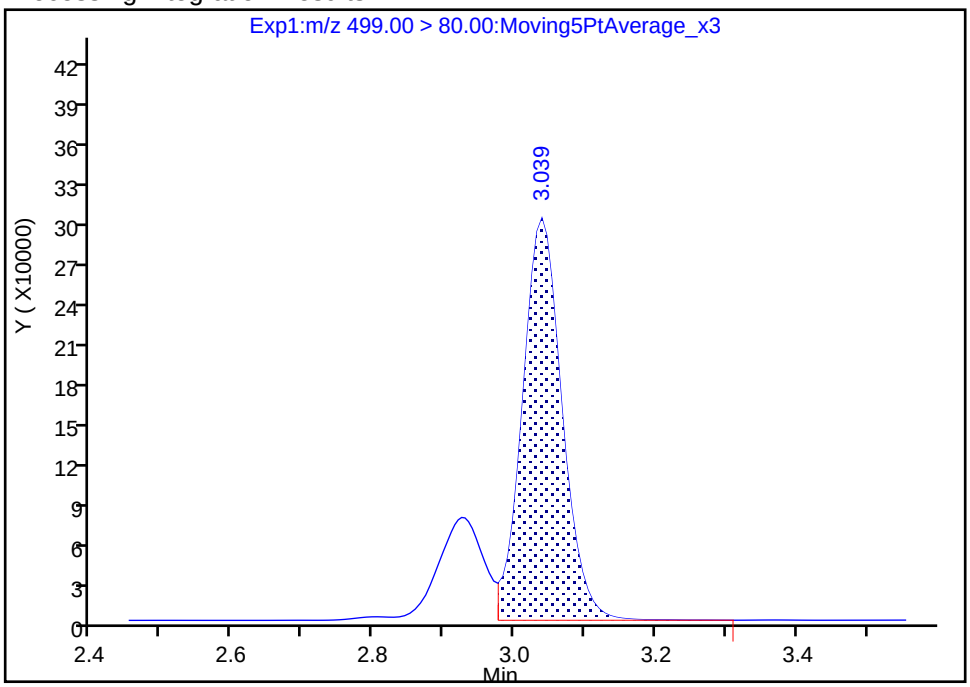
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180712-60981.b\2018.07.12LLAAAA_041.d				
Injection Date:	12-Jul-2018 15:18:02	Instrument ID:	A8_N		
Lims ID:	CCV L4				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	13	Worklist Smp#:	3
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

17 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

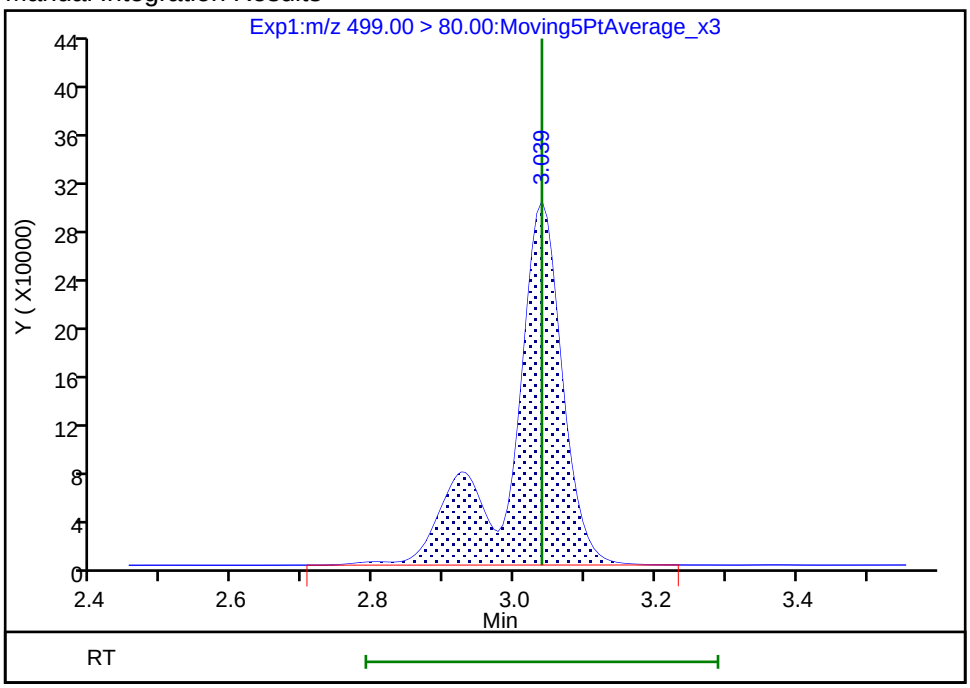
Processing Integration Results

RT: 3.04
Area: 1176244
Amount: 0.688972
Amount Units: ng/ml



Manual Integration Results

RT: 3.04
Area: 1525818
Amount: 0.893731
Amount Units: ng/ml



Reviewer: mongkols, 13-Jul-2018 12:21:04

Audit Action: Manually Integrated Audit Reason: Isomers

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Lab Sample ID: CCV 320-233774/1 Calibration Date: 07/12/2018 22:28

Instrument ID: A8_N Calib Start Date: 07/11/2018 14:48

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 07/11/2018 15:38

Lab File ID: 2018.07.12LLC_024.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.9856	0.9824		0.997	1.00	-0.3	40.0
Perfluoropentanoic acid (PFPeA)	AveID	1.213	1.207		0.995	1.00	-0.5	40.0
Perfluorobutanesulfonic acid (PFBS)	AveID	76.50	79.52		0.919	0.884	4.0	50.0
4:2 FTS	AveID	13.00	13.23		0.950	0.934	1.8	50.0
Perfluorohexanoic acid (PFHxA)	AveID	1.029	1.030		1.00	1.00	0.0	40.0
Perfluoropentanesulfonic acid (PFPeS)	AveID	69.78	74.86		1.01	0.938	7.3	50.0
HFPO-DA (GenX)	AveID	2.654	2.560		0.964	1.00	-3.6	40.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.157	1.109		0.959	1.00	-4.1	40.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.148	1.062		0.842	0.910	-7.5	40.0
ADONA	AveID	3.219	3.482		1.02	0.942	8.2	50.0
6:2 FTS	AveID	1.564	1.584		0.960	0.948	1.3	40.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.318	1.359		0.982	0.952	3.1	50.0
Perfluorooctanoic acid (PFOA)	AveID	1.232	1.210		0.983	1.00	-1.8	40.0
Perfluorononanoic acid (PFNA)	AveID	1.109	1.098		0.990	1.00	-1.0	40.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.133	1.130		0.926	0.928	-0.2	40.0
9-Chlorohexadecafluoro-3-oxa nonane-1-sulfonate	AveID	1.836	1.820		0.924	0.932	-0.9	50.0
Perfluorononanesulfonic acid (PFNS)	AveID	0.7752	0.7940		0.983	0.960	2.4	50.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9856	1.002		1.02	1.00	1.7	40.0
8:2 FTS	AveID	1.290	1.226		0.911	0.958	-5.0	40.0
Perfluorodecanoic acid (PFDA)	AveID	1.049	1.025		0.976	1.00	-2.4	40.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	0.9858	1.028		1.04	1.00	4.3	40.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6714	0.7012		1.01	0.964	4.4	50.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.8840	0.8589		0.972	1.00	-2.8	40.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.8195	0.7244		0.884	1.00	-11.6	40.0
11-Chloroeicosafluoro-3-oxau ndecane-1-sulfonate	AveID	2.654	2.816		1.00	0.942	6.1	50.0
Perfluorododecanoic acid (PFDoA)	AveID	1.092	1.030		0.943	1.00	-5.7	40.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.068	1.099		1.03	1.00	2.9	50.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2602	0.2592		0.996	1.00	-0.4	50.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		0.9580		0.987	1.00	-1.3	50.0

FORM VII 537 (modified)

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Lab Sample ID: CCV 320-233774/1 Calibration Date: 07/12/2018 22:28

Instrument ID: A8_N Calib Start Date: 07/11/2018 14:48

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 07/11/2018 15:38

Lab File ID: 2018.07.12LLC_024.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.143	1.127		0.986	1.00	-1.4	50.0
13C4 PFBA	Ave	1.356	1.340		2.47	2.50	-1.2	50.0
13C5 PFPeA	Ave	0.9425	0.9383		2.49	2.50	-0.5	50.0
13C3-PFBS	Ave	0.0237	0.0225		2.21	2.33	-5.0	50.0
M2-4:2FTS	Ave	0.1273	0.1310		2.40	2.34	2.9	50.0
13C2 PFHxA	Ave	1.017	1.069		2.63	2.50	5.1	50.0
13C3 HFPO-DA	Ave	0.0724	0.0843		2.91	2.50	16.5	50.0
13C4-PFHpA	Ave	0.9371	0.9846		2.63	2.50	5.1	50.0
18O2 PFHxS	Ave	1.328	1.355		2.41	2.37	2.1	50.0
M2-6:2FTS	Ave	0.2009	0.1900		2.25	2.38	-5.4	40.0
13C4 PFOA	Ave	0.9560	0.9472		2.48	2.50	-0.9	50.0
13C4 PFOS	Ave	0.9742	0.9779		2.40	2.39	0.4	50.0
13C5 PFNA	Ave	0.8546	0.8254		2.41	2.50	-3.4	50.0
13C8 FOSA	Ave	1.405	1.468		2.61	2.50	4.5	50.0
M2-8:2FTS	Ave	0.2939	0.2606		2.12	2.40	-11.3	40.0
13C2 PFDA	Ave	0.7503	0.7582		2.53	2.50	1.0	50.0
d3-NMeFOSAA	Ave	0.3075	0.3403		2.77	2.50	10.7	50.0
13C2 PFUnA	Ave	0.6266	0.6703		2.67	2.50	7.0	50.0
d5-NEtFOSAA	Ave	0.3150	0.3736		2.96	2.50	18.6	50.0
13C2 PFDoA	Ave	0.6496	0.6998		2.69	2.50	7.7	50.0
13C2-PFTeDA	Ave	0.6740	0.8218		3.05	2.50	21.9	50.0
13C2-PFHxDA	Ave	1.074	1.595		3.71	2.50	48.5	50.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180712-60996.b\2018.07.12LLC_024.d
Lims ID: CCV L4
Client ID:
Sample Type: CCV
Inject. Date: 12-Jul-2018 22:28:12 ALS Bottle#: 28 Worklist Smp#: 1
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV L4
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-A8_N*sub32

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180712-60996.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 13-Jul-2018 13:20:40 Calib Date: 11-Jul-2018 15:38:42
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK010

First Level Reviewer: mongkols Date: 13-Jul-2018 13:20:40

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.90 > 169.00	1.424	1.424	0.0	1.000	1986997	1.00		99.7	857	
D 1 13C4 PFBA										
217.00 > 172.00	1.424	1.430	-0.006	0.532	5056300	2.47		98.8	10653	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.719	1.719	0.0	1.000	1709429	1.00		99.5	710	
D 3 13C5-PFPeA										
267.90 > 223.00	1.719	1.729	-0.010	0.643	3540338	2.49		99.5	21131	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.765	1.765	0.0	1.000	2387600	0.9190		104	24455	
298.90 > 99.00	1.765	1.765	0.0	1.000	997248		2.39(1.25-3.74)		17445	
D 47 13C3-PFBS										
301.90 > 83.00	1.765	1.765	-0.001	0.660	78966	2.21		95.0	611	
61 1H,1H,2H,2H-perfluorohexanesulfoni										
327.00 > 307.00	1.980	1.980	0.0	1.122	419582	0.9504		102	24475	
D 60 M2-4:2FTS										
329.00 > 81.00	1.970	1.981	-0.011	0.737	461611	2.40		103	7293	
6 Perfluorohexanoic acid										
313.00 > 269.00	2.014	2.014	0.0	1.000	1661924	1.00		100	2232	
313.00 > 119.00	2.003	2.014	-0.012	0.994	154199		10.78(5.03-15.10)		1573	
D 7 13C2 PFHxA										
315.00 > 270.00	2.014	2.014	0.0	0.753	4034151	2.63		105	31659	
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.036	2.036	0.0	1.154	2384789	1.01		107	34200	
349.00 > 99.00	2.036	2.036	0.0	1.154	860933		2.77(1.36-4.07)		14775	
67 Perfluoro(2-propoxypropanoic) acid										
329.10 > 285.00	2.104	2.104	0.0	1.000	325866	0.9645		96.4	2276	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.104	2.105	-0.001	0.787	318256	2.91		117	6089	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.319	2.319	0.0	1.000	1648550	0.9591		95.9	2067	
363.00 > 169.00	2.319	2.319	0.0	1.000	662340		2.49(1.13-3.40)		2890	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.332	2.332	0.0	1.000	1976960	0.8421		92.5	12912	
399.00 > 99.00	2.332	2.332	0.0	1.000	670112		2.95(1.50-4.49)		5921	
D 9 13C4-PFHpA										
367.00 > 322.00	2.319	2.332	-0.013	0.867	3715208	2.63		105	29390	
D 11 18O2 PFHxS										
403.00 > 84.00	2.332	2.345	-0.013	0.872	4836581	2.41		102	46882	
65 Adona										
377.00 > 251.00	2.372	2.372	0.0	0.783	4840807	1.02		108	36109	
377.00 > 85.00	2.372	2.372	0.0	0.783	2851770		1.70(0.84-2.53)		16741	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.644	2.644	0.0	1.000	430706	0.9600		101	10151	
D 12 M2-6:2FTS										
429.00 > 81.00	2.644	2.652	-0.008	0.989	681100	2.25		94.6	12279	
* 62 13C2-PFOA										
415.00 > 370.00	2.674	2.674	0.0		3773350	2.50			35789	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.674	2.674	0.0	0.883	1909377	0.9819		103	23869	
449.00 > 99.00	2.674	2.674	0.0	0.883	495460		3.85(1.94-5.82)		11691	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.674	2.674	0.0	1.000	1730980	0.9832		98.2	794	
413.00 > 169.00	2.674	2.674	0.0	1.000	877737		1.97(0.84-2.52)		2289	
D 14 13C4 PFOA										
417.00 > 372.00	2.674	2.675	-0.001	1.000	3573986	2.48		99.1	40033	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.030	3.030	0.0	1.000	1548388	0.9258		99.8	27789	
499.00 > 99.00	3.030	3.030	0.0	1.000	342300		4.52(2.31-6.93)		6588	
20 Perfluorononanoic acid										
463.00 > 419.00	3.030	3.030	0.0	1.000	1367854	0.9898		99.0	3354	
463.00 > 169.00	3.030	3.030	0.0	1.000	314332		4.35(1.90-5.69)		9080	
D 19 13C5 PFNA										
468.00 > 423.00	3.030	3.038	-0.008	1.133	3114344	2.41		96.6	26264	
D 18 13C4 PFOS										
503.00 > 80.00	3.030	3.038	-0.008	1.133	3527562	2.40		100	28081	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.238	3.238	0.0	1.069	2503373	0.9239		99.1	20128	
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.369	3.369	0.0	1.112	1125015	0.9833		102	23607	
549.00 > 99.00	3.369	3.369	0.0	1.112	396689		2.84(1.33-3.97)		6449	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.369	3.369	0.0	1.000	2220581	1.02		102	17983	
25 1H,1H,2H,2H-perfluorodecanesulfoni										
527.00 > 507.00	3.378	3.378	0.0	1.000	462052	0.9105		95.0	5716	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 21 13C8 FOSA										
506.00 > 78.00	3.369	3.380	-0.011	1.260	5539644	2.61		105	30573	
D 26 M2-8:2FTS										
529.00 > 81.00	3.378	3.380	-0.002	1.263	942155	2.12		88.7	14120	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.387	3.387	0.0	1.000	1172610	0.9765		97.6	6396	
513.00 > 169.00	3.387	3.387	0.0	1.000	208306		5.63(2.36-7.09)		6697	
D 23 13C2 PFDA										
515.00 > 470.00	3.387	3.389	-0.002	1.267	2860852	2.53		101	21421	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.537	3.537	0.0	1.000	528095	1.04		104	3720	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.537	3.539	-0.002	1.322	1283948	2.77		111	25930	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.696	3.696	0.0	1.220	997745	1.01		104	20928	
599.00 > 99.00	3.696	3.696	0.0	1.220	329623		3.03(1.39-4.16)		8632	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.707	3.707	0.0	1.000	484310	0.9715		97.2	13836	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.707	3.707	0.0	1.000	732879	0.8840		88.4	3024	
563.00 > 169.00	3.707	3.707	0.0	1.000	203875		3.59(2.12-6.36)		14016	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.707	3.709	-0.002	1.386	1409753	2.96		119	3927	
D 30 13C2 PFUnA										
565.00 > 520.00	3.707	3.719	-0.012	1.386	2529297	2.67		107	37591	
66 11-Chloroeicosafluoro-3-oxaundecan										
631.00 > 451.00	3.864	3.864	0.0	1.275	3915806	1.00		106	75494	
37 Perfluorododecanoic acid										
613.00 > 569.00	3.997	3.997	0.0	1.000	1087357	0.9429		94.3	750	
613.00 > 169.00	3.997	3.997	0.0	1.000	277177		3.92(2.13-6.40)		4852	
D 36 13C2 PFDoA										
615.00 > 570.00	3.997	4.010	-0.013	1.495	2640406	2.69		108	16093	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.261	4.261	0.0	1.066	1160652	1.03		103	656	
663.00 > 169.00	4.261	4.261	0.0	1.066	354104		3.28(1.25-3.76)		7130	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.500	4.500	0.0	1.000	321498	1.00		99.6	6165	
713.00 > 219.00	4.490	4.500	-0.010	0.998	216967		1.48(0.71-2.13)		4561	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.500	4.502	-0.002	1.683	3100973	3.05		122	14232	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.904	4.904	0.0	1.000	2305497	0.9866		98.7	680	
813.00 > 169.00	4.904	4.904	0.0	1.000	383628		6.01(2.86-8.58)		3566	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.904	4.905	-0.001	1.834	6016636	3.71		149	13687	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.255	5.255	0.0	1.071	2712921	0.9863		98.6	532	
913.00 > 169.00	5.255	5.255	0.0	1.071	334208		8.12(3.83-11.48)		4471	

Reagents:

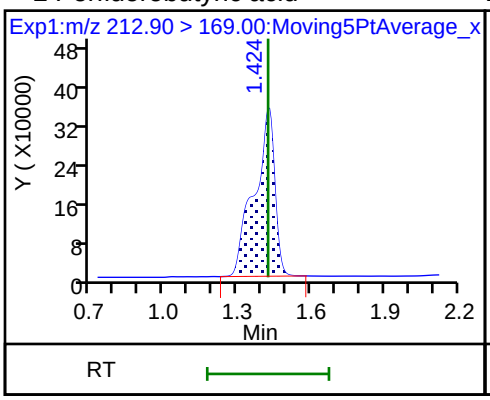
LCPFC_LL4_00005 Amount Added: 1.00 Units: mL

Report Date: 13-Jul-2018 13:20:42 Chrom Revision: 2.2 07-Jun-2018 07:41:54

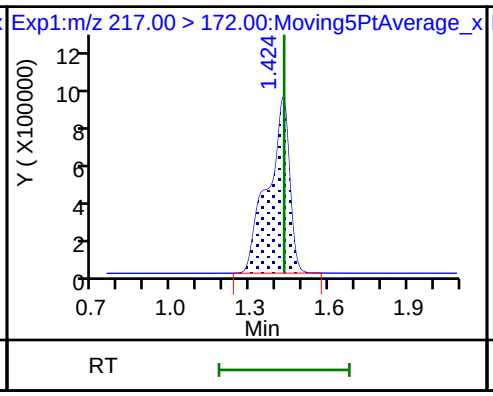
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180712-60996.b\2018.07.12LLC_024.d
Injection Date: 12-Jul-2018 22:28:12 Instrument ID: A8_N
Lims ID: CCV L4
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 28 Worklist Smp#: 1
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC ICAL

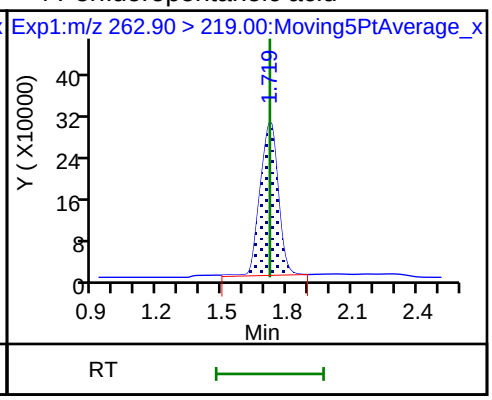
2 Perfluorobutyric acid



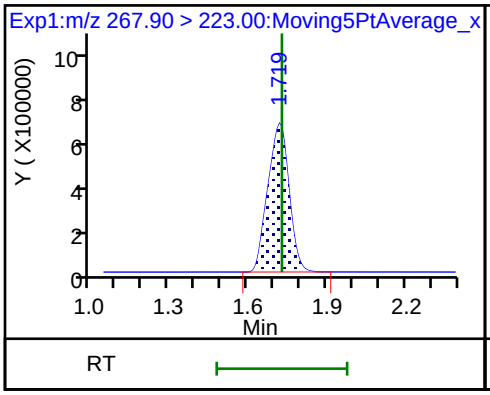
D 1 13C4 PFBA



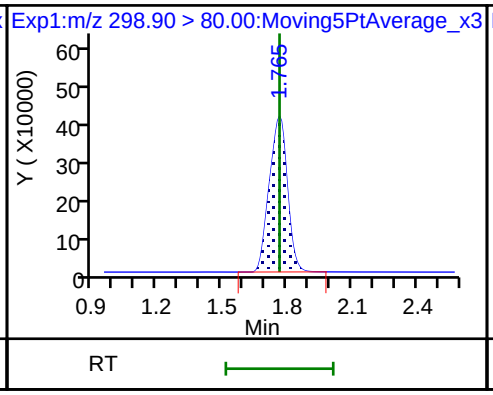
4 Perfluoropentanoic acid



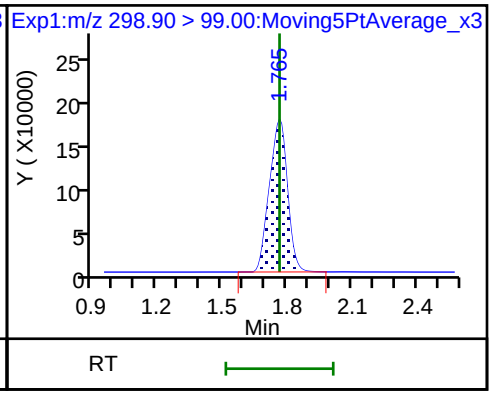
D 3 13C5-PFPeA



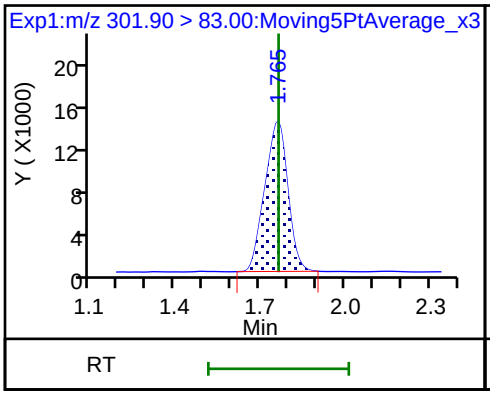
5 Perfluorobutanesulfonic acid



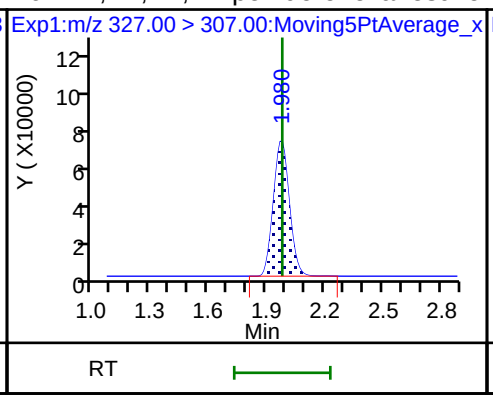
5 Perfluorobutanesulfonic acid



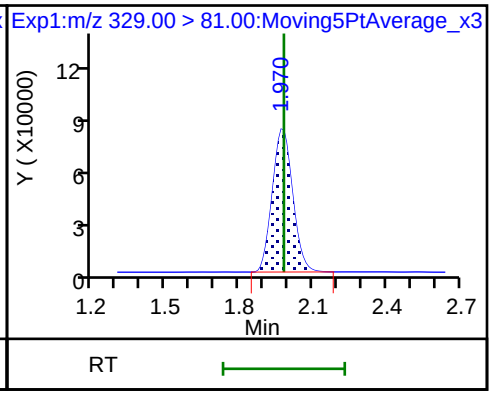
D 47 13C3-PFBS



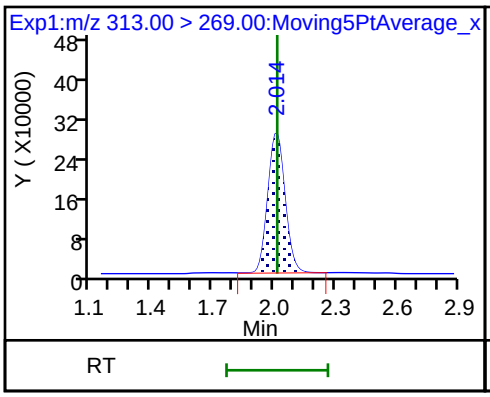
61 1H,1H,2H,2H-perfluorohexanesulfon



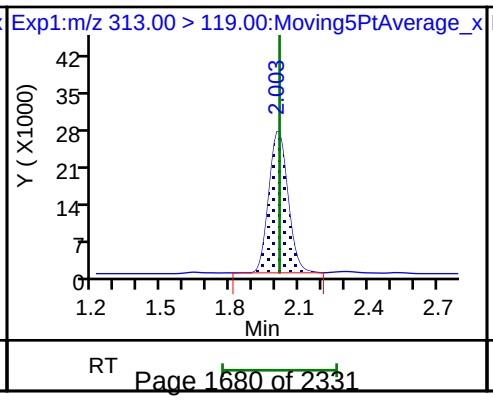
D 60 M2-4:2FTS



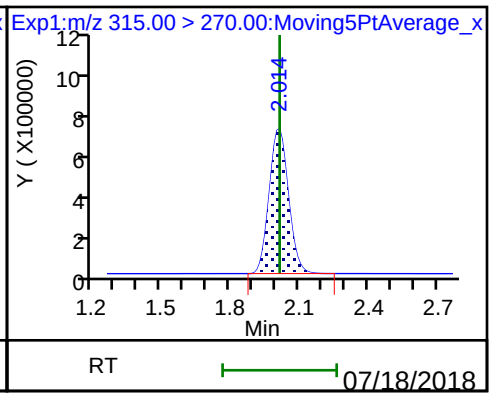
6 Perfluorohexanoic acid



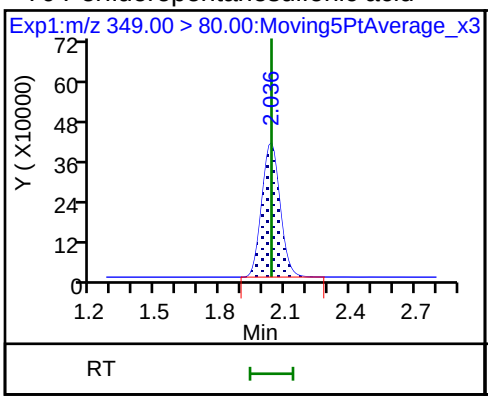
6 Perfluorohexanoic acid



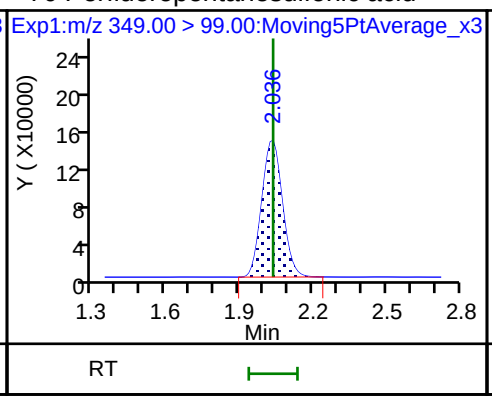
D 7 13C2 PFHxA



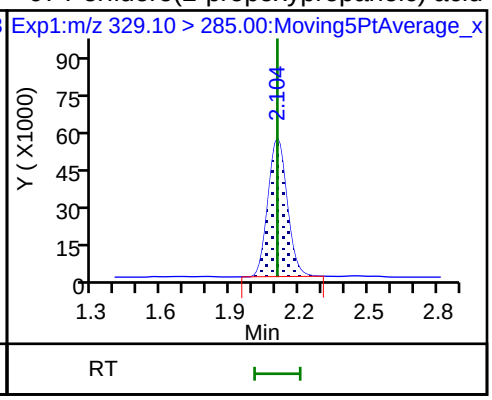
70 Perfluoropentanesulfonic acid



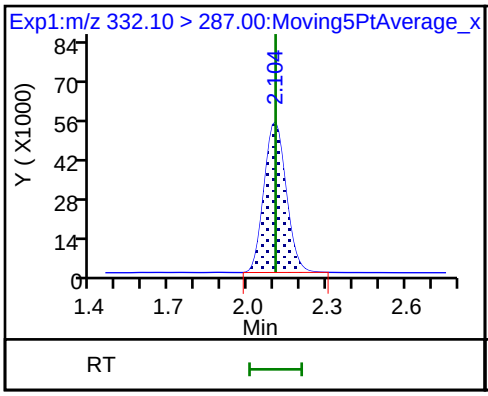
70 Perfluoropentanesulfonic acid



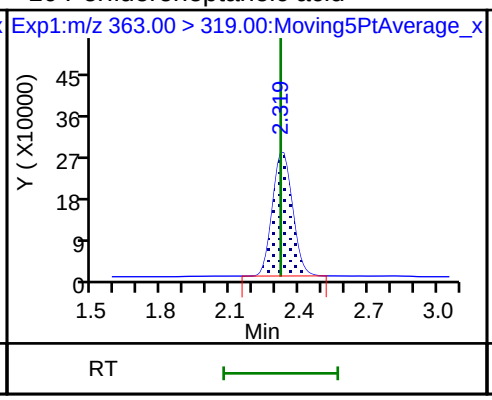
67 Perfluoro(2-propoxypropanoic) acid



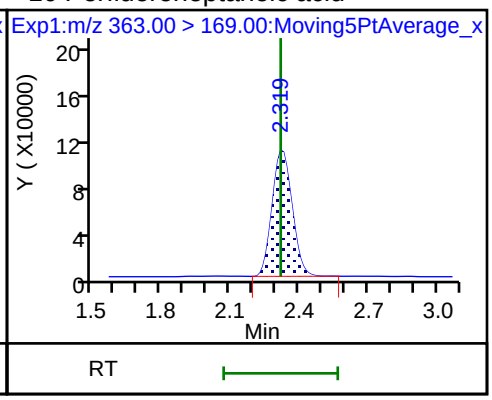
D 64 13C3 HFPO-DA



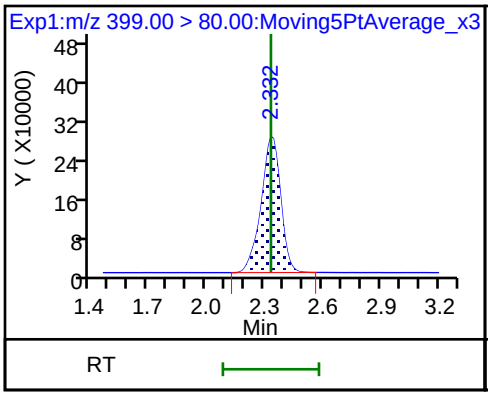
10 Perfluoroheptanoic acid



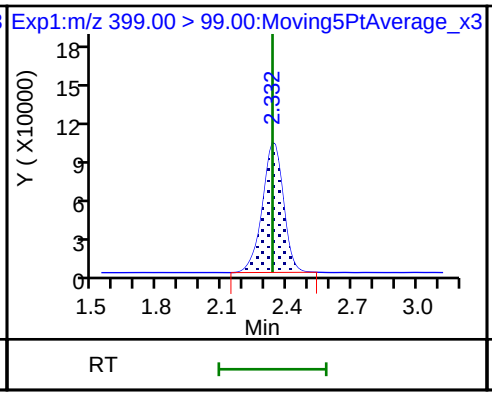
10 Perfluoroheptanoic acid



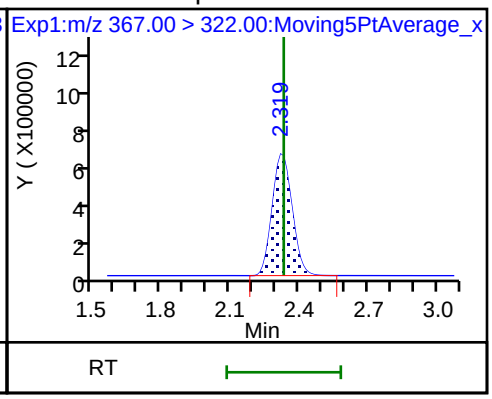
8 Perfluorohexanesulfonic acid



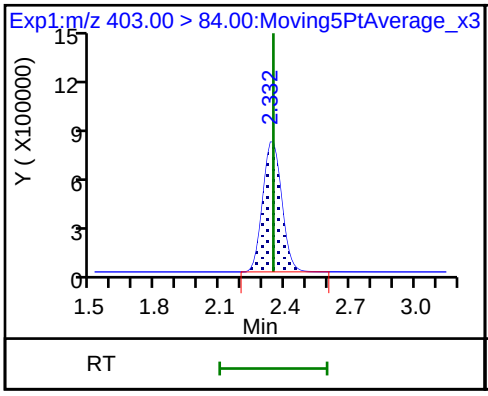
8 Perfluorohexanesulfonic acid



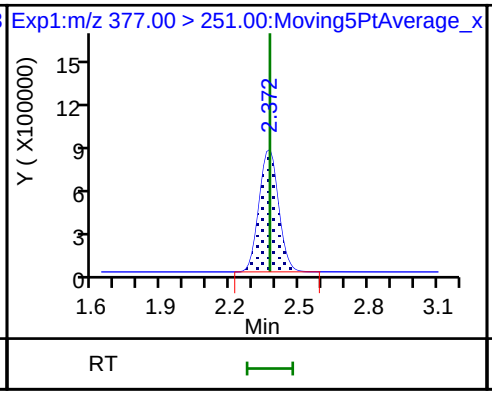
D 9 13C4-PFHpA



D 11 18O2 PFHxS



65 Adona



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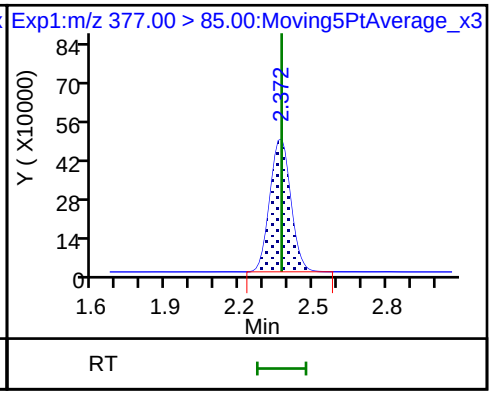
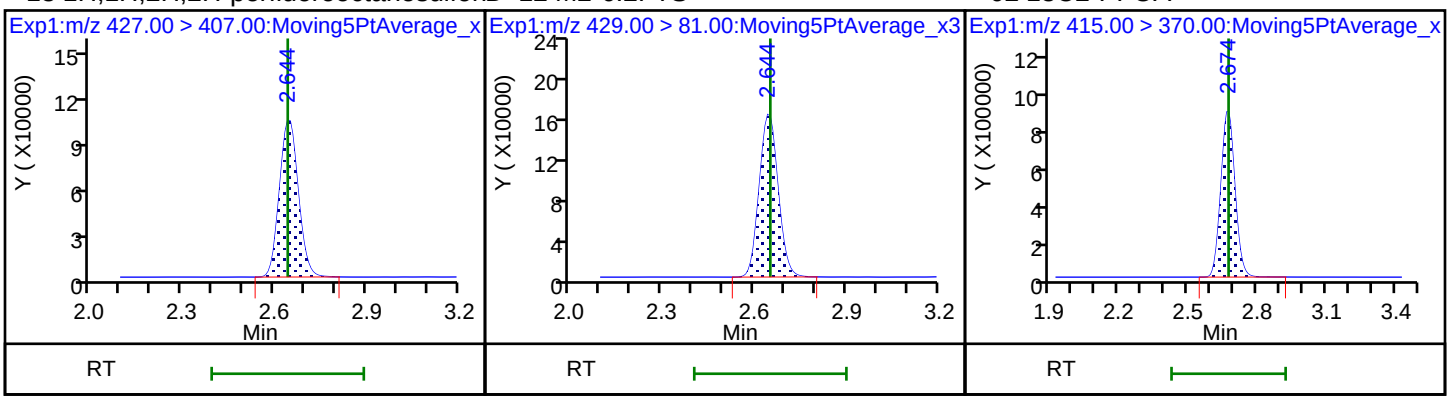
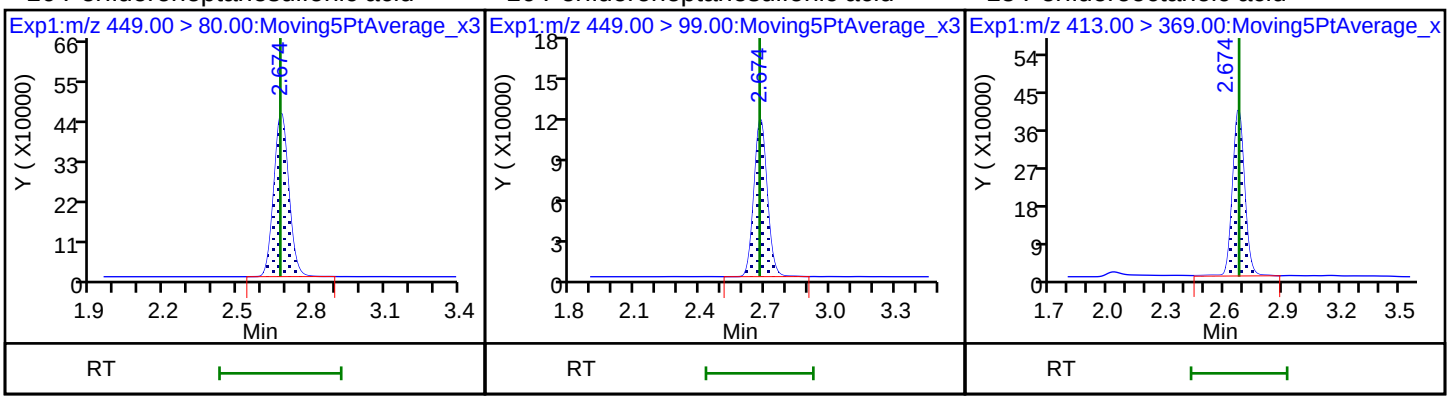


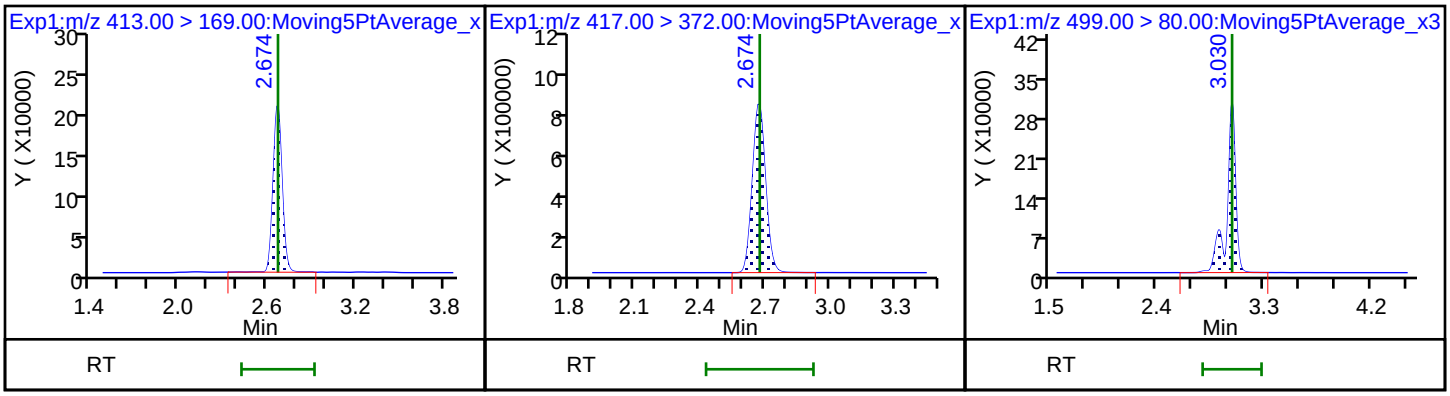
13 1H,1H,2H,2H-perfluorooctanesulfon D 12 M2-6:2FTS * 62 13C2-PFOA



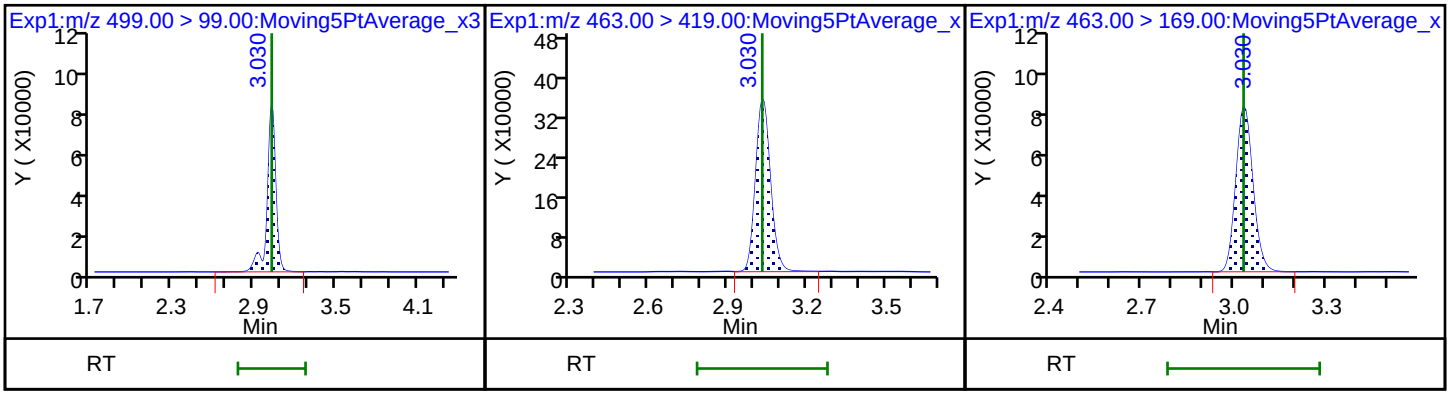
16 Perfluoroheptanesulfonic acid 16 Perfluoroheptanesulfonic acid 15 Perfluorooctanoic acid



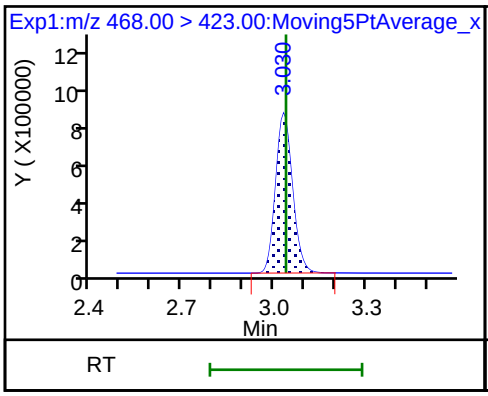
15 Perfluorooctanoic acid D 14 13C4 PFOA 17 Perfluorooctane sulfonic acid



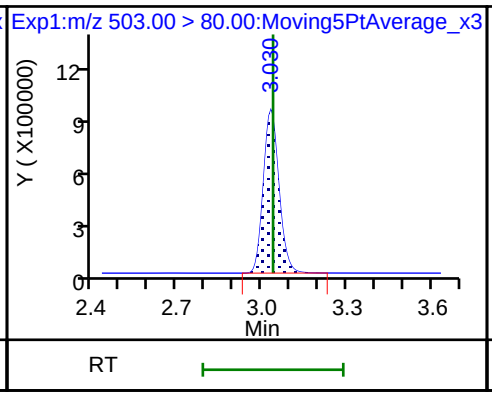
17 Perfluorooctane sulfonic acid 20 Perfluorononanoic acid 20 Perfluorononanoic acid



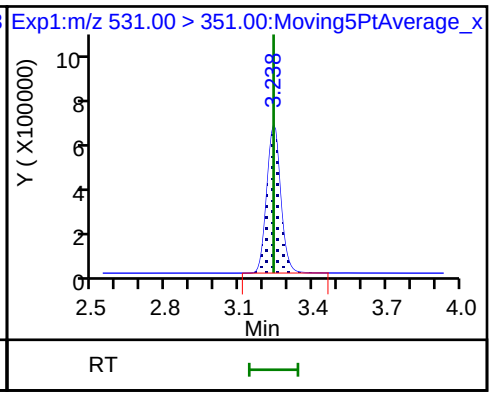
D 19 13C5 PFNA



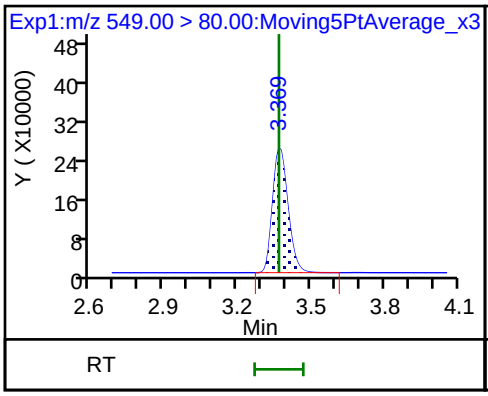
D 18 13C4 PFOS



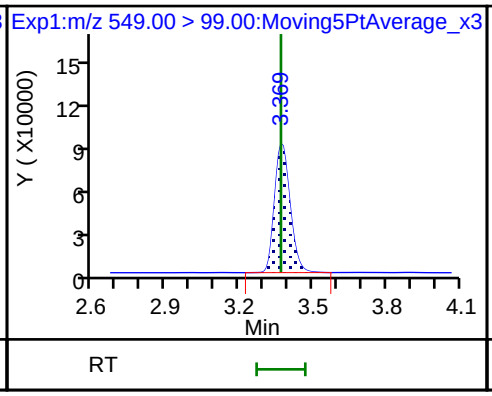
69 9-Chlorohexadecafluoro-3-oxanonane



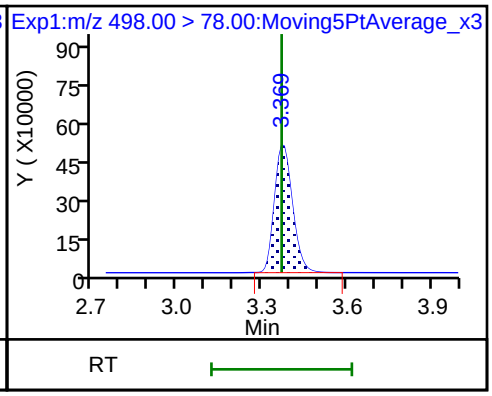
68 Perfluorononanesulfonic acid



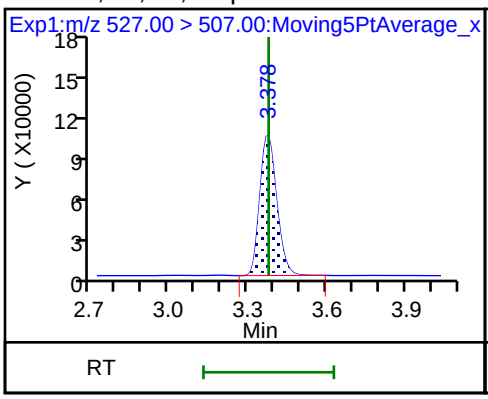
68 Perfluorononanesulfonic acid



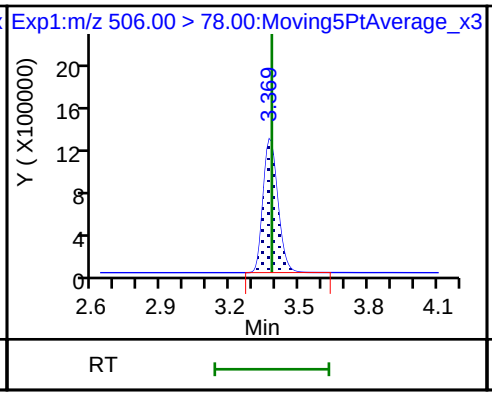
22 Perfluorooctane Sulfonamide



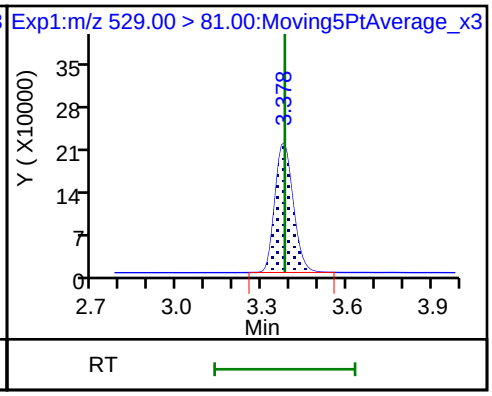
25 1H,1H,2H,2H-perfluorodecanesulfon



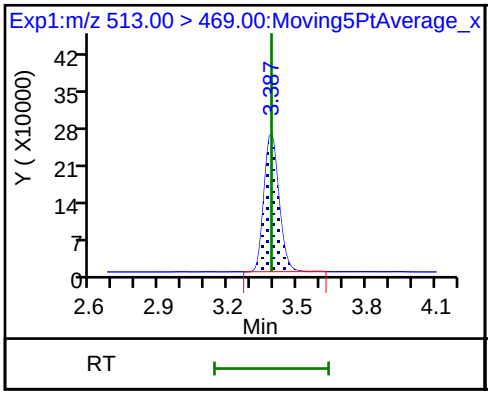
D 21 13C8 FOSA



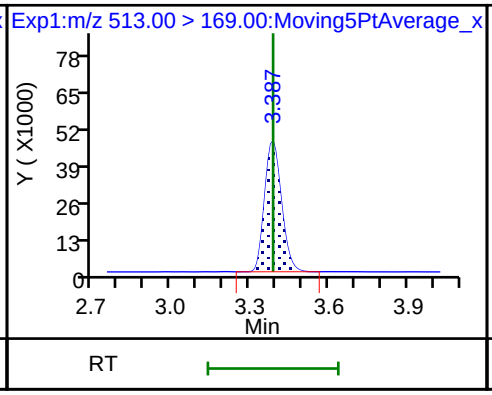
D 26 M2-8:2FTS



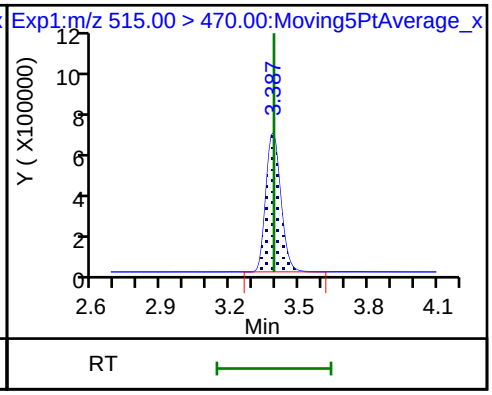
24 Perfluorodecanoic acid



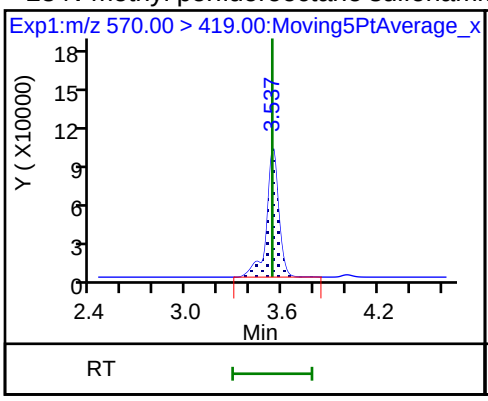
24 Perfluorodecanoic acid



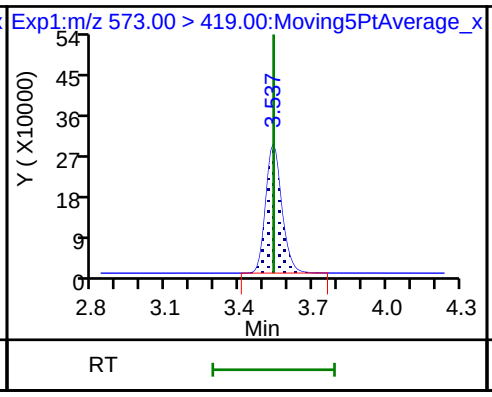
D 23 13C2 PFDA



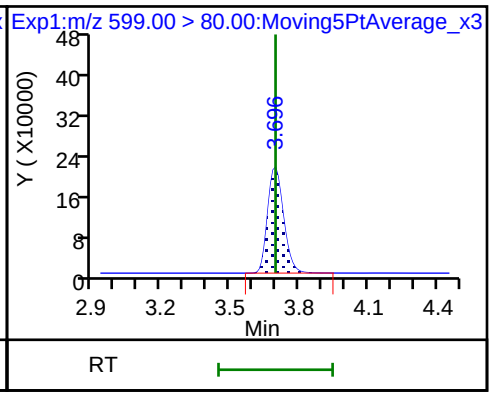
28 N-methyl perfluorooctane sulfonami



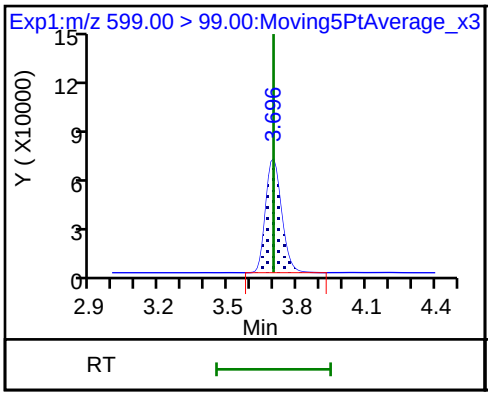
D 27 d3-NMeFOSAA



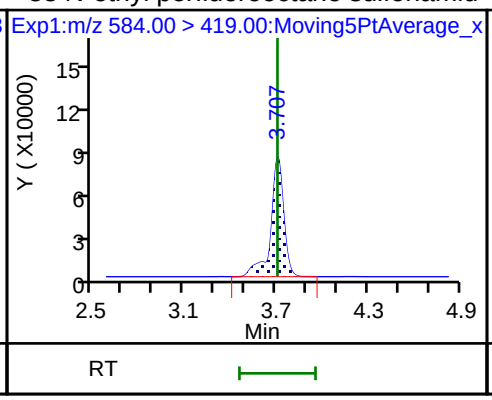
29 Perfluorodecane Sulfonic acid



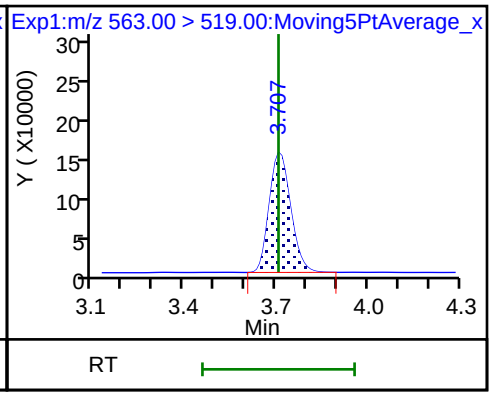
29 Perfluorodecane Sulfonic acid



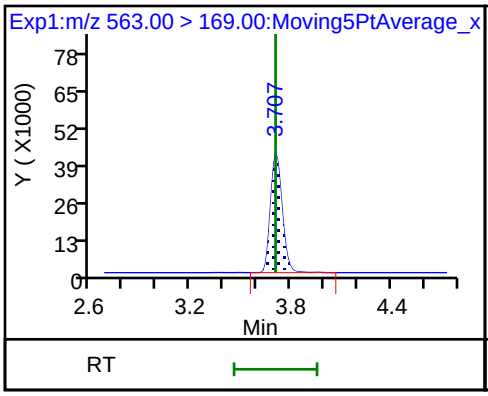
33 N-ethyl perfluorooctane sulfonamid



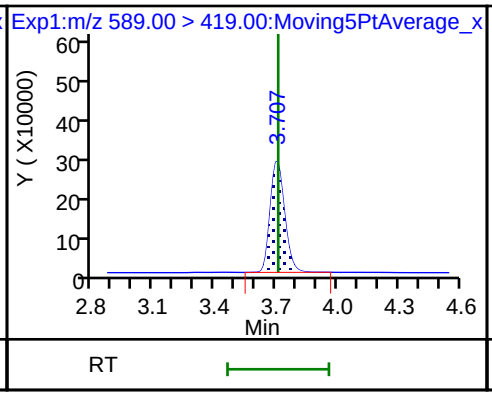
31 Perfluoroundecanoic acid



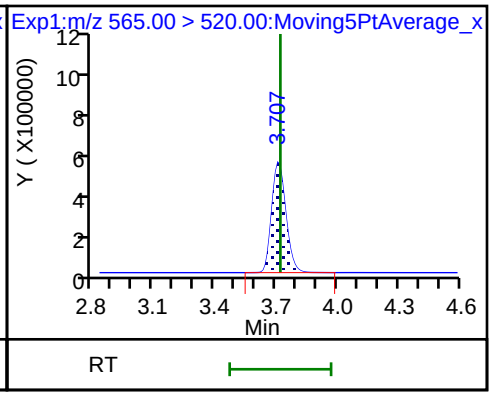
31 Perfluoroundecanoic acid



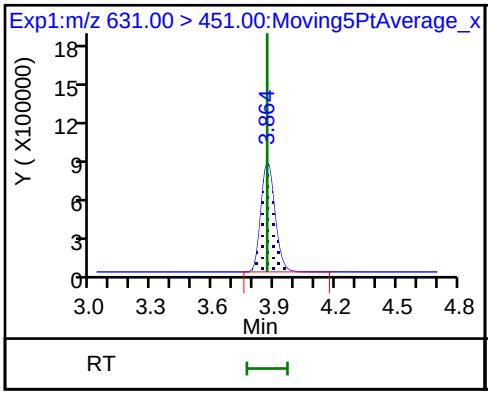
D 32 d5-NEtFOSAA



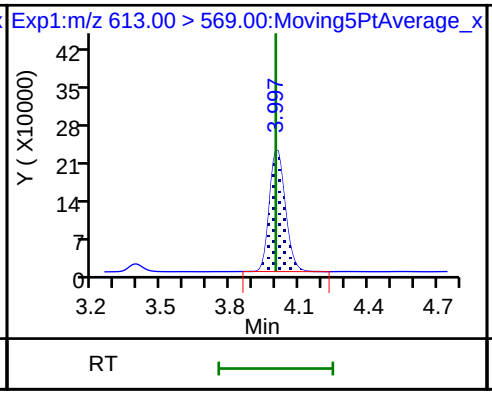
D 30 13C2 PFUnA



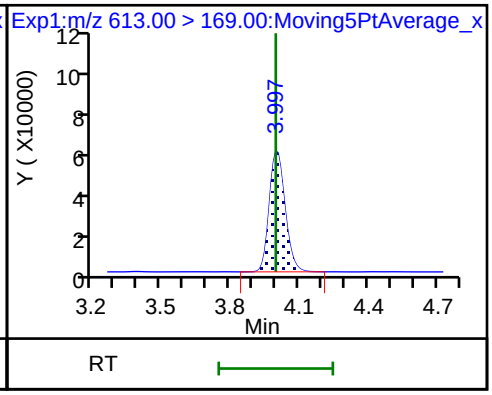
66 11-Chloroeicosafluoro-3-oxaundecan



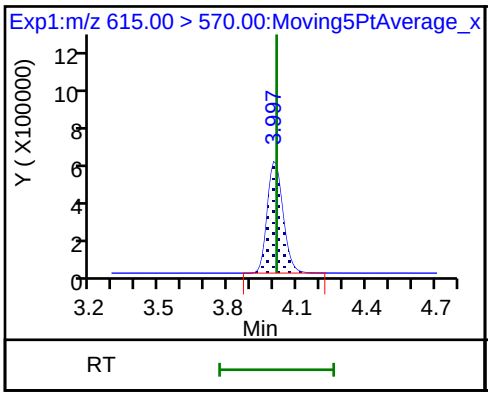
37 Perfluorododecanoic acid



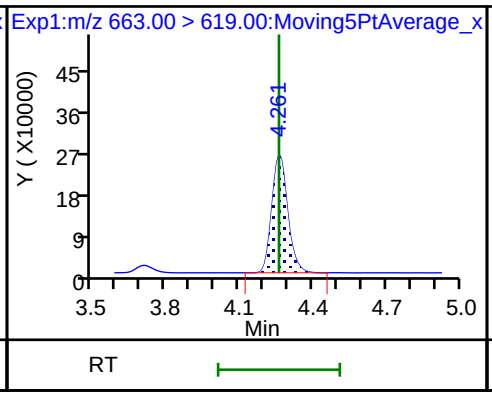
37 Perfluorododecanoic acid



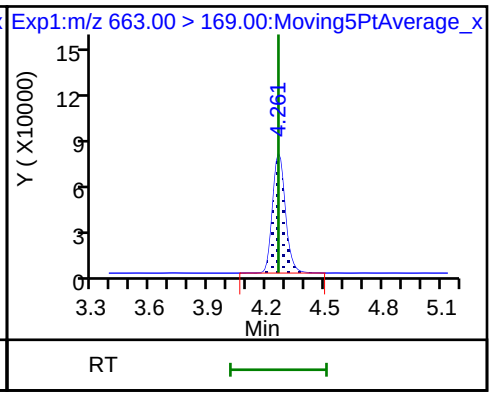
D 36 13C2 PFDoA



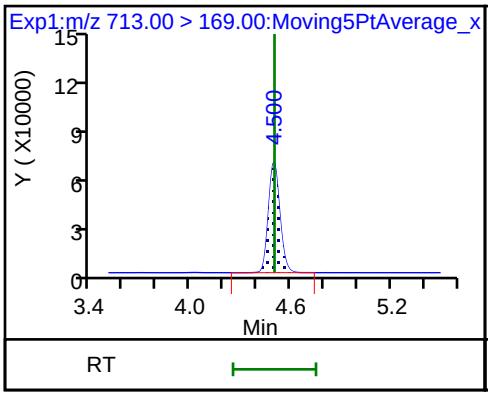
41 Perfluorotridecanoic acid



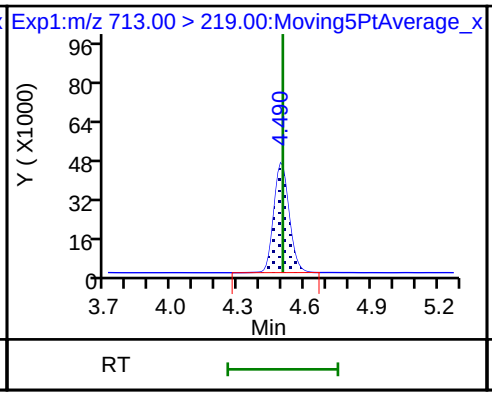
41 Perfluorotridecanoic acid



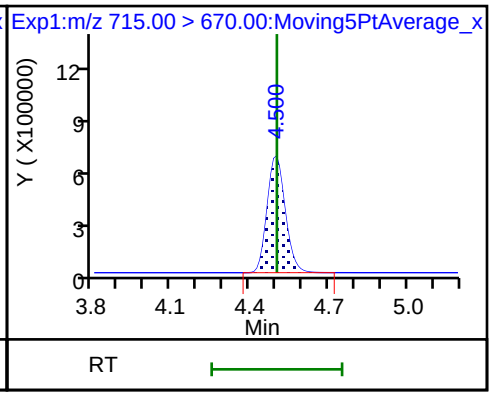
42 Perfluorotetradecanoic acid



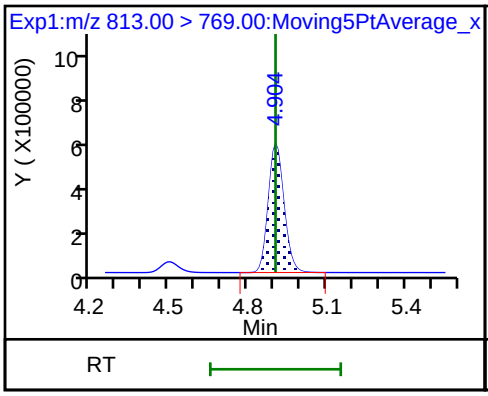
42 Perfluorotetradecanoic acid



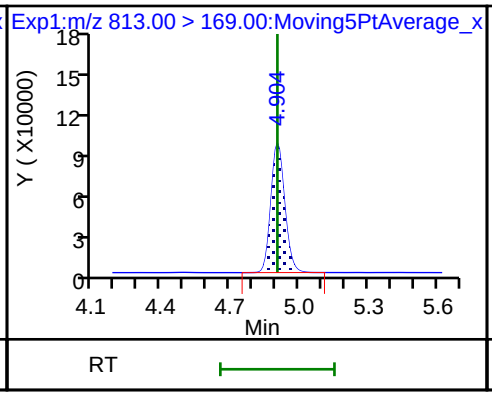
D 43 13C2-PFTeDA



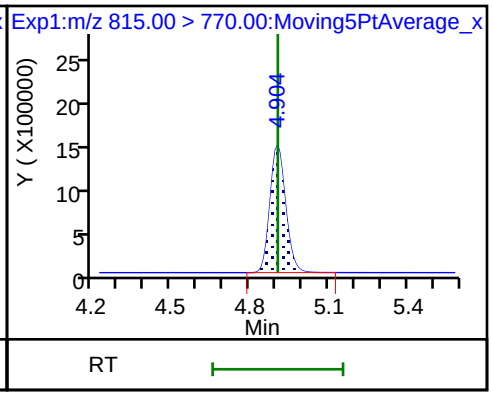
45 Perfluorohexadecanoic acid



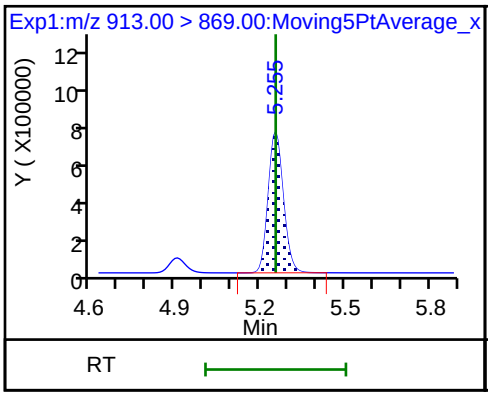
45 Perfluorohexadecanoic acid



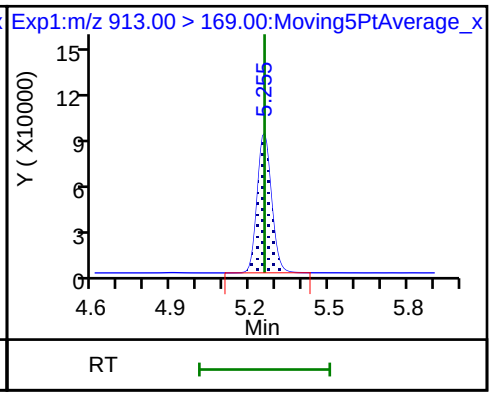
D 44 13C2-PFHxDA



46 Perfluorooctadecanoic acid



46 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Lab Sample ID: CCV 320-233774/4 Calibration Date: 07/12/2018 22:51

Instrument ID: A8_N Calib Start Date: 07/11/2018 14:48

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 07/11/2018 15:38

Lab File ID: 2018.07.12LLC_027.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.9856	1.011		2.57	2.50	2.6	40.0
Perfluoropentanoic acid (PFPeA)	AveID	1.213	1.210		2.49	2.50	-0.2	40.0
Perfluorobutanesulfonic acid (PFBS)	AveID	76.50	77.10		2.23	2.21	0.8	50.0
4:2 FTS	AveID	13.00	12.92		2.32	2.34	-0.6	50.0
Perfluorohexanoic acid (PFHxA)	AveID	1.029	1.079		2.62	2.50	4.9	40.0
Perfluoropentanesulfonic acid (PFPeS)	AveID	69.78	71.55		2.40	2.35	2.5	50.0
HFPO-DA (GenX)	AveID	2.654	2.736		2.58	2.50	3.1	40.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.157	1.149		2.48	2.50	-0.6	40.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.148	1.112		2.20	2.28	-3.1	40.0
ADONA	AveID	3.219	3.665		2.68	2.36	13.9	50.0
6:2 FTS	AveID	1.564	1.563		2.37	2.37	-0.0	40.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.318	1.374		2.48	2.38	4.3	50.0
Perfluorooctanoic acid (PFOA)	AveID	1.232	1.207		2.45	2.50	-2.0	40.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.133	1.173		2.40	2.32	3.5	40.0
Perfluorononanoic acid (PFNA)	AveID	1.109	1.069		2.41	2.50	-3.7	40.0
9-Chlorohexadecafluoro-3-oxa nonane-1-sulfonate	AveID	1.836	1.974		2.51	2.33	7.6	50.0
8:2 FTS	AveID	1.290	1.259		2.34	2.40	-2.4	40.0
Perfluorononanesulfonic acid (PFNS)	AveID	0.7752	0.8342		2.58	2.40	7.6	50.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9856	1.003		2.55	2.50	1.8	40.0
Perfluorodecanoic acid (PFDA)	AveID	1.049	1.098		2.62	2.50	4.6	40.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	0.9858	0.9566		2.43	2.50	-3.0	40.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6714	0.7028		2.52	2.41	4.7	50.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.8840	0.9708		2.75	2.50	9.8	40.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.8195	0.7846		2.39	2.50	-4.3	40.0
11-Chloroeicosafluoro-3-oxau ndecane-1-sulfonate	AveID	2.654	2.753		2.44	2.36	3.7	50.0
Perfluorododecanoic acid (PFDoA)	AveID	1.092	1.119		2.56	2.50	2.5	40.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.068	1.085		2.54	2.50	1.6	50.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2602	0.2529		2.43	2.50	-2.8	50.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		0.9657		2.52	2.50	0.8	50.0

FORM VII 537 (modified)

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Lab Sample ID: CCV 320-233774/4 Calibration Date: 07/12/2018 22:51

Instrument ID: A8_N Calib Start Date: 07/11/2018 14:48

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 07/11/2018 15:38

Lab File ID: 2018.07.12LLC_027.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.143	1.120		2.45	2.50	-2.0	50.0
13C4 PFBA	Ave	1.356	1.319		2.43	2.50	-2.7	50.0
13C5 PFPeA	Ave	0.9425	0.9277		2.46	2.50	-1.6	50.0
13C3-PFBS	Ave	0.0237	0.0237		2.33	2.33	0.1	50.0
M2-4:2FTS	Ave	0.1273	0.1221		2.24	2.34	-4.1	50.0
13C2 PFHxA	Ave	1.017	0.9941		2.44	2.50	-2.3	50.0
13C3 HFPO-DA	Ave	0.0724	0.0801		2.77	2.50	10.6	50.0
13C4-PFHpA	Ave	0.9371	0.9505		2.54	2.50	1.4	50.0
18O2 PFHxS	Ave	1.328	1.291		2.30	2.37	-2.7	50.0
M2-6:2FTS	Ave	0.2009	0.1934		2.29	2.38	-3.7	40.0
13C4 PFOA	Ave	0.9560	0.9271		2.42	2.50	-3.0	50.0
13C4 PFOS	Ave	0.9742	0.9504		2.33	2.39	-2.4	50.0
13C5 PFNA	Ave	0.8546	0.8229		2.41	2.50	-3.7	50.0
13C8 FOSA	Ave	1.405	1.432		2.55	2.50	2.0	50.0
M2-8:2FTS	Ave	0.2939	0.2383		1.94	2.40	-18.9	40.0
13C2 PFDA	Ave	0.7503	0.6978		2.32	2.50	-7.0	50.0
d3-NMeFOSAA	Ave	0.3075	0.3440		2.80	2.50	11.9	50.0
d5-NEtFOSAA	Ave	0.3150	0.3262		2.59	2.50	3.5	50.0
13C2 PFUnA	Ave	0.6266	0.6400		2.55	2.50	2.1	50.0
13C2 PFDoA	Ave	0.6496	0.6492		2.50	2.50	-0.0	50.0
13C2-PFTeDA	Ave	0.6740	0.7136		2.65	2.50	5.9	50.0
13C2-PFHxDA	Ave	1.074	1.148		2.67	2.50	7.0	50.0

FORM VII 537 (modified)

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180712-60996.b\2018.07.12LLC_027.d
Lims ID: CCV L5
Client ID:
Sample Type: CCV
Inject. Date: 12-Jul-2018 22:51:42 ALS Bottle#: 29 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV L5
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-A8_N*sub32

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180712-60996.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 13-Jul-2018 13:23:44 Calib Date: 11-Jul-2018 15:38:42
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK010

First Level Reviewer: mongkols Date: 13-Jul-2018 13:23:44

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.90 > 169.00	1.422	1.424	-0.002	1.000	4223533	2.57		103	2329	
D 1 13C4 PFBA										
217.00 > 172.00	1.422	1.430	-0.008	0.534	4176443	2.43		97.3	14016	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.717	1.719	-0.002	1.000	3555072	2.49		99.8	1547	
D 3 13C5-PFPeA										
267.90 > 223.00	1.717	1.729	-0.012	0.644	2937253	2.46		98.4	25787	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.762	1.765	-0.002	1.000	5118704	2.23		101	45029	
298.90 > 99.00	1.762	1.765	-0.002	1.000	2140704		2.39(1.25-3.74)		34389	
D 47 13C3-PFBS										
301.90 > 83.00	1.762	1.765	-0.003	0.661	69849	2.33		100	1368	
61 1H,1H,2H,2H-perfluorohexanesulfoni										
327.00 > 307.00	1.967	1.980	-0.013	1.116	906142	2.32		99.4	51446	
D 60 M2-4:2FTS										
329.00 > 81.00	1.967	1.981	-0.014	0.738	360937	2.24		95.9	6165	
6 Perfluorohexanoic acid										
313.00 > 269.00	2.011	2.014	-0.003	1.000	3397642	2.62		105	6048	
313.00 > 119.00	2.011	2.014	-0.003	1.000	315218		10.78(5.03-15.10)		4383	
D 7 13C2 PFHxA										
315.00 > 270.00	2.011	2.014	-0.003	0.754	3147448	2.44		97.7	33162	
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.033	2.036	-0.003	1.154	5040755	2.40		103	84754	
349.00 > 99.00	2.033	2.036	-0.003	1.154	1831051		2.75(1.36-4.07)		34095	
67 Perfluoro(2-propoxypropanoic) acid										
329.10 > 285.00	2.101	2.104	-0.003	1.000	693686	2.58		103	6588	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.101	2.105	-0.004	0.788	253496	2.77		111	5363	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.316	2.319	-0.003	1.000	3458983	2.48		99.4	5023	
363.00 > 169.00	2.316	2.319	-0.003	1.000	1374059		2.52(1.13-3.40)		8511	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.329	2.332	-0.003	1.000	4136699	2.20		96.9	18217	
399.00 > 99.00	2.329	2.332	-0.003	1.000	1395446		2.96(1.50-4.49)		9758	
D 9 13C4-PFHpA										
367.00 > 322.00	2.316	2.332	-0.016	0.869	3009467	2.54		101	28778	
D 11 18O2 PFHxS										
403.00 > 84.00	2.329	2.345	-0.016	0.874	3867499	2.30		97.3	38811	
65 Adona										
377.00 > 251.00	2.369	2.372	-0.003	0.783	10388304	2.68		114	67380	
377.00 > 85.00	2.369	2.372	-0.003	0.783	6169889		1.68(0.84-2.53)		26035	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.643	2.644	-0.001	1.000	907295	2.37		99.9	14835	
D 12 M2-6:2FTS										
429.00 > 81.00	2.643	2.652	-0.009	0.991	581677	2.29		96.3	14588	
* 62 13C2-PFOA										
415.00 > 370.00	2.666	2.674	-0.008		3166079	2.50			30446	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.673	2.674	-0.001	0.884	3935298	2.48		104	23960	
449.00 > 99.00	2.673	2.674	-0.001	0.884	1015240		3.88(1.94-5.82)		19409	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.673	2.674	-0.001	1.003	3546035	2.45		98.0	1935	
413.00 > 169.00	2.666	2.674	-0.008	1.000	1848860		1.92(0.84-2.52)		6260	
D 14 13C4 PFOA										
417.00 > 372.00	2.666	2.675	-0.009	1.000	2935363	2.42		97.0	37827	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.025	3.030	-0.005	1.000	3274324	2.40		103	33609	
499.00 > 99.00	3.025	3.030	-0.005	1.000	717589		4.56(2.31-6.93)		15871	
20 Perfluorononanoic acid										
463.00 > 419.00	3.032	3.030	0.002	1.002	2784597	2.41		96.3	6348	
463.00 > 169.00	3.032	3.030	0.002	1.002	669114		4.16(1.90-5.69)		24184	
D 19 13C5 PFNA										
468.00 > 423.00	3.025	3.038	-0.013	1.135	2605378	2.41		96.3	23033	
D 18 13C4 PFOS										
503.00 > 80.00	3.025	3.038	-0.013	1.135	2876487	2.33		97.6	19817	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.240	3.238	0.002	1.071	5536534	2.51		108	35567	
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.370	3.369	0.001	1.114	2409662	2.58		108	29148	
549.00 > 99.00	3.370	3.369	0.001	1.114	849409		2.84(1.33-3.97)		16013	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.370	3.369	0.001	1.000	4549967	2.55		102	29044	
25 1H,1H,2H,2H-perfluorodecanesulfoni										
527.00 > 507.00	3.370	3.378	-0.008	1.000	910468	2.34		97.6	9582	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 21 13C8 FOSA										
506.00 > 78.00	3.370	3.380	-0.010	1.264	4534710	2.55		102	27556	
D 26 M2-8:2FTS										
529.00 > 81.00	3.370	3.380	-0.010	1.264	722894	1.94		81.1	15948	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.379	3.387	-0.008	1.000	2424903	2.62		105	13377	
513.00 > 169.00	3.388	3.387	0.001	1.003	415908		5.83(2.36-7.09)		15323	
D 23 13C2 PFDA										
515.00 > 470.00	3.379	3.389	-0.010	1.268	2209158	2.32		93.0	37575	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.538	3.537	0.001	1.000	1041811	2.43		97.0	10105	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.538	3.539	-0.001	1.327	1089065	2.80		112	26306	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.697	3.696	0.001	1.222	2038548	2.52		105	35173	
599.00 > 99.00	3.697	3.696	0.001	1.222	690916		2.95(1.39-4.16)		20559	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.708	3.707	0.001	1.003	1002602	2.75		110	21751	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.708	3.707	0.001	1.000	1589802	2.39		95.7	7285	
563.00 > 169.00	3.708	3.707	0.001	1.000	422681		3.76(2.12-6.36)		28932	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.697	3.709	-0.012	1.387	1032763	2.59		104	2467	
D 30 13C2 PFUnA										
565.00 > 520.00	3.708	3.719	-0.011	1.391	2026362	2.55		102	38008	
66 11-Chloroeicosafluoro-3-oxaundecan										
631.00 > 451.00	3.866	3.864	0.002	1.278	7802264	2.44		104	74563	
37 Perfluorododecanoic acid										
613.00 > 569.00	3.999	3.997	0.002	1.000	2300309	2.56		103	1677	
613.00 > 169.00	3.999	3.997	0.002	1.000	534454		4.30(2.13-6.40)		11284	
D 36 13C2 PFDoA										
615.00 > 570.00	3.999	4.010	-0.011	1.500	2055288	2.50		99.9	12100	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.262	4.261	0.002	1.066	2229900	2.54		102	1300	
663.00 > 169.00	4.262	4.261	0.002	1.066	688744		3.24(1.25-3.76)		12665	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.491	4.500	-0.009	1.000	571449	2.43		97.2	8509	
713.00 > 219.00	4.491	4.500	-0.009	1.000	387442		1.47(0.71-2.13)		6826	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.491	4.502	-0.011	1.685	2259266	2.65		106	11039	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.905	4.904	0.001	1.000	3510933	2.52		101	978	
813.00 > 169.00	4.905	4.904	0.001	1.000	611874		5.74(2.86-8.58)		4922	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.905	4.905	0.0	1.840	3635537	2.67		107	11355	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.248	5.255	-0.007	1.070	4072153	2.45		98.0	948	
913.00 > 169.00	5.248	5.255	-0.007	1.070	512064		7.95(3.83-11.48)		4917	

Reagents:

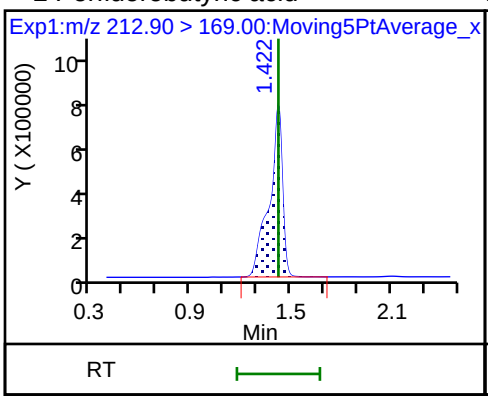
LCPFC_LL5_00005 Amount Added: 1.00 Units: mL

Report Date: 13-Jul-2018 13:23:45 Chrom Revision: 2.2 07-Jun-2018 07:41:54

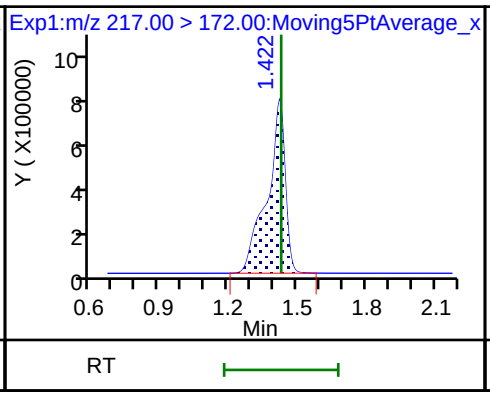
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180712-60996.b\2018.07.12LLC_027.d
Injection Date: 12-Jul-2018 22:51:42 Instrument ID: A8_N
Lims ID: CCV L5
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 29 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC ICAL

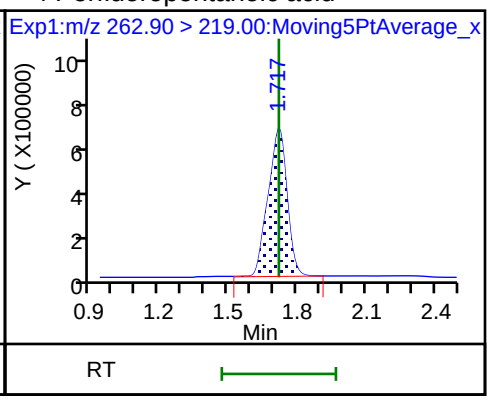
2 Perfluorobutyric acid



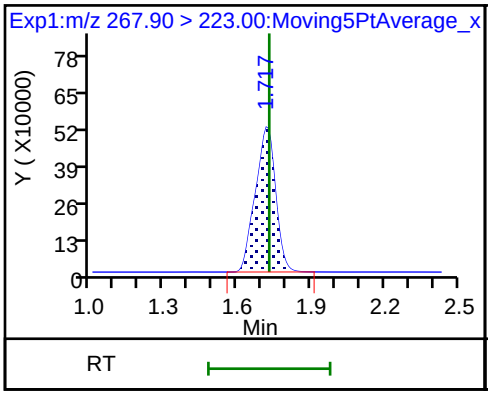
D 1 13C4 PFBA



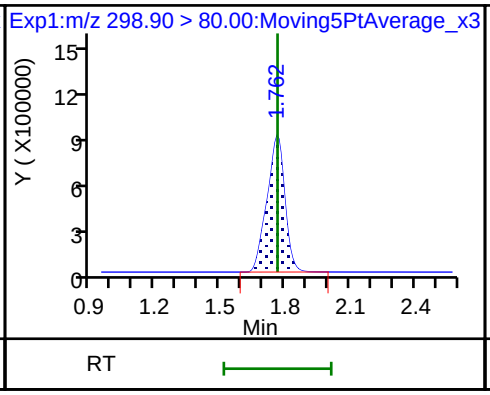
4 Perfluoropentanoic acid



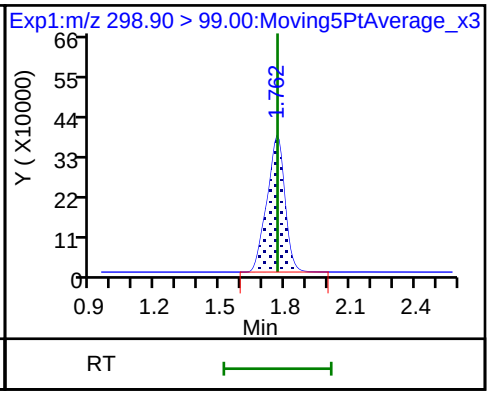
D 3 13C5-PFPeA



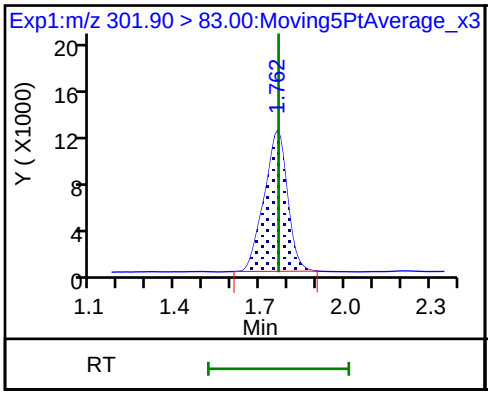
5 Perfluorobutanesulfonic acid



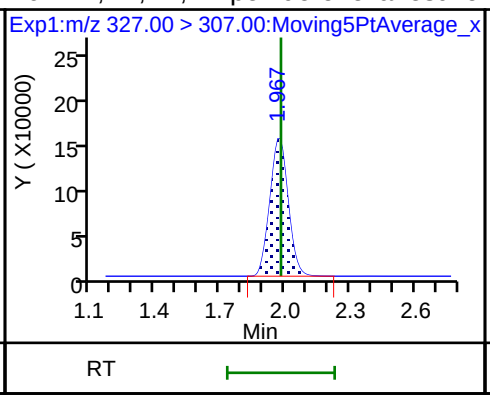
5 Perfluorobutanesulfonic acid



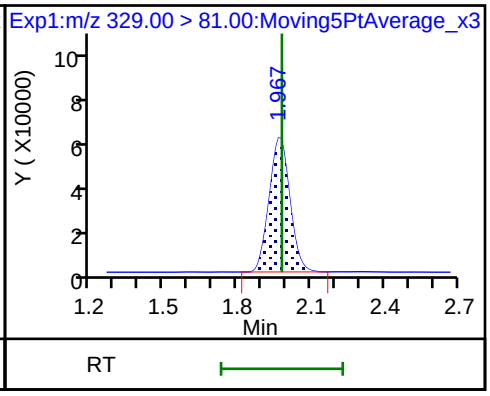
D 47 13C3-PFBS



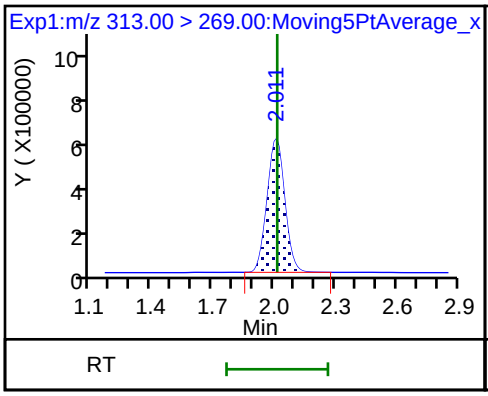
61 1H,1H,2H,2H-perfluorohexanesulfon



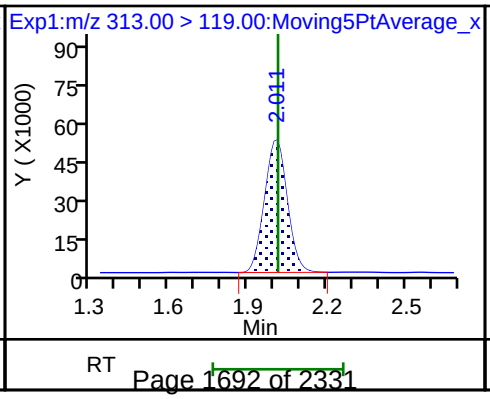
D 60 M2-4:2FTS



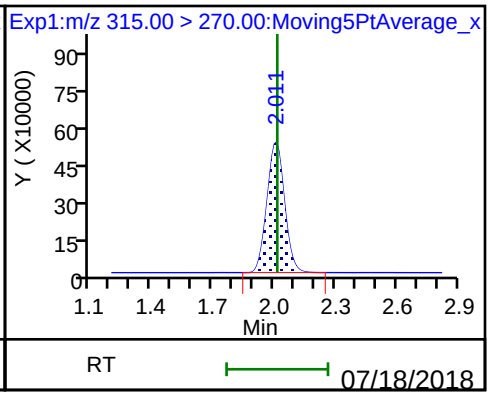
6 Perfluorohexanoic acid



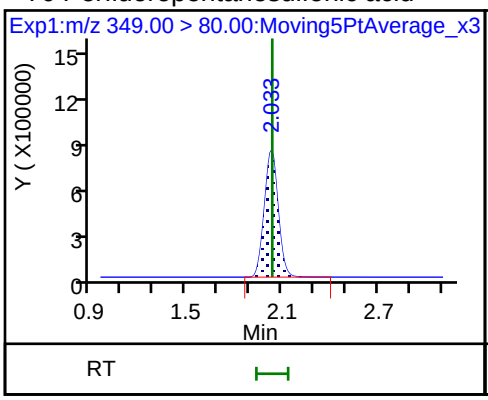
6 Perfluorohexanoic acid



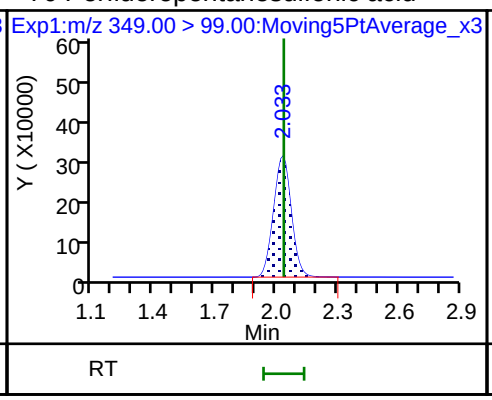
D 7 13C2 PFHxA



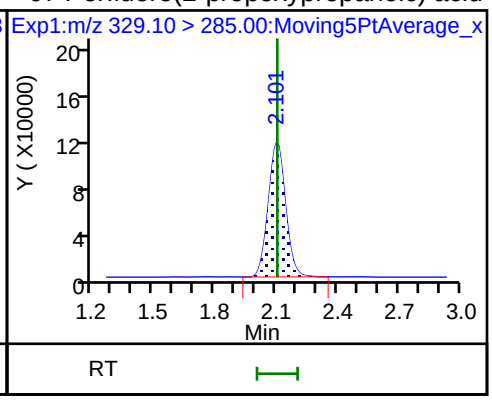
70 Perfluoropentanesulfonic acid



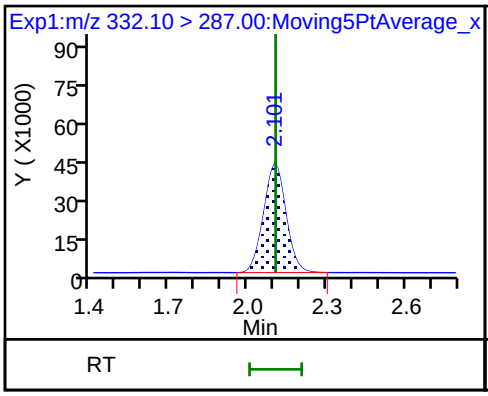
70 Perfluoropentanesulfonic acid



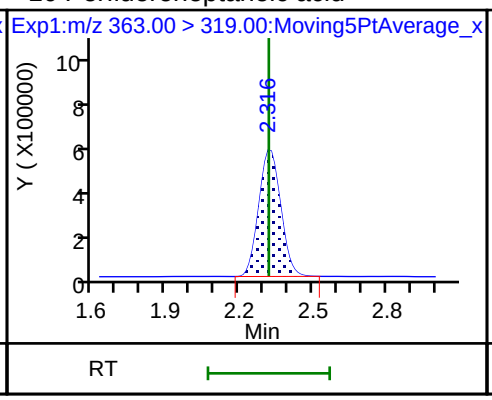
67 Perfluoro(2-propoxypropanoic) acid



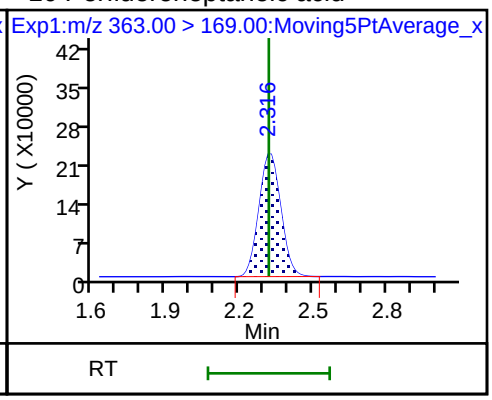
D 64 13C3 HFPO-DA



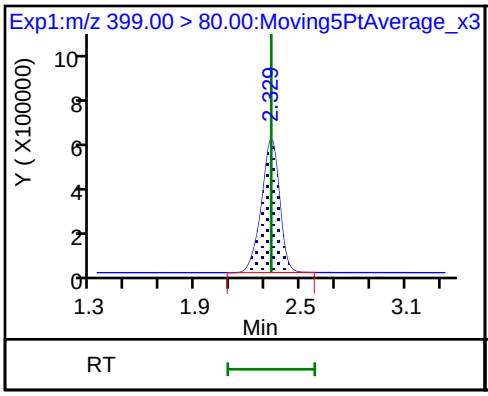
10 Perfluoroheptanoic acid



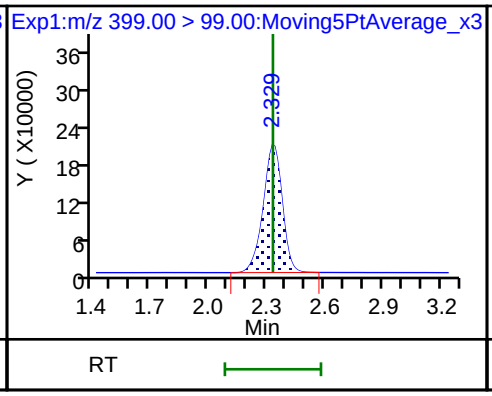
10 Perfluoroheptanoic acid



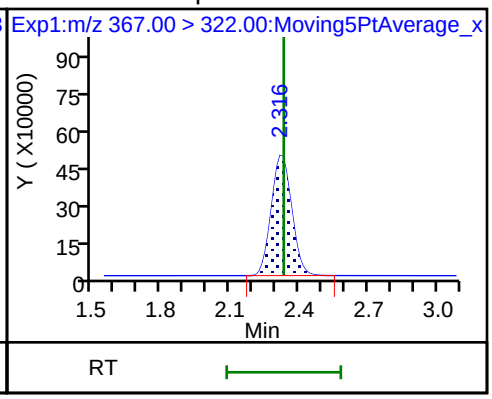
8 Perfluorohexanesulfonic acid



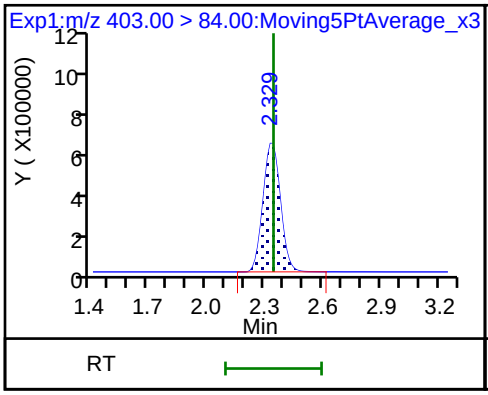
8 Perfluorohexanesulfonic acid



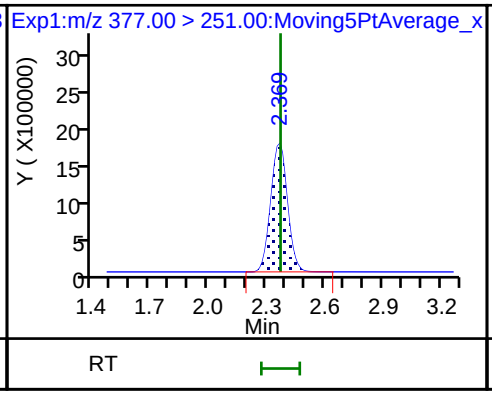
D 9 13C4-PFHpA



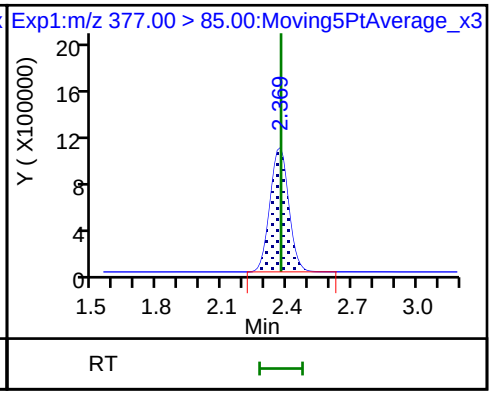
D 11 18O2 PFHxS



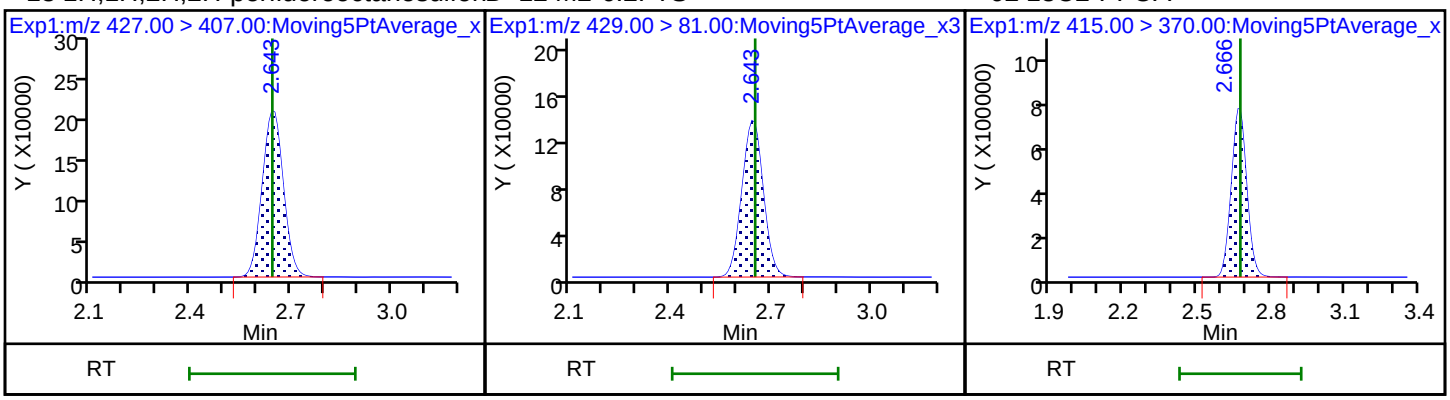
65 Adona



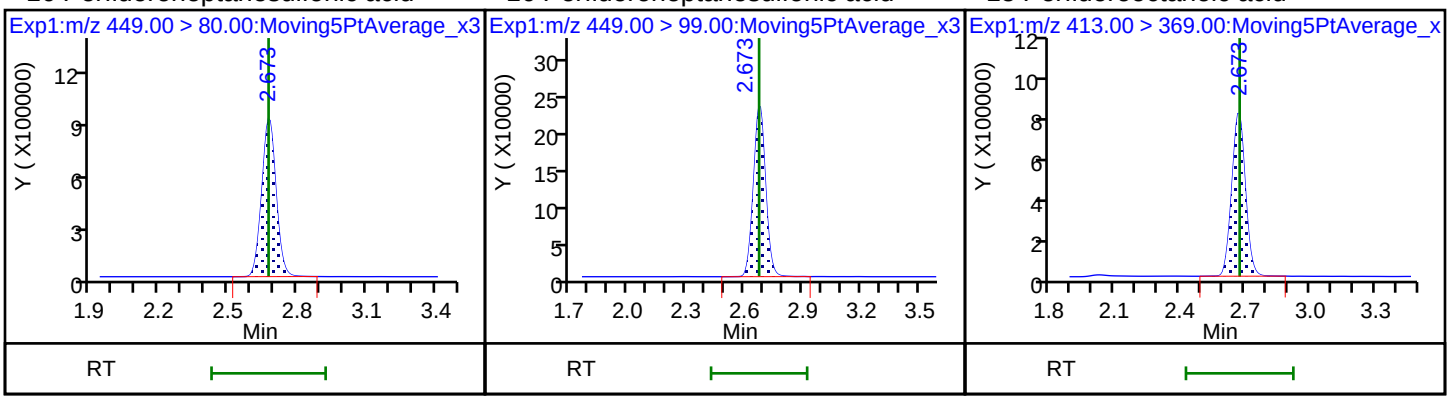
65 Adona



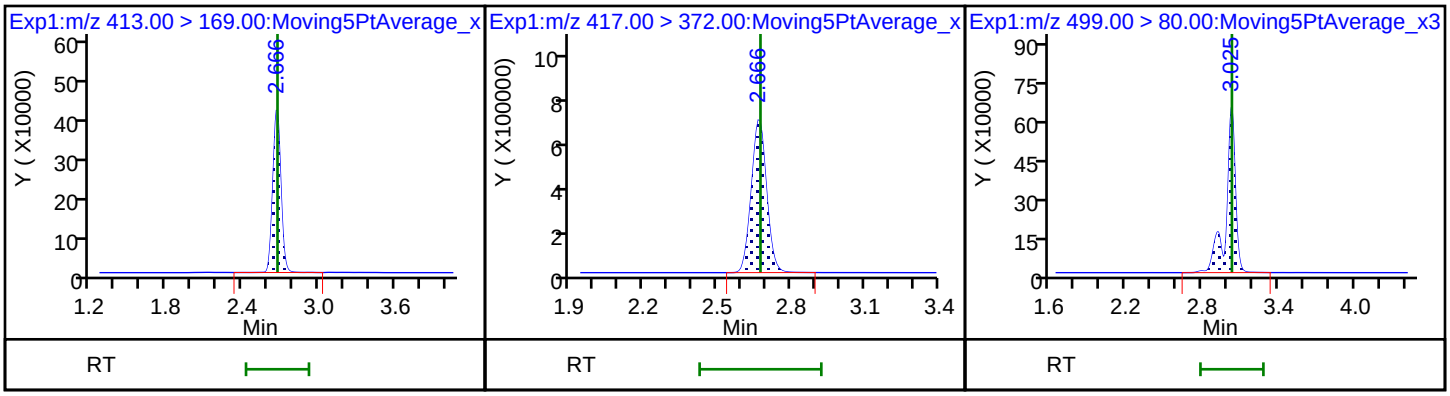
13 1H,1H,2H,2H-perfluorooctanesulfon D 12 M2-6:2FTS * 62 13C2-PFOA



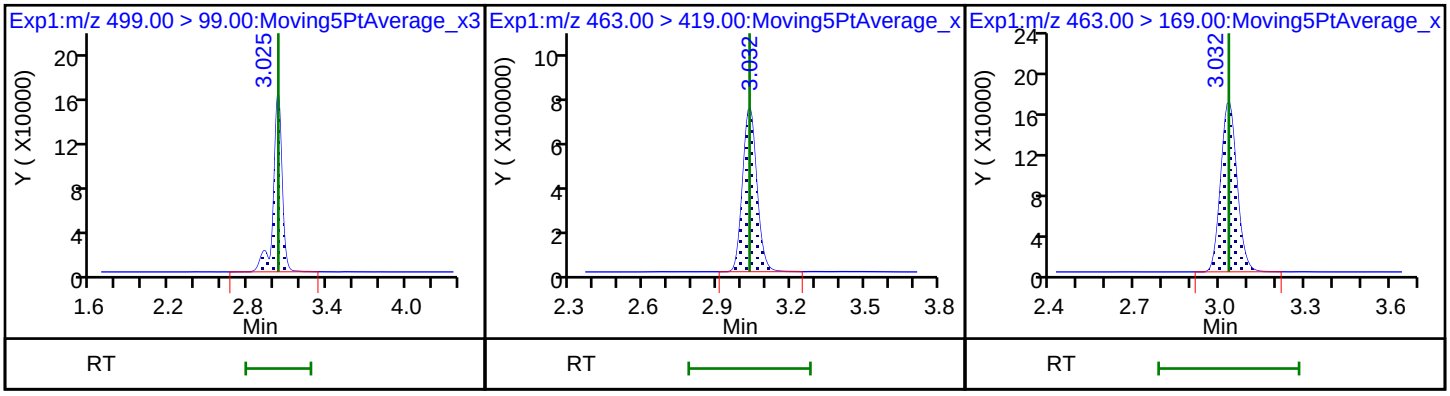
16 Perfluoroheptanesulfonic acid 16 Perfluoroheptanesulfonic acid 15 Perfluorooctanoic acid



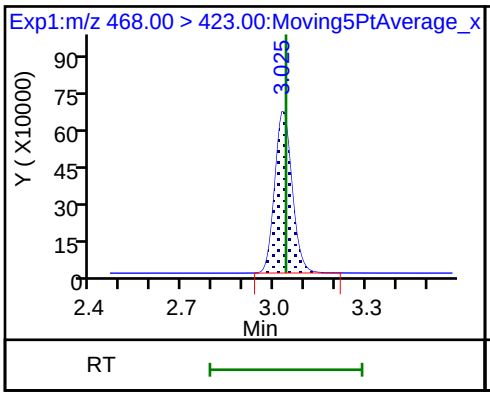
15 Perfluorooctanoic acid D 14 13C4 PFOA 17 Perfluorooctane sulfonic acid



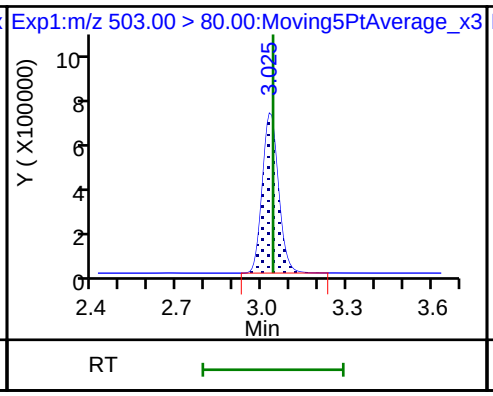
17 Perfluorooctane sulfonic acid 20 Perfluorononanoic acid 20 Perfluorononanoic acid



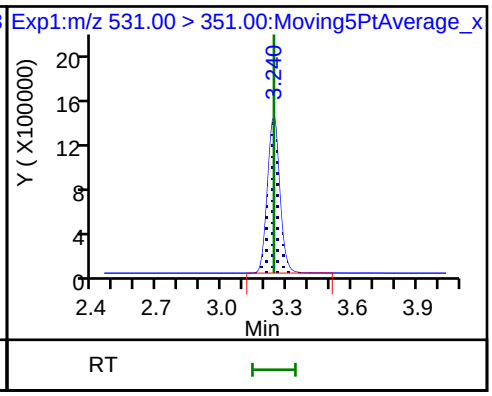
D 19 13C5 PFNA



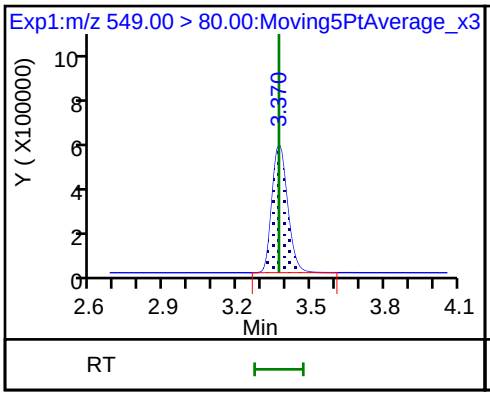
D 18 13C4 PFOS



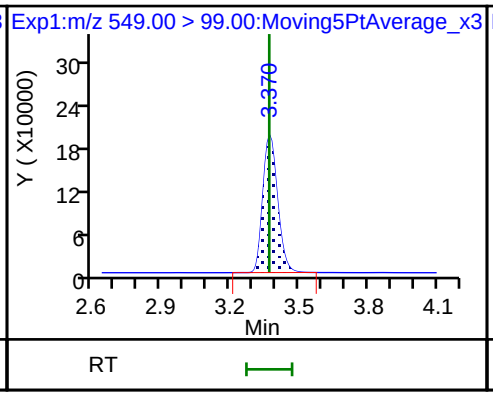
69 9-Chlorohexadecafluoro-3-oxanonane



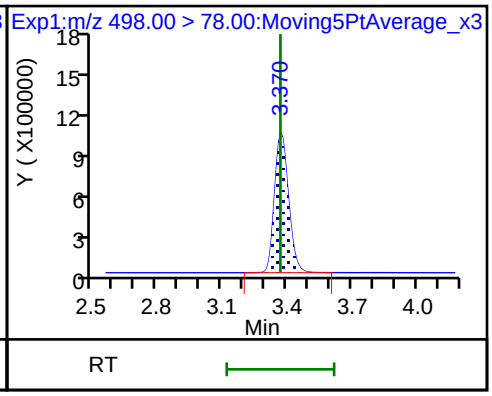
68 Perfluorononanesulfonic acid



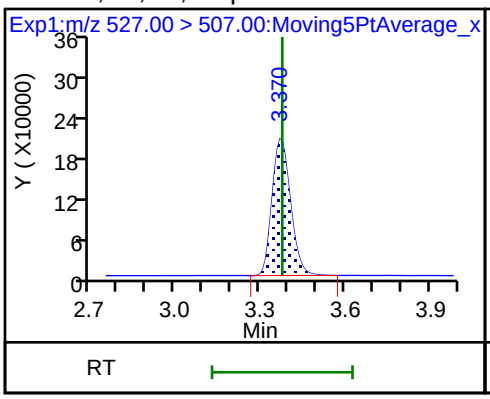
68 Perfluorononanesulfonic acid



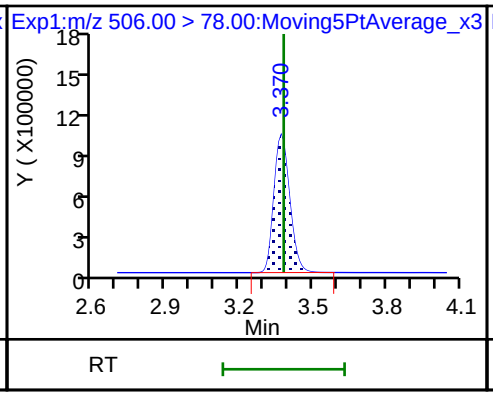
22 Perfluorooctane Sulfonamide



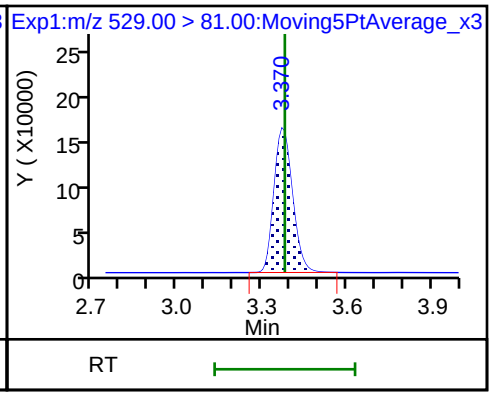
25 1H,1H,2H,2H-perfluorodecanesulfon



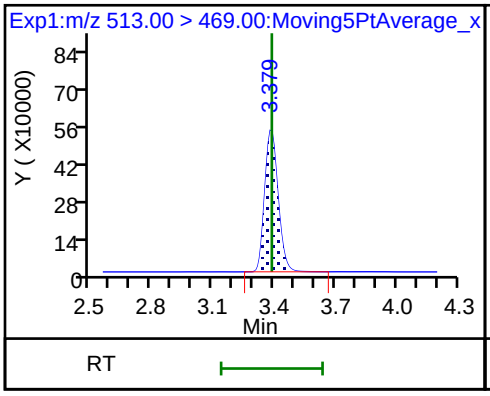
D 21 13C8 FOSA



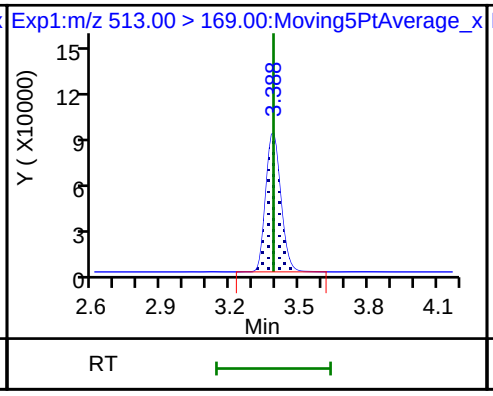
D 26 M2-8:2FTS



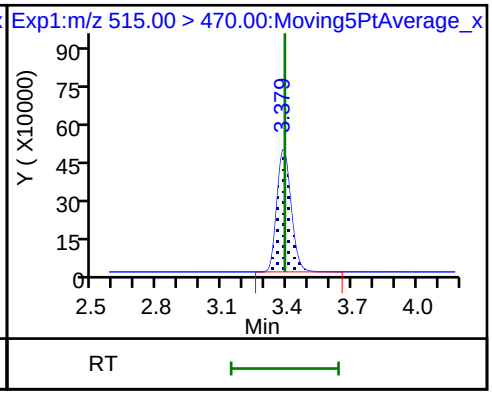
24 Perfluorodecanoic acid



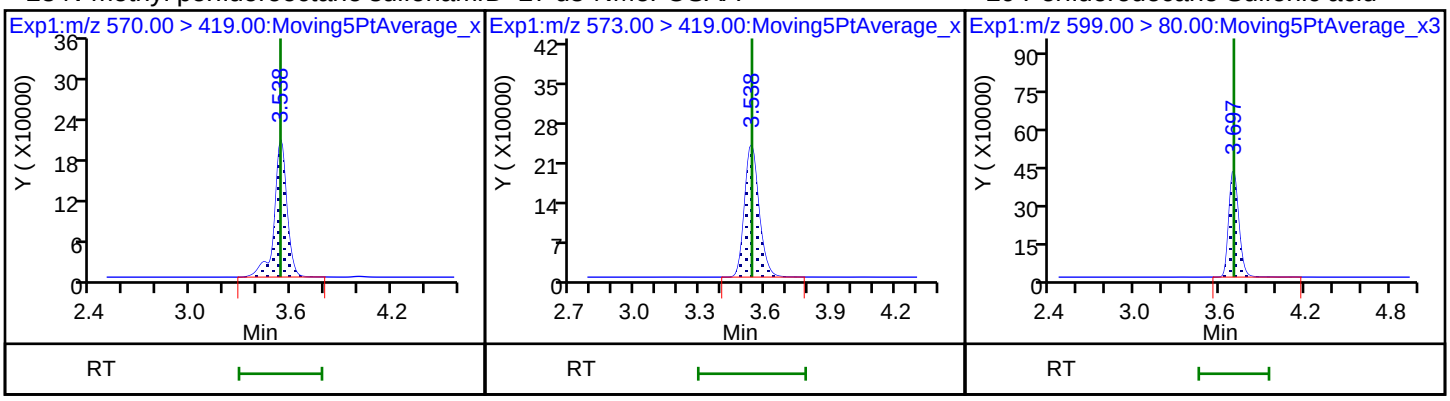
24 Perfluorodecanoic acid



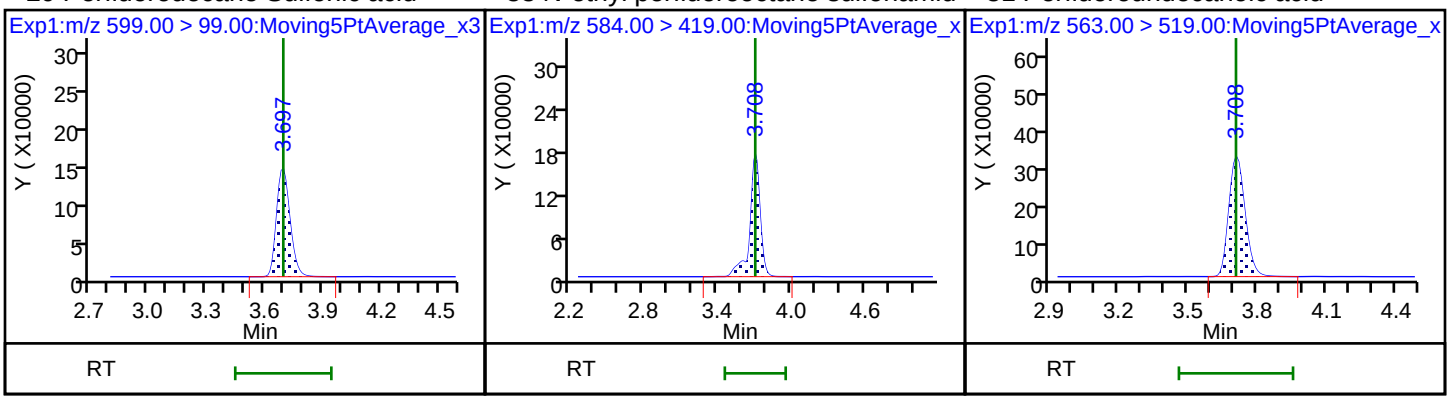
D 23 13C2 PFDA



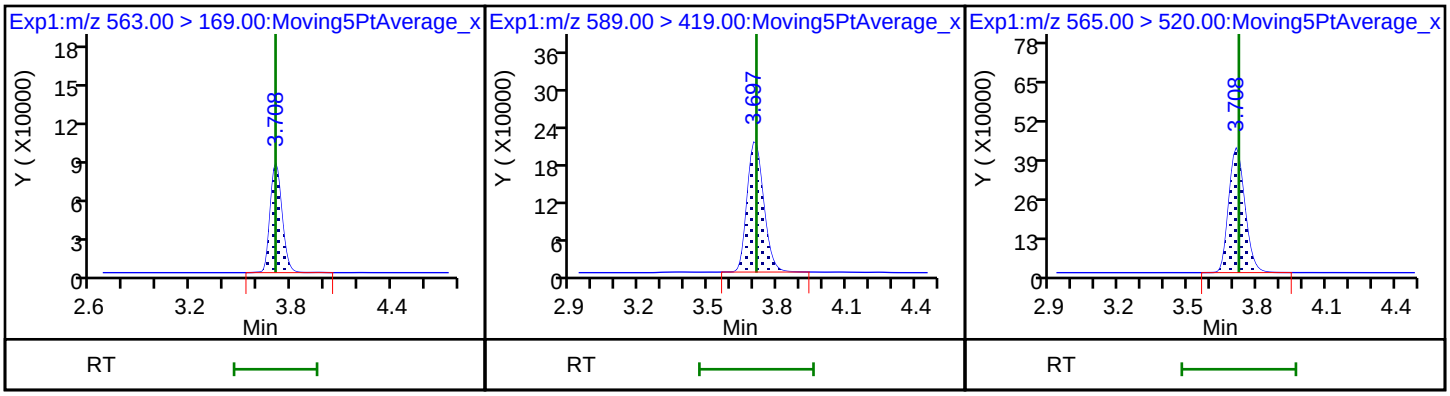
28 N-methyl perfluorooctane sulfonamiD 27 d3-NMeFOSAA 29 Perfluorodecane Sulfonic acid



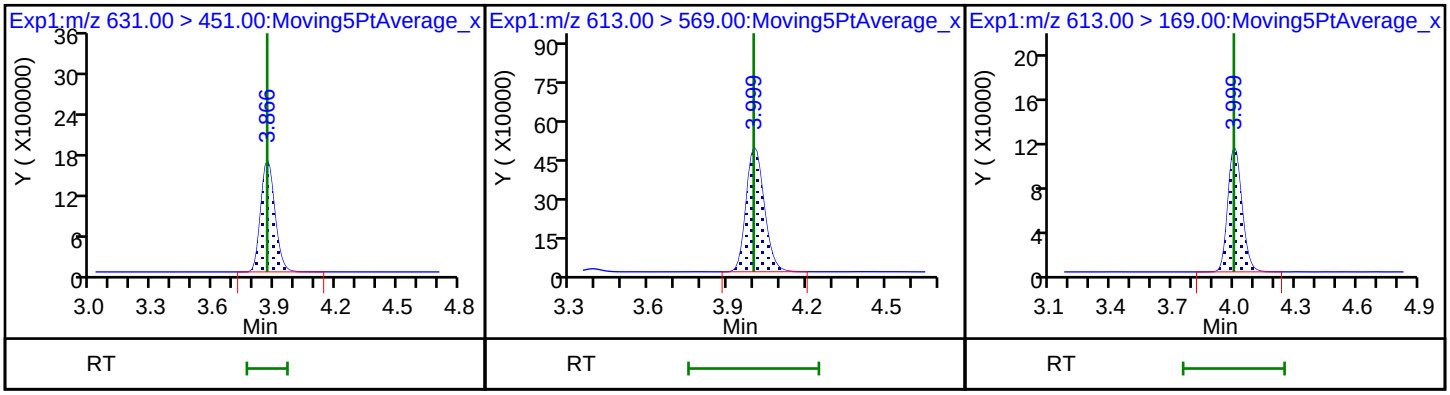
29 Perfluorodecane Sulfonic acid 33 N-ethyl perfluorooctane sulfonamid 31 Perfluoroundecanoic acid



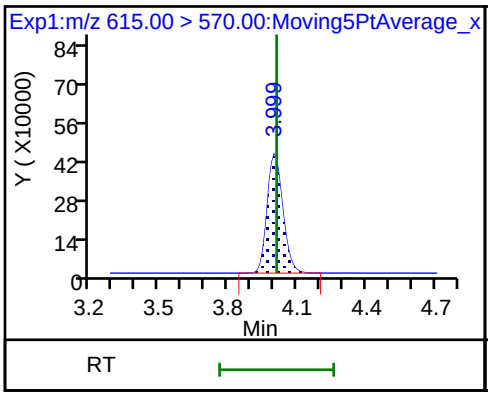
31 Perfluoroundecanoic acid D 32 d5-NEtFOSAA D 30 13C2 PFUnA



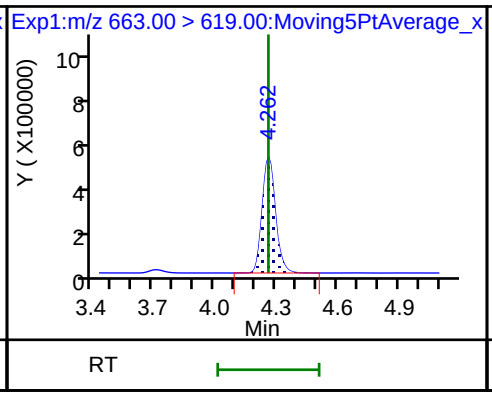
66 11-Chloroeicosafluoro-3-oxaundecan 37 Perfluorododecanoic acid 37 Perfluorododecanoic acid



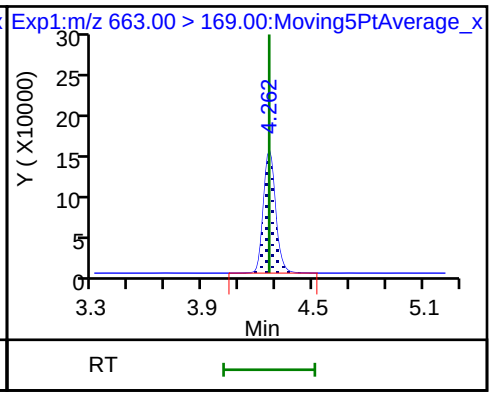
D 36 13C2 PFDoA



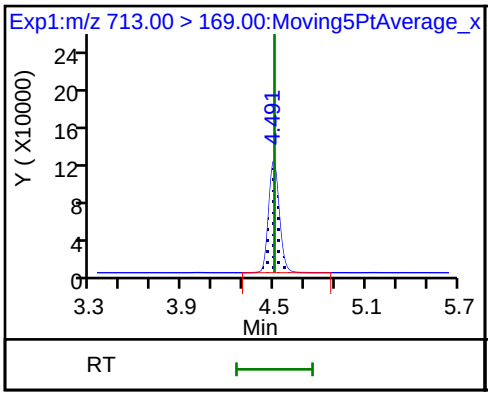
41 Perfluorotridecanoic acid



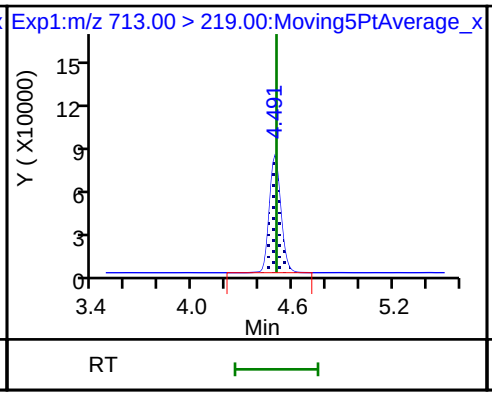
41 Perfluorotridecanoic acid



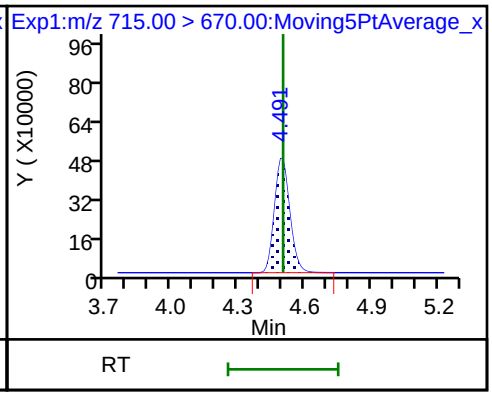
42 Perfluorotetradecanoic acid



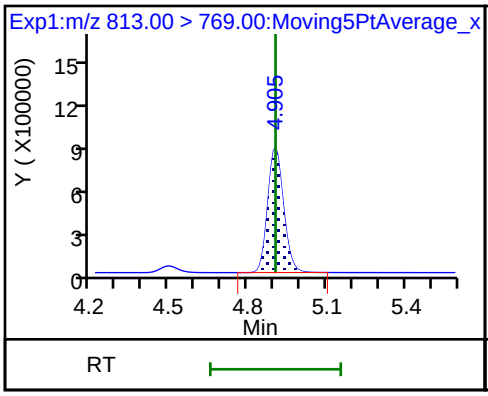
42 Perfluorotetradecanoic acid



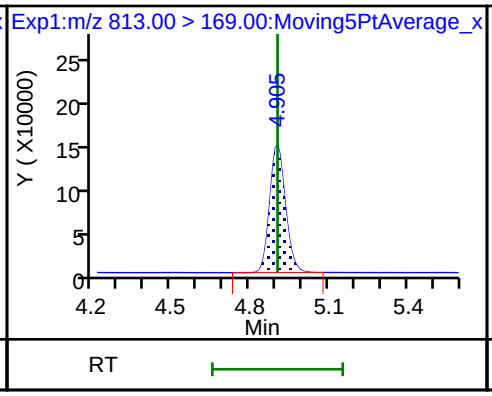
D 43 13C2-PFTeDA



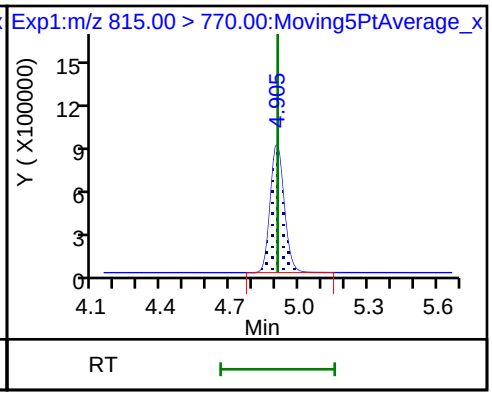
45 Perfluorohexadecanoic acid



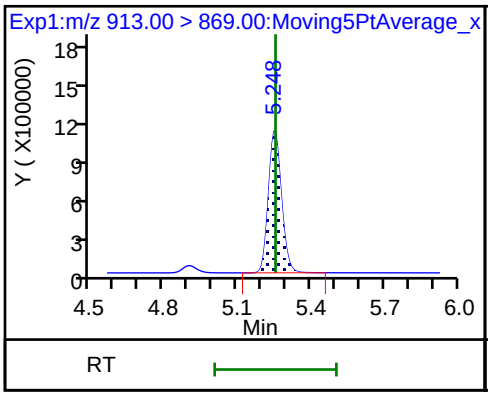
45 Perfluorohexadecanoic acid



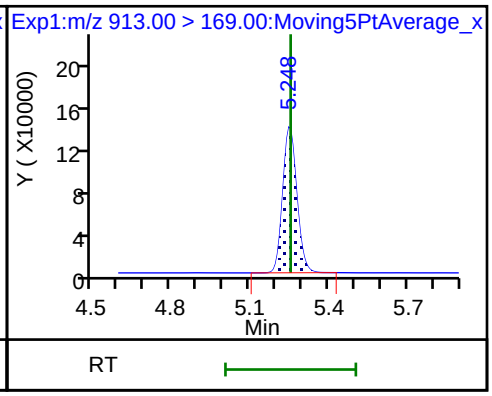
D 44 13C2-PFHxDA



46 Perfluorooctadecanoic acid



46 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Lab Sample ID: CCVL 320-233973/2 Calibration Date: 07/13/2018 16:04

Instrument ID: A8_N Calib Start Date: 07/11/2018 14:48

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 07/11/2018 15:38

Lab File ID: 2018.07.13LLAA_005.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.9856	1.040		0.0528	0.0500	5.5	50.0
Perfluoropentanoic acid (PFPeA)	AveID	1.213	1.320		0.0544	0.0500	8.8	50.0
Perfluorobutanesulfonic acid (PFBS)	AveID	76.50	73.26		0.0423	0.0442	-4.2	50.0
4:2 FTS	AveID	13.00	12.77			0.0467	-1.8	50.0
Perfluorohexanoic acid (PFHxA)	AveID	1.029	1.062		0.0516	0.0500	3.2	50.0
Perfluoropentanesulfonic acid (PFPeS)	AveID	69.78	68.06		0.0457	0.0469	-2.5	50.0
HFPO-DA (GenX)	AveID	2.654	3.005		0.0566	0.0500	13.2	50.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.157	1.198		0.0518	0.0500	3.6	50.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.148	1.273		0.0504	0.0455	10.9	50.0
ADONA	AveID	3.219	3.583		0.0524	0.0471	11.3	50.0
6:2 FTS	AveID	1.564	1.328			0.0474	-15.1	50.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.318	1.434		0.0518	0.0476	8.8	50.0
Perfluorooctanoic acid (PFOA)	AveID	1.232	1.348		0.0548	0.0501	9.5	50.0
Perfluorononanoic acid (PFNA)	AveID	1.109	1.131		0.0510	0.0500	1.9	50.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.133	1.242		0.0509	0.0464	9.6	50.0
9-Chlorohexadecafluoro-3-oxa nonane-1-sulfonate	AveID	1.836	1.857		0.0471	0.0466	1.1	50.0
Perfluorononanesulfonic acid (PFNS)	AveID	0.7752	0.8755		0.0542	0.0480	12.9	50.0
8:2 FTS	AveID	1.290	1.324			0.0479	2.7	50.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9856	0.9598		0.0487	0.0500	-2.6	50.0
Perfluorodecanoic acid (PFDA)	AveID	1.049	1.063		0.0506	0.0500	1.3	50.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	0.9858	1.110			0.0500	12.6	50.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6714	0.7456		0.0535	0.0482	11.0	50.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.8840	0.8886		0.0503	0.0500	0.5	50.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.8195	0.9931		0.0606	0.0500	21.2	50.0
11-Chloroeicosafluoro-3-oxau ndecane-1-sulfonate	AveID	2.654	2.867		0.0509	0.0471	8.0	50.0
Perfluorododecanoic acid (PFDoA)	AveID	1.092	1.126		0.0516	0.0500	3.1	50.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.068	1.083		0.0507	0.0500	1.4	50.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2602	0.2658		0.0511	0.0500	2.2	50.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		1.359		0.0500	0.0500	-0.0	50.0

FORM VII 537 (modified)

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Lab Sample ID: CCVL 320-233973/2 Calibration Date: 07/13/2018 16:04

Instrument ID: A8_N Calib Start Date: 07/11/2018 14:48

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 07/11/2018 15:38

Lab File ID: 2018.07.13LLAA_005.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.143	1.227		0.0537	0.0500	7.3	50.0
13C4 PFBA	Ave	1.356	1.305		2.41	2.50	-3.7	50.0
13C5 PFPeA	Ave	0.9425	0.9455		2.51	2.50	0.3	50.0
13C3-PFBS	Ave	0.0237	0.0242		2.37	2.33	2.0	50.0
M2-4:2FTS	Ave	0.1273	0.1216		2.23	2.34	-4.5	50.0
13C2 PFHxA	Ave	1.017	1.042		2.56	2.50	2.4	50.0
13C3 HFPO-DA	Ave	0.0724	0.0777		2.68	2.50	7.3	50.0
13C4-PFHpA	Ave	0.9371	0.9643		2.57	2.50	2.9	50.0
18O2 PFHxS	Ave	1.328	1.311		2.34	2.37	-1.2	50.0
M2-6:2FTS	Ave	0.2009	0.1940		2.29	2.38	-3.5	50.0
13C4 PFOA	Ave	0.9560	0.9536		2.49	2.50	-0.3	50.0
13C4 PFOS	Ave	0.9742	0.9329		2.29	2.39	-4.2	50.0
13C5 PFNA	Ave	0.8546	0.7976		2.33	2.50	-6.7	50.0
M2-8:2FTS	Ave	0.2939	0.2318		1.89	2.40	-21.1	50.0
13C8 FOSA	Ave	1.405	1.440		2.56	2.50	2.5	50.0
13C2 PFDA	Ave	0.7503	0.7110		2.37	2.50	-5.2	50.0
d3-NMeFOSAA	Ave	0.3075	0.3296		2.68	2.50	7.2	50.0
13C2 PFUnA	Ave	0.6266	0.6356		2.54	2.50	1.4	50.0
d5-NEtFOSAA	Ave	0.3150	0.3468		2.75	2.50	10.1	50.0
13C2 PFDoA	Ave	0.6496	0.6950		2.67	2.50	7.0	50.0
13C2-PFTeDA	Ave	0.6740	0.7319		2.71	2.50	8.6	50.0
13C2-PFHxDA	Ave	1.074	1.208		2.81	2.50	12.5	50.0

FORM VII 537 (modified)

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61052.b\2018.07.13LLAA_005.d
Lims ID: CCVL
Client ID:
Sample Type: CCVL
Inject. Date: 13-Jul-2018 16:04:34 ALS Bottle#: 21 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCVL
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-A8_N*sub32

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61052.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 15-Jul-2018 14:30:24 Calib Date: 11-Jul-2018 15:38:42
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK007

First Level Reviewer: hannigana Date: 13-Jul-2018 16:16:31

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.435	1.430	0.005	0.540	5127395	2.41		96.3	23730	
2 Perfluorobutyric acid										M
212.90 > 169.00	1.435	1.433	0.002	1.000	106640	0.0528		106	42.4	M
D 3 13C5-PFPeA										
267.90 > 223.00	1.720	1.711	0.009	0.647	3714188	2.51		100	45240	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.720	1.716	0.004	1.000	98029	0.0544		109	39.5	
D 47 13C3-PFBS										
301.90 > 83.00	1.756	1.756	0.0	0.660	88229	2.37		102	619	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.756	1.761	-0.005	1.000	122886	0.0423		95.8	751	
298.90 > 99.00	1.756	1.761	-0.005	1.000	53594		2.29(1.25-3.74)		519	
D 60 M2-4:2FTS										
329.00 > 81.00	1.970	1.959	0.011	0.741	445966	2.23		95.5	6118	
61 1H,1H,2H,2H-perfluorohexanesulfoni										
327.00 > 307.00	1.970	1.967	0.003	1.122	22633	0.0459		98.2	1333	
D 7 13C2 PFHxA										
315.00 > 270.00	2.003	1.992	0.011	0.753	4092538	2.56		102	65607	
6 Perfluorohexanoic acid										M
313.00 > 269.00	2.003	1.999	0.004	1.000	86953	0.0516		103	171	M
313.00 > 119.00	2.003	1.999	0.004	1.000	10531		8.26(5.03-15.10)		224	
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.025	2.022	0.003	1.154	121128	0.0457		97.5	3572	
349.00 > 99.00	2.025	2.022	0.003	1.154	46985		2.58(1.36-4.07)		1149	
67 Perfluoro(2-propoxypropanoic) acid										
329.10 > 285.00	2.093	2.090	0.003	1.000	18337	0.0566		113	144	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.093	2.094	-0.001	0.787	305140	2.68		107	7662	
D 9 13C4-PFHpA										
367.00 > 322.00	2.319	2.306	0.013	0.872	3787884	2.57		103	33150	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.319	2.316	0.003	1.000	90735	0.0518		104	167	
363.00 > 169.00	2.319	2.316	0.003	1.000	37628		2.41(1.13-3.40)		332	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.332	2.329	0.003	1.000	119283	0.0504		111	1253	
399.00 > 99.00	2.332	2.329	0.003	1.000	39365		3.03(1.50-4.49)		289	
D 11 18O2 PFHxS										
403.00 > 84.00	2.332	2.333	-0.001	0.877	4872045	2.34		98.8	31335	
65 Adona										
377.00 > 251.00	2.358	2.355	0.003	0.780	247415	0.0524		111	5300	
377.00 > 85.00	2.358	2.355	0.003	0.780	139439		1.77(0.84-2.53)		956	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.636	2.634	0.002	1.000	19191	0.0403		84.9	193	
D 12 M2-6:2FTS										
429.00 > 81.00	2.636	2.636	0.0	0.991	723817	2.29		96.5	13395	
* 62 13C2-PFOA										
415.00 > 370.00	2.659	2.658	0.001		3928203	2.50			43059	
D 14 13C4 PFOA										
417.00 > 372.00	2.659	2.660	-0.001	1.000	3745890	2.49		99.7	47194	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.667	2.666	0.001	1.003	101089	0.0548		109	65.7	
413.00 > 169.00	2.659	2.666	-0.007	1.000	45150		2.24(0.84-2.52)		245	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.667	2.666	0.001	0.882	100069	0.0518		109	2945	
449.00 > 99.00	2.667	2.666	0.001	0.882	25657		3.90(1.94-5.82)		517	
20 Perfluorononanoic acid										
463.00 > 419.00	3.024	3.021	0.003	1.000	70870	0.0510		102	153	
463.00 > 169.00	3.024	3.021	0.003	1.000	17797		3.98(1.90-5.69)		956	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.024	3.021	0.003	1.000	84492	0.0509		110	1130	
499.00 > 99.00	3.017	3.021	-0.004	0.998	21037		4.02(2.31-6.93)		365	
D 18 13C4 PFOS										
503.00 > 80.00	3.024	3.023	0.001	1.137	3503546	2.29		95.8	30721	
D 19 13C5 PFNA										
468.00 > 423.00	3.024	3.023	0.001	1.137	3133119	2.33		93.3	41078	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.231	3.236	-0.005	1.069	126826	0.0471		101	1294	
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.360	3.365	-0.005	1.111	61603	0.0542		113	1765	
549.00 > 99.00	3.360	3.365	-0.005	1.111	22493		2.74(1.33-3.97)		481	
25 1H,1H,2H,2H-perfluorodecanesulfoni										
527.00 > 507.00	3.370	3.365	0.005	1.003	23097	0.0492		103	367	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.370	3.365	0.005	1.000	108564	0.0487		97.4	3065	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 26 M2-8:2FTS										
529.00 > 81.00	3.360	3.369	-0.009	1.264	872154	1.89		78.9	14054	
D 21 13C8 FOSA										
506.00 > 78.00	3.370	3.369	0.001	1.267	5655727	2.56		102	34649	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.379	3.374	0.005	1.000	59367	0.0506		101	357	
513.00 > 169.00	3.379	3.374	0.005	1.000	9813		6.05(2.36-7.09)		433	
D 23 13C2 PFDA										
515.00 > 470.00	3.379	3.378	0.001	1.271	2792760	2.37		94.8	22552	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.538	3.533	0.005	1.003	28734	0.0563		113	212	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.528	3.537	-0.008	1.327	1294617	2.68		107	20454	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.686	3.690	-0.004	1.219	52679	0.0535		111	2160	
599.00 > 99.00	3.686	3.690	-0.004	1.219	17504		3.01(1.39-4.16)		618	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.697	3.696	0.001	1.390	1362228	2.75		110	3359	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.697	3.701	-0.004	1.000	49590	0.0606		121	207	
563.00 > 169.00	3.708	3.701	0.007	1.003	11553		4.29(2.12-6.36)		585	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.697	3.701	-0.004	1.000	24210	0.0503		101	443	
D 30 13C2 PFUnA										
565.00 > 520.00	3.697	3.707	-0.010	1.390	2496679	2.54		101	36833	
66 11-Chloroeicosafluoro-3-oxaundecan										
631.00 > 451.00	3.865	3.858	0.007	1.278	197936	0.0509		108	8226	
D 36 13C2 PFDoA										
615.00 > 570.00	3.998	3.997	0.001	1.503	2730213	2.67		107	21377	
37 Perfluorododecanoic acid										
613.00 > 569.00	3.998	4.000	-0.002	1.000	61482	0.0516		103	43.7	
613.00 > 169.00	3.998	4.000	-0.002	1.000	15011		4.10(2.13-6.40)		270	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.251	4.254	-0.003	1.063	59131	0.0507		101	30.5	
663.00 > 169.00	4.261	4.254	0.007	1.066	19079		3.10(1.25-3.76)		301	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.490	4.490	0.0	1.688	2874909	2.71		109	14544	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.500	4.492	0.008	1.002	15285	0.0511		102	261	
713.00 > 219.00	4.490	4.492	-0.002	1.000	11027		1.39(0.71-2.13)		260	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.895	4.896	-0.001	1.841	4743717	2.81		112	12975	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.904	4.898	0.006	1.002	128969	0.0500		99.9	33.5	
813.00 > 169.00	4.895	4.898	-0.003	1.000	21492		6.00(2.86-8.58)		223	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.247	5.249	-0.001	1.072	116382	0.0537		107	26.6	
913.00 > 169.00	5.247	5.249	-0.001	1.072	15507		7.51(3.83-11.48)		249	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

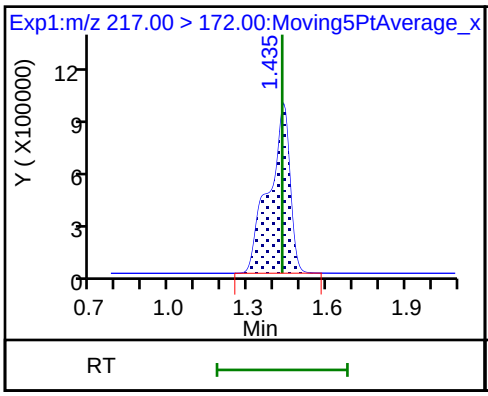
LCPFC_LL2_00005 Amount Added: 1.00 Units: mL

Report Date: 15-Jul-2018 14:30:26 Chrom Revision: 2.2 07-Jun-2018 07:41:54

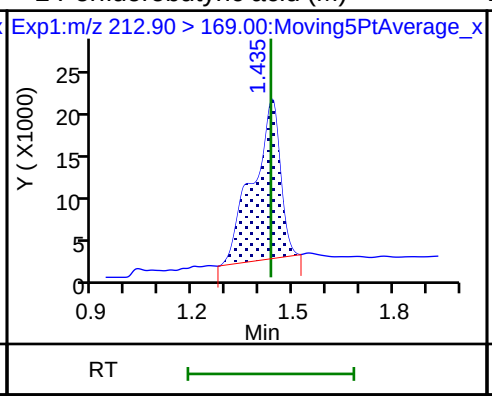
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61052.b\2018.07.13LLAA_005.d
Injection Date: 13-Jul-2018 16:04:34 Instrument ID: A8_N
Lims ID: CCVL
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 21 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC ICAL

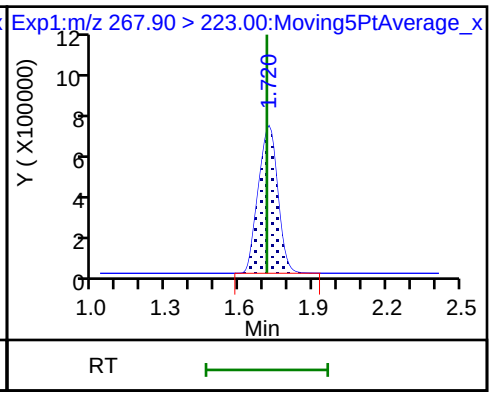
D 1 13C4 PFBA



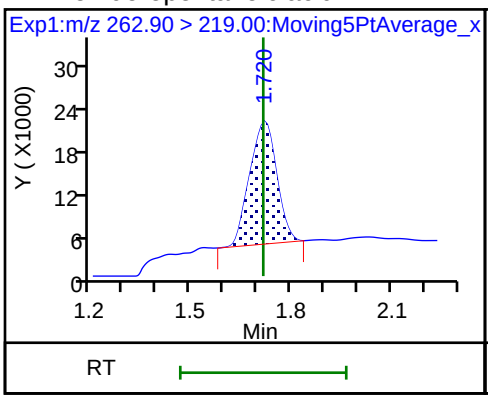
2 Perfluorobutyric acid (M)



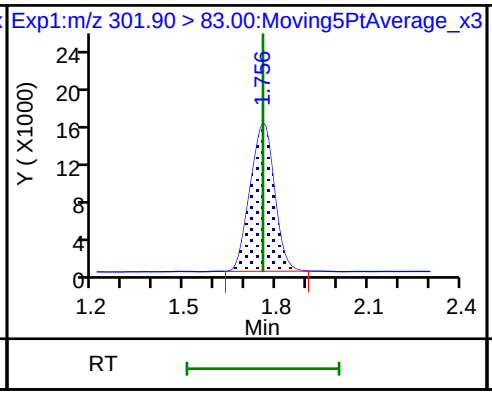
D 3 13C5-PFPeA



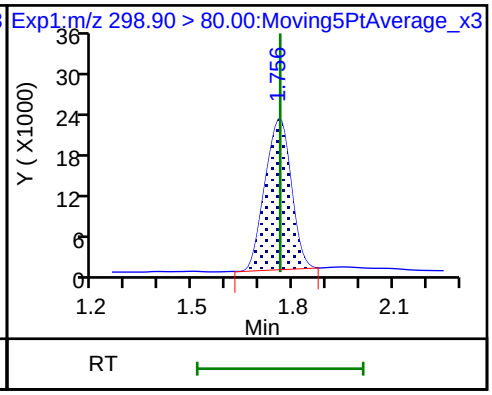
4 Perfluoropentanoic acid



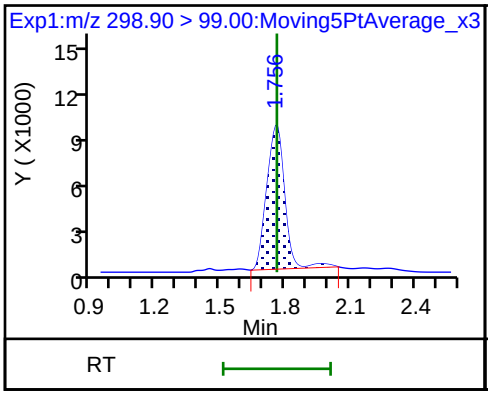
D 47 13C3-PFBS



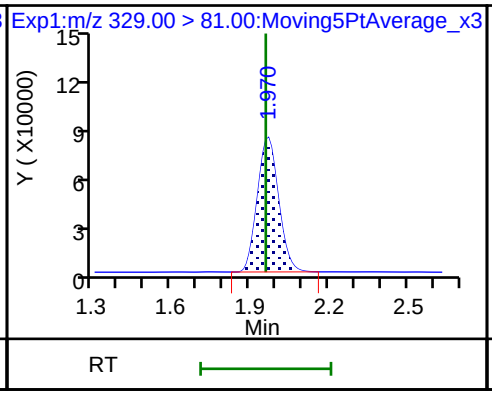
5 Perfluorobutanesulfonic acid



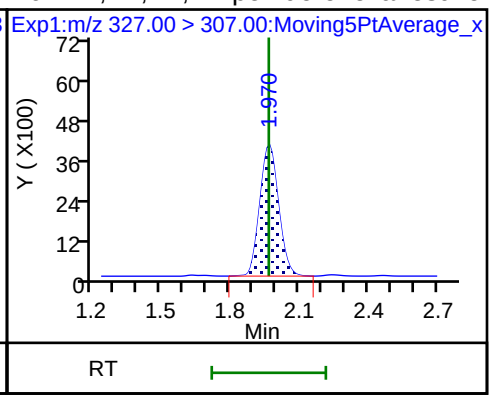
5 Perfluorobutanesulfonic acid



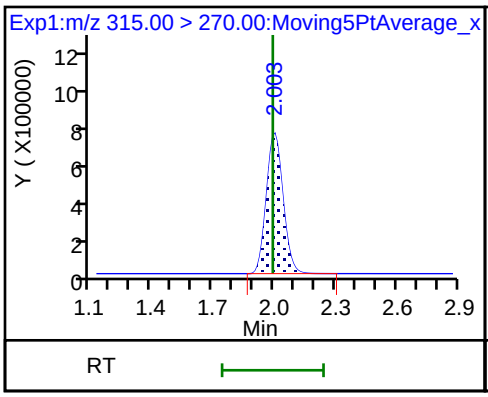
D 60 M2-4:2FTS



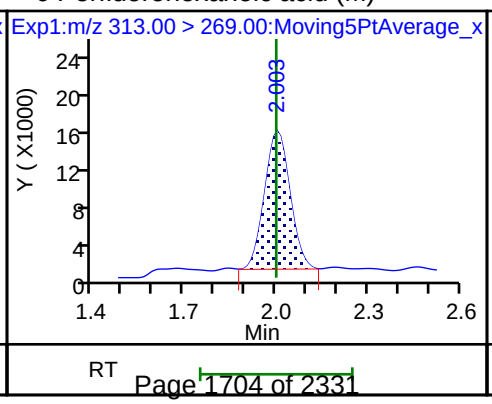
61 1H,1H,2H,2H-perfluorohexanesulfoni



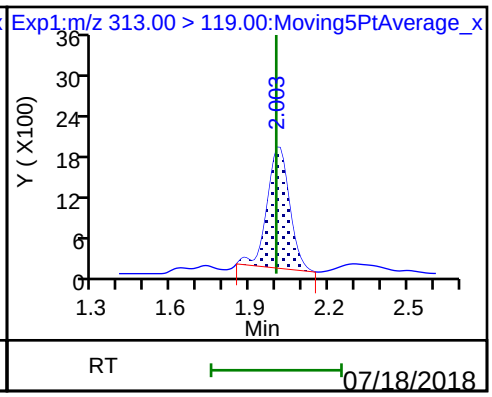
D 7 13C2 PFHxA



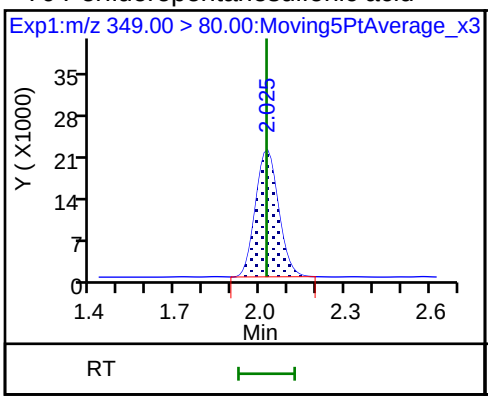
6 Perfluorohexanoic acid (M)



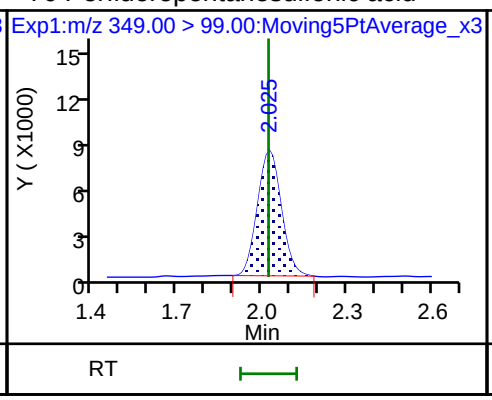
6 Perfluorohexanoic acid



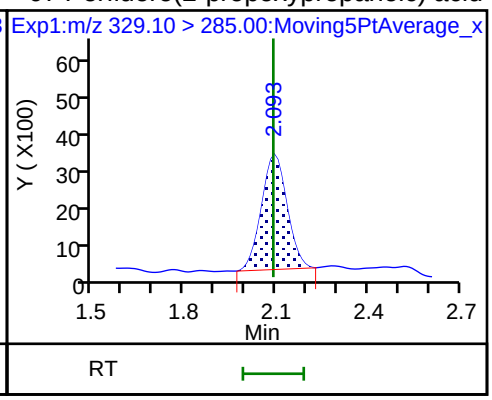
70 Perfluoropentanesulfonic acid



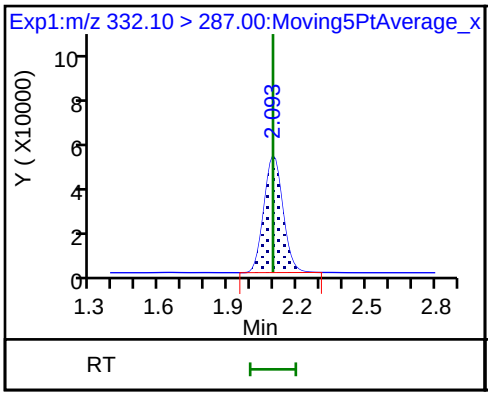
70 Perfluoropentanesulfonic acid



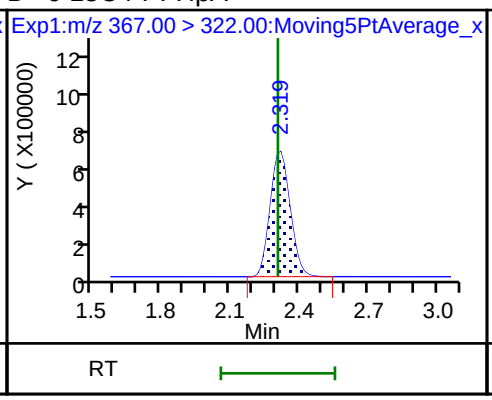
67 Perfluoro(2-propoxypropanoic) acid



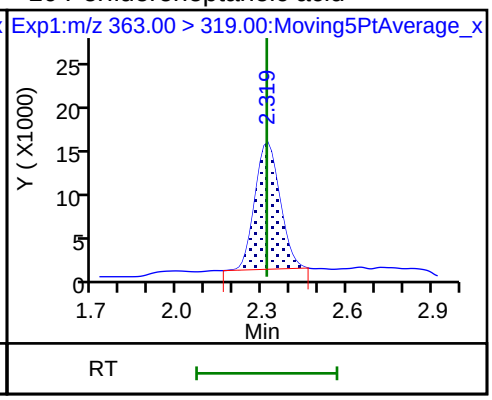
D 64 13C3 HFPO-DA



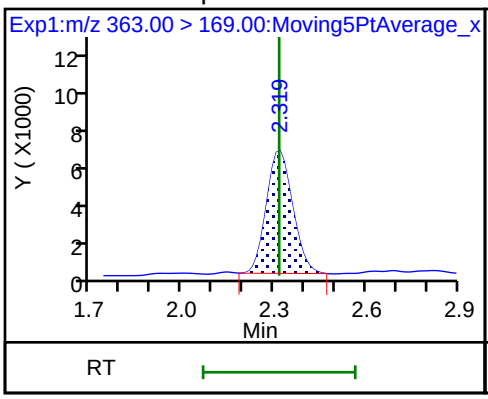
D 9 13C4-PFHpA



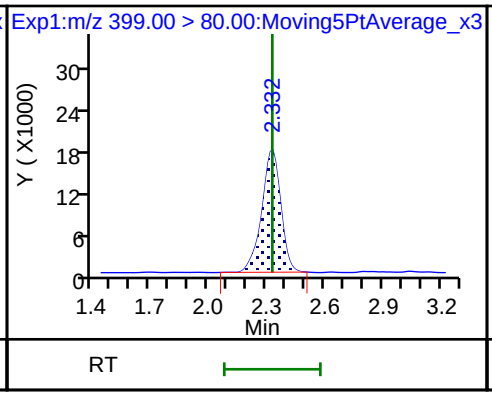
10 Perfluoroheptanoic acid



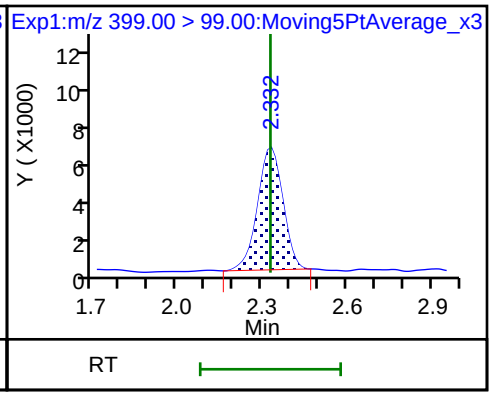
10 Perfluoroheptanoic acid



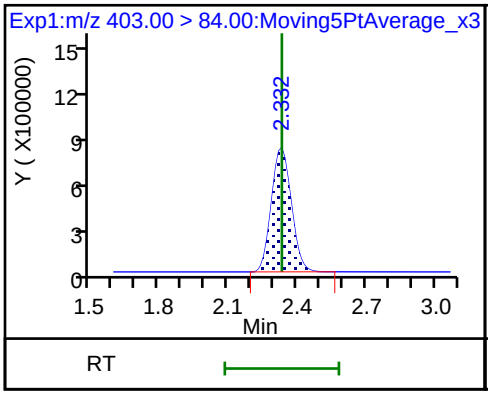
8 Perfluorohexanesulfonic acid



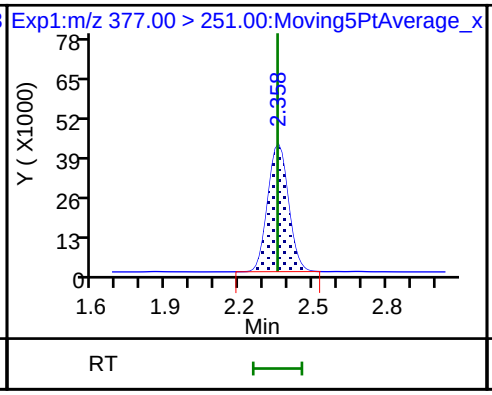
8 Perfluorohexanesulfonic acid



D 11 18O2 PFHxS



65 Adona



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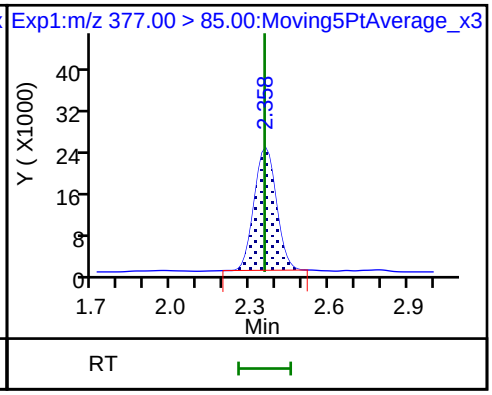
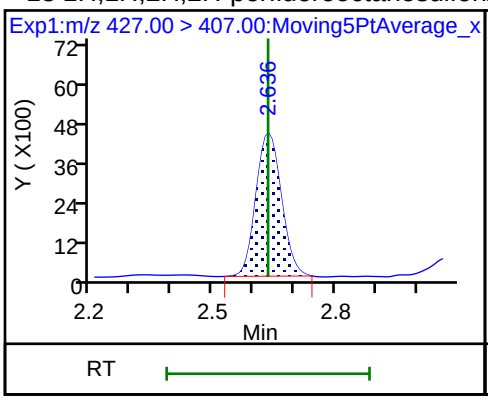
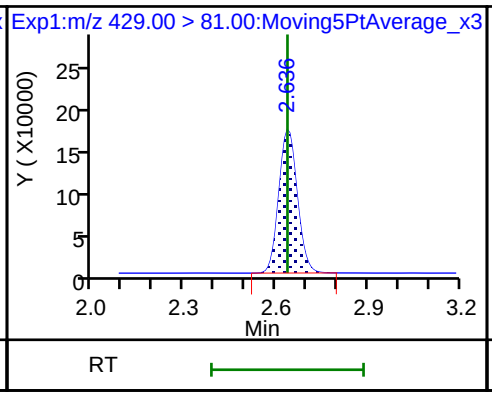


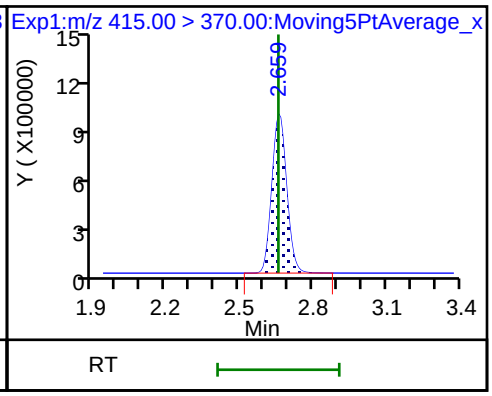
13 1H,1H,2H,2H-perfluorooctanesulfon



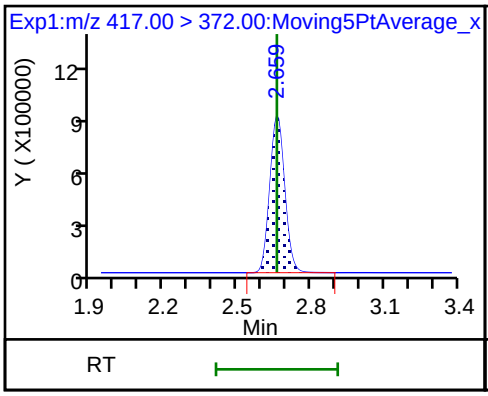
D 12 M2-6:2FTS



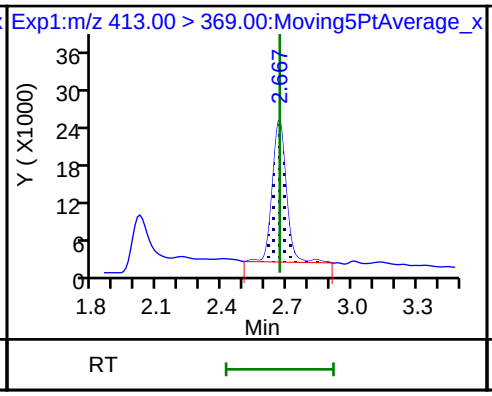
* 62 13C2-PFOA



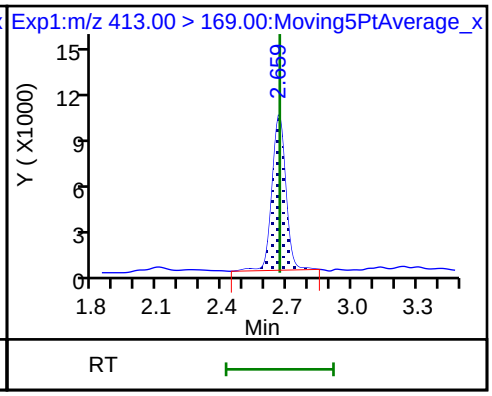
D 14 13C4 PFOA



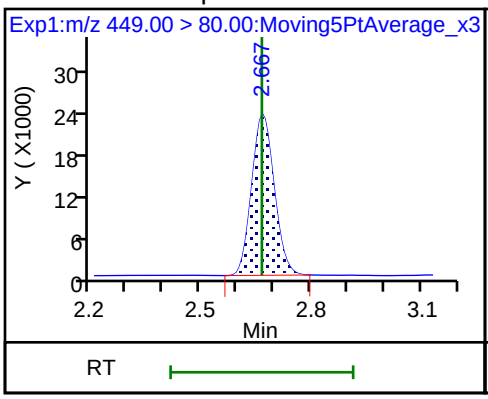
15 Perfluorooctanoic acid



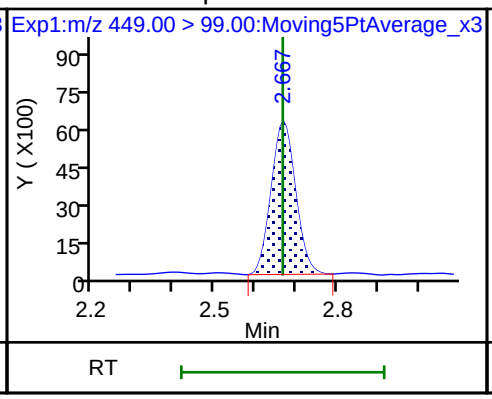
15 Perfluorooctanoic acid



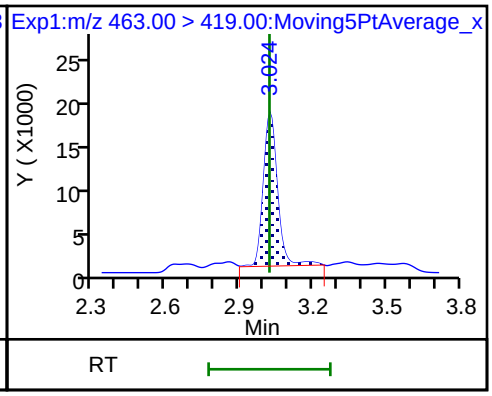
16 Perfluoroheptanesulfonic acid



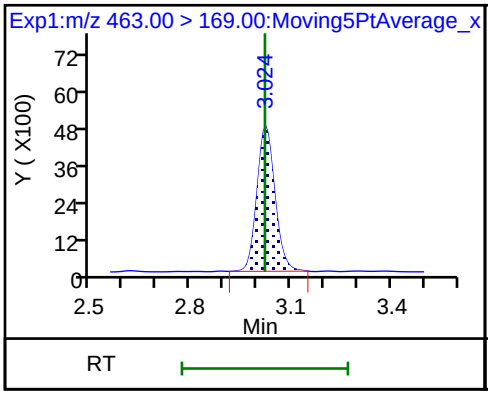
16 Perfluoroheptanesulfonic acid



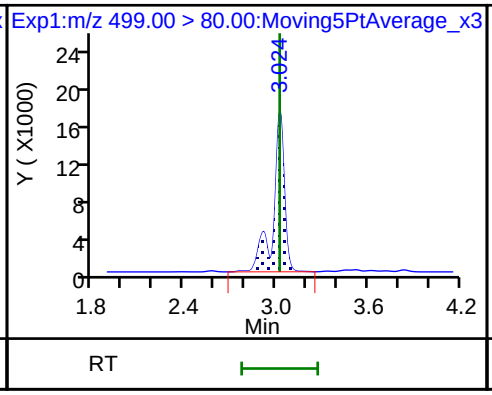
20 Perfluorononanoic acid



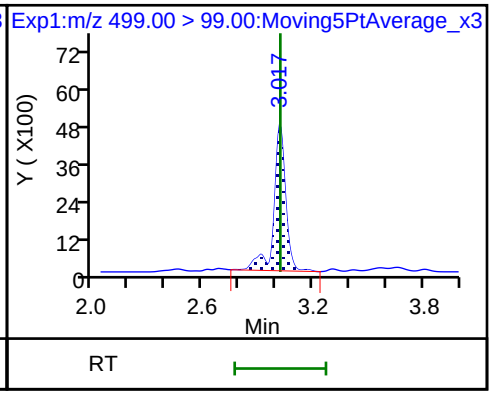
20 Perfluorononanoic acid



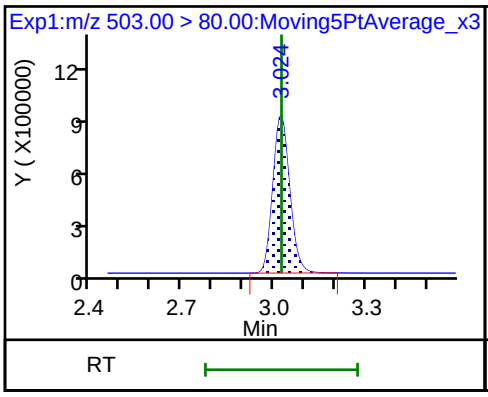
17 Perfluorooctane sulfonic acid



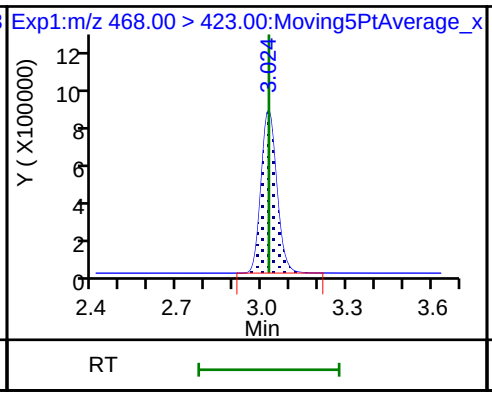
17 Perfluorooctane sulfonic acid



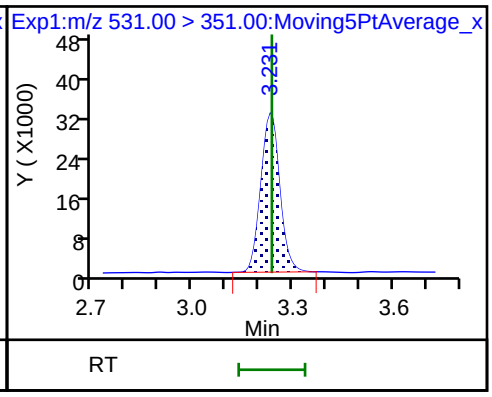
D 18 13C4 PFOS



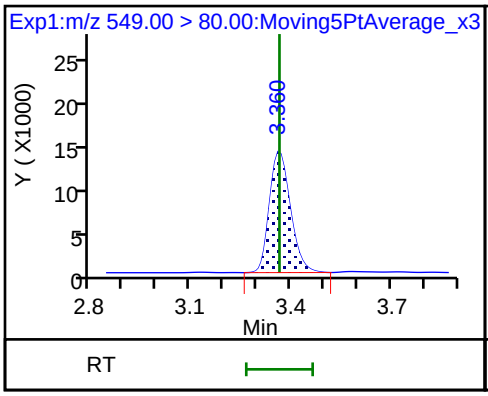
D 19 13C5 PFNA



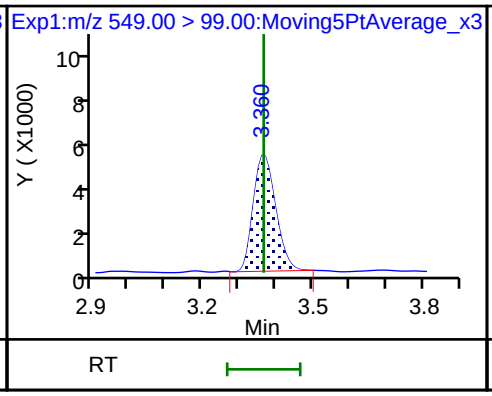
69 9-Chlorohexadecafluoro-3-oxanonane



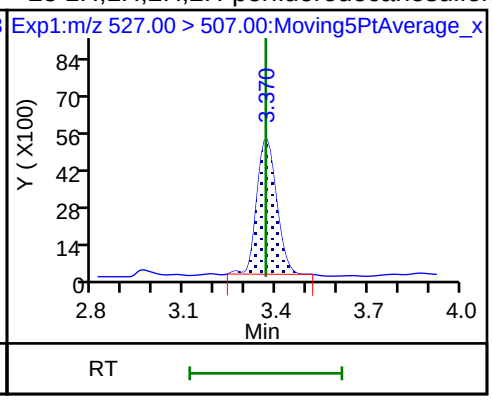
68 Perfluorononanesulfonic acid



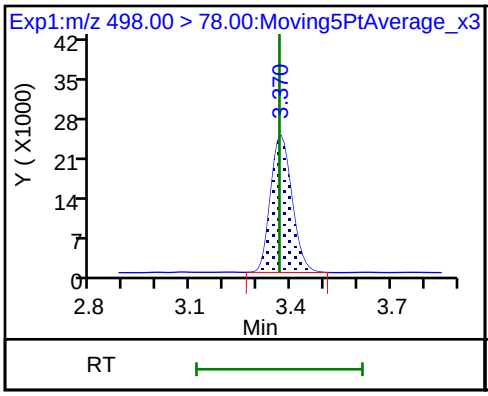
68 Perfluorononanesulfonic acid



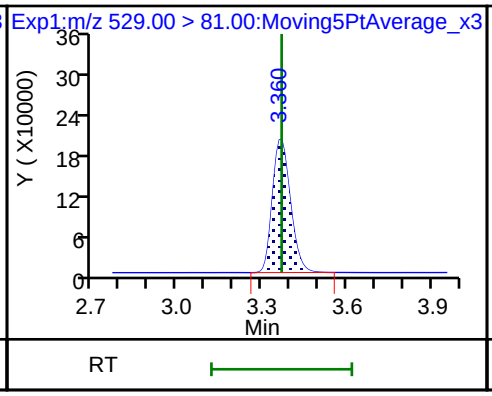
25 1H,1H,2H,2H-perfluorodecanesulfoni



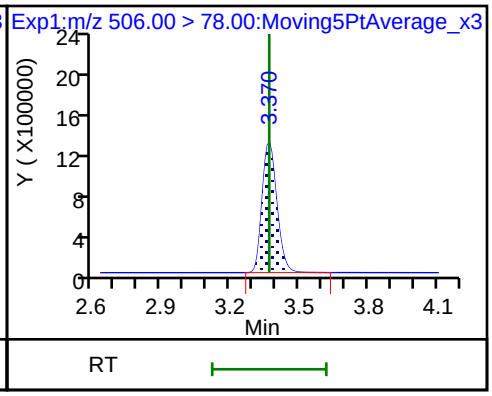
22 Perfluorooctane Sulfonamide



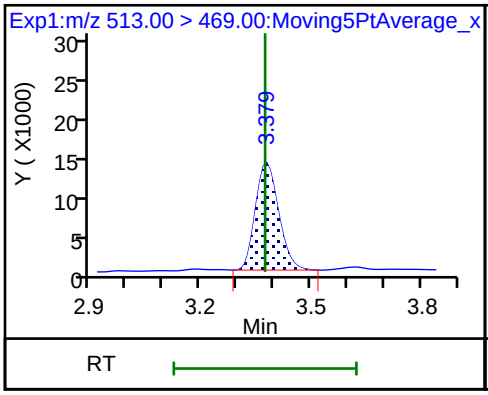
D 26 M2-8:2FTS



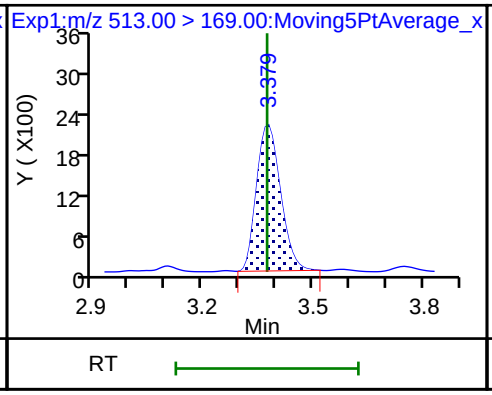
D 21 13C8 FOSA



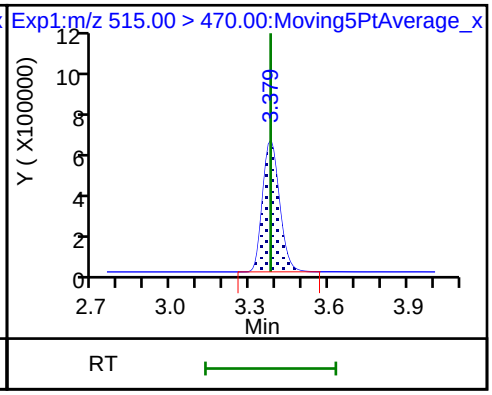
24 Perfluorodecanoic acid



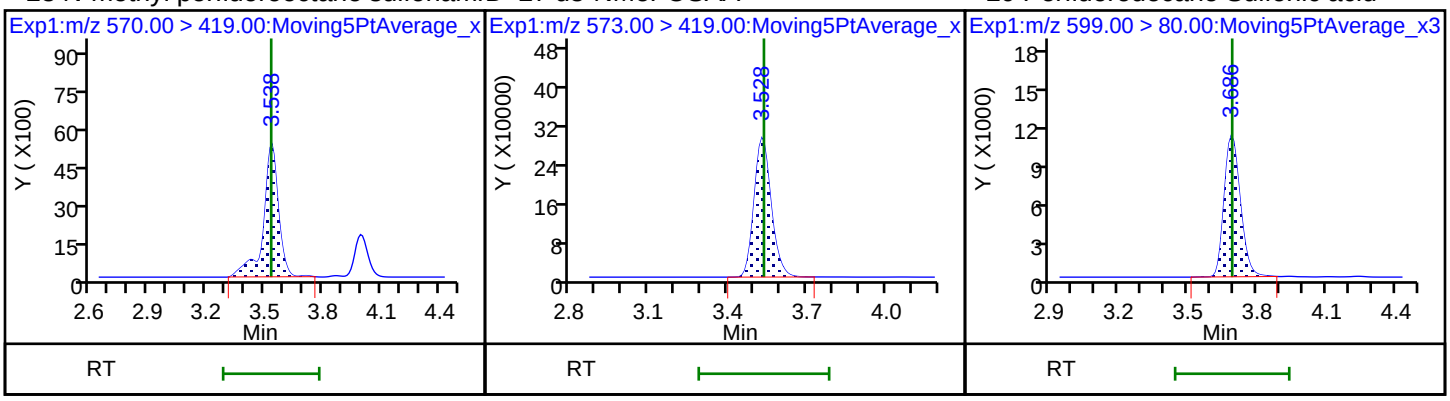
24 Perfluorodecanoic acid



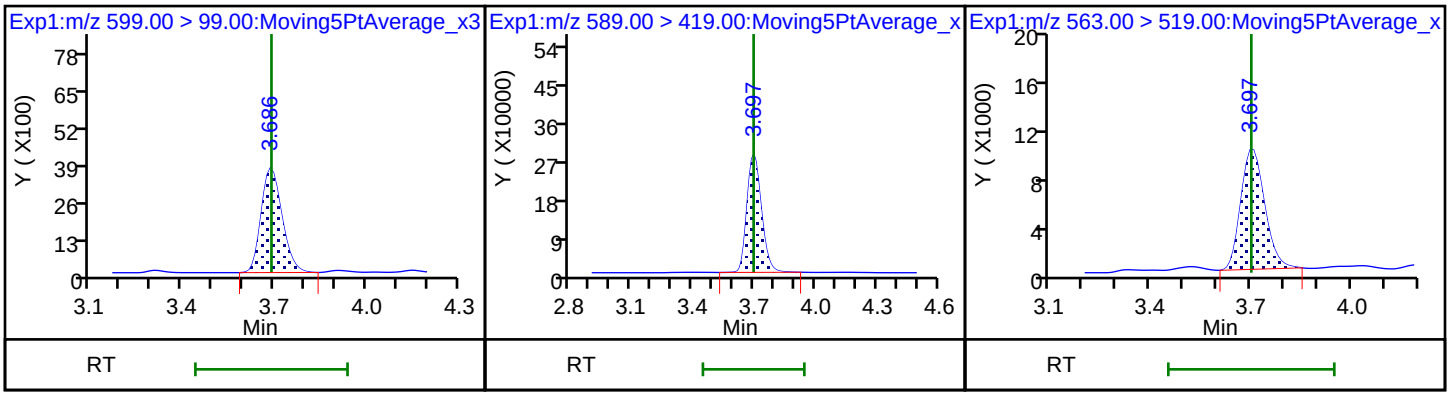
D 23 13C2 PFDA



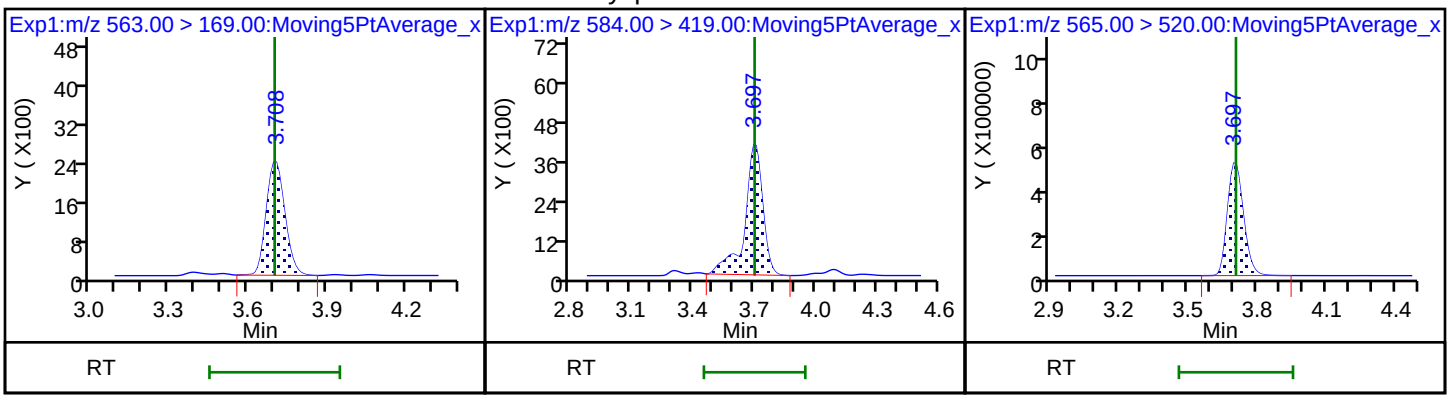
28 N-methyl perfluorooctane sulfonamiD 27 d3-NMeFOSAA 29 Perfluorodecane Sulfonic acid



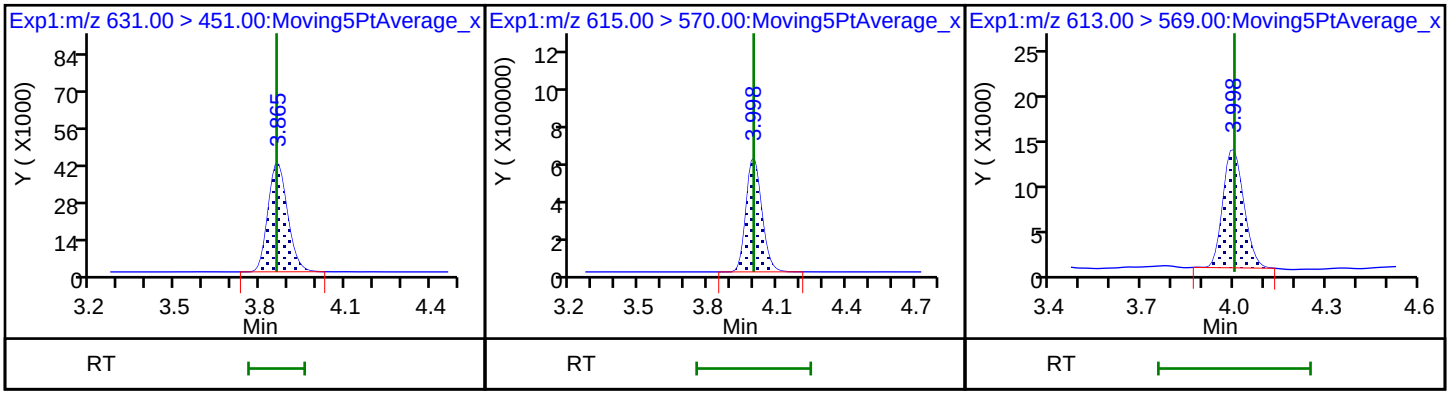
29 Perfluorodecane Sulfonic acid D 32 d5-NEtFOSAA 31 Perfluoroundecanoic acid



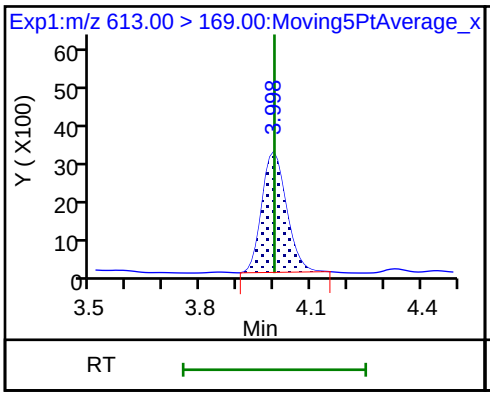
31 Perfluoroundecanoic acid 33 N-ethyl perfluorooctane sulfonamid D 30 13C2 PFUnA



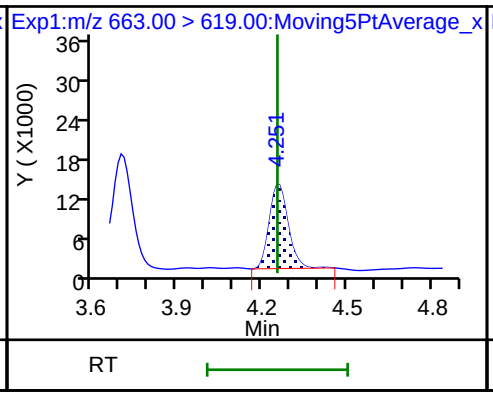
66 11-Chloroeicosafluoro-3-oxaundecanD 36 13C2 PFDoA 37 Perfluorododecanoic acid



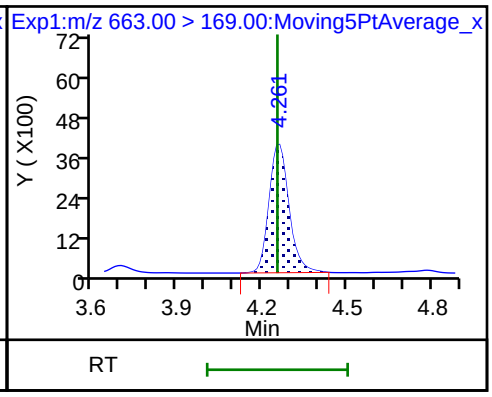
37 Perfluorododecanoic acid



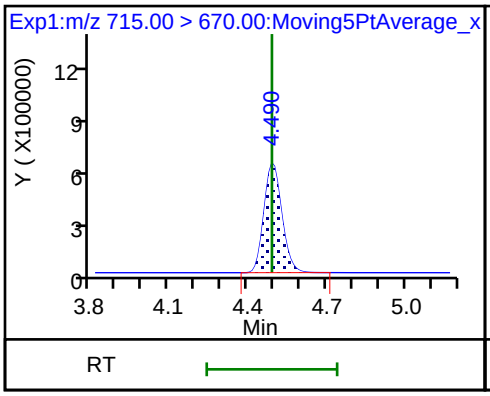
41 Perfluorotridecanoic acid



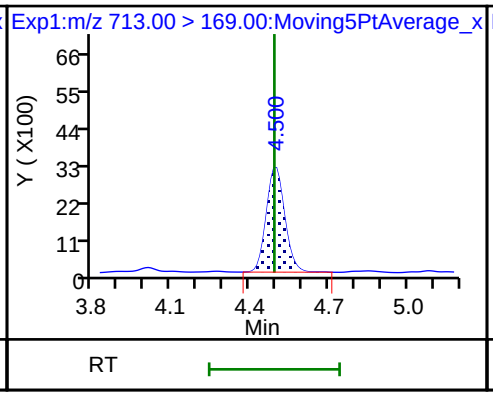
41 Perfluorotridecanoic acid



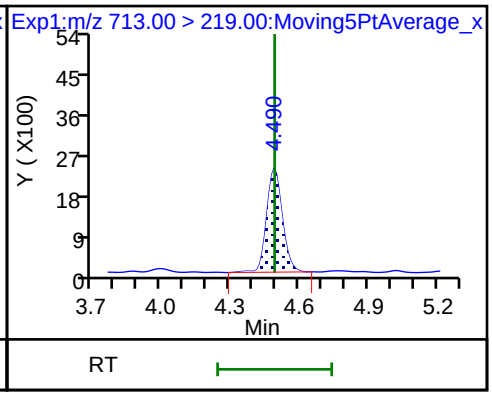
D 43 13C2-PFTeDA



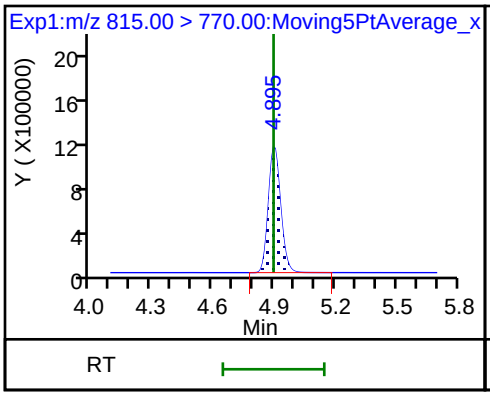
42 Perfluorotetradecanoic acid



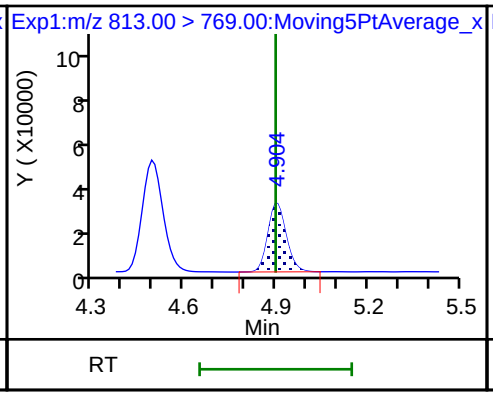
42 Perfluorotetradecanoic acid



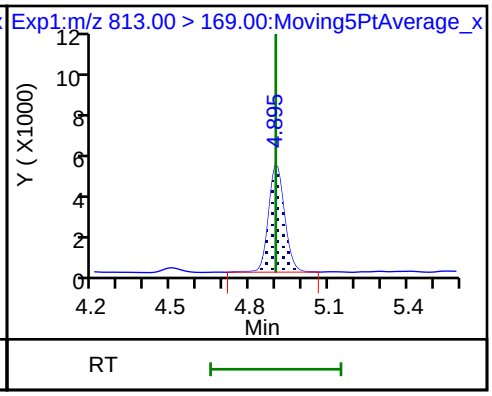
D 44 13C2-PFHxDA



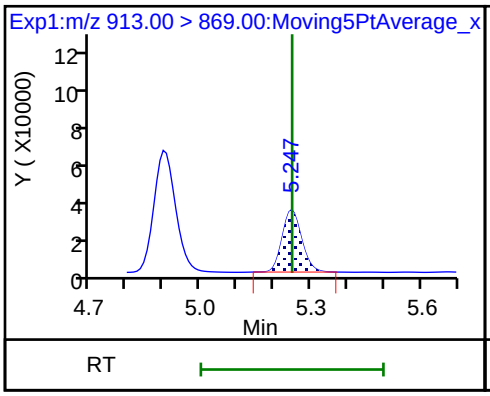
45 Perfluorohexadecanoic acid



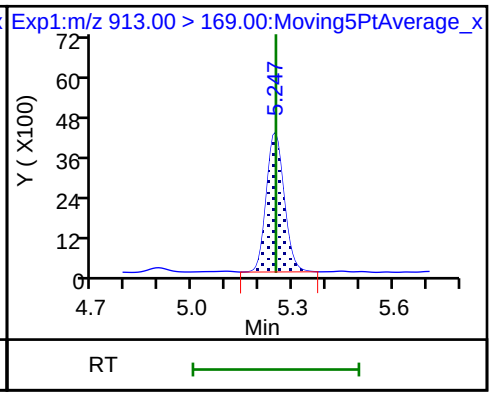
45 Perfluorohexadecanoic acid



46 Perfluorooctadecanoic acid



46 Perfluorooctadecanoic acid



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

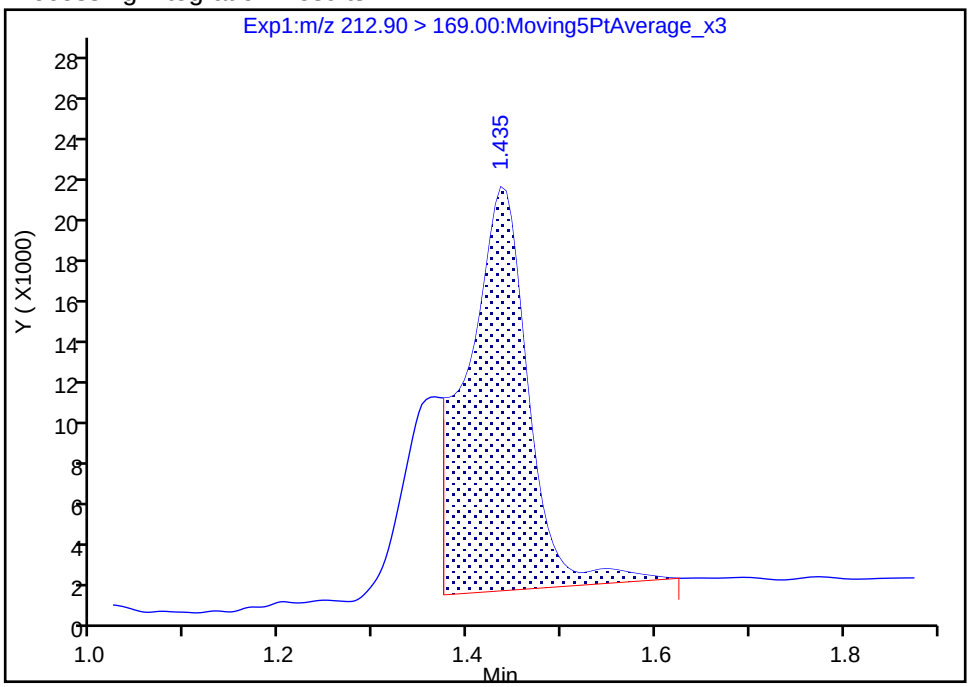
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61052.b\2018.07.13LLAA_005.d				
Injection Date:	13-Jul-2018 16:04:34	Instrument ID:	A8_N		
Lims ID:	CCVL				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	21	Worklist Smp#:	2
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

2 Perfluorobutyric acid, CAS: 375-22-4

Signal: 1

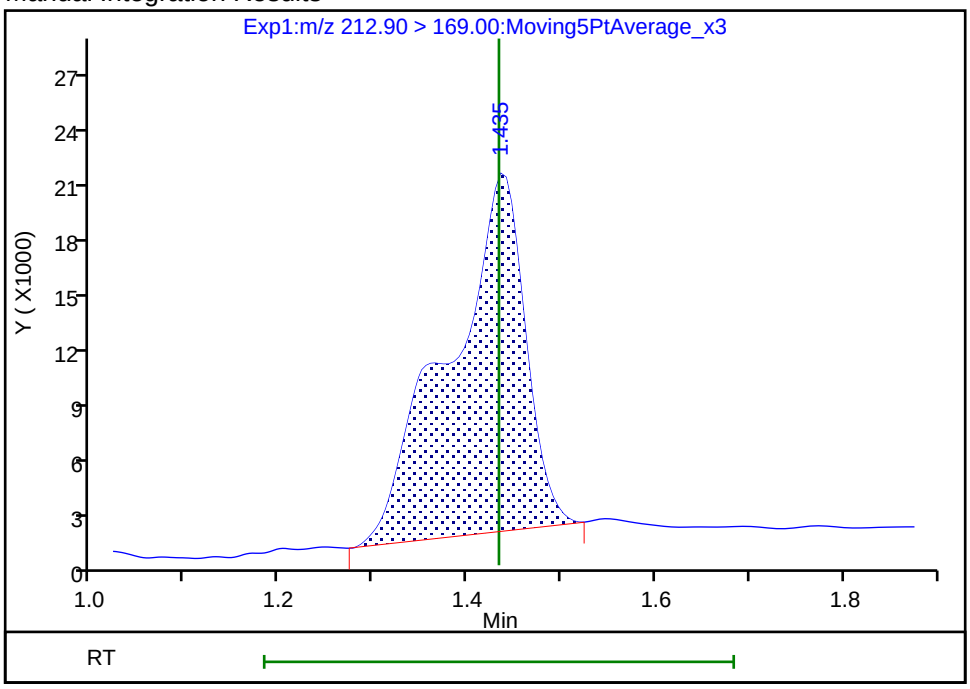
Processing Integration Results

RT: 1.44
Area: 85945
Amount: 0.042518
Amount Units: ng/ml



Manual Integration Results

RT: 1.44
Area: 106640
Amount: 0.052756
Amount Units: ng/ml



Reviewer: hannigana, 13-Jul-2018 16:15:49

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

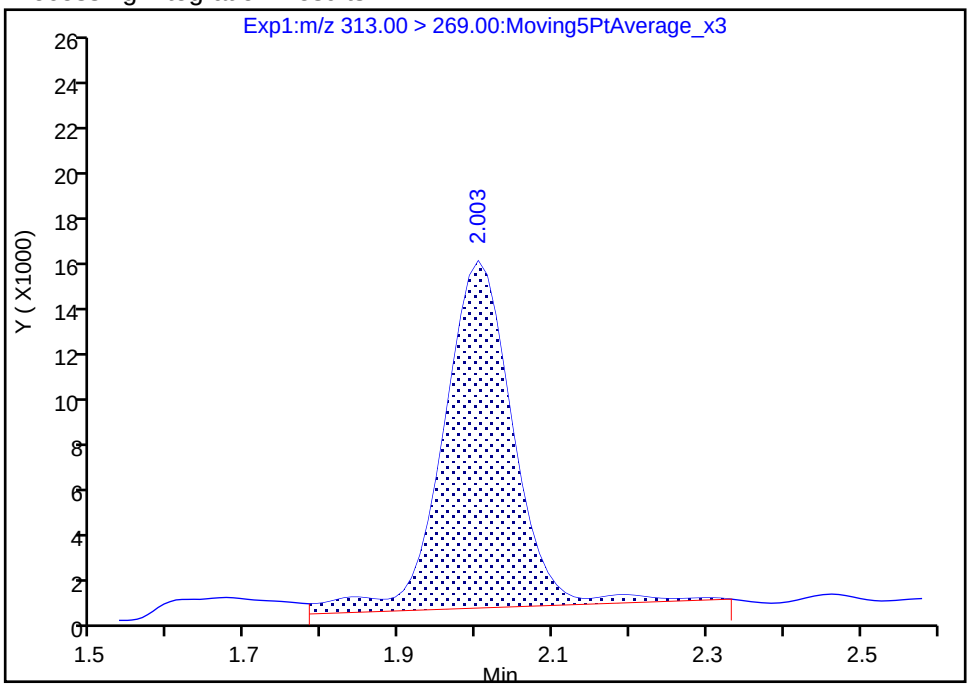
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61052.b\2018.07.13LLAA_005.d				
Injection Date:	13-Jul-2018 16:04:34	Instrument ID:	A8_N		
Lims ID:	CCVL				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	21	Worklist Smp#:	2
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

6 Perfluorohexanoic acid, CAS: 307-24-4

Signal: 1

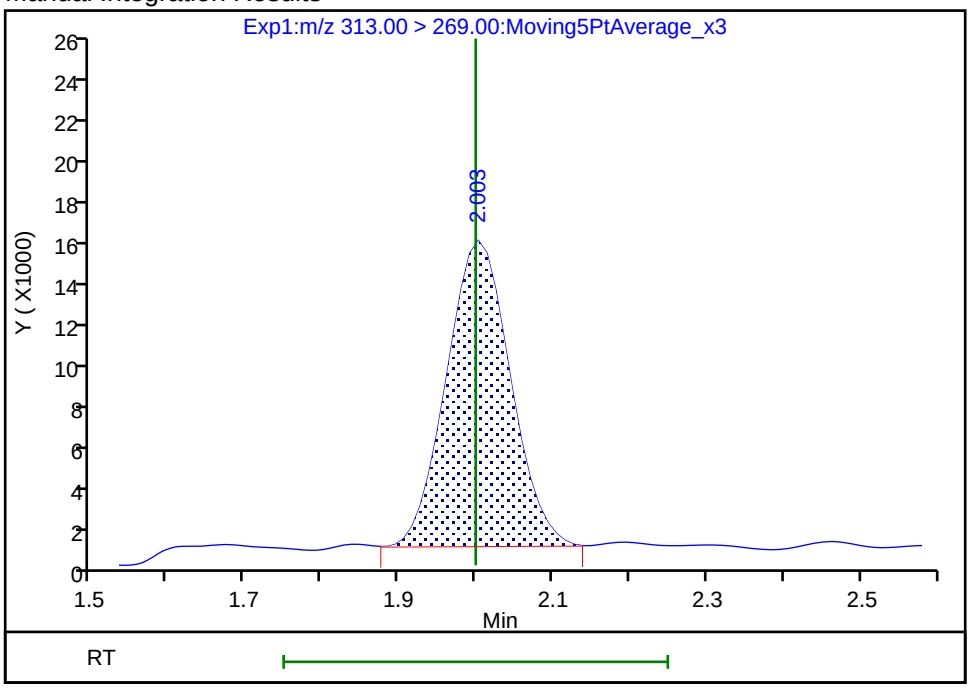
Processing Integration Results

RT: 2.00
Area: 98062
Amount: 0.058198
Amount Units: ng/ml



Manual Integration Results

RT: 2.00
Area: 86953
Amount: 0.051605
Amount Units: ng/ml



Reviewer: hannigana, 13-Jul-2018 16:16:05
Audit Action: Manually Integrated Audit Reason: Baseline

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Lab Sample ID: CCV 320-233973/3 Calibration Date: 07/13/2018 16:12

Instrument ID: A8_N Calib Start Date: 07/11/2018 14:48

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 07/11/2018 15:38

Lab File ID: 2018.07.12LLD_045.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.9856	0.9773		0.992	1.00	-0.8	40.0
Perfluoropentanoic acid (PFPeA)	AveID	1.213	1.203		0.992	1.00	-0.8	40.0
Perfluorobutanesulfonic acid (PFBS)	AveID	76.50	75.95		0.878	0.884	-0.7	50.0
4:2 FTS	AveID	13.00	13.11		0.942	0.934	0.8	50.0
Perfluorohexanoic acid (PFHxA)	AveID	1.029	1.011		0.982	1.00	-1.8	40.0
Perfluoropentanesulfonic acid (PFPeS)	AveID	69.78	70.62		0.949	0.938	1.2	50.0
HFPO-DA (GenX)	AveID	2.654	2.706		1.02	1.00	2.0	40.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.157	1.121		0.969	1.00	-3.1	40.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.148	1.083		0.859	0.910	-5.6	40.0
ADONA	AveID	3.219	3.591		1.05	0.942	11.6	50.0
6:2 FTS	AveID	1.564	1.440		0.873	0.948	-8.0	40.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.318	1.318		0.953	0.952	0.0	50.0
Perfluorooctanoic acid (PFOA)	AveID	1.232	1.132		0.920	1.00	-8.1	40.0
Perfluorononanoic acid (PFNA)	AveID	1.109	1.045		0.942	1.00	-5.8	40.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.133	1.123		0.920	0.928	-0.9	40.0
9-Chlorohexadecafluoro-3-oxa nonane-1-sulfonate	AveID	1.836	1.884		0.956	0.932	2.6	50.0
8:2 FTS	AveID	1.290	1.234		0.916	0.958	-4.3	40.0
Perfluorononanesulfonic acid (PFNS)	AveID	0.7752	0.7861		0.974	0.960	1.4	50.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9856	0.9524		0.966	1.00	-3.4	40.0
Perfluorodecanoic acid (PFDA)	AveID	1.049	1.087		1.04	1.00	3.6	40.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	0.9858	0.9701		0.984	1.00	-1.6	40.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6714	0.7022		1.01	0.964	4.6	50.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.8840	0.8410		0.951	1.00	-4.9	40.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.8195	0.7985		0.974	1.00	-2.6	40.0
11-Chloroeicosafluoro-3-oxau ndecane-1-sulfonate	AveID	2.654	2.869		1.02	0.942	8.1	50.0
Perfluorododecanoic acid (PFDoA)	AveID	1.092	1.089		0.997	1.00	-0.3	40.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.068	1.003		0.939	1.00	-6.1	50.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2602	0.2654		1.02	1.00	2.0	50.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		0.9858		1.02	1.00	1.6	50.0

FORM VII 537 (modified)

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Lab Sample ID: CCV 320-233973/3 Calibration Date: 07/13/2018 16:12

Instrument ID: A8_N Calib Start Date: 07/11/2018 14:48

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 07/11/2018 15:38

Lab File ID: 2018.07.12LLD_045.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.143	1.225		1.07	1.00	7.2	50.0
13C4 PFBA	Ave	1.356	1.324		2.44	2.50	-2.3	50.0
13C5 PFPeA	Ave	0.9425	0.9368		2.48	2.50	-0.6	50.0
13C3-PFBS	Ave	0.0237	0.0236		2.32	2.33	-0.2	50.0
M2-4:2FTS	Ave	0.1273	0.1186		2.18	2.34	-6.8	50.0
13C2 PFHxA	Ave	1.017	1.057		2.60	2.50	3.9	50.0
13C3 HFPO-DA	Ave	0.0724	0.0746		2.58	2.50	3.1	50.0
13C4-PFHpA	Ave	0.9371	0.9641		2.57	2.50	2.9	50.0
18O2 PFHxS	Ave	1.328	1.298		2.31	2.37	-2.2	50.0
M2-6:2FTS	Ave	0.2009	0.1942		2.30	2.38	-3.3	40.0
13C4 PFOA	Ave	0.9560	0.9570		2.50	2.50	0.1	50.0
13C4 PFOS	Ave	0.9742	0.9486		2.33	2.39	-2.6	50.0
13C5 PFNA	Ave	0.8546	0.8087		2.37	2.50	-5.4	50.0
13C8 FOSA	Ave	1.405	1.477		2.63	2.50	5.1	50.0
M2-8:2FTS	Ave	0.2939	0.2446		1.99	2.40	-16.8	40.0
13C2 PFDA	Ave	0.7503	0.6980		2.33	2.50	-7.0	50.0
d3-NMeFOSAA	Ave	0.3075	0.3291		2.68	2.50	7.0	50.0
13C2 PFUnA	Ave	0.6266	0.6263		2.50	2.50	-0.0	50.0
d5-NEtFOSAA	Ave	0.3150	0.3520		2.79	2.50	11.7	50.0
13C2 PFDoA	Ave	0.6496	0.6760		2.60	2.50	4.1	50.0
13C2-PFTeDA	Ave	0.6740	0.6836		2.54	2.50	1.4	50.0
13C2-PFHxDA	Ave	1.074	1.079		2.51	2.50	0.5	50.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61052.b\2018.07.12LLD_045.d
Lims ID: CCV L4
Client ID:
Sample Type: CCVIS
Inject. Date: 13-Jul-2018 16:12:22 ALS Bottle#: 13 Worklist Smp#: 3
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV L4
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-A8_N*sub32

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61052.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 15-Jul-2018 14:30:29 Calib Date: 11-Jul-2018 15:38:42
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK007

First Level Reviewer: westendorfc Date: 15-Jul-2018 14:29:43

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.433	1.430	0.003	0.539	5086418	2.44		97.7	24185	
2 Perfluorobutyric acid										
212.90 > 169.00	1.433	1.433	0.0	1.000	1988311	0.99		99.2	962	
D 3 13C5-PFPeA										
267.90 > 223.00	1.716	1.711	0.005	0.646	3598067	2.48		99.4	40823	
4 Perfluoropentanoic acid										M
262.90 > 219.00	1.716	1.716	0.0	1.000	1731365	0.99		99.2	892	M
D 47 13C3-PFBS										
301.90 > 83.00	1.752	1.756	-0.004	0.659	84432	2.32		99.8	507	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.761	1.761	0.0	1.005	2438103	0.8777		99.3	16339	
298.90 > 99.00	1.761	1.761	0.0	1.005	1007520		2.42(1.25-3.74)		8591	
D 60 M2-4:2FTS										
329.00 > 81.00	1.967	1.959	0.008	0.740	425358	2.18		93.2	5807	
61 1H,1H,2H,2H-perfluorohexanesulfoni										
327.00 > 307.00	1.967	1.967	0.0	1.122	444505	0.9416		101	19543	
D 7 13C2 PFHxA										
315.00 > 270.00	1.999	1.992	0.007	0.752	4059976	2.60		104	79076	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.999	1.999	0.0	1.000	1641132	0.9818		98.2	4234	
313.00 > 119.00	1.999	1.999	0.0	1.000	149091		11.01(5.03-15.10)		3201	
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.022	2.022	0.0	1.154	2405641	0.9493		101	41566	
349.00 > 99.00	2.022	2.022	0.0	1.154	863387		2.79(1.36-4.07)		14853	
67 Perfluoro(2-propoxypropanoic) acid										
329.10 > 285.00	2.090	2.090	0.0	1.000	310251	1.02		102	2616	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.090	2.094	-0.004	0.786	286622	2.58		103	7264	
D 9 13C4-PFHpA										
367.00 > 322.00	2.316	2.306	0.010	0.871	3703072	2.57		103	38203	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.316	2.316	0.0	1.000	1659910	0.9689		96.9	2974	
363.00 > 169.00	2.316	2.316	0.0	1.000	636247		2.61(1.13-3.40)		5885	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.329	2.329	0.0	1.000	1965298	0.8587		94.4	12651	
399.00 > 99.00	2.329	2.329	0.0	1.000	671018		2.93(1.50-4.49)		4409	
D 11 18O2 PFHxS										
403.00 > 84.00	2.329	2.333	-0.004	0.876	4715511	2.31		97.8	39325	
65 Adona										
377.00 > 251.00	2.355	2.355	0.0	0.779	4929827	1.05		112	56481	
377.00 > 85.00	2.355	2.355	0.0	0.779	2906422		1.70(0.84-2.53)		16583	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.634	2.634	0.0	1.000	407223	0.8726		92.0	3497	
D 12 M2-6:2FTS										
429.00 > 81.00	2.634	2.636	-0.002	0.991	708524	2.30		96.7	14994	
* 62 13C2-PFOA										
415.00 > 370.00	2.658	2.658	0.0		3840969	2.50			36362	
D 14 13C4 PFOA										
417.00 > 372.00	2.666	2.660	0.006	1.003	3675652	2.50		100	37933	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.666	2.666	0.0	1.000	1666347	0.9203		91.9	1059	
413.00 > 169.00	2.658	2.666	-0.008	0.997	882393		1.89(0.84-2.52)		4899	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.666	2.666	0.0	0.882	1829237	0.9526		100	21883	
449.00 > 99.00	2.666	2.666	0.0	0.882	500067		3.66(1.94-5.82)		8527	
20 Perfluorononanoic acid										
463.00 > 419.00	3.021	3.021	0.0	1.000	1298452	0.9421		94.2	2581	
463.00 > 169.00	3.021	3.021	0.0	1.000	320558		4.05(1.90-5.69)		16473	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.021	3.021	0.0	1.000	1519129	0.9198		99.1	16856	
499.00 > 99.00	3.021	3.021	0.0	1.000	351451		4.32(2.31-6.93)		5771	
D 18 13C4 PFOS										
503.00 > 80.00	3.021	3.023	-0.002	1.137	3483329	2.33		97.4	35221	
D 19 13C5 PFNA										
468.00 > 423.00	3.021	3.023	-0.002	1.137	3106129	2.37		94.6	38534	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.236	3.236	0.0	1.071	2558564	0.9563		103	22386	
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.365	3.365	0.0	1.114	1099936	0.9736		101	25517	
549.00 > 99.00	3.365	3.365	0.0	1.114	421716		2.61(1.33-3.97)		8119	
25 1H,1H,2H,2H-perfluorodecanesulfoni										
527.00 > 507.00	3.365	3.365	0.0	1.000	444232	0.9163		95.7	6708	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.365	3.365	0.0	1.000	2160769	0.9663		96.6	24240	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 26 M2-8:2FTS										
529.00 > 81.00	3.365	3.369	-0.004	1.266	900084	1.99		83.2	13616	
D 21 13C8 FOSA										
506.00 > 78.00	3.365	3.369	-0.004	1.266	5671897	2.63		105	35660	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.374	3.374	0.0	1.000	1165955	1.04		104	5673	
513.00 > 169.00	3.374	3.374	0.0	1.000	197725		5.90(2.36-7.09)		6328	
D 23 13C2 PFDA										
515.00 > 470.00	3.374	3.378	-0.004	1.269	2680856	2.33		93.0	24254	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.533	3.533	0.0	1.000	490538	0.9840		98.4	3834	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.533	3.537	-0.003	1.329	1264168	2.68		107	28062	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.690	3.690	0.0	1.221	986554	1.01		105	17350	
599.00 > 99.00	3.690	3.690	0.0	1.221	363397		2.71(1.39-4.16)		12859	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.701	3.696	0.005	1.392	1351922	2.79		112	3144	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.701	3.701	0.0	1.000	768330	0.9744		97.4	4267	
563.00 > 169.00	3.701	3.701	0.0	1.000	205765		3.73(2.12-6.36)		7173	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.701	3.701	0.0	1.000	454777	0.9513		95.1	11247	
D 30 13C2 PFUnA										
565.00 > 520.00	3.701	3.707	-0.006	1.392	2405527	2.50		100.0	45165	
66 11-Chloroeicosafluoro-3-oxaundecan										
631.00 > 451.00	3.858	3.858	0.0	1.277	3938328	1.02		108	41199	
D 36 13C2 PFDoA										
615.00 > 570.00	4.000	3.997	0.003	1.505	2596523	2.60		104	18227	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.000	4.000	0.0	1.000	1130932	1.00		99.7	830	
613.00 > 169.00	4.000	4.000	0.0	1.000	272008		4.16(2.13-6.40)		5694	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.254	4.254	0.0	1.063	1041589	0.9393		93.9	556	
663.00 > 169.00	4.254	4.254	0.0	1.063	355995		2.93(1.25-3.76)		6011	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.492	4.490	0.002	1.690	2625754	2.54		101	14285	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.492	4.492	0.0	1.000	278727	1.02		102	5329	
713.00 > 219.00	4.492	4.492	0.0	1.000	196839		1.42(0.71-2.13)		4535	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.898	4.896	0.002	1.842	4145677	2.51		101	11423	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.898	4.898	0.0	1.000	1634646	1.02		102	415	
813.00 > 169.00	4.898	4.898	0.0	1.000	277985		5.88(2.86-8.58)		3211	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.249	5.249	0.0	1.072	2030863	1.07		107	469	
913.00 > 169.00	5.241	5.249	-0.007	1.070	251719		8.07(3.83-11.48)		3231	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

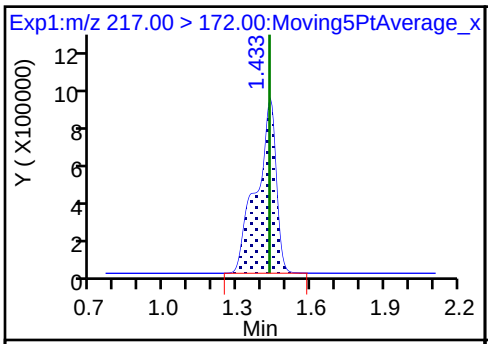
LCPFC_LL4_00005 Amount Added: 1.00 Units: mL

Report Date: 15-Jul-2018 14:30:30 Chrom Revision: 2.2 07-Jun-2018 07:41:54

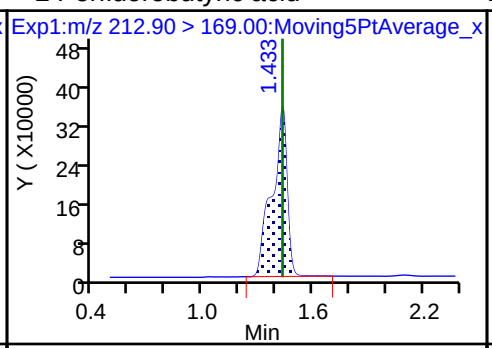
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61052.b\2018.07.12LLD_045.d
Injection Date: 13-Jul-2018 16:12:22 Instrument ID: A8_N
Lims ID: CCV L4
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 13 Worklist Smp#: 3
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC ICAL

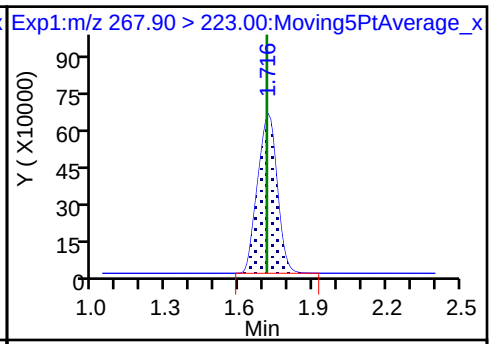
D 1 13C4 PFBA



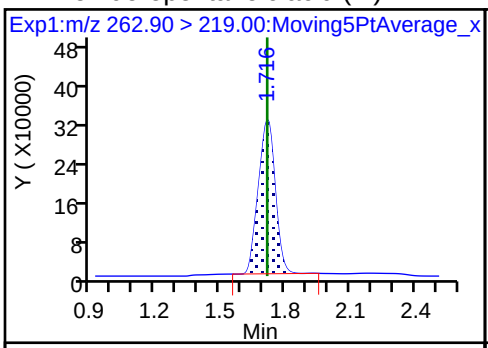
2 Perfluorobutyric acid



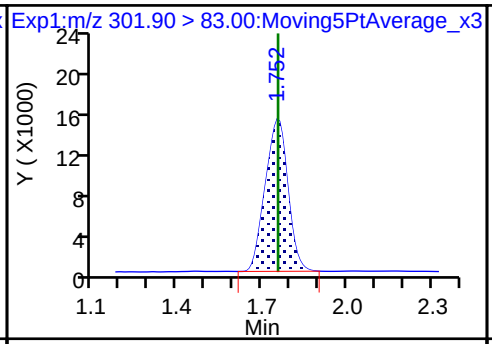
D 3 13C5-PFPeA



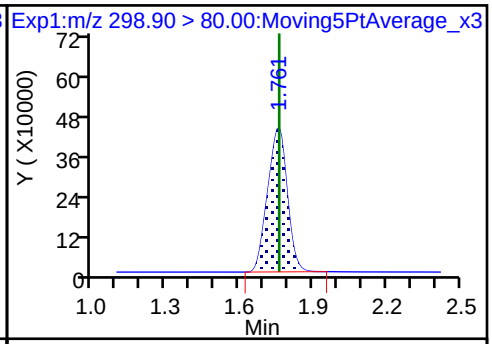
4 Perfluoropentanoic acid (M)



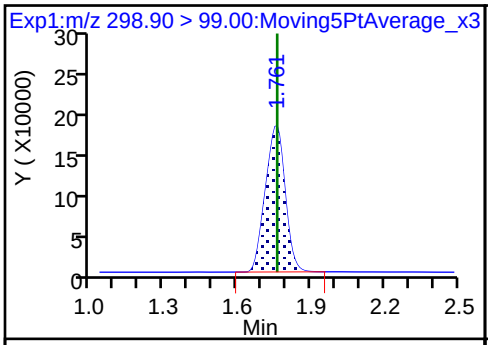
D 47 13C3-PFBS



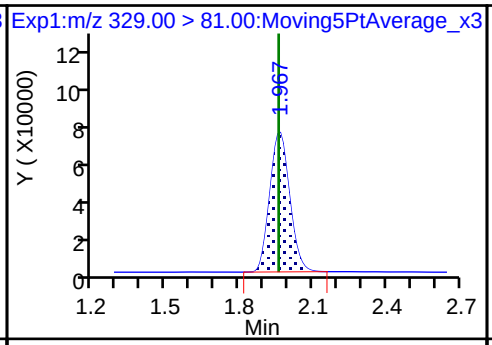
5 Perfluorobutanesulfonic acid



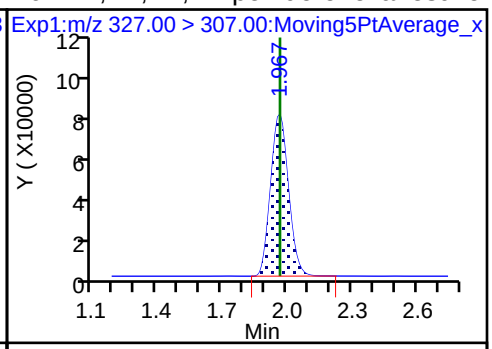
5 Perfluorobutanesulfonic acid



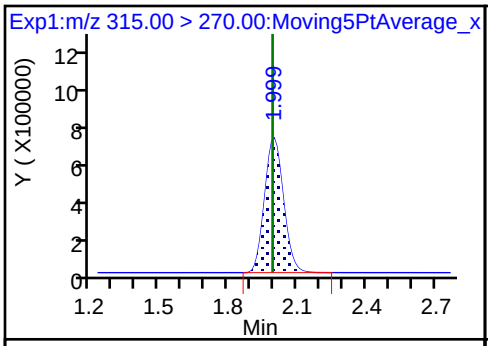
D 60 M2-4:2FTS



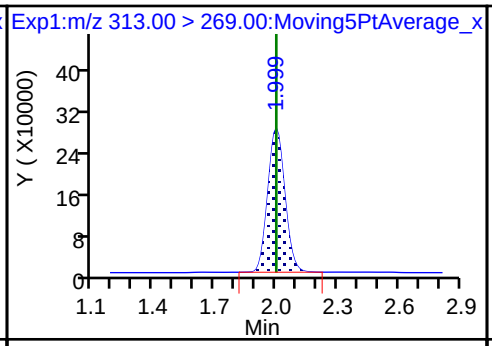
61 1H,1H,2H,2H-perfluorohexanesulfoni



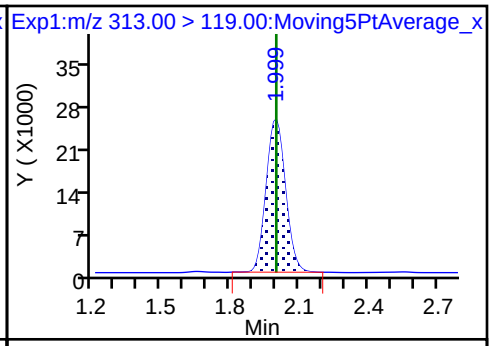
D 7 13C2 PFHxA



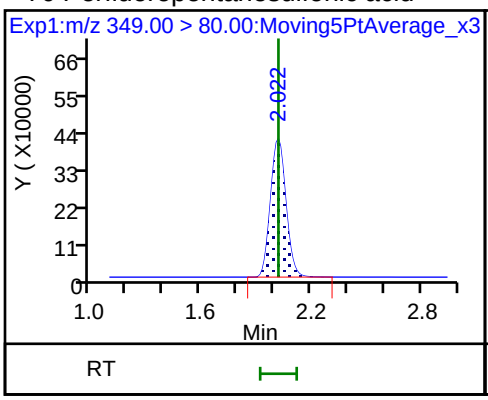
6 Perfluorohexanoic acid



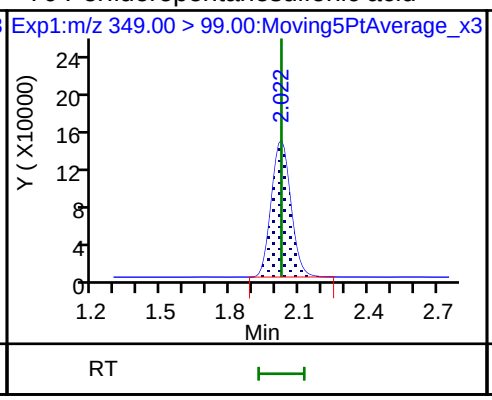
6 Perfluorohexanoic acid



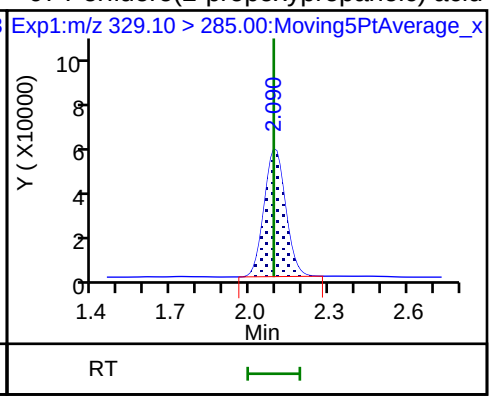
70 Perfluoropentanesulfonic acid



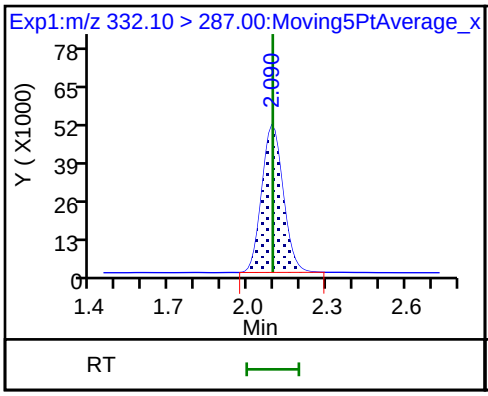
70 Perfluoropentanesulfonic acid



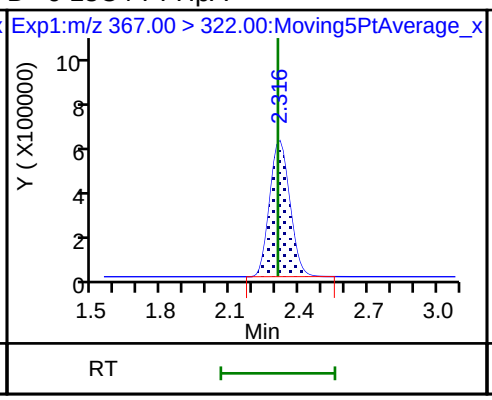
67 Perfluoro(2-propoxypropanoic) acid



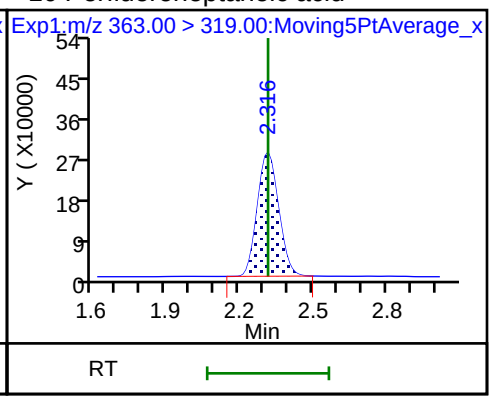
D 64 13C3 HFPO-DA



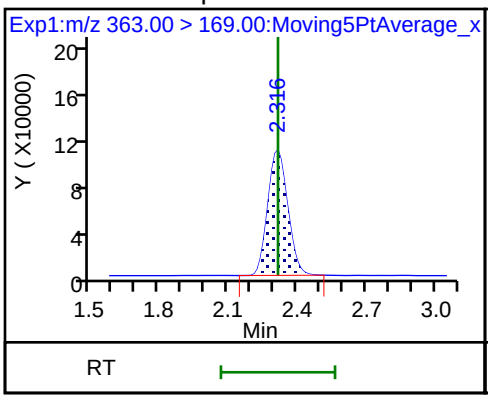
D 9 13C4-PFHpA



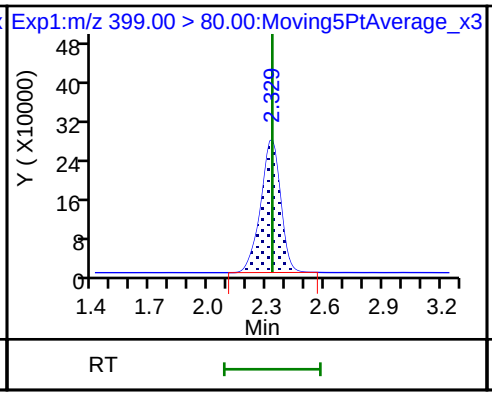
10 Perfluoroheptanoic acid



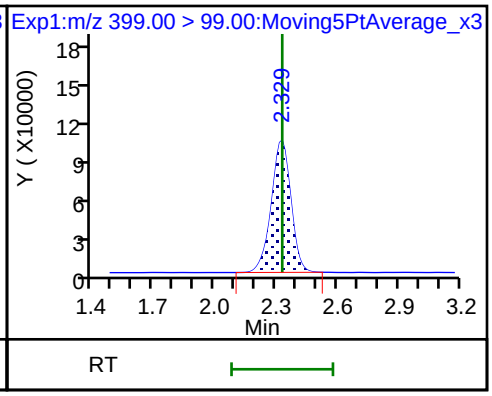
10 Perfluoroheptanoic acid



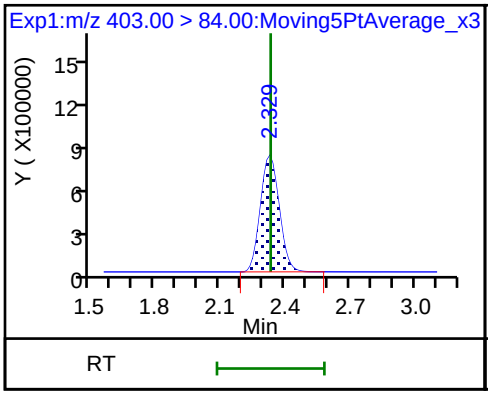
8 Perfluorohexanesulfonic acid



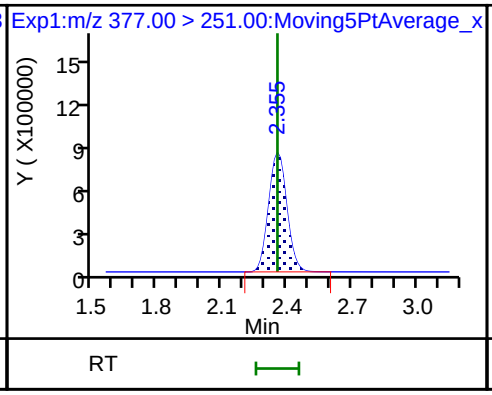
8 Perfluorohexanesulfonic acid



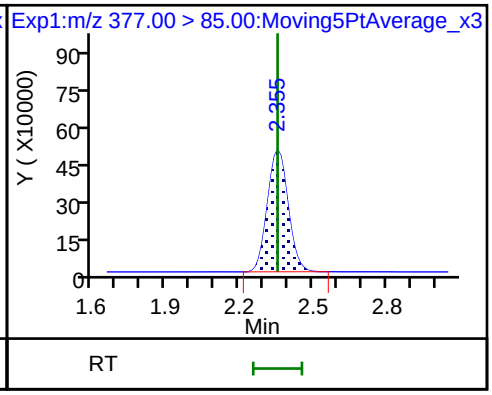
D 11 18O2 PFHxS



65 Adona



65 Adona



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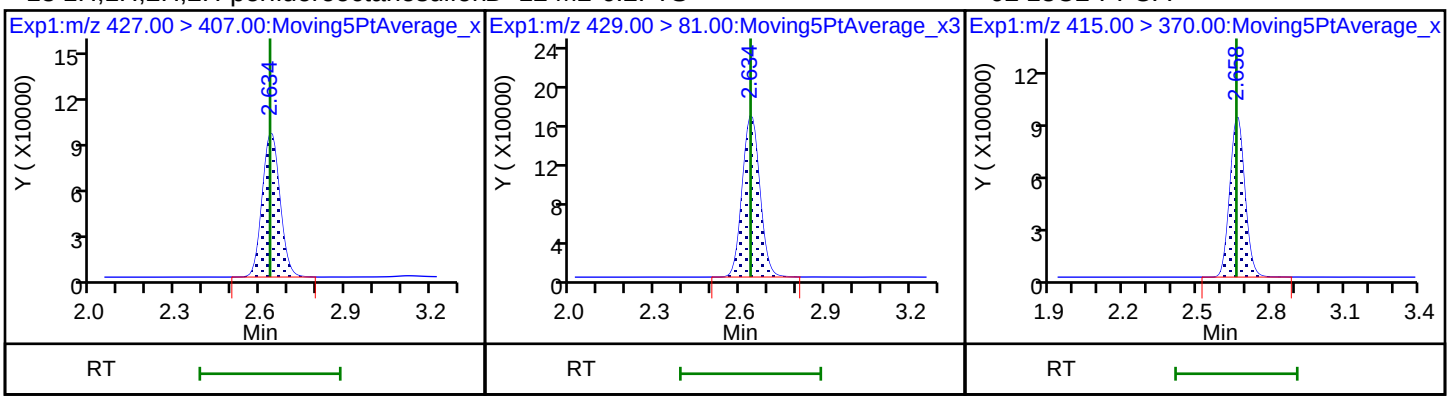
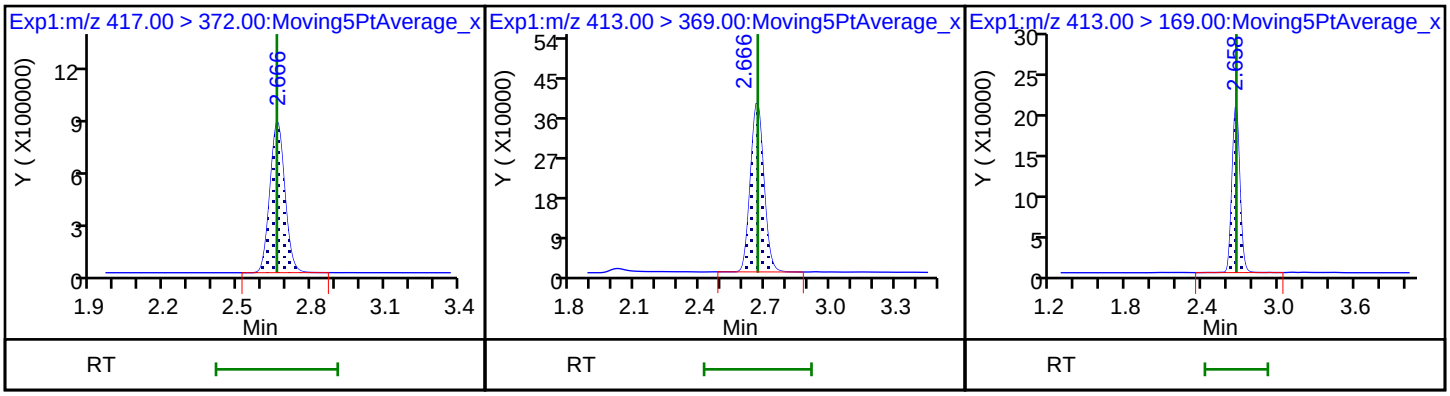
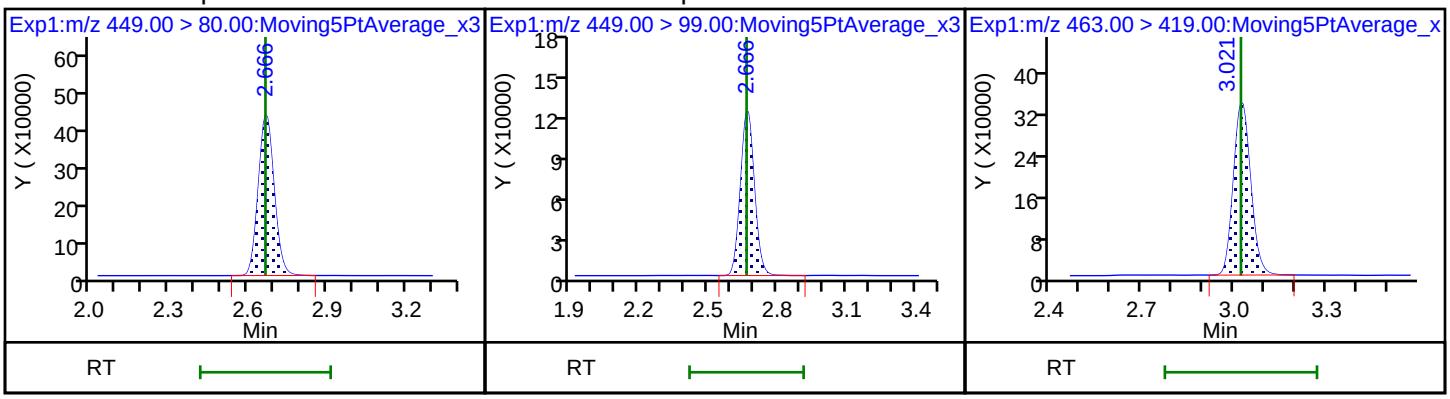


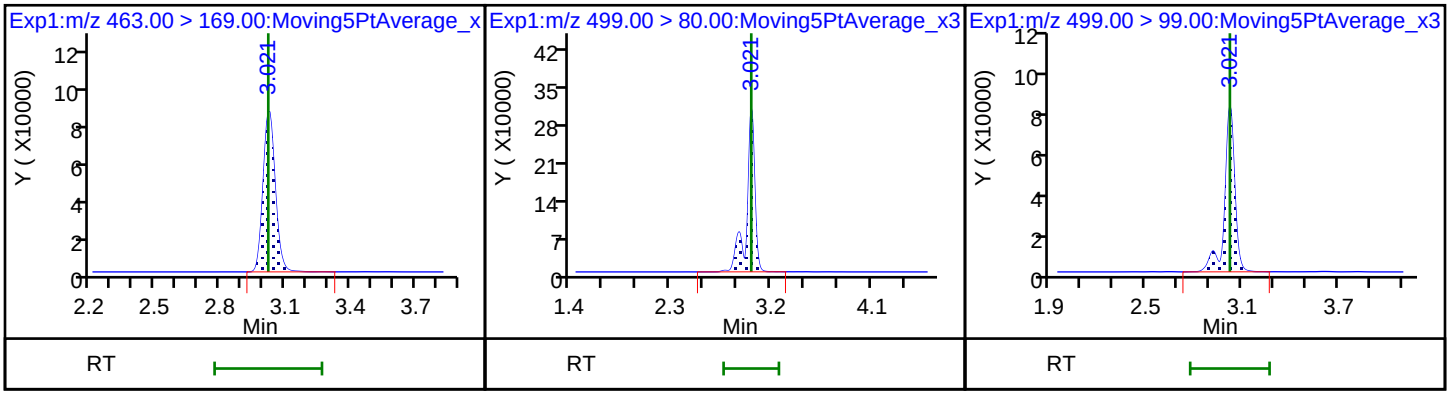
D 14 13C4 PFOA 15 Perfluorooctanoic acid 15 Perfluorooctanoic acid



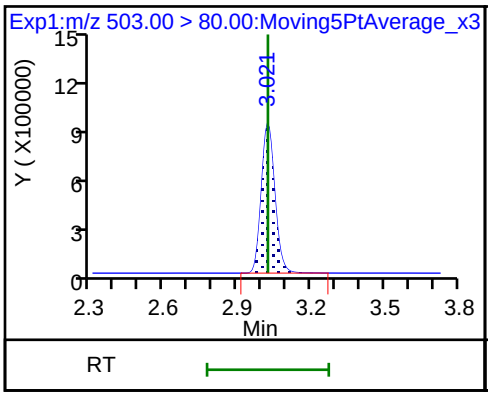
16 Perfluoroheptanesulfonic acid 16 Perfluoroheptanesulfonic acid 20 Perfluorononanoic acid



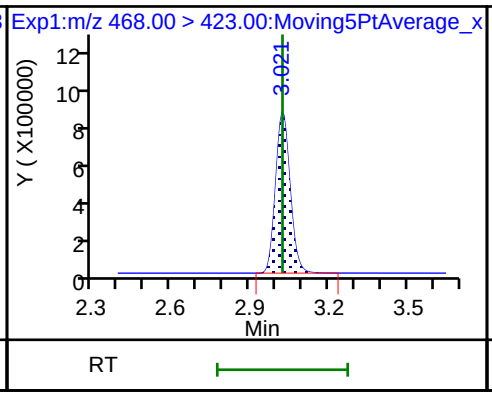
20 Perfluorononanoic acid 17 Perfluorooctane sulfonic acid 17 Perfluorooctane sulfonic acid



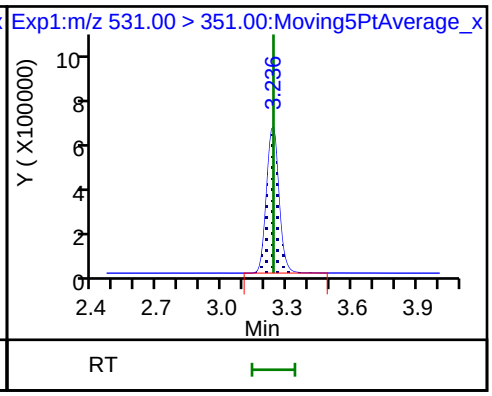
D 18 13C4 PFOS



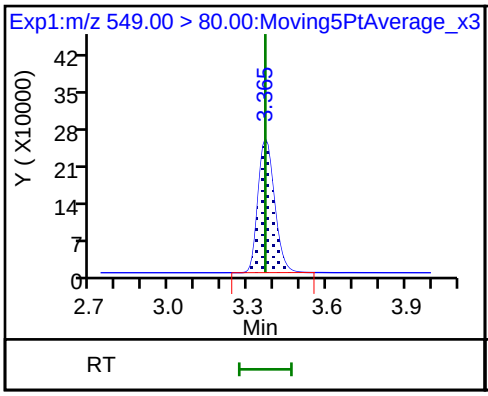
D 19 13C5 PFNA



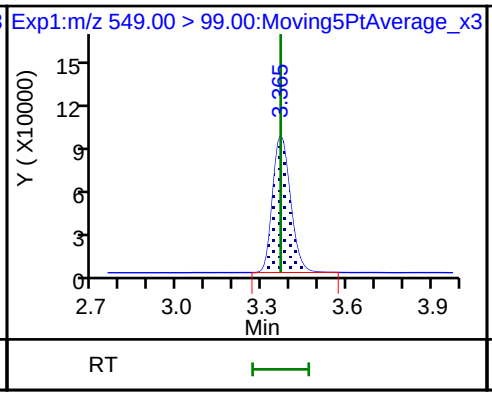
69 9-Chlorohexadecafluoro-3-oxanonane



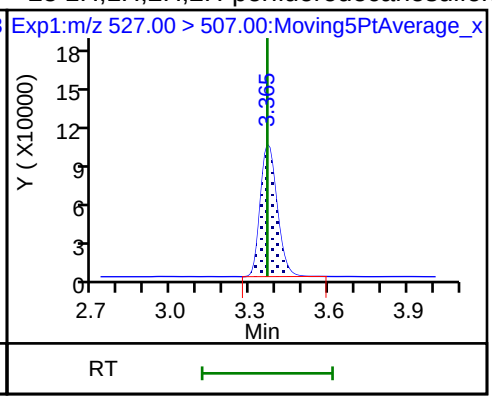
68 Perfluorononanesulfonic acid



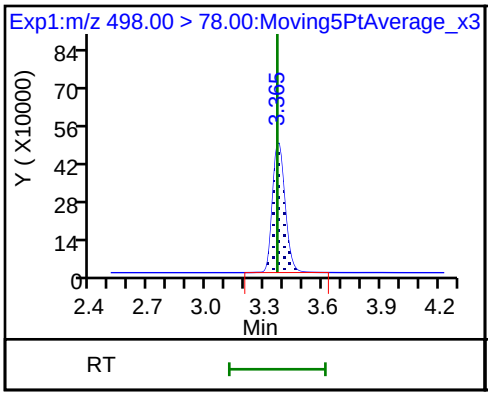
68 Perfluorononanesulfonic acid



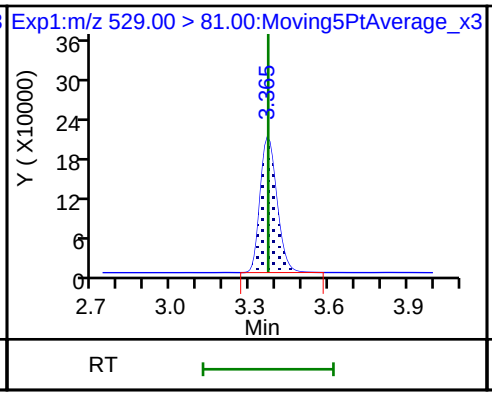
25 1H,1H,2H,2H-perfluorodecanesulfoni



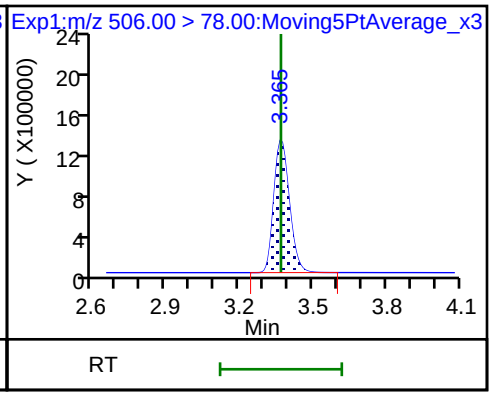
22 Perfluorooctane Sulfonamide



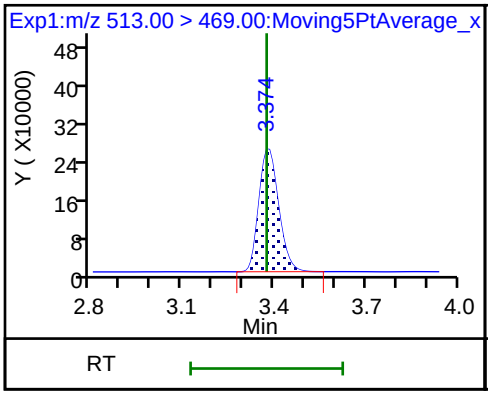
D 26 M2-8:2FTS



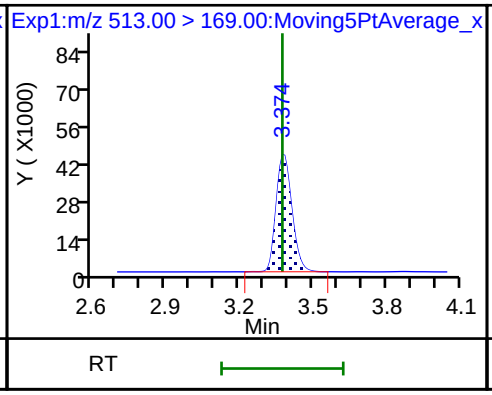
D 21 13C8 FOSA



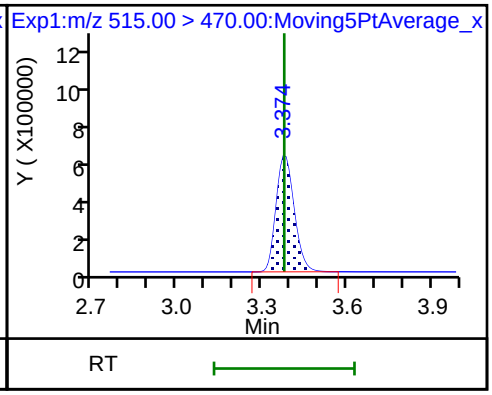
24 Perfluorodecanoic acid



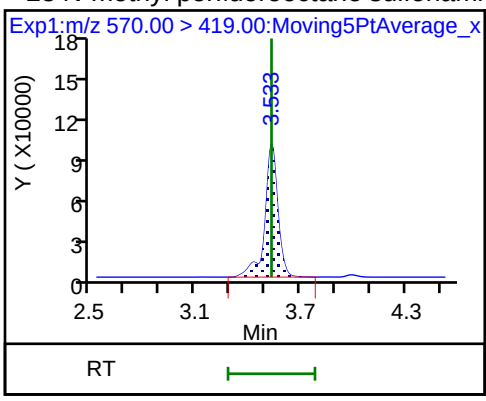
24 Perfluorodecanoic acid



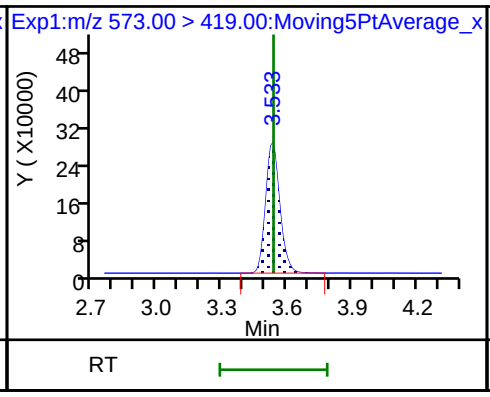
D 23 13C2 PFDA



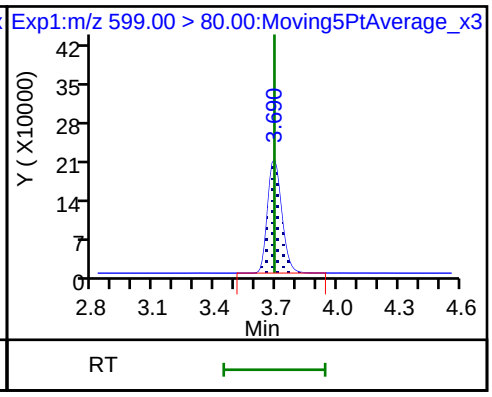
28 N-methyl perfluorooctane sulfonami



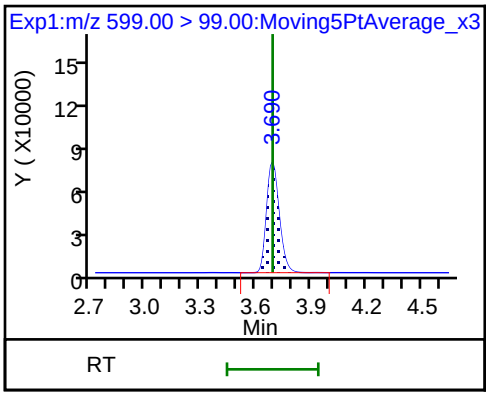
D 27 d3-NMeFOSAA



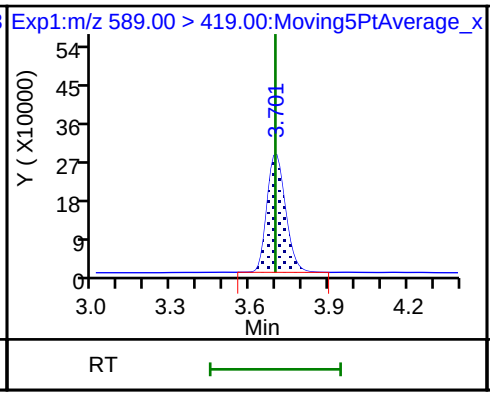
29 Perfluorodecane Sulfonic acid



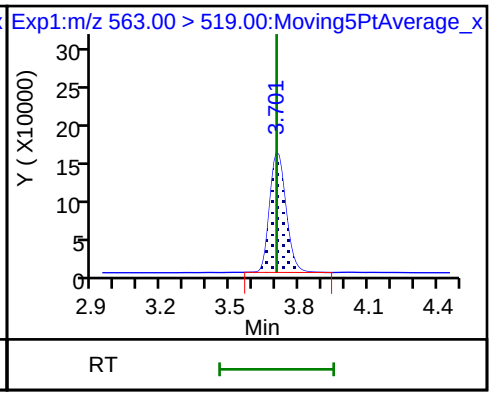
29 Perfluorodecane Sulfonic acid



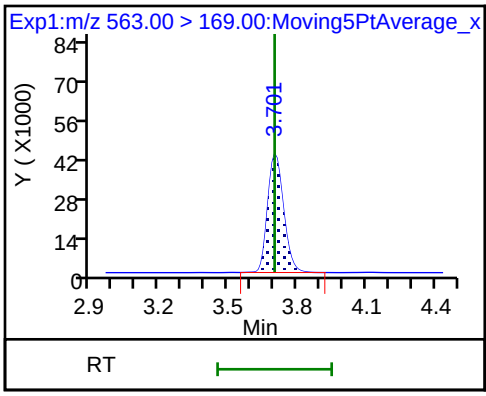
D 32 d5-NEtFOSAA



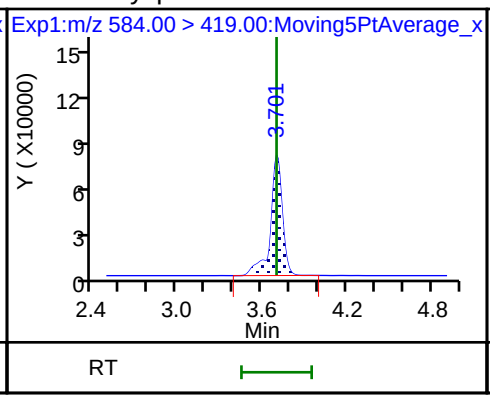
31 Perfluoroundecanoic acid



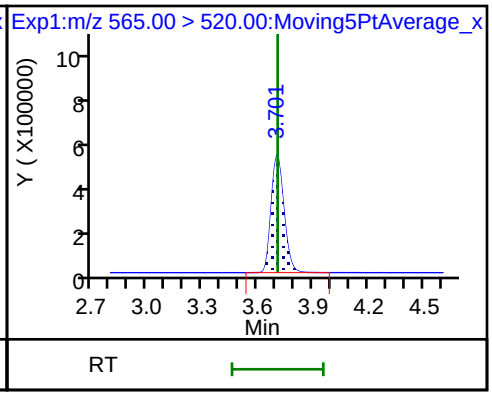
31 Perfluoroundecanoic acid



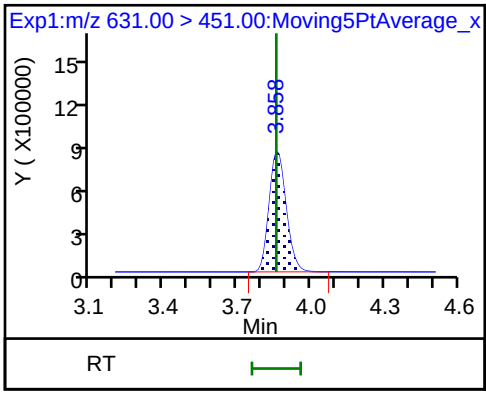
33 N-ethyl perfluorooctane sulfonamid



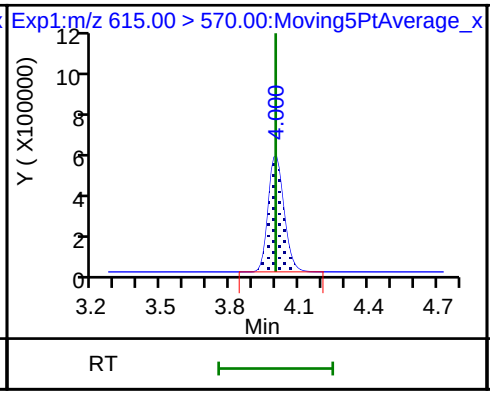
D 30 13C2 PFUnA



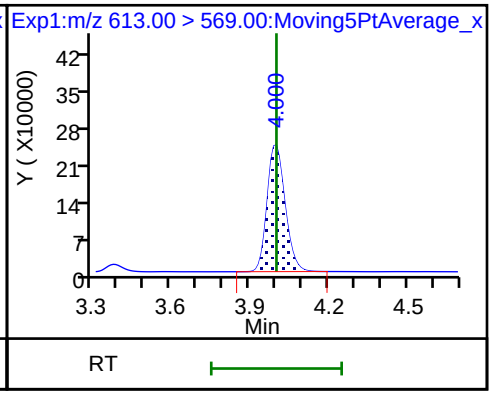
66 11-Chloroeicosafluoro-3-oxaundecan



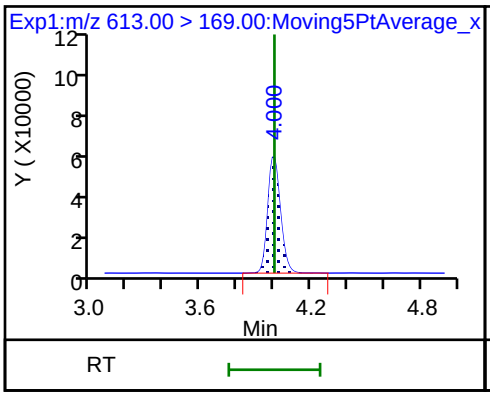
D 36 13C2 PFDoA



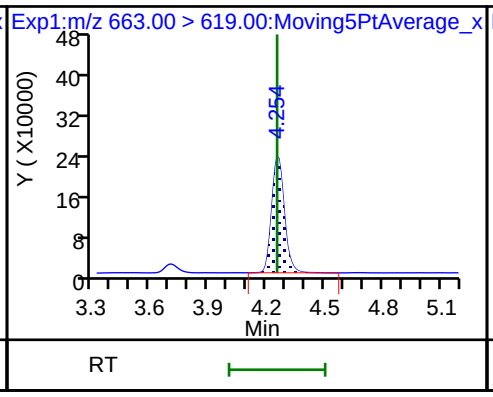
37 Perfluorododecanoic acid



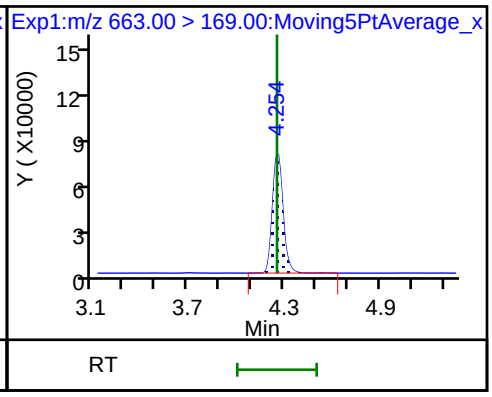
37 Perfluorododecanoic acid



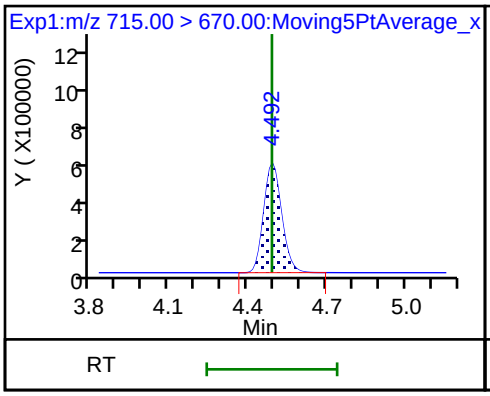
41 Perfluorotridecanoic acid



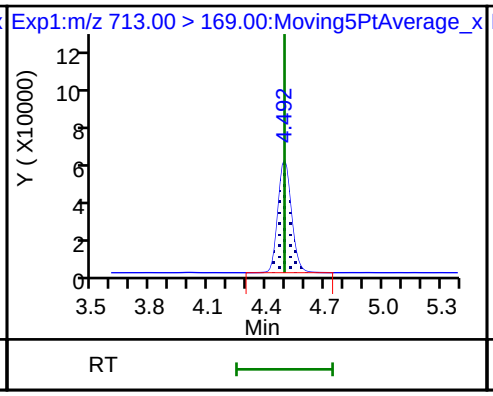
41 Perfluorotridecanoic acid



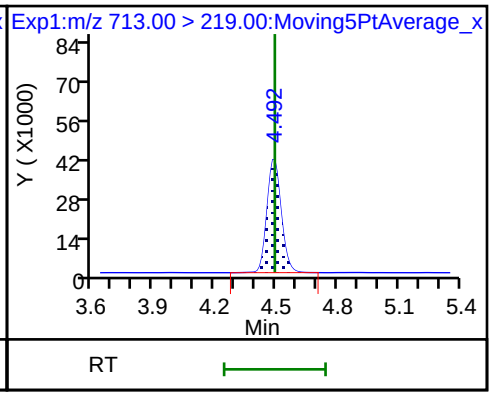
D 43 13C2-PFTeDA



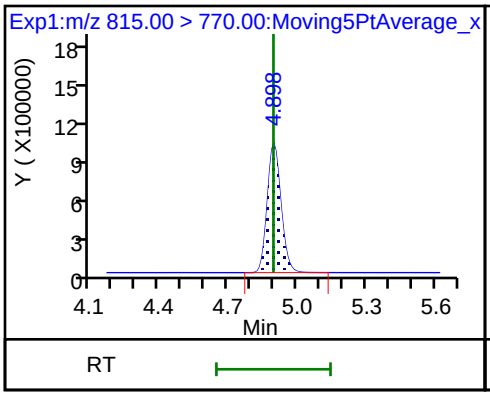
42 Perfluorotetradecanoic acid



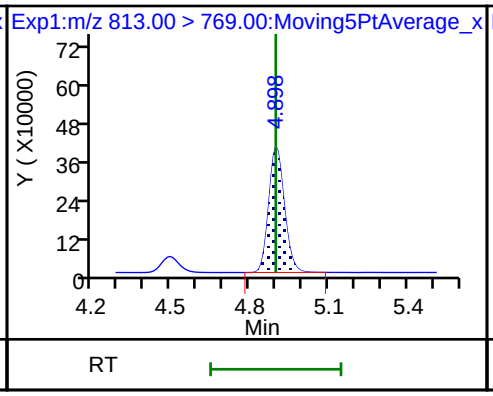
42 Perfluorotetradecanoic acid



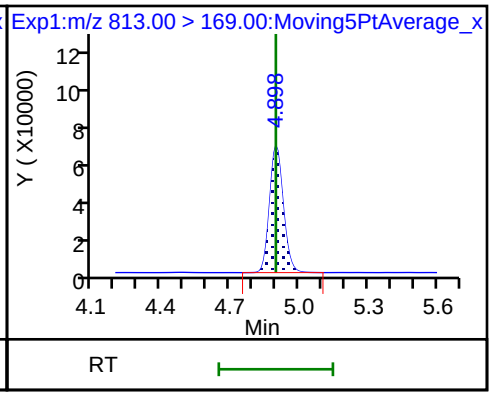
D 44 13C2-PFHxDA



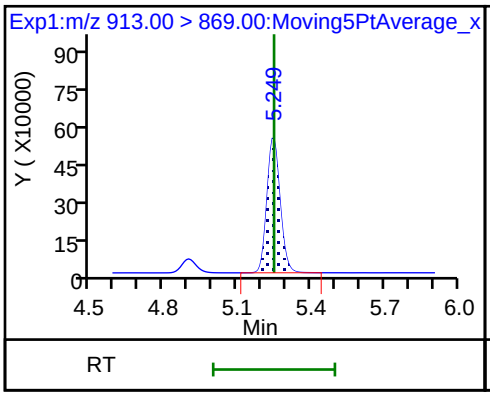
45 Perfluorohexadecanoic acid



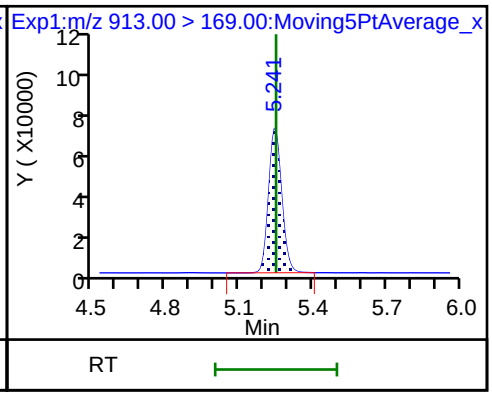
45 Perfluorohexadecanoic acid



46 Perfluorooctadecanoic acid



46 Perfluorooctadecanoic acid



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

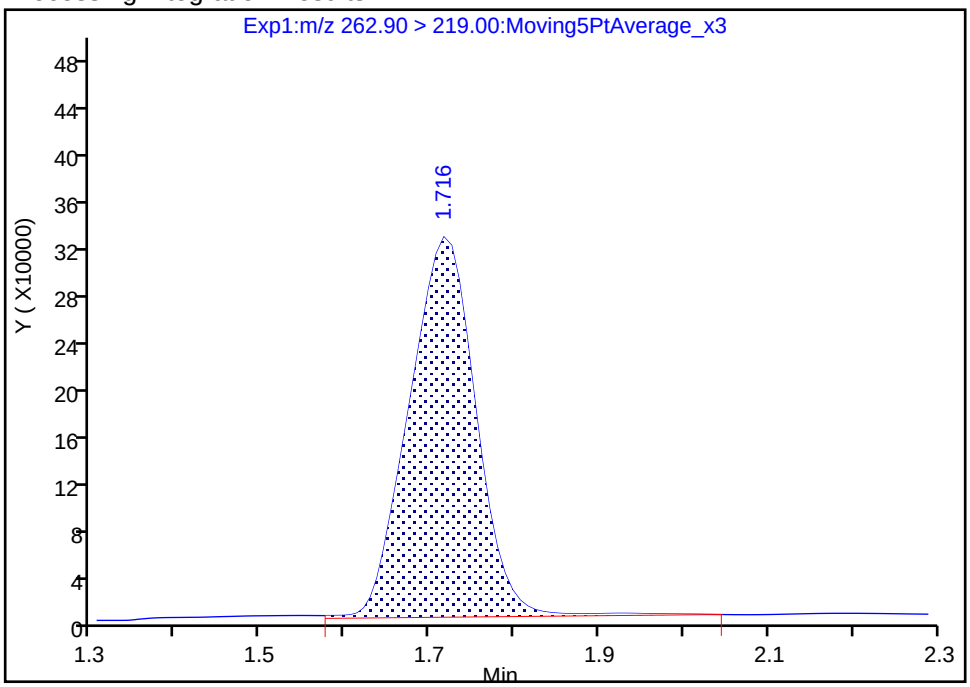
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61052.b\2018.07.12LLD_045.d				
Injection Date:	13-Jul-2018 16:12:22	Instrument ID:	A8_N		
Lims ID:	CCV L4				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	13	Worklist Smp#:	3
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

4 Perfluoropentanoic acid, CAS: 2706-90-3

Signal: 1

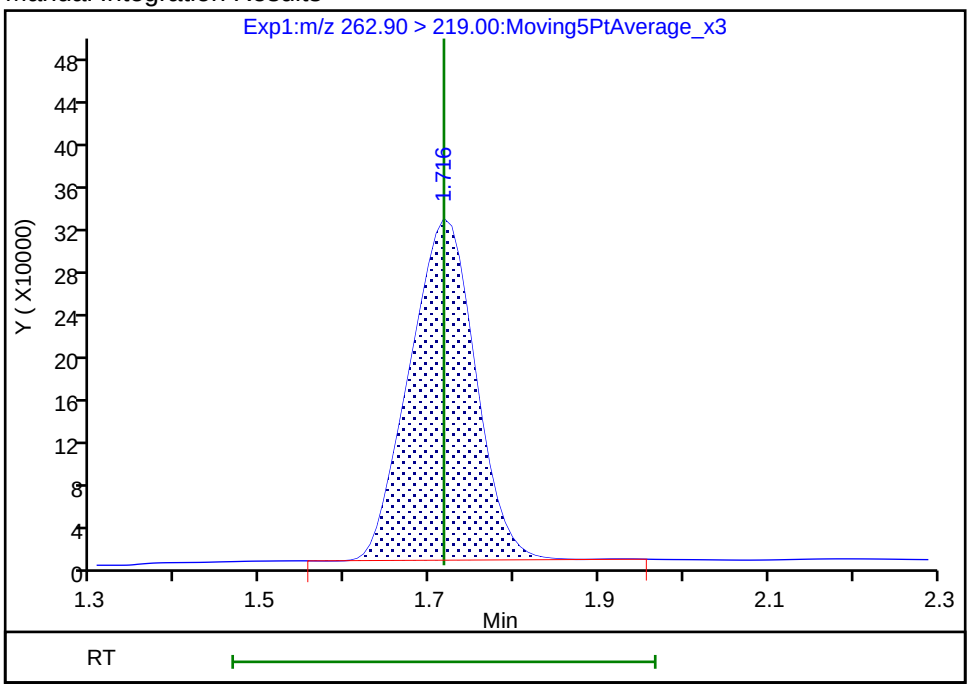
Processing Integration Results

RT: 1.72
Area: 1778893
Amount: 1.018849
Amount Units: ng/ml



Manual Integration Results

RT: 1.72
Area: 1731365
Amount: 0.991627
Amount Units: ng/ml



Reviewer: westendorfc, 15-Jul-2018 14:29:34

Audit Action: Manually Integrated Audit Reason: Baseline

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Lab Sample ID: CCV 320-233989/1 Calibration Date: 07/13/2018 20:46

Instrument ID: A8_N Calib Start Date: 07/11/2018 14:48

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 07/11/2018 15:38

Lab File ID: 2018.07.13LLC_006.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.9856	0.9847		0.999	1.00	-0.0	40.0
Perfluoropentanoic acid (PFPeA)	AveID	1.213	1.148		0.946	1.00	-5.4	40.0
Perfluorobutanesulfonic acid (PFBS)	AveID	76.50	78.40		0.906	0.884	2.5	50.0
4:2 FTS	AveID	13.00	13.05		0.938	0.934	0.4	50.0
Perfluorohexanoic acid (PFHxA)	AveID	1.029	0.996		0.967	1.00	-3.3	40.0
Perfluoropentanesulfonic acid (PFPeS)	AveID	69.78	71.94		0.967	0.938	3.1	50.0
HFPO-DA (GenX)	AveID	2.654	2.727		1.03	1.00	2.7	40.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.157	1.101		0.952	1.00	-4.8	40.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.148	1.142		0.905	0.910	-0.5	40.0
ADONA	AveID	3.219	3.675		1.08	0.942	14.2	50.0
6:2 FTS	AveID	1.564	1.534		0.929	0.948	-2.0	40.0
Perfluorooctanoic acid (PFOA)	AveID	1.232	1.105		0.898	1.00	-10.3	40.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.318	1.338		0.967	0.952	1.6	50.0
Perfluorononanoic acid (PFNA)	AveID	1.109	1.054		0.951	1.00	-4.9	40.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.133	1.091		0.894	0.928	-3.7	40.0
9-Chlorohexadecafluoro-3-oxa nonane-1-sulfonate	AveID	1.836	1.932		0.981	0.932	5.3	50.0
8:2 FTS	AveID	1.290	1.323		0.982	0.958	2.6	40.0
Perfluorononanesulfonic acid (PFNS)	AveID	0.7752	0.8134		1.01	0.960	4.9	50.0
Perfluorodecanoic acid (PFDA)	AveID	1.049	1.008		0.961	1.00	-3.9	40.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9856	1.056		1.07	1.00	7.1	40.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	0.9858	0.9700		0.984	1.00	-1.6	40.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6714	0.6902		0.991	0.964	2.8	50.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.8840	0.8427		0.953	1.00	-4.7	40.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.8195	0.7649		0.933	1.00	-6.7	40.0
11-Chloroeicosafluoro-3-oxau ndecane-1-sulfonate	AveID	2.654	2.868		1.02	0.942	8.1	50.0
Perfluorododecanoic acid (PFDoA)	AveID	1.092	1.123		1.03	1.00	2.8	40.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.068	1.075		1.01	1.00	0.7	50.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2602	0.2615		1.00	1.00	0.5	50.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		0.9574		0.986	1.00	-1.4	50.0

FORM VII 537 (modified)

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Lab Sample ID: CCV 320-233989/1 Calibration Date: 07/13/2018 20:46

Instrument ID: A8_N Calib Start Date: 07/11/2018 14:48

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 07/11/2018 15:38

Lab File ID: 2018.07.13LLC_006.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.143	0.9802		0.858	1.00	-14.2	50.0
13C4 PFBA	Ave	1.356	1.289		2.38	2.50	-4.9	50.0
13C5 PFPeA	Ave	0.9425	0.9360		2.48	2.50	-0.7	50.0
13C3-PFBS	Ave	0.0237	0.0232		2.28	2.33	-2.0	50.0
M2-4:2FTS	Ave	0.1273	0.1230		2.26	2.34	-3.3	50.0
13C2 PFHxA	Ave	1.017	1.062		2.61	2.50	4.4	50.0
13C3 HFPO-DA	Ave	0.0724	0.0780		2.69	2.50	7.7	50.0
13C4-PFHpA	Ave	0.9371	0.9644		2.57	2.50	2.9	50.0
18O2 PFHxS	Ave	1.328	1.248		2.22	2.37	-6.0	50.0
M2-6:2FTS	Ave	0.2009	0.1879		2.22	2.38	-6.5	40.0
13C4 PFOA	Ave	0.9560	0.9716		2.54	2.50	1.6	50.0
13C4 PFOS	Ave	0.9742	0.9352		2.29	2.39	-4.0	50.0
13C5 PFNA	Ave	0.8546	0.8230		2.41	2.50	-3.7	50.0
13C8 FOSA	Ave	1.405	1.383		2.46	2.50	-1.5	50.0
M2-8:2FTS	Ave	0.2939	0.2351		1.92	2.40	-20.0	40.0
13C2 PFDA	Ave	0.7503	0.7072		2.36	2.50	-5.8	50.0
d3-NMeFOSAA	Ave	0.3075	0.3214		2.61	2.50	4.5	50.0
d5-NEtFOSAA	Ave	0.3150	0.3614		2.87	2.50	14.7	50.0
13C2 PFUnA	Ave	0.6266	0.6131		2.45	2.50	-2.1	50.0
13C2 PFDoA	Ave	0.6496	0.6634		2.55	2.50	2.1	50.0
13C2-PFTeDA	Ave	0.6740	0.7199		2.67	2.50	6.8	50.0
13C2-PFHxDA	Ave	1.074	1.062		2.47	2.50	-1.1	50.0

FORM VII 537 (modified)

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\2018.07.13LLC_006.d
Lims ID: CCV L4
Client ID:
Sample Type: CCV
Inject. Date: 13-Jul-2018 20:46:17 ALS Bottle#: 30 Worklist Smp#: 1
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV L4
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-A8_N*sub32

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 16-Jul-2018 08:17:25 Calib Date: 11-Jul-2018 15:38:42
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK023

First Level Reviewer: westendorfc Date: 16-Jul-2018 08:17:04

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.90 > 169.00	1.445	1.445	0.0	1.000	1896382	1.00		99.9	1065	
D 1 13C4 PFBA										
217.00 > 172.00	1.445	1.445	0.0	0.540	4814644	2.38		95.1	24758	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.725	1.725	0.0	1.000	1605150	0.9464		94.6	821	
D 3 13C5-PFPeA										
267.90 > 223.00	1.725	1.725	0.0	0.645	3495148	2.48		99.3	45088	
D 47 13C3-PFBS										
301.90 > 83.00	1.762	1.762	0.0	0.659	80592	2.28		98.0	552	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.771	1.771	0.0	1.005	2402477	0.9061		102	17295	
298.90 > 99.00	1.771	1.771	0.0	1.005	984218		2.44(1.25-3.74)		9795	
D 60 M2-4:2FTS										
329.00 > 81.00	1.967	1.967	0.0	0.736	429106	2.26		96.7	5785	
61 1H,1H,2H,2H-perfluorohexanesulfoni										
327.00 > 307.00	1.977	1.977	0.0	1.123	422630	0.9380		100	18199	
6 Perfluorohexanoic acid										
313.00 > 269.00	2.011	2.011	0.0	1.000	1579499	0.9674		96.7	4668	
313.00 > 119.00	2.011	2.011	0.0	1.000	145499		10.86(5.03-15.10)		3525	
D 7 13C2 PFHxA										
315.00 > 270.00	2.011	2.011	0.0	0.752	3965629	2.61		104	68041	
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.033	2.033	0.0	1.154	2339074	0.9670		103	44368	
349.00 > 99.00	2.033	2.033	0.0	1.154	835704		2.80(1.36-4.07)		15838	
67 Perfluoro(2-propoxypropanoic) acid										
329.10 > 285.00	2.101	2.101	0.0	1.000	317473	1.03		103	2438	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.101	2.101	0.0	0.786	291084	2.69		108	5074	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.329	2.329	0.0	1.000	1586002	0.9519		95.2	3118	
363.00 > 169.00	2.329	2.329	0.0	1.000	589034		2.69(1.13-3.40)		7448	
D 9 13C4-PFHpA										
367.00 > 322.00	2.329	2.329	0.0	0.871	3601401	2.57		103	49154	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.342	2.342	0.0	1.000	1937063	0.9053		99.5	10319	
399.00 > 99.00	2.342	2.342	0.0	1.000	612775		3.16(1.50-4.49)		3799	
D 11 18O2 PFHxS										
403.00 > 84.00	2.342	2.342	0.0	0.876	4408438	2.22		94.0	25272	
65 Adona										
377.00 > 251.00	2.368	2.368	0.0	0.780	4836717	1.08		114	37781	
377.00 > 85.00	2.368	2.368	0.0	0.780	2786244		1.74(0.84-2.53)		18515	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.651	2.651	0.0	1.000	407993	0.9293		98.0	3983	
D 12 M2-6:2FTS										
429.00 > 81.00	2.651	2.651	0.0	0.992	666522	2.22		93.5	17627	
* 62 13C2-PFOA										
415.00 > 370.00	2.673	2.673	0.0		3734286	2.50			38815	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.673	2.673	0.0	1.000	1604984	0.8980		89.7	992	
413.00 > 169.00	2.673	2.673	0.0	1.000	869738		1.85(0.84-2.52)		4689	
D 14 13C4 PFOA										
417.00 > 372.00	2.673	2.673	0.0	1.000	3628100	2.54		102	48130	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.681	2.681	0.0	0.883	1779775	0.9670		102	20148	
449.00 > 99.00	2.681	2.681	0.0	0.883	463654		3.84(1.94-5.82)		6123	
17 Perfluorooctane sulfonic acid										M
499.00 > 80.00	3.036	3.036	0.0	1.000	1414937	0.8938		96.3	19851	M
499.00 > 99.00	3.036	3.036	0.0	1.000	336195		4.21(2.31-6.93)		5046	
20 Perfluorononanoic acid										
463.00 > 419.00	3.036	3.036	0.0	1.000	1296269	0.9505		95.1	2849	
463.00 > 169.00	3.036	3.036	0.0	1.000	322288		4.02(1.90-5.69)		11972	
D 18 13C4 PFOS										
503.00 > 80.00	3.036	3.036	0.0	1.136	3338788	2.29		96.0	36402	
D 19 13C5 PFNA										
468.00 > 423.00	3.036	3.036	0.0	1.136	3073264	2.41		96.3	33241	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.244	3.244	0.0	1.069	2515818	0.9810		105	25990	
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.376	3.376	0.0	1.112	1090837	1.01		105	22737	
549.00 > 99.00	3.376	3.376	0.0	1.112	396556		2.75(1.33-3.97)		7543	
25 1H,1H,2H,2H-perfluorodecanesulfoni										
527.00 > 507.00	3.376	3.376	0.0	1.000	445125	0.9825		103	5828	
D 21 13C8 FOSA										
506.00 > 78.00	3.376	3.376	0.0	1.263	5165908	2.46		98.5	35142	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 26 M2-8:2FTS										
529.00 > 81.00	3.376	3.376	0.0	1.263	841190	1.92		80.0	13398	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.385	3.385	0.0	1.003	2181726	1.07		107	30552	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.385	3.385	0.0	1.000	1065230	0.9610		96.1	5882	
513.00 > 169.00	3.385	3.385	0.0	1.000	197725		5.39(2.36-7.09)		7422	
D 23 13C2 PFDA										
515.00 > 470.00	3.385	3.385	0.0	1.266	2640723	2.36		94.2	27994	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.544	3.544	0.0	1.000	465702	0.9839		98.4	4490	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.544	3.544	0.0	1.326	1200252	2.61		105	23706	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.705	3.705	0.0	1.220	929499	0.99		103	32012	
599.00 > 99.00	3.694	3.705	-0.011	1.217	297191		3.13(1.39-4.16)		12237	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.705	3.705	0.0	1.386	1349496	2.87		115	3242	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.715	3.715	0.0	1.003	454887	0.9532		95.3	6323	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.715	3.715	0.0	1.000	700508	0.9334		93.3	3107	
563.00 > 169.00	3.715	3.715	0.0	1.000	176044		3.98(2.12-6.36)		9035	
D 30 13C2 PFUnA										
565.00 > 520.00	3.715	3.715	0.0	1.390	2289490	2.45		97.9	36396	
66 11-Chloroeicosafluoro-3-oxaundecan										
631.00 > 451.00	3.872	3.872	0.0	1.276	3774625	1.02		108	56906	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.005	4.005	0.0	1.000	1112735	1.03		103	744	
613.00 > 169.00	4.005	4.005	0.0	1.000	257547		4.32(2.13-6.40)		5418	
D 36 13C2 PFDoA										
615.00 > 570.00	4.005	4.005	0.0	1.498	2477259	2.55		102	20203	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.268	4.268	0.0	1.066	1065091	1.01		101	608	
663.00 > 169.00	4.268	4.268	0.0	1.066	333493		3.19(1.25-3.76)		6156	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.500	4.500	0.0	1.000	281154	1.00		100	4896	
713.00 > 219.00	4.500	4.500	0.0	1.000	185650		1.51(0.71-2.13)		3542	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.500	4.500	0.0	1.683	2688165	2.67		107	17784	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.912	4.912	0.0	1.000	1518796	0.9860		98.6	389	
813.00 > 169.00	4.912	4.912	0.0	1.000	257372		5.90(2.86-8.58)		3093	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.912	4.912	0.0	1.838	3966137	2.47		98.9	13249	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.254	5.254	0.0	1.070	1555002	0.8576		85.8	360	
913.00 > 169.00	5.254	5.254	0.0	1.070	193298		8.04(3.83-11.48)		2616	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

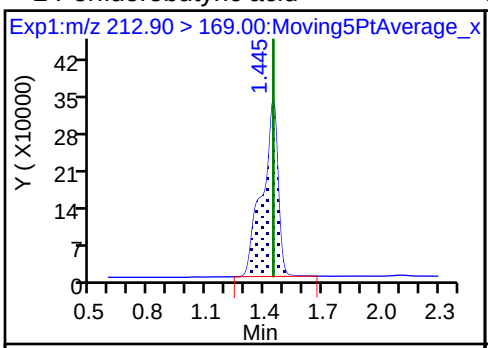
LCPFC_LL4_00005 Amount Added: 1.00 Units: mL

Report Date: 16-Jul-2018 08:17:26 Chrom Revision: 2.2 07-Jun-2018 07:41:54

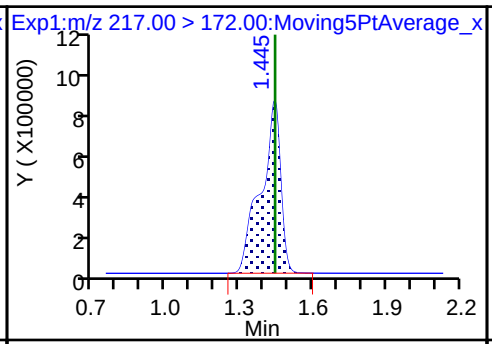
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\2018.07.13LLC_006.d
Injection Date: 13-Jul-2018 20:46:17 Instrument ID: A8_N
Lims ID: CCV L4
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 30 Worklist Smp#: 1
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC ICAL

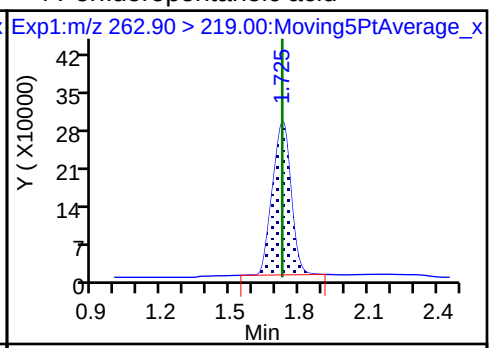
2 Perfluorobutyric acid



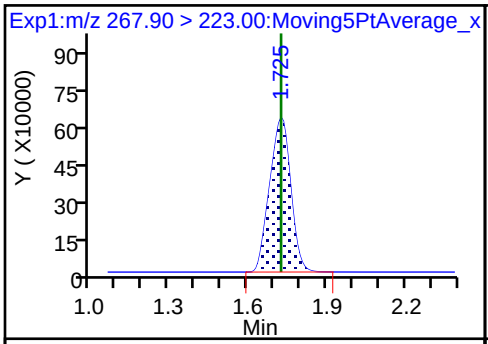
D 1 13C4 PFBA



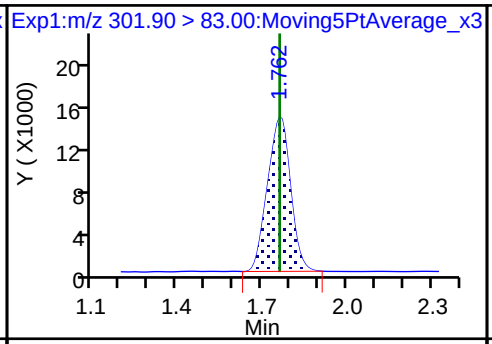
4 Perfluoropentanoic acid



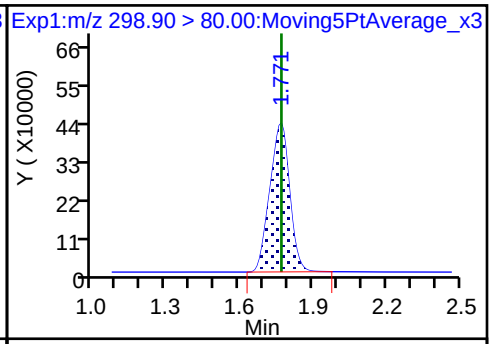
D 3 13C5-PFPeA



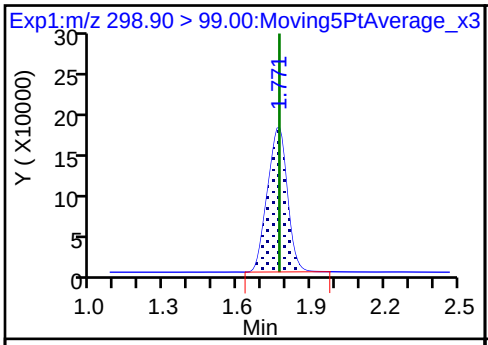
D 47 13C3-PFBS



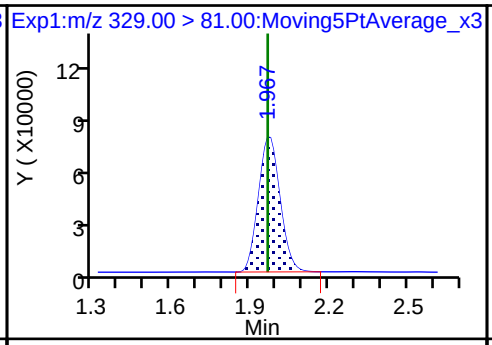
5 Perfluorobutanesulfonic acid



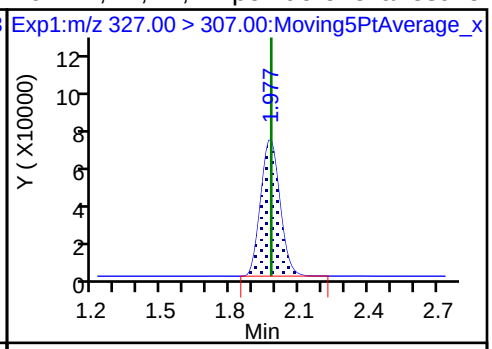
5 Perfluorobutanesulfonic acid



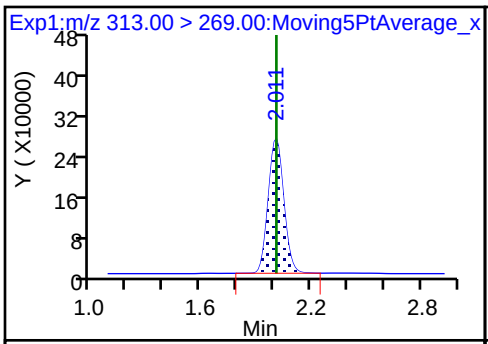
D 60 M2-4:2FTS



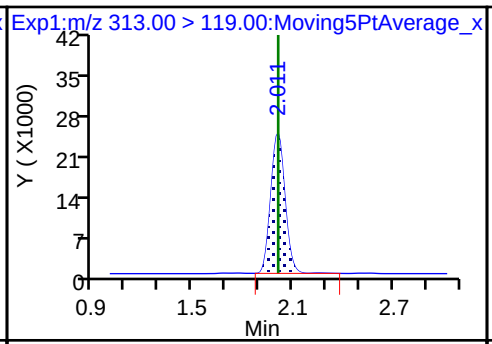
61 1H,1H,2H,2H-perfluorohexanesulfoni



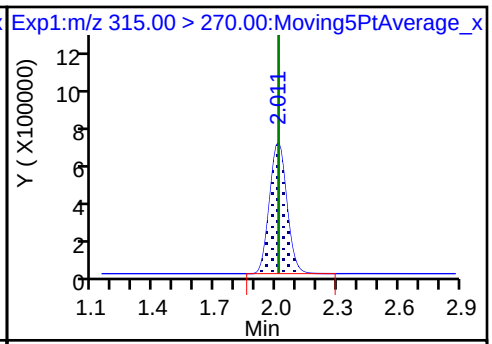
6 Perfluorohexanoic acid



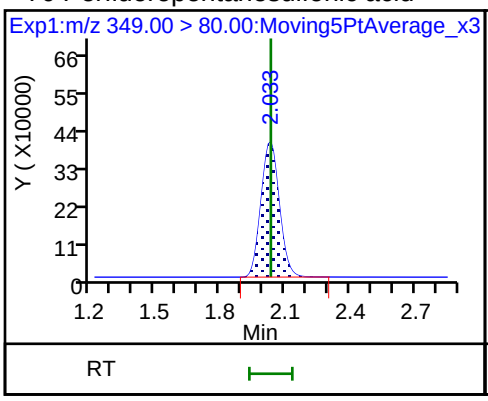
6 Perfluorohexanoic acid



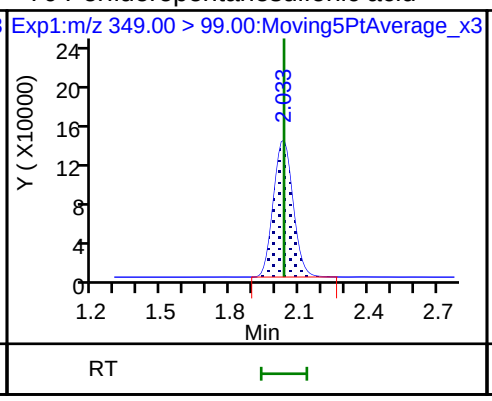
D 7 13C2 PFHxA



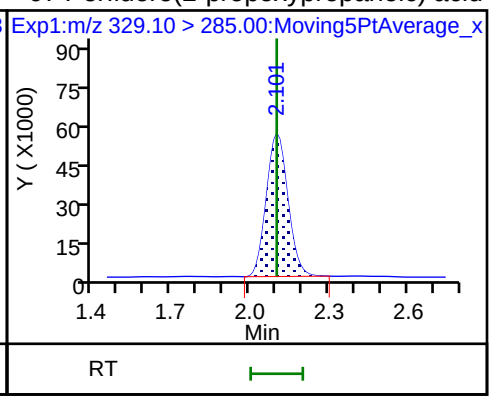
70 Perfluoropentanesulfonic acid



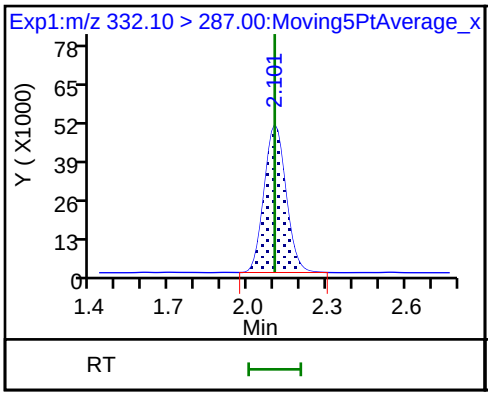
70 Perfluoropentanesulfonic acid



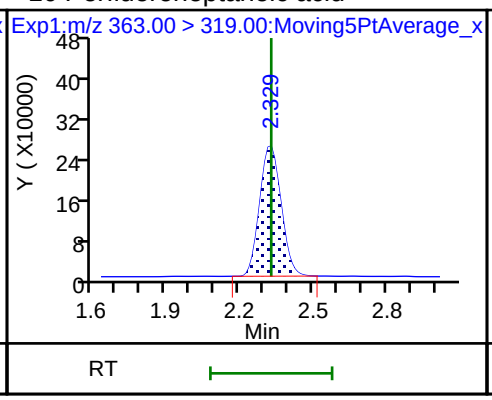
67 Perfluoro(2-propoxypropanoic) acid



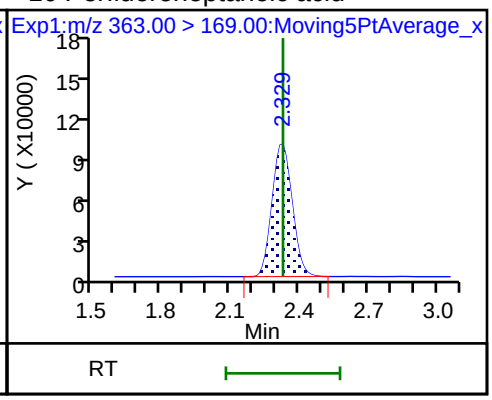
D 64 13C3 HFPO-DA



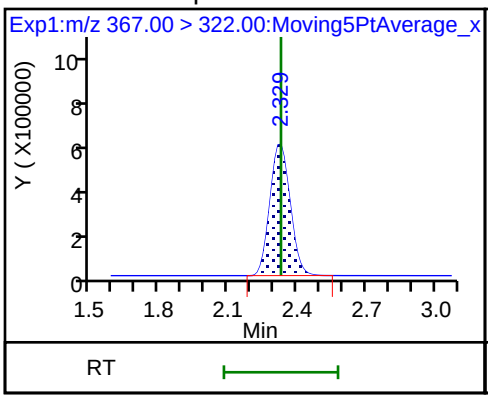
10 Perfluoroheptanoic acid



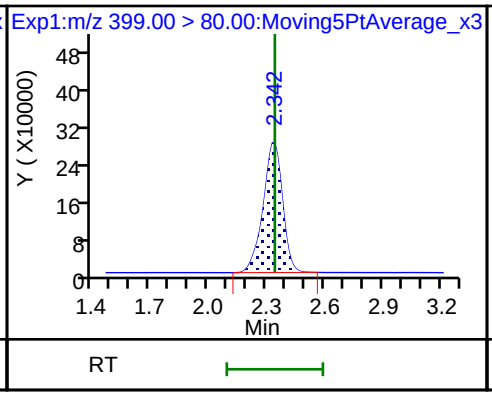
10 Perfluoroheptanoic acid



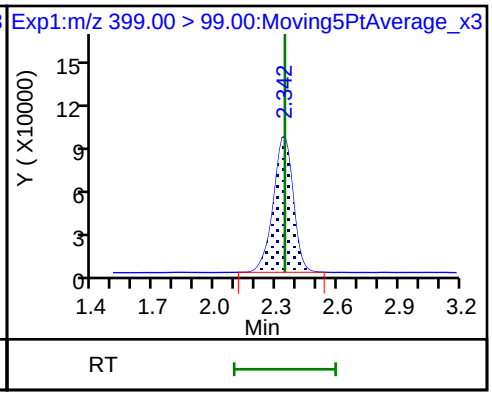
D 9 13C4-PFHpA



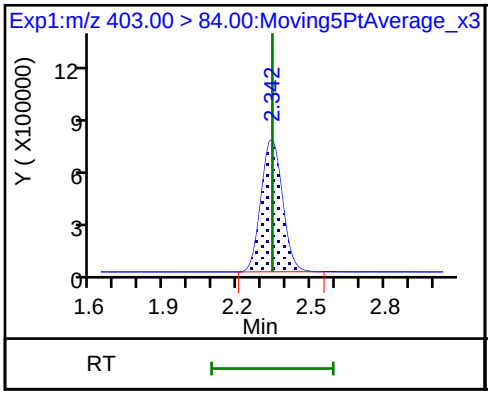
8 Perfluorohexanesulfonic acid



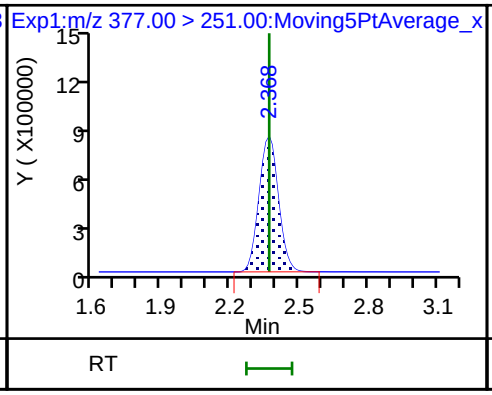
8 Perfluorohexanesulfonic acid



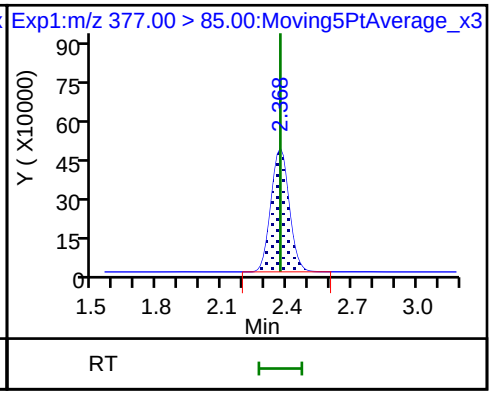
D 11 18O2 PFHxS



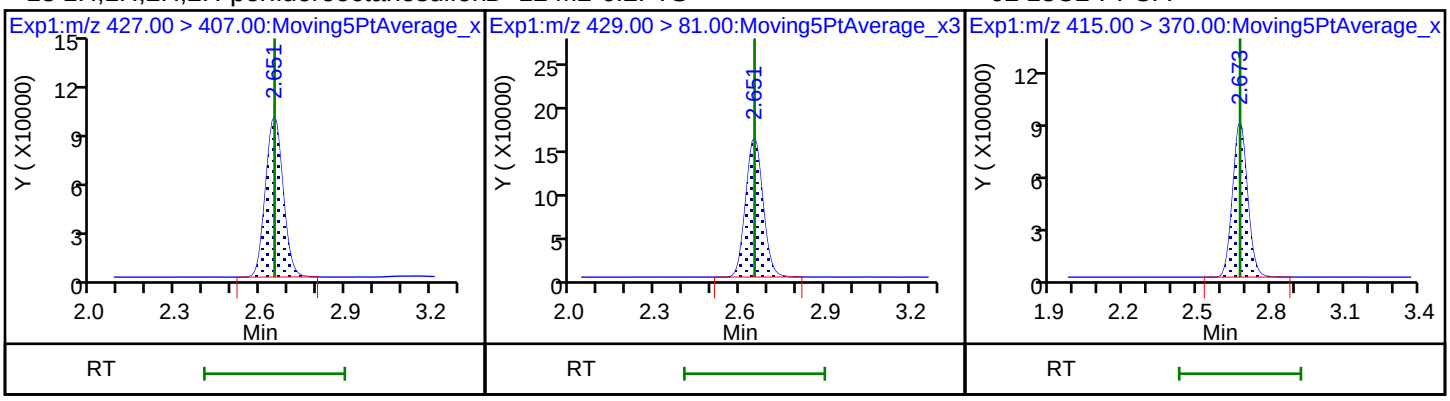
65 Adona



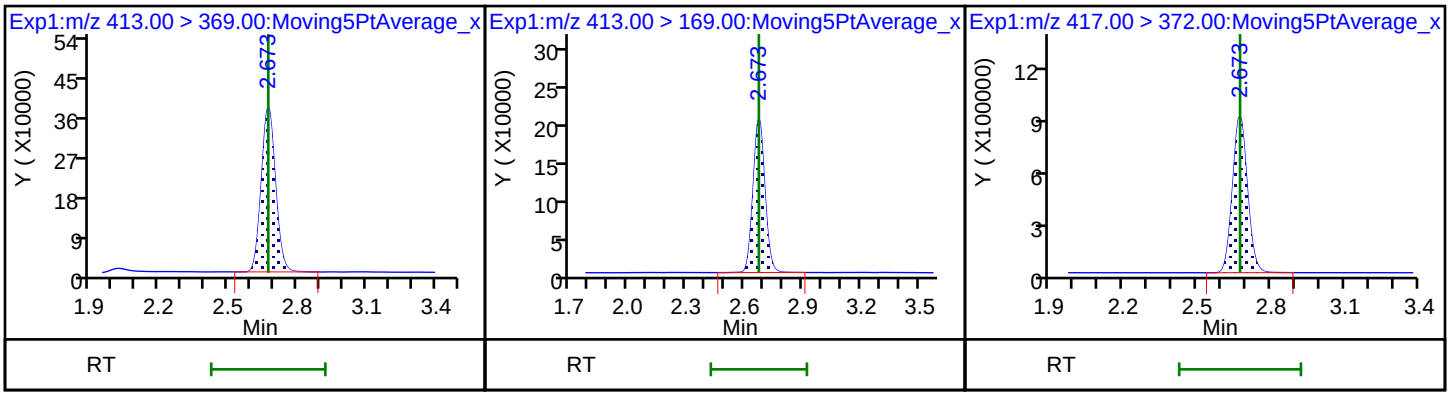
65 Adona



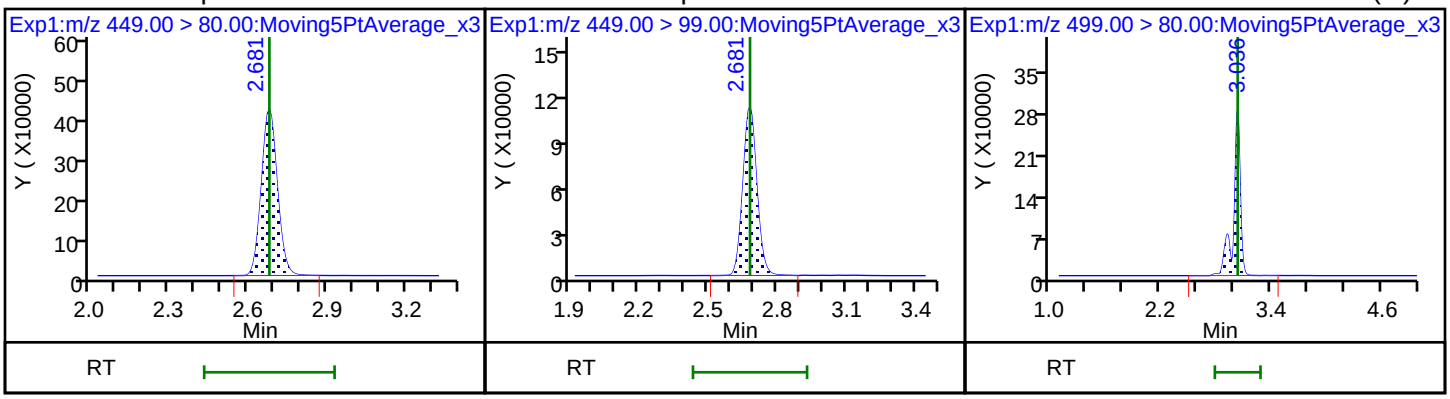
13 1H,1H,2H,2H-perfluorooctanesulfon D 12 M2-6:2FTS * 62 13C2-PFOA



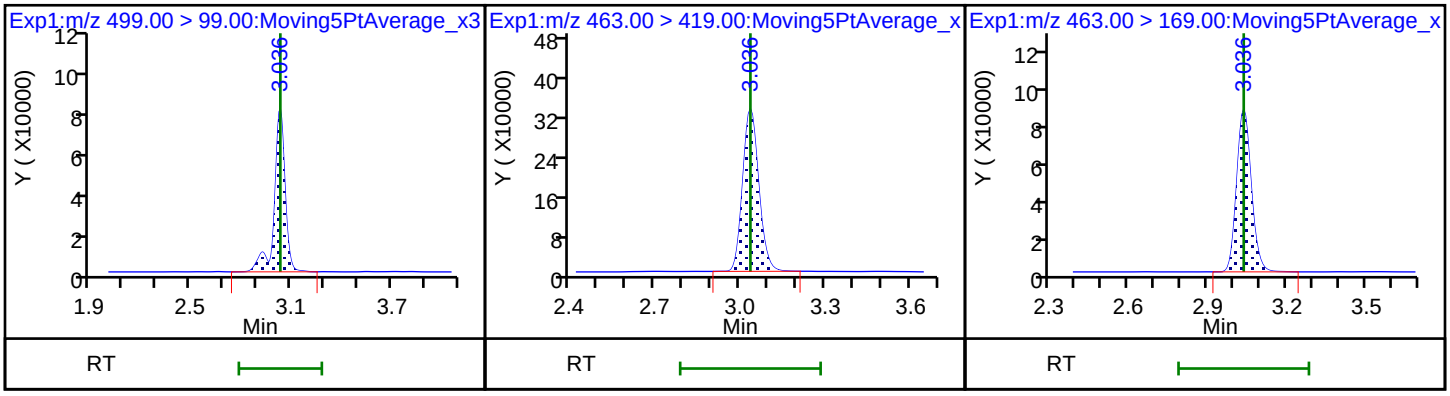
15 Perfluorooctanoic acid 15 Perfluorooctanoic acid D 14 13C4 PFOA



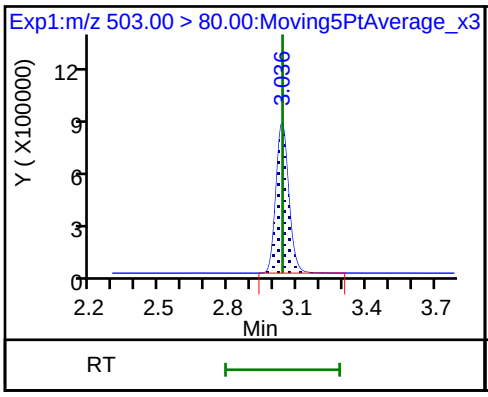
16 Perfluoroheptanesulfonic acid 16 Perfluoroheptanesulfonic acid 17 Perfluorooctane sulfonic acid (M)



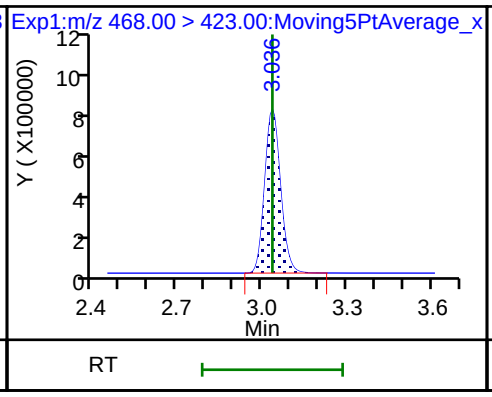
17 Perfluorooctane sulfonic acid 20 Perfluorononanoic acid 20 Perfluorononanoic acid



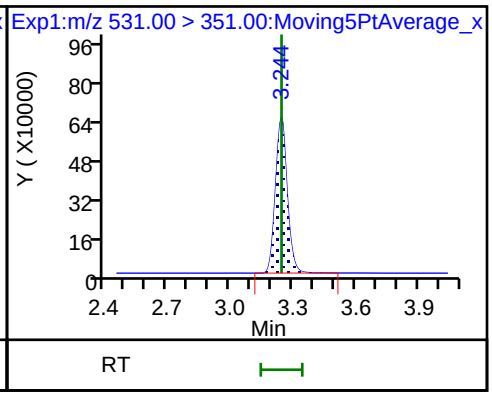
D 18 13C4 PFOS



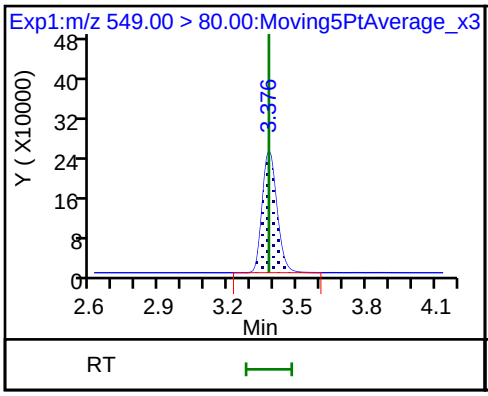
D 19 13C5 PFNA



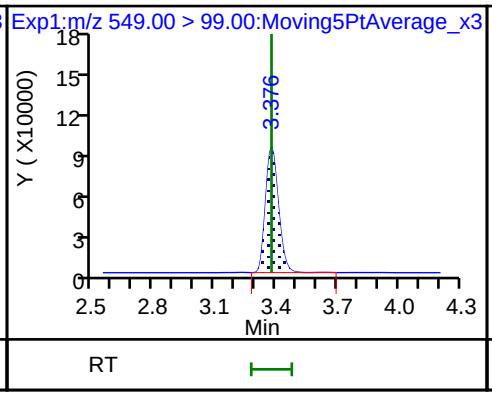
69 9-Chlorohexadecafluoro-3-oxanonane



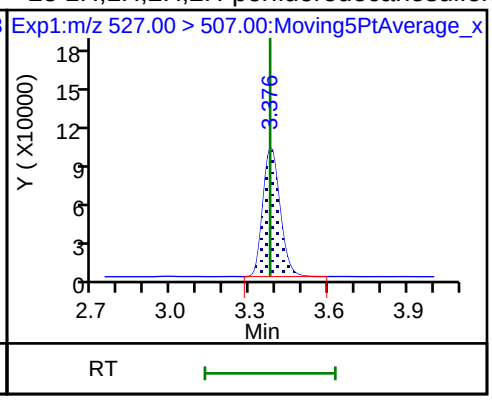
68 Perfluorononanesulfonic acid



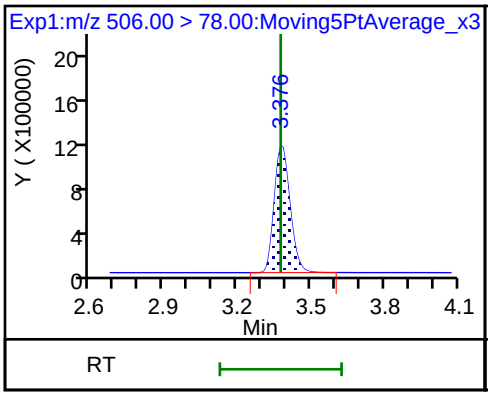
68 Perfluorononanesulfonic acid



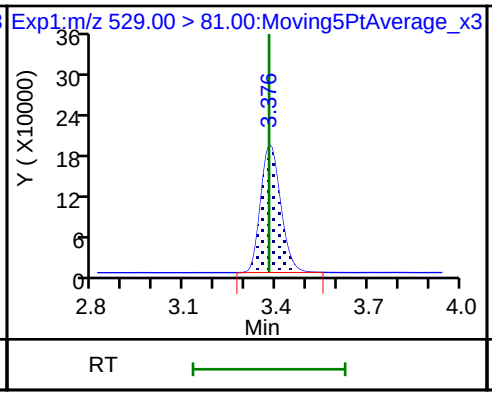
25 1H,1H,2H,2H-perfluorodecanesulfoni



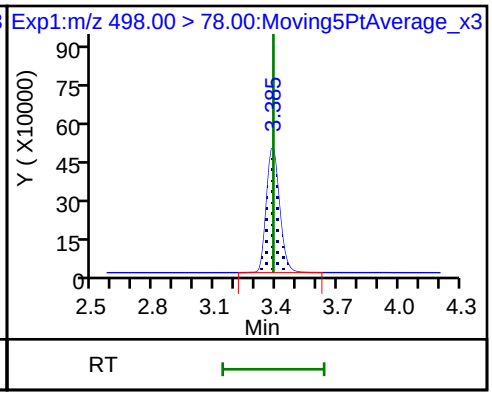
D 21 13C8 FOSA



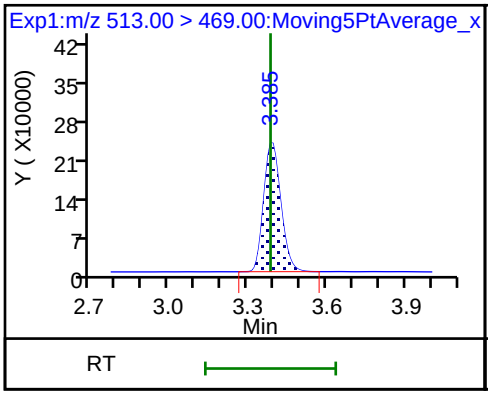
D 26 M2-8:2FTS



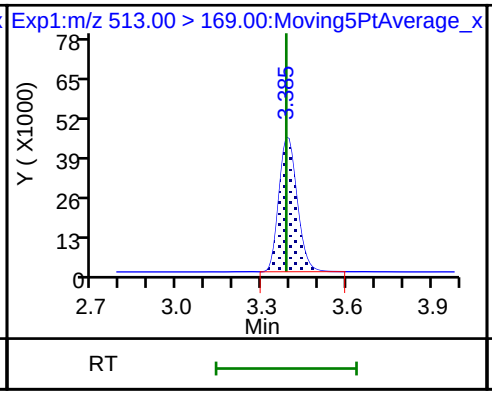
22 Perfluorooctane Sulfonamide



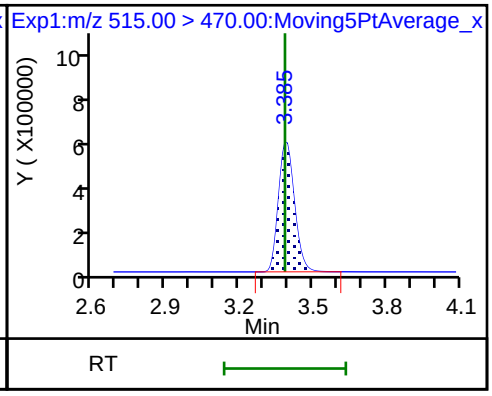
24 Perfluorodecanoic acid



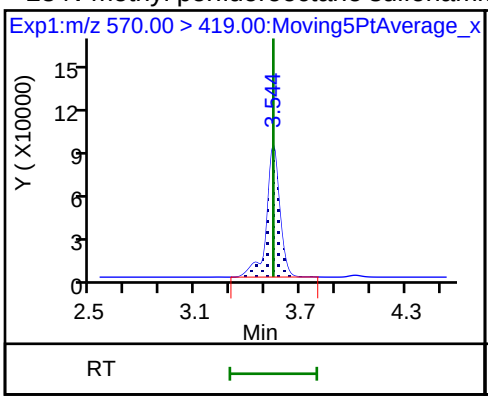
24 Perfluorodecanoic acid



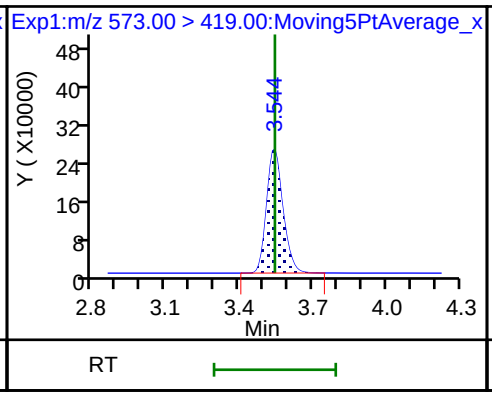
D 23 13C2 PFDA



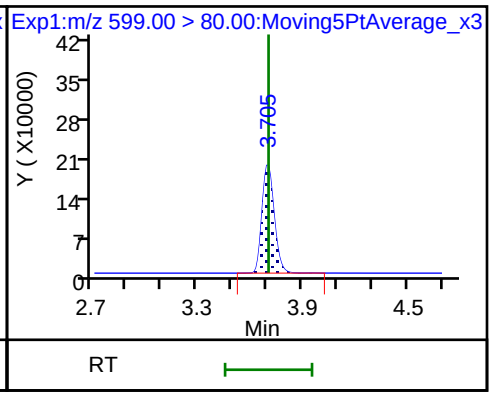
28 N-methyl perfluorooctane sulfonami



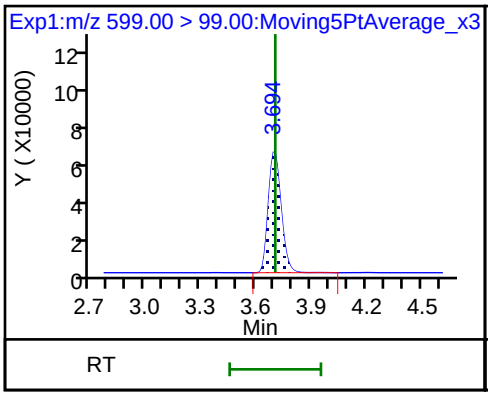
D 27 d3-NMeFOSAA



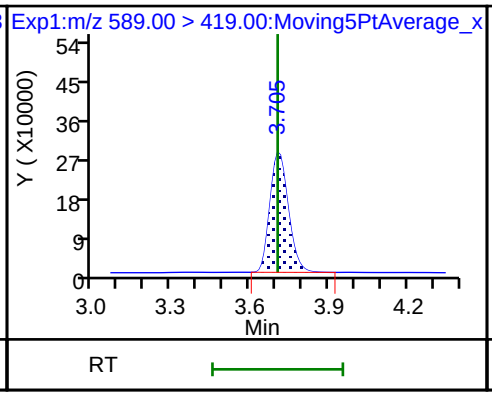
29 Perfluorodecane Sulfonic acid



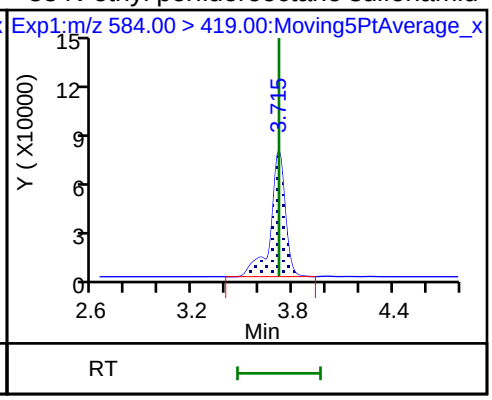
29 Perfluorodecane Sulfonic acid



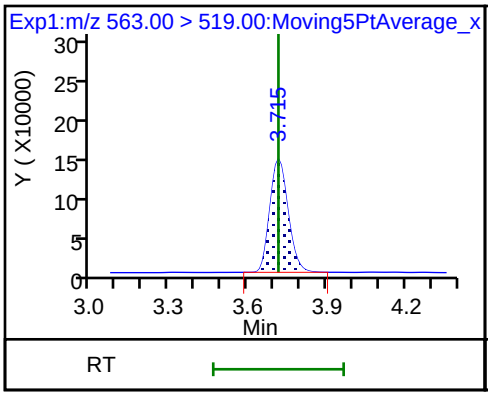
D 32 d5-NEtFOSAA



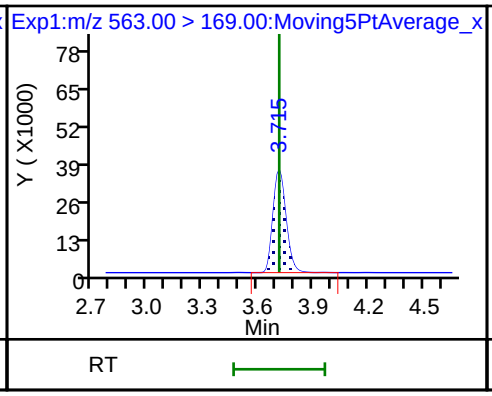
33 N-ethyl perfluorooctane sulfonamid



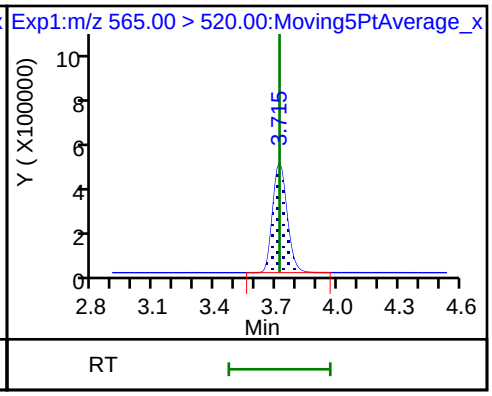
31 Perfluoroundecanoic acid



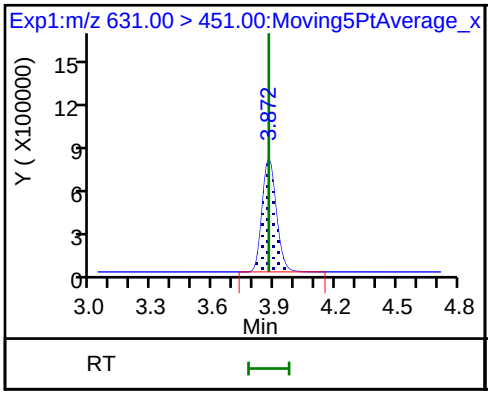
31 Perfluoroundecanoic acid



D 30 13C2 PFUnA



66 11-Chloroeicosafluoro-3-oxaundecan



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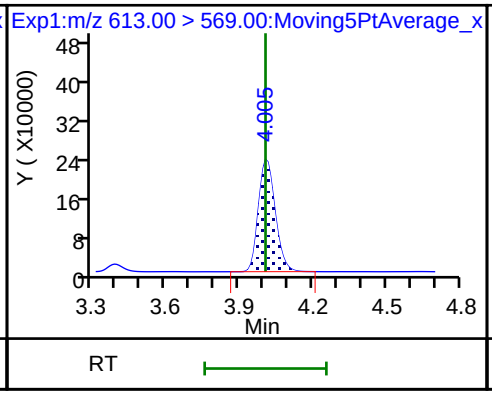
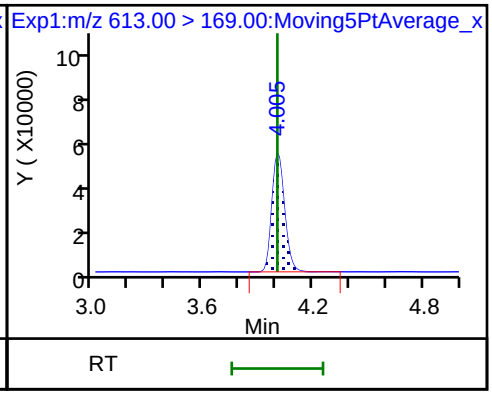


37 Perfluorododecanoic acid



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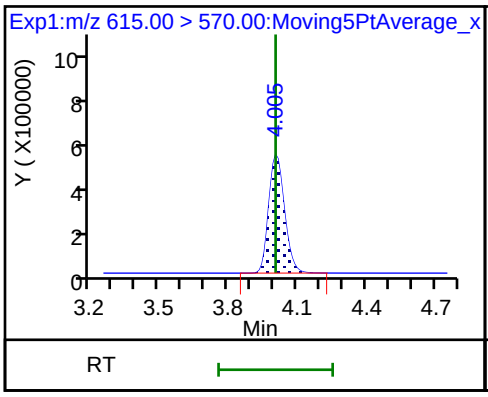

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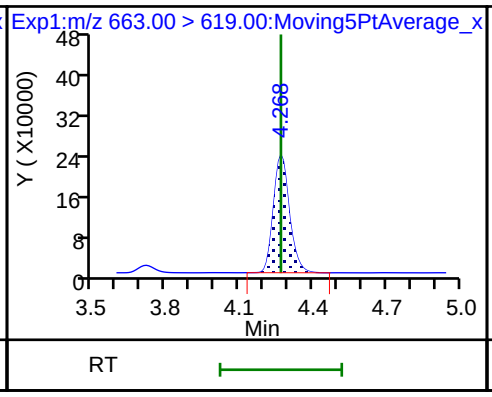
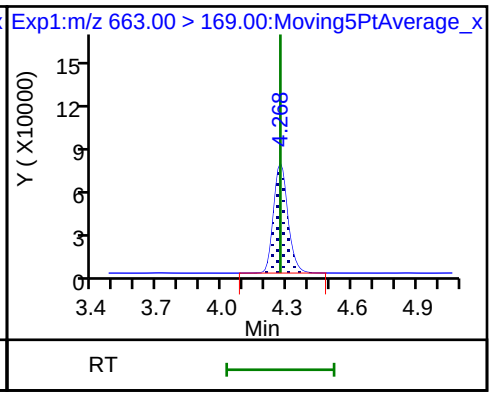
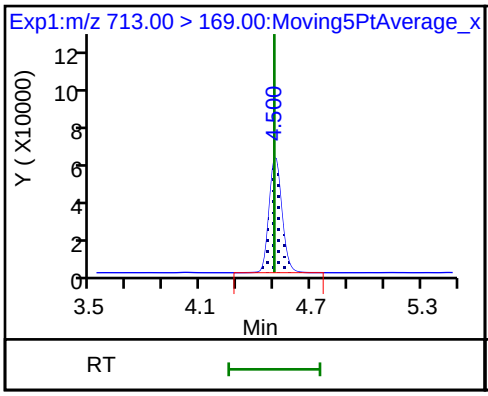


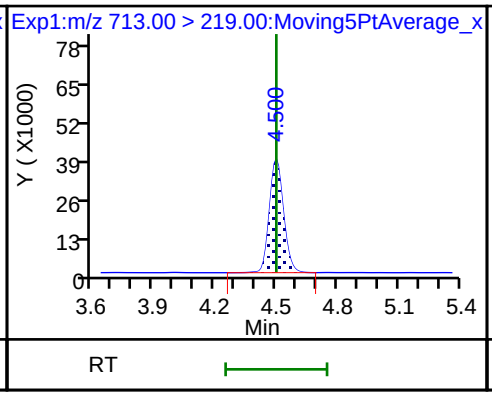
41 Perfluorotridecanoic acid



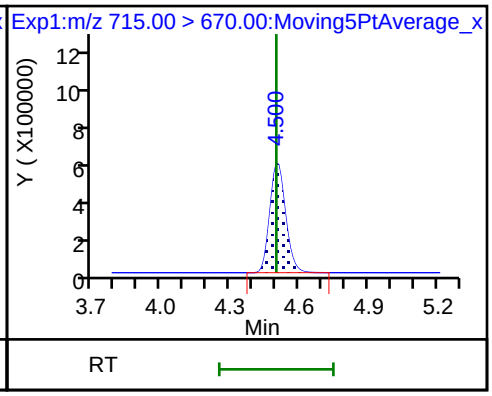
42 Perfluorotetradecanoic acid



42 Perfluorotetradecanoic acid



D 43 13C2-PFTeDA



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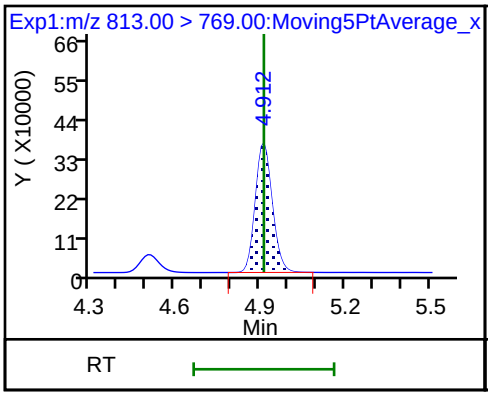

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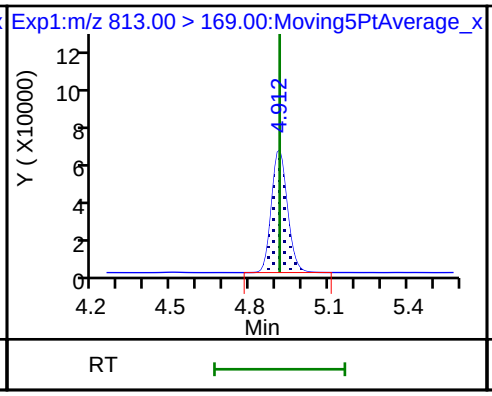

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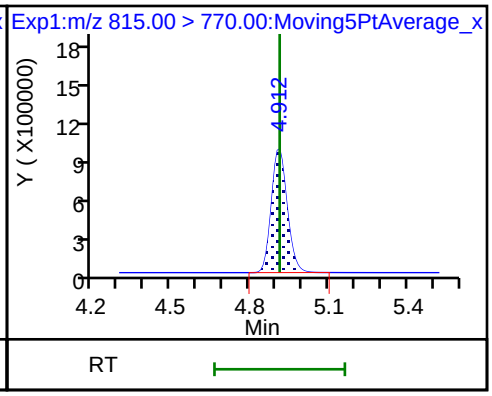
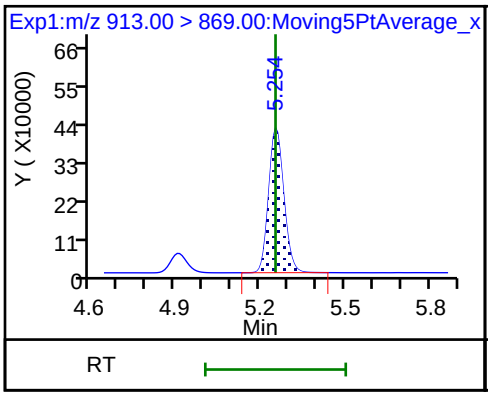
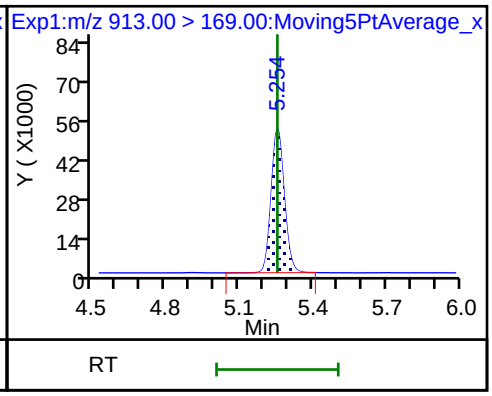


46 Perfluorooctadecanoic acid



46 Perfluorooctadecanoic acid



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

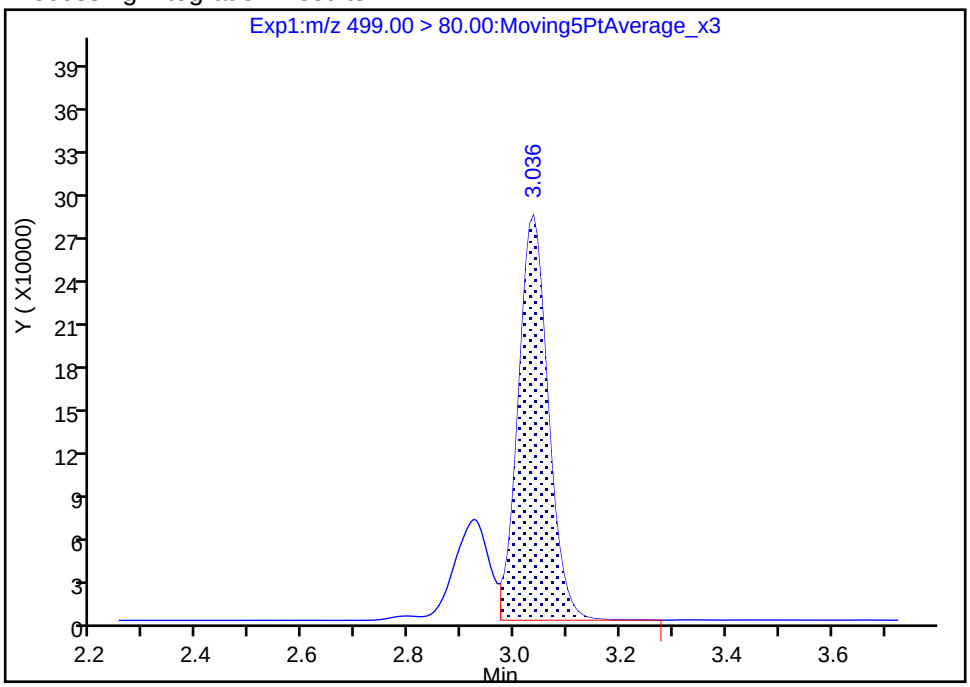
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\2018.07.13LLC_006.d				
Injection Date:	13-Jul-2018 20:46:17	Instrument ID:	A8_N		
Lims ID:	CCV L4				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	30	Worklist Smp#:	1
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

17 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

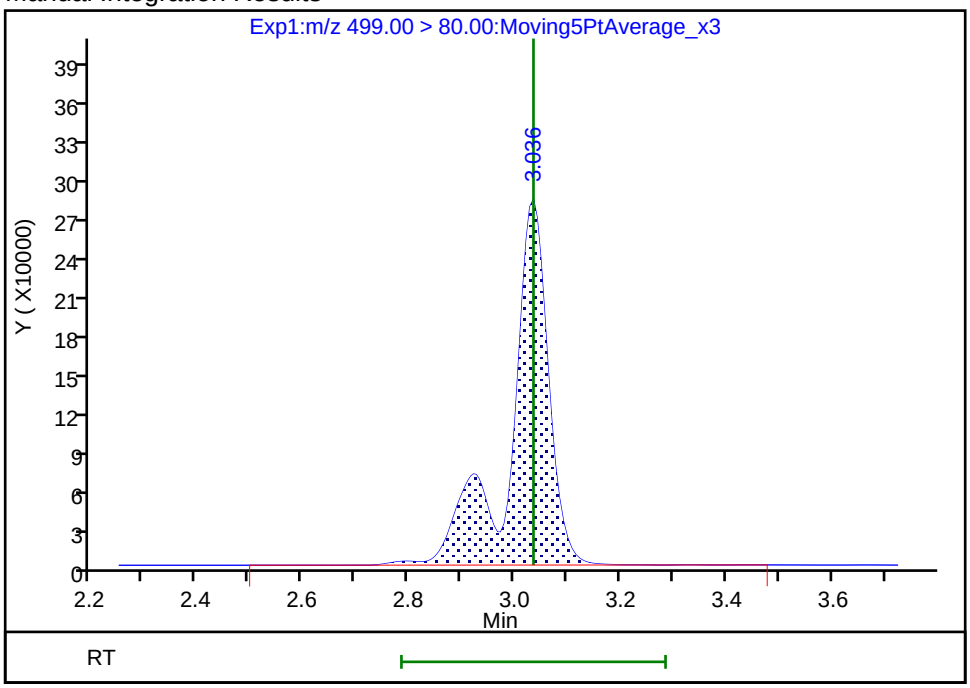
Processing Integration Results

RT: 3.04
Area: 1089549
Amount: 0.688279
Amount Units: ng/ml



Manual Integration Results

RT: 3.04
Area: 1414937
Amount: 0.893830
Amount Units: ng/ml



Reviewer: westendorfc, 16-Jul-2018 08:16:58

Audit Action: Manually Integrated Audit Reason: Isomers

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Lab Sample ID: CCV 320-233989/12 Calibration Date: 07/13/2018 22:12

Instrument ID: A8_N Calib Start Date: 07/11/2018 14:48

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 07/11/2018 15:38

Lab File ID: 2018.07.13LLC_017.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.9856	1.002		2.54	2.50	1.7	40.0
Perfluoropentanoic acid (PFPeA)	AveID	1.213	1.204		2.48	2.50	-0.7	40.0
Perfluorobutanesulfonic acid (PFBS)	AveID	76.50	80.21		2.32	2.21	4.9	50.0
4:2 FTS	AveID	13.00	13.31		2.39	2.34	2.4	50.0
Perfluorohexanoic acid (PFHxA)	AveID	1.029	1.055		2.56	2.50	2.5	40.0
Perfluoropentanesulfonic acid (PFPeS)	AveID	69.78	71.30		2.40	2.35	2.2	50.0
HFPO-DA (GenX)	AveID	2.654	2.461		2.32	2.50	-7.3	40.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.157	1.081		2.34	2.50	-6.5	40.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.148	1.091		2.16	2.28	-4.9	40.0
ADONA	AveID	3.219	3.522		2.58	2.36	9.4	50.0
6:2 FTS	AveID	1.564	1.657		2.51	2.37	5.9	40.0
Perfluorooctanoic acid (PFOA)	AveID	1.232	1.181		2.40	2.50	-4.1	40.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.318	1.349		2.44	2.38	2.4	50.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.133	1.112		2.28	2.32	-1.8	40.0
Perfluorononanoic acid (PFNA)	AveID	1.109	1.062		2.39	2.50	-4.3	40.0
9-Chlorohexadecafluoro-3-oxa nonane-1-sulfonate	AveID	1.836	1.830		2.32	2.33	-0.3	50.0
8:2 FTS	AveID	1.290	1.268		2.35	2.40	-1.7	40.0
Perfluorononanesulfonic acid (PFNS)	AveID	0.7752	0.8102		2.51	2.40	4.5	50.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9856	0.9905		2.51	2.50	0.5	40.0
Perfluorodecanoic acid (PFDA)	AveID	1.049	1.085		2.59	2.50	3.4	40.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	0.9858	1.011		2.56	2.50	2.6	40.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6714	0.7051		2.53	2.41	5.0	50.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.8840	0.8539		2.41	2.50	-3.4	40.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.8195	0.7885		2.41	2.50	-3.8	40.0
11-Chloroeicosafluoro-3-oxau ndecane-1-sulfonate	AveID	2.654	2.883		2.56	2.36	8.7	50.0
Perfluorododecanoic acid (PFDoA)	AveID	1.092	1.119		2.56	2.50	2.4	40.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.068	1.105		2.59	2.50	3.5	50.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2602	0.2466		2.37	2.50	-5.2	50.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		0.9631		2.51	2.50	0.5	50.0

FORM VII 537 (modified)

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Lab Sample ID: CCV 320-233989/12 Calibration Date: 07/13/2018 22:12

Instrument ID: A8_N Calib Start Date: 07/11/2018 14:48

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 07/11/2018 15:38

Lab File ID: 2018.07.13LLC_017.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.143	1.025		2.24	2.50	-10.3	50.0
13C4 PFBA	Ave	1.356	1.345		2.48	2.50	-0.8	50.0
13C5 PFPeA	Ave	0.9425	0.9494		2.52	2.50	0.7	50.0
13C3-PFBS	Ave	0.0237	0.0239		2.34	2.33	0.7	50.0
M2-4:2FTS	Ave	0.1273	0.1270		2.33	2.34	-0.2	50.0
13C2 PFHxA	Ave	1.017	1.059		2.60	2.50	4.1	50.0
13C3 HFPO-DA	Ave	0.0724	0.0900		3.11	2.50	24.4	50.0
13C4-PFHpA	Ave	0.9371	1.007		2.69	2.50	7.4	50.0
18O2 PFHxS	Ave	1.328	1.329		2.37	2.37	0.0	50.0
M2-6:2FTS	Ave	0.2009	0.1861		2.20	2.38	-7.4	40.0
13C4 PFOA	Ave	0.9560	0.9603		2.51	2.50	0.4	50.0
13C4 PFOS	Ave	0.9742	0.9570		2.35	2.39	-1.8	50.0
13C5 PFNA	Ave	0.8546	0.8285		2.42	2.50	-3.1	50.0
M2-8:2FTS	Ave	0.2939	0.2305		1.88	2.40	-21.5	40.0
13C8 FOSA	Ave	1.405	1.445		2.57	2.50	2.8	50.0
13C2 PFDA	Ave	0.7503	0.6943		2.31	2.50	-7.5	50.0
d3-NMeFOSAA	Ave	0.3075	0.3180		2.59	2.50	3.4	50.0
13C2 PFUnA	Ave	0.6266	0.6368		2.54	2.50	1.6	50.0
d5-NEtFOSAA	Ave	0.3150	0.3437		2.73	2.50	9.1	50.0
13C2 PFDoA	Ave	0.6496	0.6649		2.56	2.50	2.4	50.0
13C2-PFTeDA	Ave	0.6740	0.7126		2.64	2.50	5.7	50.0
13C2-PFHxDA	Ave	1.074	1.128		2.63	2.50	5.1	50.0

FORM VII 537 (modified)

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\2018.07.13LLC_017.d
Lims ID: CCV L5
Client ID:
Sample Type: CCV
Inject. Date: 13-Jul-2018 22:12:15 ALS Bottle#: 31 Worklist Smp#: 12
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV L5
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-A8_N*sub32

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 16-Jul-2018 12:43:35 Calib Date: 11-Jul-2018 15:38:42
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK023

First Level Reviewer: mongkols Date: 16-Jul-2018 12:43:35

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.90 > 169.00	1.433	1.433	0.0	1.000	4950389	2.54		102	2829	
D 1 13C4 PFBA										
217.00 > 172.00	1.433	1.445	-0.012	0.539	4939966	2.48		99.2	25650	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.716	1.716	0.0	1.000	4199329	2.48		99.3	1969	
D 3 13C5-PFPeA										
267.90 > 223.00	1.716	1.725	-0.009	0.646	3486474	2.52		101	49178	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.761	1.761	0.0	1.005	6211705	2.32		105	36039	
298.90 > 99.00	1.761	1.761	0.0	1.005	2542141		2.44(1.25-3.74)		24291	
D 47 13C3-PFBS										
301.90 > 83.00	1.752	1.762	-0.010	0.659	81476	2.34		101	503	
D 60 M2-4:2FTS										
329.00 > 81.00	1.967	1.967	0.0	0.740	435743	2.33		99.8	5583	
61 1H,1H,2H,2H-perfluorohexanesulfoni										
327.00 > 307.00	1.967	1.967	0.0	1.122	1089140	2.39		102	63883	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.999	1.999	0.0	1.000	4102771	2.56		103	10552	
313.00 > 119.00	1.999	1.999	0.0	1.000	377645		10.86(5.03-15.10)		7369	
D 7 13C2 PFHxA										
315.00 > 270.00	1.999	2.011	-0.012	0.752	3888313	2.60		104	67734	
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.022	2.022	0.0	1.154	5859127	2.40		102	72510	
349.00 > 99.00	2.022	2.022	0.0	1.154	2130018		2.75(1.36-4.07)		33831	
67 Perfluoro(2-propoxypropanoic) acid										
329.10 > 285.00	2.090	2.090	0.0	1.000	813393	2.32		92.7	7159	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.090	2.101	-0.011	0.786	330526	3.11		124	6600	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.316	2.316	0.0	1.000	3996984	2.34		93.5	7221	
363.00 > 169.00	2.316	2.316	0.0	1.000	1583806		2.52(1.13-3.40)		15461	
D 9 13C4-PFHpA										
367.00 > 322.00	2.316	2.329	-0.013	0.871	3697250	2.69		107	55811	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.329	2.329	0.0	1.000	4845912	2.16		95.1	20489	
399.00 > 99.00	2.329	2.329	0.0	1.000	1594466		3.04(1.50-4.49)		11537	
D 11 18O2 PFHxS										
403.00 > 84.00	2.329	2.342	-0.013	0.876	4615456	2.37		100	38346	
65 Adona										
377.00 > 251.00	2.355	2.355	0.0	0.780	11658839	2.58		109	86623	
377.00 > 85.00	2.355	2.355	0.0	0.780	7148747		1.63(0.84-2.53)		29959	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.634	2.634	0.0	1.000	1073636	2.51		106	7491	
D 12 M2-6:2FTS										
429.00 > 81.00	2.634	2.651	-0.017	0.991	649173	2.20		92.6	12624	
* 62 13C2-PFOA										
415.00 > 370.00	2.658	2.658	0.0		3672283	2.50			33314	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.658	2.658	0.0	1.000	4167916	2.40		95.9	2580	
413.00 > 169.00	2.658	2.658	0.0	1.000	2114255		1.97(0.84-2.52)		11165	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.666	2.666	0.0	0.883	4511973	2.44		102	29147	
449.00 > 99.00	2.666	2.666	0.0	0.883	1173506		3.84(1.94-5.82)		14627	
D 14 13C4 PFOA										
417.00 > 372.00	2.658	2.673	-0.015	1.000	3526371	2.51		100	45989	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.018	3.018	0.0	1.000	3627787	2.28		98.2	27607	
499.00 > 99.00	3.018	3.018	0.0	1.000	808352		4.49(2.31-6.93)		7669	
20 Perfluorononanoic acid										
463.00 > 419.00	3.025	3.025	0.0	1.002	3231095	2.39		95.7	6683	
463.00 > 169.00	3.025	3.025	0.0	1.002	811456		3.98(1.90-5.69)		23450	
D 18 13C4 PFOS										
503.00 > 80.00	3.018	3.036	-0.018	1.135	3359712	2.35		98.2	25536	
D 19 13C5 PFNA										
468.00 > 423.00	3.018	3.036	-0.018	1.135	3042525	2.42		96.9	30335	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.232	3.232	0.0	1.071	5995005	2.32		99.7	32109	
25 1H,1H,2H,2H-perfluorodecanesulfoni										
527.00 > 507.00	3.361	3.361	0.0	1.000	1028206	2.35		98.3	11986	
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.361	3.361	0.0	1.114	2733406	2.51		105	45108	
549.00 > 99.00	3.361	3.361	0.0	1.114	1058763		2.58(1.33-3.97)		18859	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.371	3.371	0.0	1.000	5254869	2.51		100	49301	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 21 13C8 FOSA										
506.00 > 78.00	3.371	3.376	-0.005	1.268	5305339	2.57		103	32359	
D 26 M2-8:2FTS										
529.00 > 81.00	3.361	3.376	-0.015	1.265	811067	1.88		78.5	12110	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.380	3.380	0.0	1.000	2766855	2.59		103	16829	
513.00 > 169.00	3.380	3.380	0.0	1.000	487307		5.68(2.36-7.09)		21741	
D 23 13C2 PFDA										
515.00 > 470.00	3.380	3.385	-0.005	1.272	2549742	2.31		92.5	23788	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.529	3.529	0.0	1.000	1180744	2.56		103	7492	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.529	3.544	-0.015	1.328	1167842	2.59		103	21300	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.687	3.687	0.0	1.222	2388806	2.53		105	45703	
599.00 > 99.00	3.687	3.687	0.0	1.222	845937		2.82(1.39-4.16)		19967	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.698	3.698	0.0	1.000	1843857	2.41		96.2	8572	
563.00 > 169.00	3.698	3.698	0.0	1.000	488224		3.78(2.12-6.36)		25086	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.698	3.698	0.0	1.000	1077914	2.41		96.6	25793	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.698	3.705	-0.007	1.391	1262288	2.73		109	3377	
D 30 13C2 PFUnA										
565.00 > 520.00	3.698	3.715	-0.017	1.391	2338390	2.54		102	30174	
66 11-Chloroeicosafluoro-3-oxaundecan										
631.00 > 451.00	3.855	3.855	0.0	1.277	9545710	2.56		109	73503	
37 Perfluorododecanoic acid										
613.00 > 569.00	3.999	3.999	0.0	1.000	2731337	2.56		102	1989	
613.00 > 169.00	3.999	3.999	0.0	1.000	672195		4.06(2.13-6.40)		12815	
D 36 13C2 PFDoA										
615.00 > 570.00	3.999	4.005	-0.006	1.504	2441858	2.56		102	21296	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.252	4.252	0.0	1.063	2697897	2.59		103	1584	
663.00 > 169.00	4.252	4.252	0.0	1.063	823019		3.28(1.25-3.76)		12926	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.491	4.491	0.0	1.000	645415	2.37		94.8	9040	
713.00 > 219.00	4.491	4.491	0.0	1.000	458507		1.41(0.71-2.13)		6781	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.491	4.500	-0.009	1.690	2616996	2.64		106	15411	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.905	4.905	0.0	1.002	3988989	2.51		100	976	
813.00 > 169.00	4.905	4.905	0.0	1.002	661734		6.03(2.86-8.58)		6606	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.897	4.912	-0.015	1.842	4142043	2.63		105	14415	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.248	5.248	0.0	1.072	4247575	2.24		89.7	927	
913.00 > 169.00	5.248	5.248	0.0	1.072	506830		8.38(3.83-11.48)		5447	

Reagents:

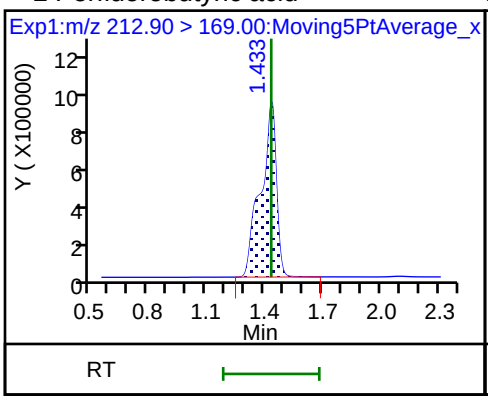
LCPFC_LL5_00005 Amount Added: 1.00 Units: mL

Report Date: 16-Jul-2018 12:43:36 Chrom Revision: 2.2 07-Jun-2018 07:41:54

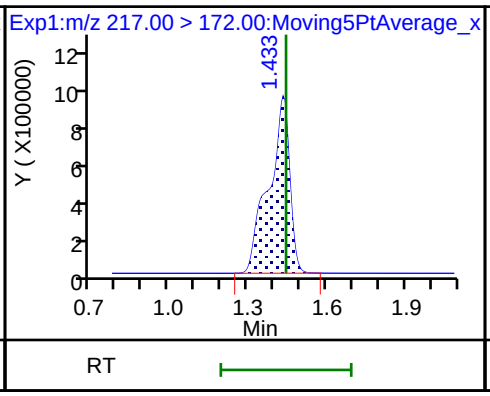
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\2018.07.13LLC_017.d
Injection Date: 13-Jul-2018 22:12:15 Instrument ID: A8_N
Lims ID: CCV L5
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 31 Worklist Smp#: 12
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC ICAL

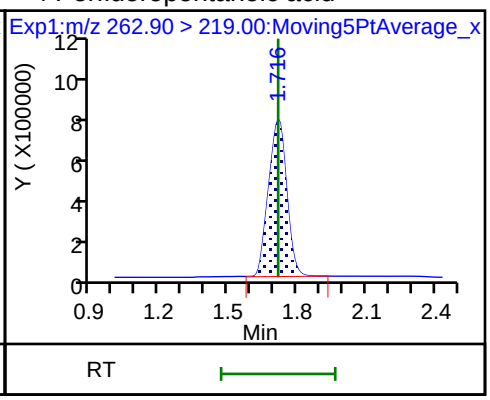
2 Perfluorobutyric acid



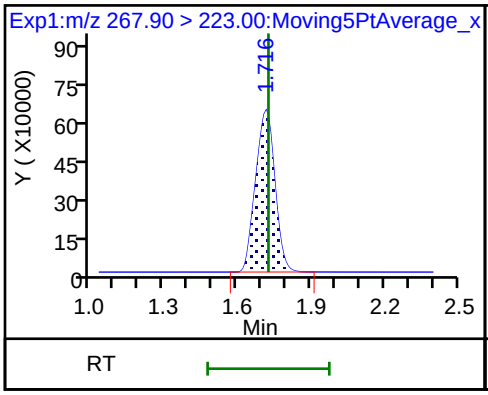
D 1 13C4 PFBA



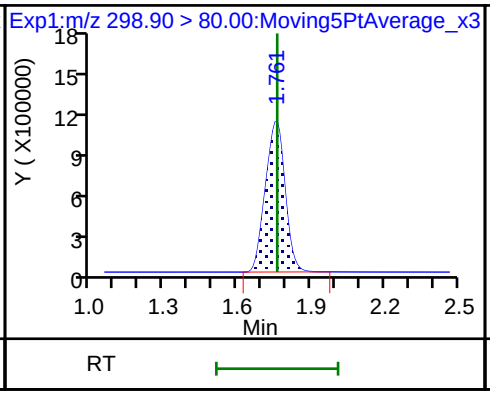
4 Perfluoropentanoic acid



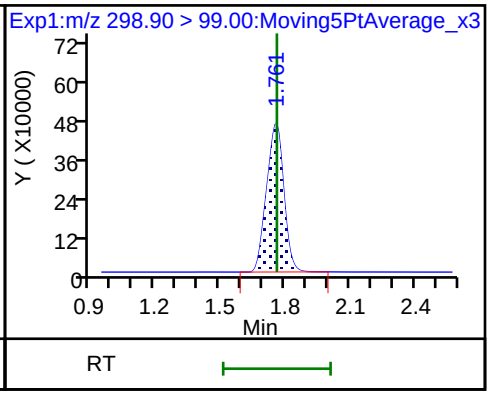
D 3 13C5-PFPeA



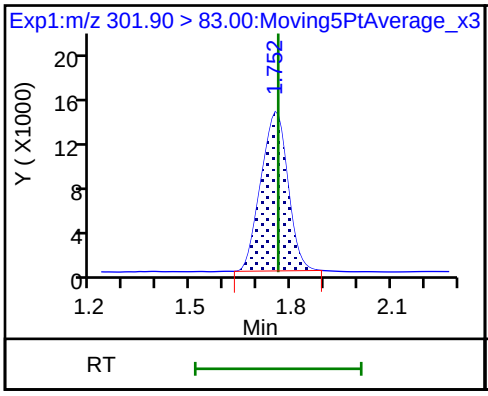
5 Perfluorobutanesulfonic acid



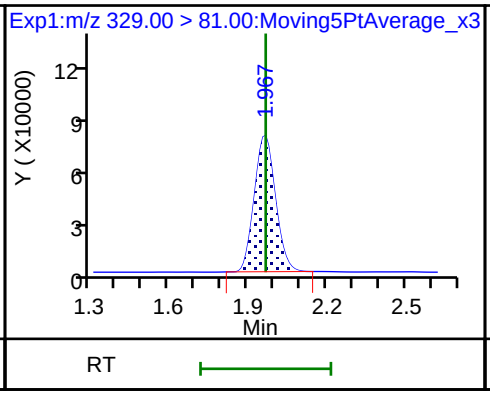
5 Perfluorobutanesulfonic acid



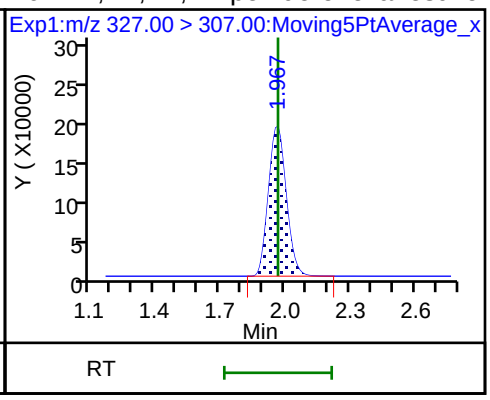
D 47 13C3-PFBS



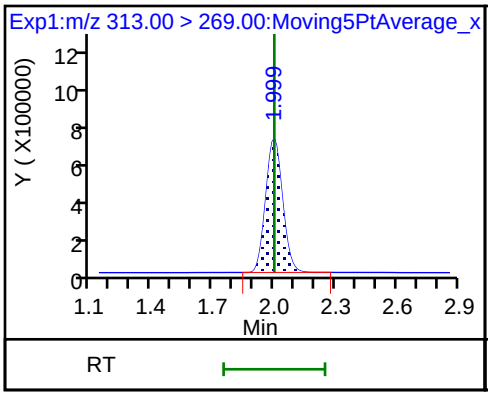
D 60 M2-4:2FTS



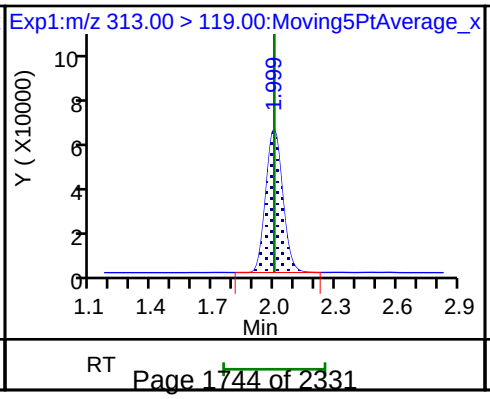
61 1H,1H,2H,2H-perfluorohexanesulfoni



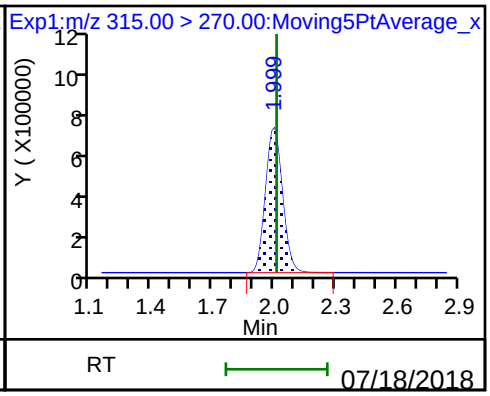
6 Perfluorohexanoic acid



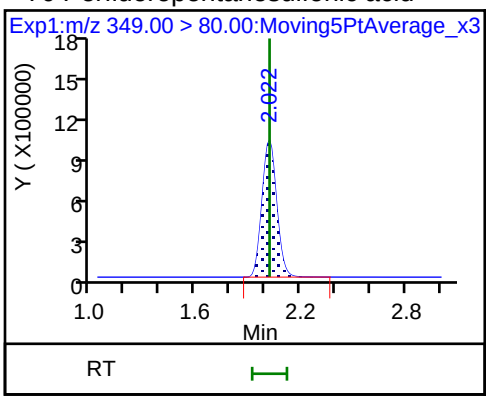
6 Perfluorohexanoic acid



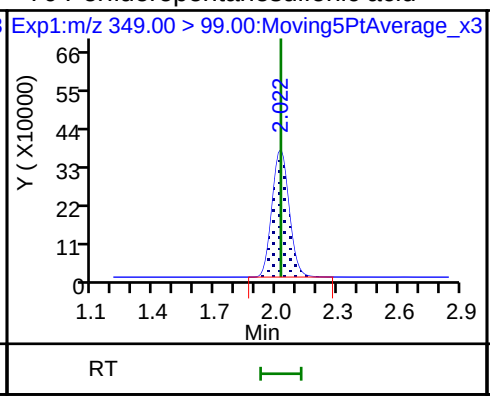
D 7 13C2 PFHxA



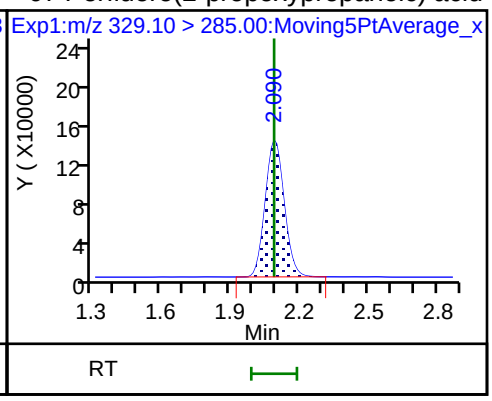
70 Perfluoropentanesulfonic acid



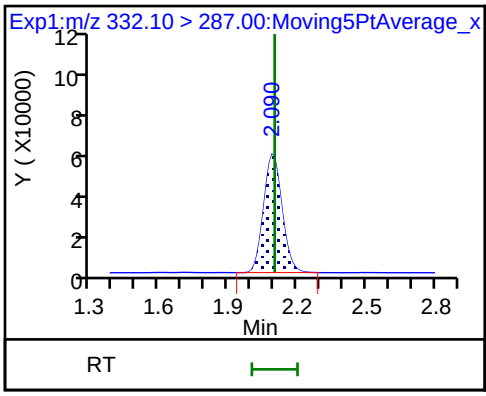
70 Perfluoropentanesulfonic acid



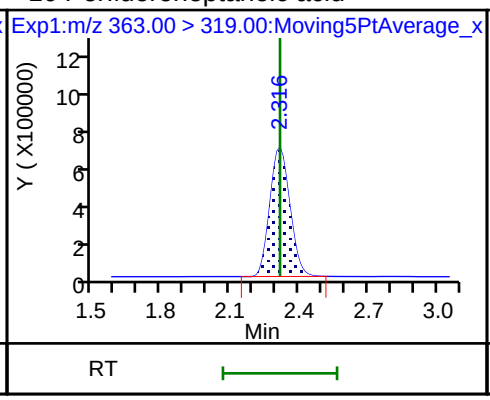
67 Perfluoro(2-propoxypropanoic) acid



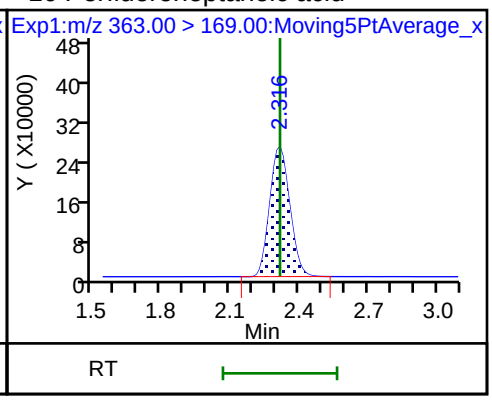
D 64 13C3 HFPO-DA



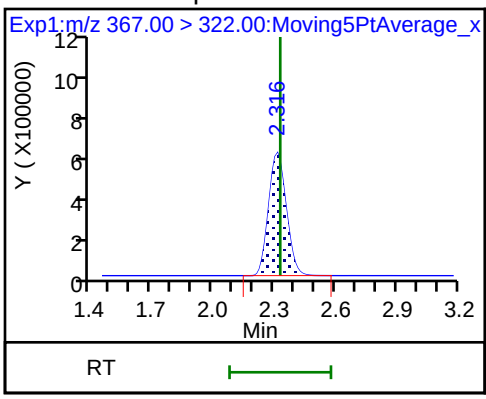
10 Perfluoroheptanoic acid



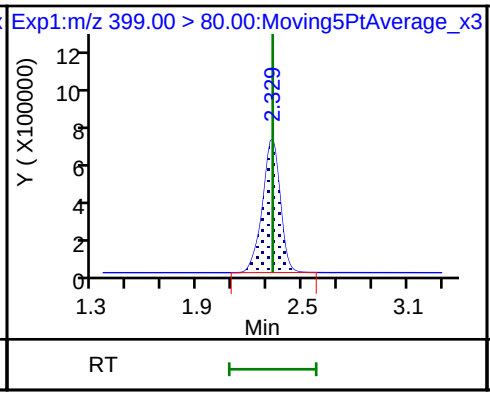
10 Perfluoroheptanoic acid



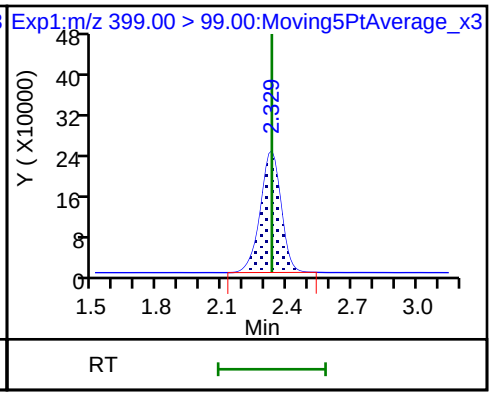
D 9 13C4-PFHpA



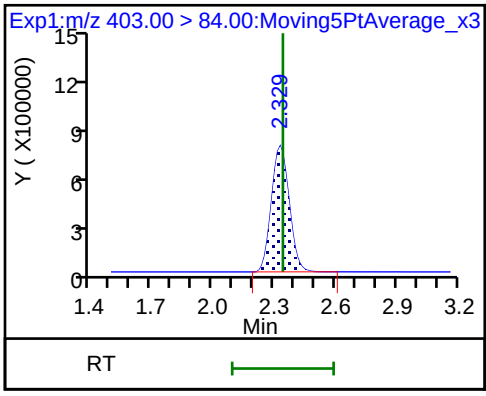
8 Perfluorohexanesulfonic acid



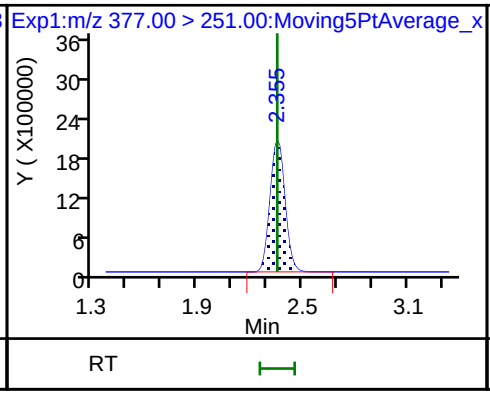
8 Perfluorohexanesulfonic acid



D 11 18O2 PFHxS



65 Adona



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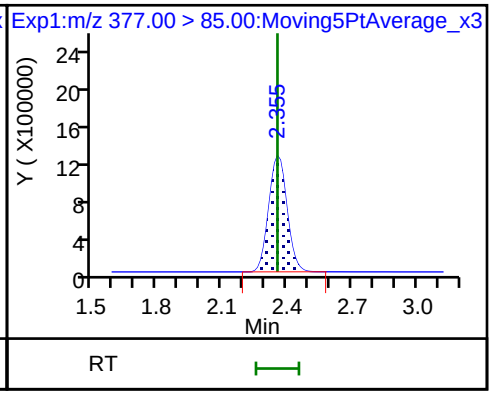
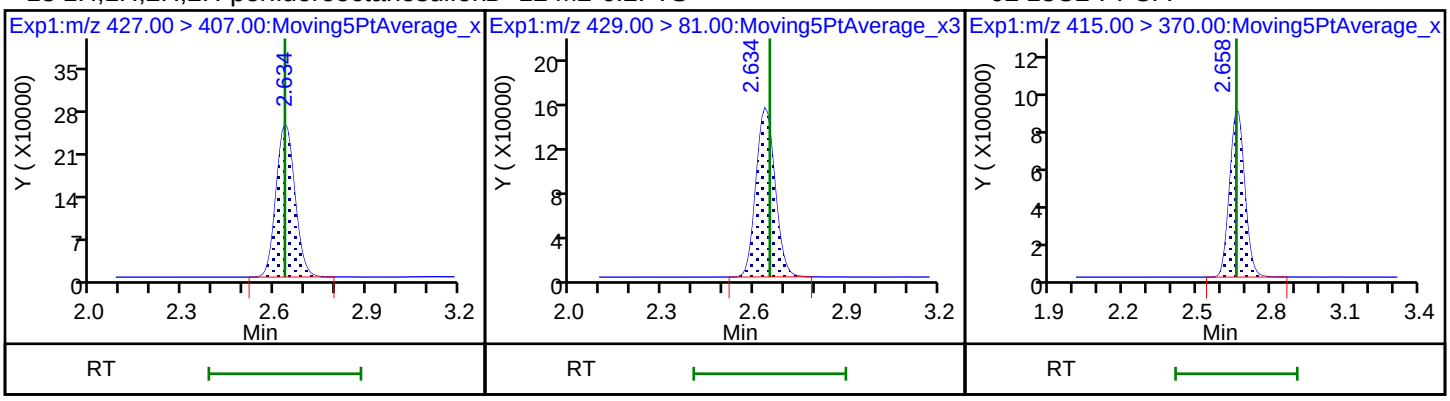
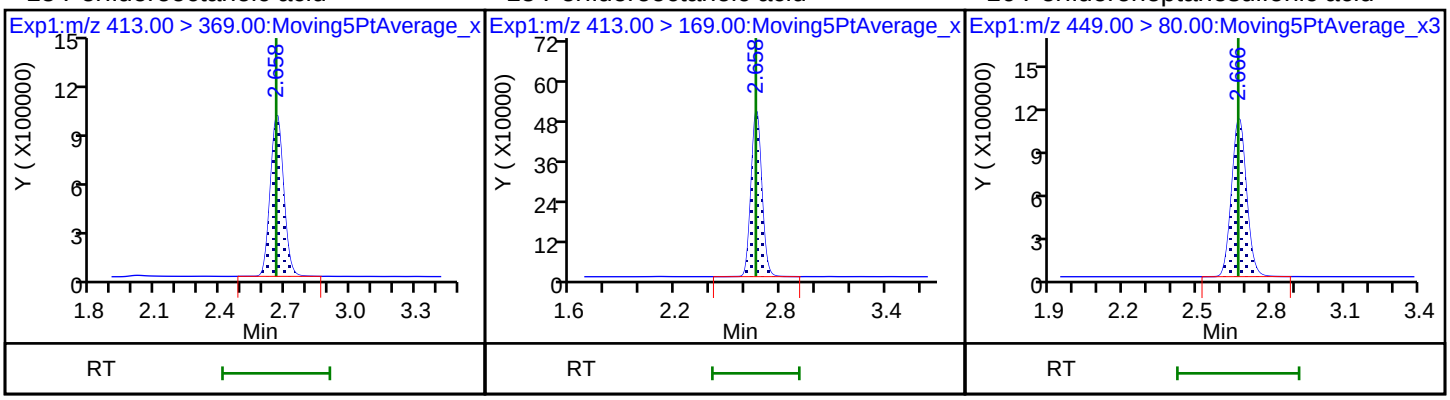


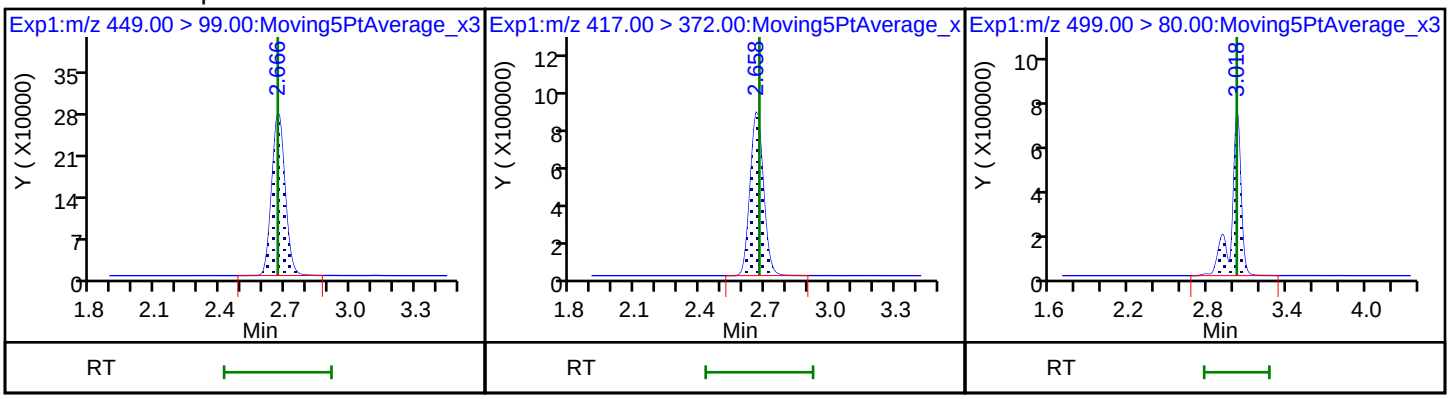
13 1H,1H,2H,2H-perfluorooctanesulfonD 12 M2-6:2FTS * 62 13C2-PFOA



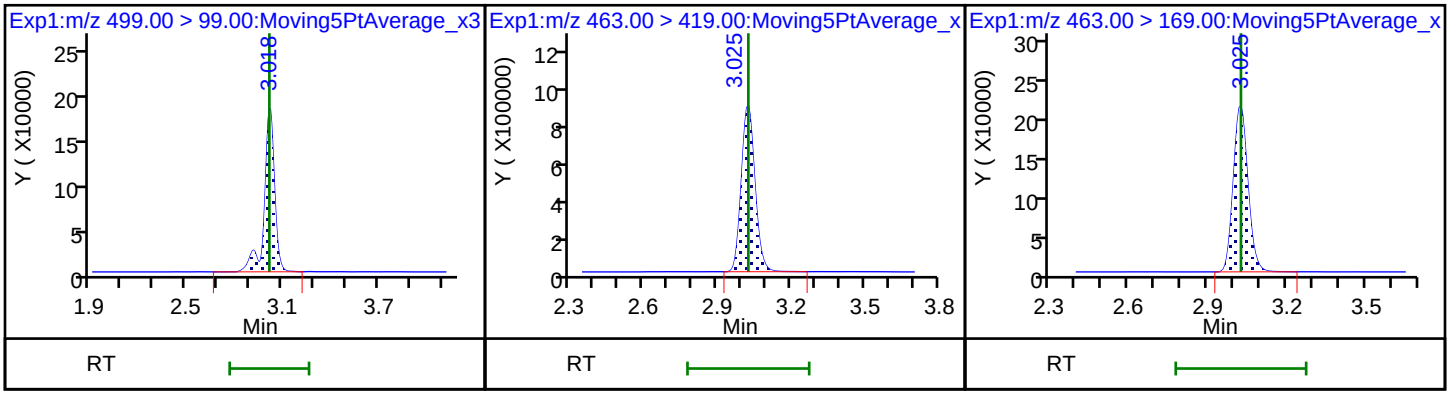
15 Perfluorooctanoic acid 15 Perfluorooctanoic acid 16 Perfluoroheptanesulfonic acid



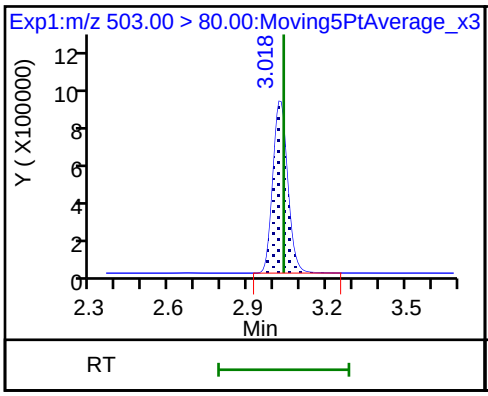
16 Perfluoroheptanesulfonic acid D 14 13C4 PFOA 17 Perfluorooctane sulfonic acid



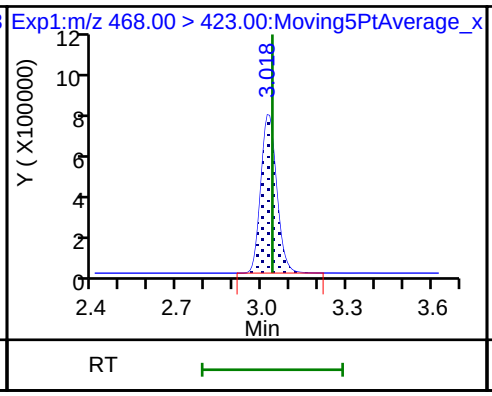
17 Perfluorooctane sulfonic acid 20 Perfluorononanoic acid 20 Perfluorononanoic acid



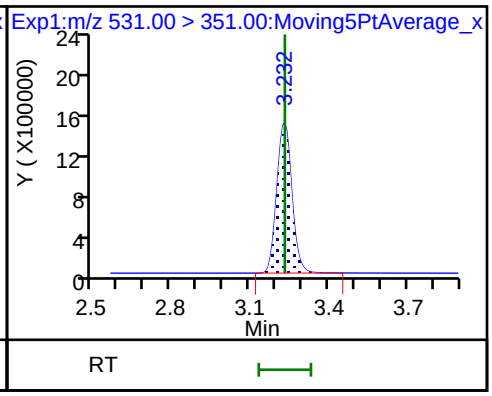
D 18 13C4 PFOS



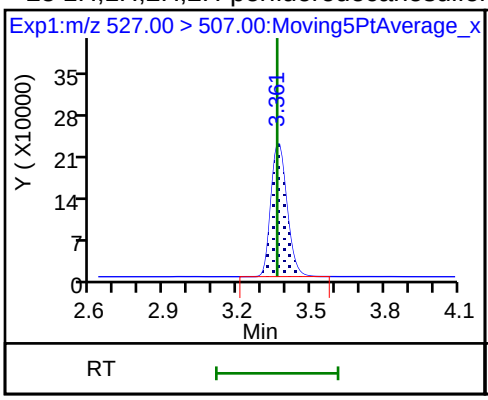
D 19 13C5 PFNA



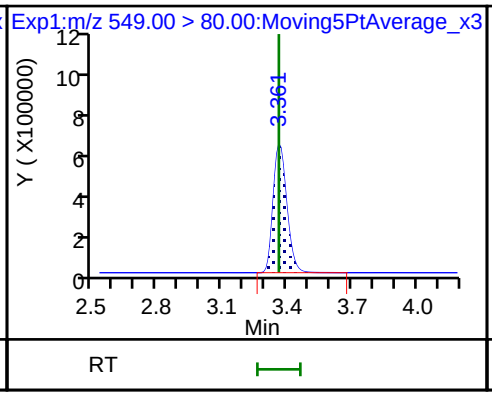
69 9-Chlorohexadecafluoro-3-oxanonane



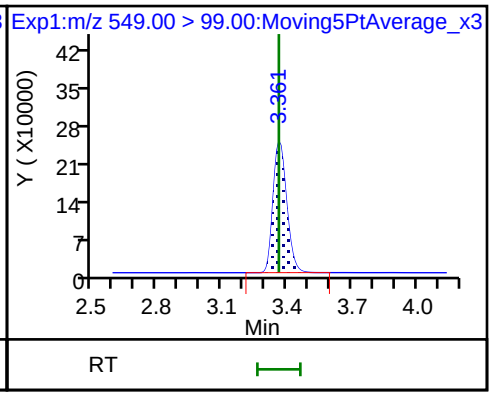
25 1H,1H,2H,2H-perfluorodecanesulfoni



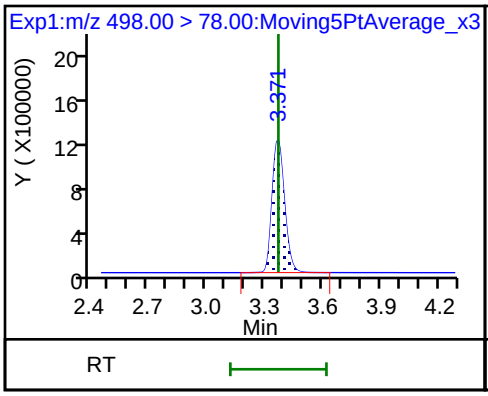
68 Perfluorononanesulfonic acid



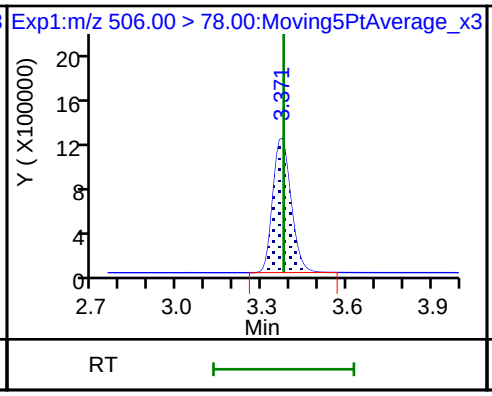
68 Perfluorononanesulfonic acid



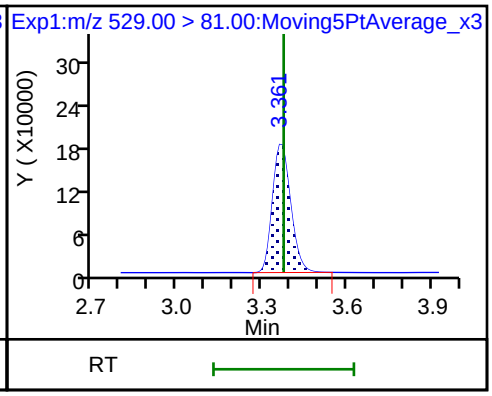
22 Perfluorooctane Sulfonamide



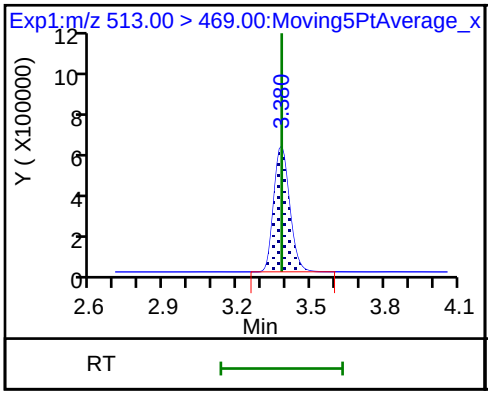
D 21 13C8 FOSA



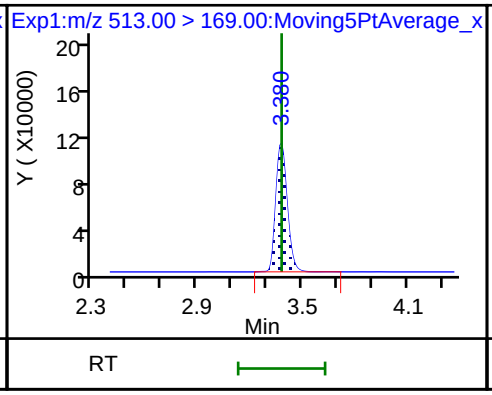
D 26 M2-8:2FTS



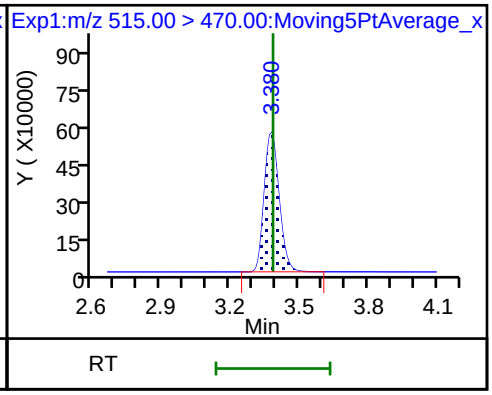
24 Perfluorodecanoic acid



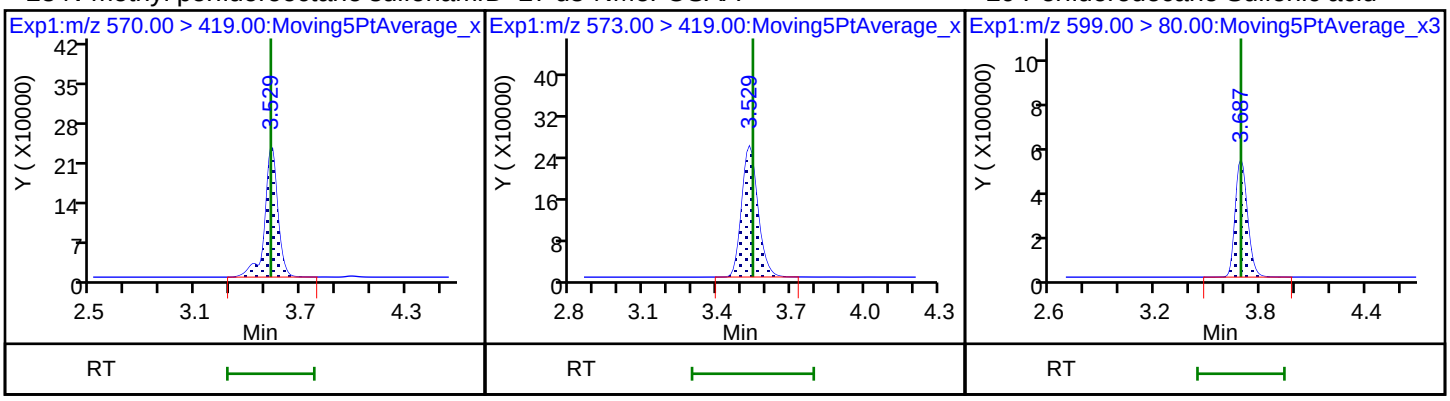
24 Perfluorodecanoic acid



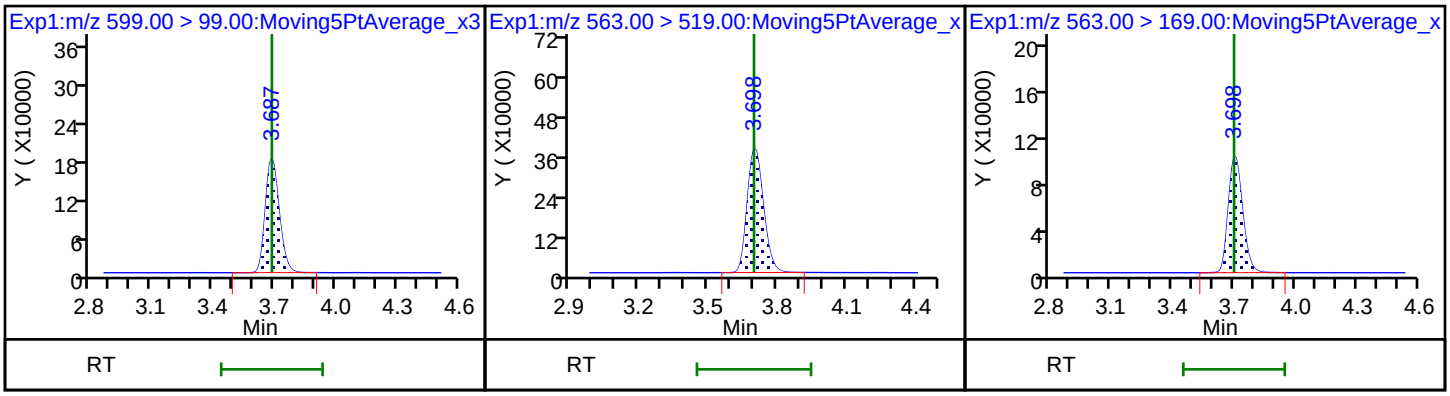
D 23 13C2 PFDA



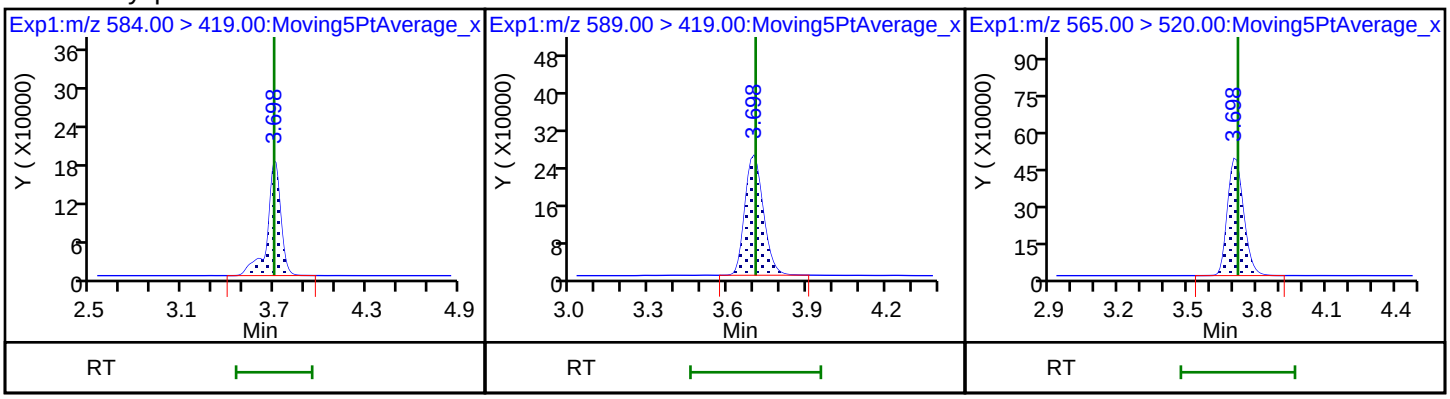
28 N-methyl perfluorooctane sulfonami D 27 d3-NMeFOSAA 29 Perfluorodecane Sulfonic acid



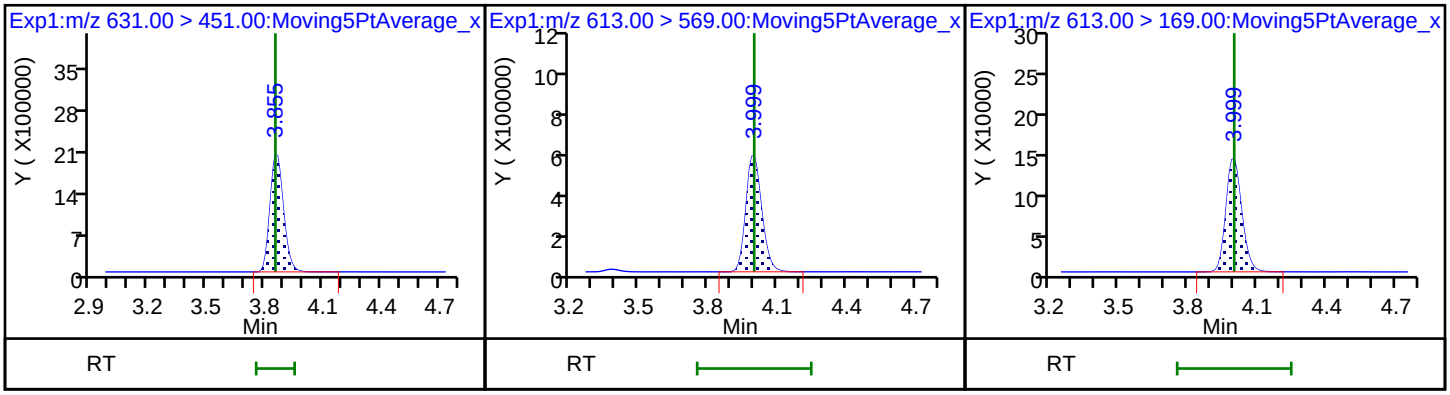
29 Perfluorodecane Sulfonic acid 31 Perfluoroundecanoic acid 31 Perfluoroundecanoic acid



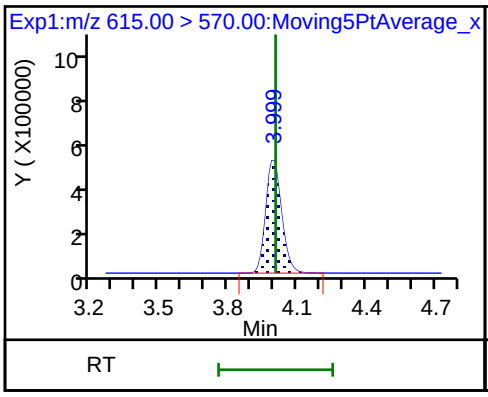
33 N-ethyl perfluorooctane sulfonamid D 32 d5-NEtFOSAA D 30 13C2 PFUnA



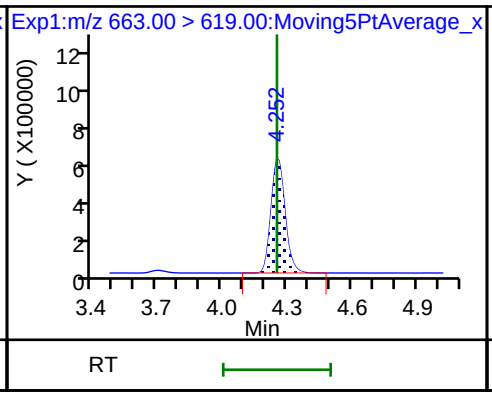
66 11-Chloroeicosafluoro-3-oxaundecan 37 Perfluorododecanoic acid 37 Perfluorododecanoic acid



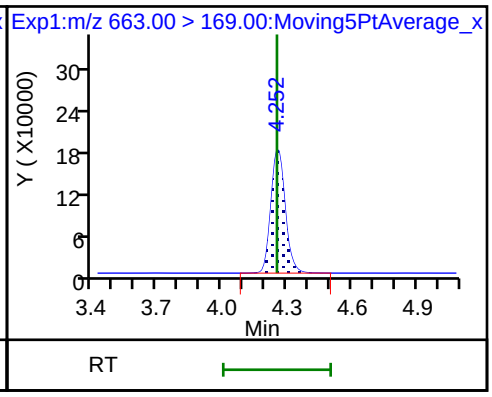
D 36 13C2 PFDoA



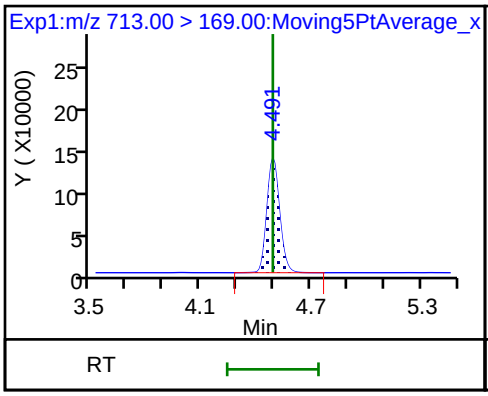
41 Perfluorotridecanoic acid



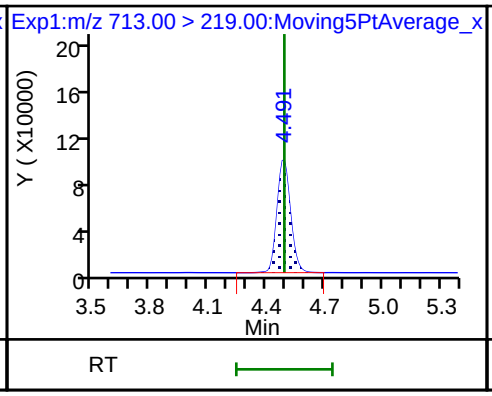
41 Perfluorotridecanoic acid



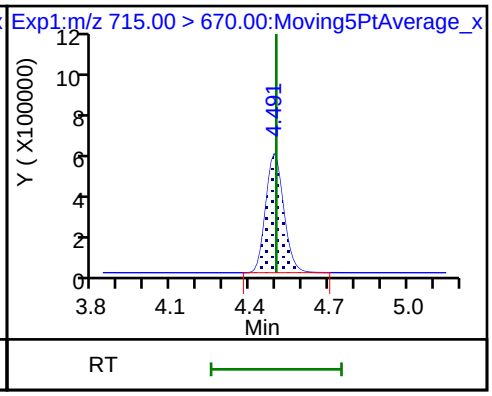
42 Perfluorotetradecanoic acid



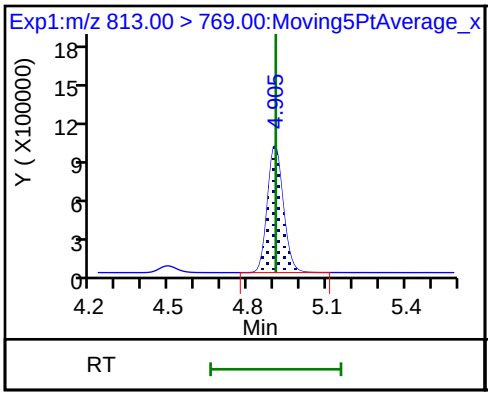
42 Perfluorotetradecanoic acid



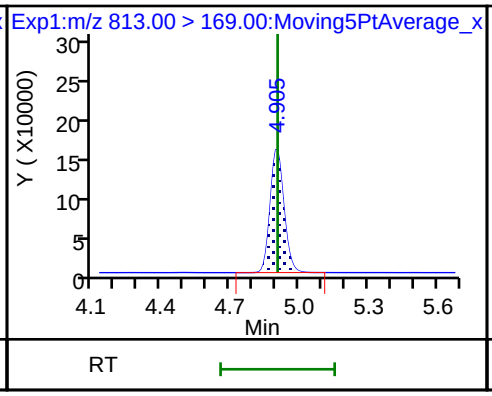
D 43 13C2-PFTeDA



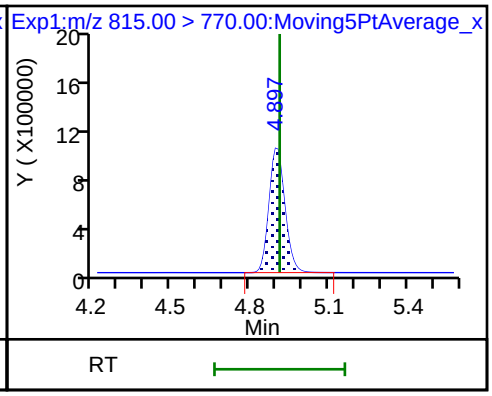
45 Perfluorohexadecanoic acid



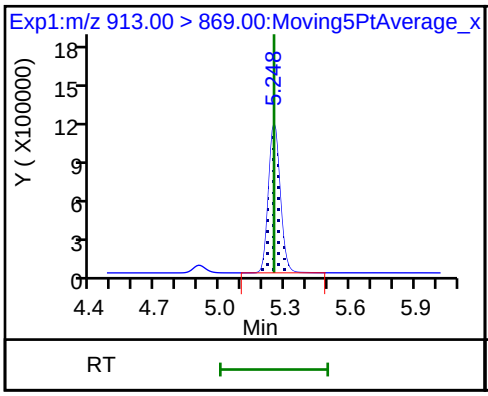
45 Perfluorohexadecanoic acid



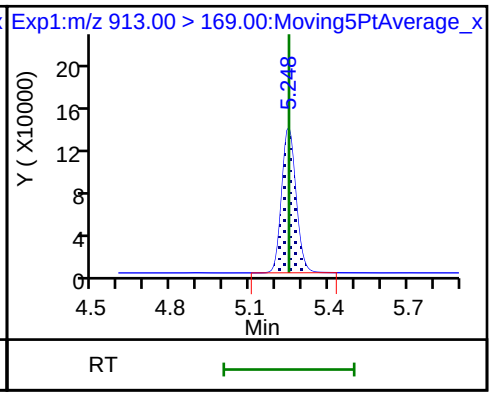
D 44 13C2-PFHxDA



46 Perfluorooctadecanoic acid



46 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Lab Sample ID: CCV 320-233989/15 Calibration Date: 07/13/2018 22:35

Instrument ID: A8_N Calib Start Date: 07/11/2018 14:48

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 07/11/2018 15:38

Lab File ID: 2018.07.13LLC_020.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.9856	0.9905		1.00	1.00	0.5	40.0
Perfluoropentanoic acid (PFPeA)	AveID	1.213	1.196		0.985	1.00	-1.5	40.0
Perfluorobutanesulfonic acid (PFBS)	AveID	76.50	74.40		0.860	0.884	-2.7	50.0
4:2 FTS	AveID	13.00	12.20		0.877	0.934	-6.1	50.0
Perfluorohexanoic acid (PFHxA)	AveID	1.029	1.036		1.01	1.00	0.6	40.0
Perfluoropentanesulfonic acid (PFPeS)	AveID	69.78	67.42		0.906	0.938	-3.4	50.0
HFPO-DA (GenX)	AveID	2.654	2.414		0.910	1.00	-9.0	40.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.157	1.158		1.00	1.00	0.1	40.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.148	1.089		0.864	0.910	-5.1	40.0
ADONA	AveID	3.219	3.499		1.02	0.942	8.7	50.0
6:2 FTS	AveID	1.564	1.605		0.973	0.948	2.6	40.0
Perfluorooctanoic acid (PFOA)	AveID	1.232	1.161		0.944	1.00	-5.7	40.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.318	1.307		0.944	0.952	-0.8	50.0
Perfluorononanoic acid (PFNA)	AveID	1.109	1.103		0.994	1.00	-0.6	40.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.133	1.097		0.898	0.928	-3.2	40.0
9-Chlorohexadecafluoro-3-oxa nonane-1-sulfonate	AveID	1.836	1.853		0.941	0.932	0.9	50.0
8:2 FTS	AveID	1.290	1.266		0.940	0.958	-1.9	40.0
Perfluorononanesulfonic acid (PFNS)	AveID	0.7752	0.7720		0.956	0.960	-0.4	50.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9856	1.000		1.01	1.00	1.5	40.0
Perfluorodecanoic acid (PFDA)	AveID	1.049	1.089		1.04	1.00	3.8	40.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	0.9858	1.018		1.03	1.00	3.3	40.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6714	0.6932		0.995	0.964	3.2	50.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.8840	0.8856		1.00	1.00	0.2	40.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.8195	0.7509		0.916	1.00	-8.4	40.0
11-Chloroeicosafluoro-3-oxau ndecane-1-sulfonate	AveID	2.654	2.829		1.00	0.942	6.6	50.0
Perfluorododecanoic acid (PFDoA)	AveID	1.092	1.071		0.981	1.00	-1.9	40.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.068	1.070		1.00	1.00	0.2	50.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2602	0.2551		0.981	1.00	-1.9	50.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		0.999		1.03	1.00	3.0	50.0

FORM VII 537 (modified)

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Lab Sample ID: CCV 320-233989/15 Calibration Date: 07/13/2018 22:35

Instrument ID: A8_N Calib Start Date: 07/11/2018 14:48

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 07/11/2018 15:38

Lab File ID: 2018.07.13LLC_020.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.143	0.9925		0.868	1.00	-13.2	50.0
13C4 PFBA	Ave	1.356	1.369		2.52	2.50	1.0	50.0
13C5 PFPeA	Ave	0.9425	0.9796		2.60	2.50	3.9	50.0
13C3-PFBS	Ave	0.0237	0.0256		2.51	2.33	8.1	50.0
M2-4:2FTS	Ave	0.1273	0.1234		2.26	2.34	-3.0	50.0
13C2 PFHxA	Ave	1.017	1.101		2.71	2.50	8.3	50.0
13C3 HFPO-DA	Ave	0.0724	0.0891		3.08	2.50	23.2	50.0
13C4-PFHpA	Ave	0.9371	0.996		2.66	2.50	6.3	50.0
18O2 PFHxS	Ave	1.328	1.361		2.42	2.37	2.5	50.0
M2-6:2FTS	Ave	0.2009	0.1875		2.22	2.38	-6.7	40.0
13C4 PFOA	Ave	0.9560	1.024		2.68	2.50	7.1	50.0
13C4 PFOS	Ave	0.9742	1.014		2.49	2.39	4.1	50.0
13C5 PFNA	Ave	0.8546	0.8244		2.41	2.50	-3.5	50.0
13C8 FOSA	Ave	1.405	1.462		2.60	2.50	4.1	50.0
M2-8:2FTS	Ave	0.2939	0.2398		1.95	2.40	-18.4	40.0
13C2 PFDA	Ave	0.7503	0.7219		2.41	2.50	-3.8	50.0
d3-NMeFOSAA	Ave	0.3075	0.3321		2.70	2.50	8.0	50.0
d5-NEtFOSAA	Ave	0.3150	0.3635		2.88	2.50	15.4	50.0
13C2 PFUnA	Ave	0.6266	0.6654		2.66	2.50	6.2	50.0
13C2 PFDoA	Ave	0.6496	0.7001		2.69	2.50	7.8	50.0
13C2-PFTeDA	Ave	0.6740	0.7318		2.71	2.50	8.6	50.0
13C2-PFHxDA	Ave	1.074	1.158		2.70	2.50	7.8	50.0

FORM VII 537 (modified)

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\2018.07.13LLC_020.d
Lims ID: CCV L4
Client ID:
Sample Type: CCV
Inject. Date: 13-Jul-2018 22:35:54 ALS Bottle#: 30 Worklist Smp#: 15
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV L4
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-A8_N*sub32

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 16-Jul-2018 12:48:39 Calib Date: 11-Jul-2018 15:38:42
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK023

First Level Reviewer: mongkols Date: 16-Jul-2018 12:48:39

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.90 > 169.00	1.441	1.441	0.0	1.000	1844473	1.00		100	1080	
D 1 13C4 PFBA										
217.00 > 172.00	1.441	1.445	-0.004	0.540	4655495	2.52		101	25092	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.729	1.729	0.0	1.000	1593143	0.9855		98.5	738	
D 3 13C5-PFPeA										
267.90 > 223.00	1.729	1.725	0.004	0.648	3331509	2.60		104	46033	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.765	1.765	0.0	1.000	2291734	0.8598		97.3	13730	
298.90 > 99.00	1.765	1.765	0.0	1.000	955533		2.40(1.25-3.74)		9416	
D 47 13C3-PFBS										
301.90 > 83.00	1.765	1.762	0.003	0.662	81011	2.51		108	556	
D 60 M2-4:2FTS										
329.00 > 81.00	1.970	1.967	0.003	0.739	391956	2.26		97.0	4519	
61 1H,1H,2H,2H-perfluorohexanesulfoni										
327.00 > 307.00	1.970	1.970	0.0	1.116	397105	0.8768		93.9	22920	
6 Perfluorohexanoic acid										
313.00 > 269.00	2.004	2.004	0.0	1.000	1551964	1.01		101	5705	
313.00 > 119.00	2.004	2.004	0.0	1.000	142824		10.87(5.03-15.10)		3026	
D 7 13C2 PFHxA										
315.00 > 270.00	2.004	2.011	-0.007	0.751	3745806	2.71		108	80528	
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.026	2.026	0.0	1.148	2203505	0.9063		96.6	37337	
349.00 > 99.00	2.026	2.026	0.0	1.148	813759		2.71(1.36-4.07)		13887	
67 Perfluoro(2-propoxypropanoic) acid										
329.10 > 285.00	2.094	2.094	0.0	0.995	292751	0.9096		91.0	2971	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.105	2.101	0.004	0.789	303145	3.08		123	7679	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.320	2.320	0.0	1.000	1569381	1.00		100	3156	
363.00 > 169.00	2.320	2.320	0.0	1.000	608959		2.58(1.13-3.40)		5925	
D 9 13C4-PFHpA										
367.00 > 322.00	2.320	2.329	-0.009	0.870	3388114	2.66		106	30854	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.333	2.333	0.0	1.000	1835113	0.8636		94.9	12338	
399.00 > 99.00	2.333	2.333	0.0	1.000	614242		2.99(1.50-4.49)		3960	
D 11 18O2 PFHxS										
403.00 > 84.00	2.333	2.342	-0.009	0.874	4378167	2.42		103	37735	
65 Adona										
377.00 > 251.00	2.359	2.359	0.0	0.778	4545802	1.02		109	40431	
377.00 > 85.00	2.359	2.359	0.0	0.778	2737490		1.66(0.84-2.53)		13576	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.645	2.645	0.0	1.000	388207	0.9729		103	3924	
D 12 M2-6:2FTS										
429.00 > 81.00	2.645	2.651	-0.006	0.991	605775	2.22		93.3	12814	
* 62 13C2-PFOA										
415.00 > 370.00	2.668	2.668	0.0		3400861	2.50			35831	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.668	2.668	0.0	1.000	1618763	0.9436		94.3	983	
413.00 > 169.00	2.668	2.668	0.0	1.000	832265		1.95(0.84-2.52)		5162	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.675	2.675	0.0	0.883	1715829	0.9443		99.2	15495	
449.00 > 99.00	2.675	2.675	0.0	0.883	459710		3.73(1.94-5.82)		7622	
D 14 13C4 PFOA										
417.00 > 372.00	2.668	2.673	-0.005	1.000	3482405	2.68		107	43103	
17 Perfluorooctane sulfonic acid										M
499.00 > 80.00	3.031	3.031	0.0	1.000	1403585	0.8981		96.8	19458	M
499.00 > 99.00	3.031	3.031	0.0	1.000	320252		4.38(2.31-6.93)		5936	M
20 Perfluorononanoic acid										
463.00 > 419.00	3.031	3.031	0.0	1.000	1236466	0.99		99.4	2625	
463.00 > 169.00	3.031	3.031	0.0	1.000	300566		4.11(1.90-5.69)		8465	
D 18 13C4 PFOS										
503.00 > 80.00	3.031	3.036	-0.005	1.136	3296218	2.49		104	33707	
D 19 13C5 PFNA										
468.00 > 423.00	3.031	3.036	-0.005	1.136	2803540	2.41		96.5	59487	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.240	3.240	0.0	1.069	2381625	0.9407		101	21587	
25 1H,1H,2H,2H-perfluorodecanesulfoni										
527.00 > 507.00	3.380	3.380	0.0	1.000	395520	0.9399		98.1	5471	
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.380	3.380	0.0	1.115	1022168	0.9561		99.6	19159	
549.00 > 99.00	3.371	3.380	-0.009	1.112	399299		2.56(1.33-3.97)		6851	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.380	3.380	0.0	1.000	1989345	1.01		101	17787	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 21 13C8 FOSA										
506.00 > 78.00	3.380	3.376	0.004	1.267	4972990	2.60		104	48415	
D 26 M2-8:2FTS										
529.00 > 81.00	3.380	3.376	0.004	1.267	781322	1.95		81.6	12350	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.389	3.389	0.0	1.000	1069259	1.04		104	5465	
513.00 > 169.00	3.389	3.389	0.0	1.000	173268		6.17(2.36-7.09)		5470	
D 23 13C2 PFDA										
515.00 > 470.00	3.389	3.385	0.004	1.270	2454897	2.41		96.2	18904	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.548	3.548	0.0	1.003	459849	1.03		103	4969	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.539	3.544	-0.005	1.326	1129426	2.70		108	14459	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.698	3.698	0.0	1.220	921587	1.00		103	24224	
599.00 > 99.00	3.698	3.698	0.0	1.220	312626		2.95(1.39-4.16)		12993	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.719	3.719	0.0	1.000	679694	0.9163		91.6	3481	
563.00 > 169.00	3.709	3.719	-0.010	0.997	200652		3.39(2.12-6.36)		10214	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.709	3.709	0.0	1.000	437946	1.00		100	14740	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.709	3.705	0.004	1.390	1236366	2.88		115	2778	
D 30 13C2 PFUnA										
565.00 > 520.00	3.719	3.715	0.004	1.394	2263009	2.66		106	35587	
66 11-Chloroeicosafluoro-3-oxaundecan										
631.00 > 451.00	3.876	3.876	0.0	1.279	3675837	1.00		107	54881	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.009	4.009	0.0	1.000	1019981	0.9808		98.1	750	
613.00 > 169.00	4.009	4.009	0.0	1.000	256381		3.98(2.13-6.40)		5999	
D 36 13C2 PFDoA										
615.00 > 570.00	4.009	4.005	0.004	1.503	2381032	2.69		108	18686	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.272	4.272	0.0	1.066	1019181	1.00		100	547	
663.00 > 169.00	4.262	4.272	-0.010	1.063	315795		3.23(1.25-3.76)		5275	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.501	4.501	0.0	1.000	253991	0.9807		98.1	3855	
713.00 > 219.00	4.501	4.501	0.0	1.000	185567		1.37(0.71-2.13)		4270	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.501	4.500	0.001	1.687	2488712	2.71		109	14789	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.905	4.905	0.0	1.000	1574030	1.03		103	405	
813.00 > 169.00	4.905	4.905	0.0	1.000	250416		6.29(2.86-8.58)		2878	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.905	4.912	-0.007	1.838	3937614	2.70		108	13093	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.255	5.255	0.0	1.071	1563195	0.8684		86.8	368	
913.00 > 169.00	5.255	5.255	0.0	1.071	197080		7.93(3.83-11.48)		2653	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

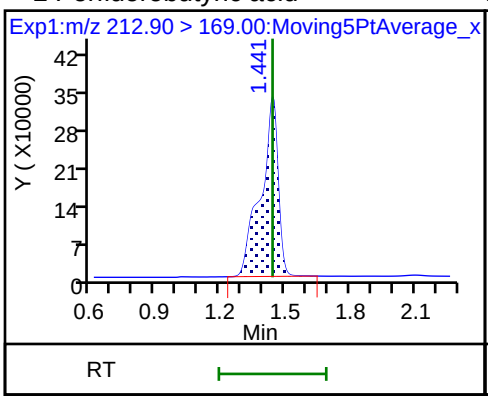
LCPFC_LL4_00005 Amount Added: 1.00 Units: mL

Report Date: 16-Jul-2018 12:48:41 Chrom Revision: 2.2 07-Jun-2018 07:41:54

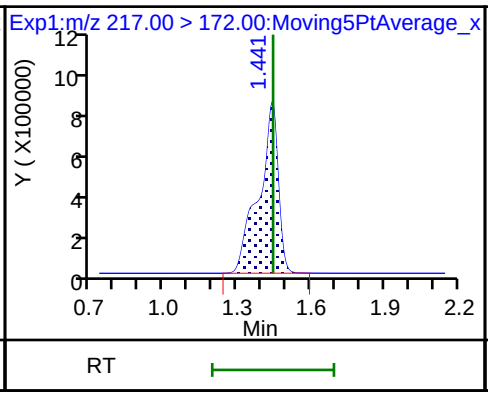
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\2018.07.13LLC_020.d
Injection Date: 13-Jul-2018 22:35:54 Instrument ID: A8_N
Lims ID: CCV L4
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 30 Worklist Smp#: 15
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC ICAL

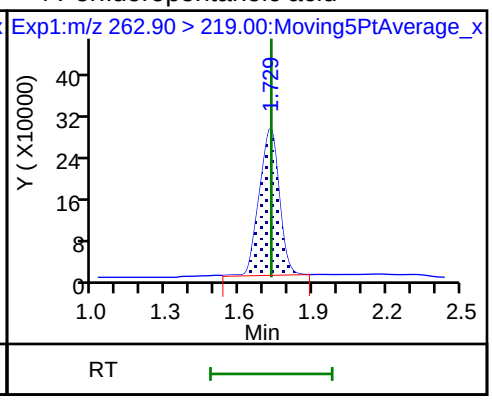
2 Perfluorobutyric acid



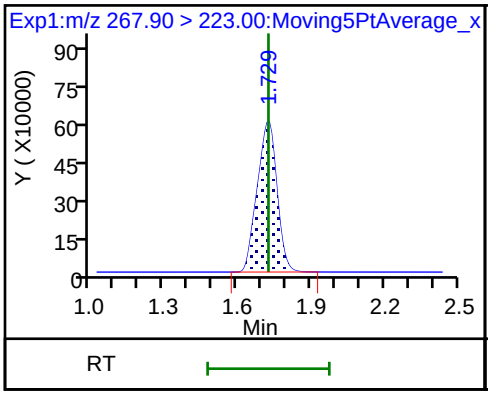
D 1 13C4 PFBA



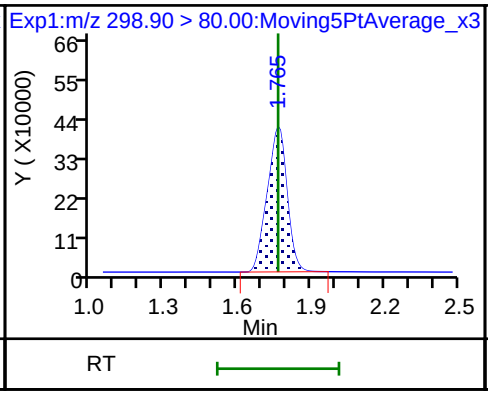
4 Perfluoropentanoic acid



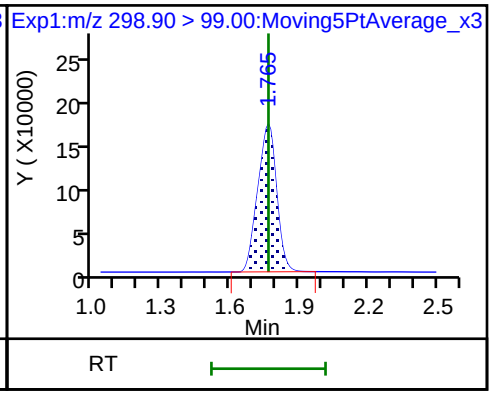
D 3 13C5-PFPeA



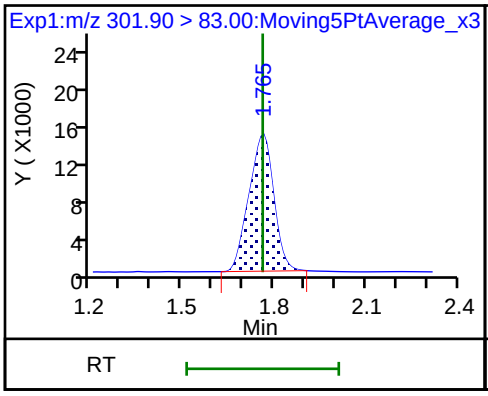
5 Perfluorobutanesulfonic acid



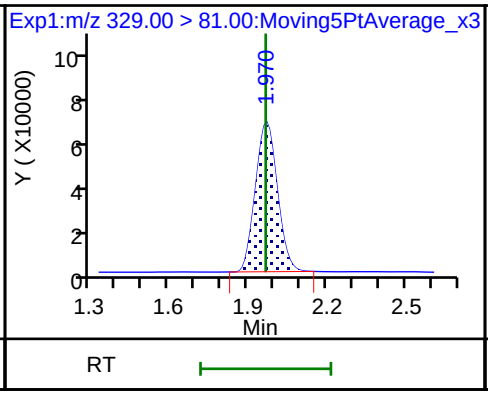
5 Perfluorobutanesulfonic acid



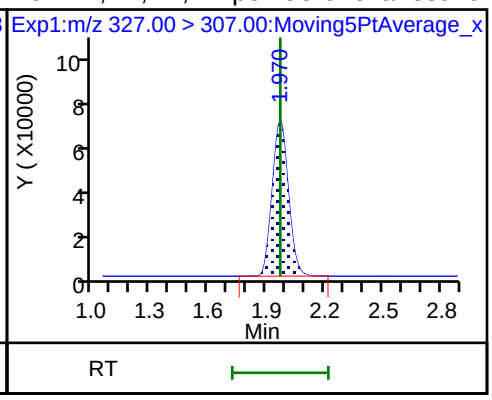
D 47 13C3-PFBS



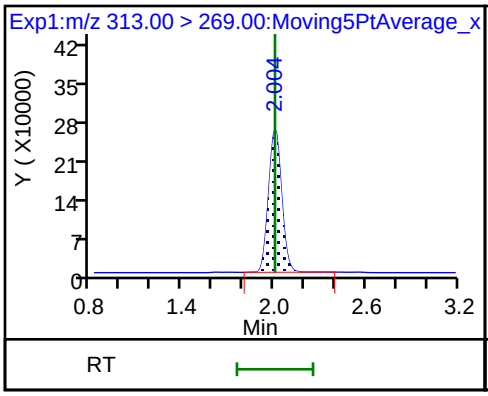
D 60 M2-4:2FTS



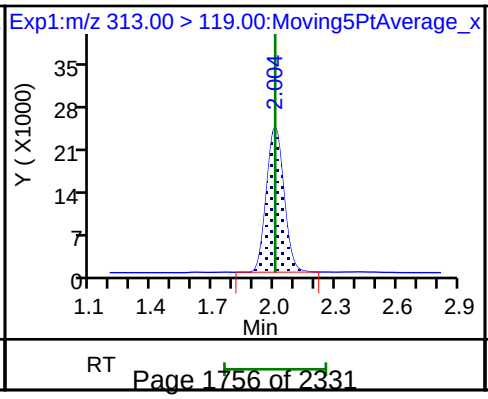
61 1H,1H,2H,2H-perfluorohexanesulfoni



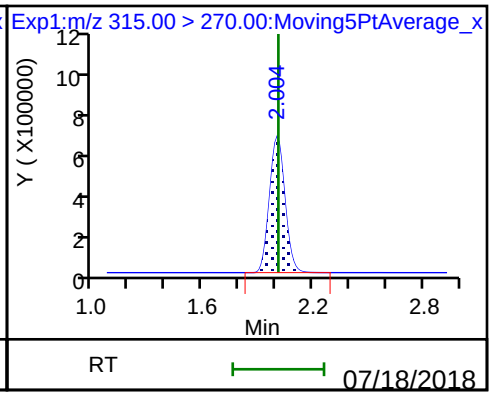
6 Perfluorohexanoic acid



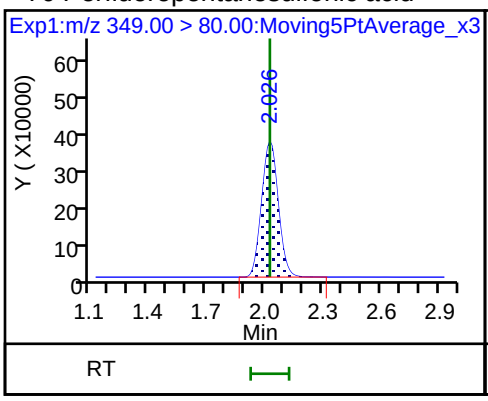
6 Perfluorohexanoic acid



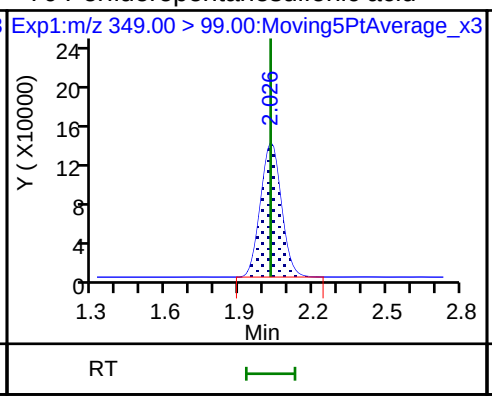
D 7 13C2 PFHxA



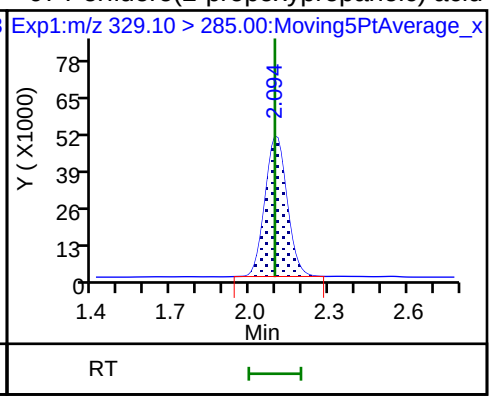
70 Perfluoropentanesulfonic acid



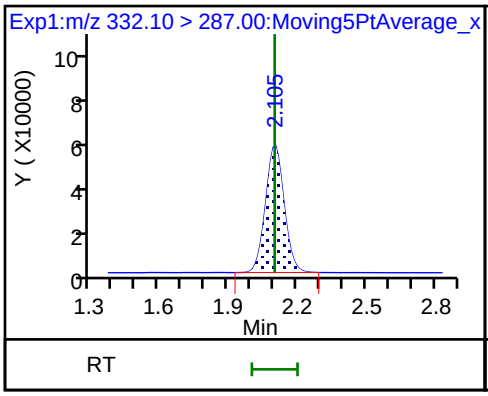
70 Perfluoropentanesulfonic acid



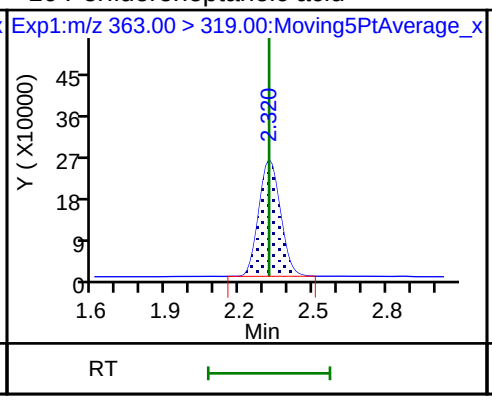
67 Perfluoro(2-propoxypropanoic) acid



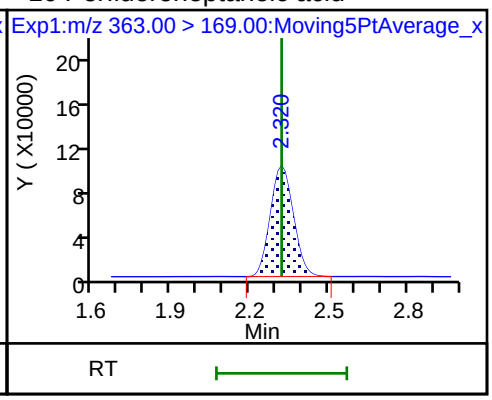
D 64 13C3 HFPO-DA



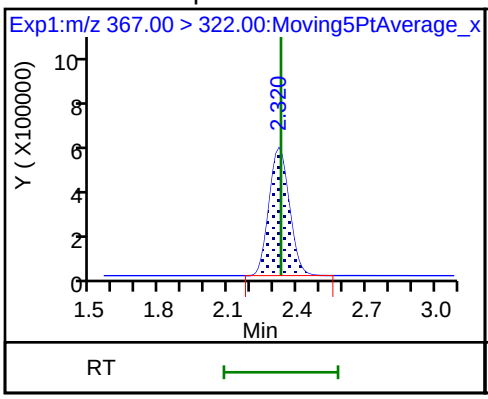
10 Perfluoroheptanoic acid



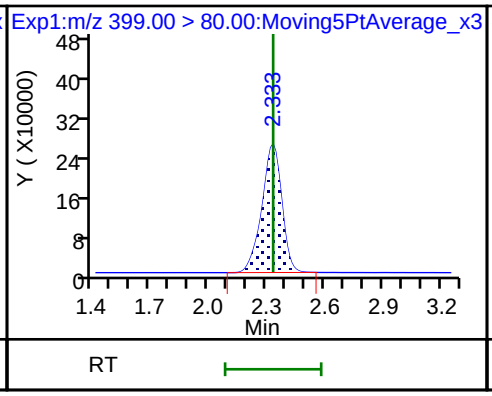
10 Perfluoroheptanoic acid



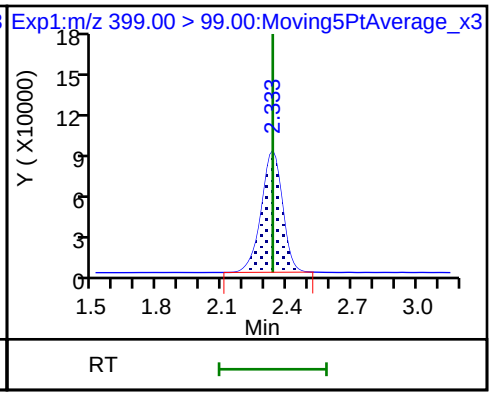
D 9 13C4-PFHpA



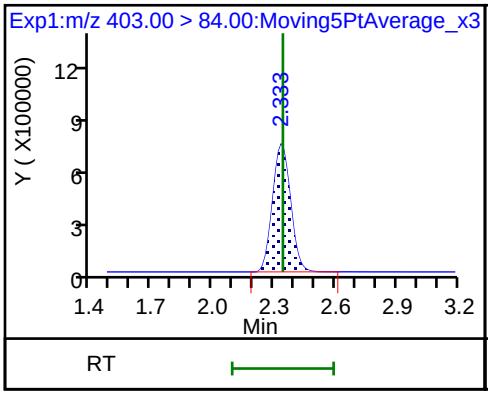
8 Perfluorohexanesulfonic acid



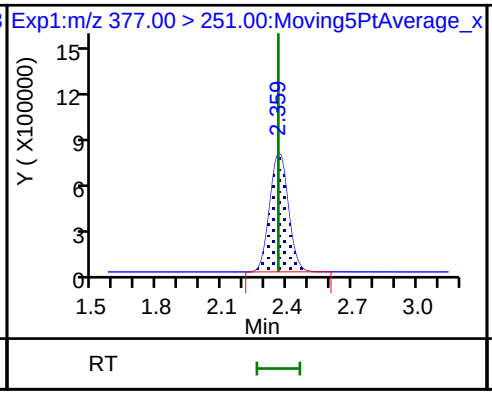
8 Perfluorohexanesulfonic acid



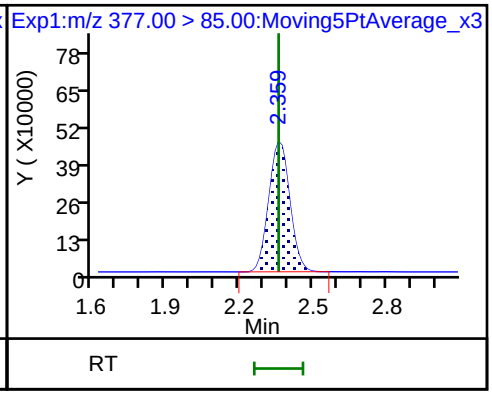
D 11 18O2 PFHxS



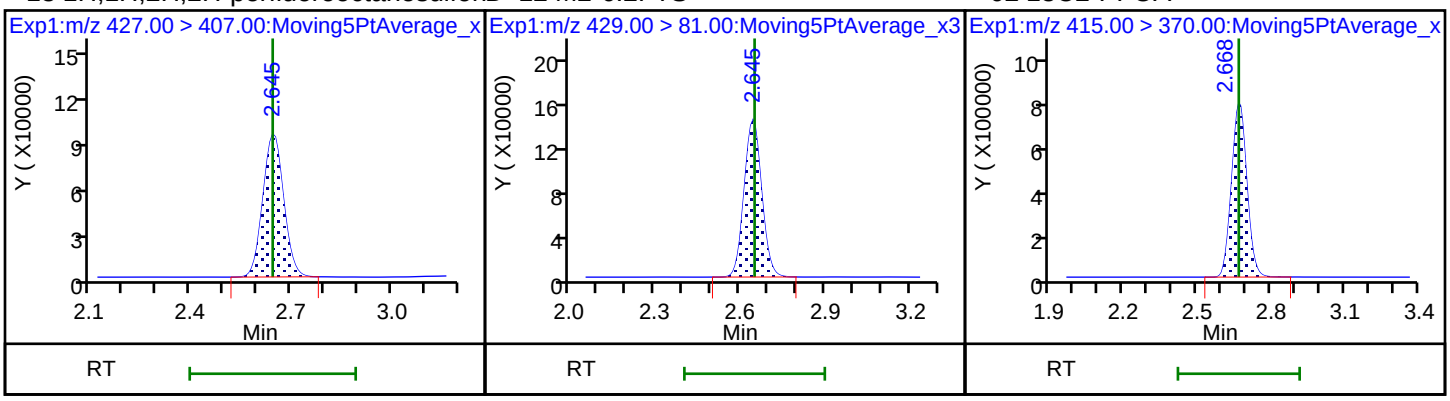
65 Adona



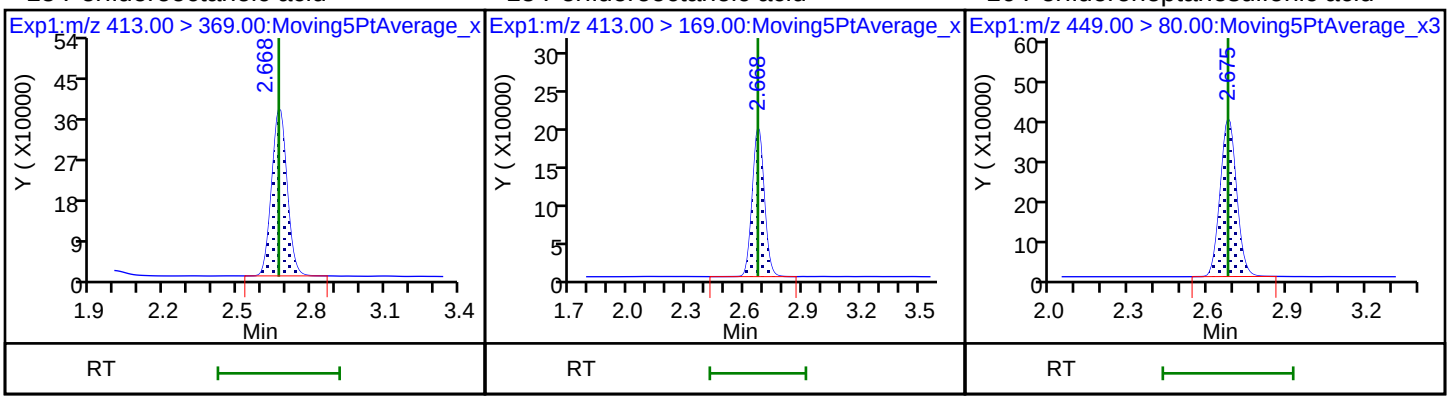
65 Adona



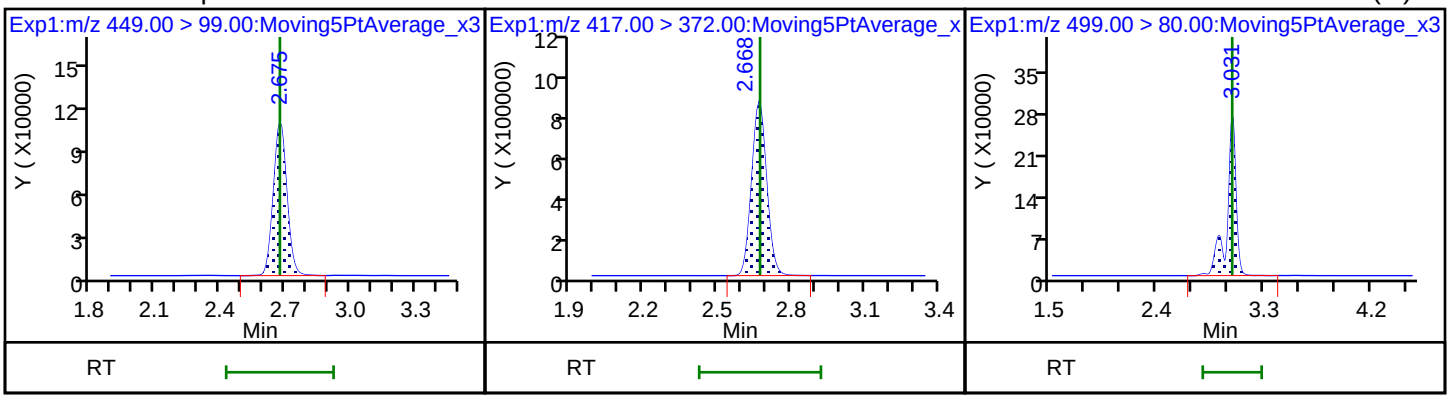
13 1H,1H,2H,2H-perfluorooctanesulfonD 12 M2-6:2FTS * 62 13C2-PFOA



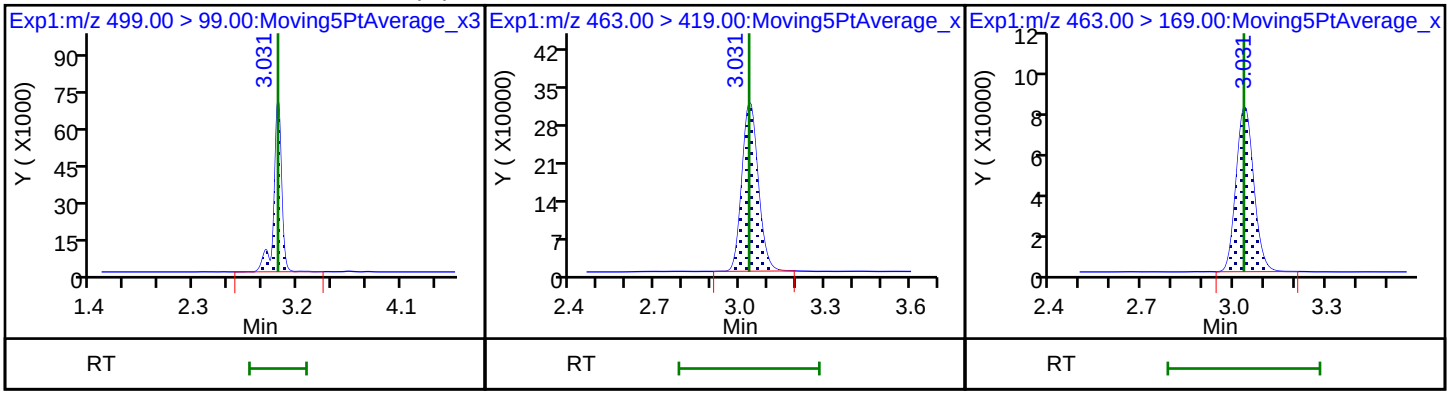
15 Perfluorooctanoic acid 15 Perfluorooctanoic acid 16 Perfluoroheptanesulfonic acid



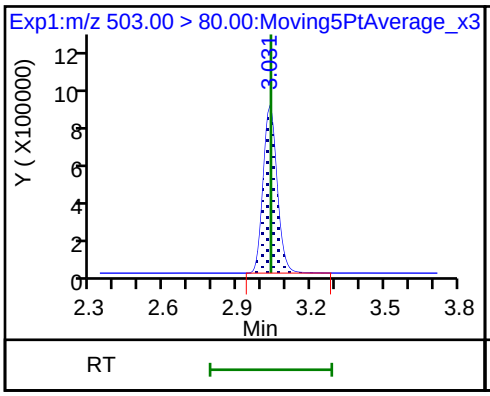
16 Perfluoroheptanesulfonic acid D 14 13C4 PFOA 17 Perfluorooctane sulfonic acid (M)



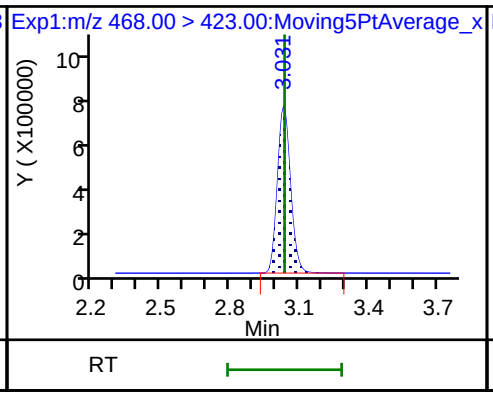
17 Perfluorooctane sulfonic acid (M) 20 Perfluorononanoic acid 20 Perfluorononanoic acid



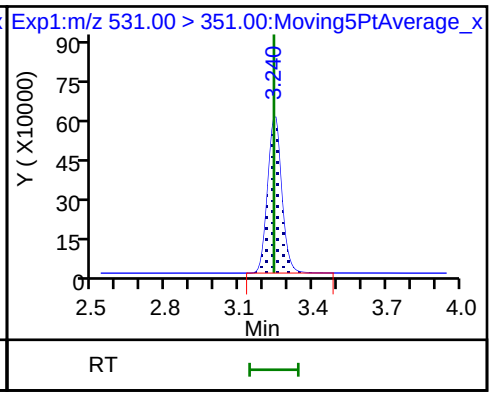
D 18 13C4 PFOS



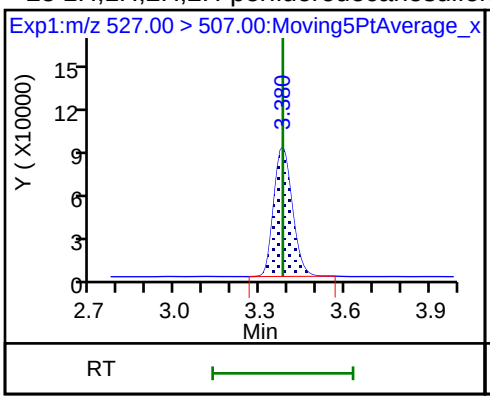
D 19 13C5 PFNA



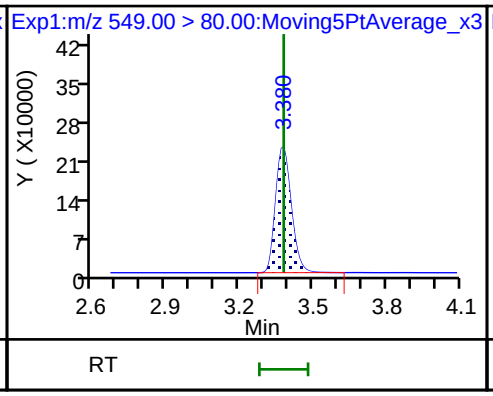
69 9-Chlorohexadecafluoro-3-oxanonane



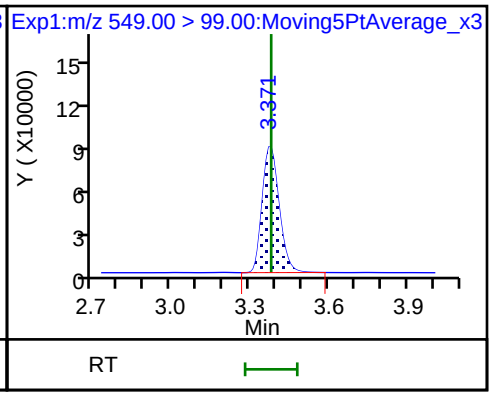
25 1H,1H,2H,2H-perfluorodecanesulfoni



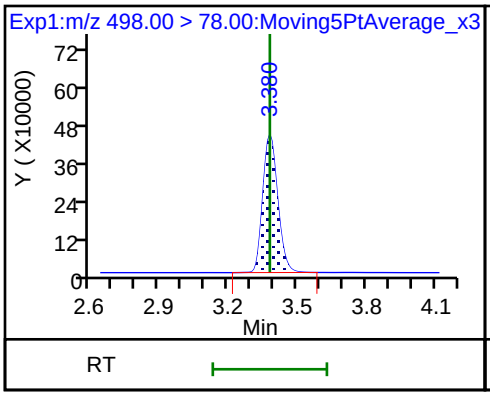
68 Perfluorononanesulfonic acid



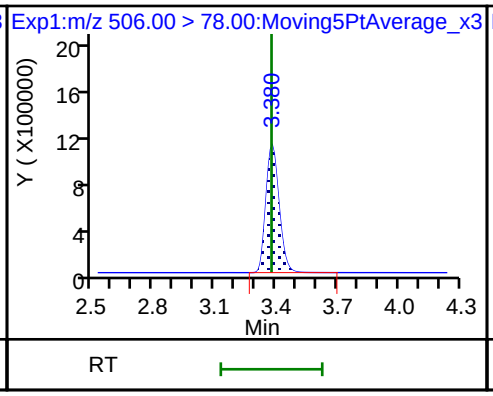
68 Perfluorononanesulfonic acid



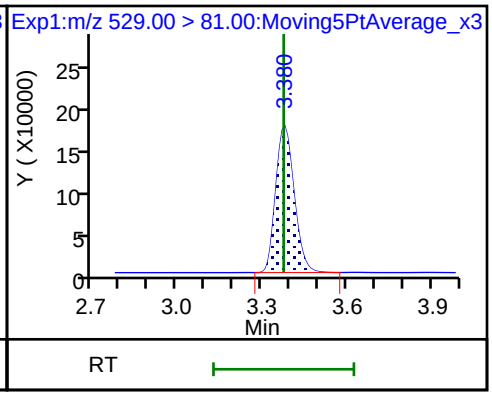
22 Perfluorooctane Sulfonamide



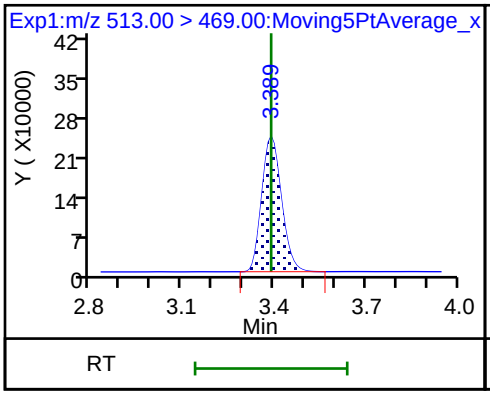
D 21 13C8 FOSA



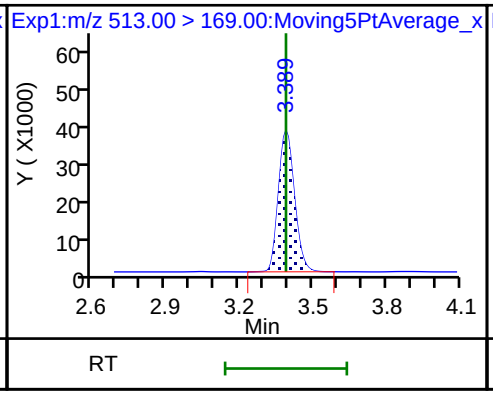
D 26 M2-8:2FTS



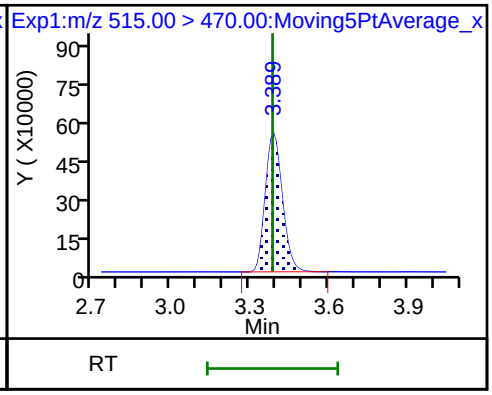
24 Perfluorodecanoic acid



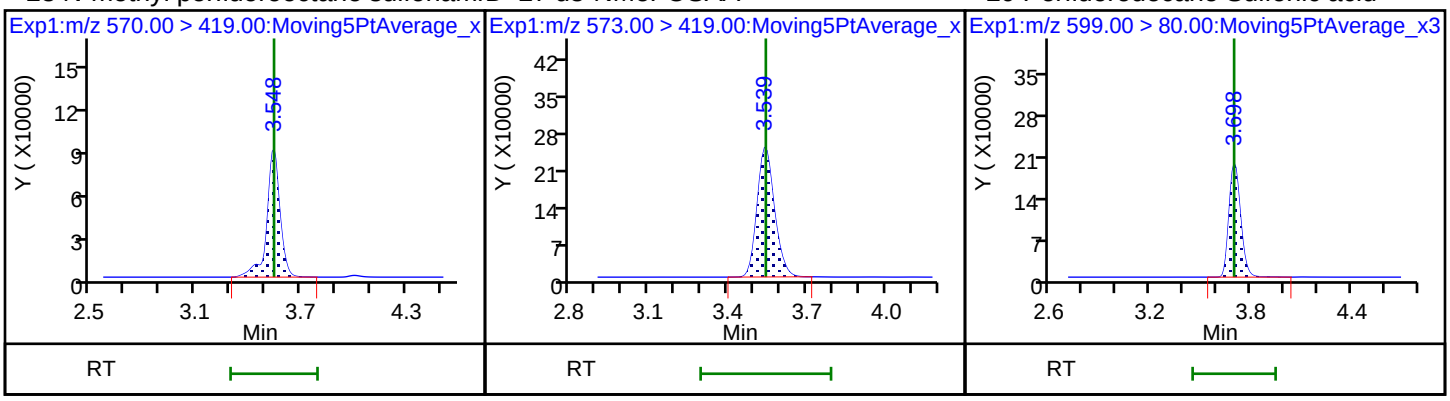
24 Perfluorodecanoic acid



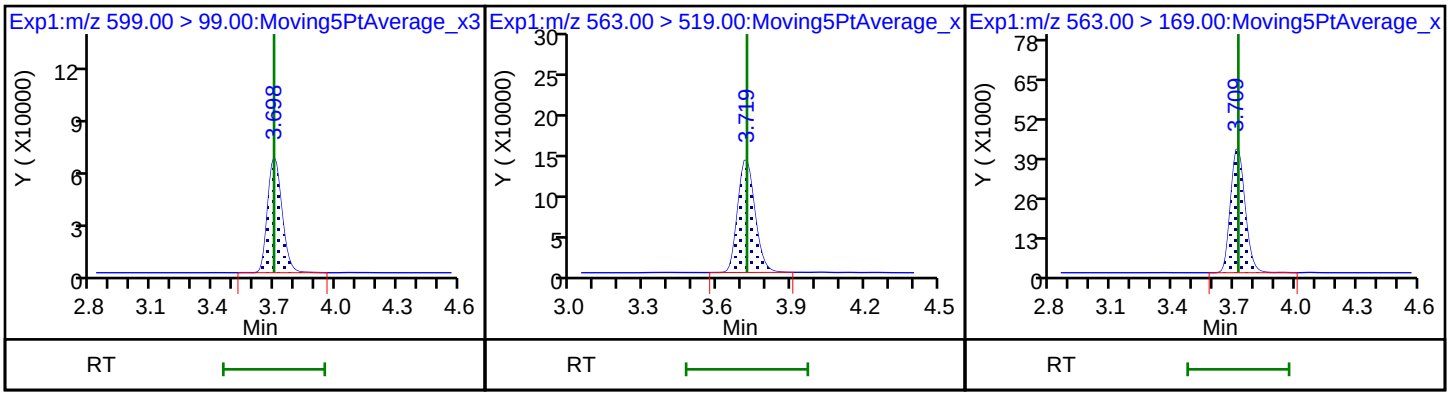
D 23 13C2 PFDA



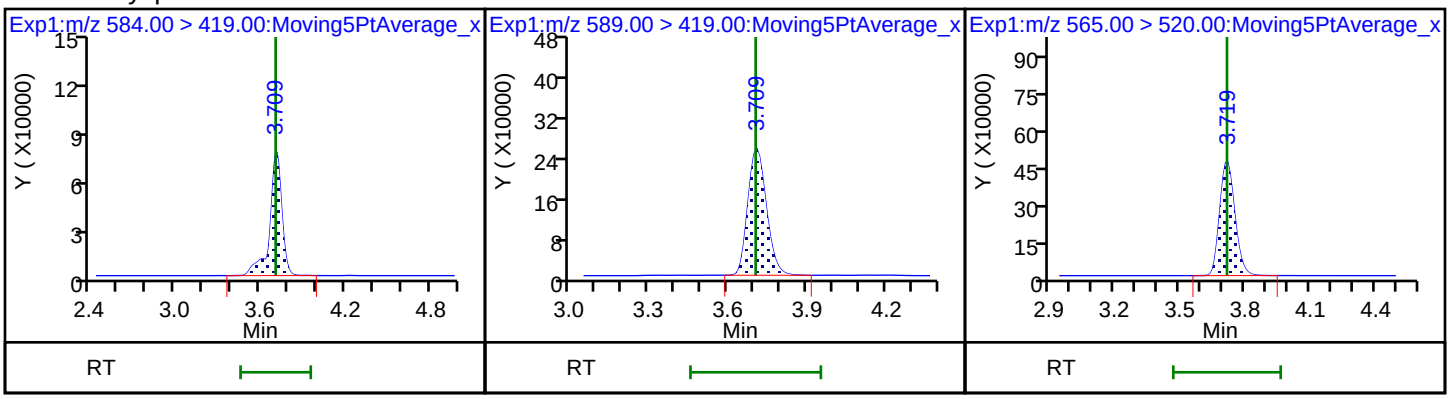
28 N-methyl perfluorooctane sulfonamiD 27 d3-NMeFOSAA 29 Perfluorodecane Sulfonic acid



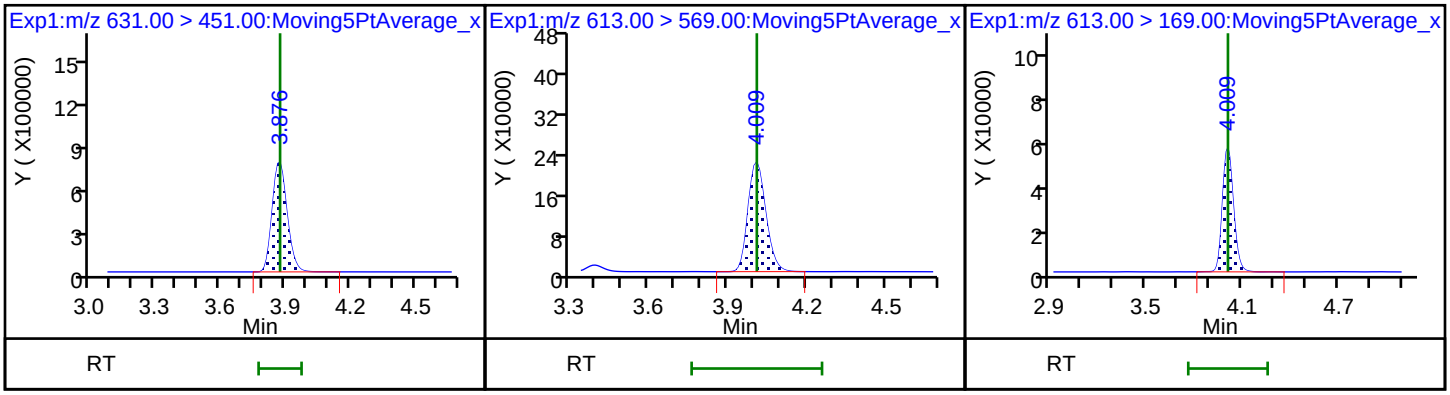
29 Perfluorodecane Sulfonic acid 31 Perfluoroundecanoic acid 31 Perfluoroundecanoic acid



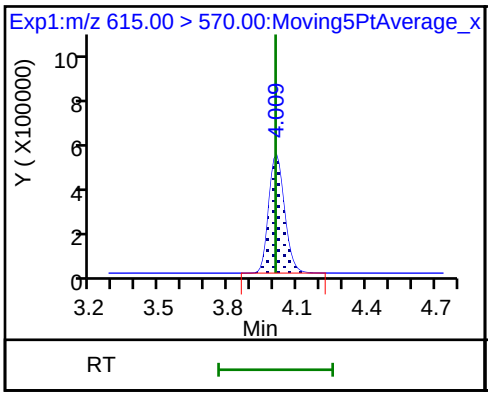
33 N-ethyl perfluorooctane sulfonamid D 32 d5-NEtFOSAA D 30 13C2 PFUnA



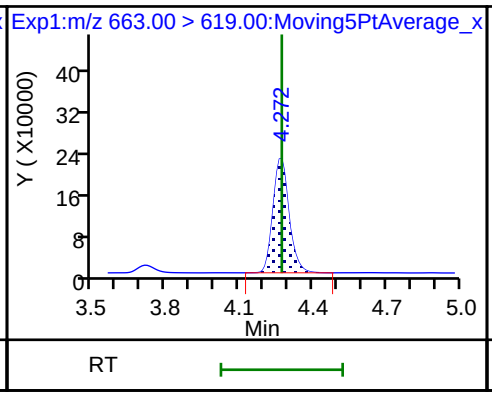
66 11-Chloroeicosafluoro-3-oxaundecan 37 Perfluorododecanoic acid 37 Perfluorododecanoic acid



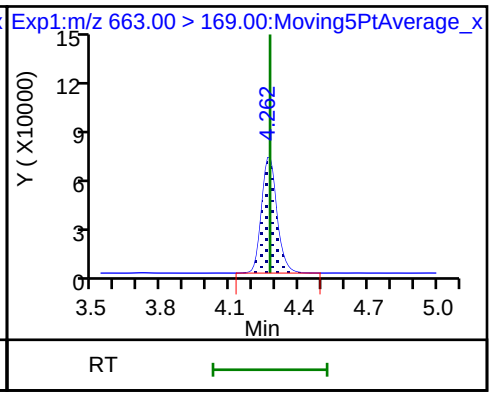
D 36 13C2 PFDoA



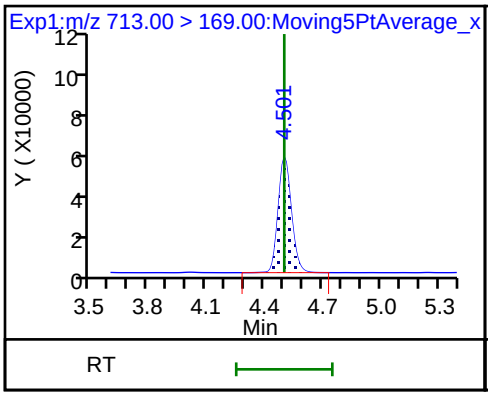
41 Perfluorotridecanoic acid



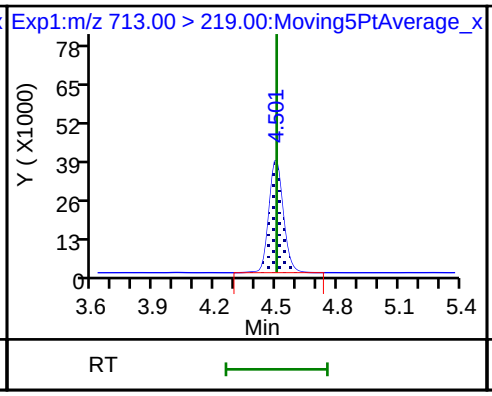
41 Perfluorotridecanoic acid



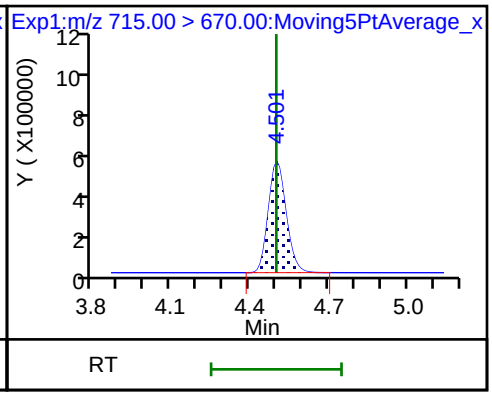
42 Perfluorotetradecanoic acid



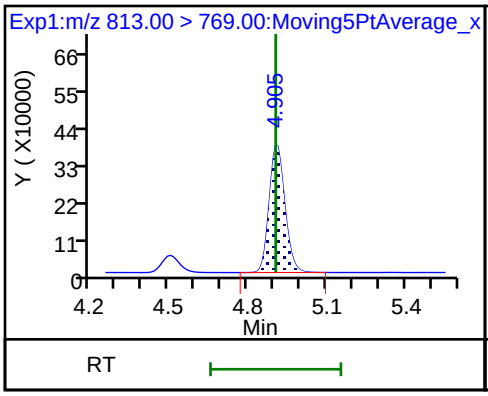
42 Perfluorotetradecanoic acid



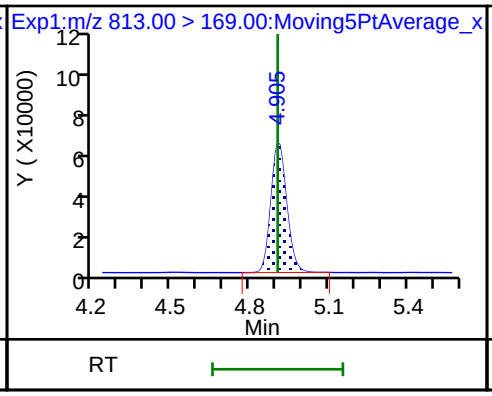
D 43 13C2-PFTeDA



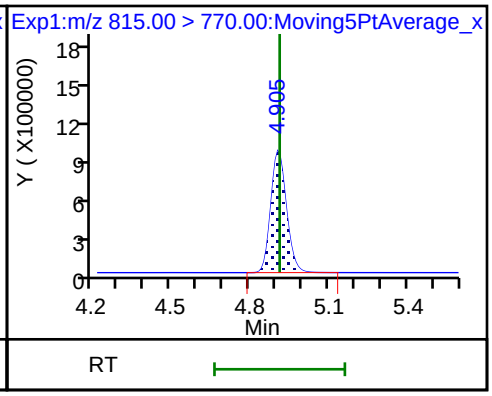
45 Perfluorohexadecanoic acid



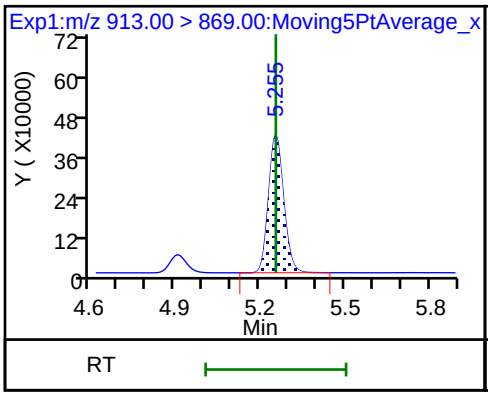
45 Perfluorohexadecanoic acid



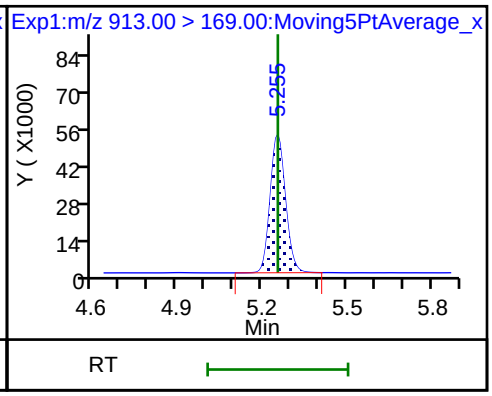
D 44 13C2-PFHxDA



46 Perfluorooctadecanoic acid



46 Perfluorooctadecanoic acid



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

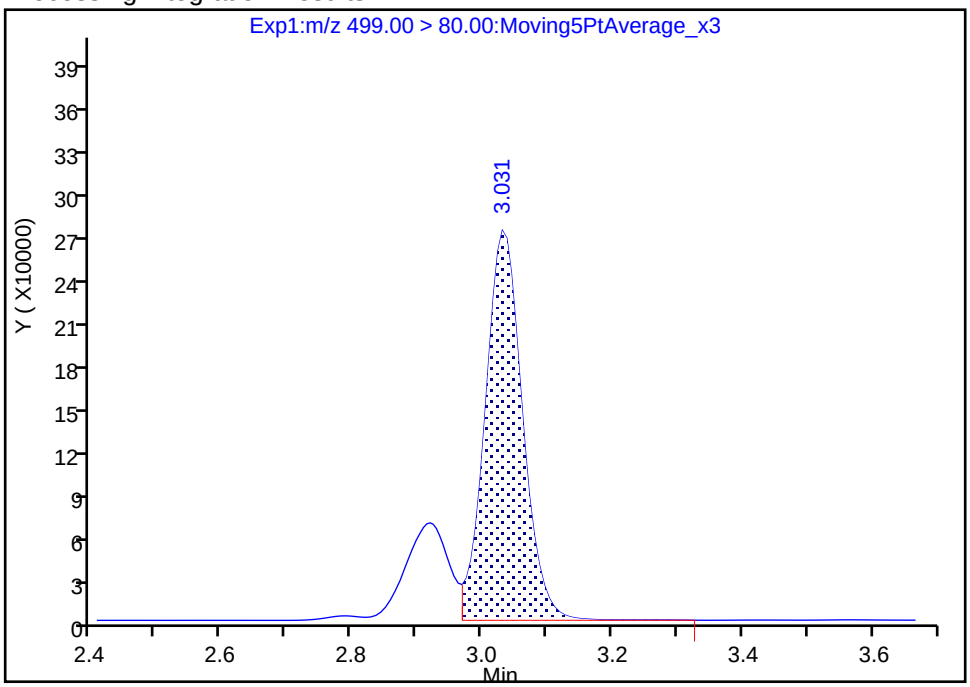
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\2018.07.13LLC_020.d				
Injection Date:	13-Jul-2018 22:35:54	Instrument ID:	A8_N		
Lims ID:	CCV L4				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	30	Worklist Smp#:	15
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

17 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

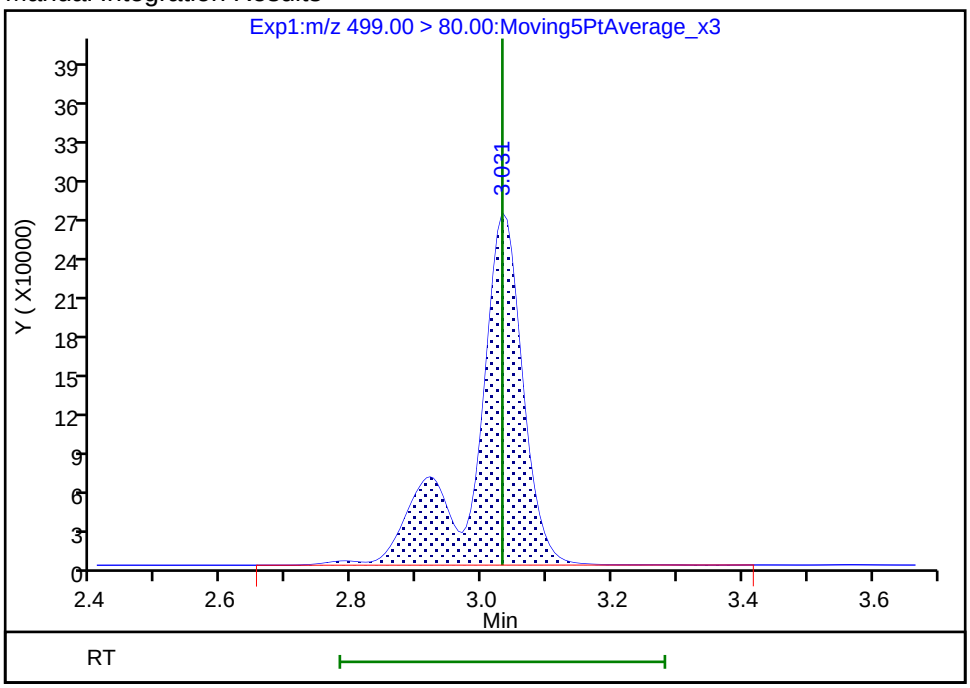
Processing Integration Results

RT: 3.03
Area: 1080616
Amount: 0.691452
Amount Units: ng/ml



Manual Integration Results

RT: 3.03
Area: 1403585
Amount: 0.898110
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 12:48:26

Audit Action: Manually Integrated Audit Reason: Isomers

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

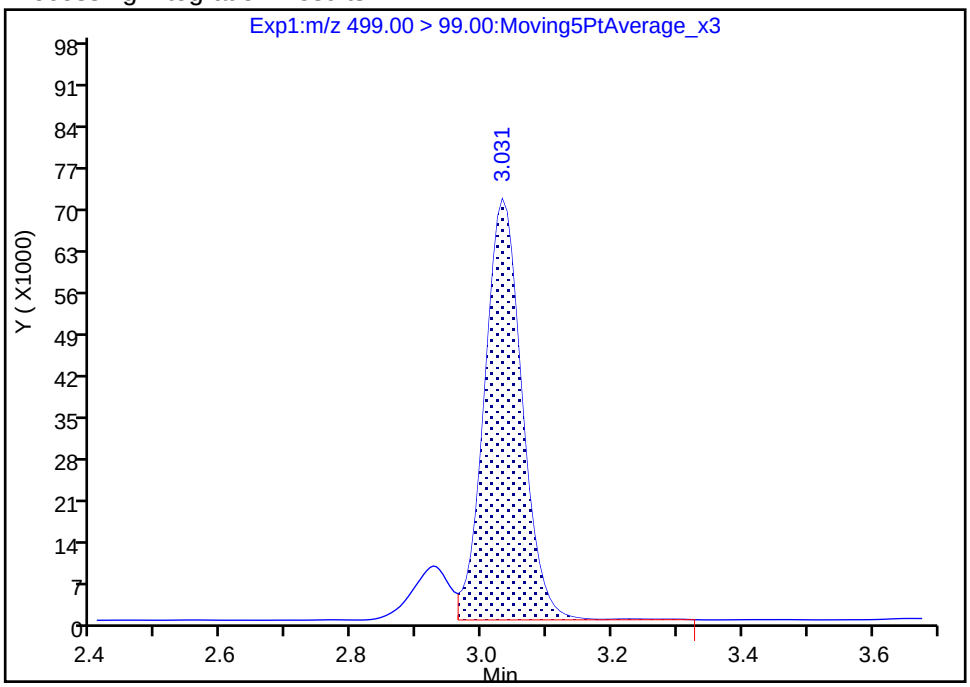
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\2018.07.13LLC_020.d				
Injection Date:	13-Jul-2018 22:35:54	Instrument ID:	A8_N		
Lims ID:	CCV L4				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	30	Worklist Smp#:	15
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

17 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 2

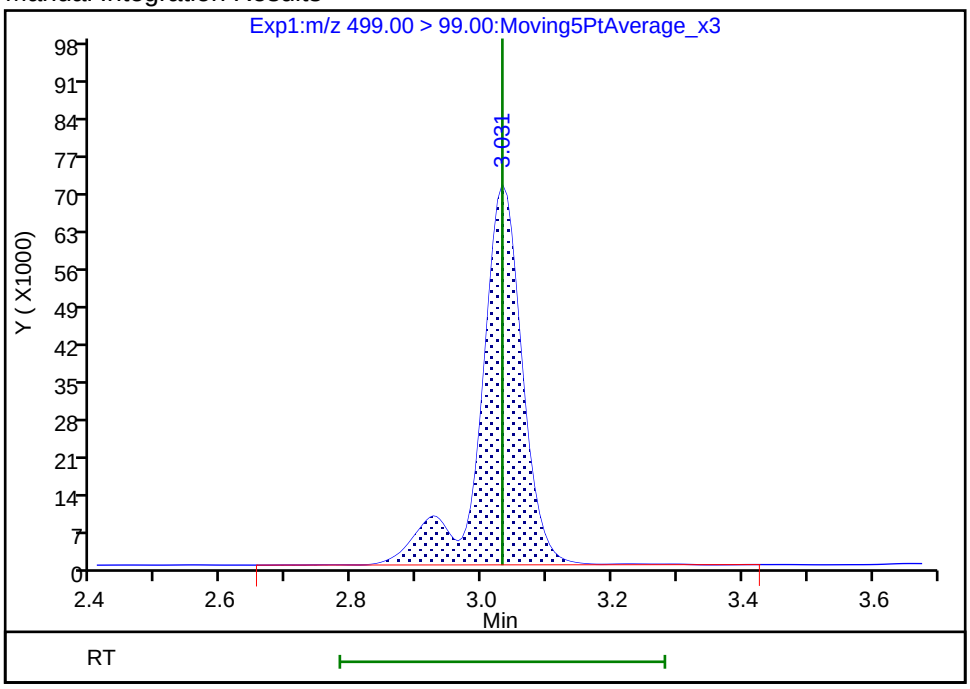
Processing Integration Results

RT: 3.03
Area: 283632
Amount: 0.691452
Amount Units: ng/ml



Manual Integration Results

RT: 3.03
Area: 320252
Amount: 0.898110
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 12:48:29
Audit Action: Manually Integrated Audit Reason: Isomers

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Lab Sample ID: CCVL 320-233992/2 Calibration Date: 07/13/2018 22:59

Instrument ID: A8_N Calib Start Date: 07/11/2018 14:48

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 07/11/2018 15:38

Lab File ID: 2018.07.13LLB_005.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.9856	1.003		0.0509	0.0500	1.8	50.0
Perfluoropentanoic acid (PFPeA)	AveID	1.213	1.241		0.0511	0.0500	2.3	50.0
Perfluorobutanesulfonic acid (PFBS)	AveID	76.50	78.58		0.0454	0.0442	2.7	50.0
4:2 FTS	AveID	13.00	12.30			0.0467	-5.4	50.0
Perfluorohexanoic acid (PFHxA)	AveID	1.029	1.052		0.0511	0.0500	2.2	50.0
Perfluoropentanesulfonic acid (PFPeS)	AveID	69.78	72.44		0.0487	0.0469	3.8	50.0
HFPO-DA (GenX)	AveID	2.654	2.358		0.0444	0.0500	-11.2	50.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.157	1.254		0.0542	0.0500	8.4	50.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.148	1.269		0.0503	0.0455	10.5	50.0
ADONA	AveID	3.219	3.495		0.0511	0.0471	8.6	50.0
6:2 FTS	AveID	1.564	1.677		0.0508	0.0474	7.2	50.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.318	1.326		0.0479	0.0476	0.6	50.0
Perfluorooctanoic acid (PFOA)	AveID	1.232	1.158		0.0470	0.0501	-6.0	50.0
Perfluorononanoic acid (PFNA)	AveID	1.109	1.198		0.0540	0.0500	8.0	50.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.133	1.116		0.0457	0.0464	-1.5	50.0
9-Chlorohexadecafluoro-3-oxa nonane-1-sulfonate	AveID	1.836	1.808		0.0459	0.0466	-1.5	50.0
8:2 FTS	AveID	1.290	1.405		0.0522	0.0479	9.0	50.0
Perfluorononanesulfonic acid (PFNS)	AveID	0.7752	0.7694		0.0476	0.0480	-0.7	50.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9856	0.9818		0.0498	0.0500	-0.4	50.0
Perfluorodecanoic acid (PFDA)	AveID	1.049	1.012		0.0482	0.0500	-3.6	50.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	0.9858	0.8870			0.0500	-10.0	50.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6714	0.6220		0.0447	0.0482	-7.4	50.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.8840	0.7937			0.0500	-10.2	50.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.8195	0.8051		0.0491	0.0500	-1.7	50.0
11-Chloroeicosafluoro-3-oxau ndecane-1-sulfonate	AveID	2.654	2.852		0.0506	0.0471	7.5	50.0
Perfluorododecanoic acid (PFDoA)	AveID	1.092	1.014		0.0464	0.0500	-7.1	50.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.068	1.063		0.0498	0.0500	-0.4	50.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2602	0.2592		0.0498	0.0500	-0.4	50.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		1.346		0.0493	0.0500	-1.5	50.0

FORM VII 537 (modified)

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Lab Sample ID: CCVL 320-233992/2 Calibration Date: 07/13/2018 22:59

Instrument ID: A8_N Calib Start Date: 07/11/2018 14:48

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 07/11/2018 15:38

Lab File ID: 2018.07.13LLB_005.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.143	1.136		0.0497	0.0500	-0.6	50.0
13C4 PFBA	Ave	1.356	1.275		2.35	2.50	-5.9	50.0
13C5 PFPeA	Ave	0.9425	0.9013		2.39	2.50	-4.4	50.0
13C3-PFBS	Ave	0.0237	0.0229		2.24	2.33	-3.5	50.0
M2-4:2FTS	Ave	0.1273	0.1268		2.33	2.34	-0.4	50.0
13C2 PFHxA	Ave	1.017	1.021		2.51	2.50	0.4	50.0
13C3 HFPO-DA	Ave	0.0724	0.0837		2.89	2.50	15.6	50.0
13C4-PFHpA	Ave	0.9371	0.9656		2.58	2.50	3.0	50.0
18O2 PFHxS	Ave	1.328	1.290		2.30	2.37	-2.8	50.0
M2-6:2FTS	Ave	0.2009	0.1821		2.15	2.38	-9.3	50.0
13C4 PFOA	Ave	0.9560	0.9616		2.51	2.50	0.6	50.0
13C4 PFOS	Ave	0.9742	0.9431		2.31	2.39	-3.2	50.0
13C5 PFNA	Ave	0.8546	0.7885		2.31	2.50	-7.7	50.0
13C8 FOSA	Ave	1.405	1.425		2.54	2.50	1.4	50.0
M2-8:2FTS	Ave	0.2939	0.2381		1.94	2.40	-19.0	50.0
13C2 PFDA	Ave	0.7503	0.7289		2.43	2.50	-2.9	50.0
d3-NMeFOSAA	Ave	0.3075	0.3164		2.57	2.50	2.9	50.0
d5-NEtFOSAA	Ave	0.3150	0.3643		2.89	2.50	15.6	50.0
13C2 PFUnA	Ave	0.6266	0.6286		2.51	2.50	0.3	50.0
13C2 PFDoA	Ave	0.6496	0.6957		2.68	2.50	7.1	50.0
13C2-PFTeDA	Ave	0.6740	0.7137		2.65	2.50	5.9	50.0
13C2-PFHxDA	Ave	1.074	1.184		2.76	2.50	10.3	50.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61058.b\2018.07.13LLB_005.d
Lims ID: CCVL
Client ID:
Sample Type: CCVL
Inject. Date: 13-Jul-2018 22:59:24 ALS Bottle#: 21 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCVL
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-A8_N*sub32

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61058.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 16-Jul-2018 12:50:34 Calib Date: 11-Jul-2018 15:38:42
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK023

First Level Reviewer: mongkols Date: 16-Jul-2018 12:50:34

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.90 > 169.00	1.439	1.436	0.003	1.000	101854	0.0509		102	52.8	
D 1 13C4 PFBA										M
217.00 > 172.00	1.439	1.441	-0.002	0.540	5075383	2.35		94.1	29808	M
4 Perfluoropentanoic acid										M
262.90 > 219.00	1.717	1.721	-0.004	1.000	89018	0.0511		102	35.0	M
D 3 13C5-PFPeA										
267.90 > 223.00	1.717	1.729	-0.012	0.644	3587257	2.39		95.6	36308	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.762	1.757	0.005	1.000	126441	0.0454		103	1182	
298.90 > 99.00	1.762	1.757	0.005	1.000	53949		2.34(1.25-3.74)		800	
D 47 13C3-PFBS										
301.90 > 83.00	1.762	1.765	-0.003	0.661	84645	2.24		96.5	569	
61 1H,1H,2H,2H-perfluorohexanesulfoni										
327.00 > 307.00	1.967	1.960	0.007	1.116	20918	0.0442		94.6	1252	
D 60 M2-4:2FTS										
329.00 > 81.00	1.967	1.970	-0.003	0.738	471181	2.33		99.6	7065	
D 7 13C2 PFHxA										
315.00 > 270.00	2.000	2.004	-0.004	0.750	4063520	2.51		100	71394	
6 Perfluorohexanoic acid										
313.00 > 269.00	2.000	2.004	-0.004	1.000	85501	0.0511		102	197	
313.00 > 119.00	2.000	2.004	-0.004	1.000	9793		8.73(5.03-15.10)		209	
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.022	2.016	0.006	1.148	123683	0.0487		104	3589	
349.00 > 99.00	2.022	2.016	0.006	1.148	44376		2.79(1.36-4.07)		1300	
67 Perfluoro(2-propoxypropanoic) acid										
329.10 > 285.00	2.090	2.095	-0.005	0.995	15702	0.0444		88.8	127	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.101	2.105	-0.004	0.788	332931	2.89		116	7322	
D 9 13C4-PFHpA										
367.00 > 322.00	2.316	2.320	-0.004	0.869	3843058	2.58		103	35581	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.316	2.321	-0.005	1.000	96386	0.0542		108	179	
363.00 > 169.00	2.316	2.321	-0.005	1.000	33767		2.85(1.13-3.40)		373	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.329	2.321	0.008	1.000	118557	0.0503		111	1458	
399.00 > 99.00	2.329	2.321	0.008	1.000	41882		2.83(1.50-4.49)		341	
D 11 18O2 PFHxS										
403.00 > 84.00	2.329	2.333	-0.004	0.874	4856119	2.30		97.2	42580	
65 Adona										
377.00 > 251.00	2.369	2.360	0.009	0.783	247167	0.0511		109	5287	
377.00 > 85.00	2.369	2.360	0.009	0.783	140255		1.76(0.84-2.53)		1186	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.643	2.637	0.006	1.000	23055	0.0508		107	220	
D 12 M2-6:2FTS										
429.00 > 81.00	2.643	2.645	-0.002	0.991	688664	2.15		90.7	12653	
* 62 13C2-PFOA										
415.00 > 370.00	2.666	2.661	0.005		3979952	2.50			47206	
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.673	2.661	0.012	1.003	88688	0.0470		94.0	54.7	M
413.00 > 169.00	2.666	2.661	0.005	1.000	50607		1.75(0.84-2.52)		303	
D 14 13C4 PFOA										
417.00 > 372.00	2.666	2.668	-0.002	1.000	3827171	2.51		101	38209	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.673	2.669	0.004	0.883	94760	0.0479		101	3297	
449.00 > 99.00	2.673	2.669	0.004	0.883	23298		4.07(1.94-5.82)		476	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.033	3.025	0.008	1.002	77725	0.0457		98.5	1137	
499.00 > 99.00	3.026	3.025	0.001	1.000	19056		4.08(2.31-6.93)		288	
20 Perfluorononanoic acid										
463.00 > 419.00	3.033	3.025	0.008	1.002	75178	0.0540		108	165	
463.00 > 169.00	3.026	3.025	0.001	1.000	17409		4.32(1.90-5.69)		807	
D 18 13C4 PFOS										
503.00 > 80.00	3.026	3.031	-0.005	1.135	3588196	2.31		96.8	31294	
D 19 13C5 PFNA										
468.00 > 423.00	3.026	3.031	-0.005	1.135	3138057	2.31		92.3	36956	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.241	3.233	0.008	1.071	126461	0.0459		98.5	1179	
25 1H,1H,2H,2H-perfluorodecanesulfoni										
527.00 > 507.00	3.371	3.370	0.001	1.000	25518	0.0522		109	402	
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.371	3.370	0.001	1.114	55446	0.0476		99.3	1849	
549.00 > 99.00	3.371	3.370	0.001	1.114	25169		2.20(1.33-3.97)		551	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.371	3.370	0.001	1.000	111359	0.0498		99.6	3142	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
24 Perfluorodecanoic acid										
513.00 > 469.00	3.389	3.379	0.010	1.003	58700	0.0482		96.4	528	
513.00 > 169.00	3.389	3.379	0.010	1.003	10872		5.40(2.36-7.09)		400	
D 26 M2-8:2FTS										
529.00 > 81.00	3.371	3.380	-0.009	1.264	907832	1.94		81.0	15735	
D 21 13C8 FOSA										
506.00 > 78.00	3.371	3.380	-0.009	1.264	5671110	2.54		101	49371	
D 23 13C2 PFDA										
515.00 > 470.00	3.380	3.389	-0.009	1.268	2901047	2.43		97.1	40612	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.539	3.538	0.001	1.000	22338	0.0450		90.0	158	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.539	3.539	0.0	1.327	1259209	2.57		103	27617	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.688	3.697	-0.009	1.219	45011	0.0447		92.6	1584	
599.00 > 99.00	3.688	3.697	-0.009	1.219	15515		2.90(1.39-4.16)		634	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.709	3.708	0.001	1.000	40287	0.0491		98.3	219	
563.00 > 169.00	3.709	3.708	0.001	1.000	10620		3.79(2.12-6.36)		462	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.709	3.708	0.001	1.003	23016	0.0449		89.8	391	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.698	3.709	-0.011	1.387	1449927	2.89		116	4252	
D 30 13C2 PFUnA										
565.00 > 520.00	3.709	3.719	-0.010	1.391	2501936	2.51		100	43419	
66 11-Chloroeicosafluoro-3-oxaundecan										
631.00 > 451.00	3.866	3.865	0.001	1.277	201677	0.0506		107	10565	
37 Perfluorododecanoic acid										
613.00 > 569.00	3.999	3.998	0.001	1.000	56152	0.0464		92.9	39.4	
613.00 > 169.00	3.999	3.998	0.001	1.000	12794		4.39(2.13-6.40)		299	
D 36 13C2 PFDoA										
615.00 > 570.00	3.999	4.009	-0.010	1.500	2768837	2.68		107	20470	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.262	4.261	0.001	1.066	58876	0.0498		99.6	30.7	
663.00 > 169.00	4.262	4.261	0.001	1.066	18939		3.11(1.25-3.76)		453	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.490	4.501	-0.011	0.998	14725	0.0498		99.6	239	
713.00 > 219.00	4.490	4.501	-0.011	0.998	12139		1.21(0.71-2.13)		372	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.501	4.501	0.0	1.688	2840583	2.65		106	16137	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.904	4.905	-0.001	1.000	126904	0.0493		98.5	31.1	
813.00 > 169.00	4.904	4.905	-0.001	1.000	21967		5.78(2.86-8.58)		272	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.904	4.905	-0.001	1.840	4713791	2.76		110	15064	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.247	5.247	0.0	1.070	107098	0.0497		99.4	21.6	
913.00 > 169.00	5.247	5.247	0.0	1.070	12634		8.48(3.83-11.48)		205	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

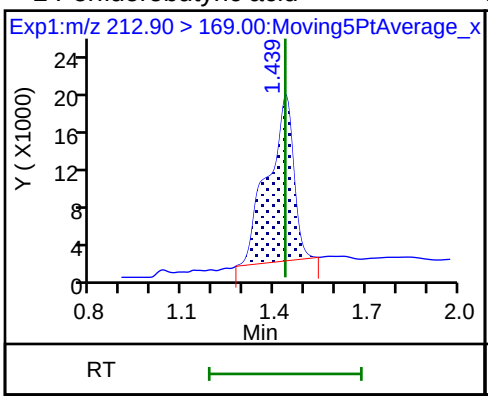
LCPFC_LL2_00005 Amount Added: 1.00 Units: mL

Report Date: 16-Jul-2018 12:50:36 Chrom Revision: 2.2 07-Jun-2018 07:41:54

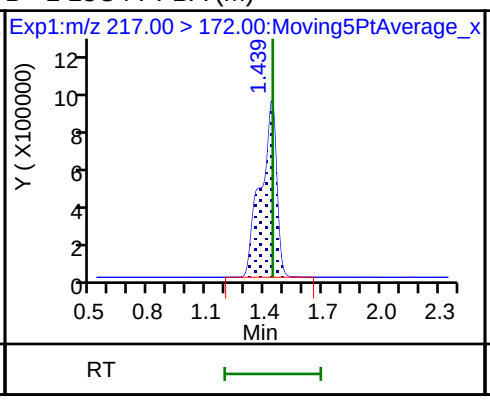
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61058.b\2018.07.13LLB_005.d
Injection Date: 13-Jul-2018 22:59:24 Instrument ID: A8_N
Lims ID: CCVL
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 21 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC ICAL

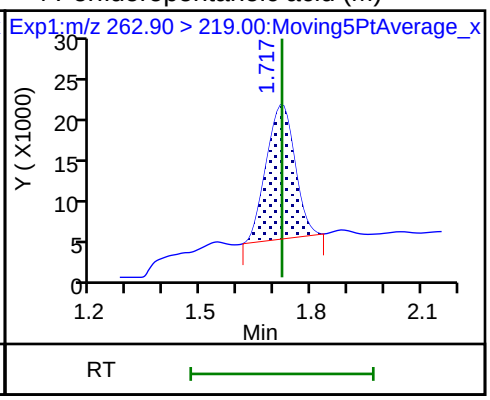
2 Perfluorobutyric acid



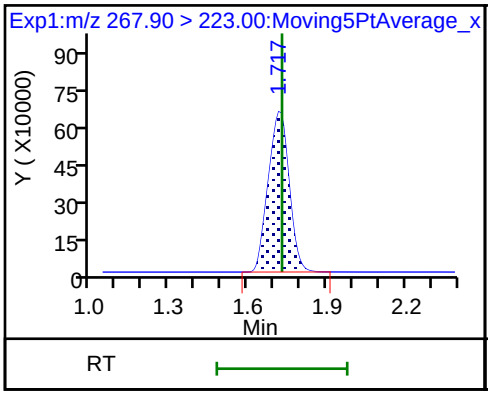
D 1 13C4 PFBA (M)



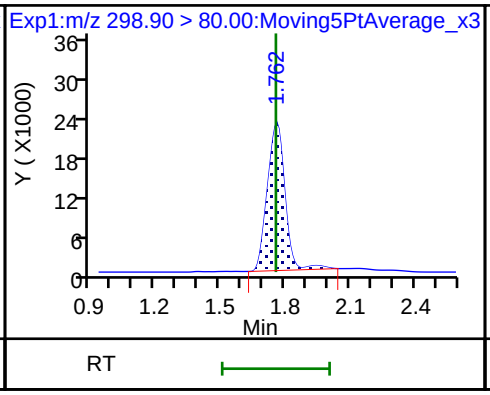
4 Perfluoropentanoic acid (M)



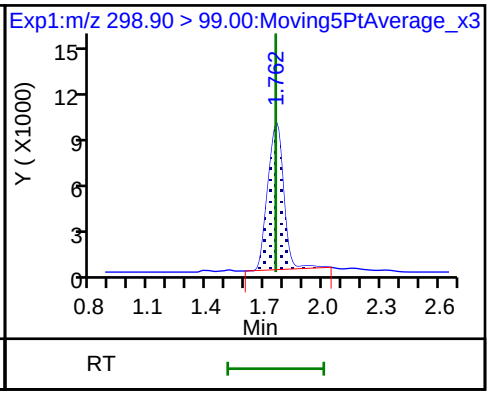
D 3 13C5-PFPeA



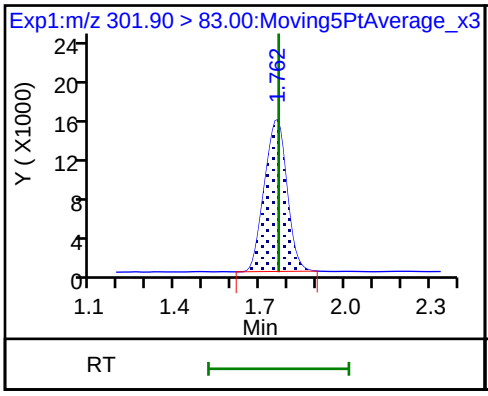
5 Perfluorobutanesulfonic acid



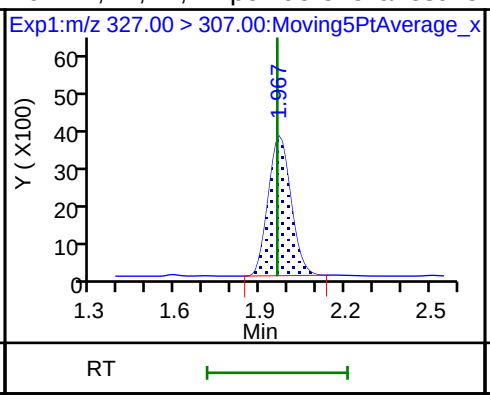
5 Perfluorobutanesulfonic acid



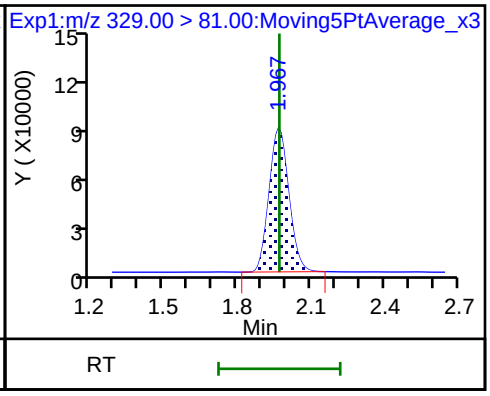
D 47 13C3-PFBS



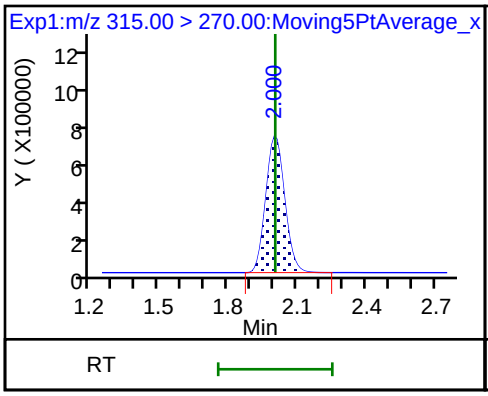
61 1H,1H,2H,2H-perfluorohexanesulfon



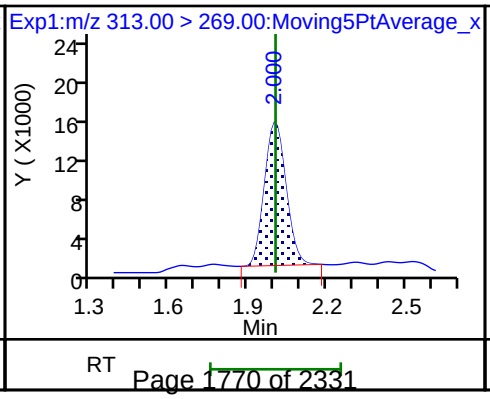
D 60 M2-4:2FTS



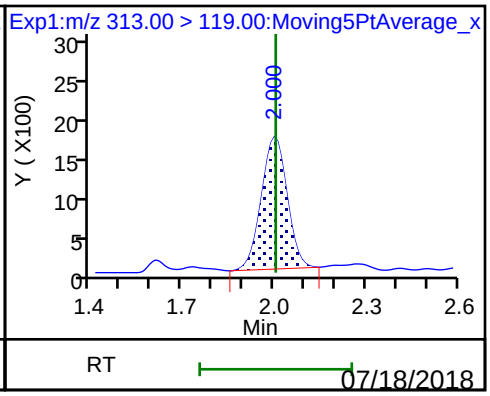
D 7 13C2 PFHxA



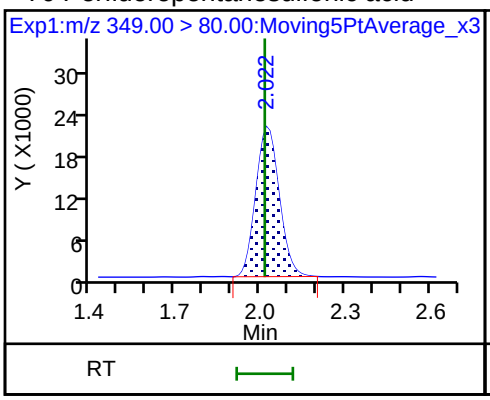
6 Perfluorohexanoic acid



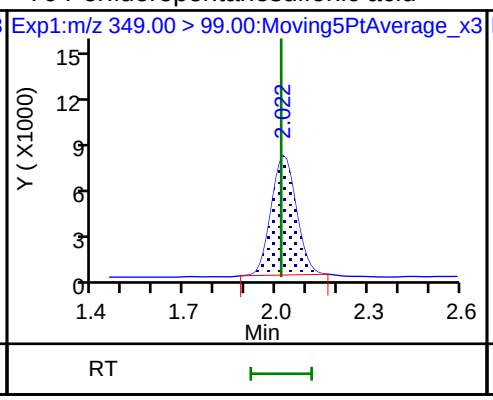
6 Perfluorohexanoic acid



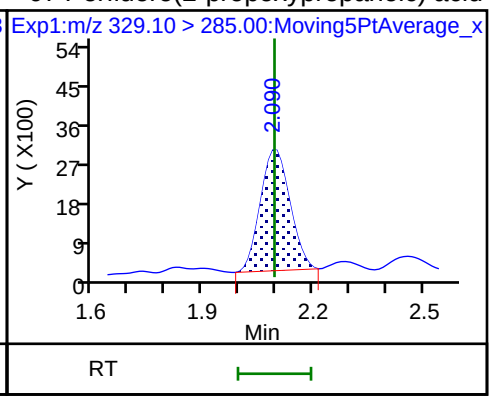
70 Perfluoropentanesulfonic acid



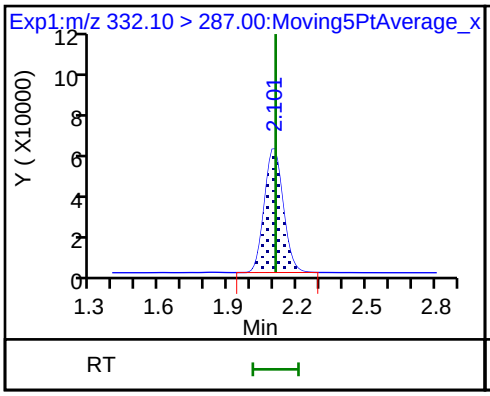
70 Perfluoropentanesulfonic acid



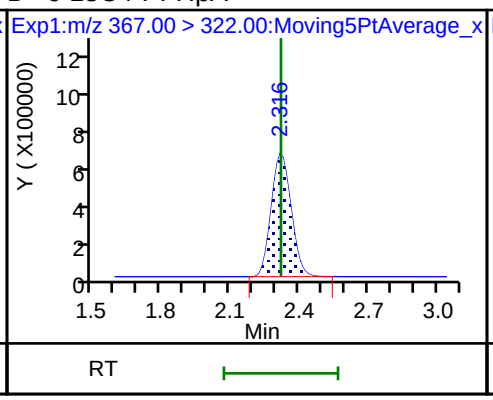
67 Perfluoro(2-propoxypropanoic) acid



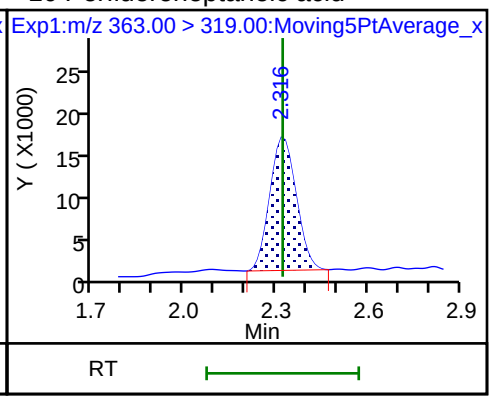
D 64 13C3 HFPO-DA



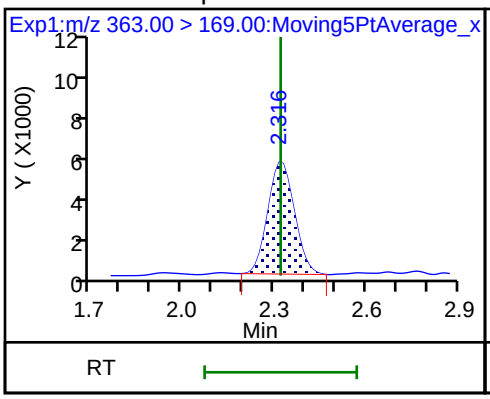
D 9 13C4-PFHpA



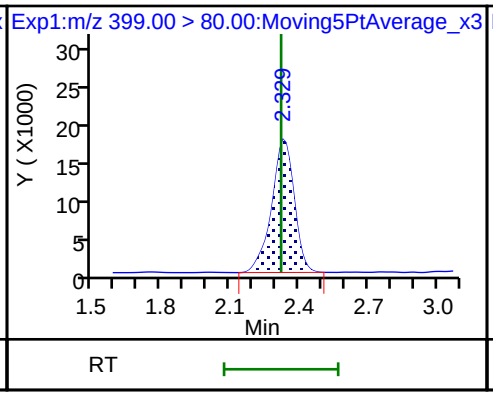
10 Perfluoroheptanoic acid



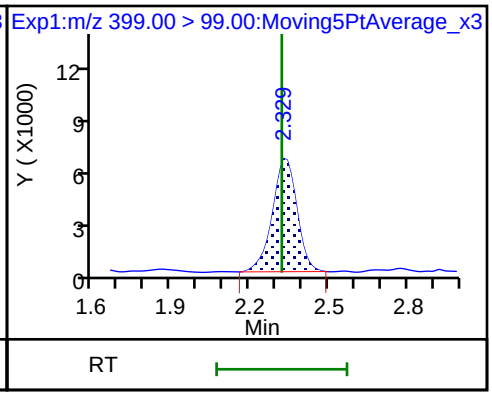
10 Perfluoroheptanoic acid



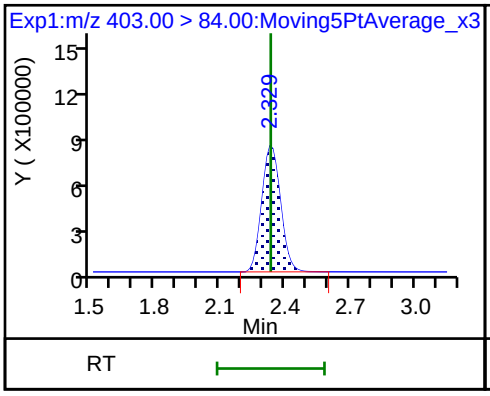
8 Perfluorohexanesulfonic acid



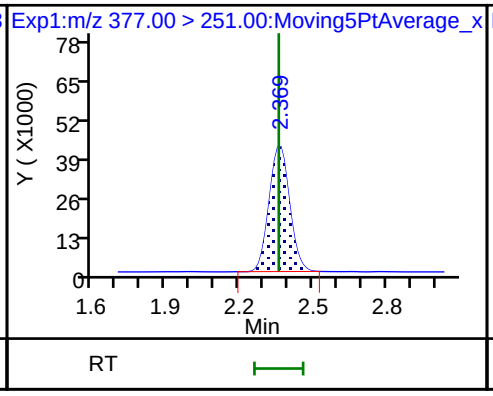
8 Perfluorohexanesulfonic acid



D 11 18O2 PFHxS



65 Adona



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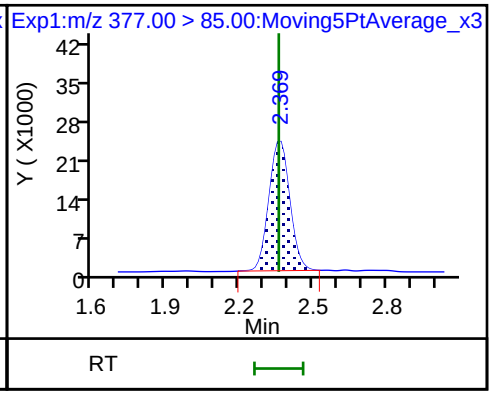
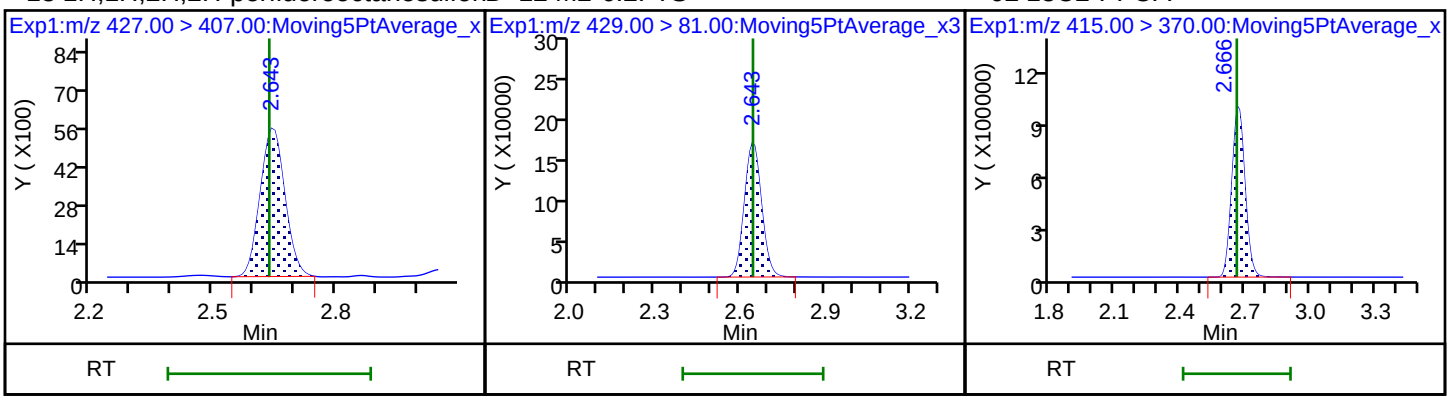
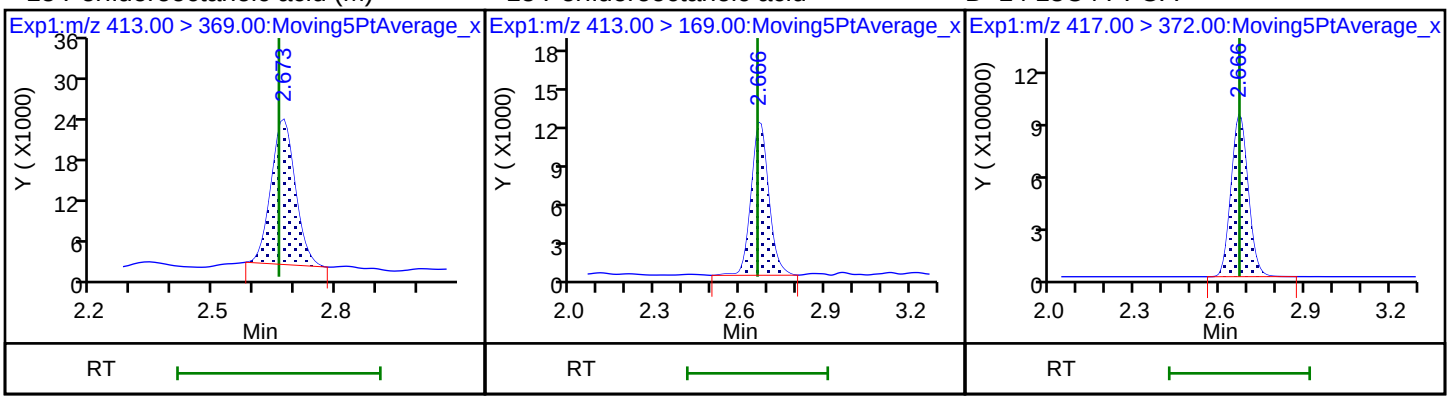


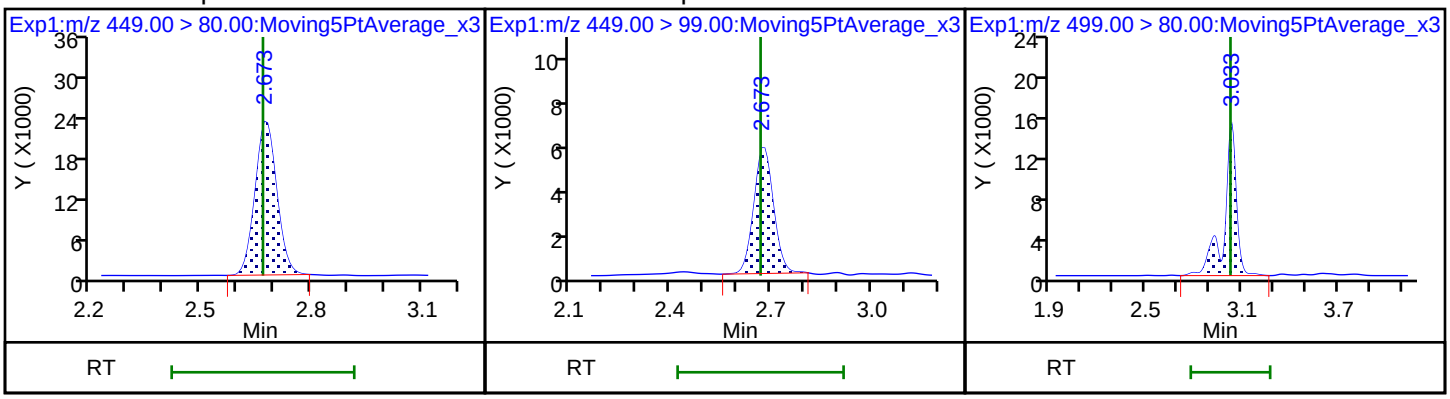
13 1H,1H,2H,2H-perfluorooctanesulfonD 12 M2-6:2FTS * 62 13C2-PFOA



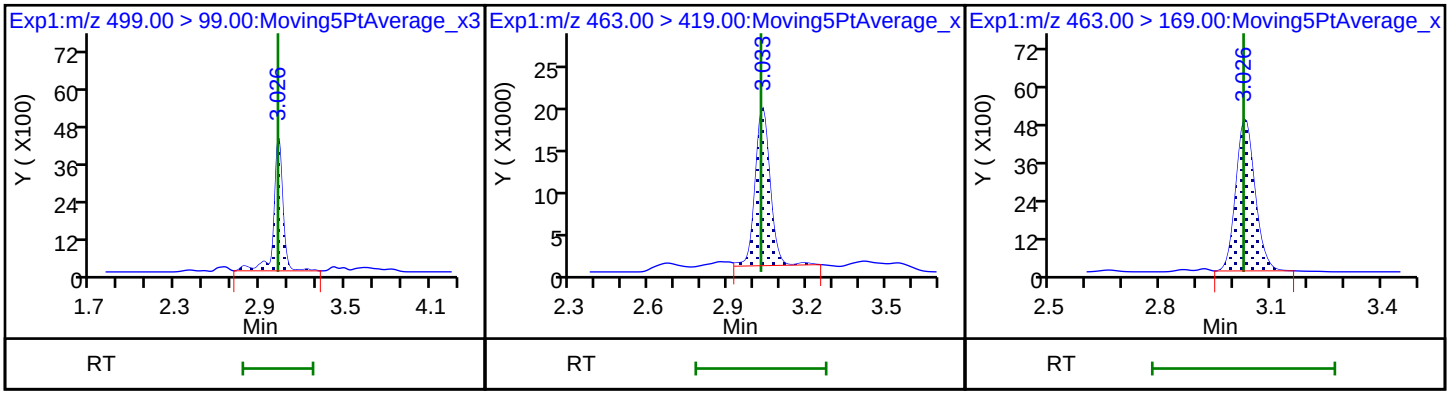
15 Perfluorooctanoic acid (M) 15 Perfluorooctanoic acid D 14 13C4 PFOA



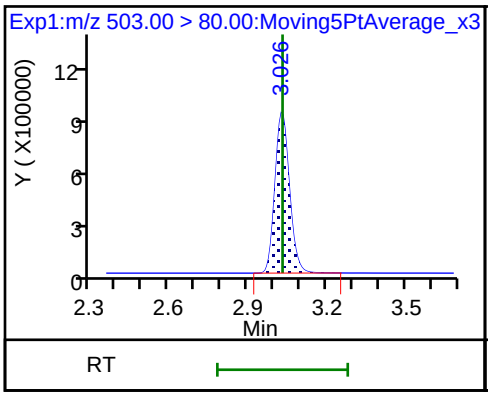
16 Perfluoroheptanesulfonic acid 16 Perfluoroheptanesulfonic acid 17 Perfluorooctane sulfonic acid



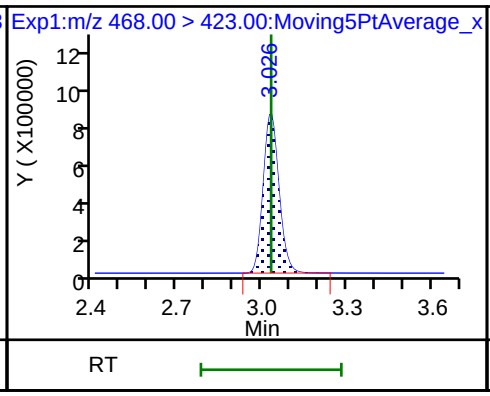
17 Perfluorooctane sulfonic acid 20 Perfluorononanoic acid 20 Perfluorononanoic acid



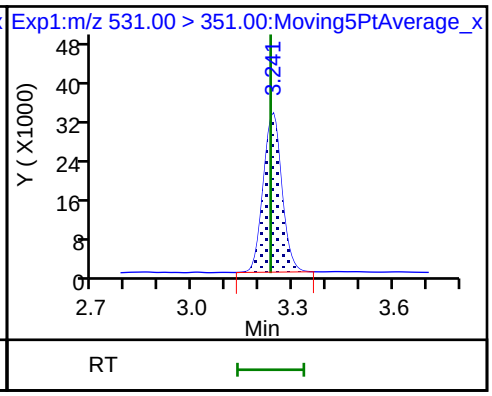
D 18 13C4 PFOS



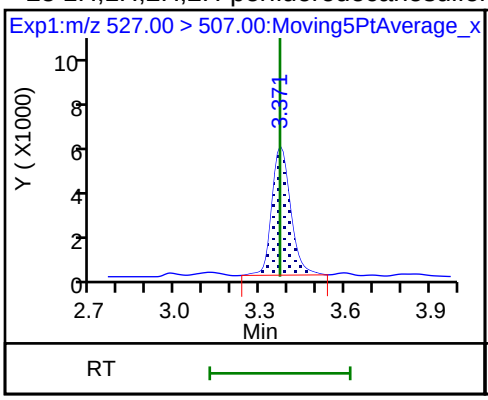
D 19 13C5 PFNA



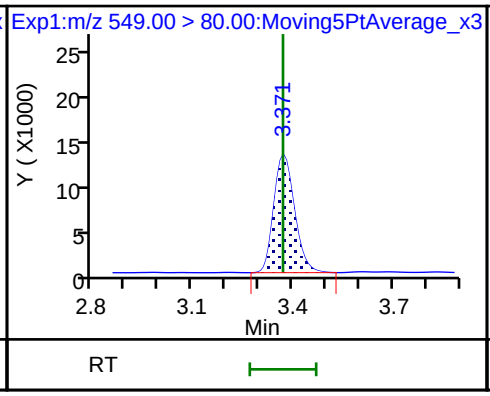
69 9-Chlorohexadecafluoro-3-oxanonane



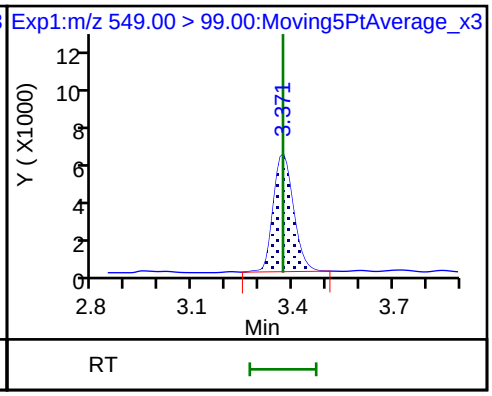
25 1H,1H,2H,2H-perfluorodecanesulfoni



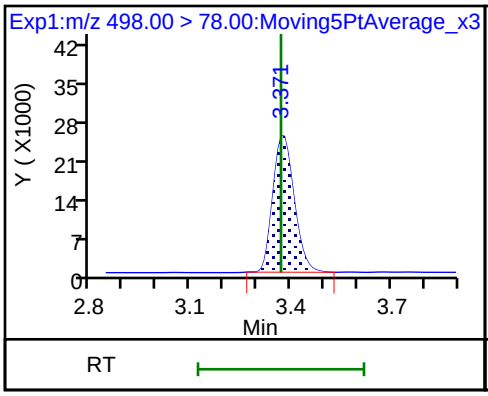
68 Perfluorononanesulfonic acid



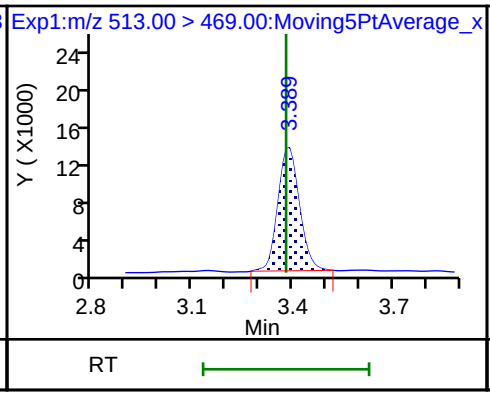
68 Perfluorononanesulfonic acid



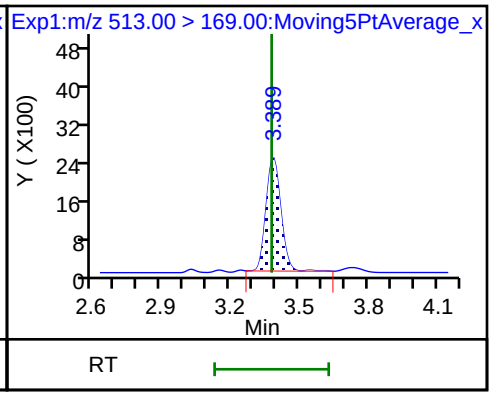
22 Perfluorooctane Sulfonamide



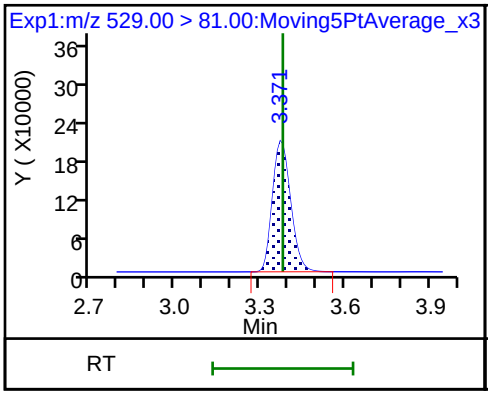
24 Perfluorodecanoic acid



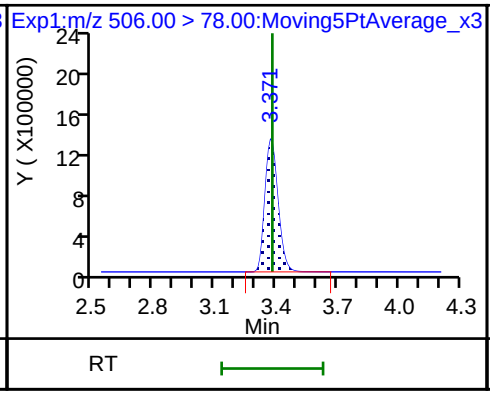
24 Perfluorodecanoic acid



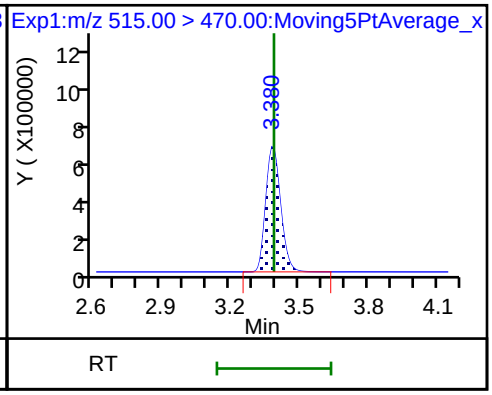
D 26 M2-8:2FTS



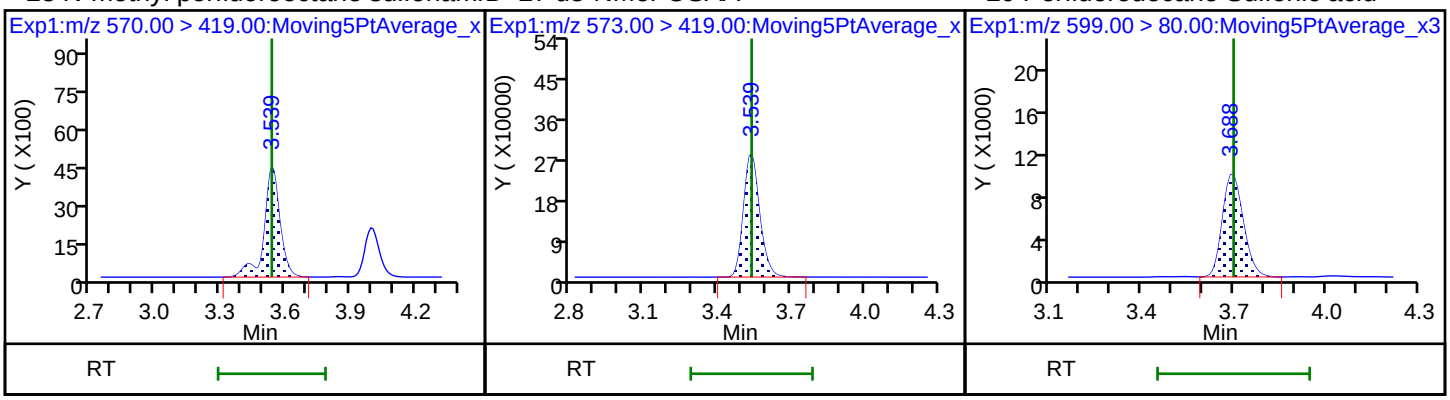
D 21 13C8 FOSA



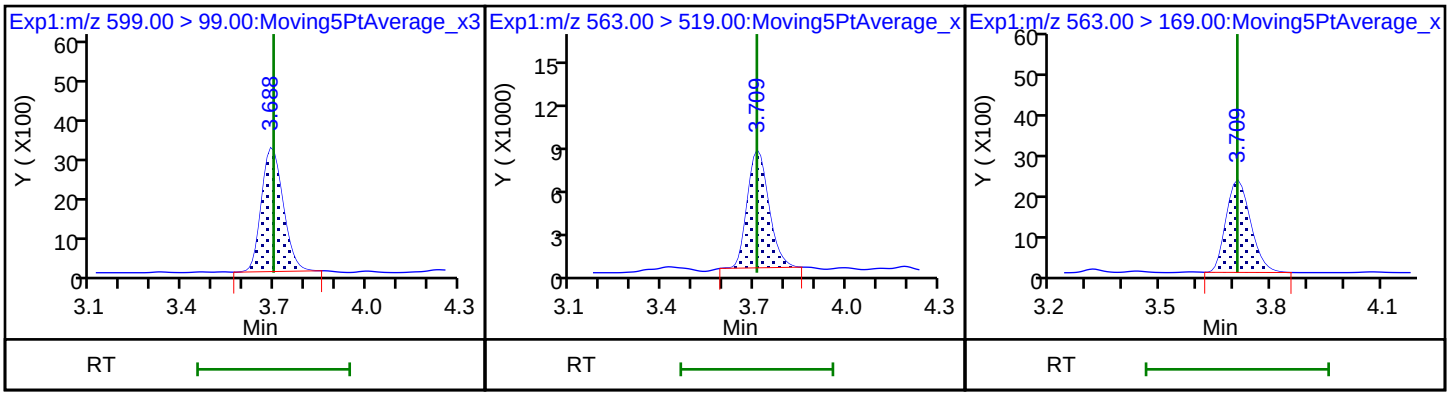
D 23 13C2 PFDA



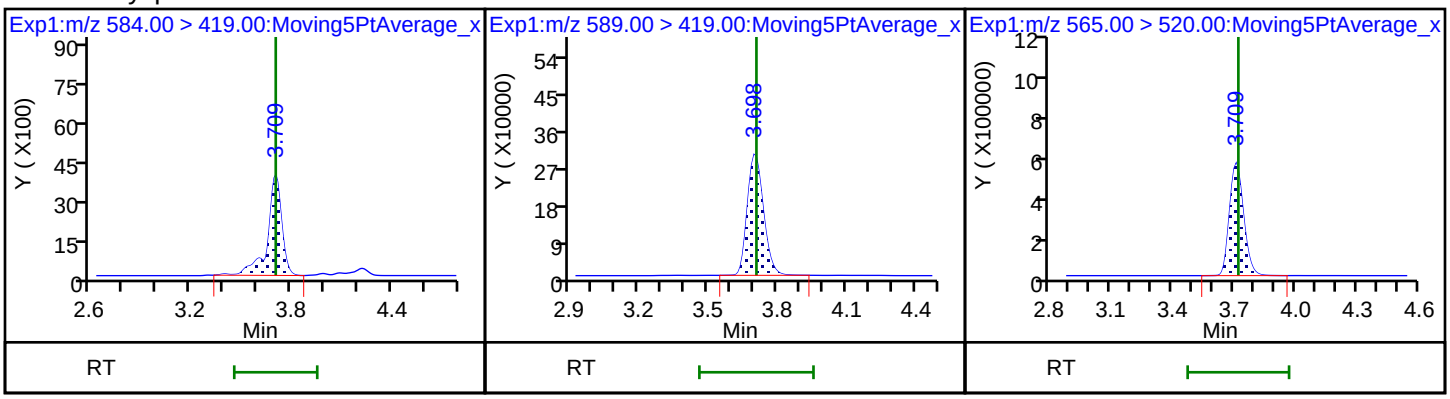
28 N-methyl perfluorooctane sulfonami D 27 d3-NMeFOSAA 29 Perfluorodecane Sulfonic acid



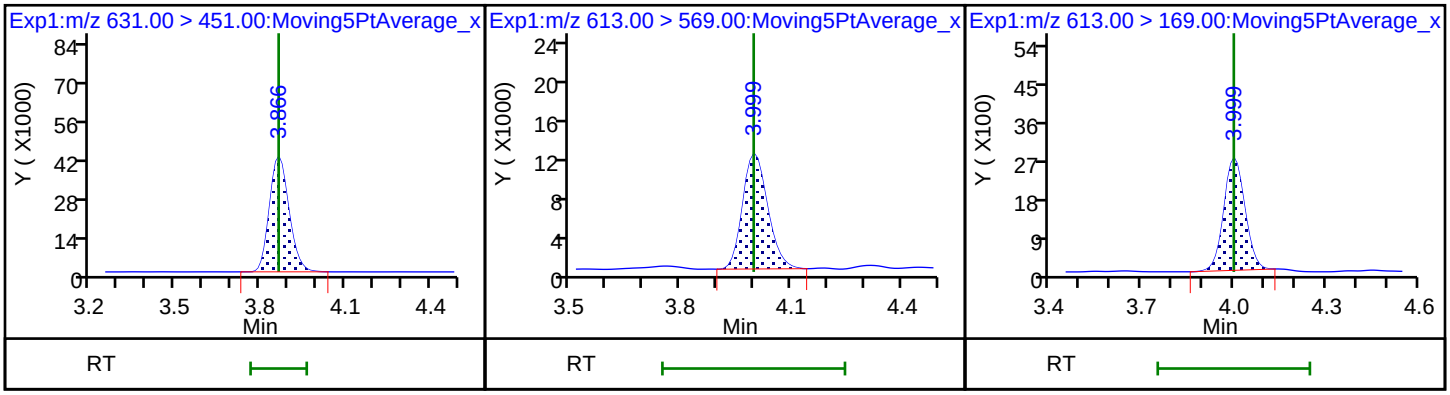
29 Perfluorodecane Sulfonic acid 31 Perfluoroundecanoic acid 31 Perfluoroundecanoic acid



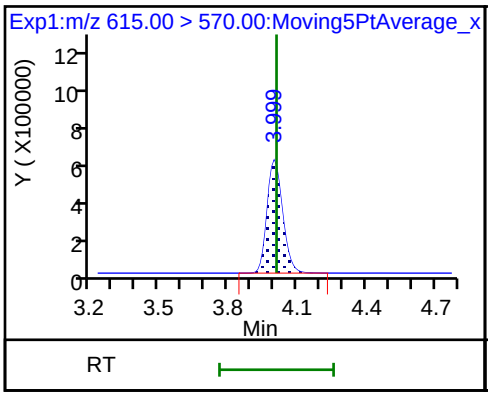
33 N-ethyl perfluorooctane sulfonamid D 32 d5-NEtFOSAA D 30 13C2 PFUnA



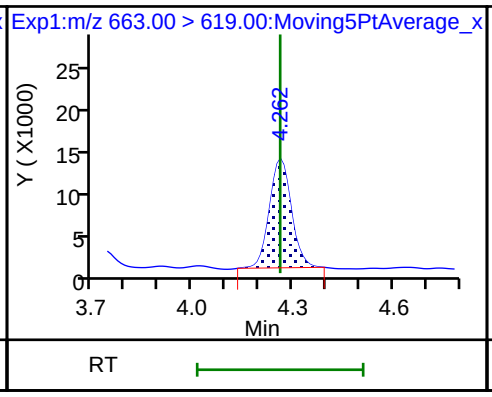
66 11-Chloroeicosafluoro-3-oxaundecan 37 Perfluorododecanoic acid 37 Perfluorododecanoic acid



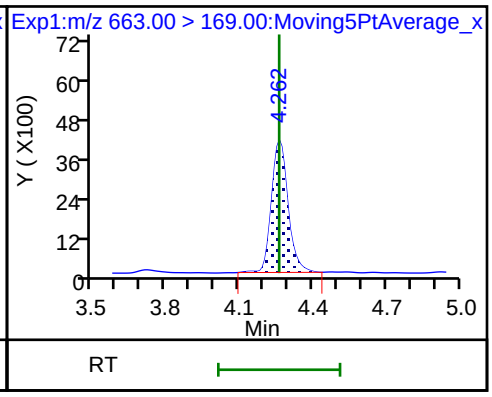
D 36 13C2 PFDoA



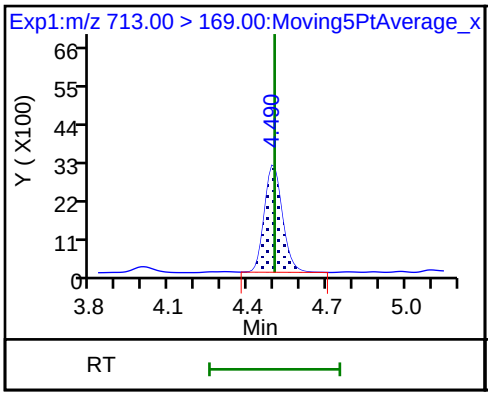
41 Perfluorotridecanoic acid



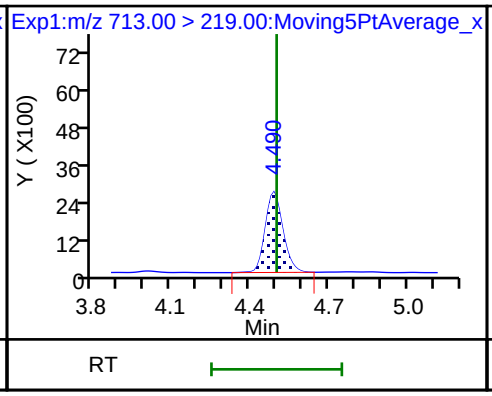
41 Perfluorotridecanoic acid



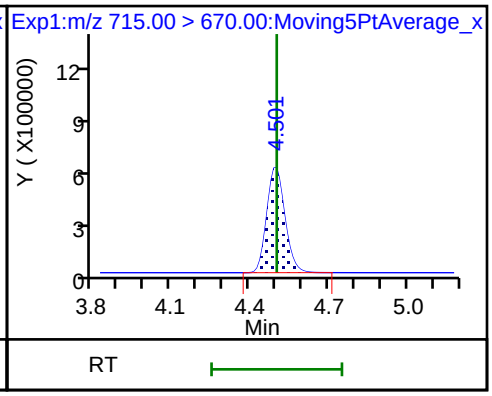
42 Perfluorotetradecanoic acid



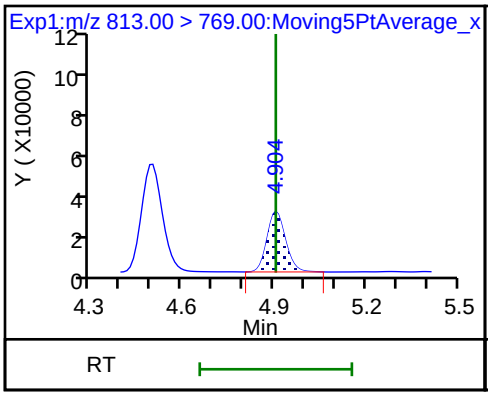
42 Perfluorotetradecanoic acid



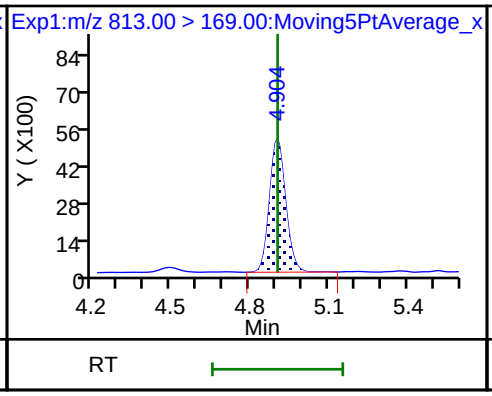
D 43 13C2-PFTeDA



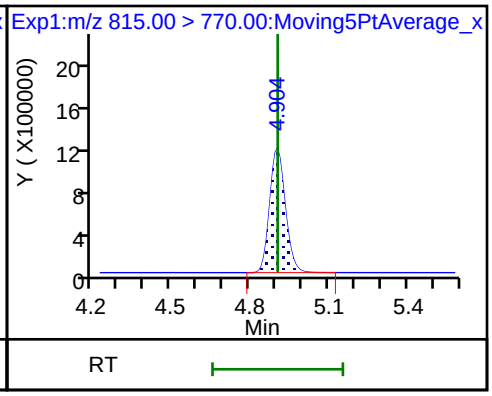
45 Perfluorohexadecanoic acid



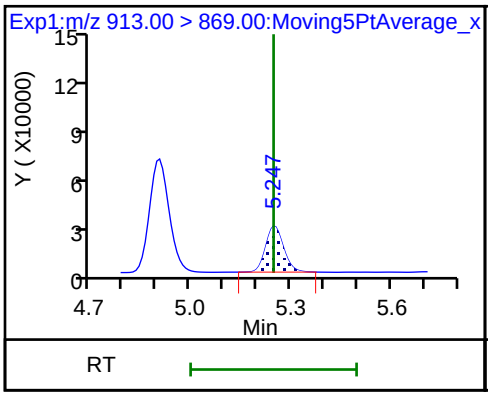
45 Perfluorohexadecanoic acid



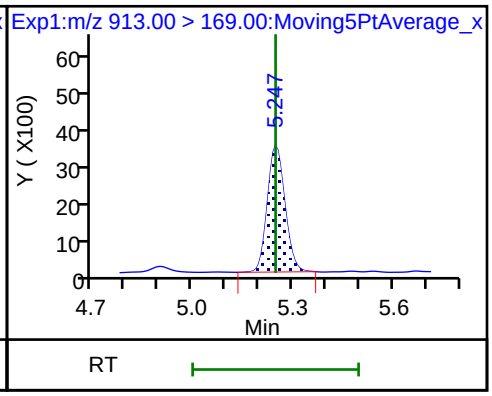
D 44 13C2-PFHxDA



46 Perfluorooctadecanoic acid



46 Perfluorooctadecanoic acid



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

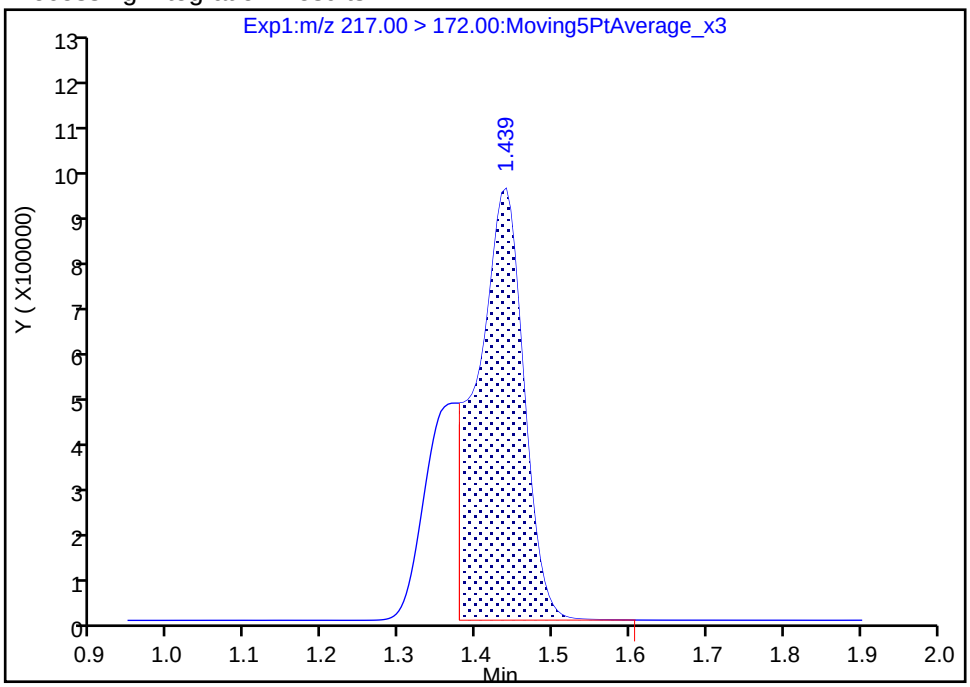
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61058.b\2018.07.13LLB_005.d				
Injection Date:	13-Jul-2018 22:59:24	Instrument ID:	A8_N		
Lims ID:	CCVL				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	21	Worklist Smp#:	2
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

D 1 13C4 PFBA, CAS: STL00992

Signal: 1

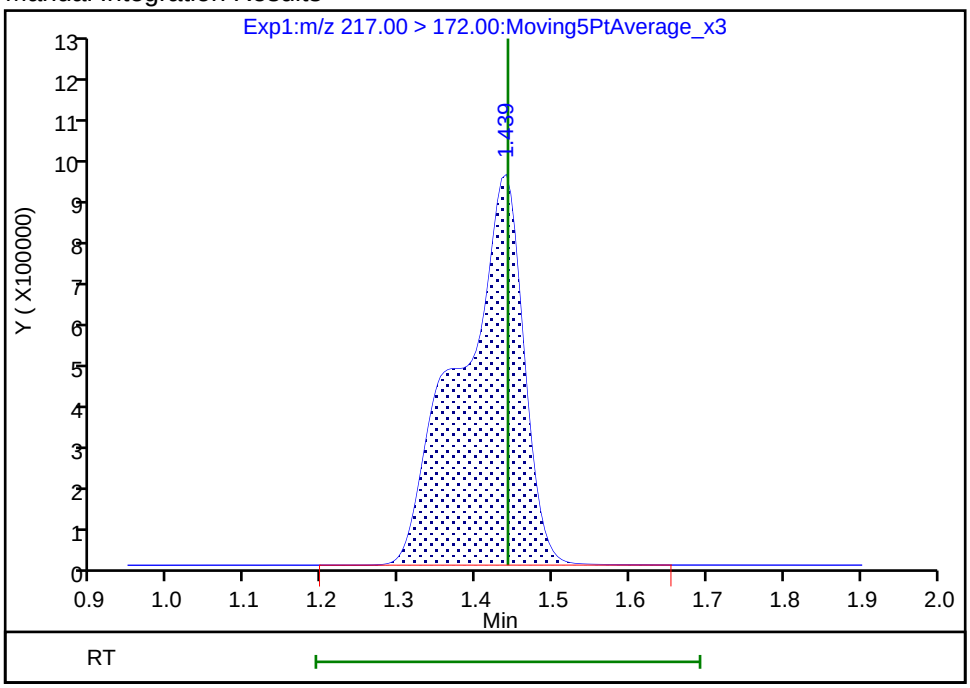
Processing Integration Results

RT: 1.44
Area: 3725043
Amount: 1.725690
Amount Units: ng/ml



Manual Integration Results

RT: 1.44
Area: 5075383
Amount: 2.351258
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 12:49:53

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

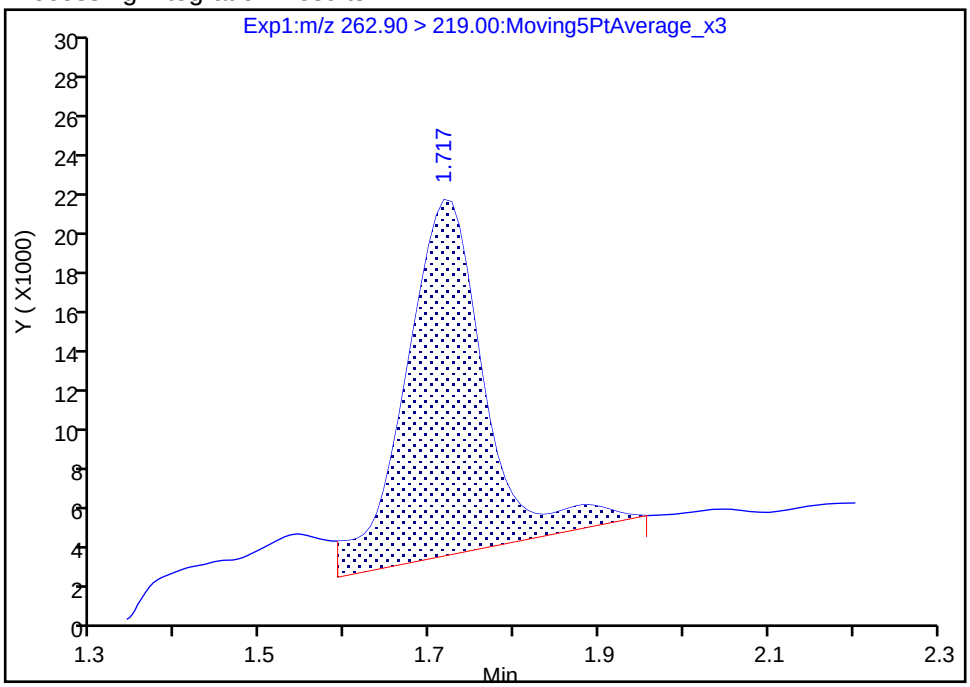
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61058.b\2018.07.13LLB_005.d				
Injection Date:	13-Jul-2018 22:59:24	Instrument ID:	A8_N		
Lims ID:	CCVL				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	21	Worklist Smp#:	2
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

4 Perfluoropentanoic acid, CAS: 2706-90-3

Signal: 1

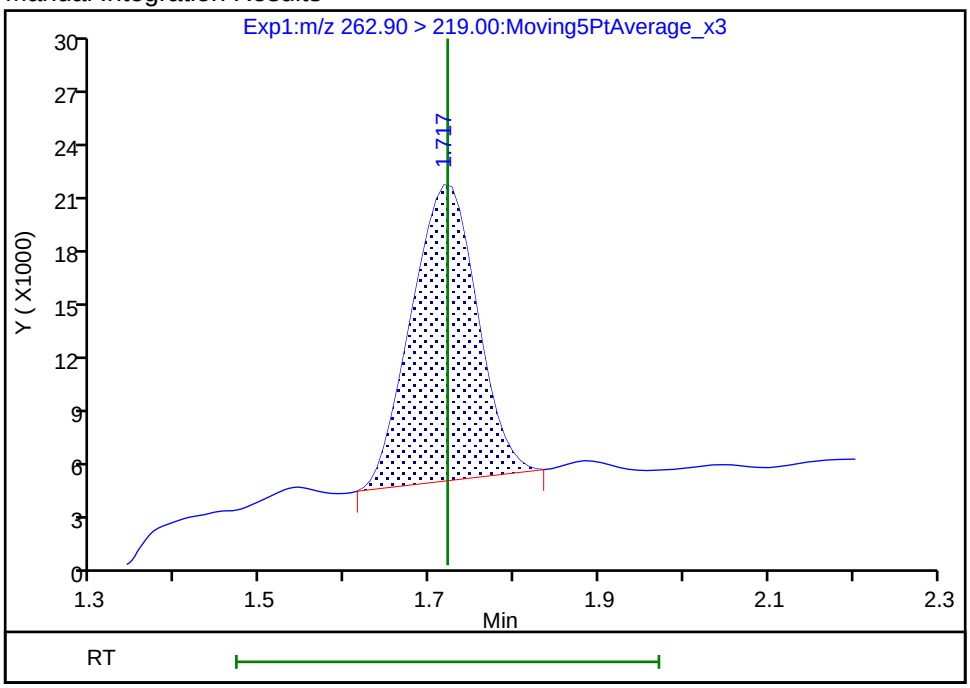
Processing Integration Results

RT: 1.72
Area: 115993
Amount: 0.066634
Amount Units: ng/ml



Manual Integration Results

RT: 1.72
Area: 89018
Amount: 0.051138
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 12:50:10
Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

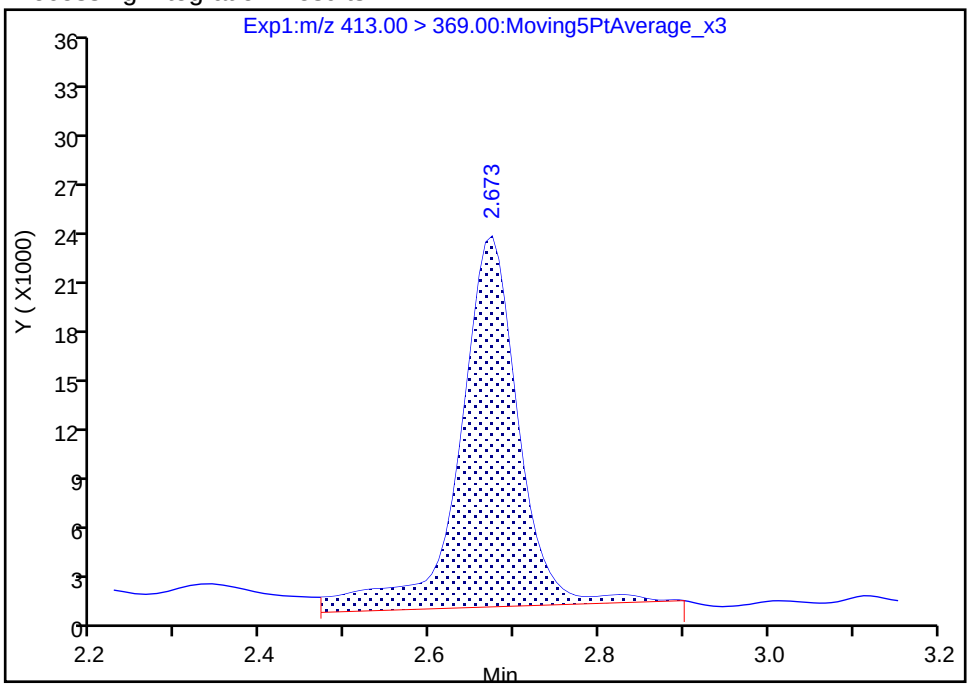
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61058.b\2018.07.13LLB_005.d				
Injection Date:	13-Jul-2018 22:59:24	Instrument ID:	A8_N		
Lims ID:	CCVL				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	21	Worklist Smp#:	2
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

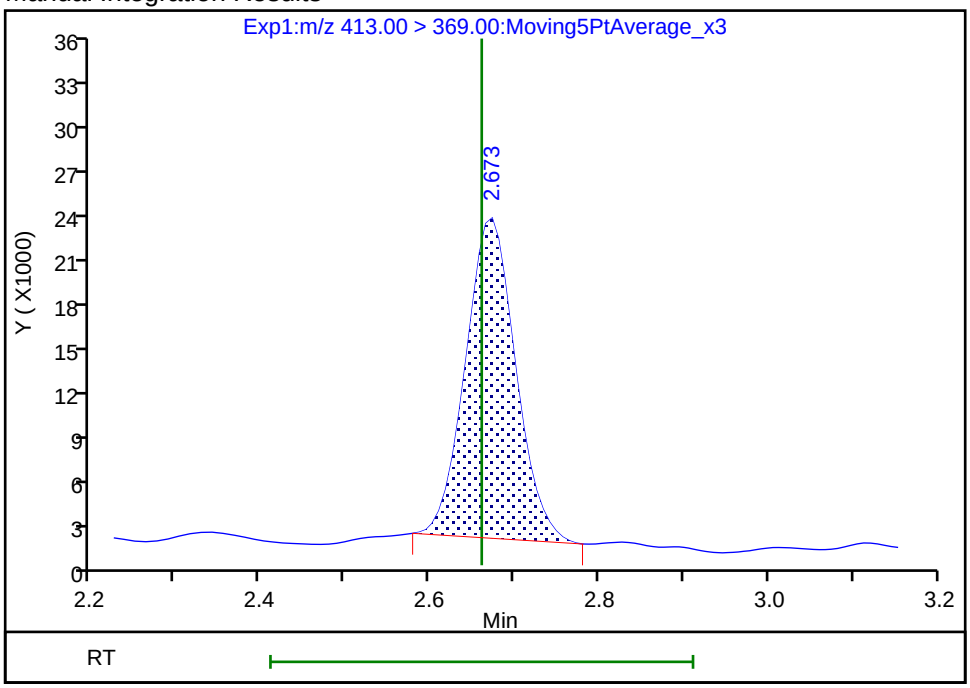
Processing Integration Results

RT: 2.67
Area: 110287
Amount: 0.058497
Amount Units: ng/ml



Manual Integration Results

RT: 2.67
Area: 88688
Amount: 0.047041
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 12:50:20

Audit Action: Manually Integrated Audit Reason: Baseline

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Lab Sample ID: CCV 320-233992/3 Calibration Date: 07/13/2018 23:07

Instrument ID: A8_N Calib Start Date: 07/11/2018 14:48

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 07/11/2018 15:38

Lab File ID: 2018.07.13LLB_018.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.9856	0.9782		0.993	1.00	-0.7	40.0
Perfluoropentanoic acid (PFPeA)	AveID	1.213	1.166		0.961	1.00	-3.9	40.0
Perfluorobutanesulfonic acid (PFBS)	AveID	76.50	77.57		0.896	0.884	1.4	50.0
4:2 FTS	AveID	13.00	12.84		0.922	0.934	-1.2	50.0
Perfluorohexanoic acid (PFHxA)	AveID	1.029	1.032		1.00	1.00	0.3	40.0
Perfluoropentanesulfonic acid (PFPeS)	AveID	69.78	68.44		0.920	0.938	-1.9	50.0
HFPO-DA (GenX)	AveID	2.654	2.742		1.03	1.00	3.3	40.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.157	1.122		0.970	1.00	-3.0	40.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.148	1.079		0.856	0.910	-6.0	40.0
ADONA	AveID	3.219	3.663		1.07	0.942	13.8	50.0
6:2 FTS	AveID	1.564	1.592		0.965	0.948	1.8	40.0
Perfluorooctanoic acid (PFOA)	AveID	1.232	1.175		0.955	1.00	-4.6	40.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.318	1.316		0.951	0.952	-0.1	50.0
Perfluorononanoic acid (PFNA)	AveID	1.109	1.132		1.02	1.00	2.0	40.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.133	1.091		0.894	0.928	-3.7	40.0
9-Chlorohexadecafluoro-3-oxa nonane-1-sulfonate	AveID	1.836	1.833		0.931	0.932	-0.1	50.0
8:2 FTS	AveID	1.290	1.350		1.00	0.958	4.6	40.0
Perfluorononanesulfonic acid (PFNS)	AveID	0.7752	0.8018		0.993	0.960	3.4	50.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9856	0.9787		0.993	1.00	-0.7	40.0
Perfluorodecanoic acid (PFDA)	AveID	1.049	1.066		1.02	1.00	1.6	40.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	0.9858	1.005		1.02	1.00	1.9	40.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6714	0.6886		0.989	0.964	2.6	50.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.8840	0.8572		0.970	1.00	-3.0	40.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.8195	0.7339		0.896	1.00	-10.4	40.0
11-Chloroeicosafluoro-3-oxau ndecane-1-sulfonate	AveID	2.654	2.912		1.03	0.942	9.7	50.0
Perfluorododecanoic acid (PFDoA)	AveID	1.092	1.126		1.03	1.00	3.1	40.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.068	1.053		0.986	1.00	-1.4	50.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2602	0.2611		1.00	1.00	0.4	50.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		0.9493		0.977	1.00	-2.3	50.0

FORM VII 537 (modified)

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Lab Sample ID: CCV 320-233992/3 Calibration Date: 07/13/2018 23:07

Instrument ID: A8_N Calib Start Date: 07/11/2018 14:48

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 07/11/2018 15:38

Lab File ID: 2018.07.13LLB_018.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.143	1.022		0.894	1.00	-10.6	50.0
13C4 PFBA	Ave	1.356	1.334		2.46	2.50	-1.6	50.0
13C5 PFPeA	Ave	0.9425	0.9415		2.50	2.50	-0.1	50.0
13C3-PFBS	Ave	0.0237	0.0240		2.36	2.33	1.4	50.0
M2-4:2FTS	Ave	0.1273	0.1314		2.41	2.34	3.3	50.0
13C2 PFHxA	Ave	1.017	1.067		2.62	2.50	4.8	50.0
13C3 HFPO-DA	Ave	0.0724	0.0731		2.53	2.50	1.1	50.0
13C4-PFHpA	Ave	0.9371	1.001		2.67	2.50	6.8	50.0
18O2 PFHxS	Ave	1.328	1.354		2.41	2.37	2.0	50.0
M2-6:2FTS	Ave	0.2009	0.1959		2.32	2.38	-2.5	40.0
13C4 PFOA	Ave	0.9560	0.9596		2.51	2.50	0.4	50.0
13C4 PFOS	Ave	0.9742	0.9612		2.36	2.39	-1.3	50.0
13C5 PFNA	Ave	0.8546	0.8002		2.34	2.50	-6.4	50.0
13C8 FOSA	Ave	1.405	1.477		2.63	2.50	5.1	50.0
M2-8:2FTS	Ave	0.2939	0.2313		1.89	2.40	-21.3	40.0
13C2 PFDA	Ave	0.7503	0.7218		2.40	2.50	-3.8	50.0
d3-NMeFOSAA	Ave	0.3075	0.3313		2.69	2.50	7.7	50.0
d5-NEtFOSAA	Ave	0.3150	0.3603		2.86	2.50	14.4	50.0
13C2 PFUnA	Ave	0.6266	0.6409		2.56	2.50	2.3	50.0
13C2 PFDoA	Ave	0.6496	0.6701		2.58	2.50	3.2	50.0
13C2-PFTeDA	Ave	0.6740	0.6879		2.55	2.50	2.1	50.0
13C2-PFHxDA	Ave	1.074	1.178		2.74	2.50	9.7	50.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61058.b\2018.07.13LLB_018.d
Lims ID: CCV L4
Client ID:
Sample Type: CCVIS
Inject. Date: 13-Jul-2018 23:07:14 ALS Bottle#: 28 Worklist Smp#: 3
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV L4
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-A8_N*sub32

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61058.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 16-Jul-2018 12:51:17 Calib Date: 11-Jul-2018 15:38:42
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK023

First Level Reviewer: mongkols Date: 16-Jul-2018 12:51:17

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.90 > 169.00	1.436	1.436	0.0	1.000	1915959	0.99		99.3	1099	
D 1 13C4 PFBA										
217.00 > 172.00	1.436	1.441	-0.005	0.540	4896659	2.46		98.4	28606	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.721	1.721	0.0	1.000	1611278	0.9608		96.1	782	
D 3 13C5-PFPeA										
267.90 > 223.00	1.721	1.729	-0.008	0.647	3456057	2.50		99.9	48629	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.757	1.757	0.0	1.000	2418383	0.8964		101	15573	
298.90 > 99.00	1.757	1.757	0.0	1.000	974391		2.48(1.25-3.74)		9790	
D 47 13C3-PFBS										
301.90 > 83.00	1.757	1.765	-0.008	0.660	82002	2.36		101	569	
61 1H,1H,2H,2H-perfluorohexanesulfoni										
327.00 > 307.00	1.960	1.960	0.0	1.116	422869	0.9224		98.8	24976	
D 60 M2-4:2FTS										
329.00 > 81.00	1.960	1.970	-0.010	0.737	450682	2.41		103	6071	
D 7 13C2 PFHxA										
315.00 > 270.00	2.004	2.004	0.0	0.753	3915164	2.62		105	61677	
6 Perfluorohexanoic acid										
313.00 > 269.00	2.004	2.004	0.0	1.000	1616342	1.00		100	4933	
313.00 > 119.00	1.993	2.004	-0.011	0.994	144349		11.20(5.03-15.10)		2793	
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.016	2.016	0.0	1.147	2264139	0.9199		98.1	34800	
349.00 > 99.00	2.027	2.016	0.011	1.154	845093		2.68(1.36-4.07)		18137	
67 Perfluoro(2-propoxypropanoic) acid										
329.10 > 285.00	2.095	2.095	0.0	1.000	294435	1.03		103	2571	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.095	2.105	-0.010	0.787	268479	2.53		101	5891	
D 9 13C4-PFHpA										
367.00 > 322.00	2.308	2.320	-0.012	0.867	3673956	2.67		107	33522	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.321	2.321	0.0	1.006	1649037	0.9702		97.0	3136	
363.00 > 169.00	2.321	2.321	0.0	1.006	630245		2.62(1.13-3.40)		7431	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.321	2.321	0.0	0.994	1952747	0.8555		94.0	12652	
399.00 > 99.00	2.321	2.321	0.0	0.994	628534		3.11(1.50-4.49)		3231	
D 11 18O2 PFHxS										
403.00 > 84.00	2.334	2.333	0.001	0.877	4702550	2.41		102	31984	
65 Adona										
377.00 > 251.00	2.360	2.360	0.0	0.780	4870575	1.07		114	69196	
377.00 > 85.00	2.360	2.360	0.0	0.780	2738941		1.78(0.84-2.53)		15000	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.637	2.637	0.0	1.000	434293	0.9649		102	5292	
D 12 M2-6:2FTS										
429.00 > 81.00	2.637	2.645	-0.008	0.991	683294	2.32		97.5	13505	
* 62 13C2-PFOA										
415.00 > 370.00	2.661	2.661	0.0		3671011	2.50			29032	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.661	2.661	0.0	1.000	1657359	0.9551		95.4	970	
413.00 > 169.00	2.661	2.661	0.0	1.000	857515		1.93(0.84-2.52)		4482	
D 14 13C4 PFOA										
417.00 > 372.00	2.661	2.668	-0.007	1.000	3522619	2.51		100	32042	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.669	2.669	0.0	0.882	1767824	0.9507		99.9	23179	
449.00 > 99.00	2.669	2.669	0.0	0.882	480665		3.68(1.94-5.82)		8765	
17 Perfluorooctane sulfonic acid										M
499.00 > 80.00	3.025	3.025	0.0	1.000	1429389	0.8937		96.3	11464	M
499.00 > 99.00	3.025	3.025	0.0	1.000	332154		4.30(2.31-6.93)		6713	M
20 Perfluorononanoic acid										
463.00 > 419.00	3.025	3.025	0.0	1.000	1330100	1.02		102	3080	
463.00 > 169.00	3.025	3.025	0.0	1.000	293706		4.53(1.90-5.69)		8406	
D 18 13C4 PFOS										
503.00 > 80.00	3.025	3.031	-0.006	1.137	3373221	2.36		98.7	28266	
D 19 13C5 PFNA										
468.00 > 423.00	3.025	3.031	-0.006	1.137	2937702	2.34		93.6	30497	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.233	3.233	0.0	1.069	2411669	0.9308		99.9	23717	
25 1H,1H,2H,2H-perfluorodecanesulfoni										
527.00 > 507.00	3.370	3.370	0.0	1.000	439262	1.00		105	8977	
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.370	3.370	0.0	1.114	1086328	0.99		103	19145	
549.00 > 99.00	3.370	3.370	0.0	1.114	433501		2.51(1.33-3.97)		7600	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.370	3.370	0.0	1.000	2122020	0.99		99.3	28244	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
24 Perfluorodecanoic acid										
513.00 > 469.00	3.379	3.379	0.0	1.000	1129540	1.02		102	7711	
513.00 > 169.00	3.379	3.379	0.0	1.000	180803		6.25(2.36-7.09)		5828	
D 26 M2-8:2FTS										
529.00 > 81.00	3.370	3.380	-0.010	1.266	813556	1.89		78.7	12271	
D 21 13C8 FOSA										
506.00 > 78.00	3.370	3.380	-0.010	1.266	5420753	2.63		105	58535	
D 23 13C2 PFDA										
515.00 > 470.00	3.379	3.389	-0.010	1.270	2649548	2.40		96.2	27017	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.538	3.538	0.0	1.003	488628	1.02		102	4146	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.529	3.539	-0.010	1.326	1216028	2.69		108	24088	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.697	3.697	0.0	1.222	936864	0.9886		103	12887	
599.00 > 99.00	3.687	3.697	-0.010	1.219	310976		3.01(1.39-4.16)		13010	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.708	3.708	0.0	1.000	690654	0.8956		89.6	3034	
563.00 > 169.00	3.708	3.708	0.0	1.000	183272		3.77(2.12-6.36)		9320	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.708	3.708	0.0	1.003	453537	0.9697		97.0	7853	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.697	3.709	-0.012	1.389	1322693	2.86		114	3115	
D 30 13C2 PFUnA										
565.00 > 520.00	3.708	3.719	-0.011	1.393	2352576	2.56		102	40659	
66 11-Chloroeicosafluoro-3-oxaundecan										
631.00 > 451.00	3.865	3.865	0.0	1.278	3870926	1.03		110	58287	
37 Perfluorododecanoic acid										
613.00 > 569.00	3.998	3.998	0.0	1.000	1107607	1.03		103	770	
613.00 > 169.00	3.998	3.998	0.0	1.000	259928		4.26(2.13-6.40)		6149	
D 36 13C2 PFDoA										
615.00 > 570.00	3.998	4.009	-0.011	1.502	2460018	2.58		103	20897	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.261	4.261	0.0	1.066	1036123	0.9862		98.6	579	
663.00 > 169.00	4.261	4.261	0.0	1.066	333245		3.11(1.25-3.76)		6700	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.501	4.501	0.0	1.000	263746	1.00		100	5585	
713.00 > 219.00	4.491	4.501	-0.010	0.998	185546		1.42(0.71-2.13)		3923	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.501	4.501	0.0	1.691	2525438	2.55		102	16114	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.905	4.905	0.0	1.000	1642205	0.9775		97.7	411	
813.00 > 169.00	4.905	4.905	0.0	1.000	269777		6.09(2.86-8.58)		3635	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.905	4.905	0.0	1.843	4324790	2.74		110	15884	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.247	5.247	0.0	1.070	1768520	0.8945		89.4	383	
913.00 > 169.00	5.247	5.247	0.0	1.070	226866		7.80(3.83-11.48)		2785	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

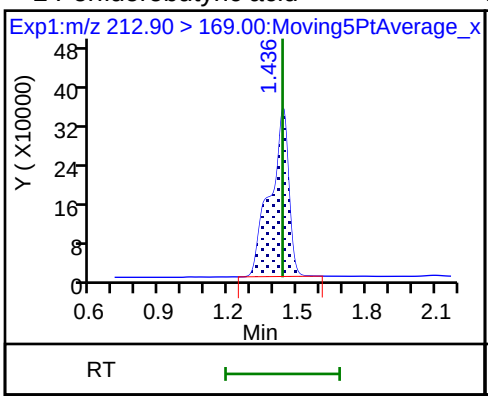
LCPFC_LL4_00005 Amount Added: 1.00 Units: mL

Report Date: 16-Jul-2018 12:51:18 Chrom Revision: 2.2 07-Jun-2018 07:41:54

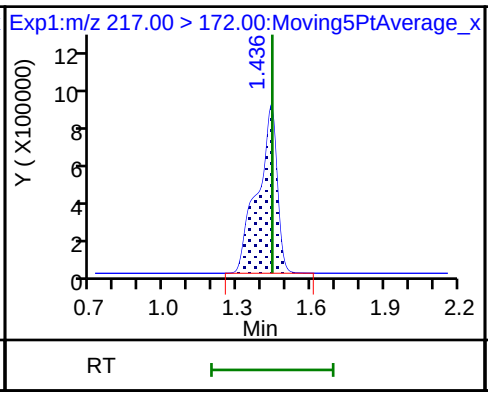
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61058.b\2018.07.13LLB_018.d
Injection Date: 13-Jul-2018 23:07:14 Instrument ID: A8_N
Lims ID: CCV L4
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 28 Worklist Smp#: 3
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC ICAL

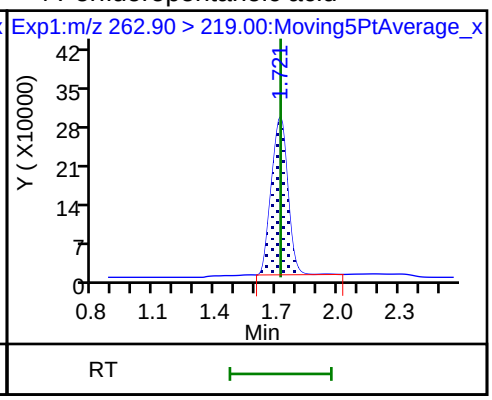
2 Perfluorobutyric acid



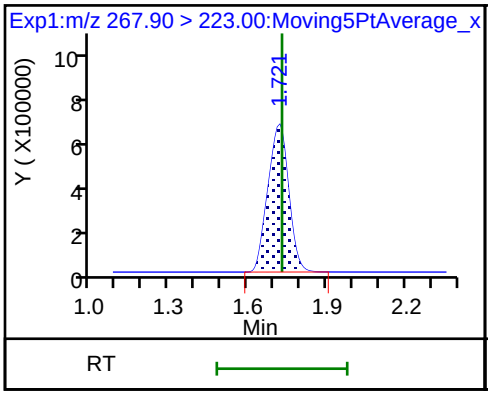
D 1 13C4 PFBA



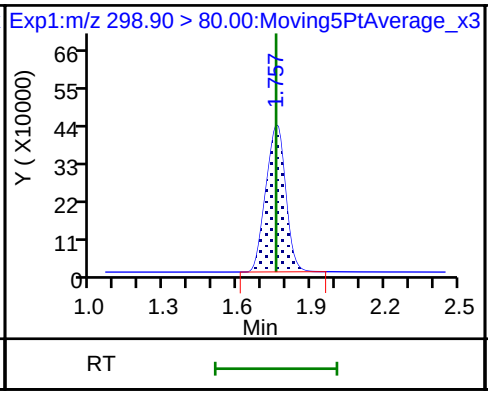
4 Perfluoropentanoic acid



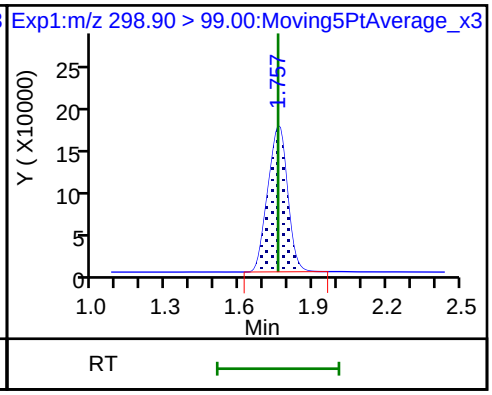
D 3 13C5-PFPeA



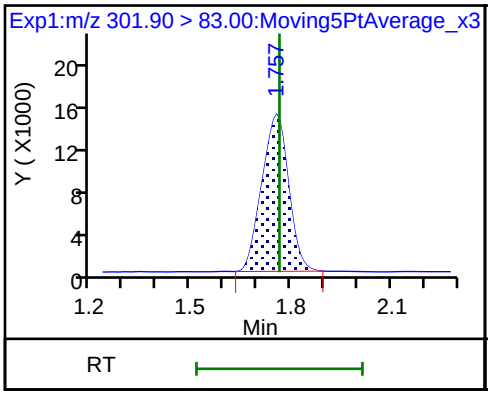
5 Perfluorobutanesulfonic acid



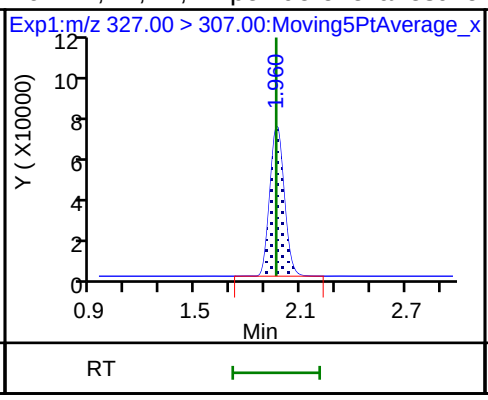
5 Perfluorobutanesulfonic acid



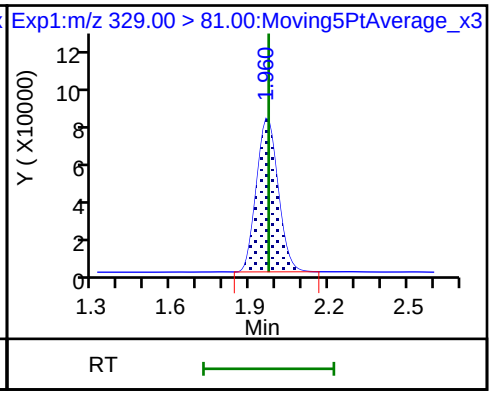
D 47 13C3-PFBS



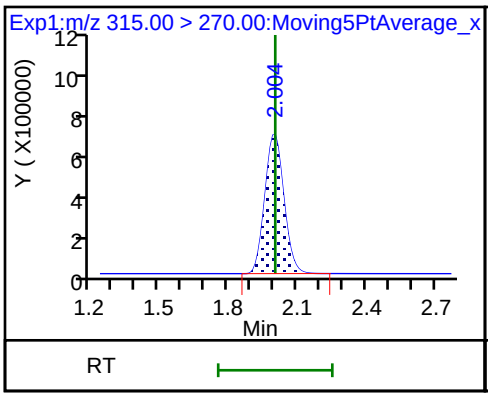
61 1H,1H,2H,2H-perfluorohexanesulfon



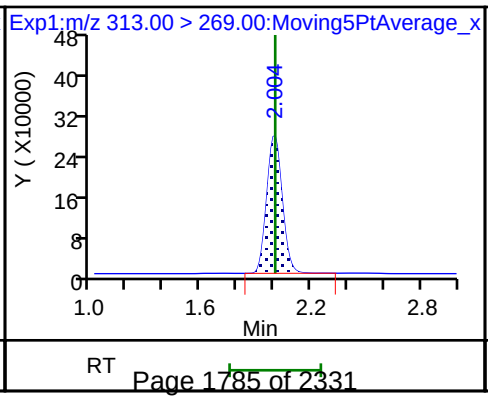
D 60 M2-4:2FTS



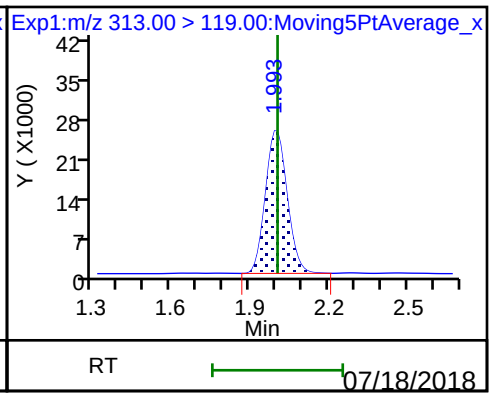
D 7 13C2 PFHxA



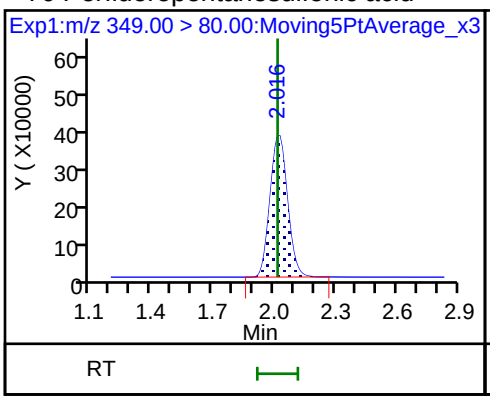
6 Perfluorohexanoic acid



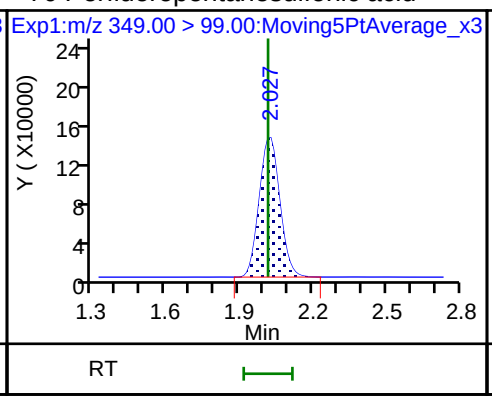
6 Perfluorohexanoic acid



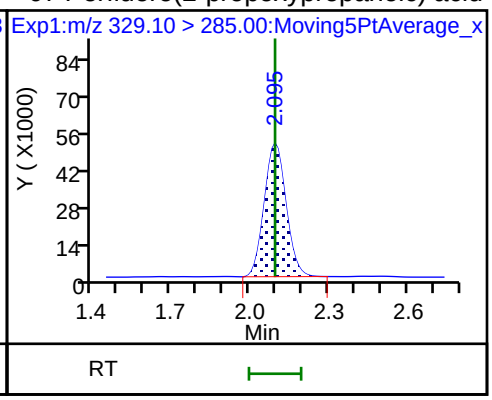
70 Perfluoropentanesulfonic acid



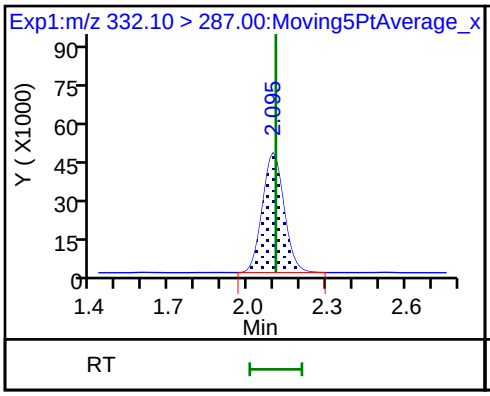
70 Perfluoropentanesulfonic acid



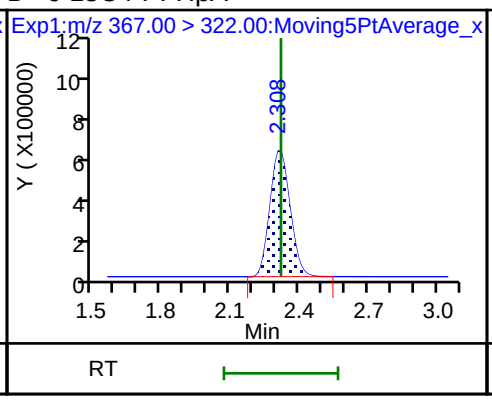
67 Perfluoro(2-propoxypropanoic) acid



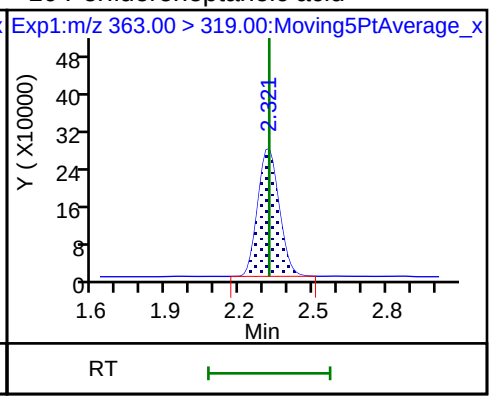
D 64 13C3 HFPO-DA



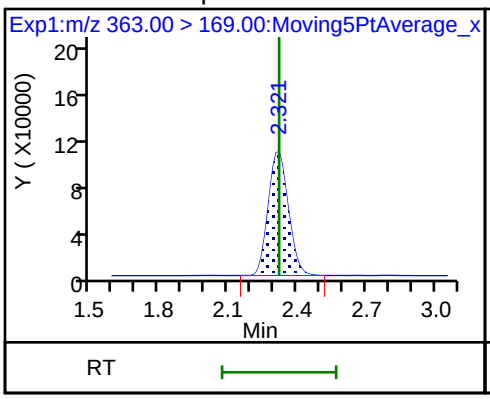
D 9 13C4-PFHpA



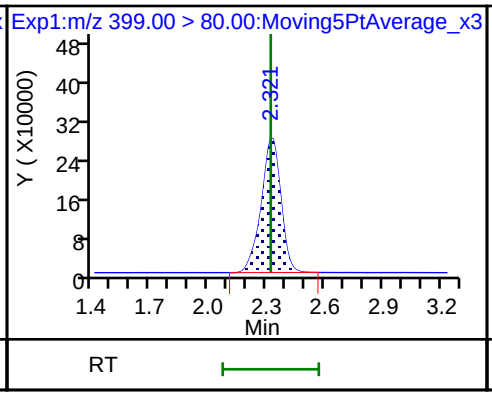
10 Perfluoroheptanoic acid



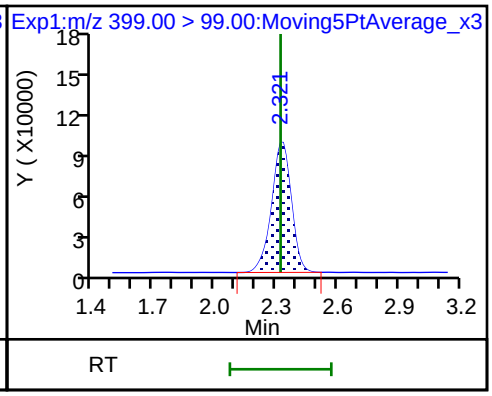
10 Perfluoroheptanoic acid



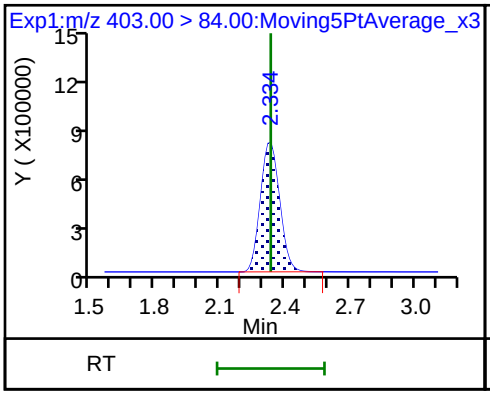
8 Perfluorohexanesulfonic acid



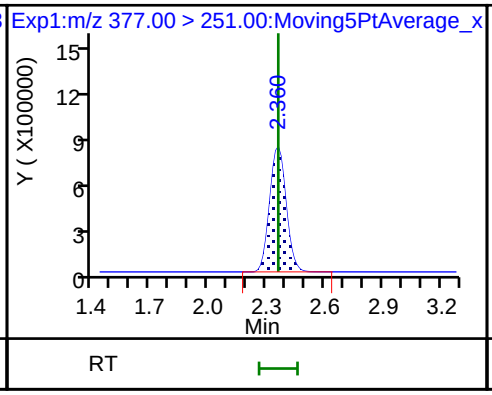
8 Perfluorohexanesulfonic acid



D 11 18O2 PFHxS



65 Adona



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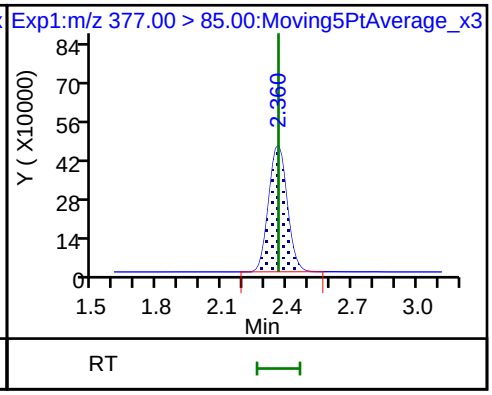
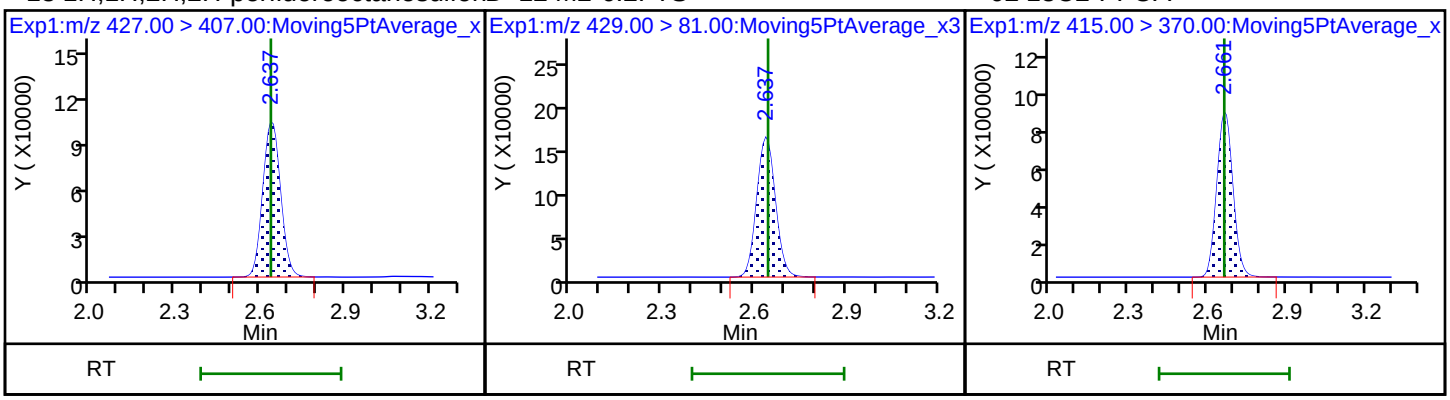
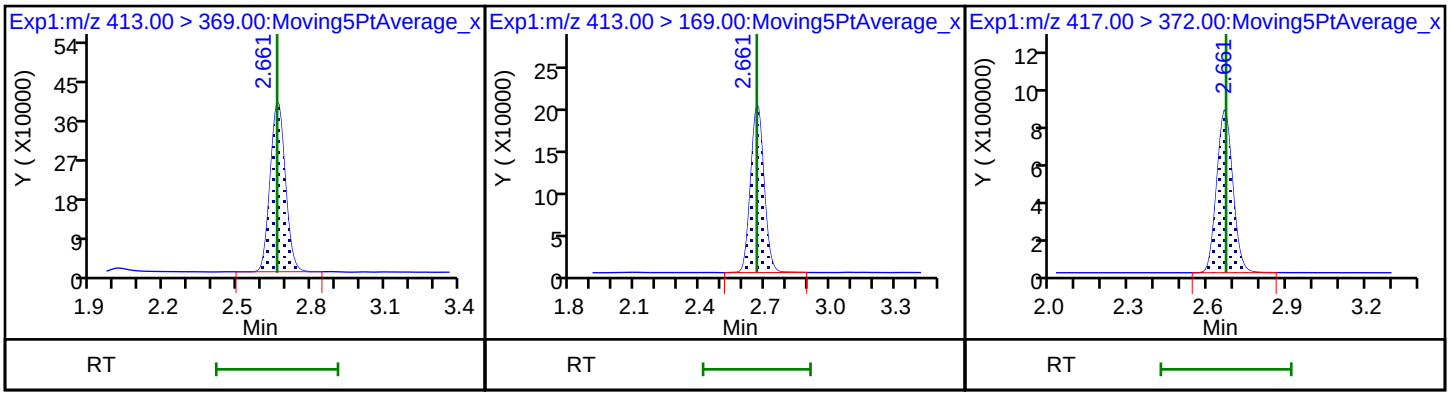


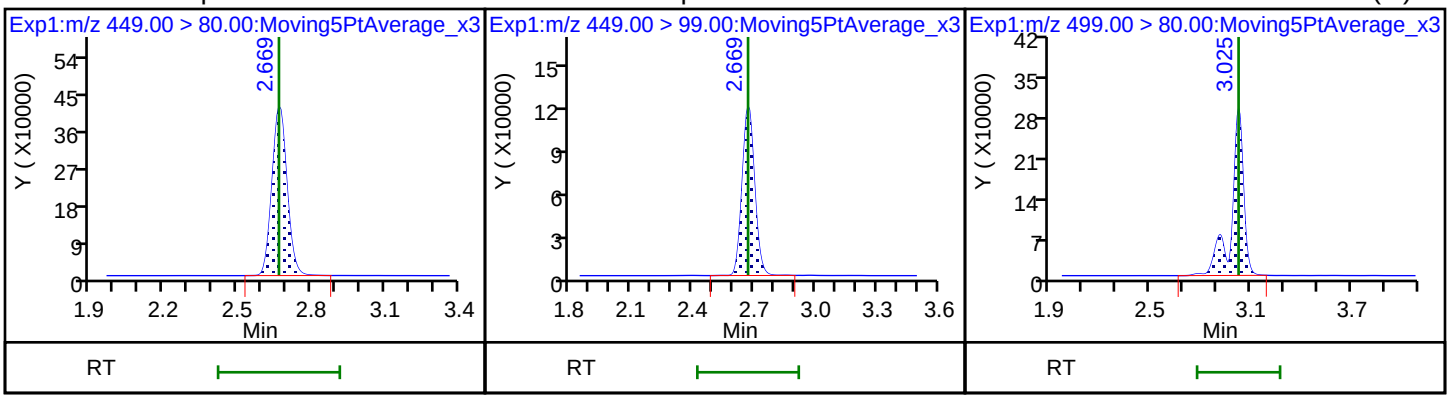
13 1H,1H,2H,2H-perfluorooctanesulfonD 12 M2-6:2FTS * 62 13C2-PFOA



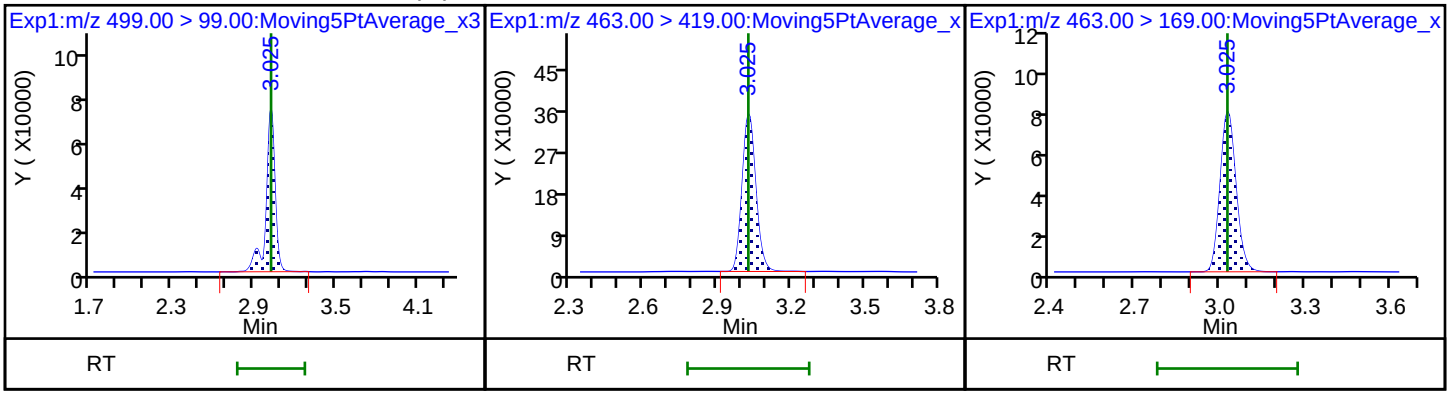
15 Perfluorooctanoic acid 15 Perfluorooctanoic acid D 14 13C4 PFOA



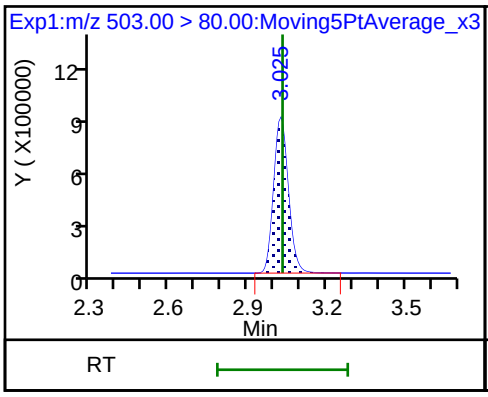
16 Perfluoroheptanesulfonic acid 16 Perfluoroheptanesulfonic acid 17 Perfluorooctane sulfonic acid (M)



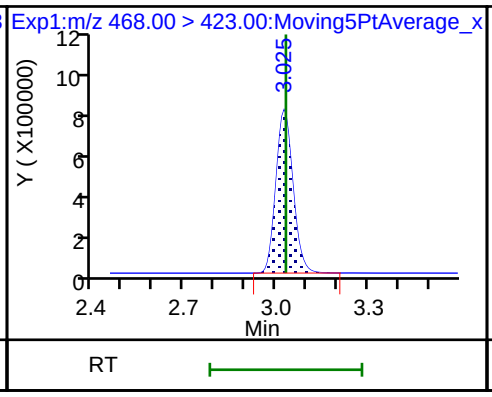
17 Perfluorooctane sulfonic acid (M) 20 Perfluorononanoic acid 20 Perfluorononanoic acid



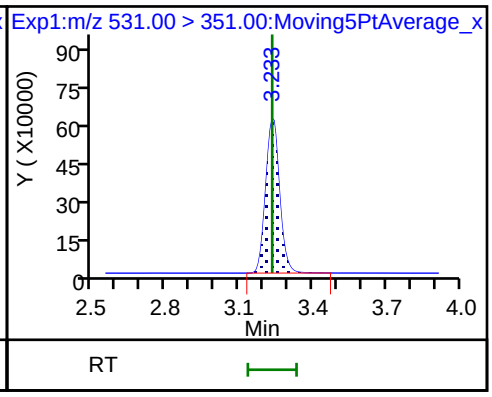
D 18 13C4 PFOS



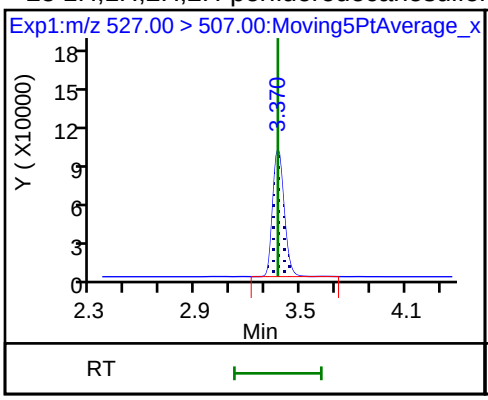
D 19 13C5 PFNA



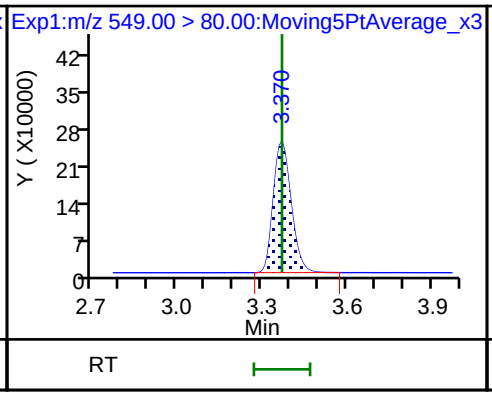
69 9-Chlorohexadecafluoro-3-oxanonane



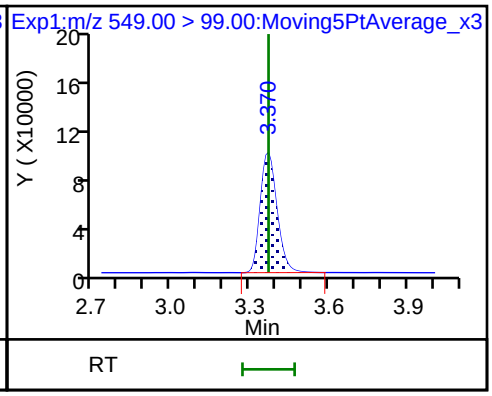
25 1H,1H,2H,2H-perfluorodecanesulfoni



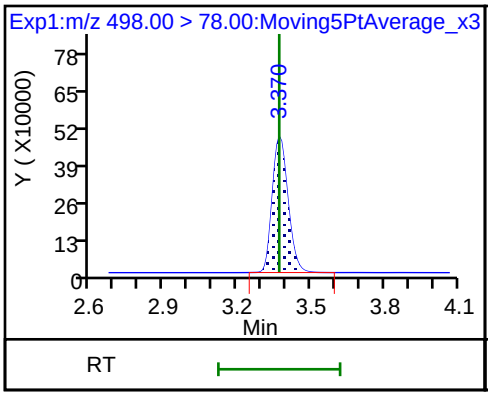
68 Perfluorononanesulfonic acid



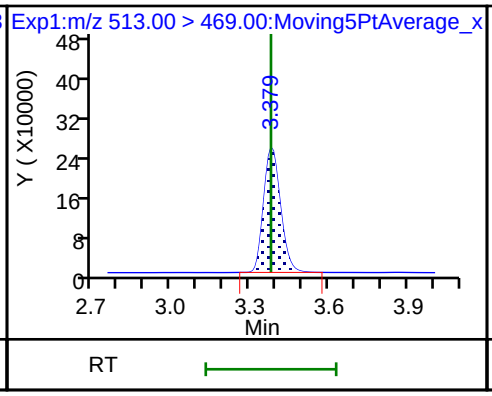
68 Perfluorononanesulfonic acid



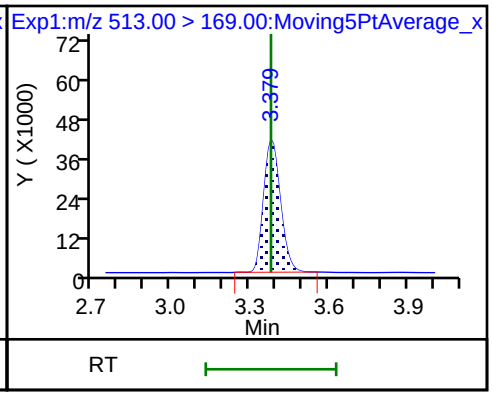
22 Perfluorooctane Sulfonamide



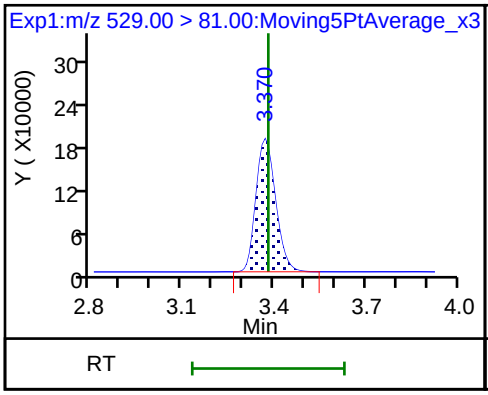
24 Perfluorodecanoic acid



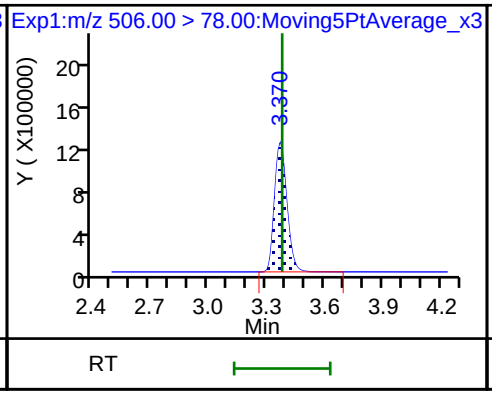
24 Perfluorodecanoic acid



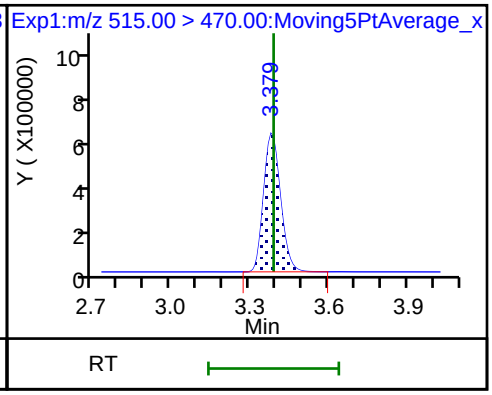
D 26 M2-8:2FTS



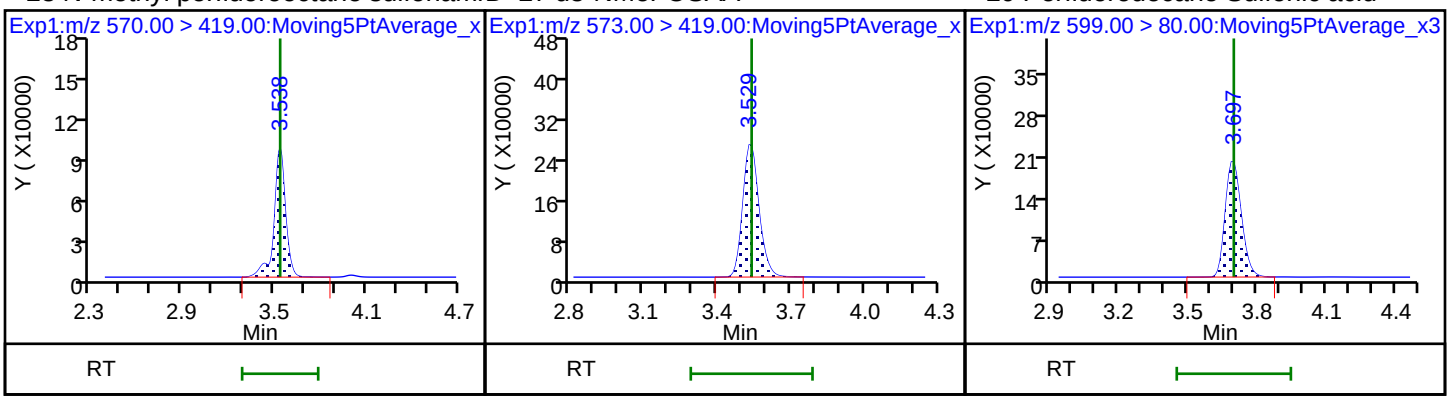
D 21 13C8 FOSA



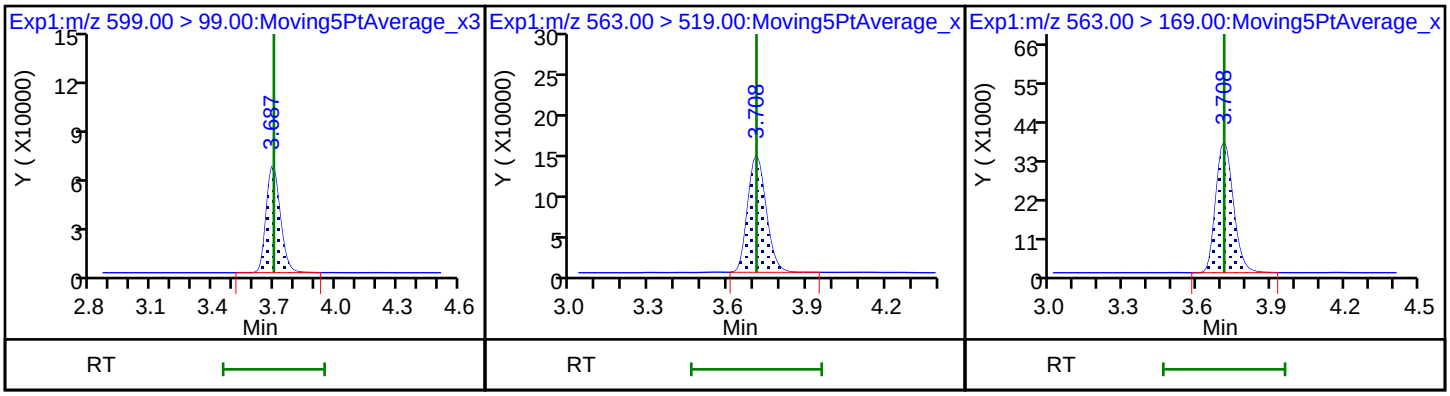
D 23 13C2 PFDA



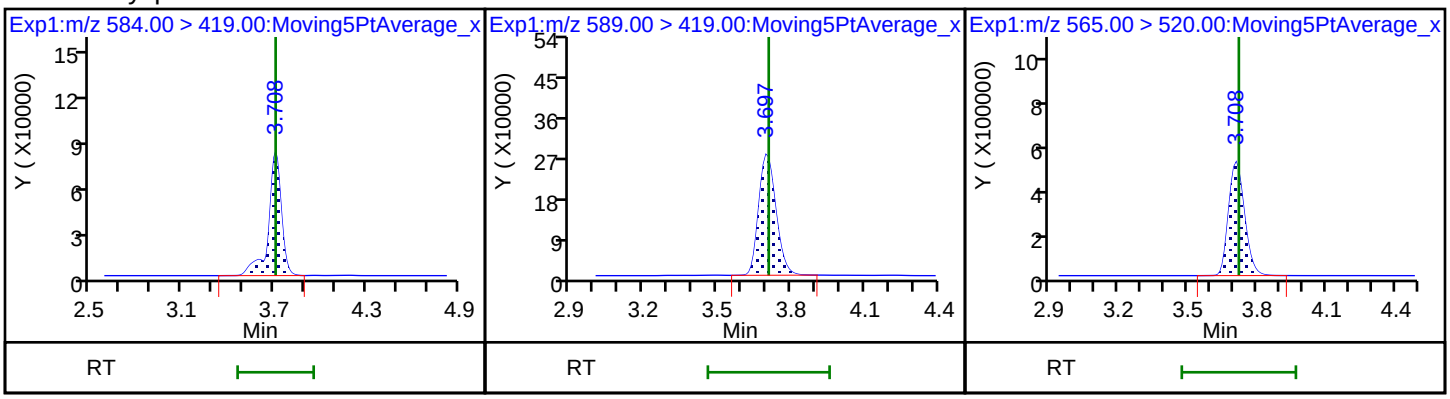
28 N-methyl perfluorooctane sulfonami D 27 d3-NMeFOSAA 29 Perfluorodecane Sulfonic acid



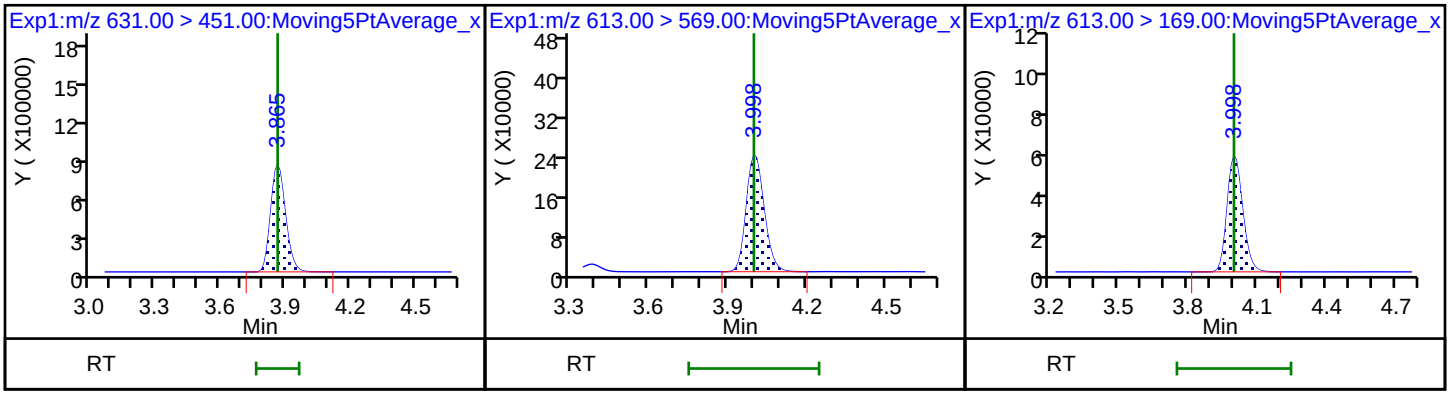
29 Perfluorodecane Sulfonic acid 31 Perfluoroundecanoic acid 31 Perfluoroundecanoic acid



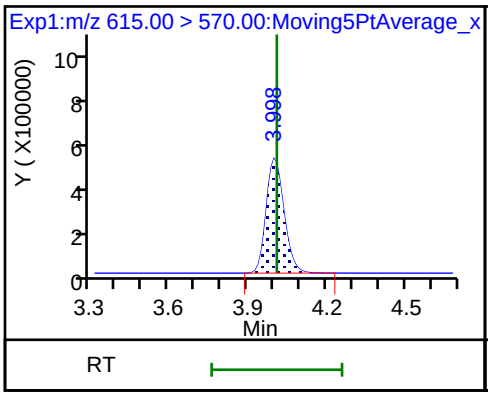
33 N-ethyl perfluorooctane sulfonamid D 32 d5-NEtFOSAA D 30 13C2 PFUnA



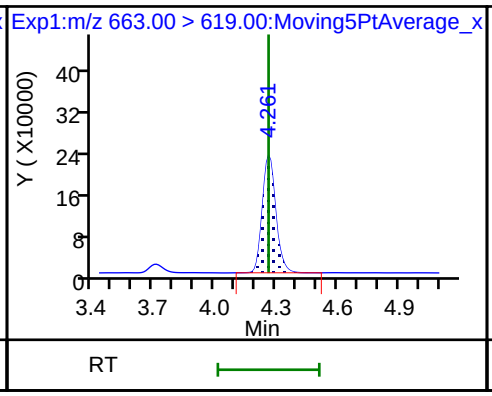
66 11-Chloroeicosafluoro-3-oxaundecan 37 Perfluorododecanoic acid 37 Perfluorododecanoic acid



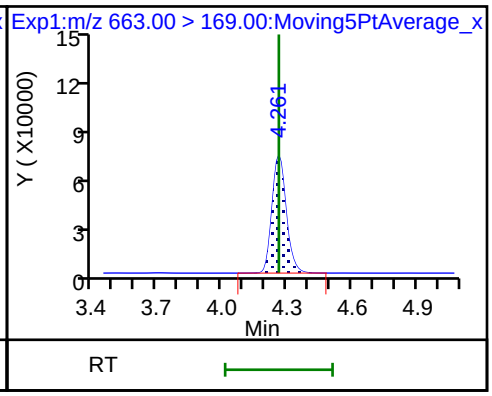
D 36 13C2 PFDoA



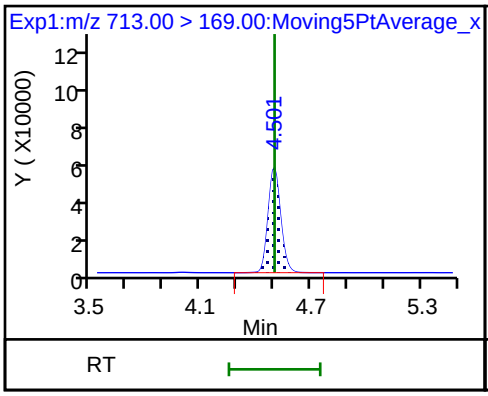
41 Perfluorotridecanoic acid



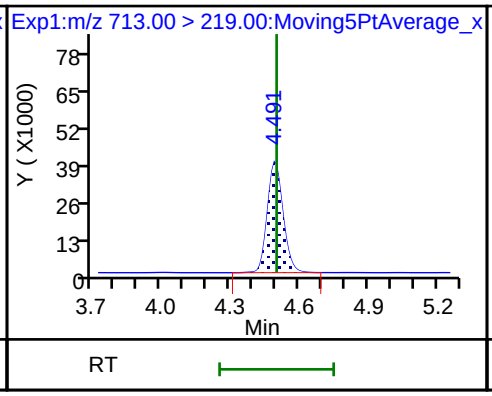
41 Perfluorotridecanoic acid



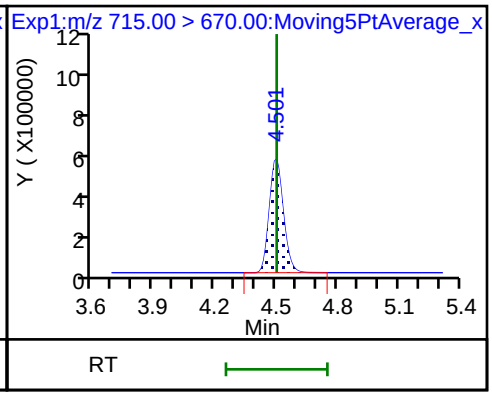
42 Perfluorotetradecanoic acid



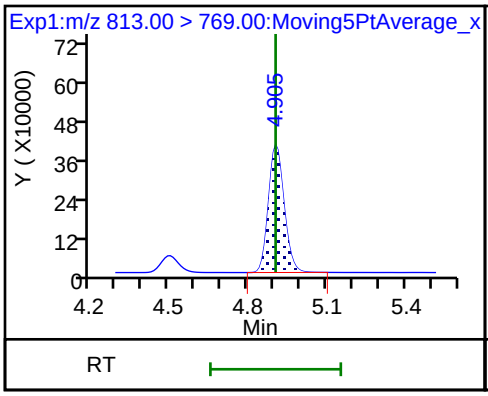
42 Perfluorotetradecanoic acid



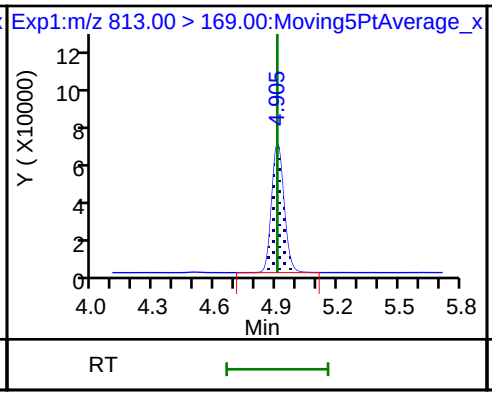
D 43 13C2-PFTeDA



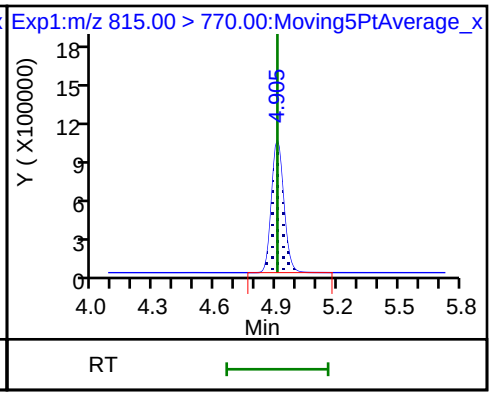
45 Perfluorohexadecanoic acid



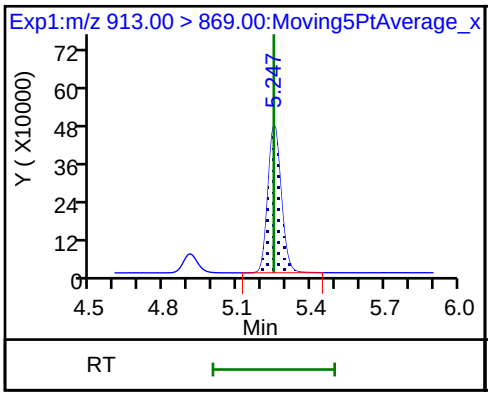
45 Perfluorohexadecanoic acid



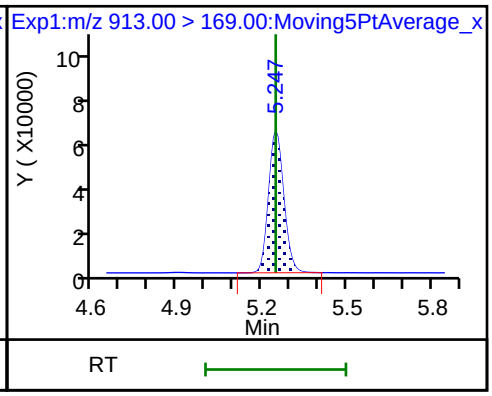
D 44 13C2-PFHxDA



46 Perfluorooctadecanoic acid



46 Perfluorooctadecanoic acid



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

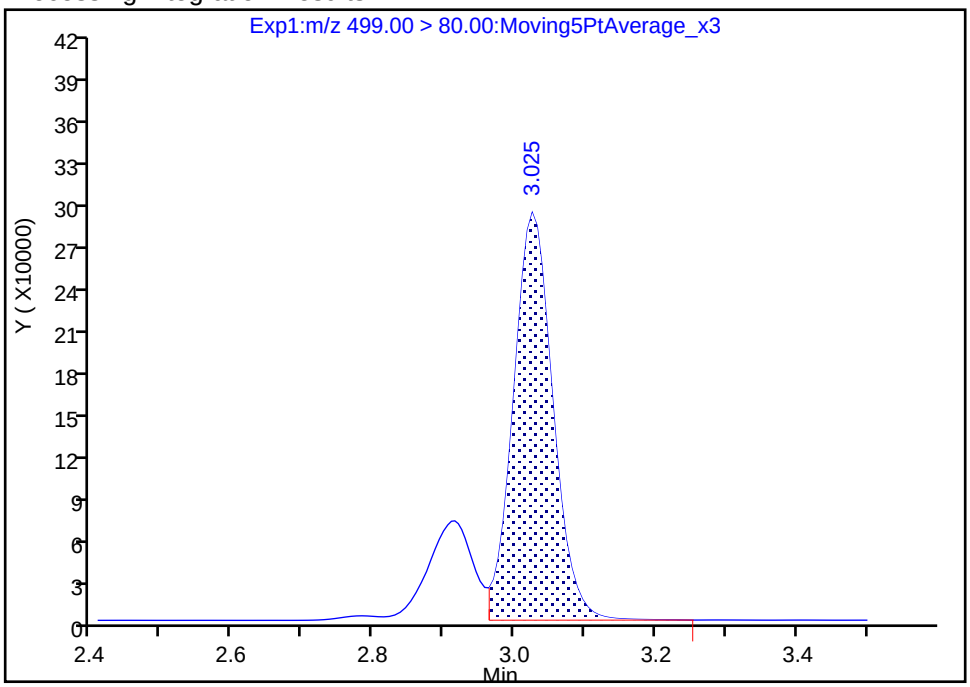
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61058.b\2018.07.13LLB_018.d				
Injection Date:	13-Jul-2018 23:07:14	Instrument ID:	A8_N		
Lims ID:	CCV L4				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	28	Worklist Smp#:	3
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

17 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

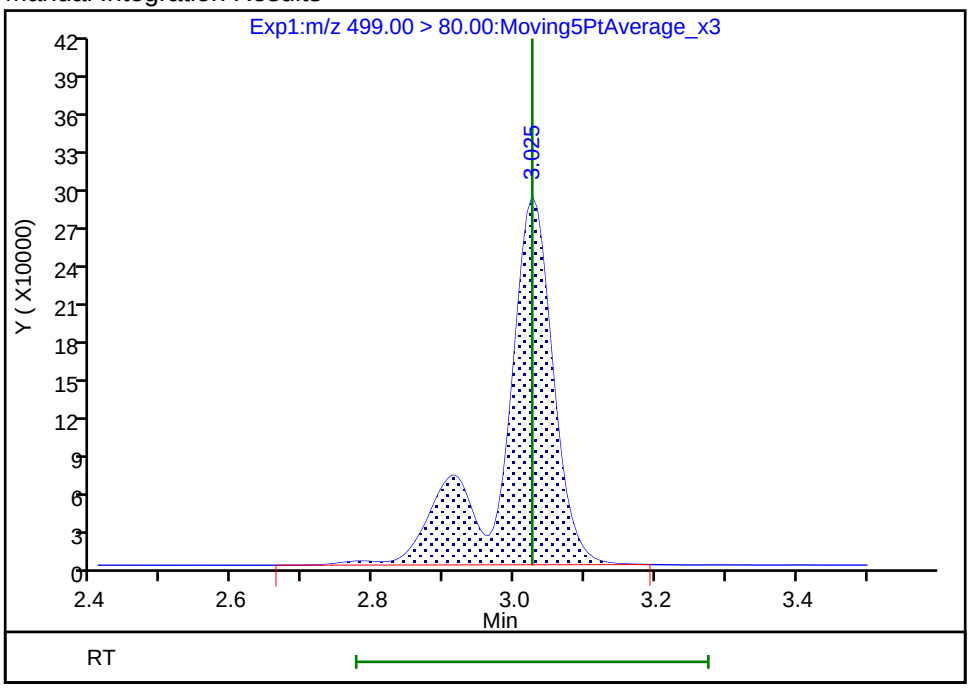
Processing Integration Results

RT: 3.03
Area: 1113283
Amount: 0.696093
Amount Units: ng/ml



Manual Integration Results

RT: 3.03
Area: 1429389
Amount: 0.893742
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 12:50:57

Audit Action: Manually Integrated Audit Reason: Isomers

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

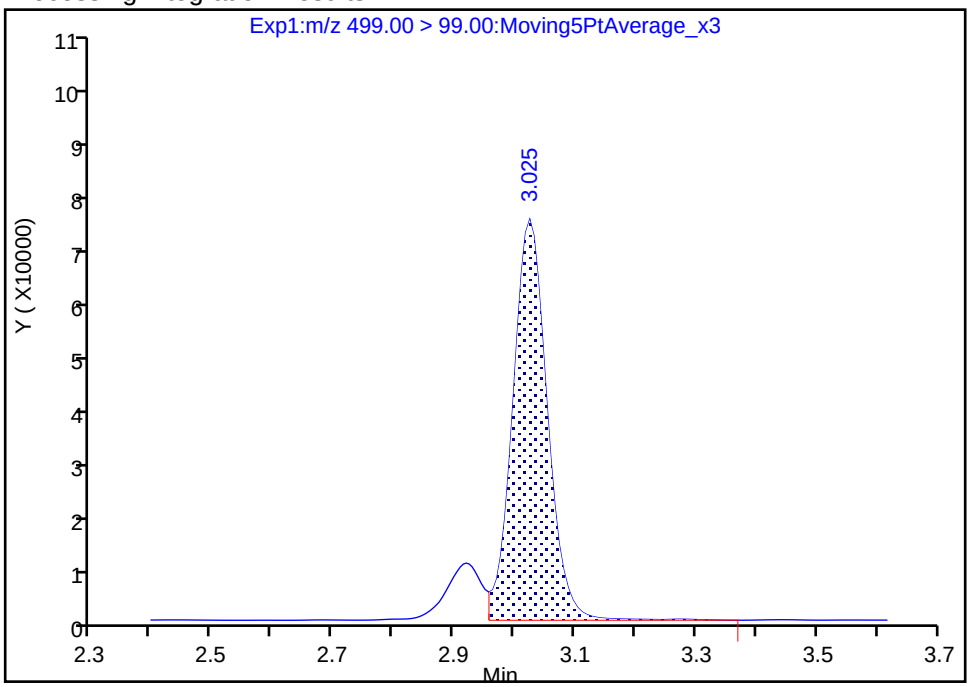
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61058.b\2018.07.13LLB_018.d				
Injection Date:	13-Jul-2018 23:07:14	Instrument ID:	A8_N		
Lims ID:	CCV L4				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	28	Worklist Smp#:	3
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

17 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 2

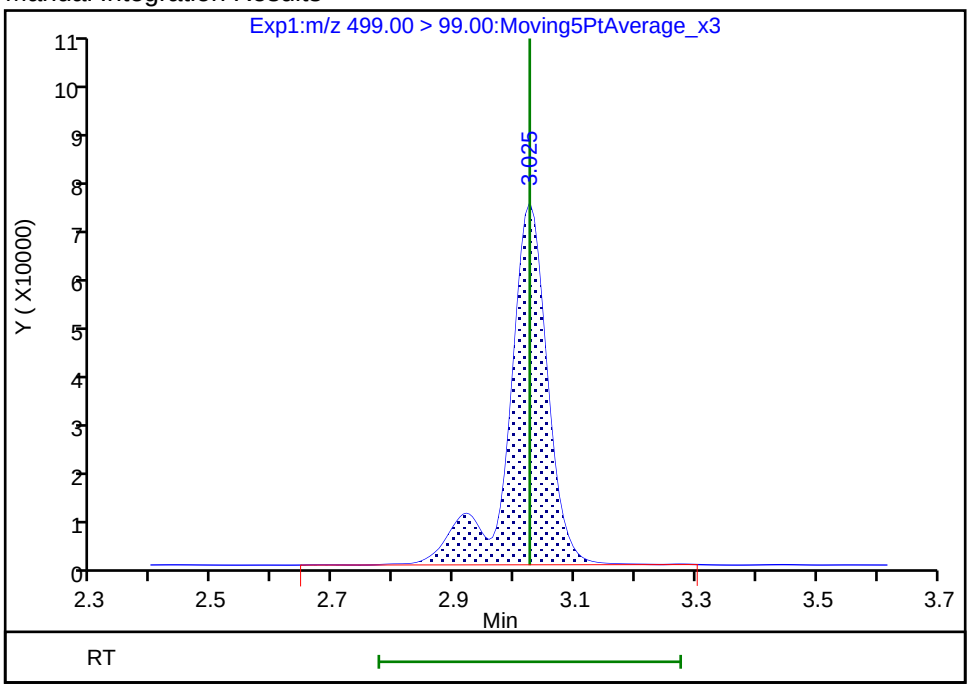
Processing Integration Results

RT: 3.03
Area: 291843
Amount: 0.696093
Amount Units: ng/ml



Manual Integration Results

RT: 3.03
Area: 332154
Amount: 0.893742
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 12:50:59
Audit Action: Manually Integrated Audit Reason: Isomers

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Lab Sample ID: CCV 320-233997/1 Calibration Date: 07/14/2018 03:33

Instrument ID: A8_N Calib Start Date: 07/11/2018 14:48

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 07/11/2018 15:38

Lab File ID: 2018.07.13LLB_052.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.9856	1.000		2.54	2.50	1.4	40.0
Perfluoropentanoic acid (PFPeA)	AveID	1.213	1.173		2.42	2.50	-3.3	40.0
Perfluorobutanesulfonic acid (PFBS)	AveID	76.50	80.20		2.32	2.21	4.8	50.0
4:2 FTS	AveID	13.00	12.69		2.28	2.34	-2.4	50.0
Perfluorohexanoic acid (PFHxA)	AveID	1.029	1.052		2.56	2.50	2.2	40.0
Perfluoropentanesulfonic acid (PFPeS)	AveID	69.78	72.49		2.44	2.35	3.9	50.0
HFPO-DA (GenX)	AveID	2.654	2.520		2.37	2.50	-5.0	40.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.157	1.097		2.37	2.50	-5.2	40.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.148	1.120		2.22	2.28	-2.4	40.0
ADONA	AveID	3.219	3.554		2.60	2.36	10.4	50.0
6:2 FTS	AveID	1.564	1.795		2.72	2.37	14.8	40.0
Perfluorooctanoic acid (PFOA)	AveID	1.232	1.185		2.41	2.50	-3.8	40.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.318	1.408		2.54	2.38	6.8	50.0
Perfluorononanoic acid (PFNA)	AveID	1.109	1.097		2.47	2.50	-1.1	40.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.133	1.153		2.36	2.32	1.7	40.0
9-Chlorohexadecafluoro-3-oxa nonane-1-sulfonate	AveID	1.836	1.948		2.47	2.33	6.1	50.0
Perfluorononanesulfonic acid (PFNS)	AveID	0.7752	0.8195		2.54	2.40	5.7	50.0
8:2 FTS	AveID	1.290	1.360		2.53	2.40	5.5	40.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9856	1.046		2.65	2.50	6.2	40.0
Perfluorodecanoic acid (PFDA)	AveID	1.049	1.063		2.53	2.50	1.3	40.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	0.9858	0.9841		2.50	2.50	-0.2	40.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6714	0.7040		2.53	2.41	4.9	50.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.8840	0.8448		2.39	2.50	-4.4	40.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.8195	0.8242		2.51	2.50	0.6	40.0
11-Chloroeicosafluoro-3-oxau ndecane-1-sulfonate	AveID	2.654	2.899		2.57	2.36	9.3	50.0
Perfluorododecanoic acid (PFDoA)	AveID	1.092	1.118		2.56	2.50	2.4	40.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.068	1.102		2.58	2.50	3.2	50.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2602	0.2670		2.57	2.50	2.6	50.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		0.9515		2.48	2.50	-0.7	50.0

FORM VII 537 (modified)

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Lab Sample ID: CCV 320-233997/1 Calibration Date: 07/14/2018 03:33

Instrument ID: A8_N Calib Start Date: 07/11/2018 14:48

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 07/11/2018 15:38

Lab File ID: 2018.07.13LLB_052.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.143	1.158		2.53	2.50	1.4	50.0
13C4 PFBA	Ave	1.356	1.310		2.42	2.50	-3.3	50.0
13C5 PFPeA	Ave	0.9425	0.9467		2.51	2.50	0.4	50.0
13C3-PFBS	Ave	0.0237	0.0234		2.30	2.33	-1.3	50.0
M2-4:2FTS	Ave	0.1273	0.1189		2.18	2.34	-6.6	50.0
13C2 PFHxA	Ave	1.017	1.051		2.58	2.50	3.4	50.0
13C3 HFPO-DA	Ave	0.0724	0.0830		2.87	2.50	14.6	50.0
13C4-PFHpA	Ave	0.9371	0.9907		2.64	2.50	5.7	50.0
18O2 PFHxS	Ave	1.328	1.292		2.30	2.37	-2.7	50.0
M2-6:2FTS	Ave	0.2009	0.1747		2.07	2.38	-13.1	40.0
13C4 PFOA	Ave	0.9560	0.9769		2.55	2.50	2.2	50.0
13C4 PFOS	Ave	0.9742	0.9515		2.33	2.39	-2.3	50.0
13C5 PFNA	Ave	0.8546	0.7912		2.31	2.50	-7.4	50.0
13C8 FOSA	Ave	1.405	1.372		2.44	2.50	-2.3	50.0
M2-8:2FTS	Ave	0.2939	0.2227		1.81	2.40	-24.2	40.0
13C2 PFDA	Ave	0.7503	0.7176		2.39	2.50	-4.4	50.0
d3-NMeFOSAA	Ave	0.3075	0.3467		2.82	2.50	12.7	50.0
13C2 PFUnA	Ave	0.6266	0.6232		2.49	2.50	-0.5	50.0
d5-NEtFOSAA	Ave	0.3150	0.3495		2.77	2.50	11.0	50.0
13C2 PFDoA	Ave	0.6496	0.6560		2.52	2.50	1.0	50.0
13C2-PFTeDA	Ave	0.6740	0.7010		2.60	2.50	4.0	50.0
13C2-PFHxDA	Ave	1.074	1.182		2.75	2.50	10.1	50.0

FORM VII 537 (modified)

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\2018.07.13LLB_052.d
Lims ID: CCV L5
Client ID:
Sample Type: CCV
Inject. Date: 14-Jul-2018 03:33:38 ALS Bottle#: 29 Worklist Smp#: 1
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV L5
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-A8_N*sub32

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 16-Jul-2018 14:10:54 Calib Date: 11-Jul-2018 15:38:42
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK023

First Level Reviewer: mongkols Date: 16-Jul-2018 14:10:54

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.444	1.441	0.003	0.540	5048934	2.42		96.7	25508	
2 Perfluorobutyric acid										
212.90 > 169.00	1.444	1.444	0.0	1.000	5047536	2.54		101	2899	
D 3 13C5-PFPeA										
267.90 > 223.00	1.725	1.720	0.005	0.645	3647404	2.51		100	48090	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.725	1.725	0.0	1.000	4279991	2.42		96.7	2456	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.761	1.761	0.0	1.000	6387403	2.32		105	38598	
298.90 > 99.00	1.761	1.761	0.0	1.000	2583642		2.47(1.25-3.74)		25825	
D 47 13C3-PFBS										
301.90 > 83.00	1.761	1.765	-0.004	0.659	83784	2.30		98.7	541	
61 1H,1H,2H,2H-perfluorohexanesulfoni										
327.00 > 307.00	1.967	1.967	0.0	1.116	1067599	2.28		97.6	47260	
D 60 M2-4:2FTS										
329.00 > 81.00	1.967	1.970	-0.003	0.736	427692	2.18		93.4	5828	
6 Perfluorohexanoic acid										
313.00 > 269.00	2.011	2.011	0.0	1.000	4263371	2.56		102	11044	
313.00 > 119.00	2.011	2.011	0.0	1.000	371107		11.49(5.03-15.10)		6442	
D 7 13C2 PFHxA										
315.00 > 270.00	2.011	2.003	0.008	0.752	4050954	2.58		103	78720	
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.033	2.033	0.0	1.154	6125362	2.44		104	75496	
349.00 > 99.00	2.033	2.033	0.0	1.154	2231608		2.74(1.36-4.07)		29595	
67 Perfluoro(2-propoxypropanoic) acid										
329.10 > 285.00	2.101	2.101	0.0	1.000	805436	2.37		95.0	6783	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.101	2.105	-0.004	0.786	319581	2.87		115	6311	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.329	2.329	0.0	1.000	4187091	2.37		94.8	8567	
363.00 > 169.00	2.316	2.329	-0.013	0.994	1683990		2.49(1.13-3.40)		13969	
D 9 13C4-PFHpA										
367.00 > 322.00	2.329	2.319	0.010	0.871	3816757	2.64		106	45066	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.329	2.329	0.0	0.994	5076474	2.22		97.6	22754	
399.00 > 99.00	2.342	2.329	0.013	1.000	1715510		2.96(1.50-4.49)		10288	
D 11 18O2 PFHxS										
403.00 > 84.00	2.342	2.332	0.010	0.876	4709804	2.30		97.3	34340	
65 Adona										
377.00 > 251.00	2.368	2.368	0.0	0.781	12273315	2.60		110	62280	
377.00 > 85.00	2.368	2.368	0.0	0.781	7471345		1.64(0.84-2.53)		43261	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.651	2.651	0.0	1.000	1145318	2.72		115	9434	
D 12 M2-6:2FTS										
429.00 > 81.00	2.651	2.644	0.007	0.992	639343	2.07		86.9	17016	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.673	2.673	0.0	1.000	4463539	2.41		96.2	2807	
413.00 > 169.00	2.673	2.673	0.0	1.000	2212737		2.02(0.84-2.52)		13500	
* 62 13C2-PFOA										
415.00 > 370.00	2.673	2.673	0.0		3852715	2.50			36821	
D 14 13C4 PFOA										
417.00 > 372.00	2.673	2.667	0.006	1.000	3763722	2.55		102	45009	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.681	2.681	0.0	0.884	4912555	2.54		107	39542	
449.00 > 99.00	2.681	2.681	0.0	0.884	1211200		4.06(1.94-5.82)		20511	
D 18 13C4 PFOS										
503.00 > 80.00	3.033	3.027	0.006	1.135	3504460	2.33		97.7	23553	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.033	3.033	0.0	1.000	3921441	2.36		102	28116	
499.00 > 99.00	3.033	3.033	0.0	1.000	892535		4.39(2.31-6.93)		11237	
20 Perfluorononanoic acid										
463.00 > 419.00	3.033	3.033	0.0	1.000	3344618	2.47		98.9	6197	
463.00 > 169.00	3.033	3.033	0.0	1.000	820959		4.07(1.90-5.69)		26613	
D 19 13C5 PFNA										
468.00 > 423.00	3.033	3.034	-0.001	1.135	3048247	2.31		92.6	37607	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.241	3.241	0.0	1.069	6654095	2.47		106	51133	
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.371	3.371	0.0	1.111	2883827	2.54		106	50384	
549.00 > 99.00	3.371	3.371	0.0	1.111	1061007		2.72(1.33-3.97)		13340	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.380	3.380	0.0	1.000	5530013	2.65		106	44508	
25 1H,1H,2H,2H-perfluorodecanesulfoni										
527.00 > 507.00	3.380	3.380	0.0	1.000	1118071	2.53		105	16736	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 21 13C8 FOSA										
506.00 > 78.00	3.380	3.379	0.001	1.264	5285374	2.44		97.7	41009	
D 26 M2-8:2FTS										
529.00 > 81.00	3.380	3.379	0.001	1.264	821837	1.81		75.8	15329	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.389	3.389	0.0	1.000	2938424	2.53		101	20030	
513.00 > 169.00	3.389	3.389	0.0	1.000	520047		5.65(2.36-7.09)		11631	
D 23 13C2 PFDA										
515.00 > 470.00	3.389	3.389	0.0	1.268	2764871	2.39		95.6	22947	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.538	3.538	0.0	1.324	1335719	2.82		113	29489	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.548	3.548	0.0	1.003	1314535	2.50		99.8	9362	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.698	3.698	0.0	1.219	2487799	2.53		105	86615	
599.00 > 99.00	3.698	3.698	0.0	1.219	879955		2.83(1.39-4.16)		20474	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.709	3.708	0.001	1.387	1346663	2.77		111	4402	
D 30 13C2 PFUnA										
565.00 > 520.00	3.709	3.708	0.001	1.387	2400983	2.49		99.5	37859	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.709	3.709	0.0	1.000	1978952	2.51		101	7969	
563.00 > 169.00	3.709	3.709	0.0	1.000	500342		3.96(2.12-6.36)		20669	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.709	3.709	0.0	1.000	1137678	2.39		95.6	17574	
66 11-Chloroeicosafluoro-3-oxaundecan										
631.00 > 451.00	3.866	3.866	0.0	1.275	10011538	2.57		109	65393	
D 36 13C2 PFDoA										
615.00 > 570.00	3.999	3.999	0.0	1.496	2527340	2.52		101	18259	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.010	4.010	0.0	1.003	2824636	2.56		102	1900	
613.00 > 169.00	4.010	4.010	0.0	1.003	680523		4.15(2.13-6.40)		15816	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.263	4.263	0.0	1.066	2784742	2.58		103	1389	
663.00 > 169.00	4.263	4.263	0.0	1.066	851664		3.27(1.25-3.76)		10403	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.502	4.502	0.0	1.000	721017	2.57		103	8999	
713.00 > 219.00	4.492	4.502	-0.010	0.998	512829		1.41(0.71-2.13)		8241	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.502	4.501	0.001	1.684	2700599	2.60		104	14729	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.906	4.905	0.001	1.835	4554082	2.75		110	13366	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.914	4.914	0.0	1.002	4333367	2.48		99.3	972	
813.00 > 169.00	4.906	4.914	-0.008	1.000	733553		5.91(2.86-8.58)		6262	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.256	5.256	0.0	1.071	5275439	2.53		101	1018	
913.00 > 169.00	5.256	5.256	0.0	1.071	635936		8.30(3.83-11.48)		6348	

Reagents:

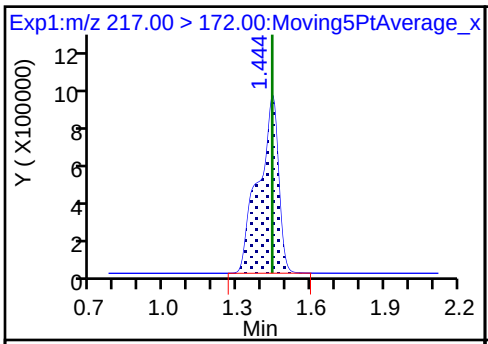
LCPFC_LL5_00005 Amount Added: 1.00 Units: mL

Report Date: 16-Jul-2018 14:10:55 Chrom Revision: 2.2 07-Jun-2018 07:41:54

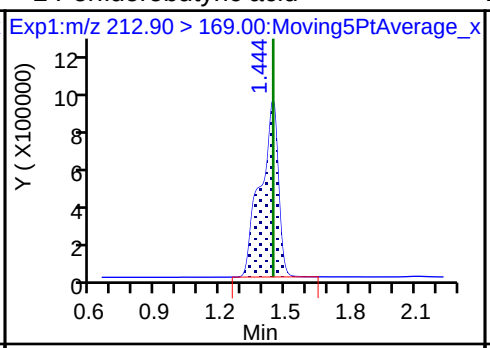
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\2018.07.13LLB_052.d
Injection Date: 14-Jul-2018 03:33:38 Instrument ID: A8_N
Lims ID: CCV L5
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 29 Worklist Smp#: 1
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC ICAL

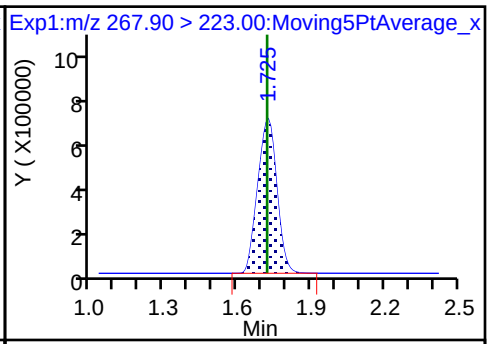
D 1 13C4 PFBA



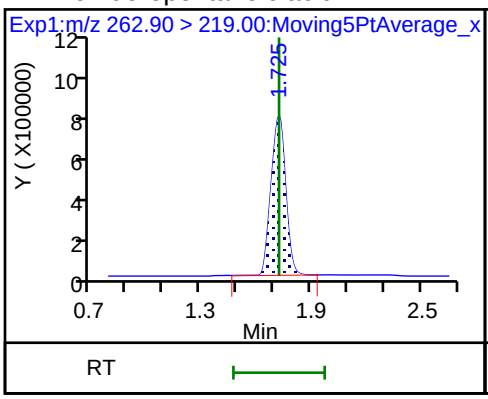
2 Perfluorobutyric acid



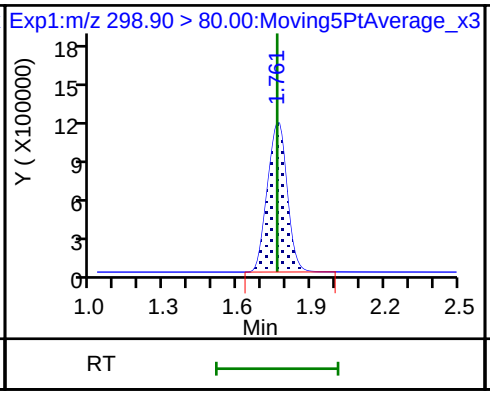
D 3 13C5-PFPeA



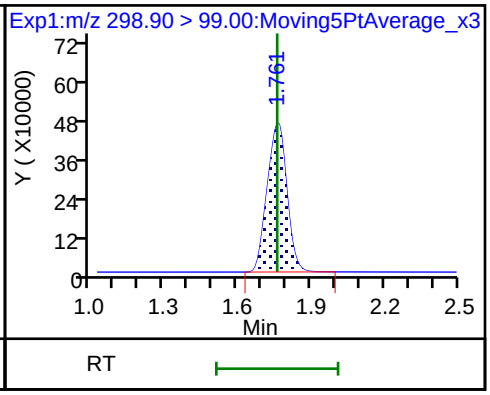
4 Perfluoropentanoic acid



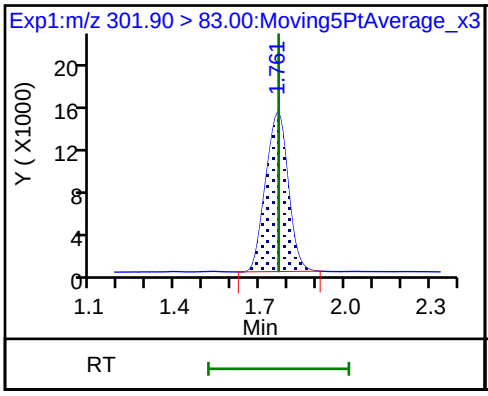
5 Perfluorobutanesulfonic acid



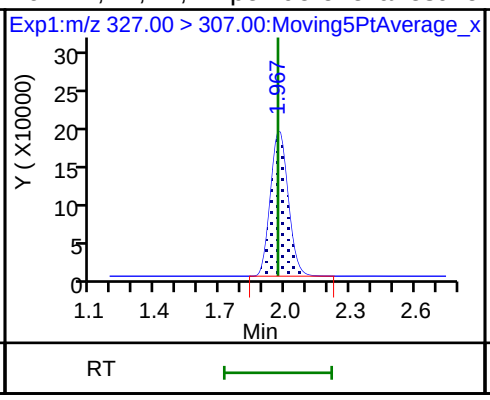
5 Perfluorobutanesulfonic acid



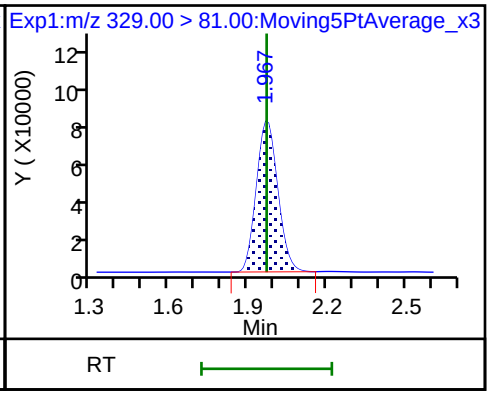
D 47 13C3-PFBS



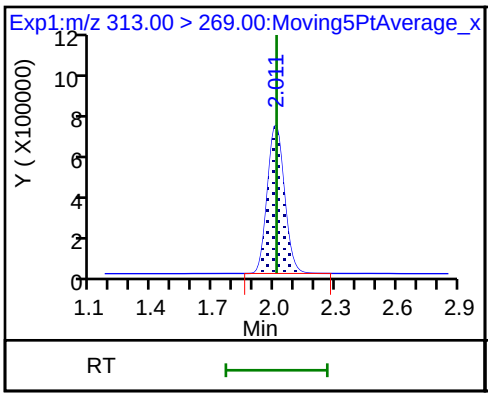
61 1H,1H,2H,2H-perfluorohexanesulfon



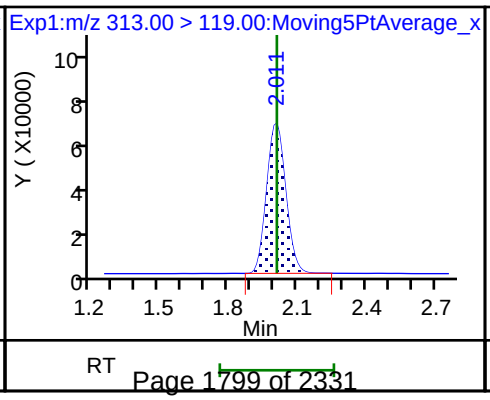
D 60 M2-4:2FTS



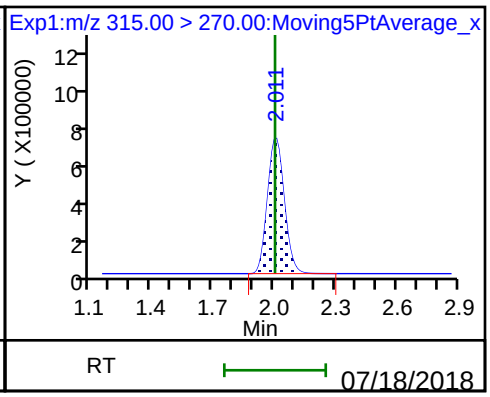
6 Perfluorohexanoic acid



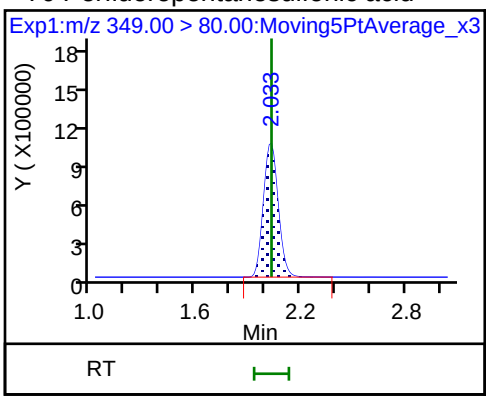
6 Perfluorohexanoic acid



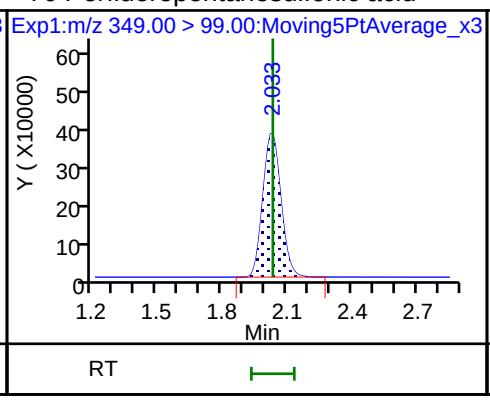
D 7 13C2 PFHxA



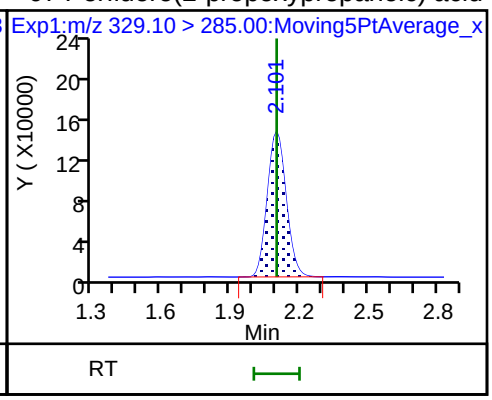
70 Perfluoropentanesulfonic acid



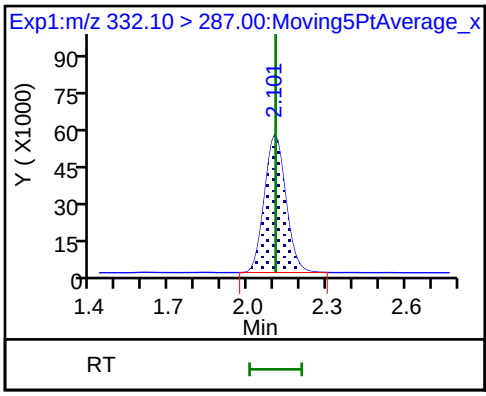
70 Perfluoropentanesulfonic acid



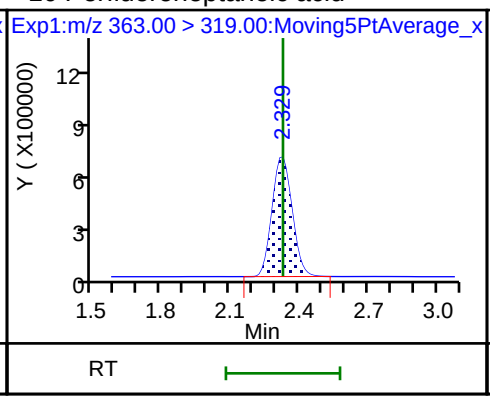
67 Perfluoro(2-propoxypropanoic) acid



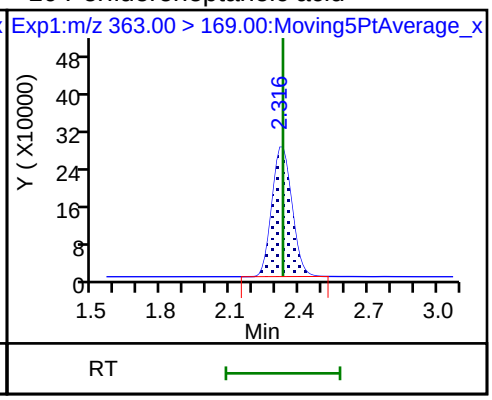
D 64 13C3 HFPO-DA



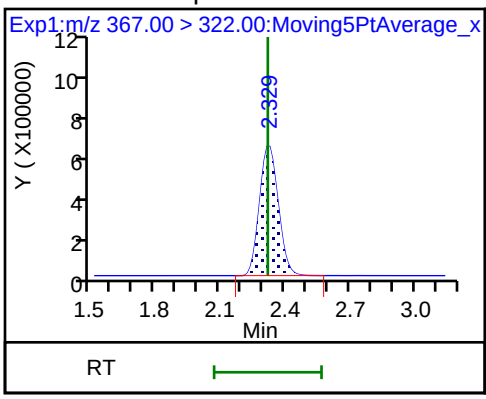
10 Perfluoroheptanoic acid



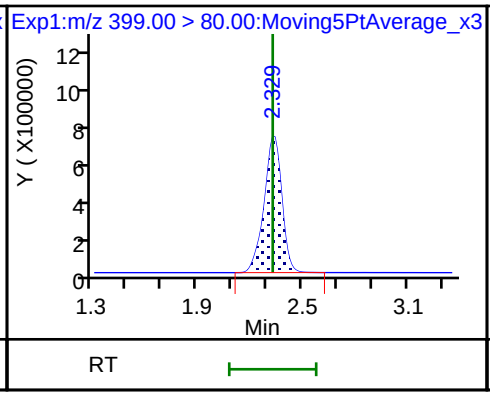
10 Perfluoroheptanoic acid



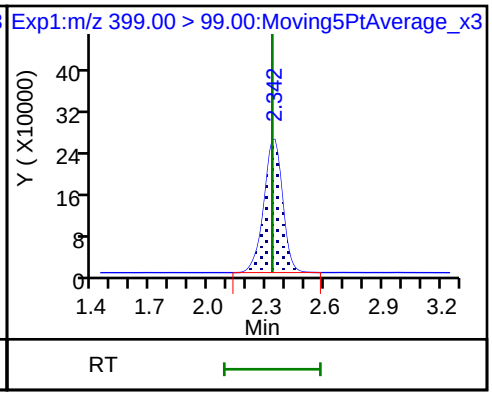
D 9 13C4-PFHpA



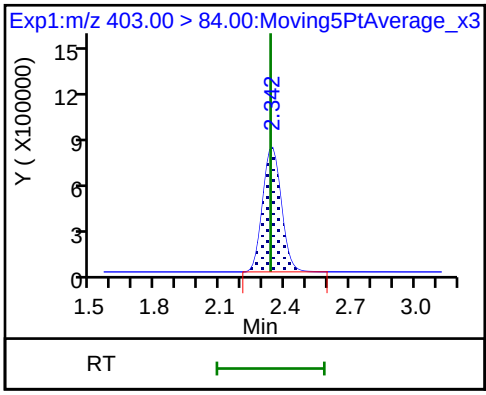
8 Perfluorohexanesulfonic acid



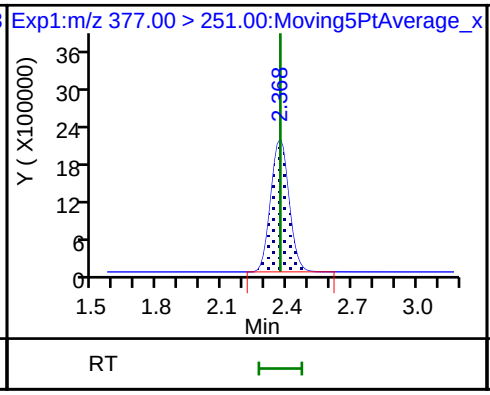
8 Perfluorohexanesulfonic acid



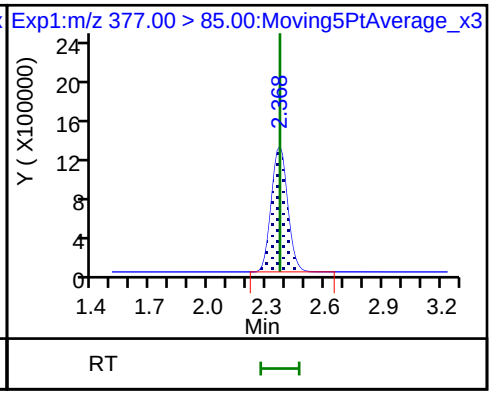
D 11 18O2 PFHxS



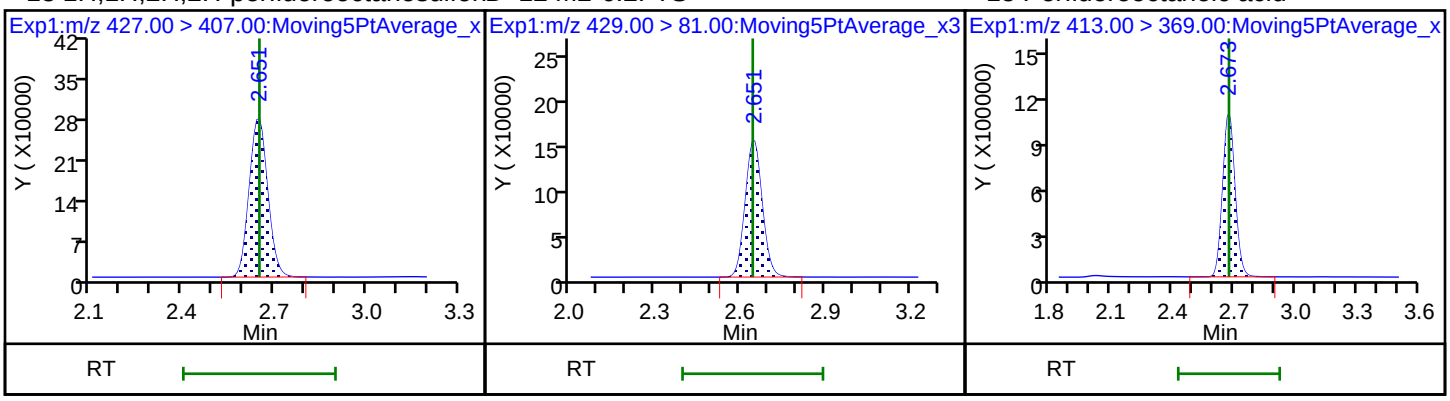
65 Adona



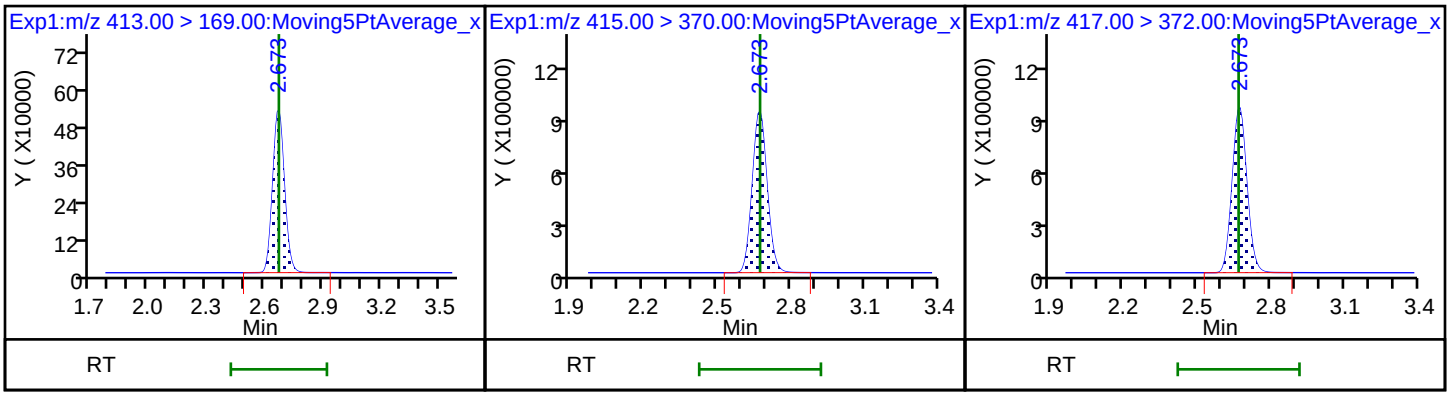
65 Adona



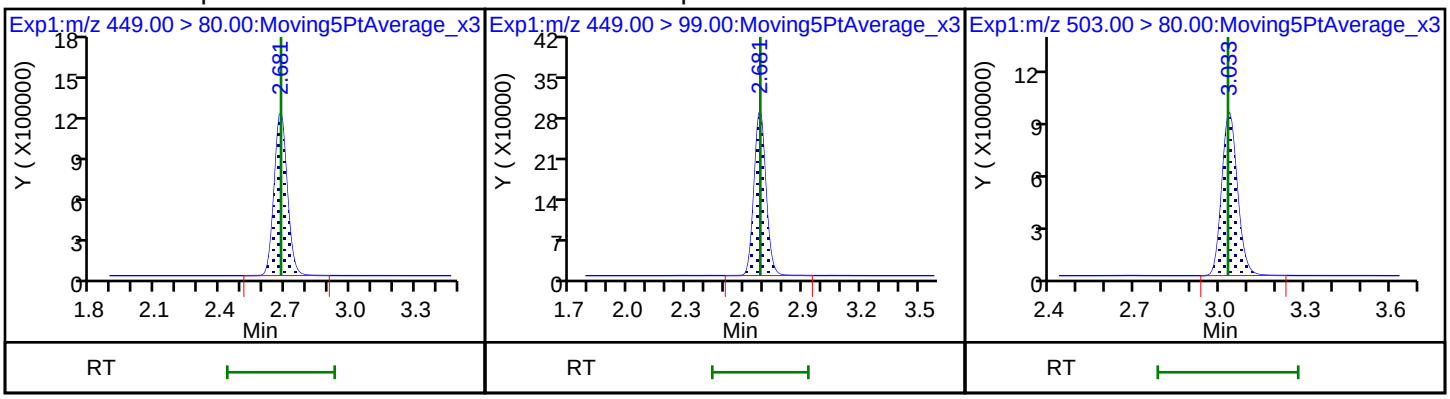
13 1H,1H,2H,2H-perfluorooctanesulfon D 12 M2-6:2FTS 15 Perfluorooctanoic acid



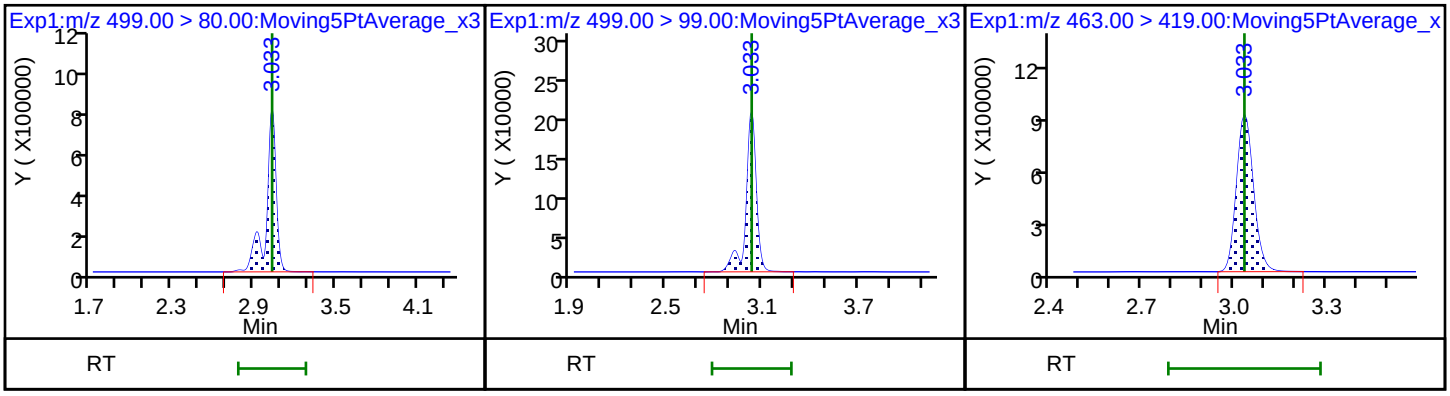
15 Perfluorooctanoic acid * 62 13C2-PFOA D 14 13C4 PFOA



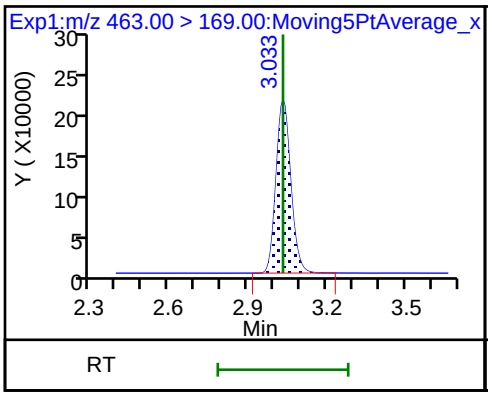
16 Perfluoroheptanesulfonic acid 16 Perfluoroheptanesulfonic acid D 18 13C4 PFOS



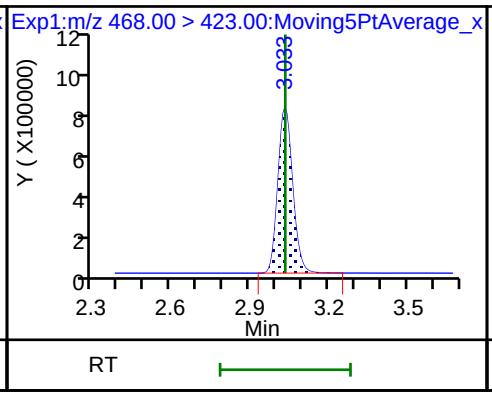
17 Perfluorooctane sulfonic acid 17 Perfluorooctane sulfonic acid 20 Perfluorononanoic acid



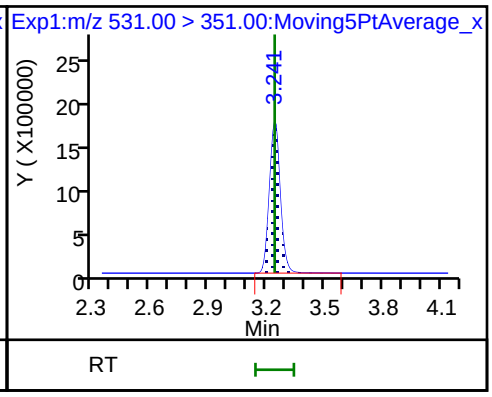
20 Perfluorononanoic acid



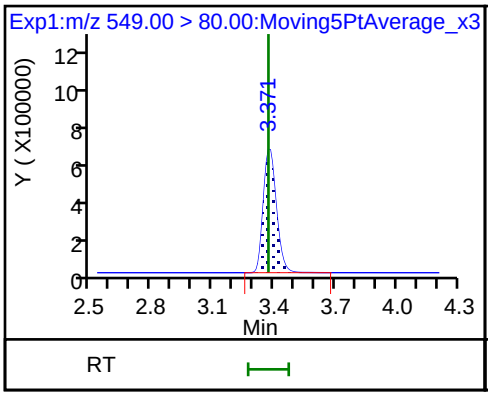
D 19 13C5 PFNA



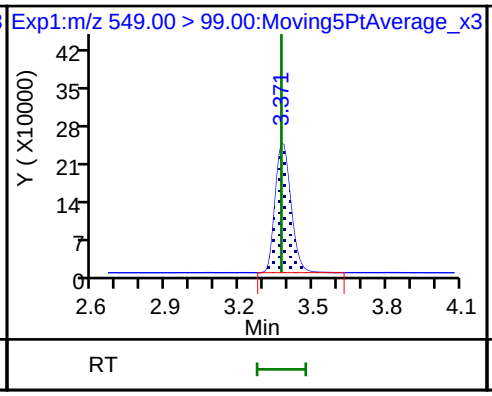
69 9-Chlorohexadecafluoro-3-oxanonane



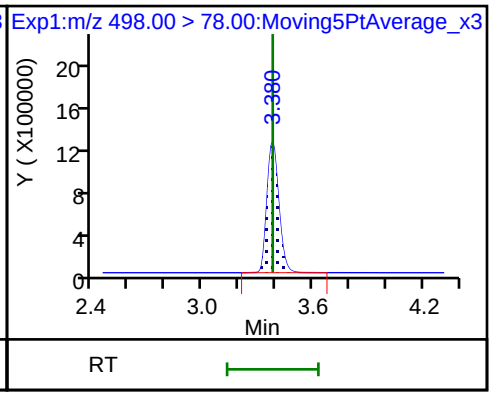
68 Perfluorononanesulfonic acid



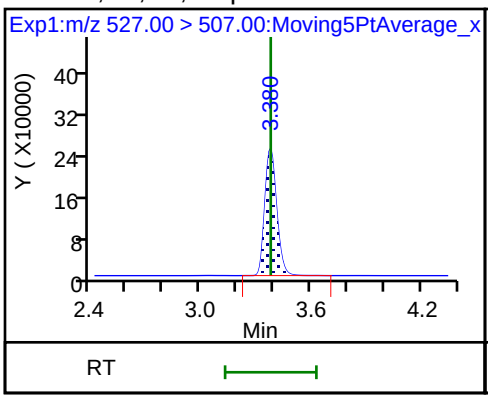
68 Perfluorononanesulfonic acid



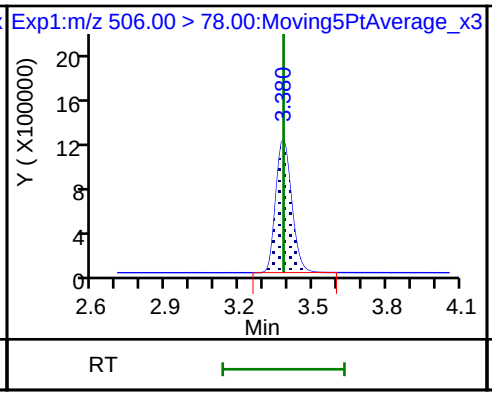
22 Perfluorooctane Sulfonamide



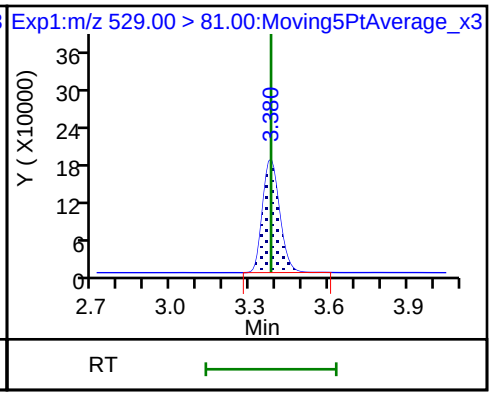
25 1H,1H,2H,2H-perfluorodecanesulfon



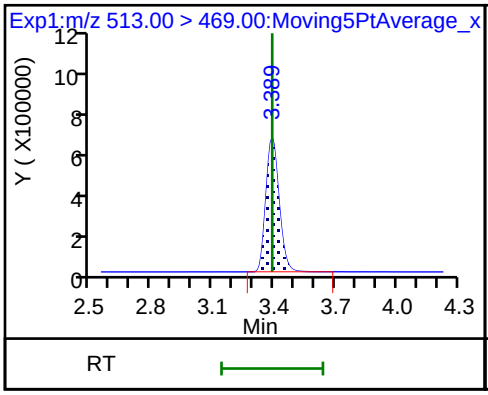
D 21 13C8 FOSA



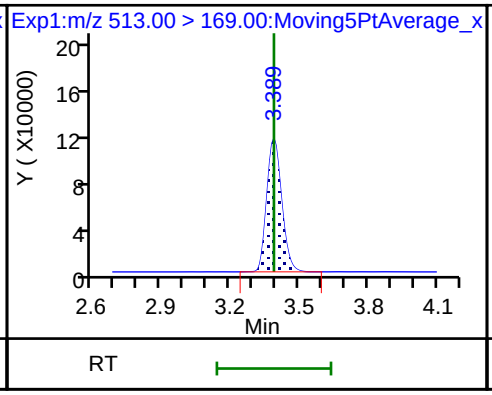
D 26 M2-8:2FTS



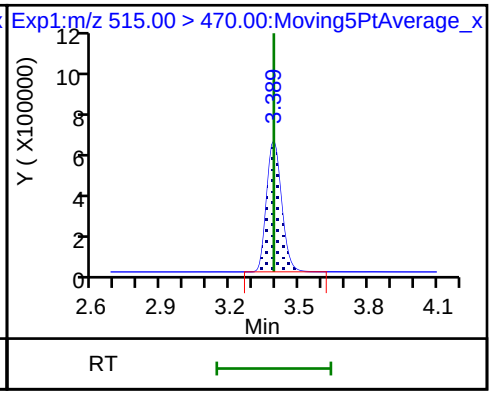
24 Perfluorodecanoic acid



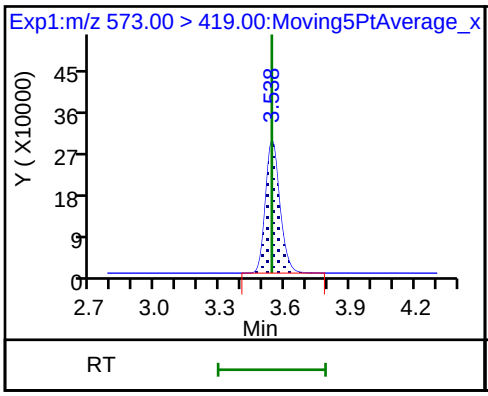
24 Perfluorodecanoic acid



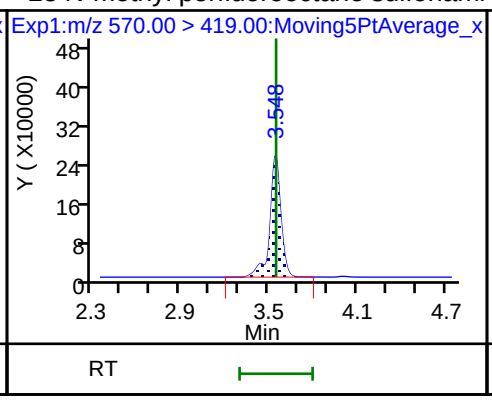
D 23 13C2 PFDA



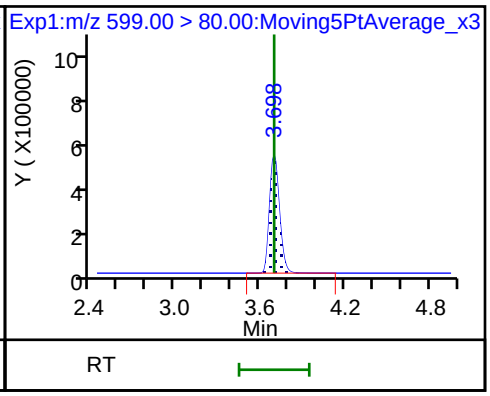
D 27 d3-NMeFOSAA



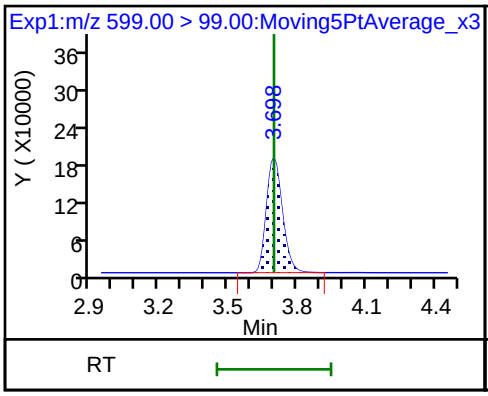
28 N-methyl perfluorooctane sulfonami



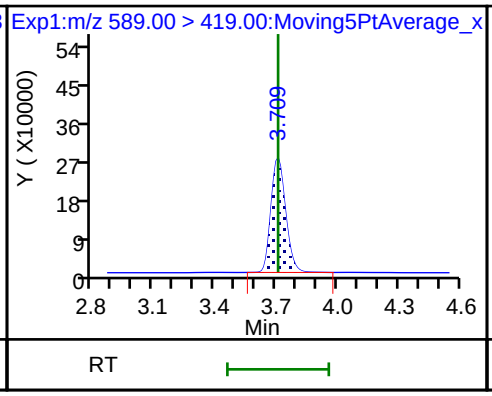
29 Perfluorodecane Sulfonic acid



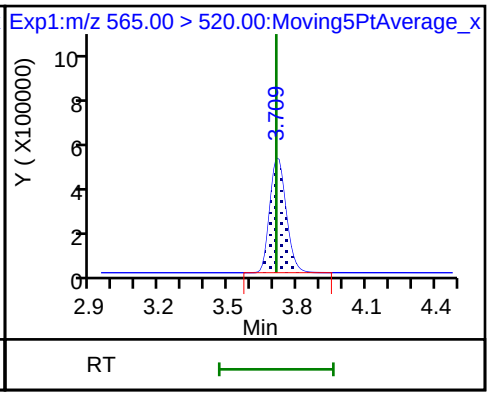
29 Perfluorodecane Sulfonic acid



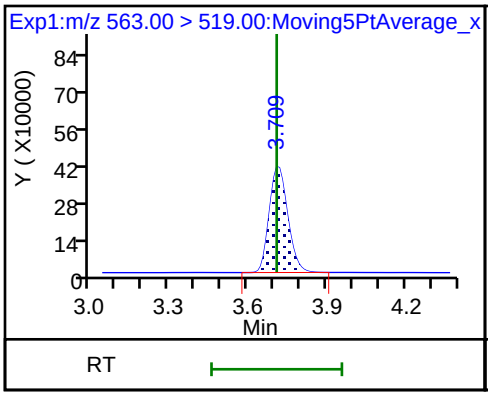
D 32 d5-NEtFOSAA



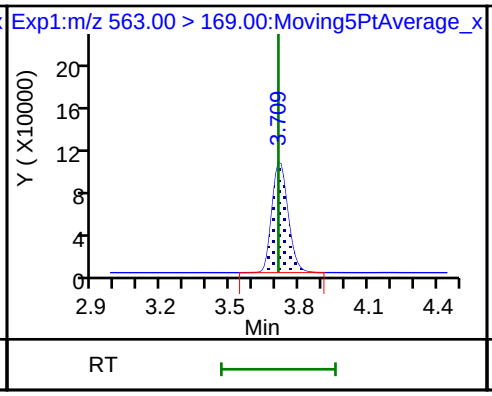
D 30 13C2 PFUnA



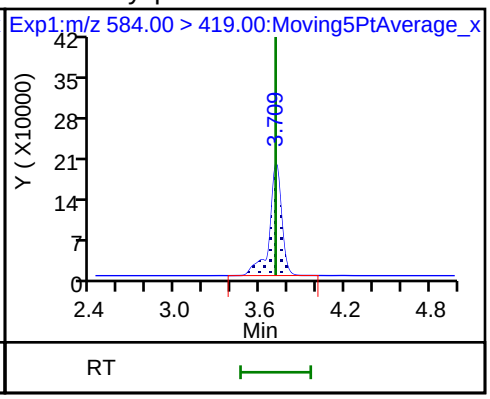
31 Perfluoroundecanoic acid



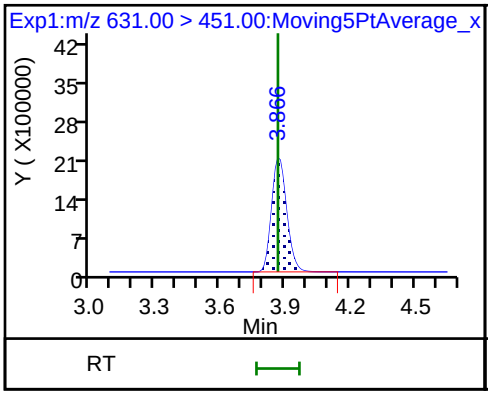
31 Perfluoroundecanoic acid



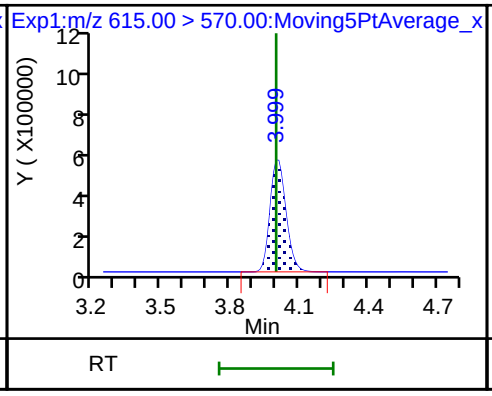
33 N-ethyl perfluorooctane sulfonamid



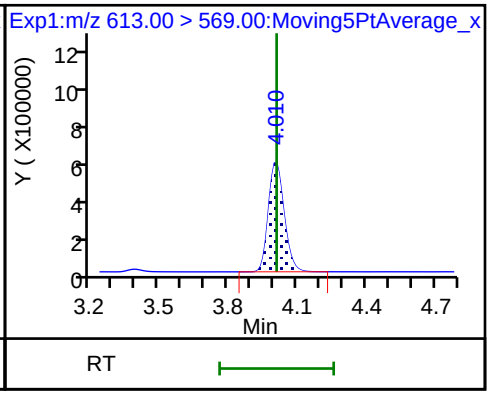
66 11-Chloroeicosafluoro-3-oxaundecan



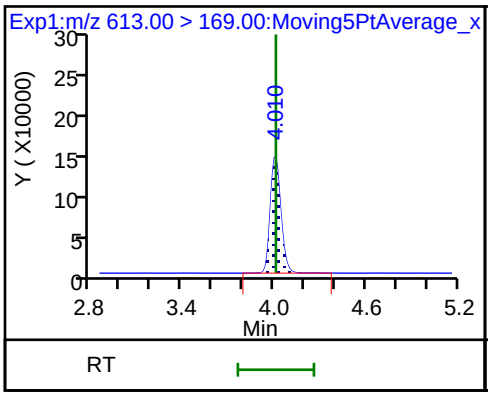
D 36 13C2 PFDoA



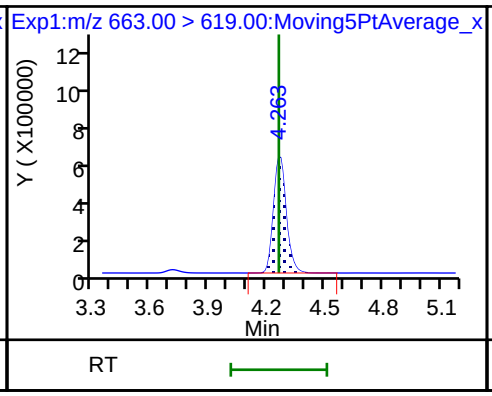
37 Perfluorododecanoic acid



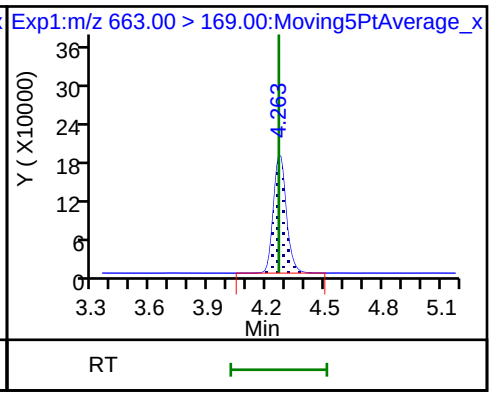
37 Perfluorododecanoic acid



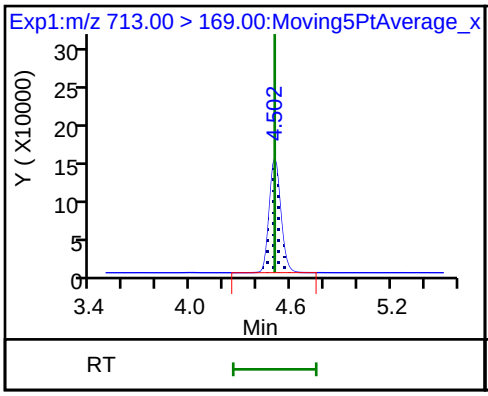
41 Perfluorotridecanoic acid



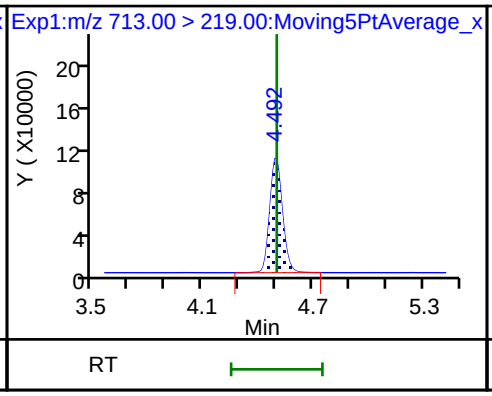
41 Perfluorotridecanoic acid



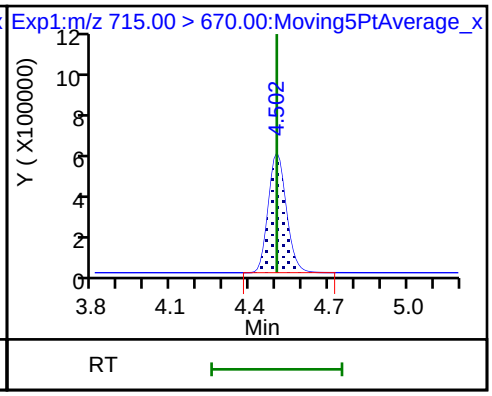
42 Perfluorotetradecanoic acid



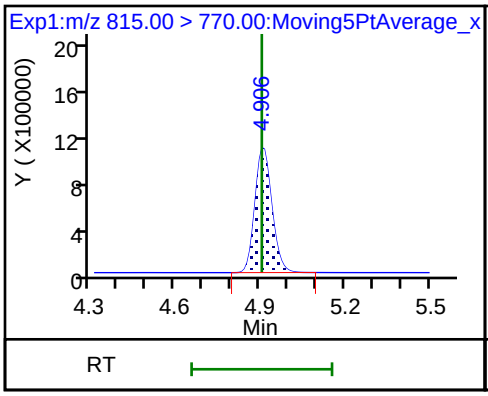
42 Perfluorotetradecanoic acid



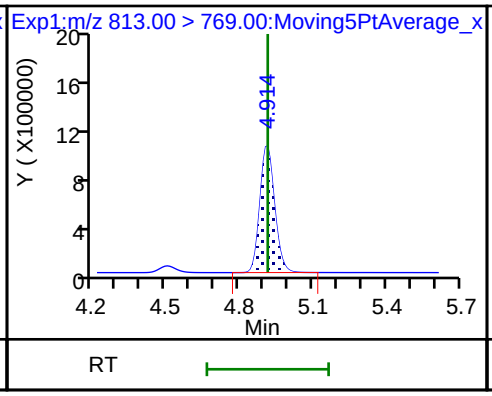
D 43 13C2-PFTeDA



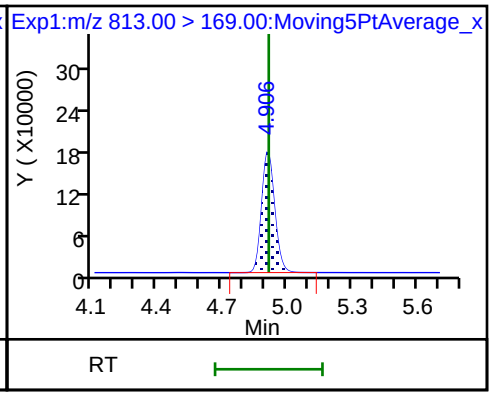
D 44 13C2-PFHxDA



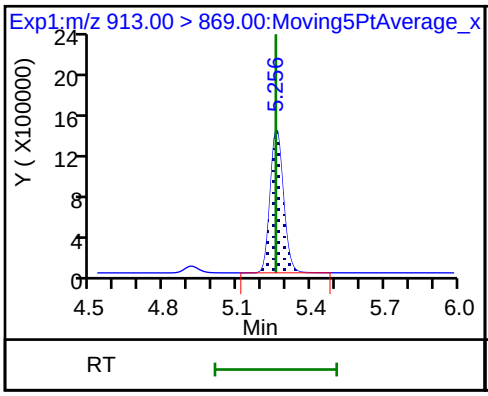
45 Perfluorohexadecanoic acid



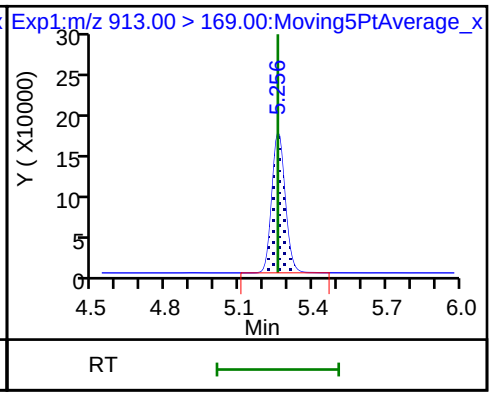
45 Perfluorohexadecanoic acid



46 Perfluorooctadecanoic acid



46 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Lab Sample ID: CCV 320-233997/11 Calibration Date: 07/14/2018 04:51

Instrument ID: A8_N Calib Start Date: 07/11/2018 14:48

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 07/11/2018 15:38

Lab File ID: 2018.07.13LLB_062.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.9856	0.9914		1.01	1.00	0.6	40.0
Perfluoropentanoic acid (PFPeA)	AveID	1.213	1.206		0.994	1.00	-0.6	40.0
Perfluorobutanesulfonic acid (PFBS)	AveID	76.50	74.77		0.864	0.884	-2.3	50.0
4:2 FTS	AveID	13.00	13.05		0.937	0.934	0.4	50.0
Perfluorohexanoic acid (PFHxA)	AveID	1.029	1.009		0.980	1.00	-2.0	40.0
Perfluoropentanesulfonic acid (PFPeS)	AveID	69.78	68.86		0.926	0.938	-1.3	50.0
HFPO-DA (GenX)	AveID	2.654	2.389		0.900	1.00	-10.0	40.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.157	1.119		0.967	1.00	-3.3	40.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.148	1.069		0.848	0.910	-6.9	40.0
ADONA	AveID	3.219	3.483		1.02	0.942	8.2	50.0
6:2 FTS	AveID	1.564	1.560		0.945	0.948	-0.3	40.0
Perfluorooctanoic acid (PFOA)	AveID	1.232	1.167		0.949	1.00	-5.2	40.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.318	1.360		0.983	0.952	3.2	50.0
Perfluorononanoic acid (PFNA)	AveID	1.109	1.141		1.03	1.00	2.9	40.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.133	1.126		0.922	0.928	-0.6	40.0
9-Chlorohexadecafluoro-3-oxa nonane-1-sulfonate	AveID	1.836	1.845		0.937	0.932	0.5	50.0
8:2 FTS	AveID	1.290	1.251		0.929	0.958	-3.0	40.0
Perfluorononanesulfonic acid (PFNS)	AveID	0.7752	0.7867		0.974	0.960	1.5	50.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9856	1.015		1.03	1.00	3.0	40.0
Perfluorodecanoic acid (PFDA)	AveID	1.049	1.096		1.04	1.00	4.5	40.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	0.9858	1.030		1.05	1.00	4.5	40.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6714	0.6888		0.989	0.964	2.6	50.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.8840	0.8629		0.976	1.00	-2.4	40.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.8195	0.7583		0.925	1.00	-7.5	40.0
11-Chloroeicosafluoro-3-oxau ndecane-1-sulfonate	AveID	2.654	2.942		1.04	0.942	10.9	50.0
Perfluorododecanoic acid (PFDoA)	AveID	1.092	1.091		0.999	1.00	-0.0	40.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.068	1.110		1.04	1.00	4.0	50.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2602	0.2429		0.934	1.00	-6.6	50.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		0.9455		0.973	1.00	-2.7	50.0

FORM VII 537 (modified)

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Lab Sample ID: CCV 320-233997/11 Calibration Date: 07/14/2018 04:51

Instrument ID: A8_N Calib Start Date: 07/11/2018 14:48

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 07/11/2018 15:38

Lab File ID: 2018.07.13LLB_062.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.143	1.118		0.978	1.00	-2.2	50.0
13C4 PFBA	Ave	1.356	1.300		2.40	2.50	-4.1	50.0
13C5 PFPeA	Ave	0.9425	0.9436		2.50	2.50	0.1	50.0
13C3-PFBS	Ave	0.0237	0.0241		2.36	2.33	1.5	50.0
M2-4:2FTS	Ave	0.1273	0.1283		2.35	2.34	0.8	50.0
13C2 PFHxA	Ave	1.017	1.049		2.58	2.50	3.1	50.0
13C3 HFPO-DA	Ave	0.0724	0.0830		2.87	2.50	14.7	50.0
13C4-PFHpA	Ave	0.9371	0.9271		2.47	2.50	-1.1	50.0
18O2 PFHxS	Ave	1.328	1.332		2.37	2.37	0.3	50.0
M2-6:2FTS	Ave	0.2009	0.1861		2.20	2.38	-7.4	40.0
13C4 PFOA	Ave	0.9560	0.9636		2.52	2.50	0.8	50.0
13C4 PFOS	Ave	0.9742	0.9576		2.35	2.39	-1.7	50.0
13C5 PFNA	Ave	0.8546	0.7756		2.27	2.50	-9.2	50.0
13C8 FOSA	Ave	1.405	1.447		2.58	2.50	3.0	50.0
M2-8:2FTS	Ave	0.2939	0.2409		1.96	2.40	-18.0	40.0
13C2 PFDA	Ave	0.7503	0.7087		2.36	2.50	-5.6	50.0
d3-NMeFOSAA	Ave	0.3075	0.3249		2.64	2.50	5.6	50.0
d5-NEtFOSAA	Ave	0.3150	0.3513		2.79	2.50	11.5	50.0
13C2 PFUnA	Ave	0.6266	0.6537		2.61	2.50	4.3	50.0
13C2 PFDoA	Ave	0.6496	0.6412		2.47	2.50	-1.3	50.0
13C2-PFTeDA	Ave	0.6740	0.7489		2.78	2.50	11.1	50.0
13C2-PFHxDA	Ave	1.074	1.172		2.73	2.50	9.2	50.0

FORM VII 537 (modified)

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\2018.07.13LLB_062.d
Lims ID: CCV L4
Client ID:
Sample Type: CCV
Inject. Date: 14-Jul-2018 04:51:52 ALS Bottle#: 28 Worklist Smp#: 11
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV L4
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-A8_N*sub32

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 16-Jul-2018 14:20:40 Calib Date: 11-Jul-2018 15:38:42
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK023

First Level Reviewer: mongkols Date: 16-Jul-2018 14:20:40

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.439	1.441	-0.002	0.540	4837826	2.40		95.9	26307	
2 Perfluorobutyric acid										
212.90 > 169.00	1.445	1.445	0.0	1.004	1918463	1.01		101	1081	
D 3 13C5-PFPeA										
267.90 > 223.00	1.726	1.720	0.006	0.647	3511533	2.50		100	45102	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.726	1.726	0.0	1.000	1693999	0.99		99.4	1064	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.762	1.762	0.0	1.000	2366066	0.8641		97.7	14214	
298.90 > 99.00	1.762	1.762	0.0	1.000	985489		2.40(1.25-3.74)		8981	
D 47 13C3-PFBS										
301.90 > 83.00	1.762	1.765	-0.003	0.661	83224	2.36		102	497	
61 1H,1H,2H,2H-perfluorohexanesulfoni										
327.00 > 307.00	1.967	1.967	0.0	1.116	436131	0.9373		100	19602	
D 60 M2-4:2FTS										
329.00 > 81.00	1.967	1.970	-0.003	0.738	445999	2.35		101	6587	
D 7 13C2 PFHxA										
315.00 > 270.00	2.000	2.003	-0.003	0.750	3903689	2.58		103	68291	
6 Perfluorohexanoic acid										
313.00 > 269.00	2.000	2.000	0.0	1.000	1574901	0.9799		98.0	4527	
313.00 > 119.00	2.000	2.000	0.0	1.000	157411		10.01(5.03-15.10)		3905	
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.022	2.022	0.0	1.148	2312114	0.9256		98.7	36538	
349.00 > 99.00	2.022	2.022	0.0	1.148	835629		2.77(1.36-4.07)		18054	
67 Perfluoro(2-propoxypropanoic) acid										
329.10 > 285.00	2.101	2.101	0.0	1.000	295281	0.9001		90.0	2699	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.101	2.105	-0.004	0.788	308989	2.87		115	6648	
D 9 13C4-PFHpA										
367.00 > 322.00	2.316	2.319	-0.003	0.869	3450272	2.47		98.9	52005	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.316	2.316	0.0	1.000	1543778	0.9671		96.7	3328	
363.00 > 169.00	2.316	2.316	0.0	1.000	626500		2.46(1.13-3.40)		10336	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.329	2.329	0.0	1.000	1929547	0.8477		93.1	15532	
399.00 > 99.00	2.329	2.329	0.0	1.000	643980		3.00(1.50-4.49)		4882	
D 11 18O2 PFHxS										
403.00 > 84.00	2.329	2.332	-0.003	0.874	4689833	2.37		100	46147	
65 Adona										
377.00 > 251.00	2.355	2.355	0.0	0.777	4676738	1.02		108	38081	
377.00 > 85.00	2.355	2.355	0.0	0.777	2780199		1.68(0.84-2.53)		15782	
D 12 M2-6:2FTS										
429.00 > 81.00	2.643	2.644	-0.001	0.991	657849	2.20		92.6	17314	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.643	2.643	0.0	1.000	409691	0.9455		99.7	4411	
D 14 13C4 PFOA										
417.00 > 372.00	2.666	2.667	-0.001	1.000	3586148	2.52		101	35822	
* 62 13C2-PFOA										
415.00 > 370.00	2.666	2.666	0.0		3721520	2.50			46619	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.666	2.666	0.0	1.000	1676030	0.9487		94.8	1071	
413.00 > 169.00	2.666	2.666	0.0	1.000	838389		2.00(0.84-2.52)		4837	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.673	2.673	0.0	0.883	1845652	0.9827		103	23381	
449.00 > 99.00	2.673	2.673	0.0	0.883	464526		3.97(1.94-5.82)		9138	
D 18 13C4 PFOS										
503.00 > 80.00	3.029	3.027	0.002	1.136	3406993	2.35		98.3	27205	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.029	3.029	0.0	1.000	1489301	0.9220		99.4	12933	
499.00 > 99.00	3.029	3.029	0.0	1.000	331754		4.49(2.31-6.93)		6345	
20 Perfluorononanoic acid										
463.00 > 419.00	3.029	3.029	0.0	1.000	1317577	1.03		103	2727	
463.00 > 169.00	3.029	3.029	0.0	1.000	305064		4.32(1.90-5.69)		13206	
D 19 13C5 PFNA										
468.00 > 423.00	3.029	3.034	-0.005	1.136	2886435	2.27		90.8	37069	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.237	3.237	0.0	1.069	2451875	0.9370		101	21601	
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.376	3.376	0.0	1.115	1076607	0.9743		101	24496	
549.00 > 99.00	3.376	3.376	0.0	1.115	402378		2.68(1.33-3.97)		6974	
D 26 M2-8:2FTS										
529.00 > 81.00	3.376	3.379	-0.003	1.266	858911	1.96		82.0	12821	
D 21 13C8 FOSA										
506.00 > 78.00	3.376	3.379	-0.003	1.266	5385092	2.58		103	48856	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
25 1H,1H,2H,2H-perfluorodecanesulfoni										
527.00 > 507.00	3.376	3.376	0.0	1.000	429851	0.9292		97.0	6402	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.376	3.376	0.0	1.000	2185735	1.03		103	22685	
D 23 13C2 PFDA										
515.00 > 470.00	3.385	3.389	-0.004	1.270	2637356	2.36		94.4	31227	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.385	3.385	0.0	1.000	1156325	1.04		104	7475	
513.00 > 169.00	3.385	3.385	0.0	1.000	209554		5.52(2.36-7.09)		7842	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.535	3.538	-0.003	1.326	1208923	2.64		106	23945	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.544	3.544	0.0	1.003	498234	1.05		105	5557	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.694	3.694	0.0	1.220	946587	0.9890		103	22133	
599.00 > 99.00	3.694	3.694	0.0	1.220	330209		2.87(1.39-4.16)		9959	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.705	3.708	-0.003	1.390	1307430	2.79		112	3040	
D 30 13C2 PFUnA										
565.00 > 520.00	3.716	3.708	0.008	1.394	2432713	2.61		104	45563	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.716	3.716	0.0	1.000	737885	0.9254		92.5	3786	
563.00 > 169.00	3.705	3.716	-0.011	0.997	183100		4.03(2.12-6.36)		9324	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.716	3.716	0.0	1.003	451261	0.9761		97.6	9510	
66 11-Chloroeicosafluoro-3-oxaundecan										
631.00 > 451.00	3.873	3.873	0.0	1.278	3950184	1.04		111	51886	
D 36 13C2 PFDoA										
615.00 > 570.00	4.006	3.999	0.007	1.503	2386148	2.47		98.7	17504	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.006	4.006	0.0	1.000	1041571	1.00		99.9	671	
613.00 > 169.00	4.006	4.006	0.0	1.000	255210		4.08(2.13-6.40)		4506	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.269	4.269	0.0	1.066	1059380	1.04		104	578	
663.00 > 169.00	4.269	4.269	0.0	1.066	339299		3.12(1.25-3.76)		6136	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.500	4.501	-0.001	1.688	2787105	2.78		111	17402	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.500	4.500	0.0	1.000	270806	0.9336		93.4	3336	
713.00 > 219.00	4.500	4.500	0.0	1.000	189524		1.43(0.71-2.13)		3619	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.912	4.905	0.007	1.843	4362437	2.73		109	13119	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.912	4.912	0.0	1.000	1649860	0.9735		97.3	383	
813.00 > 169.00	4.912	4.912	0.0	1.000	282925		5.83(2.86-8.58)		3095	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.254	5.254	0.0	1.070	1950735	0.9781		97.8	418	
913.00 > 169.00	5.254	5.254	0.0	1.070	242093		8.06(3.83-11.48)		2636	

Reagents:

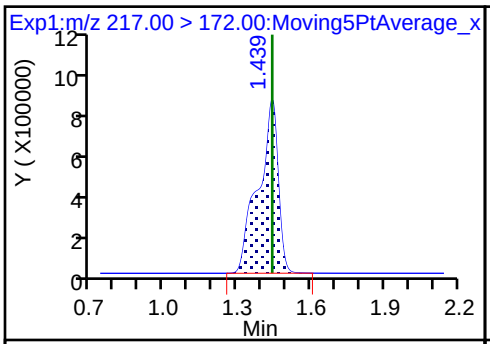
LCPFC_LL4_00005 Amount Added: 1.00 Units: mL

Report Date: 16-Jul-2018 14:20:41 Chrom Revision: 2.2 07-Jun-2018 07:41:54

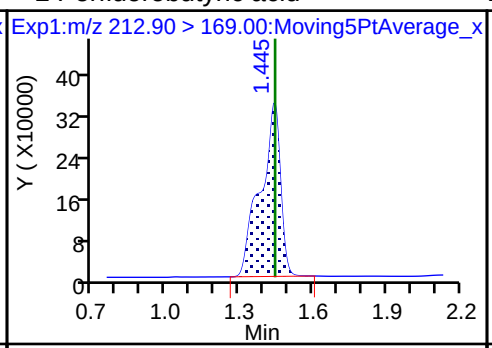
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\2018.07.13LLB_062.d
Injection Date: 14-Jul-2018 04:51:52 Instrument ID: A8_N
Lims ID: CCV L4
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 28 Worklist Smp#: 11
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC ICAL

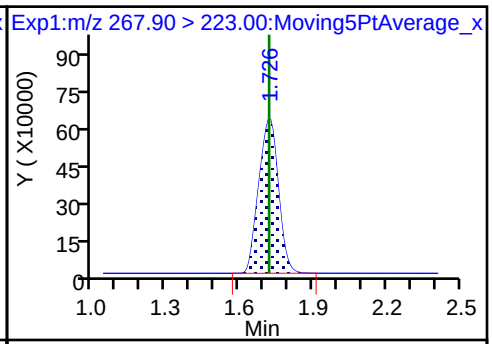
D 1 13C4 PFBA



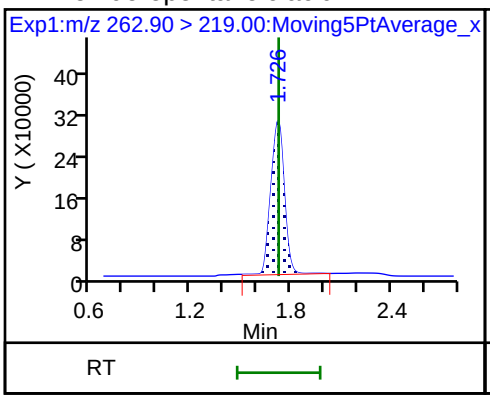
2 Perfluorobutyric acid



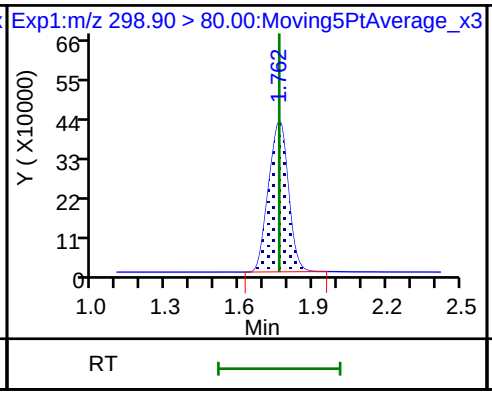
D 3 13C5-PFPeA



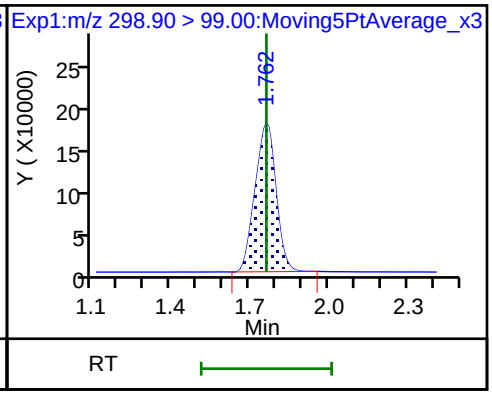
4 Perfluoropentanoic acid



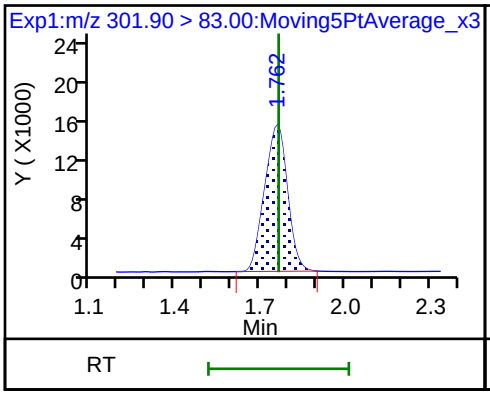
5 Perfluorobutanesulfonic acid



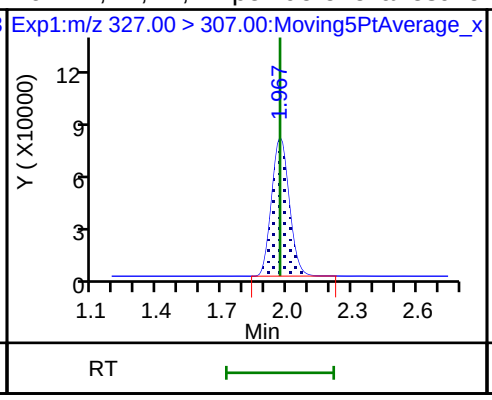
5 Perfluorobutanesulfonic acid



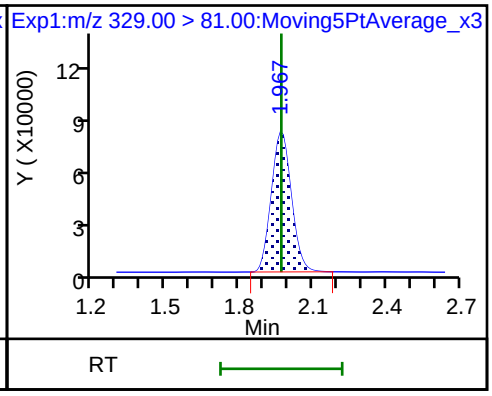
D 47 13C3-PFBS



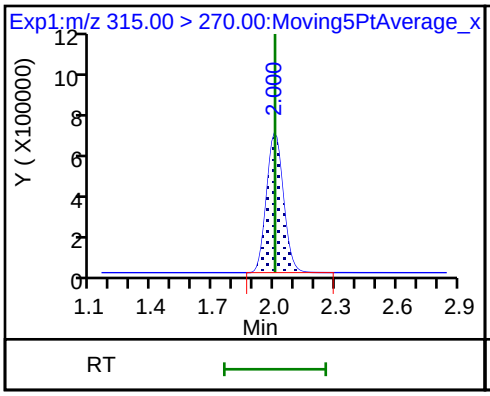
61 1H,1H,2H,2H-perfluorohexanesulfon



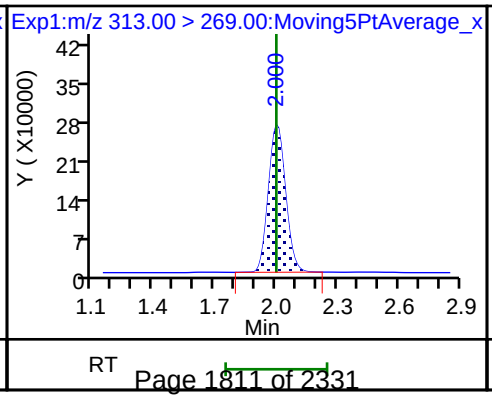
D 60 M2-4:2FTS



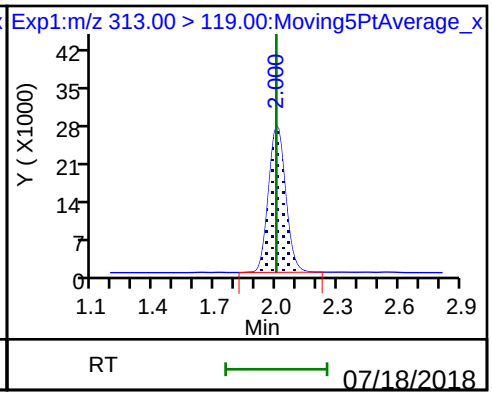
D 7 13C2 PFHxA



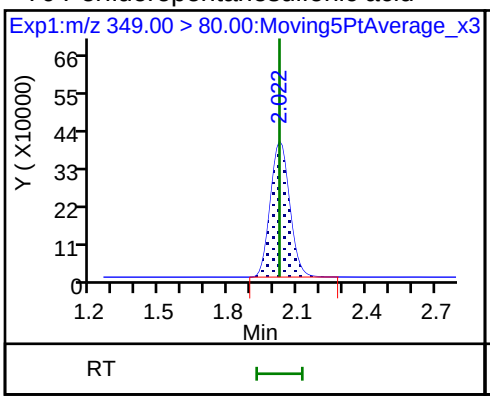
6 Perfluorohexanoic acid



6 Perfluorohexanoic acid



70 Perfluoropentanesulfonic acid



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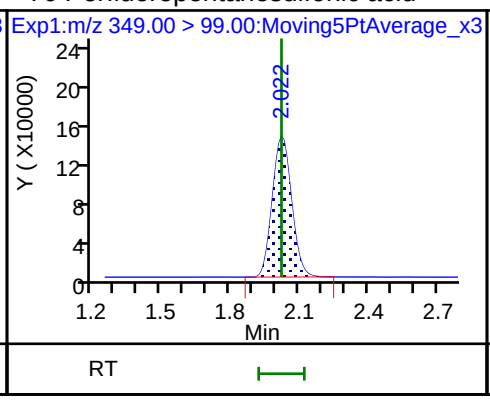
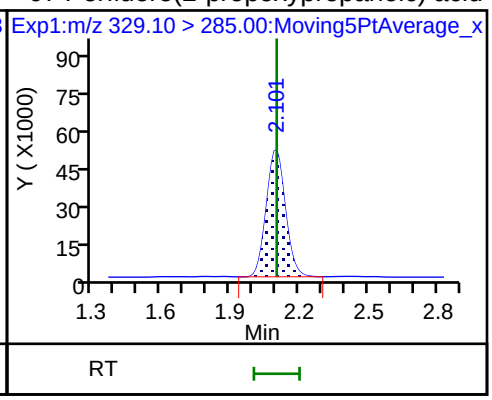
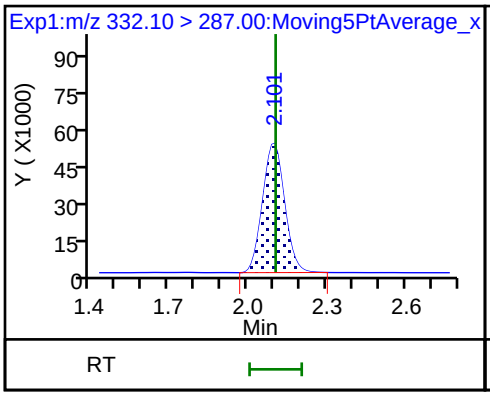


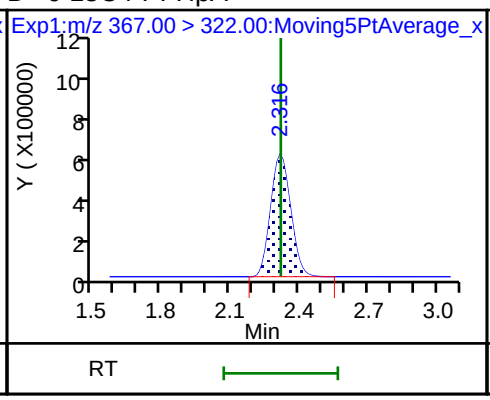
67 Perfluoro(2-propoxypropanoic) acid



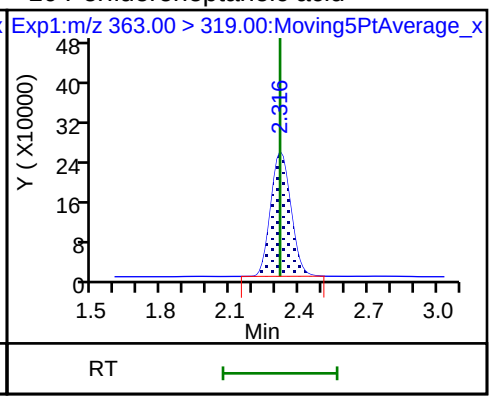
D 64 13C3 HFPO-DA



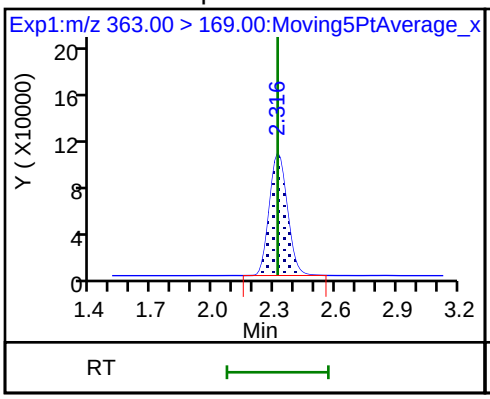
D 9 13C4-PFHpA



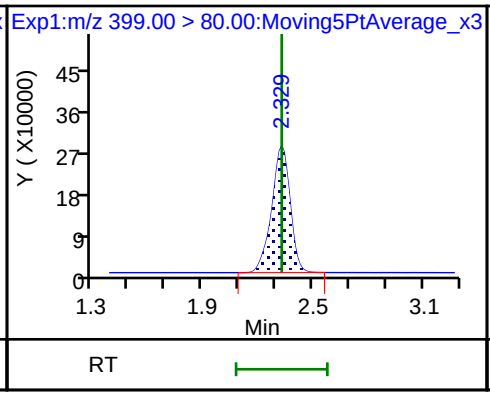
10 Perfluoroheptanoic acid



10 Perfluoroheptanoic acid



8 Perfluorohexanesulfonic acid



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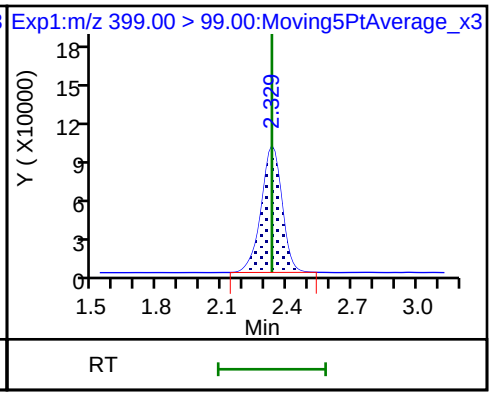
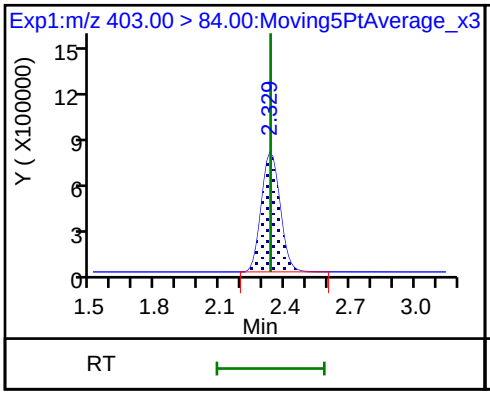
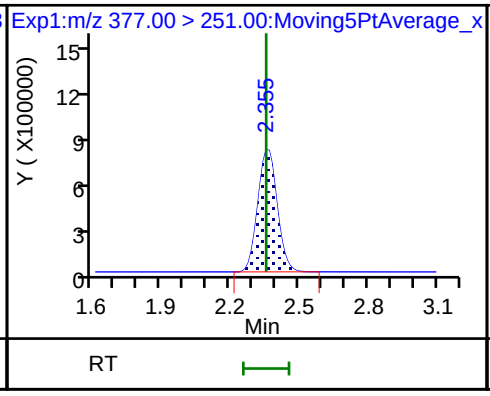


D 11 18O2 PFHxS



65 Adona



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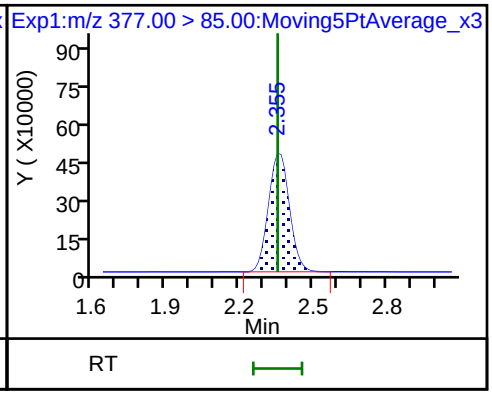
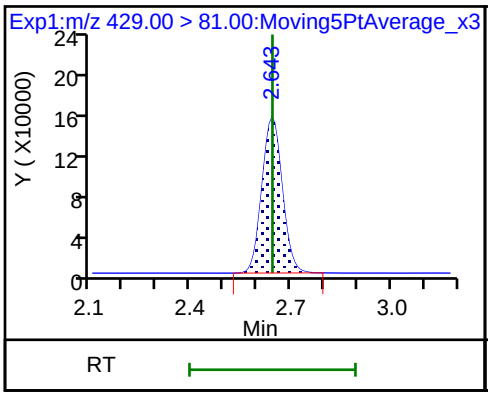
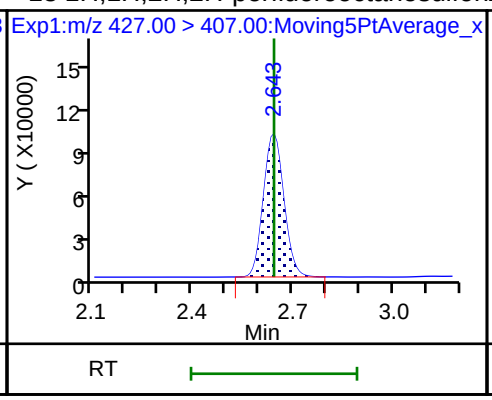


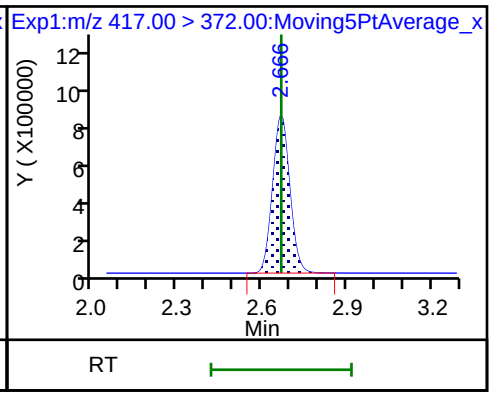
D 12 M2-6:2FTS



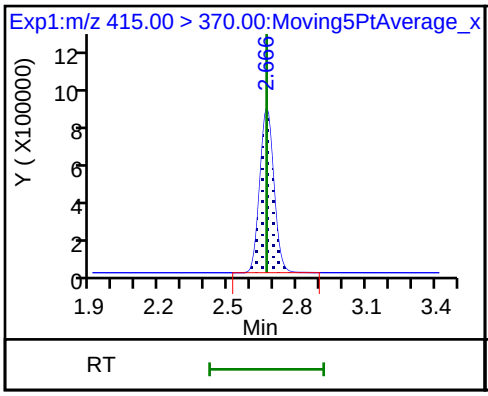
13 1H,1H,2H,2H-perfluorooctanesulfon



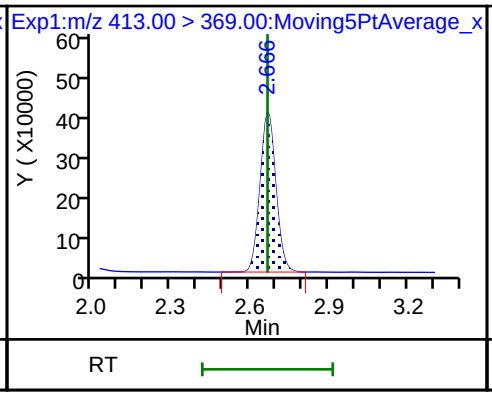
D 14 13C4 PFOA



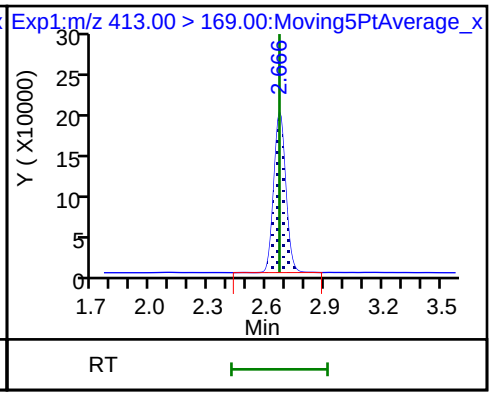
* 62 13C2-PFOA



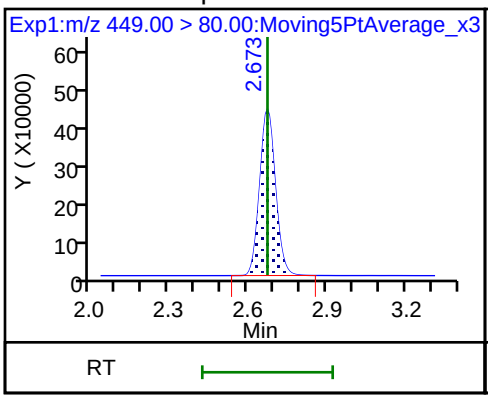
15 Perfluorooctanoic acid



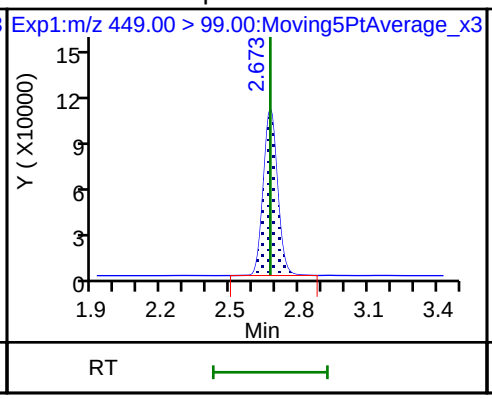
15 Perfluorooctanoic acid



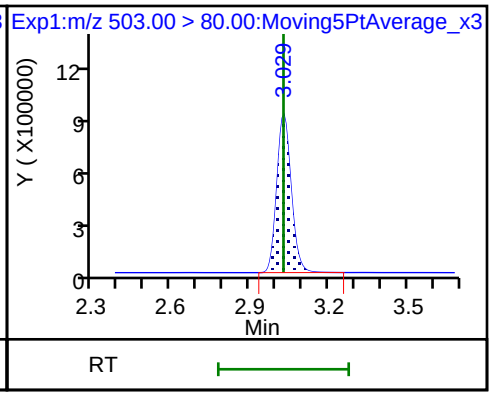
16 Perfluoroheptanesulfonic acid



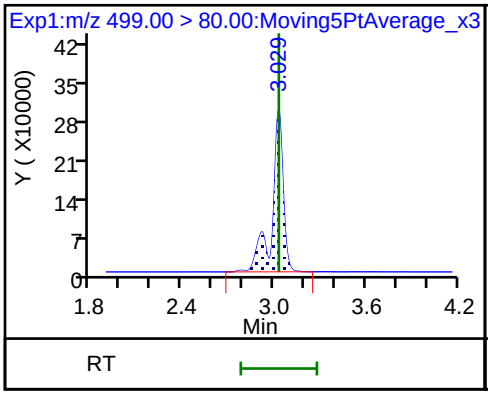
16 Perfluoroheptanesulfonic acid



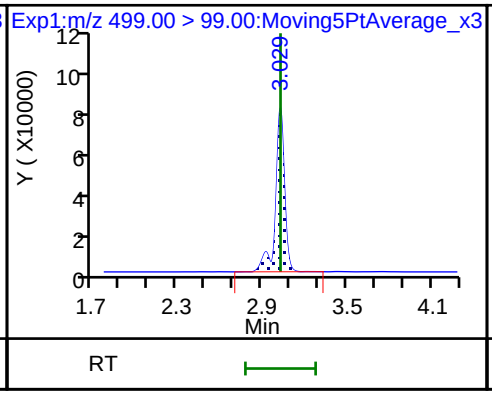
D 18 13C4 PFOS



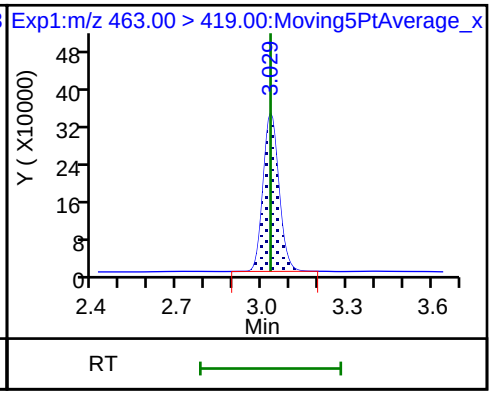
17 Perfluorooctane sulfonic acid



17 Perfluorooctane sulfonic acid



20 Perfluorononanoic acid



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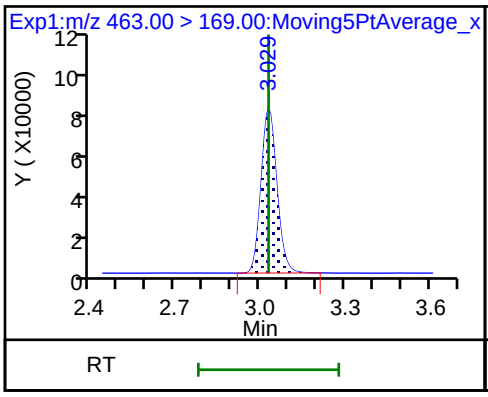
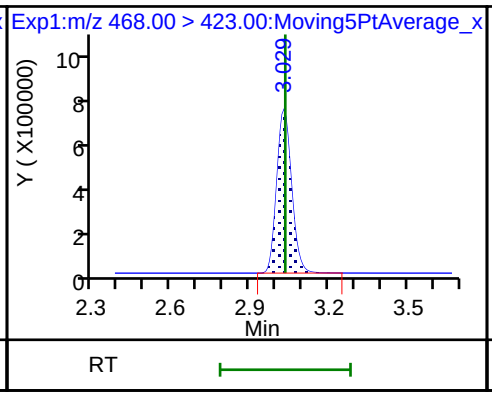
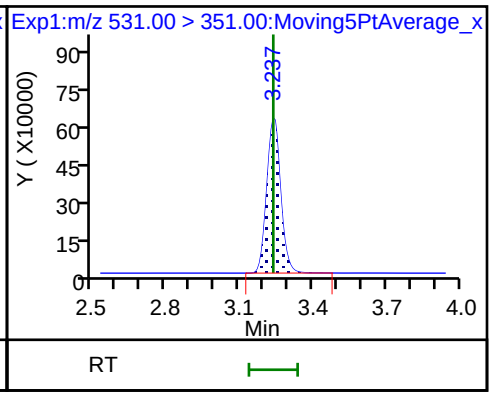


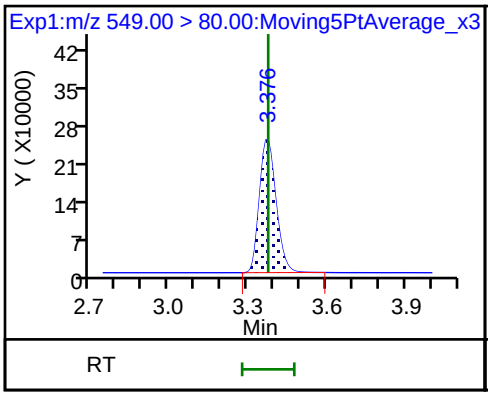
D 19 13C5 PFNA



69 9-Chlorohexadecafluoro-3-oxanonane



68 Perfluorononanesulfonic acid



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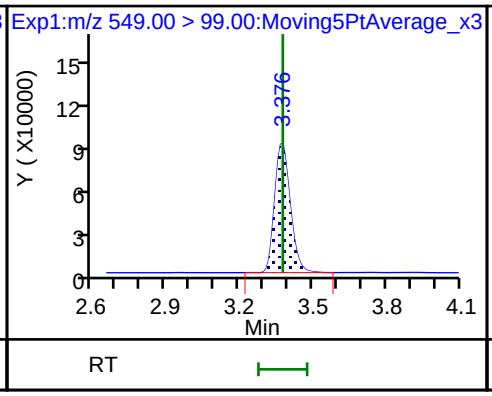
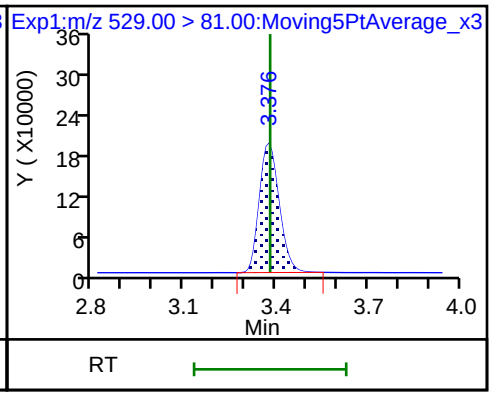
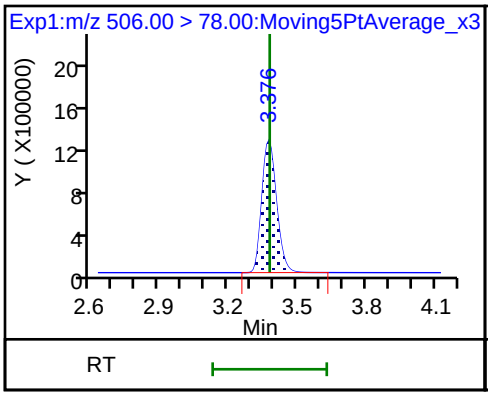


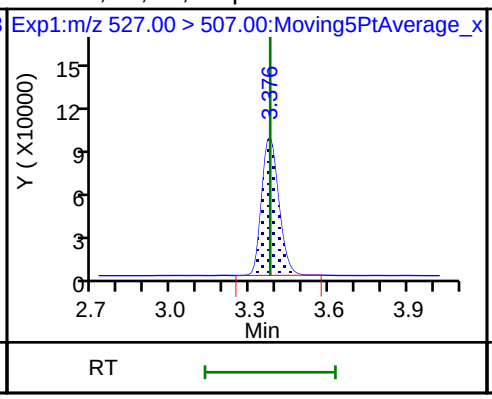
D 26 M2-8:2FTS



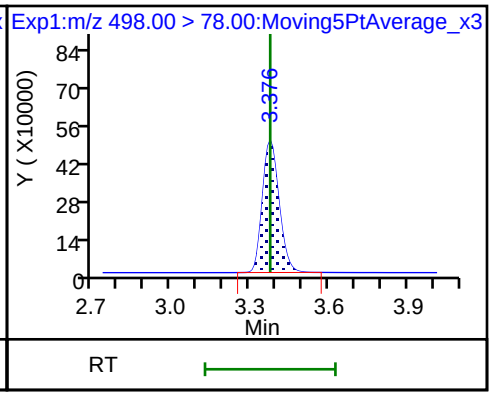
D 21 13C8 FOSA



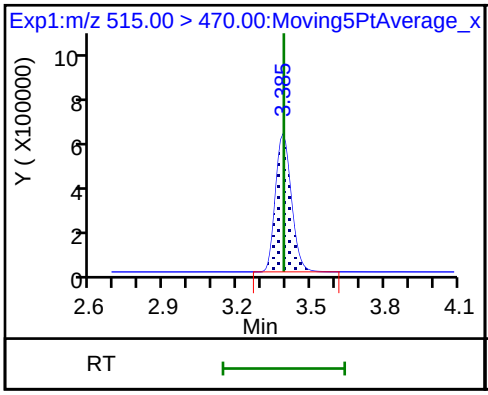
25 1H,1H,2H,2H-perfluorodecanesulfoni



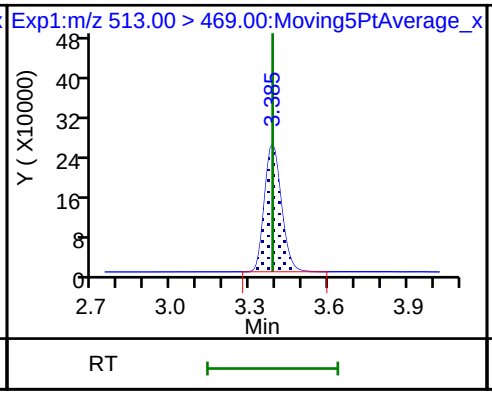
22 Perfluorooctane Sulfonamide



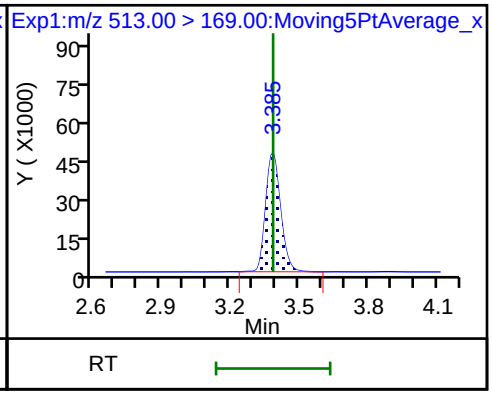
D 23 13C2 PFDA



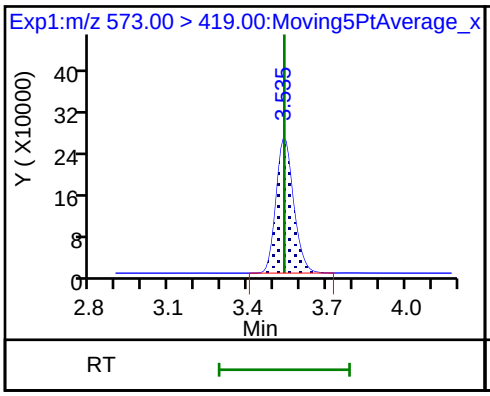
24 Perfluorodecanoic acid



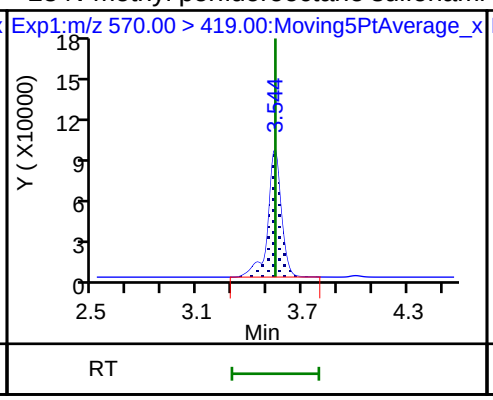
24 Perfluorodecanoic acid



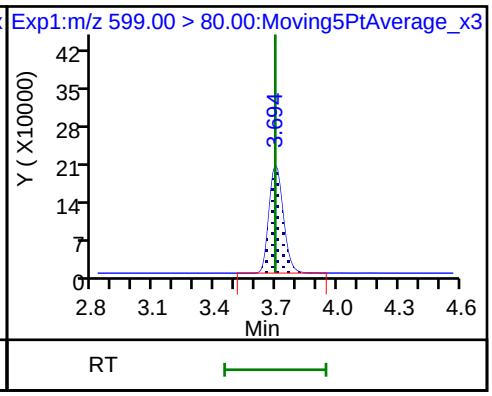
D 27 d3-NMeFOSAA



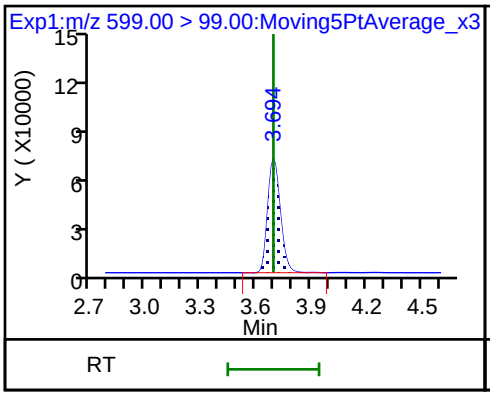
28 N-methyl perfluorooctane sulfonami



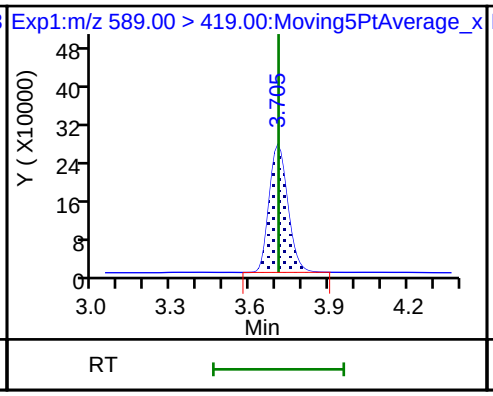
29 Perfluorodecane Sulfonic acid



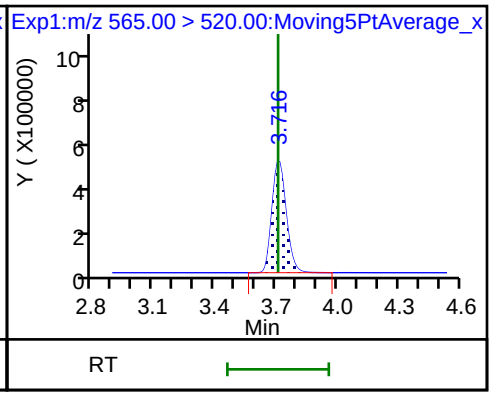
29 Perfluorodecane Sulfonic acid



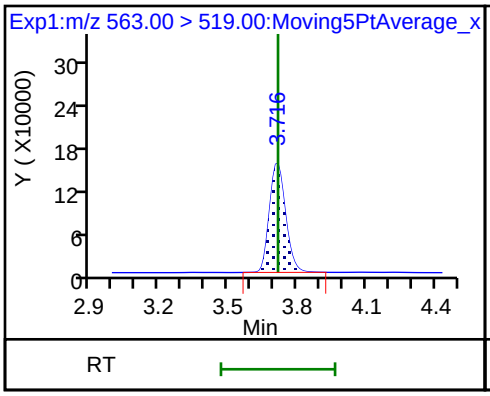
D 32 d5-NEtFOSAA



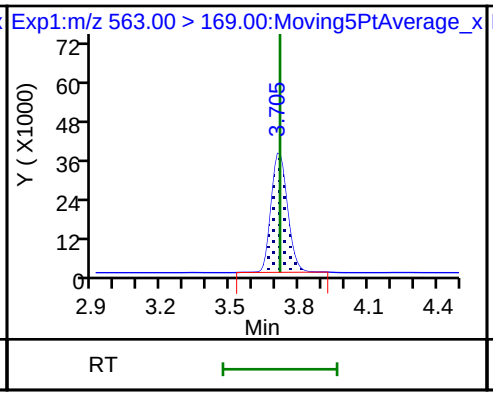
D 30 13C2 PFUnA



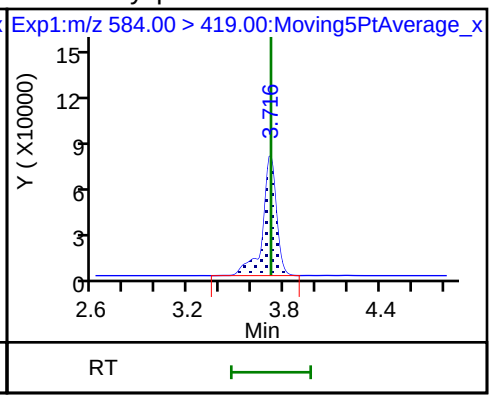
31 Perfluoroundecanoic acid



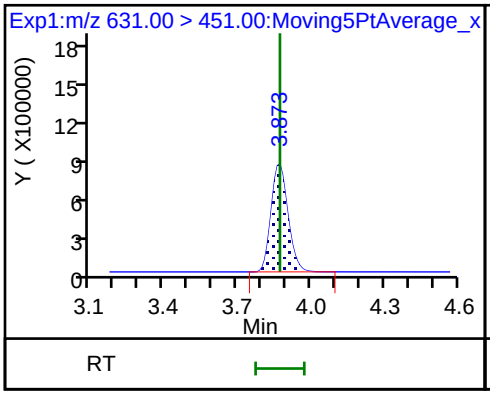
31 Perfluoroundecanoic acid



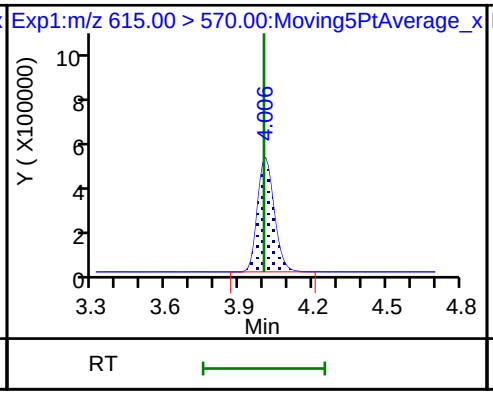
33 N-ethyl perfluorooctane sulfonamid



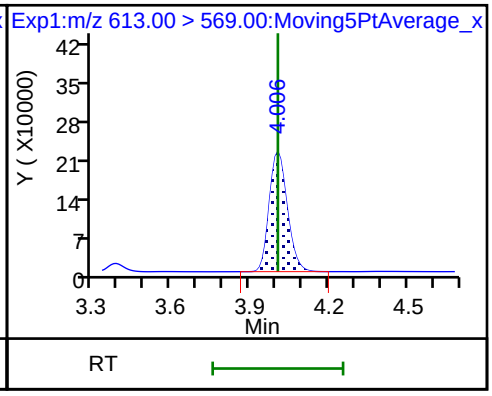
66 11-Chloroeicosafluoro-3-oxaundecan



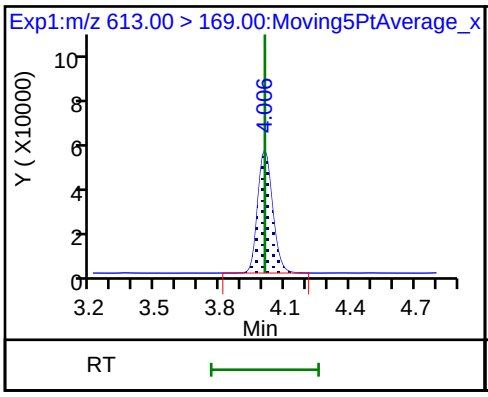
D 36 13C2 PFDoA



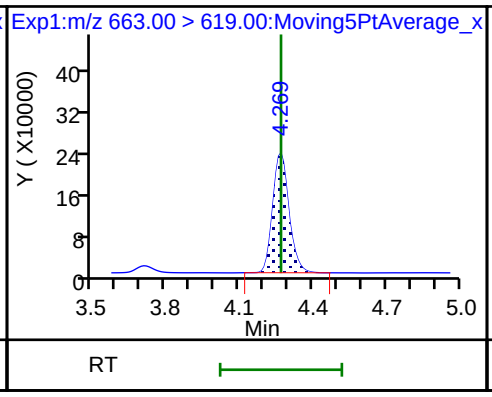
37 Perfluorododecanoic acid



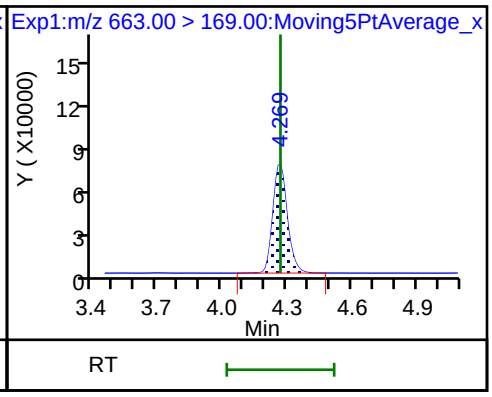
37 Perfluorododecanoic acid



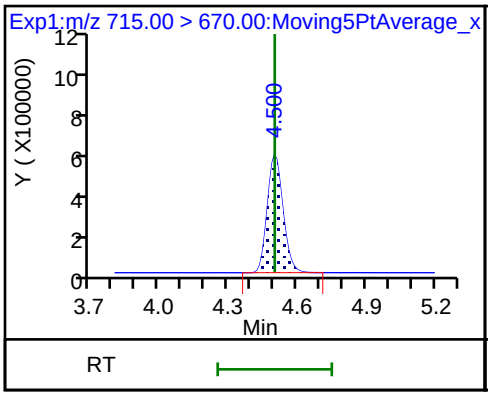
41 Perfluorotridecanoic acid



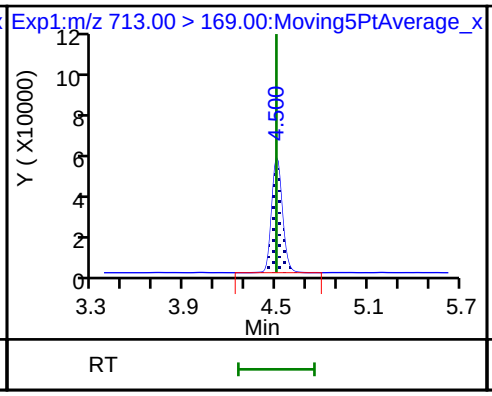
41 Perfluorotridecanoic acid



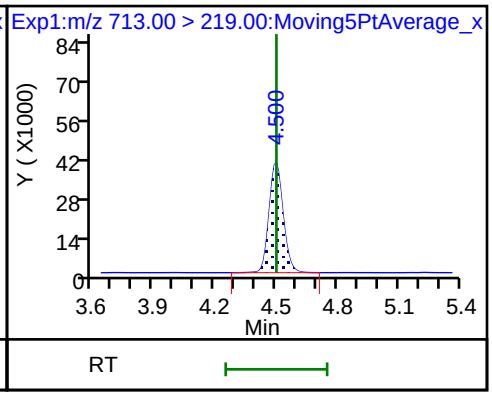
D 43 13C2-PFTeDA



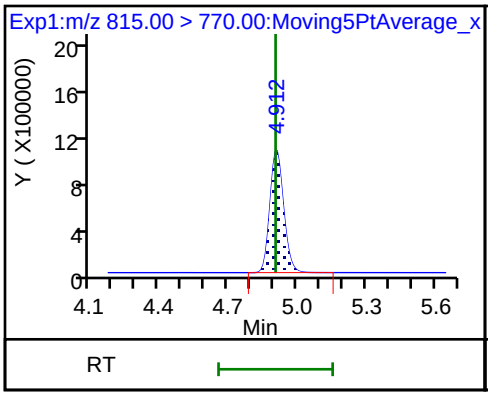
42 Perfluorotetradecanoic acid



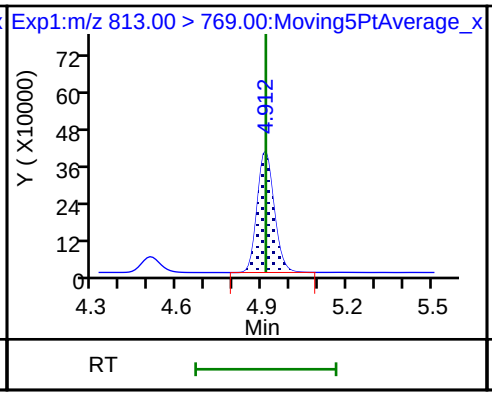
42 Perfluorotetradecanoic acid



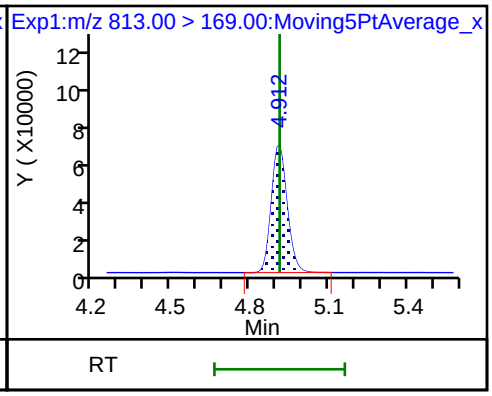
D 44 13C2-PFHxDA



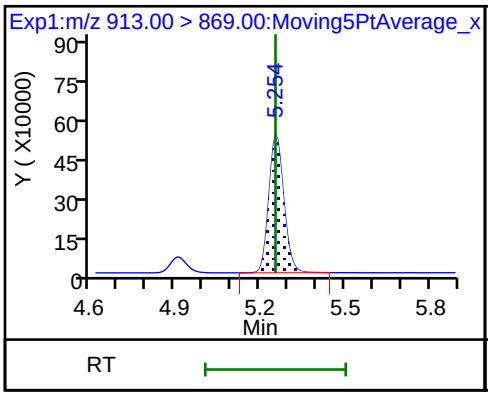
45 Perfluorohexadecanoic acid



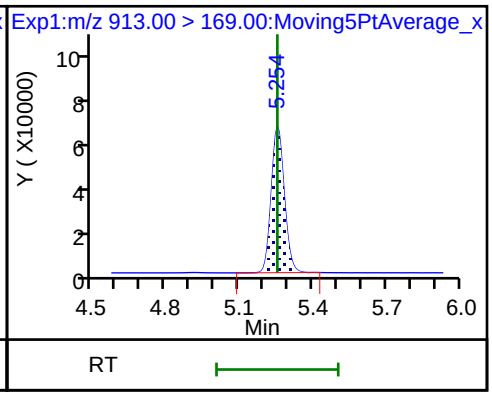
45 Perfluorohexadecanoic acid



46 Perfluorooctadecanoic acid



46 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Lab Sample ID: CCV 320-233997/20 Calibration Date: 07/14/2018 06:02

Instrument ID: A8_N Calib Start Date: 07/11/2018 14:48

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 07/11/2018 15:38

Lab File ID: 2018.07.13LLB_071.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.9856	1.002		2.54	2.50	1.6	40.0
Perfluoropentanoic acid (PFPeA)	AveID	1.213	1.205		2.48	2.50	-0.7	40.0
Perfluorobutanesulfonic acid (PFBS)	AveID	76.50	77.98		2.25	2.21	1.9	50.0
4:2 FTS	AveID	13.00	12.46		2.24	2.34	-4.2	50.0
Perfluorohexanoic acid (PFHxA)	AveID	1.029	1.063		2.58	2.50	3.3	40.0
Perfluoropentanesulfonic acid (PFPeS)	AveID	69.78	72.84		2.45	2.35	4.4	50.0
HFPO-DA (GenX)	AveID	2.654	2.758		2.60	2.50	3.9	40.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.157	1.139		2.46	2.50	-1.5	40.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.148	1.084		2.15	2.28	-5.5	40.0
ADONA	AveID	3.219	3.644		2.67	2.36	13.2	50.0
6:2 FTS	AveID	1.564	1.529		2.32	2.37	-2.2	40.0
Perfluorooctanoic acid (PFOA)	AveID	1.232	1.221		2.48	2.50	-0.9	40.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.318	1.393		2.52	2.38	5.7	50.0
Perfluorononanoic acid (PFNA)	AveID	1.109	1.123		2.53	2.50	1.2	40.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.133	1.129		2.31	2.32	-0.4	40.0
9-Chlorohexadecafluoro-3-oxa nonane-1-sulfonate	AveID	1.836	1.988		2.52	2.33	8.3	50.0
8:2 FTS	AveID	1.290	1.253		2.33	2.40	-2.9	40.0
Perfluorononanesulfonic acid (PFNS)	AveID	0.7752	0.8430		2.61	2.40	8.7	50.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9856	1.020		2.59	2.50	3.5	40.0
Perfluorodecanoic acid (PFDA)	AveID	1.049	1.058		2.52	2.50	0.8	40.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	0.9858	1.020		2.59	2.50	3.5	40.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6714	0.7375		2.65	2.41	9.8	50.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.8840	0.8717		2.46	2.50	-1.4	40.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.8195	0.7507		2.29	2.50	-8.4	40.0
11-Chloroeicosafluoro-3-oxau ndecane-1-sulfonate	AveID	2.654	3.053		2.71	2.36	15.1	50.0
Perfluorododecanoic acid (PFDoA)	AveID	1.092	1.083		2.48	2.50	-0.8	40.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.068	1.070		2.50	2.50	0.2	50.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2602	0.2553		2.45	2.50	-1.9	50.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		1.023		2.67	2.50	6.8	50.0

FORM VII 537 (modified)

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Lab Sample ID: CCV 320-233997/20 Calibration Date: 07/14/2018 06:02

Instrument ID: A8_N Calib Start Date: 07/11/2018 14:48

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 07/11/2018 15:38

Lab File ID: 2018.07.13LLB_071.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.143	1.183		2.59	2.50	3.5	50.0
13C4 PFBA	Ave	1.356	1.304		2.40	2.50	-3.8	50.0
13C5 PFPeA	Ave	0.9425	0.9173		2.43	2.50	-2.7	50.0
13C3-PFBS	Ave	0.0237	0.0234		2.29	2.33	-1.4	50.0
M2-4:2FTS	Ave	0.1273	0.1193		2.19	2.34	-6.3	50.0
13C2 PFHxA	Ave	1.017	1.039		2.55	2.50	2.2	50.0
13C3 HFPO-DA	Ave	0.0724	0.0747		2.58	2.50	3.2	50.0
13C4-PFHpA	Ave	0.9371	0.9424		2.51	2.50	0.6	50.0
18O2 PFHxS	Ave	1.328	1.292		2.30	2.37	-2.7	50.0
M2-6:2FTS	Ave	0.2009	0.1839		2.17	2.38	-8.5	40.0
13C4 PFOA	Ave	0.9560	0.9333		2.44	2.50	-2.4	50.0
13C4 PFOS	Ave	0.9742	0.9168		2.25	2.39	-5.9	50.0
13C5 PFNA	Ave	0.8546	0.7897		2.31	2.50	-7.6	50.0
13C8 FOSA	Ave	1.405	1.366		2.43	2.50	-2.8	50.0
M2-8:2FTS	Ave	0.2939	0.2344		1.91	2.40	-20.2	40.0
13C2 PFDA	Ave	0.7503	0.7095		2.36	2.50	-5.4	50.0
d3-NMeFOSAA	Ave	0.3075	0.3215		2.61	2.50	4.5	50.0
d5-NEtFOSAA	Ave	0.3150	0.3467		2.75	2.50	10.1	50.0
13C2 PFUnA	Ave	0.6266	0.6298		2.51	2.50	0.5	50.0
13C2 PFDoA	Ave	0.6496	0.6897		2.65	2.50	6.2	50.0
13C2-PFTeDA	Ave	0.6740	0.6756		2.51	2.50	0.2	50.0
13C2-PFHxDA	Ave	1.074	1.098		2.56	2.50	2.3	50.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\2018.07.13LLB_071.d
Lims ID: CCV L5
Client ID:
Sample Type: CCV
Inject. Date: 14-Jul-2018 06:02:14 ALS Bottle#: 14 Worklist Smp#: 20
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV L5
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-A8_N*sub32

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 16-Jul-2018 14:29:09 Calib Date: 11-Jul-2018 15:38:42
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK023

First Level Reviewer: mongkols Date: 16-Jul-2018 14:29:09

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.440	1.441	-0.001	0.542	4949618	2.40		96.2	27727	
2 Perfluorobutyric acid										
212.90 > 169.00	1.440	1.440	0.0	1.000	4958359	2.54		102	2872	
D 3 13C5-PFPeA										
267.90 > 223.00	1.719	1.720	-0.001	0.647	3481409	2.43		97.3	42572	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.719	1.719	0.0	1.000	4194245	2.48		99.3	2981	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.764	1.764	0.0	1.005	6109794	2.25		102	35263	
298.90 > 99.00	1.764	1.764	0.0	1.005	2538800		2.41(1.25-3.74)		22979	
D 47 13C3-PFBS										
301.90 > 83.00	1.755	1.765	-0.010	0.660	82429	2.29		98.6	479	
61 1H,1H,2H,2H-perfluorohexanesulfoni										
327.00 > 307.00	1.969	1.969	0.0	1.122	1031255	2.24		95.8	45605	
D 60 M2-4:2FTS										
329.00 > 81.00	1.959	1.970	-0.011	0.737	422745	2.19		93.7	6675	
6 Perfluorohexanoic acid										
313.00 > 269.00	2.002	2.002	0.0	1.000	4194876	2.58		103	11146	
313.00 > 119.00	2.002	2.002	0.0	1.000	386877		10.84(5.03-15.10)		8415	
D 7 13C2 PFHxA										
315.00 > 270.00	2.002	2.003	-0.001	0.753	3945396	2.55		102	85523	
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.025	2.025	0.0	1.154	6056137	2.45		104	69838	
349.00 > 99.00	2.025	2.025	0.0	1.154	2155597		2.81(1.36-4.07)		28558	
67 Perfluoro(2-propoxypropanoic) acid										
329.10 > 285.00	2.093	2.093	0.0	1.000	781515	2.60		104	6518	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.093	2.105	-0.012	0.787	283381	2.58		103	4948	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.318	2.318	0.0	1.000	4073609	2.46		98.5	7470	
363.00 > 169.00	2.318	2.318	0.0	1.000	1534261		2.66(1.13-3.40)		13341	
D 9 13C4-PFHpA										
367.00 > 322.00	2.318	2.319	-0.001	0.872	3576951	2.51		101	45438	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.318	2.318	0.0	0.994	4838747	2.15		94.5	15227	
399.00 > 99.00	2.331	2.318	0.013	1.000	1625702		2.98(1.50-4.49)		8385	
D 11 18O2 PFHxS										
403.00 > 84.00	2.331	2.332	-0.001	0.877	4638330	2.30		97.3	38451	
65 Adona										
377.00 > 251.00	2.358	2.358	0.0	0.779	11942544	2.67		113	78330	
377.00 > 85.00	2.358	2.358	0.0	0.779	7118831		1.68(0.84-2.53)		40351	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.635	2.635	0.0	1.000	1012046	2.32		97.8	7942	
D 12 M2-6:2FTS										
429.00 > 81.00	2.635	2.644	-0.009	0.991	663140	2.17		91.5	17265	
* 62 13C2-PFOA										
415.00 > 370.00	2.659	2.659	0.0		3795503	2.50			35991	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.659	2.659	0.0	1.000	4329761	2.48		99.1	3045	
413.00 > 169.00	2.659	2.659	0.0	1.000	2130420		2.03(0.84-2.52)		11190	
D 14 13C4 PFOA										
417.00 > 372.00	2.659	2.667	-0.008	1.000	3542501	2.44		97.6	35126	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.666	2.666	0.0	0.881	4613001	2.52		106	26240	
449.00 > 99.00	2.666	2.666	0.0	0.881	1182821		3.90(1.94-5.82)		23284	
D 18 13C4 PFOS										
503.00 > 80.00	3.025	3.027	-0.002	1.138	3326479	2.25		94.1	26245	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.025	3.025	0.0	1.000	3645317	2.31		99.6	21136	
499.00 > 99.00	3.025	3.025	0.0	1.000	845060		4.31(2.31-6.93)		10111	
20 Perfluorononanoic acid										
463.00 > 419.00	3.025	3.025	0.0	1.000	3364799	2.53		101	6342	
463.00 > 169.00	3.025	3.025	0.0	1.000	817985		4.11(1.90-5.69)		30038	
D 19 13C5 PFNA										
468.00 > 423.00	3.025	3.034	-0.009	1.138	2997186	2.31		92.4	35447	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.233	3.233	0.0	1.069	6445880	2.52		108	42459	
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.370	3.370	0.0	1.114	2815899	2.61		109	26973	
549.00 > 99.00	3.370	3.370	0.0	1.114	1057349		2.66(1.33-3.97)		20090	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.370	3.370	0.0	1.000	5286591	2.59		103	47577	
25 1H,1H,2H,2H-perfluorodecanesulfoni										
527.00 > 507.00	3.370	3.370	0.0	1.000	1067489	2.33		97.1	13257	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 21 13C8 FOSA										
506.00 > 78.00	3.370	3.379	-0.009	1.267	5184361	2.43		97.2	40352	
D 26 M2-8:2FTS										
529.00 > 81.00	3.370	3.379	-0.009	1.267	852187	1.91		79.8	14798	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.379	3.379	0.0	1.000	2848459	2.52		101	15653	
513.00 > 169.00	3.379	3.379	0.0	1.000	482759		5.90(2.36-7.09)		21429	
D 23 13C2 PFDA										
515.00 > 470.00	3.379	3.389	-0.010	1.271	2692829	2.36		94.6	27538	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.528	3.538	-0.010	1.327	1220253	2.61		105	22256	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.538	3.538	0.0	1.003	1244570	2.59		103	8293	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.687	3.687	0.0	1.219	2473891	2.65		110	32373	
599.00 > 99.00	3.687	3.687	0.0	1.219	826850		2.99(1.39-4.16)		28730	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.697	3.708	-0.011	1.390	1315977	2.75		110	2972	
D 30 13C2 PFUnA										
565.00 > 520.00	3.708	3.708	0.0	1.394	2390565	2.51		101	30765	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.708	3.708	0.0	1.000	1794692	2.29		91.6	7975	
563.00 > 169.00	3.708	3.708	0.0	1.000	492449		3.64(2.12-6.36)		16983	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.708	3.708	0.0	1.003	1147087	2.46		98.6	24094	
66 11-Chloroeicosafluoro-3-oxaundecan										
631.00 > 451.00	3.866	3.866	0.0	1.278	10008106	2.71		115	104773	
D 36 13C2 PFDoA										
615.00 > 570.00	3.999	3.999	0.0	1.504	2617720	2.65		106	21375	
37 Perfluorododecanoic acid										
613.00 > 569.00	3.999	3.999	0.0	1.000	2834337	2.48		99.2	1765	
613.00 > 169.00	3.999	3.999	0.0	1.000	697319		4.06(2.13-6.40)		10581	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.262	4.262	0.0	1.066	2800309	2.50		100	1454	
663.00 > 169.00	4.262	4.262	0.0	1.066	892683		3.14(1.25-3.76)		13239	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.501	4.501	0.0	1.000	654782	2.45		98.1	7656	
713.00 > 219.00	4.491	4.501	-0.010	0.998	483431		1.35(0.71-2.13)		7248	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.501	4.501	0.0	1.693	2564409	2.51		100	15890	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.905	4.905	0.0	1.845	4167663	2.56		102	11801	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.905	4.905	0.0	1.000	4261621	2.67		107	978	
813.00 > 169.00	4.905	4.905	0.0	1.000	668879		6.37(2.86-8.58)		5547	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.255	5.255	0.0	1.071	4931050	2.59		104	1086	
913.00 > 169.00	5.255	5.255	0.0	1.071	600191		8.22(3.83-11.48)		4947	

Reagents:

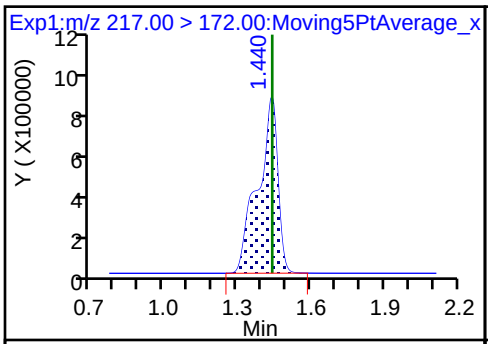
LCPFC_LL5_00005 Amount Added: 1.00 Units: mL

Report Date: 16-Jul-2018 14:29:10 Chrom Revision: 2.2 07-Jun-2018 07:41:54

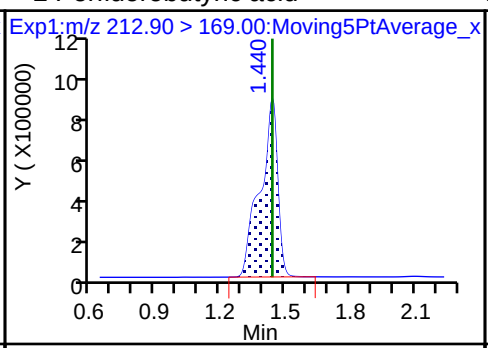
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\2018.07.13LLB_071.d
Injection Date: 14-Jul-2018 06:02:14 Instrument ID: A8_N
Lims ID: CCV L5
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 14 Worklist Smp#: 20
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC ICAL

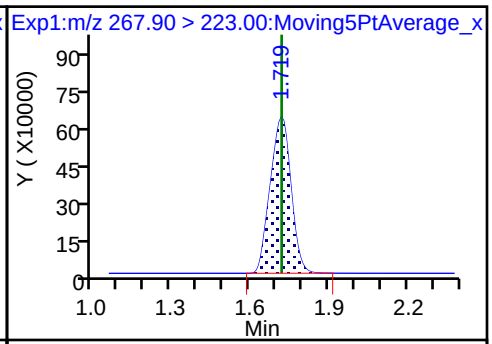
D 1 13C4 PFBA



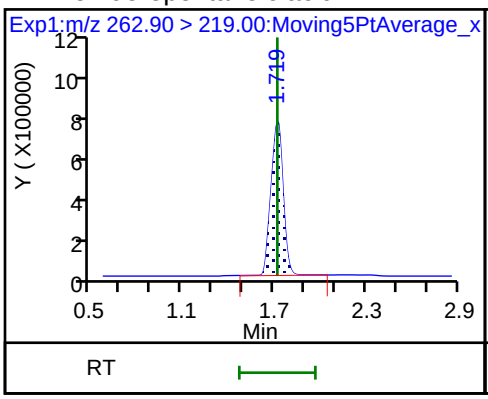
2 Perfluorobutyric acid



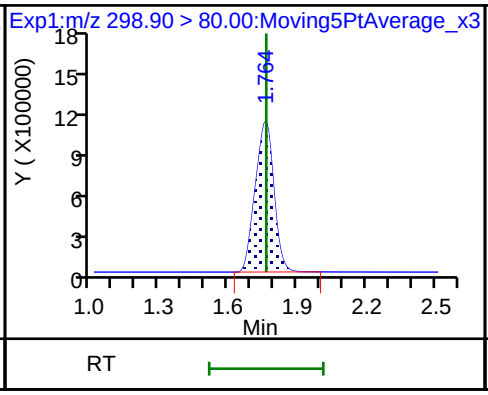
D 3 13C5-PFPeA



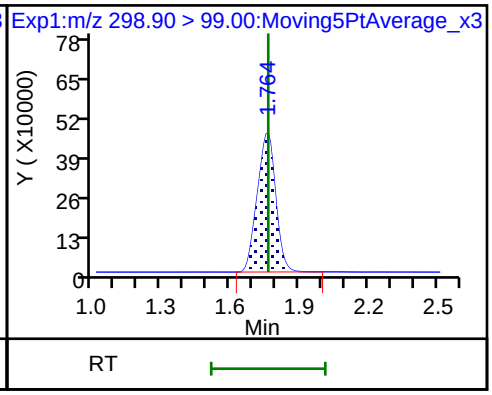
4 Perfluoropentanoic acid



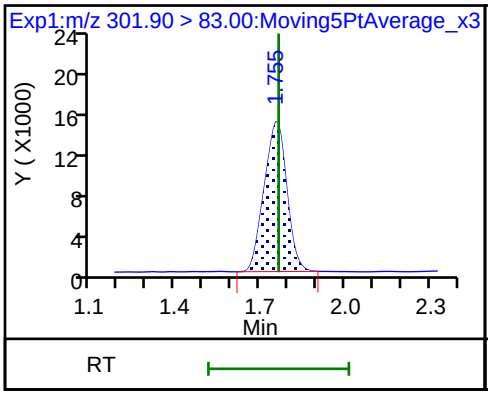
5 Perfluorobutanesulfonic acid



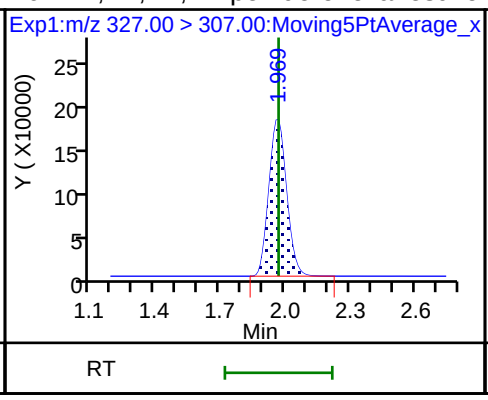
5 Perfluorobutanesulfonic acid



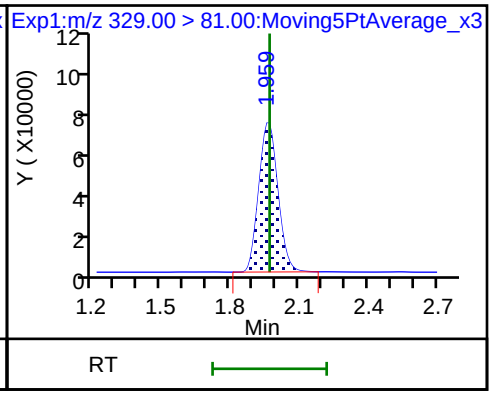
D 47 13C3-PFBS



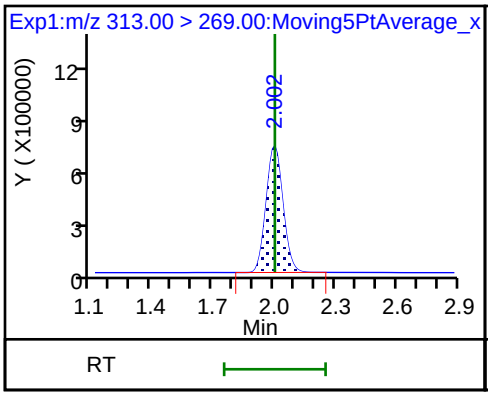
61 1H,1H,2H,2H-perfluorohexanesulfon



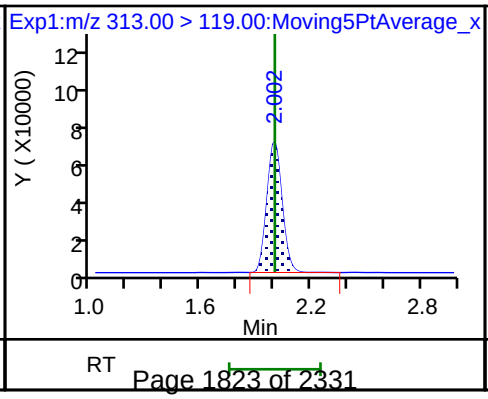
D 60 M2-4:2FTS



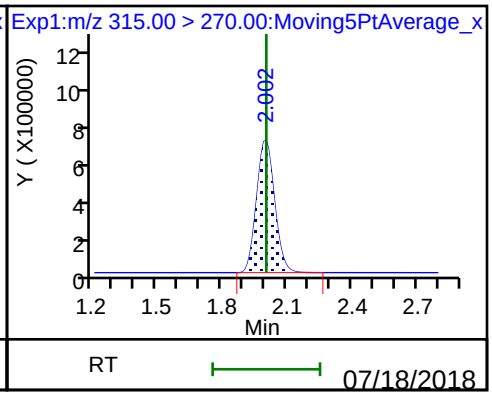
6 Perfluorohexanoic acid



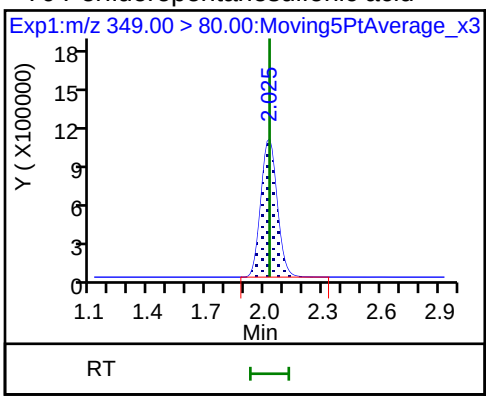
6 Perfluorohexanoic acid



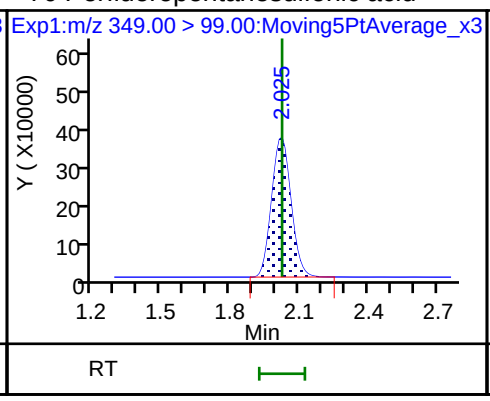
D 7 13C2 PFHxA



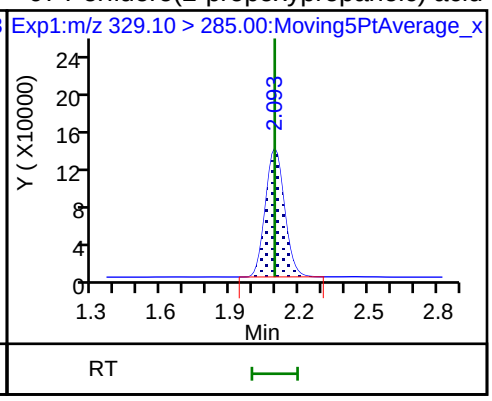
70 Perfluoropentanesulfonic acid



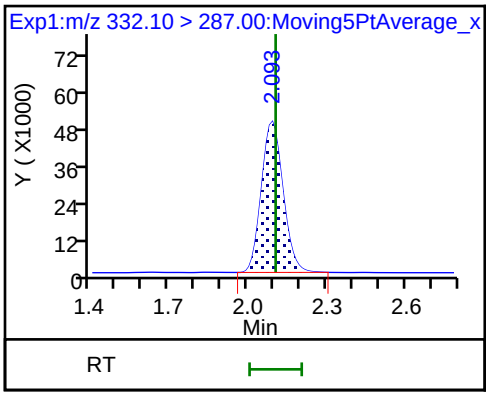
70 Perfluoropentanesulfonic acid



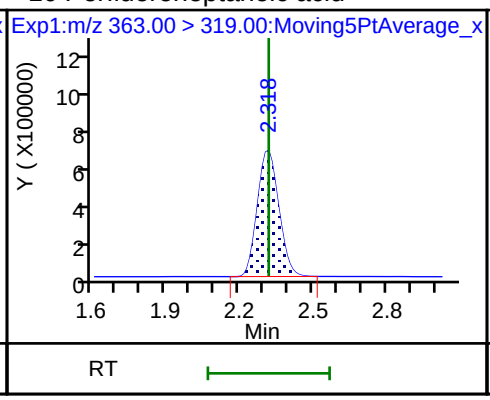
67 Perfluoro(2-propoxypropanoic) acid



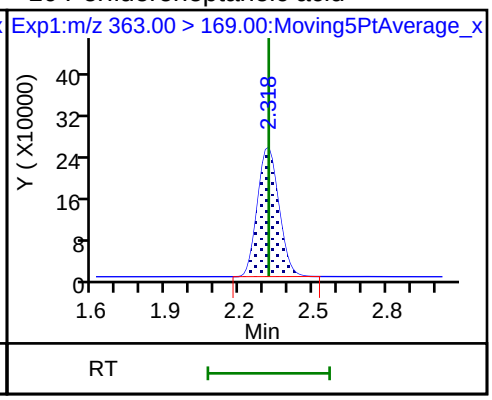
D 64 13C3 HFPO-DA



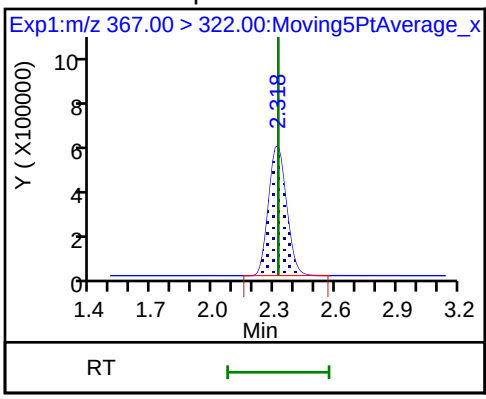
10 Perfluoroheptanoic acid



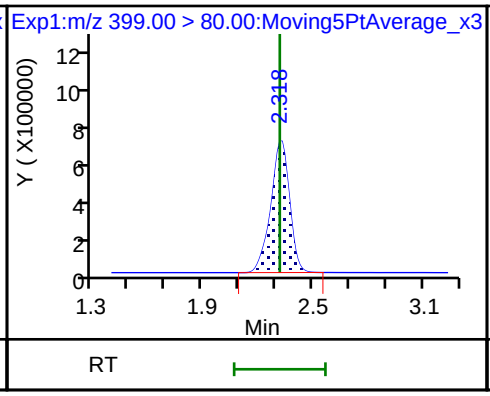
10 Perfluoroheptanoic acid



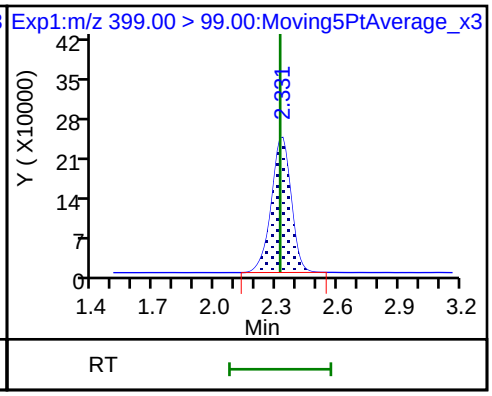
D 9 13C4-PFHpA



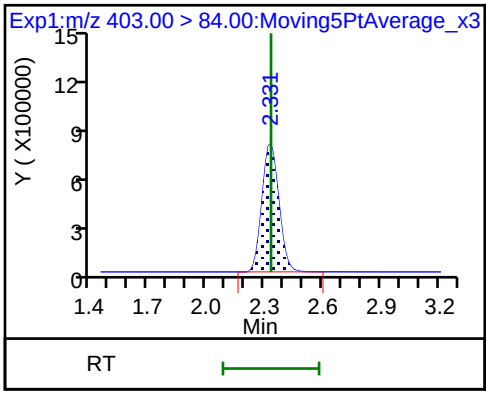
8 Perfluorohexanesulfonic acid



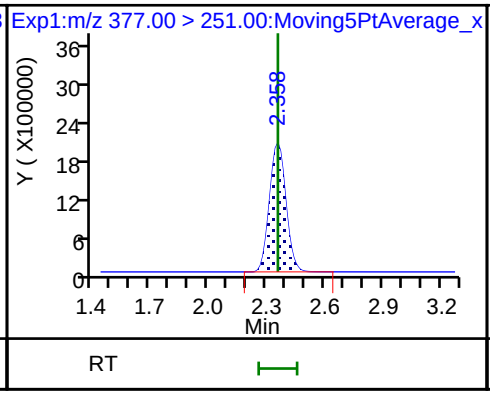
8 Perfluorohexanesulfonic acid



D 11 18O2 PFHxS



65 Adona



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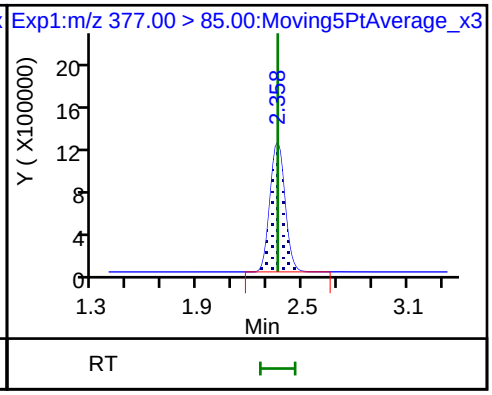
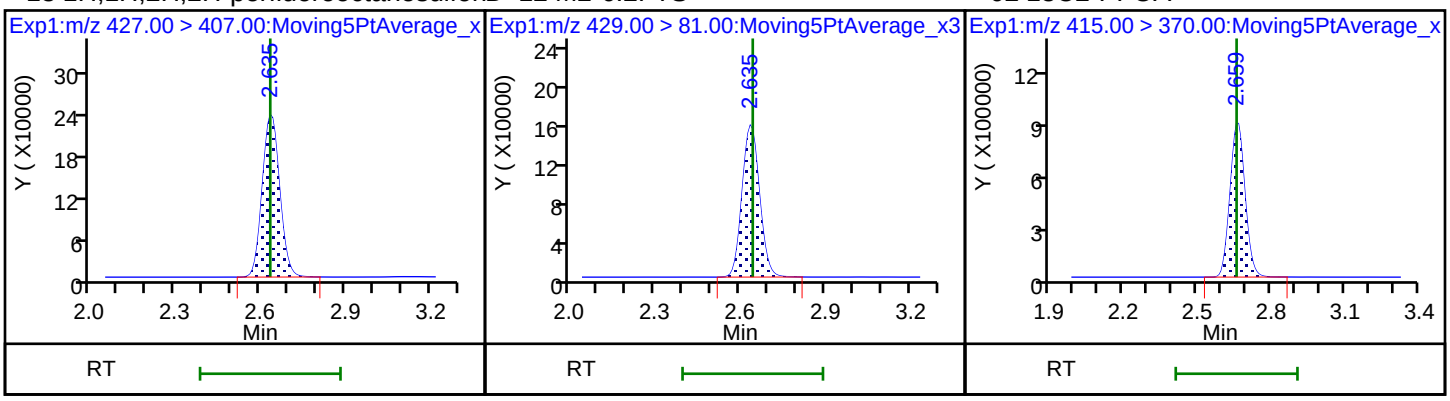
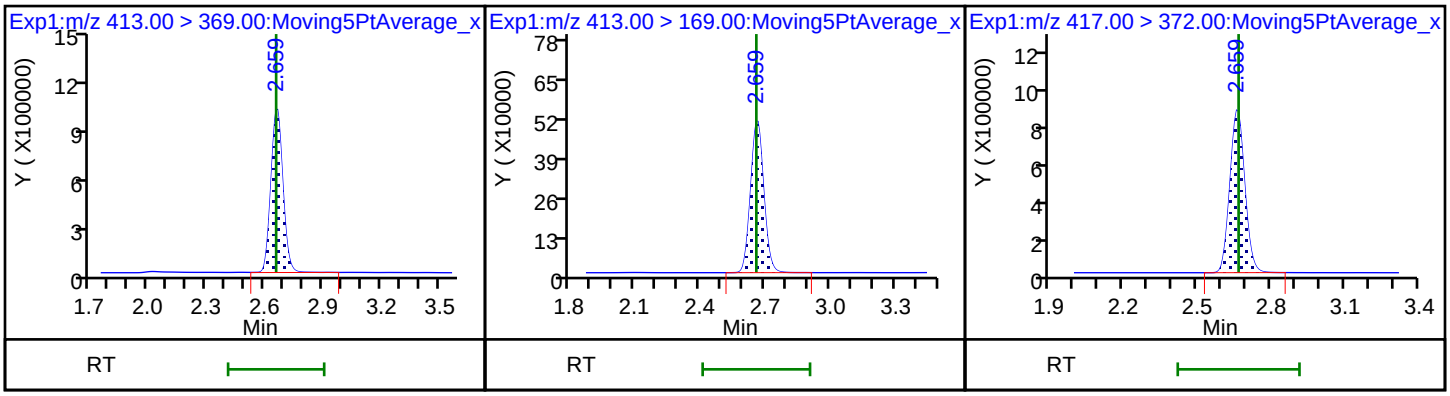


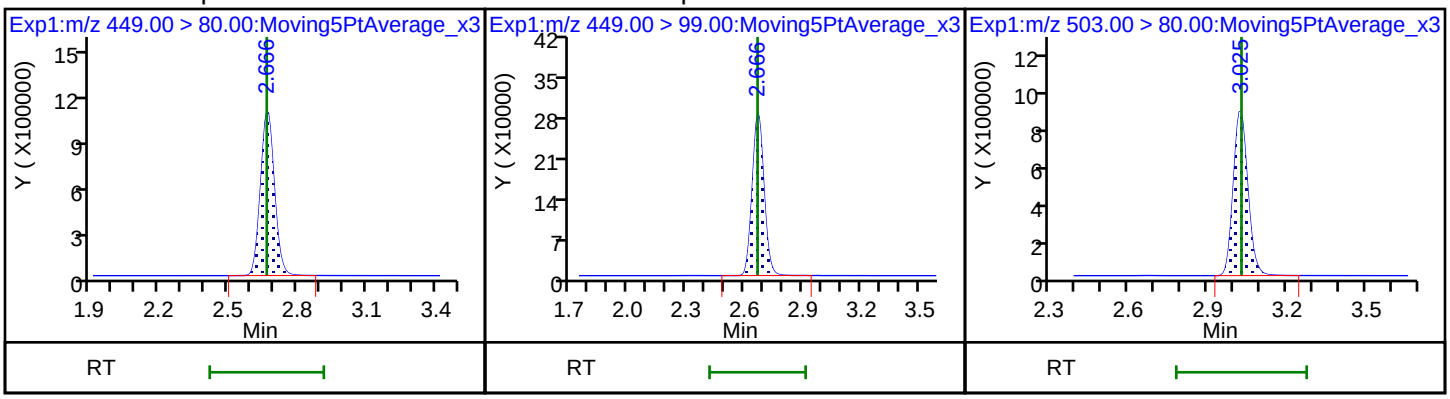
13 1H,1H,2H,2H-perfluorooctanesulfon D 12 M2-6:2FTS * 62 13C2-PFOA



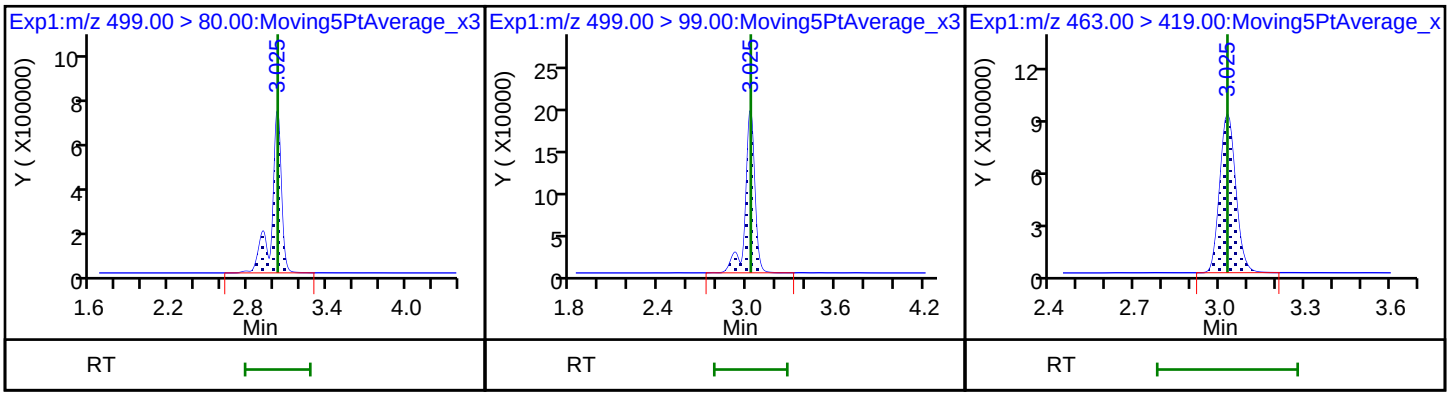
15 Perfluorooctanoic acid 15 Perfluorooctanoic acid D 14 13C4 PFOA



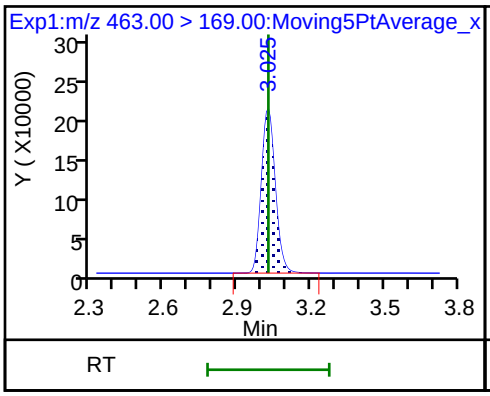
16 Perfluoroheptanesulfonic acid 16 Perfluoroheptanesulfonic acid D 18 13C4 PFOS



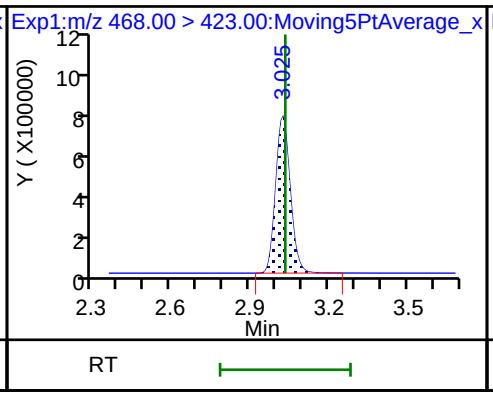
17 Perfluorooctane sulfonic acid 17 Perfluorooctane sulfonic acid 20 Perfluorononanoic acid



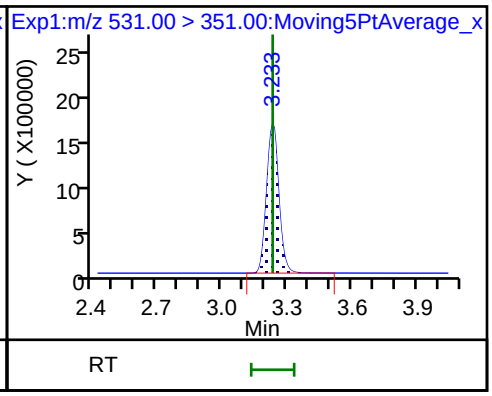
20 Perfluorononanoic acid



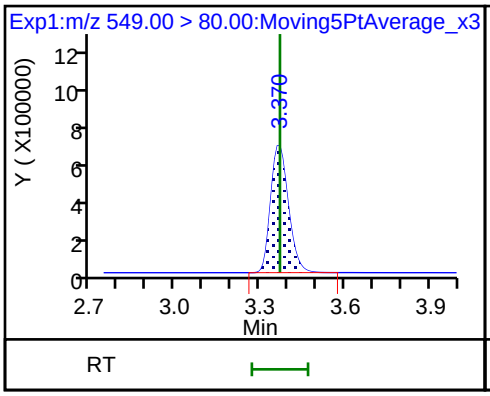
D 19 13C5 PFNA



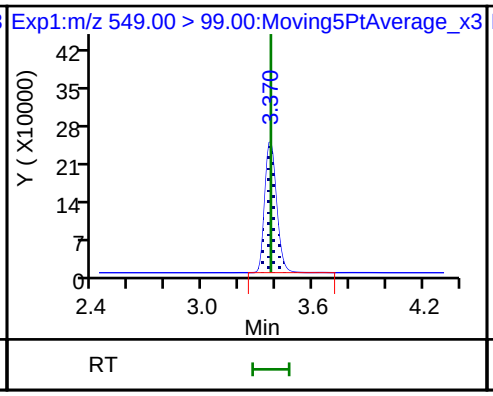
69 9-Chlorohexadecafluoro-3-oxanonane



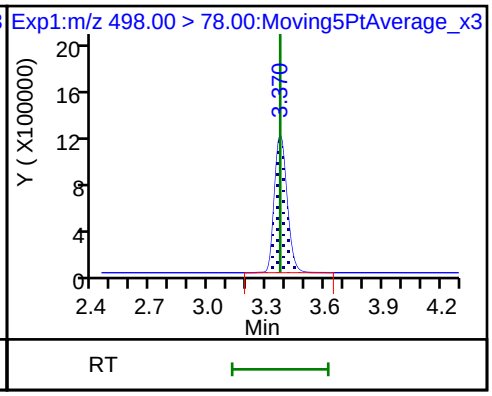
68 Perfluorononanesulfonic acid



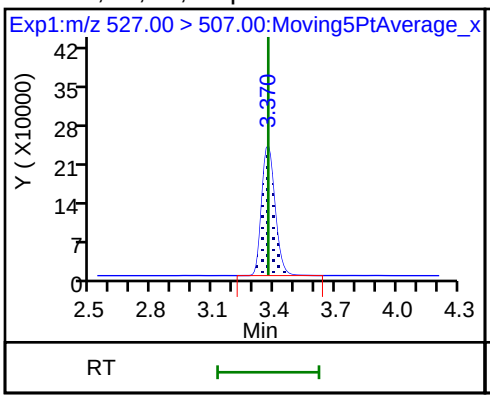
68 Perfluorononanesulfonic acid



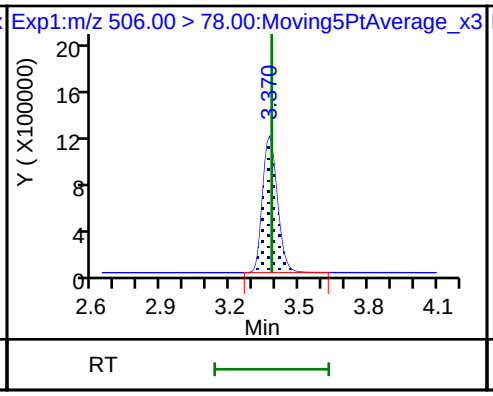
22 Perfluorooctane Sulfonamide



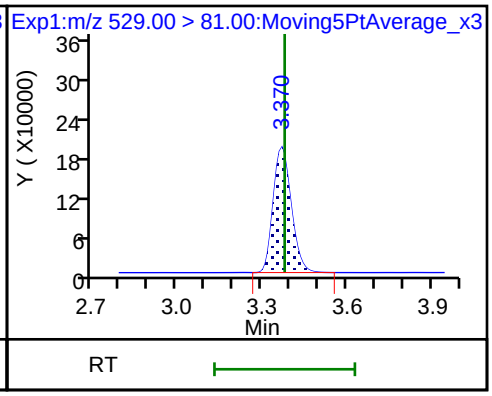
25 1H,1H,2H,2H-perfluorodecanesulfon



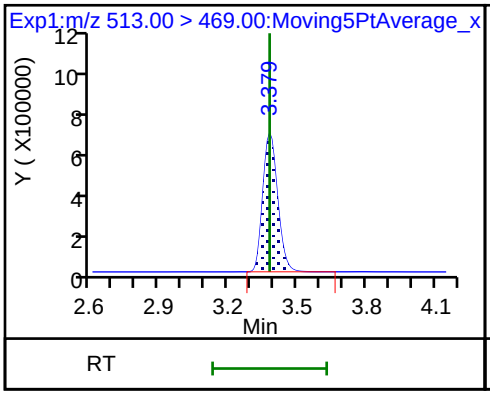
D 21 13C8 FOSA



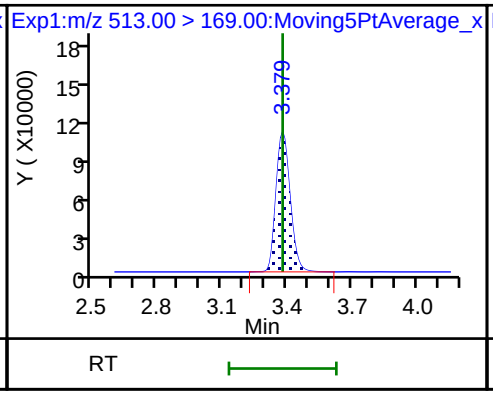
D 26 M2-8:2FTS



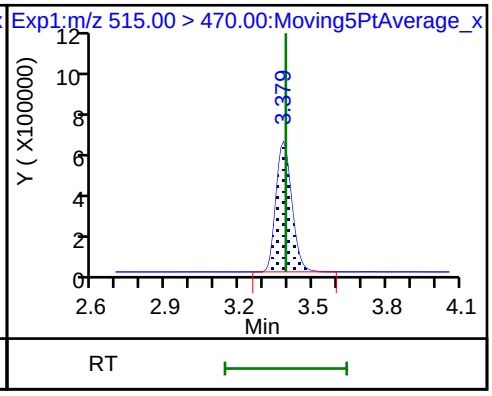
24 Perfluorodecanoic acid



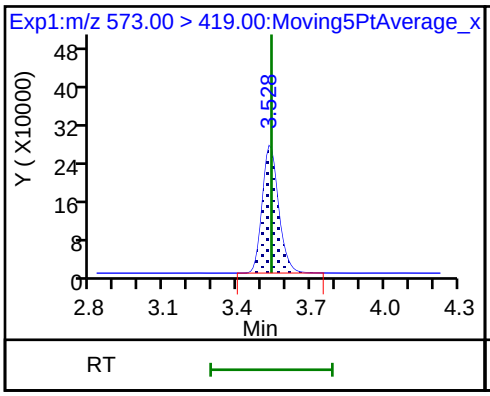
24 Perfluorodecanoic acid



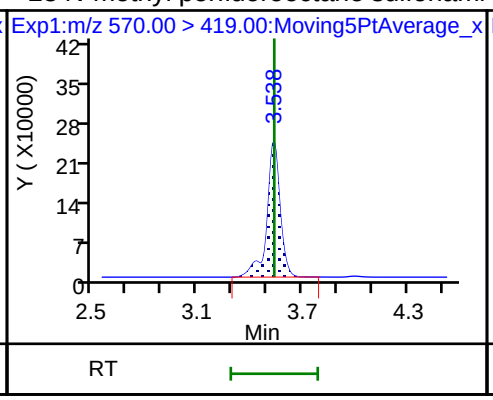
D 23 13C2 PFDA



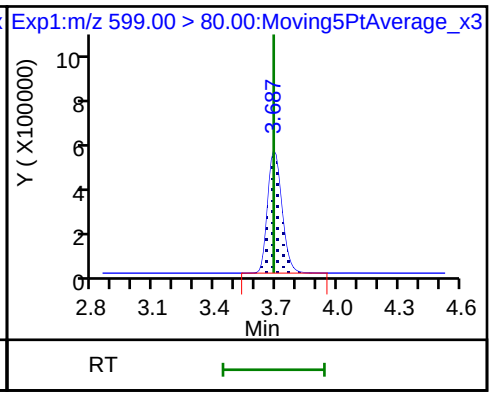
D 27 d3-NMeFOSAA



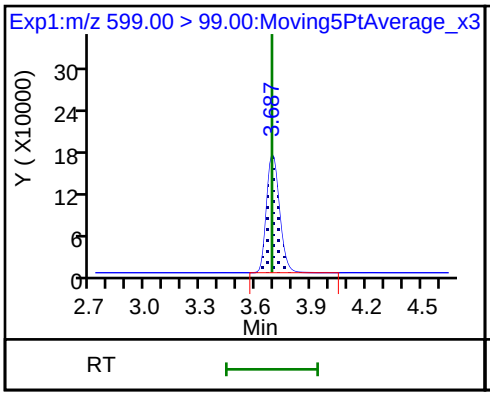
28 N-methyl perfluorooctane sulfonami



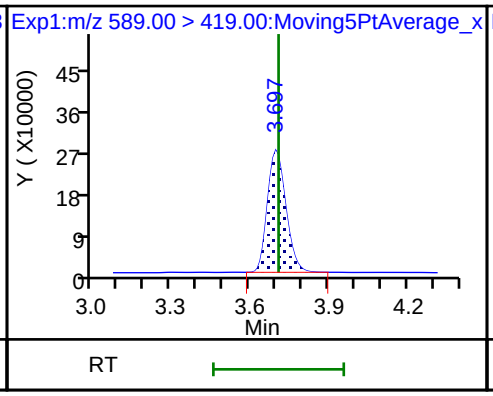
29 Perfluorodecane Sulfonic acid



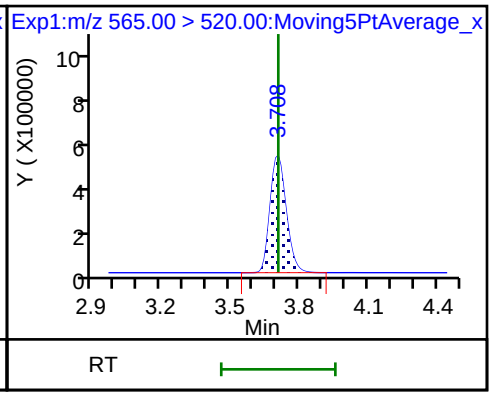
29 Perfluorodecane Sulfonic acid



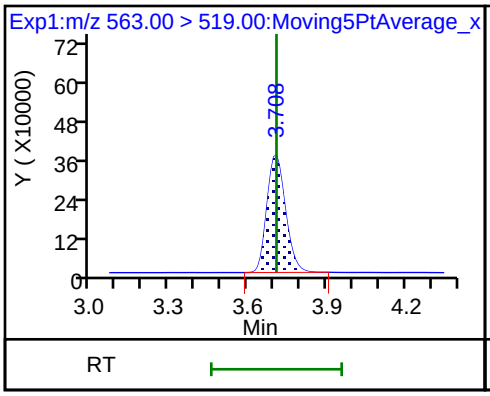
D 32 d5-NEtFOSAA



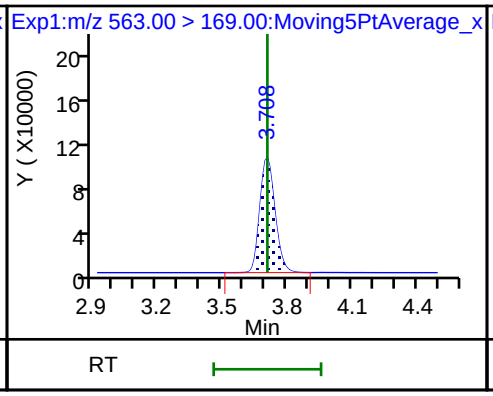
D 30 13C2 PFUnA



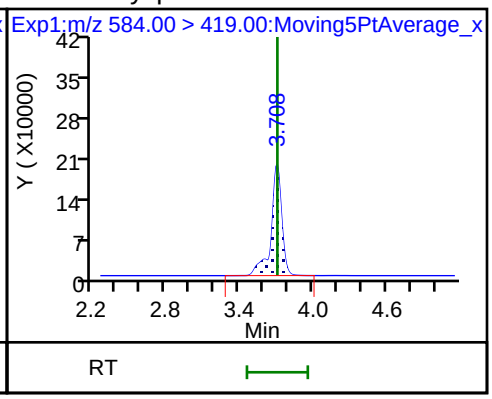
31 Perfluoroundecanoic acid



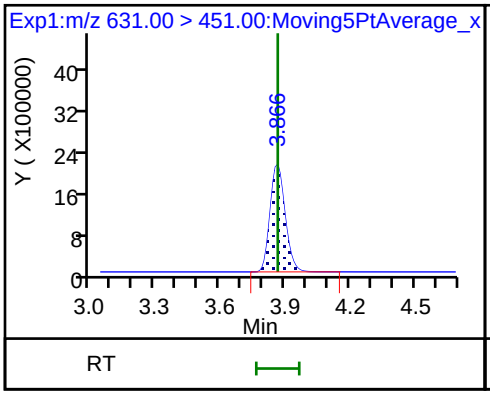
31 Perfluoroundecanoic acid



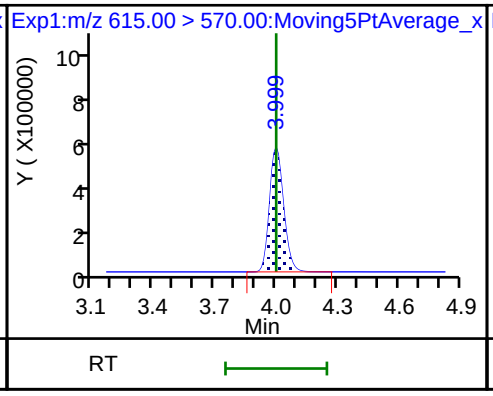
33 N-ethyl perfluorooctane sulfonamid



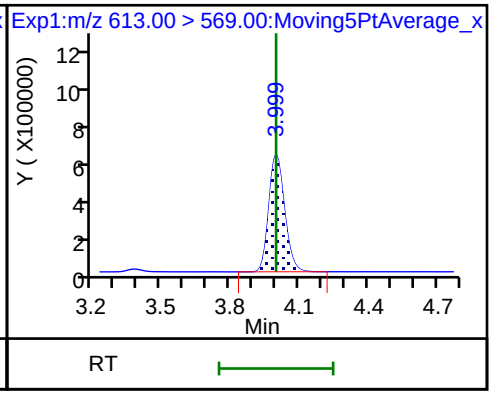
66 11-Chloroeicosafluoro-3-oxaundecan



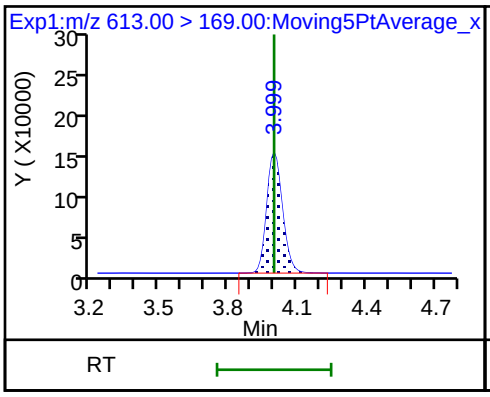
D 36 13C2 PFDoA



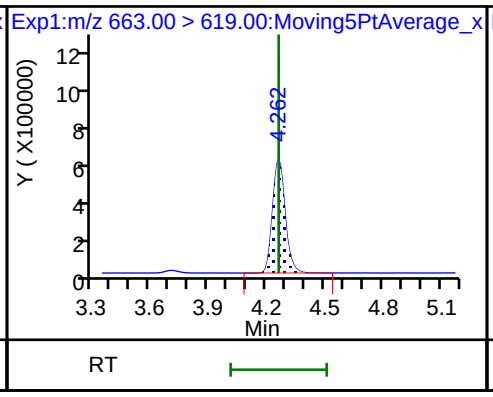
37 Perfluorododecanoic acid



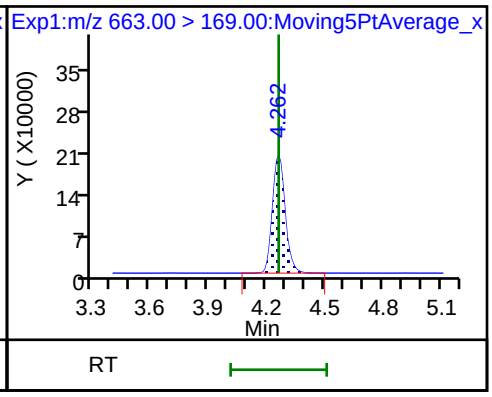
37 Perfluorododecanoic acid



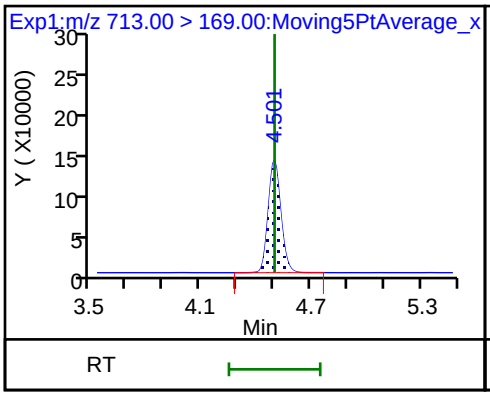
41 Perfluorotridecanoic acid



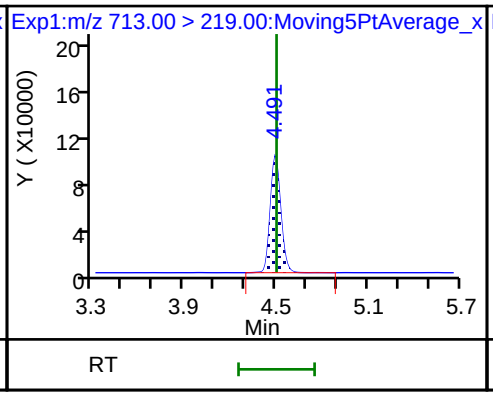
41 Perfluorotridecanoic acid



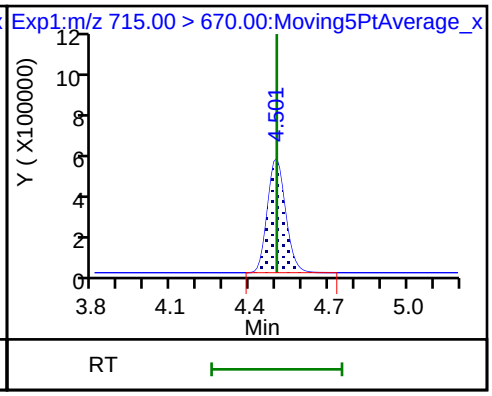
42 Perfluorotetradecanoic acid



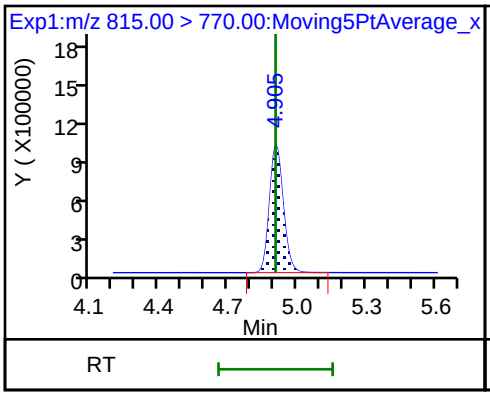
42 Perfluorotetradecanoic acid



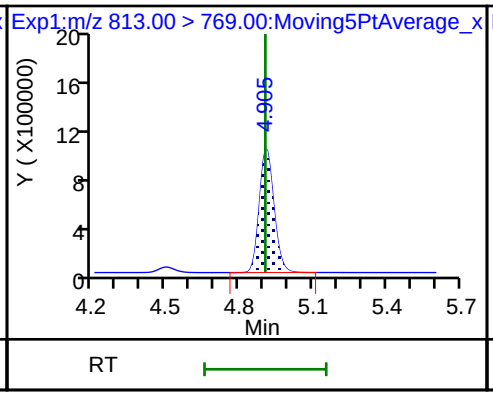
D 43 13C2-PFTeDA



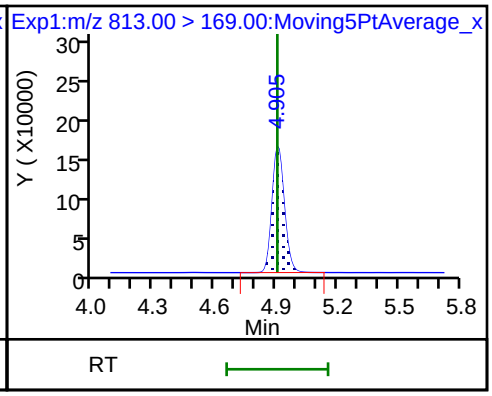
D 44 13C2-PFHxDA



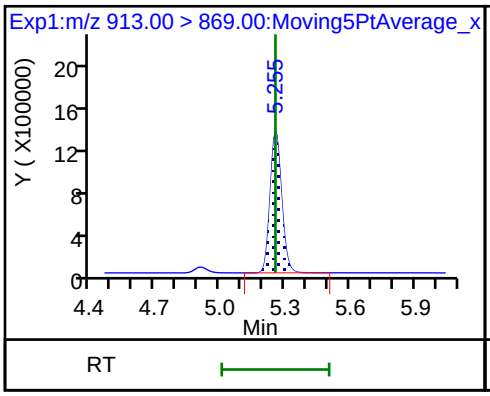
45 Perfluorohexadecanoic acid



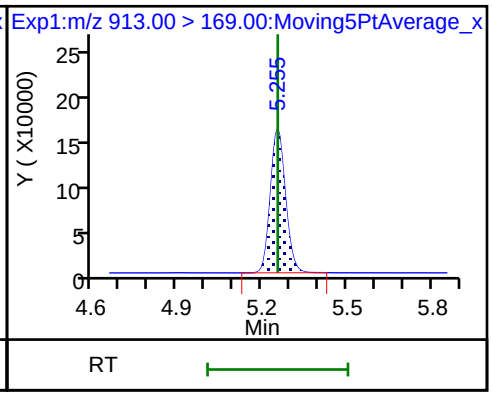
45 Perfluorohexadecanoic acid



46 Perfluorooctadecanoic acid



46 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Lab Sample ID: CCVL 320-234011/2 Calibration Date: 07/14/2018 11:16

Instrument ID: A8_N Calib Start Date: 07/11/2018 14:48

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 07/11/2018 15:38

Lab File ID: 2018.07.14LLA_005.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.9856	1.083		0.0549	0.0500	9.8	50.0
Perfluoropentanoic acid (PFPeA)	AveID	1.213	1.278		0.0527	0.0500	5.4	50.0
Perfluorobutanesulfonic acid (PFBS)	AveID	76.50	73.95		0.0427	0.0442	-3.3	50.0
4:2 FTS	AveID	13.00	13.39			0.0467	3.0	50.0
Perfluorohexanoic acid (PFHxA)	AveID	1.029	1.068		0.0519	0.0500	3.7	50.0
Perfluoropentanesulfonic acid (PFPeS)	AveID	69.78	74.64		0.0502	0.0469	7.0	50.0
HFPO-DA (GenX)	AveID	2.654	2.424		0.0457	0.0500	-8.7	50.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.157	1.236		0.0534	0.0500	6.9	50.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.148	1.198		0.0475	0.0455	4.3	50.0
ADONA	AveID	3.219	3.624		0.0530	0.0471	12.6	50.0
6:2 FTS	AveID	1.564	1.543			0.0474	-1.4	50.0
Perfluorooctanoic acid (PFOA)	AveID	1.232	1.312		0.0533	0.0501	6.5	50.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.318	1.308		0.0473	0.0476	-0.7	50.0
Perfluorononanoic acid (PFNA)	AveID	1.109	1.066		0.0481	0.0500	-3.9	50.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.133	1.198		0.0490	0.0464	5.7	50.0
9-Chlorohexadecafluoro-3-oxa nonane-1-sulfonate	AveID	1.836	1.919		0.0487	0.0466	4.6	50.0
8:2 FTS	AveID	1.290	1.316			0.0479	2.0	50.0
Perfluorononanesulfonic acid (PFNS)	AveID	0.7752	0.7694		0.0476	0.0480	-0.8	50.0
Perfluorodecanoic acid (PFDA)	AveID	1.049	1.031		0.0491	0.0500	-1.7	50.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9856	0.9891		0.0502	0.0500	0.4	50.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	0.9858	0.9181			0.0500	-6.9	50.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6714	0.5914		0.0425	0.0482	-11.9	50.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.8840	1.018		0.0576	0.0500	15.2	50.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.8195	0.9097		0.0555	0.0500	11.0	50.0
11-Chloroeicosafluoro-3-oxau ndecane-1-sulfonate	AveID	2.654	2.843		0.0505	0.0471	7.1	50.0
Perfluorododecanoic acid (PFDoA)	AveID	1.092	1.235		0.0565	0.0500	13.1	50.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.068	1.041		0.0487	0.0500	-2.5	50.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2602	0.2865		0.0550	0.0500	10.1	50.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		1.427		0.0535	0.0500	7.1	50.0

FORM VII 537 (modified)

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Lab Sample ID: CCVL 320-234011/2 Calibration Date: 07/14/2018 11:16

Instrument ID: A8_N Calib Start Date: 07/11/2018 14:48

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 07/11/2018 15:38

Lab File ID: 2018.07.14LLA_005.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.143	1.123		0.0491	0.0500	-1.7	50.0
13C4 PFBA	Ave	1.356	1.252		2.31	2.50	-7.7	50.0
13C5 PFPeA	Ave	0.9425	0.9214		2.44	2.50	-2.2	50.0
13C3-PFBS	Ave	0.0237	0.0234		2.30	2.33	-1.2	50.0
M2-4:2FTS	Ave	0.1273	0.1199		2.20	2.34	-5.8	50.0
13C2 PFHxA	Ave	1.017	1.049		2.58	2.50	3.1	50.0
13C3 HFPO-DA	Ave	0.0724	0.0818		2.82	2.50	13.0	50.0
13C4-PFHpA	Ave	0.9371	0.9620		2.57	2.50	2.7	50.0
18O2 PFHxS	Ave	1.328	1.310		2.33	2.37	-1.4	50.0
M2-6:2FTS	Ave	0.2009	0.1811		2.14	2.38	-9.9	50.0
13C4 PFOA	Ave	0.9560	0.9543		2.50	2.50	-0.2	50.0
13C4 PFOS	Ave	0.9742	0.9238		2.27	2.39	-5.2	50.0
13C5 PFNA	Ave	0.8546	0.7800		2.28	2.50	-8.7	50.0
M2-8:2FTS	Ave	0.2939	0.2282		1.86	2.40	-22.3	50.0
13C2 PFDA	Ave	0.7503	0.7432		2.48	2.50	-0.9	50.0
13C8 FOSA	Ave	1.405	1.427		2.54	2.50	1.6	50.0
d3-NMeFOSAA	Ave	0.3075	0.3188		2.59	2.50	3.7	50.0
d5-NEtFOSAA	Ave	0.3150	0.3558		2.82	2.50	13.0	50.0
13C2 PFUnA	Ave	0.6266	0.6360		2.54	2.50	1.5	50.0
13C2 PFDoA	Ave	0.6496	0.6976		2.68	2.50	7.4	50.0
13C2-PFTeDA	Ave	0.6740	0.6922		2.57	2.50	2.7	50.0
13C2-PFHxDA	Ave	1.074	1.203		2.80	2.50	12.1	50.0

FORM VII 537 (modified)

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61062.b\2018.07.14LLA_005.d
Lims ID: CCVL
Client ID:
Sample Type: CCVL
Inject. Date: 14-Jul-2018 11:16:47 ALS Bottle#: 21 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCVL
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-A8_N*sub32

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61062.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 16-Jul-2018 14:48:38 Calib Date: 11-Jul-2018 15:38:42
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK023

First Level Reviewer: mongkols Date: 16-Jul-2018 14:48:38

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.435	1.440	-0.005	0.541	4940854	2.31		92.3	31175	
2 Perfluorobutyric acid										
212.90 > 169.00	1.435	1.441	-0.006	1.000	106983	0.0549		110	37.4	
D 3 13C5-PFPeA										
267.90 > 223.00	1.719	1.719	0.0	0.648	3635850	2.44		97.8	51072	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.719	1.719	0.0	1.000	92955	0.0527		105	41.9	
D 47 13C3-PFBS										
301.90 > 83.00	1.755	1.755	0.0	0.662	85850	2.30		98.8	592	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.755	1.764	-0.009	1.000	120693	0.0427		96.7	700	
298.90 > 99.00	1.755	1.764	-0.009	1.000	50415		2.39(1.25-3.74)		355	
D 60 M2-4:2FTS										
329.00 > 81.00	1.959	1.959	0.0	0.739	441717	2.20		94.2	6065	
61 1H,1H,2H,2H-perfluorohexanesulfoni										
327.00 > 307.00	1.959	1.970	-0.011	1.116	23083	0.0481		103	1410	
D 7 13C2 PFHxA										
315.00 > 270.00	1.991	2.002	-0.011	0.751	4137969	2.58		103	65684	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.991	2.003	-0.012	1.000	88350	0.0519		104	207	
313.00 > 119.00	1.991	2.003	-0.012	1.000	8427		10.48(5.03-15.10)		194	
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.014	2.025	-0.011	1.147	129264	0.0502		107	2819	
349.00 > 99.00	2.014	2.025	-0.011	1.147	44408		2.91(1.36-4.07)		699	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.082	2.093	-0.011	0.785	322689	2.82		113	7083	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
67 Perfluoro(2-propoxypropanoic) acid										
329.10 > 285.00	2.093	2.093	0.0	1.005	15646	0.0457		91.3	114	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.306	2.306	0.0	1.000	93837	0.0534		107	181	
363.00 > 169.00	2.306	2.306	0.0	1.000	31402		2.99(1.13-3.40)		407	
D 9 13C4-PFHpA										
367.00 > 322.00	2.306	2.318	-0.012	0.870	3796009	2.57		103	48557	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.319	2.319	0.0	1.000	112650	0.0475		104	1184	
399.00 > 99.00	2.319	2.319	0.0	1.000	37604		3.00(1.50-4.49)		240	
D 11 18O2 PFHxS										
403.00 > 84.00	2.319	2.331	-0.012	0.874	4888592	2.33		98.6	47890	
65 Adona										
377.00 > 251.00	2.345	2.358	-0.013	0.778	248890	0.0530		113	6017	
377.00 > 85.00	2.345	2.358	-0.013	0.778	137325		1.81(0.84-2.53)		1095	
D 12 M2-6:2FTS										
429.00 > 81.00	2.627	2.635	-0.008	0.991	678919	2.14		90.1	10554	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.627	2.636	-0.009	1.000	20904	0.0467		98.6	162	
D 14 13C4 PFOA										
417.00 > 372.00	2.652	2.659	-0.007	1.000	3765597	2.50		99.8	49516	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.652	2.659	-0.007	1.000	98892	0.0533		107	57.9	
413.00 > 169.00	2.652	2.659	-0.007	1.000	51443		1.92(0.84-2.52)		413	
* 62 13C2-PFOA										
415.00 > 370.00	2.652	2.659	-0.007		3945973	2.50			42746	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.659	2.667	-0.008	0.882	90784	0.0473		99.3	3641	
449.00 > 99.00	2.659	2.667	-0.008	0.882	25172		3.61(1.94-5.82)		512	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.014	3.016	-0.002	1.000	81024	0.0490		106	1137	
499.00 > 99.00	3.007	3.016	-0.009	0.998	18539		4.37(2.31-6.93)		411	
20 Perfluorononanoic acid										
463.00 > 419.00	3.014	3.016	-0.002	1.000	65639	0.0481		96.1	122	
463.00 > 169.00	3.007	3.016	-0.009	0.998	17594		3.73(1.90-5.69)		937	
D 18 13C4 PFOS										
503.00 > 80.00	3.014	3.025	-0.011	1.137	3484836	2.27		94.8	27560	
D 19 13C5 PFNA										
468.00 > 423.00	3.014	3.025	-0.011	1.137	3077895	2.28		91.3	32099	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.220	3.222	-0.002	1.068	130419	0.0487		105	1382	
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.356	3.350	0.006	1.113	53846	0.0476		99.2	1785	
549.00 > 99.00	3.356	3.350	0.006	1.113	22194		2.43(1.33-3.97)		341	
25 1H,1H,2H,2H-perfluorodecanesulfoni										
527.00 > 507.00	3.356	3.359	-0.003	1.000	22707	0.0489		102	505	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.374	3.368	0.006	1.003	111361	0.0502		100	3197	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
24 Perfluorodecanoic acid										
513.00 > 469.00	3.365	3.368	-0.003	1.000	60495	0.0491		98.3	376	
513.00 > 169.00	3.365	3.368	-0.003	1.000	10618		5.70(2.36-7.09)		362	
D 21 13C8 FOSA										
506.00 > 78.00	3.365	3.370	-0.005	1.269	5629559	2.54		102	45511	
D 26 M2-8:2FTS										
529.00 > 81.00	3.356	3.370	-0.014	1.265	862789	1.86		77.7	11560	
D 23 13C2 PFDA										
515.00 > 470.00	3.365	3.379	-0.014	1.269	2932821	2.48		99.1	52225	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.524	3.518	0.006	1.003	23101	0.0466		93.1	150	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.514	3.528	-0.014	1.325	1258096	2.59		104	27720	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.679	3.674	0.005	1.221	41566	0.0425		88.1	1782	
599.00 > 99.00	3.669	3.674	-0.005	1.217	19045		2.18(1.39-4.16)		575	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.690	3.685	0.005	1.000	45660	0.0555		111	195	
563.00 > 169.00	3.690	3.685	0.005	1.000	8120		5.62(2.12-6.36)		429	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.690	3.685	0.005	1.003	28593	0.0576		115	363	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.679	3.697	-0.018	1.387	1404113	2.82		113	3455	
D 30 13C2 PFUnA										
565.00 > 520.00	3.690	3.708	-0.018	1.391	2509563	2.54		102	40685	
66 11-Chloroeicosafluoro-3-oxaundecan										
631.00 > 451.00	3.847	3.842	0.005	1.276	195240	0.0505		107	8203	
37 Perfluorododecanoic acid										
613.00 > 569.00	3.978	3.975	0.003	1.000	67972	0.0565		113	49.9	
613.00 > 169.00	3.978	3.975	0.003	1.000	15257		4.46(2.13-6.40)		352	
D 36 13C2 PFDoA										
615.00 > 570.00	3.978	3.999	-0.021	1.500	2752671	2.68		107	20581	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.243	4.240	0.003	1.067	57303	0.0487		97.5	29.5	
663.00 > 169.00	4.243	4.240	0.003	1.067	16451		3.48(1.25-3.76)		332	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.480	4.479	0.001	1.000	15649	0.0550		110	234	
713.00 > 219.00	4.470	4.479	-0.009	0.998	10635		1.47(0.71-2.13)		245	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.480	4.501	-0.021	1.690	2731557	2.57		103	16320	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.878	4.878	0.0	1.000	135553	0.0535		107	34.4	
813.00 > 169.00	4.878	4.878	0.0	1.000	20742		6.54(2.86-8.58)		332	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.878	4.905	-0.027	1.840	4748623	2.80		112	16108	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.218	5.225	-0.007	1.070	106645	0.0491		98.3	21.6	
913.00 > 169.00	5.218	5.225	-0.007	1.070	12370		8.62(3.83-11.48)		206	

Reagents:

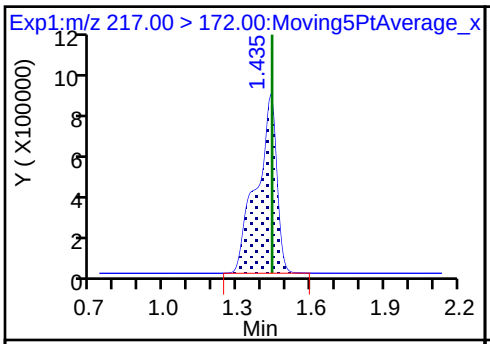
LCPFC_LL2_00005 Amount Added: 1.00 Units: mL

Report Date: 16-Jul-2018 14:48:40 Chrom Revision: 2.2 07-Jun-2018 07:41:54

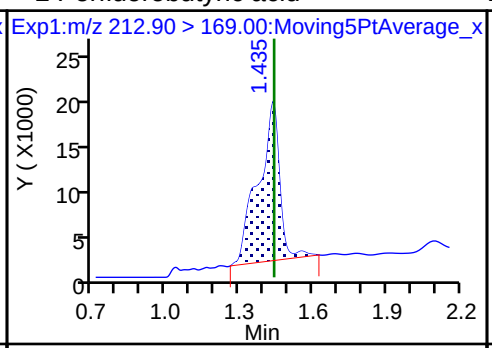
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61062.b\2018.07.14LLA_005.d
Injection Date: 14-Jul-2018 11:16:47 Instrument ID: A8_N
Lims ID: CCVL
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 21 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC ICAL

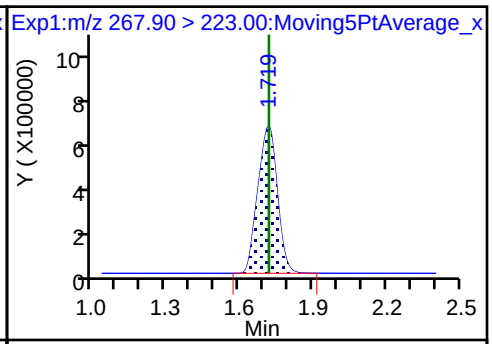
D 1 13C4 PFBA



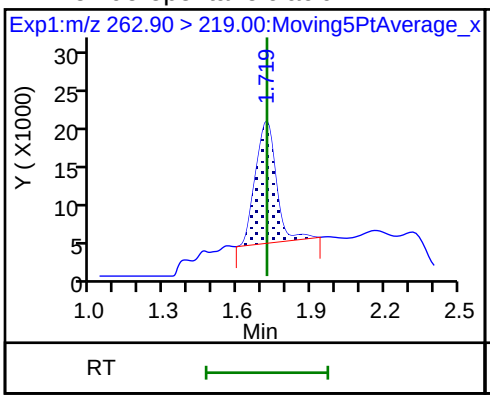
2 Perfluorobutyric acid



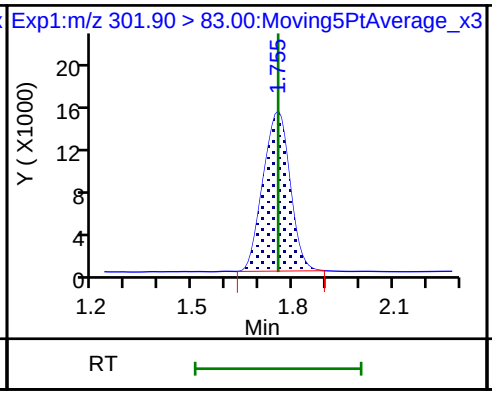
D 3 13C5-PFPeA



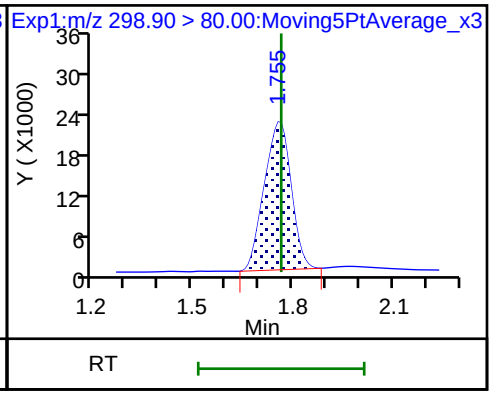
4 Perfluoropentanoic acid



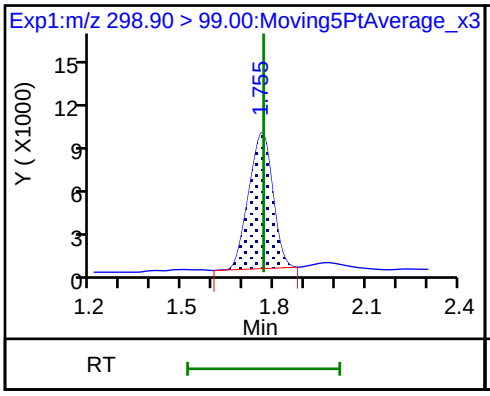
D 47 13C3-PFBS



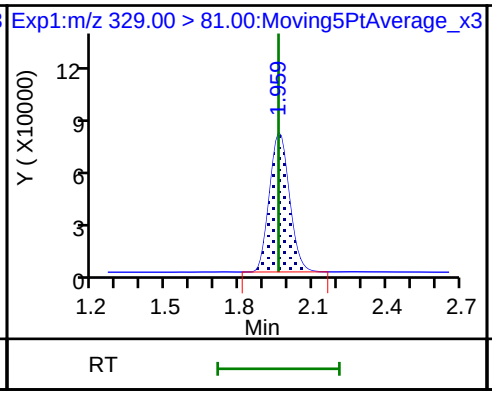
5 Perfluorobutanesulfonic acid



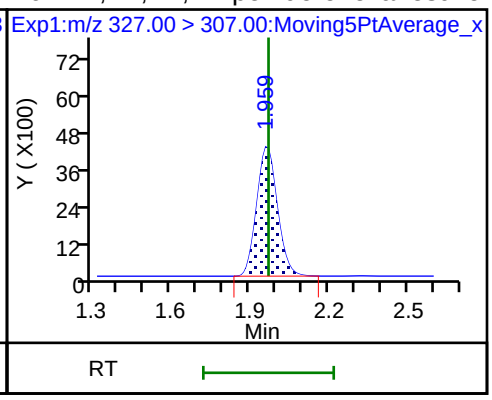
5 Perfluorobutanesulfonic acid



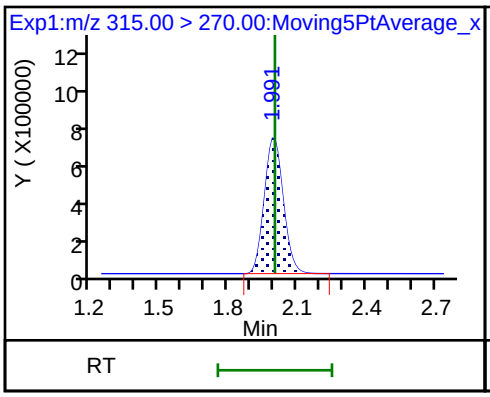
D 60 M2-4:2FTS



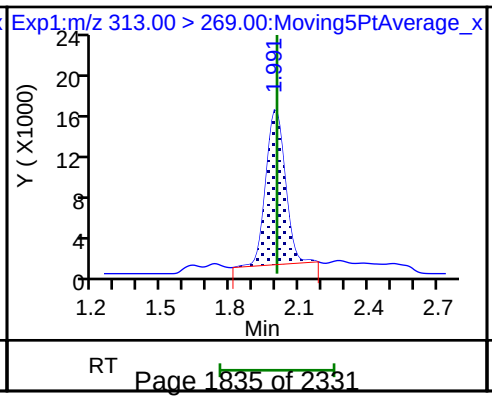
61 1H,1H,2H,2H-perfluorohexanesulfoni



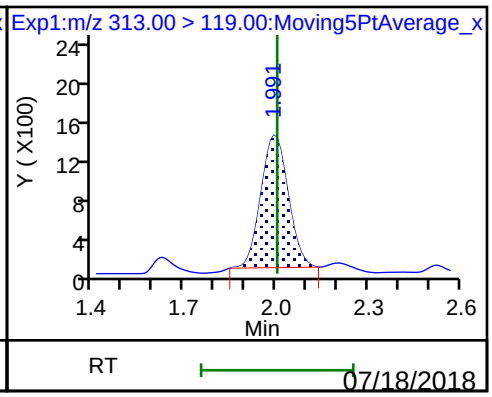
D 7 13C2 PFHxA



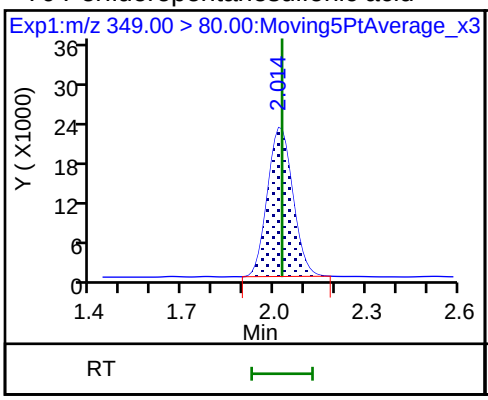
6 Perfluorohexanoic acid



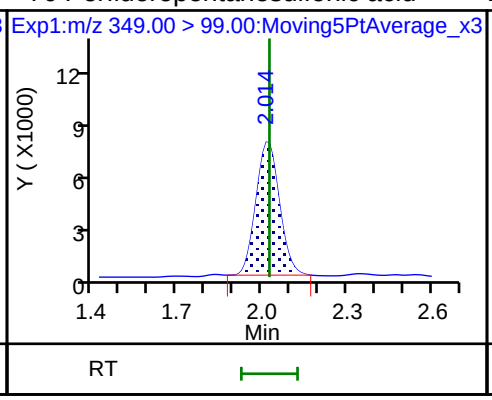
6 Perfluorohexanoic acid



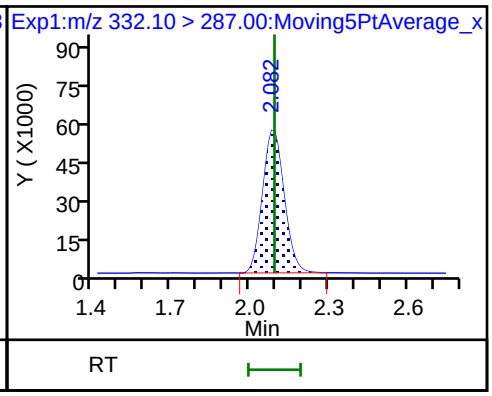
70 Perfluoropentanesulfonic acid



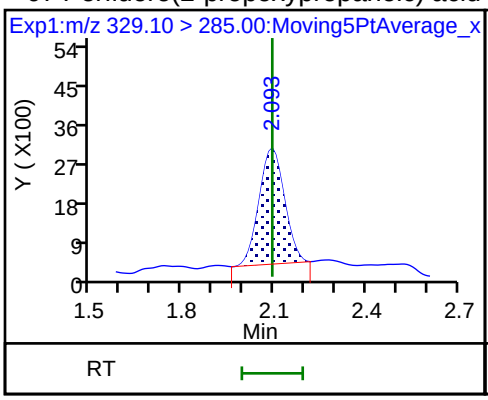
70 Perfluoropentanesulfonic acid



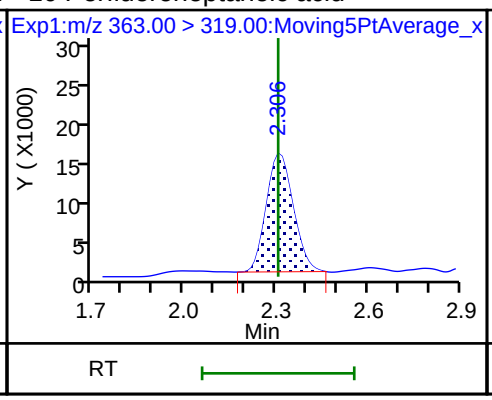
D 64 13C3 HFPO-DA



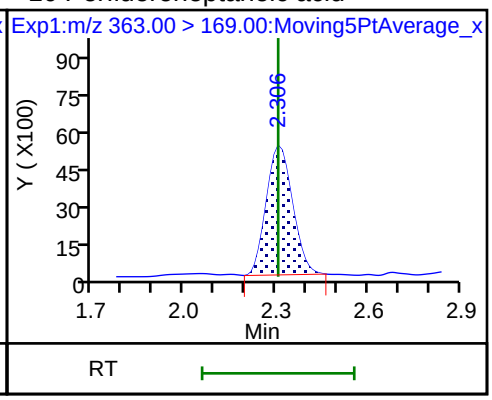
67 Perfluoro(2-propoxypropanoic) acid



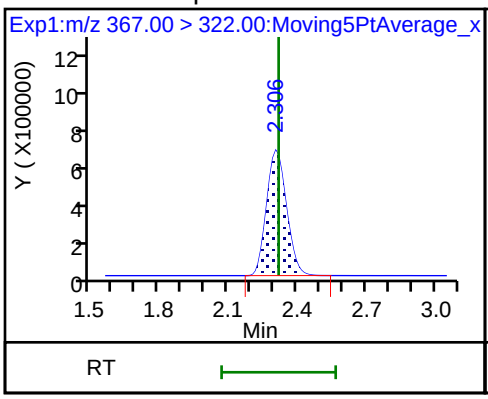
10 Perfluoroheptanoic acid



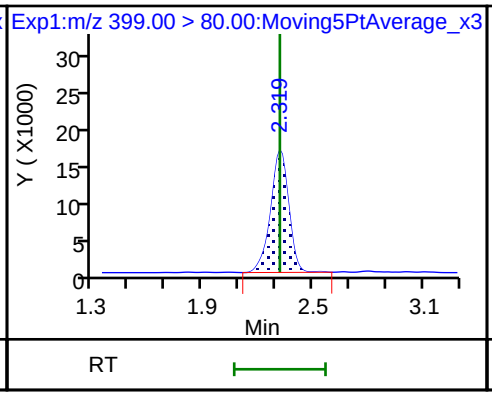
10 Perfluoroheptanoic acid



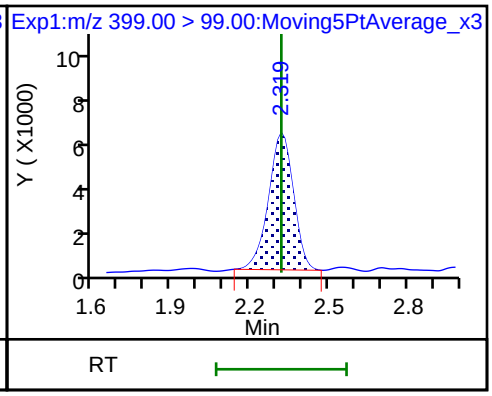
D 9 13C4-PFHpA



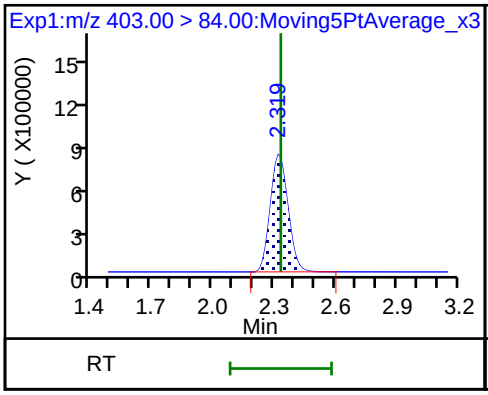
8 Perfluorohexanesulfonic acid



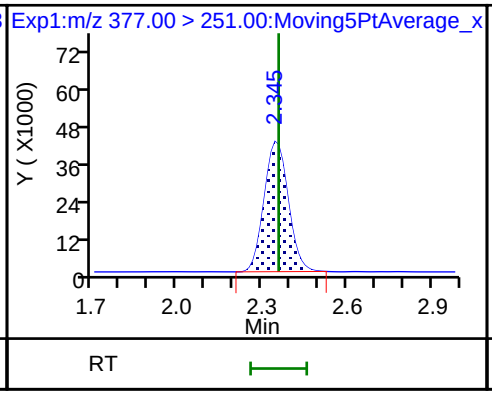
8 Perfluorohexanesulfonic acid



D 11 18O2 PFHxS



65 Adona



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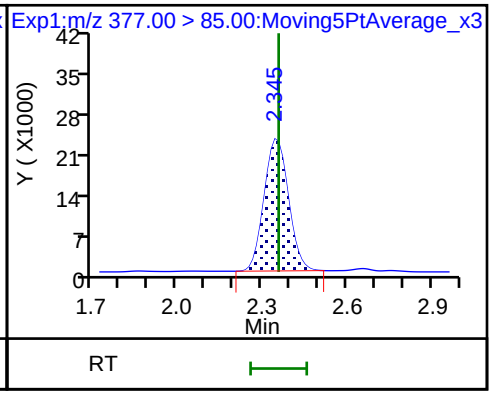
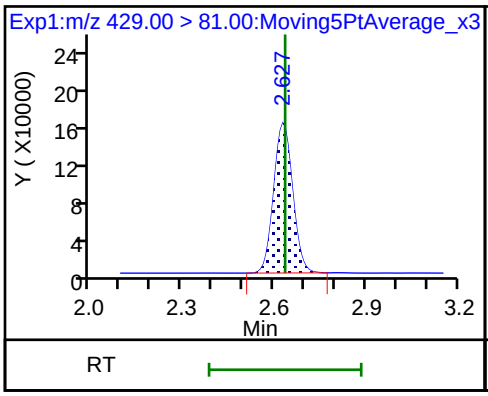
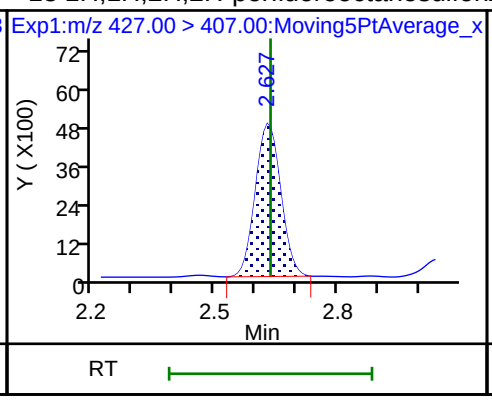


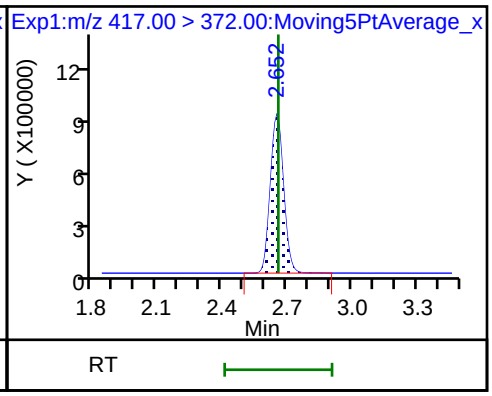
D 12 M2-6:2FTS



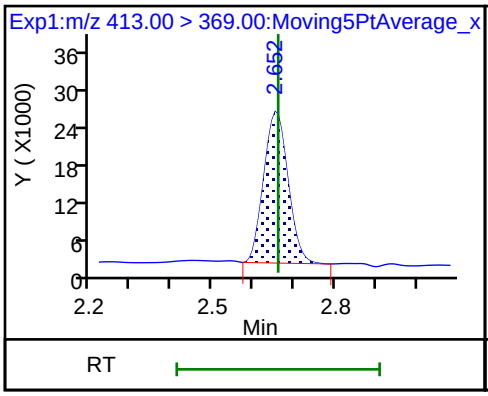
13 1H,1H,2H,2H-perfluorooctanesulfon



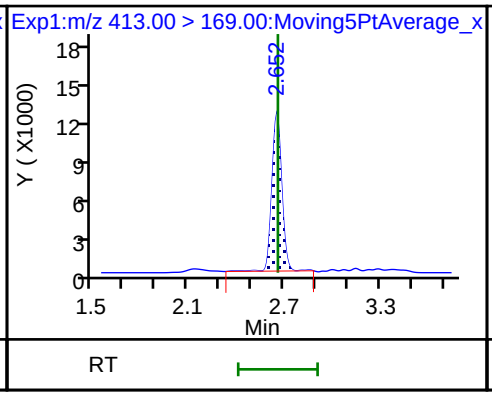
D 14 13C4 PFOA



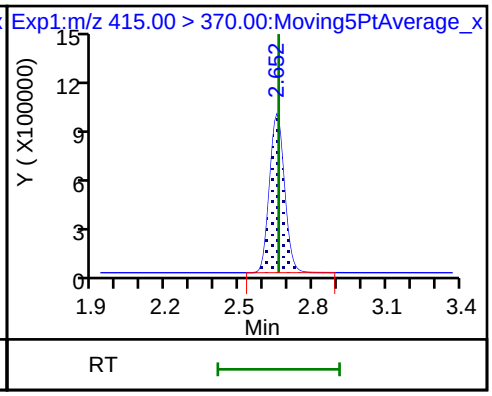
15 Perfluorooctanoic acid



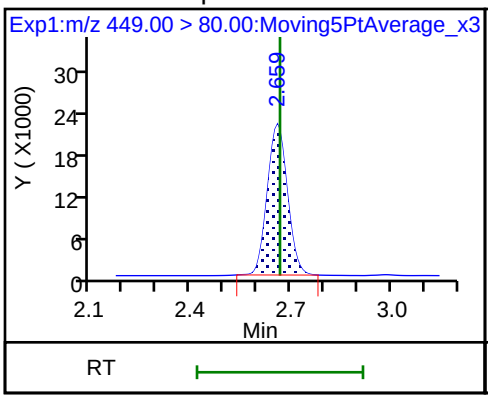
15 Perfluorooctanoic acid



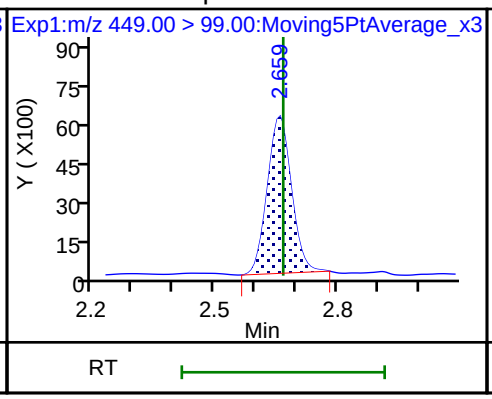
* 62 13C2-PFOA



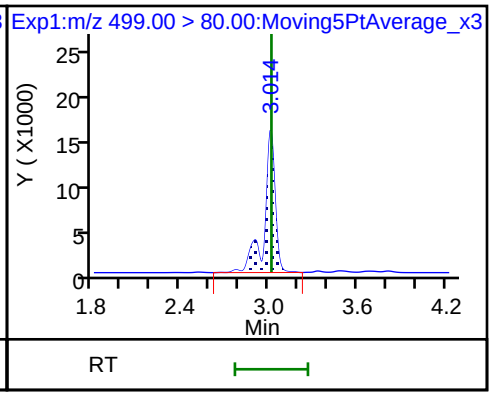
16 Perfluoroheptanesulfonic acid



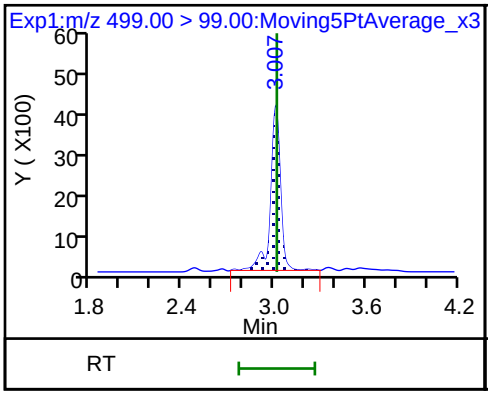
16 Perfluoroheptanesulfonic acid



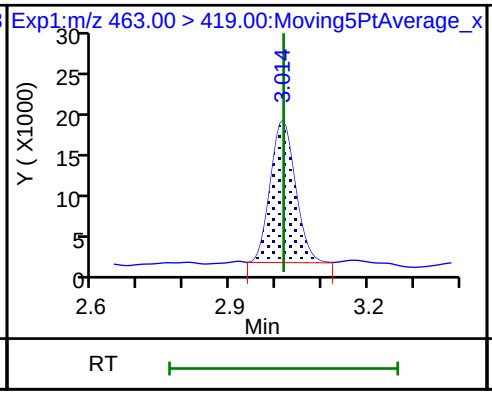
17 Perfluorooctane sulfonic acid



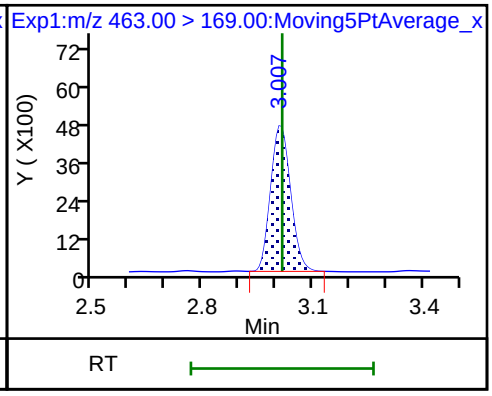
17 Perfluorooctane sulfonic acid



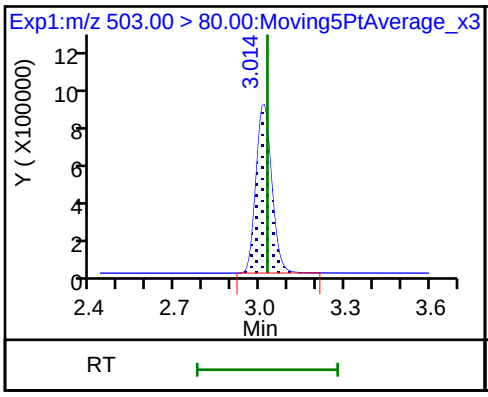
20 Perfluorononanoic acid



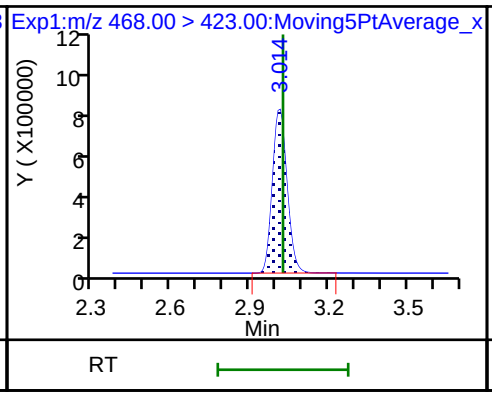
20 Perfluorononanoic acid



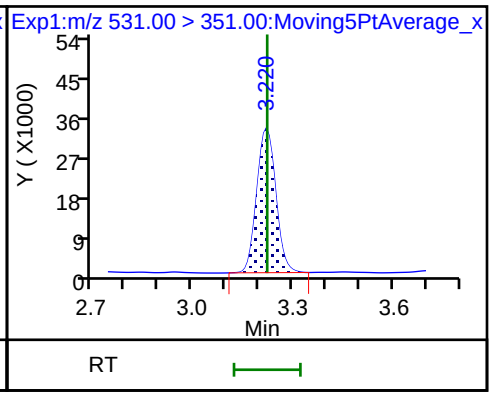
D 18 13C4 PFOS



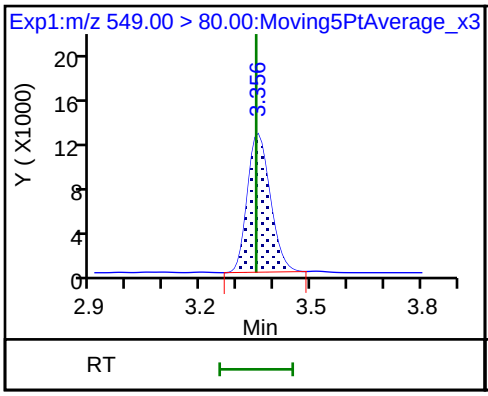
D 19 13C5 PFNA



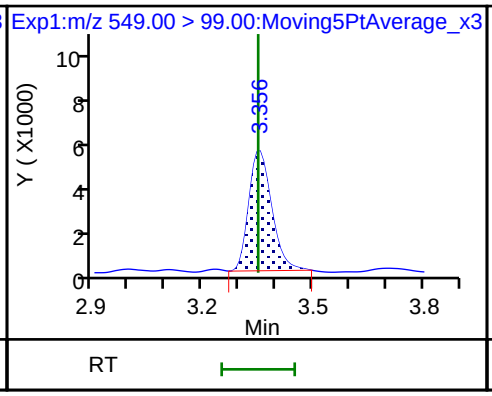
69 9-Chlorohexadecafluoro-3-oxanonane



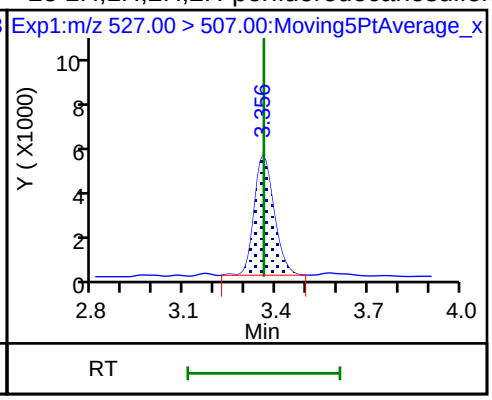
68 Perfluorononanesulfonic acid



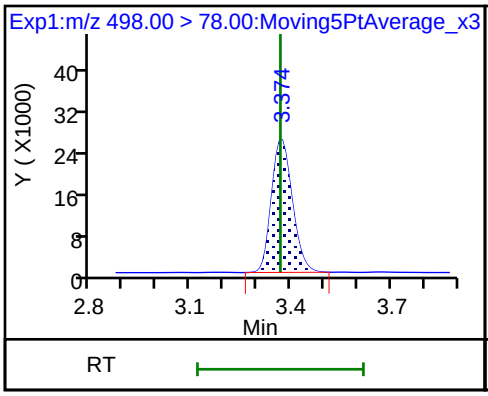
68 Perfluorononanesulfonic acid



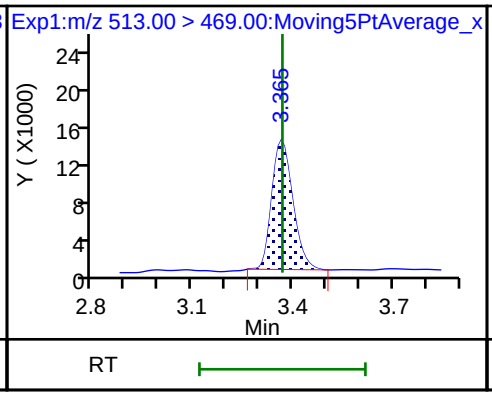
25 1H,1H,2H,2H-perfluorodecanesulfoni



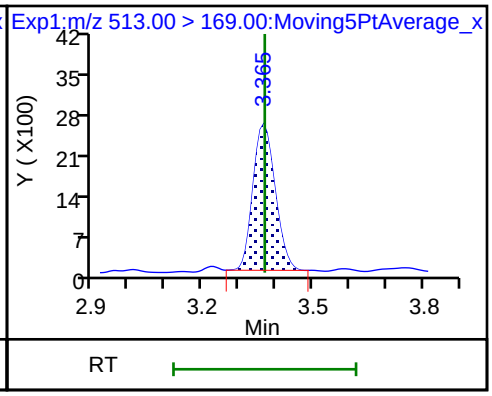
22 Perfluorooctane Sulfonamide



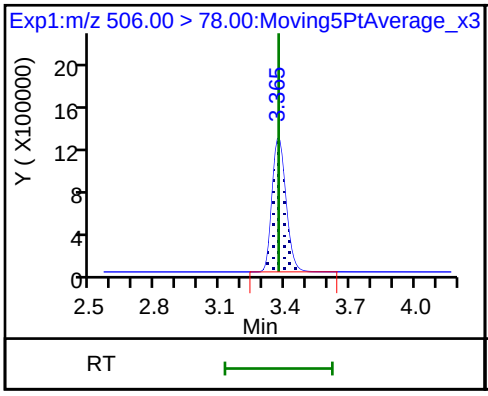
24 Perfluorodecanoic acid



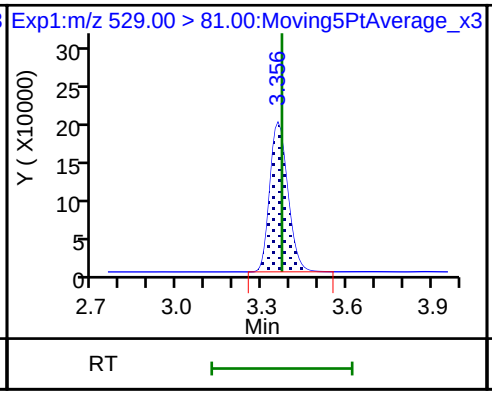
24 Perfluorodecanoic acid



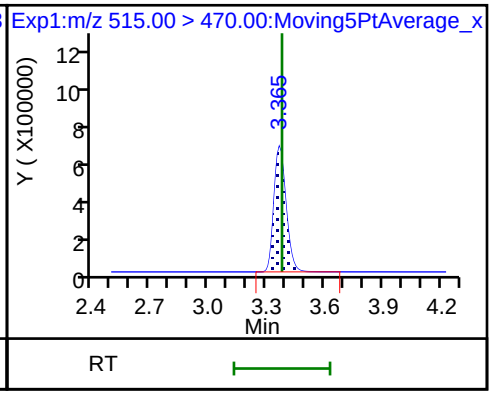
D 21 13C8 FOSA



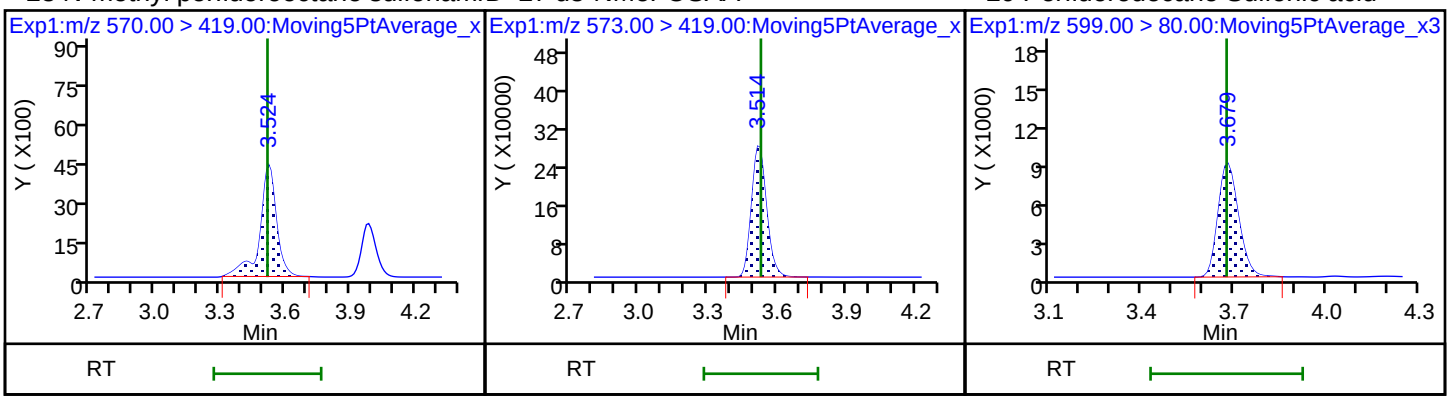
D 26 M2-8:2FTS



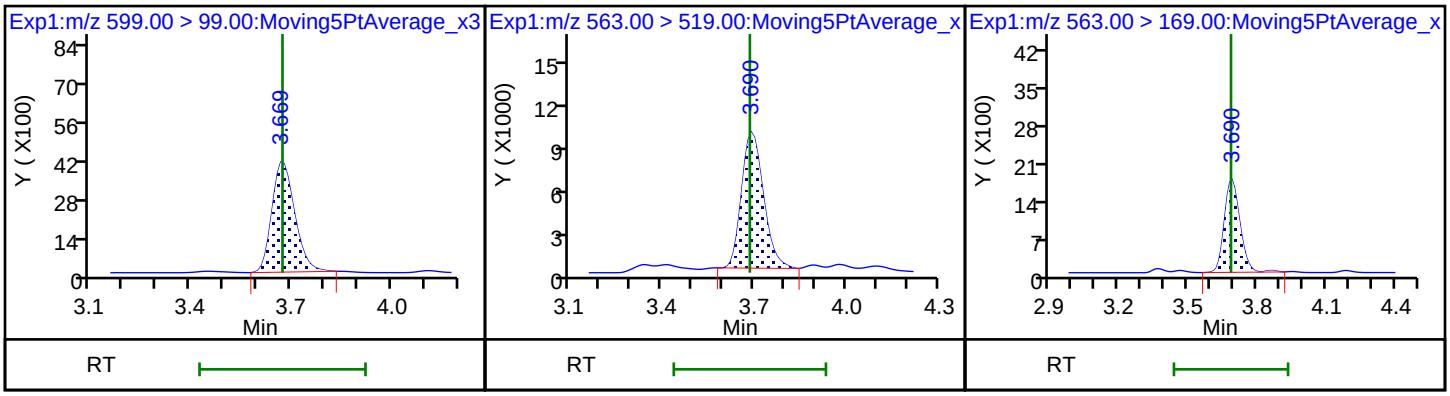
D 23 13C2 PFDA



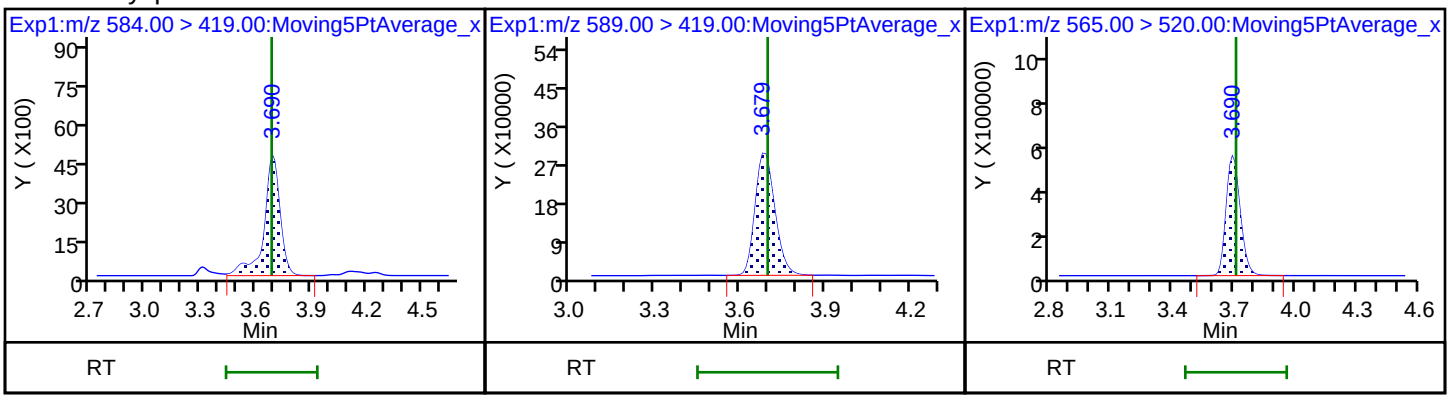
28 N-methyl perfluorooctane sulfonamiD 27 d3-NMeFOSAA 29 Perfluorodecane Sulfonic acid



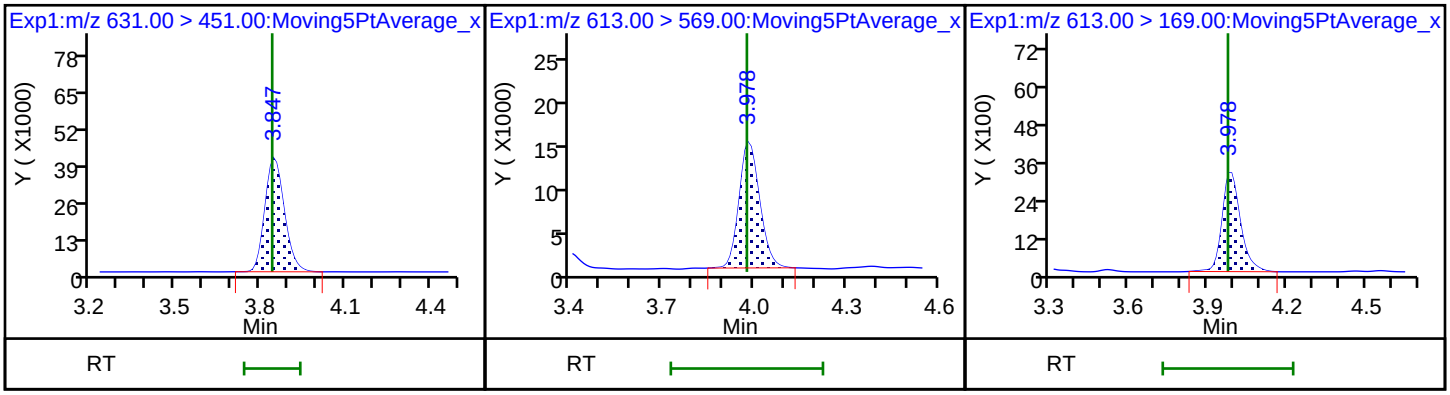
29 Perfluorodecane Sulfonic acid 31 Perfluoroundecanoic acid 31 Perfluoroundecanoic acid



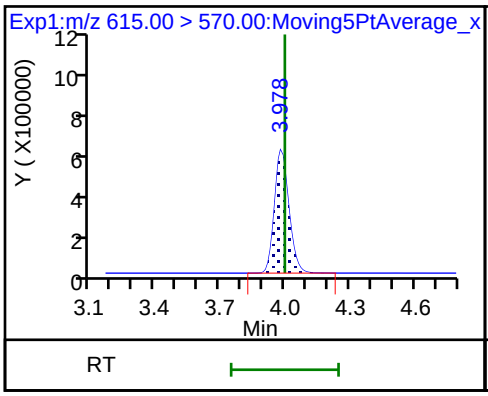
33 N-ethyl perfluorooctane sulfonamid D 32 d5-NEtFOSAA D 30 13C2 PFUnA



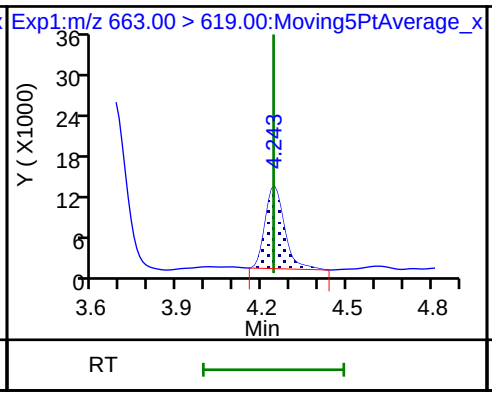
66 11-Chloroeicosafluoro-3-oxaundecan 37 Perfluorododecanoic acid 37 Perfluorododecanoic acid



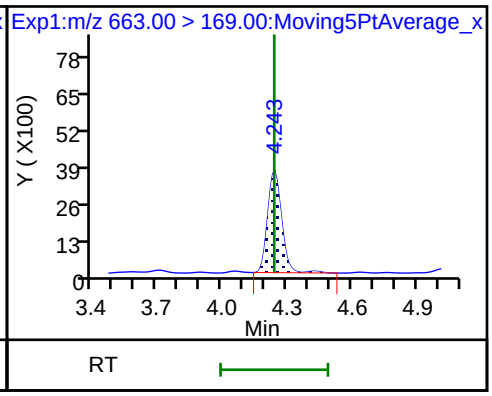
D 36 13C2 PFDoA



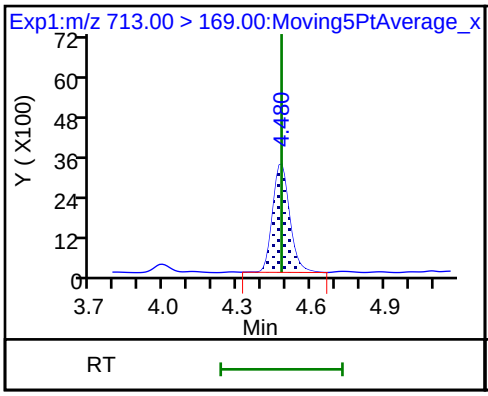
41 Perfluorotridecanoic acid



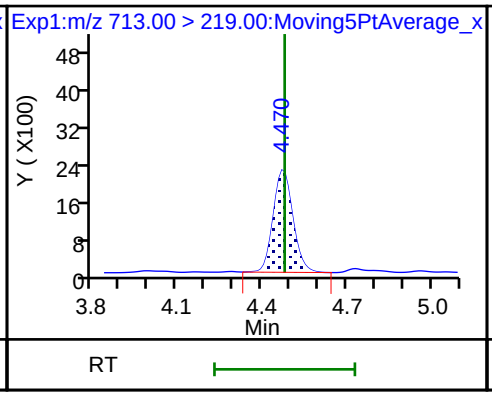
41 Perfluorotridecanoic acid



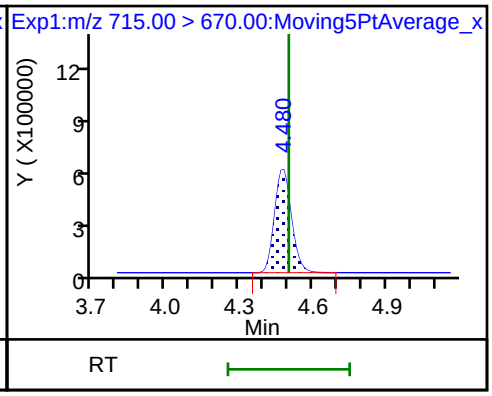
42 Perfluorotetradecanoic acid



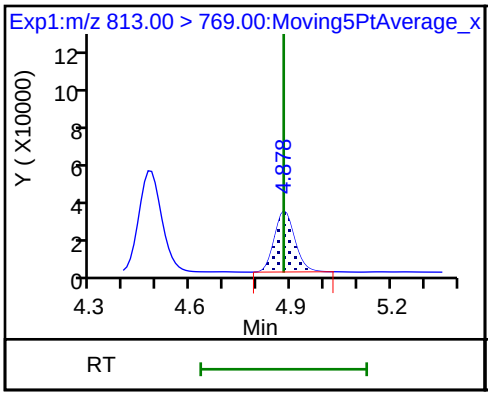
42 Perfluorotetradecanoic acid



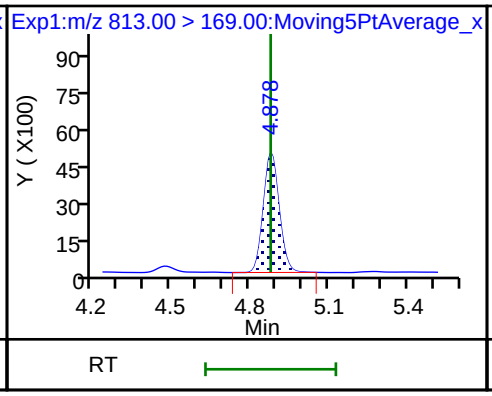
D 43 13C2-PFTeDA



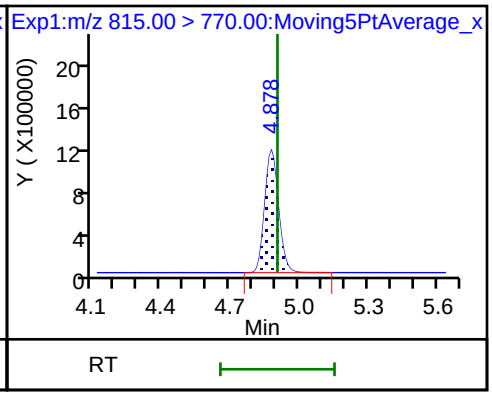
45 Perfluorohexadecanoic acid



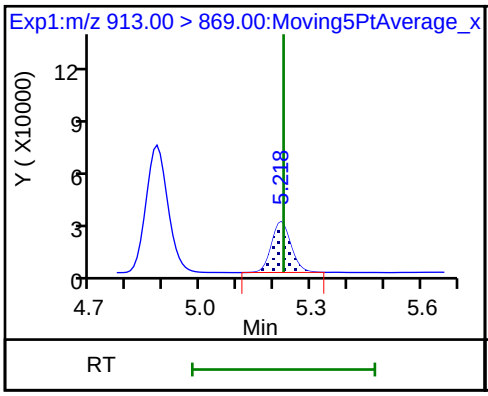
45 Perfluorohexadecanoic acid



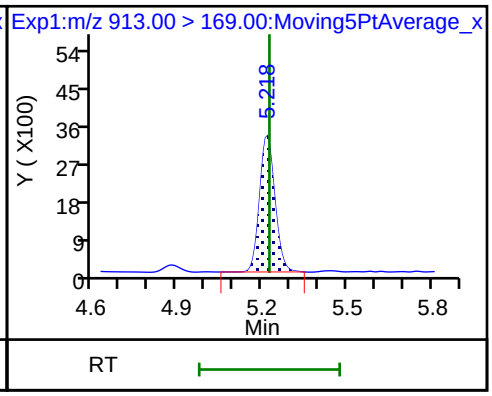
D 44 13C2-PFHxDA



46 Perfluorooctadecanoic acid



46 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Lab Sample ID: CCV 320-234011/3 Calibration Date: 07/14/2018 11:24

Instrument ID: A8_N Calib Start Date: 07/11/2018 14:48

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 07/11/2018 15:38

Lab File ID: 2018.07.14LLA_006.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.9856	0.9751		0.989	1.00	-1.1	40.0
Perfluoropentanoic acid (PFPeA)	AveID	1.213	1.141		0.941	1.00	-5.9	40.0
Perfluorobutanesulfonic acid (PFBS)	AveID	76.50	75.76		0.875	0.884	-1.0	50.0
4:2 FTS	AveID	13.00	12.10		0.869	0.934	-6.9	50.0
Perfluorohexanoic acid (PFHxA)	AveID	1.029	1.034		1.00	1.00	0.4	40.0
Perfluoropentanesulfonic acid (PFPeS)	AveID	69.78	69.31		0.932	0.938	-0.7	50.0
HFPO-DA (GenX)	AveID	2.654	2.588		0.975	1.00	-2.5	40.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.157	1.096		0.948	1.00	-5.2	40.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.148	1.056		0.837	0.910	-8.0	40.0
ADONA	AveID	3.219	3.680		1.08	0.942	14.3	50.0
6:2 FTS	AveID	1.564	1.587		0.962	0.948	1.5	40.0
Perfluorooctanoic acid (PFOA)	AveID	1.232	1.214		0.986	1.00	-1.5	40.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.318	1.368		0.989	0.952	3.9	50.0
Perfluorononanoic acid (PFNA)	AveID	1.109	1.144		1.03	1.00	3.1	40.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.133	1.145		0.938	0.928	1.0	40.0
9-Chlorohexadecafluoro-3-oxa nonane-1-sulfonate	AveID	1.836	1.925		0.977	0.932	4.9	50.0
Perfluorononanesulfonic acid (PFNS)	AveID	0.7752	0.8351		1.03	0.960	7.7	50.0
8:2 FTS	AveID	1.290	1.214		0.902	0.958	-5.9	40.0
Perfluorodecanoic acid (PFDA)	AveID	1.049	1.112		1.06	1.00	6.0	40.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9856	0.9751		0.989	1.00	-1.1	40.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	0.9858	1.083		1.10	1.00	9.8	40.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6714	0.7381		1.06	0.964	9.9	50.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.8840	0.8369		0.947	1.00	-5.3	40.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.8195	0.8383		1.02	1.00	2.3	40.0
11-Chloroeicosafluoro-3-oxau ndecane-1-sulfonate	AveID	2.654	3.045		1.08	0.942	14.8	50.0
Perfluorododecanoic acid (PFDoA)	AveID	1.092	1.140		1.04	1.00	4.4	40.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.068	1.074		1.01	1.00	0.6	50.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2602	0.2586		0.994	1.00	-0.6	50.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		0.9511		0.979	1.00	-2.1	50.0

FORM VII 537 (modified)

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Lab Sample ID: CCV 320-234011/3 Calibration Date: 07/14/2018 11:24

Instrument ID: A8_N Calib Start Date: 07/11/2018 14:48

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 07/11/2018 15:38

Lab File ID: 2018.07.14LLA_006.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.143	1.099		0.961	1.00	-3.9	50.0
13C4 PFBA	Ave	1.356	1.331		2.45	2.50	-1.8	50.0
13C5 PFPeA	Ave	0.9425	0.9690		2.57	2.50	2.8	50.0
13C3-PFBS	Ave	0.0237	0.0250		2.45	2.33	5.5	50.0
M2-4:2FTS	Ave	0.1273	0.1323		2.43	2.34	4.0	50.0
13C2 PFHxA	Ave	1.017	1.106		2.72	2.50	8.7	50.0
13C3 HFPO-DA	Ave	0.0724	0.0846		2.92	2.50	16.8	50.0
13C4-PFHpA	Ave	0.9371	1.004		2.68	2.50	7.2	50.0
18O2 PFHxS	Ave	1.328	1.334		2.38	2.37	0.5	50.0
M2-6:2FTS	Ave	0.2009	0.1821		2.15	2.38	-9.4	40.0
13C4 PFOA	Ave	0.9560	0.9543		2.50	2.50	-0.2	50.0
13C4 PFOS	Ave	0.9742	0.9489		2.33	2.39	-2.6	50.0
13C5 PFNA	Ave	0.8546	0.7759		2.27	2.50	-9.2	50.0
M2-8:2FTS	Ave	0.2939	0.2386		1.94	2.40	-18.8	40.0
13C2 PFDA	Ave	0.7503	0.7108		2.37	2.50	-5.3	50.0
13C8 FOSA	Ave	1.405	1.487		2.65	2.50	5.9	50.0
d3-NMeFOSAA	Ave	0.3075	0.3187		2.59	2.50	3.6	50.0
13C2 PFUnA	Ave	0.6266	0.6427		2.56	2.50	2.6	50.0
d5-NEtFOSAA	Ave	0.3150	0.3647		2.89	2.50	15.8	50.0
13C2 PFDoA	Ave	0.6496	0.6902		2.66	2.50	6.3	50.0
13C2-PFTeDA	Ave	0.6740	0.7217		2.68	2.50	7.1	50.0
13C2-PFHxDA	Ave	1.074	1.213		2.83	2.50	13.0	50.0

FORM VII 537 (modified)

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61062.b\2018.07.14LLA_006.d
Lims ID: CCV L4
Client ID:
Sample Type: CCVIS
Inject. Date: 14-Jul-2018 11:24:37 ALS Bottle#: 13 Worklist Smp#: 3
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV L4
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-A8_N*sub32

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61062.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 16-Jul-2018 14:49:08 Calib Date: 11-Jul-2018 15:38:42
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK023

First Level Reviewer: mongkols Date: 16-Jul-2018 14:49:08

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.435	1.440	-0.005	0.540	4927413	2.45		98.2	31691	
2 Perfluorobutyric acid										
212.90 > 169.00	1.441	1.441	0.0	1.004	1921787	0.9893		98.9	683	
D 3 13C5-PFPeA										
267.90 > 223.00	1.719	1.719	0.0	0.647	3586457	2.57		103	49723	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.719	1.719	0.0	1.000	1636969	0.9406		94.1	768	
D 47 13C3-PFBS										
301.90 > 83.00	1.755	1.755	0.0	0.660	86025	2.45		106	551	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.764	1.764	0.0	1.005	2477951	0.8755		99.0	14788	
298.90 > 99.00	1.764	1.764	0.0	1.005	1012338		2.45(1.25-3.74)		9504	
D 60 M2-4:2FTS										
329.00 > 81.00	1.970	1.959	0.011	0.741	457406	2.43		104	5053	
61 1H,1H,2H,2H-perfluorohexanesulfoni										
327.00 > 307.00	1.970	1.970	0.0	1.122	418151	0.8694		93.1	24689	
D 7 13C2 PFHxA										
315.00 > 270.00	2.003	2.002	0.001	0.753	4094309	2.72		109	79058	
6 Perfluorohexanoic acid										
313.00 > 269.00	2.003	2.003	0.0	1.000	1692808	1.00		100	3876	
313.00 > 119.00	2.003	2.003	0.0	1.000	151735		11.16(5.03-15.10)		2387	
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.025	2.025	0.0	1.154	2405466	0.9317		99.3	41196	
349.00 > 99.00	2.025	2.025	0.0	1.154	863788		2.78(1.36-4.07)		16557	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.093	2.093	0.0	0.787	312973	2.92		117	6889	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
67 Perfluoro(2-propoxypropanoic) acid										
329.10 > 285.00	2.093	2.093	0.0	1.000	323973	0.9750		97.5	2475	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.306	2.306	0.0	1.000	1630031	0.9479		94.8	2782	
363.00 > 169.00	2.306	2.306	0.0	1.000	641259		2.54(1.13-3.40)		8766	
D 9 13C4-PFHpA										
367.00 > 322.00	2.306	2.318	-0.012	0.867	3717032	2.68		107	38340	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.319	2.319	0.0	1.000	1898508	0.8374		92.0	10376	
399.00 > 99.00	2.319	2.319	0.0	1.000	638476		2.97(1.50-4.49)		4332	
D 11 18O2 PFHxS										
403.00 > 84.00	2.319	2.331	-0.012	0.872	4670887	2.38		100	45108	
65 Adona										
377.00 > 251.00	2.358	2.358	0.0	0.784	4870066	1.08		114	54652	
377.00 > 85.00	2.358	2.358	0.0	0.784	2747109		1.77(0.84-2.53)		19275	
D 12 M2-6:2FTS										
429.00 > 81.00	2.627	2.635	-0.008	0.988	640138	2.15		90.6	13448	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.636	2.636	0.0	1.003	405607	0.9619		101	3743	
D 14 13C4 PFOA										
417.00 > 372.00	2.652	2.659	-0.007	0.997	3532031	2.50		99.8	30439	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.659	2.659	0.0	1.003	1716386	0.9865		98.5	1120	
413.00 > 169.00	2.659	2.659	0.0	1.003	864120		1.99(0.84-2.52)		5156	
* 62 13C2-PFOA										
415.00 > 370.00	2.659	2.659	0.0		3701261	2.50			34475	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.667	2.667	0.0	0.886	1829998	0.9887		104	18698	
449.00 > 99.00	2.659	2.667	-0.008	0.884	471488		3.88(1.94-5.82)		10852	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.016	3.016	0.0	1.002	1492624	0.9377		101	14096	
499.00 > 99.00	3.009	3.016	-0.007	1.000	344910		4.33(2.31-6.93)		4836	
20 Perfluorononanoic acid										
463.00 > 419.00	3.016	3.016	0.0	1.000	1314202	1.03		103	2429	
463.00 > 169.00	3.016	3.016	0.0	1.000	305266		4.31(1.90-5.69)		8771	
D 18 13C4 PFOS										
503.00 > 80.00	3.009	3.025	-0.016	1.131	3357479	2.33		97.4	25626	
D 19 13C5 PFNA										
468.00 > 423.00	3.016	3.025	-0.009	1.134	2871807	2.27		90.8	33773	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.222	3.222	0.0	1.071	2520255	0.9773		105	27628	
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.350	3.350	0.0	1.113	1126273	1.03		108	26238	
549.00 > 99.00	3.350	3.350	0.0	1.113	434347		2.59(1.33-3.97)		6739	
25 1H,1H,2H,2H-perfluorodecanesulfoni										
527.00 > 507.00	3.359	3.359	0.0	1.000	410897	0.9018		94.1	8371	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.368	3.368	0.0	1.000	2147044	0.9893		98.9	27097	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
24 Perfluorodecanoic acid										
513.00 > 469.00	3.368	3.368	0.0	1.000	1170649	1.06		106	5715	
513.00 > 169.00	3.368	3.368	0.0	1.000	197502		5.93(2.36-7.09)		4922	
D 21 13C8 FOSA										
506.00 > 78.00	3.368	3.370	-0.002	1.267	5504614	2.65		106	54594	
D 26 M2-8:2FTS										
529.00 > 81.00	3.359	3.370	-0.011	1.263	845980	1.94		81.2	13915	
D 23 13C2 PFDA										
515.00 > 470.00	3.368	3.379	-0.011	1.267	2630938	2.37		94.7	39974	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.518	3.518	0.0	1.000	510854	1.10		110	3397	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.518	3.528	-0.010	1.323	1179433	2.59		104	19962	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.674	3.674	0.0	1.221	999487	1.06		110	19352	
599.00 > 99.00	3.674	3.674	0.0	1.221	345993		2.89(1.39-4.16)		6749	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.685	3.685	0.0	1.000	797633	1.02		102	3571	
563.00 > 169.00	3.685	3.685	0.0	1.000	182891		4.36(2.12-6.36)		12404	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.685	3.685	0.0	1.000	451805	0.9466		94.7	8699	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.685	3.697	-0.012	1.386	1349725	2.89		116	3040	
D 30 13C2 PFUnA										
565.00 > 520.00	3.685	3.708	-0.023	1.386	2378716	2.56		103	38125	
66 11-Chloroeicosafluoro-3-oxaundecan										
631.00 > 451.00	3.842	3.842	0.0	1.277	4029645	1.08		115	35159	
37 Perfluorododecanoic acid										
613.00 > 569.00	3.975	3.975	0.0	1.000	1164859	1.04		104	869	
613.00 > 169.00	3.975	3.975	0.0	1.000	275073		4.23(2.13-6.40)		5242	
D 36 13C2 PFDoA										
615.00 > 570.00	3.975	3.999	-0.024	1.495	2554745	2.66		106	22583	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.240	4.240	0.0	1.067	1097408	1.01		101	574	
663.00 > 169.00	4.240	4.240	0.0	1.067	323893		3.39(1.25-3.76)		5504	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.479	4.479	0.0	1.000	276334	0.99		99.4	3827	
713.00 > 219.00	4.469	4.479	-0.010	0.998	187804		1.47(0.71-2.13)		3924	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.479	4.501	-0.022	1.684	2671301	2.68		107	19140	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.878	4.878	0.0	1.000	1708530	0.9794		97.9	434	
813.00 > 169.00	4.878	4.878	0.0	1.000	287573		5.94(2.86-8.58)		3648	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.878	4.905	-0.027	1.834	4490830	2.83		113	14295	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.225	5.225	0.0	1.071	1973969	0.9615		96.1	404	
913.00 > 169.00	5.218	5.225	-0.007	1.070	240251		8.22(3.83-11.48)		3625	

Reagents:

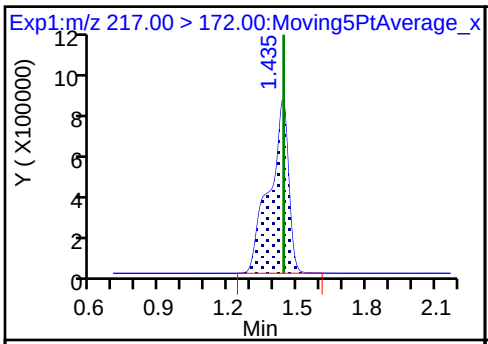
LCPFC_LL4_00005 Amount Added: 1.00 Units: mL

Report Date: 16-Jul-2018 14:49:09 Chrom Revision: 2.2 07-Jun-2018 07:41:54

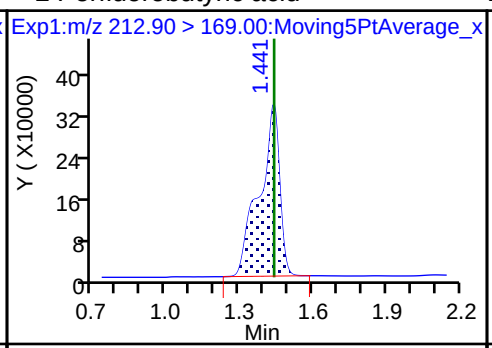
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61062.b\2018.07.14LLA_006.d
Injection Date: 14-Jul-2018 11:24:37 Instrument ID: A8_N
Lims ID: CCV L4
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 13 Worklist Smp#: 3
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC ICAL

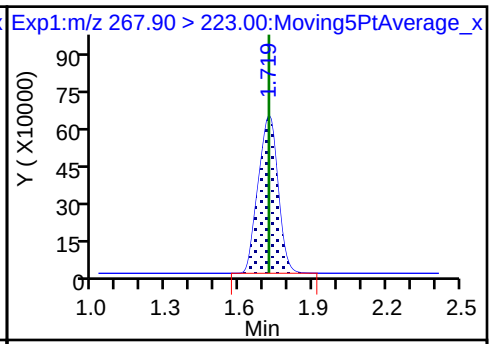
D 1 13C4 PFBA



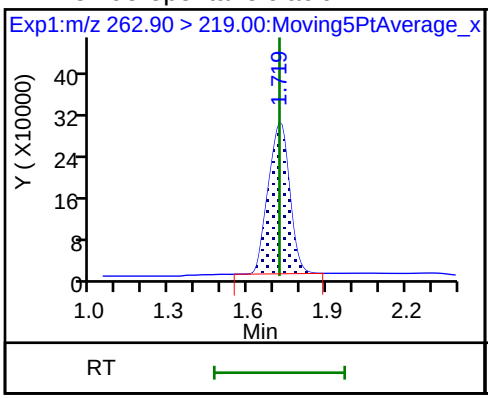
2 Perfluorobutyric acid



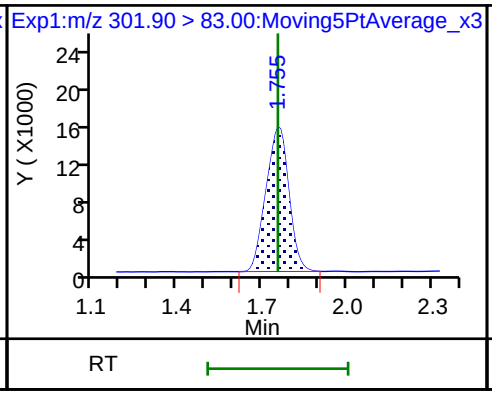
D 3 13C5-PFPeA



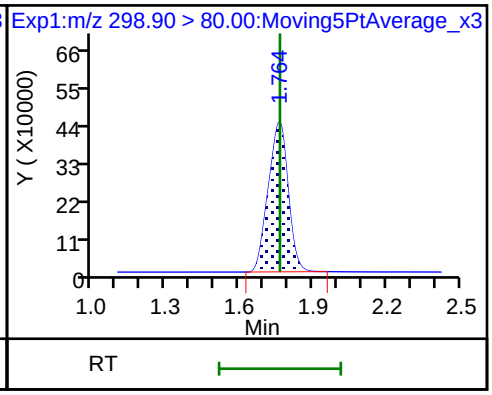
4 Perfluoropentanoic acid



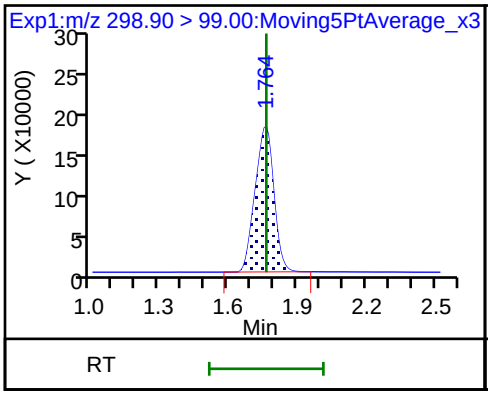
D 47 13C3-PFBS



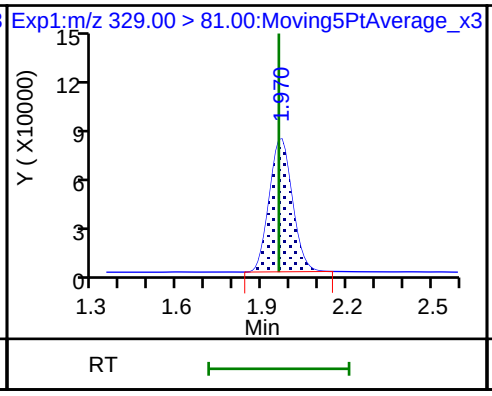
5 Perfluorobutanesulfonic acid



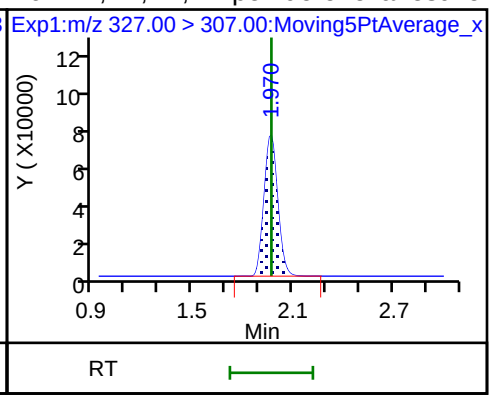
5 Perfluorobutanesulfonic acid



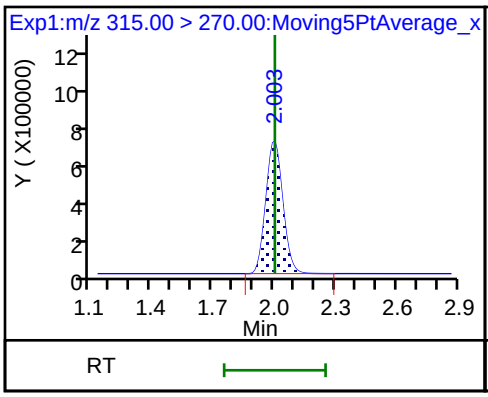
D 60 M2-4:2FTS



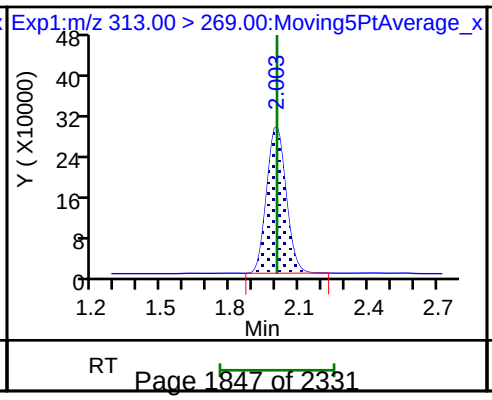
61 1H,1H,2H,2H-perfluorohexanesulfoni



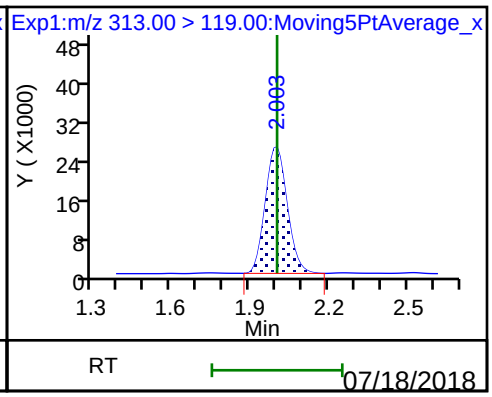
D 7 13C2 PFHxA



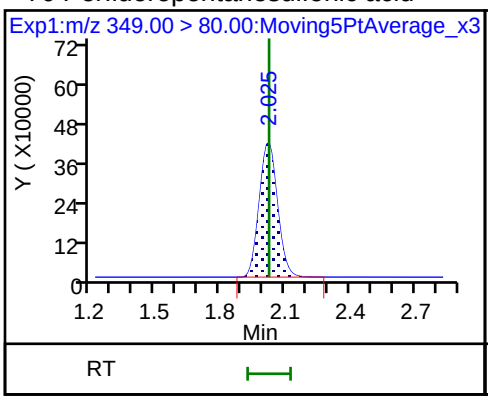
6 Perfluorohexanoic acid



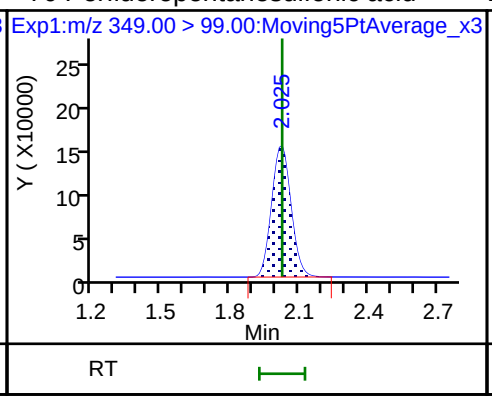
6 Perfluorohexanoic acid



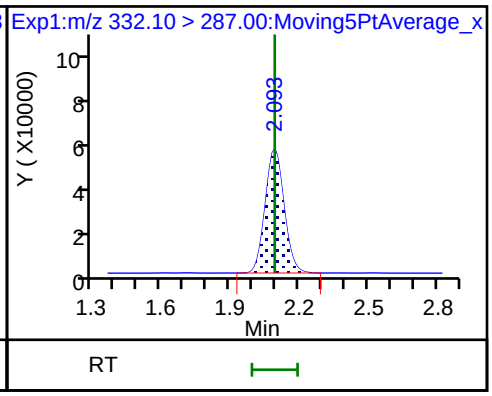
70 Perfluoropentanesulfonic acid



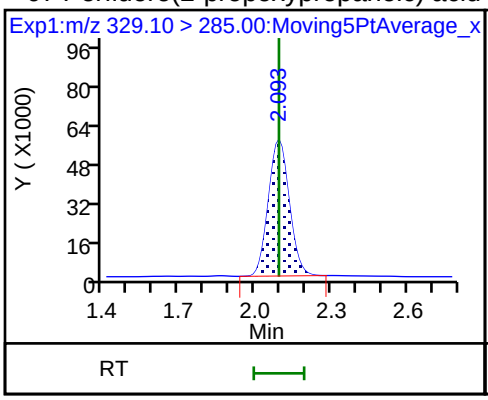
70 Perfluoropentanesulfonic acid



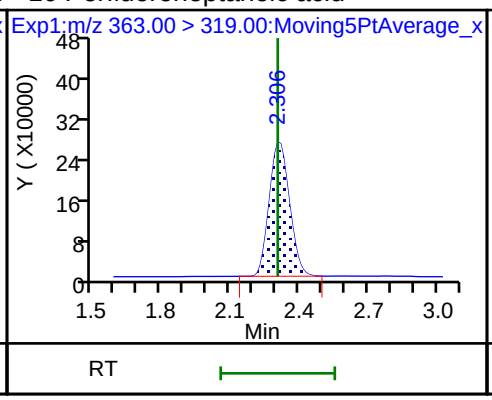
D 64 13C3 HFPO-DA



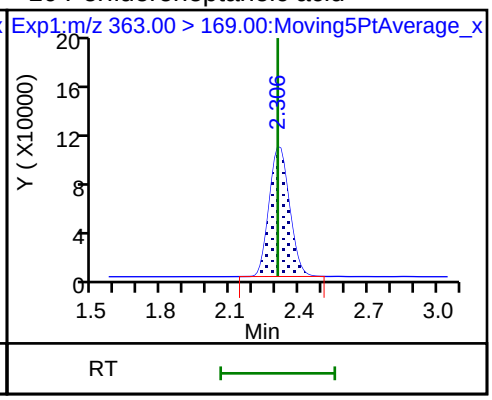
67 Perfluoro(2-propoxypropanoic) acid



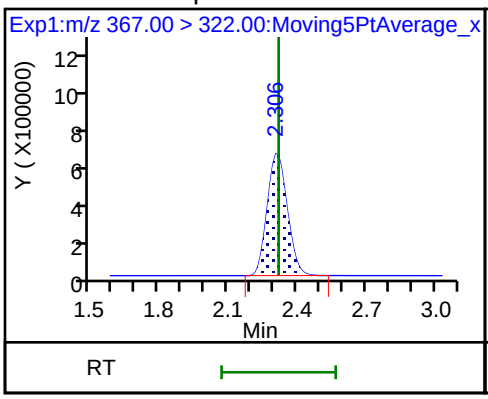
10 Perfluoroheptanoic acid



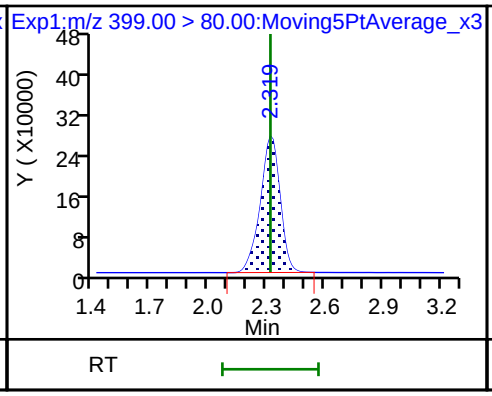
10 Perfluoroheptanoic acid



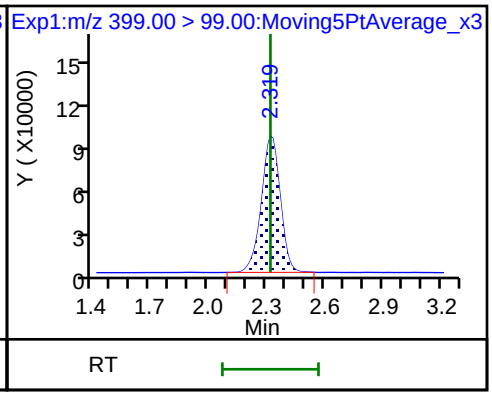
D 9 13C4-PFHpA



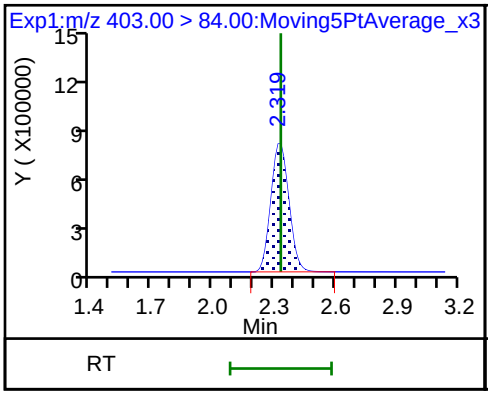
8 Perfluorohexanesulfonic acid



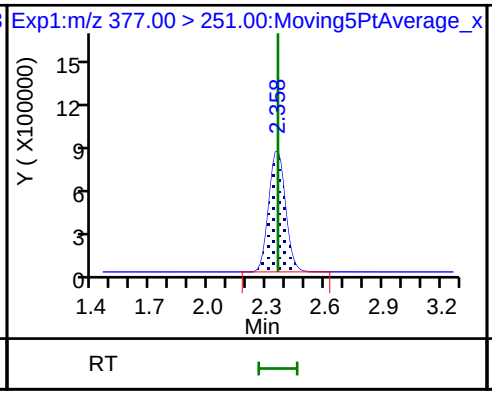
8 Perfluorohexanesulfonic acid



D 11 18O2 PFHxS



65 Adona



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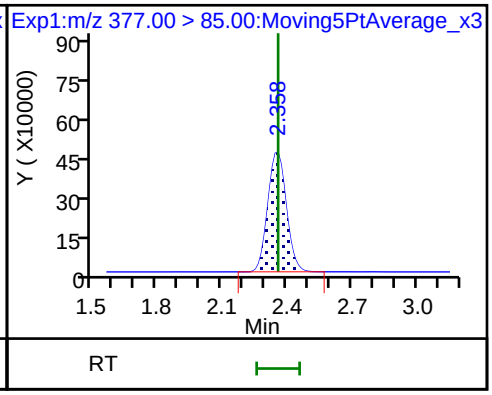
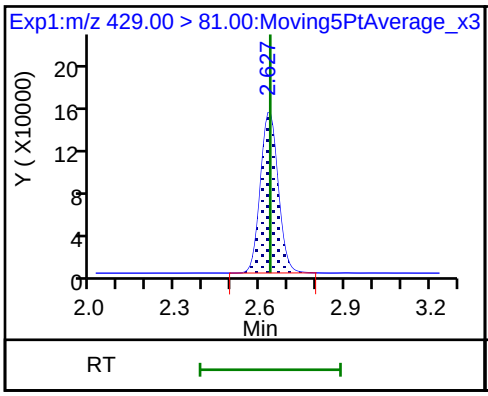
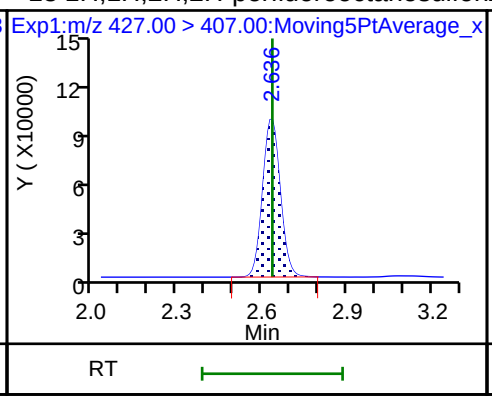


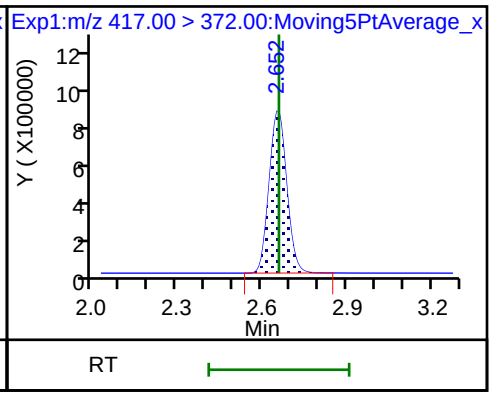
D 12 M2-6:2FTS



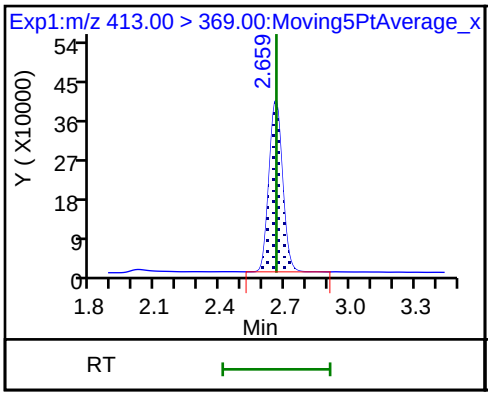
13 1H,1H,2H,2H-perfluorooctanesulfon



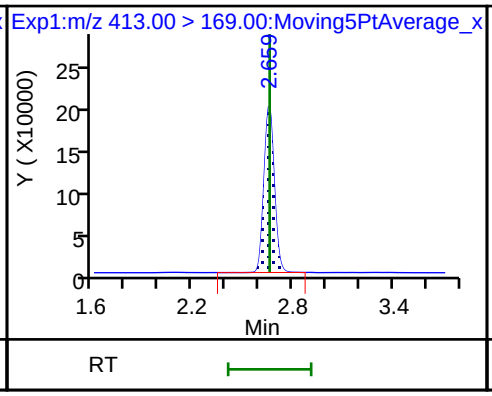
D 14 13C4 PFOA



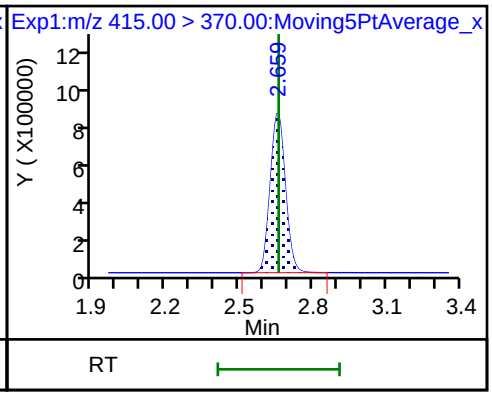
15 Perfluorooctanoic acid



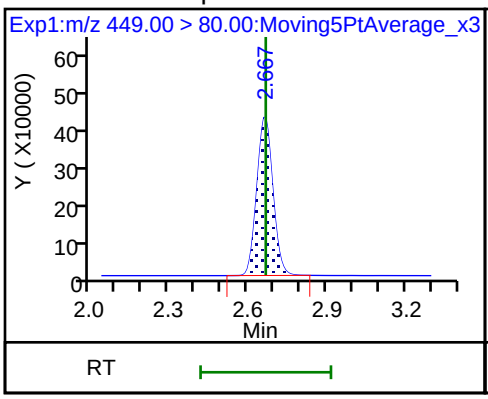
15 Perfluorooctanoic acid



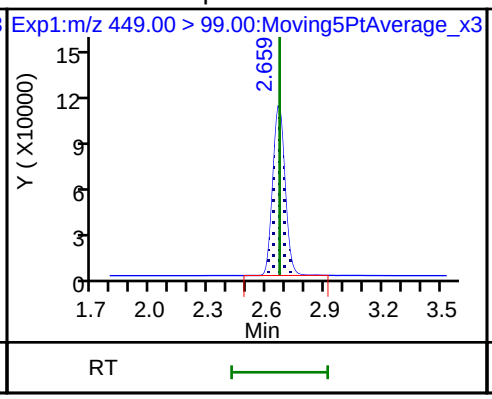
* 62 13C2-PFOA



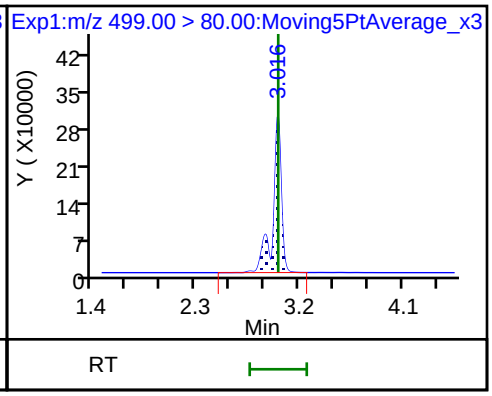
16 Perfluoroheptanesulfonic acid



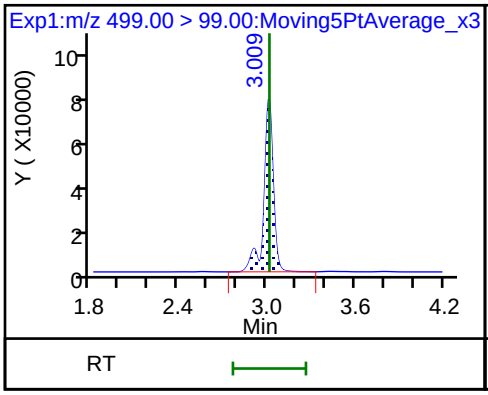
16 Perfluoroheptanesulfonic acid



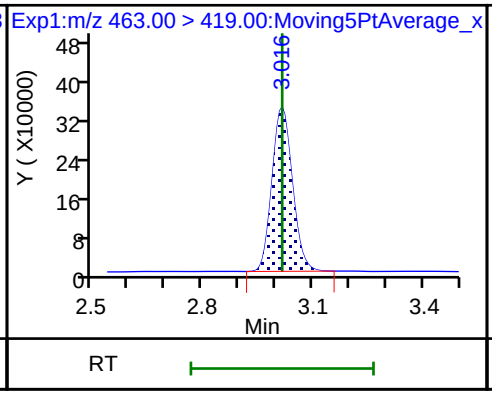
17 Perfluorooctane sulfonic acid



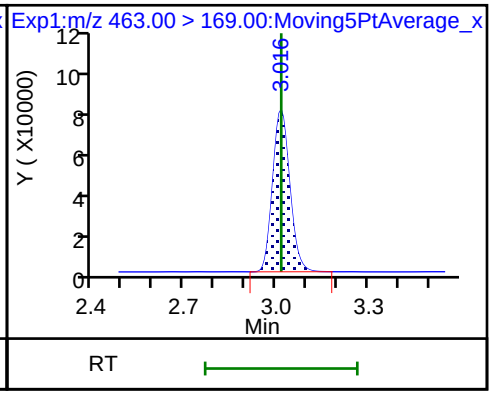
17 Perfluorooctane sulfonic acid



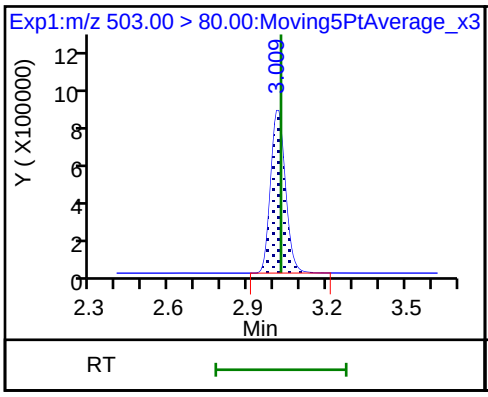
20 Perfluorononanoic acid



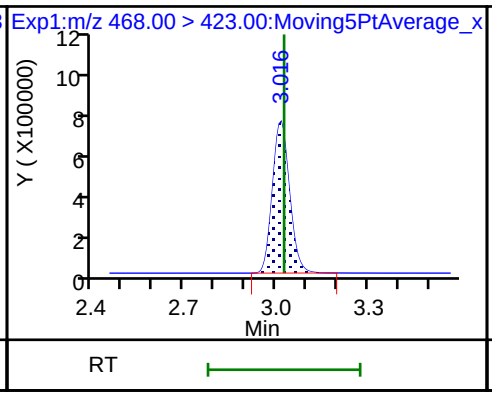
20 Perfluorononanoic acid



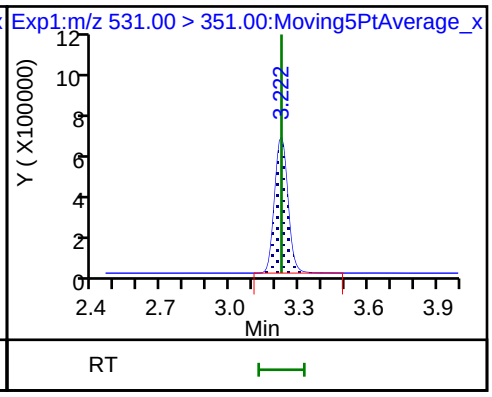
D 18 13C4 PFOS



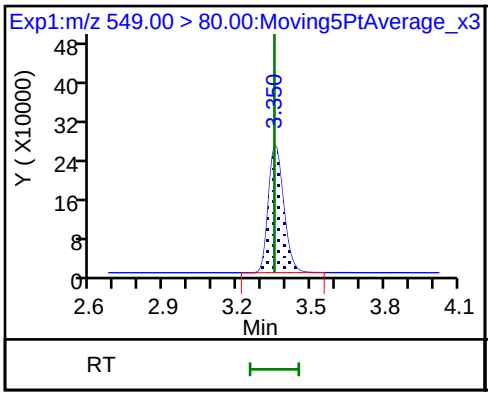
D 19 13C5 PFNA



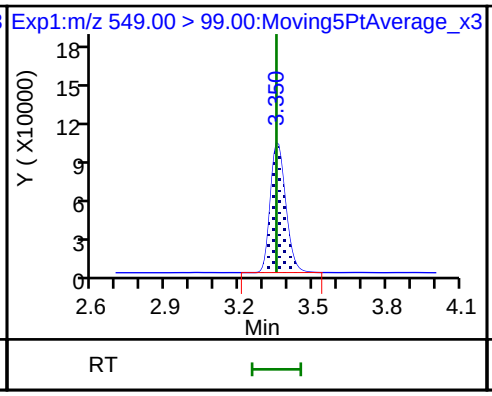
69 9-Chlorohexadecafluoro-3-oxanonane



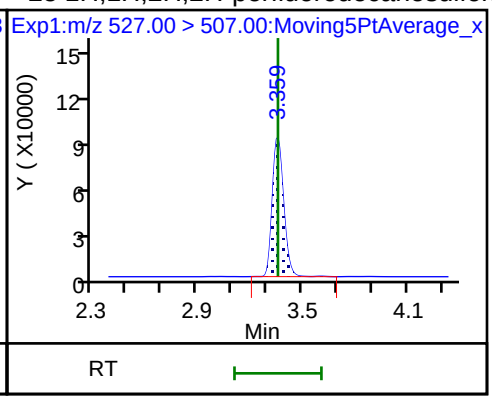
68 Perfluorononanesulfonic acid



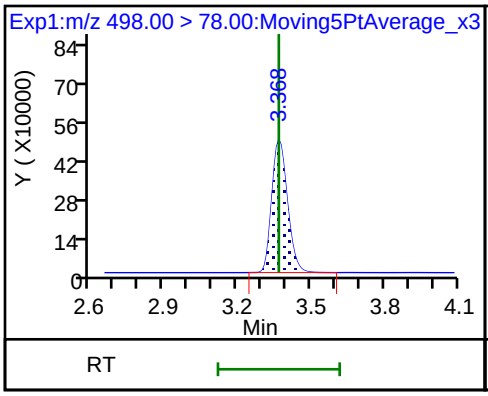
68 Perfluorononanesulfonic acid



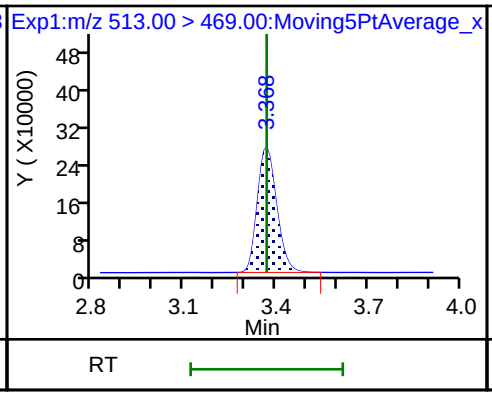
25 1H,1H,2H,2H-perfluorodecanesulfoni



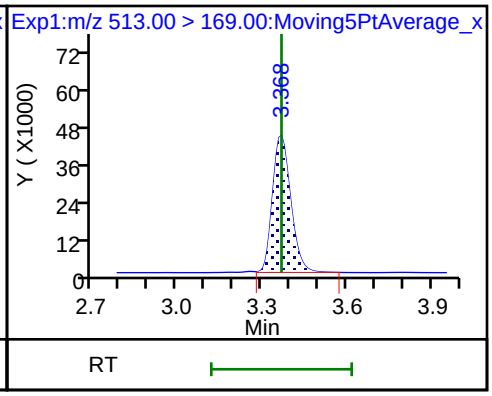
22 Perfluorooctane Sulfonamide



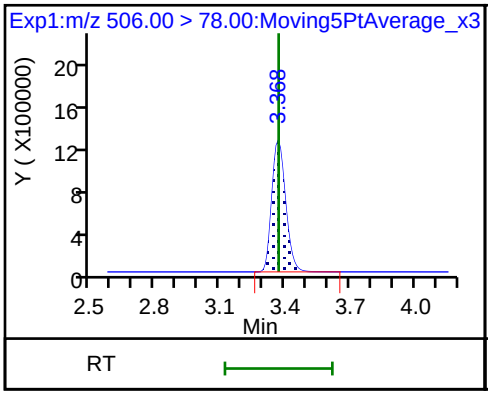
24 Perfluorodecanoic acid



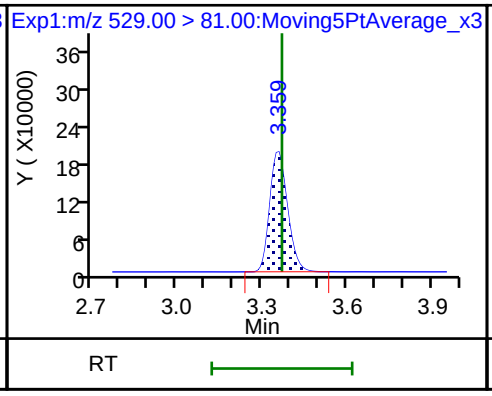
24 Perfluorodecanoic acid



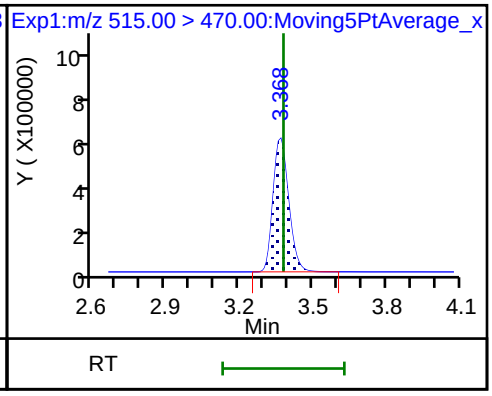
D 21 13C8 FOSA



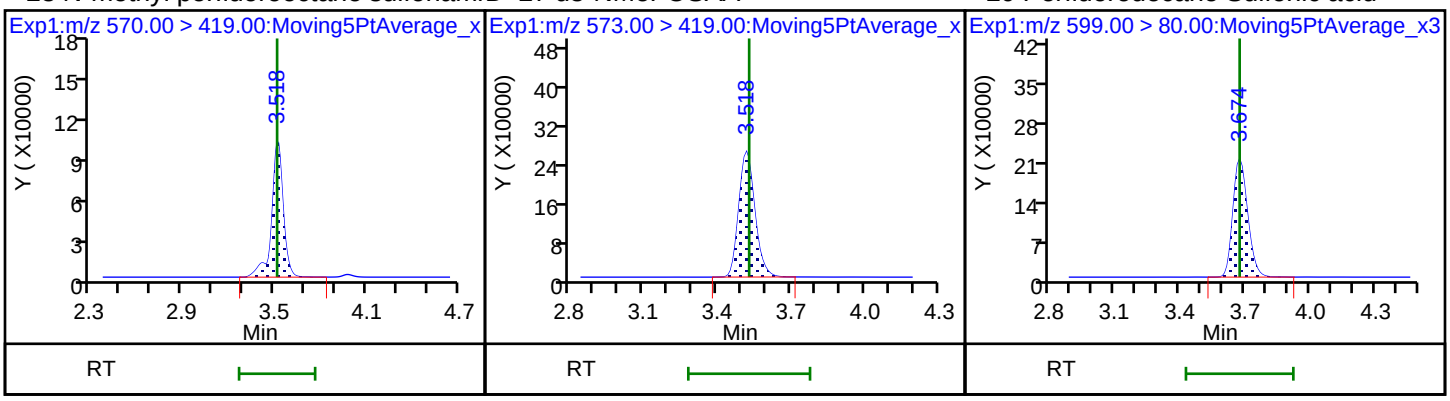
D 26 M2-8:2FTS



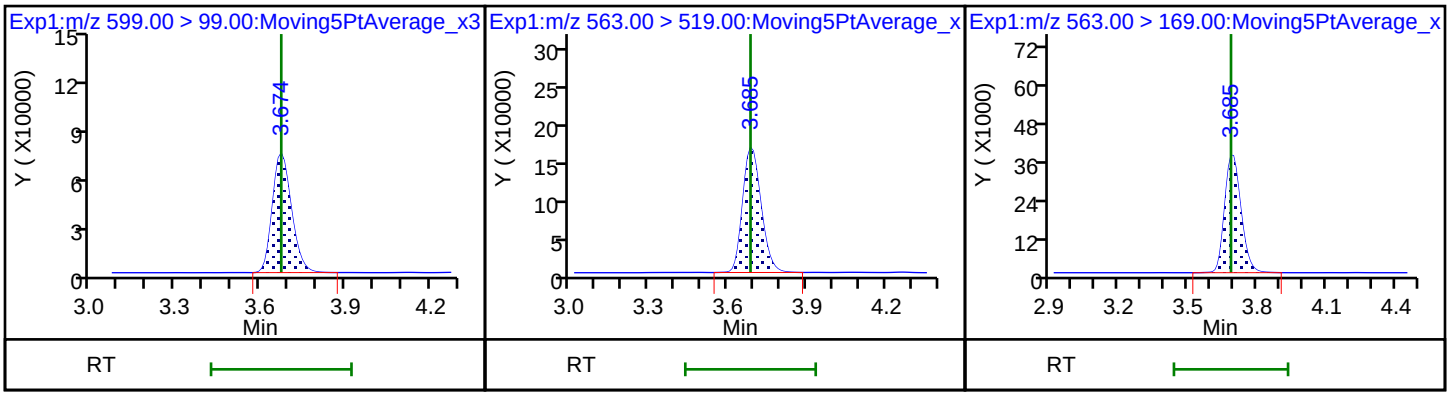
D 23 13C2 PFDA



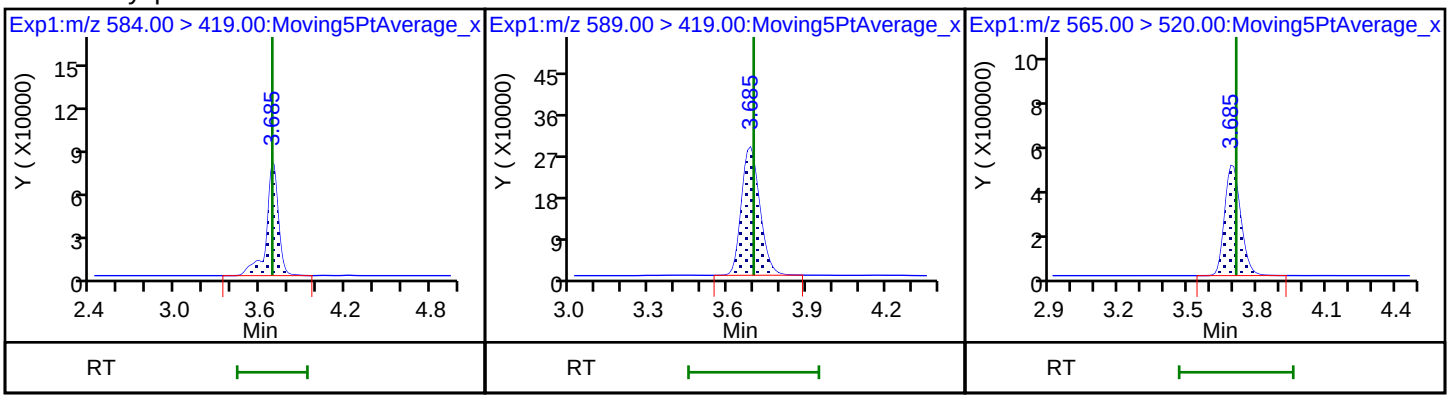
28 N-methyl perfluorooctane sulfonamiD 27 d3-NMeFOSAA 29 Perfluorodecane Sulfonic acid



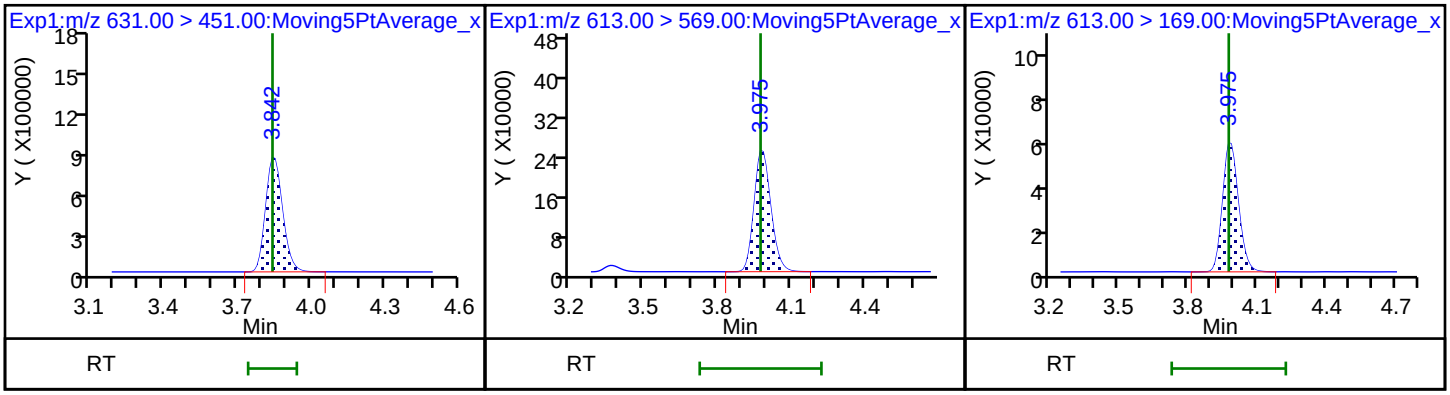
29 Perfluorodecane Sulfonic acid 31 Perfluoroundecanoic acid 31 Perfluoroundecanoic acid



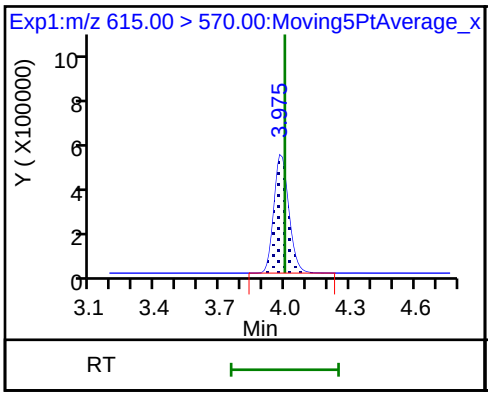
33 N-ethyl perfluorooctane sulfonamid D 32 d5-NEtFOSAA D 30 13C2 PFUnA



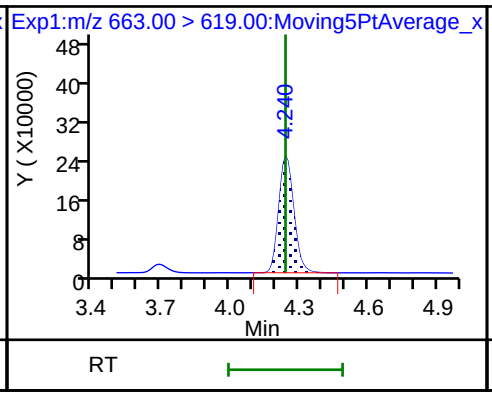
66 11-Chloroeicosafluoro-3-oxaundecan 37 Perfluorododecanoic acid 37 Perfluorododecanoic acid



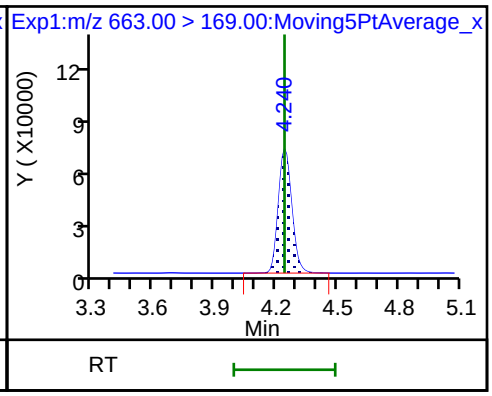
D 36 13C2 PFDoA



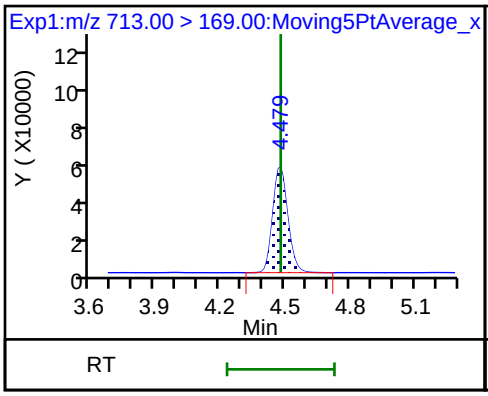
41 Perfluorotridecanoic acid



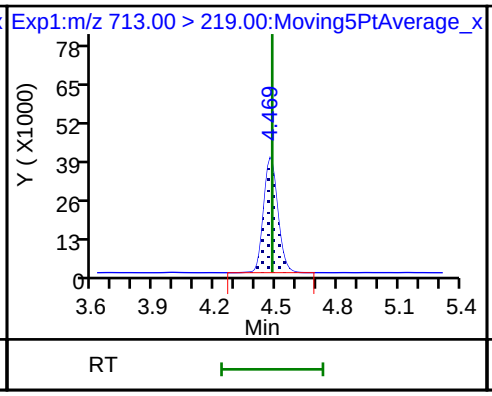
41 Perfluorotridecanoic acid



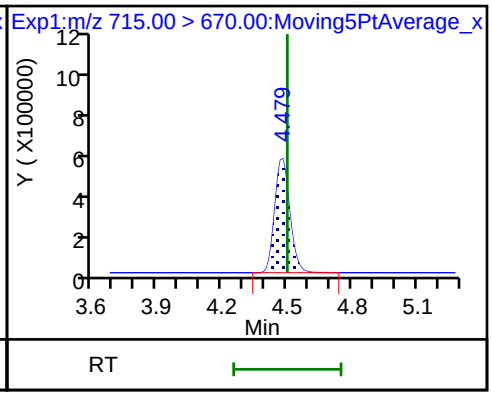
42 Perfluorotetradecanoic acid



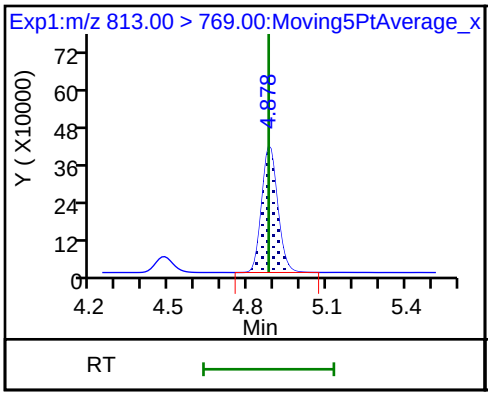
42 Perfluorotetradecanoic acid



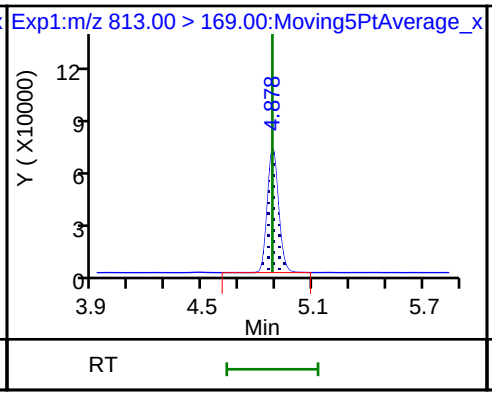
D 43 13C2-PFTeDA



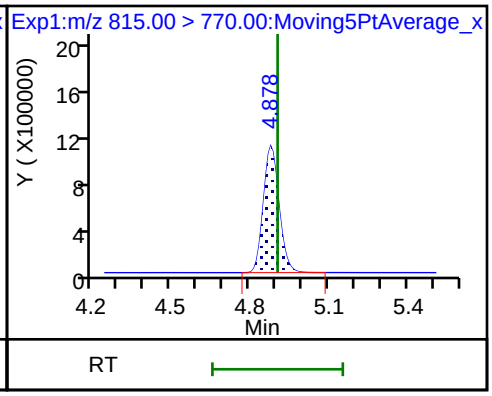
45 Perfluorohexadecanoic acid



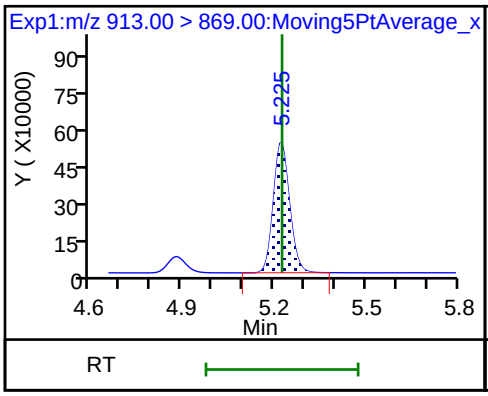
45 Perfluorohexadecanoic acid



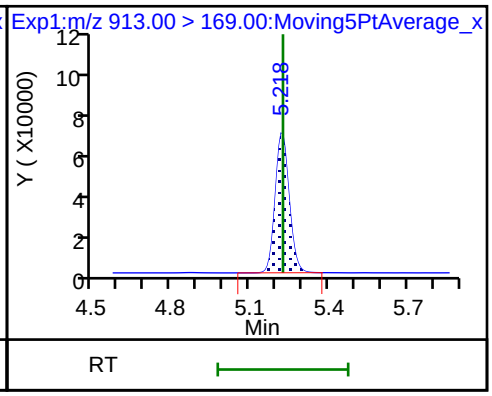
D 44 13C2-PFHxDA



46 Perfluorooctadecanoic acid



46 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Lab Sample ID: CCV 320-234231/1 Calibration Date: 07/14/2018 12:58

Instrument ID: A8_N Calib Start Date: 07/11/2018 14:48

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 07/11/2018 15:38

Lab File ID: 2018.07.14LLA_018.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.9856	1.011		2.57	2.50	2.6	40.0
Perfluoropentanoic acid (PFPeA)	AveID	1.213	1.175		2.42	2.50	-3.2	40.0
Perfluorobutanesulfonic acid (PFBS)	AveID	76.50	77.01		2.22	2.21	0.7	50.0
4:2 FTS	AveID	13.00	12.39		2.23	2.34	-4.7	50.0
Perfluorohexanoic acid (PFHxA)	AveID	1.029	1.136		2.76	2.50	10.4	40.0
Perfluoropentanesulfonic acid (PFPeS)	AveID	69.78	72.57		2.44	2.35	4.0	50.0
HFPO-DA (GenX)	AveID	2.654	2.372		2.23	2.50	-10.6	40.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.157	1.093		2.36	2.50	-5.5	40.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.148	1.107		2.19	2.28	-3.6	40.0
ADONA	AveID	3.219	3.495		2.56	2.36	8.6	50.0
6:2 FTS	AveID	1.564	1.686		2.55	2.37	7.8	40.0
Perfluorooctanoic acid (PFOA)	AveID	1.232	1.180		2.40	2.50	-4.2	40.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.318	1.365		2.47	2.38	3.6	50.0
Perfluorononanoic acid (PFNA)	AveID	1.109	1.114		2.51	2.50	0.4	40.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.133	1.149		2.35	2.32	1.4	40.0
9-Chlorohexadecafluoro-3-oxa nonane-1-sulfonate	AveID	1.836	1.952		2.48	2.33	6.3	50.0
8:2 FTS	AveID	1.290	1.391		2.58	2.40	7.8	40.0
Perfluorononanesulfonic acid (PFNS)	AveID	0.7752	0.8085		2.50	2.40	4.3	50.0
Perfluorodecanoic acid (PFDA)	AveID	1.049	1.012		2.41	2.50	-3.6	40.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9856	1.029		2.61	2.50	4.4	40.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	0.9858	0.9896		2.51	2.50	0.4	40.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6714	0.6984		2.51	2.41	4.0	50.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.8840	0.9029		2.55	2.50	2.1	40.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.8195	0.8848		2.70	2.50	8.0	40.0
11-Chloroeicosafluoro-3-oxau ndecane-1-sulfonate	AveID	2.654	2.910		2.58	2.36	9.7	50.0
Perfluorododecanoic acid (PFDoA)	AveID	1.092	1.067		2.44	2.50	-2.3	40.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.068	1.009		2.36	2.50	-5.5	50.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2602	0.2509		2.41	2.50	-3.6	50.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		0.9949		2.60	2.50	3.8	50.0

FORM VII 537 (modified)

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Lab Sample ID: CCV 320-234231/1 Calibration Date: 07/14/2018 12:58

Instrument ID: A8_N Calib Start Date: 07/11/2018 14:48

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 07/11/2018 15:38

Lab File ID: 2018.07.14LLA_018.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.143	1.157		2.53	2.50	1.3	50.0
13C4 PFBA	Ave	1.356	1.322		2.44	2.50	-2.5	50.0
13C5 PFPeA	Ave	0.9425	0.9268		2.46	2.50	-1.7	50.0
13C3-PFBS	Ave	0.0237	0.0238		2.34	2.33	0.7	50.0
M2-4:2FTS	Ave	0.1273	0.1233		2.26	2.34	-3.1	50.0
13C2 PFHxA	Ave	1.017	1.007		2.48	2.50	-1.0	50.0
13C3 HFPO-DA	Ave	0.0724	0.0875		3.02	2.50	20.9	50.0
13C4-PFHpA	Ave	0.9371	0.996		2.66	2.50	6.3	50.0
18O2 PFHxS	Ave	1.328	1.299		2.31	2.37	-2.1	50.0
M2-6:2FTS	Ave	0.2009	0.1720		2.03	2.38	-14.4	40.0
13C4 PFOA	Ave	0.9560	0.9771		2.56	2.50	2.2	50.0
13C4 PFOS	Ave	0.9742	0.9444		2.32	2.39	-3.1	50.0
13C5 PFNA	Ave	0.8546	0.8051		2.36	2.50	-5.8	50.0
M2-8:2FTS	Ave	0.2939	0.2112		1.72	2.40	-28.1	40.0
13C2 PFDA	Ave	0.7503	0.7177		2.39	2.50	-4.3	50.0
13C8 FOSA	Ave	1.405	1.375		2.45	2.50	-2.1	50.0
d3-NMeFOSAA	Ave	0.3075	0.3190		2.59	2.50	3.7	50.0
d5-NEtFOSAA	Ave	0.3150	0.3409		2.70	2.50	8.2	50.0
13C2 PFUnA	Ave	0.6266	0.5932		2.37	2.50	-5.3	50.0
13C2 PFDoA	Ave	0.6496	0.6905		2.66	2.50	6.3	50.0
13C2-PFTeDA	Ave	0.6740	0.6934		2.57	2.50	2.9	50.0
13C2-PFHxDA	Ave	1.074	1.159		2.70	2.50	8.0	50.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180716-61105.b\2018.07.14LLA_018.d
Lims ID: CCV L5
Client ID:
Sample Type: CCV
Inject. Date: 14-Jul-2018 12:58:35 ALS Bottle#: 14 Worklist Smp#: 1
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV L5
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-A8_N*sub32

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180716-61105.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 17-Jul-2018 08:09:51 Calib Date: 11-Jul-2018 15:38:42
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK016

First Level Reviewer: mongkols Date: 17-Jul-2018 08:09:50

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.435	1.436	-0.001	0.540	4982819	2.44		97.5	27153	
2 Perfluorobutyric acid										
212.90 > 169.00	1.435	1.435	0.0	1.000	5039210	2.57		103	1622	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.719	1.719	0.0	1.000	4102755	2.42		96.8	1876	
D 3 13C5-PFPeA										
267.90 > 223.00	1.719	1.720	-0.001	0.647	3493089	2.46		98.3	42614	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.755	1.755	0.0	1.000	6118073	2.22		101	32551	
298.90 > 99.00	1.755	1.755	0.0	1.000	2494391		2.45(1.25-3.74)		17200	
D 47 13C3-PFBS										
301.90 > 83.00	1.755	1.756	-0.001	0.660	83581	2.34		101	604	
61 1H,1H,2H,2H-perfluorohexanesulfoni										
327.00 > 307.00	1.959	1.959	0.0	1.116	1040361	2.23		95.3	46293	
D 60 M2-4:2FTS										
329.00 > 81.00	1.959	1.959	0.0	0.737	433997	2.26		96.9	6062	
D 7 13C2 PFHxA										
315.00 > 270.00	1.991	1.992	-0.001	0.749	3797245	2.48		99.0	60133	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.991	1.991	0.0	1.000	4314227	2.76		110	9946	
313.00 > 119.00	1.991	1.991	0.0	1.000	375143		11.50(5.03-15.10)		5937	
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.014	2.014	0.0	1.147	6117592	2.44		104	52983	
349.00 > 99.00	2.014	2.014	0.0	1.147	2140435		2.86(1.36-4.07)		26396	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.093	2.082	0.011	0.787	329721	3.02		121	5793	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
67 Perfluoro(2-propoxypropanoic) acid										
329.10 > 285.00	2.093	2.093	0.0	1.000	782011	2.23		89.4	6546	
D 9 13C4-PFHpA										
367.00 > 322.00	2.306	2.306	0.0	0.867	3755433	2.66		106	34664	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.306	2.306	0.0	1.000	4105373	2.36		94.5	6987	
363.00 > 169.00	2.306	2.306	0.0	1.000	1615814		2.54(1.13-3.40)		12094	
D 11 18O2 PFHxS										
403.00 > 84.00	2.319	2.319	0.0	0.872	4631717	2.31		97.9	30538	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.319	2.319	0.0	1.000	4931041	2.19		96.4	20152	
399.00 > 99.00	2.319	2.319	0.0	1.000	1643102		3.00(1.50-4.49)		8230	
65 Adona										
377.00 > 251.00	2.358	2.358	0.0	0.781	11718545	2.56		109	89896	
377.00 > 85.00	2.358	2.358	0.0	0.781	7040163		1.66(0.84-2.53)		29291	
D 12 M2-6:2FTS										
429.00 > 81.00	2.635	2.628	0.007	0.991	615814	2.03		85.6	11060	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.635	2.635	0.0	1.000	1036279	2.55		108	10105	
D 14 13C4 PFOA										
417.00 > 372.00	2.659	2.652	0.007	1.000	3682897	2.56		102	41857	
* 62 13C2-PFOA										
415.00 > 370.00	2.659	2.659	0.0		3769148	2.50			37670	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.659	2.659	0.0	1.000	4349366	2.40		95.8	2736	
413.00 > 169.00	2.659	2.659	0.0	1.000	2117863		2.05(0.84-2.52)		10060	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.667	2.667	0.0	0.883	4626795	2.47		104	32417	
449.00 > 99.00	2.667	2.667	0.0	0.883	1198696		3.86(1.94-5.82)		20451	
D 19 13C5 PFNA										
468.00 > 423.00	3.019	3.018	0.0	1.135	3034670	2.36		94.2	37799	
D 18 13C4 PFOS										
503.00 > 80.00	3.019	3.018	0.0	1.135	3402848	2.32		96.9	29791	
20 Perfluorononanoic acid										
463.00 > 419.00	3.019	3.019	0.0	1.000	3381456	2.51		100	5878	
463.00 > 169.00	3.019	3.019	0.0	1.000	815664		4.15(1.90-5.69)		27032	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.019	3.019	0.0	1.000	3794319	2.35		101	23469	
499.00 > 99.00	3.019	3.019	0.0	1.000	816485		4.65(2.31-6.93)		9770	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.225	3.225	0.0	1.068	6475057	2.48		106	44385	
D 26 M2-8:2FTS										
529.00 > 81.00	3.361	3.361	0.0	1.264	762431	1.72		71.9	12358	
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.361	3.361	0.0	1.113	2762771	2.50		104	31922	
549.00 > 99.00	3.361	3.361	0.0	1.113	1026757		2.69(1.33-3.97)		13120	
25 1H,1H,2H,2H-perfluorodecanesulfoni										
527.00 > 507.00	3.361	3.361	0.0	1.000	1060277	2.58		108	15889	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 23 13C2 PFDA										
515.00 > 470.00	3.370	3.370	0.0	1.267	2705168	2.39		95.7	30607	
D 21 13C8 FOSA										
506.00 > 78.00	3.370	3.370	0.0	1.267	5181460	2.45		97.9	48811	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.370	3.370	0.0	1.000	2737914	2.41		96.4	16675	
513.00 > 169.00	3.370	3.370	0.0	1.000	485729		5.64(2.36-7.09)		10865	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.370	3.370	0.0	1.000	5334008	2.61		104	36580	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.529	3.520	0.009	1.327	1202378	2.59		104	37699	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.529	3.529	0.0	1.000	1189888	2.51		100	9671	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.687	3.687	0.0	1.386	1284734	2.70		108	3706	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.676	3.676	0.0	1.218	2396444	2.51		104	50266	
599.00 > 99.00	3.676	3.676	0.0	1.218	836287		2.87(1.39-4.16)		25042	
D 30 13C2 PFUnA										
565.00 > 520.00	3.698	3.698	0.0	1.390	2235969	2.37		94.7	38614	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.698	3.698	0.0	1.000	1978343	2.70		108	10769	
563.00 > 169.00	3.698	3.698	0.0	1.000	488634		4.05(2.12-6.36)		16995	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.698	3.698	0.0	1.003	1159943	2.55		102	25224	
66 11-Chloroeicosafluoro-3-oxaundecan										
631.00 > 451.00	3.855	3.855	0.0	1.277	9758341	2.58		110	128058	
D 36 13C2 PFDoA										
615.00 > 570.00	3.988	3.988	0.0	1.500	2602474	2.66		106	26416	
37 Perfluorododecanoic acid										
613.00 > 569.00	3.988	3.988	0.0	1.000	2775593	2.44		97.7	2034	
613.00 > 169.00	3.988	3.988	0.0	1.000	661969		4.19(2.13-6.40)		13960	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.252	4.252	0.0	1.066	2625468	2.36		94.5	1442	
663.00 > 169.00	4.252	4.252	0.0	1.066	823371		3.19(1.25-3.76)		10685	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.480	4.480	0.0	1.685	2613416	2.57		103	17185	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.480	4.480	0.0	1.000	655602	2.41		96.4	9809	
713.00 > 219.00	4.480	4.480	0.0	1.000	473886		1.38(0.71-2.13)		8207	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.887	4.887	0.0	1.838	4368536	2.70		108	12812	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.887	4.887	0.0	1.000	4346023	2.60		104	1012	
813.00 > 169.00	4.887	4.887	0.0	1.000	665099		6.53(2.86-8.58)		4980	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.233	5.233	0.0	1.071	5055914	2.53		101	987	
913.00 > 169.00	5.233	5.233	0.0	1.071	594106		8.51(3.83-11.48)		5356	

Reagents:

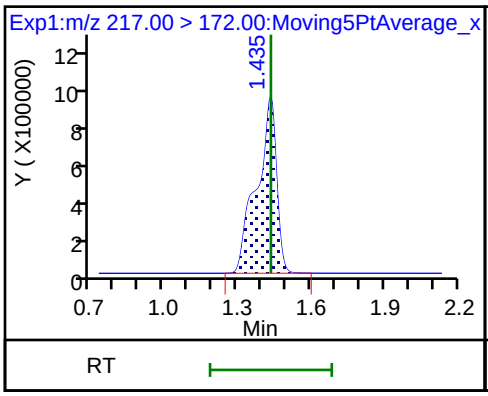
LCPFC_LL5_00005 Amount Added: 1.00 Units: mL

Report Date: 17-Jul-2018 08:09:52 Chrom Revision: 2.2 07-Jun-2018 07:41:54

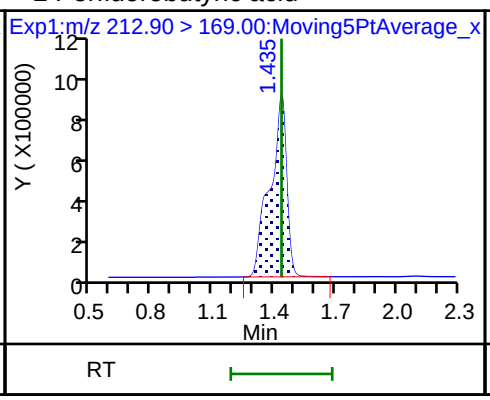
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180716-61105.b\2018.07.14LLA_018.d
Injection Date: 14-Jul-2018 12:58:35 Instrument ID: A8_N
Lims ID: CCV L5
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 14 Worklist Smp#: 1
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC ICAL

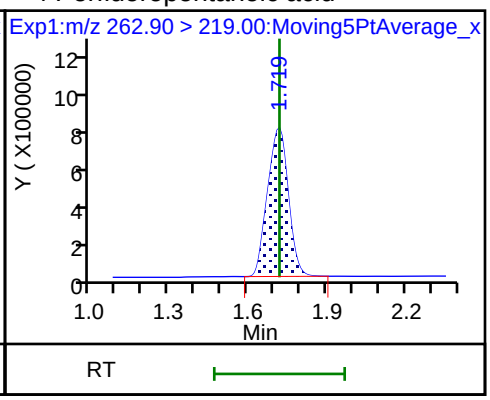
D 1 13C4 PFBA



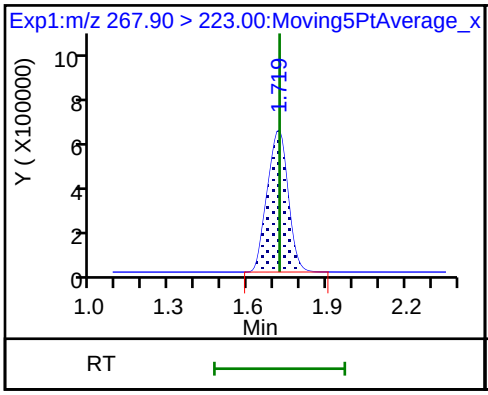
2 Perfluorobutyric acid



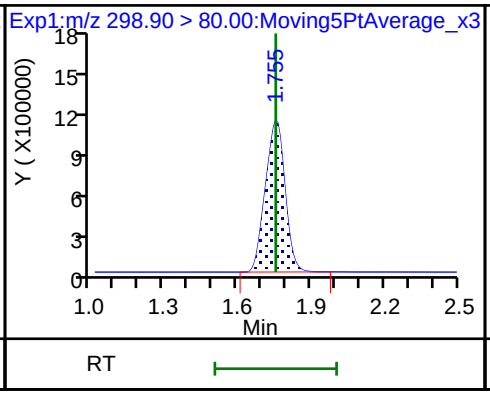
4 Perfluoropentanoic acid



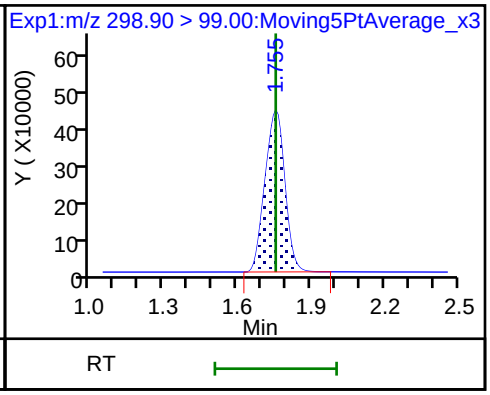
D 3 13C5-PFPeA



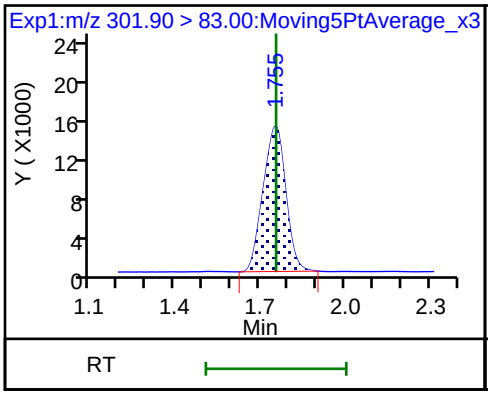
5 Perfluorobutanesulfonic acid



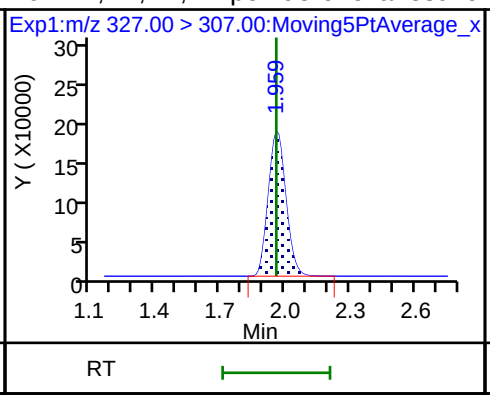
5 Perfluorobutanesulfonic acid



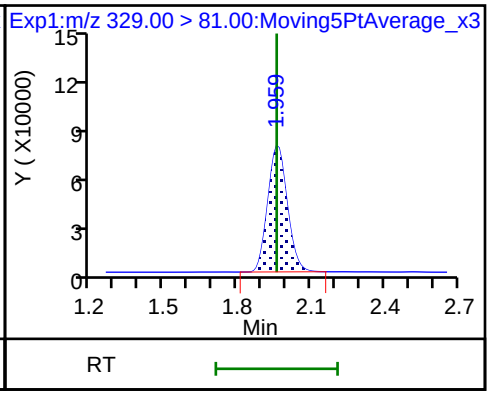
D 47 13C3-PFBS



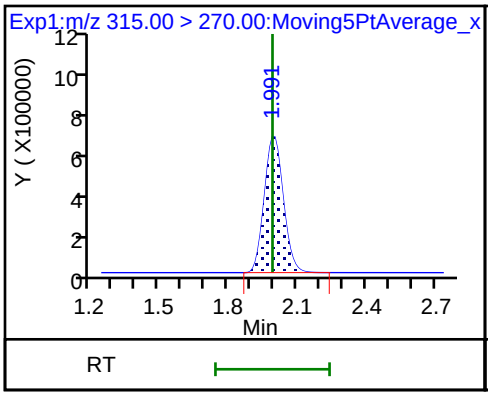
61 1H,1H,2H,2H-perfluorohexanesulfon



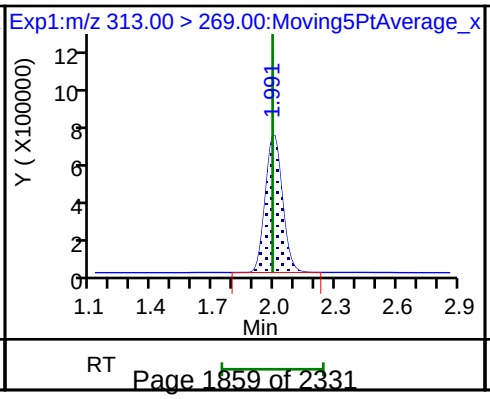
D 60 M2-4:2FTS



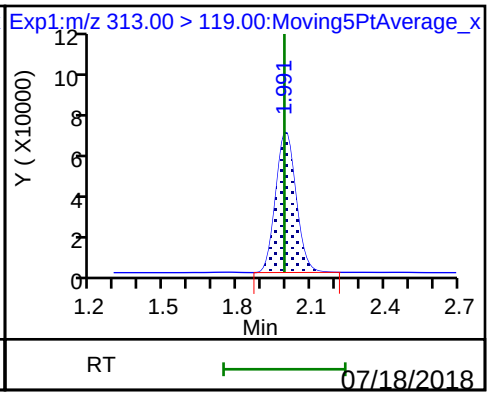
D 7 13C2 PFHxA



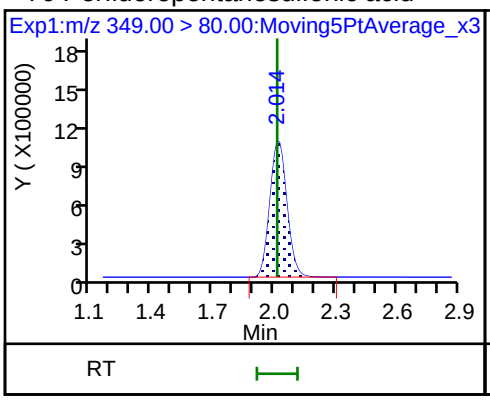
6 Perfluorohexanoic acid



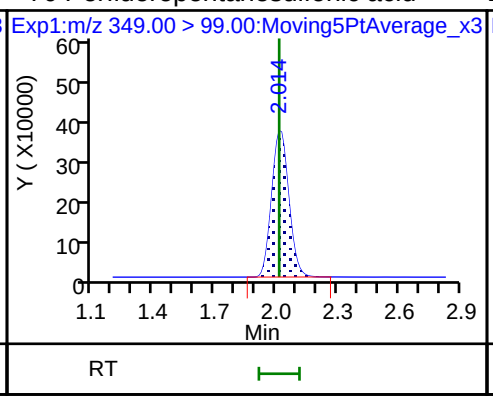
6 Perfluorohexanoic acid



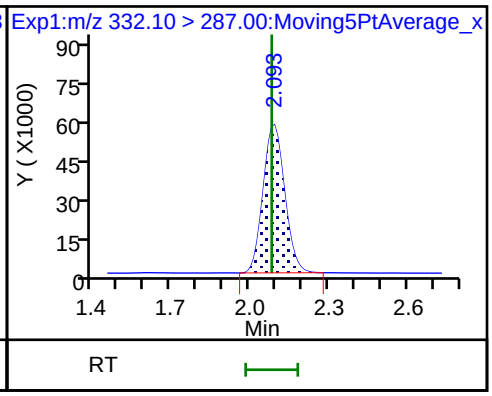
70 Perfluoropentanesulfonic acid



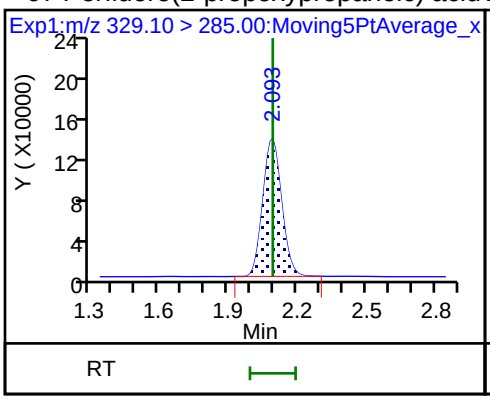
70 Perfluoropentanesulfonic acid



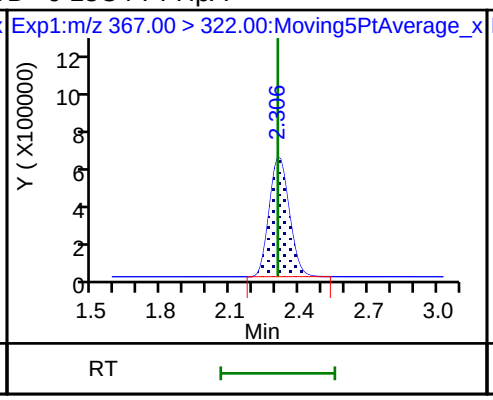
D 64 13C3 HFPO-DA



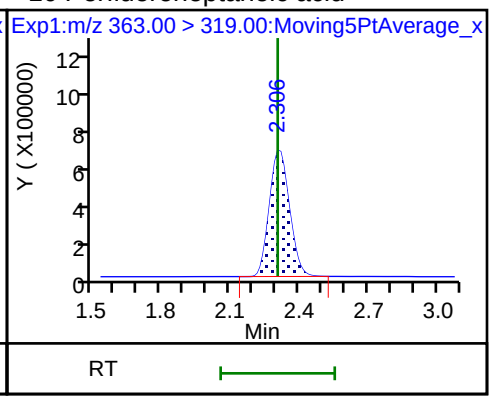
67 Perfluoro(2-propoxypropanoic) acid



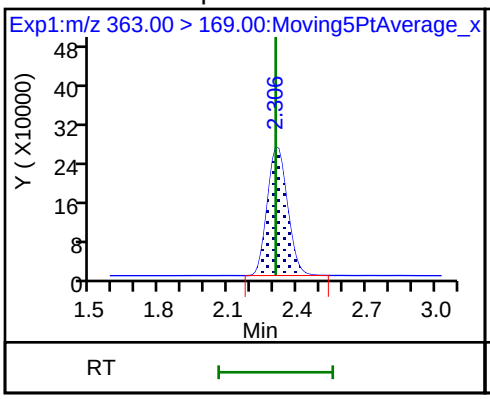
D 9 13C4-PFHpA



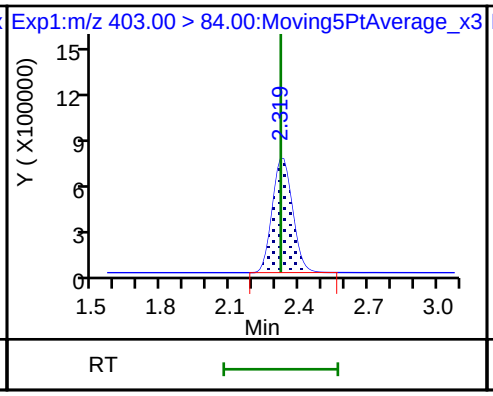
10 Perfluoroheptanoic acid



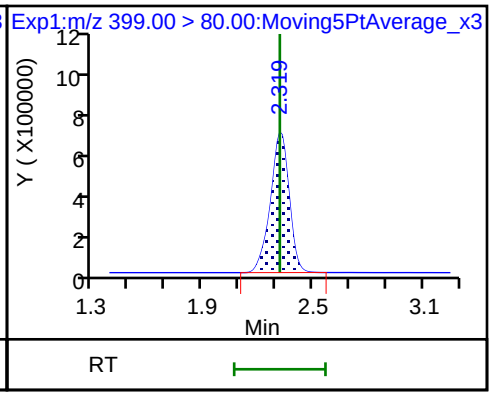
10 Perfluoroheptanoic acid



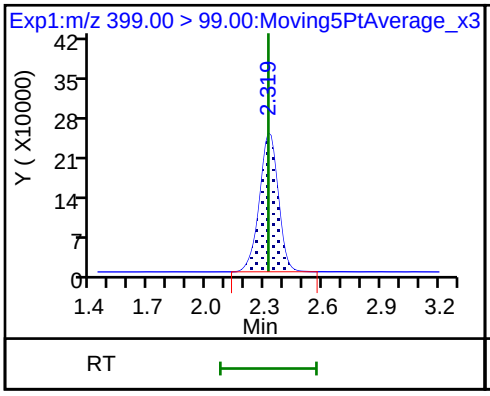
D 11 18O2 PFHxS



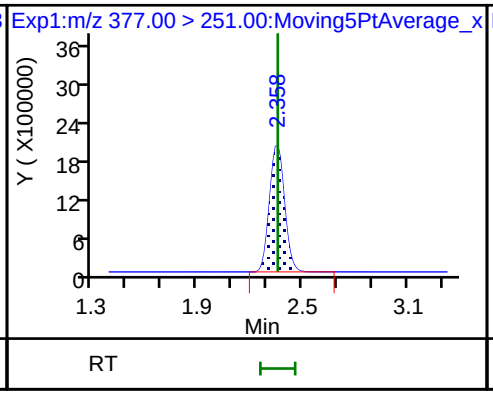
8 Perfluorohexanesulfonic acid



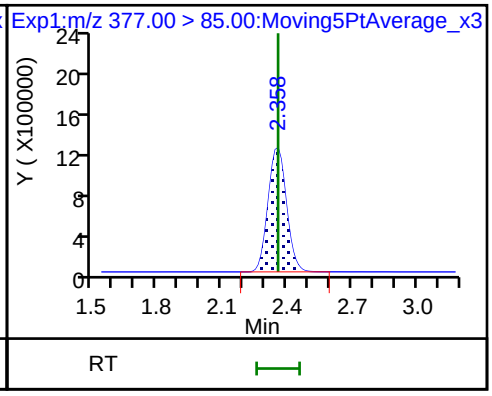
8 Perfluorohexanesulfonic acid



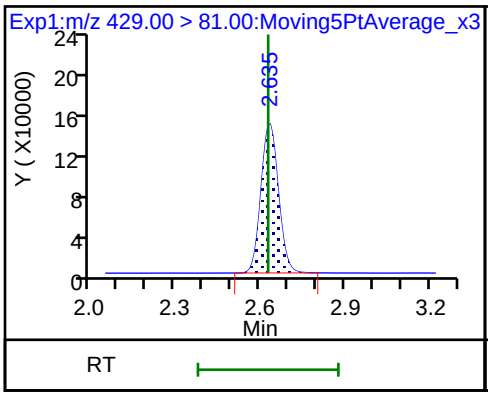
65 Adona



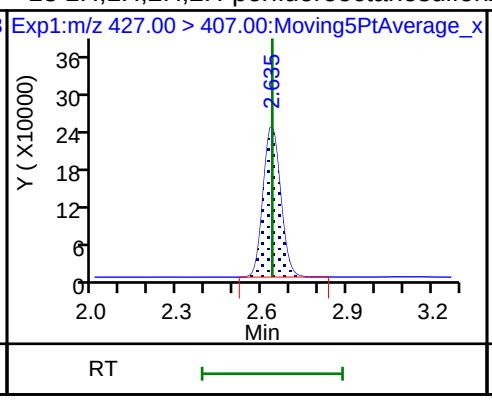
65 Adona



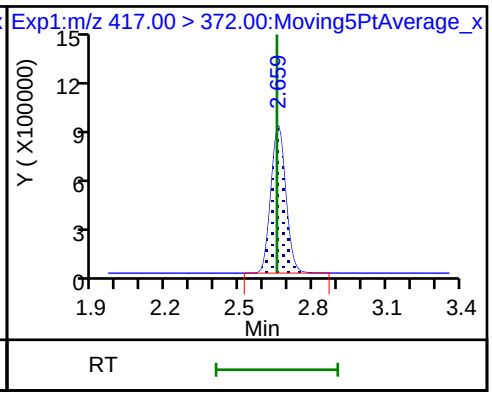
D 12 M2-6:2FTS



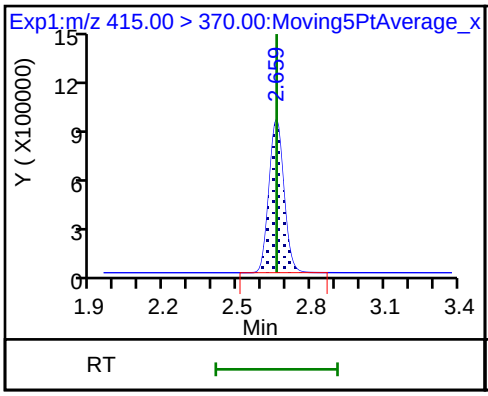
13 1H,1H,2H,2H-perfluorooctanesulfon



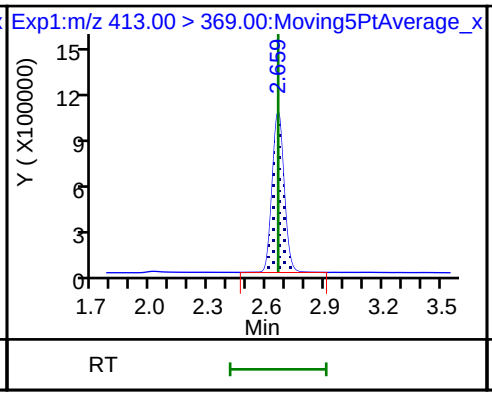
D 14 13C4 PFOA



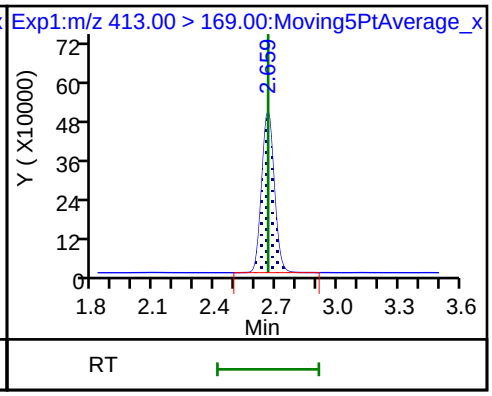
* 62 13C2-PFOA



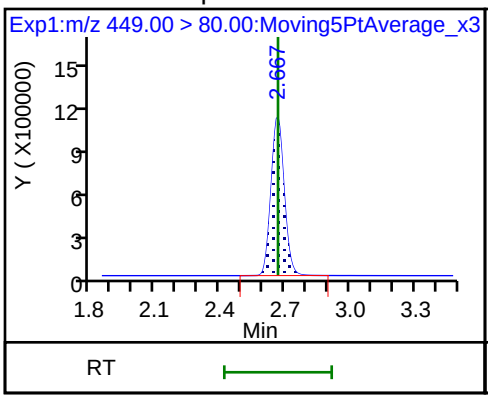
15 Perfluorooctanoic acid



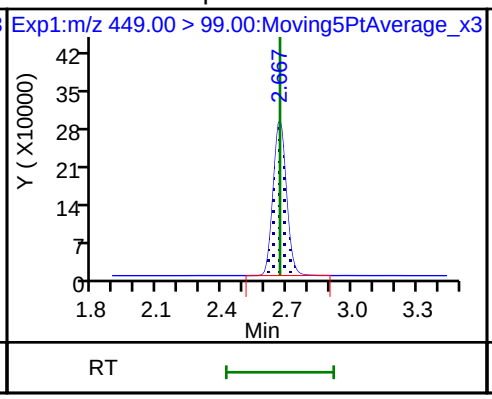
15 Perfluorooctanoic acid



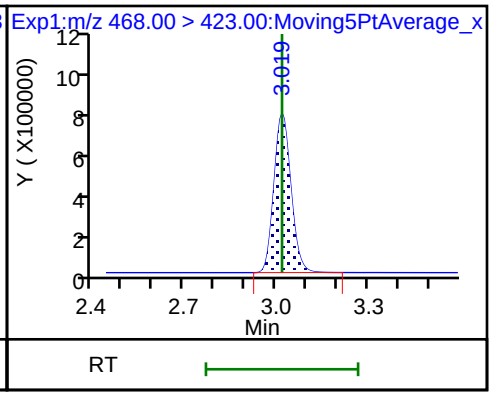
16 Perfluoroheptanesulfonic acid



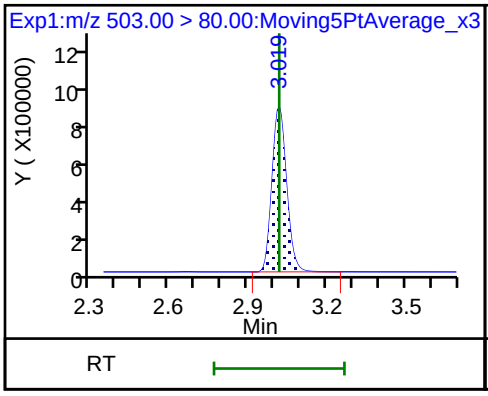
16 Perfluoroheptanesulfonic acid



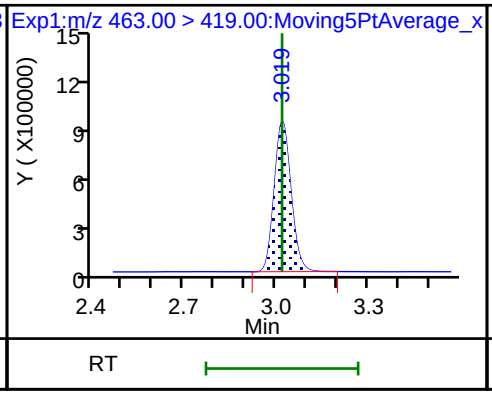
D 19 13C5 PFNA



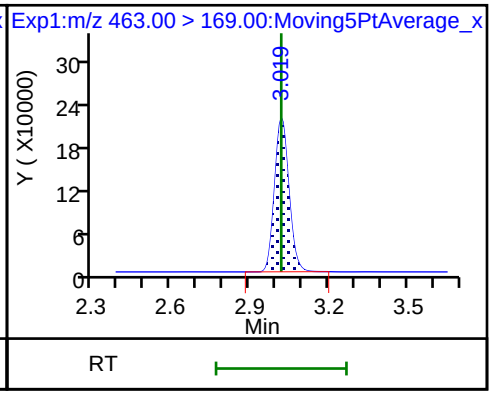
D 18 13C4 PFOS



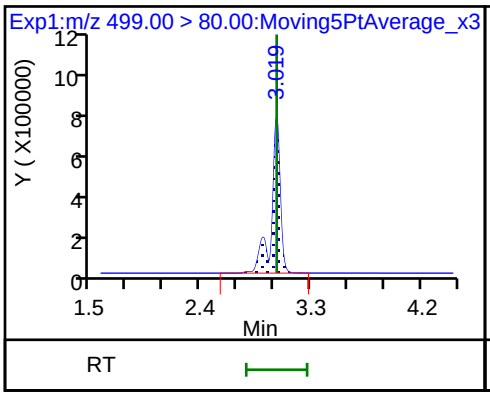
20 Perfluorononanoic acid



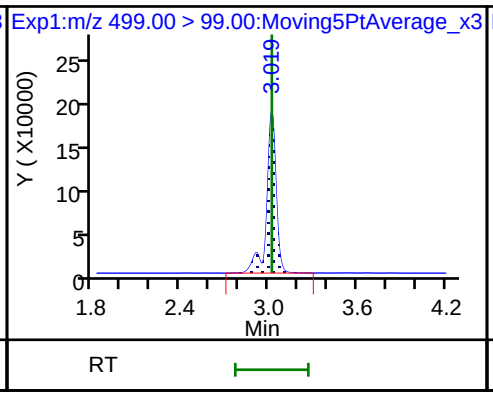
20 Perfluorononanoic acid



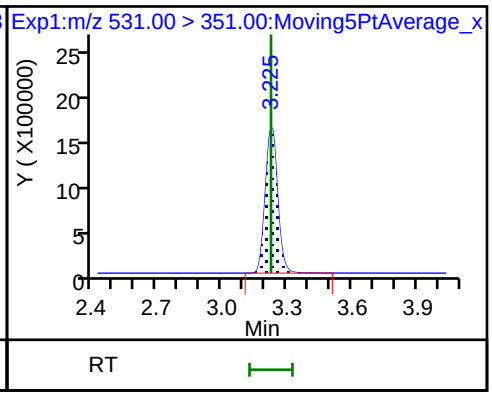
17 Perfluorooctane sulfonic acid



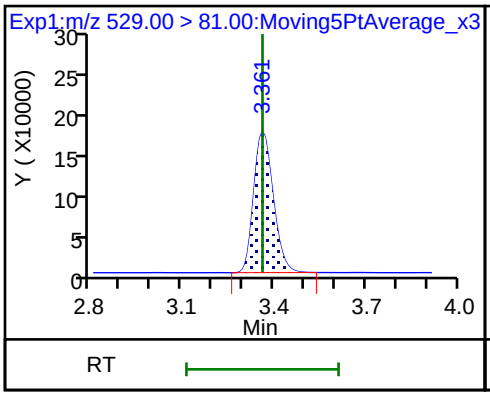
17 Perfluorooctane sulfonic acid



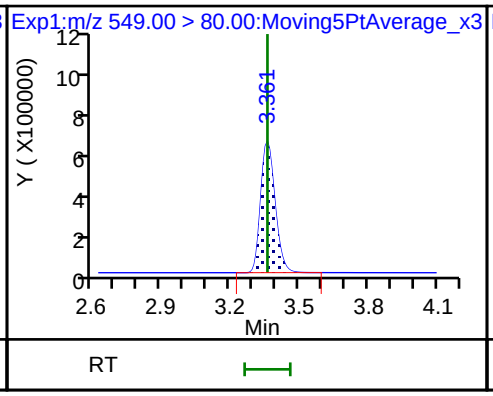
69 9-Chlorohexadecafluoro-3-oxanonane



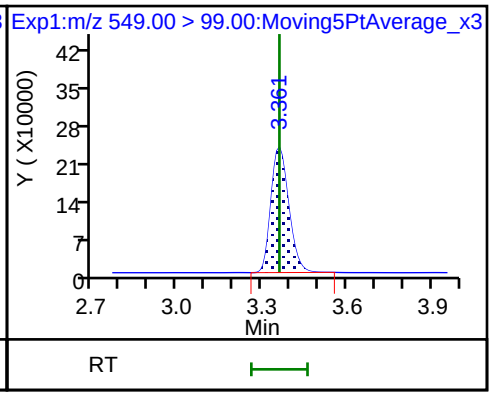
D 26 M2-8:2FTS



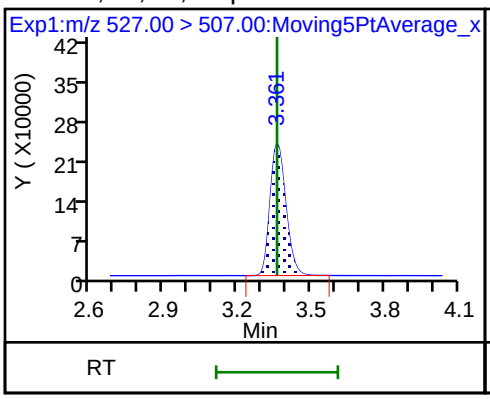
68 Perfluorononanesulfonic acid



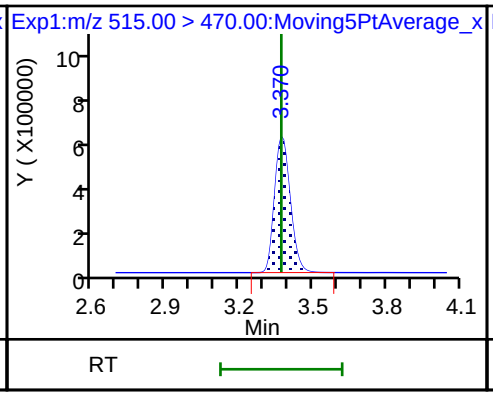
68 Perfluorononanesulfonic acid



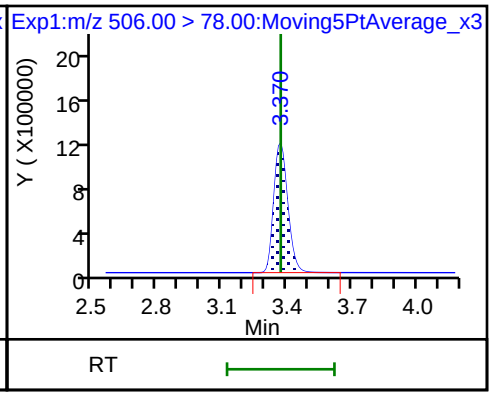
25 1H,1H,2H,2H-perfluorodecanesulfon



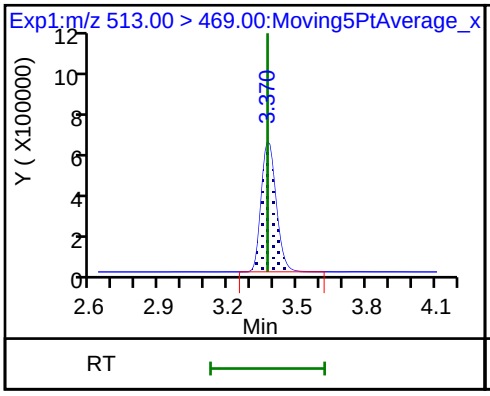
D 23 13C2 PFDA



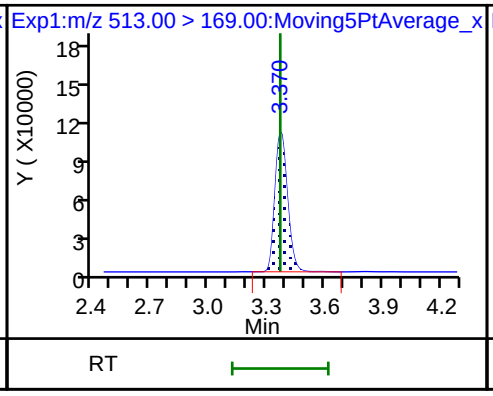
D 21 13C8 FOSA



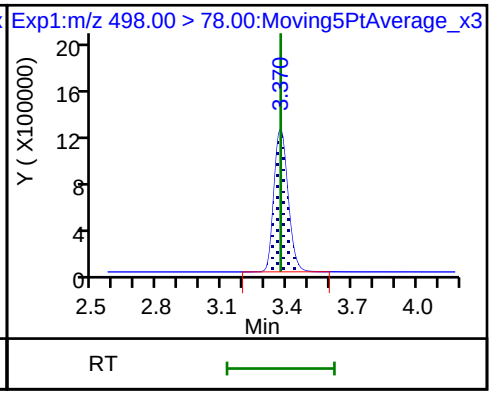
24 Perfluorodecanoic acid



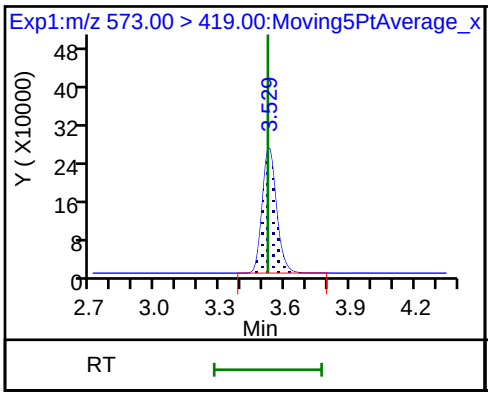
24 Perfluorodecanoic acid



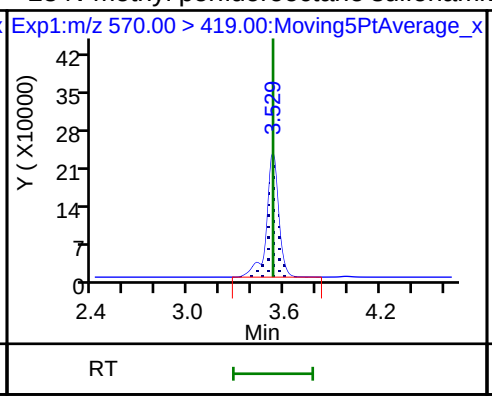
22 Perfluorooctane Sulfonamide



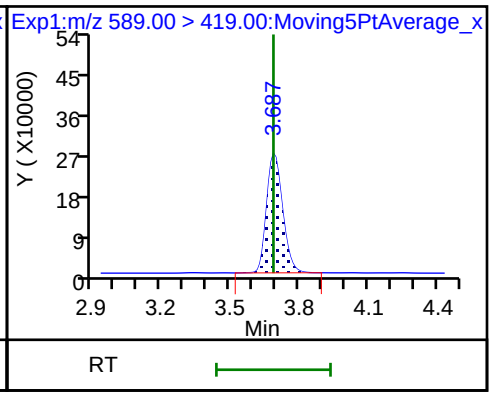
D 27 d3-NMeFOSAA



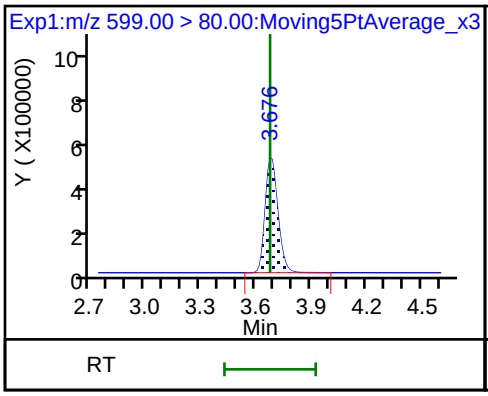
28 N-methyl perfluorooctane sulfonami



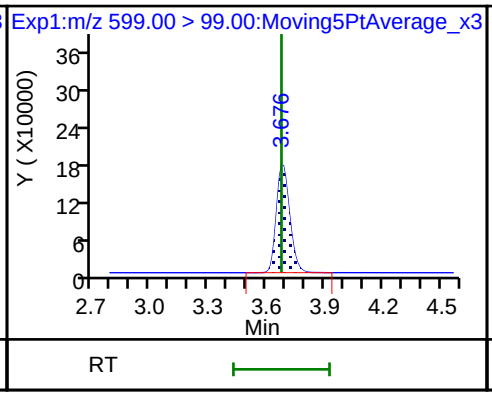
D 32 d5-NEtFOSAA



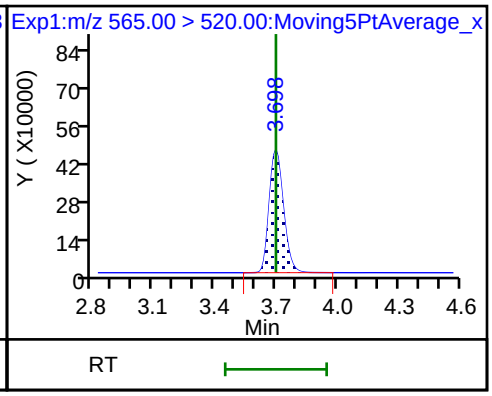
29 Perfluorodecane Sulfonic acid



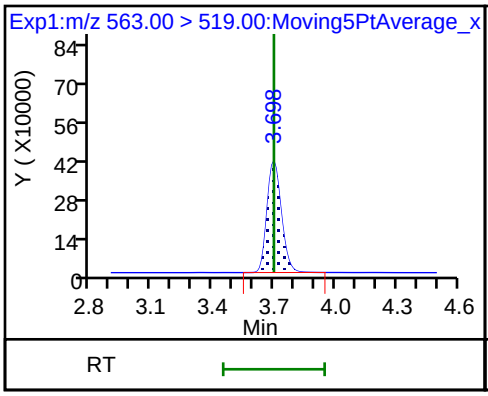
29 Perfluorodecane Sulfonic acid



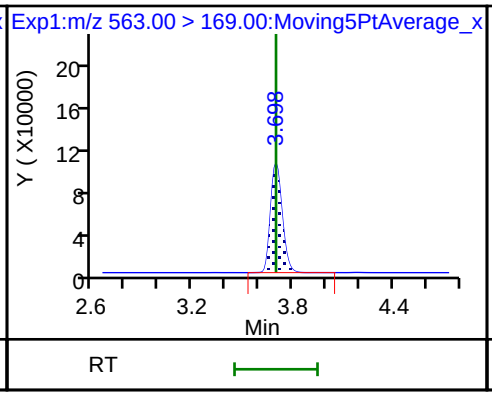
D 30 13C2 PFUnA



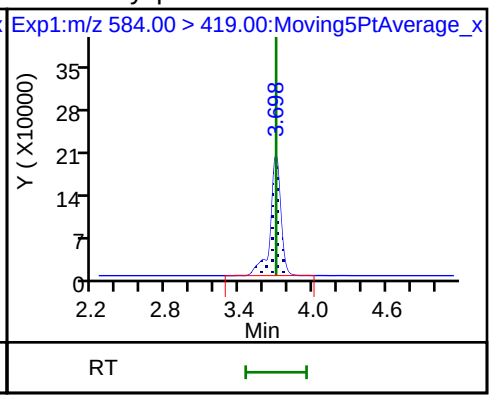
31 Perfluoroundecanoic acid



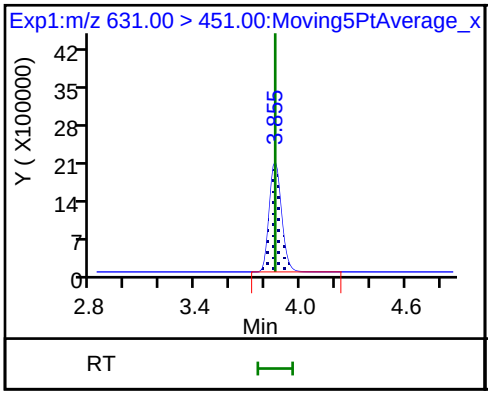
31 Perfluoroundecanoic acid



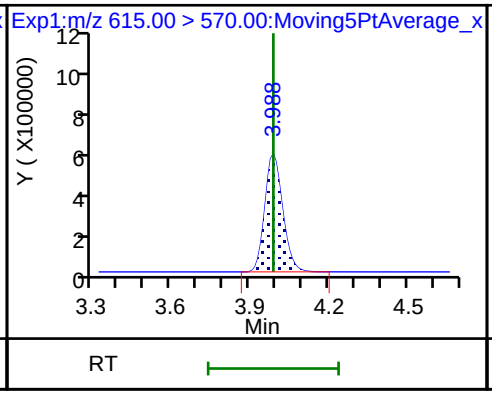
33 N-ethyl perfluorooctane sulfonamid



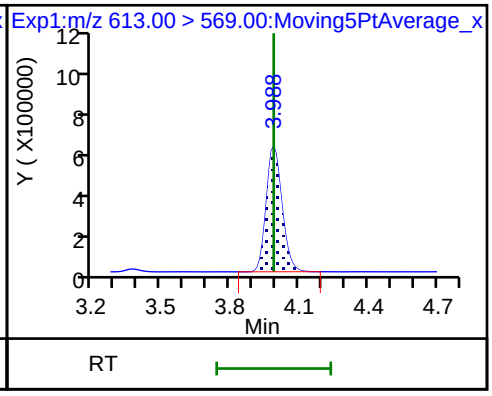
66 11-Chloroeicosafluoro-3-oxaundecan



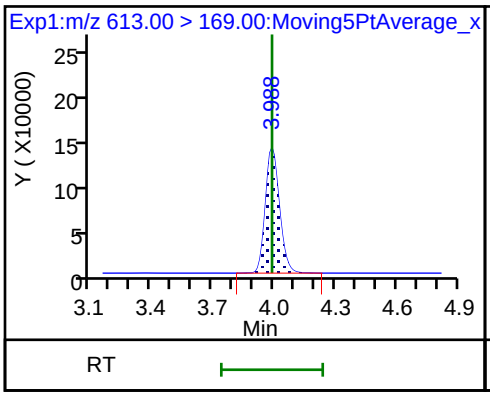
D 36 13C2 PFDoA



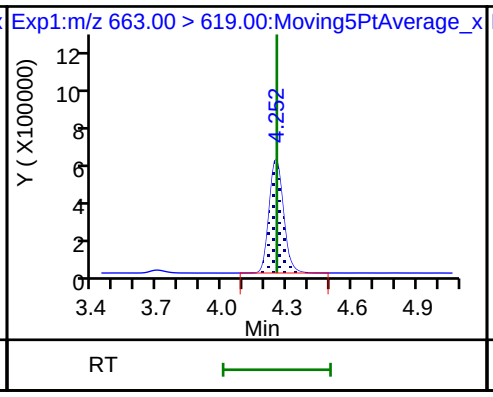
37 Perfluorododecanoic acid



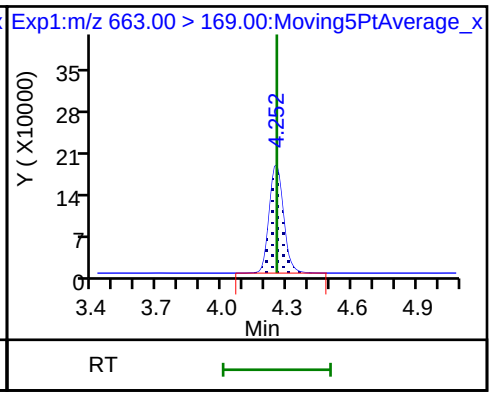
37 Perfluorododecanoic acid



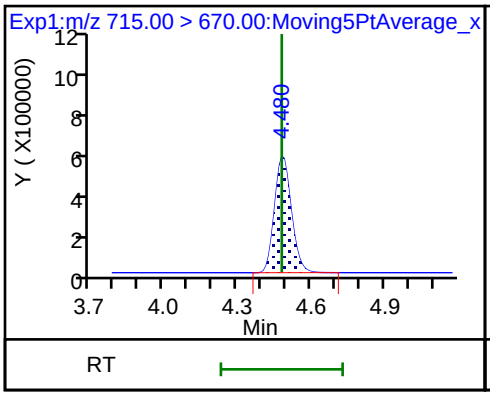
41 Perfluorotridecanoic acid



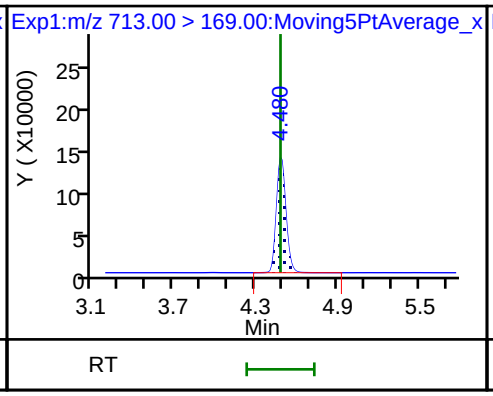
41 Perfluorotridecanoic acid



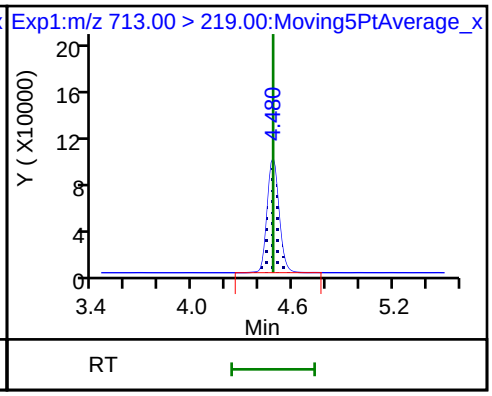
D 43 13C2-PFTeDA



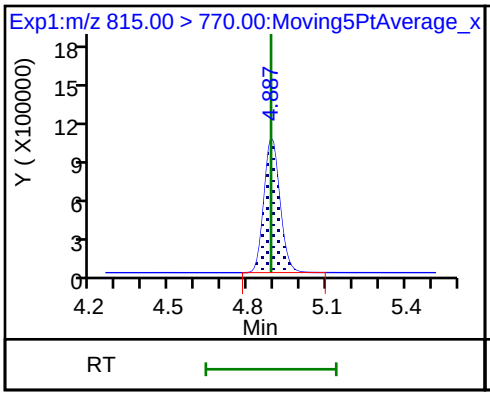
42 Perfluorotetradecanoic acid



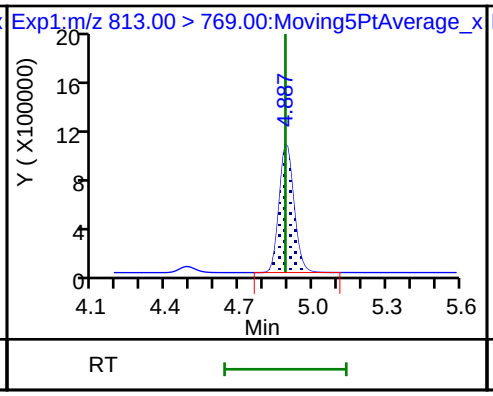
42 Perfluorotetradecanoic acid



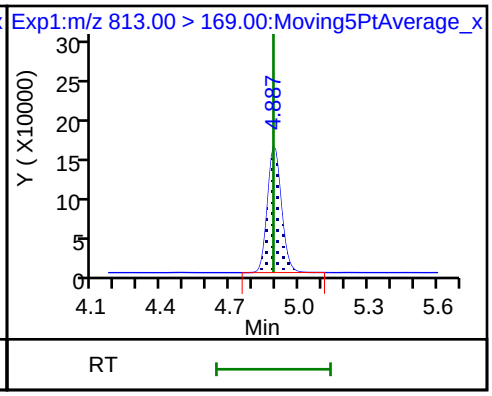
D 44 13C2-PFHxDA



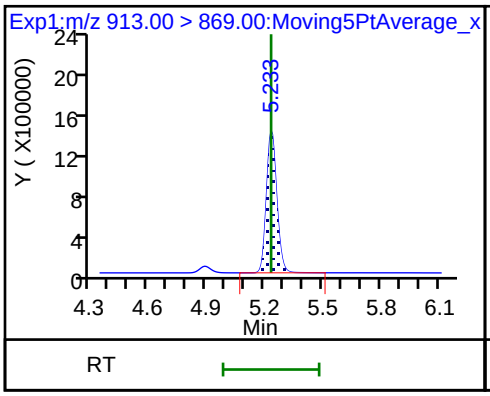
45 Perfluorohexadecanoic acid



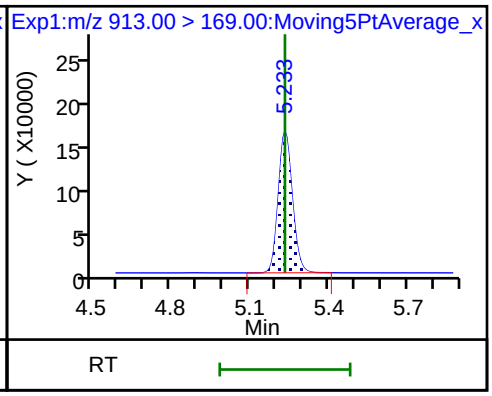
45 Perfluorohexadecanoic acid



46 Perfluorooctadecanoic acid



46 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Lab Sample ID: CCV 320-234231/9 Calibration Date: 07/14/2018 14:01

Instrument ID: A8_N Calib Start Date: 07/11/2018 14:48

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 07/11/2018 15:38

Lab File ID: 2018.07.14LLA_026.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.9856	0.9862		1.00	1.00	0.0	40.0
Perfluoropentanoic acid (PFPeA)	AveID	1.213	1.132		0.934	1.00	-6.6	40.0
Perfluorobutanesulfonic acid (PFBS)	AveID	76.50	79.69		0.921	0.884	4.2	50.0
4:2 FTS	AveID	13.00	12.56		0.902	0.934	-3.4	50.0
Perfluorohexanoic acid (PFHxA)	AveID	1.029	1.017		0.988	1.00	-1.2	40.0
Perfluoropentanesulfonic acid (PFPeS)	AveID	69.78	73.89		0.993	0.938	5.9	50.0
HFPO-DA (GenX)	AveID	2.654	2.664		1.00	1.00	0.4	40.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.157	1.093		0.945	1.00	-5.5	40.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.148	1.092		0.866	0.910	-4.8	40.0
ADONA	AveID	3.219	3.540		1.04	0.942	10.0	50.0
6:2 FTS	AveID	1.564	1.459		0.884	0.948	-6.7	40.0
Perfluorooctanoic acid (PFOA)	AveID	1.232	1.161		0.944	1.00	-5.7	40.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.318	1.345		0.972	0.952	2.1	50.0
Perfluorononanoic acid (PFNA)	AveID	1.109	1.089		0.982	1.00	-1.8	40.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.133	1.131		0.926	0.928	-0.2	40.0
9-Chlorohexadecafluoro-3-oxa nonane-1-sulfonate	AveID	1.836	1.960		0.995	0.932	6.8	50.0
8:2 FTS	AveID	1.290	1.283		0.953	0.958	-0.6	40.0
Perfluorononanesulfonic acid (PFNS)	AveID	0.7752	0.8234		1.02	0.960	6.2	50.0
Perfluorodecanoic acid (PFDA)	AveID	1.049	0.9413		0.897	1.00	-10.3	40.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9856	0.9851		0.999	1.00	-0.0	40.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	0.9858	0.9949		1.01	1.00	0.9	40.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6714	0.6845		0.983	0.964	1.9	50.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.8840	0.8984		1.02	1.00	1.6	40.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.8195	0.7865		0.960	1.00	-4.0	40.0
11-Chloroeicosafluoro-3-oxau ndecane-1-sulfonate	AveID	2.654	2.921		1.04	0.942	10.1	50.0
Perfluorododecanoic acid (PFDoA)	AveID	1.092	1.072		0.982	1.00	-1.8	40.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.068	1.006		0.942	1.00	-5.8	50.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2602	0.2411		0.927	1.00	-7.3	50.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		0.9716		1.00	1.00	0.1	50.0

FORM VII 537 (modified)

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Lab Sample ID: CCV 320-234231/9 Calibration Date: 07/14/2018 14:01

Instrument ID: A8_N Calib Start Date: 07/11/2018 14:48

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 07/11/2018 15:38

Lab File ID: 2018.07.14LLA_026.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.143	1.125		0.985	1.00	-1.5	50.0
13C4 PFBA	Ave	1.356	1.308		2.41	2.50	-3.6	50.0
13C5 PFPeA	Ave	0.9425	0.9385		2.49	2.50	-0.4	50.0
13C3-PFBS	Ave	0.0237	0.0228		2.24	2.33	-3.7	50.0
M2-4:2FTS	Ave	0.1273	0.1199		2.20	2.34	-5.8	50.0
13C2 PFHxA	Ave	1.017	1.029		2.53	2.50	1.1	50.0
13C3 HFPO-DA	Ave	0.0724	0.0768		2.65	2.50	6.2	50.0
13C4-PFHpA	Ave	0.9371	1.009		2.69	2.50	7.6	50.0
18O2 PFHxS	Ave	1.328	1.297		2.31	2.37	-2.3	50.0
M2-6:2FTS	Ave	0.2009	0.1855		2.19	2.38	-7.7	40.0
13C4 PFOA	Ave	0.9560	0.9470		2.48	2.50	-0.9	50.0
13C4 PFOS	Ave	0.9742	0.9331		2.29	2.39	-4.2	50.0
13C5 PFNA	Ave	0.8546	0.8106		2.37	2.50	-5.2	50.0
M2-8:2FTS	Ave	0.2939	0.2176		1.77	2.40	-26.0	40.0
13C8 FOSA	Ave	1.405	1.388		2.47	2.50	-1.2	50.0
13C2 PFDA	Ave	0.7503	0.7295		2.43	2.50	-2.8	50.0
d3-NMeFOSAA	Ave	0.3075	0.3061		2.49	2.50	-0.5	50.0
13C2 PFUnA	Ave	0.6266	0.6233		2.49	2.50	-0.5	50.0
d5-NEtFOSAA	Ave	0.3150	0.3446		2.73	2.50	9.4	50.0
13C2 PFDoA	Ave	0.6496	0.6722		2.59	2.50	3.5	50.0
13C2-PFTeDA	Ave	0.6740	0.7225		2.68	2.50	7.2	50.0
13C2-PFHxDA	Ave	1.074	1.159		2.70	2.50	8.0	50.0

FORM VII 537 (modified)

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180716-61105.b\2018.07.14LLA_026.d
Lims ID: CCV L4
Client ID:
Sample Type: CCV
Inject. Date: 14-Jul-2018 14:01:17 ALS Bottle#: 13 Worklist Smp#: 9
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV L4
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-A8_N*sub32

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180716-61105.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 17-Jul-2018 08:21:23 Calib Date: 11-Jul-2018 15:38:42
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK016

First Level Reviewer: mongkols Date: 17-Jul-2018 08:21:23

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.90 > 169.00	1.441	1.441	0.0	1.004	1989748	1.00		100	689	
D 1 13C4 PFBA										
217.00 > 172.00	1.435	1.436	-0.001	0.538	5043798	2.41		96.4	26379	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.719	1.719	0.0	1.000	1639951	0.9335		93.4	845	
D 3 13C5-PFPeA										
267.90 > 223.00	1.719	1.720	-0.001	0.645	3620296	2.49		99.6	50401	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.756	1.756	0.0	1.000	2479999	0.9209		104	14252	
298.90 > 99.00	1.756	1.756	0.0	1.000	993461		2.50(1.25-3.74)		8375	
D 47 13C3-PFBS										
301.90 > 83.00	1.756	1.756	0.0	0.658	81853	2.24		96.3	493	
61 1H,1H,2H,2H-perfluorohexanesulfoni										
327.00 > 307.00	1.959	1.959	0.0	1.116	412921	0.9023		96.6	18139	
D 60 M2-4:2FTS										
329.00 > 81.00	1.959	1.959	0.0	0.735	431914	2.20		94.2	5872	
6 Perfluorohexanoic acid										
313.00 > 269.00	2.003	2.003	0.0	1.000	1613809	0.9877		98.8	3518	
313.00 > 119.00	2.003	2.003	0.0	1.000	148334		10.88(5.03-15.10)		3168	
D 7 13C2 PFHxA										
315.00 > 270.00	2.003	1.992	0.010	0.751	3968304	2.53		101	63112	
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.025	2.025	0.0	1.154	2440041	0.99		106	37825	
349.00 > 99.00	2.025	2.025	0.0	1.154	892784		2.73(1.36-4.07)		15398	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.093	2.082	0.011	0.785	296352	2.65		106	6495	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
67 Perfluoro(2-propoxypropanoic) acid										
329.10 > 285.00	2.093	2.093	0.0	1.000	315825	1.00		100	2649	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.319	2.319	0.0	1.000	1700427	0.9447		94.5	3192	
363.00 > 169.00	2.319	2.319	0.0	1.000	637520		2.67(1.13-3.40)		7036	
D 9 13C4-PFHpA										
367.00 > 322.00	2.319	2.306	0.013	0.870	3890790	2.69		108	49549	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.332	2.332	0.0	1.000	1989563	0.8659		95.2	12921	
399.00 > 99.00	2.332	2.332	0.0	1.000	655335		3.04(1.50-4.49)		4479	
D 11 18O2 PFHxS										
403.00 > 84.00	2.332	2.319	0.013	0.874	4733693	2.31		97.7	46019	
65 Adona										
377.00 > 251.00	2.358	2.358	0.0	0.780	4801165	1.04		110	34164	
377.00 > 85.00	2.358	2.358	0.0	0.780	2834648		1.69(0.84-2.53)		18560	
D 12 M2-6:2FTS										
429.00 > 81.00	2.636	2.628	0.008	0.988	679865	2.19		92.3	14488	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.644	2.644	0.0	1.003	395985	0.8843		93.3	4777	
D 14 13C4 PFOA										
417.00 > 372.00	2.667	2.652	0.015	1.000	3652855	2.48		99.1	34586	
* 62 13C2-PFOA										
415.00 > 370.00	2.667	2.667	0.0		3857497	2.50			39562	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.667	2.667	0.0	1.000	1697999	0.9436		94.3	1061	
413.00 > 169.00	2.667	2.667	0.0	1.000	854564		1.99(0.84-2.52)		4459	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.674	2.674	0.0	0.885	1843825	0.9720		102	21617	
449.00 > 99.00	2.674	2.674	0.0	0.885	483500		3.81(1.94-5.82)		7582	
D 19 13C5 PFNA										
468.00 > 423.00	3.029	3.018	0.011	1.136	3126847	2.37		94.8	45075	
D 18 13C4 PFOS										
503.00 > 80.00	3.023	3.018	0.005	1.133	3441122	2.29		95.8	24088	
20 Perfluorononanoic acid										
463.00 > 419.00	3.029	3.029	0.0	1.000	1362135	0.9817		98.2	2267	
463.00 > 169.00	3.029	3.029	0.0	1.000	326979		4.17(1.90-5.69)		16843	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.029	3.029	0.0	1.002	1510872	0.9260		99.8	13658	
499.00 > 99.00	3.023	3.029	-0.006	1.000	348254		4.34(2.31-6.93)		6979	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.238	3.238	0.0	1.071	2630175	1.00		107	25076	
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.368	3.368	0.0	1.114	1138135	1.02		106	18906	
549.00 > 99.00	3.368	3.368	0.0	1.114	408523		2.79(1.33-3.97)		8452	
25 1H,1H,2H,2H-perfluorodecanesulfoni										
527.00 > 507.00	3.368	3.368	0.0	1.000	412489	0.9526		99.4	5131	
D 26 M2-8:2FTS										
529.00 > 81.00	3.368	3.361	0.007	1.263	803938	1.77		74.0	12837	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.377	3.377	0.0	1.000	2109496	1.00		99.9	27956	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.377	3.377	0.0	0.997	1059422	0.8970		89.7	6193	
513.00 > 169.00	3.386	3.377	0.009	1.000	195184		5.43(2.36-7.09)		5423	
D 21 13C8 FOSA										
506.00 > 78.00	3.377	3.370	0.007	1.266	5353576	2.47		98.8	48383	
D 23 13C2 PFDA										
515.00 > 470.00	3.386	3.370	0.016	1.270	2813856	2.43		97.2	29858	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.536	3.520	0.016	1.326	1180810	2.49		99.5	23391	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.536	3.536	0.0	1.000	469932	1.01		101	3903	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.695	3.695	0.0	1.223	950044	0.9828		102	17887	
599.00 > 99.00	3.695	3.695	0.0	1.223	318103		2.99(1.39-4.16)		9514	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.706	3.687	0.019	1.390	1329129	2.73		109	2846	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.706	3.706	0.0	1.000	756457	0.9598		96.0	3199	
563.00 > 169.00	3.706	3.706	0.0	1.000	197511		3.83(2.12-6.36)		6796	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.706	3.706	0.0	1.000	477615	1.02		102	20689	
D 30 13C2 PFUnA										
565.00 > 520.00	3.706	3.698	0.008	1.390	2404461	2.49		99.5	41481	
66 11-Chloroeicosafluoro-3-oxaundecan										
631.00 > 451.00	3.863	3.863	0.0	1.278	3961957	1.04		110	55507	
37 Perfluorododecanoic acid										
613.00 > 569.00	3.996	3.996	0.0	1.000	1111998	0.9819		98.2	735	
613.00 > 169.00	3.996	3.996	0.0	1.000	262590		4.23(2.13-6.40)		5018	
D 36 13C2 PFDoA										
615.00 > 570.00	3.996	3.988	0.008	1.499	2593056	2.59		103	20252	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.260	4.260	0.0	1.066	1043347	0.9421		94.2	573	
663.00 > 169.00	4.260	4.260	0.0	1.066	335771		3.11(1.25-3.76)		5250	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.490	4.480	0.010	1.684	2787038	2.68		107	20873	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.501	4.501	0.0	1.002	268754	0.9266		92.7	3984	
713.00 > 219.00	4.490	4.501	-0.010	1.000	203074		1.32(0.71-2.13)		3290	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.904	4.904	0.0	1.000	1737987	1.00		100	441	
813.00 > 169.00	4.904	4.904	0.0	1.000	284915		6.10(2.86-8.58)		2438	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.904	4.887	0.017	1.839	4471811	2.70		108	13607	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.247	5.247	0.0	1.070	2012797	0.9846		98.5	433	
913.00 > 169.00	5.247	5.247	0.0	1.070	251523		8.00(3.83-11.48)		2960	

Reagents:

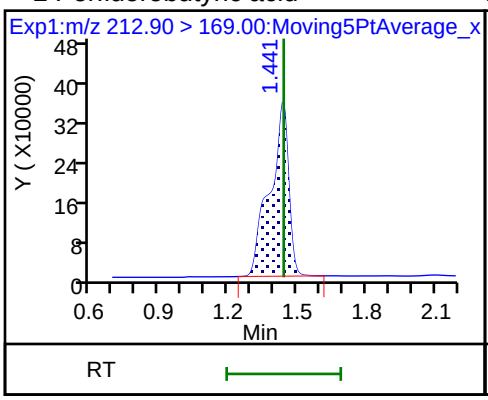
LCPFC_LL4_00005 Amount Added: 1.00 Units: mL

Report Date: 17-Jul-2018 08:21:25 Chrom Revision: 2.2 07-Jun-2018 07:41:54

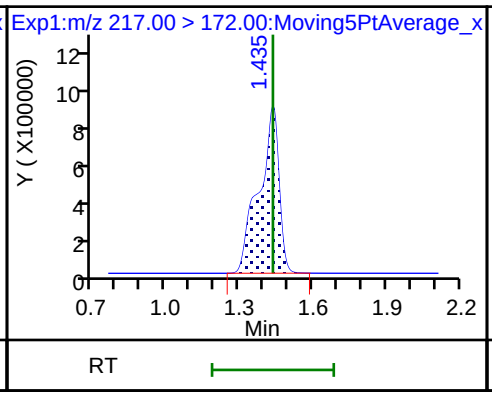
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180716-61105.b\2018.07.14LLA_026.d
Injection Date: 14-Jul-2018 14:01:17 Instrument ID: A8_N
Lims ID: CCV L4
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 13 Worklist Smp#: 9
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC ICAL

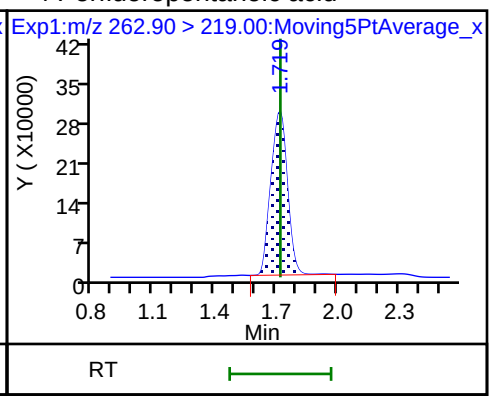
2 Perfluorobutyric acid



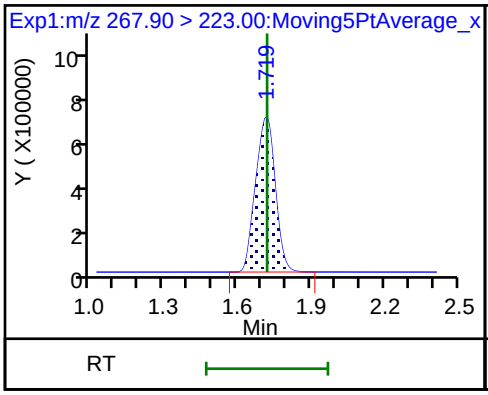
D 1 13C4 PFBA



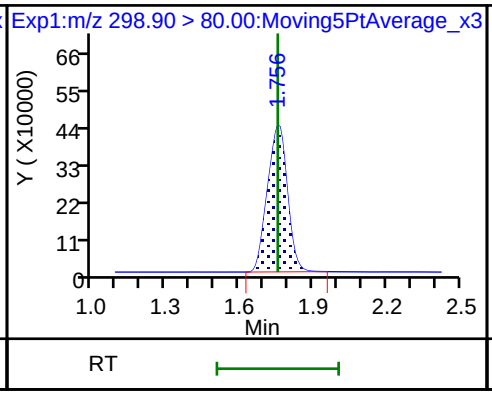
4 Perfluoropentanoic acid



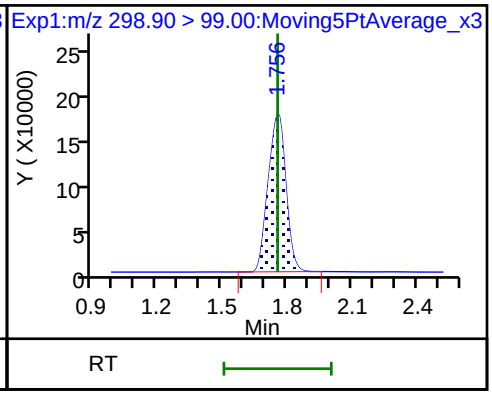
D 3 13C5-PFPeA



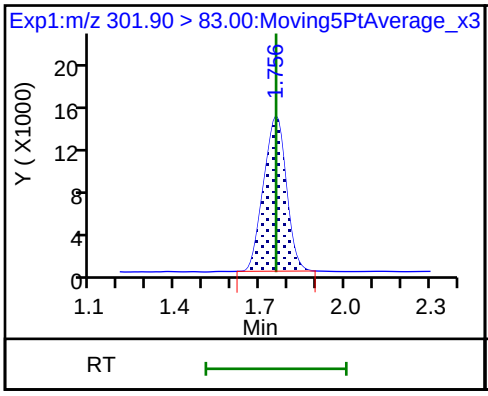
5 Perfluorobutanesulfonic acid



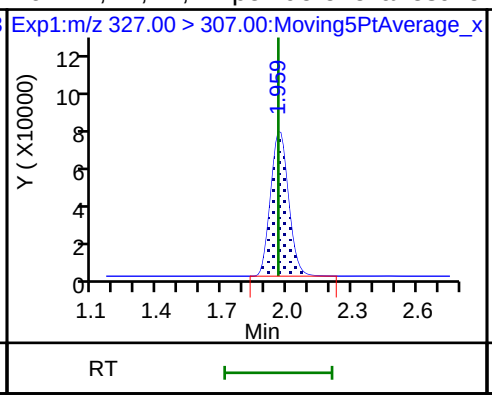
5 Perfluorobutanesulfonic acid



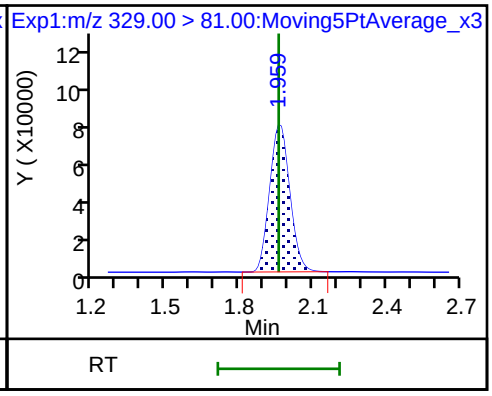
D 47 13C3-PFBS



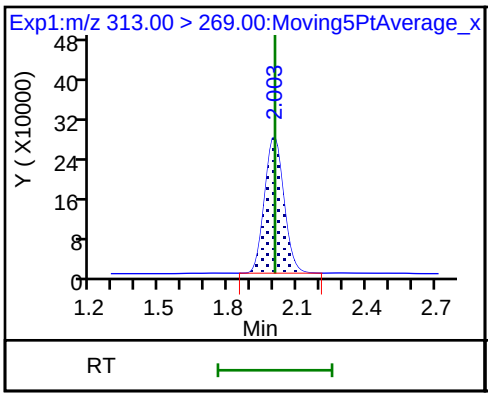
61 1H,1H,2H,2H-perfluorohexanesulfon



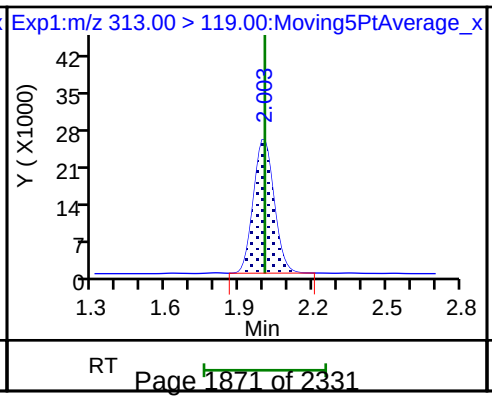
D 60 M2-4:2FTS



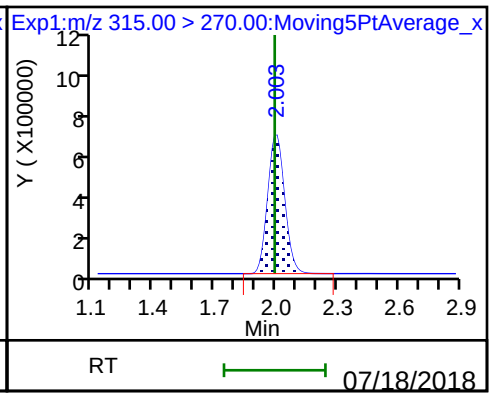
6 Perfluorohexanoic acid



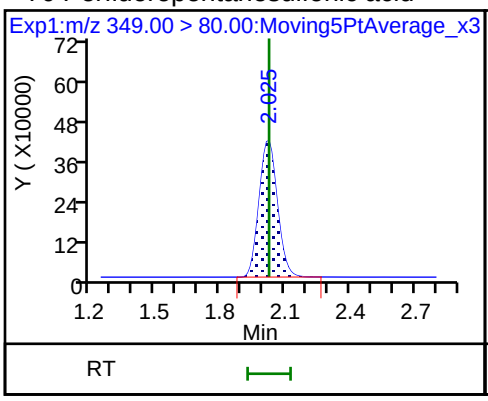
6 Perfluorohexanoic acid



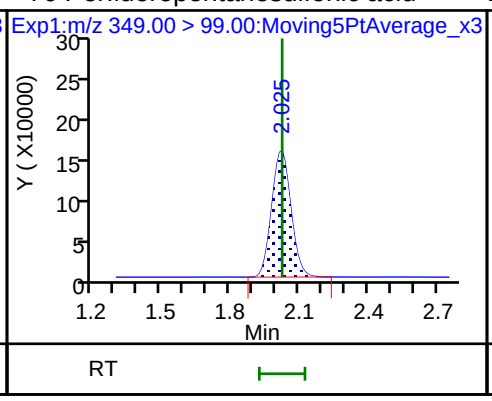
D 7 13C2 PFHxA



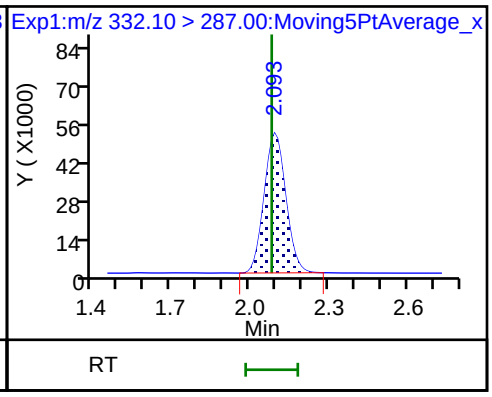
70 Perfluoropentanesulfonic acid



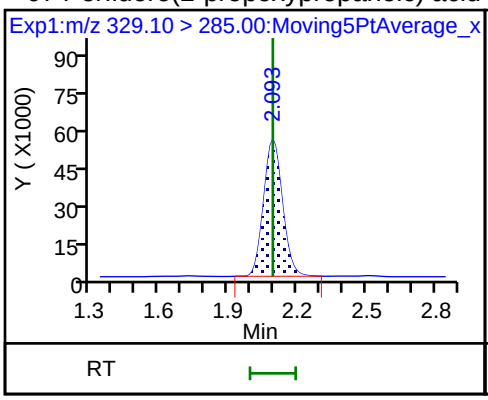
70 Perfluoropentanesulfonic acid



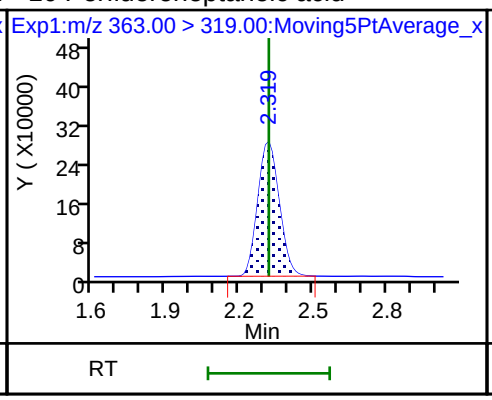
D 64 13C3 HFPO-DA



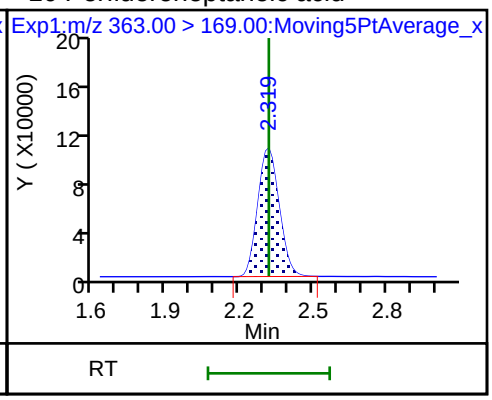
67 Perfluoro(2-propoxypropanoic) acid



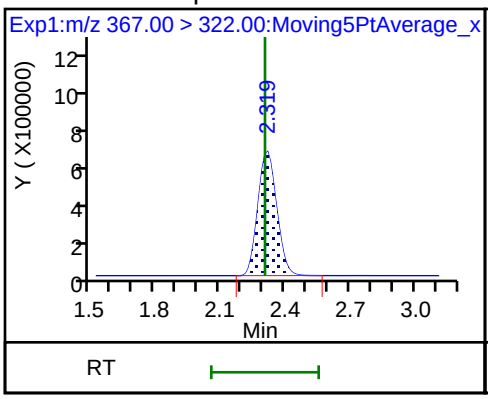
10 Perfluoroheptanoic acid



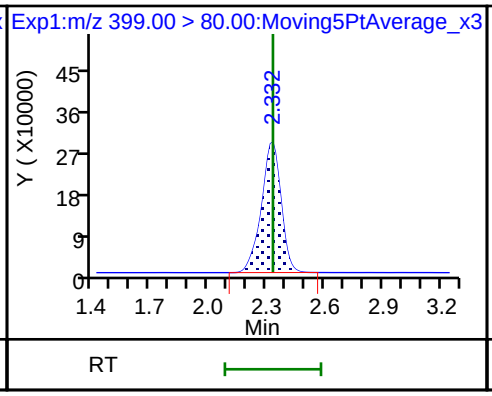
10 Perfluoroheptanoic acid



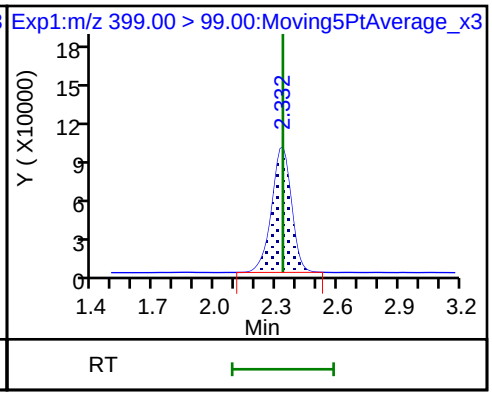
D 9 13C4-PFHpA



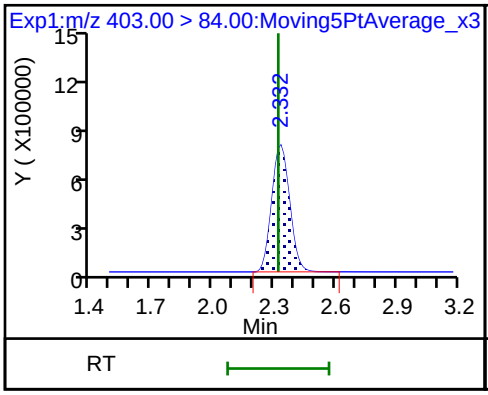
8 Perfluorohexanesulfonic acid



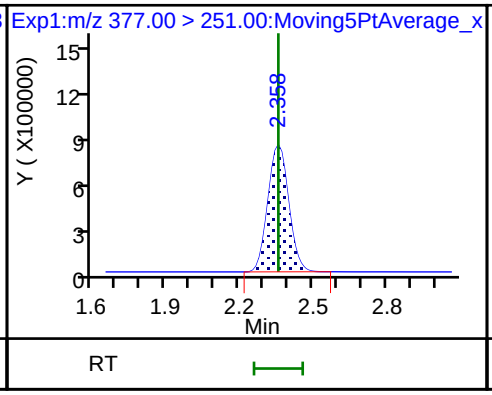
8 Perfluorohexanesulfonic acid



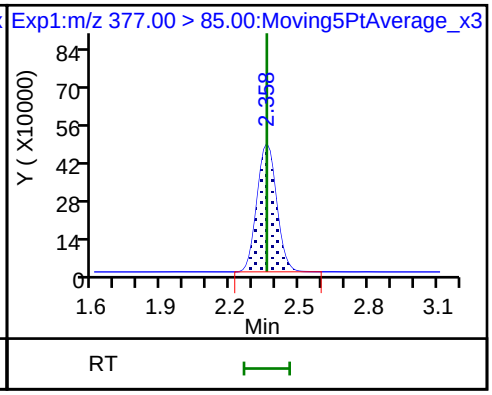
D 11 18O2 PFHxS



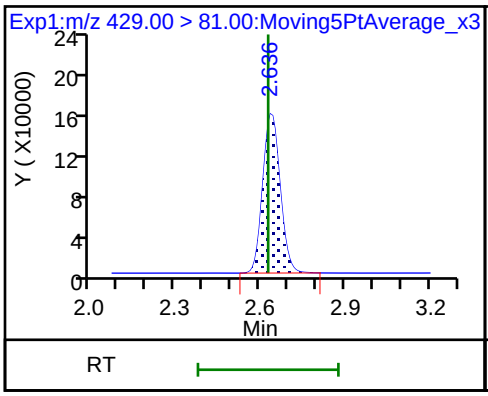
65 Adona



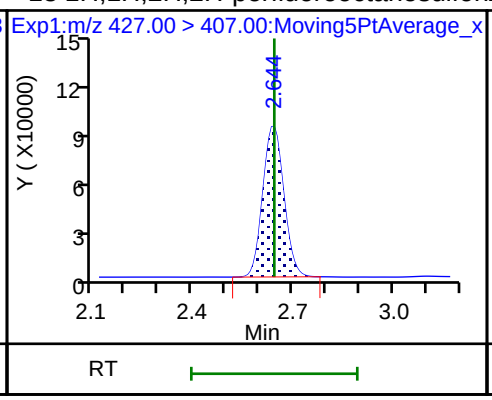
65 Adona



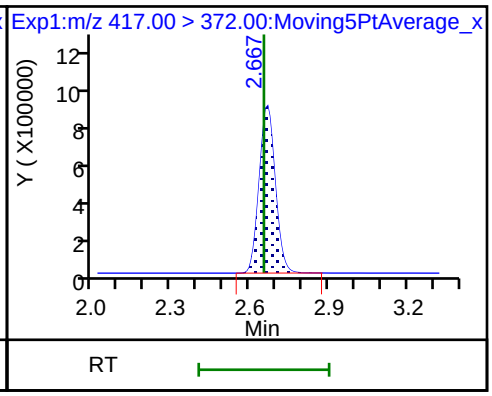
D 12 M2-6:2FTS



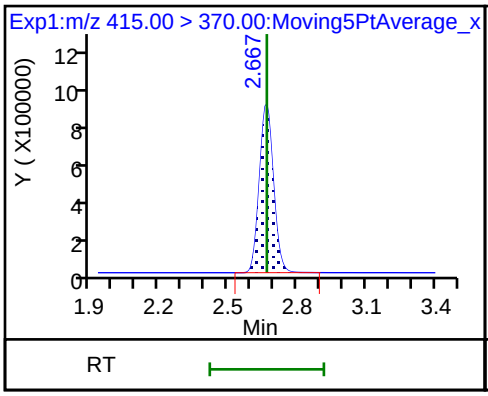
13 1H,1H,2H,2H-perfluorooctanesulfon



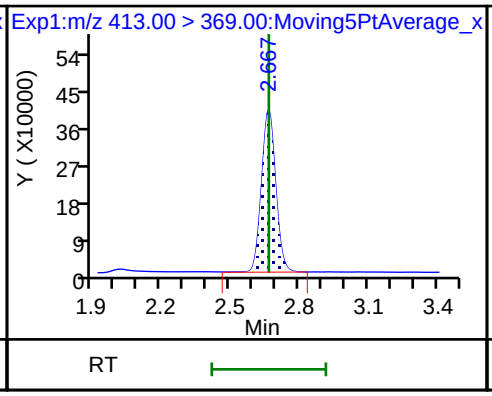
D 14 13C4 PFOA



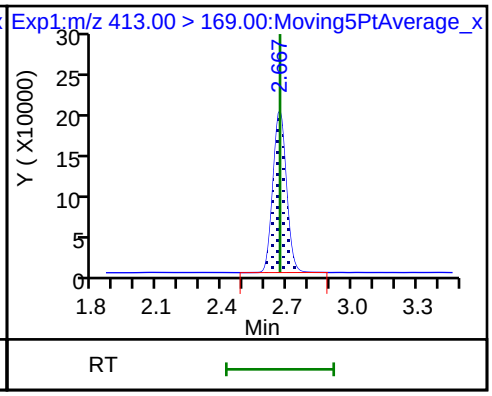
* 62 13C2-PFOA



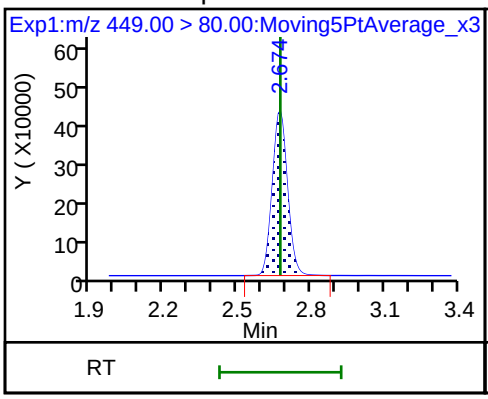
15 Perfluorooctanoic acid



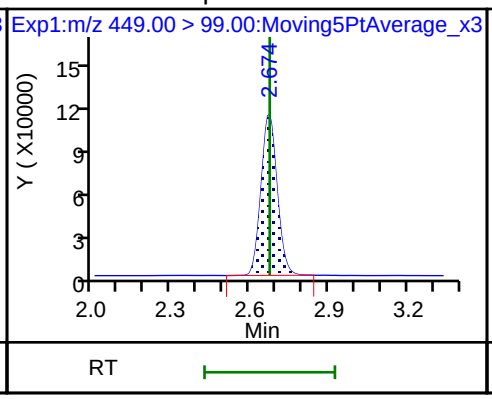
15 Perfluorooctanoic acid



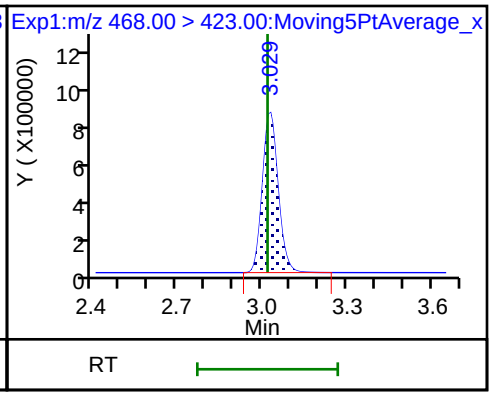
16 Perfluoroheptanesulfonic acid



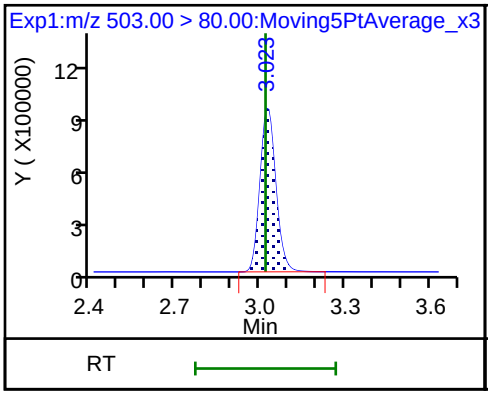
16 Perfluoroheptanesulfonic acid



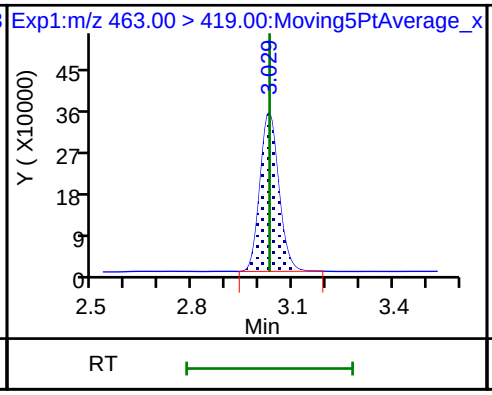
D 19 13C5 PFNA



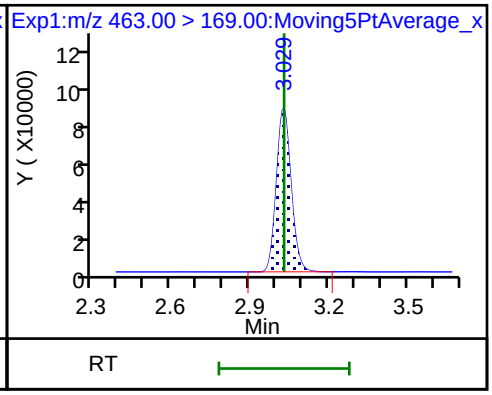
D 18 13C4 PFOS



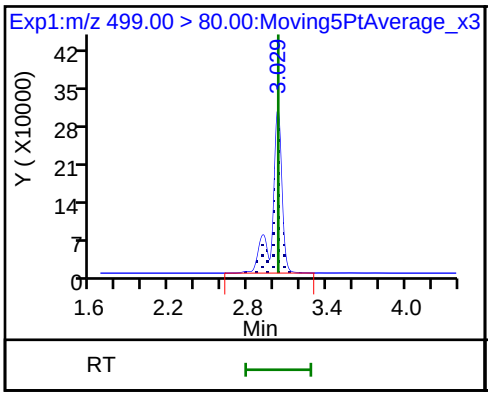
20 Perfluorononanoic acid



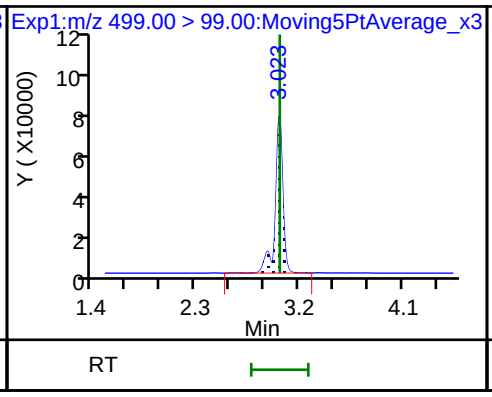
20 Perfluorononanoic acid



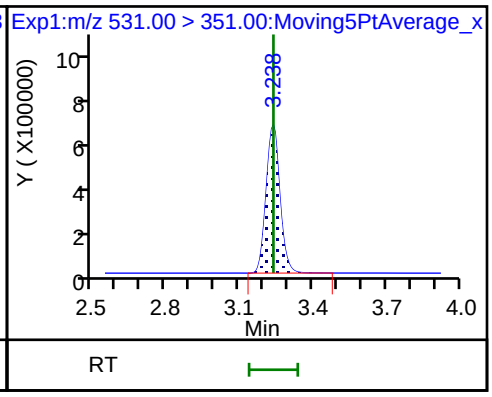
17 Perfluorooctane sulfonic acid



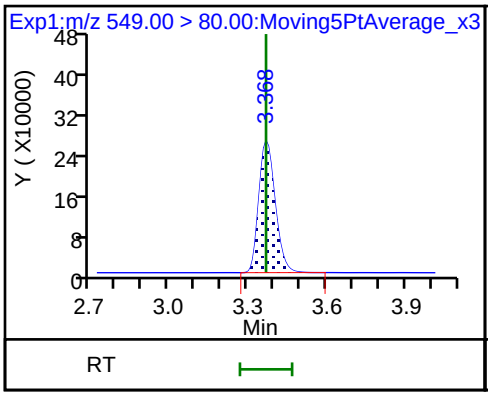
17 Perfluorooctane sulfonic acid



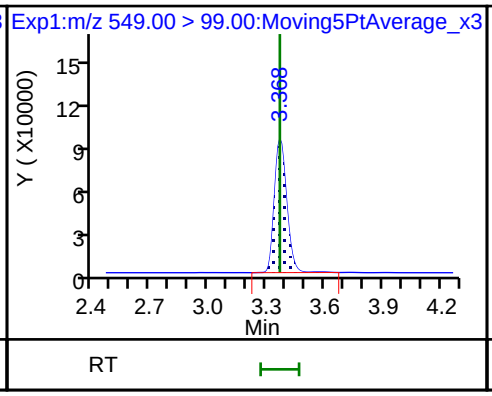
69 9-Chlorohexadecafluoro-3-oxanonane



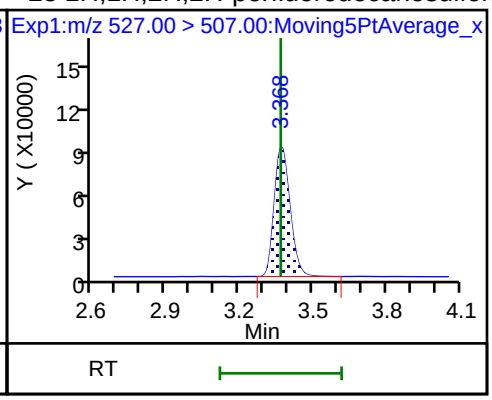
68 Perfluorononanesulfonic acid



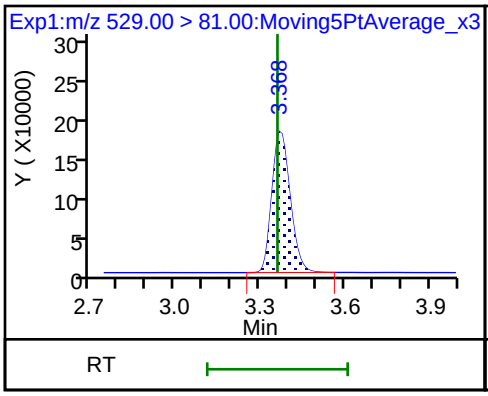
68 Perfluorononanesulfonic acid



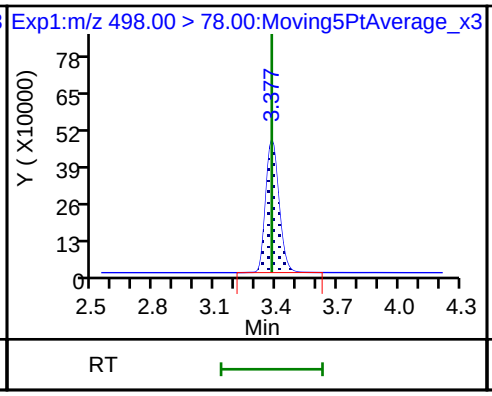
25 1H,1H,2H,2H-perfluorodecanesulfoni



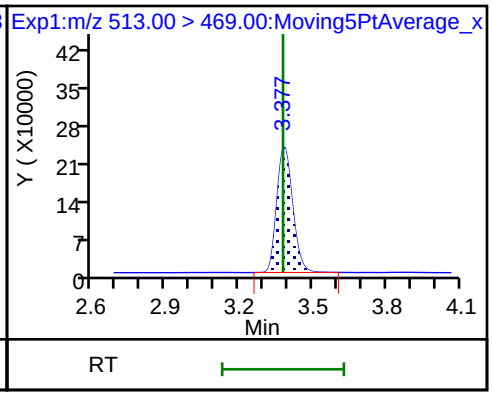
D 26 M2-8:2FTS



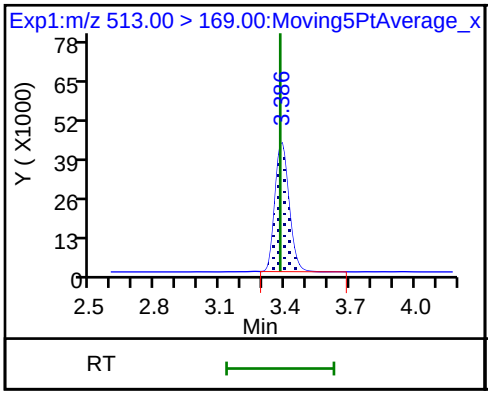
22 Perfluorooctane Sulfonamide



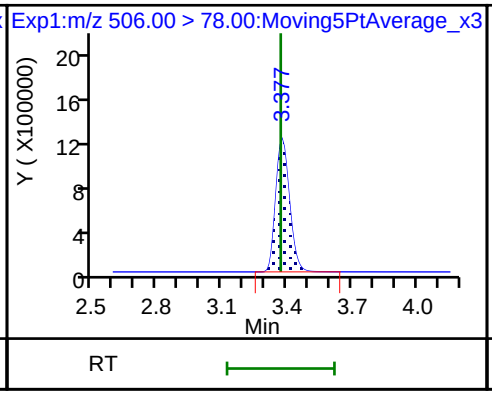
24 Perfluorodecanoic acid



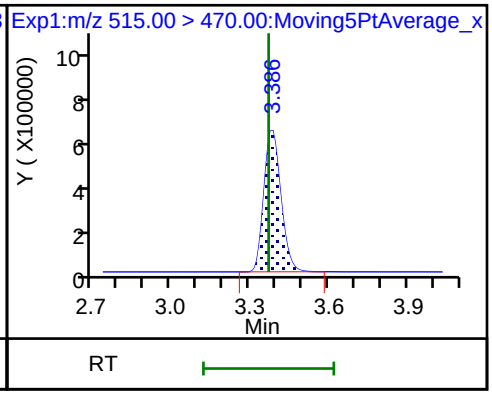
24 Perfluorodecanoic acid



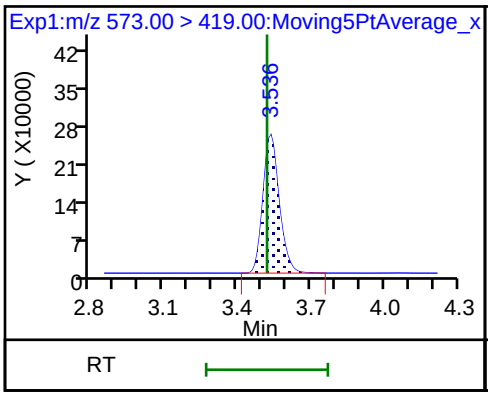
D 21 13C8 FOSA



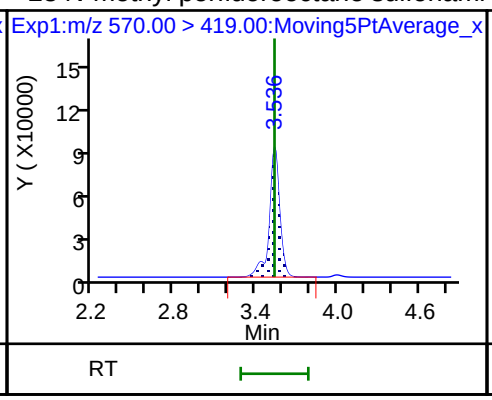
D 23 13C2 PFDA



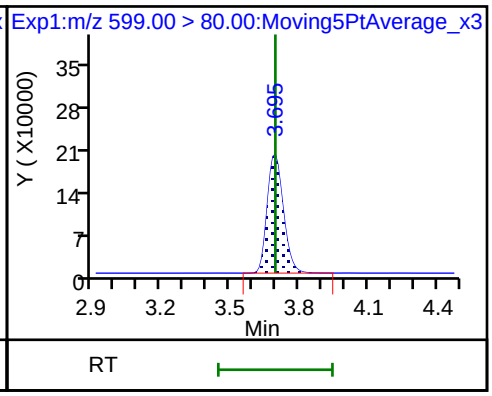
D 27 d3-NMeFOSAA



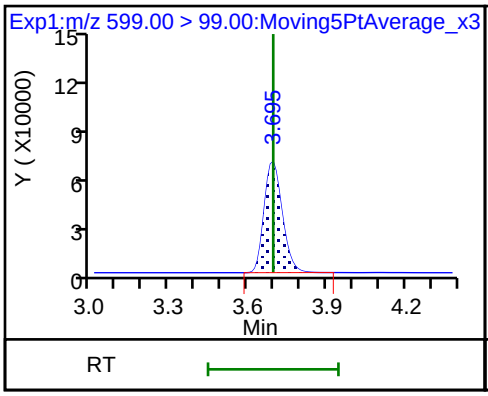
28 N-methyl perfluorooctane sulfonami



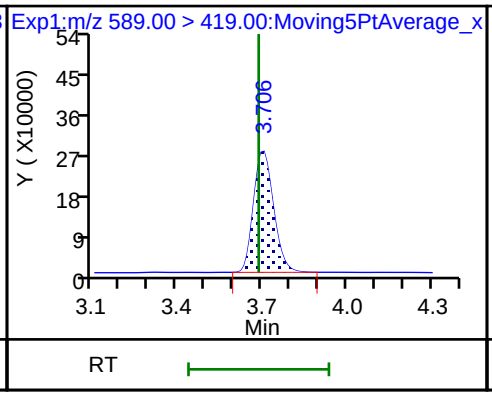
29 Perfluorodecane Sulfonic acid



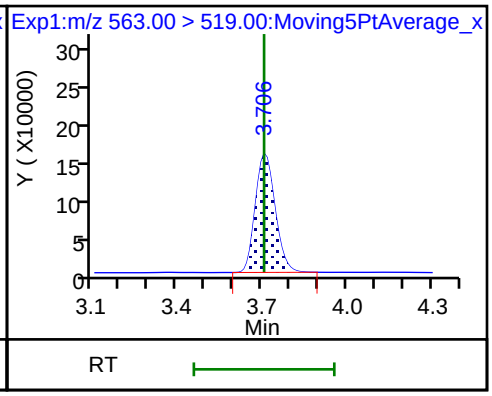
29 Perfluorodecane Sulfonic acid



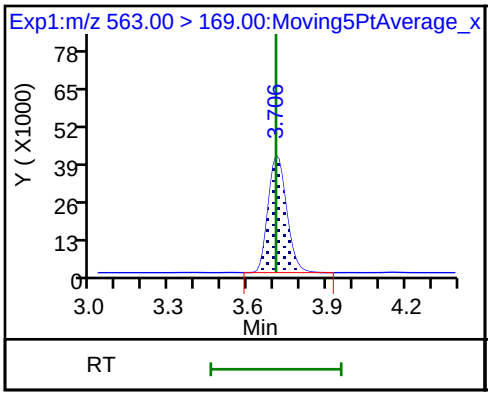
D 32 d5-NEtFOSAA



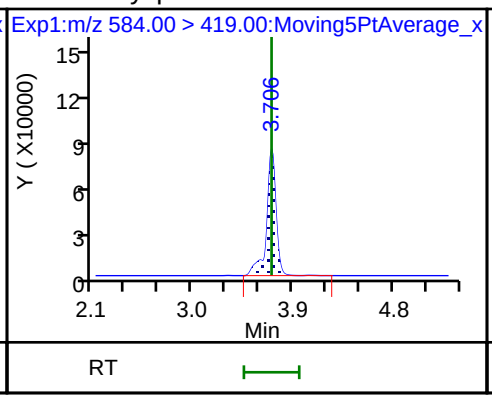
31 Perfluoroundecanoic acid



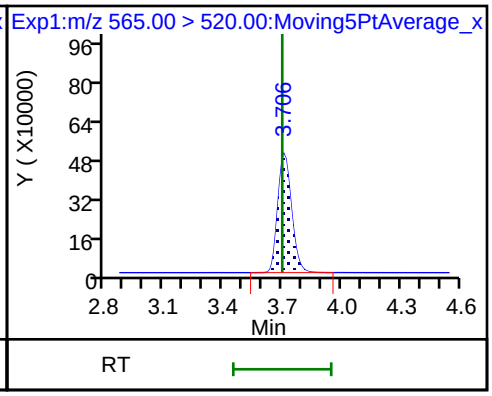
31 Perfluoroundecanoic acid



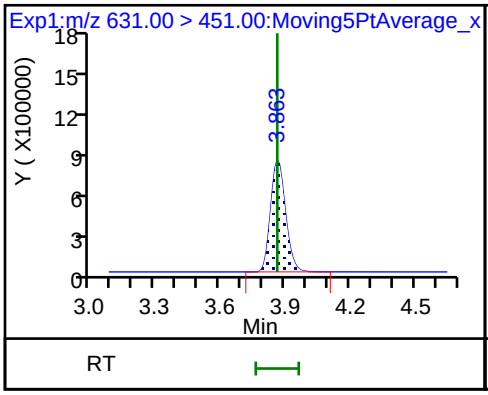
33 N-ethyl perfluorooctane sulfonamid



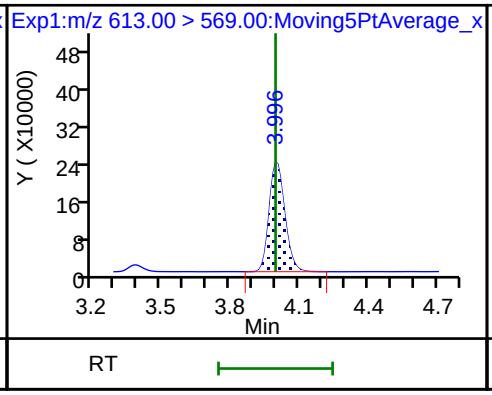
D 30 13C2 PFUnA



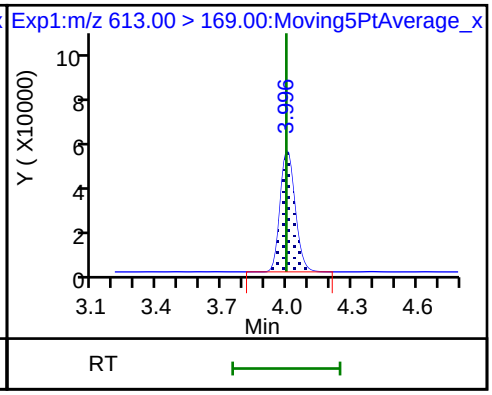
66 11-Chloroeicosafluoro-3-oxaundecan



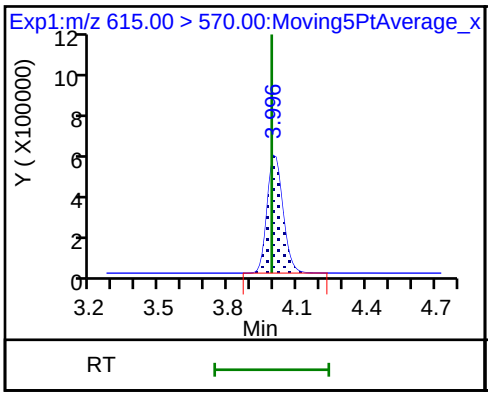
37 Perfluorododecanoic acid



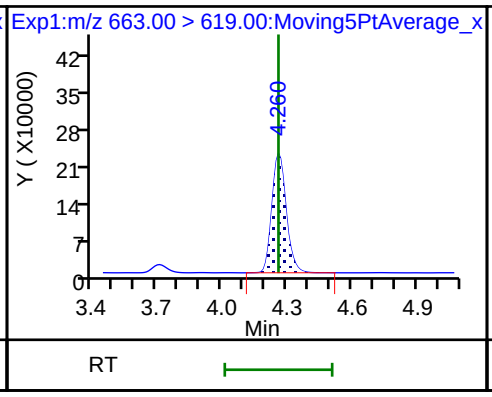
37 Perfluorododecanoic acid



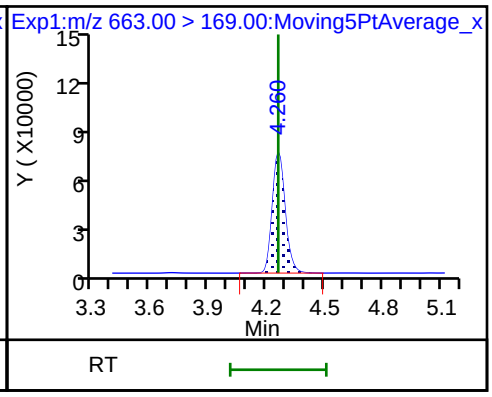
D 36 13C2 PFDoA



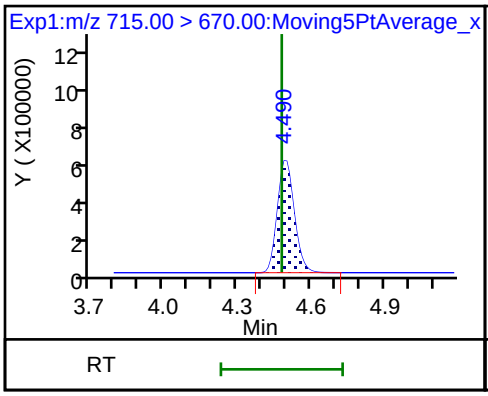
41 Perfluorotridecanoic acid



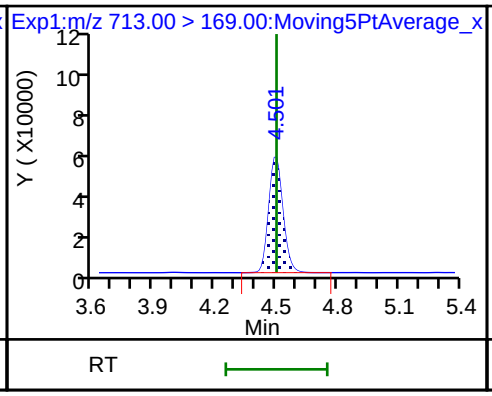
41 Perfluorotridecanoic acid



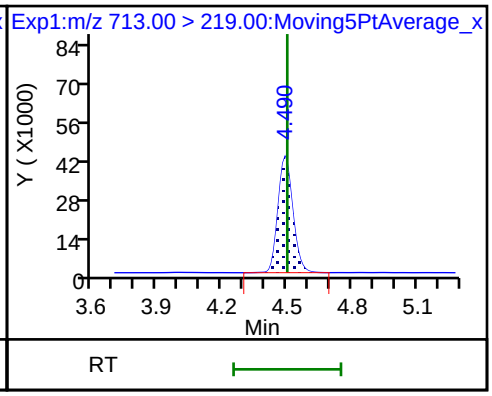
D 43 13C2-PFTeDA



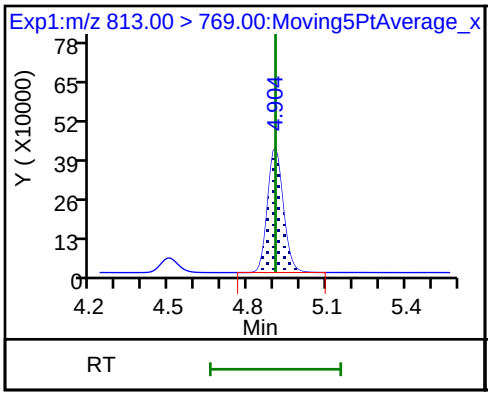
42 Perfluorotetradecanoic acid



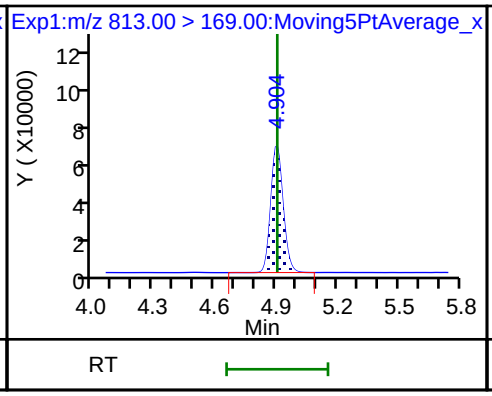
42 Perfluorotetradecanoic acid



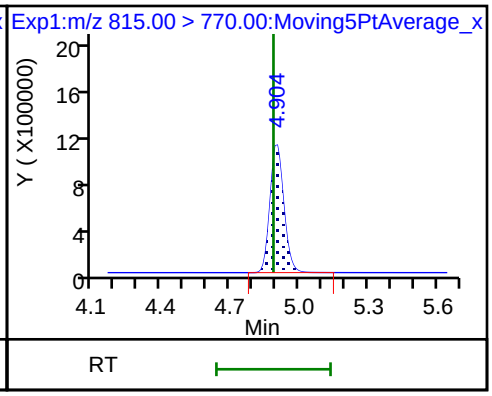
45 Perfluorohexadecanoic acid



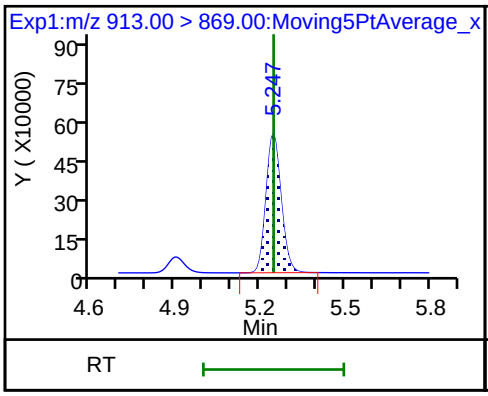
45 Perfluorohexadecanoic acid



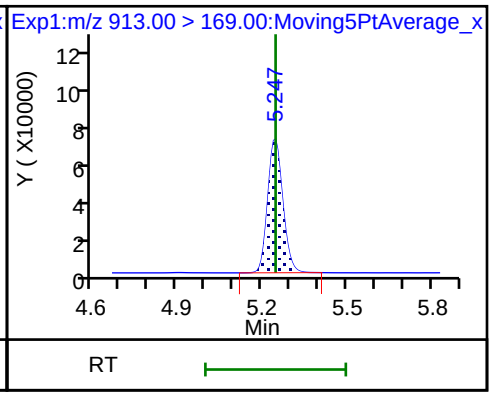
D 44 13C2-PFHxDA



46 Perfluorooctadecanoic acid



46 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Lab Sample ID: CCV 320-234231/20 Calibration Date: 07/14/2018 15:27

Instrument ID: A8_N Calib Start Date: 07/11/2018 14:48

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 07/11/2018 15:38

Lab File ID: 2018.07.14LLA_037.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.9856	1.002		2.54	2.50	1.6	40.0
Perfluoropentanoic acid (PFPeA)	AveID	1.213	1.194		2.46	2.50	-1.5	40.0
Perfluorobutanesulfonic acid (PFBS)	AveID	76.50	80.36		2.32	2.21	5.0	50.0
4:2 FTS	AveID	13.00	13.15		2.36	2.34	1.1	50.0
Perfluorohexanoic acid (PFHxA)	AveID	1.029	1.062		2.58	2.50	3.2	40.0
Perfluoropentanesulfonic acid (PFPeS)	AveID	69.78	73.74		2.48	2.35	5.7	50.0
HFPO-DA (GenX)	AveID	2.654	2.601		2.45	2.50	-2.0	40.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.157	1.107		2.39	2.50	-4.3	40.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.148	1.128		2.24	2.28	-1.7	40.0
ADONA	AveID	3.219	3.487		2.55	2.36	8.3	50.0
6:2 FTS	AveID	1.564	1.484		2.25	2.37	-5.1	40.0
Perfluorooctanoic acid (PFOA)	AveID	1.232	1.232		2.50	2.50	0.0	40.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.318	1.356		2.45	2.38	2.9	50.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.133	1.137		2.33	2.32	0.3	40.0
Perfluorononanoic acid (PFNA)	AveID	1.109	1.131		2.55	2.50	2.0	40.0
9-Chlorohexadecafluoro-3-oxa nonane-1-sulfonate	AveID	1.836	1.945		2.47	2.33	6.0	50.0
8:2 FTS	AveID	1.290	1.241		2.30	2.40	-3.8	40.0
Perfluorononanesulfonic acid (PFNS)	AveID	0.7752	0.8235		2.55	2.40	6.2	50.0
Perfluorodecanoic acid (PFDA)	AveID	1.049	1.104		2.63	2.50	5.2	40.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9856	1.032		2.62	2.50	4.7	40.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	0.9858	1.025		2.60	2.50	4.0	40.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6714	0.7192		2.58	2.41	7.1	50.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.8840	0.9228		2.61	2.50	4.4	40.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.8195	0.8014		2.44	2.50	-2.2	40.0
11-Chloroeicosafluoro-3-oxau ndecane-1-sulfonate	AveID	2.654	2.791		2.48	2.36	5.2	50.0
Perfluorododecanoic acid (PFDoA)	AveID	1.092	1.105		2.53	2.50	1.2	40.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.068	1.065		2.49	2.50	-0.2	50.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2602	0.2621		2.52	2.50	0.8	50.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		0.9795		2.56	2.50	2.2	50.0

FORM VII 537 (modified)

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Lab Sample ID: CCV 320-234231/20 Calibration Date: 07/14/2018 15:27

Instrument ID: A8_N Calib Start Date: 07/11/2018 14:48

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 07/11/2018 15:38

Lab File ID: 2018.07.14LLA_037.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.143	1.090		2.38	2.50	-4.6	50.0
13C4 PFBA	Ave	1.356	1.328		2.45	2.50	-2.1	50.0
13C5 PFPeA	Ave	0.9425	0.9291		2.46	2.50	-1.4	50.0
13C3-PFBS	Ave	0.0237	0.0230		2.26	2.33	-2.7	50.0
M2-4:2FTS	Ave	0.1273	0.1248		2.29	2.34	-1.9	50.0
13C2 PFHxA	Ave	1.017	1.064		2.62	2.50	4.6	50.0
13C3 HFPO-DA	Ave	0.0724	0.0809		2.79	2.50	11.8	50.0
13C4-PFHpA	Ave	0.9371	1.009		2.69	2.50	7.7	50.0
18O2 PFHxS	Ave	1.328	1.296		2.31	2.37	-2.4	50.0
M2-6:2FTS	Ave	0.2009	0.1978		2.34	2.38	-1.5	40.0
13C4 PFOA	Ave	0.9560	0.9669		2.53	2.50	1.1	50.0
13C4 PFOS	Ave	0.9742	0.9565		2.35	2.39	-1.8	50.0
13C5 PFNA	Ave	0.8546	0.7969		2.33	2.50	-6.8	50.0
M2-8:2FTS	Ave	0.2939	0.2537		2.07	2.40	-13.7	40.0
13C2 PFDA	Ave	0.7503	0.7228		2.41	2.50	-3.7	50.0
13C8 FOSA	Ave	1.405	1.383		2.46	2.50	-1.6	50.0
d3-NMeFOSAA	Ave	0.3075	0.3188		2.59	2.50	3.7	50.0
d5-NEtFOSAA	Ave	0.3150	0.3455		2.74	2.50	9.7	50.0
13C2 PFUnA	Ave	0.6266	0.6595		2.63	2.50	5.3	50.0
13C2 PFDoA	Ave	0.6496	0.6880		2.65	2.50	5.9	50.0
13C2-PFTeDA	Ave	0.6740	0.7066		2.62	2.50	4.8	50.0
13C2-PFHxDA	Ave	1.074	1.182		2.75	2.50	10.1	50.0

FORM VII 537 (modified)

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180716-61105.b\2018.07.14LLA_037.d
Lims ID: CCV L5
Client ID:
Sample Type: CCV
Inject. Date: 14-Jul-2018 15:27:21 ALS Bottle#: 14 Worklist Smp#: 20
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV L5
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-A8_N*sub32

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180716-61105.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 17-Jul-2018 08:42:10 Calib Date: 11-Jul-2018 15:38:42
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK016

First Level Reviewer: mongkols Date: 17-Jul-2018 08:42:10

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.441	1.436	0.005	0.540	5079690	2.45		97.9	23792	
2 Perfluorobutyric acid										
212.90 > 169.00	1.441	1.441	0.0	1.000	5087650	2.54		102	2105	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.719	1.719	0.0	1.000	4244230	2.46		98.5	1854	
D 3 13C5-PFPeA										
267.90 > 223.00	1.719	1.720	-0.001	0.645	3553465	2.46		98.6	43239	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.765	1.765	0.0	1.005	6261129	2.32		105	30049	
298.90 > 99.00	1.765	1.765	0.0	1.005	2578263		2.43(1.25-3.74)		20464	
D 47 13C3-PFBS										
301.90 > 83.00	1.755	1.756	-0.001	0.658	81971	2.26		97.3	499	
61 1H,1H,2H,2H-perfluorohexanesulfoni										
327.00 > 307.00	1.970	1.970	0.0	1.122	1082192	2.36		101	48345	
D 60 M2-4:2FTS										
329.00 > 81.00	1.970	1.959	0.011	0.739	445927	2.29		98.1	6673	
D 7 13C2 PFHxA										
315.00 > 270.00	2.003	1.992	0.011	0.751	4070802	2.62		105	59526	
6 Perfluorohexanoic acid										
313.00 > 269.00	2.003	2.003	0.0	1.000	4323615	2.58		103	11363	
313.00 > 119.00	2.003	2.003	0.0	1.000	399179		10.83(5.03-15.10)		7728	
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.025	2.025	0.0	1.154	6096142	2.48		106	55827	
349.00 > 99.00	2.025	2.025	0.0	1.154	2173506		2.80(1.36-4.07)		23610	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.093	2.082	0.011	0.785	309443	2.79		112	6096	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
67 Perfluoro(2-propoxypropanoic) acid										
329.10 > 285.00	2.093	2.093	0.0	1.000	804845	2.45		98.0	6192	
D 9 13C4-PFHpA										
367.00 > 322.00	2.319	2.306	0.013	0.870	3860795	2.69		108	46165	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.319	2.319	0.0	1.000	4274975	2.39		95.7	7901	
363.00 > 169.00	2.319	2.319	0.0	1.000	1647855		2.59(1.13-3.40)		14527	
D 11 18O2 PFHxS										
403.00 > 84.00	2.332	2.319	0.013	0.874	4687832	2.31		97.6	43325	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.332	2.332	0.0	1.000	5087627	2.24		98.3	20270	
399.00 > 99.00	2.332	2.332	0.0	1.000	1659846		3.07(1.50-4.49)		8098	
65 Adona										
377.00 > 251.00	2.358	2.358	0.0	0.779	12015909	2.55		108	75866	
377.00 > 85.00	2.358	2.358	0.0	0.779	7255880		1.66(0.84-2.53)		35560	
D 12 M2-6:2FTS										
429.00 > 81.00	2.644	2.628	0.016	0.991	718818	2.34		98.5	16944	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.644	2.644	0.0	1.000	1064609	2.25		94.9	7439	
D 14 13C4 PFOA										
417.00 > 372.00	2.667	2.652	0.015	1.000	3698153	2.53		101	44027	
* 62 13C2-PFOA										
415.00 > 370.00	2.667	2.667	0.0		3824847	2.50			39776	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.667	2.667	0.0	1.000	4560388	2.50		100	2771	
413.00 > 169.00	2.667	2.667	0.0	1.000	2180941		2.09(0.84-2.52)		10318	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.674	2.674	0.0	0.884	4721747	2.45		103	30478	
449.00 > 99.00	2.674	2.674	0.0	0.884	1226112		3.85(1.94-5.82)		19339	
D 19 13C5 PFNA										
468.00 > 423.00	3.025	3.018	0.007	1.134	3048012	2.33		93.2	37457	
D 18 13C4 PFOS										
503.00 > 80.00	3.025	3.018	0.007	1.134	3497390	2.35		98.2	21550	
20 Perfluorononanoic acid										
463.00 > 419.00	3.032	3.032	0.0	1.002	3448508	2.55		102	7736	
463.00 > 169.00	3.025	3.032	-0.007	1.000	838191		4.11(1.90-5.69)		30395	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.025	3.025	0.0	1.000	3860492	2.33		100	22075	
499.00 > 99.00	3.025	3.025	0.0	1.000	842274		4.58(2.31-6.93)		11924	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.240	3.240	0.0	1.071	6633284	2.47		106	42714	
D 26 M2-8:2FTS										
529.00 > 81.00	3.370	3.361	0.009	1.264	929593	2.07		86.3	10984	
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.370	3.370	0.0	1.114	2892303	2.55		106	23820	
549.00 > 99.00	3.370	3.370	0.0	1.114	1048506		2.76(1.33-3.97)		12051	
25 1H,1H,2H,2H-perfluorodecanesulfoni										
527.00 > 507.00	3.370	3.370	0.0	1.000	1153779	2.30		96.2	18222	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 23 13C2 PFDA										
515.00 > 470.00	3.379	3.370	0.009	1.267	2764402	2.41		96.3	36046	
D 21 13C8 FOSA										
506.00 > 78.00	3.379	3.370	0.009	1.267	5287849	2.46		98.4	53966	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.379	3.379	0.0	1.000	3051219	2.63		105	17399	
513.00 > 169.00	3.379	3.379	0.0	1.000	538866		5.66(2.36-7.09)		14992	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.379	3.379	0.0	1.000	5458321	2.62		105	49178	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.538	3.520	0.018	1.327	1219222	2.59		104	26939	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.538	3.538	0.0	1.000	1249445	2.60		104	12305	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.697	3.687	0.010	1.386	1321346	2.74		110	4037	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.697	3.697	0.0	1.222	2536357	2.58		107	32941	
599.00 > 99.00	3.697	3.697	0.0	1.222	826992		3.07(1.39-4.16)		21563	
D 30 13C2 PFUnA										
565.00 > 520.00	3.708	3.698	0.010	1.390	2522506	2.63		105	43332	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.708	3.708	0.0	1.000	2021540	2.44		97.8	9688	
563.00 > 169.00	3.708	3.708	0.0	1.000	521915		3.87(2.12-6.36)		26801	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.708	3.708	0.0	1.003	1219324	2.61		104	26107	
66 11-Chloroeicosafluoro-3-oxaundecan										
631.00 > 451.00	3.866	3.866	0.0	1.278	9617555	2.48		105	61341	
D 36 13C2 PFDoA										
615.00 > 570.00	3.999	3.988	0.011	1.499	2631427	2.65		106	22347	
37 Perfluorododecanoic acid										
613.00 > 569.00	3.999	3.999	0.0	1.000	2908880	2.53		101	2144	
613.00 > 169.00	3.999	3.999	0.0	1.000	688970		4.22(2.13-6.40)		12135	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.262	4.262	0.0	1.066	2802770	2.49		99.8	1534	
663.00 > 169.00	4.262	4.262	0.0	1.066	862559		3.25(1.25-3.76)		12753	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.491	4.480	0.011	1.684	2702507	2.62		105	15781	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.501	4.501	0.0	1.002	708400	2.52		101	7797	
713.00 > 219.00	4.491	4.501	-0.010	1.000	510316		1.39(0.71-2.13)		6726	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.905	4.887	0.018	1.839	4522587	2.75		110	15036	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.905	4.905	0.0	1.000	4430002	2.56		102	1202	
813.00 > 169.00	4.905	4.905	0.0	1.000	702943		6.30(2.86-8.58)		4546	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.248	5.248	0.0	1.070	4929287	2.38		95.4	1168	
913.00 > 169.00	5.248	5.248	0.0	1.070	589483		8.36(3.83-11.48)		3962	

Reagents:

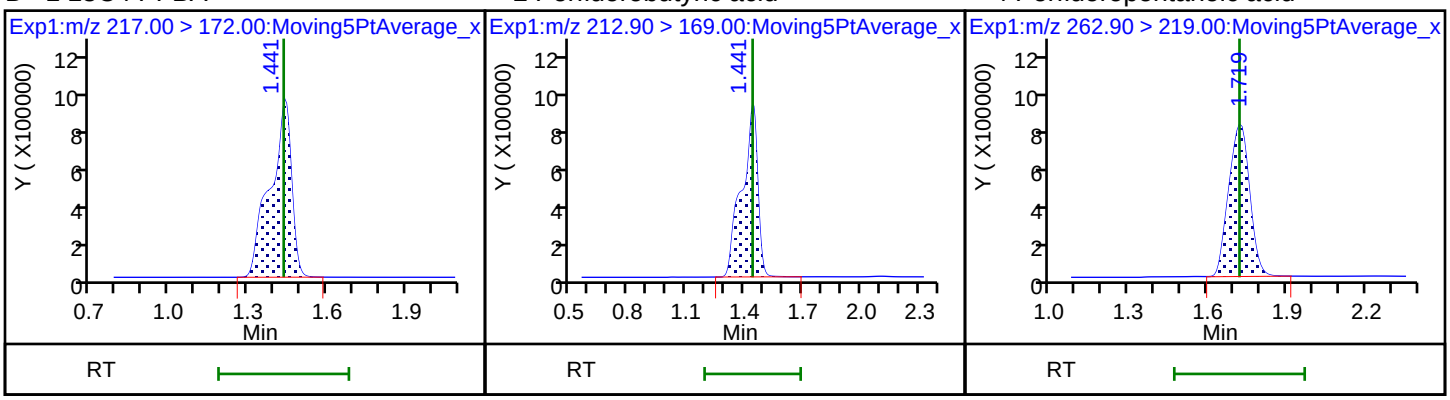
LCPFC_LL5_00005 Amount Added: 1.00 Units: mL

Report Date: 17-Jul-2018 08:42:11 Chrom Revision: 2.2 07-Jun-2018 07:41:54

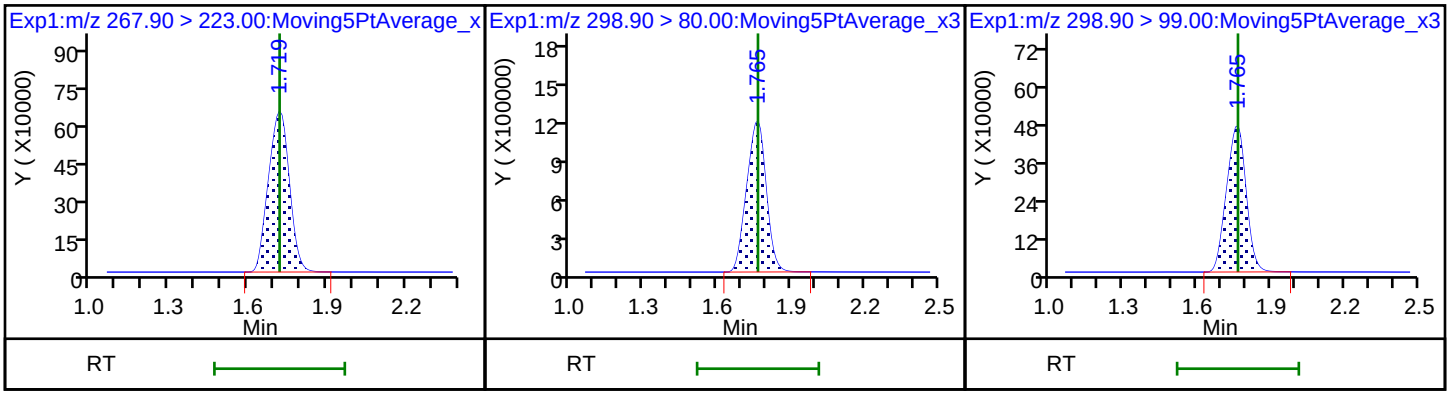
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180716-61105.b\2018.07.14LLA_037.d
Injection Date: 14-Jul-2018 15:27:21 Instrument ID: A8_N
Lims ID: CCV L5
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 14 Worklist Smp#: 20
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC ICAL

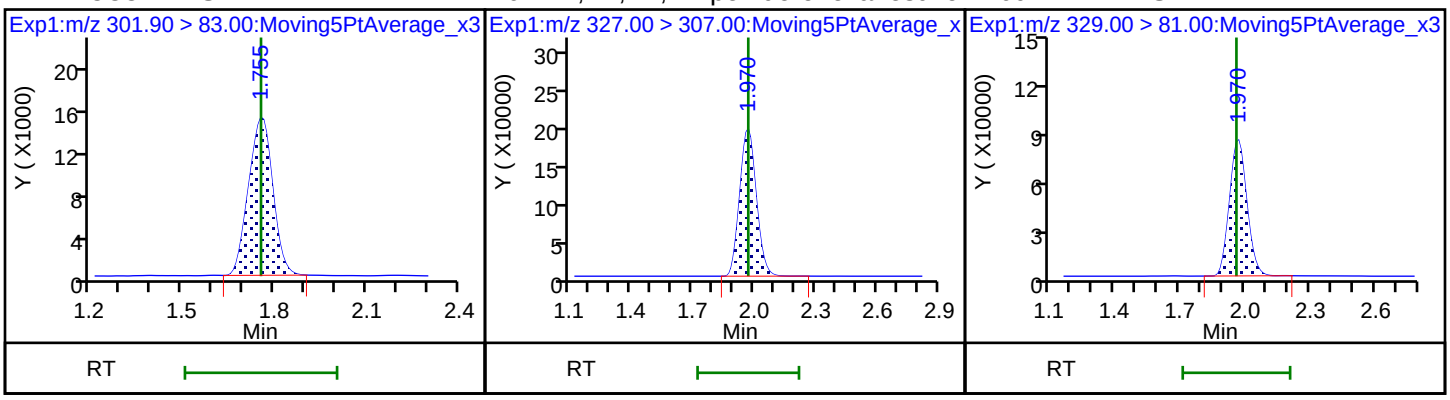
D 1 13C4 PFBA | 2 Perfluorobutyric acid | 4 Perfluoropentanoic acid



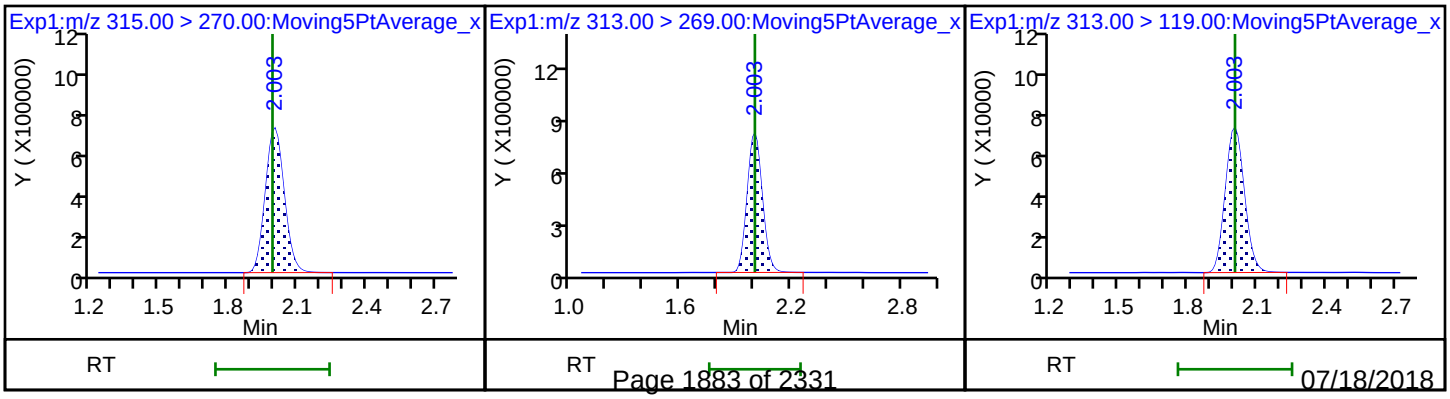
D 3 13C5-PFPeA | 5 Perfluorobutanesulfonic acid | 5 Perfluorobutanesulfonic acid



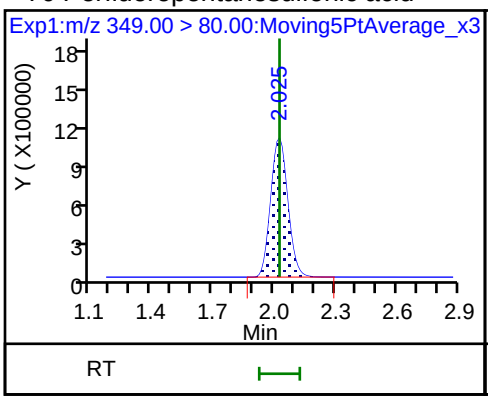
D 47 13C3-PFBS | 61 1H,1H,2H,2H-perfluorohexanesulfon | D 60 M2-4:2FTS



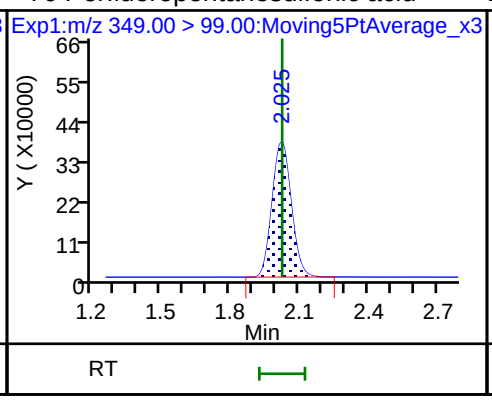
D 7 13C2 PFHxA | 6 Perfluorohexanoic acid | 6 Perfluorohexanoic acid



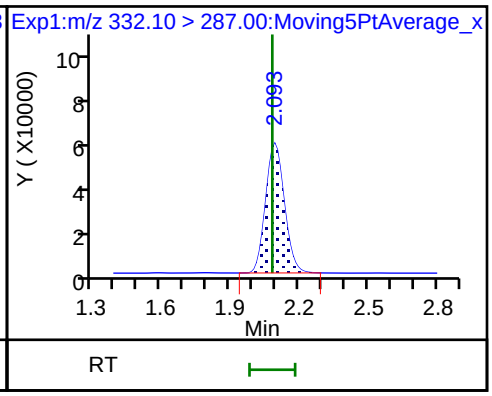
70 Perfluoropentanesulfonic acid



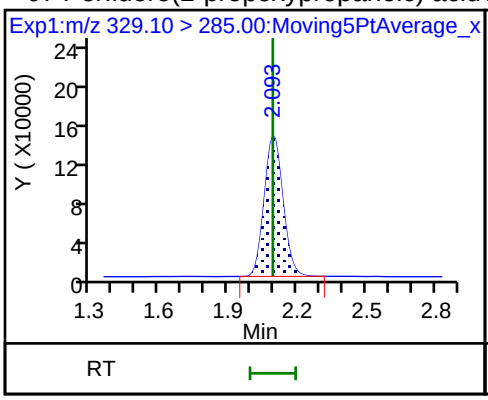
70 Perfluoropentanesulfonic acid



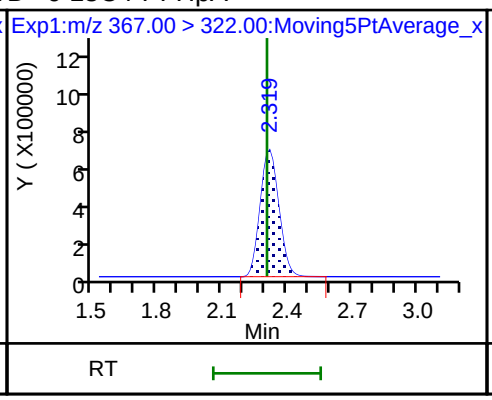
D 64 13C3 HFPO-DA



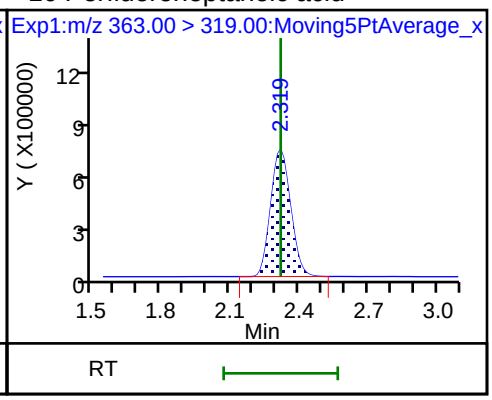
67 Perfluoro(2-propoxypropanoic) acid



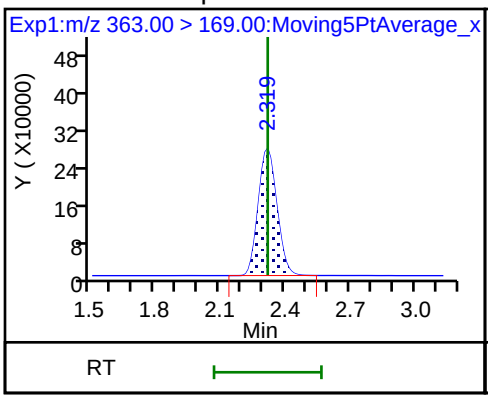
D 9 13C4-PFHpA



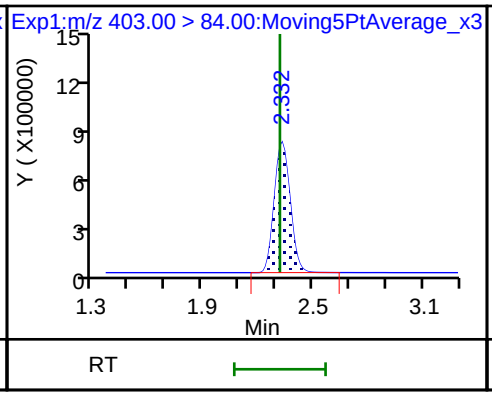
10 Perfluoroheptanoic acid



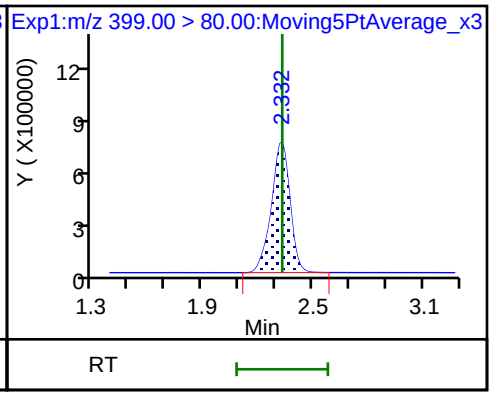
10 Perfluoroheptanoic acid



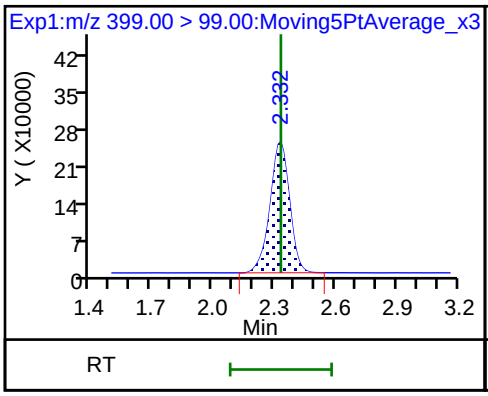
D 11 18O2 PFHxS



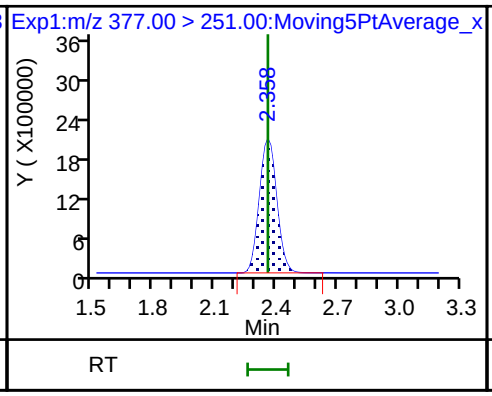
8 Perfluorohexanesulfonic acid



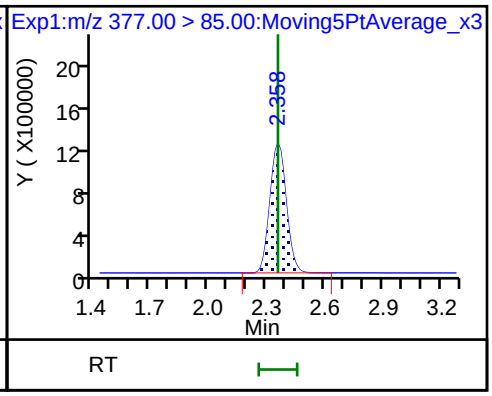
8 Perfluorohexanesulfonic acid



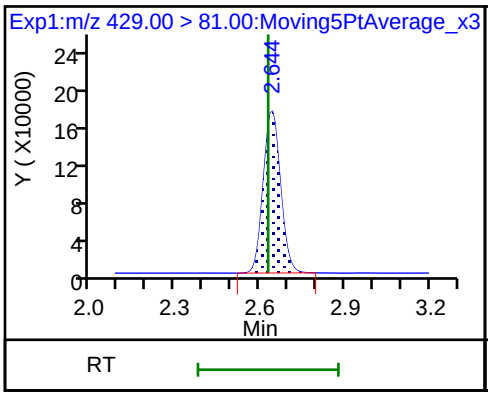
65 Adona



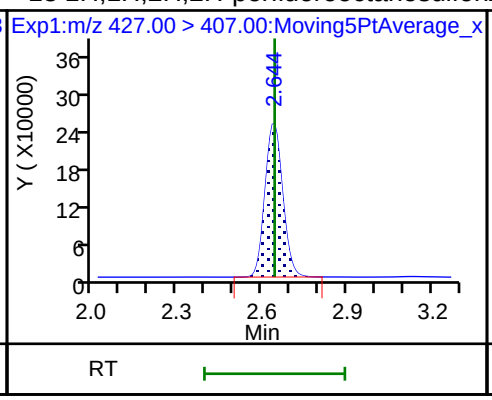
65 Adona



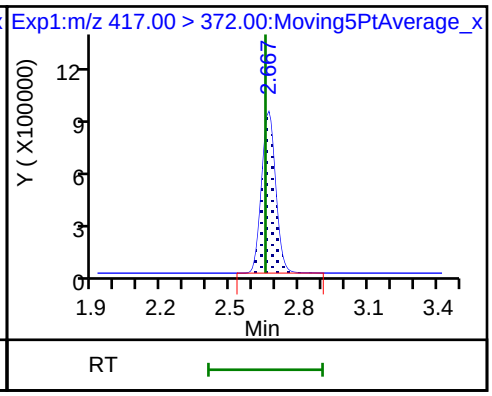
D 12 M2-6:2FTS



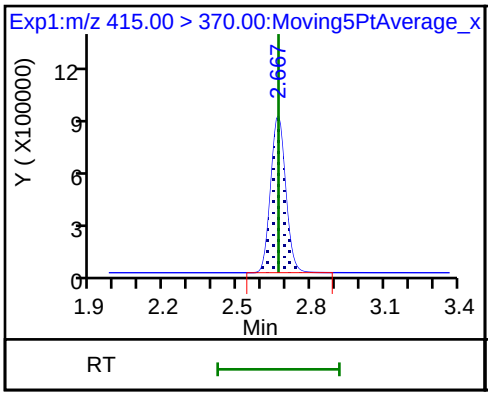
13 1H,1H,2H,2H-perfluorooctanesulfon



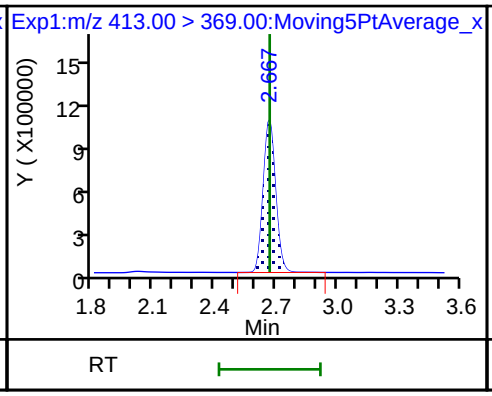
D 14 13C4 PFOA



* 62 13C2-PFOA



15 Perfluorooctanoic acid



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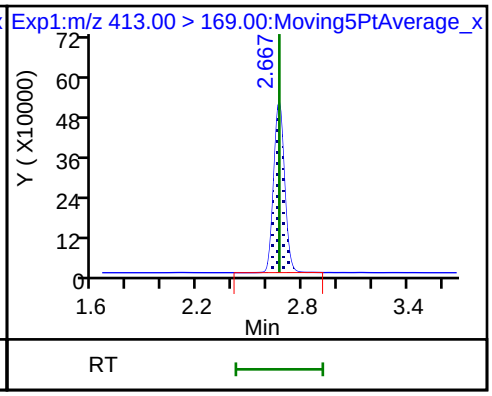
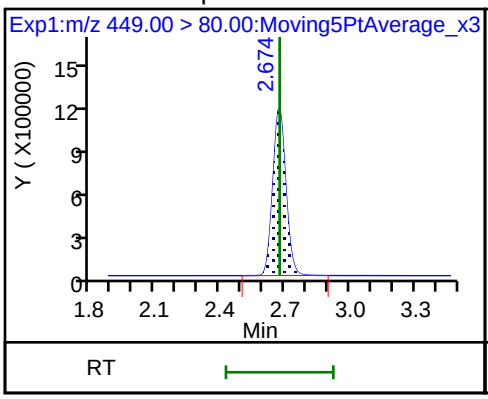
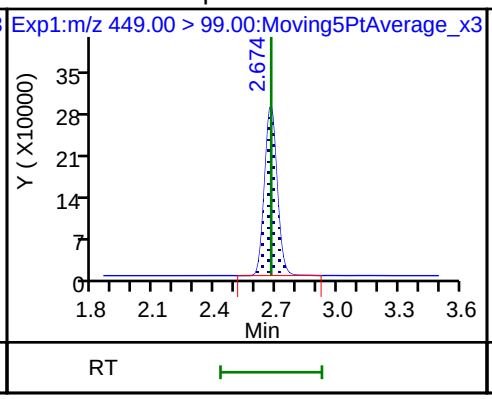


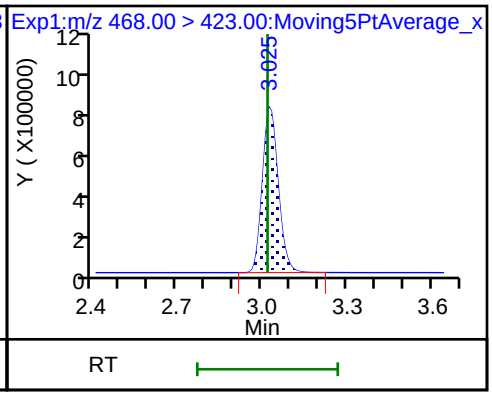
16 Perfluoroheptanesulfonic acid



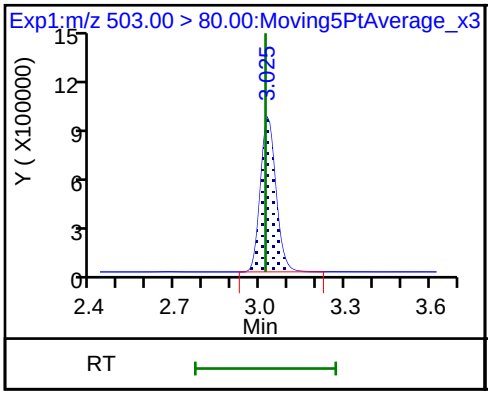
16 Perfluoroheptanesulfonic acid



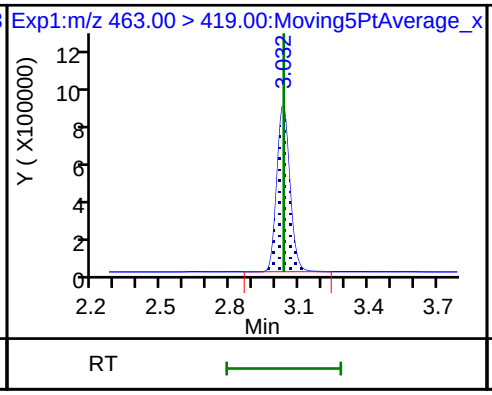
D 19 13C5 PFNA



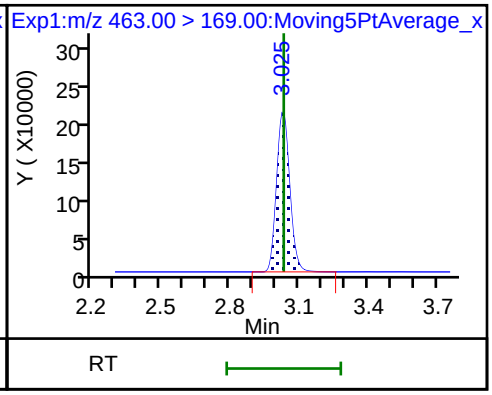
D 18 13C4 PFOS



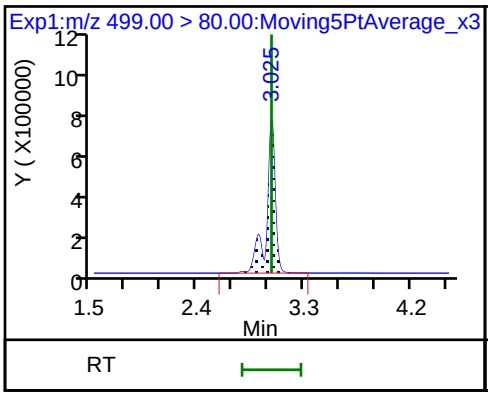
20 Perfluorononanoic acid



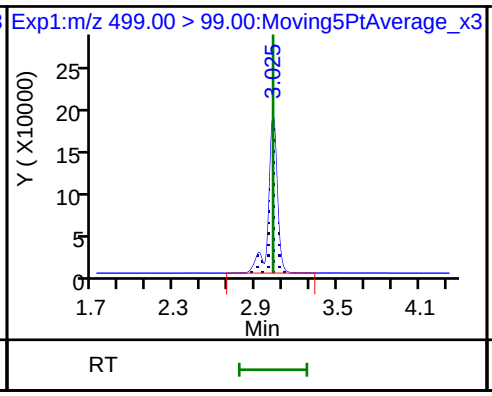
20 Perfluorononanoic acid



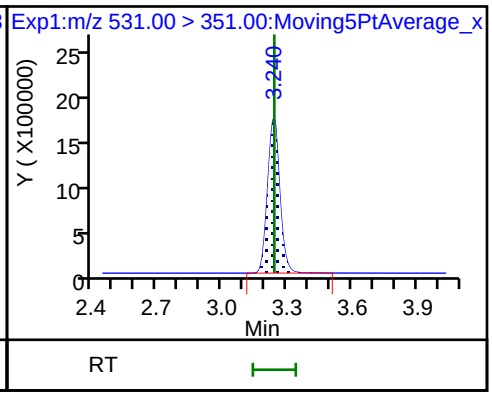
17 Perfluorooctane sulfonic acid



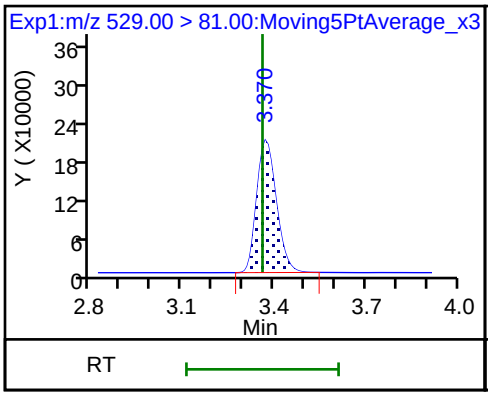
17 Perfluorooctane sulfonic acid



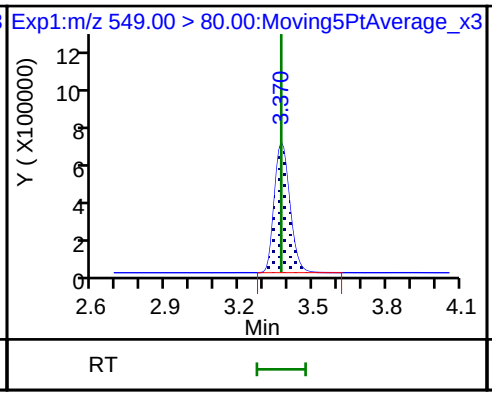
69 9-Chlorohexadecafluoro-3-oxanonane



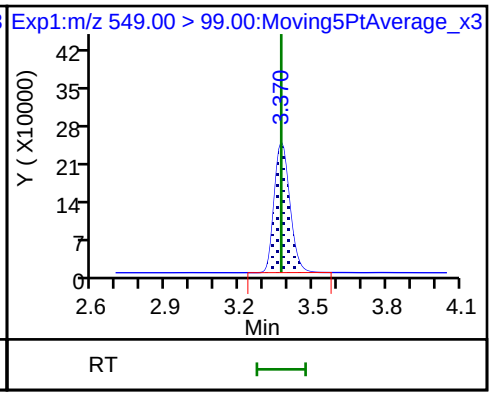
D 26 M2-8:2FTS



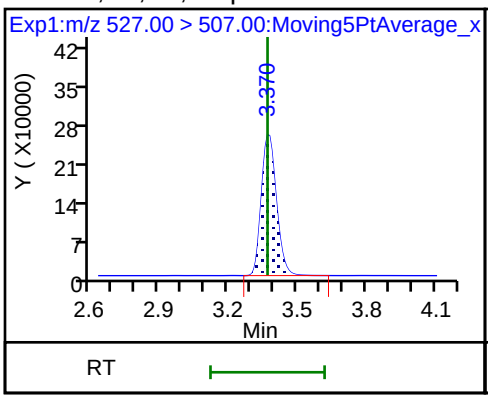
68 Perfluorononanesulfonic acid



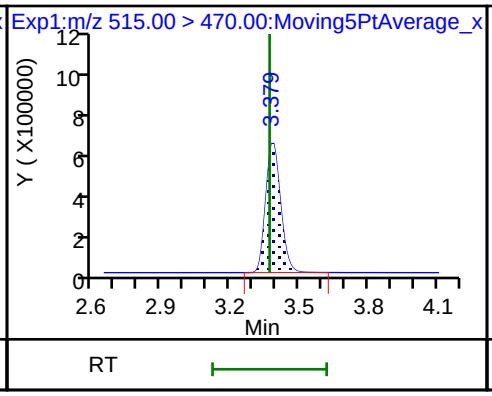
68 Perfluorononanesulfonic acid



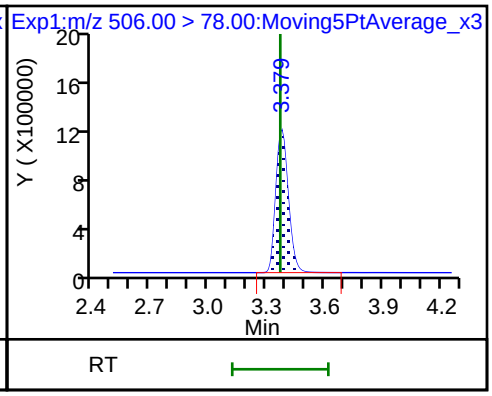
25 1H,1H,2H,2H-perfluorodecanesulfon



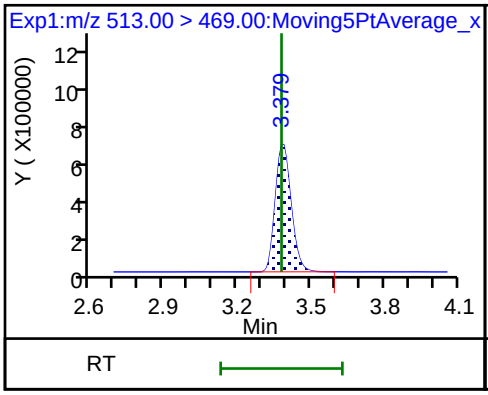
D 23 13C2 PFDA



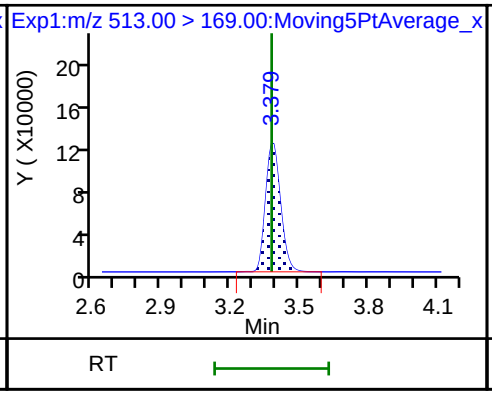
D 21 13C8 FOSA



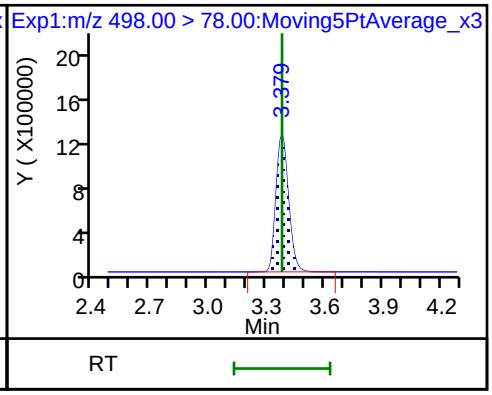
24 Perfluorodecanoic acid



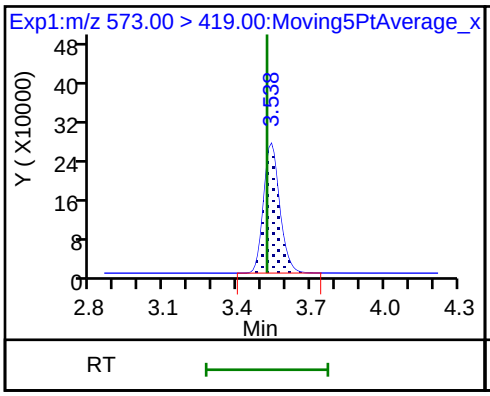
24 Perfluorodecanoic acid



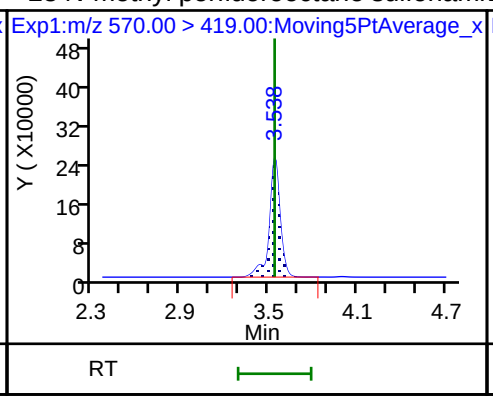
22 Perfluorooctane Sulfonamide



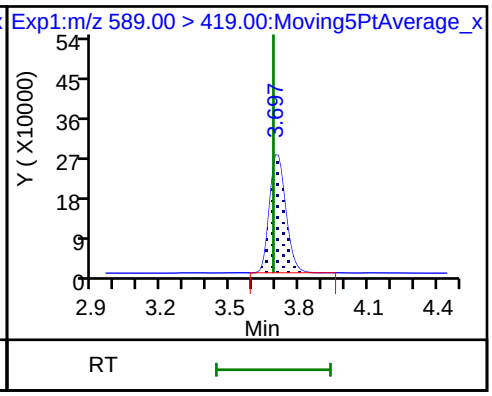
D 27 d3-NMeFOSAA



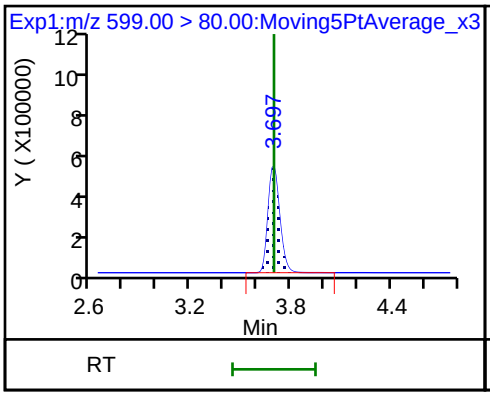
28 N-methyl perfluorooctane sulfonami



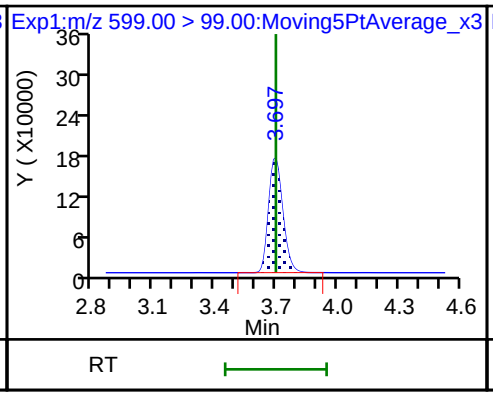
D 32 d5-NEtFOSAA



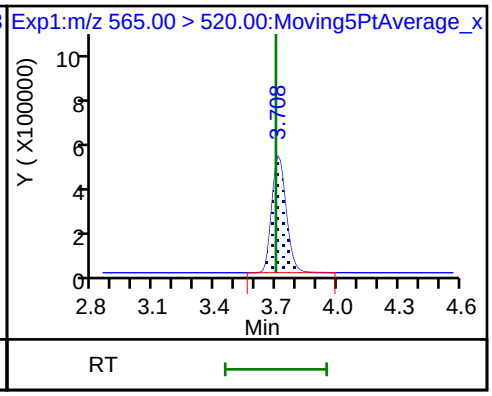
29 Perfluorodecane Sulfonic acid



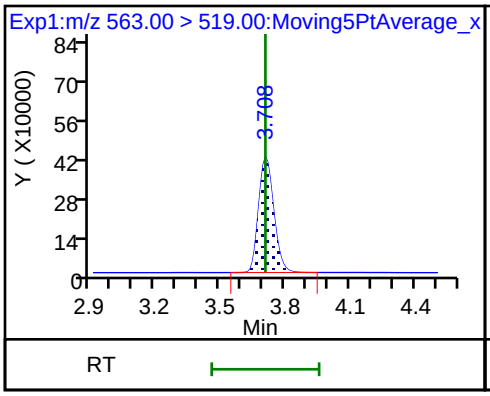
29 Perfluorodecane Sulfonic acid



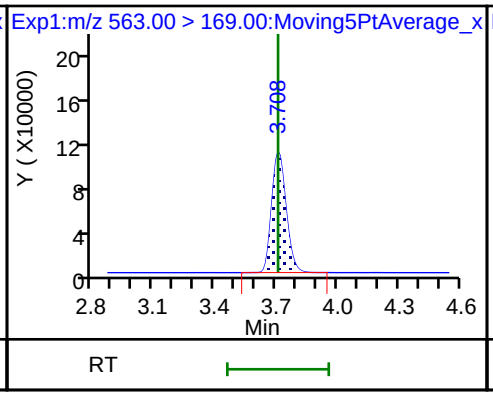
D 30 13C2 PFUnA



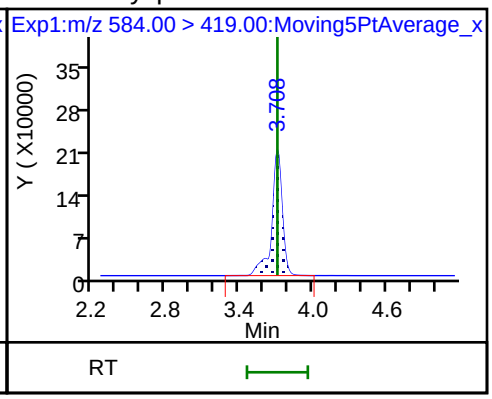
31 Perfluoroundecanoic acid



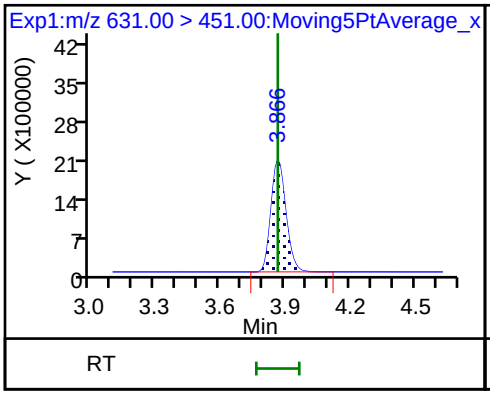
31 Perfluoroundecanoic acid



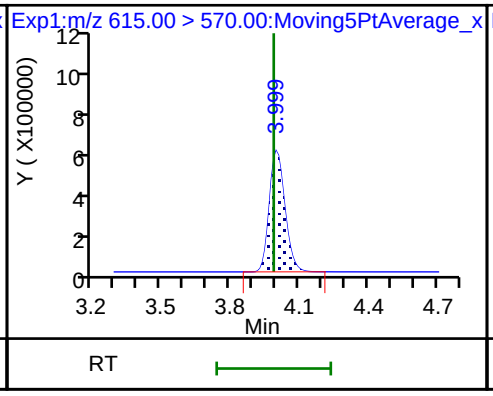
33 N-ethyl perfluorooctane sulfonamid



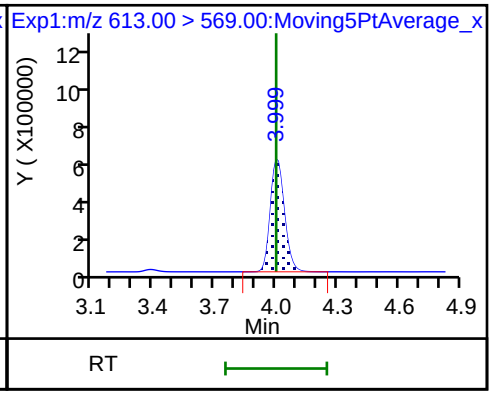
66 11-Chloroeicosafluoro-3-oxaundecan



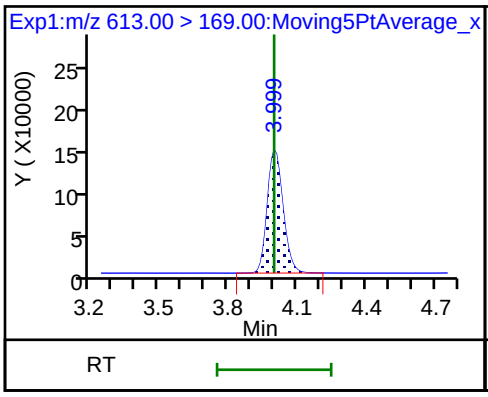
D 36 13C2 PFDoA



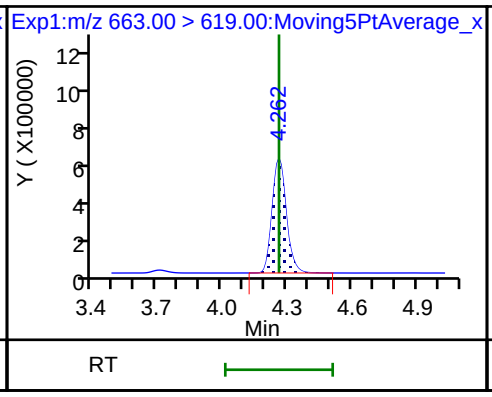
37 Perfluorododecanoic acid



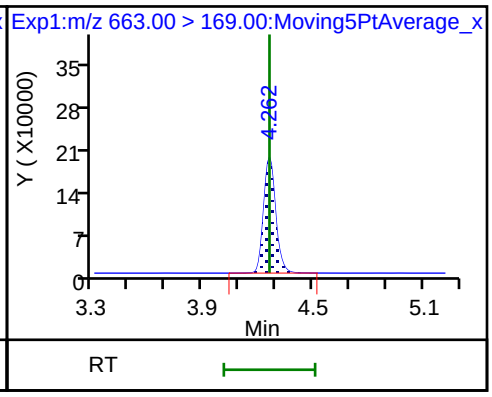
37 Perfluorododecanoic acid



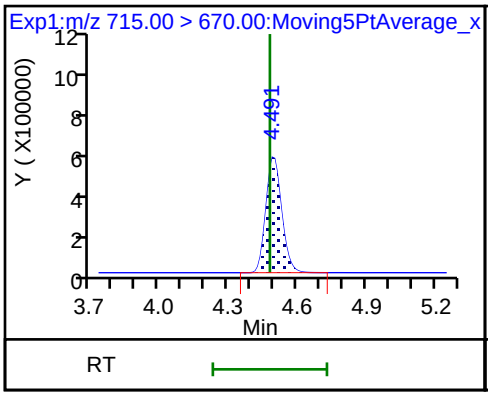
41 Perfluorotridecanoic acid



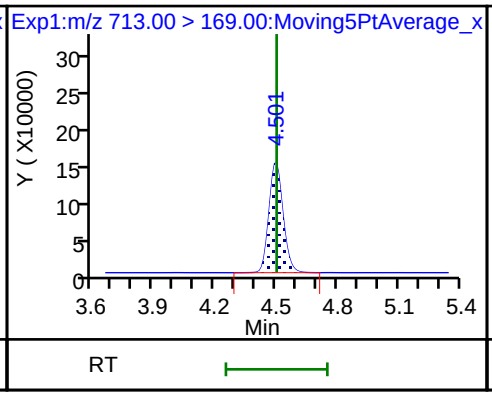
41 Perfluorotridecanoic acid



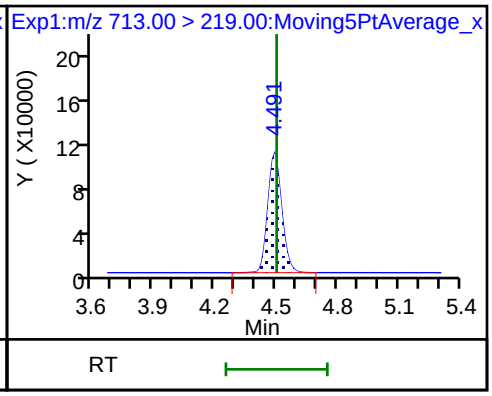
D 43 13C2-PFTeDA



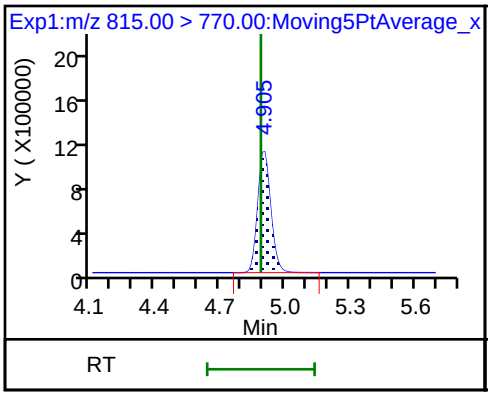
42 Perfluorotetradecanoic acid



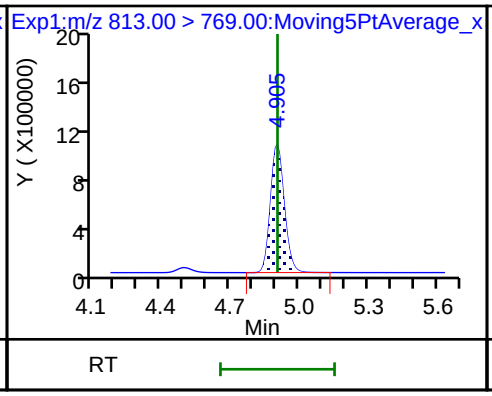
42 Perfluorotetradecanoic acid



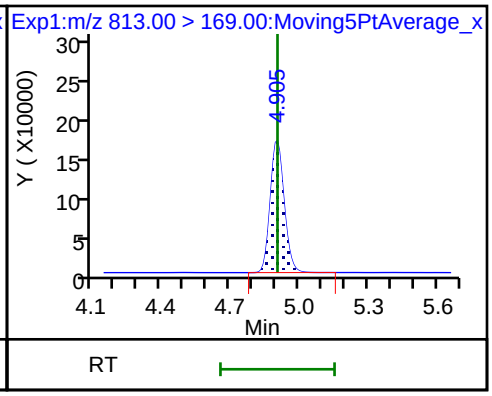
D 44 13C2-PFHxDA



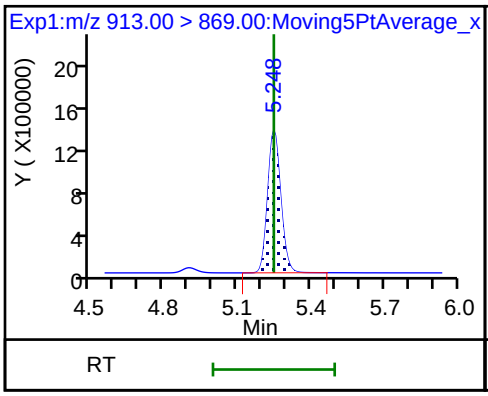
45 Perfluorohexadecanoic acid



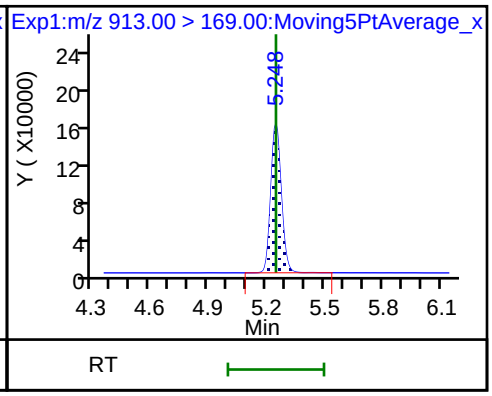
45 Perfluorohexadecanoic acid



46 Perfluorooctadecanoic acid



46 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Lab Sample ID: CCVL 320-234295/2 Calibration Date: 07/16/2018 12:54

Instrument ID: A8_N Calib Start Date: 07/11/2018 14:48

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 07/11/2018 15:38

Lab File ID: 2018.07.16LLA_004.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.9856	1.038		0.0526	0.0500	5.3	50.0
Perfluoropentanoic acid (PFPeA)	AveID	1.213	1.258		0.0518	0.0500	3.7	50.0
Perfluorobutanesulfonic acid (PFBS)	AveID	76.50	77.29		0.0447	0.0442	1.0	50.0
4:2 FTS	AveID	13.00	13.87			0.0467	6.7	50.0
Perfluorohexanoic acid (PFHxA)	AveID	1.029	1.089		0.0529	0.0500	5.8	50.0
Perfluoropentanesulfonic acid (PFPeS)	AveID	69.78	70.12		0.0471	0.0469	0.5	50.0
HFPO-DA (GenX)	AveID	2.654	3.044		0.0573	0.0500	14.7	50.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.157	1.175		0.0508	0.0500	1.6	50.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.148	1.226		0.0486	0.0455	6.8	50.0
ADONA	AveID	3.219	3.508		0.0513	0.0471	9.0	50.0
6:2 FTS	AveID	1.564	1.710		0.0518	0.0474	9.3	50.0
Perfluorooctanoic acid (PFOA)	AveID	1.232	1.276		0.0519	0.0501	3.6	50.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.318	1.271		0.0459	0.0476	-3.5	50.0
Perfluorononanoic acid (PFNA)	AveID	1.109	1.185		0.0534	0.0500	6.8	50.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.133	1.162		0.0476	0.0464	2.5	50.0
9-Chlorohexadecafluoro-3-oxa nonane-1-sulfonate	AveID	1.836	1.819		0.0462	0.0466	-0.9	50.0
8:2 FTS	AveID	1.290	1.150			0.0479	-10.8	50.0
Perfluorononanesulfonic acid (PFNS)	AveID	0.7752	0.7367		0.0456	0.0480	-5.0	50.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9856	0.9911		0.0503	0.0500	0.6	50.0
Perfluorodecanoic acid (PFDA)	AveID	1.049	1.040		0.0496	0.0500	-0.8	50.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	0.9858	0.9594			0.0500	-2.7	50.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6714	0.6490		0.0466	0.0482	-3.3	50.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.8840	0.8725		0.0493	0.0500	-1.3	50.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.8195	0.9718		0.0593	0.0500	18.6	50.0
11-Chloroeicosafluoro-3-oxau ndecane-1-sulfonate	AveID	2.654	2.746		0.0487	0.0471	3.5	50.0
Perfluorododecanoic acid (PFDoA)	AveID	1.092	1.009		0.0462	0.0500	-7.6	50.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.068	1.088		0.0509	0.0500	1.9	50.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2602	0.2944		0.0566	0.0500	13.2	50.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		1.301		0.0469	0.0500	-6.2	50.0

FORM VII 537 (modified)

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Lab Sample ID: CCVL 320-234295/2 Calibration Date: 07/16/2018 12:54

Instrument ID: A8_N Calib Start Date: 07/11/2018 14:48

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 07/11/2018 15:38

Lab File ID: 2018.07.16LLA_004.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.143	1.027		0.0449	0.0500	-10.1	50.0
13C4 PFBA	Ave	1.356	1.291		2.38	2.50	-4.8	50.0
13C5 PFPeA	Ave	0.9425	0.9380		2.49	2.50	-0.5	50.0
13C3-PFBS	Ave	0.0237	0.0237		2.33	2.33	0.0	50.0
M2-4:2FTS	Ave	0.1273	0.1324		2.43	2.34	4.1	50.0
13C2 PFHxA	Ave	1.017	1.060		2.61	2.50	4.2	50.0
13C3 HFPO-DA	Ave	0.0724	0.0566		1.95	2.50	-21.8	50.0
13C4-PFHpA	Ave	0.9371	0.9652		2.58	2.50	3.0	50.0
18O2 PFHxS	Ave	1.328	1.332		2.37	2.37	0.3	50.0
M2-6:2FTS	Ave	0.2009	0.1953		2.31	2.38	-2.8	50.0
13C4 PFOA	Ave	0.9560	0.9832		2.57	2.50	2.8	50.0
13C4 PFOS	Ave	0.9742	0.9896		2.43	2.39	1.6	50.0
13C5 PFNA	Ave	0.8546	0.8310		2.43	2.50	-2.8	50.0
13C8 FOSA	Ave	1.405	1.451		2.58	2.50	3.3	50.0
M2-8:2FTS	Ave	0.2939	0.2663		2.17	2.40	-9.4	50.0
13C2 PFDA	Ave	0.7503	0.7181		2.39	2.50	-4.3	50.0
d3-NMeFOSAA	Ave	0.3075	0.3403		2.77	2.50	10.7	50.0
d5-NEtFOSAA	Ave	0.3150	0.3715		2.95	2.50	17.9	50.0
13C2 PFUnA	Ave	0.6266	0.6206		2.48	2.50	-1.0	50.0
13C2 PFDoA	Ave	0.6496	0.6412		2.47	2.50	-1.3	50.0
13C2-PFTeDA	Ave	0.6740	0.6407		2.38	2.50	-4.9	50.0
13C2-PFHxDA	Ave	1.074	0.9188		2.14	2.50	-14.4	50.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180716-61126.b\2018.07.16LLA_004.d
Lims ID: CCVL
Client ID:
Sample Type: CCVL
Inject. Date: 16-Jul-2018 12:54:32 ALS Bottle#: 21 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCVL
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-A8_N*sub32

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180716-61126.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 16-Jul-2018 16:17:39 Calib Date: 11-Jul-2018 15:38:42
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK023

First Level Reviewer: roycea Date: 16-Jul-2018 14:02:28

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										M
217.00 > 172.00	1.435	1.442	-0.007	0.535	5394590	2.38		95.2	26326	M
2 Perfluorobutyric acid										
212.90 > 169.00	1.441	1.445	-0.004	1.004	111957	0.0526		105	38.6	
D 3 13C5-PFPeA										
267.90 > 223.00	1.728	1.721	0.007	0.645	3919476	2.49		99.5	54529	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.737	1.744	-0.007	1.005	98596	0.0518		104	39.1	
D 47 13C3-PFBS										
301.90 > 83.00	1.773	1.757	0.016	0.661	92065	2.33		100	620	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.773	1.780	-0.007	1.000	135283	0.0447		101	1025	
298.90 > 99.00	1.773	1.780	-0.007	1.000	52894		2.56(1.25-3.74)		493	
D 60 M2-4:2FTS										
329.00 > 81.00	1.991	1.971	0.020	0.742	516780	2.43		104	9207	
61 1H,1H,2H,2H-perfluorohexanesulfoni										
327.00 > 307.00	1.980	1.988	-0.008	1.117	25640	0.0498		107	1561	
D 7 13C2 PFHxA										
315.00 > 270.00	2.025	2.005	0.020	0.755	4429392	2.61		104	71224	
6 Perfluorohexanoic acid										
313.00 > 269.00	2.025	2.034	-0.009	1.000	96459	0.0529		106	247	
313.00 > 119.00	2.025	2.034	-0.009	1.000	9377		10.29(5.03-15.10)		175	
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.048	2.056	-0.008	1.155	130230	0.0471		100	5701	
349.00 > 99.00	2.048	2.056	-0.008	1.155	44868		2.90(1.36-4.07)		1123	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.115	2.095	0.020	0.789	236344	1.95		78.2	5186	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
67 Perfluoro(2-propoxypropanoic) acid										
329.10 > 285.00	2.127	2.124	0.003	1.005	14389	0.0573		115	143	
D 9 13C4-PFHpA										
367.00 > 322.00	2.332	2.321	0.011	0.870	4032973	2.58		103	39943	
D 11 18O2 PFHxS										
403.00 > 84.00	2.358	2.334	0.024	0.879	5265657	2.37		100	38901	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.332	2.342	-0.010	1.000	94742	0.0508		102	186	
363.00 > 169.00	2.345	2.342	0.003	1.006	40510		2.34(1.13-3.40)		452	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.345	2.355	-0.010	0.994	124228	0.0486		107	1155	
399.00 > 99.00	2.345	2.355	-0.010	0.994	45563		2.73(1.50-4.49)		281	
65 Adona										
377.00 > 251.00	2.384	2.392	-0.008	0.784	273292	0.0513		109	5402	
377.00 > 85.00	2.384	2.392	-0.008	0.784	150201		1.82(0.84-2.53)		1482	
D 12 M2-6:2FTS										
429.00 > 81.00	2.659	2.644	0.015	0.992	775121	2.31		97.2	14432	
D 14 13C4 PFOA										
417.00 > 372.00	2.682	2.668	0.014	1.000	4108148	2.57		103	41453	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.659	2.674	-0.015	1.000	26449	0.0518		109	187	
* 62 13C2-PFOA										
415.00 > 370.00	2.682	2.696	-0.014		4178400	2.50			49105	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.682	2.696	-0.014	1.000	104951	0.0519		104	58.1	
413.00 > 169.00	2.682	2.696	-0.014	1.000	55097		1.90(0.84-2.52)		319	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.689	2.704	-0.015	0.884	100047	0.0459		96.5	2787	
449.00 > 99.00	2.689	2.704	-0.015	0.884	28338		3.53(1.94-5.82)		531	
D 18 13C4 PFOS										
503.00 > 80.00	3.042	3.031	0.011	1.134	3952846	2.43		102	40434	
D 19 13C5 PFNA										
468.00 > 423.00	3.042	3.031	0.011	1.134	3472108	2.43		97.2	37751	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.042	3.057	-0.015	1.000	89144	0.0476		103	1494	
499.00 > 99.00	3.042	3.057	-0.015	1.000	19859		4.49(2.31-6.93)		292	
20 Perfluorononanoic acid										
463.00 > 419.00	3.042	3.057	-0.015	1.000	82267	0.0534		107	129	
463.00 > 169.00	3.042	3.057	-0.015	1.000	17515		4.70(1.90-5.69)		284	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.250	3.265	-0.015	1.068	140157	0.0462		99.1	1848	
D 21 13C8 FOSA										
506.00 > 78.00	3.383	3.379	0.004	1.262	6062417	2.58		103	44490	
D 26 M2-8:2FTS										
529.00 > 81.00	3.383	3.379	0.004	1.262	1066132	2.17		90.6	15037	
D 23 13C2 PFDA										
515.00 > 470.00	3.393	3.388	0.005	1.265	3000601	2.39		95.7	37354	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
25 1H,1H,2H,2H-perfluorodecanesulfoni										
527.00 > 507.00	3.383	3.396	-0.013	1.000	24521	0.0427		89.2	295	
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.383	3.396	-0.013	1.112	58484	0.0456		95.0	1918	
549.00 > 99.00	3.383	3.396	-0.013	1.112	22928		2.55(1.33-3.97)		393	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.383	3.396	-0.013	1.000	120172	0.0503		101	3430	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.393	3.405	-0.012	1.000	62442	0.0496		99.2	350	
513.00 > 169.00	3.393	3.405	-0.012	1.000	11794		5.29(2.36-7.09)		350	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.551	3.538	0.013	1.324	1422030	2.77		111	38904	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.551	3.564	-0.013	1.000	27285	0.0487		97.3	267	
D 30 13C2 PFUnA										
565.00 > 520.00	3.722	3.708	0.014	1.388	2593024	2.48		99.0	33572	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.711	3.708	0.003	1.384	1552181	2.95		118	4248	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.700	3.717	-0.017	1.217	51740	0.0466		96.7	1327	
599.00 > 99.00	3.711	3.717	-0.006	1.220	19315		2.68(1.39-4.16)		574	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.722	3.738	-0.016	1.003	27084	0.0493		98.7	552	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.722	3.738	-0.016	1.000	50400	0.0593		119	247	
563.00 > 169.00	3.722	3.738	-0.016	1.000	11245		4.48(2.12-6.36)		318	
66 11-Chloroeicosafluoro-3-oxaundecan										
631.00 > 451.00	3.878	3.886	-0.008	1.275	213917	0.0487		103	8981	
D 36 13C2 PFDoA										
615.00 > 570.00	4.010	4.008	0.002	1.495	2679150	2.47		98.7	27091	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.010	4.029	-0.019	1.000	54050	0.0462		92.4	34.9	
613.00 > 169.00	4.010	4.029	-0.019	1.000	13874		3.90(2.13-6.40)		296	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.273	4.290	-0.017	1.066	58293	0.0509		102	25.3	
663.00 > 169.00	4.273	4.290	-0.017	1.066	20676		2.82(1.25-3.76)		319	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.511	4.501	0.010	1.682	2677288	2.38		95.1	15822	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.511	4.522	-0.011	1.000	15764	0.0566		113	329	
713.00 > 219.00	4.511	4.522	-0.011	1.000	9766		1.61(0.71-2.13)		290	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.922	4.905	0.017	1.835	3839301	2.14		85.6	12633	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.922	4.931	-0.009	1.000	99898	0.0469		93.8	21.7	
813.00 > 169.00	4.922	4.931	-0.009	1.000	16837		5.93(2.86-8.58)		222	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.269	5.285	-0.016	1.071	78876	0.0449		89.9	15.8	
913.00 > 169.00	5.269	5.285	-0.016	1.071	10188		7.74(3.83-11.48)		192	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

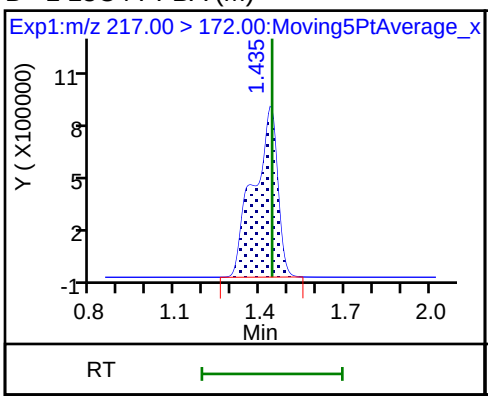
LCPFC_LL2_00005 Amount Added: 1.00 Units: mL

Report Date: 16-Jul-2018 16:17:41 Chrom Revision: 2.2 07-Jun-2018 07:41:54

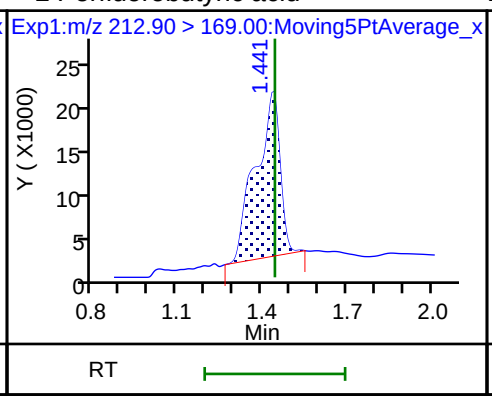
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180716-61126.b\2018.07.16LLA_004.d
Injection Date: 16-Jul-2018 12:54:32 Instrument ID: A8_N
Lims ID: CCVL
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 21 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC ICAL

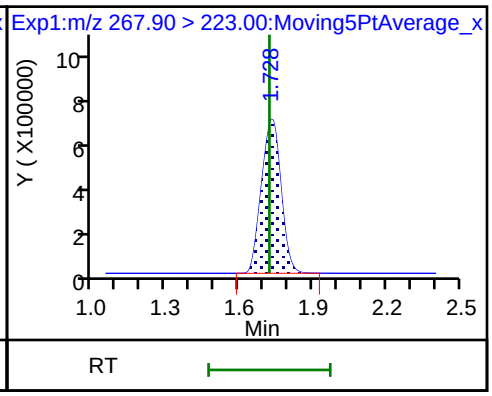
D 1 13C4 PFBA (M)



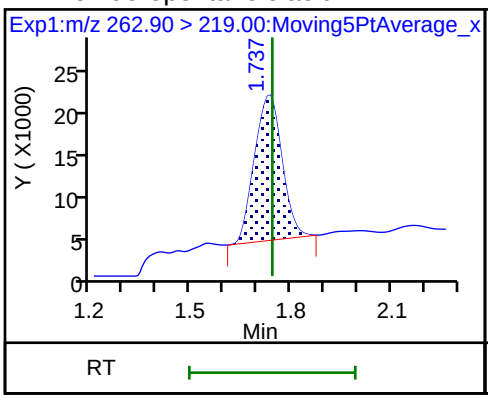
2 Perfluorobutyric acid



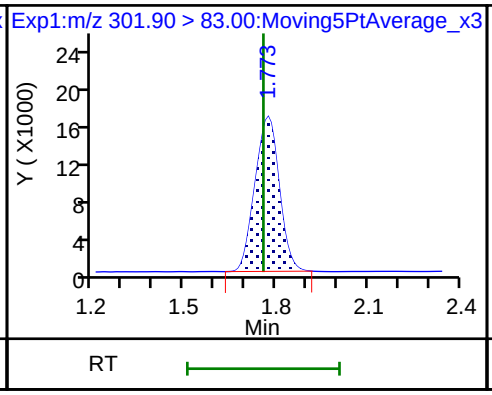
D 3 13C5-PFPeA



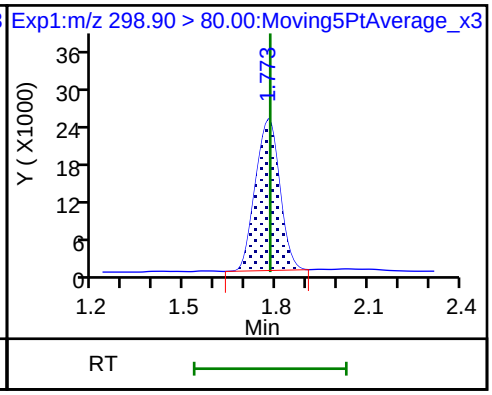
4 Perfluoropentanoic acid



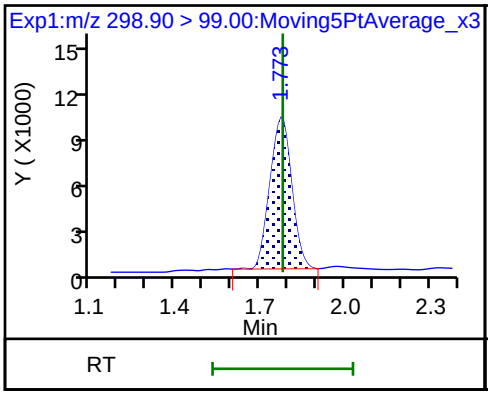
D 47 13C3-PFBS



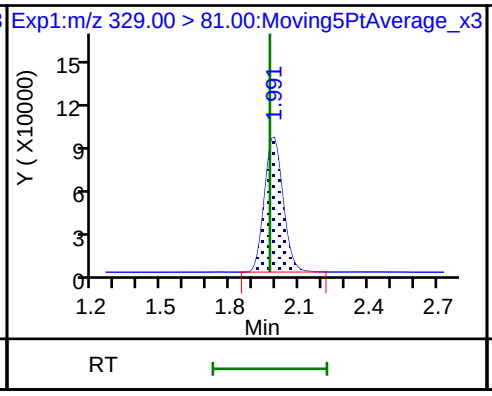
5 Perfluorobutanesulfonic acid



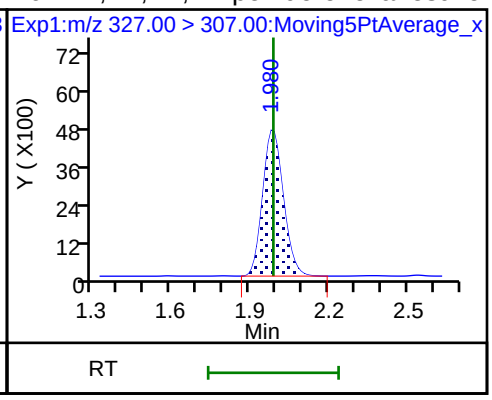
5 Perfluorobutanesulfonic acid



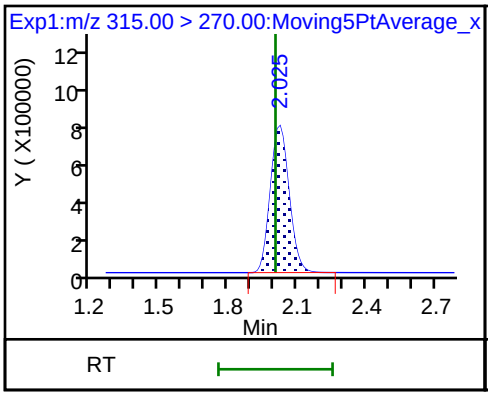
D 60 M2-4:2FTS



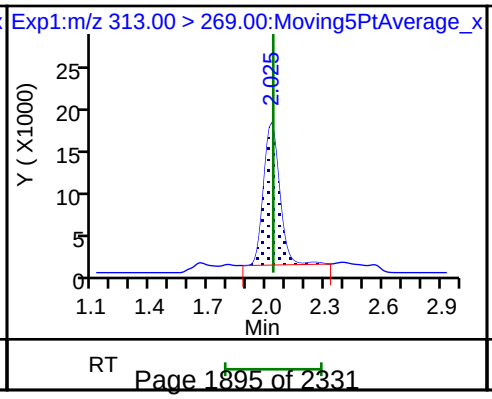
61 1H,1H,2H,2H-perfluorohexanesulfoni



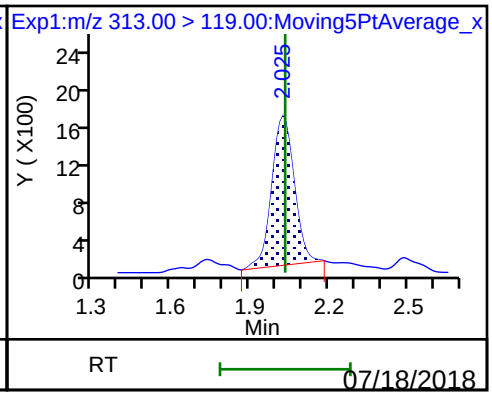
D 7 13C2 PFHxA



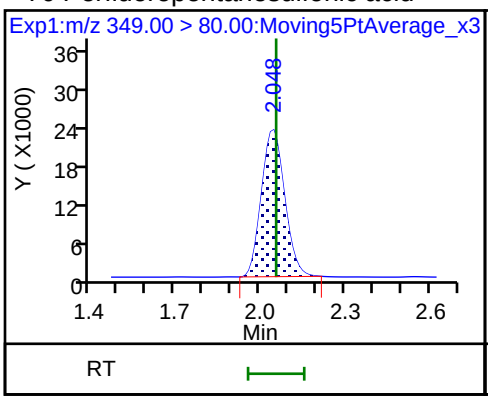
6 Perfluorohexanoic acid



6 Perfluorohexanoic acid



70 Perfluoropentanesulfonic acid



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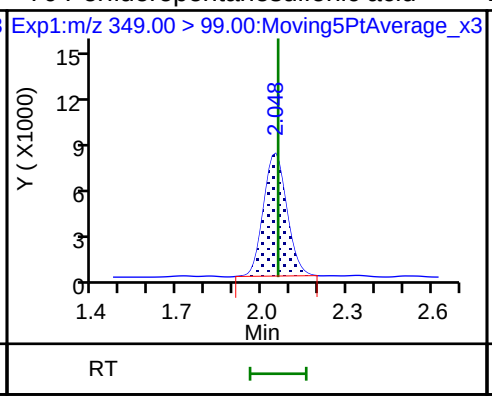
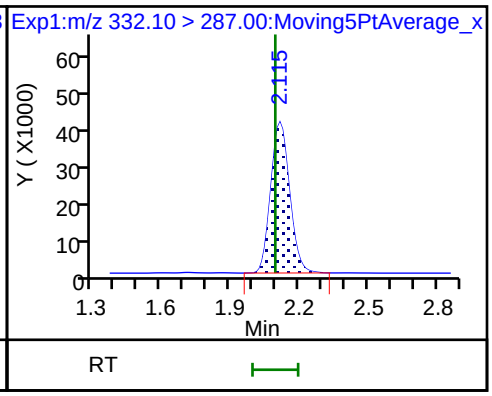
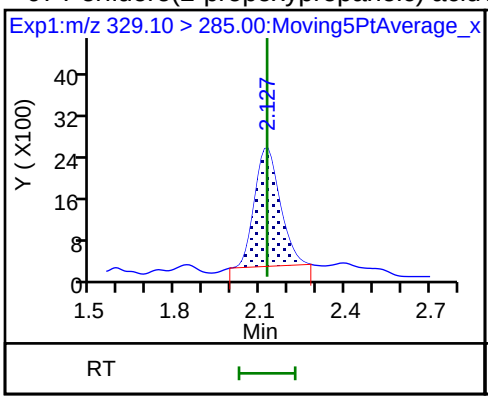


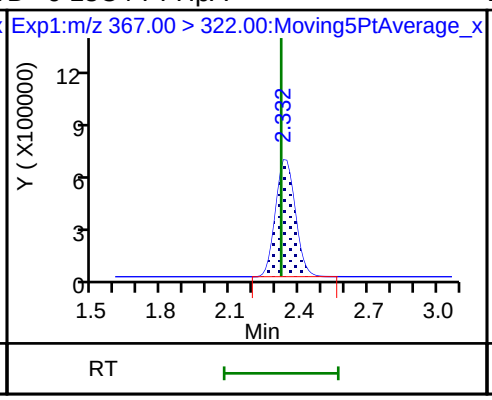
D 64 13C3 HFPO-DA



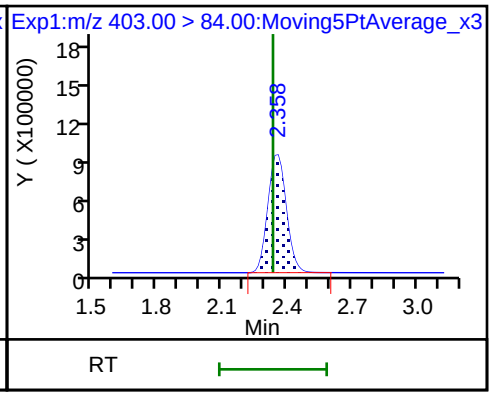
67 Perfluoro(2-propoxypropanoic) acid



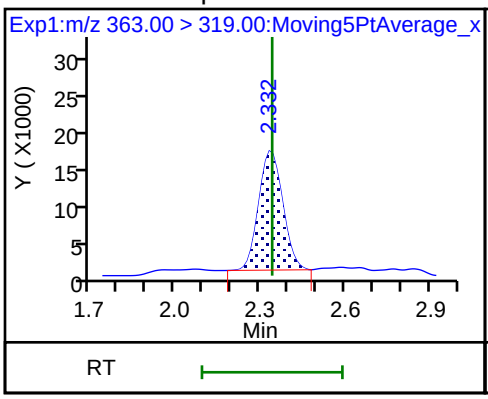
D 9 13C4-PFHpA



D 11 18O2 PFHxS



10 Perfluoroheptanoic acid



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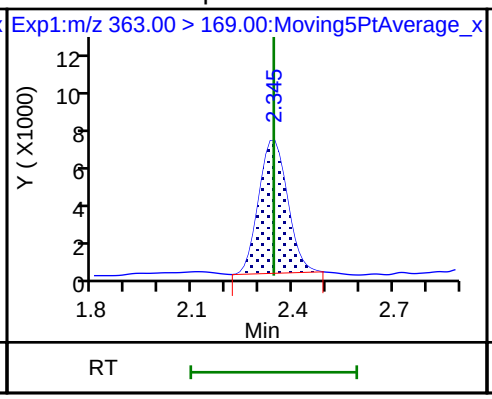
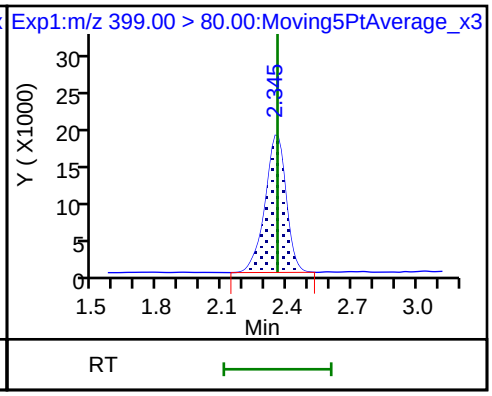
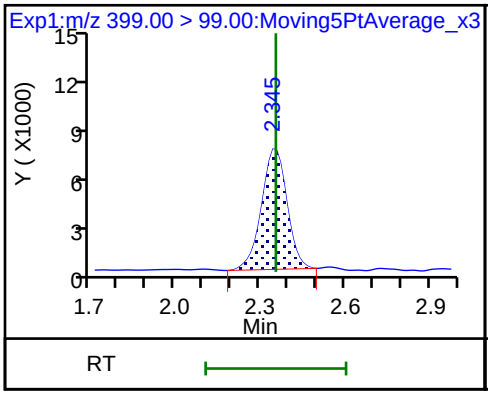


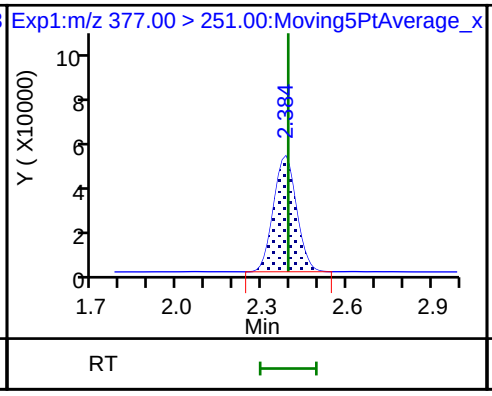
8 Perfluorohexanesulfonic acid



8 Perfluorohexanesulfonic acid



65 Adona



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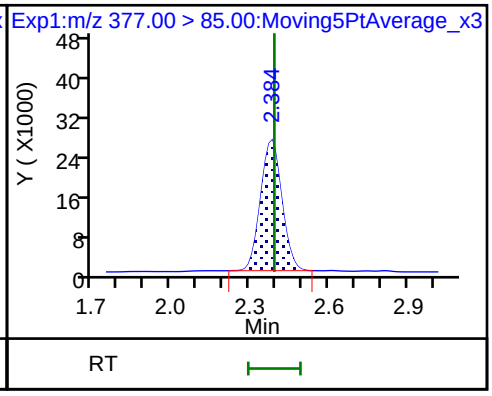
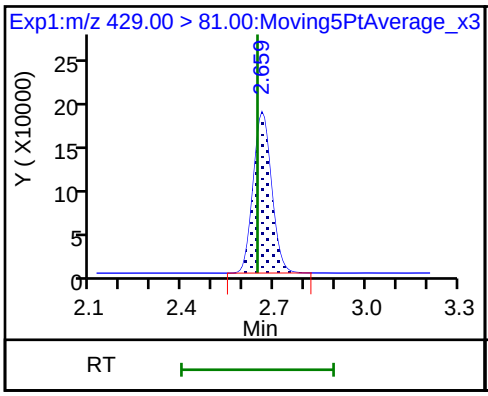
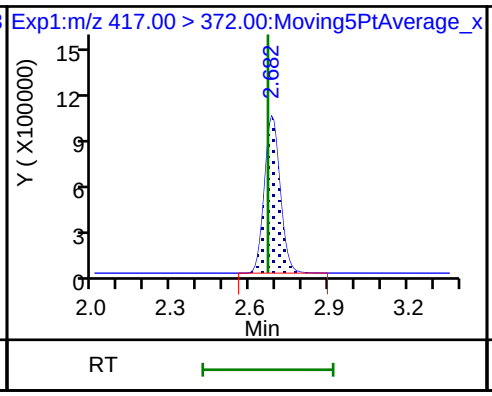


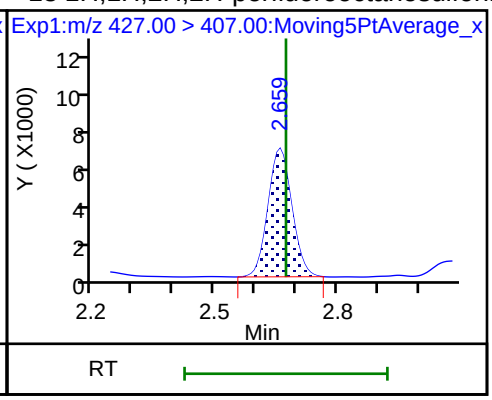
D 12 M2-6:2FTS



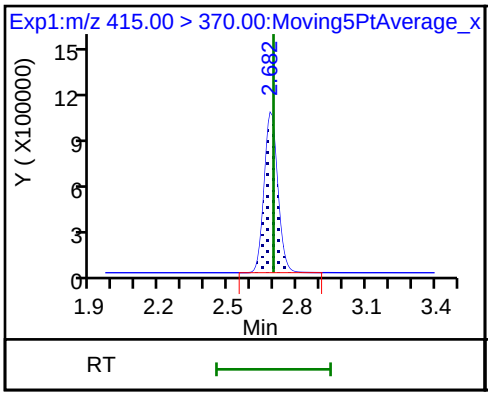
D 14 13C4 PFOA



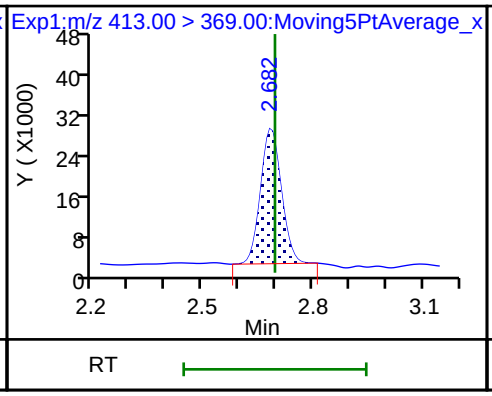
13 1H,1H,2H,2H-perfluorooctanesulfoni



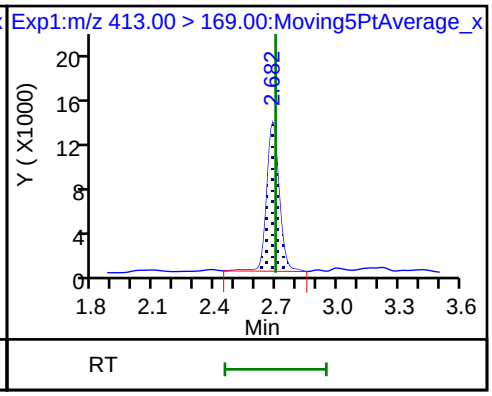
* 62 13C2-PFOA



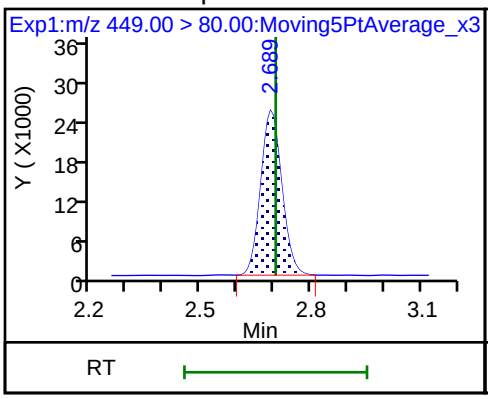
15 Perfluorooctanoic acid



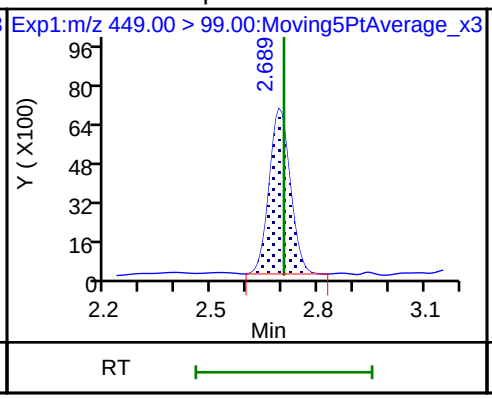
15 Perfluorooctanoic acid



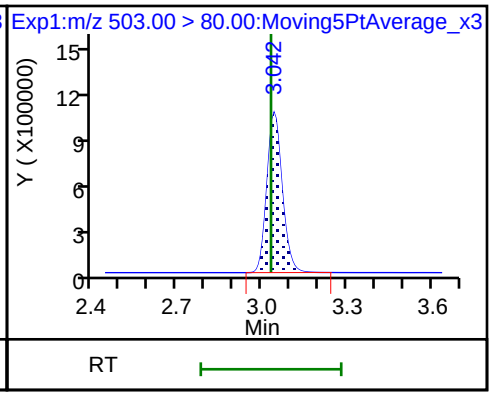
16 Perfluoroheptanesulfonic acid



16 Perfluoroheptanesulfonic acid



D 18 13C4 PFOS



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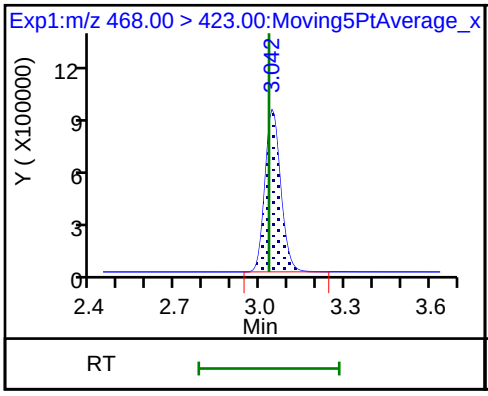
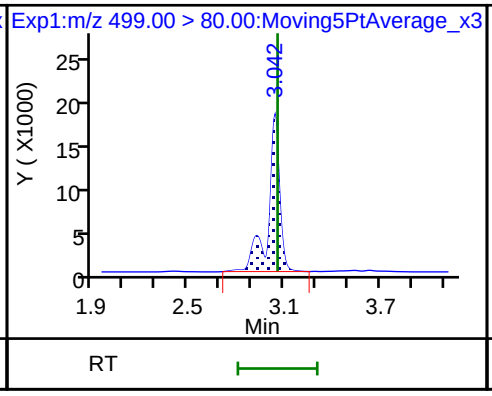
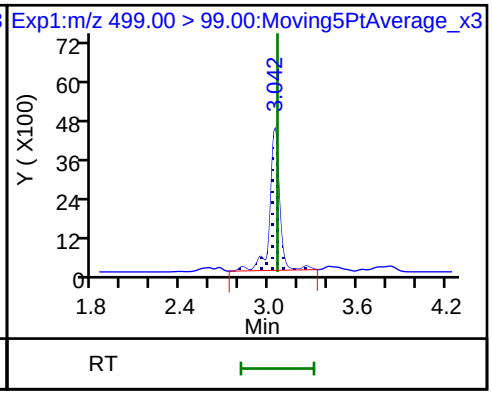


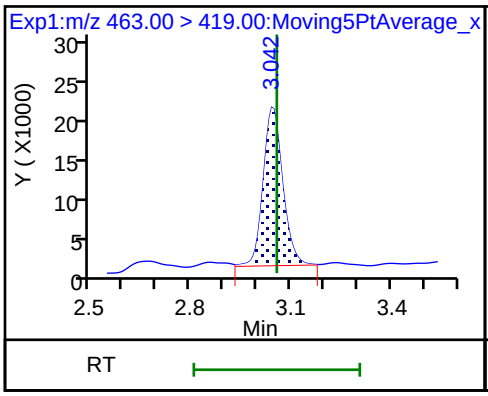
17 Perfluorooctane sulfonic acid



17 Perfluorooctane sulfonic acid



20 Perfluorononanoic acid



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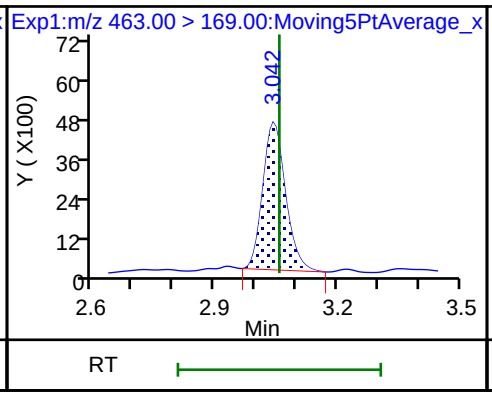
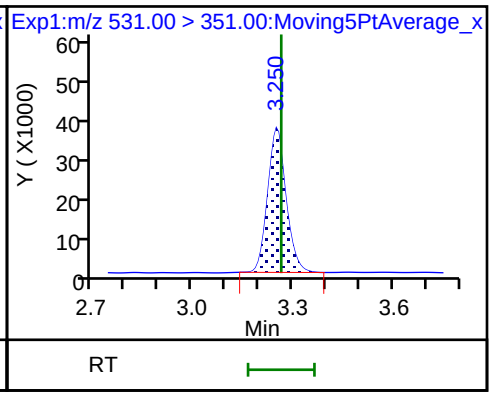
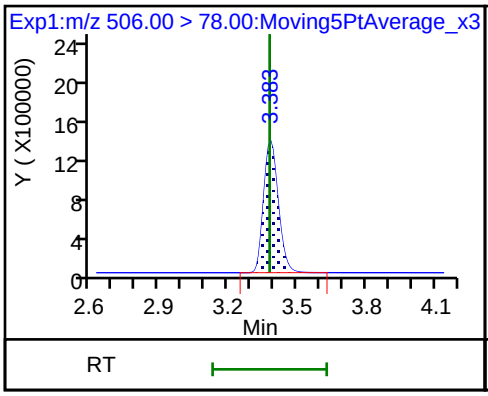


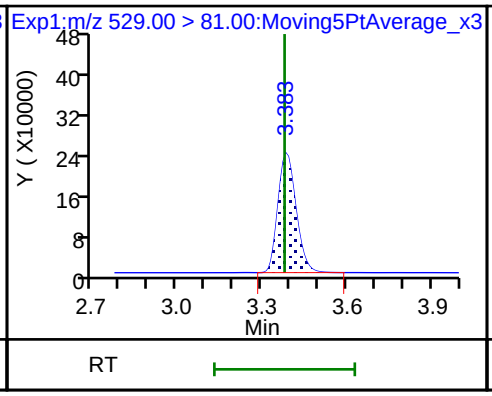
69 9-Chlorohexadecafluoro-3-oxanonane



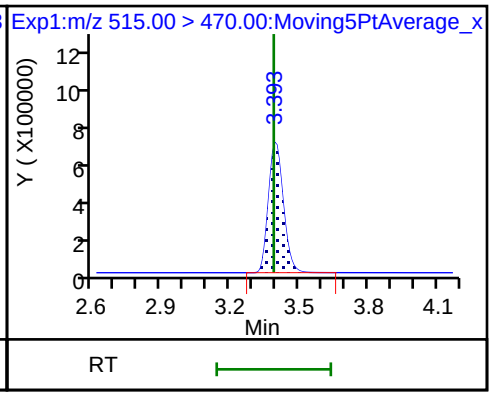
D 21 13C8 FOSA



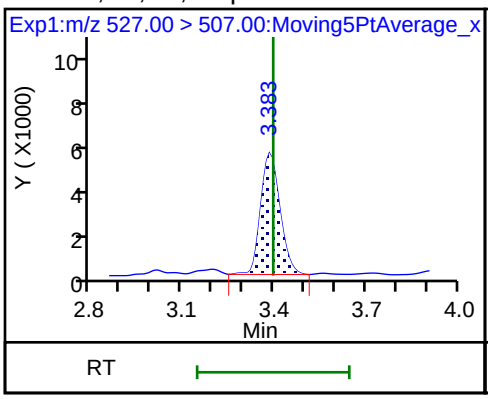
D 26 M2-8:2FTS



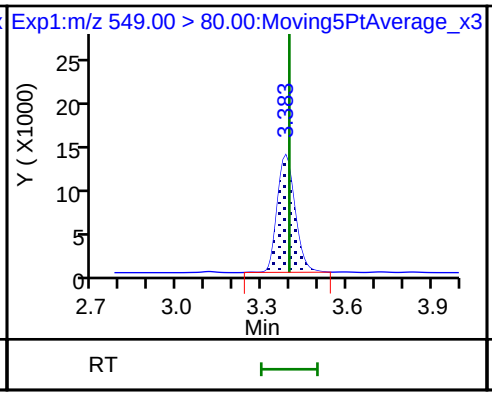
D 23 13C2 PFDA



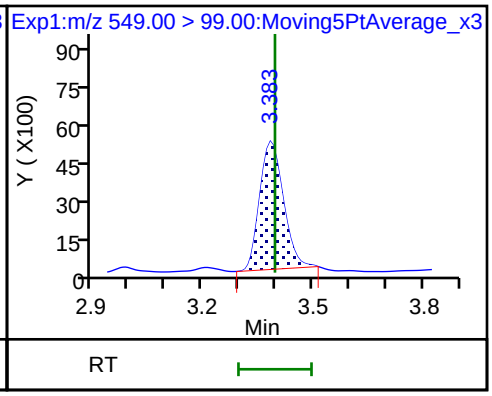
25 1H,1H,2H,2H-perfluorodecanesulfoni



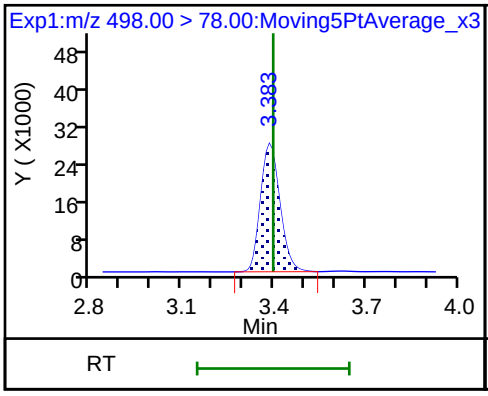
68 Perfluorononanesulfonic acid



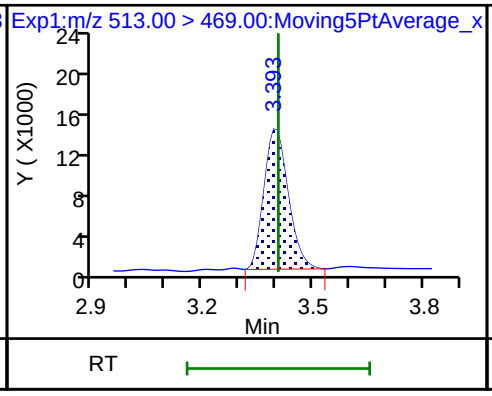
68 Perfluorononanesulfonic acid



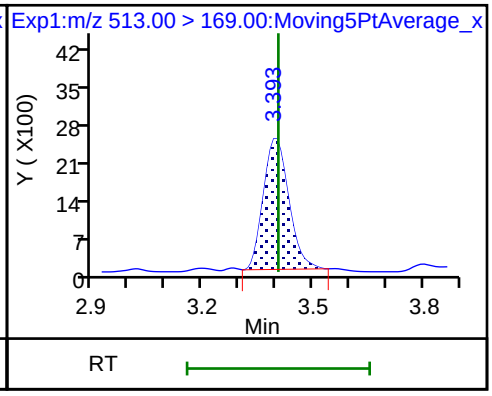
22 Perfluorooctane Sulfonamide



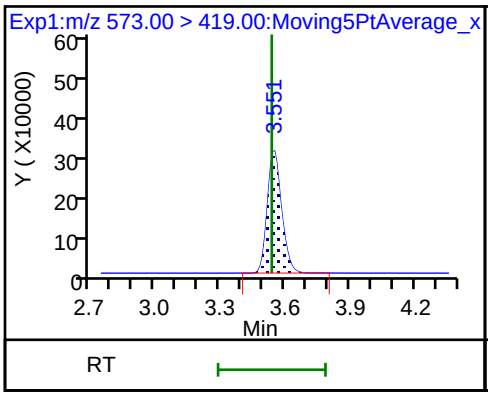
24 Perfluorodecanoic acid



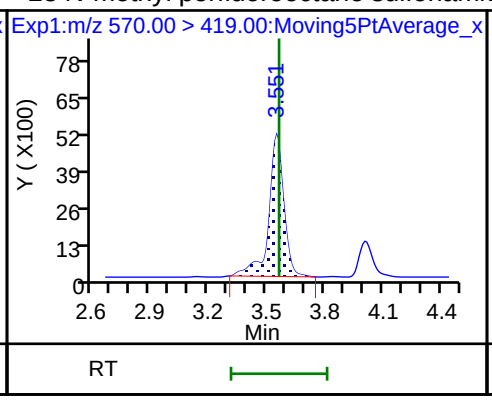
24 Perfluorodecanoic acid



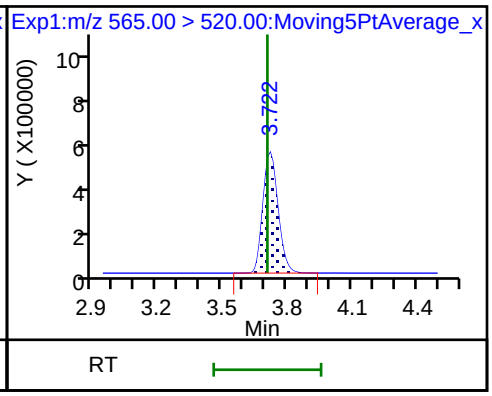
D 27 d3-NMeFOSAA



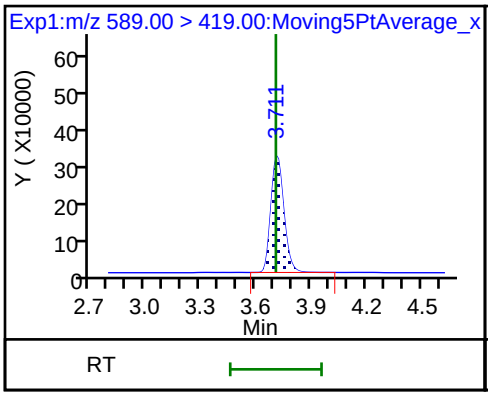
28 N-methyl perfluorooctane sulfonami



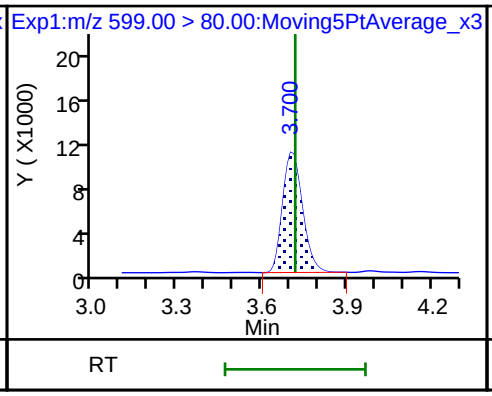
D 30 13C2 PFUnA



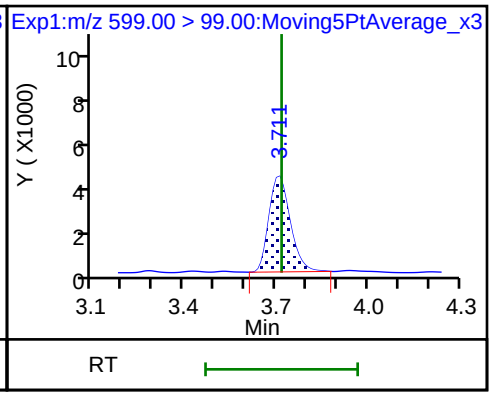
D 32 d5-NEtFOSAA



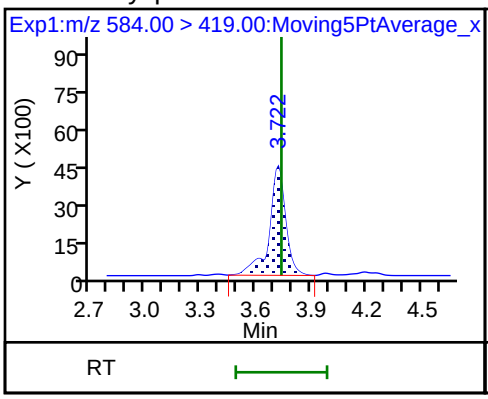
29 Perfluorodecane Sulfonic acid



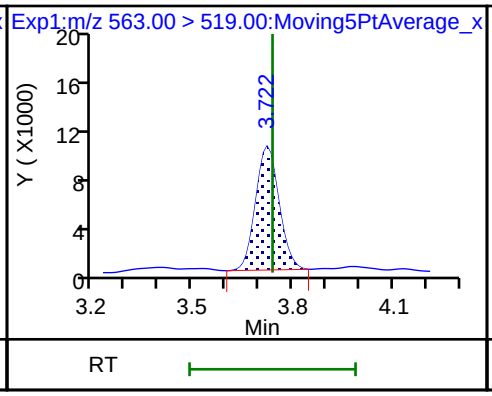
29 Perfluorodecane Sulfonic acid



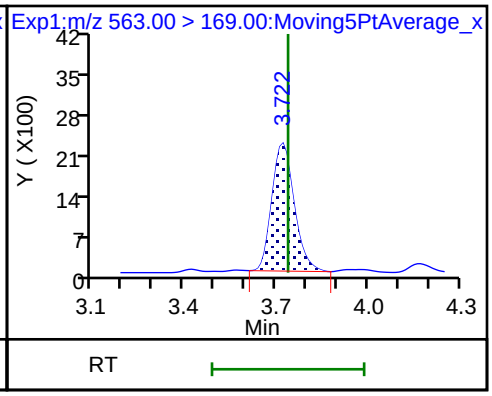
33 N-ethyl perfluorooctane sulfonamid



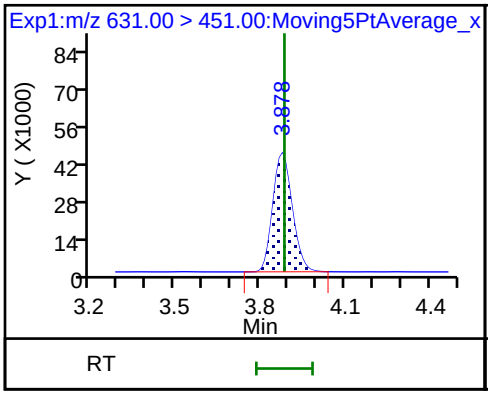
31 Perfluoroundecanoic acid



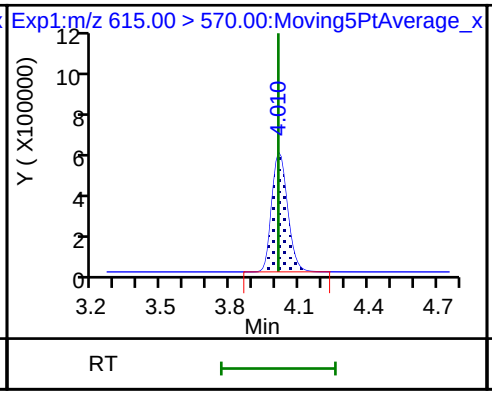
31 Perfluoroundecanoic acid



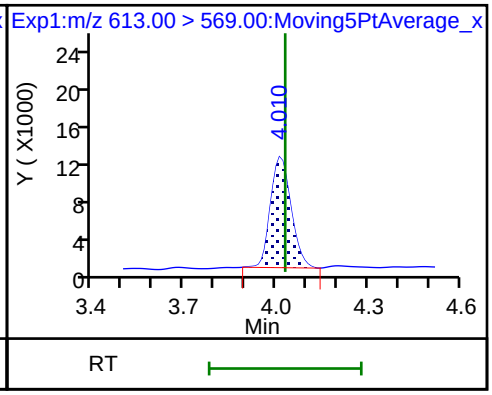
66 11-Chloroeicosafluoro-3-oxaundecan



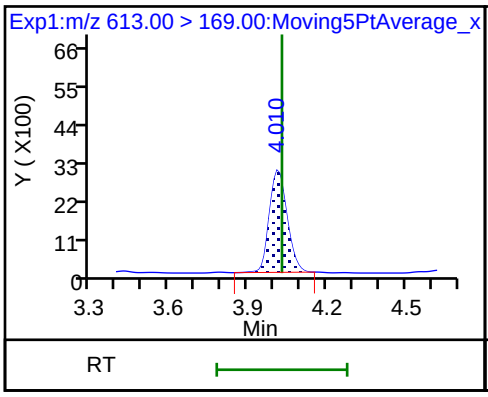
D 36 13C2 PFDoA



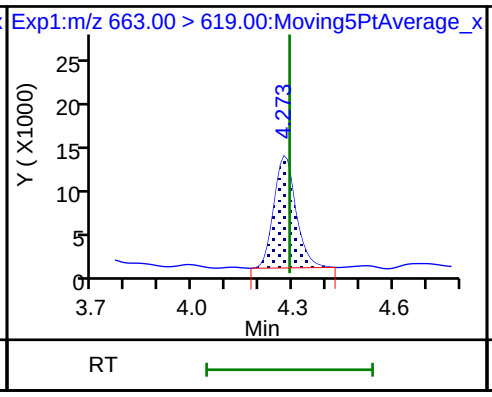
37 Perfluorododecanoic acid



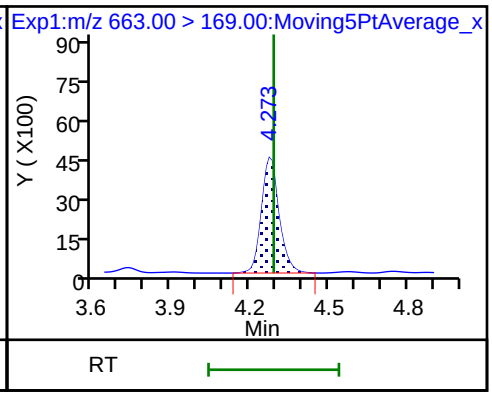
37 Perfluorododecanoic acid



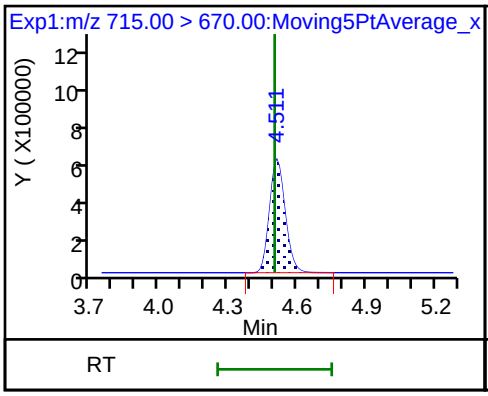
41 Perfluorotridecanoic acid



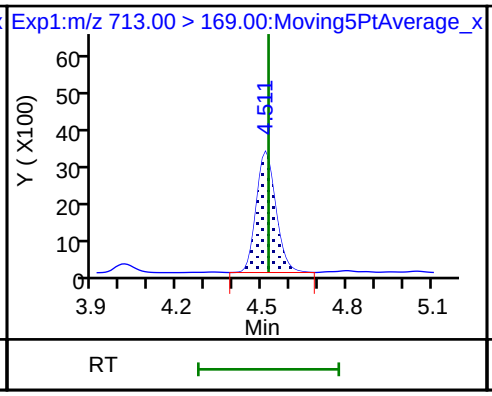
41 Perfluorotridecanoic acid



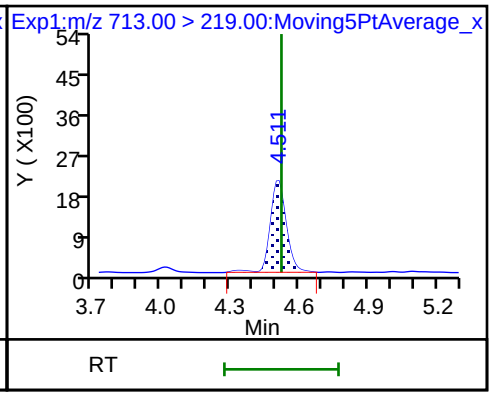
D 43 13C2-PFTeDA



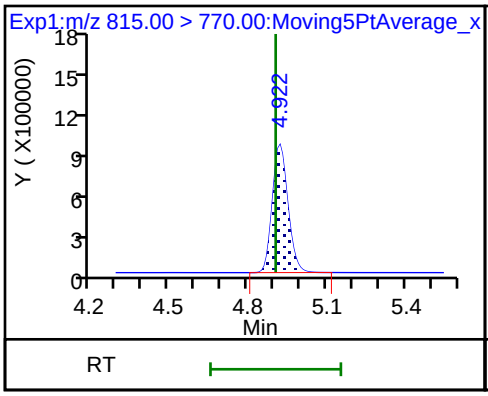
42 Perfluorotetradecanoic acid



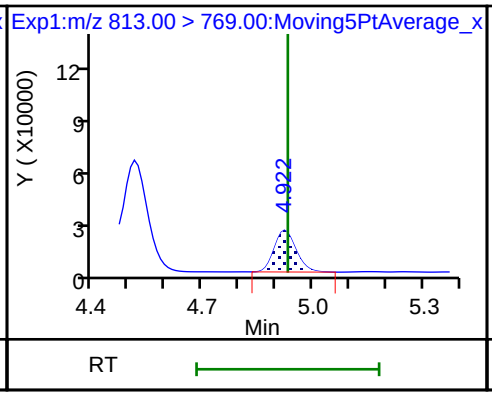
42 Perfluorotetradecanoic acid



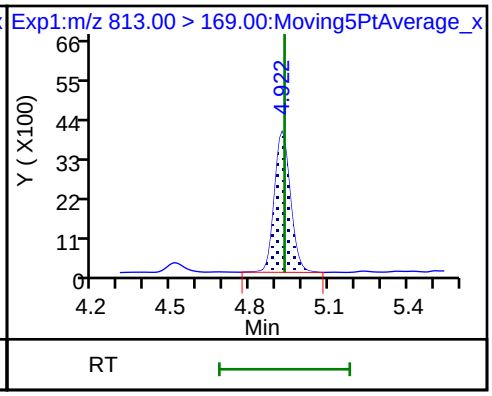
D 44 13C2-PFHxDA



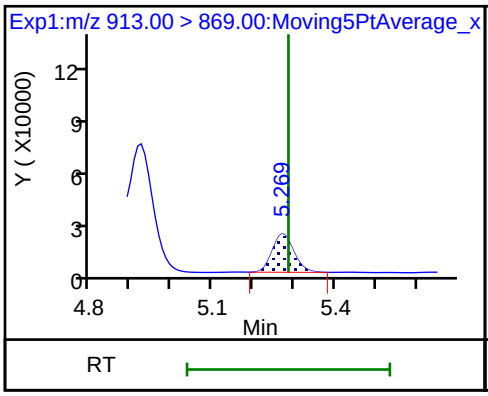
45 Perfluorohexadecanoic acid



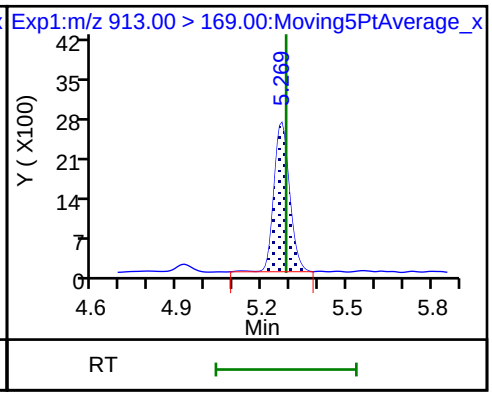
45 Perfluorohexadecanoic acid



46 Perfluorooctadecanoic acid



46 Perfluorooctadecanoic acid



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

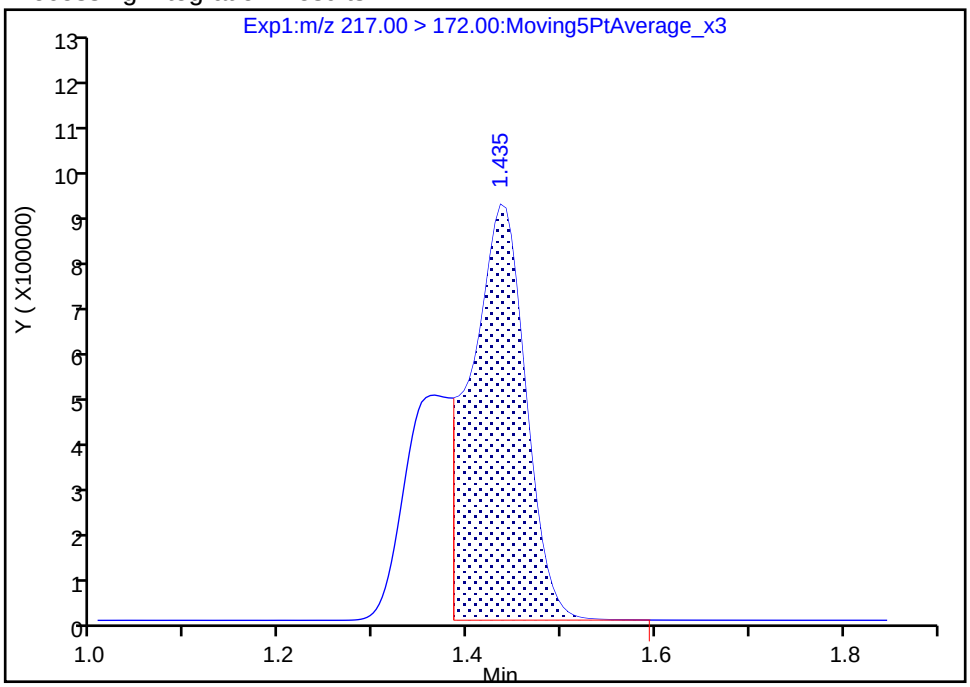
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180716-61126.b\2018.07.16LLA_004.d				
Injection Date:	16-Jul-2018 12:54:32	Instrument ID:	A8_N		
Lims ID:	CCVL				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	21	Worklist Smp#:	2
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

D 1 13C4 PFBA, CAS: STL00992

Signal: 1

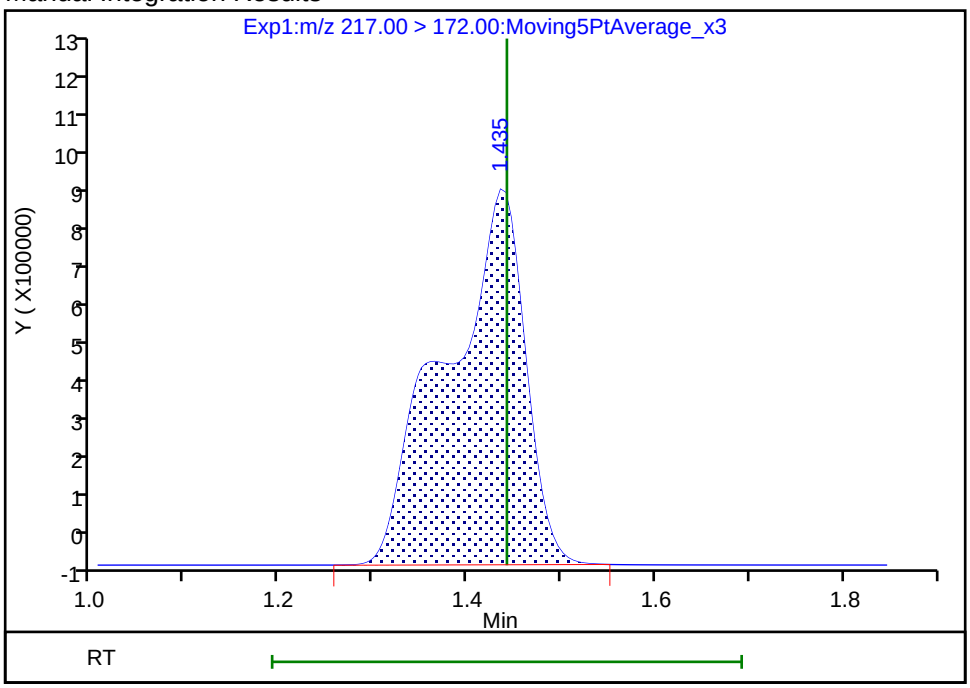
Processing Integration Results

RT: 1.44
Area: 3682677
Amount: 1.625036
Amount Units: ng/ml



Manual Integration Results

RT: 1.44
Area: 5394590
Amount: 2.380443
Amount Units: ng/ml



Reviewer: roycea, 16-Jul-2018 14:02:15

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Lab Sample ID: CCV 320-234295/3 Calibration Date: 07/16/2018 13:02

Instrument ID: A8_N Calib Start Date: 07/11/2018 14:48

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 07/11/2018 15:38

Lab File ID: 2018.07.16LLA_005.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.9856	0.9888		1.00	1.00	0.3	40.0
Perfluoropentanoic acid (PFPeA)	AveID	1.213	1.191		0.981	1.00	-1.9	40.0
Perfluorobutanesulfonic acid (PFBS)	AveID	76.50	80.45		0.930	0.884	5.2	50.0
4:2 FTS	AveID	13.00	13.09		0.940	0.934	0.7	50.0
Perfluorohexanoic acid (PFHxA)	AveID	1.029	1.052		1.02	1.00	2.2	40.0
Perfluoropentanesulfonic acid (PFPeS)	AveID	69.78	72.51		0.975	0.938	3.9	50.0
HFPO-DA (GenX)	AveID	2.654	2.613		0.984	1.00	-1.6	40.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.157	1.049		0.907	1.00	-9.3	40.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.148	1.066		0.845	0.910	-7.1	40.0
ADONA	AveID	3.219	3.654		1.07	0.942	13.5	50.0
6:2 FTS	AveID	1.564	1.475		0.894	0.948	-5.7	40.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.318	1.302		0.941	0.952	-1.2	50.0
Perfluorooctanoic acid (PFOA)	AveID	1.232	1.146		0.932	1.00	-6.9	40.0
Perfluorononanoic acid (PFNA)	AveID	1.109	1.088		0.981	1.00	-1.9	40.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.133	1.095		0.896	0.928	-3.4	40.0
9-Chlorohexadecafluoro-3-oxa nonane-1-sulfonate	AveID	1.836	1.921		0.975	0.932	4.7	50.0
8:2 FTS	AveID	1.290	1.350		1.00	0.958	4.7	40.0
Perfluorononanesulfonic acid (PFNS)	AveID	0.7752	0.7838		0.971	0.960	1.1	50.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9856	0.9728		0.987	1.00	-1.3	40.0
Perfluorodecanoic acid (PFDA)	AveID	1.049	1.081		1.03	1.00	3.1	40.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	0.9858	1.055		1.07	1.00	7.0	40.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6714	0.6655		0.956	0.964	-0.9	50.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.8840	0.7924		0.896	1.00	-10.4	40.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.8195	0.7343		0.896	1.00	-10.4	40.0
11-Chloroeicosafluoro-3-oxau ndecane-1-sulfonate	AveID	2.654	2.728		0.968	0.942	2.8	50.0
Perfluorododecanoic acid (PFDoA)	AveID	1.092	1.069		0.979	1.00	-2.1	40.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.068	1.082		1.01	1.00	1.3	50.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2602	0.2346		0.902	1.00	-9.8	50.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		0.9780		1.01	1.00	0.8	50.0

FORM VII 537 (modified)

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Lab Sample ID: CCV 320-234295/3 Calibration Date: 07/16/2018 13:02

Instrument ID: A8_N Calib Start Date: 07/11/2018 14:48

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 07/11/2018 15:38

Lab File ID: 2018.07.16LLA_005.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.143	1.101		0.963	1.00	-3.7	50.0
13C4 PFBA	Ave	1.356	1.275		2.35	2.50	-6.0	50.0
13C5 PFPeA	Ave	0.9425	0.8939		2.37	2.50	-5.2	50.0
13C3-PFBS	Ave	0.0237	0.0227		2.23	2.33	-4.2	50.0
M2-4:2FTS	Ave	0.1273	0.1255		2.30	2.34	-1.4	50.0
13C2 PFHxA	Ave	1.017	1.011		2.48	2.50	-0.7	50.0
13C3 HFPO-DA	Ave	0.0724	0.0647		2.23	2.50	-10.6	50.0
13C4-PFHpA	Ave	0.9371	1.005		2.68	2.50	7.3	50.0
18O2 PFHxS	Ave	1.328	1.307		2.33	2.37	-1.6	50.0
M2-6:2FTS	Ave	0.2009	0.1982		2.34	2.38	-1.3	40.0
13C4 PFOA	Ave	0.9560	0.9502		2.48	2.50	-0.6	50.0
13C4 PFOS	Ave	0.9742	0.9658		2.37	2.39	-0.9	50.0
13C5 PFNA	Ave	0.8546	0.8175		2.39	2.50	-4.3	50.0
13C8 FOSA	Ave	1.405	1.399		2.49	2.50	-0.4	50.0
M2-8:2FTS	Ave	0.2939	0.2345		1.91	2.40	-20.2	40.0
13C2 PFDA	Ave	0.7503	0.6992		2.33	2.50	-6.8	50.0
d3-NMeFOSAA	Ave	0.3075	0.3201		2.60	2.50	4.1	50.0
13C2 PFUnA	Ave	0.6266	0.6305		2.52	2.50	0.6	50.0
d5-NEtFOSAA	Ave	0.3150	0.3635		2.88	2.50	15.4	50.0
13C2 PFDoA	Ave	0.6496	0.6187		2.38	2.50	-4.8	50.0
13C2-PFTeDA	Ave	0.6740	0.6425		2.38	2.50	-4.7	50.0
13C2-PFHxDA	Ave	1.074	1.001		2.33	2.50	-6.8	50.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180716-61126.b\2018.07.16LLA_005.d
Lims ID: CCV L4
Client ID:
Sample Type: CCVIS
Inject. Date: 16-Jul-2018 13:02:21 ALS Bottle#: 13 Worklist Smp#: 3
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV L4
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-A8_N*sub32

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180716-61126.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 16-Jul-2018 16:17:44 Calib Date: 11-Jul-2018 15:38:42
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK023

First Level Reviewer: roycea Date: 16-Jul-2018 14:02:52

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.435	1.442	-0.007	0.535	5043453	2.35		94.0	33615	
2 Perfluorobutyric acid										
212.90 > 169.00	1.435	1.435	0.0	1.000	1994797	1.00		100	761	
D 3 13C5-PFPeA										
267.90 > 223.00	1.737	1.721	0.016	0.648	3535333	2.37		94.8	48429	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.737	1.737	0.0	1.000	1683788	0.9815		98.1	890	
D 47 13C3-PFBS										
301.90 > 83.00	1.773	1.757	0.016	0.661	83476	2.23		95.8	551	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.773	1.773	0.0	1.000	2553538	0.9298		105	17523	
298.90 > 99.00	1.773	1.773	0.0	1.000	1036306		2.46(1.25-3.74)		10842	
D 60 M2-4:2FTS										
329.00 > 81.00	1.991	1.971	0.020	0.742	463486	2.30		98.6	6338	
61 1H,1H,2H,2H-perfluorohexanesulfoni										
327.00 > 307.00	1.991	1.991	0.0	1.123	438807	0.9402		101	26042	
D 7 13C2 PFHxA										
315.00 > 270.00	2.025	2.005	0.020	0.755	3996590	2.48		99.3	58214	
6 Perfluorohexanoic acid										
313.00 > 269.00	2.025	2.025	0.0	1.000	1681060	1.02		102	3574	
313.00 > 119.00	2.025	2.025	0.0	1.000	157338		10.68(5.03-15.10)		3043	
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.047	2.047	0.0	1.155	2442029	0.9747		104	42255	
349.00 > 99.00	2.047	2.047	0.0	1.155	884732		2.76(1.36-4.07)		11798	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.115	2.095	0.020	0.789	255857	2.23		89.4	6516	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
67 Perfluoro(2-propoxypropanoic) acid										
329.10 > 285.00	2.115	2.115	0.0	1.000	267418	0.9845		98.4	2484	
D 9 13C4-PFHpA										
367.00 > 322.00	2.345	2.321	0.024	0.874	3975138	2.68		107	55279	
D 11 18O2 PFHxS										
403.00 > 84.00	2.358	2.334	0.024	0.879	4888939	2.33		98.4	32891	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.345	2.345	0.0	1.000	1668345	0.9072		90.7	3282	
363.00 > 169.00	2.345	2.345	0.0	1.000	648557		2.57(1.13-3.40)		5671	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.345	2.345	0.0	0.994	2005245	0.8450		92.9	15274	
399.00 > 99.00	2.358	2.345	0.013	1.000	697294		2.88(1.50-4.49)		3799	
65 Adona										
377.00 > 251.00	2.383	2.383	0.0	0.783	5259796	1.07		114	42265	
377.00 > 85.00	2.383	2.383	0.0	0.783	2985667		1.76(0.84-2.53)		20997	
D 12 M2-6:2FTS										
429.00 > 81.00	2.659	2.644	0.015	0.992	744670	2.34		98.7	13486	
D 14 13C4 PFOA										
417.00 > 372.00	2.681	2.668	0.013	1.000	3757971	2.48		99.4	37389	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.659	2.659	0.0	1.000	438572	0.8941		94.3	2758	
* 62 13C2-PFOA										
415.00 > 370.00	2.681	2.681	0.0		3955070	2.50			55056	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.689	2.689	0.0	1.003	1724680	0.9316		93.1	1031	
413.00 > 169.00	2.681	2.689	-0.008	1.000	884477		1.95(0.84-2.52)		5087	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.689	2.689	0.0	0.883	1893899	0.9408		98.8	30250	
449.00 > 99.00	2.689	2.689	0.0	0.883	511569		3.70(1.94-5.82)		9442	
D 18 13C4 PFOS										
503.00 > 80.00	3.045	3.031	0.014	1.136	3651882	2.37		99.1	28846	
D 19 13C5 PFNA										
468.00 > 423.00	3.045	3.031	0.014	1.136	3233217	2.39		95.7	39804	
17 Perfluorooctane sulfonic acid										M
499.00 > 80.00	3.045	3.045	0.0	1.000	1552161	0.8965		96.6	51411	M
499.00 > 99.00	3.045	3.045	0.0	1.000	367808		4.22(2.31-6.93)		5942	
20 Perfluorononanoic acid										
463.00 > 419.00	3.045	3.045	0.0	1.000	1406829	0.9806		98.1	2532	
463.00 > 169.00	3.045	3.045	0.0	1.000	324804		4.33(1.90-5.69)		6451	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.254	3.254	0.0	1.068	2735896	0.9754		105	28981	
D 21 13C8 FOSA										
506.00 > 78.00	3.380	3.379	0.001	1.260	5532078	2.49		99.6	53867	
D 26 M2-8:2FTS										
529.00 > 81.00	3.389	3.379	0.010	1.264	888473	1.91		79.8	14170	
D 23 13C2 PFDA										
515.00 > 470.00	3.398	3.388	0.010	1.267	2765461	2.33		93.2	28121	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
25 1H,1H,2H,2H-perfluorodecanesulfoni										
527.00 > 507.00	3.389	3.389	0.0	1.000	479859	1.00		105	10727	
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.389	3.389	0.0	1.113	1149708	0.9706		101	21511	
549.00 > 99.00	3.389	3.389	0.0	1.113	457710		2.51(1.33-3.97)		7309	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.389	3.389	0.0	1.003	2152559	0.9870		98.7	22963	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.398	3.398	0.0	1.000	1196291	1.03		103	5906	
513.00 > 169.00	3.398	3.398	0.0	1.000	207953		5.75(2.36-7.09)		7703	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.548	3.538	0.010	1.323	1266083	2.60		104	25072	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.557	3.557	0.0	1.003	534100	1.07		107	4347	
D 30 13C2 PFUnA										
565.00 > 520.00	3.719	3.708	0.011	1.387	2493730	2.52		101	46543	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.719	3.708	0.011	1.387	1437692	2.88		115	3298	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.709	3.709	0.0	1.218	980285	0.9555		99.1	25600	
599.00 > 99.00	3.709	3.709	0.0	1.218	357358		2.74(1.39-4.16)		9345	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.719	3.719	0.0	1.000	455715	0.8964		89.6	10700	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.719	3.719	0.0	1.000	732501	0.8961		89.6	3243	
563.00 > 169.00	3.719	3.719	0.0	1.000	207673		3.53(2.12-6.36)		5291	
66 11-Chloroeicosafluoro-3-oxaundecan										
631.00 > 451.00	3.877	3.877	0.0	1.273	3925886	0.9683		103	51321	
D 36 13C2 PFDoA										
615.00 > 570.00	4.010	4.008	0.002	1.495	2447040	2.38		95.2	25662	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.020	4.020	0.0	1.003	1046806	0.9795		97.9	731	
613.00 > 169.00	4.020	4.020	0.0	1.003	252656		4.14(2.13-6.40)		4079	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.282	4.282	0.0	1.068	1059119	1.01		101	491	
663.00 > 169.00	4.273	4.282	-0.009	1.066	316293		3.35(1.25-3.76)		5250	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.512	4.501	0.011	1.683	2540985	2.38		95.3	16013	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.512	4.512	0.0	1.000	238484	0.9018		90.2	3604	
713.00 > 219.00	4.512	4.512	0.0	1.000	186783		1.28(0.71-2.13)		3925	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.923	4.905	0.018	1.836	3957587	2.33		93.2	12790	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.923	4.923	0.0	1.000	1548181	1.01		101	354	
813.00 > 169.00	4.923	4.923	0.0	1.000	248568		6.23(2.86-8.58)		3352	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.270	5.270	0.0	1.071	1742992	0.9634		96.3	346	
913.00 > 169.00	5.270	5.270	0.0	1.071	210686		8.27(3.83-11.48)		3344	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

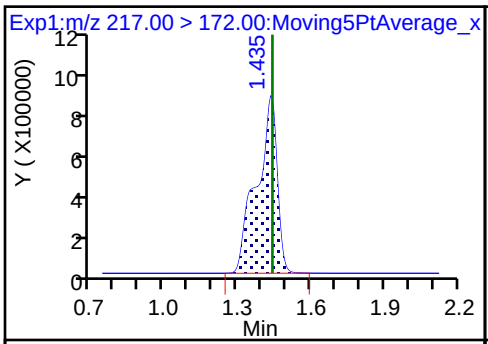
LCPFC_LL4_00005 Amount Added: 1.00 Units: mL

Report Date: 16-Jul-2018 16:17:46 Chrom Revision: 2.2 07-Jun-2018 07:41:54

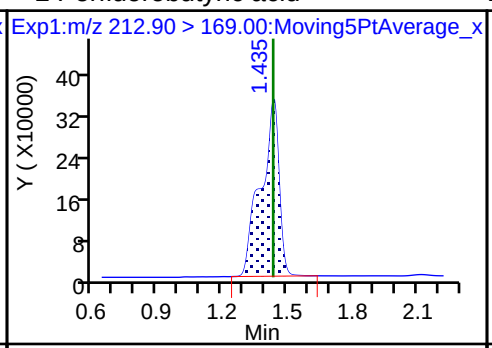
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180716-61126.b\2018.07.16LLA_005.d
Injection Date: 16-Jul-2018 13:02:21 Instrument ID: A8_N
Lims ID: CCV L4
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 13 Worklist Smp#: 3
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC ICAL

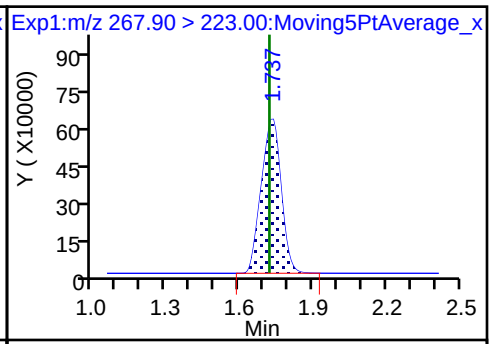
D 1 13C4 PFBA



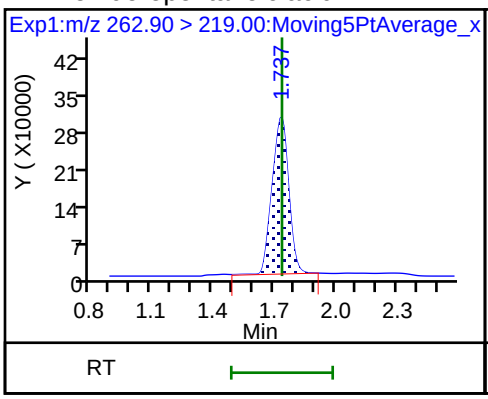
2 Perfluorobutyric acid



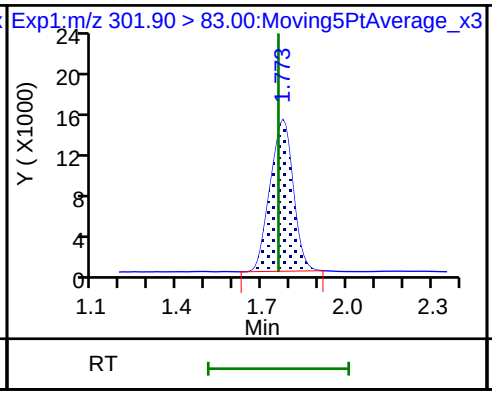
D 3 13C5-PFPeA



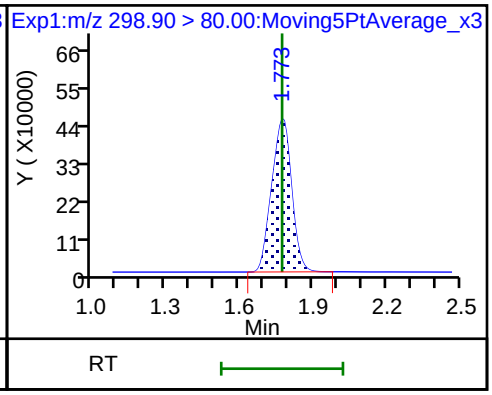
4 Perfluoropentanoic acid



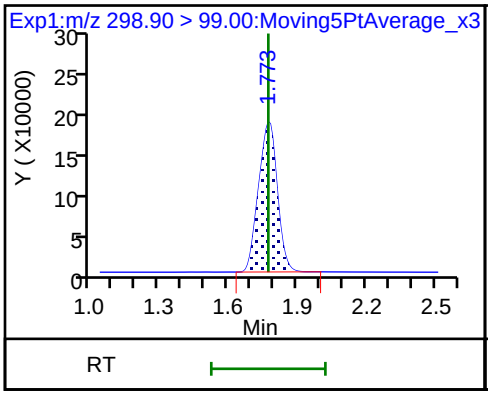
D 47 13C3-PFBS



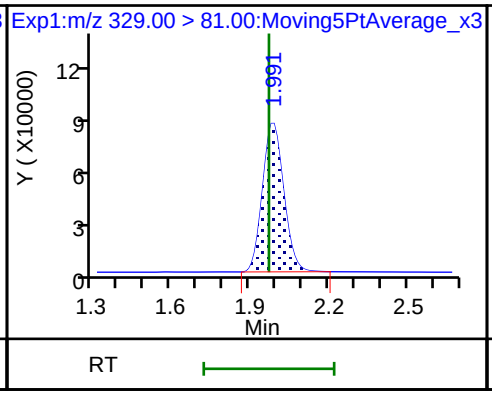
5 Perfluorobutanesulfonic acid



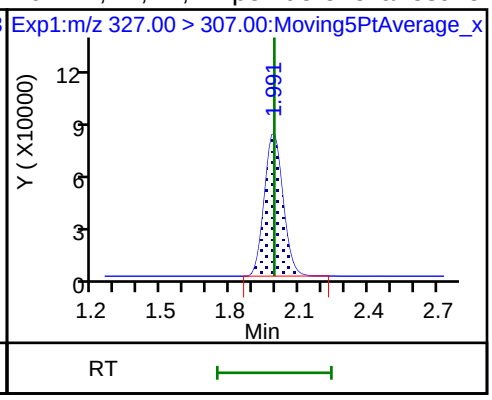
5 Perfluorobutanesulfonic acid



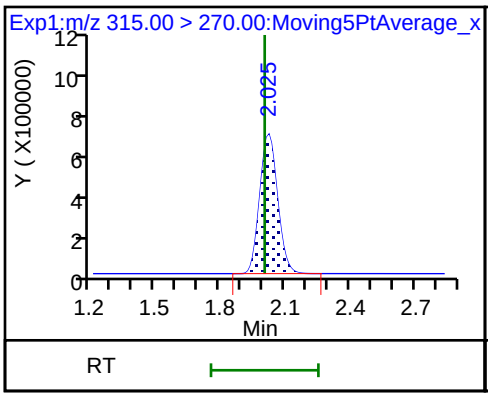
D 60 M2-4:2FTS



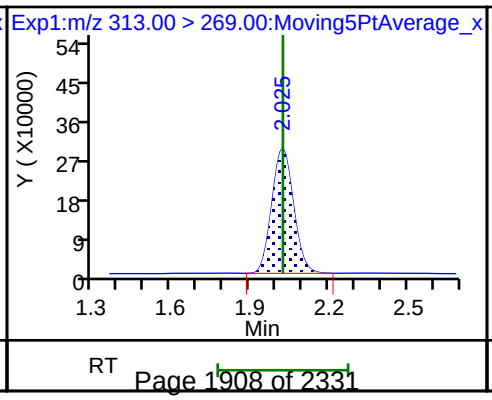
61 1H,1H,2H,2H-perfluorohexanesulfoni



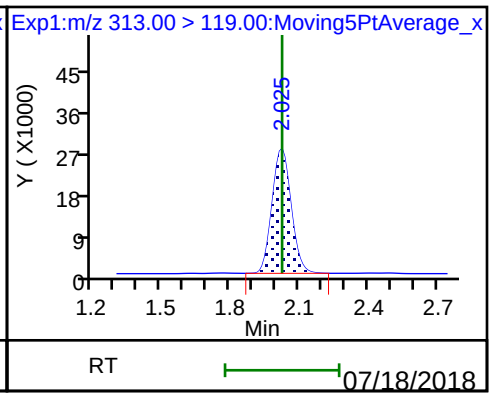
D 7 13C2 PFHxA



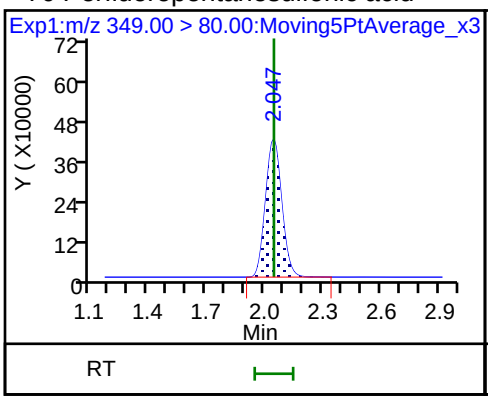
6 Perfluorohexanoic acid



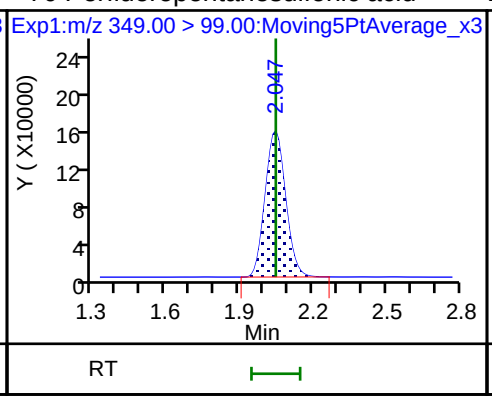
6 Perfluorohexanoic acid



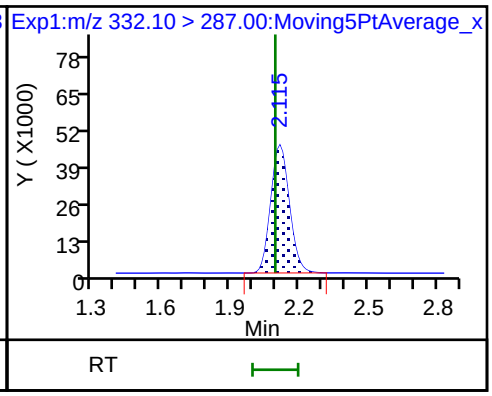
70 Perfluoropentanesulfonic acid



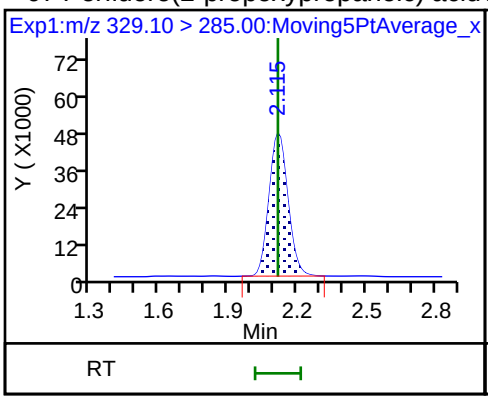
70 Perfluoropentanesulfonic acid



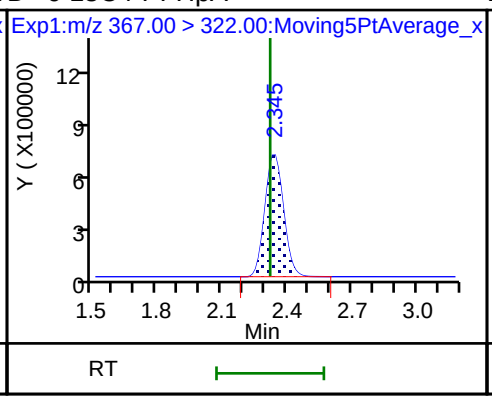
D 64 13C3 HFPO-DA



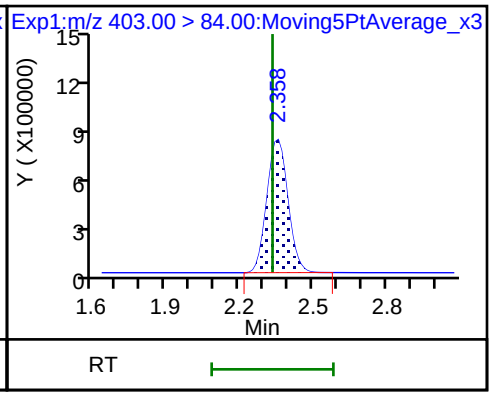
67 Perfluoro(2-propoxypropanoic) acid



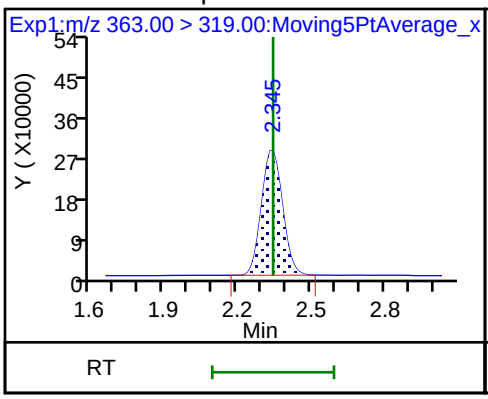
D 9 13C4-PFHpA



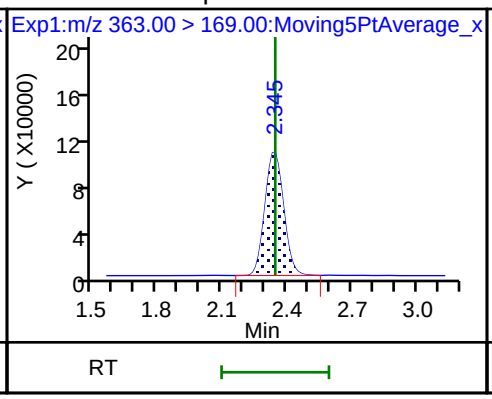
D 11 18O2 PFHxS



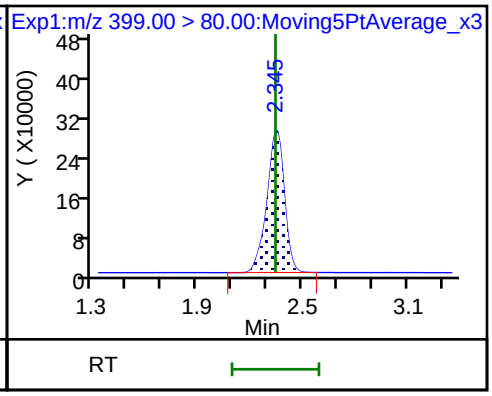
10 Perfluoroheptanoic acid



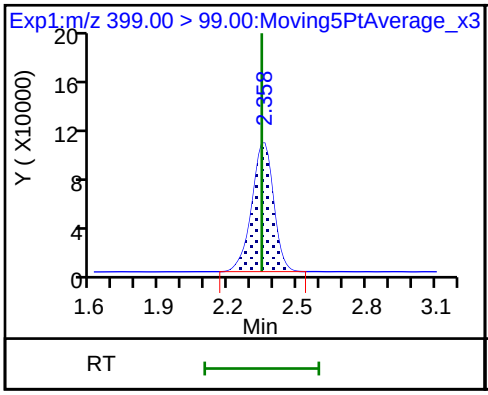
10 Perfluoroheptanoic acid



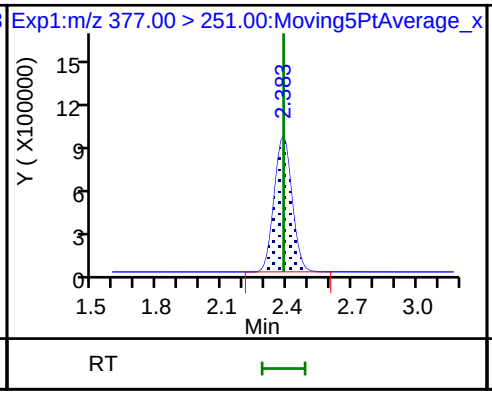
8 Perfluorohexanesulfonic acid



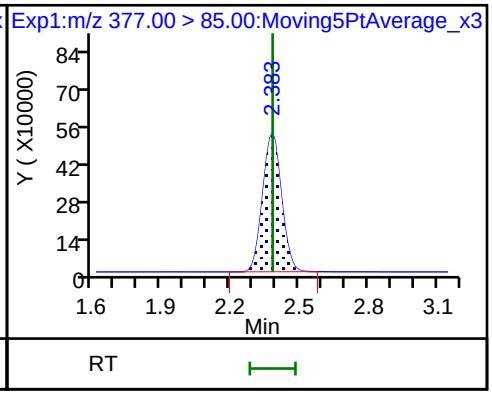
8 Perfluorohexanesulfonic acid



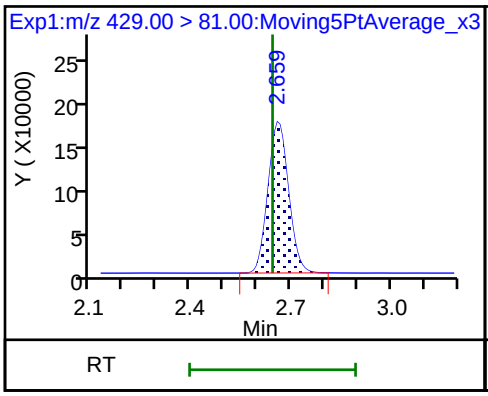
65 Adona



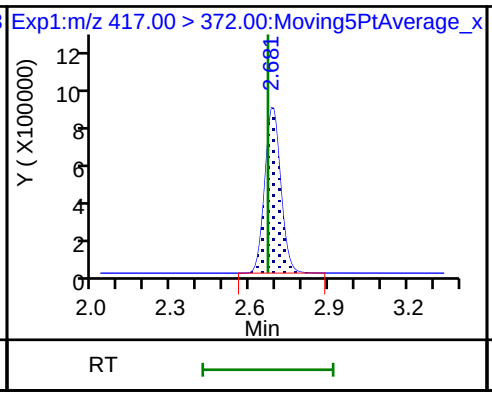
65 Adona



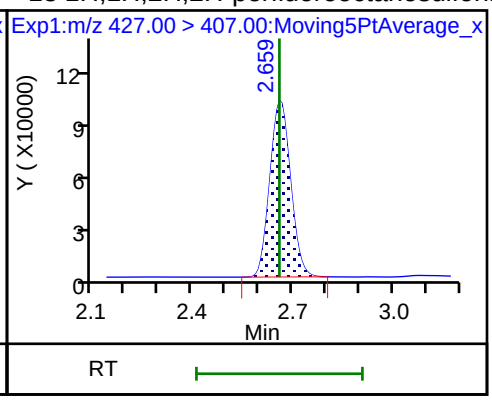
D 12 M2-6:2FTS



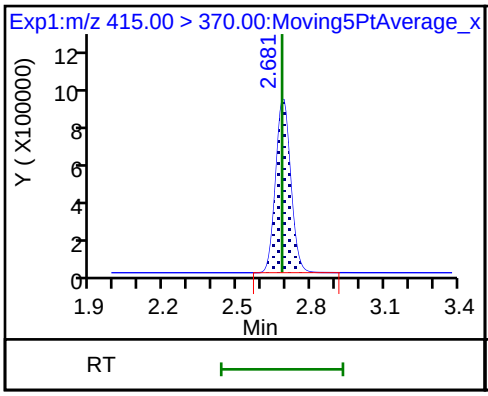
D 14 13C4 PFOA



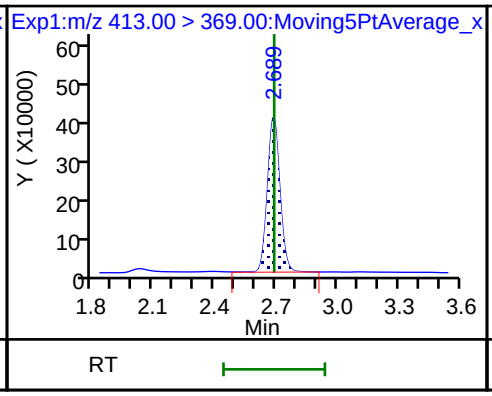
13 1H,1H,2H,2H-perfluorooctanesulfoni



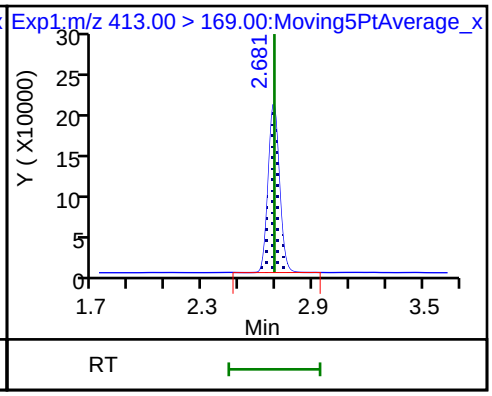
* 62 13C2-PFOA



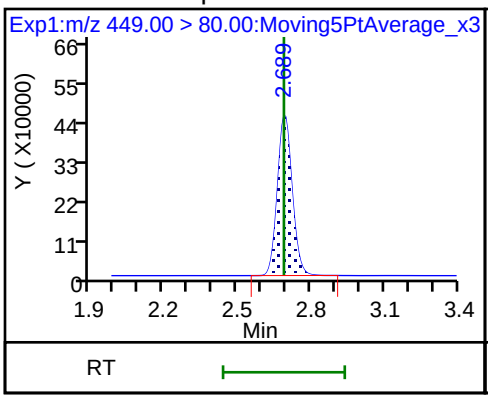
15 Perfluorooctanoic acid



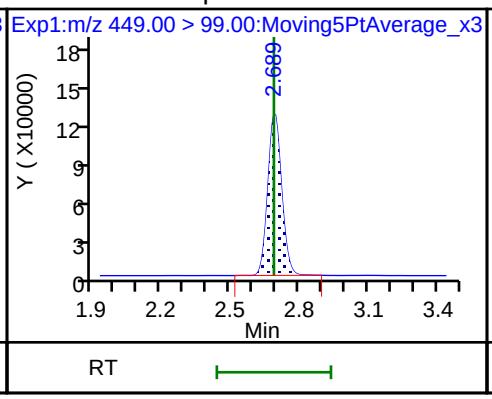
15 Perfluorooctanoic acid



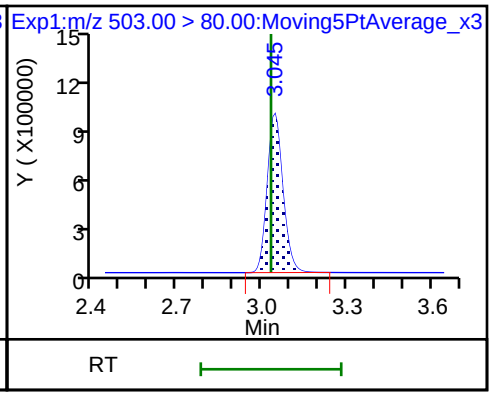
16 Perfluoroheptanesulfonic acid



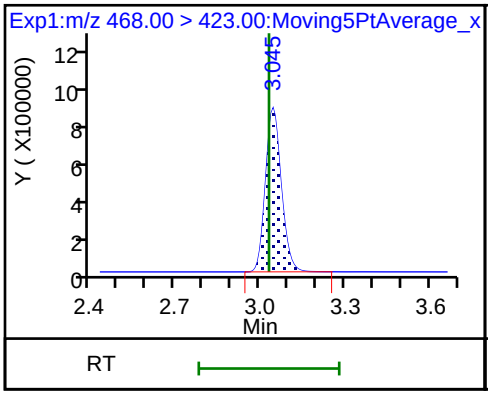
16 Perfluoroheptanesulfonic acid



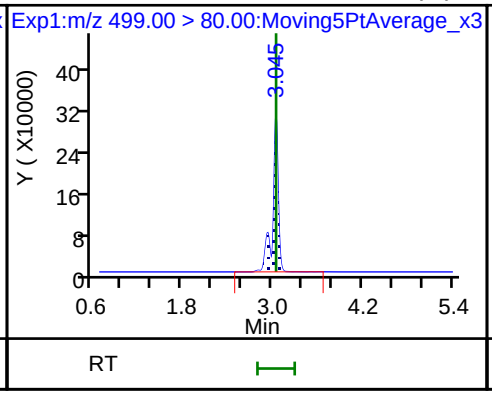
D 18 13C4 PFOS



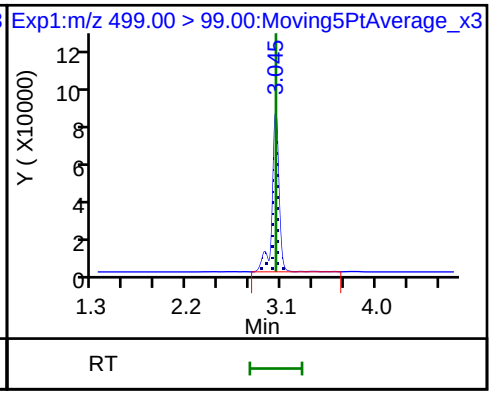
D 19 13C5 PFNA



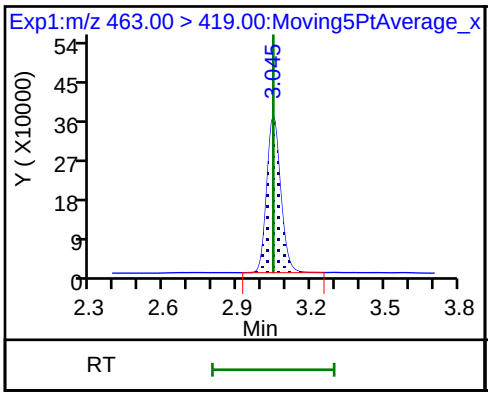
17 Perfluorooctane sulfonic acid (M)



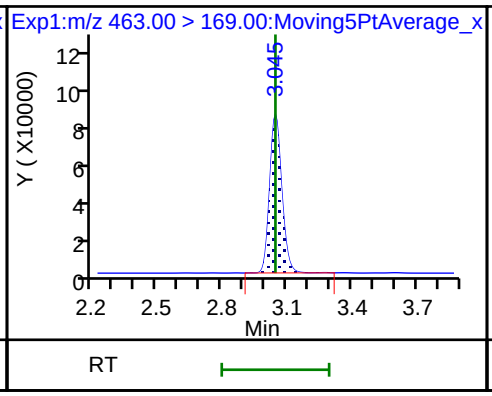
17 Perfluorooctane sulfonic acid



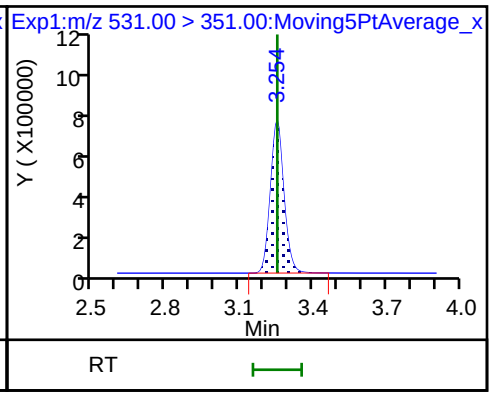
20 Perfluorononanoic acid



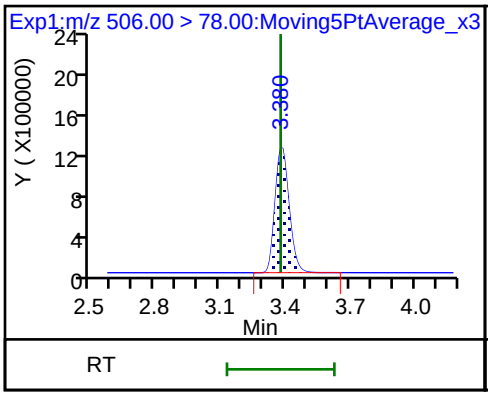
20 Perfluorononanoic acid



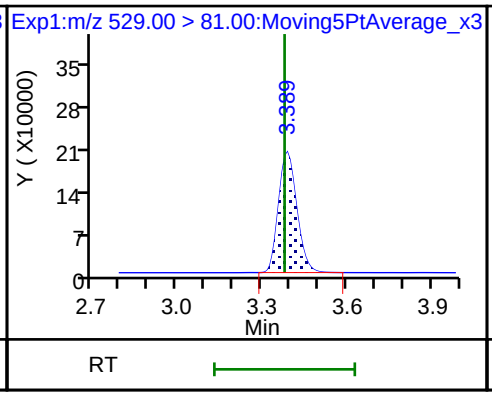
69 9-Chlorohexadecafluoro-3-oxanonane



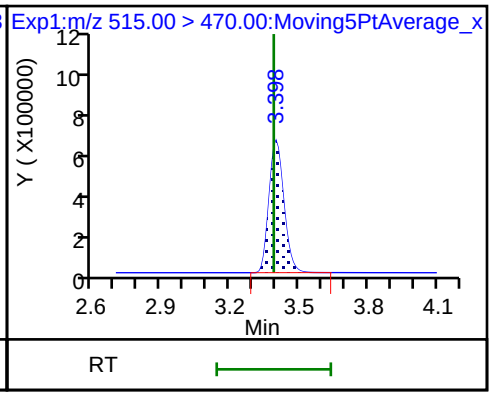
D 21 13C8 FOSA



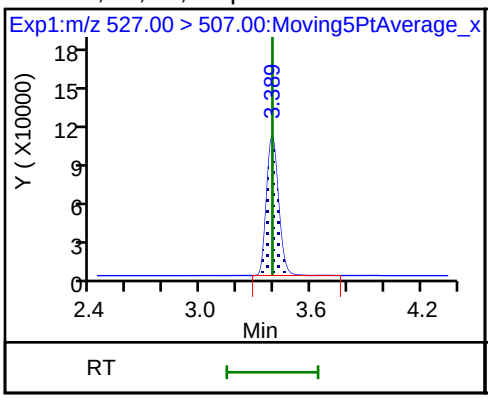
D 26 M2-8:2FTS



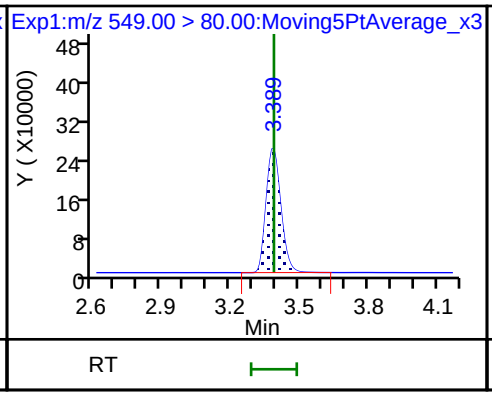
D 23 13C2 PFDA



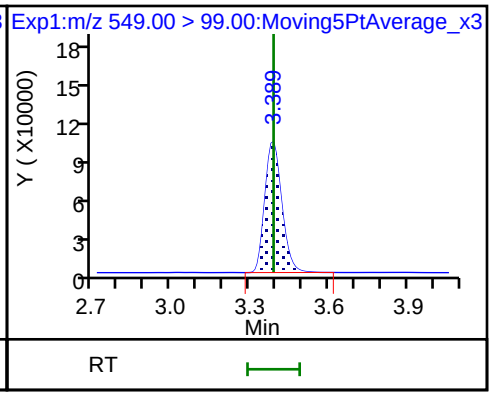
25 1H,1H,2H,2H-perfluorodecanesulfoni



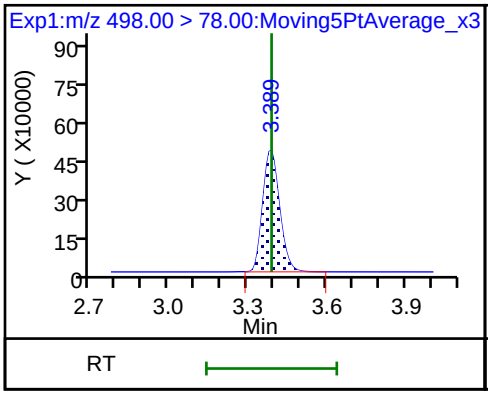
68 Perfluorononanesulfonic acid



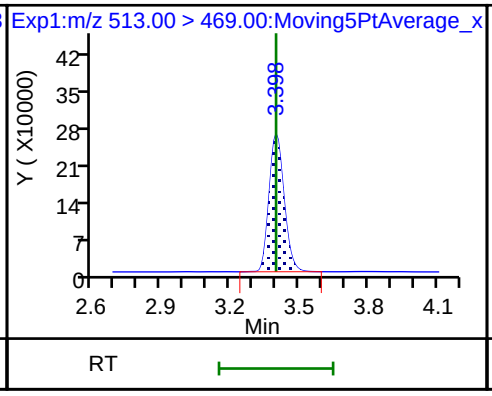
68 Perfluorononanesulfonic acid



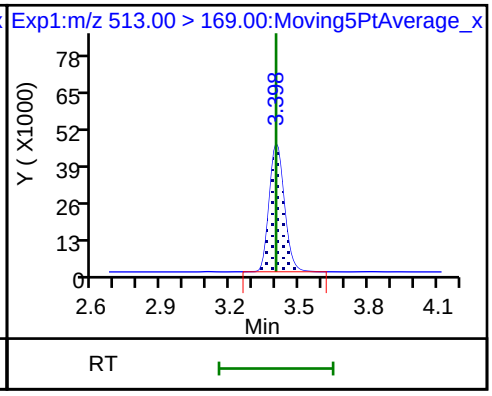
22 Perfluorooctane Sulfonamide



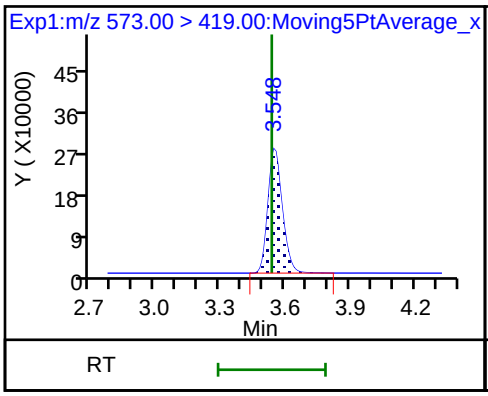
24 Perfluorodecanoic acid



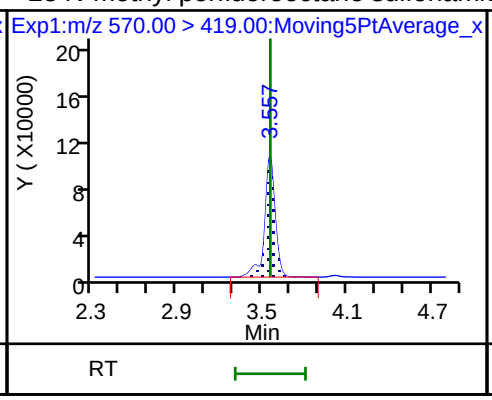
24 Perfluorodecanoic acid



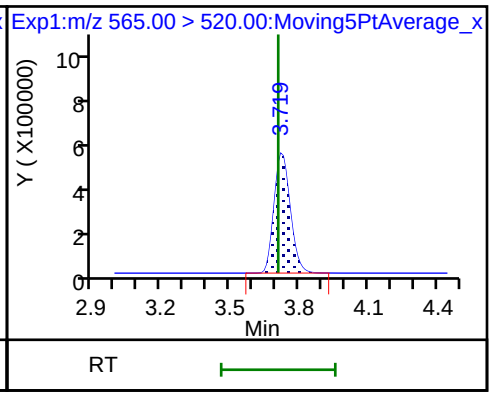
D 27 d3-NMeFOSAA



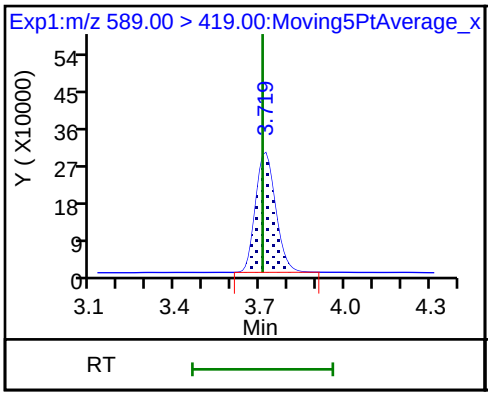
28 N-methyl perfluorooctane sulfonami



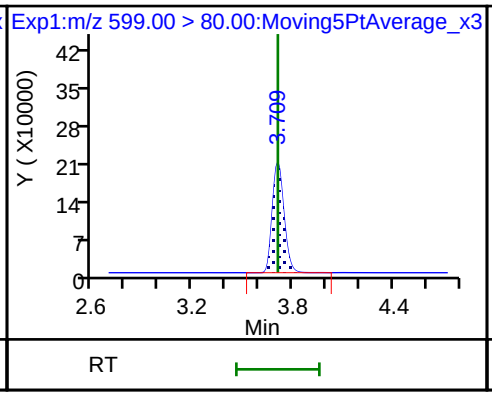
D 30 13C2 PFUnA



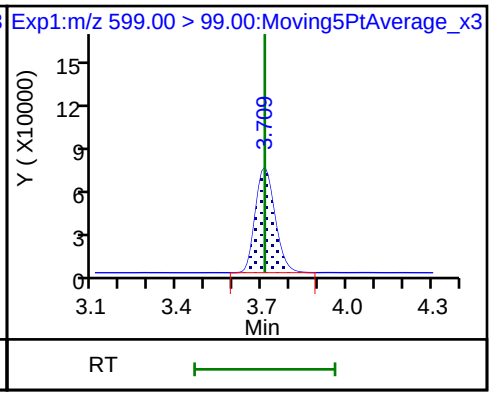
D 32 d5-NEtFOSAA



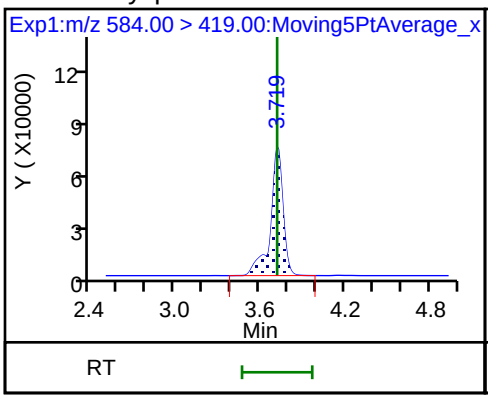
29 Perfluorodecane Sulfonic acid



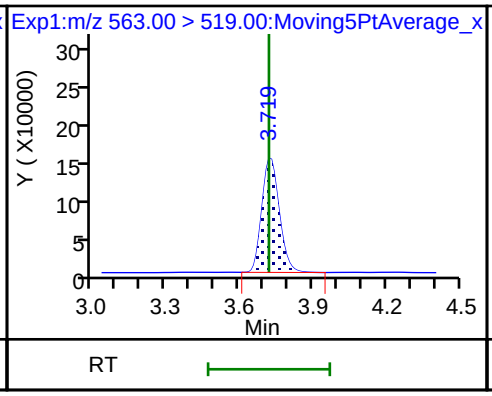
29 Perfluorodecane Sulfonic acid



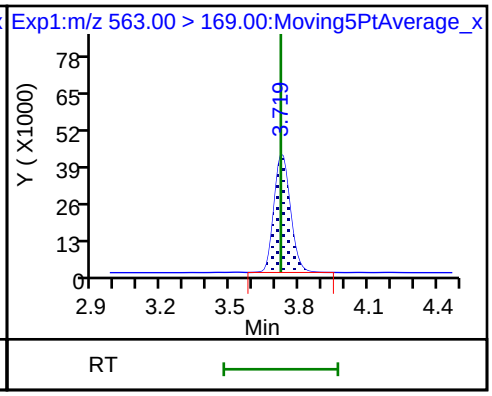
33 N-ethyl perfluorooctane sulfonamid



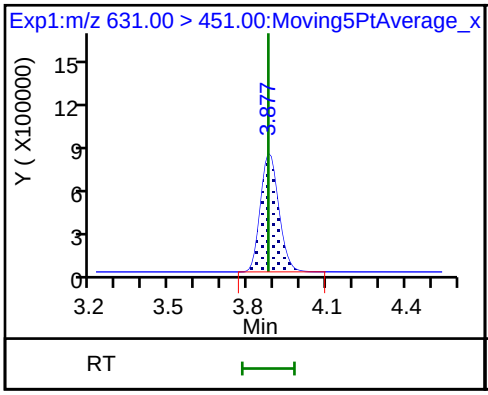
31 Perfluoroundecanoic acid



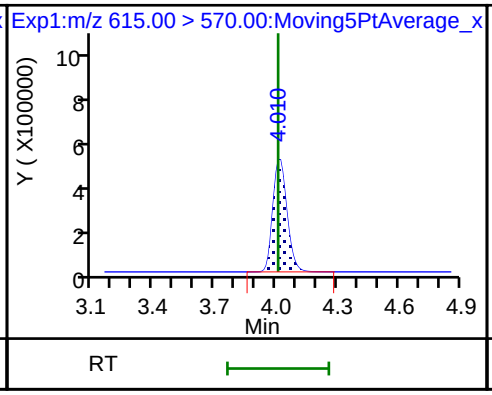
31 Perfluoroundecanoic acid



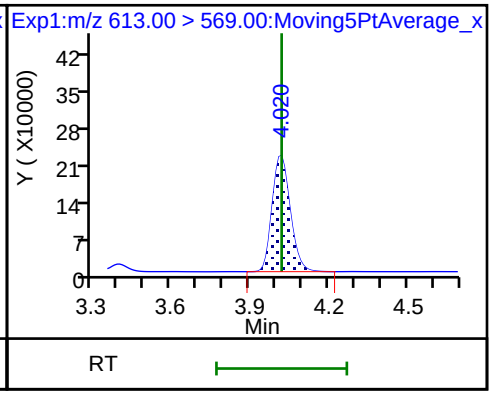
66 11-Chloroeicosafluoro-3-oxaundecan



D 36 13C2 PFDoA



37 Perfluorododecanoic acid



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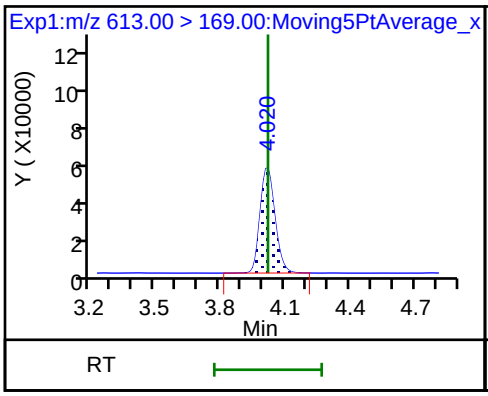
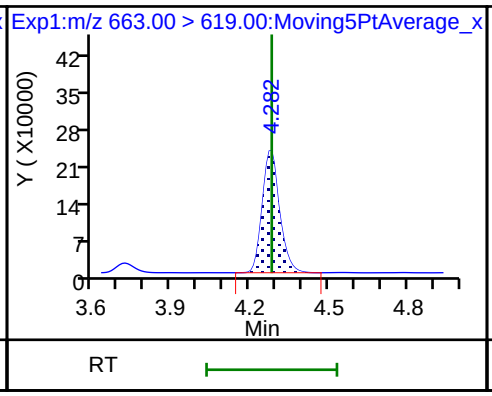
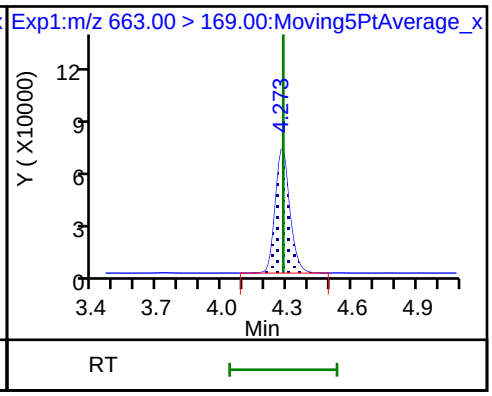


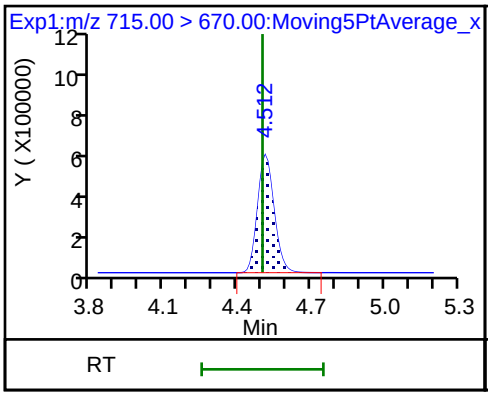
41 Perfluorotridecanoic acid



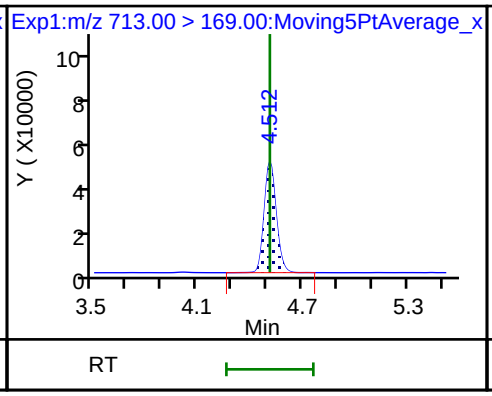
41 Perfluorotridecanoic acid



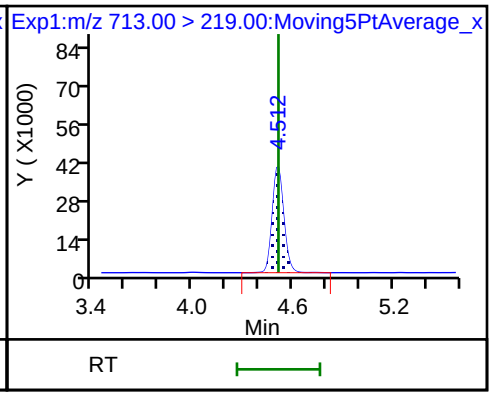
D 43 13C2-PFTeDA



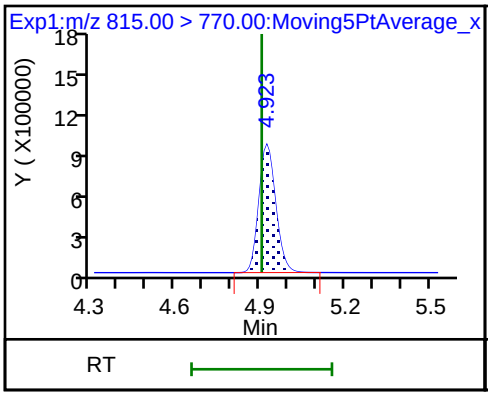
42 Perfluorotetradecanoic acid



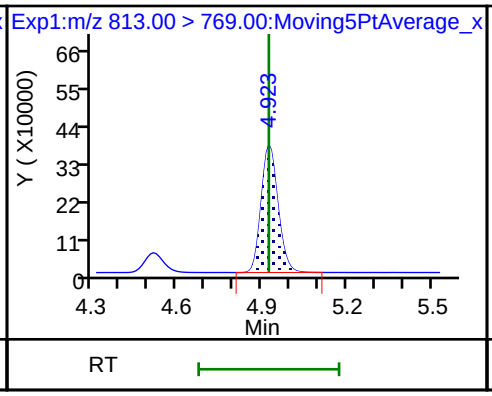
42 Perfluorotetradecanoic acid



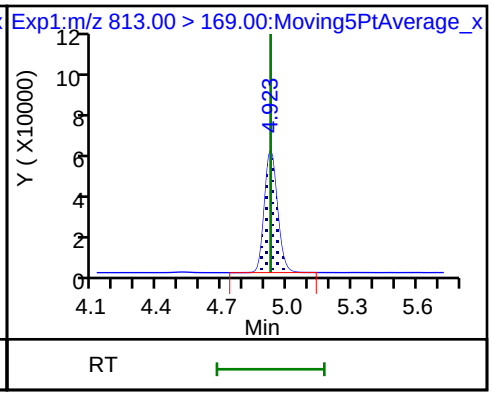
D 44 13C2-PFHxDA



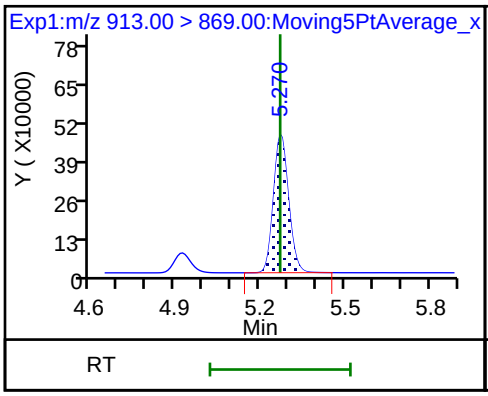
45 Perfluorohexadecanoic acid



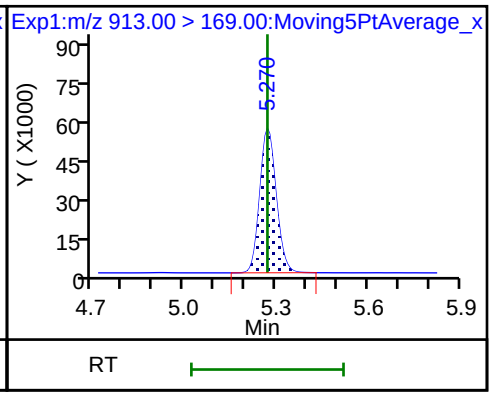
45 Perfluorohexadecanoic acid



46 Perfluorooctadecanoic acid



46 Perfluorooctadecanoic acid



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

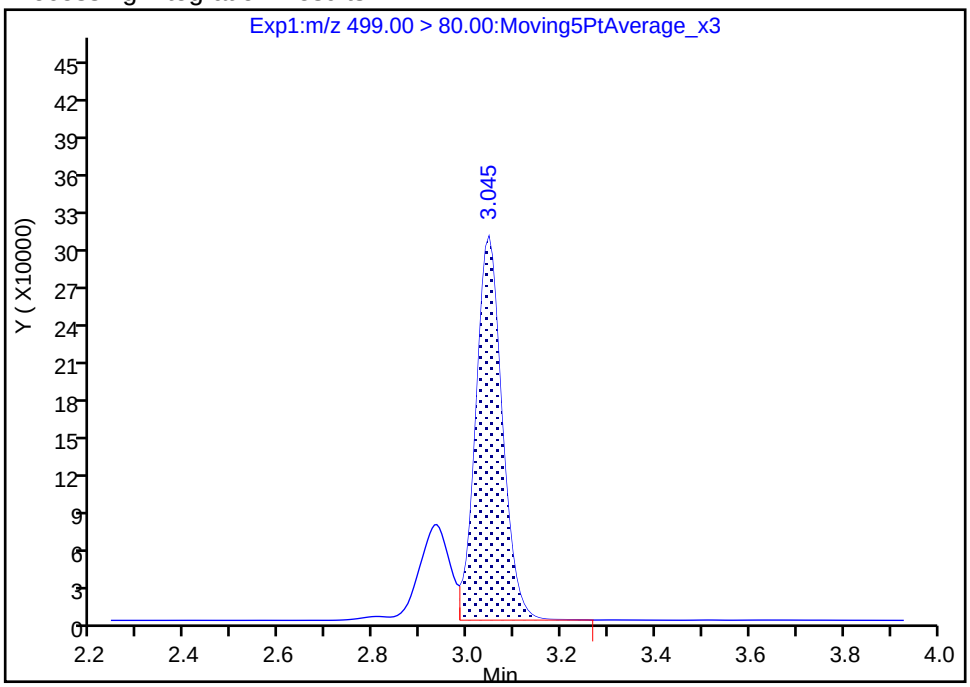
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180716-61126.b\2018.07.16LLA_005.d				
Injection Date:	16-Jul-2018 13:02:21	Instrument ID:	A8_N		
Lims ID:	CCV L4				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	13	Worklist Smp#:	3
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

17 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

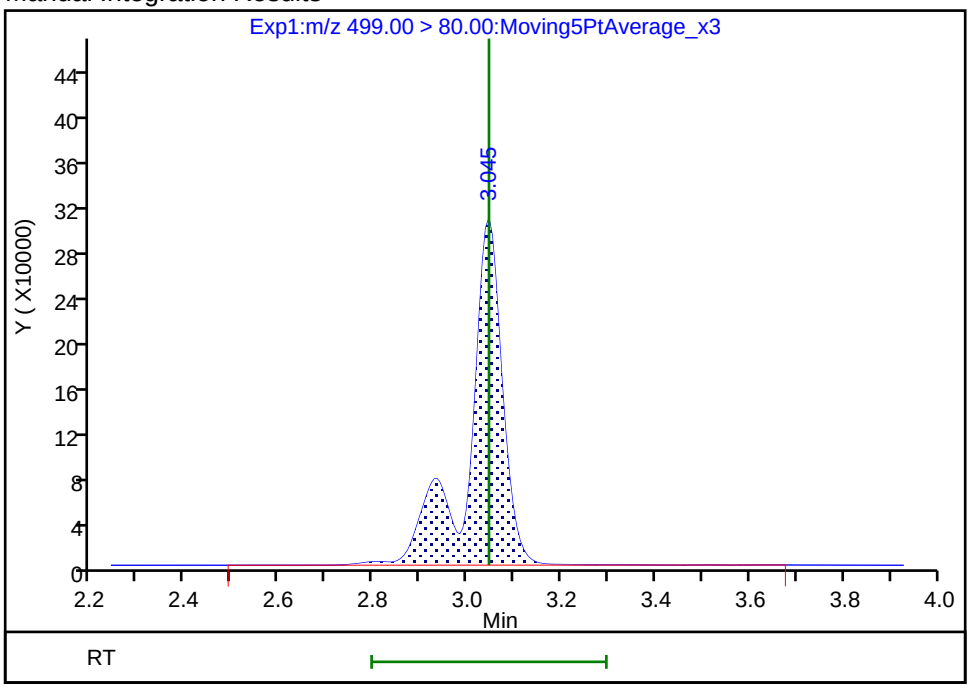
Processing Integration Results

RT: 3.05
Area: 1193326
Amount: 0.689206
Amount Units: ng/ml



Manual Integration Results

RT: 3.05
Area: 1552161
Amount: 0.896451
Amount Units: ng/ml



Reviewer: westendorfc, 16-Jul-2018 16:15:05

Audit Action: Manually Integrated Audit Reason: Isomers

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Lab Sample ID: CCV 320-234295/6 Calibration Date: 07/16/2018 13:25

Instrument ID: A8_N Calib Start Date: 07/11/2018 14:48

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 07/11/2018 15:38

Lab File ID: 2018.07.16LLA_008.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.9856	0.9925		2.52	2.50	0.7	40.0
Perfluoropentanoic acid (PFPeA)	AveID	1.213	1.209		2.49	2.50	-0.4	40.0
Perfluorobutanesulfonic acid (PFBS)	AveID	76.50	78.42		2.27	2.21	2.5	50.0
4:2 FTS	AveID	13.00	12.82		2.30	2.34	-1.4	50.0
Perfluorohexanoic acid (PFHxA)	AveID	1.029	1.036		2.52	2.50	0.7	40.0
Perfluoropentanesulfonic acid (PFPeS)	AveID	69.78	75.87		2.55	2.35	8.7	50.0
HFPO-DA (GenX)	AveID	2.654	3.181		3.00	2.50	19.9	40.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.157	1.124		2.43	2.50	-2.8	40.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.148	1.182		2.34	2.28	3.0	40.0
ADONA	AveID	3.219	3.621		2.65	2.36	12.5	50.0
6:2 FTS	AveID	1.564	1.578		2.39	2.37	0.8	40.0
Perfluorooctanoic acid (PFOA)	AveID	1.232	1.175		2.39	2.50	-4.6	40.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.318	1.366		2.47	2.38	3.7	50.0
Perfluorononanoic acid (PFNA)	AveID	1.109	1.101		2.48	2.50	-0.7	40.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.133	1.161		2.38	2.32	2.5	40.0
9-Chlorohexadecafluoro-3-oxa nonane-1-sulfonate	AveID	1.836	1.981		2.51	2.33	7.9	50.0
8:2 FTS	AveID	1.290	1.205		2.24	2.40	-6.6	40.0
Perfluorononanesulfonic acid (PFNS)	AveID	0.7752	0.8241		2.55	2.40	6.3	50.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9856	0.9799		2.49	2.50	-0.6	40.0
Perfluorodecanoic acid (PFDA)	AveID	1.049	1.066		2.54	2.50	1.6	40.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	0.9858	0.9857		2.50	2.50	-0.0	40.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6714	0.6991		2.51	2.41	4.1	50.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.8840	0.9183		2.60	2.50	3.9	40.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.8195	0.7783		2.37	2.50	-5.0	40.0
11-Chloroeicosafluoro-3-oxau ndecane-1-sulfonate	AveID	2.654	2.938		2.61	2.36	10.7	50.0
Perfluorododecanoic acid (PFDoA)	AveID	1.092	1.146		2.62	2.50	4.9	40.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.068	1.199		2.81	2.50	12.3	50.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2602	0.2544		2.44	2.50	-2.2	50.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		0.9774		2.55	2.50	2.0	50.0

FORM VII 537 (modified)

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Lab Sample ID: CCV 320-234295/6 Calibration Date: 07/16/2018 13:25

Instrument ID: A8_N Calib Start Date: 07/11/2018 14:48

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 07/11/2018 15:38

Lab File ID: 2018.07.16LLA_008.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.143	1.092		2.39	2.50	-4.4	50.0
13C4 PFBA	Ave	1.356	1.280		2.36	2.50	-5.6	50.0
13C5 PFPeA	Ave	0.9425	0.9002		2.39	2.50	-4.5	50.0
13C3-PFBS	Ave	0.0237	0.0232		2.28	2.33	-1.9	50.0
M2-4:2FTS	Ave	0.1273	0.1195		2.19	2.34	-6.1	50.0
13C2 PFHxA	Ave	1.017	1.026		2.52	2.50	0.9	50.0
13C3 HFPO-DA	Ave	0.0724	0.0579		2.00	2.50	-20.0	50.0
13C4-PFHpA	Ave	0.9371	0.9701		2.59	2.50	3.5	50.0
18O2 PFHxS	Ave	1.328	1.259		2.24	2.37	-5.2	50.0
M2-6:2FTS	Ave	0.2009	0.1947		2.30	2.38	-3.1	40.0
13C4 PFOA	Ave	0.9560	0.9434		2.47	2.50	-1.3	50.0
13C4 PFOS	Ave	0.9742	0.9532		2.34	2.39	-2.1	50.0
13C5 PFNA	Ave	0.8546	0.8015		2.34	2.50	-6.2	50.0
13C8 FOSA	Ave	1.405	1.386		2.47	2.50	-1.3	50.0
M2-8:2FTS	Ave	0.2939	0.2591		2.11	2.40	-11.8	40.0
13C2 PFDA	Ave	0.7503	0.6943		2.31	2.50	-7.5	50.0
d3-NMeFOSAA	Ave	0.3075	0.3389		2.75	2.50	10.2	50.0
d5-NEtFOSAA	Ave	0.3150	0.3415		2.71	2.50	8.4	50.0
13C2 PFUnA	Ave	0.6266	0.5978		2.39	2.50	-4.6	50.0
13C2 PFDoA	Ave	0.6496	0.6227		2.40	2.50	-4.1	50.0
13C2-PFTeDA	Ave	0.6740	0.6674		2.48	2.50	-1.0	50.0
13C2-PFHxDA	Ave	1.074	1.090		2.54	2.50	1.5	50.0

FORM VII 537 (modified)

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180716-61126.b\2018.07.16LLA_008.d
Lims ID: CCV L5
Client ID:
Sample Type: CCV
Inject. Date: 16-Jul-2018 13:25:51 ALS Bottle#: 14 Worklist Smp#: 6
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV L5
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-A8_N*sub32

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180716-61126.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 16-Jul-2018 16:17:54 Calib Date: 11-Jul-2018 15:38:42
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK023

First Level Reviewer: roycea Date: 16-Jul-2018 14:03:28

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.90 > 169.00	1.445	1.445	0.0	1.000	5094420	2.52		101	1614	
D 1 13C4 PFBA										M
217.00 > 172.00	1.445	1.442	0.003	0.536	5133048	2.36		94.4	25469	M
D 3 13C5-PFPeA										
267.90 > 223.00	1.744	1.721	0.023	0.647	3608467	2.39		95.5	53977	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.744	1.744	0.0	1.000	4361689	2.49		99.6	1988	
D 47 13C3-PFBS										
301.90 > 83.00	1.780	1.757	0.023	0.660	86601	2.28		98.1	515	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.780	1.780	0.0	1.000	6455725	2.27		103	41369	
298.90 > 99.00	1.780	1.780	0.0	1.000	2660472		2.43(1.25-3.74)		23677	
D 60 M2-4:2FTS										
329.00 > 81.00	1.988	1.971	0.017	0.737	447233	2.19		93.9	5220	
61 1H,1H,2H,2H-perfluorohexanesulfoni										
327.00 > 307.00	1.988	1.988	0.0	1.117	1115040	2.30		98.6	38283	
D 7 13C2 PFHxA										
315.00 > 270.00	2.034	2.005	0.029	0.754	4113480	2.52		101	71253	
6 Perfluorohexanoic acid										
313.00 > 269.00	2.034	2.034	0.0	1.000	4263005	2.52		101	11776	
313.00 > 119.00	2.034	2.034	0.0	1.000	387031		11.01(5.03-15.10)		6711	
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.056	2.056	0.0	1.155	6626839	2.55		109	95718	
349.00 > 99.00	2.056	2.056	0.0	1.155	2331745		2.84(1.36-4.07)		26914	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.124	2.095	0.029	0.788	232181	2.00		80.0	4550	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
67 Perfluoro(2-propoxypropanoic) acid										
329.10 > 285.00	2.124	2.124	0.0	1.000	738641	3.00		120	6243	
D 9 13C4-PFHpA										
367.00 > 322.00	2.342	2.321	0.021	0.869	3888976	2.59		104	43527	
D 11 18O2 PFHxS										
403.00 > 84.00	2.355	2.334	0.021	0.874	4774477	2.24		94.8	42496	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.342	2.342	0.0	1.000	4370560	2.43		97.2	10144	
363.00 > 169.00	2.342	2.342	0.0	1.000	1700239		2.57(1.13-3.40)		13055	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.355	2.355	0.0	1.000	5430731	2.34		103	21681	
399.00 > 99.00	2.355	2.355	0.0	1.000	1724816		3.15(1.50-4.49)		8607	
65 Adona										
377.00 > 251.00	2.392	2.392	0.0	0.782	13033880	2.65		112	85843	
377.00 > 85.00	2.392	2.392	0.0	0.782	7868051		1.66(0.84-2.53)		37811	
D 12 M2-6:2FTS										
429.00 > 81.00	2.666	2.644	0.022	0.989	741633	2.30		96.9	16217	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.674	2.674	0.0	1.003	1167518	2.39		101	8447	
D 14 13C4 PFOA										
417.00 > 372.00	2.696	2.668	0.028	1.000	3781818	2.47		98.7	45457	
* 62 13C2-PFOA										
415.00 > 370.00	2.696	2.696	0.0		4008716	2.50			40387	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.696	2.696	0.0	1.000	4448031	2.39		95.4	2310	
413.00 > 169.00	2.696	2.696	0.0	1.000	2244533		1.98(0.84-2.52)		9406	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.704	2.704	0.0	0.884	4968112	2.47		104	29444	
449.00 > 99.00	2.704	2.704	0.0	0.884	1319889		3.76(1.94-5.82)		17702	
D 18 13C4 PFOS										
503.00 > 80.00	3.057	3.031	0.026	1.134	3653106	2.34		97.9	22421	
D 19 13C5 PFNA										
468.00 > 423.00	3.057	3.031	0.026	1.134	3212881	2.34		93.8	45526	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.057	3.057	0.0	1.000	4118308	2.38		102	29941	
499.00 > 99.00	3.057	3.057	0.0	1.000	923795		4.46(2.31-6.93)		13896	
20 Perfluorononanoic acid										
463.00 > 419.00	3.057	3.057	0.0	1.000	3538410	2.48		99.3	6987	
463.00 > 169.00	3.057	3.057	0.0	1.000	823789		4.30(1.90-5.69)		13208	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.265	3.265	0.0	1.068	7055791	2.51		108	80335	
D 21 13C8 FOSA										
506.00 > 78.00	3.396	3.379	0.017	1.260	5557639	2.47		98.7	41523	
D 26 M2-8:2FTS										
529.00 > 81.00	3.396	3.379	0.017	1.260	995152	2.11		88.2	18184	
D 23 13C2 PFDA										
515.00 > 470.00	3.405	3.388	0.017	1.263	2783385	2.31		92.5	27965	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
25 1H,1H,2H,2H-perfluorodecanesulfoni										
527.00 > 507.00	3.396	3.396	0.0	1.000	1199358	2.24		93.4	13713	
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.396	3.396	0.0	1.111	3022982	2.55		106	45937	
549.00 > 99.00	3.396	3.396	0.0	1.111	1102861		2.74(1.33-3.97)		11364	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.396	3.396	0.0	1.000	5445714	2.49		99.4	40865	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.405	3.405	0.0	1.000	2967709	2.54		102	16044	
513.00 > 169.00	3.405	3.405	0.0	1.000	521364		5.69(2.36-7.09)		12906	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.564	3.538	0.026	1.322	1358412	2.75		110	29189	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.564	3.564	0.0	1.000	1338976	2.50		100.0	11632	
D 30 13C2 PFUnA										
565.00 > 520.00	3.738	3.708	0.030	1.387	2396305	2.39		95.4	44574	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.728	3.708	0.020	1.383	1369021	2.71		108	3360	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.717	3.717	0.0	1.216	2575350	2.51		104	35498	
599.00 > 99.00	3.717	3.717	0.0	1.216	899876		2.86(1.39-4.16)		18514	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.738	3.738	0.0	1.003	1257140	2.60		104	26384	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.738	3.738	0.0	1.000	1865092	2.37		95.0	7936	
563.00 > 169.00	3.738	3.738	0.0	1.000	472430		3.95(2.12-6.36)		7451	
66 11-Chloroeicosafluoro-3-oxaundecan										
631.00 > 451.00	3.886	3.886	0.0	1.271	10574934	2.61		111	62940	
D 36 13C2 PFDoA										
615.00 > 570.00	4.029	4.008	0.021	1.494	2496256	2.40		95.9	20235	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.029	4.029	0.0	1.000	2860311	2.62		105	1824	
613.00 > 169.00	4.029	4.029	0.0	1.000	669589		4.27(2.13-6.40)		12780	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.290	4.290	0.0	1.065	2992565	2.81		112	1406	
663.00 > 169.00	4.290	4.290	0.0	1.065	924944		3.24(1.25-3.76)		12579	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.522	4.501	0.021	1.677	2675235	2.48		99.0	13307	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.522	4.522	0.0	1.000	680639	2.44		97.8	10330	
713.00 > 219.00	4.522	4.522	0.0	1.000	507935		1.34(0.71-2.13)		8307	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.931	4.905	0.026	1.829	4370000	2.54		102	14691	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.931	4.931	0.0	1.000	4271055	2.55		102	1008	
813.00 > 169.00	4.931	4.931	0.0	1.000	654169		6.53(2.86-8.58)		5866	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.285	5.285	0.0	1.072	4773498	2.39		95.6	881	
913.00 > 169.00	5.285	5.285	0.0	1.072	579268		8.24(3.83-11.48)		5981	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

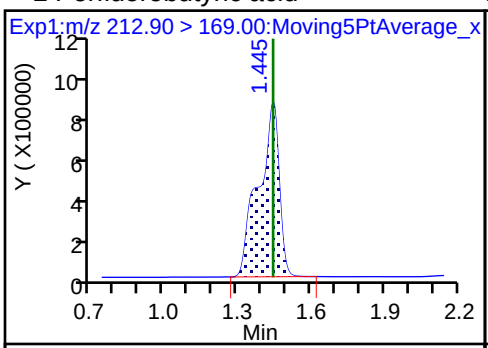
LCPFC_LL5_00005 Amount Added: 1.00 Units: mL

Report Date: 16-Jul-2018 16:17:55 Chrom Revision: 2.2 07-Jun-2018 07:41:54

TestAmerica Sacramento

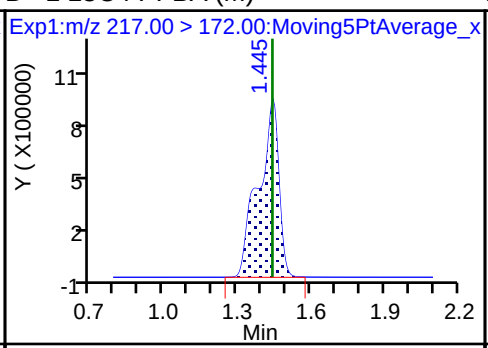
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180716-61126.b\2018.07.16LLA_008.d
Injection Date: 16-Jul-2018 13:25:51 Instrument ID: A8_N
Lims ID: CCV L5
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 14 Worklist Smp#: 6
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC ICAL

2 Perfluorobutyric acid



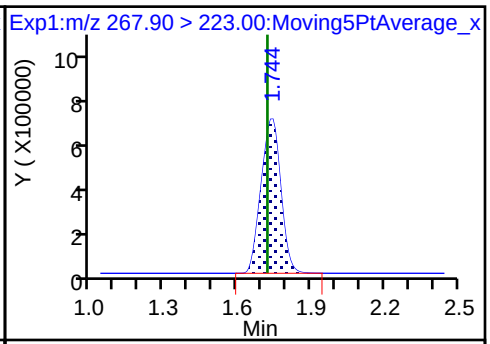
RT

D 1 13C4 PFBA (M)



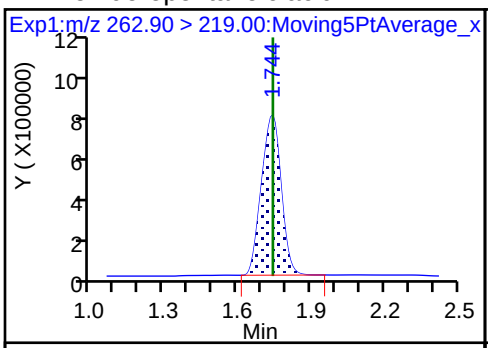
RT

D 3 13C5-PFPeA



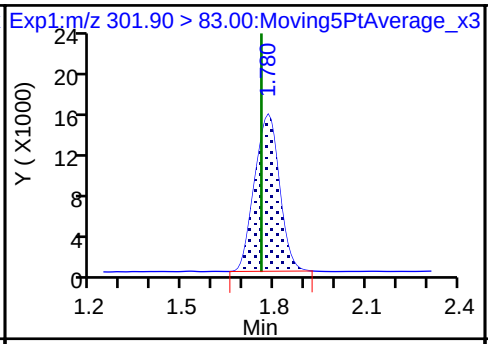
RT

4 Perfluoropentanoic acid



RT

D 47 13C3-PFBS



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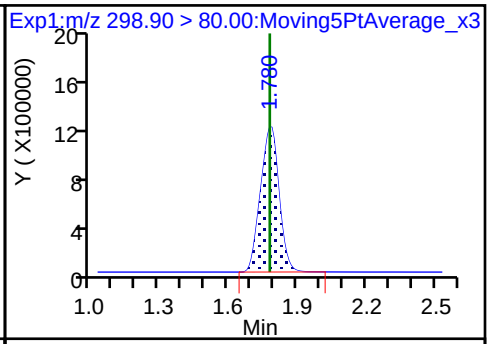
5 Perfluorobutanesulfonic acid



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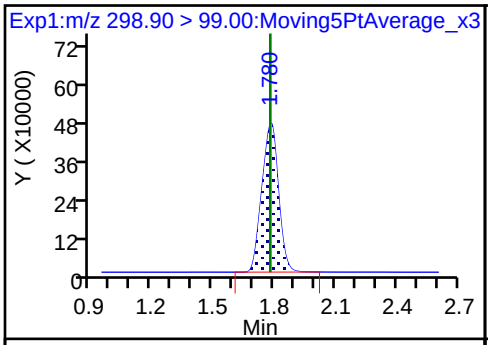
5 Perfluorobutanesulfonic acid



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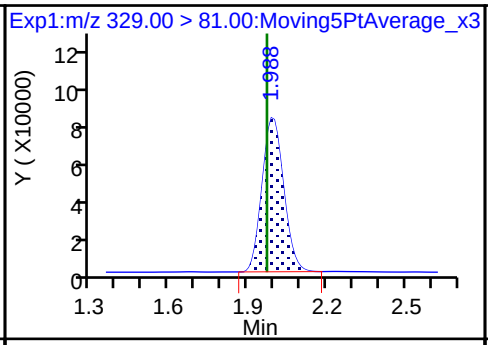
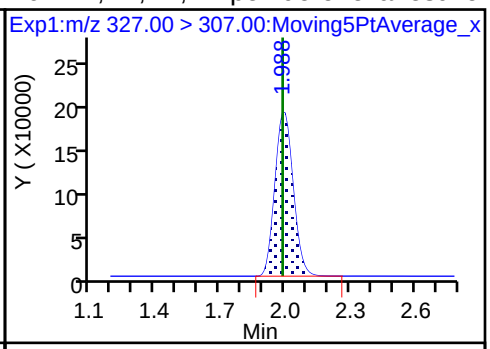
D 60 M2-4:2FTS



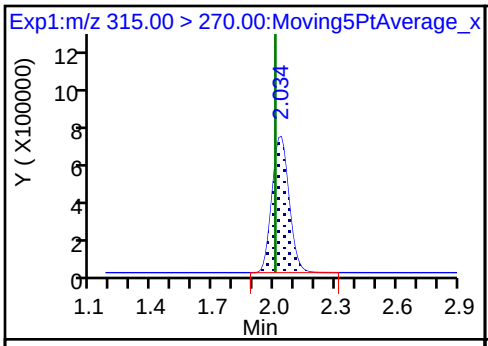
RT

61 1H,1H,2H,2H-perfluorohexanesulfoni



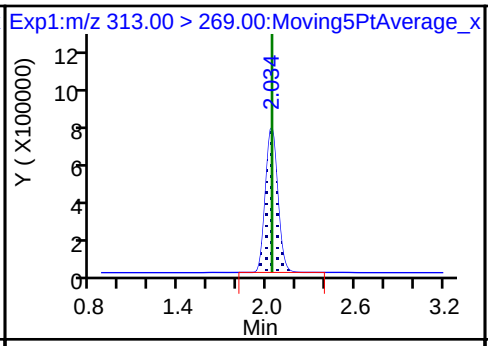
RT

D 7 13C2 PFHxA



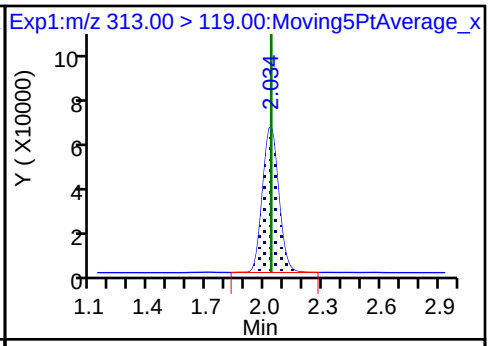
RT

6 Perfluorohexanoic acid



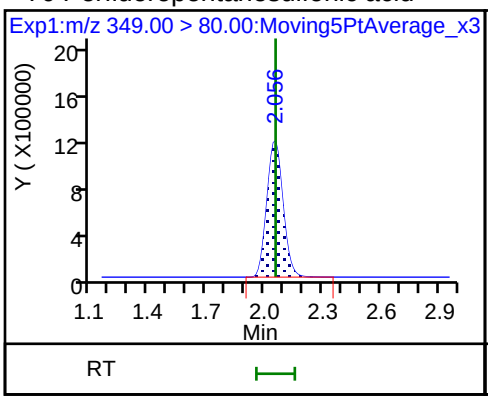
RT

6 Perfluorohexanoic acid

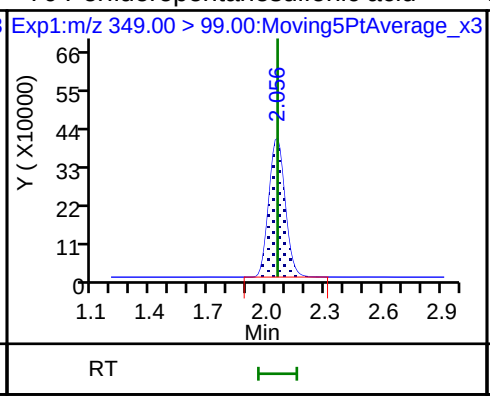


RT

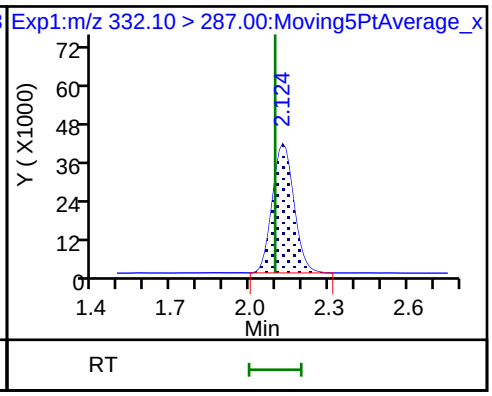
70 Perfluoropentanesulfonic acid



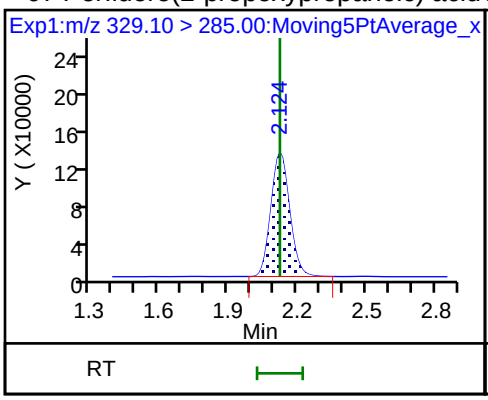
70 Perfluoropentanesulfonic acid



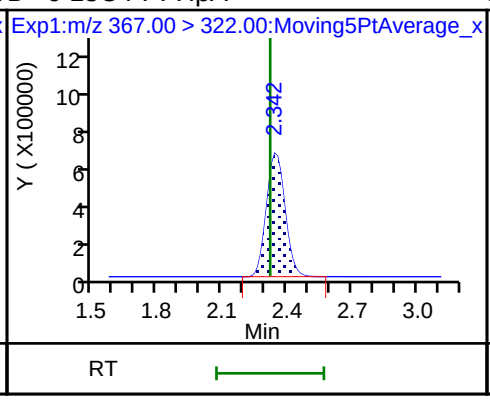
D 64 13C3 HFPO-DA



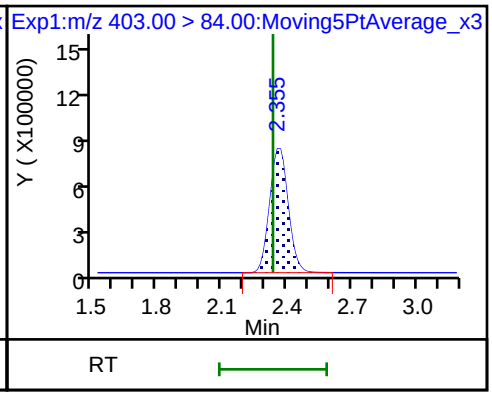
67 Perfluoro(2-propoxypropanoic) acid



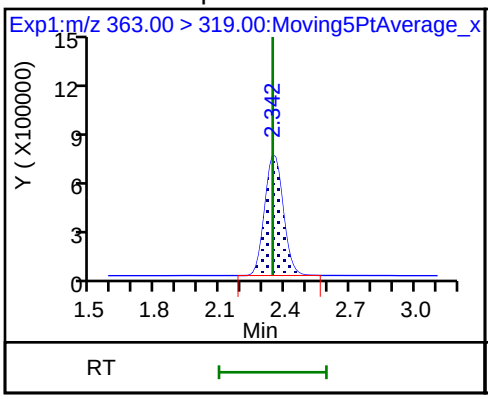
D 9 13C4-PFHpA



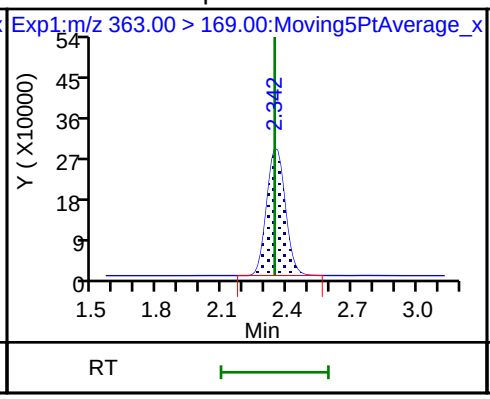
D 11 18O2 PFHxS



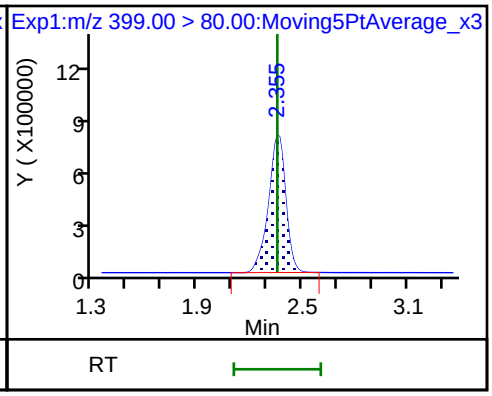
10 Perfluoroheptanoic acid



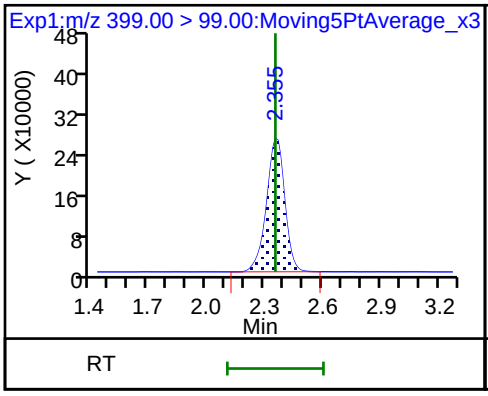
10 Perfluoroheptanoic acid



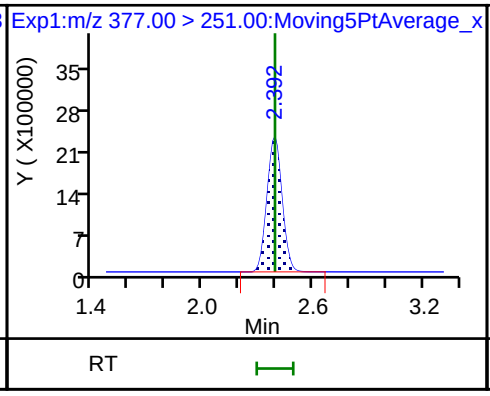
8 Perfluorohexanesulfonic acid



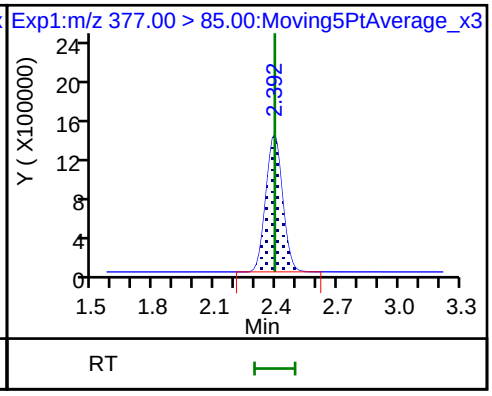
8 Perfluorohexanesulfonic acid



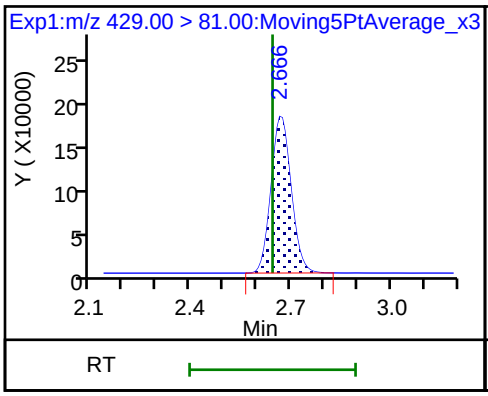
65 Adona



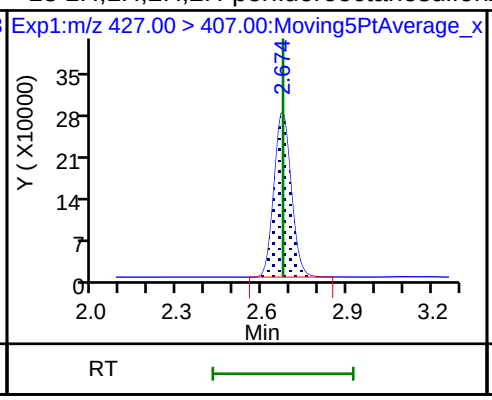
65 Adona



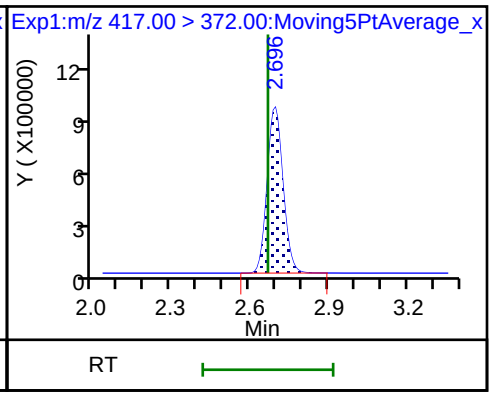
D 12 M2-6:2FTS



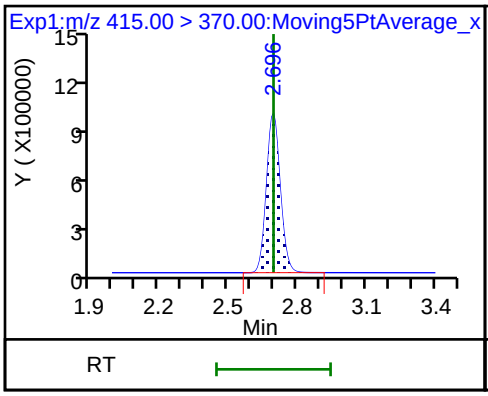
13 1H,1H,2H,2H-perfluorooctanesulfon



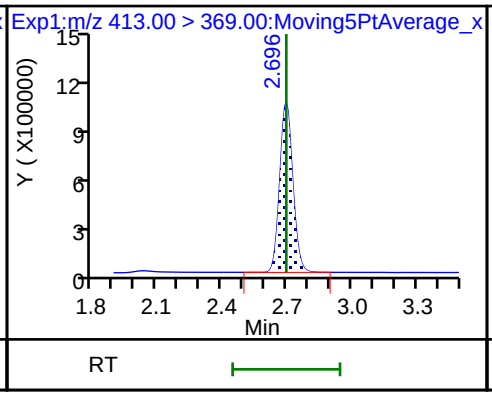
D 14 13C4 PFOA



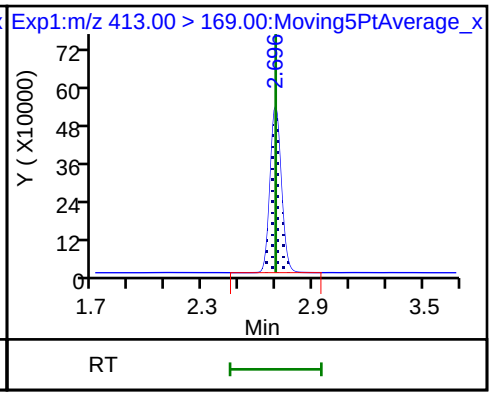
* 62 13C2-PFOA



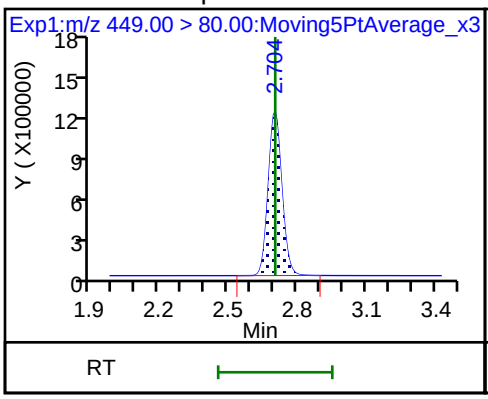
15 Perfluorooctanoic acid



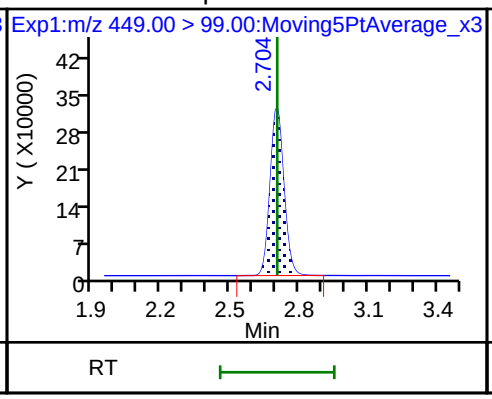
15 Perfluorooctanoic acid



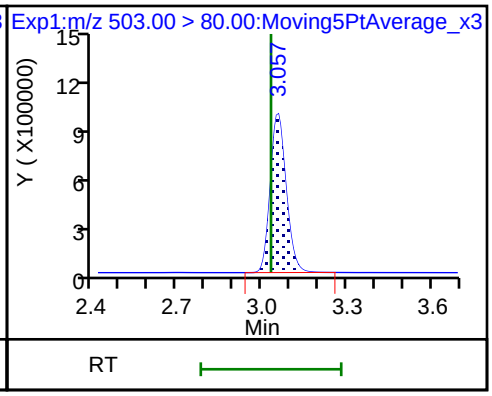
16 Perfluoroheptanesulfonic acid



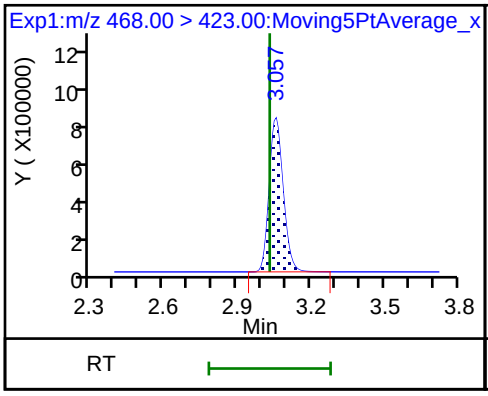
16 Perfluoroheptanesulfonic acid



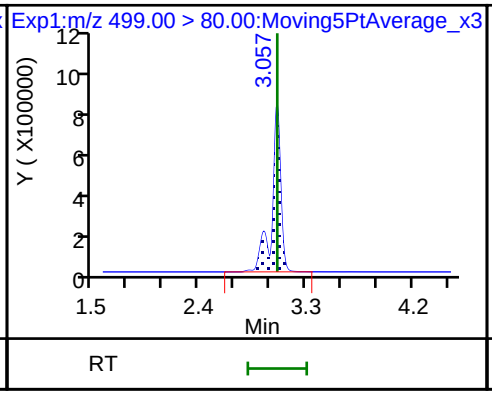
D 18 13C4 PFOS



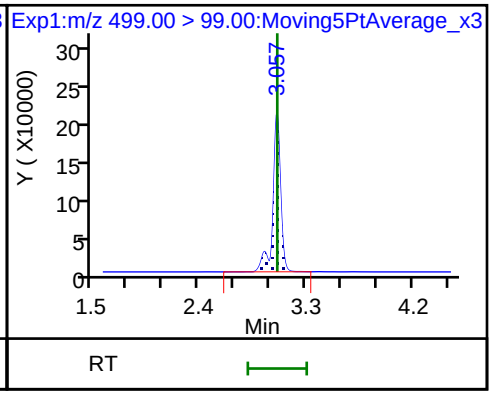
D 19 13C5 PFNA



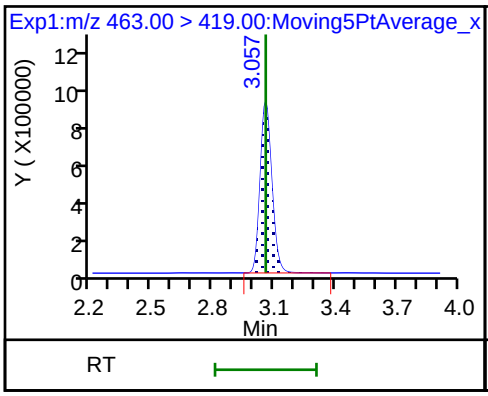
17 Perfluorooctane sulfonic acid



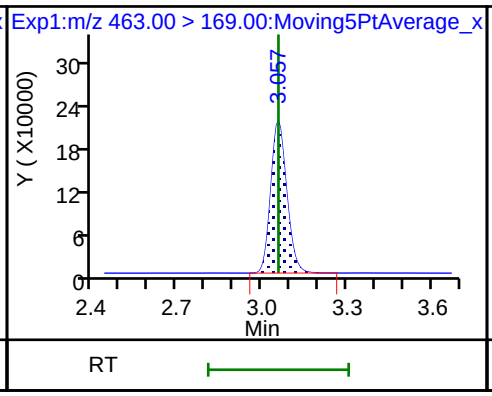
17 Perfluorooctane sulfonic acid



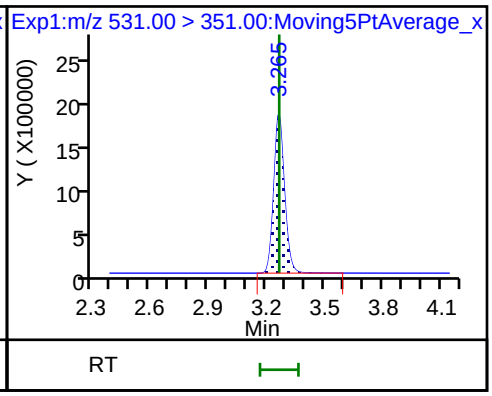
20 Perfluorononanoic acid



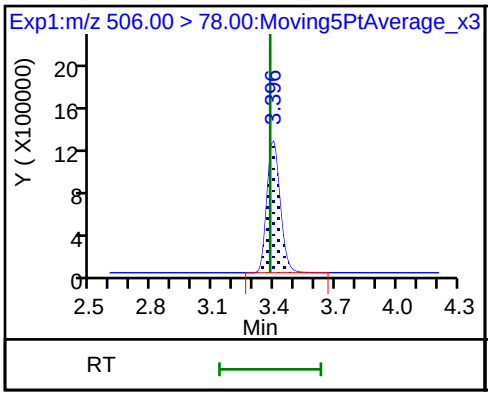
20 Perfluorononanoic acid



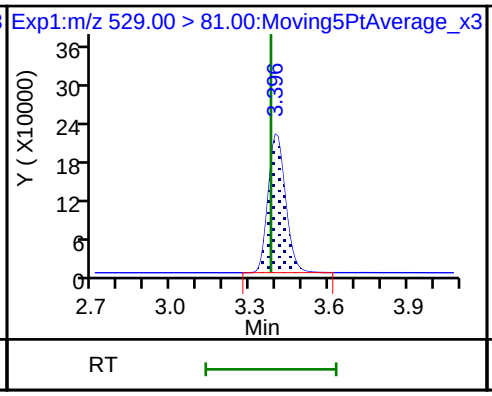
69 9-Chlorohexadecafluoro-3-oxanonane



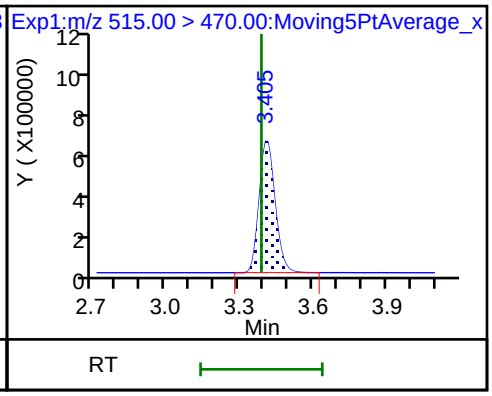
D 21 13C8 FOSA



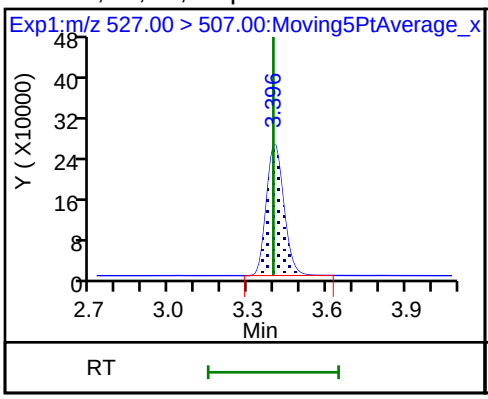
D 26 M2-8:2FTS



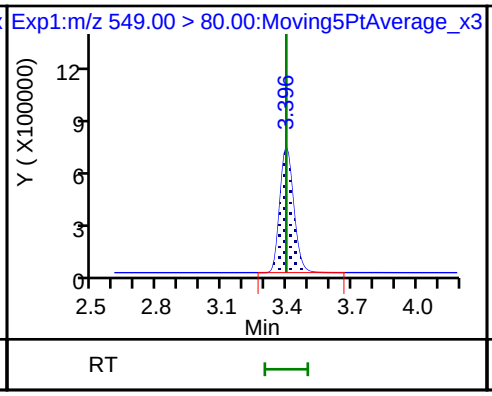
D 23 13C2 PFDA



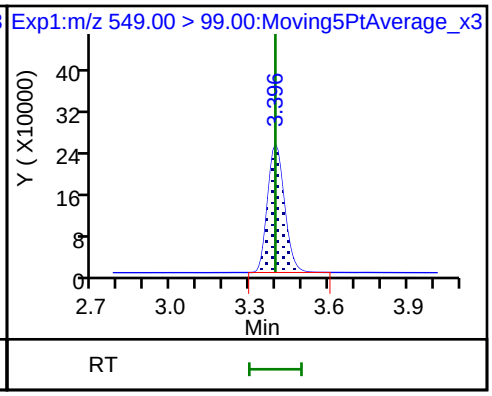
25 1H,1H,2H,2H-perfluorodecanesulfoni



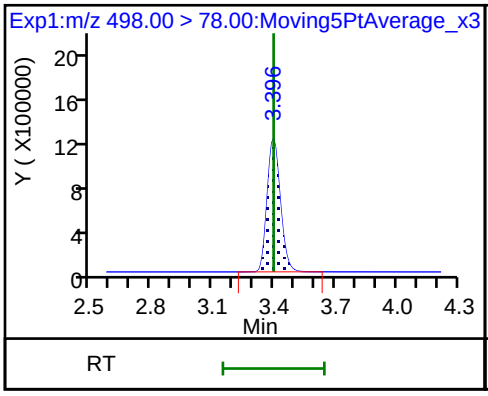
68 Perfluorononanesulfonic acid



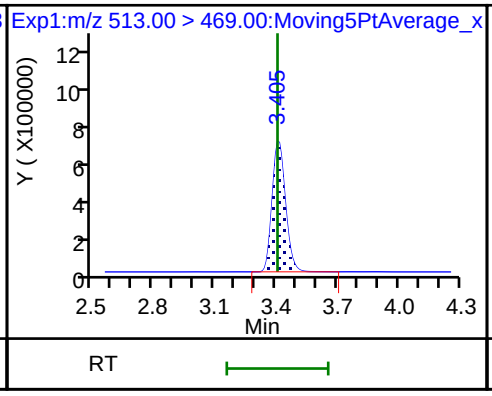
68 Perfluorononanesulfonic acid



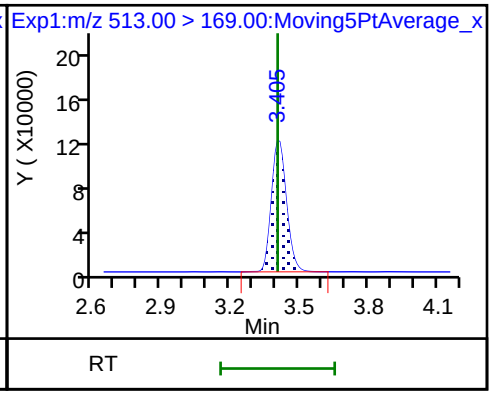
22 Perfluorooctane Sulfonamide



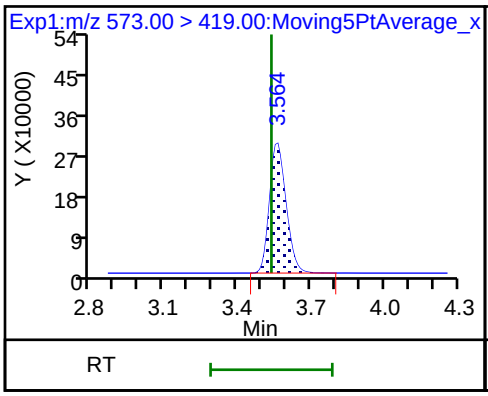
24 Perfluorodecanoic acid



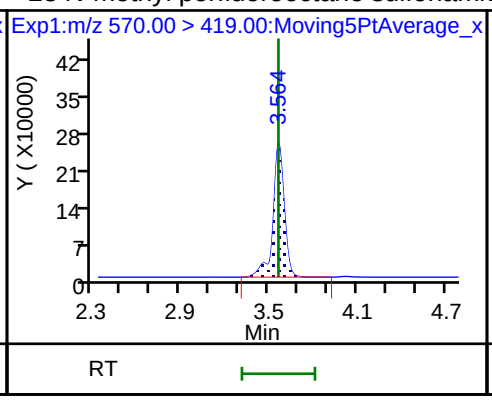
24 Perfluorodecanoic acid



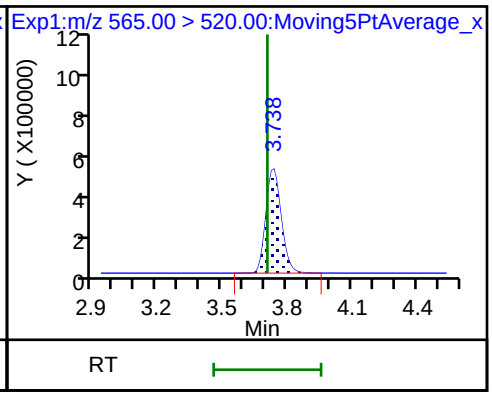
D 27 d3-NMeFOSAA



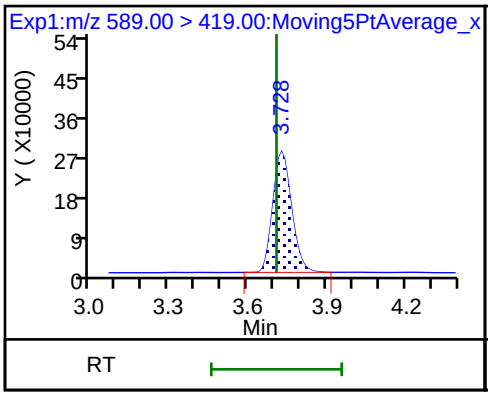
28 N-methyl perfluorooctane sulfonami



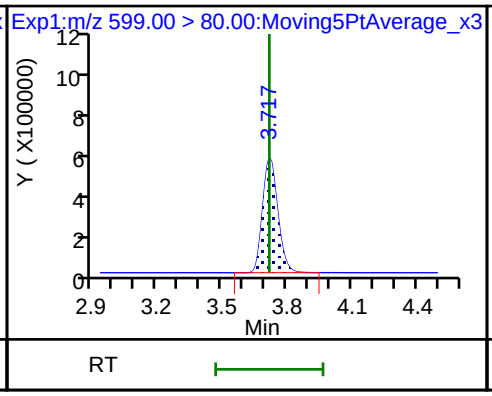
D 30 13C2 PFUnA



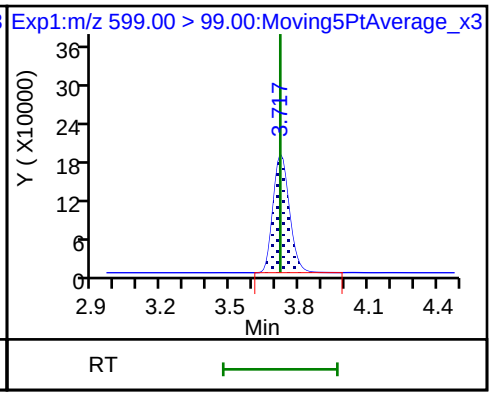
D 32 d5-NEtFOSAA



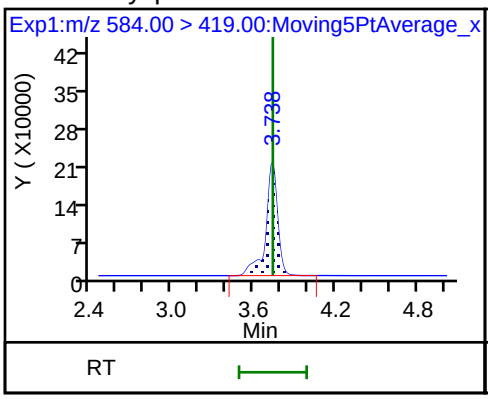
29 Perfluorodecane Sulfonic acid



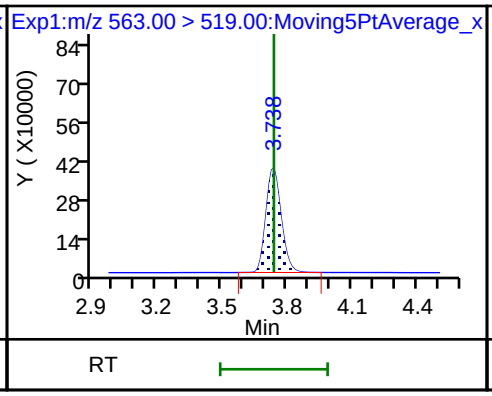
29 Perfluorodecane Sulfonic acid



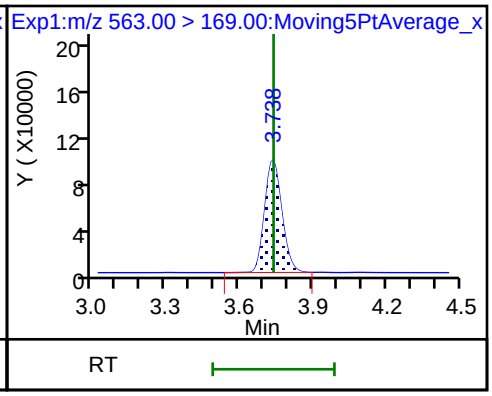
33 N-ethyl perfluorooctane sulfonamid



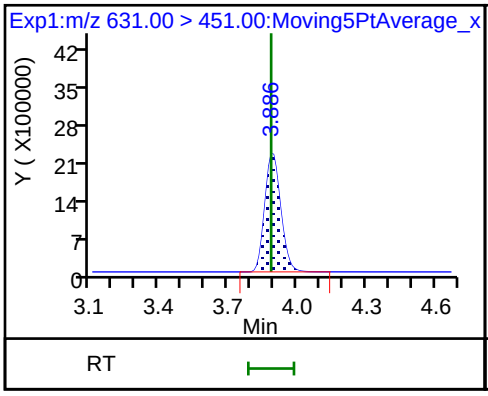
31 Perfluoroundecanoic acid



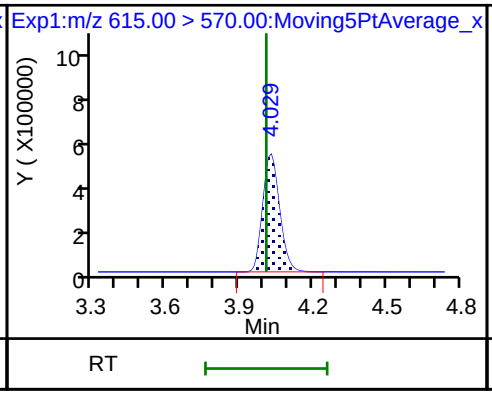
31 Perfluoroundecanoic acid



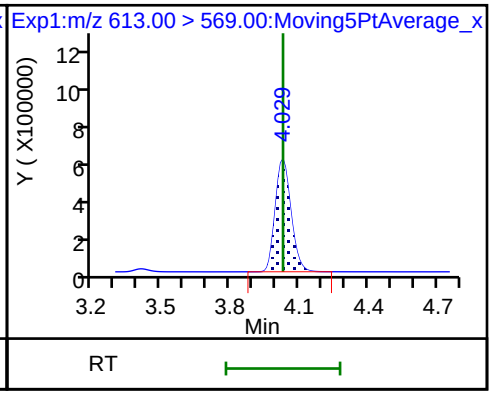
66 11-Chloroeicosafluoro-3-oxaundecan



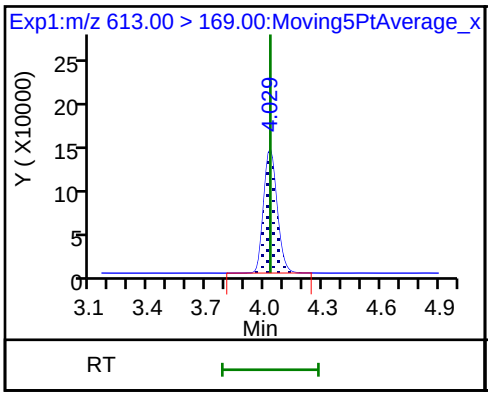
D 36 13C2 PFDoA



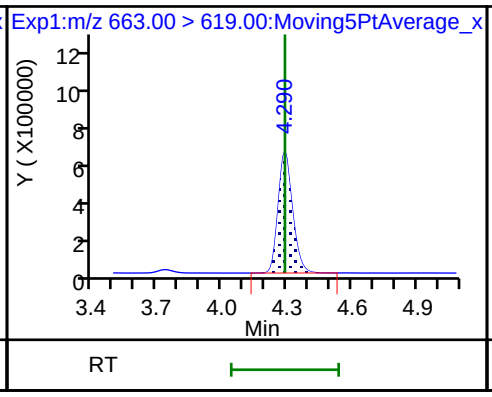
37 Perfluorododecanoic acid



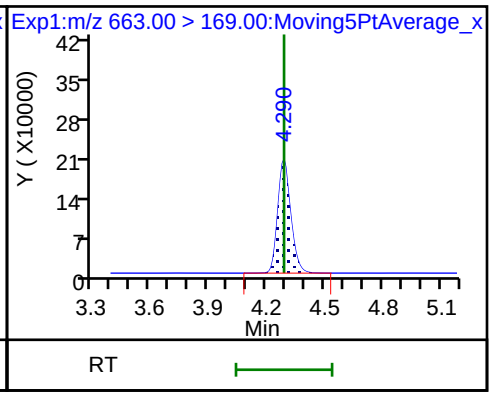
37 Perfluorododecanoic acid



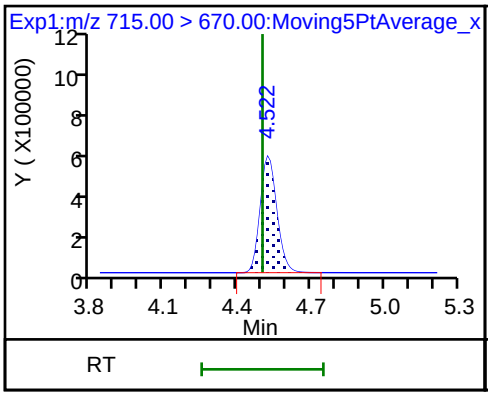
41 Perfluorotridecanoic acid



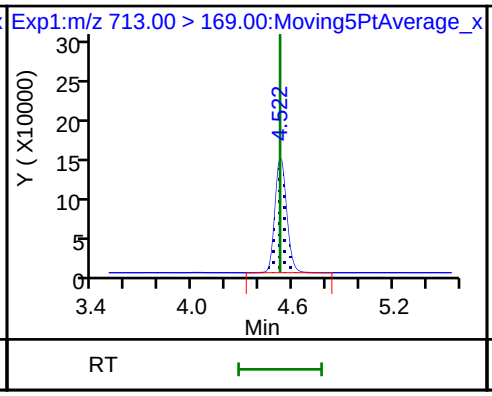
41 Perfluorotridecanoic acid



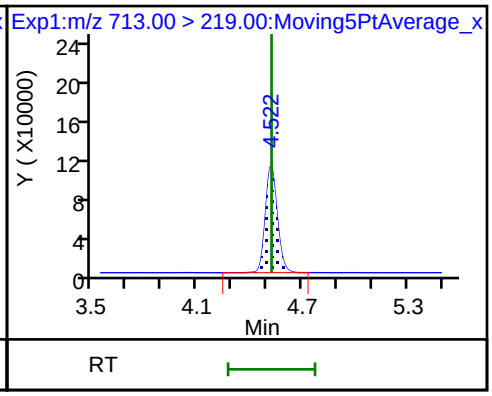
D 43 13C2-PFTeDA



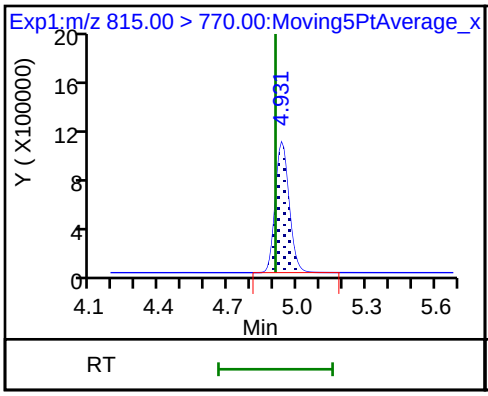
42 Perfluorotetradecanoic acid



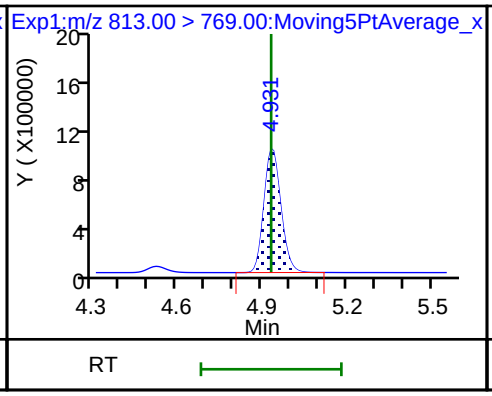
42 Perfluorotetradecanoic acid



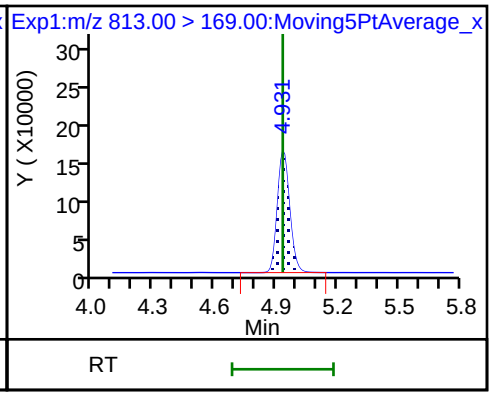
D 44 13C2-PFHxDA



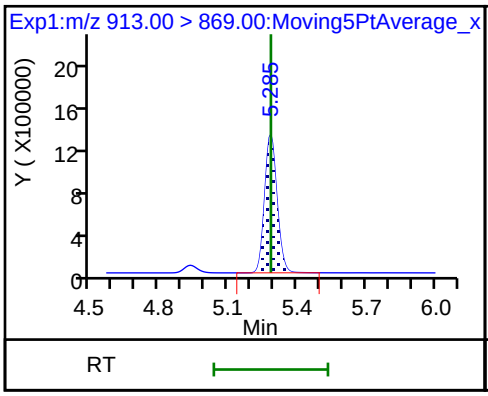
45 Perfluorohexadecanoic acid



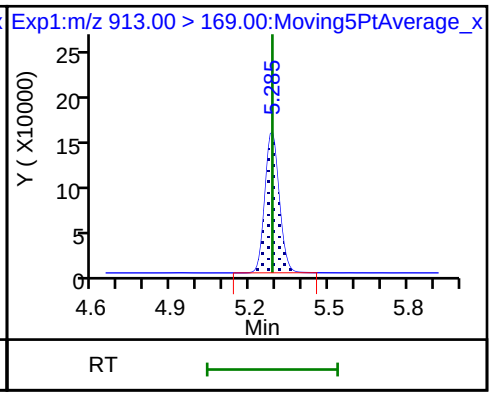
45 Perfluorohexadecanoic acid



46 Perfluorooctadecanoic acid



46 Perfluorooctadecanoic acid



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

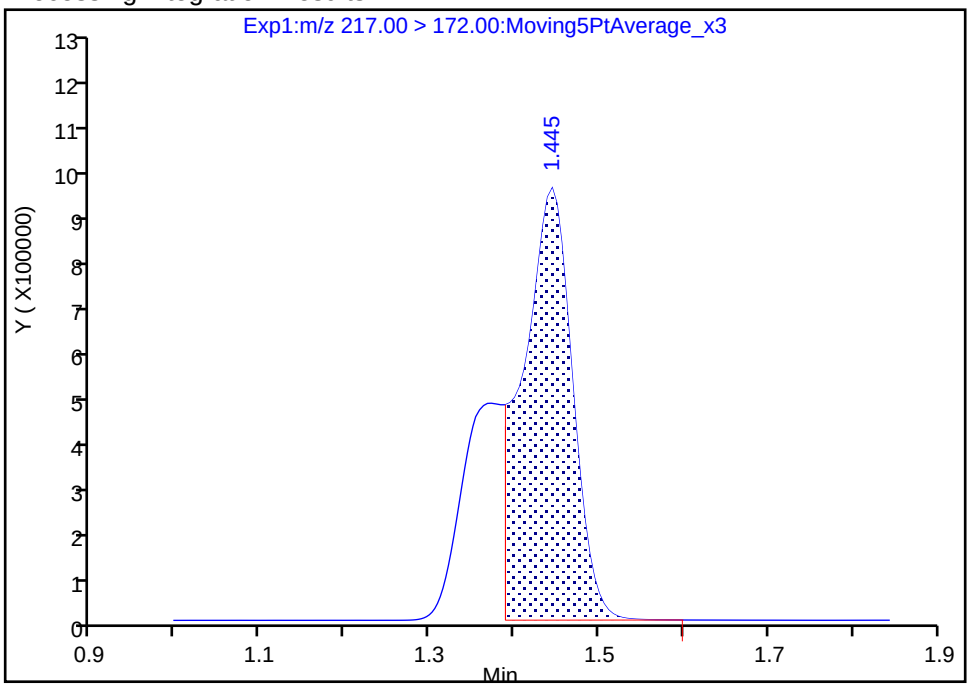
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180716-61126.b\2018.07.16LLA_008.d				
Injection Date:	16-Jul-2018 13:25:51	Instrument ID:	A8_N		
Lims ID:	CCV L5				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	14	Worklist Smp#:	6
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

D 1 13C4 PFBA, CAS: STL00992

Signal: 1

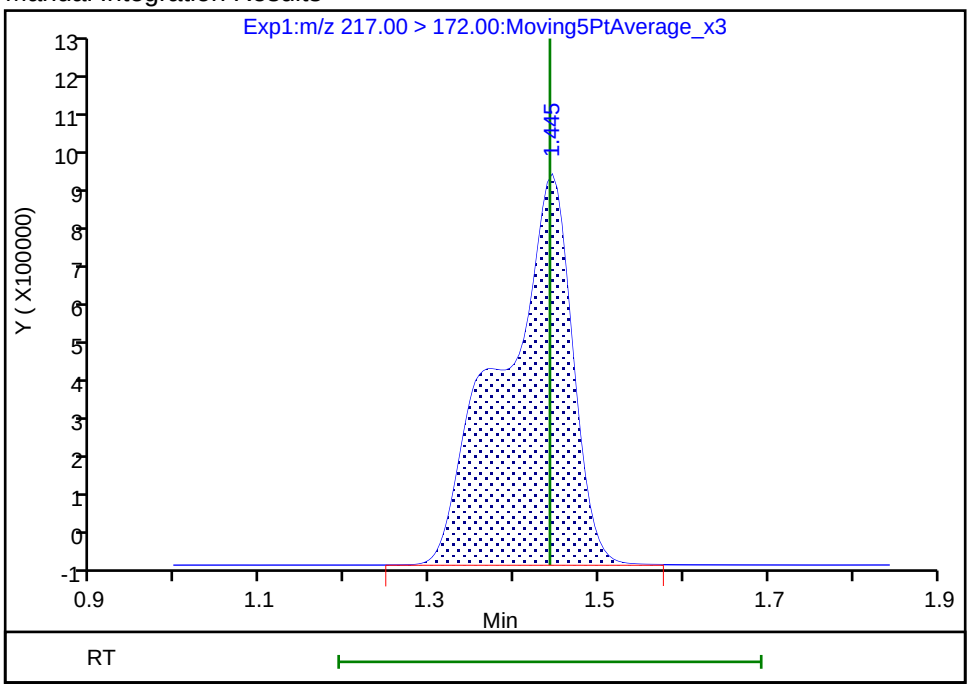
Processing Integration Results

RT: 1.44
Area: 3583333
Amount: 1.648129
Amount Units: ng/ml



Manual Integration Results

RT: 1.44
Area: 5133048
Amount: 2.360909
Amount Units: ng/ml



Reviewer: roycea, 16-Jul-2018 14:03:06

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID:
Lab Sample ID: MB 320-231392/1-A
Matrix: Solid
Lab File ID: 2018.07.13LLB_053.d
Analysis Method: 537 (modified)
Date Collected:
Extraction Method: SHAKE
Date Extracted: 06/28/2018 05:15
Sample wt/vol: 5.00(g)
Date Analyzed: 07/14/2018 03:41
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 233997
Units: mg/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	ND		0.00020	0.000028
2706-90-3	Perfluoropentanoic acid (PFPeA)	ND		0.00020	0.000077
307-24-4	Perfluorohexanoic acid (PFHxA)	ND		0.00020	0.000042
375-85-9	Perfluoroheptanoic acid (PFHpA)	ND		0.00020	0.000029
335-67-1	Perfluorooctanoic acid (PFOA)	ND		0.00020	0.000086
375-95-1	Perfluorononanoic acid (PFNA)	ND		0.00020	0.000036
335-76-2	Perfluorodecanoic acid (PFDA)	ND		0.00020	0.000022
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		0.00020	0.000036
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		0.00020	0.000067
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		0.00020	0.000051
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		0.00020	0.000054
375-73-5	Perfluorobutanesulfonic acid (PFBS)	ND		0.00020	0.000025
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	ND		0.00020	0.000031
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.00020	0.000035
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	ND		0.00050	0.00020
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		0.00020	0.000039
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		0.00020	0.000082
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.0020	0.00039
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.0020	0.00037
27619-97-2	6:2 FTS	ND		0.0020	0.00015
39108-34-4	8:2 FTS	ND		0.0020	0.00025

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID:
Lab Sample ID: MB 320-231392/1-A
Matrix: Solid
Lab File ID: 2018.07.13LLB_053.d
Analysis Method: 537 (modified)
Date Collected:
Extraction Method: SHAKE
Date Extracted: 06/28/2018 05:15
Sample wt/vol: 5.00(g)
Date Analyzed: 07/14/2018 03:41
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 233997
Units: mg/Kg

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00992	13C4 PFBA	85		25-150
STL01893	13C5 PFPeA	91		25-150
STL00993	13C2 PFHxA	92		25-150
STL01892	13C4-PFHpA	95		25-150
STL00990	13C4 PFOA	92		25-150
STL00995	13C5 PFNA	87		25-150
STL00996	13C2 PFDA	92		25-150
STL00997	13C2 PFUnA	96		25-150
STL00998	13C2 PFDoA	92		25-150
STL02116	13C2-PFTeDA	95		25-150
STL02337	13C3-PFBS	88		25-150
STL00994	18O2 PFHxS	88		25-150
STL00991	13C4 PFOS	90		25-150
STL01056	13C8 FOSA	87		25-150
STL02118	d3-NMeFOSAA	100		25-150
STL02117	d5-NEtFOSAA	101		25-150
STL02279	M2-6:2FTS	84		25-150
STL02280	M2-8:2FTS	70		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\2018.07.13LLB_053.d
Lims ID: MB 320-231392/1-A
Client ID:
Sample Type: MB
Inject. Date: 14-Jul-2018 03:41:29 ALS Bottle#: 38 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: mb 320-231392/1-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 16-Jul-2018 14:11:53 Calib Date: 11-Jul-2018 15:38:42
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK023

First Level Reviewer: mongkols Date: 16-Jul-2018 14:11:53

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										M
217.00 > 172.00	1.435	1.441	-0.006	0.538	4989705	2.13		85.3	36604	M
D 3 13C5-PFPeA										
267.90 > 223.00	1.719	1.720	-0.001	0.645	3684848	2.27		90.6	49361	
D 47 13C3-PFBS										
301.90 > 83.00	1.755	1.765	-0.010	0.658	83575	2.04		87.9	479	
D 7 13C2 PFHxA										
315.00 > 270.00	2.002	2.003	-0.001	0.751	4029197	2.30		91.8	69765	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.093	2.105	-0.012	0.785	336585	2.70		108	6777	
D 9 13C4-PFHpA										
367.00 > 322.00	2.319	2.319	0.0	0.870	3858278	2.39		95.4	40393	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.332	2.329	0.003	1.000	19182	0.008278			213	
399.00 > 99.00	2.345	2.329	0.016	1.006	7123		2.69(1.50-4.49)		50.9	
D 11 18O2 PFHxS										
403.00 > 84.00	2.332	2.332	0.0	0.874	4773865	2.08		88.1	47206	
65 Adona										
377.00 > 251.00	2.371	2.368	0.003	0.783	3460	0.000714			74.0	
377.00 > 85.00	2.371	2.368	0.003	0.783	2758		1.25(0.84-2.53)		17.2	
D 12 M2-6:2FTS										
429.00 > 81.00	2.643	2.644	-0.001	0.991	688298	1.99		83.6	16210	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.643	2.651	-0.008	1.000	9513	0.0210			102	
D 14 13C4 PFOA										
417.00 > 372.00	2.667	2.667	0.0	1.000	3808113	2.31		92.3	48812	
* 62 13C2-PFOA										
415.00 > 370.00	2.667	2.673	-0.006		4314005	2.50			52588	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										
413.00 > 369.00	2.667	2.673	-0.006	1.000	12946	0.006901			7.2	
413.00 > 169.00	2.674	2.673	0.001	1.003	16519		0.78(0.84-2.52)		91.4	
D 18 13C4 PFOS										
503.00 > 80.00	3.028	3.027	0.001	1.135	3597779	2.14		89.5	43588	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.028	3.033	-0.005	1.000	32175	0.0189			441	
499.00 > 99.00	3.035	3.033	0.002	1.002	8485		3.79(2.31-6.93)		131	
D 19 13C5 PFNA										
468.00 > 423.00	3.028	3.034	-0.006	1.135	3201275	2.17		86.8	52905	
D 26 M2-8:2FTS										
529.00 > 81.00	3.374	3.379	-0.005	1.265	854311	1.68		70.3	13716	
D 21 13C8 FOSA										
506.00 > 78.00	3.374	3.379	-0.005	1.265	5261266	2.17		86.8	73831	
D 23 13C2 PFDA										
515.00 > 470.00	3.383	3.389	-0.006	1.269	2964439	2.29		91.6	37295	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.542	3.538	0.004	1.328	1321760	2.49		99.6	41832	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.711	3.708	0.003	1.392	1371176	2.52		101	3312	
D 30 13C2 PFUnA										
565.00 > 520.00	3.711	3.708	0.003	1.392	2598607	2.40		96.1	54263	
66 11-Chloroeicosafluoro-3-oxaundecan										
631.00 > 451.00	3.878	3.866	0.012	1.281	6886	0.001724			192	
D 36 13C2 PFDoA										
615.00 > 570.00	4.010	3.999	0.011	1.504	2584192	2.31		92.2	22805	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.501	4.501	0.0	1.688	2748798	2.36		94.5	17184	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.904	4.905	-0.001	1.839	4492486	2.42		97.0	13674	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.904	4.914	-0.010	1.000	43712	0.004035			10.8	
813.00 > 169.00	4.904	4.914	-0.010	1.000	7310		5.98(2.86-8.58)		70.6	

QC Flag Legend

Review Flags

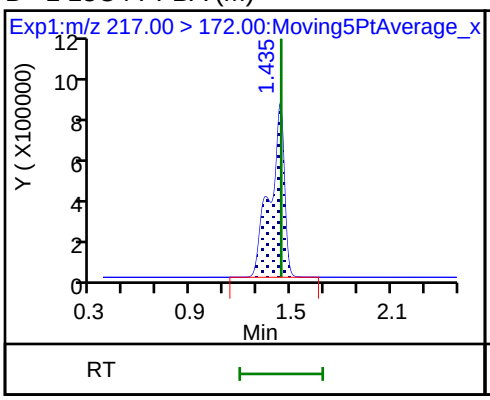
M - Manually Integrated

Report Date: 16-Jul-2018 14:11:53 Chrom Revision: 2.2 07-Jun-2018 07:41:54

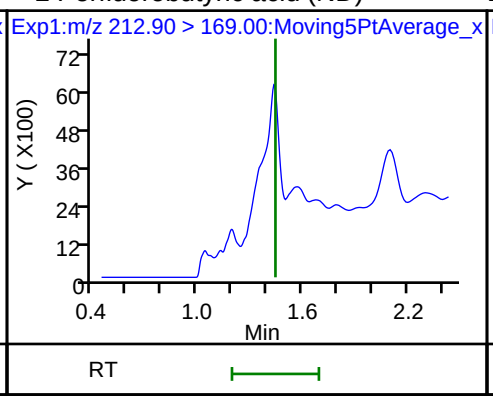
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\2018.07.13LLB_053.d
Injection Date: 14-Jul-2018 03:41:29 Instrument ID: A8_N
Lims ID: MB 320-231392/1-A
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 38 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC ICAL

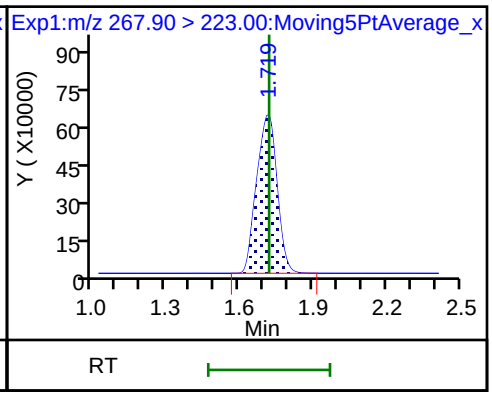
D 1 13C4 PFBA (M)



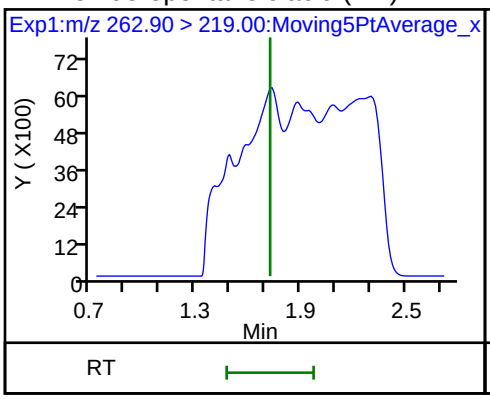
2 Perfluorobutyric acid (ND)



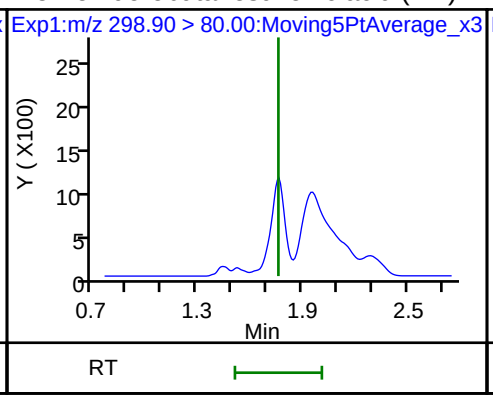
D 3 13C5-PFPeA



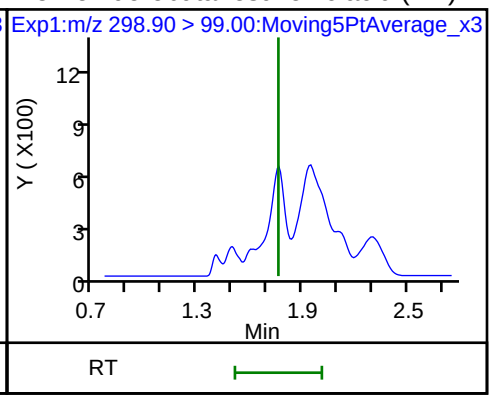
4 Perfluoropentanoic acid (ND)



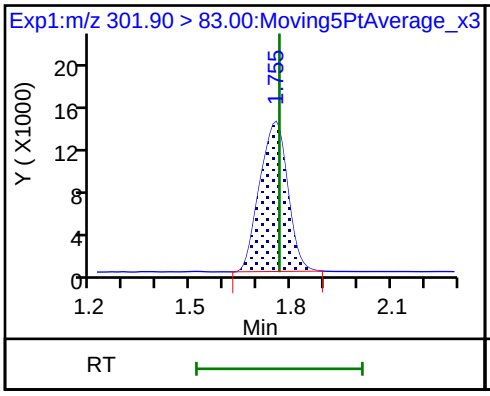
5 Perfluorobutanesulfonic acid (ND)



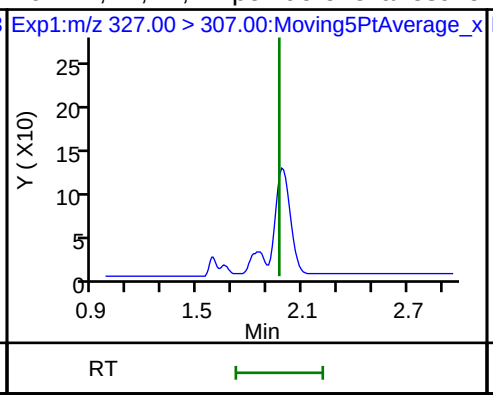
5 Perfluorobutanesulfonic acid (ND)



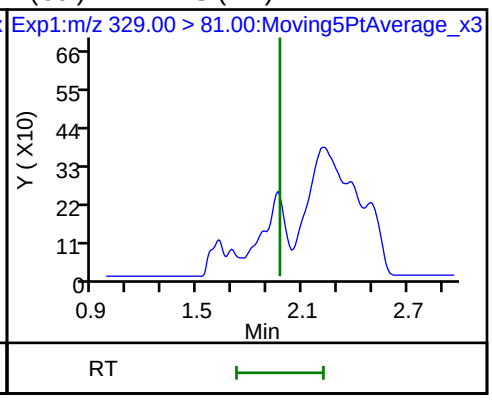
D 47 13C3-PFBS



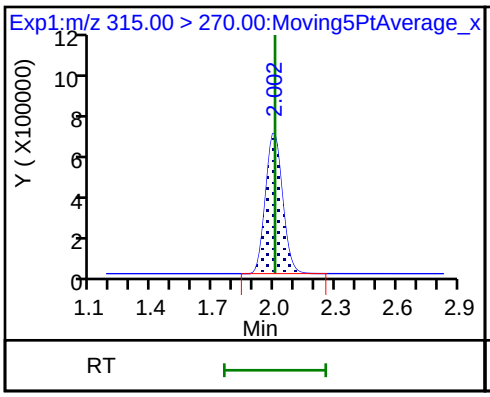
61 1H,1H,2H,2H-perfluorohexanesulfonic (ND)



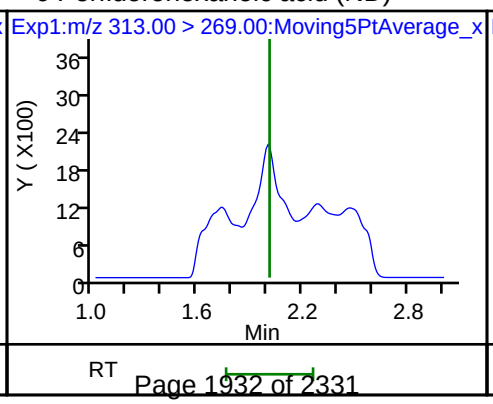
D 50 M2-4:2FTS (ND)



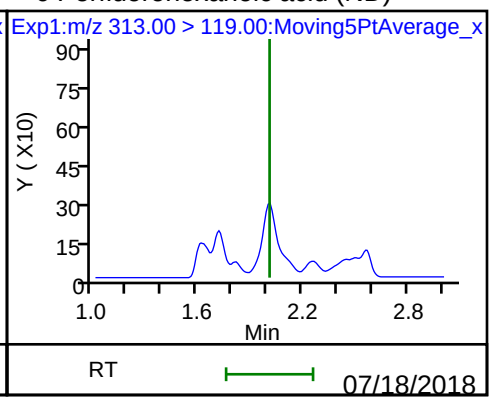
D 7 13C2 PFHxA



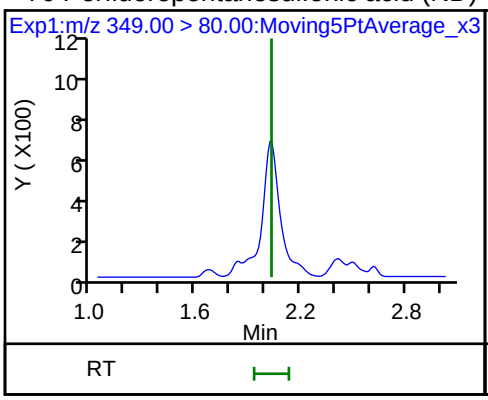
6 Perfluorohexanoic acid (ND)



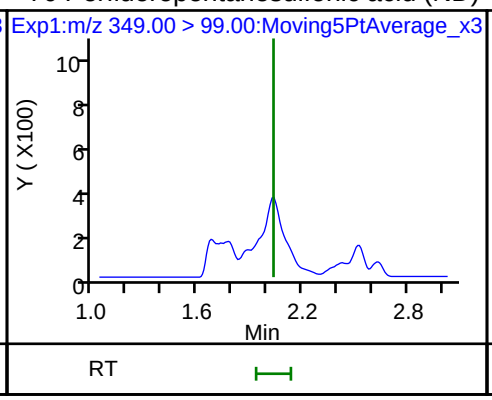
6 Perfluorohexanoic acid (ND)



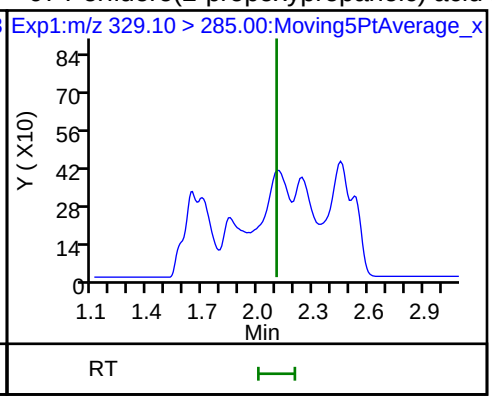
70 Perfluoropentanesulfonic acid (ND)



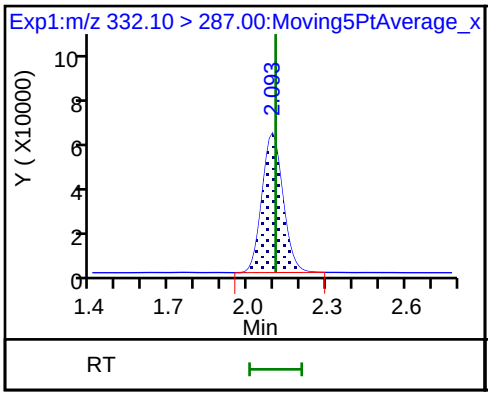
70 Perfluoropentanesulfonic acid (ND)



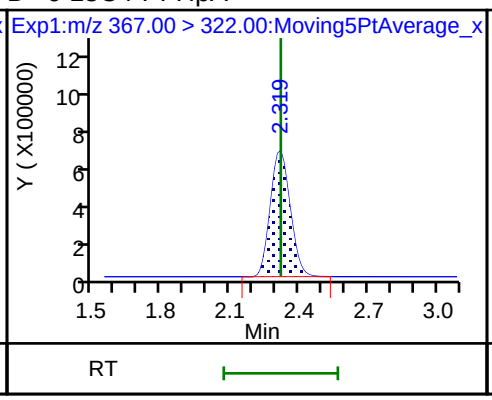
67 Perfluoro(2-propoxypropanoic) acid (ND)



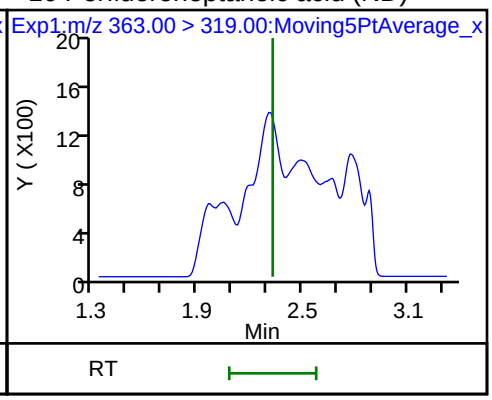
D 64 13C3 HFPO-DA



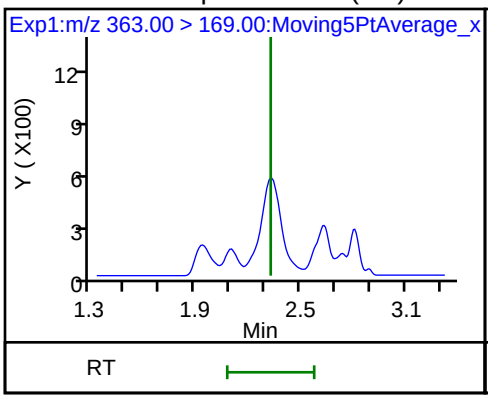
D 9 13C4-PFHpA



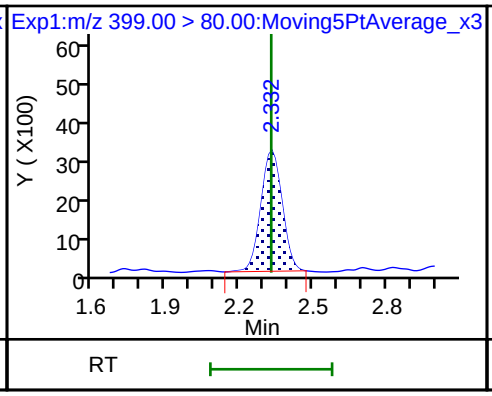
10 Perfluoroheptanoic acid (ND)



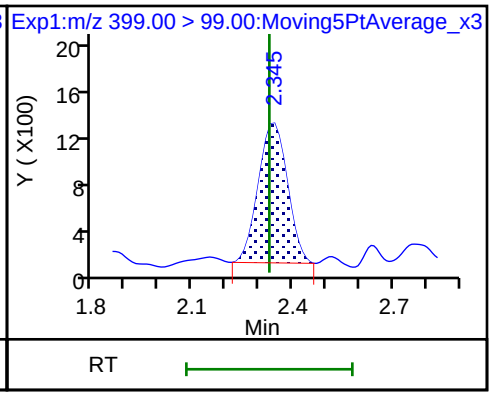
10 Perfluoroheptanoic acid (ND)



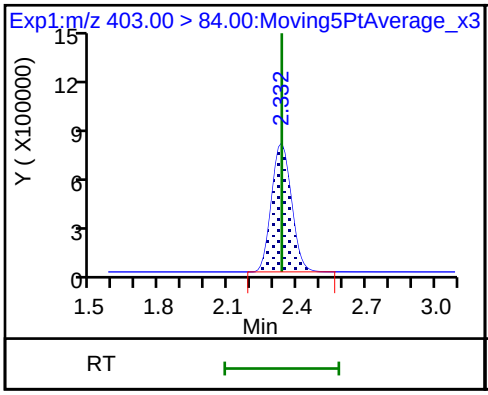
8 Perfluorohexanesulfonic acid



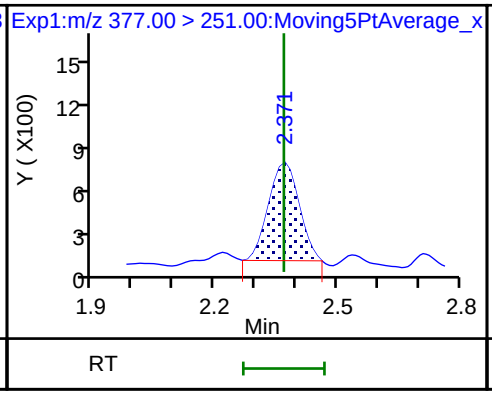
8 Perfluorohexanesulfonic acid



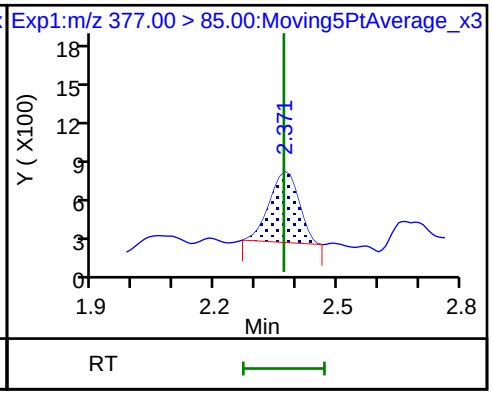
D 11 18O2 PFHxS



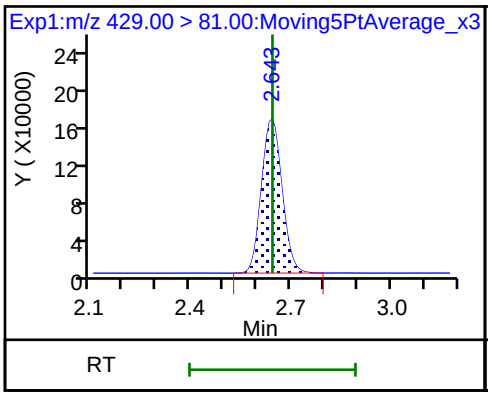
65 Adona



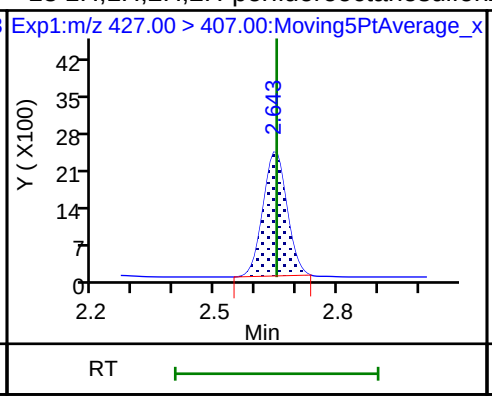
65 Adona



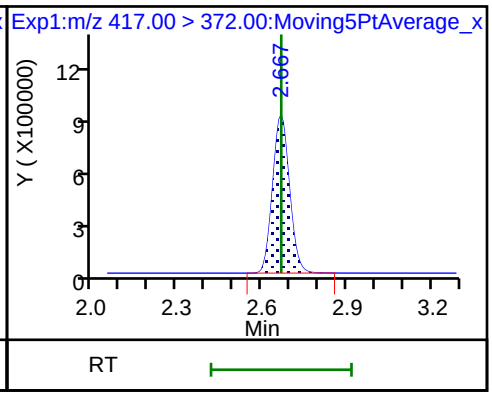
D 12 M2-6:2FTS



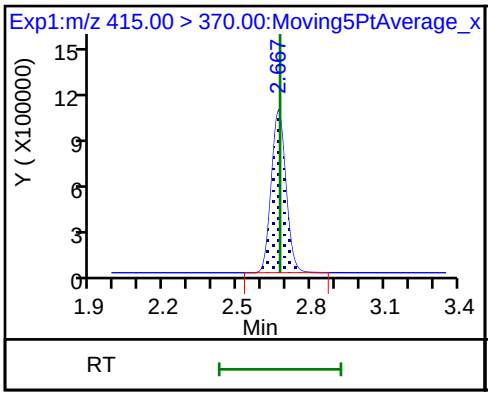
13 1H,1H,2H,2H-perfluorooctanesulfon



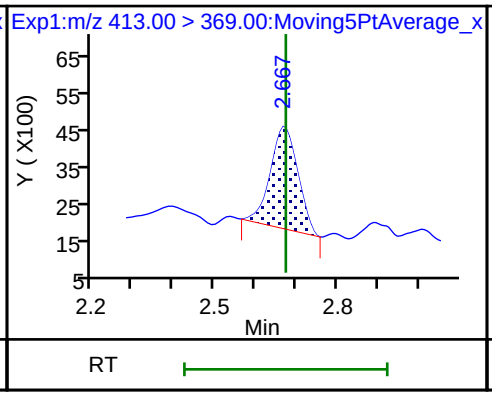
D 14 13C4 PFOA



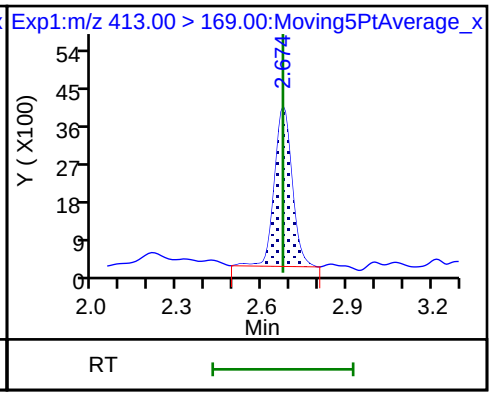
* 62 13C2-PFOA



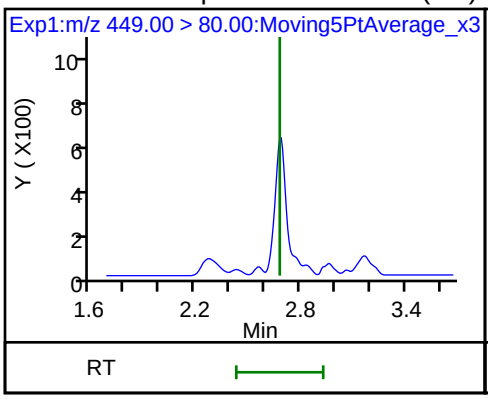
15 Perfluorooctanoic acid



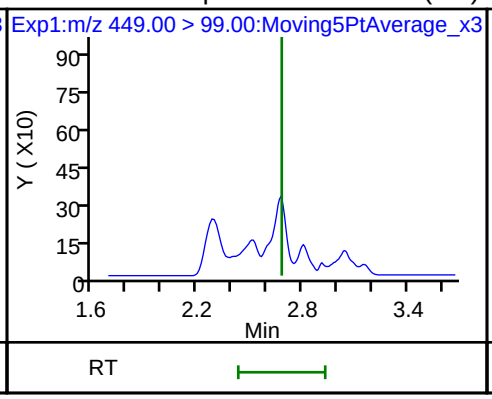
15 Perfluorooctanoic acid



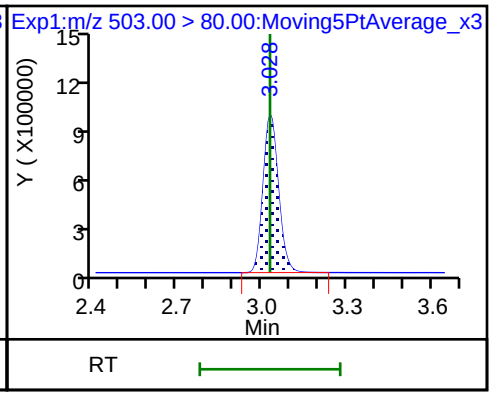
16 Perfluoroheptanesulfonic acid (ND)



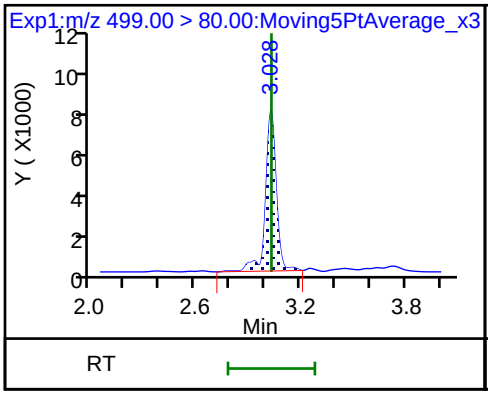
16 Perfluoroheptanesulfonic acid (ND)



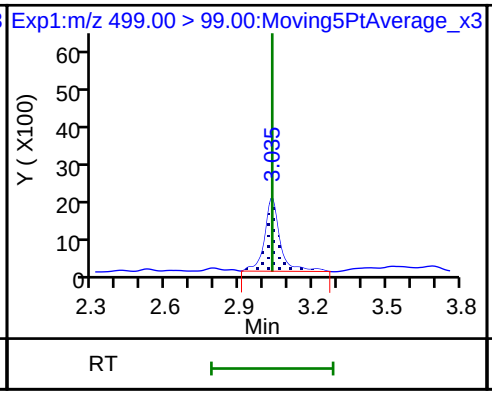
D 18 13C4 PFOS



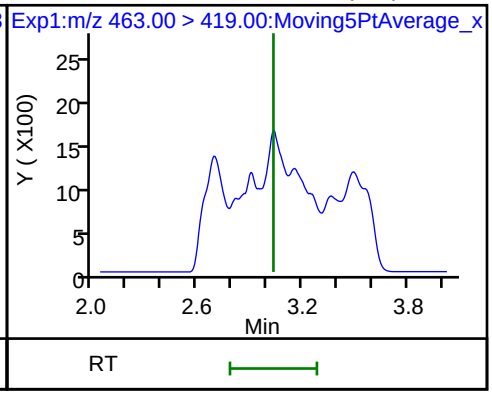
17 Perfluorooctane sulfonic acid



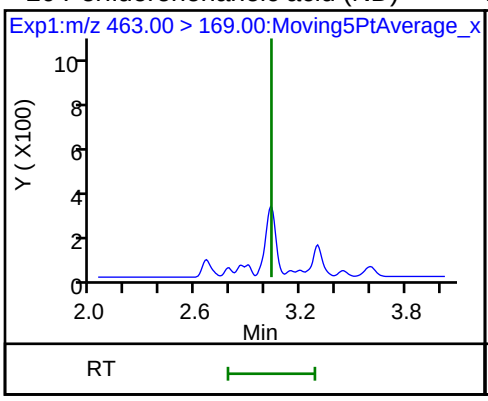
17 Perfluorooctane sulfonic acid



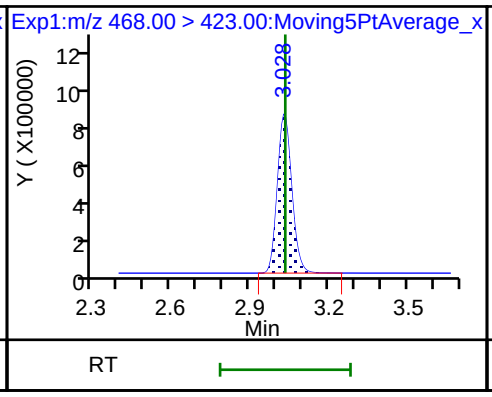
20 Perfluorononanoic acid (ND)



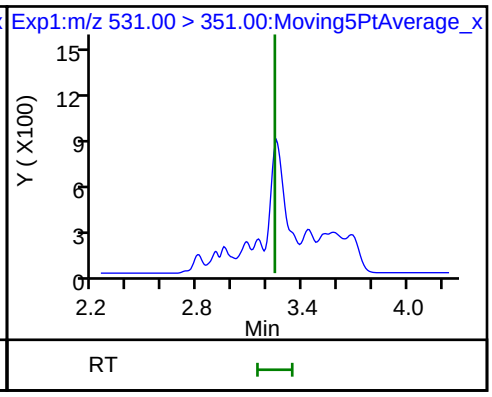
20 Perfluorononanoic acid (ND)



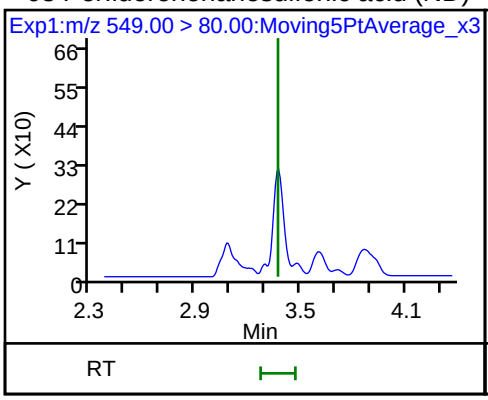
D 19 13C5 PFNA



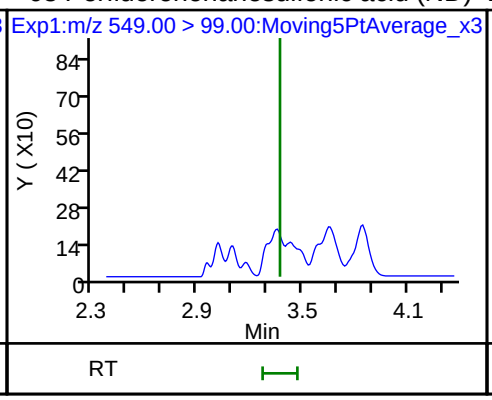
69 9-Chlorohexadecafluoro-3-oxanonane (ND)



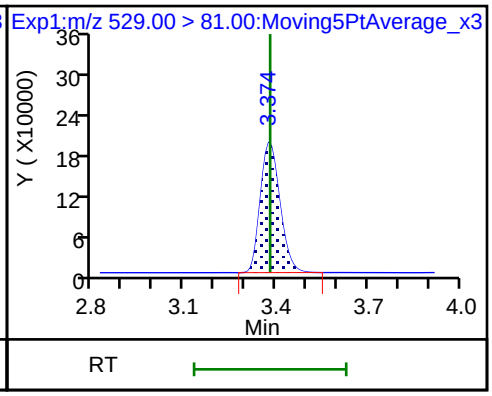
68 Perfluorononanesulfonic acid (ND)



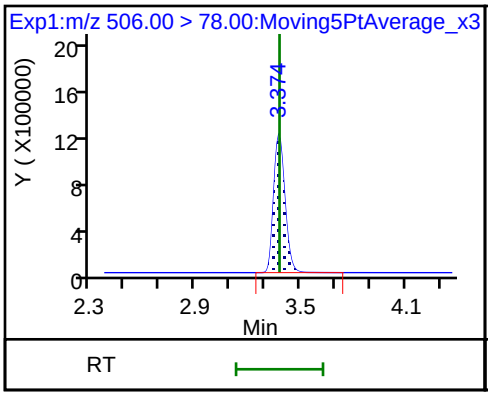
68 Perfluorononanesulfonic acid (ND)



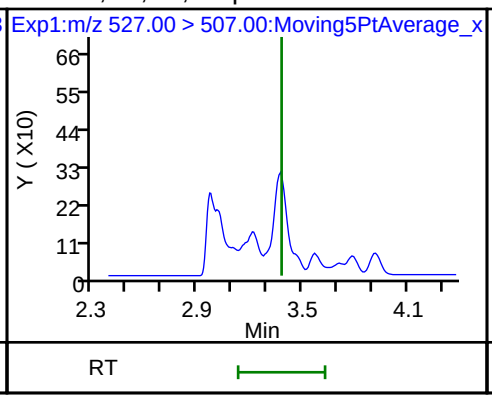
D 26 M2-8:2FTS



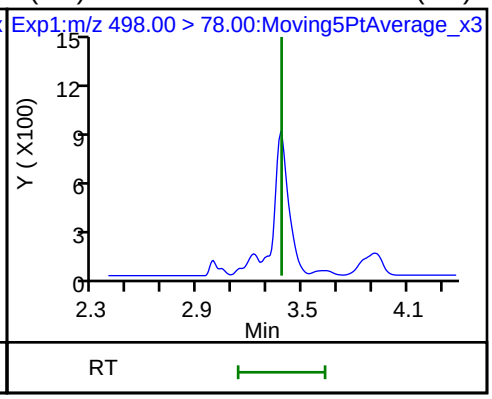
D 21 13C8 FOSA



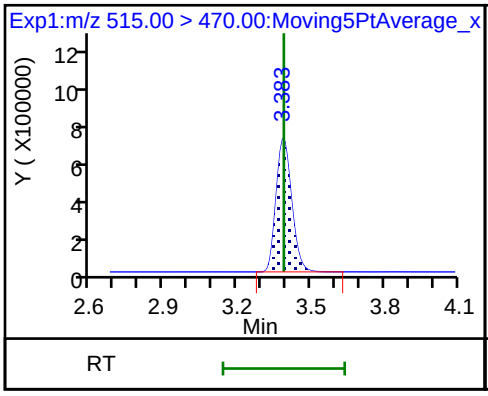
25 1H,1H,2H,2H-perfluorodecanesulfoni acid (ND)



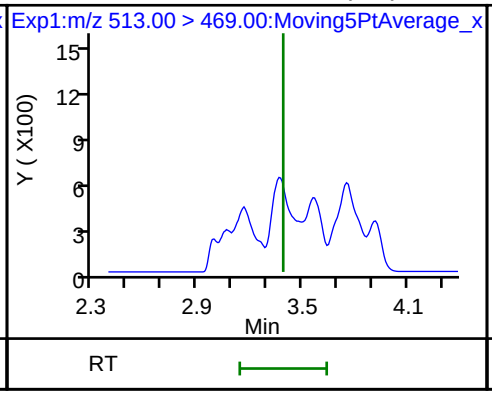
22 Perfluorooctane Sulfonamide (ND)



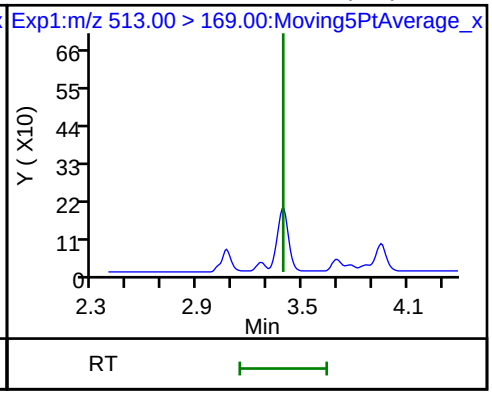
D 23 13C2 PFDA



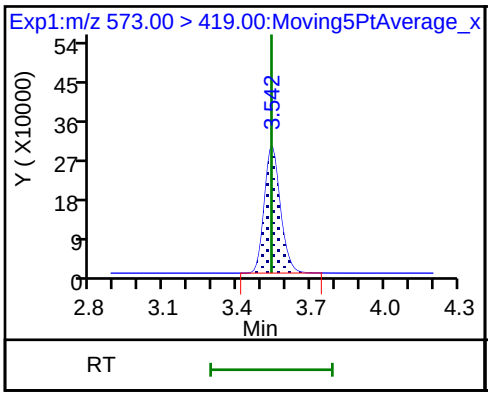
24 Perfluorodecanoic acid (ND)



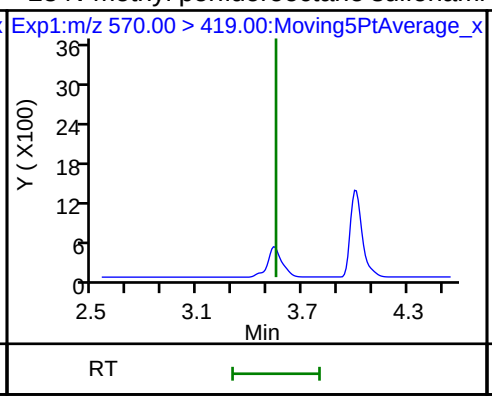
24 Perfluorodecanoic acid (ND)



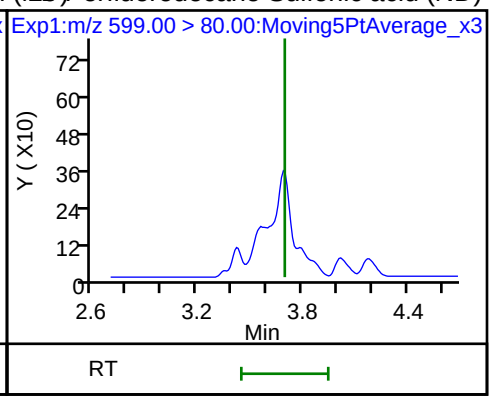
D 27 d3-NMeFOSAA



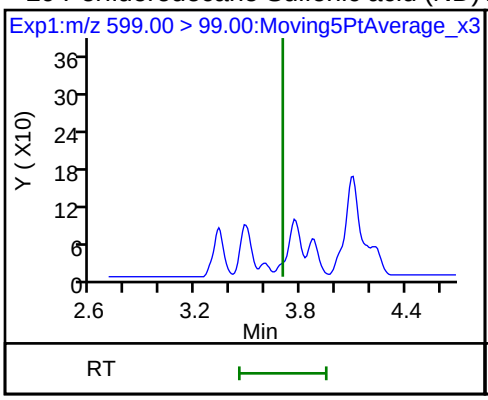
28 N-methyl perfluorooctane sulfonami (ND)



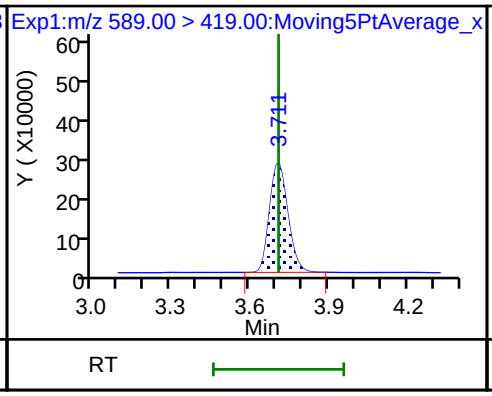
29 Perfluorodecane Sulfonic acid (ND)



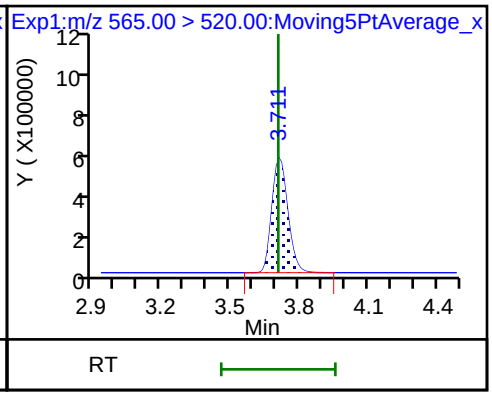
29 Perfluorodecane Sulfonic acid (ND)



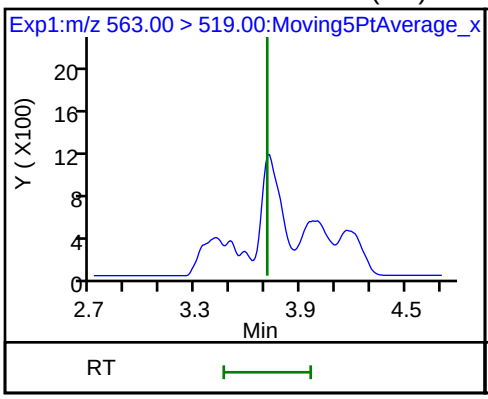
D 32 d5-NEtFOSAA



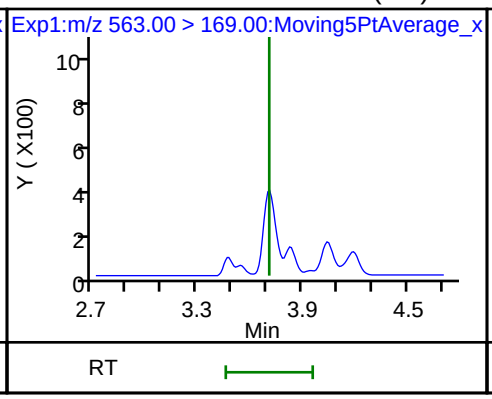
D 30 13C2 PFUnA



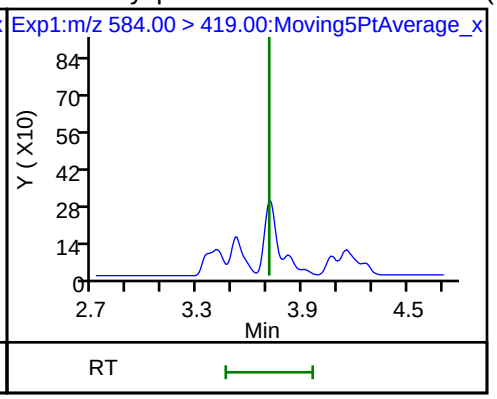
31 Perfluoroundecanoic acid (ND)



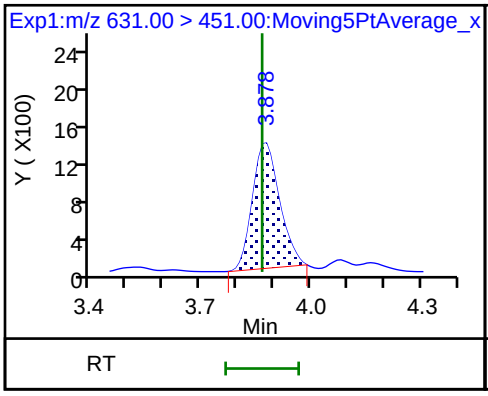
31 Perfluoroundecanoic acid (ND)



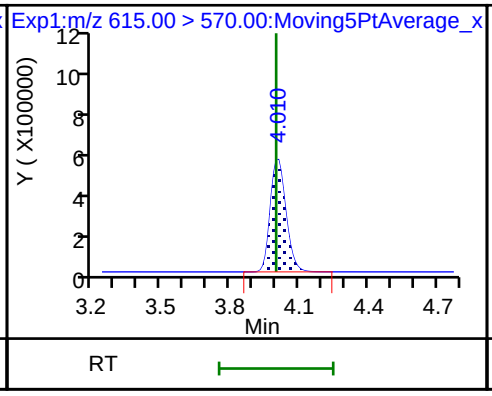
33 N-ethyl perfluorooctane sulfonamid (ND)



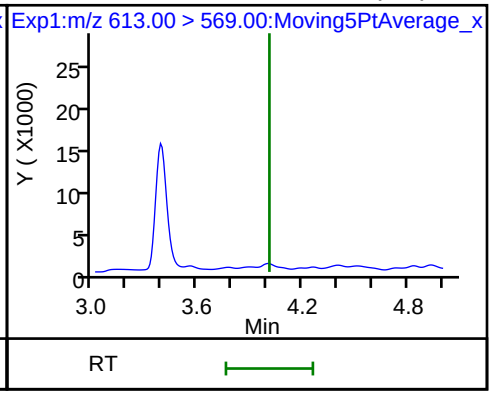
66 11-Chloroeicosafluoro-3-oxaundecan



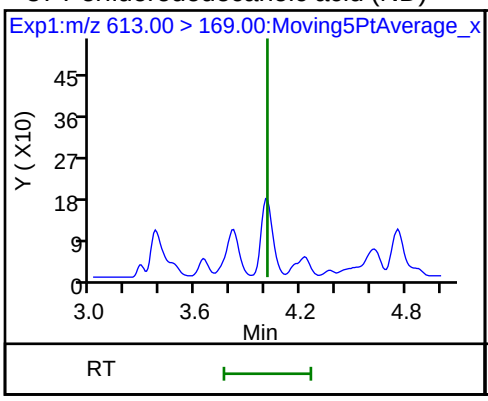
D 36 13C2 PFDoA



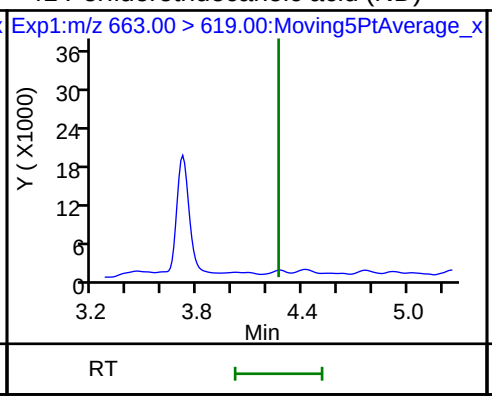
37 Perfluorododecanoic acid (ND)



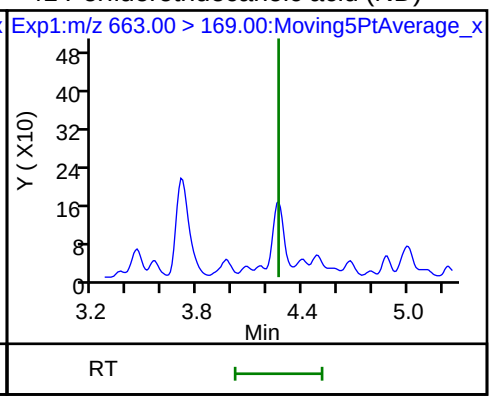
37 Perfluorododecanoic acid (ND)



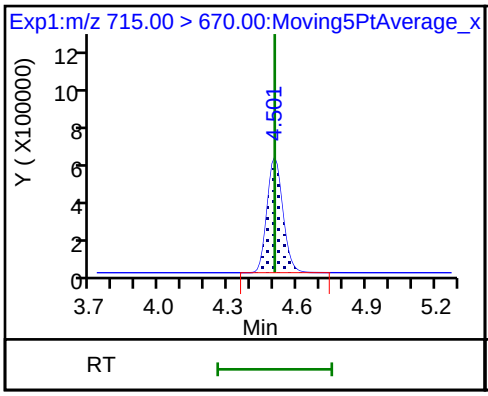
41 Perfluorotridecanoic acid (ND)



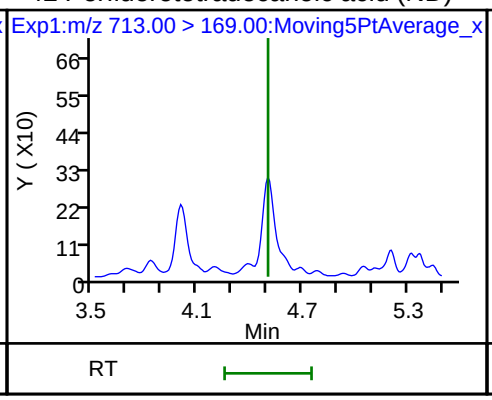
41 Perfluorotridecanoic acid (ND)



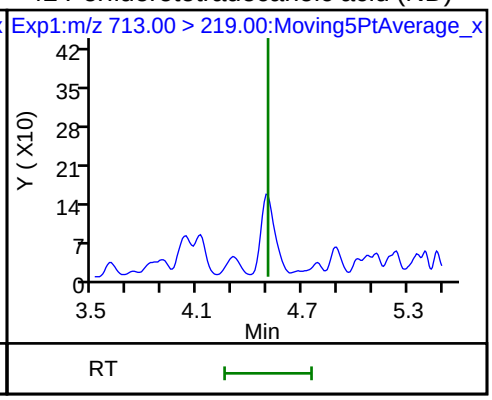
D 43 13C2-PFTeDA



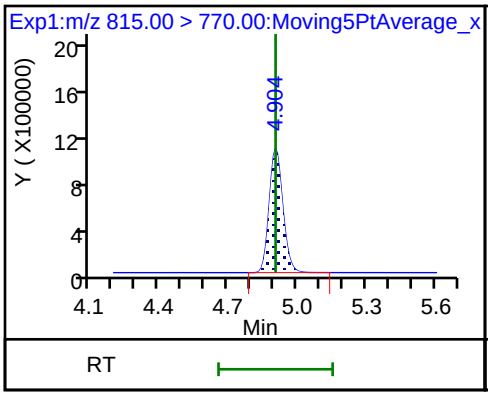
42 Perfluorotetradecanoic acid (ND)



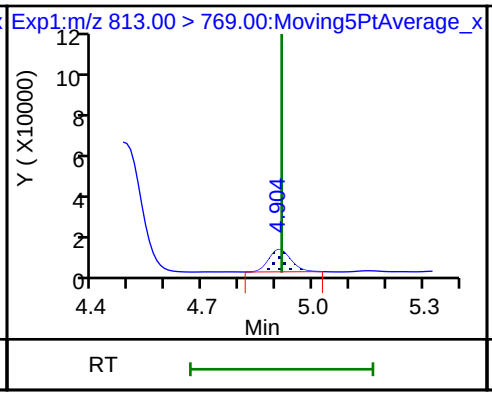
42 Perfluorotetradecanoic acid (ND)



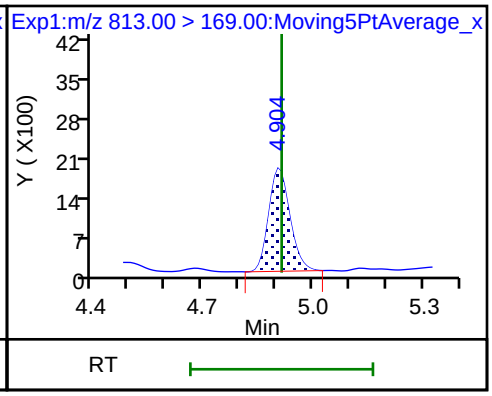
D 44 13C2-PFHxDA



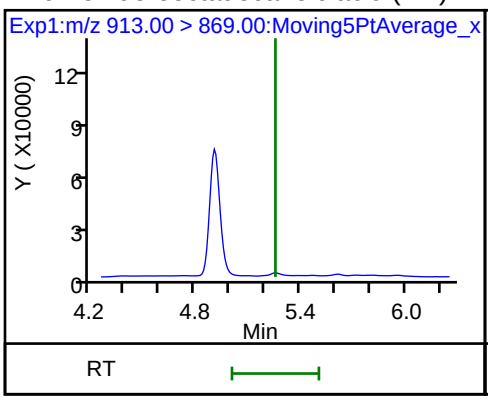
45 Perfluorohexadecanoic acid



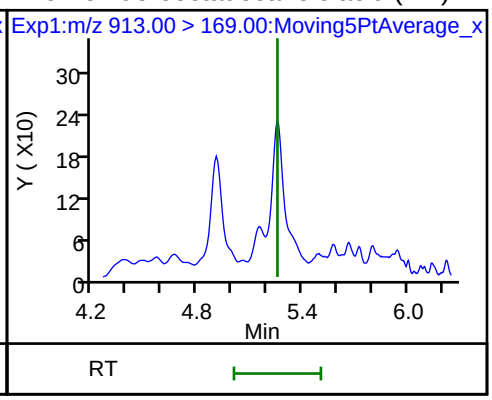
45 Perfluorohexadecanoic acid



46 Perfluorooctadecanoic acid (ND)



46 Perfluorooctadecanoic acid (ND)



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

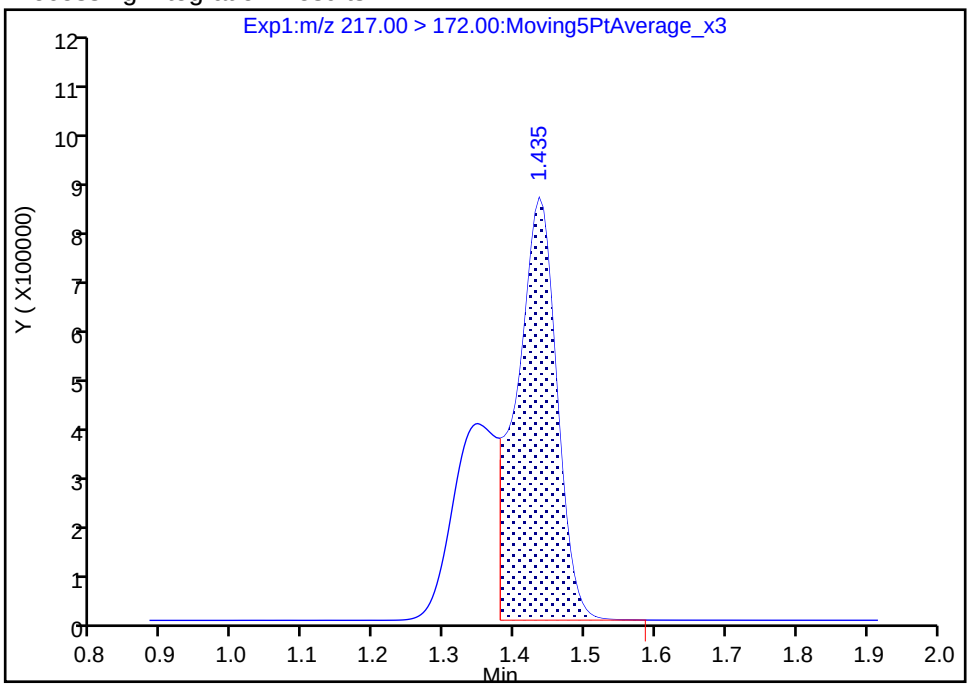
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\2018.07.13LLB_053.d				
Injection Date:	14-Jul-2018 03:41:29	Instrument ID:	A8_N		
Lims ID:	MB 320-231392/1-A				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	38	Worklist Smp#:	2
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

D 1 13C4 PFBA, CAS: STL00992

Signal: 1

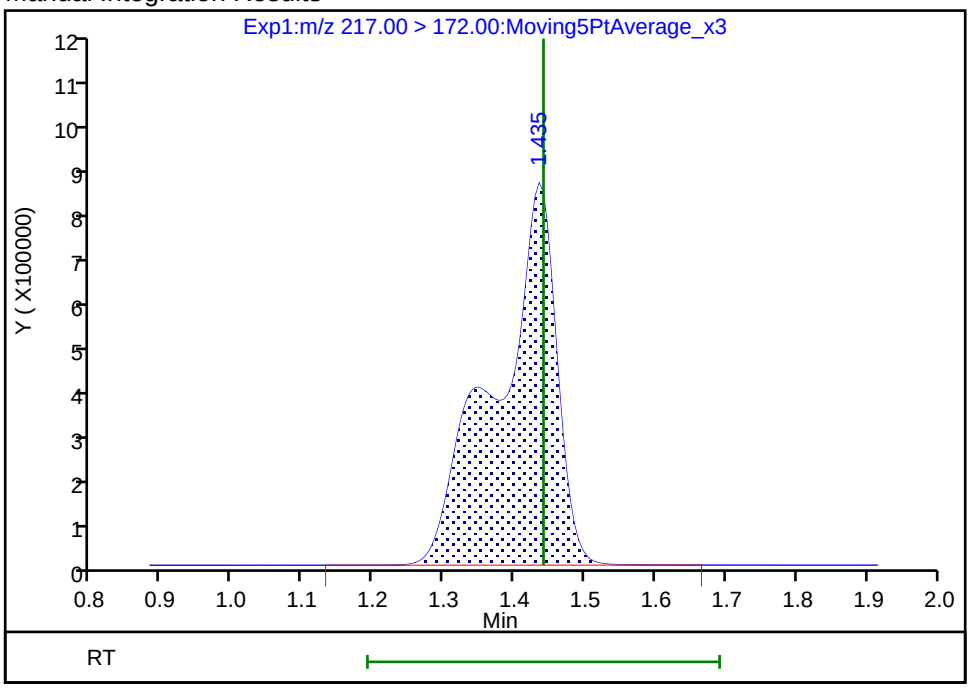
Processing Integration Results

RT: 1.44
Area: 3294910
Amount: 1.408225
Amount Units: ng/ml



Manual Integration Results

RT: 1.44
Area: 4989705
Amount: 2.132571
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 14:11:07

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID:
Lab Sample ID: MB 320-231393/1-A
Matrix: Solid
Lab File ID: 2018.07.14LLA_019.d
Analysis Method: 537 (modified)
Date Collected:
Extraction Method: SHAKE
Date Extracted: 06/28/2018 06:06
Sample wt/vol: 5.00(g)
Date Analyzed: 07/14/2018 13:06
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 234231
Units: mg/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	ND		0.00020	0.000028
2706-90-3	Perfluoropentanoic acid (PFPeA)	ND		0.00020	0.000077
307-24-4	Perfluorohexanoic acid (PFHxA)	ND		0.00020	0.000042
375-85-9	Perfluoroheptanoic acid (PFHpA)	ND		0.00020	0.000029
335-67-1	Perfluorooctanoic acid (PFOA)	ND		0.00020	0.000086
375-95-1	Perfluorononanoic acid (PFNA)	ND		0.00020	0.000036
335-76-2	Perfluorodecanoic acid (PFDA)	ND		0.00020	0.000022
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		0.00020	0.000036
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		0.00020	0.000067
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		0.00020	0.000051
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		0.00020	0.000054
375-73-5	Perfluorobutanesulfonic acid (PFBS)	ND		0.00020	0.000025
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	ND		0.00020	0.000031
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.00020	0.000035
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	ND		0.00050	0.00020
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		0.00020	0.000039
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		0.00020	0.000082
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.0020	0.00039
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.0020	0.00037
27619-97-2	6:2 FTS	ND		0.0020	0.00015
39108-34-4	8:2 FTS	ND		0.0020	0.00025

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID:
Lab Sample ID: MB 320-231393/1-A
Matrix: Solid
Lab File ID: 2018.07.14LLA_019.d
Analysis Method: 537 (modified)
Date Collected:
Extraction Method: SHAKE
Date Extracted: 06/28/2018 06:06
Sample wt/vol: 5.00(g)
Date Analyzed: 07/14/2018 13:06
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 234231
Units: mg/Kg

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00992	13C4 PFBA	84		25-150
STL01893	13C5 PFPeA	87		25-150
STL00993	13C2 PFHxA	91		25-150
STL01892	13C4-PFHpA	91		25-150
STL00990	13C4 PFOA	89		25-150
STL00995	13C5 PFNA	82		25-150
STL00996	13C2 PFDA	87		25-150
STL00997	13C2 PFUnA	89		25-150
STL00998	13C2 PFDoA	87		25-150
STL02116	13C2-PFTeDA	90		25-150
STL02337	13C3-PFBS	83		25-150
STL00994	18O2 PFHxS	88		25-150
STL00991	13C4 PFOS	82		25-150
STL01056	13C8 FOSA	81		25-150
STL02118	d3-NMeFOSAA	88		25-150
STL02117	d5-NEtFOSAA	86		25-150
STL02279	M2-6:2FTS	78		25-150
STL02280	M2-8:2FTS	67		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180716-61105.b\2018.07.14LLA_019.d
Lims ID: MB 320-231393/1-A
Client ID:
Sample Type: MB
Inject. Date: 14-Jul-2018 13:06:22 ALS Bottle#: 11 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: mb 320-231393/1-a
Misc. Info.: Plate: 1 Rack: 5
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180716-61105.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 17-Jul-2018 08:10:56 Calib Date: 11-Jul-2018 15:38:42
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK016

First Level Reviewer: mongkols Date: 17-Jul-2018 08:10:56

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										M
217.00 > 172.00	1.439	1.436	0.003	0.541	5090890	2.10		83.8	51865	M
D 3 13C5-PFPeA										
267.90 > 223.00	1.716	1.720	-0.004	0.646	3664370	2.17		86.8	45469	
D 47 13C3-PFBS										
301.90 > 83.00	1.753	1.756	-0.004	0.659	82128	1.94		83.3	455	
D 7 13C2 PFHxA										
315.00 > 270.00	1.999	1.992	0.007	0.752	4161251	2.28		91.4	79368	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.090	2.082	0.008	0.786	344963	2.66		106	6738	
D 9 13C4-PFHpA										
367.00 > 322.00	2.316	2.306	0.010	0.871	3835408	2.29		91.4	52783	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.329	2.319	0.010	1.000	16911	0.007030			230	
399.00 > 99.00	2.329	2.319	0.010	1.000	5242		3.23(1.50-4.49)		29.0	
D 11 18O2 PFHxS										
403.00 > 84.00	2.329	2.319	0.010	0.876	4956332	2.08		88.1	51643	
D 12 M2-6:2FTS										
429.00 > 81.00	2.634	2.628	0.006	0.991	667711	1.86		78.1	17544	
D 14 13C4 PFOA										
417.00 > 372.00	2.658	2.652	0.006	1.000	3792879	2.21		88.6	65219	
* 62 13C2-PFOA										
415.00 > 370.00	2.658	2.659	-0.001		4477893	2.50			52074	
D 19 13C5 PFNA										
468.00 > 423.00	3.019	3.018	0.001	1.136	3153467	2.06		82.4	41330	
D 18 13C4 PFOS										
503.00 > 80.00	3.019	3.018	0.001	1.136	3404921	1.95		81.6	49916	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
17 Perfluorooctane sulfonic acid										M
499.00 > 80.00	3.019	3.019	0.001	1.000	25181	0.0156			380	
499.00 > 99.00	3.019	3.019	0.001	1.000	6033		4.17(2.31-6.93)		81.9	M
D 26 M2-8:2FTS										
529.00 > 81.00	3.361	3.361	0.0	1.265	839473	1.59		66.6	14853	
D 21 13C8 FOSA										
506.00 > 78.00	3.361	3.370	-0.009	1.265	5077346	2.02		80.7	49801	
D 23 13C2 PFDA										
515.00 > 470.00	3.371	3.370	0.001	1.268	2906376	2.16		86.5	31727	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.520	3.520	0.0	1.324	1215625	2.21		88.3	26896	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.688	3.687	0.001	1.387	1218700	2.16		86.4	3520	
D 30 13C2 PFUnA										
565.00 > 520.00	3.698	3.698	0.0	1.391	2506274	2.23		89.3	43803	
D 36 13C2 PFDoA										
615.00 > 570.00	3.989	3.988	0.001	1.500	2535394	2.18		87.2	33721	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.490	4.480	0.010	1.689	2728136	2.26		90.4	19646	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.896	4.887	0.009	1.000	38390	0.000744			9.2	
813.00 > 169.00	4.896	4.887	0.009	1.000	6732		5.70(2.86-8.58)		60.5	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.896	4.887	0.009	1.842	4527596	2.35		94.2	14056	

QC Flag Legend

Review Flags

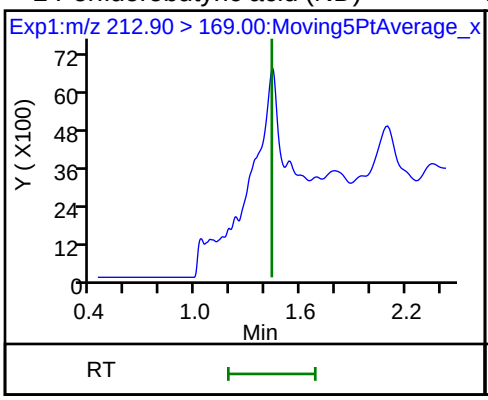
M - Manually Integrated

Report Date: 17-Jul-2018 08:10:57 Chrom Revision: 2.2 07-Jun-2018 07:41:54

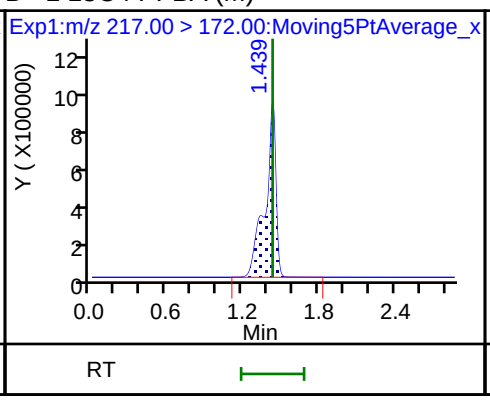
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180716-61105.b\2018.07.14LLA_019.d
Injection Date: 14-Jul-2018 13:06:22 Instrument ID: A8_N
Lims ID: MB 320-231393/1-A
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 11 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC ICAL

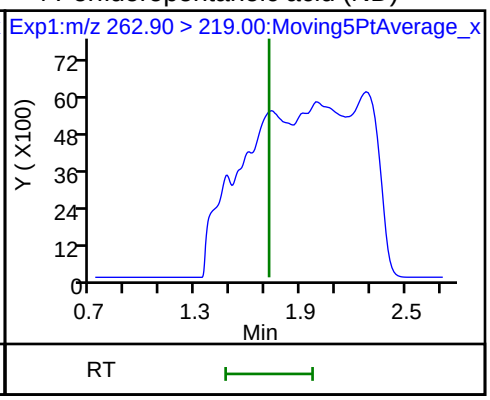
2 Perfluorobutyric acid (ND)



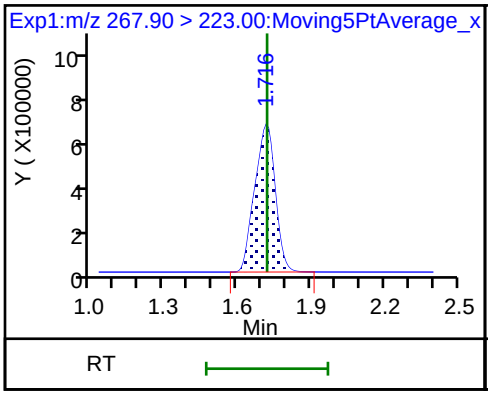
D 1 13C4 PFBA (M)



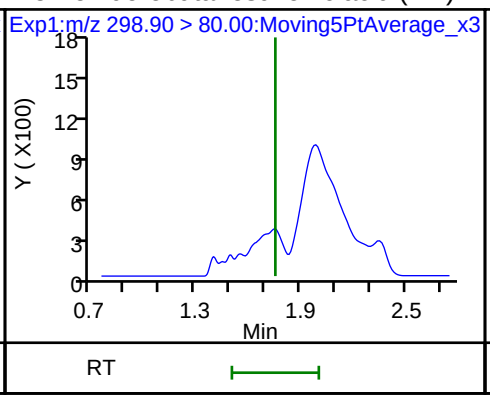
4 Perfluoropentanoic acid (ND)



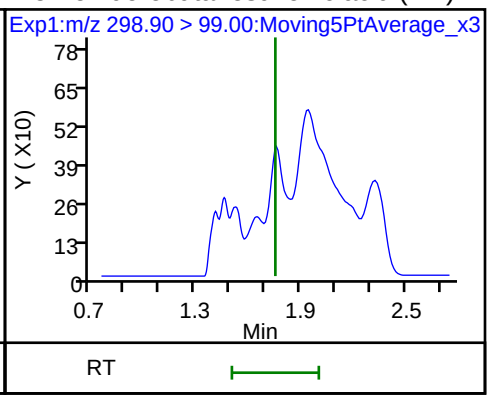
D 3 13C5-PFPeA



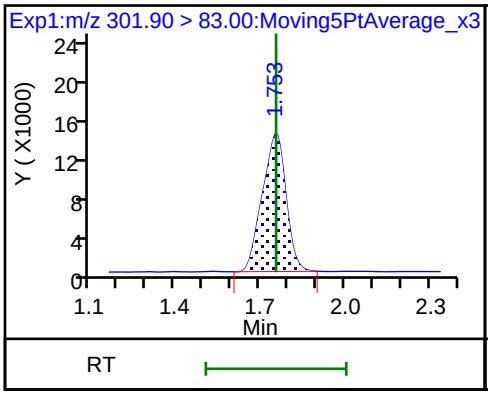
5 Perfluorobutanesulfonic acid (ND)



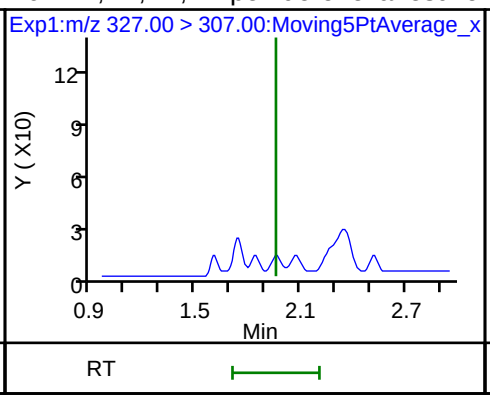
5 Perfluorobutanesulfonic acid (ND)



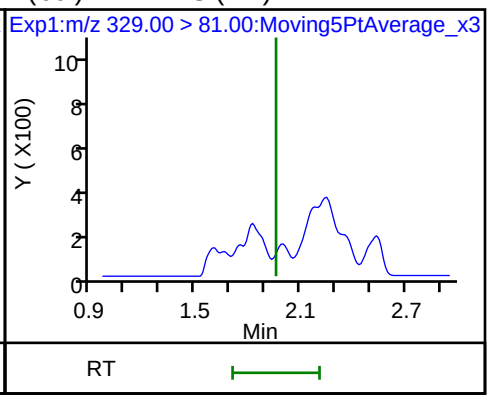
D 47 13C3-PFBS



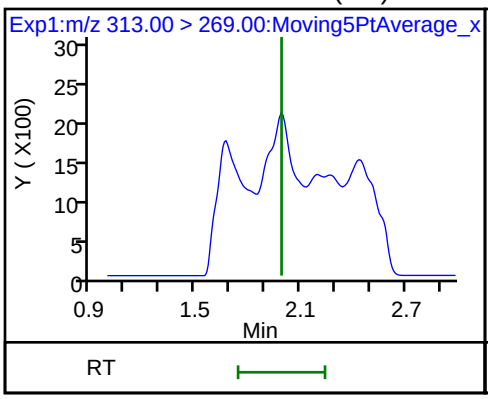
61 1H,1H,2H,2H-perfluorohexanesulfonic acid (ND)



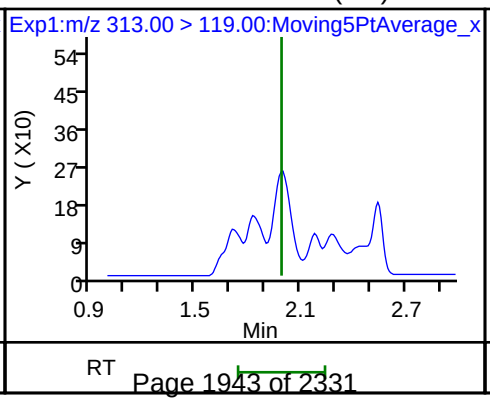
D 60 M2-4:2FTS (ND)



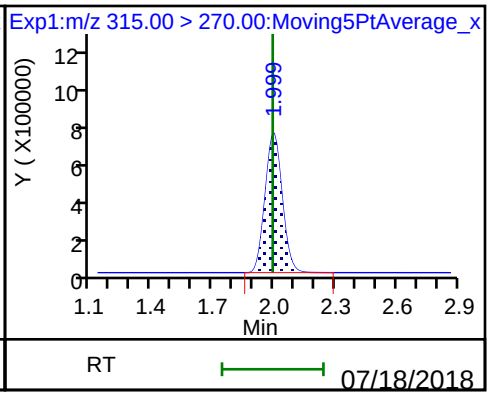
6 Perfluorohexanoic acid (ND)



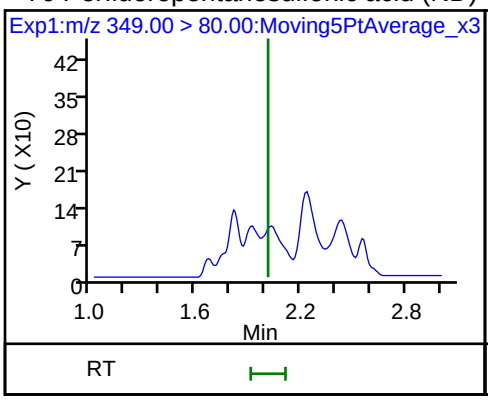
6 Perfluorohexanoic acid (ND)



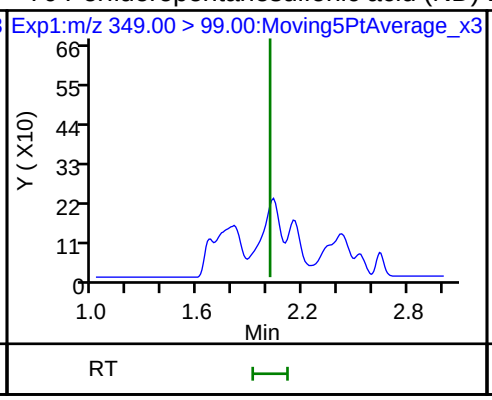
D 7 13C2 PFHxA



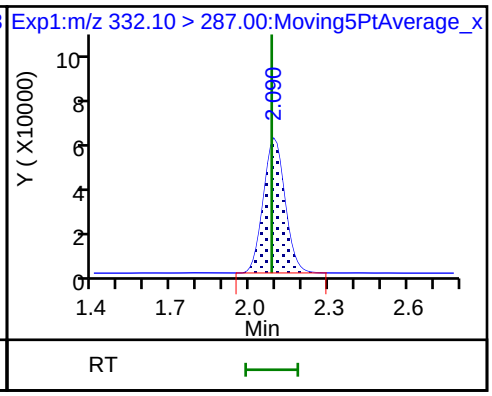
70 Perfluoropentanesulfonic acid (ND)



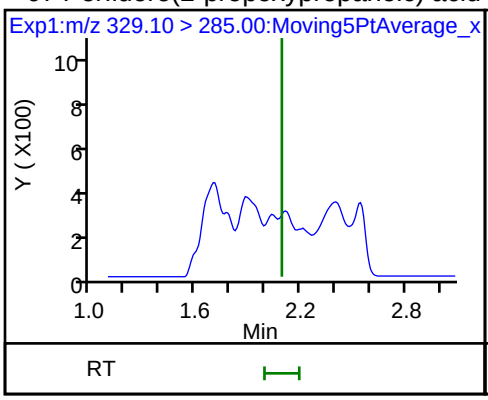
70 Perfluoropentanesulfonic acid (ND)



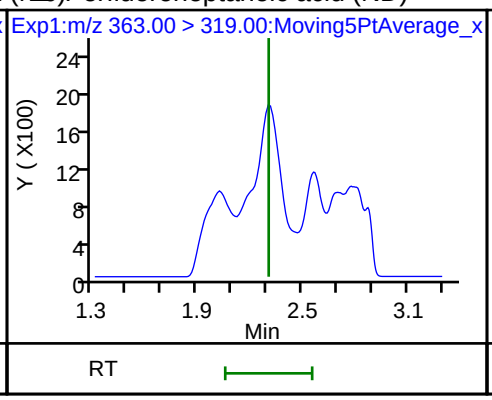
D 64 13C3 HFPO-DA



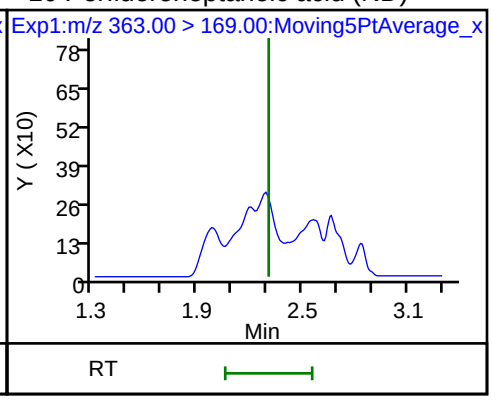
67 Perfluoro(2-propoxypropanoic) acid (ND)



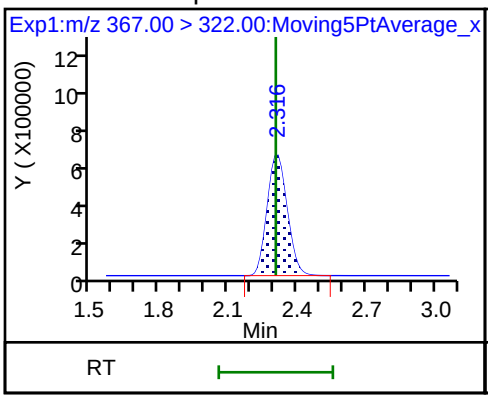
10 Perfluoroheptanoic acid (ND)



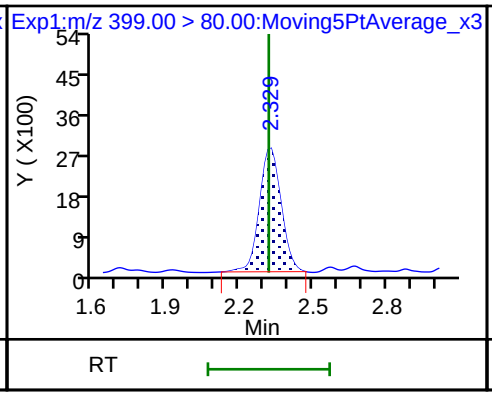
10 Perfluoroheptanoic acid (ND)



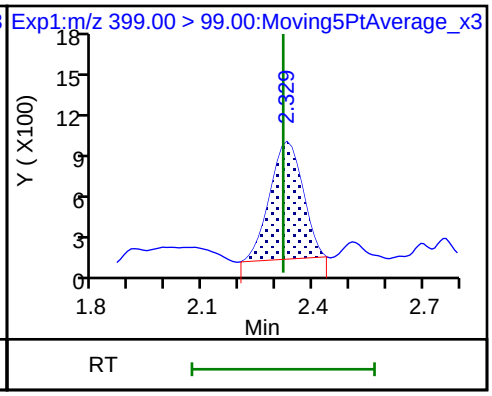
D 9 13C4-PFHpA



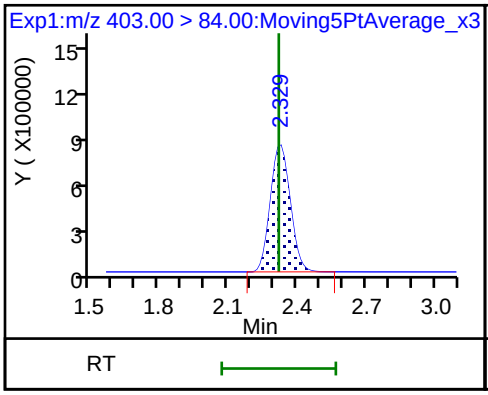
8 Perfluorohexanesulfonic acid



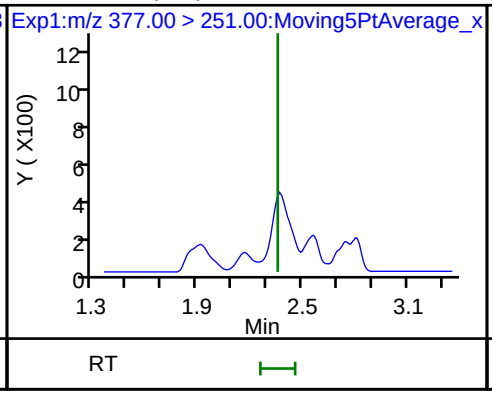
8 Perfluorohexanesulfonic acid



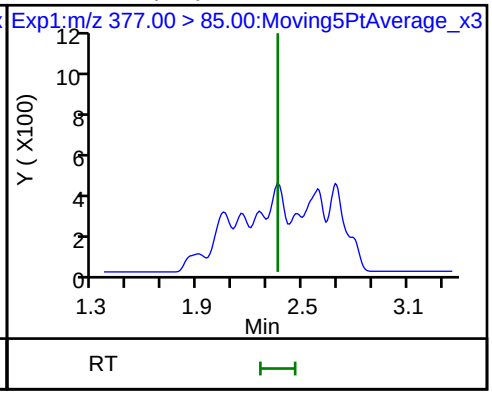
D 11 18O2 PFHxS



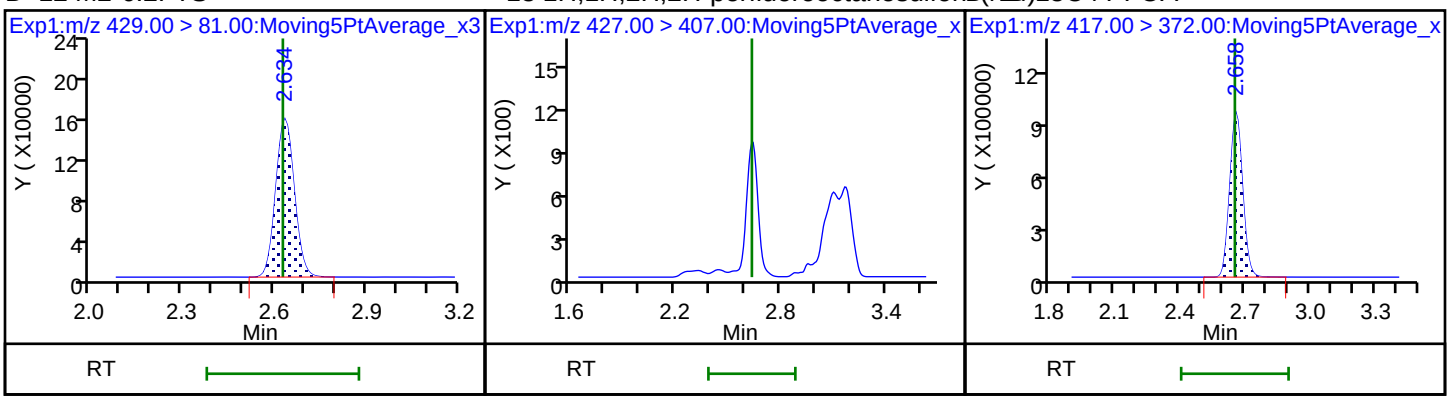
65 Adona (ND)



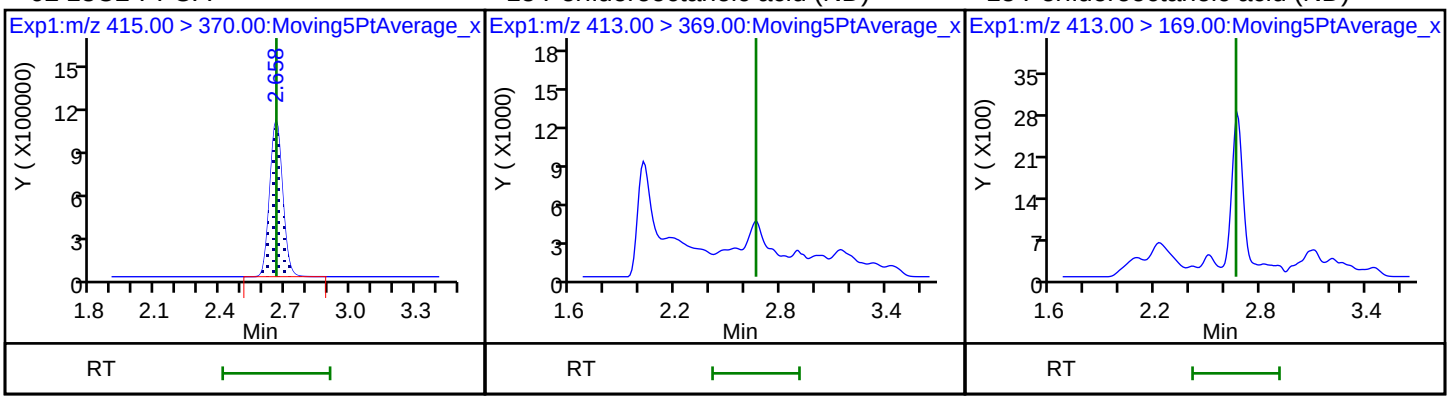
65 Adona (ND)



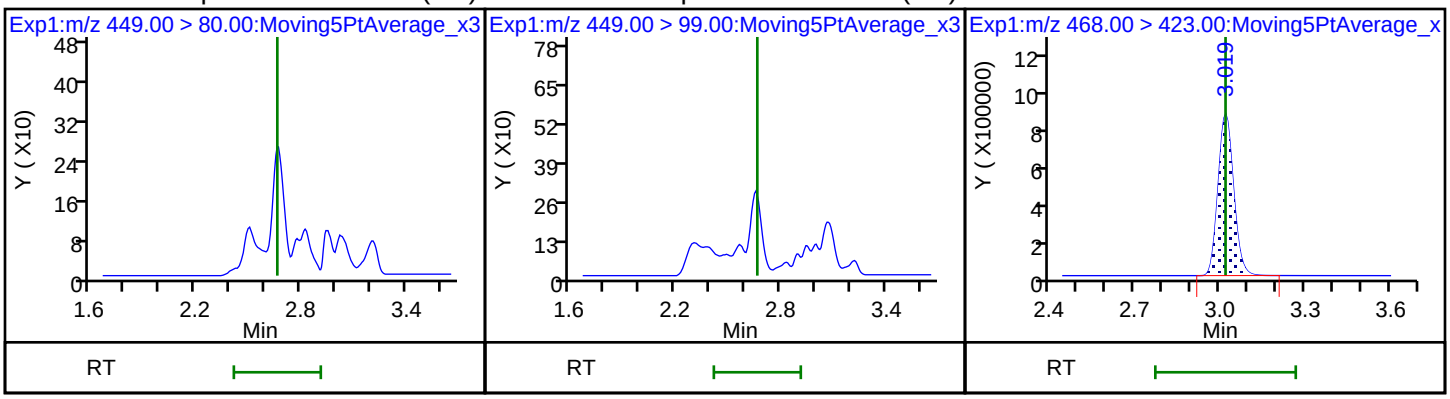
D 12 M2-6:2FTS | 13 1H,1H,2H,2H-perfluorooctanesulfon(ND) | D 14 13C4 PFOA



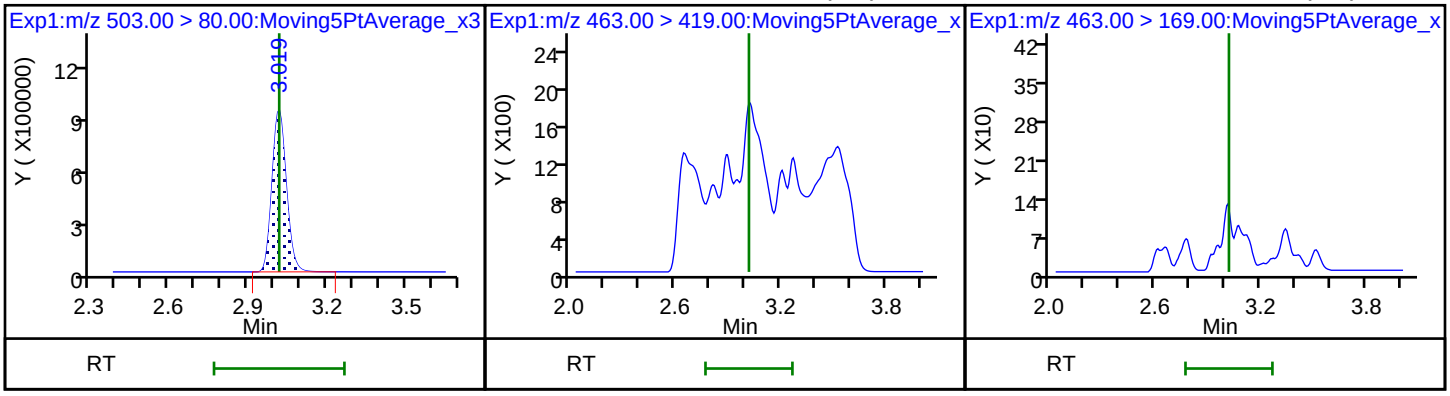
* 62 13C2-PFOA | 15 Perfluorooctanoic acid (ND) | 15 Perfluorooctanoic acid (ND)



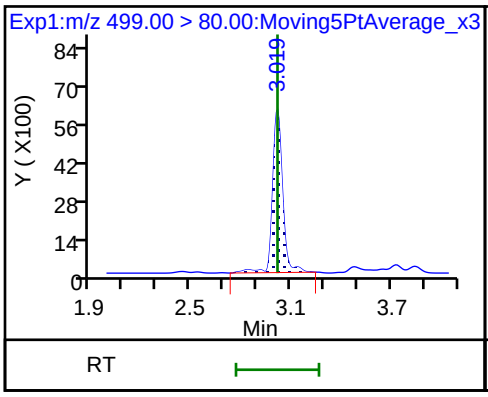
16 Perfluoroheptanesulfonic acid (ND) | 16 Perfluoroheptanesulfonic acid (ND) | D 19 13C5 PFNA



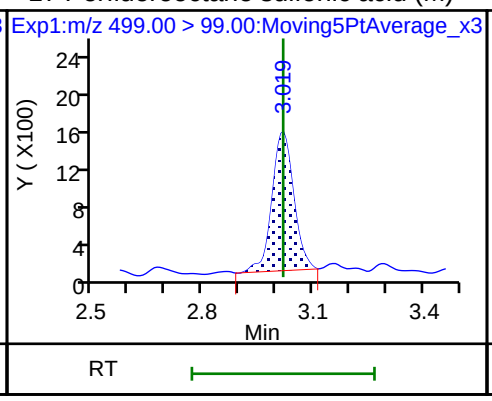
D 18 13C4 PFOS | 20 Perfluorononanoic acid (ND) | 20 Perfluorononanoic acid (ND)



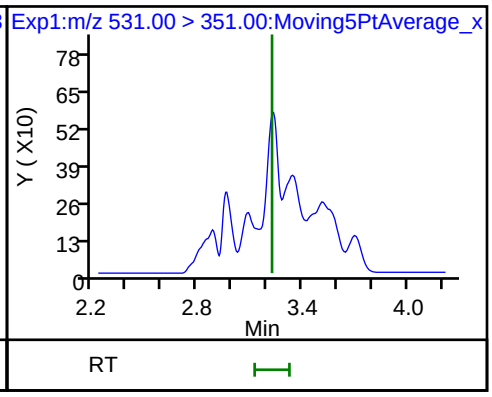
17 Perfluorooctane sulfonic acid



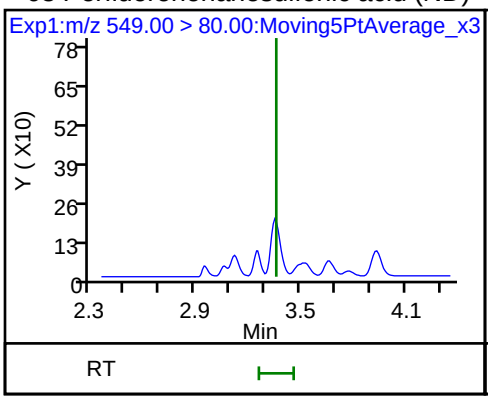
17 Perfluorooctane sulfonic acid (M)



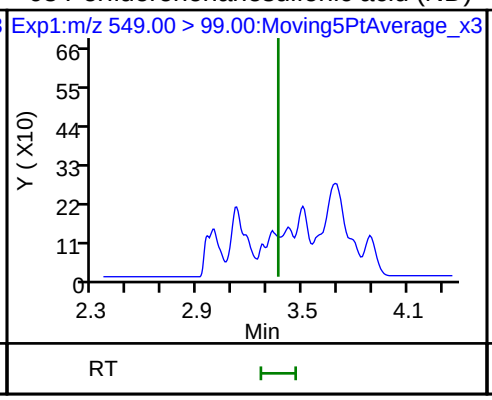
69 9-Chlorohexadecafluoro-3-oxanonane (ND)



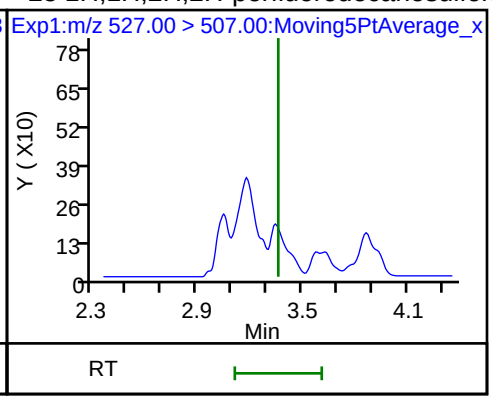
68 Perfluorononanesulfonic acid (ND)



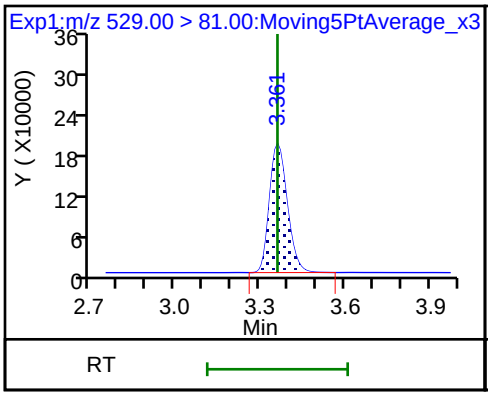
68 Perfluorononanesulfonic acid (ND)



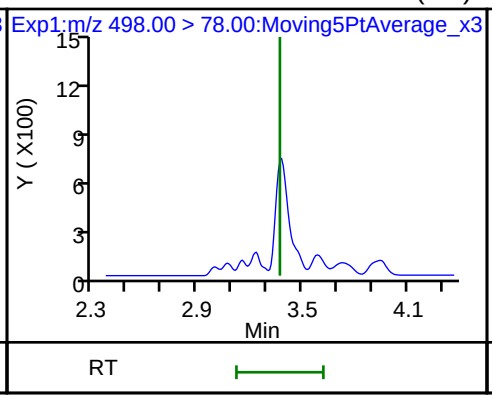
25 1H,1H,2H,2H-perfluorodecanesulfoni (ND)



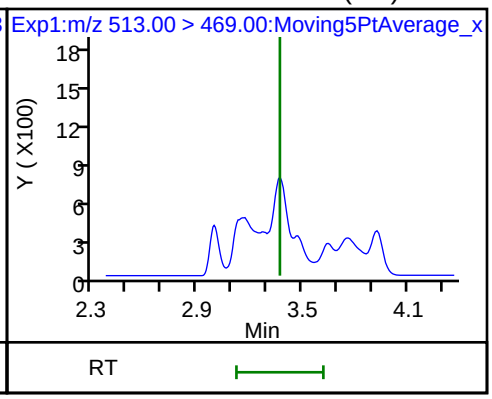
D 26 M2-8:2FTS



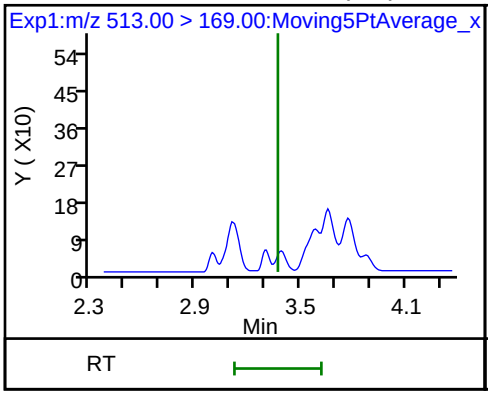
22 Perfluorooctane Sulfonamide (ND)



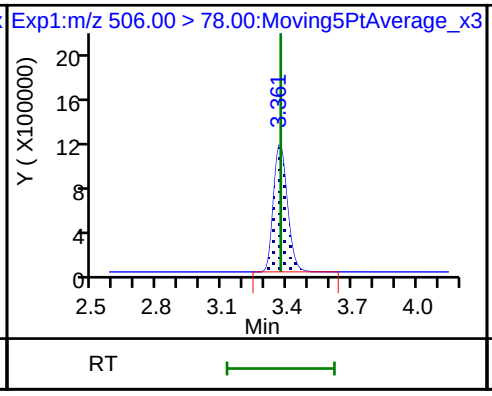
24 Perfluorodecanoic acid (ND)



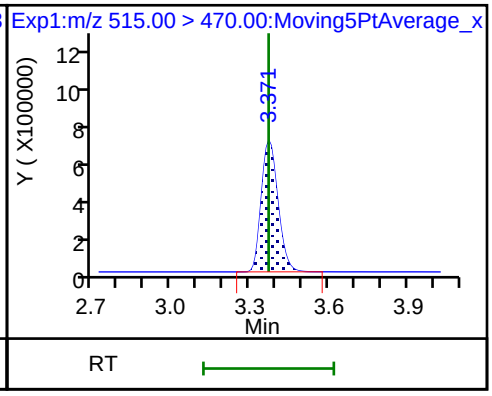
24 Perfluorodecanoic acid (ND)



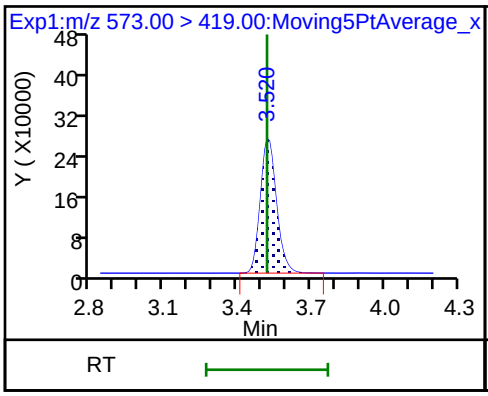
D 21 13C8 FOSA



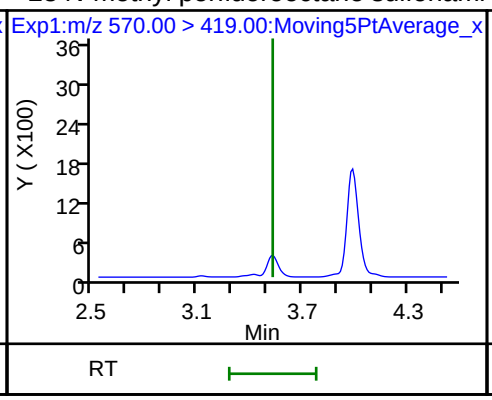
D 23 13C2 PFDA



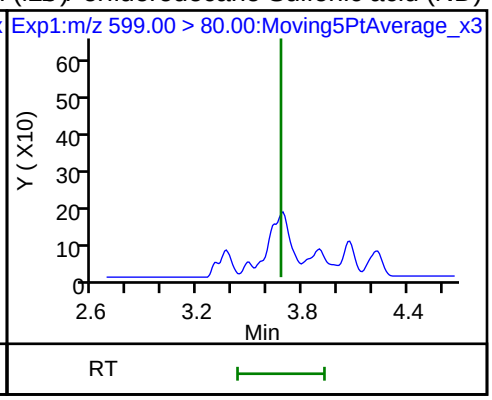
D 27 d3-NMeFOSAA



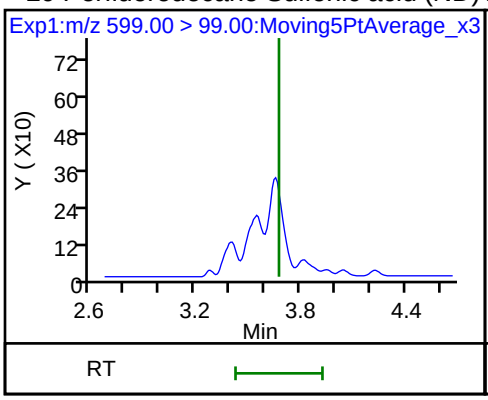
28 N-methyl perfluorooctane sulfonami (ND)



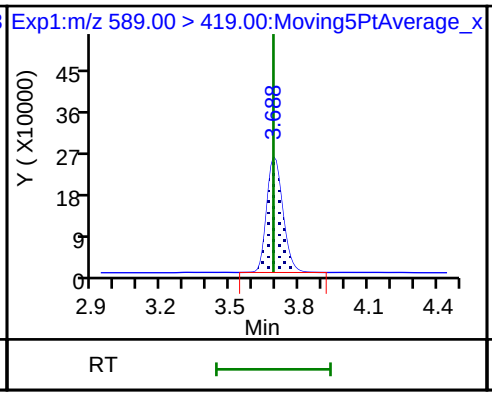
29 Perfluorodecane Sulfonic acid (ND)



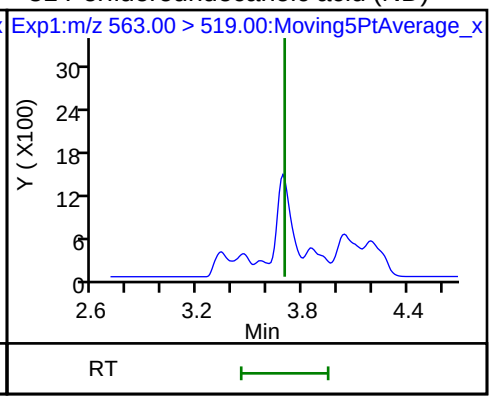
29 Perfluorodecane Sulfonic acid (ND)



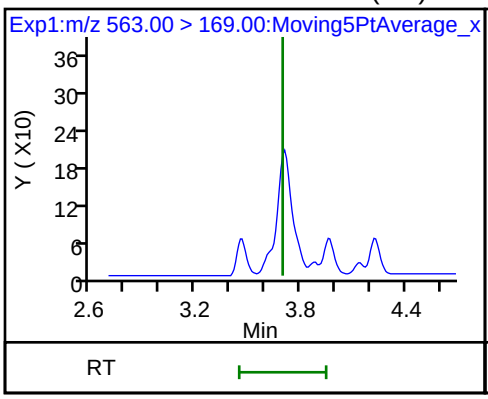
D 32 d5-NEtFOSAA



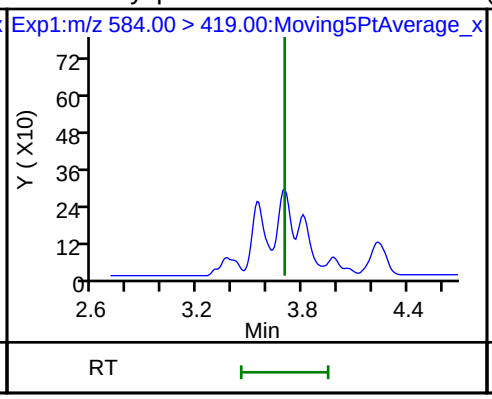
31 Perfluoroundecanoic acid (ND)



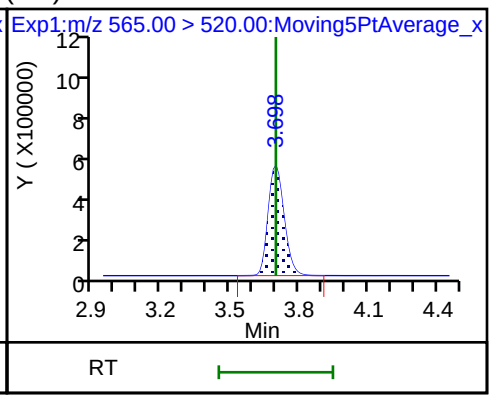
31 Perfluoroundecanoic acid (ND)



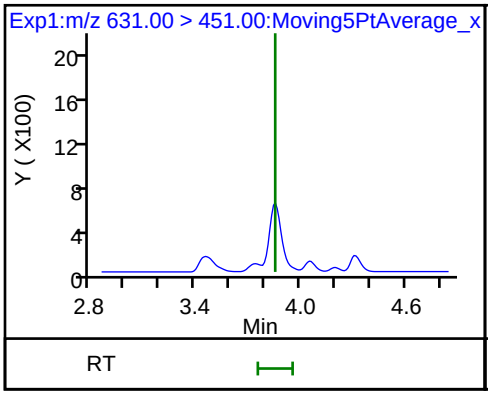
33 N-ethyl perfluorooctane sulfonamid (ND)



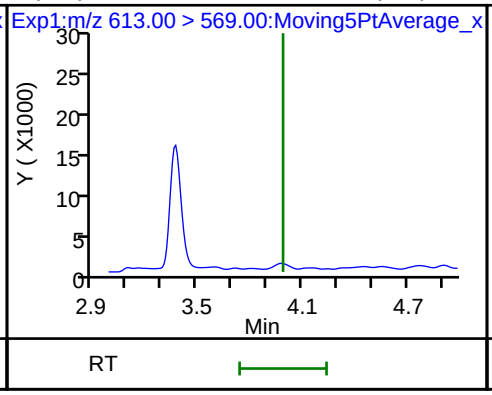
M 30 13C2 PFUnA



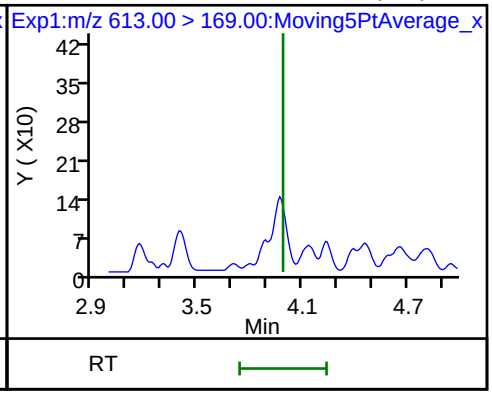
66 11-Chloroeicosafluoro-3-oxaundecan (ND)



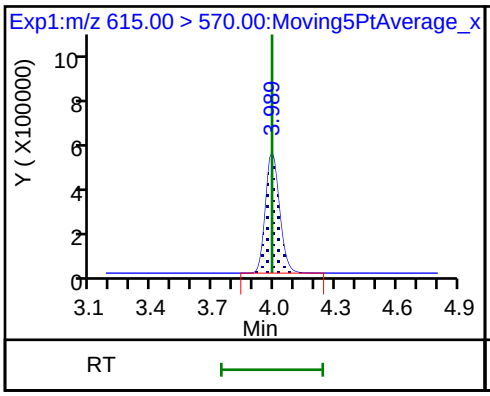
37 Perfluorododecanoic acid (ND)



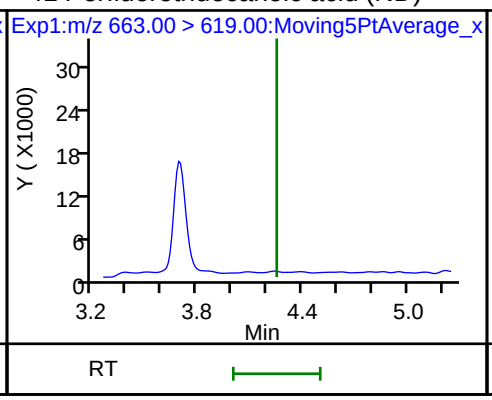
37 Perfluorododecanoic acid (ND)



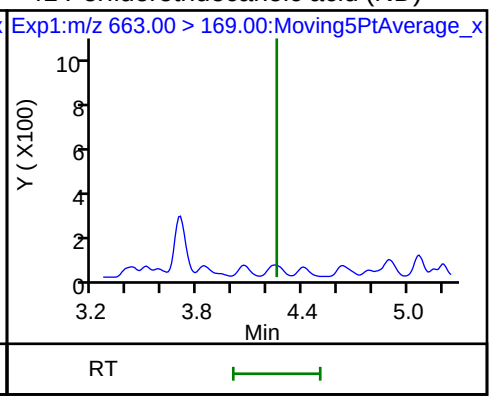
D 36 13C2 PFDoA



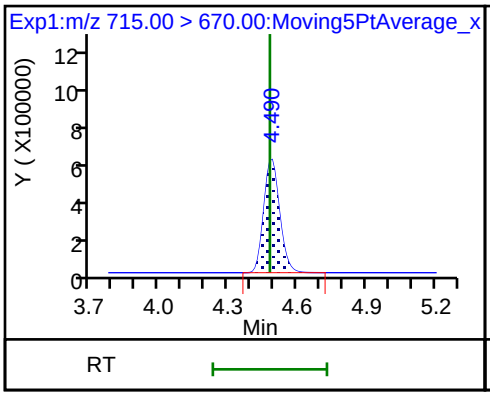
41 Perfluorotridecanoic acid (ND)



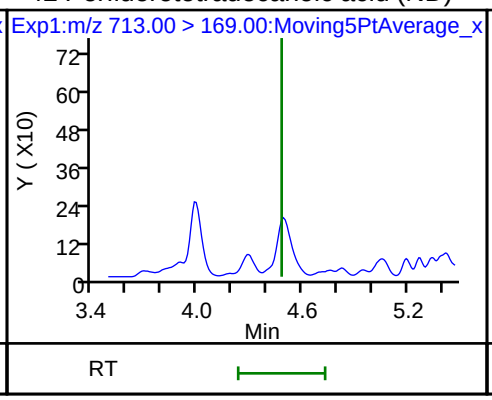
41 Perfluorotridecanoic acid (ND)



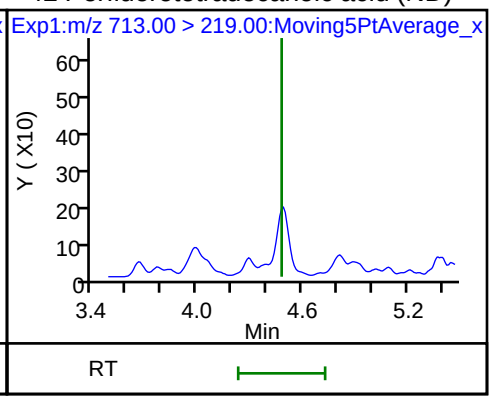
D 43 13C2-PFTeDA



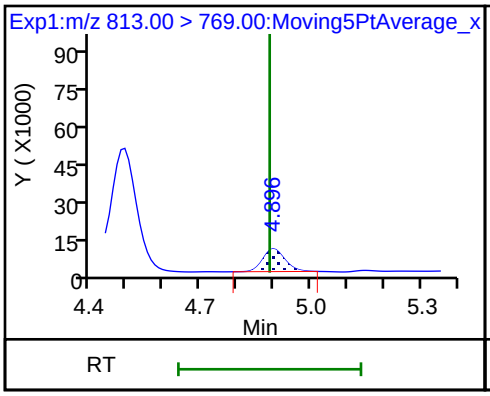
42 Perfluorotetradecanoic acid (ND)



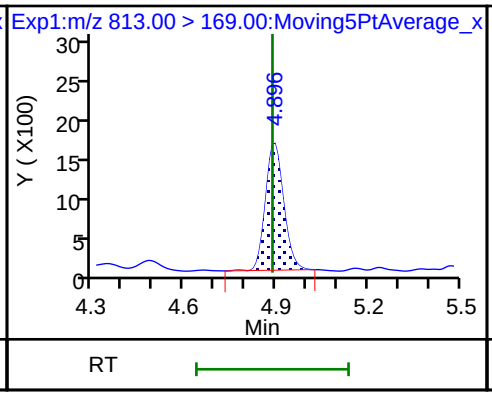
42 Perfluorotetradecanoic acid (ND)



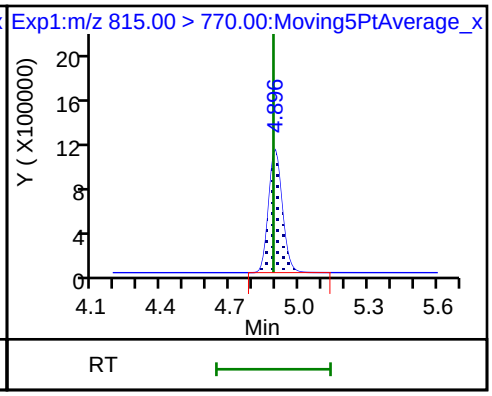
45 Perfluorohexadecanoic acid



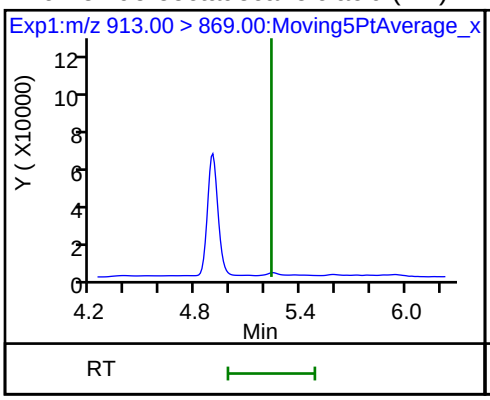
45 Perfluorohexadecanoic acid



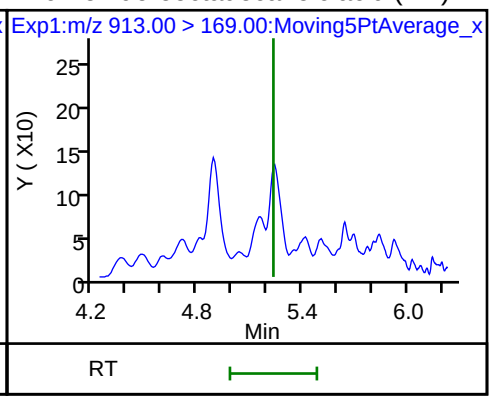
D 44 13C2-PFHxDA



46 Perfluorooctadecanoic acid (ND)



46 Perfluorooctadecanoic acid (ND)



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

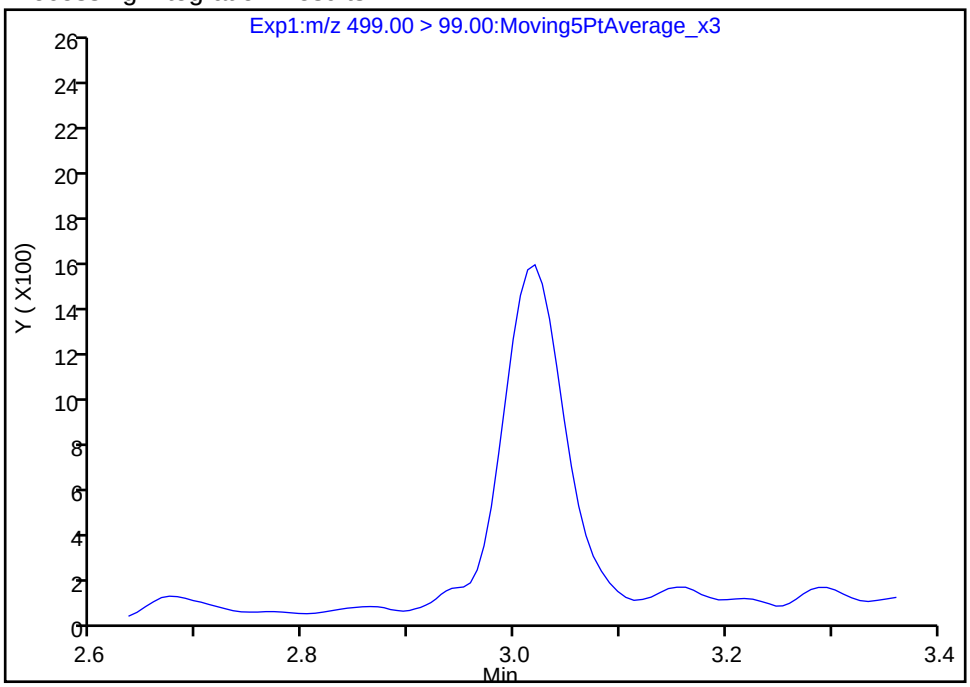
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180716-61105.b\2018.07.14LLA_019.d				
Injection Date:	14-Jul-2018 13:06:22	Instrument ID:	A8_N		
Lims ID:	MB 320-231393/1-A				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	11	Worklist Smp#:	2
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

17 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 2

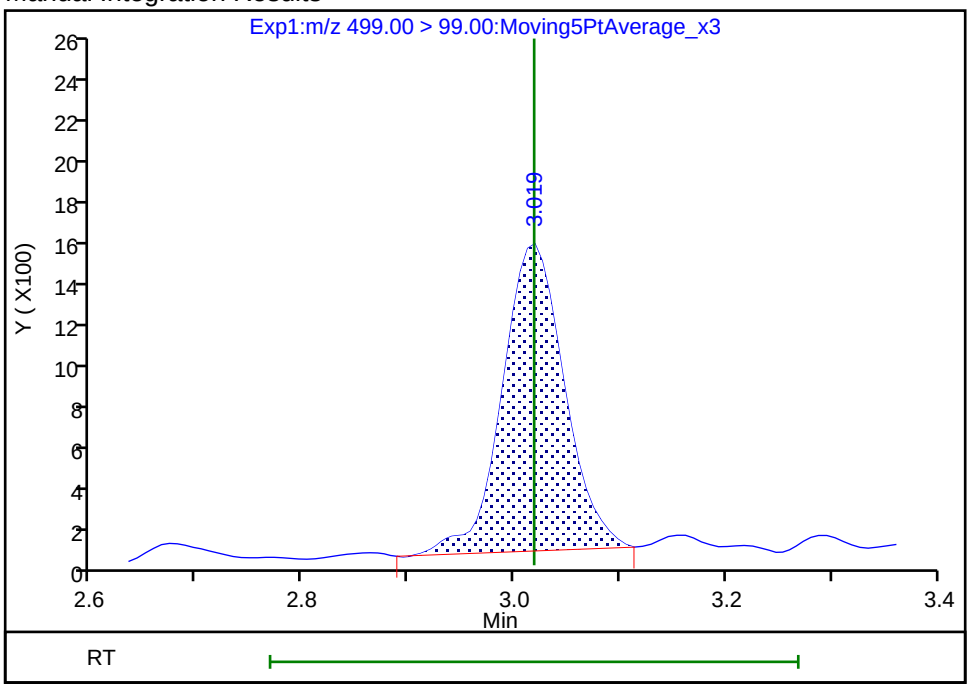
Processing Integration Results

RT: 3.02
Area: 0
Amount: 0.015598
Amount Units: ng/ml



Manual Integration Results

RT: 3.02
Area: 6033
Amount: 0.015598
Amount Units: ng/ml



Reviewer: mongkols, 17-Jul-2018 08:10:40

Audit Action: Manually Integrated Audit Reason: Assign Peak

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

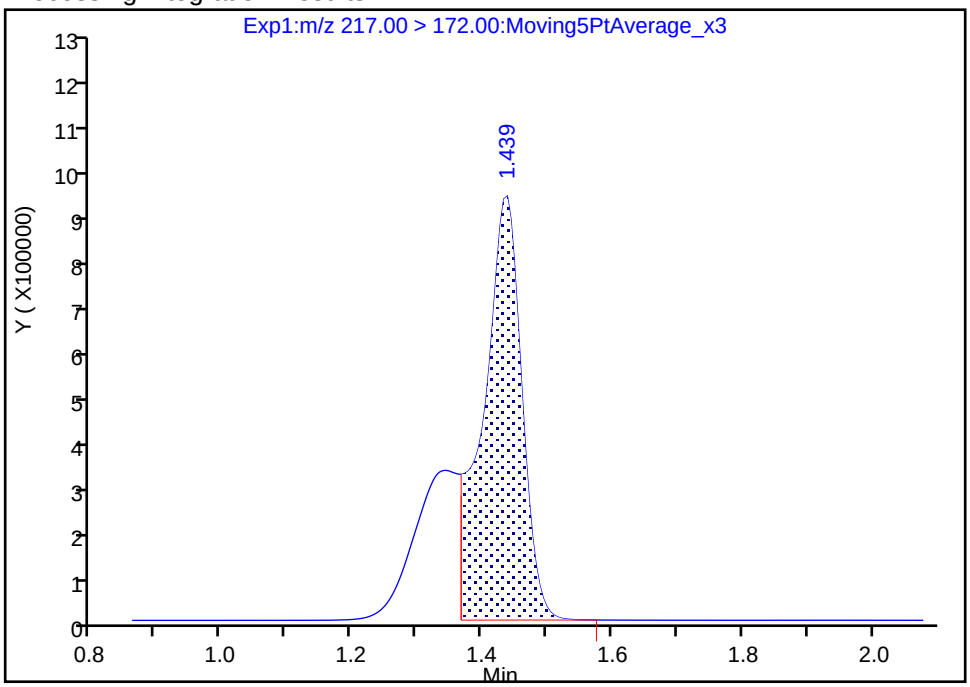
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180716-61105.b\2018.07.14LLA_019.d				
Injection Date:	14-Jul-2018 13:06:22	Instrument ID:	A8_N		
Lims ID:	MB 320-231393/1-A				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	11	Worklist Smp#:	2
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

D 1 13C4 PFBA, CAS: STL00992

Signal: 1

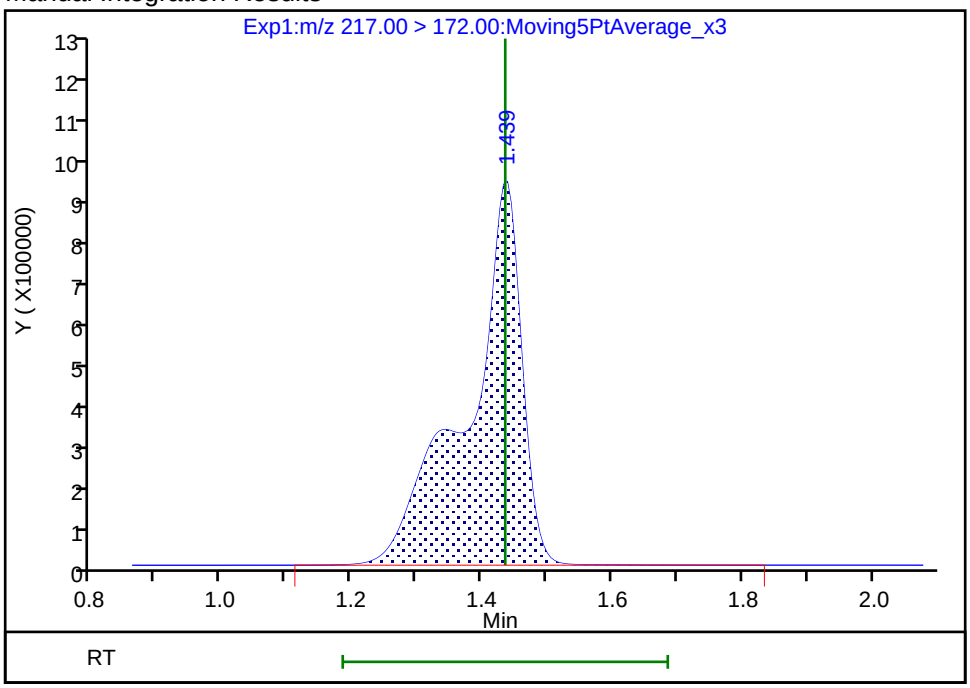
Processing Integration Results

RT: 1.44
Area: 3592394
Amount: 1.479175
Amount Units: ng/ml



Manual Integration Results

RT: 1.44
Area: 5090890
Amount: 2.096183
Amount Units: ng/ml



Reviewer: mongkols, 17-Jul-2018 08:10:11

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID:
Lab Sample ID: MB 320-232121/1-A
Matrix: Water
Lab File ID: 2018.07.06LLC_014.d
Analysis Method: 537 (modified)
Date Collected:
Extraction Method: 3535
Date Extracted: 07/02/2018 14:58
Sample wt/vol: 250.00(mL)
Date Analyzed: 07/07/2018 01:04
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 232800
Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	0.000469	J	0.0020	0.00035
2706-90-3	Perfluoropentanoic acid (PFPeA)	ND		0.0020	0.00049
307-24-4	Perfluorohexanoic acid (PFHxA)	ND		0.0020	0.00058
375-85-9	Perfluoroheptanoic acid (PFHpA)	ND		0.0020	0.00025
335-67-1	Perfluorooctanoic acid (PFOA)	ND		0.0020	0.00085
375-95-1	Perfluorononanoic acid (PFNA)	ND		0.0020	0.00027
335-76-2	Perfluorodecanoic acid (PFDA)	ND		0.0020	0.00031
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		0.0020	0.0011
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		0.0020	0.00055
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		0.0020	0.0013
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		0.0020	0.00029
375-73-5	Perfluorobutanesulfonic acid (PFBS)	ND		0.0020	0.00020
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	ND		0.0020	0.00030
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.000272	J	0.0020	0.00017
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.0020	0.00019
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	ND		0.0020	0.00054
8789-57-2	Perfluorononanesulfonic acid (PFNS)	ND		0.0020	0.00016
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		0.0020	0.00032
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		0.0020	0.00035
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.020	0.0031
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.020	0.0019
757124-72-4	4:2 FTS	ND		0.020	0.0052
27619-97-2	6:2 FTS	ND		0.020	0.0020
39108-34-4	8:2 FTS	ND		0.020	0.0020

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID:
Lab Sample ID: MB 320-232121/1-A
Matrix: Water
Lab File ID: 2018.07.06LLC_014.d
Analysis Method: 537 (modified)
Date Collected:
Extraction Method: 3535
Date Extracted: 07/02/2018 14:58
Sample wt/vol: 250.00(mL)
Date Analyzed: 07/07/2018 01:04
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 232800
Units: ug/L

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00992	13C4 PFBA	87		25-150
STL01893	13C5 PFPeA	94		25-150
STL00993	13C2 PFHxA	97		25-150
STL01892	13C4-PFHpA	103		25-150
STL00990	13C4 PFOA	106		25-150
STL00995	13C5 PFNA	109		25-150
STL00996	13C2 PFDA	108		25-150
STL00997	13C2 PFUnA	108		25-150
STL00998	13C2 PFDoA	108		25-150
STL02116	13C2-PFTeDA	103		25-150
STL02337	13C3-PFBS	94		25-150
STL00994	18O2 PFHxS	109		25-150
STL00991	13C4 PFOS	105		25-150
STL01056	13C8 FOSA	89		25-150
STL02118	d3-NMeFOSAA	107		25-150
STL02117	d5-NEtFOSAA	112		25-150
STL02279	M2-6:2FTS	111		25-150
STL02280	M2-8:2FTS	117		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\2018.07.06LLC_014.d
Lims ID: MB 320-232121/1-A
Client ID:
Sample Type: MB
Inject. Date: 07-Jul-2018 01:04:11 ALS Bottle#: 7 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: mb 320-232121/1-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 09-Jul-2018 13:01:41 Calib Date: 05-Jul-2018 09:38:17
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180705-60684.b\2018.07.05LLICALAA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK010

First Level Reviewer: mongkols Date: 09-Jul-2018 13:01:41

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.430	1.428	0.002	0.538	5440507	2.17		86.8	22033	
2 Perfluorobutyric acid										
212.90 > 169.00	1.430	1.428	0.002	1.000	26050	0.0117			10.1	
D 3 13C5-PFPeA										
267.90 > 223.00	1.702	1.707	-0.005	0.640	4354665	2.35		93.9	43571	
D 47 13C3-PFBS										
301.90 > 83.00	1.747	1.743	0.004	0.657	97223	2.19		94.2	780	
D 7 13C2 PFHxA										
315.00 > 270.00	1.991	1.988	0.003	0.749	4816760	2.42		97.0	53475	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.082	2.078	0.004	0.783	441605	2.71		109	8396	
D 9 13C4-PFHpA										
367.00 > 322.00	2.306	2.302	0.004	0.867	4553716	2.58		103	39626	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.319	2.303	0.016	1.000	18621	0.006812			172	
399.00 > 99.00	2.319	2.303	0.016	1.000	8794		2.12(1.50-4.49)		66.0	
D 11 18O2 PFHxS										
403.00 > 84.00	2.319	2.315	0.004	0.872	5591320	2.58		109	60820	
D 12 M2-6:2FTS										
429.00 > 81.00	2.627	2.626	0.001	0.988	1046349	2.64		111	17146	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.627	2.627	0.001	1.000	12070	0.0175			70.1	
D 14 13C4 PFOA										
417.00 > 372.00	2.659	2.650	0.009	1.000	4573751	2.65		106	34755	
* 62 13C2-PFOA										
415.00 > 370.00	2.659	2.651	0.008		4528295	2.50			39005	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
20 Perfluorononanoic acid										R
463.00 > 419.00	3.028	3.015	0.013	1.002	1951	0.001133			3.7	R
463.00 > 169.00	3.021	3.015	0.006	1.000	1250		1.56(1.90-5.69)		42.5	
D 18 13C4 PFOS										
503.00 > 80.00	3.021	3.015	0.006	1.136	3892638	2.51		105	34234	
D 19 13C5 PFNA										
468.00 > 423.00	3.021	3.015	0.006	1.136	3995905	2.72		109	45260	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.228	3.221	0.007	1.068	2541	0.000825			55.6	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.365	3.357	0.008	1.000	3964	0.002085			96.7	
D 26 M2-8:2FTS										
529.00 > 81.00	3.365	3.367	-0.002	1.265	1230107	2.79		117	23738	
D 21 13C8 FOSA										
506.00 > 78.00	3.365	3.367	-0.002	1.265	4792160	2.23		89.2	46362	
D 23 13C2 PFDA										
515.00 > 470.00	3.374	3.376	-0.002	1.269	3425182	2.70		108	39817	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.533	3.525	0.008	1.003	5486	0.006646			71.6	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.524	3.525	-0.001	1.325	2005159	2.69		107	26607	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.690	3.694	-0.004	1.000	7759	0.0104			137	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.690	3.694	-0.004	1.388	2064101	2.80		112	20645	
D 30 13C2 PFUnA										
565.00 > 520.00	3.701	3.705	-0.004	1.392	2866162	2.69		108	37539	
66 11-Chloroeicosafluoro-3-oxaundecan										
631.00 > 451.00	3.847	3.851	-0.004	1.273	5046	0.001074			85.9	
37 Perfluorododecanoic acid										R
613.00 > 569.00	3.978	3.984	-0.006	0.997	3857	0.002850			4.2	R
613.00 > 169.00	4.000	3.984	0.016	1.003	1822		2.12(2.13-6.40)		34.7	
D 36 13C2 PFDoA										
615.00 > 570.00	3.989	3.995	-0.006	1.500	3070592	2.69		108	18495	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.491	4.489	0.002	1.689	3581088	2.58		103	16058	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.896	4.895	0.001	1.000	60577	0.001863			26.0	
813.00 > 169.00	4.896	4.895	0.001	1.000	10129		5.98(2.86-8.58)		120	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.896	4.895	0.001	1.841	6446647	2.51		100	15675	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.240	5.246	-0.006	1.070	10756	0.003583			3.5	
913.00 > 169.00	5.240	5.246	-0.006	1.070	1651		6.51(3.83-11.48)		21.1	

QC Flag Legend

Processing Flags

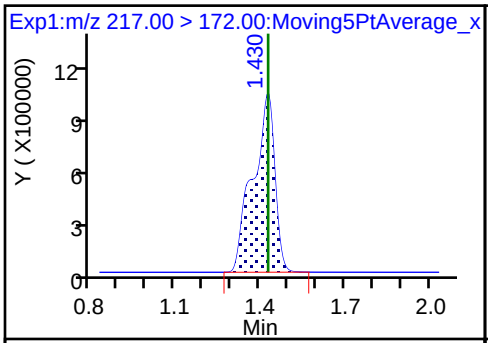
R - Failed Signal Ratio Test

Report Date: 09-Jul-2018 13:01:41 Chrom Revision: 2.2 07-Jun-2018 07:41:54

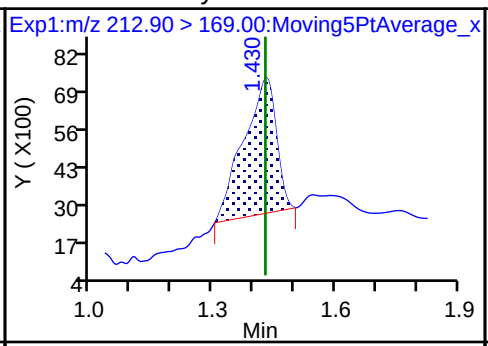
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\2018.07.06LLC_014.d
Injection Date: 07-Jul-2018 01:04:11 Instrument ID: A8_N
Lims ID: MB 320-232121/1-A
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 7 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC ICAL

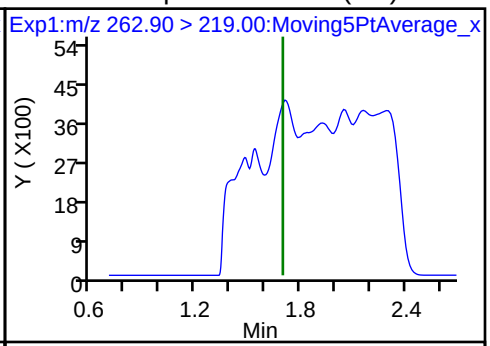
D 1 13C4 PFBA



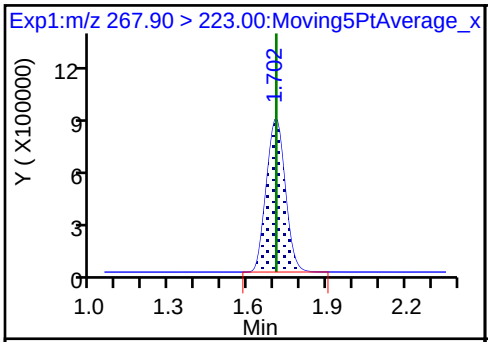
2 Perfluorobutyric acid



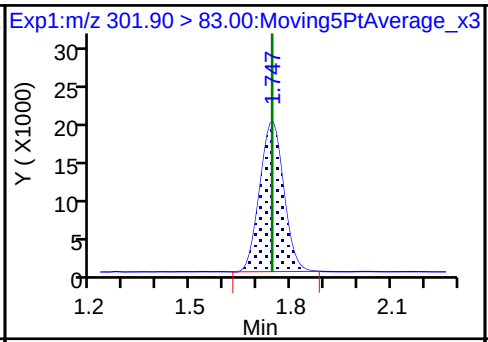
4 Perfluoropentanoic acid (ND)



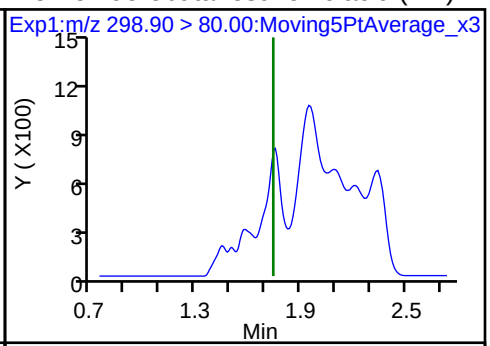
D 3 13C5-PFPeA



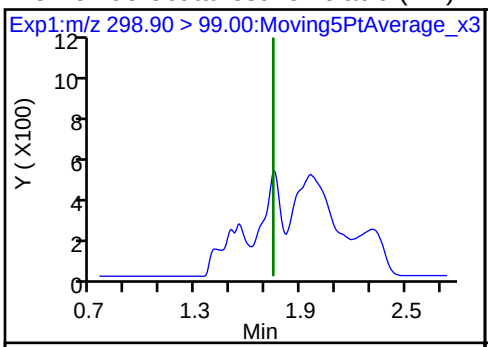
D 47 13C3-PFBS



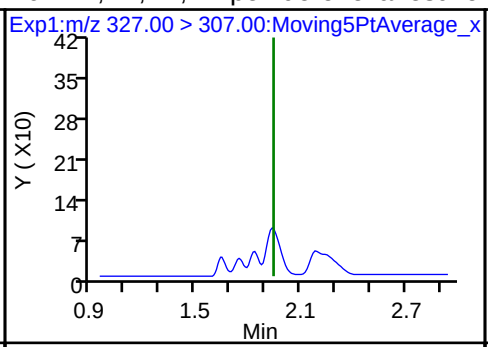
5 Perfluorobutanesulfonic acid (ND)



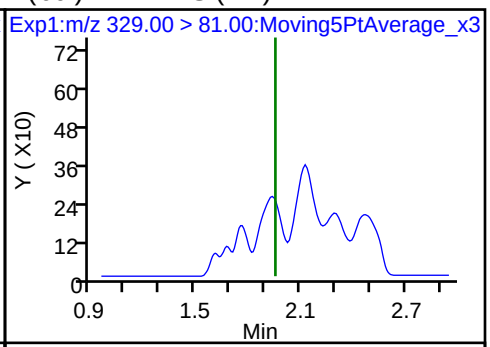
5 Perfluorobutanesulfonic acid (ND)



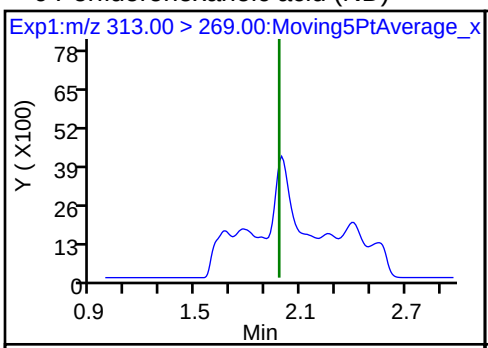
61 1H,1H,2H,2H-perfluorohexanesulfonic acid (ND)



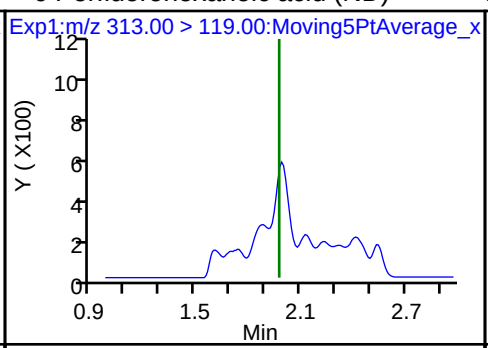
D 80 M2-4:2FTS (ND)



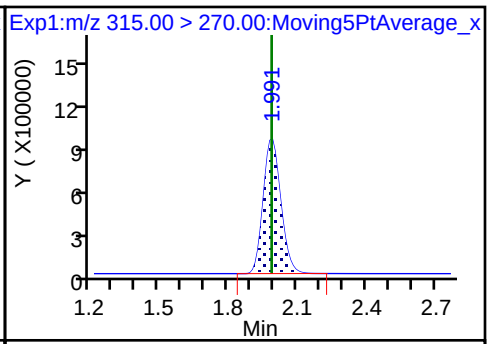
6 Perfluorohexanoic acid (ND)



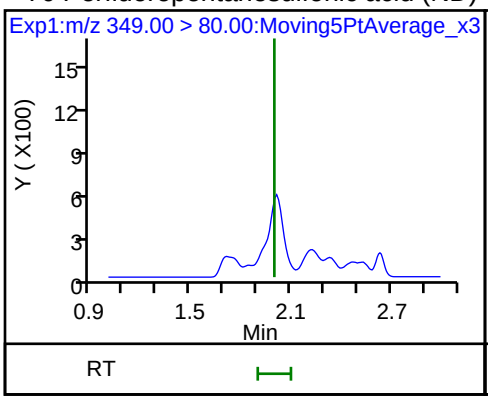
6 Perfluorohexanoic acid (ND)



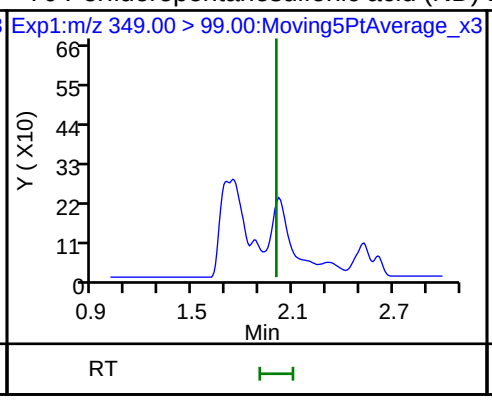
D 7 13C2 PFHxA



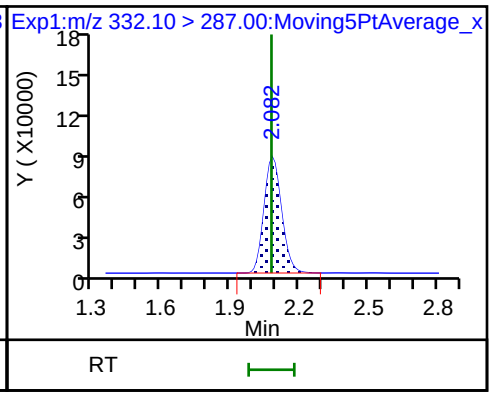
70 Perfluoropentanesulfonic acid (ND)



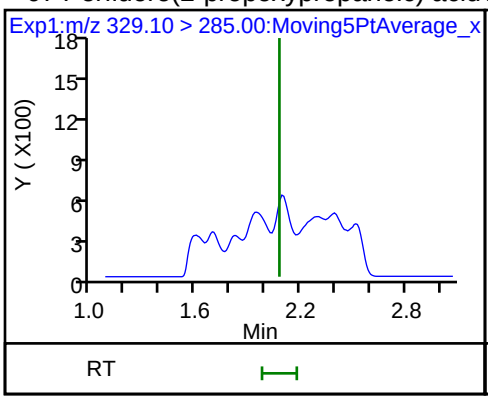
70 Perfluoropentanesulfonic acid (ND)



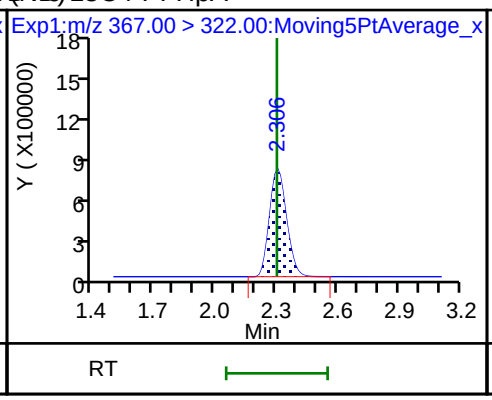
D 64 13C3 HFPO-DA



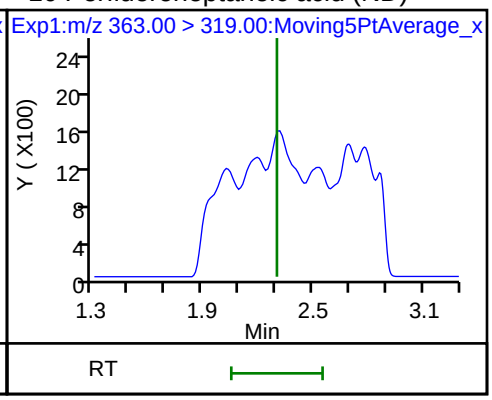
67 Perfluoro(2-propoxypropanoic) acid (ND)



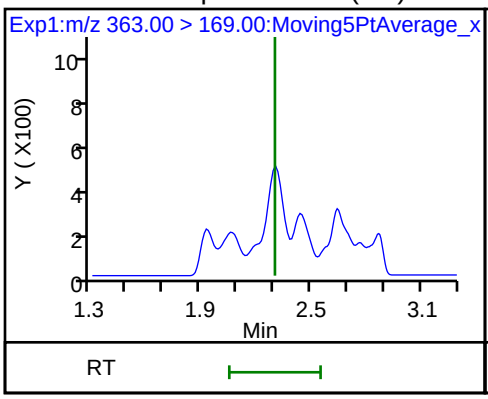
D 9 13C4-PFHpA



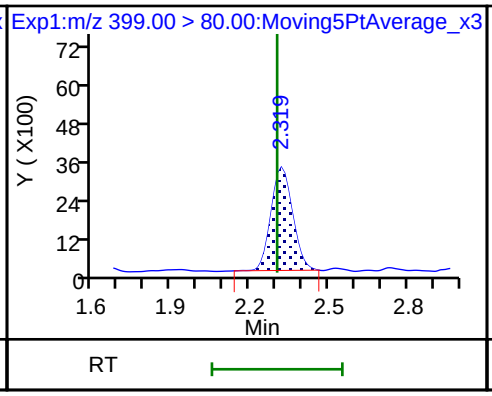
10 Perfluoroheptanoic acid (ND)



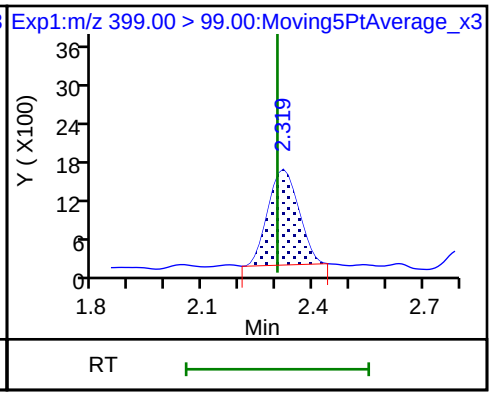
10 Perfluoroheptanoic acid (ND)



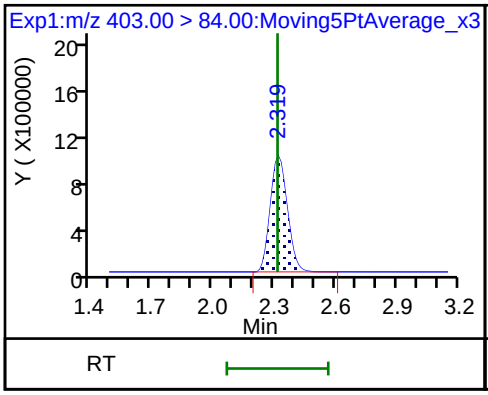
8 Perfluorohexanesulfonic acid



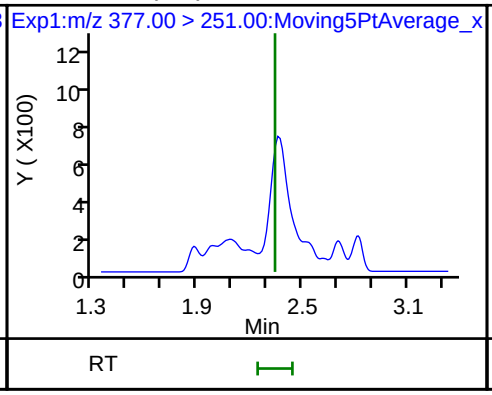
8 Perfluorohexanesulfonic acid



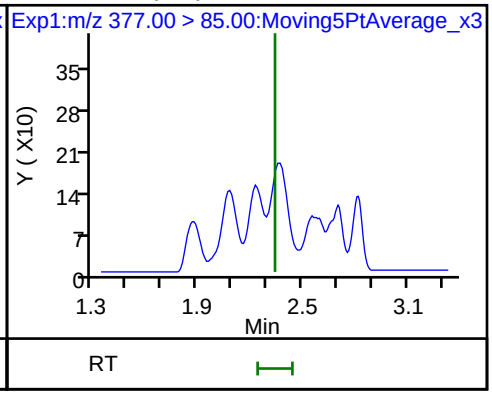
D 11 18O2 PFHxS



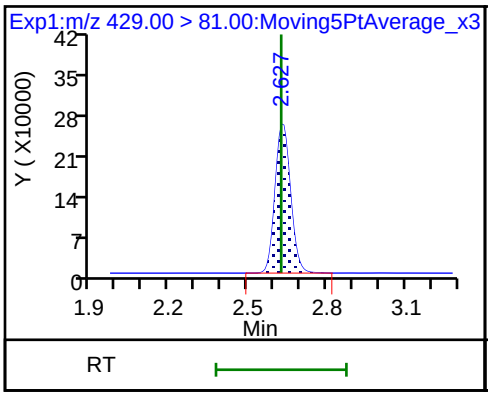
65 Adona (ND)



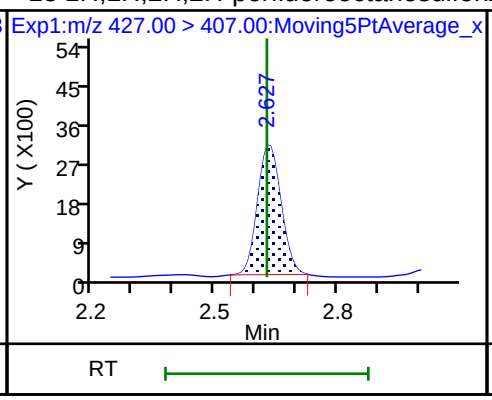
65 Adona (ND)



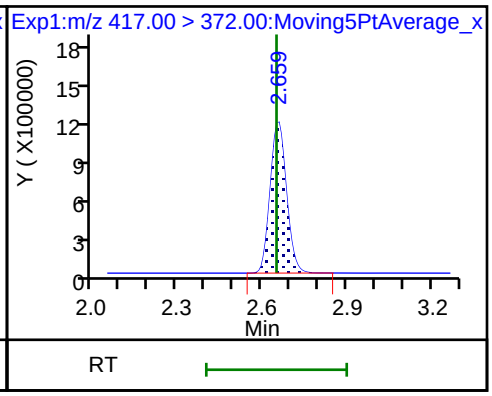
D 12 M2-6:2FTS



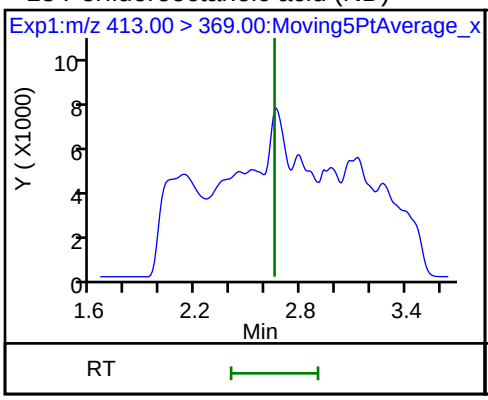
13 1H,1H,2H,2H-perfluorooctanesulfon



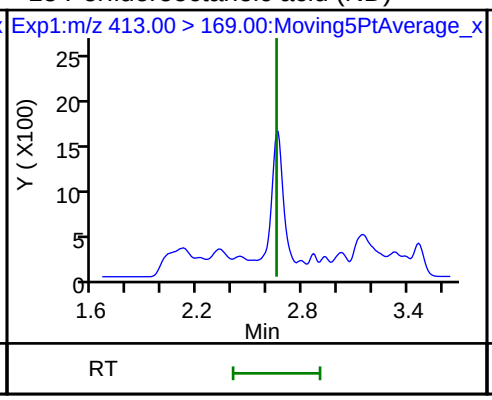
D 14 13C4 PFOA



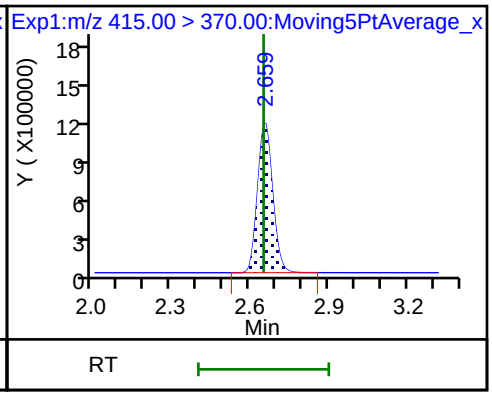
15 Perfluorooctanoic acid (ND)



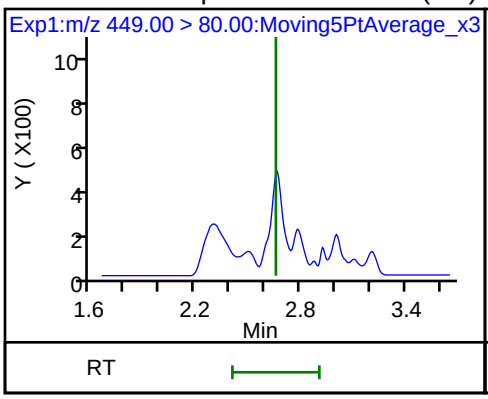
15 Perfluorooctanoic acid (ND)



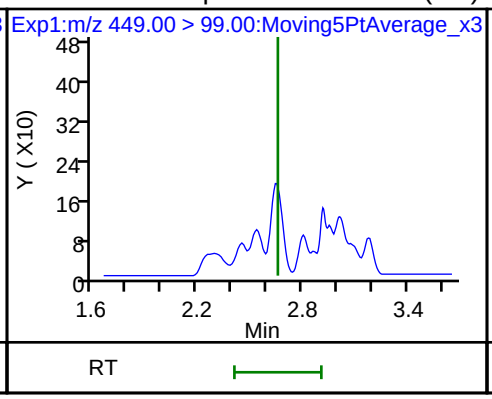
* 62 13C2-PFOA



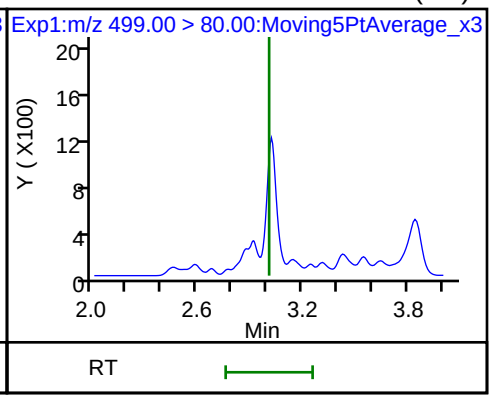
16 Perfluoroheptanesulfonic acid (ND)



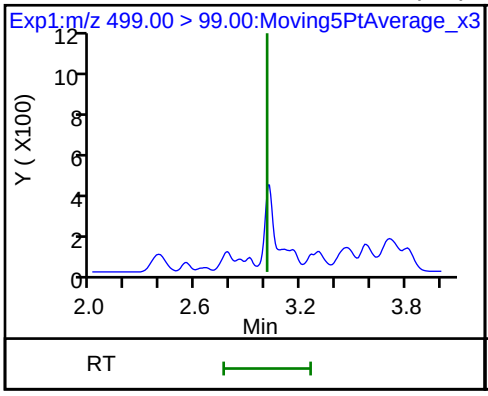
16 Perfluoroheptanesulfonic acid (ND)



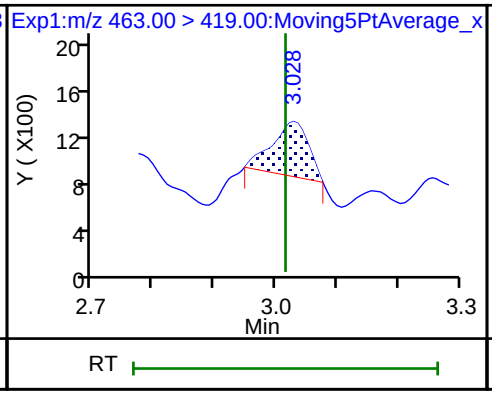
17 Perfluorooctane sulfonic acid (ND)



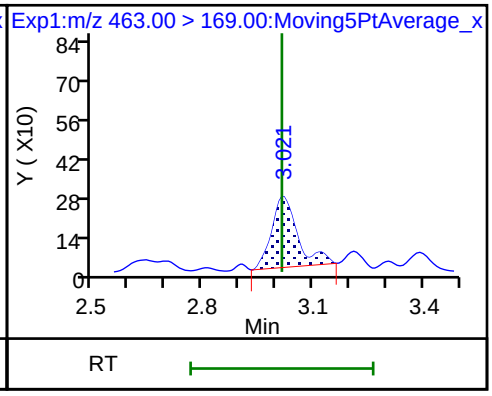
17 Perfluorooctane sulfonic acid (ND)



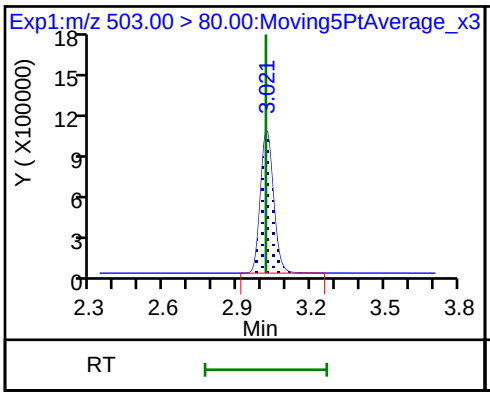
20 Perfluorononanoic acid



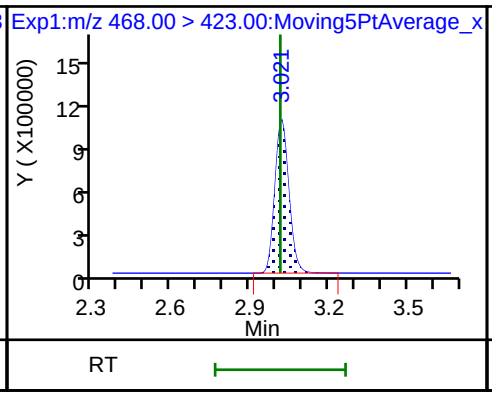
20 Perfluorononanoic acid



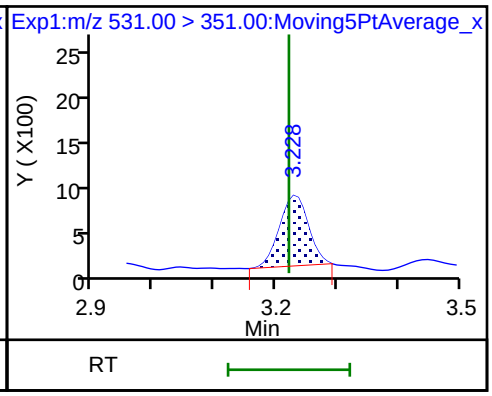
D 18 13C4 PFOS



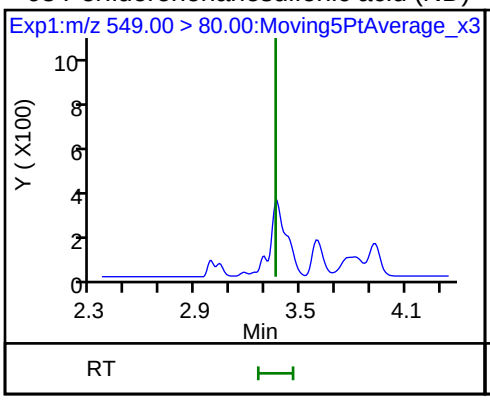
D 19 13C5 PFNA



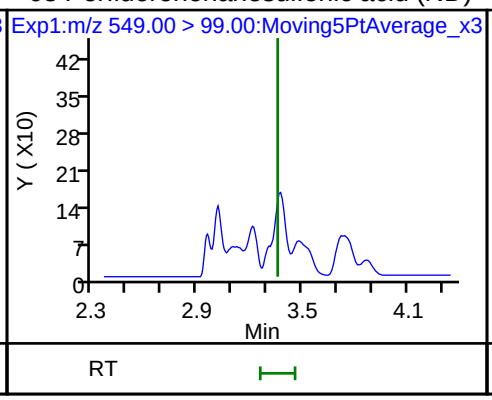
69 9-Chlorohexadecafluoro-3-oxanonane



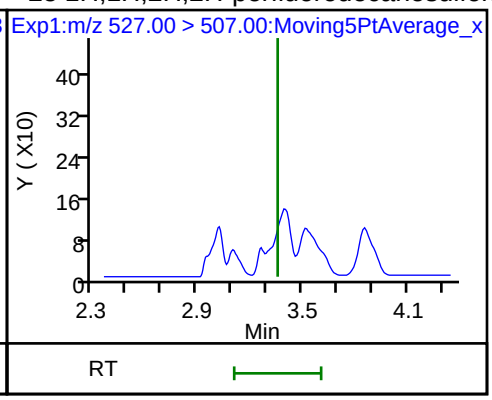
68 Perfluorononanesulfonic acid (ND)



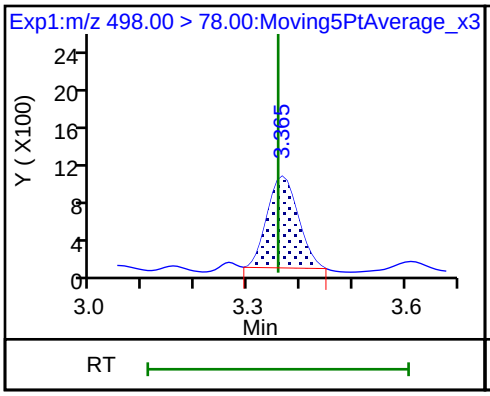
68 Perfluorononanesulfonic acid (ND)



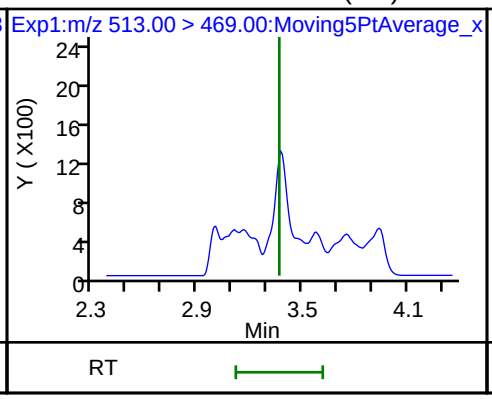
25 1H,1H,2H,2H-perfluorodecanesulfoni (ND)



22 Perfluorooctane Sulfonamide



24 Perfluorodecanoic acid (ND)



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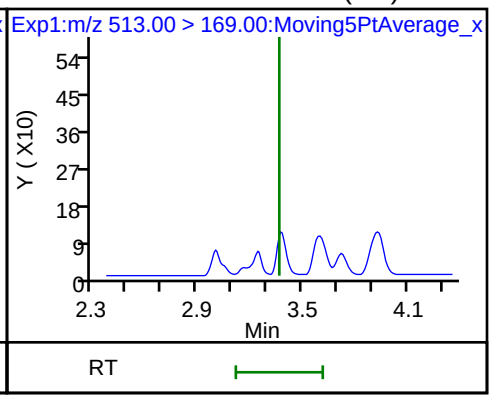
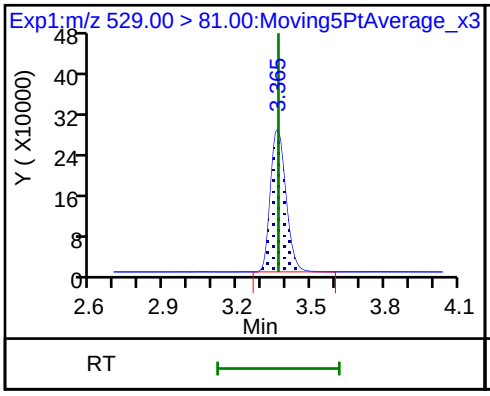
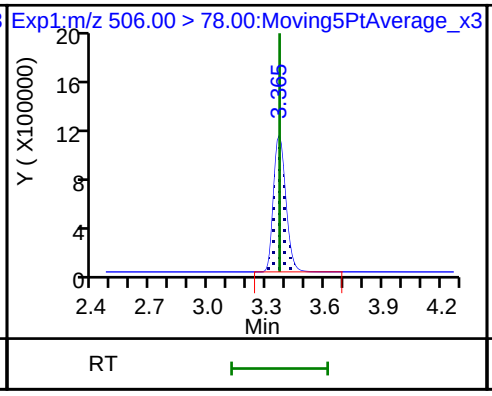


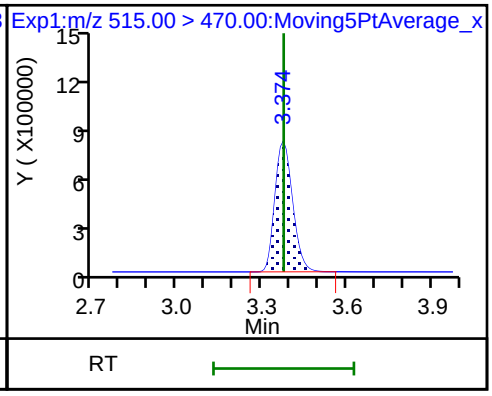
D 26 M2-8:2FTS



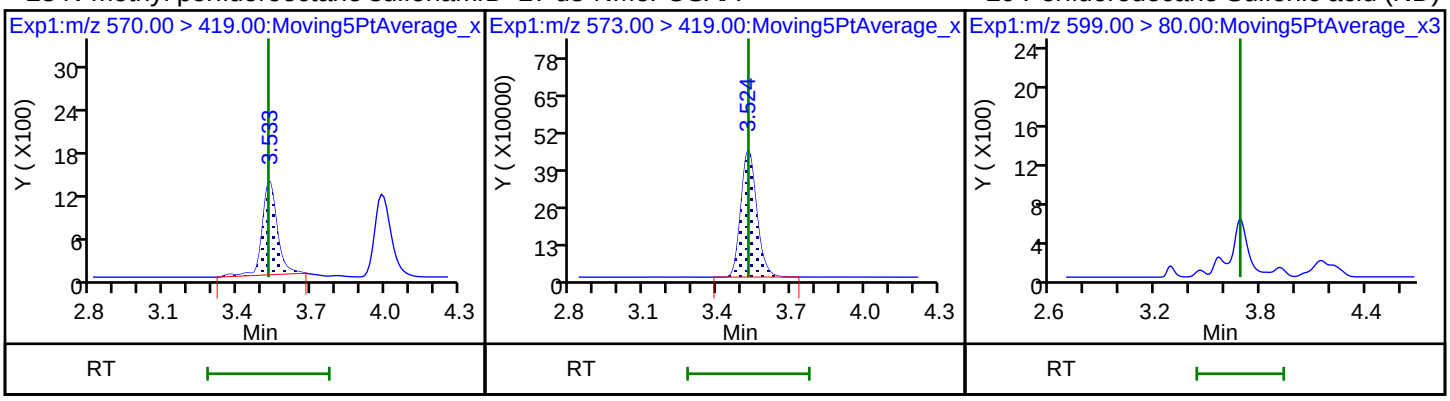
D 21 13C8 FOSA



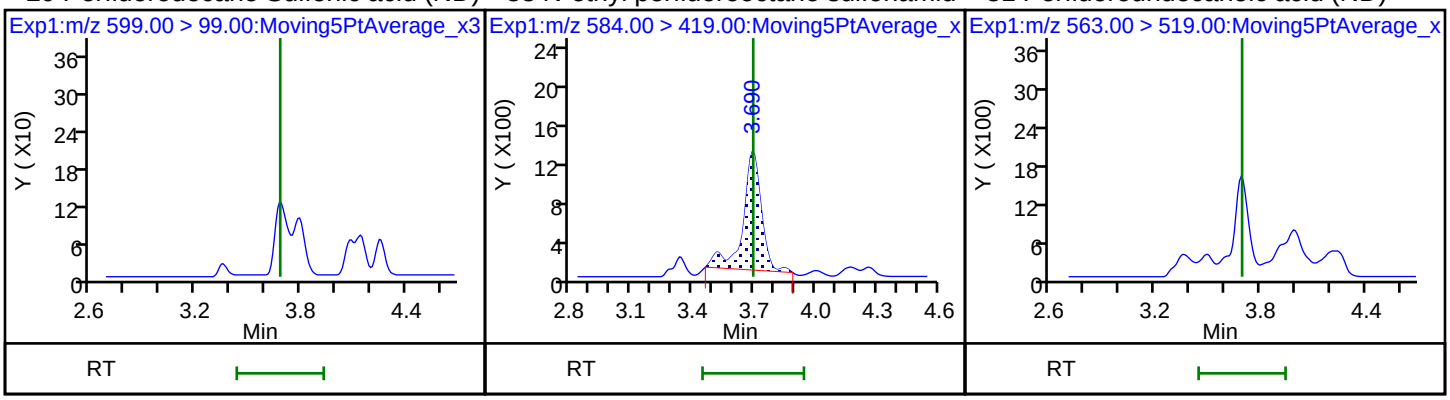
D 23 13C2 PFDA



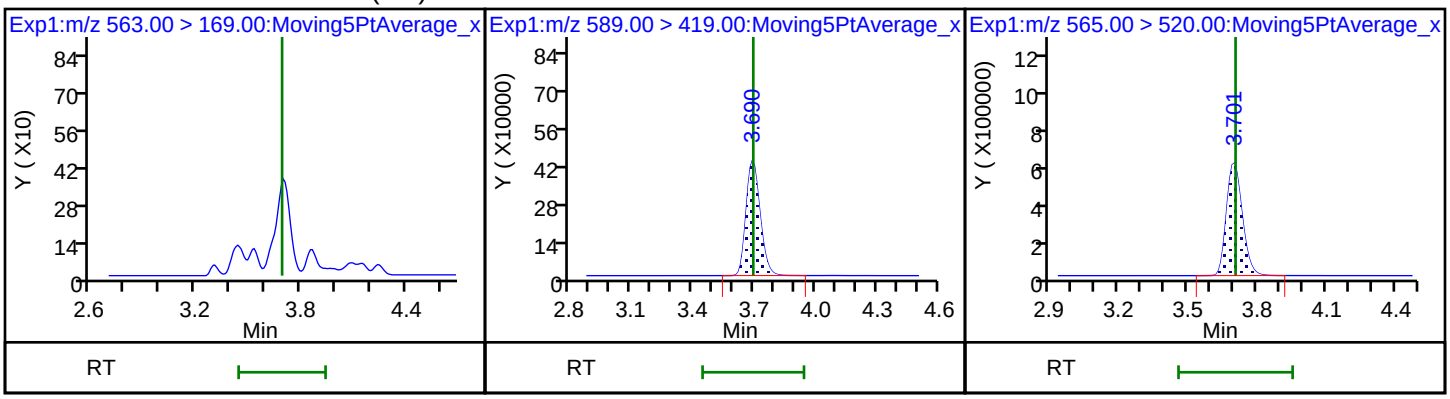
28 N-methyl perfluorooctane sulfonamiD 27 d3-NMeFOSAA 29 Perfluorodecane Sulfonic acid (ND)



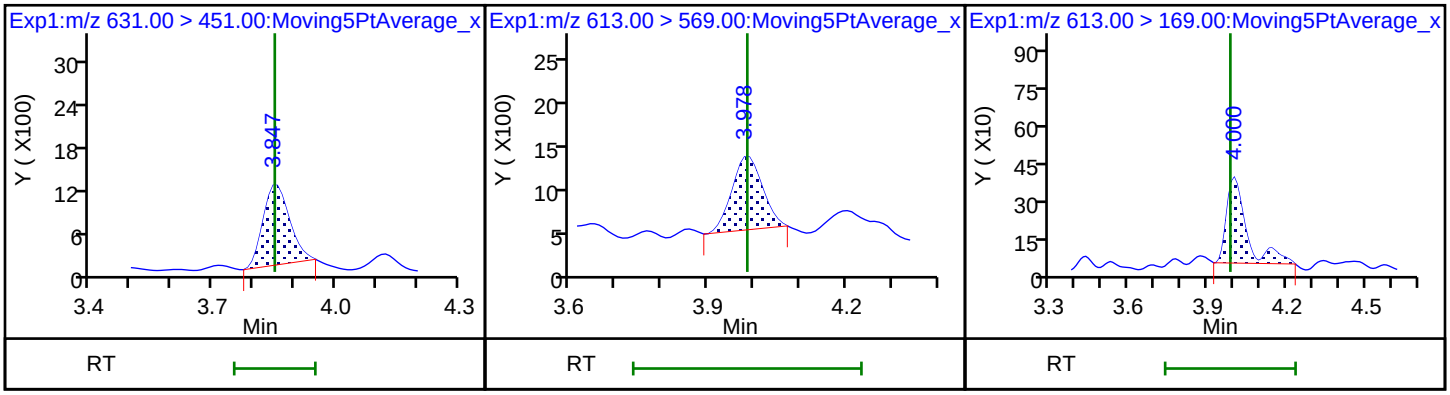
29 Perfluorodecane Sulfonic acid (ND) 33 N-ethyl perfluorooctane sulfonamid 31 Perfluoroundecanoic acid (ND)



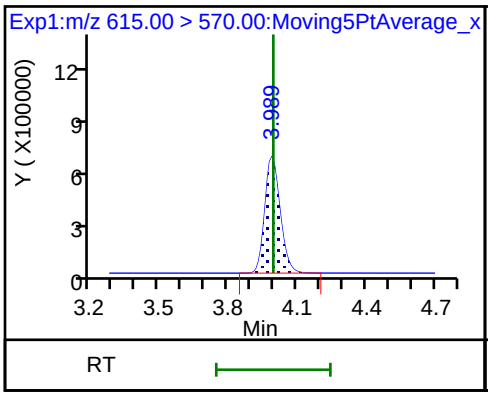
31 Perfluoroundecanoic acid (ND) D 32 d5-NEtFOSAA D 30 13C2 PFUnA



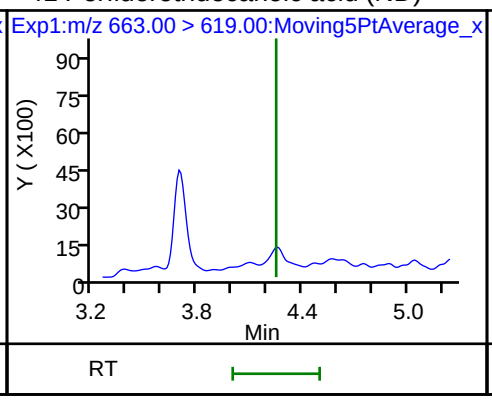
66 11-Chloroeicosafluoro-3-oxaundecan 37 Perfluorododecanoic acid 37 Perfluorododecanoic acid



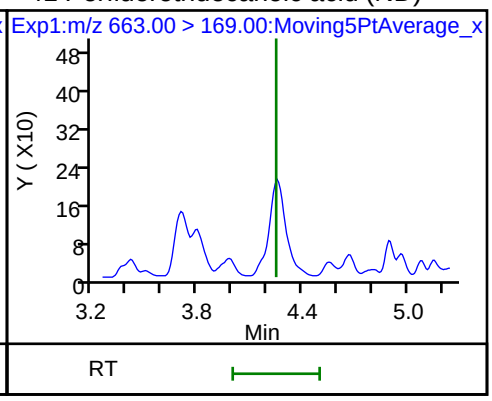
D 36 13C2 PFDoA



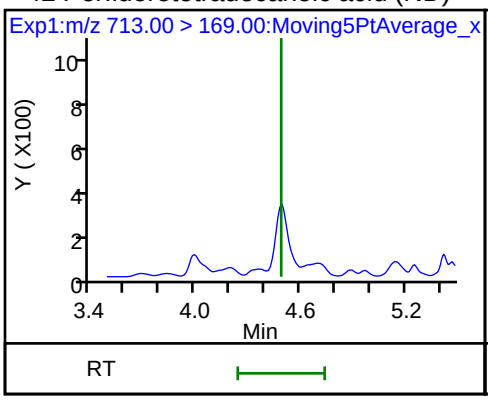
41 Perfluorotridecanoic acid (ND)



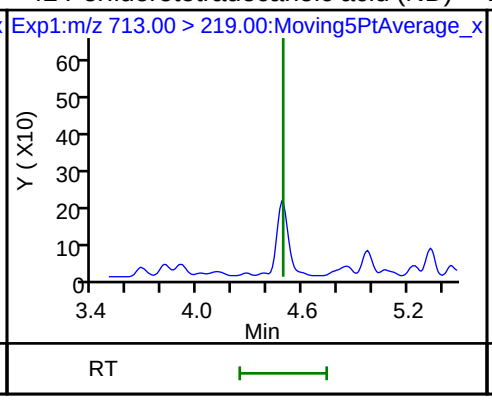
41 Perfluorotridecanoic acid (ND)



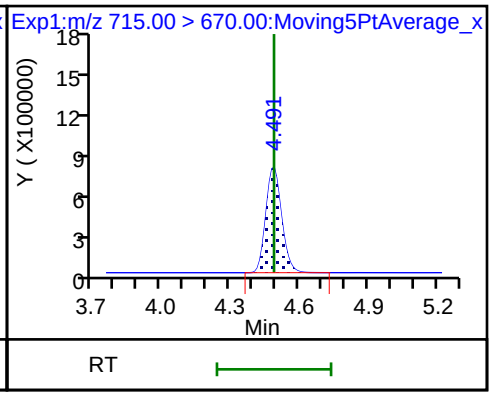
42 Perfluorotetradecanoic acid (ND)



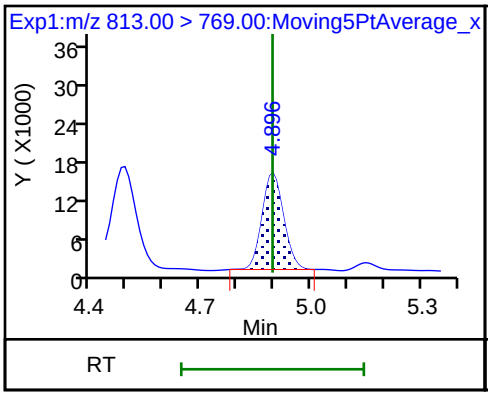
42 Perfluorotetradecanoic acid (ND)



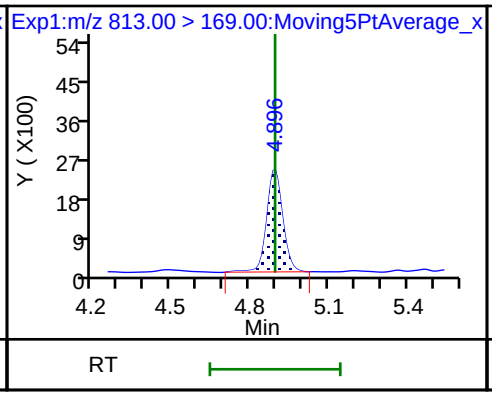
D 43 13C2-PFTeDA



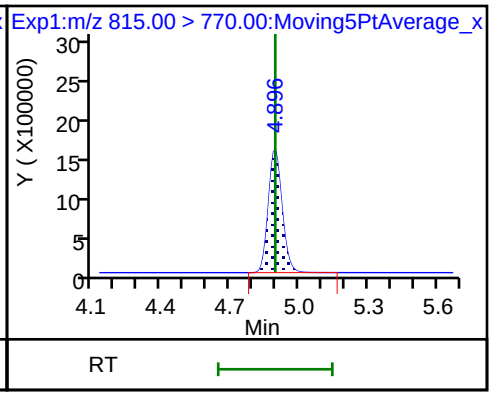
45 Perfluorohexadecanoic acid



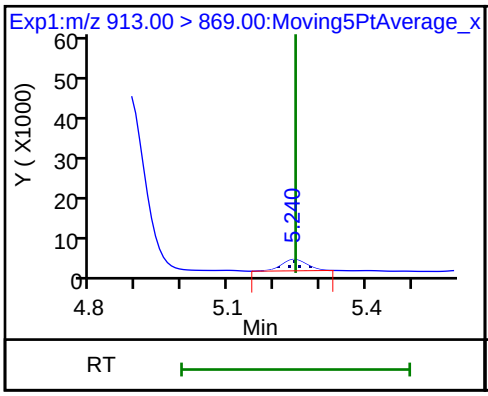
45 Perfluorohexadecanoic acid



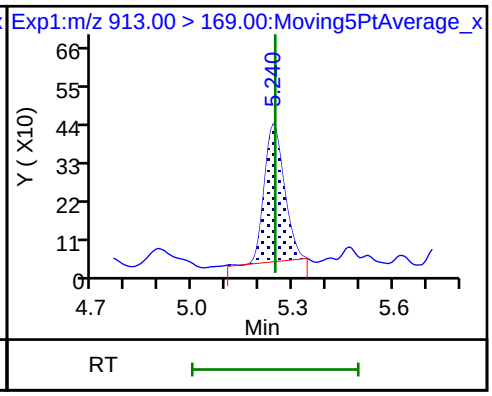
D 44 13C2-PFHxDA



46 Perfluorooctadecanoic acid



46 Perfluorooctadecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID:
Lab Sample ID: MB 320-232150/1-A
Matrix: Water
Lab File ID: 2018.07.06LLAAA_032.d
Analysis Method: 537 (modified)
Date Collected:
Extraction Method: 3535
Date Extracted: 07/02/2018 16:10
Sample wt/vol: 250.00(mL)
Date Analyzed: 07/06/2018 17:38
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 232788
Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	0.000418	J	0.0020	0.00035
2706-90-3	Perfluoropentanoic acid (PFPeA)	ND		0.0020	0.00049
307-24-4	Perfluorohexanoic acid (PFHxA)	ND		0.0020	0.00058
375-85-9	Perfluoroheptanoic acid (PFHpA)	ND		0.0020	0.00025
335-67-1	Perfluorooctanoic acid (PFOA)	ND		0.0020	0.00085
375-95-1	Perfluorononanoic acid (PFNA)	ND		0.0020	0.00027
335-76-2	Perfluorodecanoic acid (PFDA)	ND		0.0020	0.00031
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		0.0020	0.0011
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		0.0020	0.00055
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		0.0020	0.0013
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		0.0020	0.00029
375-73-5	Perfluorobutanesulfonic acid (PFBS)	ND		0.0020	0.00020
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	ND		0.0020	0.00030
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.000331	J	0.0020	0.00017
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.0020	0.00019
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	ND		0.0020	0.00054
8789-57-2	Perfluorononanesulfonic acid (PFNS)	ND		0.0020	0.00016
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		0.0020	0.00032
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		0.0020	0.00035
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.020	0.0031
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.020	0.0019
757124-72-4	4:2 FTS	ND		0.020	0.0052
27619-97-2	6:2 FTS	ND		0.020	0.0020
39108-34-4	8:2 FTS	ND		0.020	0.0020

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID:
Lab Sample ID: MB 320-232150/1-A
Matrix: Water
Lab File ID: 2018.07.06LLAAA_032.d
Analysis Method: 537 (modified)
Date Collected:
Extraction Method: 3535
Date Extracted: 07/02/2018 16:10
Sample wt/vol: 250.00(mL)
Date Analyzed: 07/06/2018 17:38
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 232788
Units: ug/L

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00992	13C4 PFBA	97		25-150
STL01893	13C5 PFPeA	91		25-150
STL00993	13C2 PFHxA	90		25-150
STL01892	13C4-PFHpA	103		25-150
STL00990	13C4 PFOA	100		25-150
STL00995	13C5 PFNA	98		25-150
STL00996	13C2 PFDA	95		25-150
STL00997	13C2 PFUnA	95		25-150
STL00998	13C2 PFDoA	100		25-150
STL02116	13C2-PFTeDA	92		25-150
STL02337	13C3-PFBS	90		25-150
STL00994	18O2 PFHxS	101		25-150
STL00991	13C4 PFOS	96		25-150
STL01056	13C8 FOSA	85		25-150
STL02118	d3-NMeFOSAA	92		25-150
STL02117	d5-NEtFOSAA	96		25-150
STL02279	M2-6:2FTS	104		25-150
STL02280	M2-8:2FTS	105		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180706-60751.b\2018.07.06LLAAA_032.d
Lims ID: MB 320-232150/1-A
Client ID:
Sample Type: MB
Inject. Date: 06-Jul-2018 17:38:01 ALS Bottle#: 22 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: mb 320-232150/1-a
Misc. Info.: Plate: 1 Rack: 5
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180706-60751.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 09-Jul-2018 10:12:30 Calib Date: 05-Jul-2018 09:38:17
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180705-60684.b\2018.07.05LLICALAA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK010

First Level Reviewer: mongkols Date: 09-Jul-2018 10:12:30

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										M
217.00 > 172.00	1.422	1.424	-0.002	0.537	7305725	2.43		97.4	34740	M
2 Perfluorobutyric acid										M
212.90 > 169.00	1.428	1.433	-0.005	1.004	31217	0.0105			10.6	M
D 3 13C5-PFPeA										
267.90 > 223.00	1.698	1.702	-0.004	0.641	5046879	2.27		90.9	58655	
D 47 13C3-PFBS										
301.90 > 83.00	1.744	1.738	0.006	0.658	111596	2.10		90.4	830	
D 7 13C2 PFHxA										
315.00 > 270.00	1.988	1.981	0.007	0.750	5346952	2.25		90.0	72658	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.079	2.070	0.009	0.784	413253	2.12		84.9	10012	
D 9 13C4-PFHpA										
367.00 > 322.00	2.303	2.293	0.010	0.869	5434189	2.58		103	39842	
D 11 18O2 PFHxS										
403.00 > 84.00	2.316	2.306	0.010	0.874	6183241	2.38		101	60561	
8 Perfluorohexanesulfonic acid										R
399.00 > 80.00	2.316	2.315	0.001	1.000	24992	0.008267			212	R
399.00 > 99.00	2.316	2.315	0.001	1.000	5105		4.90(1.50-4.49)		29.5	
D 12 M2-6:2FTS										
429.00 > 81.00	2.626	2.627	-0.001	0.991	1168990	2.47		104	18181	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.626	2.634	-0.008	1.000	14892	0.0193			79.2	
D 14 13C4 PFOA										
417.00 > 372.00	2.651	2.652	-0.001	1.000	5161054	2.50		99.8	62329	
* 62 13C2-PFOA										
415.00 > 370.00	2.651	2.658	-0.007		5418889	2.50			37532	
D 19 13C5 PFNA										
468.00 > 423.00	3.012	3.009	0.003	1.136	4322597	2.46		98.4	37763	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 18 13C4 PFOS										
503.00 > 80.00	3.012	3.009	0.003	1.136	4252825	2.29		96.0	29610	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.225	3.237	-0.012	1.071	2917	0.000867			70.1	
D 21 13C8 FOSA										
506.00 > 78.00	3.361	3.359	0.002	1.268	5458896	2.12		84.9	36517	
D 26 M2-8:2FTS										
529.00 > 81.00	3.361	3.359	0.002	1.268	1328937	2.52		105	38711	
25 1H,1H,2H,2H-perfluorodecanesulfoni										
527.00 > 507.00	3.352	3.367	-0.015	0.997	1307	0.001783			52.7	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.361	3.367	-0.006	1.000	3914	0.001808			87.4	
D 23 13C2 PFDA										
515.00 > 470.00	3.370	3.368	0.002	1.271	3597841	2.37		95.0	43845	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.520	3.518	0.002	1.328	2062084	2.31		92.4	28612	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.687	3.685	0.002	1.391	2122291	2.41		96.2	16540	
D 30 13C2 PFUnA										
565.00 > 520.00	3.698	3.696	0.002	1.395	3015238	2.37		94.7	31628	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.698	3.705	-0.007	1.003	4711	0.006155			63.3	
66 11-Chloroeicosafluoro-3-oxaundecan										
631.00 > 451.00	3.854	3.862	-0.008	1.280	4679	0.000912			76.4	
D 36 13C2 PFDoA										
615.00 > 570.00	3.988	3.986	0.002	1.505	3404985	2.50		99.8	20201	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.479	4.479	0.0	1.690	3837530	2.31		92.3	17899	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.490	4.491	-0.001	1.002	2501	0.006017			37.3	
713.00 > 219.00	4.479	4.491	-0.012	1.000	1564		1.60(0.71-2.13)		25.9	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.887	4.896	-0.009	1.844	7420230	2.41		96.5	14974	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.895	4.905	-0.010	1.002	69154	0.001660			27.6	
813.00 > 169.00	4.895	4.905	-0.010	1.002	14739		4.69(2.86-8.58)		158	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.240	5.247	-0.007	1.072	9060	0.002622			2.9	
913.00 > 169.00	5.233	5.247	-0.014	1.071	1152		7.86(3.83-11.48)		15.7	

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Review Flags

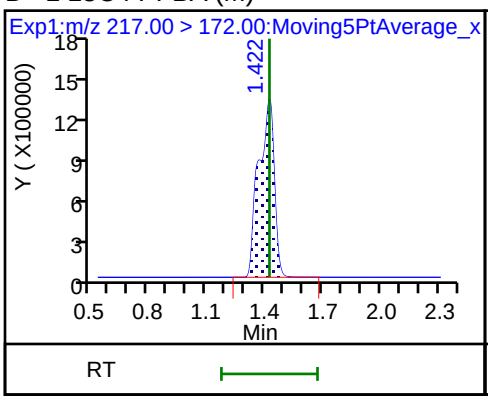
M - Manually Integrated

Report Date: 09-Jul-2018 10:12:30 Chrom Revision: 2.2 07-Jun-2018 07:41:54

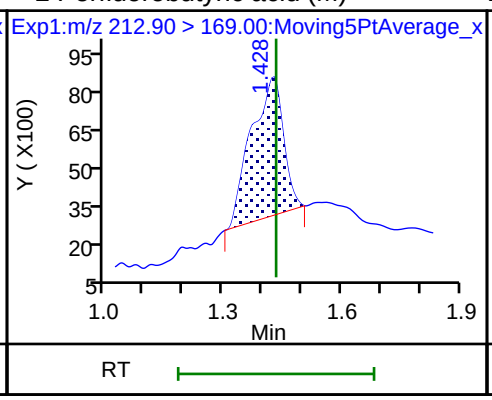
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180706-60751.b\2018.07.06LLAAA_032.d
Injection Date: 06-Jul-2018 17:38:01 Instrument ID: A8_N
Lims ID: MB 320-232150/1-A
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 22 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC ICAL

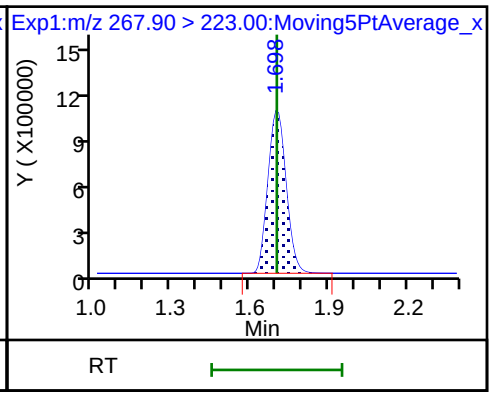
D 1 13C4 PFBA (M)



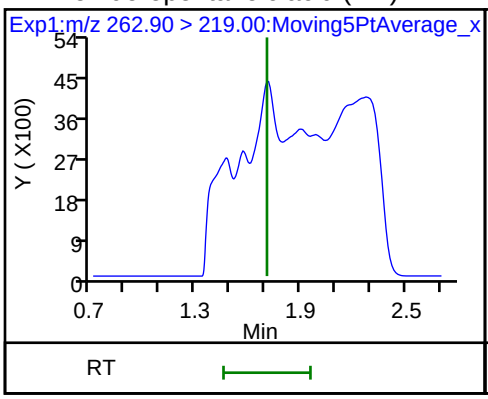
2 Perfluorobutyric acid (M)



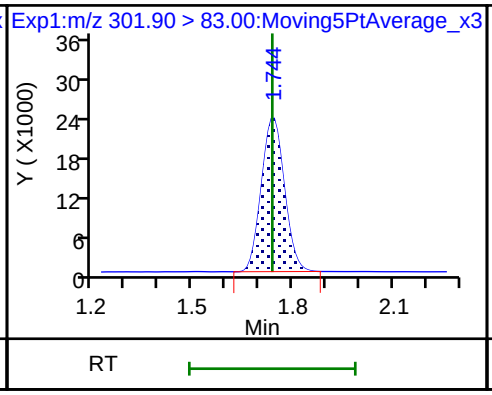
D 3 13C5-PFPeA



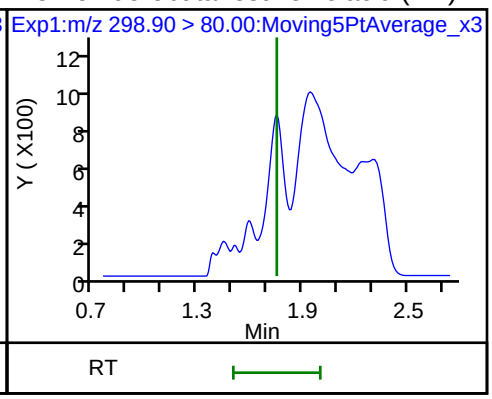
4 Perfluoropentanoic acid (ND)



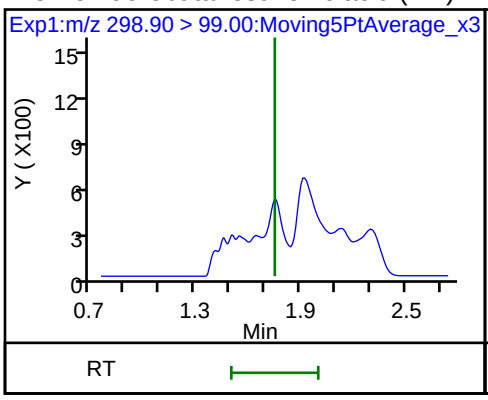
D 47 13C3-PFBS



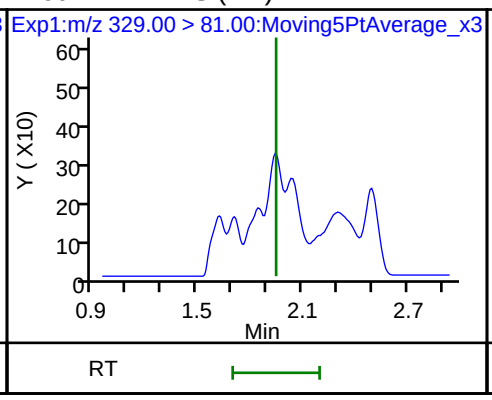
5 Perfluorobutanesulfonic acid (ND)



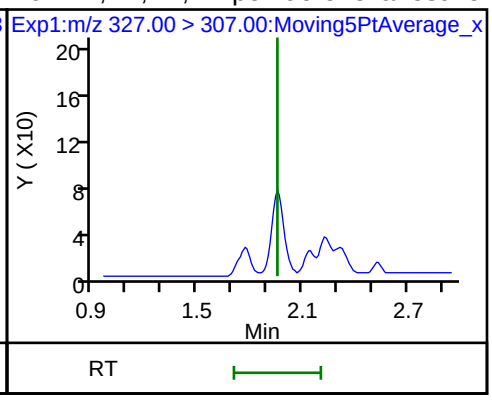
5 Perfluorobutanesulfonic acid (ND)



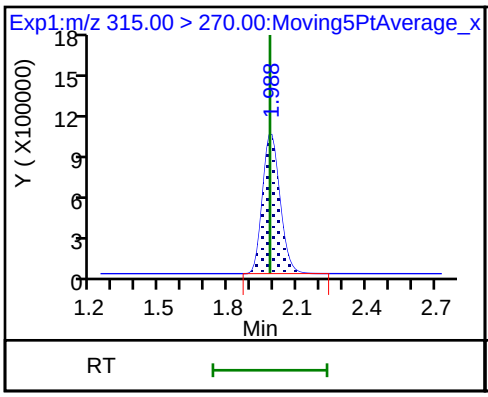
D 60 M2-4:2FTS (ND)



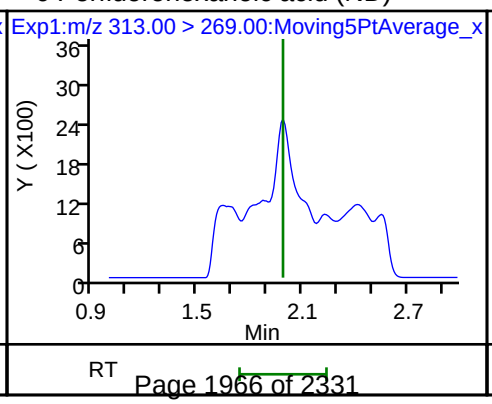
61 1H,1H,2H,2H-perfluorohexanesulfoni (ND)



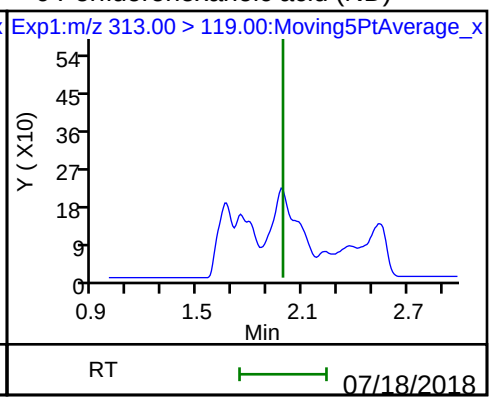
D 7 13C2 PFHxA



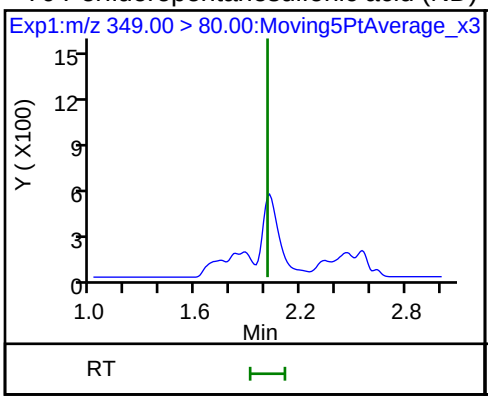
6 Perfluorohexanoic acid (ND)



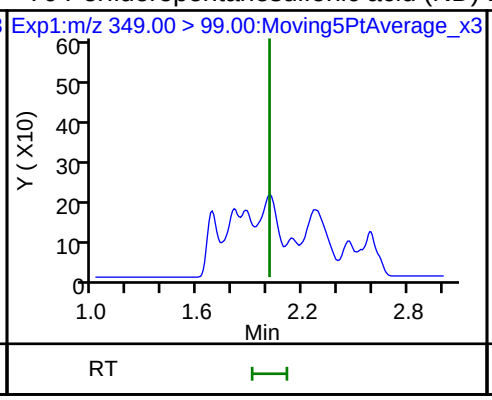
6 Perfluorohexanoic acid (ND)



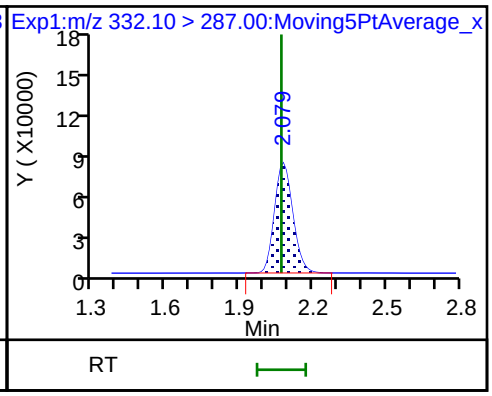
70 Perfluoropentanesulfonic acid (ND)



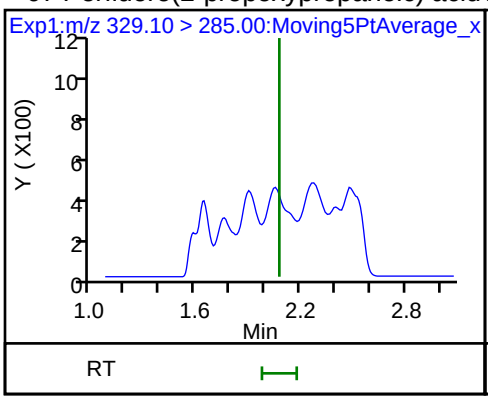
70 Perfluoropentanesulfonic acid (ND)



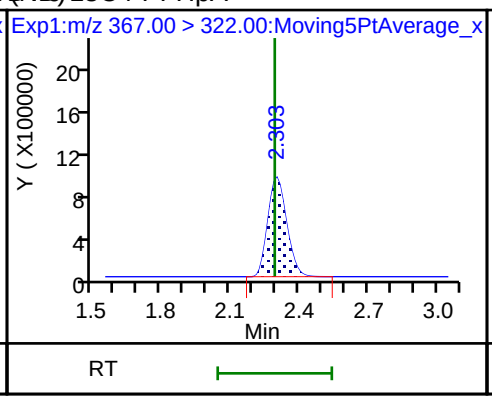
D 64 13C3 HFPO-DA



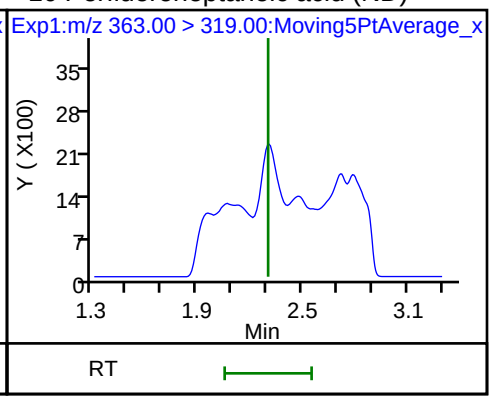
67 Perfluoro(2-propoxypropanoic) acid (ND)



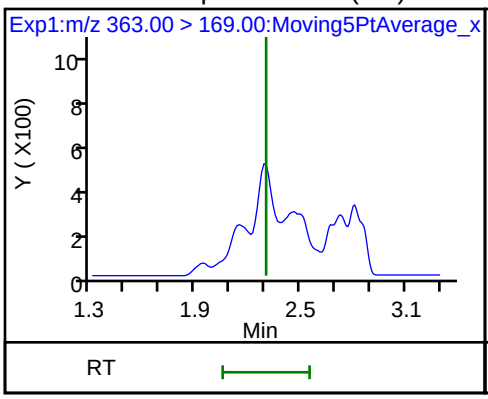
D 9 13C4-PFHpA



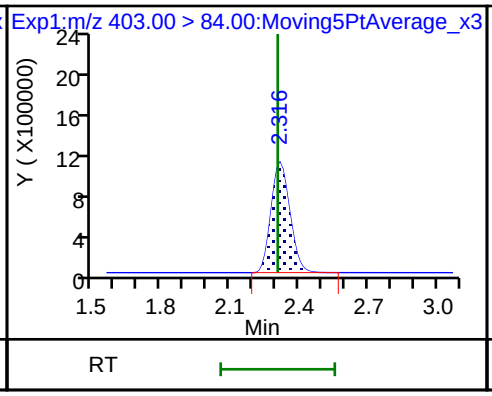
10 Perfluoroheptanoic acid (ND)



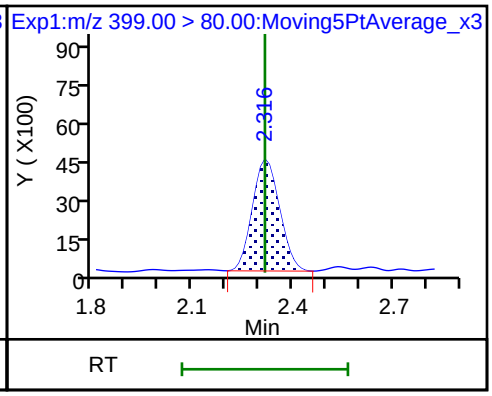
10 Perfluoroheptanoic acid (ND)



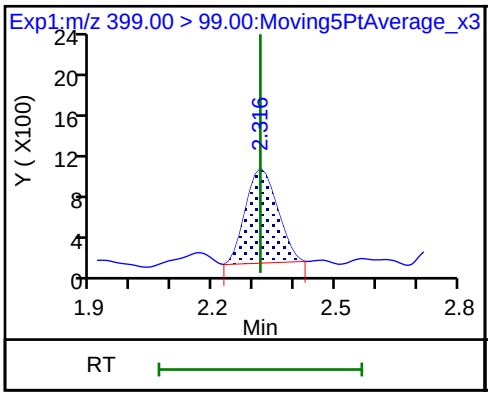
D 11 18O2 PFHxS



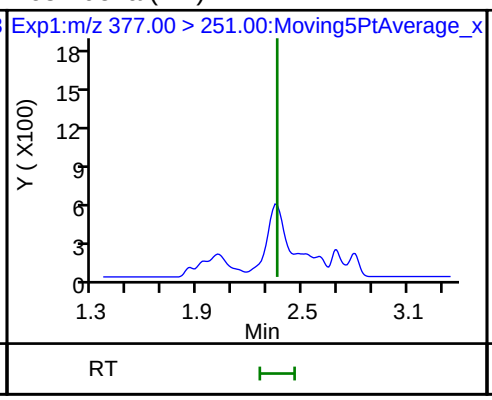
8 Perfluorohexanesulfonic acid



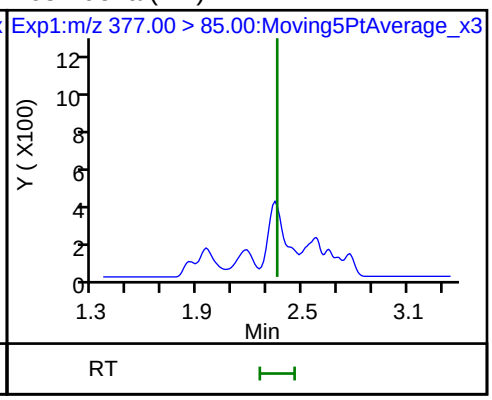
8 Perfluorohexanesulfonic acid



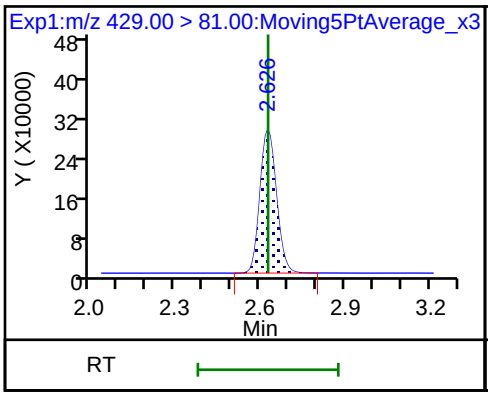
65 Adona (ND)



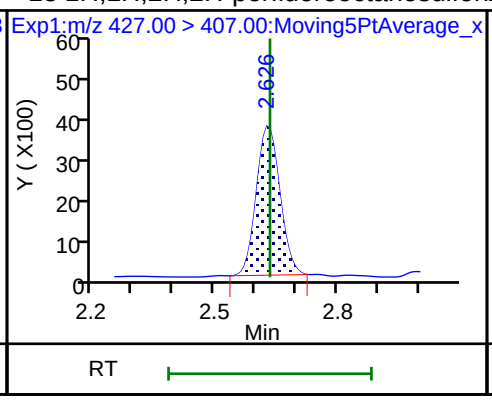
65 Adona (ND)



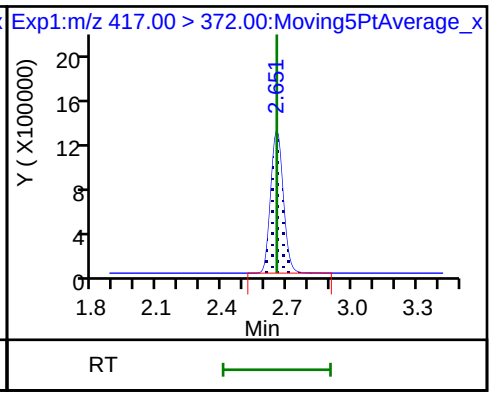
D 12 M2-6:2FTS



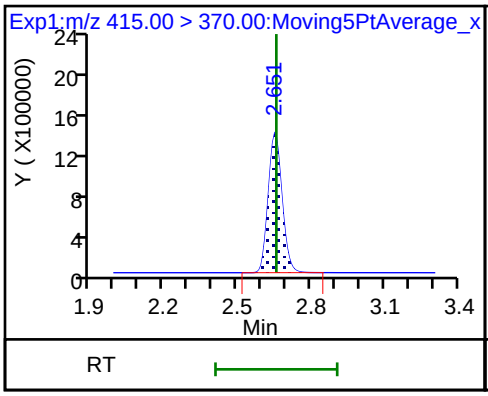
13 1H,1H,2H,2H-perfluorooctanesulfon



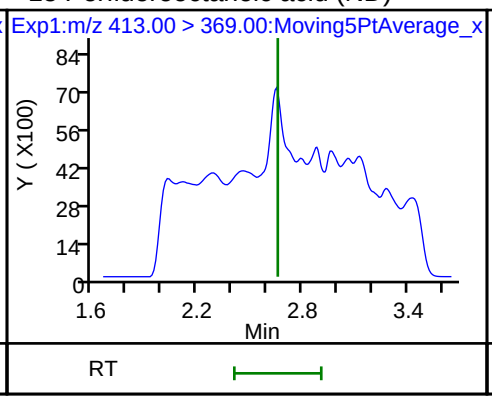
D 14 13C4 PFOA



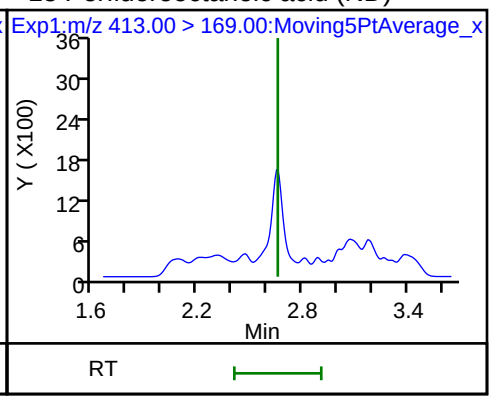
* 62 13C2-PFOA



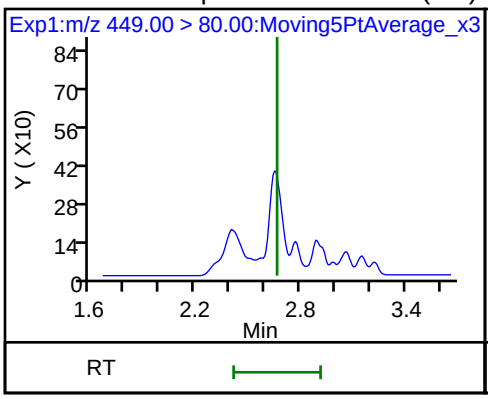
15 Perfluorooctanoic acid (ND)



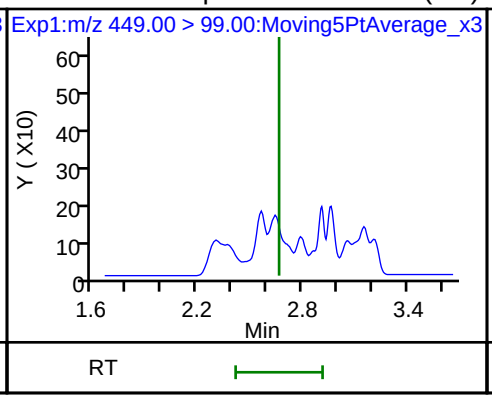
15 Perfluorooctanoic acid (ND)



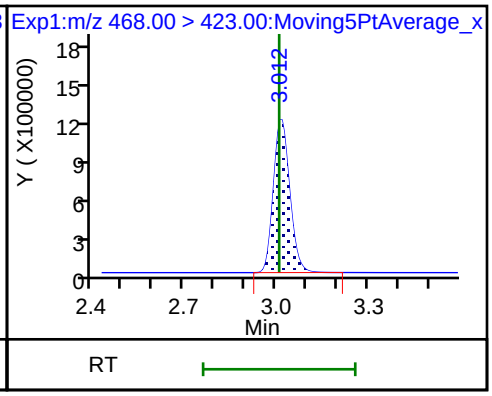
16 Perfluoroheptanesulfonic acid (ND)



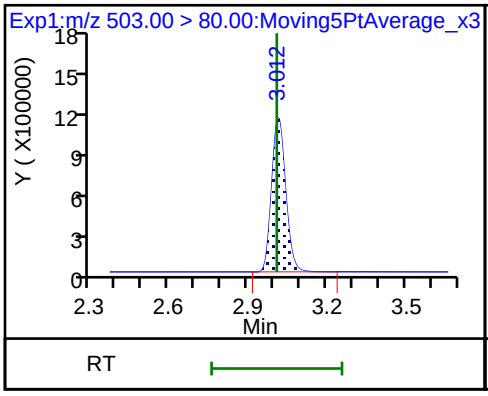
16 Perfluoroheptanesulfonic acid (ND)



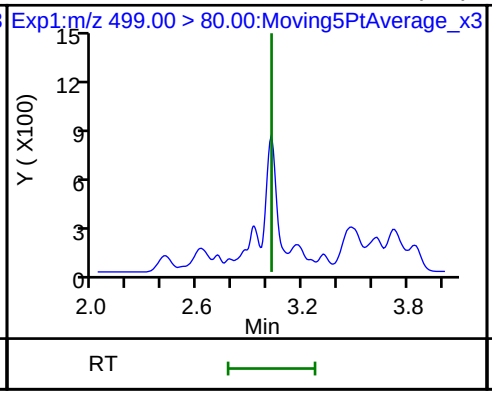
D 19 13C5 PFNA



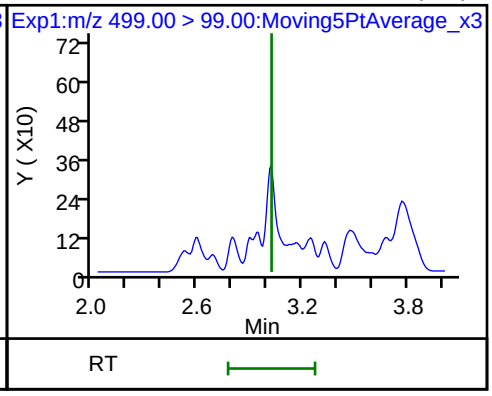
D 18 13C4 PFOS



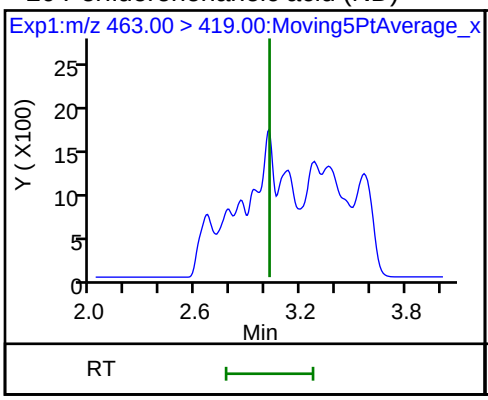
17 Perfluorooctane sulfonic acid (ND)



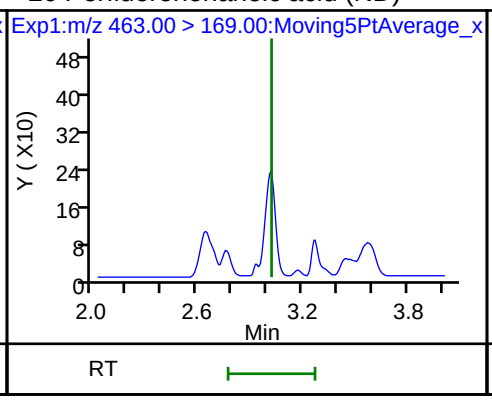
17 Perfluorooctane sulfonic acid (ND)



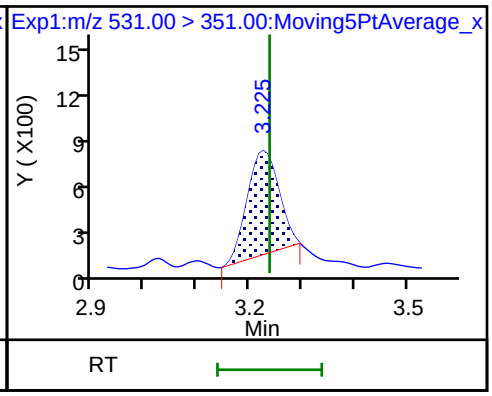
20 Perfluorononanoic acid (ND)



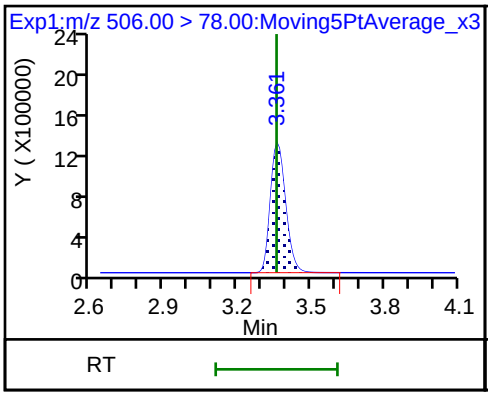
20 Perfluorononanoic acid (ND)



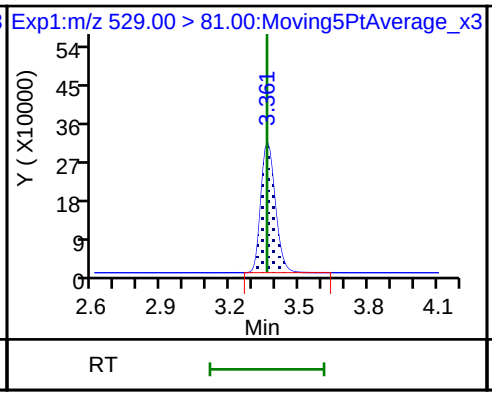
69 9-Chlorohexadecafluoro-3-oxanonane



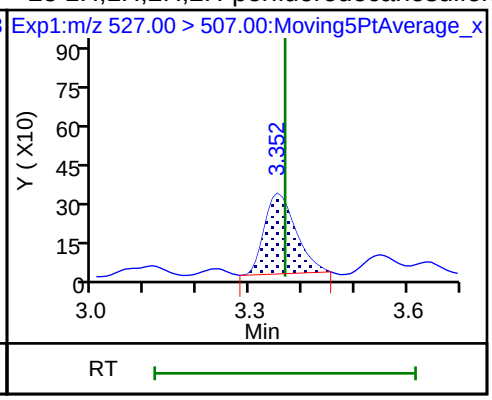
D 21 13C8 FOSA



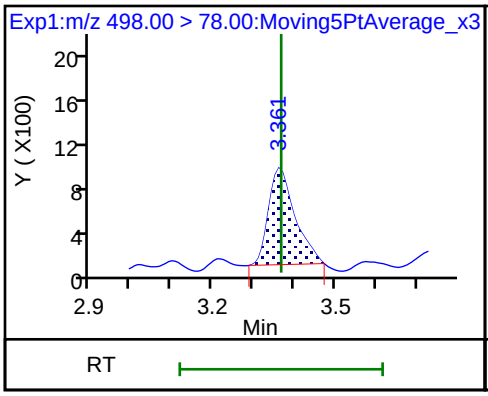
D 26 M2-8:2FTS



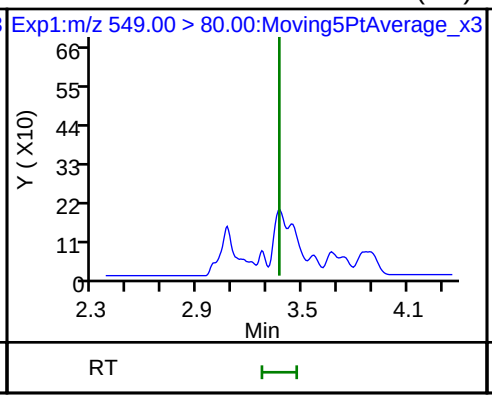
25 1H,1H,2H,2H-perfluorodecanesulfoni



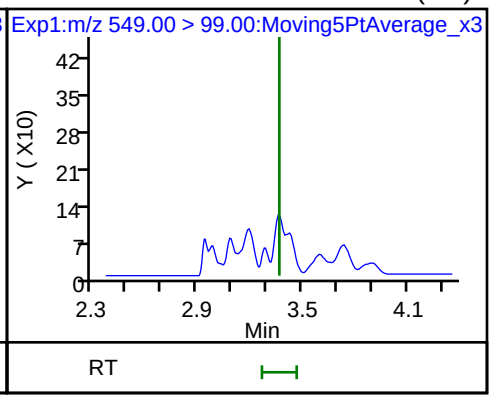
22 Perfluorooctane Sulfonamide



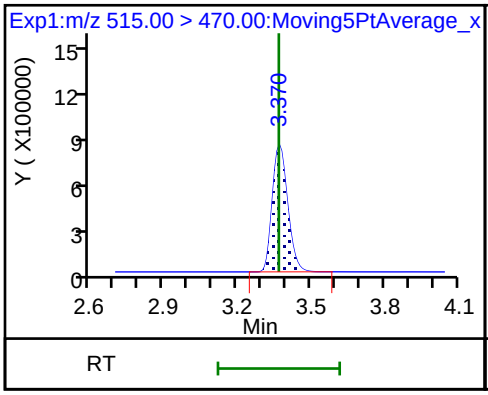
68 Perfluorononanesulfonic acid (ND)



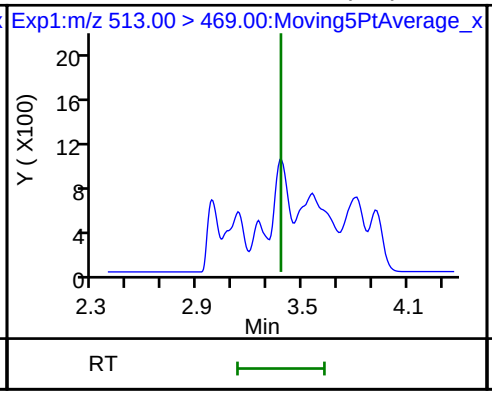
68 Perfluorononanesulfonic acid (ND)



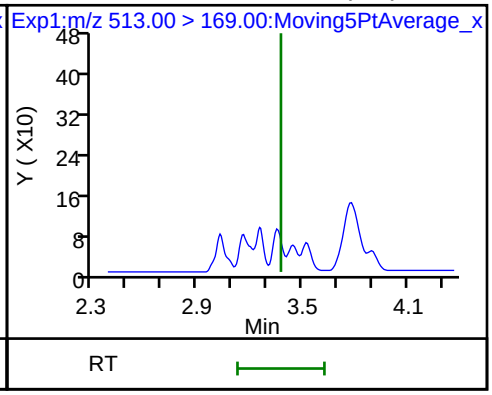
D 23 13C2 PFDA



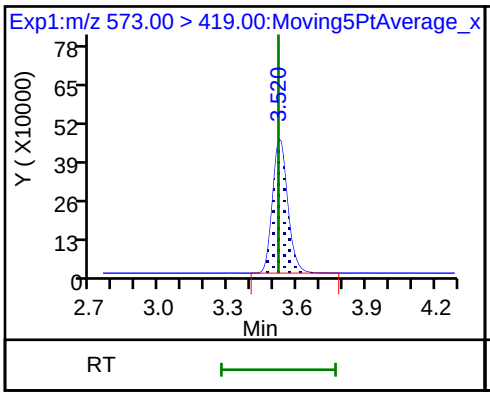
24 Perfluorodecanoic acid (ND)



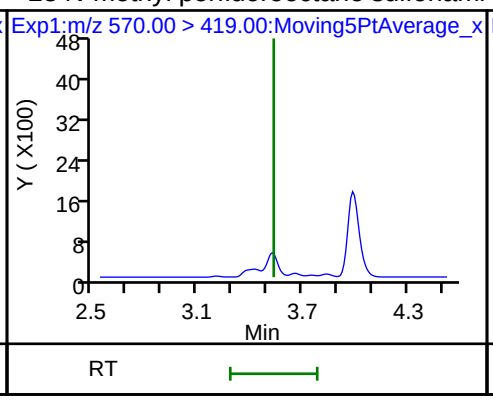
24 Perfluorodecanoic acid (ND)



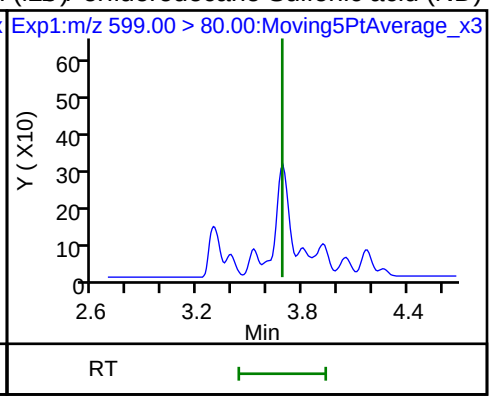
D 27 d3-NMeFOSAA



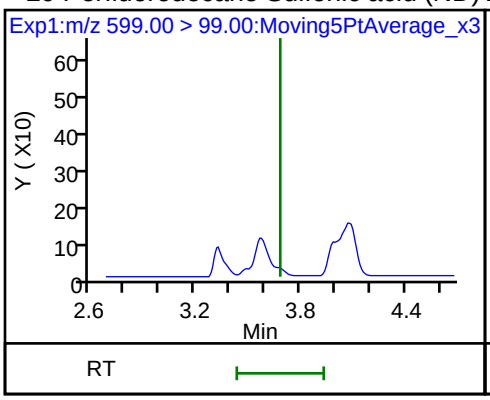
28 N-methyl perfluorooctane sulfonami (ND)



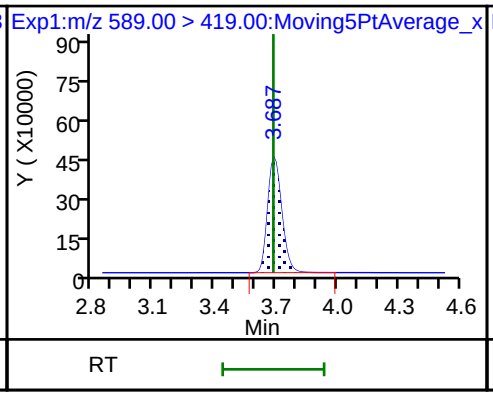
29 Perfluorodecane Sulfonic acid (ND)



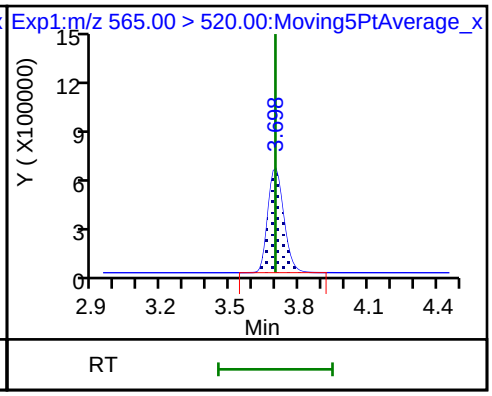
29 Perfluorodecane Sulfonic acid (ND)



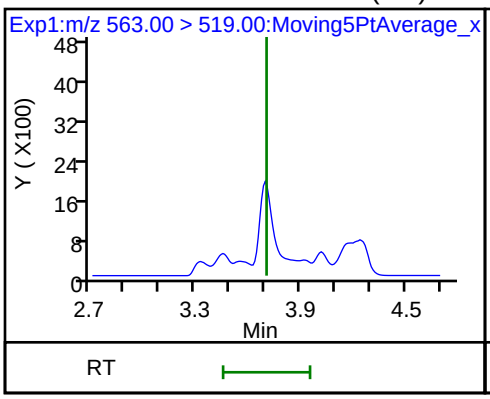
D 32 d5-NEtFOSAA



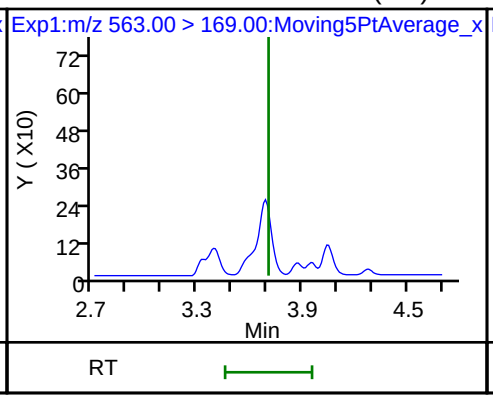
D 30 13C2 PFUnA



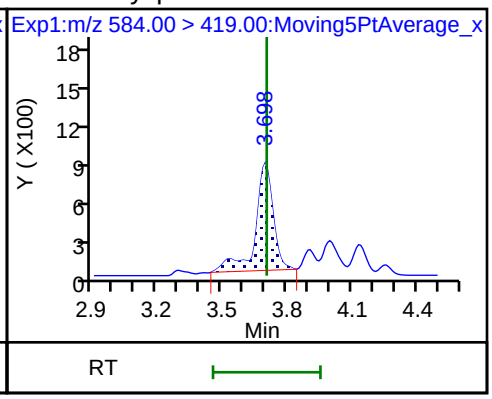
31 Perfluoroundecanoic acid (ND)



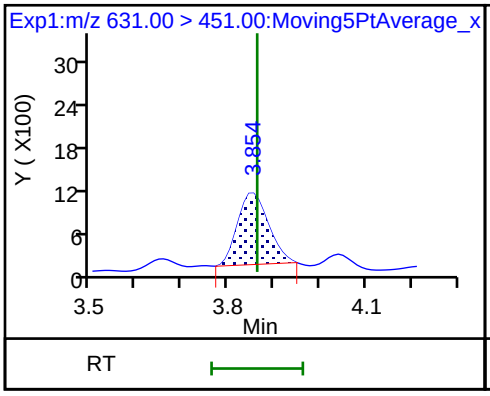
31 Perfluoroundecanoic acid (ND)



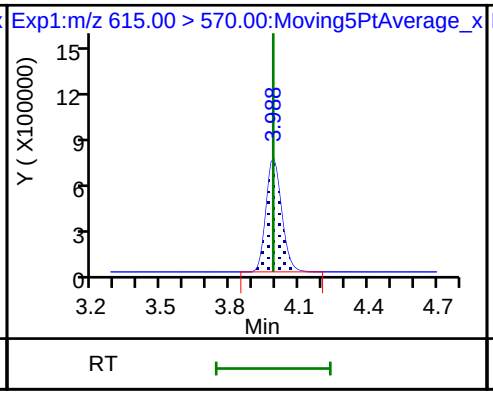
33 N-ethyl perfluorooctane sulfonamid



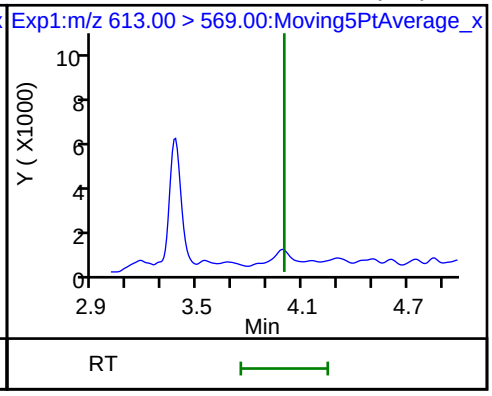
66 11-Chloroeicosafluoro-3-oxaundecan



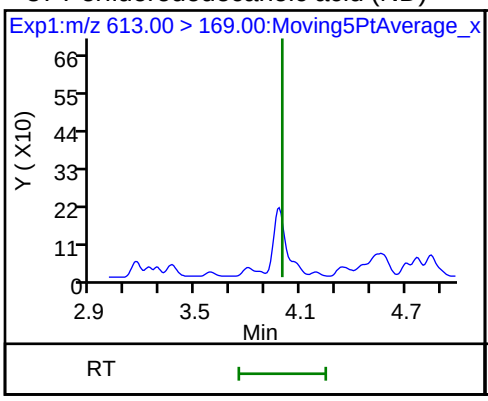
D 36 13C2 PFDoA



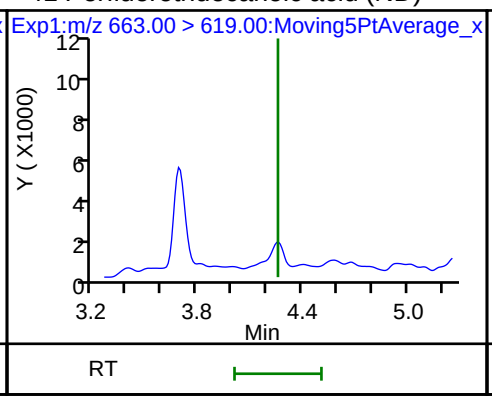
37 Perfluorododecanoic acid (ND)



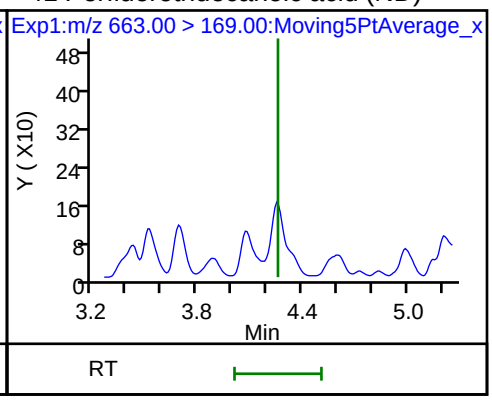
37 Perfluorododecanoic acid (ND)



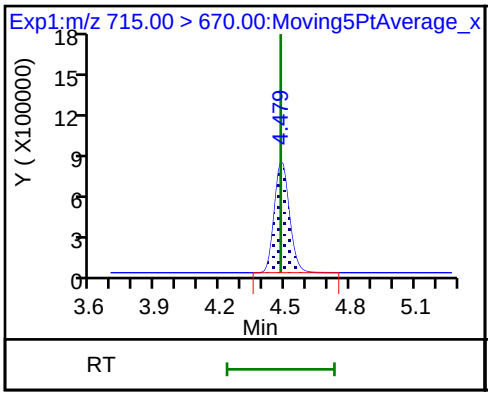
41 Perfluorotridecanoic acid (ND)



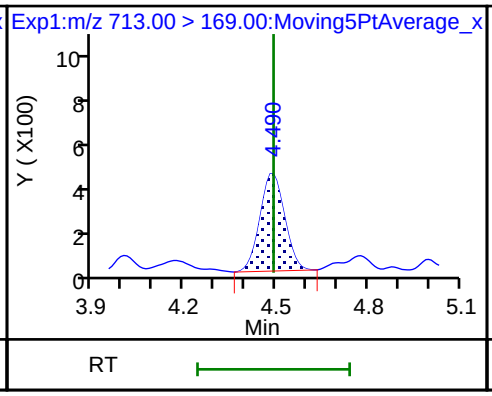
41 Perfluorotridecanoic acid (ND)



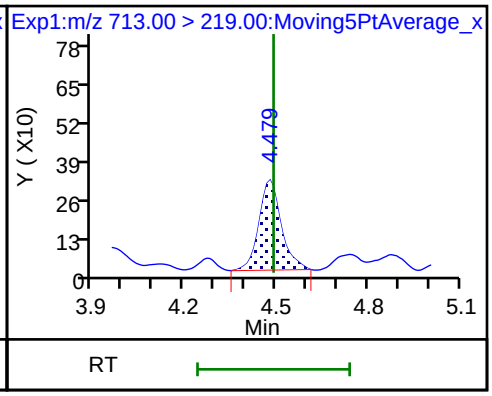
D 43 13C2-PFTeDA



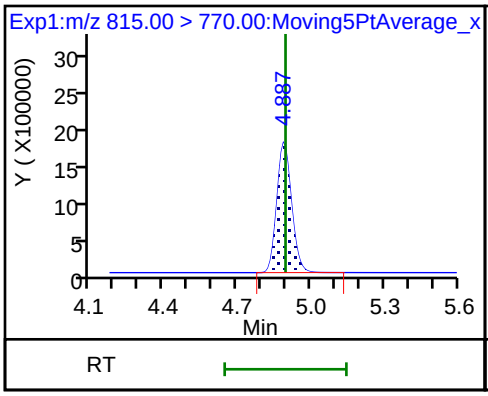
42 Perfluorotetradecanoic acid



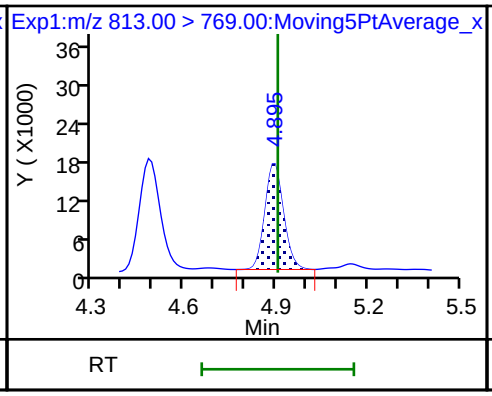
42 Perfluorotetradecanoic acid



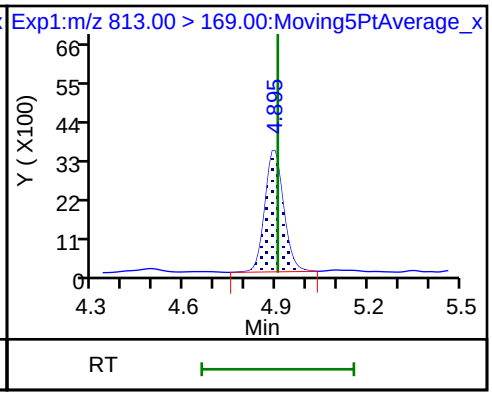
D 44 13C2-PFHxDA



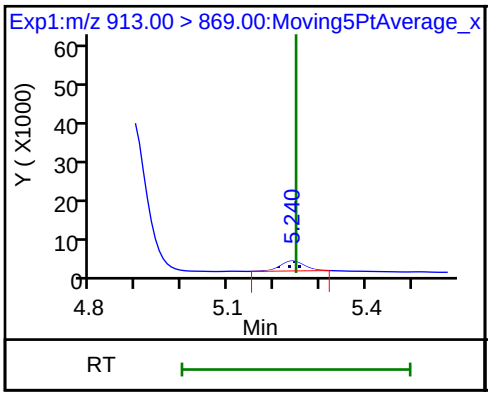
45 Perfluorohexadecanoic acid



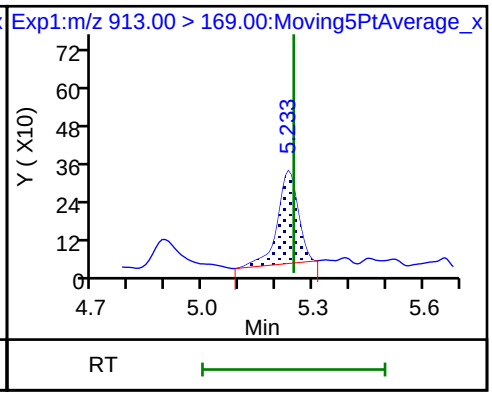
45 Perfluorohexadecanoic acid



46 Perfluorooctadecanoic acid



46 Perfluorooctadecanoic acid



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

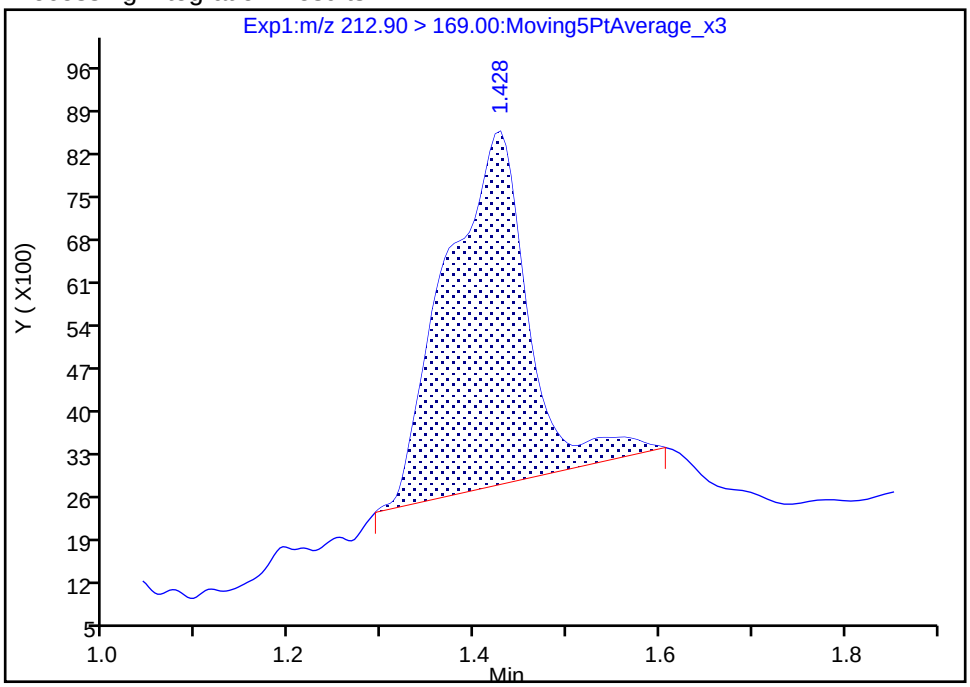
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180706-60751.b\2018.07.06LLAAA_032.d				
Injection Date:	06-Jul-2018 17:38:01	Instrument ID:	A8_N		
Lims ID:	MB 320-232150/1-A				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	22	Worklist Smp#:	2
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

2 Perfluorobutyric acid, CAS: 375-22-4

Signal: 1

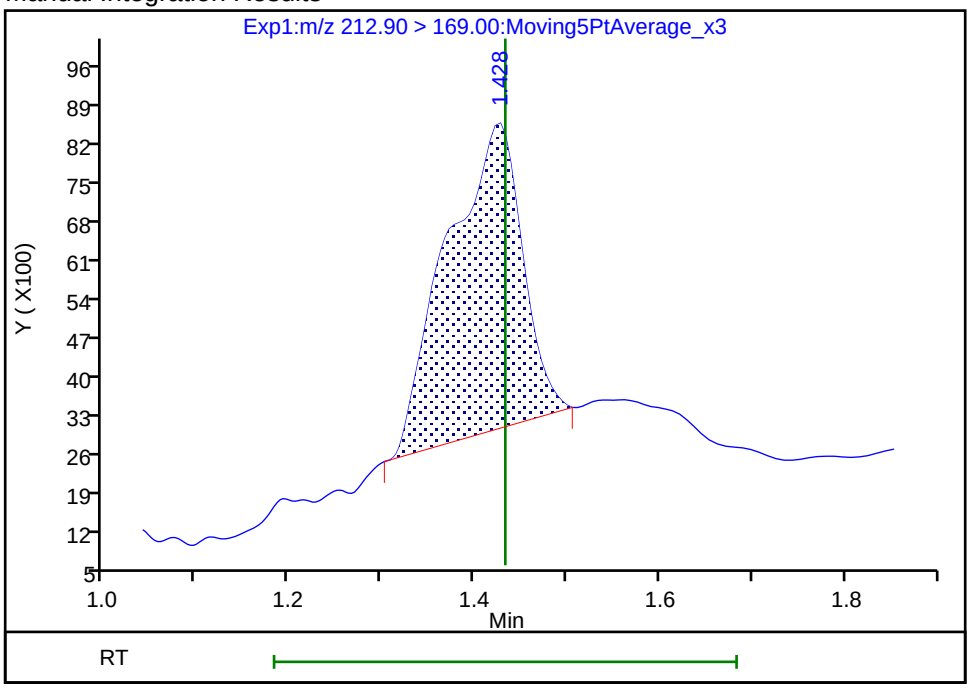
Processing Integration Results

RT: 1.43
Area: 35591
Amount: 0.011924
Amount Units: ng/ml



Manual Integration Results

RT: 1.43
Area: 31217
Amount: 0.010458
Amount Units: ng/ml



Reviewer: mongkols, 09-Jul-2018 10:12:07

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

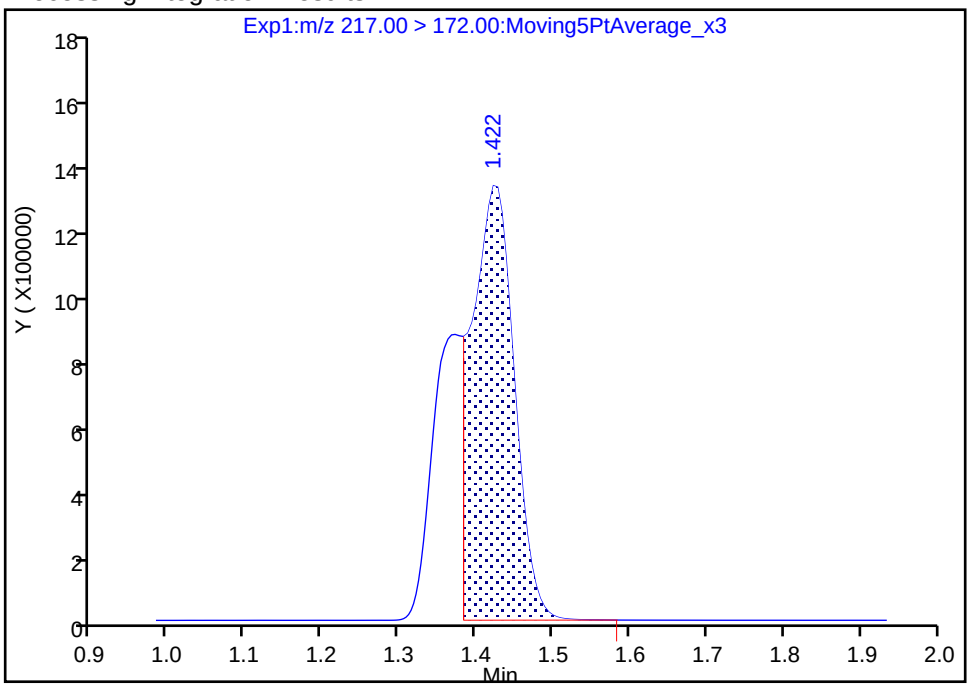
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180706-60751.b\2018.07.06LLAAA_032.d				
Injection Date:	06-Jul-2018 17:38:01	Instrument ID:	A8_N		
Lims ID:	MB 320-232150/1-A				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	22	Worklist Smp#:	2
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

D 1 13C4 PFBA, CAS: STL00992

Signal: 1

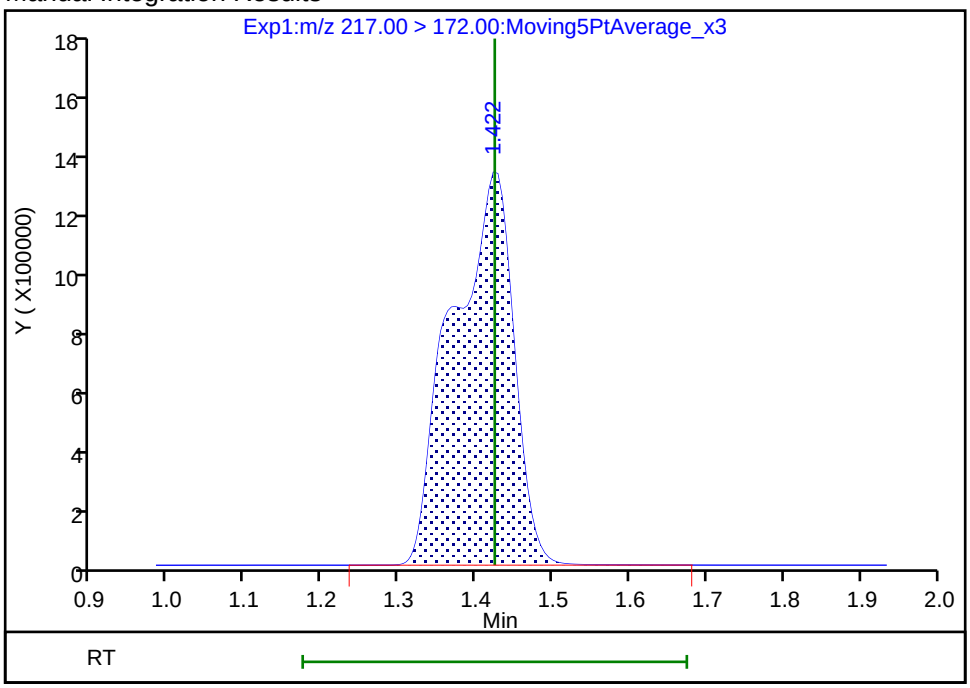
Processing Integration Results

RT: 1.42
Area: 4953350
Amount: 1.650888
Amount Units: ng/ml



Manual Integration Results

RT: 1.42
Area: 7305725
Amount: 2.434904
Amount Units: ng/ml



Reviewer: mongkols, 09-Jul-2018 10:11:51

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID:
Lab Sample ID: CCB 320-232772/1
Matrix: Water
Lab File ID: 2018.07.06LLAAA_003.d
Analysis Method: 537 (modified)
Date Collected:
Extraction Method:
Date Extracted:
Sample wt/vol: 1(mL)
Date Analyzed: 07/06/2018 15:40
Con. Extract Vol.:
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 232772
Units: ng/mL

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	ND		0.050	0.0088
2706-90-3	Perfluoropentanoic acid (PFPeA)	ND		0.050	0.012
307-24-4	Perfluorohexanoic acid (PFHxA)	ND		0.050	0.015
375-85-9	Perfluoroheptanoic acid (PFHpA)	ND		0.050	0.0063
335-67-1	Perfluorooctanoic acid (PFOA)	ND		0.050	0.021
375-95-1	Perfluorononanoic acid (PFNA)	ND		0.050	0.0068
335-76-2	Perfluorodecanoic acid (PFDA)	ND		0.050	0.0078
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		0.050	0.028
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		0.050	0.014
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		0.050	0.033
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		0.050	0.0073
375-73-5	Perfluorobutanesulfonic acid (PFBS)	ND		0.050	0.0050
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	ND		0.050	0.030
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.00553	J	0.050	0.0043
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.050	0.0048
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	ND		0.050	0.014
8789-57-2	Perfluorononanesulfonic acid (PFNS)	ND		0.050	0.016
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		0.050	0.0080
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		0.050	0.0088
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.50	0.078
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.50	0.048
757124-72-4	4:2 FTS	ND		0.50	0.052
27619-97-2	6:2 FTS	ND		0.50	0.050
39108-34-4	8:2 FTS	ND		0.50	0.050

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID:
Lab Sample ID: CCB 320-232772/1
Matrix: Water
Lab File ID: 2018.07.06LLAAA_003.d
Analysis Method: 537 (modified)
Date Collected:
Extraction Method:
Date Extracted:
Sample wt/vol: 1(mL)
Date Analyzed: 07/06/2018 15:40
Con. Extract Vol.:
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 232772
Units: ng/mL

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00992	13C4 PFBA	93		25-150
STL01893	13C5 PFPeA	92		25-150
STL00993	13C2 PFHxA	98		25-150
STL01892	13C4-PFHpA	101		25-150
STL00990	13C4 PFOA	98		25-150
STL00995	13C5 PFNA	102		25-150
STL00996	13C2 PFDA	103		25-150
STL00997	13C2 PFUnA	99		25-150
STL00998	13C2 PFDoA	96		25-150
STL02116	13C2-PFTeDA	92		25-150
STL02337	13C3-PFBS	93		25-150
STL00994	18O2 PFHxS	99		25-150
STL00991	13C4 PFOS	101		25-150
STL01056	13C8 FOSA	94		25-150
STL02118	d3-NMeFOSAA	96		25-150
STL02117	d5-NEtFOSAA	106		25-150
STL02279	M2-6:2FTS	103		25-150
STL02280	M2-8:2FTS	106		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180706-60746.b\2018.07.06LLAAA_003.d
Lims ID: CCB
Client ID:
Sample Type: CCB
Inject. Date: 06-Jul-2018 15:40:39 ALS Bottle#: 20 Worklist Smp#: 1
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCB
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180706-60746.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 09-Jul-2018 08:44:25 Calib Date: 05-Jul-2018 09:38:17
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180705-60684.b\2018.07.05LLICALAA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK010

First Level Reviewer: mongkols Date: 09-Jul-2018 08:47:27

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.430	1.424	0.006	0.539	6077709	2.32		92.8	25470	
D 3 13C5-PFPeA										
267.90 > 223.00	1.703	1.701	0.002	0.642	4438268	2.29		91.6	44821	
D 47 13C3-PFBS										
301.90 > 83.00	1.748	1.746	0.002	0.659	100625	2.17		93.3	807	
D 60 M2-4:2FTS										
329.00 > 81.00	1.949	1.948	0.001	0.735	680251	2.28		97.7	9594	
D 7 13C2 PFHxA										
315.00 > 270.00	1.981	1.980	0.001	0.747	5067750	2.44		97.7	65425	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.083	2.082	0.001	0.785	377546	2.22		88.8	6350	
D 9 13C4-PFHpA										
367.00 > 322.00	2.307	2.306	0.001	0.870	4664405	2.53		101	37427	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.320	2.306	0.014	1.000	14357	0.005532			139	
399.00 > 99.00	2.307	2.306	0.001	0.994	6718		2.14(1.50-4.49)		54.3	
D 11 18O2 PFHxS										
403.00 > 84.00	2.320	2.319	0.001	0.875	5308533	2.34		99.0	37309	
D 12 M2-6:2FTS										
429.00 > 81.00	2.629	2.627	0.002	0.991	1015188	2.45		103	13293	
* 62 13C2-PFOA										
415.00 > 370.00	2.653	2.652	0.001		4730610	2.50			48043	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.653	2.652	0.001	1.000	15483	0.007363			4.6	
413.00 > 169.00	2.659	2.652	0.007	1.002	0		0.00(0.84-2.52)			
D 14 13C4 PFOA										
417.00 > 372.00	2.653	2.652	0.001	1.000	4433206	2.46		98.2	36261	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
20 Perfluorononanoic acid										
463.00 > 419.00	3.079	3.016	0.063	1.021	2160	0.001284			2.1	
463.00 > 169.00	3.023	3.016	0.007	1.002	380		5.68(1.90-5.69)		14.2	
D 18 13C4 PFOS										
503.00 > 80.00	3.016	3.017	-0.001	1.137	3923197	2.42		101	28549	
D 19 13C5 PFNA										
468.00 > 423.00	3.016	3.017	-0.001	1.137	3903966	2.54		102	45399	
D 26 M2-8:2FTS										
529.00 > 81.00	3.359	3.359	0.0	1.266	1164931	2.53		106	19103	
D 21 13C8 FOSA										
506.00 > 78.00	3.359	3.369	-0.010	1.266	5286720	2.35		94.1	33678	
D 23 13C2 PFDA										
515.00 > 470.00	3.368	3.378	-0.010	1.269	3414781	2.58		103	45833	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.527	3.527	0.0	1.329	1879955	2.41		96.5	19884	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.696	3.696	0.0	1.000	5611	0.005988			22.2	
563.00 > 169.00	3.696	3.696	0.0	1.000	2492		2.25(2.12-6.36)		69.2	
D 30 13C2 PFUnA										
565.00 > 520.00	3.696	3.696	0.0	1.393	2755515	2.48		99.2	33987	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.696	3.696	0.0	1.393	2031645	2.64		106	12730	
D 36 13C2 PFDoA										
615.00 > 570.00	3.986	3.987	-0.001	1.502	2860605	2.40		96.1	18246	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.490	4.490	0.0	1.692	3350891	2.31		92.3	12414	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.903	4.896	0.007	1.002	52467	-0.001299			22.9	
813.00 > 169.00	4.895	4.896	-0.001	1.000	9345		5.61(2.86-8.58)		92.5	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.895	4.896	-0.001	1.845	6401992	2.38		95.3	13486	

Reagents:

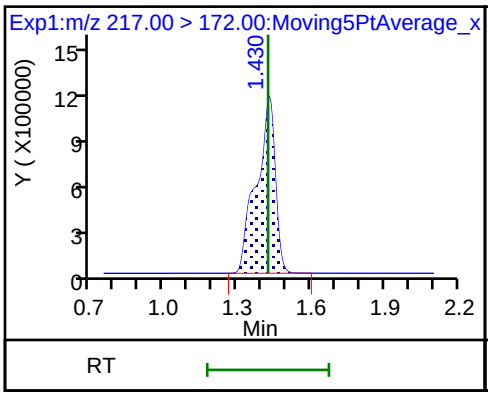
LCPFC_LL0_00007 Amount Added: 1.00 Units: mL

Report Date: 09-Jul-2018 08:47:28 Chrom Revision: 2.2 07-Jun-2018 07:41:54

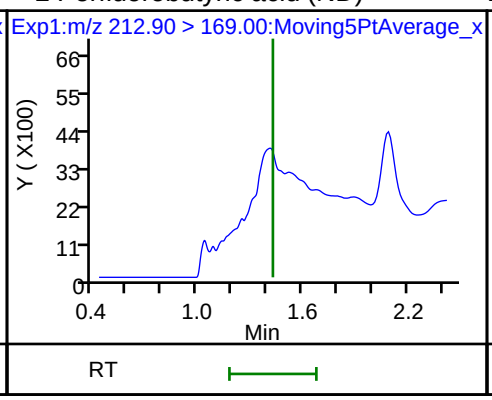
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180706-60746.b\2018.07.06LLAAA_003.d
Injection Date: 06-Jul-2018 15:40:39 Instrument ID: A8_N
Lims ID: CCB
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 20 Worklist Smp#: 1
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC ICAL

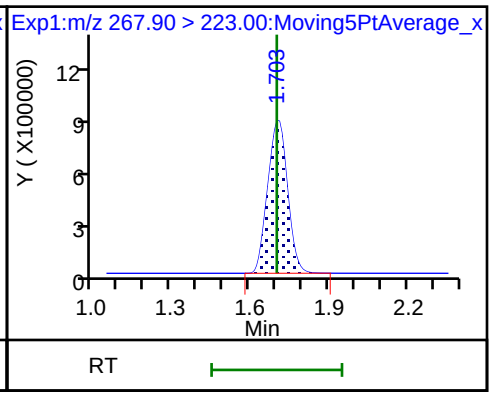
D 1 13C4 PFBA



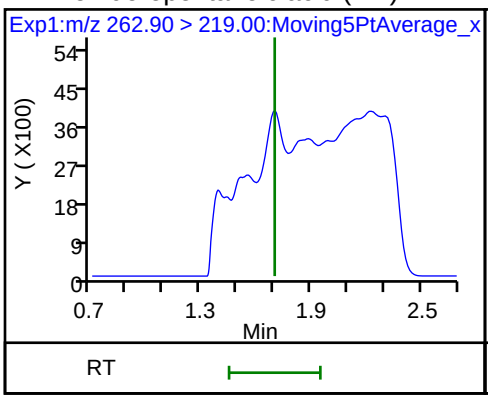
2 Perfluorobutyric acid (ND)



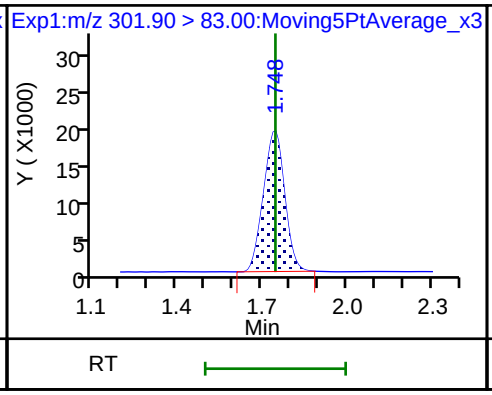
D 3 13C5-PFPeA



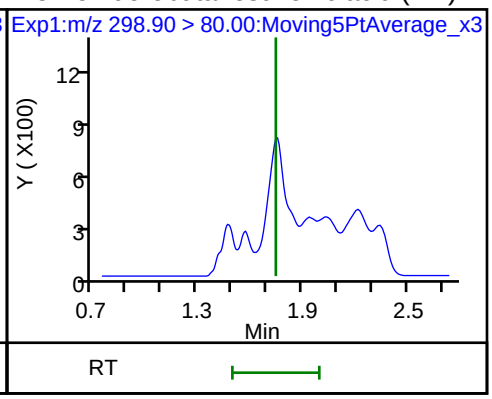
4 Perfluoropentanoic acid (ND)



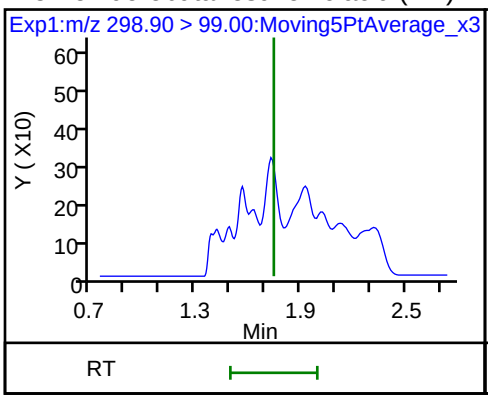
D 47 13C3-PFBS



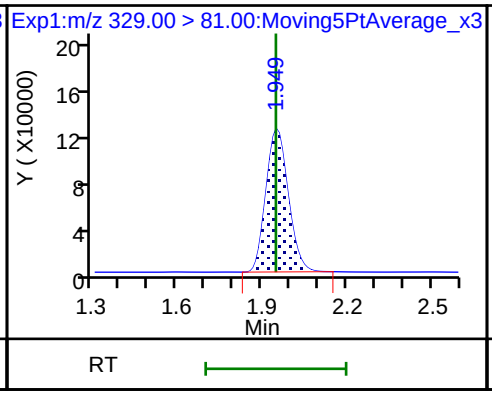
5 Perfluorobutanesulfonic acid (ND)



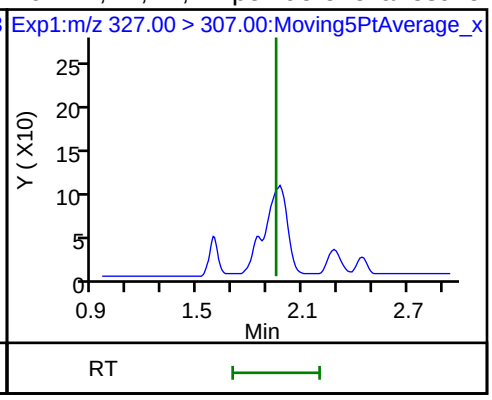
5 Perfluorobutanesulfonic acid (ND)



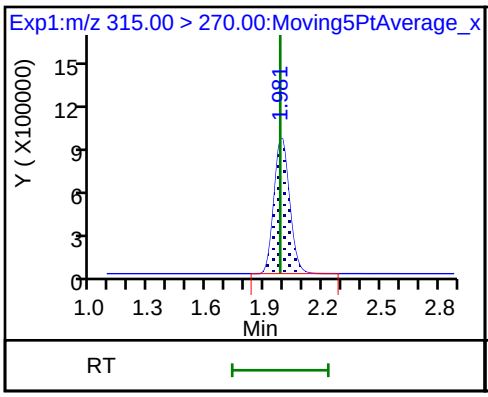
D 60 M2-4:2FTS



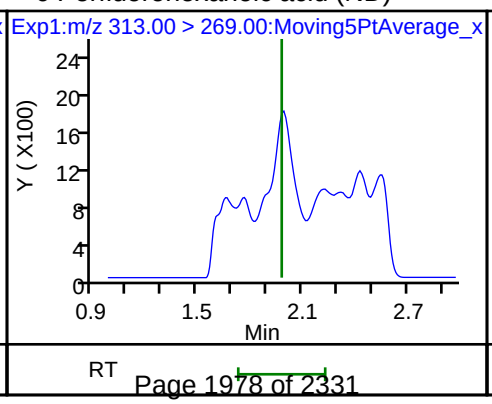
61 1H,1H,2H,2H-perfluorohexanesulfoni (ND)



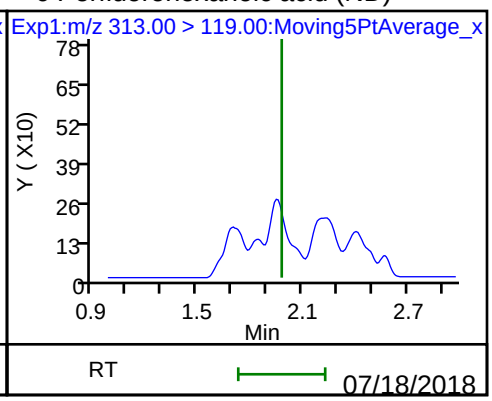
D 7 13C2 PFHxA



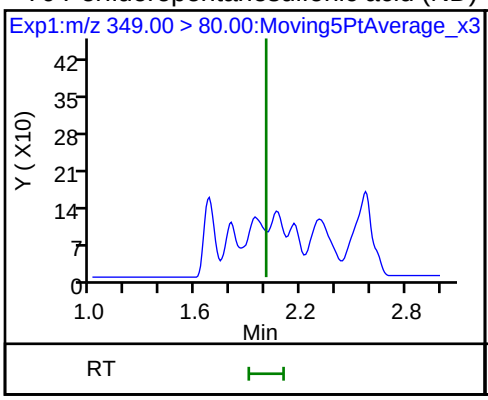
6 Perfluorohexanoic acid (ND)



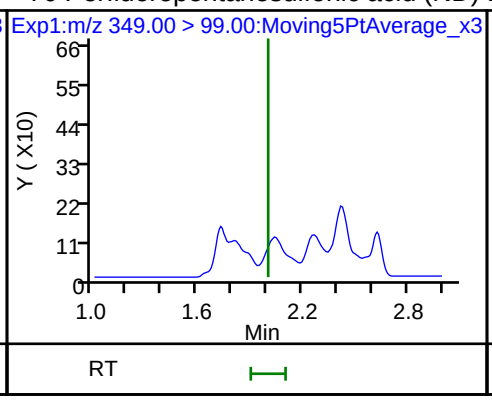
6 Perfluorohexanoic acid (ND)



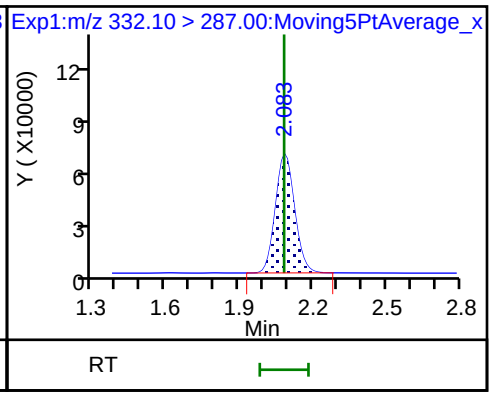
70 Perfluoropentanesulfonic acid (ND)



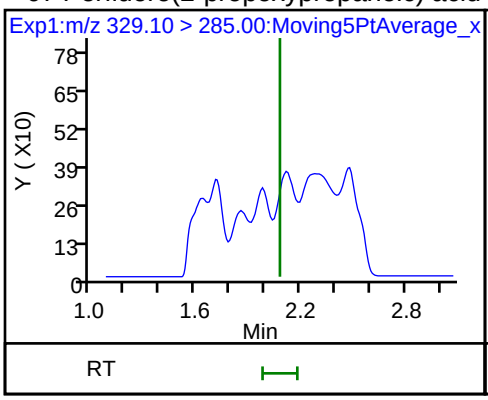
70 Perfluoropentanesulfonic acid (ND)



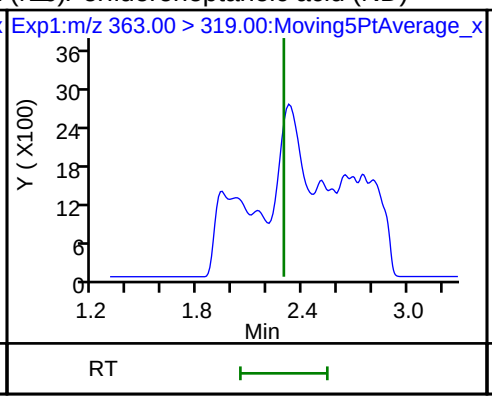
D 64 13C3 HFPO-DA



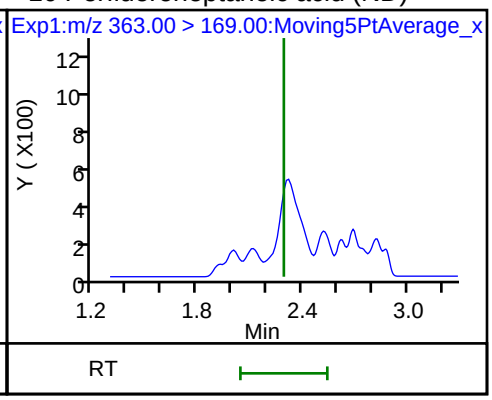
67 Perfluoro(2-propoxypropanoic) acid (ND)



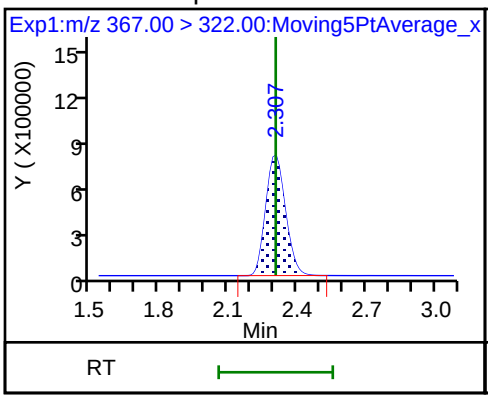
10 Perfluoroheptanoic acid (ND)



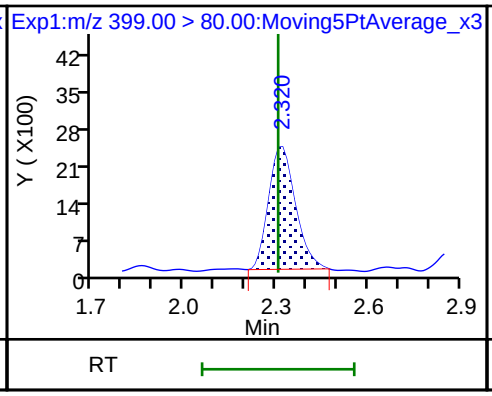
10 Perfluoroheptanoic acid (ND)



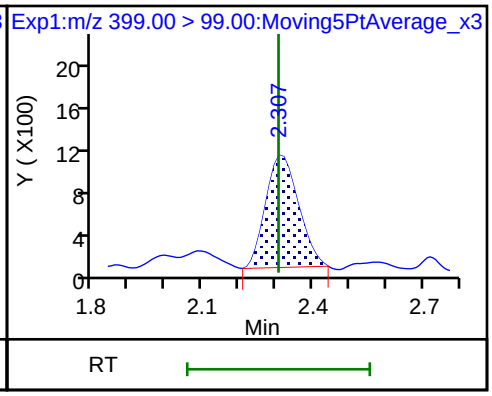
D 9 13C4-PFHpA



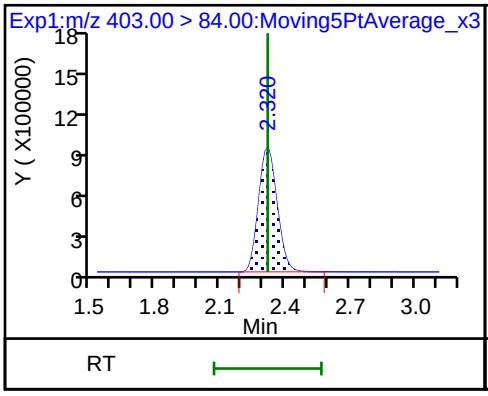
8 Perfluorohexanesulfonic acid



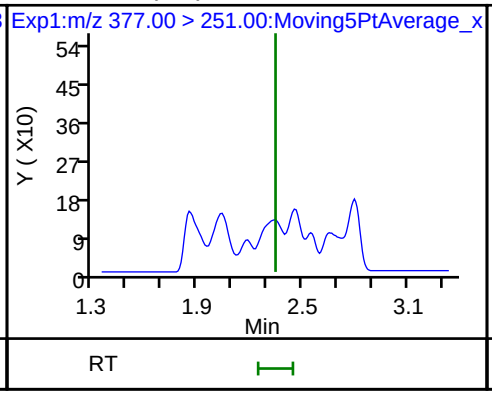
8 Perfluorohexanesulfonic acid



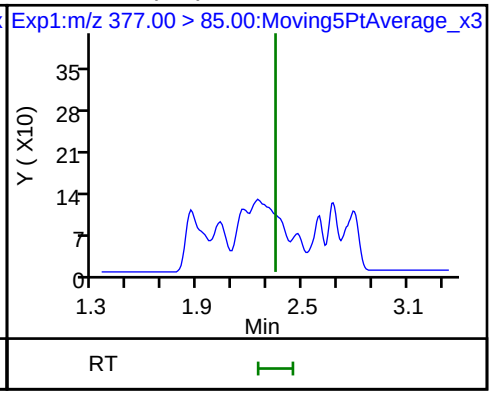
D 11 18O2 PFHxS



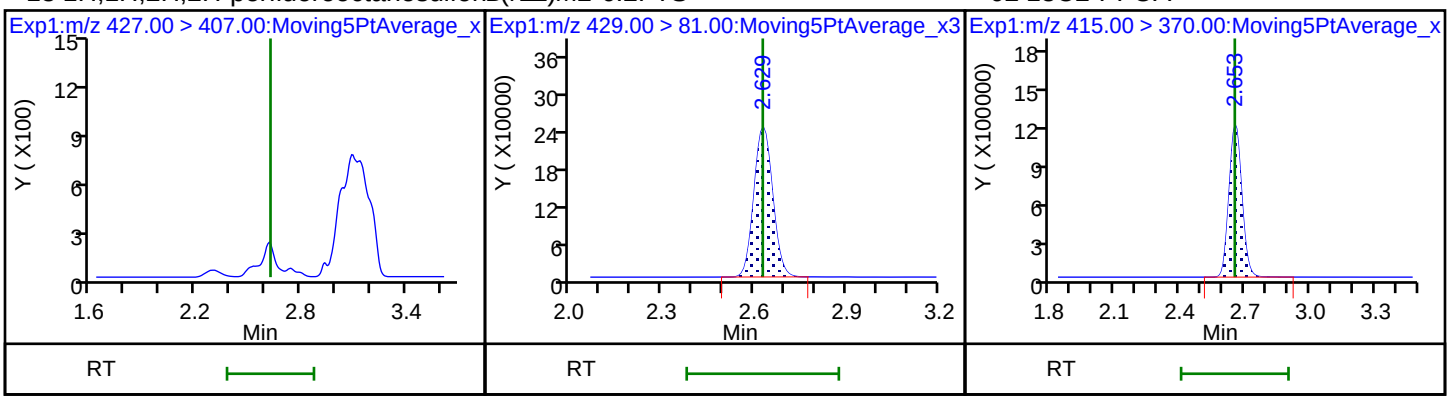
65 Adona (ND)



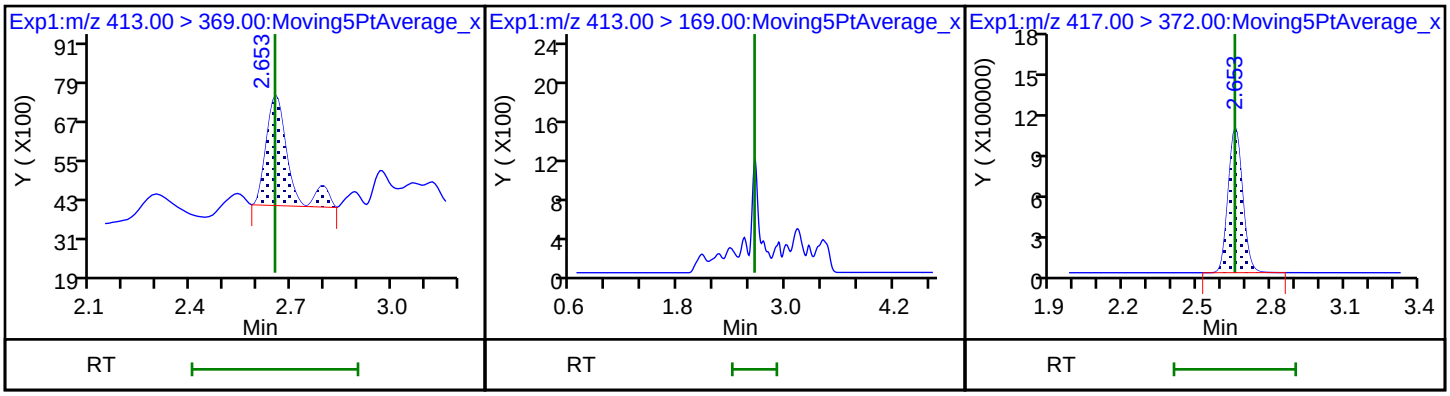
65 Adona (ND)



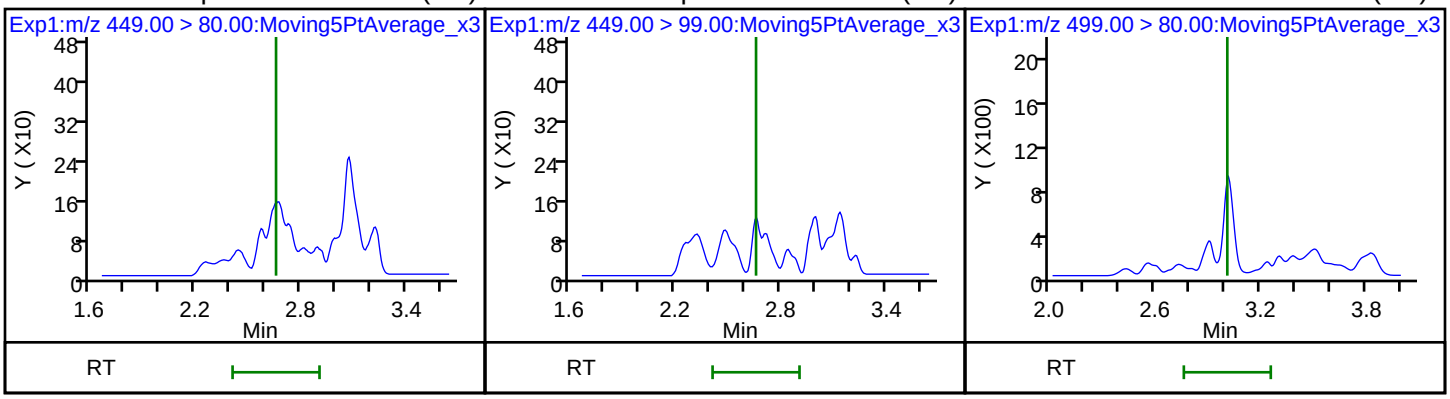
13 1H,1H,2H,2H-perfluorooctanesulfonic (ND) D 12 M2-6:2FTS * 62 13C2-PFOA



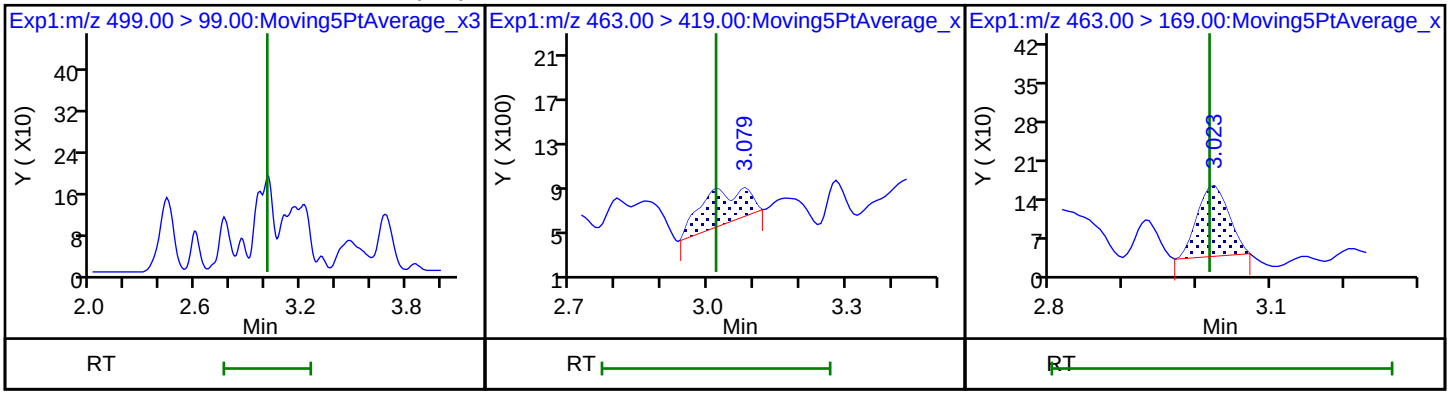
15 Perfluorooctanoic acid 15 Perfluorooctanoic acid D 14 13C4 PFOA



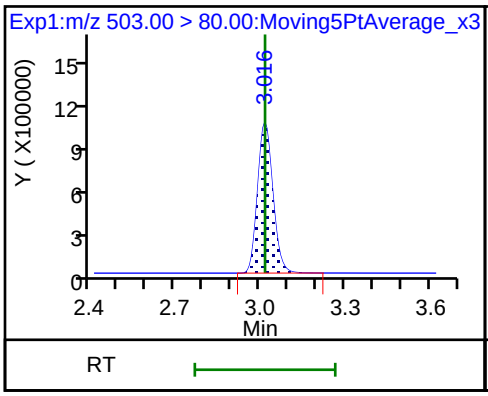
16 Perfluoroheptanesulfonic acid (ND) 16 Perfluoroheptanesulfonic acid (ND) 17 Perfluorooctane sulfonic acid (ND)



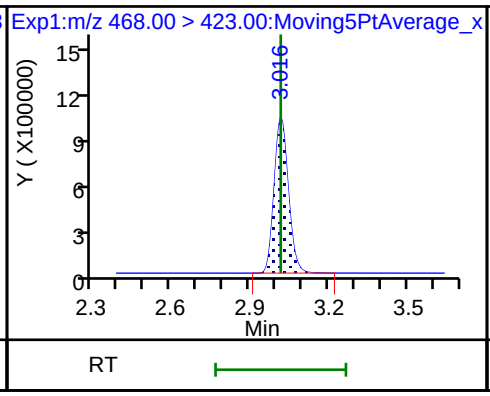
17 Perfluorooctane sulfonic acid (ND) 20 Perfluorononanoic acid 20 Perfluorononanoic acid



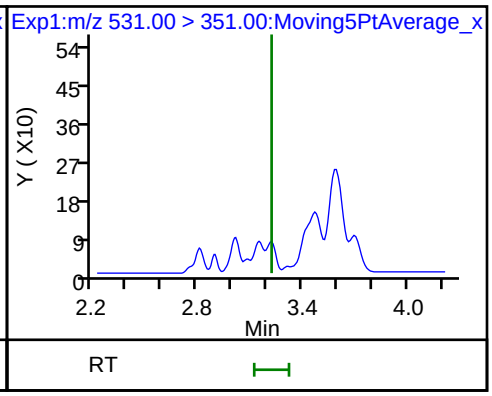
D 18 13C4 PFOS



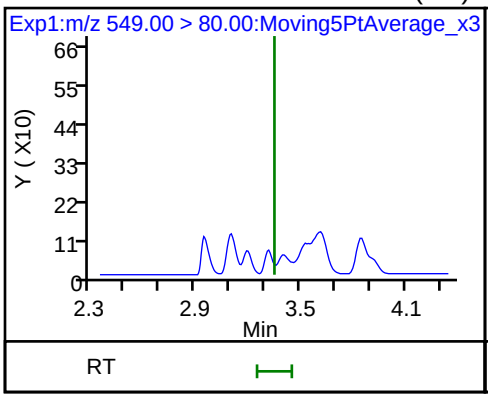
D 19 13C5 PFNA



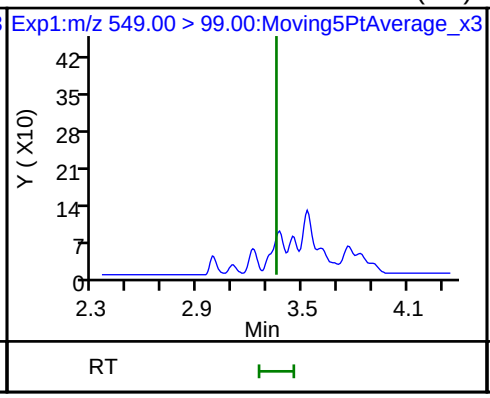
69 9-Chlorohexadecafluoro-3-oxanonane (ND)



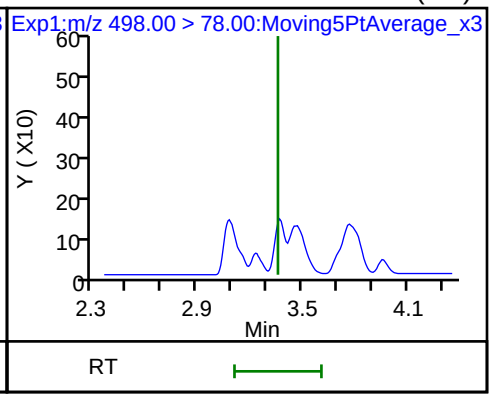
68 Perfluorononanesulfonic acid (ND)



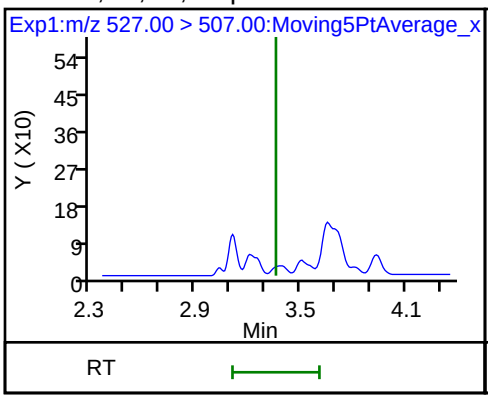
68 Perfluorononanesulfonic acid (ND)



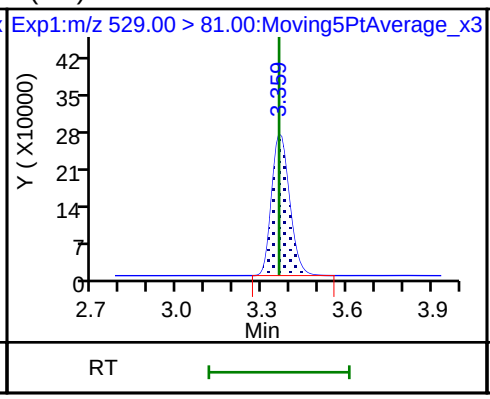
22 Perfluorooctane Sulfonamide (ND)



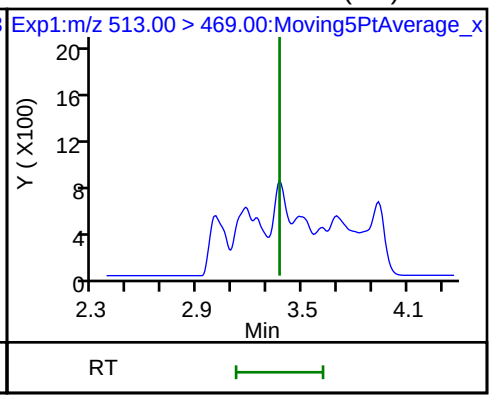
25 1H,1H,2H,2H-perfluorodecanesulfonic acid (ND)



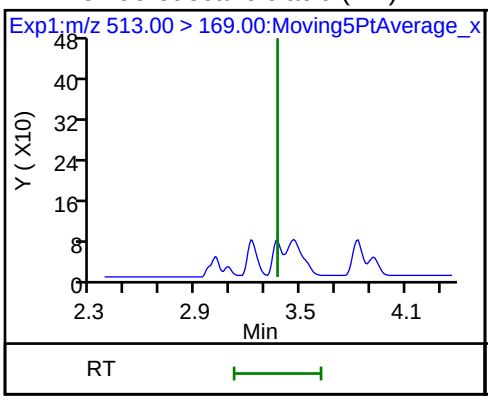
D 26 M2-8:2FTS



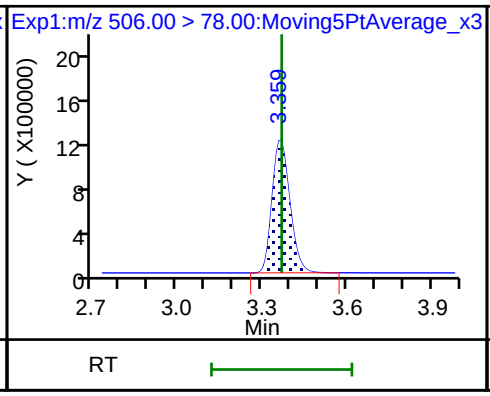
24 Perfluorodecanoic acid (ND)



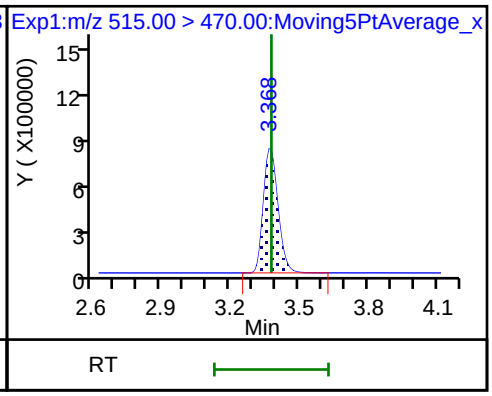
24 Perfluorodecanoic acid (ND)



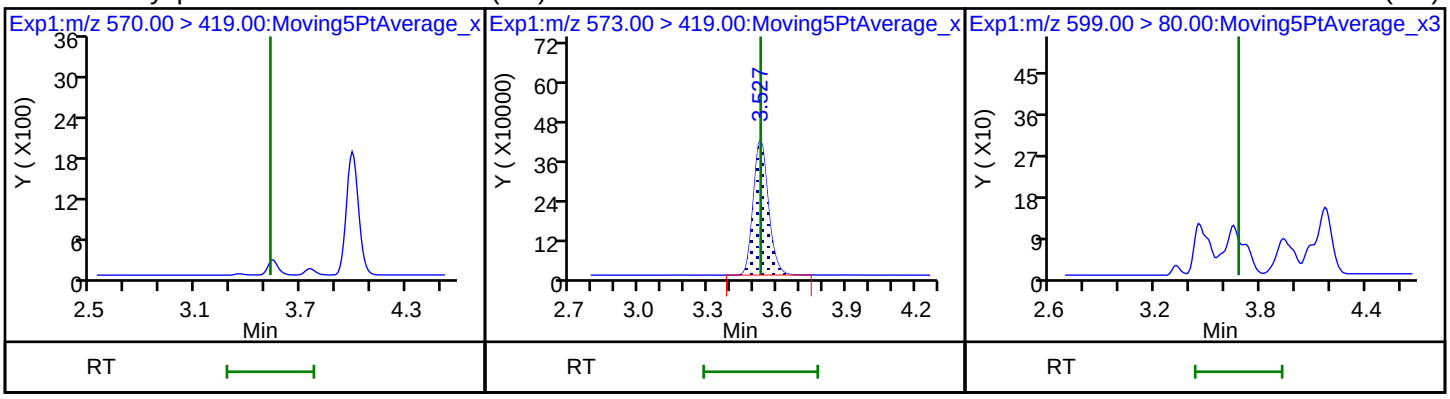
D 21 13C8 FOSA



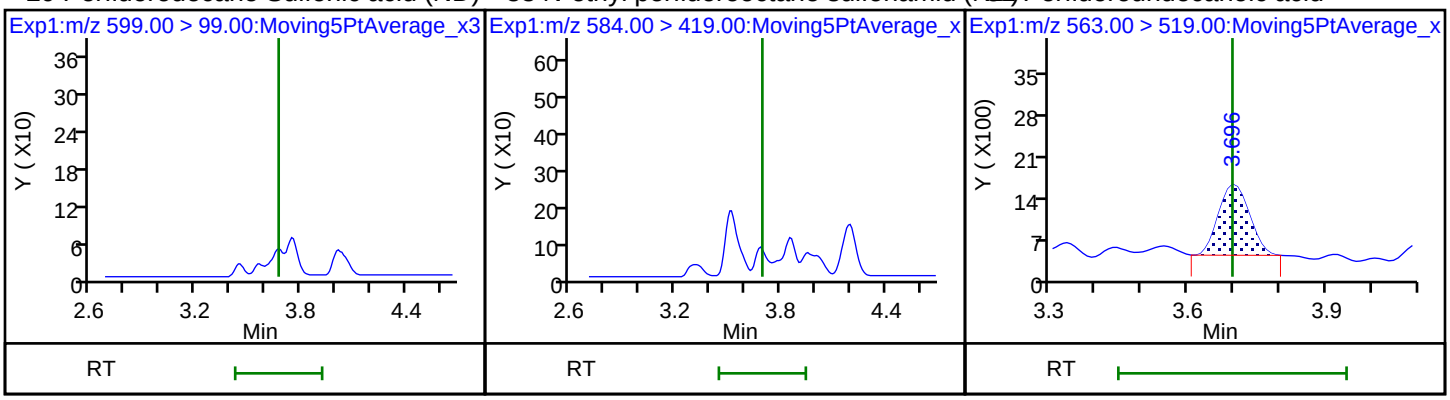
D 23 13C2 PFDA



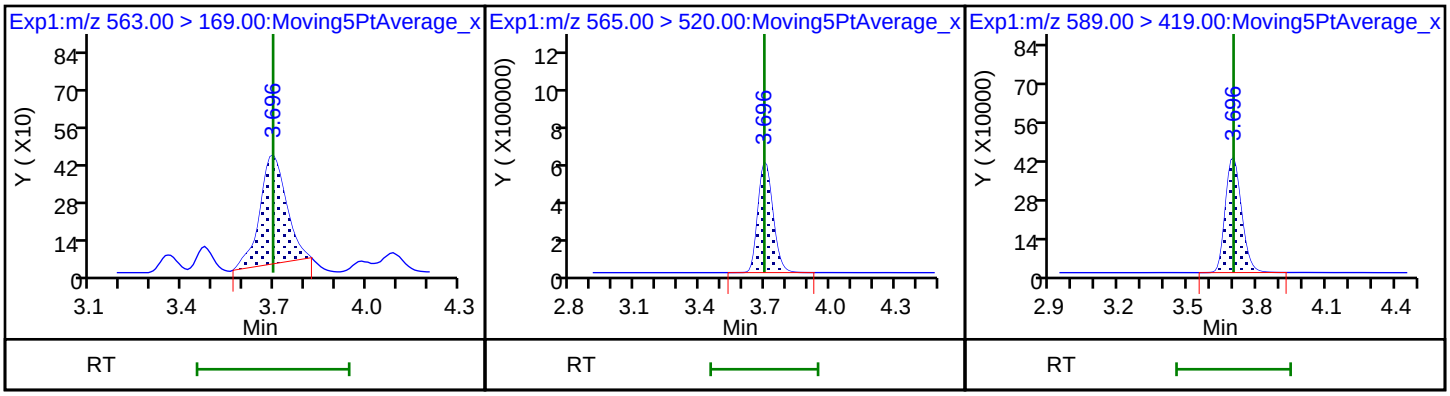
28 N-methyl perfluorooctane sulfonamid (ND) D 27 d3-NMeFOSAA 29 Perfluorodecane Sulfonic acid (ND)



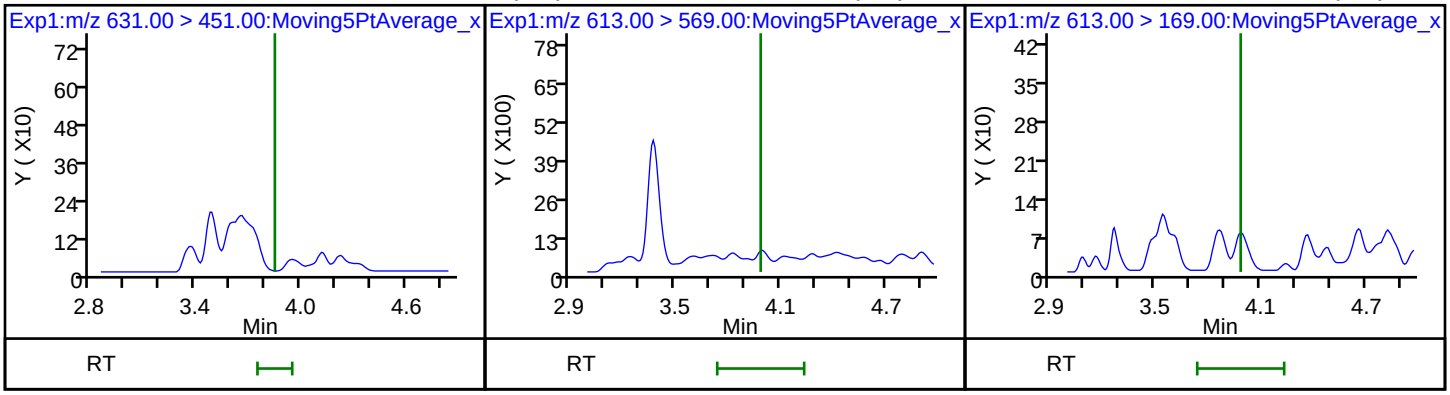
29 Perfluorodecane Sulfonic acid (ND) 33 N-ethyl perfluorooctane sulfonamid (ND) 31 Perfluoroundecanoic acid



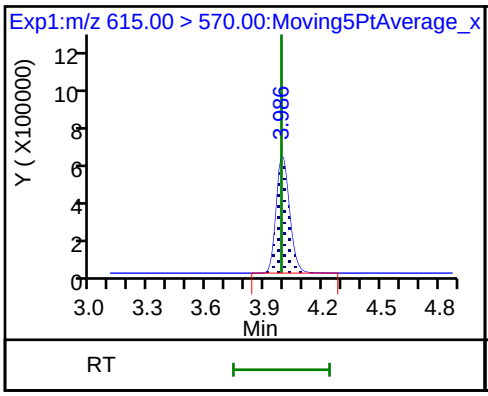
31 Perfluoroundecanoic acid D 30 13C2 PFUnA D 32 d5-NEtFOSAA



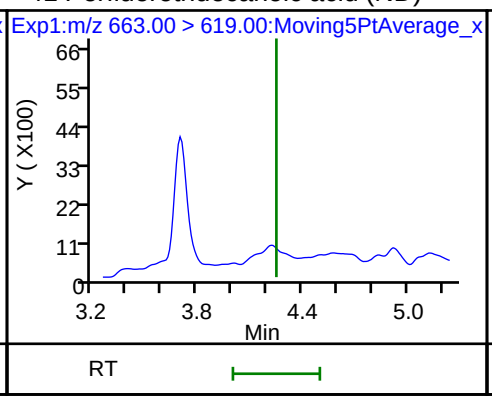
66 11-Chloroeicosafluoro-3-oxaundecan (ND) 36 Perfluorododecanoic acid (ND) 37 Perfluorododecanoic acid (ND)



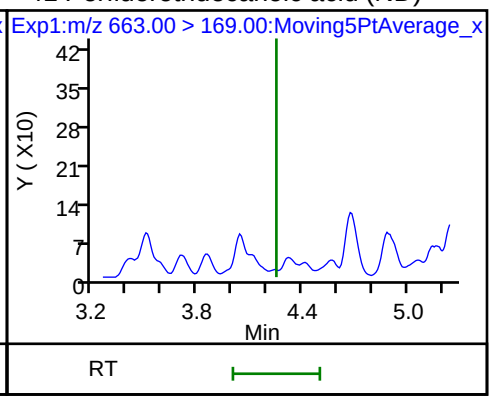
D 36 13C2 PFDoA



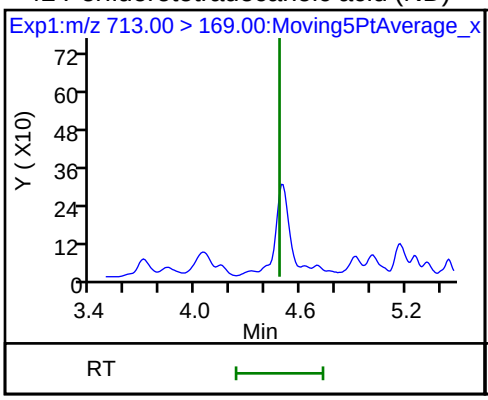
41 Perfluorotridecanoic acid (ND)



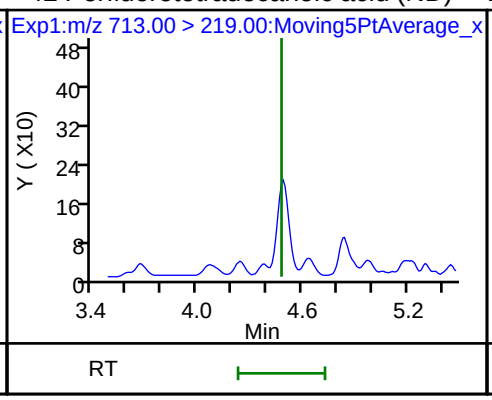
41 Perfluorotridecanoic acid (ND)



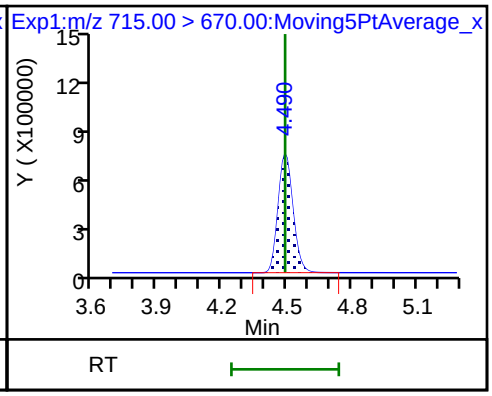
42 Perfluorotetradecanoic acid (ND)



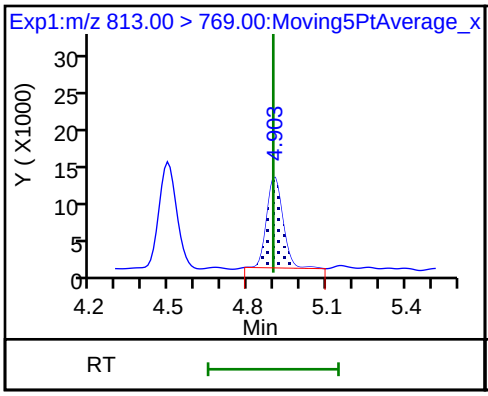
42 Perfluorotetradecanoic acid (ND)



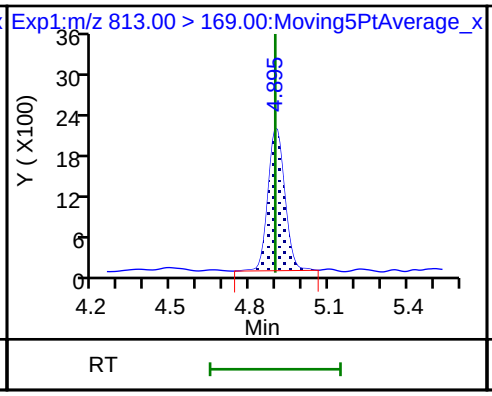
D 43 13C2-PFTeDA



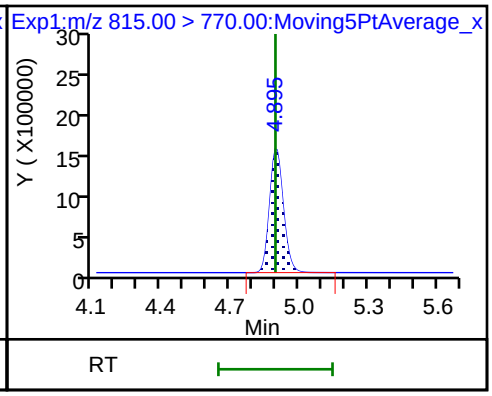
45 Perfluorohexadecanoic acid



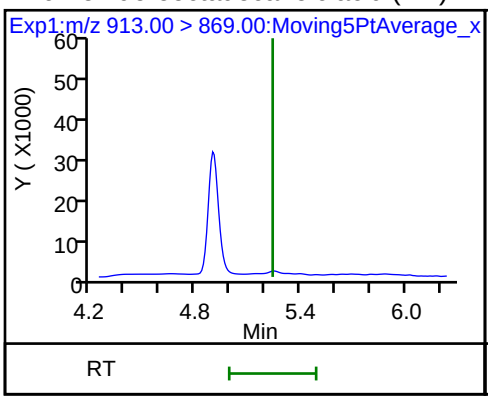
45 Perfluorohexadecanoic acid



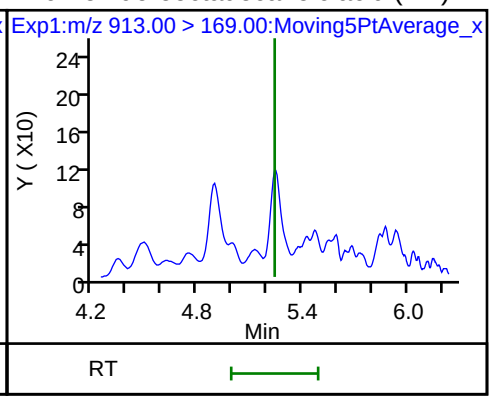
D 44 13C2-PFHxDA



46 Perfluorooctadecanoic acid (ND)



46 Perfluorooctadecanoic acid (ND)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID:
Lab Sample ID: CCB 320-232797/1
Matrix: Water
Lab File ID: 2018.07.06LLC_003.d
Analysis Method: 537 (modified)
Date Collected:
Extraction Method:
Date Extracted:
Sample wt/vol: 1(mL)
Date Analyzed: 07/06/2018 23:38
Con. Extract Vol.:
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 232797
Units: ng/mL

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	ND		0.050	0.0088
2706-90-3	Perfluoropentanoic acid (PFPeA)	ND		0.050	0.012
307-24-4	Perfluorohexanoic acid (PFHxA)	ND		0.050	0.015
375-85-9	Perfluoroheptanoic acid (PFHpA)	ND		0.050	0.0063
335-67-1	Perfluorooctanoic acid (PFOA)	ND		0.050	0.021
375-95-1	Perfluorononanoic acid (PFNA)	ND		0.050	0.0068
335-76-2	Perfluorodecanoic acid (PFDA)	ND		0.050	0.0078
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		0.050	0.028
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		0.050	0.014
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		0.050	0.033
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		0.050	0.0073
375-73-5	Perfluorobutanesulfonic acid (PFBS)	ND		0.050	0.0050
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	ND		0.050	0.030
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.00581	J	0.050	0.0043
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.050	0.0048
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	ND		0.050	0.014
8789-57-2	Perfluorononanesulfonic acid (PFNS)	ND		0.050	0.016
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		0.050	0.0080
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		0.050	0.0088
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.50	0.078
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.50	0.048
757124-72-4	4:2 FTS	ND		0.50	0.052
27619-97-2	6:2 FTS	ND		0.50	0.050
39108-34-4	8:2 FTS	ND		0.50	0.050

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID:
Lab Sample ID: CCB 320-232797/1
Matrix: Water
Lab File ID: 2018.07.06LLC_003.d
Analysis Method: 537 (modified)
Date Collected:
Extraction Method:
Date Extracted:
Sample wt/vol: 1(mL)
Date Analyzed: 07/06/2018 23:38
Con. Extract Vol.:
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 232797
Units: ng/mL

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00992	13C4 PFBA	94		25-150
STL01893	13C5 PFPeA	93		25-150
STL00993	13C2 PFHxA	95		25-150
STL01892	13C4-PFHpA	99		25-150
STL00990	13C4 PFOA	104		25-150
STL00995	13C5 PFNA	102		25-150
STL00996	13C2 PFDA	97		25-150
STL00997	13C2 PFUnA	97		25-150
STL00998	13C2 PFDoA	103		25-150
STL02116	13C2-PFTeDA	91		25-150
STL02337	13C3-PFBS	89		25-150
STL00994	18O2 PFHxS	101		25-150
STL00991	13C4 PFOS	100		25-150
STL01056	13C8 FOSA	94		25-150
STL02118	d3-NMeFOSAA	94		25-150
STL02117	d5-NEtFOSAA	100		25-150
STL02279	M2-6:2FTS	107		25-150
STL02280	M2-8:2FTS	107		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180706-60754.b\2018.07.06LLC_003.d
Lims ID: CCB
Client ID:
Sample Type: CCB
Inject. Date: 06-Jul-2018 23:38:02 ALS Bottle#: 20 Worklist Smp#: 1
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCB
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180706-60754.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 09-Jul-2018 12:33:24 Calib Date: 05-Jul-2018 09:38:17
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180705-60684.b\2018.07.05LLICALAA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK010

First Level Reviewer: mongkols Date: 09-Jul-2018 12:49:04

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.428	1.430	-0.002	0.537	5934077	2.34		93.6	22601	
D 3 13C5-PFPeA										
267.90 > 223.00	1.708	1.711	-0.003	0.642	4369171	2.33		93.1	43257	
D 47 13C3-PFBS										
301.90 > 83.00	1.744	1.747	-0.003	0.656	92596	2.06		88.7	744	
D 60 M2-4:2FTS										
329.00 > 81.00	1.956	1.949	0.007	0.736	689754	2.39		102	8824	
D 7 13C2 PFHxA										
315.00 > 270.00	1.988	1.992	-0.004	0.748	4763743	2.37		94.8	55994	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.079	2.083	-0.004	0.782	341215	2.07		82.9	6122	
D 9 13C4-PFHpA										
367.00 > 322.00	2.303	2.307	-0.004	0.866	4400817	2.47		98.7	35299	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.316	2.315	0.001	1.000	14909	0.005813			152	
399.00 > 99.00	2.316	2.315	0.001	1.000	3887		3.84(1.50-4.49)		27.1	
D 11 18O2 PFHxS										
403.00 > 84.00	2.316	2.320	-0.004	0.871	5246292	2.39		101	46238	
D 12 M2-6:2FTS										
429.00 > 81.00	2.627	2.628	-0.002	0.988	1013448	2.53		107	18344	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.658	2.650	0.008	1.000	16504	0.007688			4.4	
413.00 > 169.00	2.660	2.650	0.010	1.001	0		0.00(0.84-2.52)			
* 62 13C2-PFOA										
415.00 > 370.00	2.658	2.650	0.008		4580635	2.50			29116	
D 14 13C4 PFOA										
417.00 > 372.00	2.658	2.653	0.005	1.000	4526005	2.59		104	31057	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 18 13C4 PFOS										
503.00 > 80.00	3.019	3.018	0.001	1.136	3760790	2.40		100	33292	
D 19 13C5 PFNA										
468.00 > 423.00	3.019	3.018	0.001	1.136	3805731	2.56		102	45643	
D 26 M2-8:2FTS										
529.00 > 81.00	3.361	3.361	0.0	1.264	1138148	2.56		107	19882	
D 21 13C8 FOSA										
506.00 > 78.00	3.370	3.371	-0.001	1.268	5108964	2.35		94.0	29806	
D 23 13C2 PFDA										
515.00 > 470.00	3.380	3.380	0.0	1.271	3116662	2.43		97.3	36749	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.529	3.529	0.0	1.327	1780015	2.36		94.3	24779	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.698	3.698	0.0	1.391	1861787	2.50		99.9	18299	
D 30 13C2 PFUnA										
565.00 > 520.00	3.698	3.698	0.0	1.391	2616576	2.43		97.3	32095	
D 36 13C2 PFDoA										
615.00 > 570.00	3.988	3.989	-0.001	1.500	2966483	2.57		103	17034	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.490	4.491	-0.001	1.689	3196218	2.27		90.9	14661	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.895	4.896	-0.001	1.841	6125431	2.35		94.2	12437	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.895	4.904	-0.009	1.000	54012	0.000339			28.5	
813.00 > 169.00	4.895	4.904	-0.009	1.000	9736		5.55(2.86-8.58)		121	

Reagents:

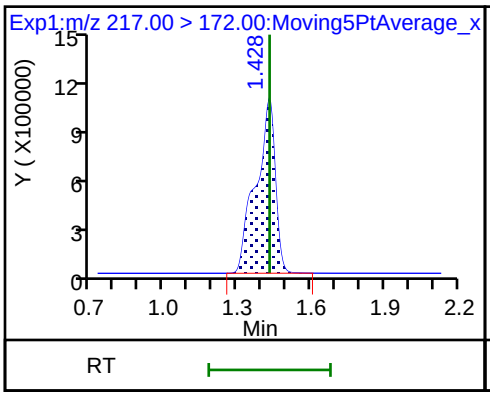
LCPFC_LL0_00007 Amount Added: 1.00 Units: mL

Report Date: 09-Jul-2018 12:49:05 Chrom Revision: 2.2 07-Jun-2018 07:41:54

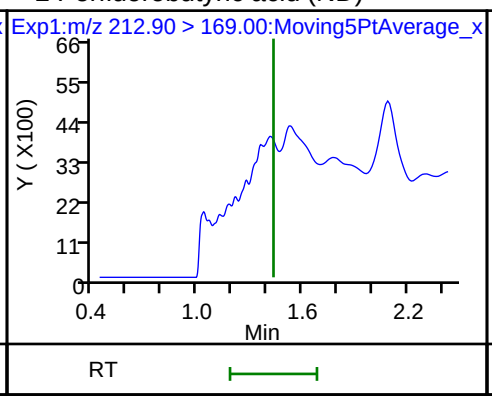
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180706-60754.b\2018.07.06LLC_003.d
Injection Date: 06-Jul-2018 23:38:02 Instrument ID: A8_N
Lims ID: CCB
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 20 Worklist Smp#: 1
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC ICAL

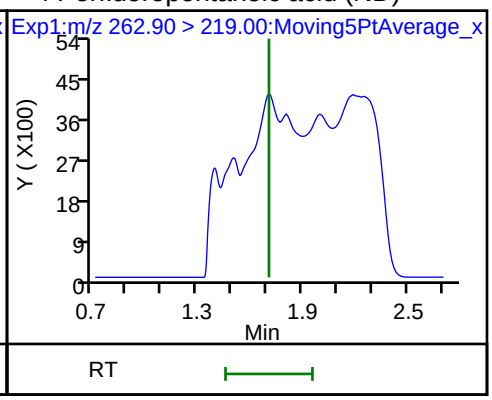
D 1 13C4 PFBA



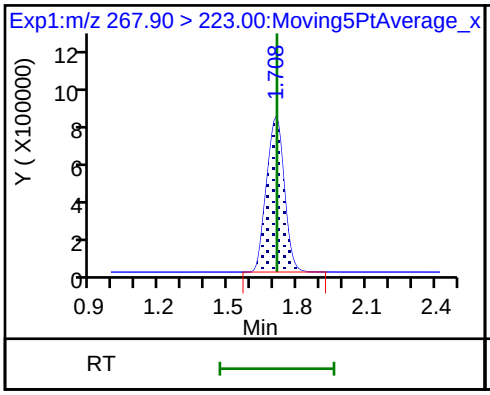
2 Perfluorobutyric acid (ND)



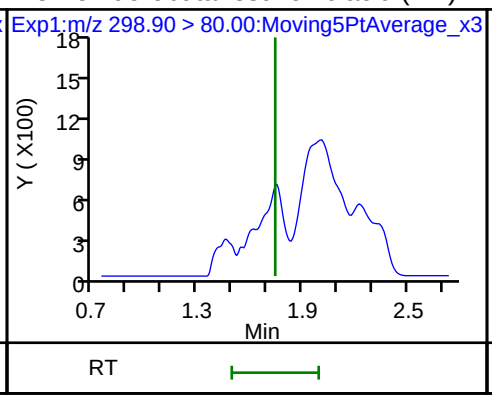
4 Perfluoropentanoic acid (ND)



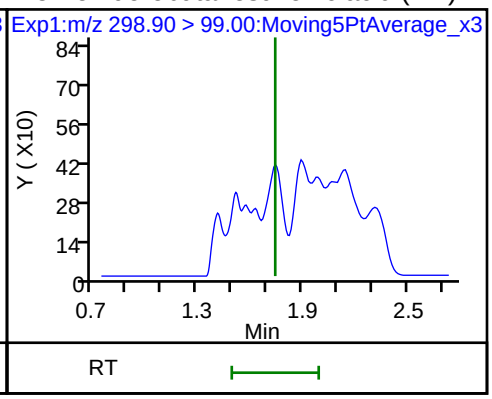
D 3 13C5-PFPeA



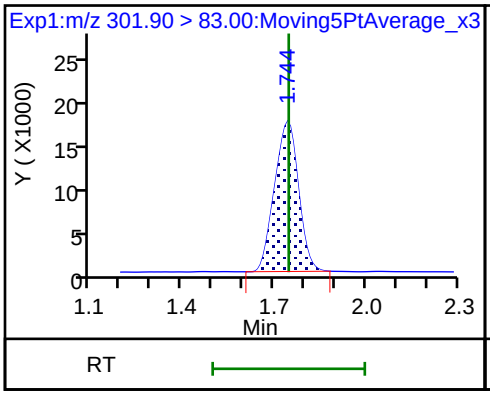
5 Perfluorobutanesulfonic acid (ND)



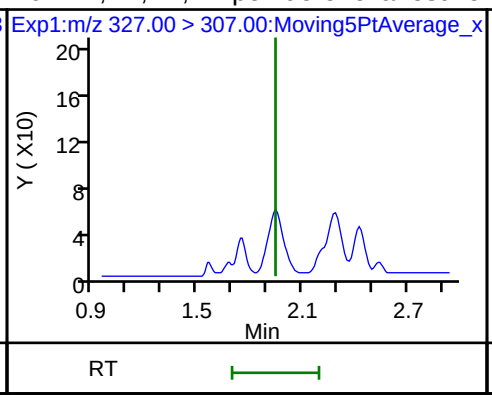
5 Perfluorobutanesulfonic acid (ND)



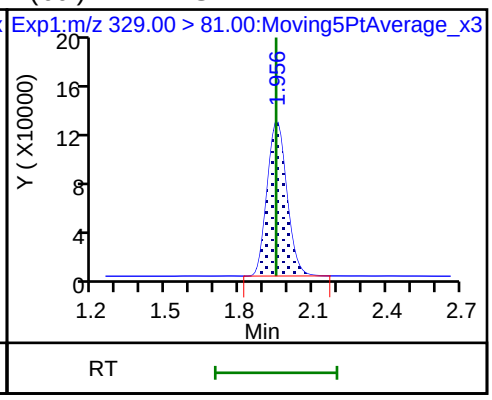
D 47 13C3-PFBS



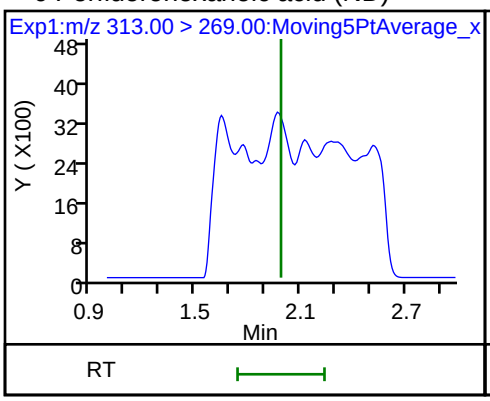
61 1H,1H,2H,2H-perfluorohexanesulfonic acid (ND)



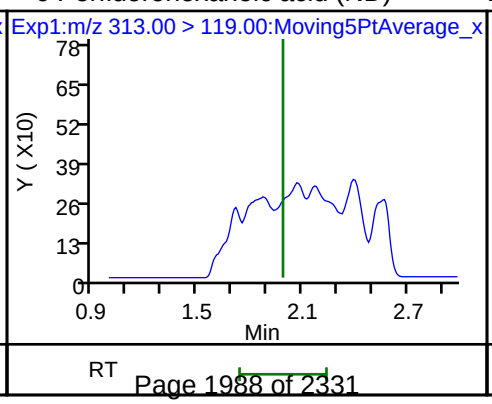
D 50 M2-4:2FTS



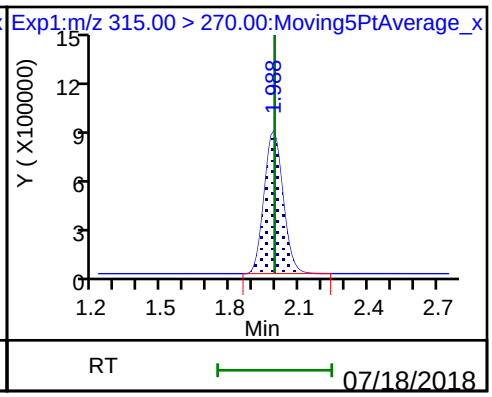
6 Perfluorohexanoic acid (ND)



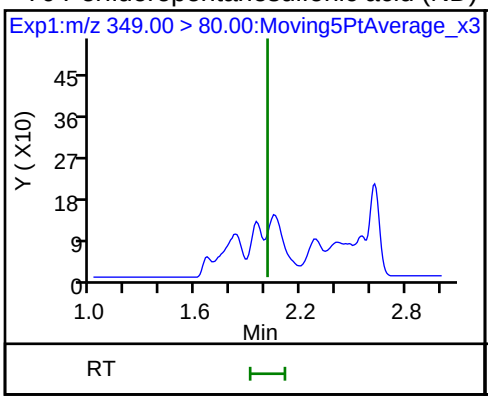
6 Perfluorohexanoic acid (ND)



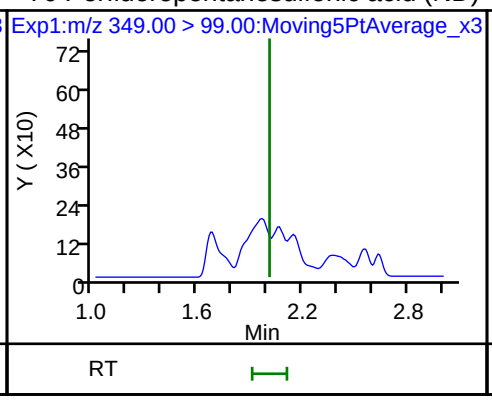
D 7 13C2 PFHxA



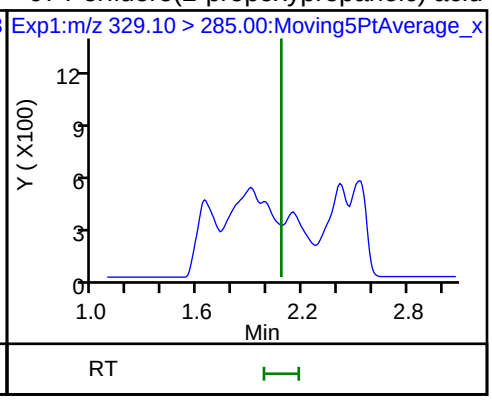
70 Perfluoropentanesulfonic acid (ND)



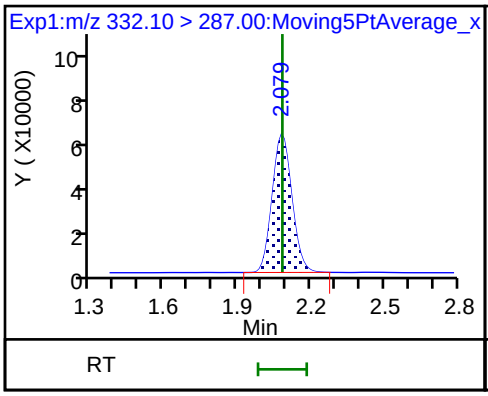
70 Perfluoropentanesulfonic acid (ND)



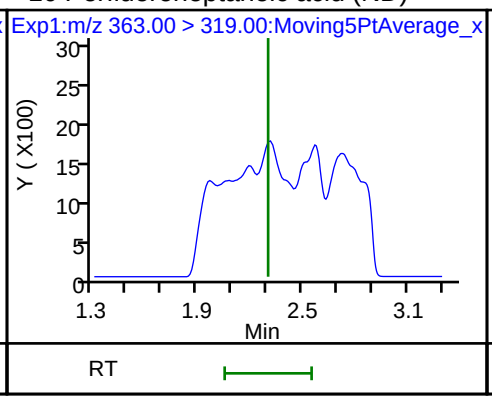
67 Perfluoro(2-propoxypropanoic) acid (ND)



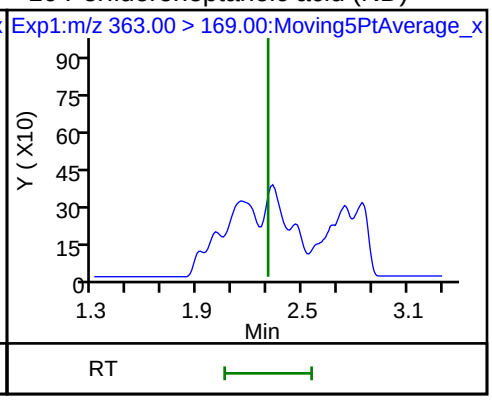
D 64 13C3 HFPO-DA



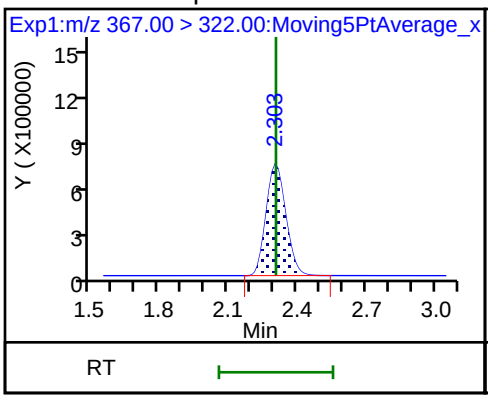
10 Perfluoroheptanoic acid (ND)



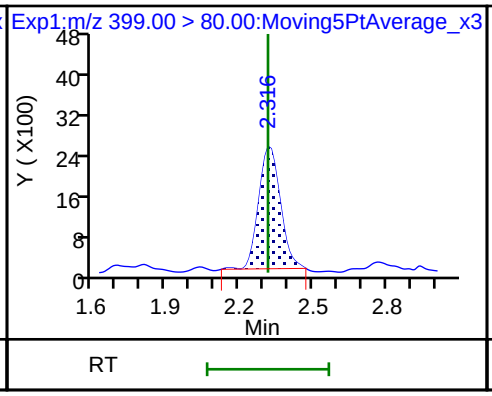
10 Perfluoroheptanoic acid (ND)



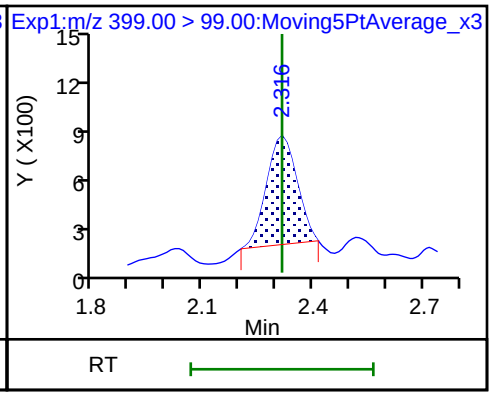
D 9 13C4-PFHpA



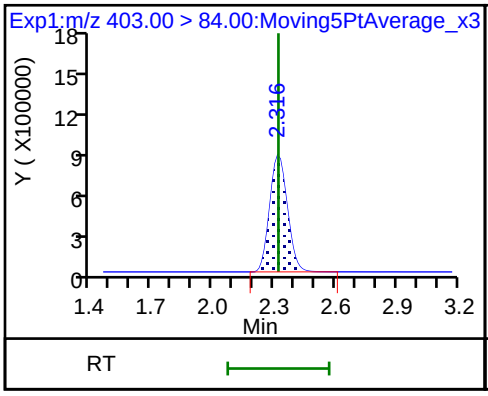
8 Perfluorohexanesulfonic acid



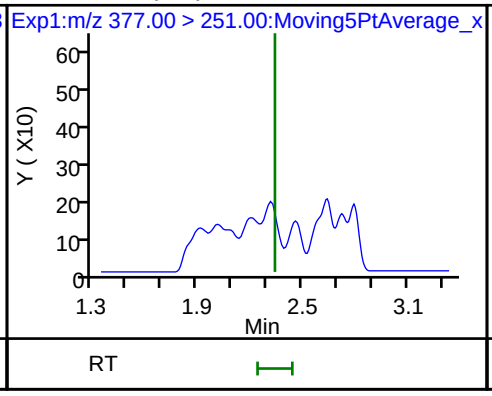
8 Perfluorohexanesulfonic acid



D 11 18O2 PFHxS



65 Adona (ND)



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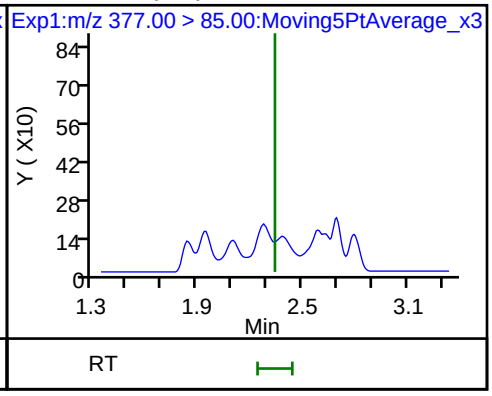
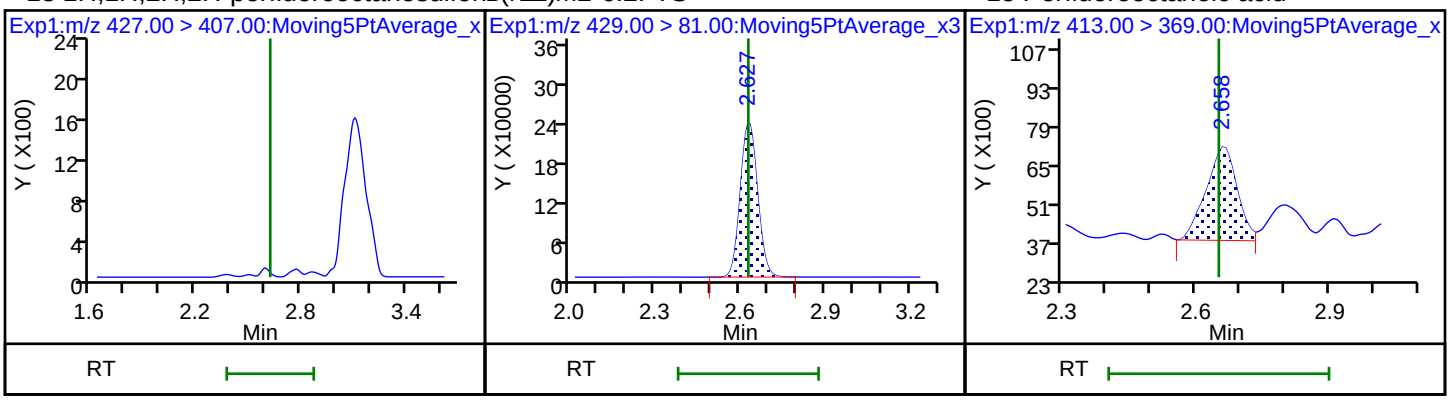
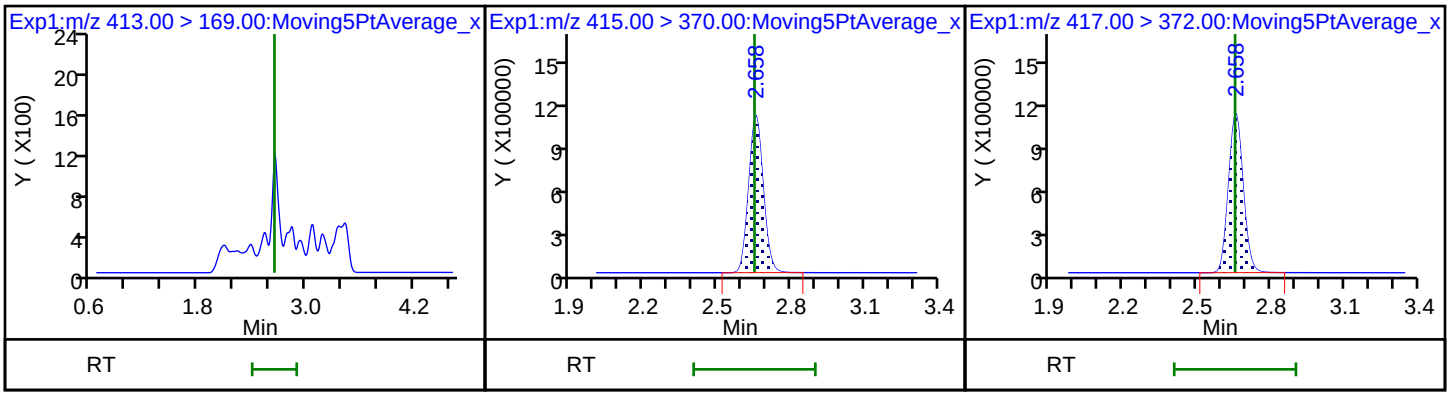


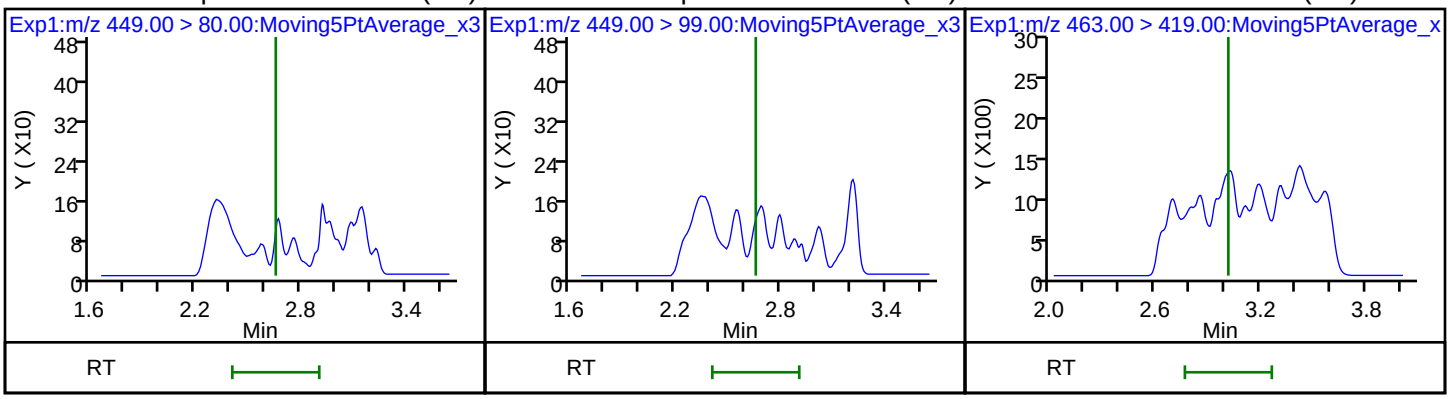
13 1H,1H,2H,2H-perfluorooctanesulfonic (ND) D 12 M2-6:2FTS 15 Perfluorooctanoic acid



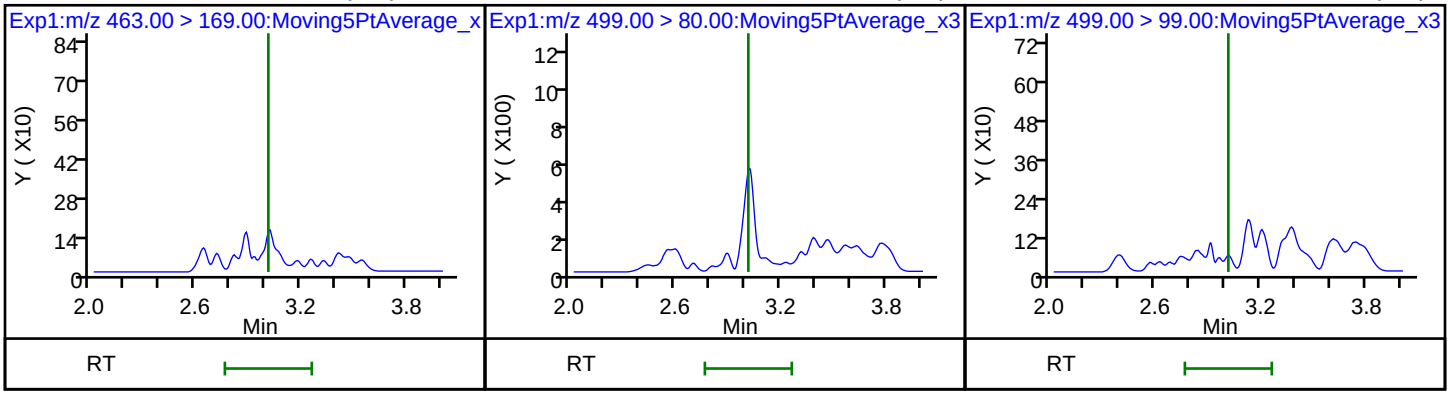
15 Perfluorooctanoic acid * 62 13C2-PFOA D 14 13C4 PFOA



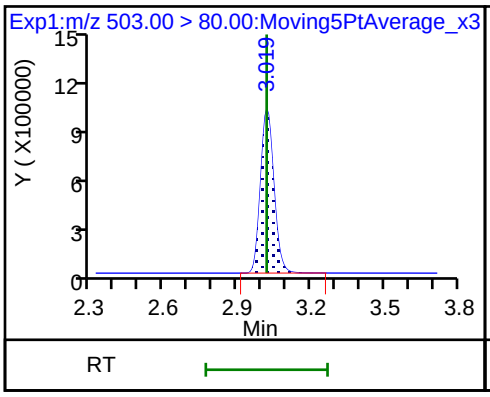
16 Perfluoroheptanesulfonic acid (ND) 16 Perfluoroheptanesulfonic acid (ND) 20 Perfluorononanoic acid (ND)



20 Perfluorononanoic acid (ND) 17 Perfluorooctane sulfonic acid (ND) 17 Perfluorooctane sulfonic acid (ND)



D 18 13C4 PFOS



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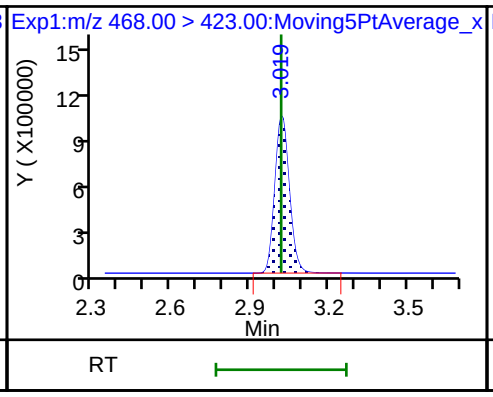
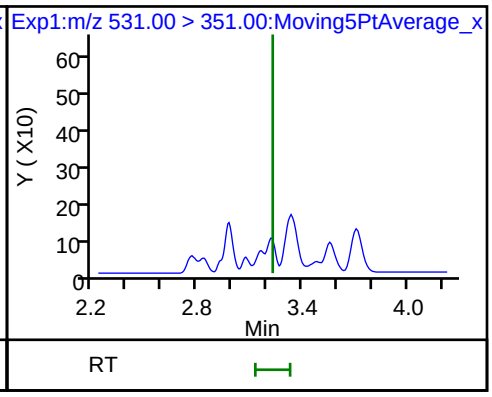
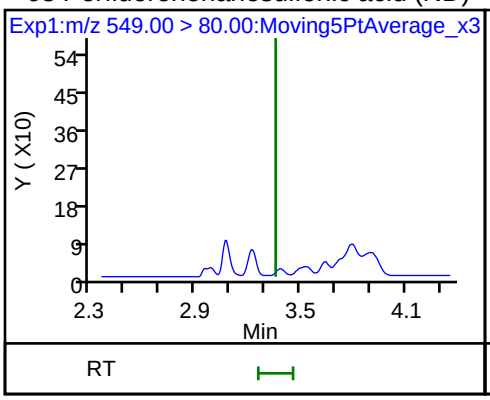


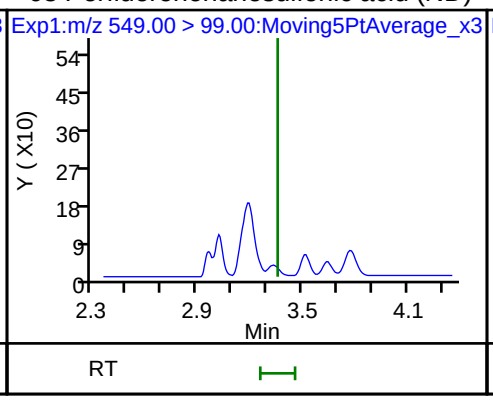
69 9-Chlorohexadecafluoro-3-oxanonane (ND)



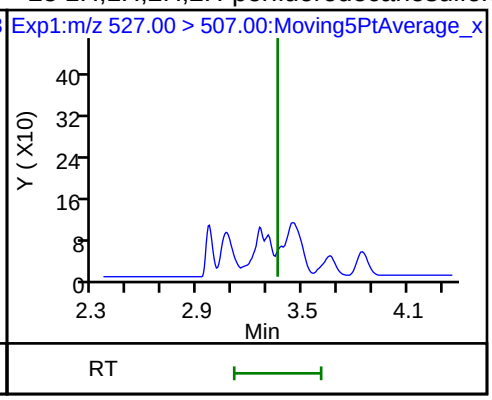
68 Perfluorononanesulfonic acid (ND)



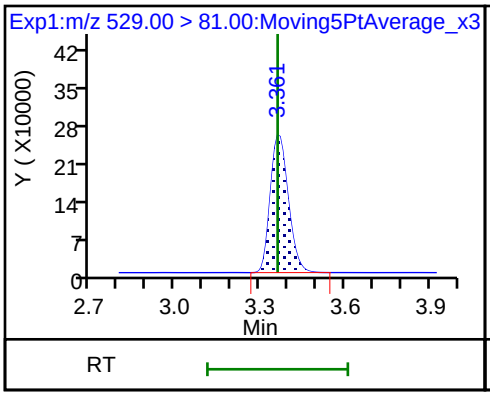
68 Perfluorononanesulfonic acid (ND)



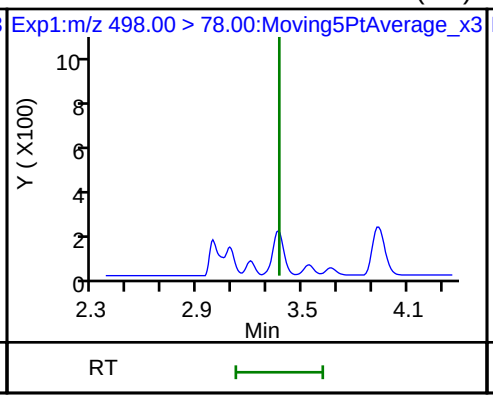
25 1H,1H,2H,2H-perfluorodecanesulfoni (ND)



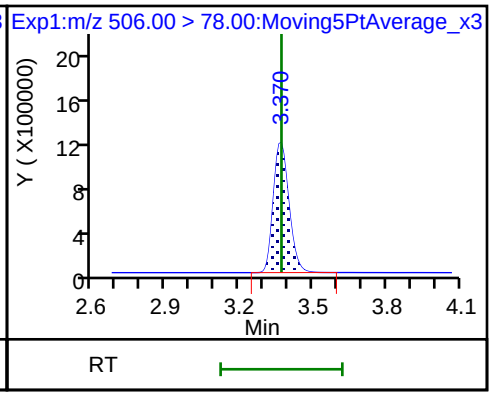
D 26 M2-8:2FTS



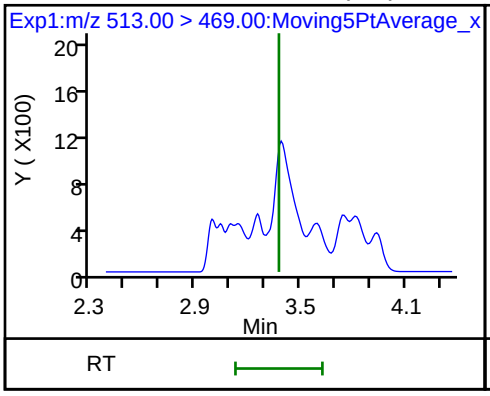
22 Perfluorooctane Sulfonamide (ND)



D 21 13C8 FOSA



24 Perfluorodecanoic acid (ND)



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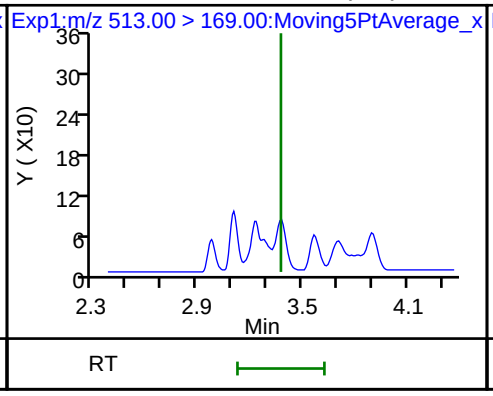
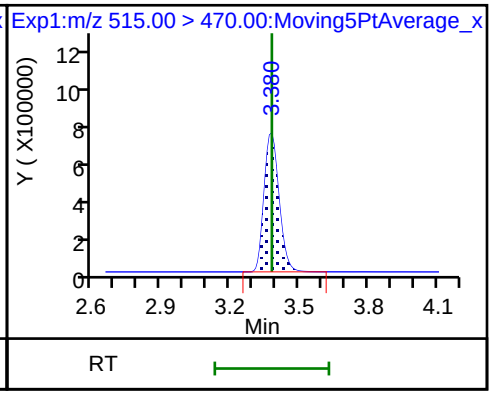
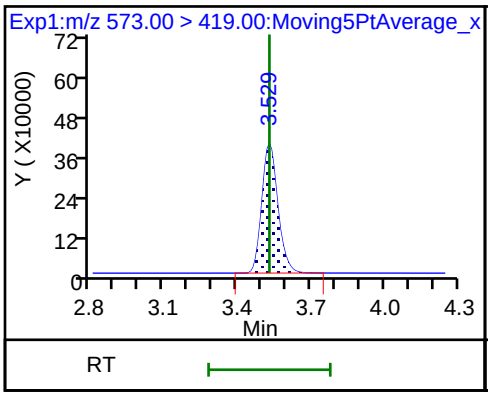


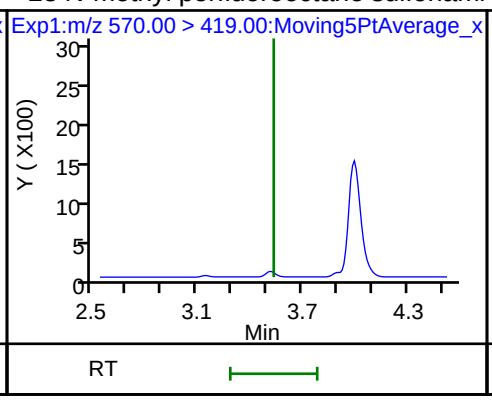
D 23 13C2 PFDA



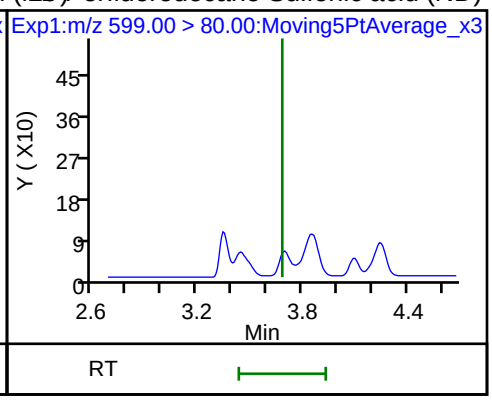
D 27 d3-NMeFOSAA



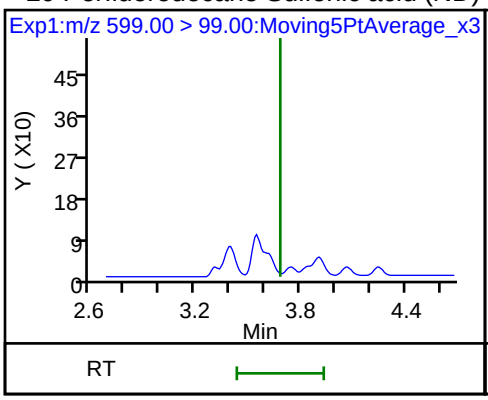
28 N-methyl perfluorooctane sulfonami (ND)



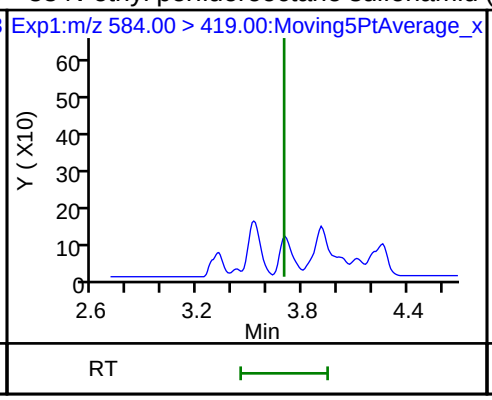
29 Perfluorodecane Sulfonic acid (ND)



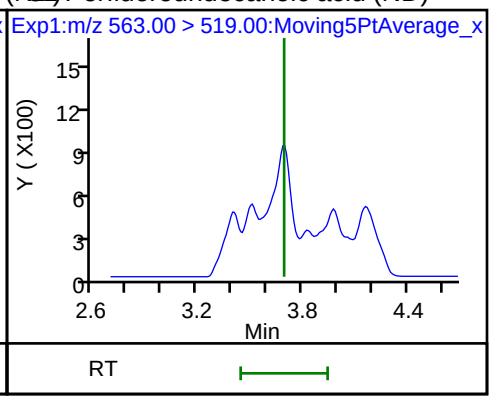
29 Perfluorodecane Sulfonic acid (ND)



33 N-ethyl perfluorooctane sulfonamid (ND)



31 Perfluoroundecanoic acid (ND)



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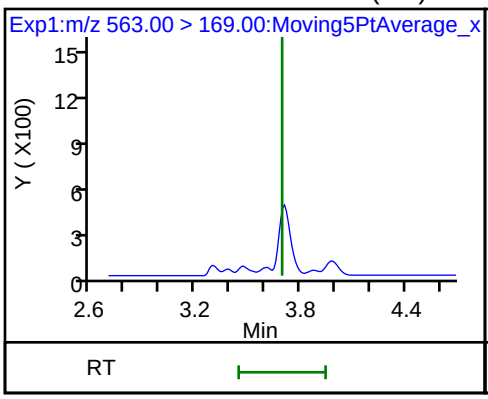
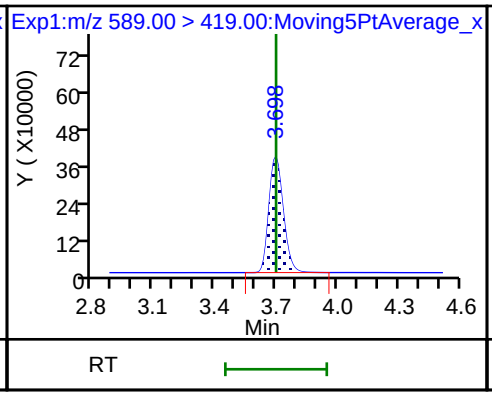
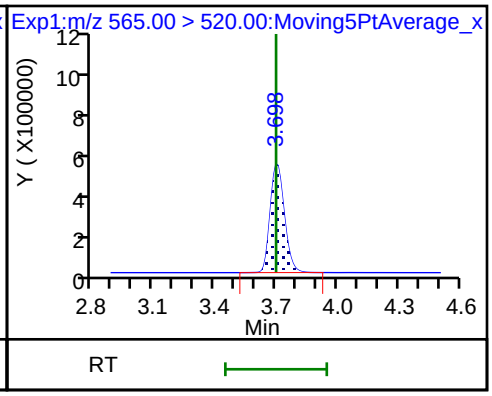


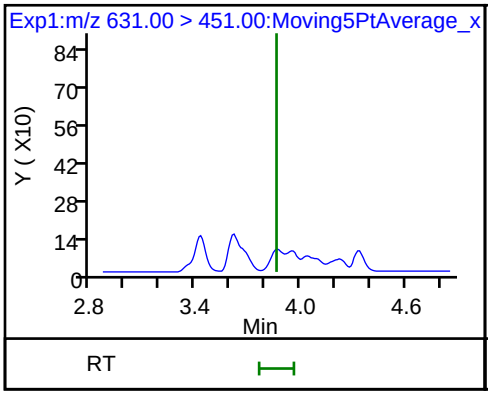
D 32 d5-NEtFOSAA



D 30 13C2 PFUnA



66 11-Chloroeicosafluoro-3-oxaundecan (ND)



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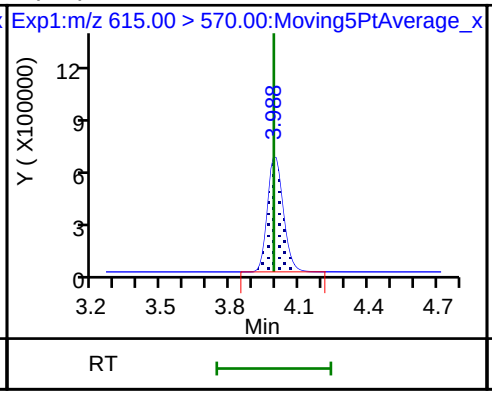

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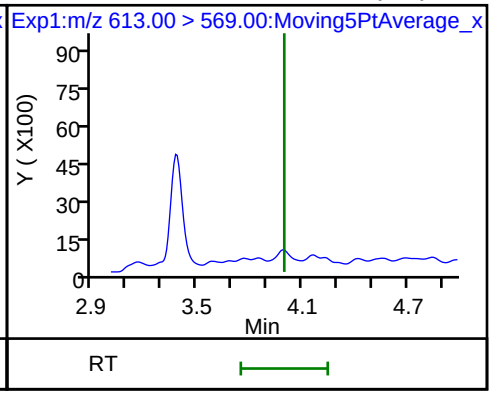

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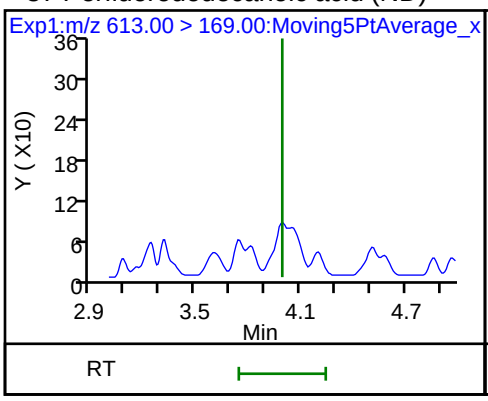
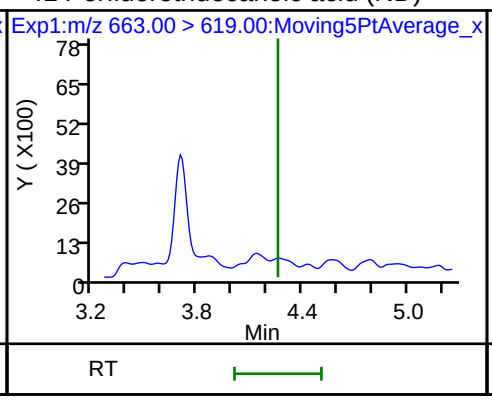
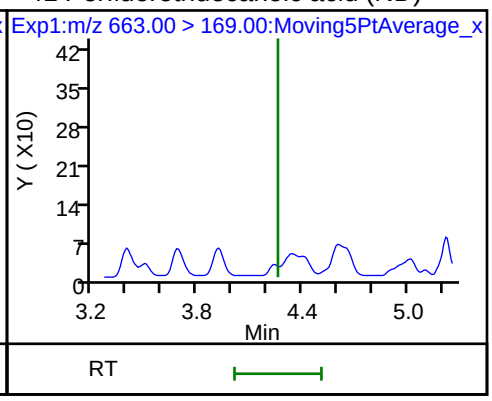


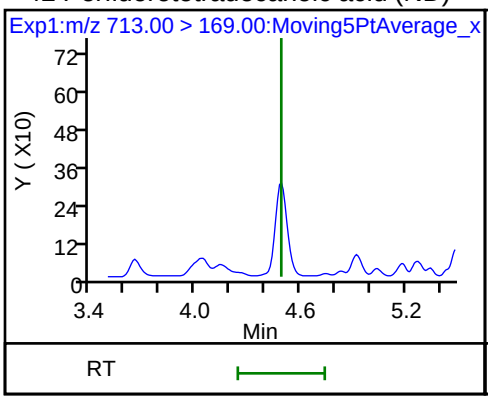
41 Perfluorotridecanoic acid (ND)



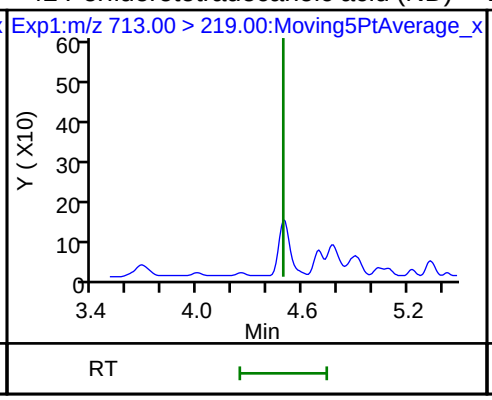
41 Perfluorotridecanoic acid (ND)



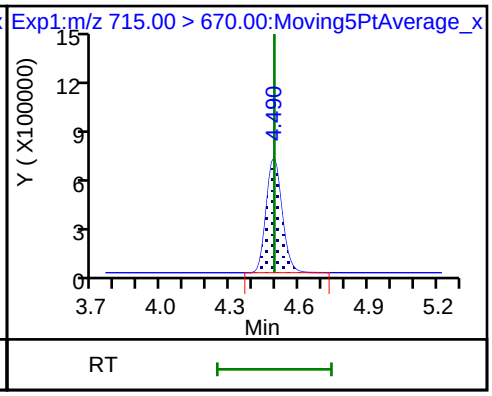
42 Perfluorotetradecanoic acid (ND)



42 Perfluorotetradecanoic acid (ND)



D 43 13C2-PFTeDA



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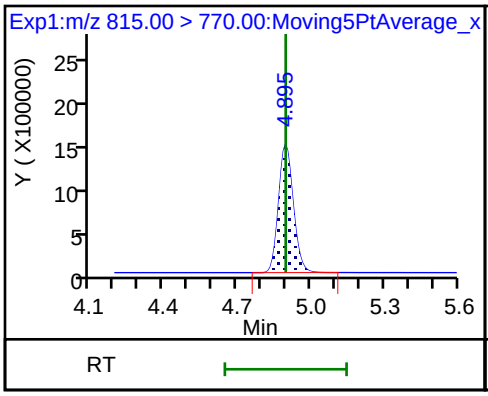
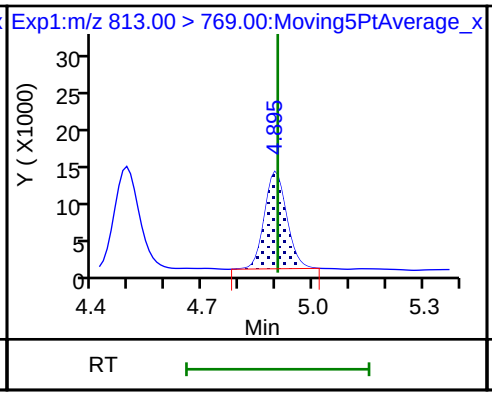
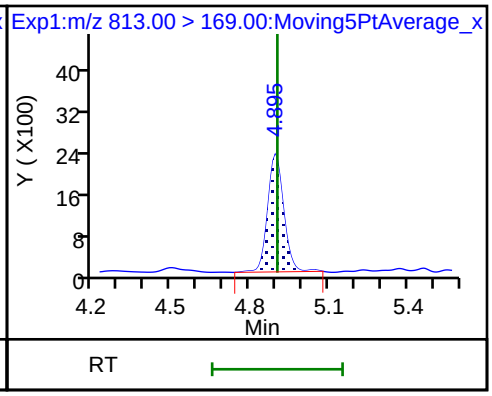


45 Perfluorohexadecanoic acid



45 Perfluorohexadecanoic acid



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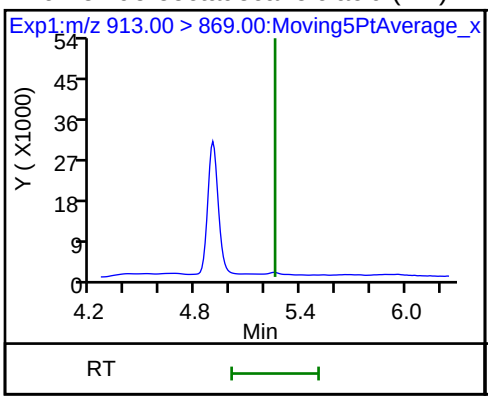

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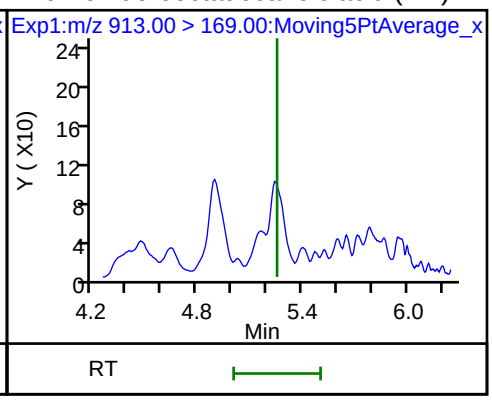


FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID:
Lab Sample ID: CCB 320-233725/1
Matrix: Water
Lab File ID: 2018.07.12LLB_QC_001.d
Analysis Method: 537 (modified)
Date Collected:
Extraction Method:
Date Extracted:
Sample wt/vol: 1(mL)
Date Analyzed: 07/12/2018 14:54
Con. Extract Vol.:
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 233725
Units: ng/mL

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	ND		0.050	0.0088
2706-90-3	Perfluoropentanoic acid (PFPeA)	ND		0.050	0.012
307-24-4	Perfluorohexanoic acid (PFHxA)	ND		0.050	0.015
375-85-9	Perfluoroheptanoic acid (PFHpA)	ND		0.050	0.0063
335-67-1	Perfluorooctanoic acid (PFOA)	ND		0.050	0.021
375-95-1	Perfluorononanoic acid (PFNA)	ND		0.050	0.0068
335-76-2	Perfluorodecanoic acid (PFDA)	ND		0.050	0.0078
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		0.050	0.028
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		0.050	0.014
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		0.050	0.033
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		0.050	0.0073
375-73-5	Perfluorobutanesulfonic acid (PFBS)	ND		0.050	0.0050
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	ND		0.050	0.030
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.00586	J	0.050	0.0043
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.050	0.0048
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	ND		0.050	0.014
8789-57-2	Perfluorononanesulfonic acid (PFNS)	ND		0.050	0.016
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		0.050	0.0080
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		0.050	0.0088
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.50	0.078
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.50	0.048
757124-72-4	4:2 FTS	ND		0.50	0.052
27619-97-2	6:2 FTS	ND		0.50	0.050
39108-34-4	8:2 FTS	ND		0.50	0.050

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID:
Lab Sample ID: CCB 320-233725/1
Matrix: Water
Lab File ID: 2018.07.12LLB_QC_001.d
Analysis Method: 537 (modified)
Date Collected:
Extraction Method:
Date Extracted:
Sample wt/vol: 1(mL)
Date Analyzed: 07/12/2018 14:54
Con. Extract Vol.:
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 233725
Units: ng/mL

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00992	13C4 PFBA	97		25-150
STL01893	13C5 PFPeA	93		25-150
STL00993	13C2 PFHxA	97		25-150
STL01892	13C4-PFHpA	103		25-150
STL00990	13C4 PFOA	102		25-150
STL00995	13C5 PFNA	95		25-150
STL00996	13C2 PFDA	100		25-150
STL00997	13C2 PFUnA	102		25-150
STL00998	13C2 PFDoA	104		25-150
STL02116	13C2-PFTeDA	104		25-150
STL02337	13C3-PFBS	97		25-150
STL00994	18O2 PFHxS	97		25-150
STL00991	13C4 PFOS	98		25-150
STL01056	13C8 FOSA	105		25-150
STL02118	d3-NMeFOSAA	111		25-150
STL02117	d5-NEtFOSAA	121		25-150
STL02279	M2-6:2FTS	95		25-150
STL02280	M2-8:2FTS	88		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180712-60981.b\2018.07.12LLB_QC_001.d
Lims ID: CCB
Client ID:
Sample Type: CCB
Inject. Date: 12-Jul-2018 14:54:33 ALS Bottle#: 20 Worklist Smp#: 1
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCB
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180712-60981.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 13-Jul-2018 09:10:19 Calib Date: 11-Jul-2018 15:38:42
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK010

First Level Reviewer: mongkols Date: 13-Jul-2018 11:38:52

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.413	1.411	0.002	0.528	5153525	2.43		97.3	28856	
D 3 13C5-PFPeA										
267.90 > 223.00	1.711	1.717	-0.007	0.640	3440735	2.34		93.5	40945	
D 47 13C3-PFBS										
301.90 > 83.00	1.756	1.753	0.003	0.656	83696	2.26		97.3	513	
D 60 M2-4:2FTS										
329.00 > 81.00	1.980	1.978	0.002	0.741	441687	2.22		95.2	6630	
D 7 13C2 PFHxA										
315.00 > 270.00	2.014	2.022	-0.008	0.753	3839708	2.42		96.7	51922	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.116	2.113	0.003	0.791	285030	2.52		101	7249	
D 9 13C4-PFHpA										
367.00 > 322.00	2.332	2.342	-0.010	0.872	3759988	2.57		103	49053	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.345	2.346	-0.001	1.000	13558	0.005859			209	
399.00 > 99.00	2.345	2.346	-0.001	1.000	4281		3.17(1.50-4.49)		38.7	
D 11 18O2 PFHxS										
403.00 > 84.00	2.345	2.355	-0.010	0.877	4767136	2.30		97.2	44937	
D 12 M2-6:2FTS										
429.00 > 81.00	2.652	2.658	-0.006	0.992	710261	2.26		95.3	24501	
D 14 13C4 PFOA										
417.00 > 372.00	2.674	2.681	-0.007	1.000	3793410	2.54		102	35158	
* 62 13C2-PFOA										
415.00 > 370.00	2.674	2.683	-0.009		3905479	2.50			33815	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.674	2.683	-0.009	1.000	13209	0.007069			5.9	
413.00 > 169.00	2.674	2.683	-0.009	1.000	4804		2.75(0.84-2.52)		26.2	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 18 13C4 PFOS										
503.00 > 80.00	3.028	3.037	-0.009	1.132	3546573	2.33		97.5	32348	
D 19 13C5 PFNA										
468.00 > 423.00	3.035	3.044	-0.009	1.135	3158151	2.37		94.6	41518	
D 26 M2-8:2FTS										
529.00 > 81.00	3.374	3.378	-0.004	1.262	962199	2.10		87.5	11535	
D 21 13C8 FOSA										
506.00 > 78.00	3.365	3.378	-0.013	1.258	5751357	2.62		105	32945	
25 1H,1H,2H,2H-perfluorodecanesulfoni										
527.00 > 507.00	3.204	3.379	-0.175	0.949	525	0.001013			10.7	
D 23 13C2 PFDA										
515.00 > 470.00	3.384	3.387	-0.003	1.265	2944672	2.51		100	33506	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.533	3.536	-0.003	1.321	1334550	2.78		111	24844	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.701	3.706	-0.005	1.384	1486138	3.02		121	3943	
D 30 13C2 PFUnA										
565.00 > 520.00	3.701	3.717	-0.016	1.384	2506244	2.56		102	43038	
D 36 13C2 PFDoA										
615.00 > 570.00	4.000	4.007	-0.007	1.496	2630292	2.59		104	20055	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.491	4.501	-0.010	1.679	2746405	2.61		104	17104	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.905	4.904	0.001	1.834	4515726	2.69		108	12318	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.905	4.913	-0.008	1.000	38292	0.000746			9.1	
813.00 > 169.00	4.896	4.913	-0.017	0.998	6724		5.69(2.86-8.58)		80.1	

Reagents:

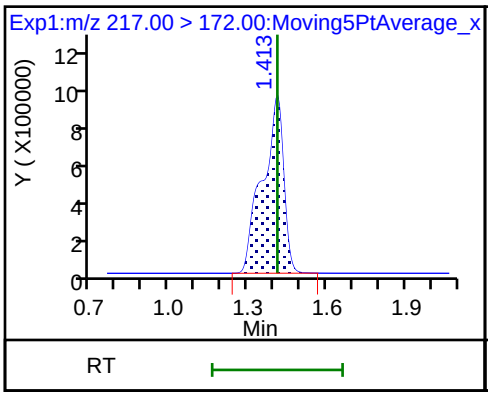
LCPFC_LL0_00007 Amount Added: 1.00 Units: mL

Report Date: 13-Jul-2018 11:38:53 Chrom Revision: 2.2 07-Jun-2018 07:41:54

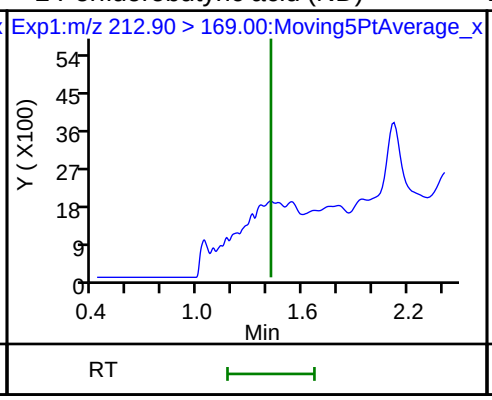
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180712-60981.b\2018.07.12LLB_QC_001.d
Injection Date: 12-Jul-2018 14:54:33 Instrument ID: A8_N
Lims ID: CCB
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 20 Worklist Smp#: 1
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC ICAL

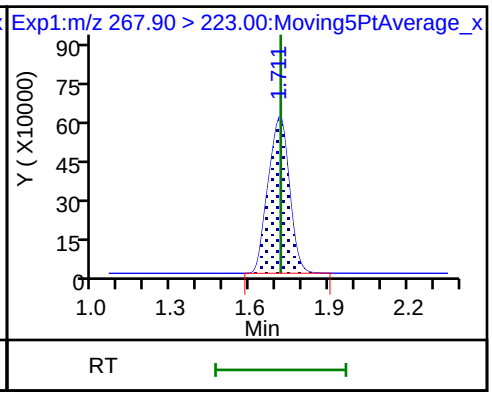
D 1 13C4 PFBA



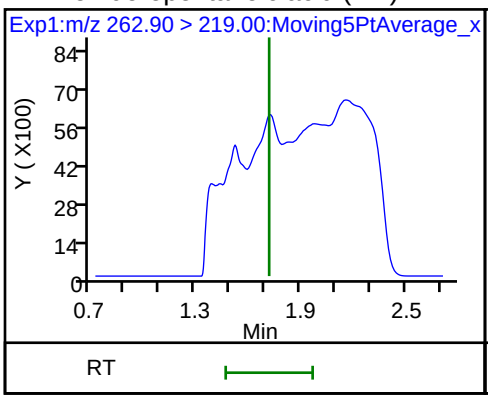
2 Perfluorobutyric acid (ND)



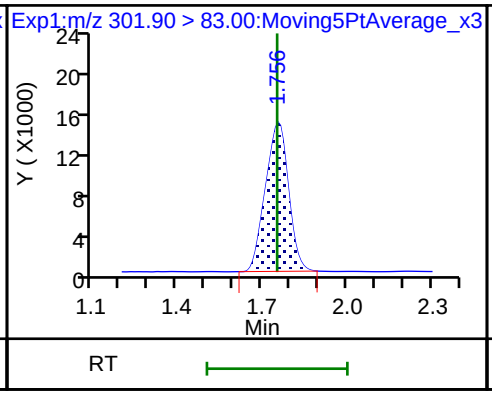
D 3 13C5-PFPeA



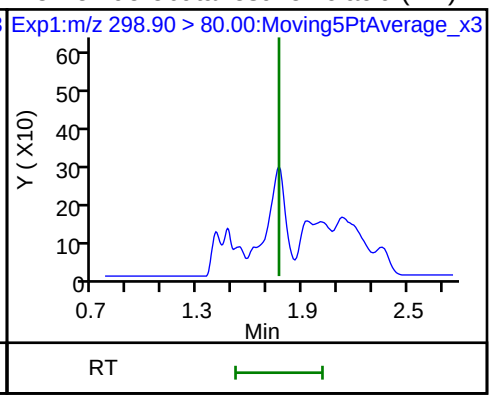
4 Perfluoropentanoic acid (ND)



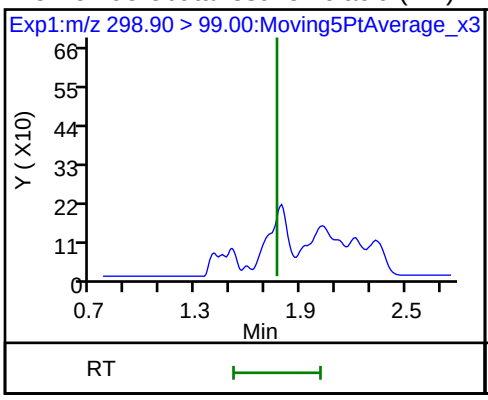
D 47 13C3-PFBS



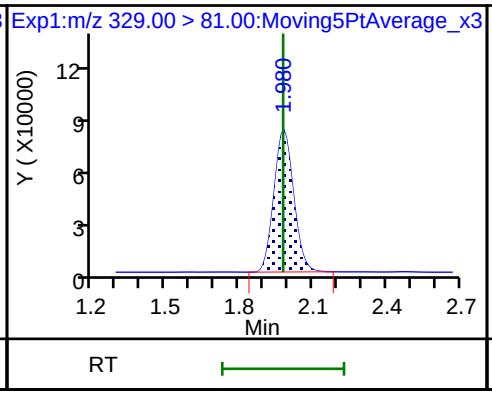
5 Perfluorobutanesulfonic acid (ND)



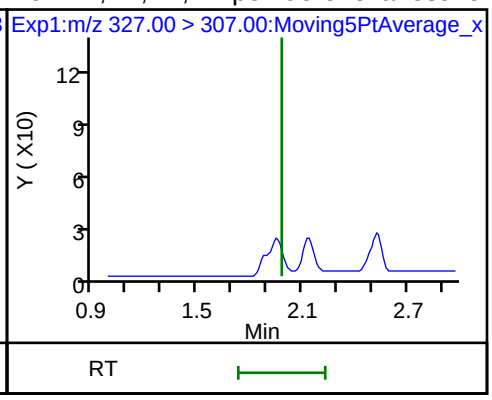
5 Perfluorobutanesulfonic acid (ND)



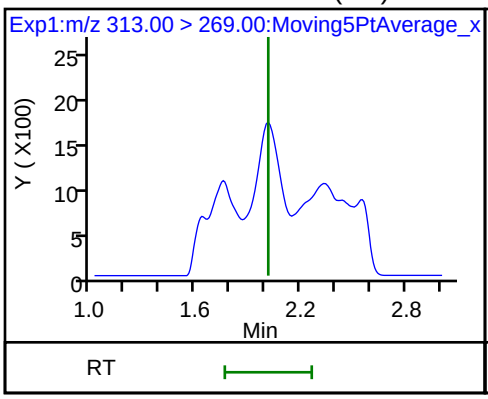
D 60 M2-4:2FTS



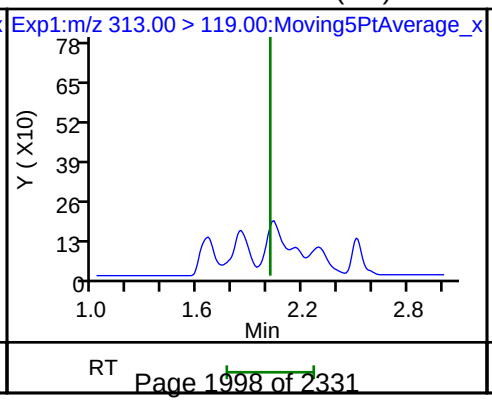
61 1H,1H,2H,2H-perfluorohexanesulfoni (ND)



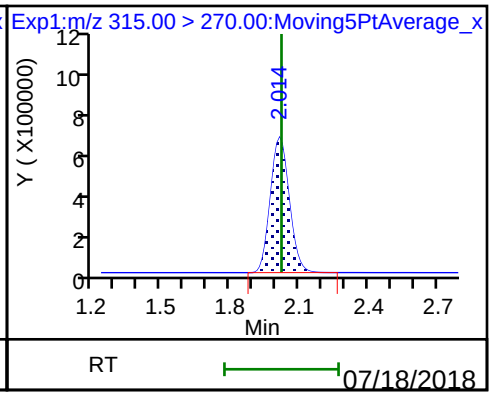
6 Perfluorohexanoic acid (ND)



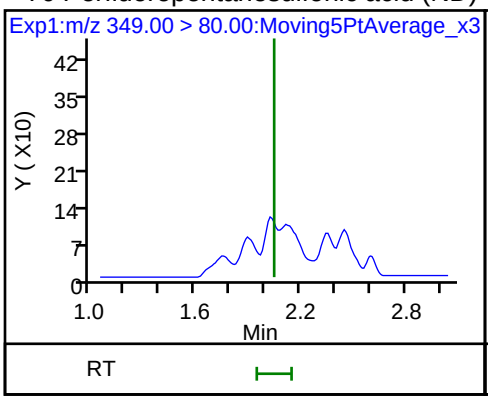
6 Perfluorohexanoic acid (ND)



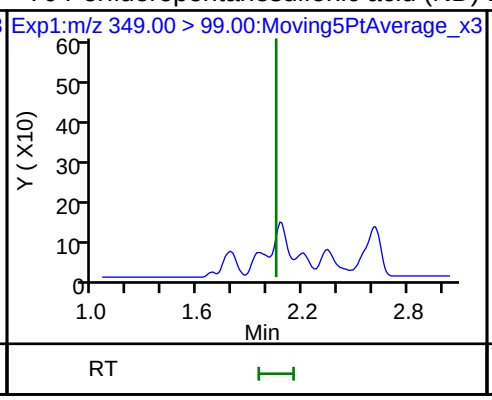
D 7 13C2 PFHxA



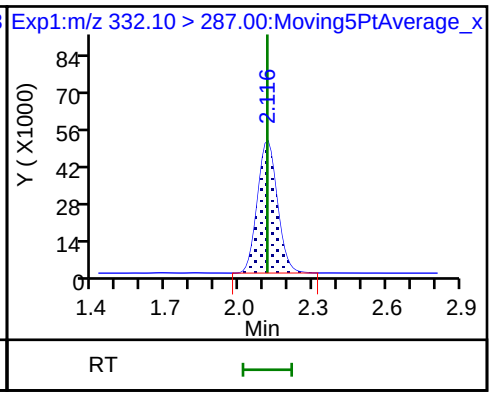
70 Perfluoropentanesulfonic acid (ND)



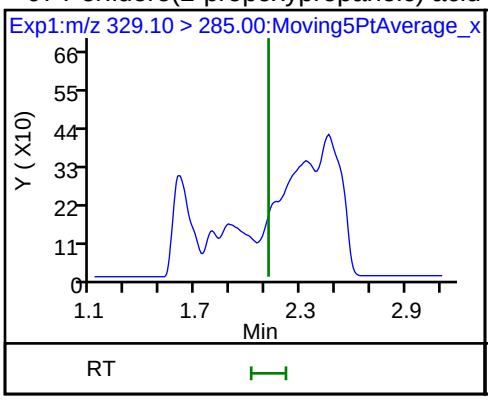
70 Perfluoropentanesulfonic acid (ND)



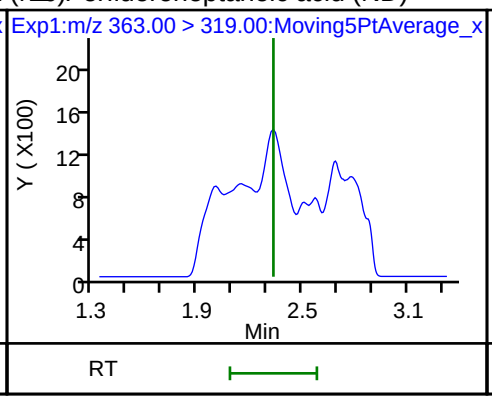
D 64 13C3 HFPO-DA



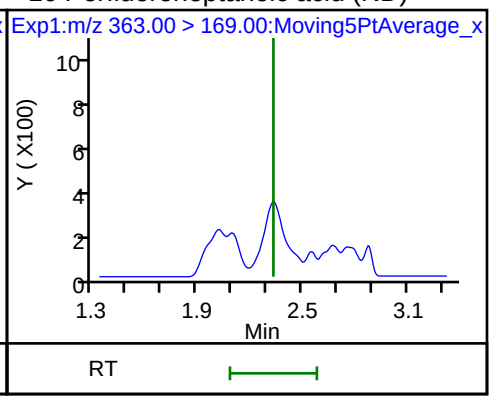
67 Perfluoro(2-propoxypropanoic) acid (ND)



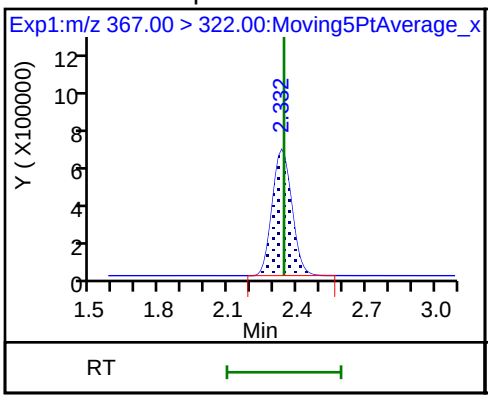
10 Perfluoroheptanoic acid (ND)



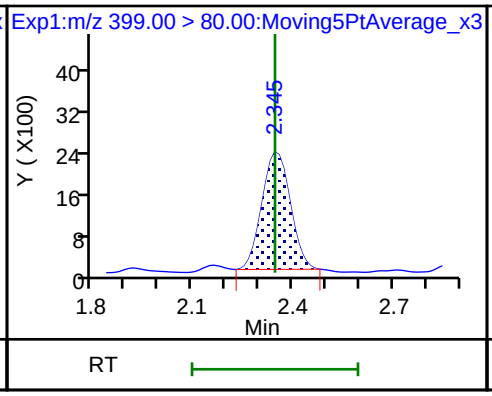
10 Perfluoroheptanoic acid (ND)



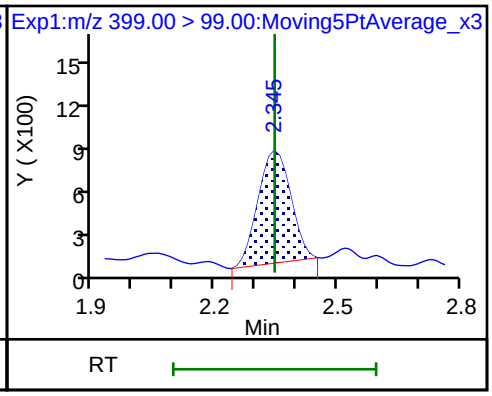
D 9 13C4-PFHpA



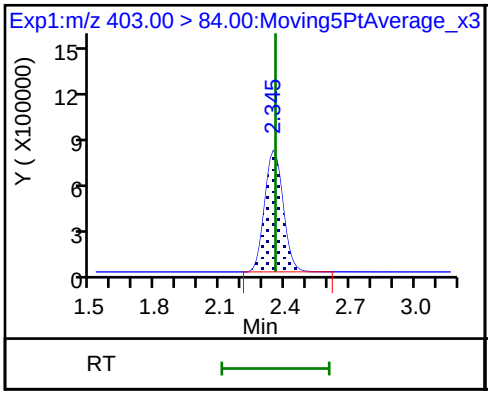
8 Perfluorohexanesulfonic acid



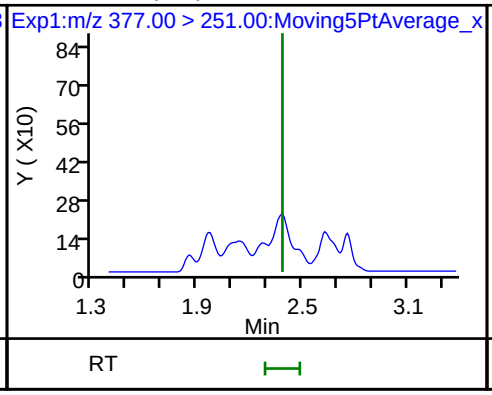
8 Perfluorohexanesulfonic acid



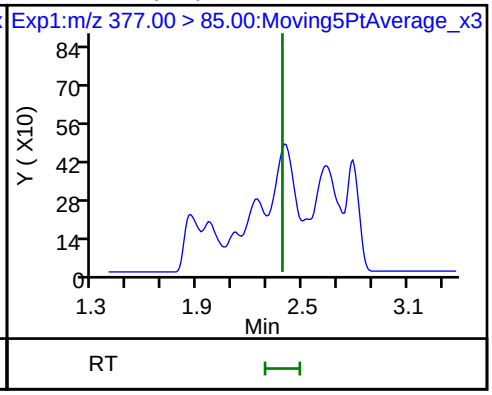
D 11 18O2 PFHxS



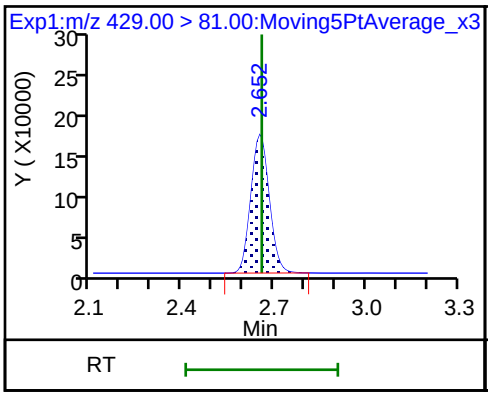
65 Adona (ND)



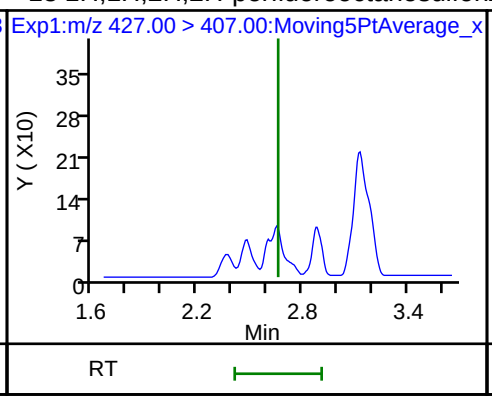
65 Adona (ND)



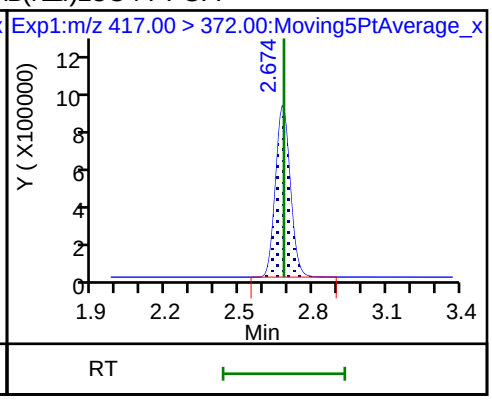
D 12 M2-6:2FTS



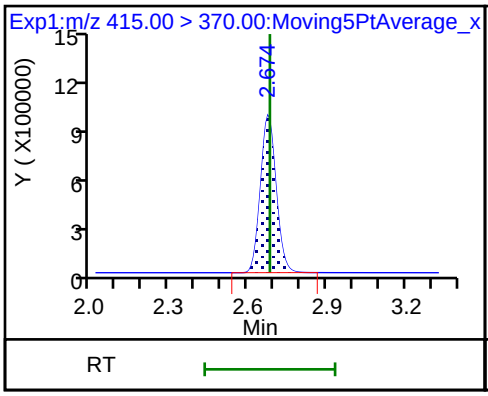
13 1H,1H,2H,2H-perfluorooctanesulfonic (ND)



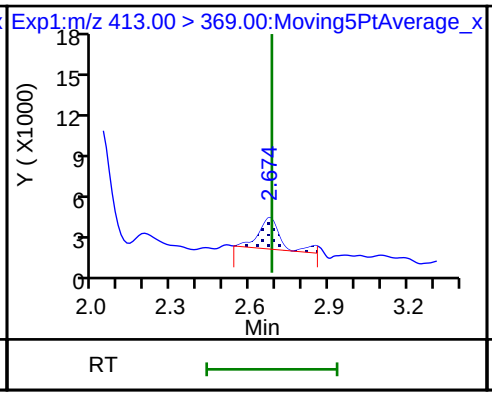
D 14 13C4 PFOA



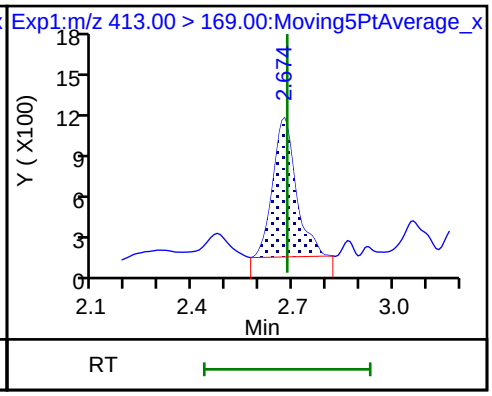
* 62 13C2-PFOA



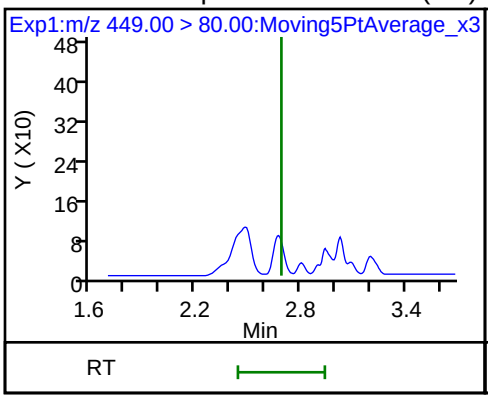
15 Perfluorooctanoic acid



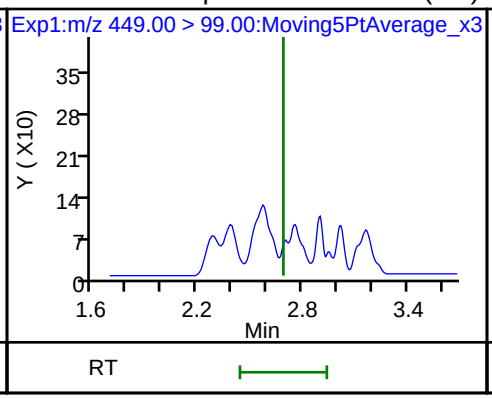
15 Perfluorooctanoic acid



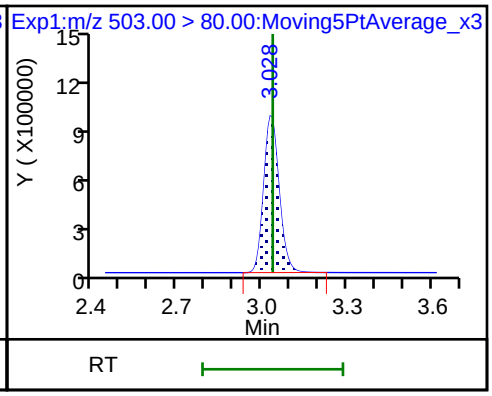
16 Perfluoroheptanesulfonic acid (ND)



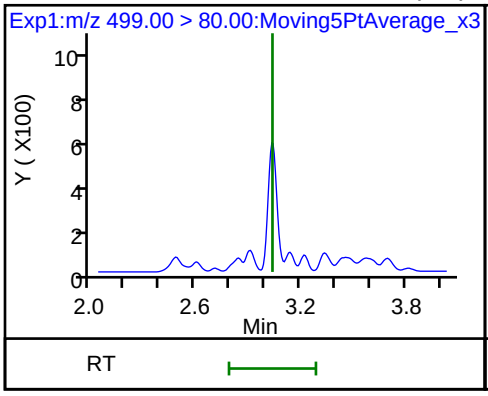
16 Perfluoroheptanesulfonic acid (ND)



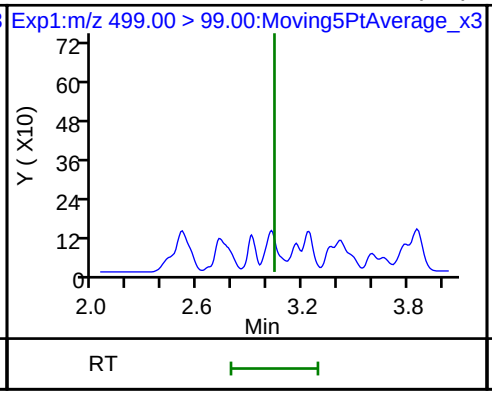
D 18 13C4 PFOS



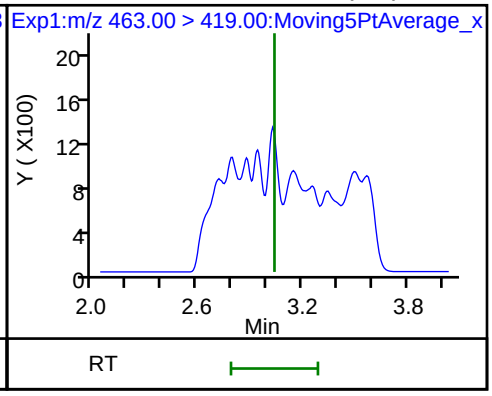
17 Perfluorooctane sulfonic acid (ND)



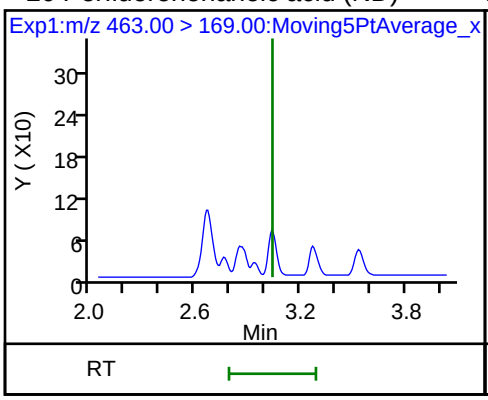
17 Perfluorooctane sulfonic acid (ND)



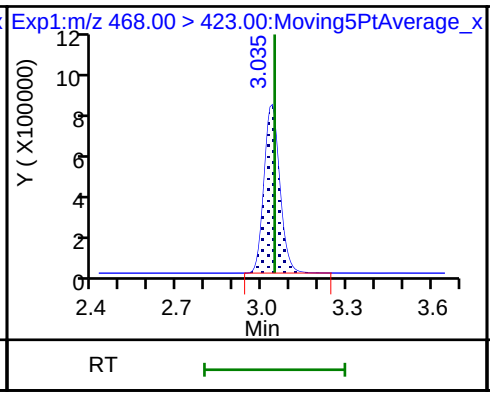
20 Perfluorononanoic acid (ND)



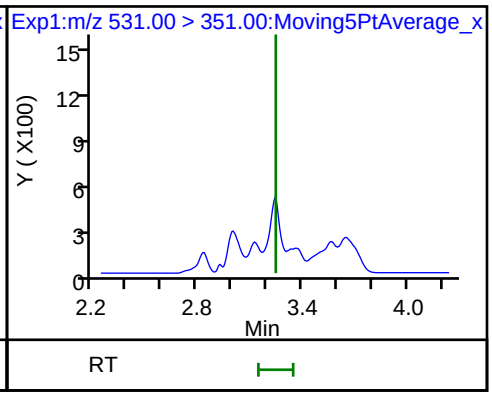
20 Perfluorononanoic acid (ND)



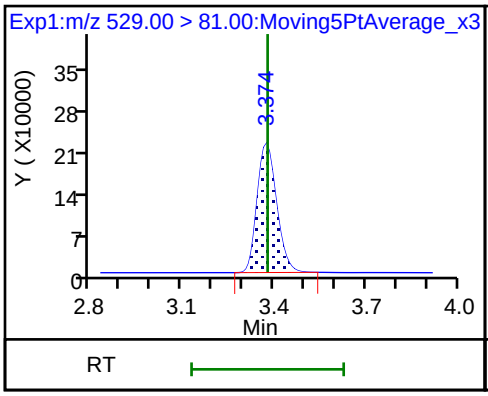
D 19 13C5 PFNA



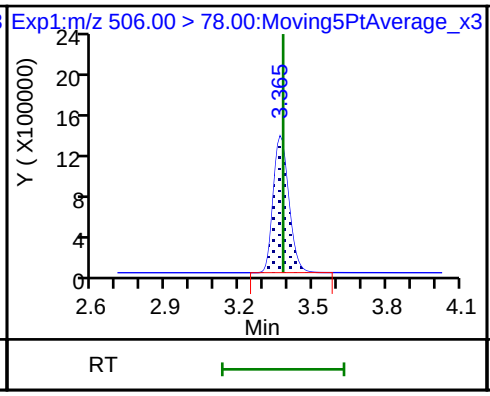
69 9-Chlorohexadecafluoro-3-oxanonane (ND)



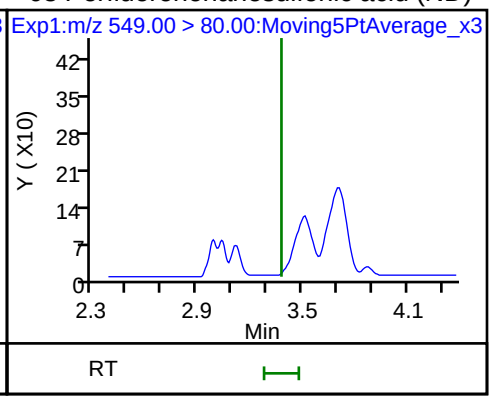
D 26 M2-8:2FTS



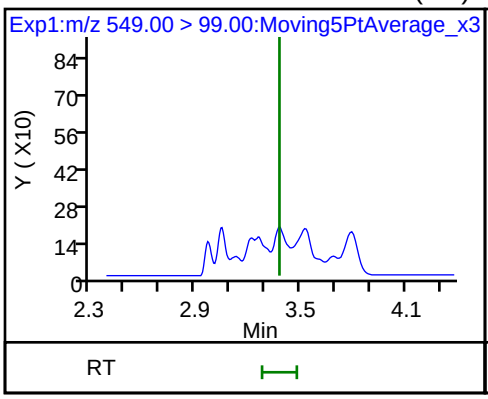
D 21 13C8 FOSA



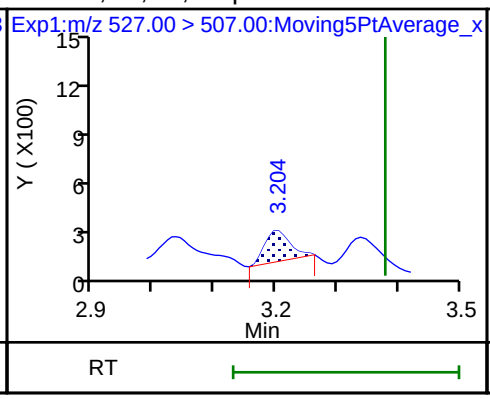
68 Perfluorononanesulfonic acid (ND)



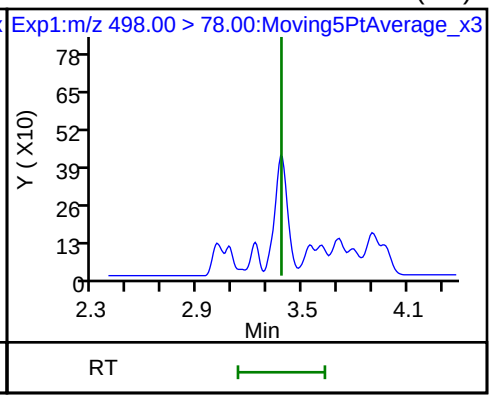
68 Perfluorononanesulfonic acid (ND)



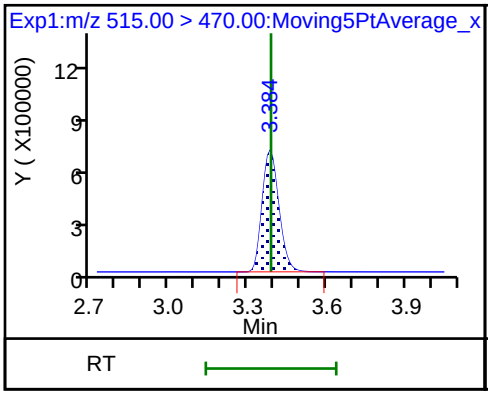
25 1H,1H,2H,2H-perfluorodecanesulfoni



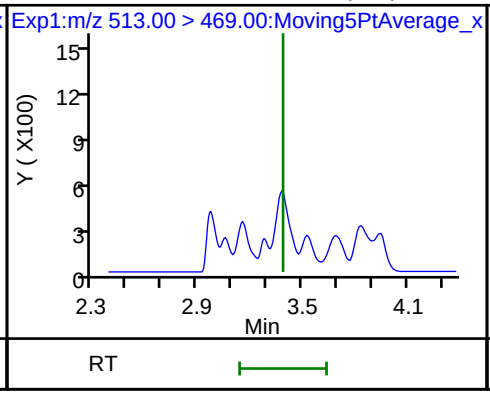
22 Perfluorooctane Sulfonamide (ND)



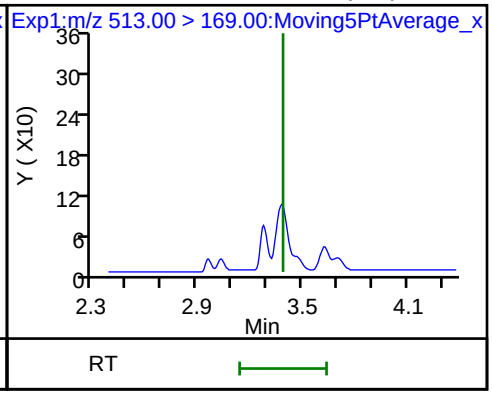
D 23 13C2 PFDA



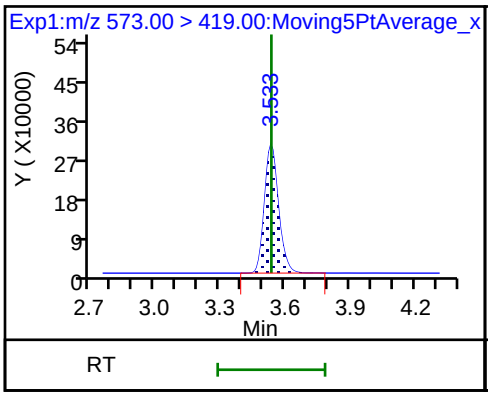
24 Perfluorodecanoic acid (ND)



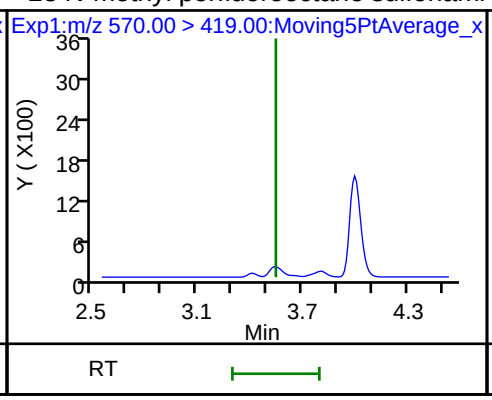
24 Perfluorodecanoic acid (ND)



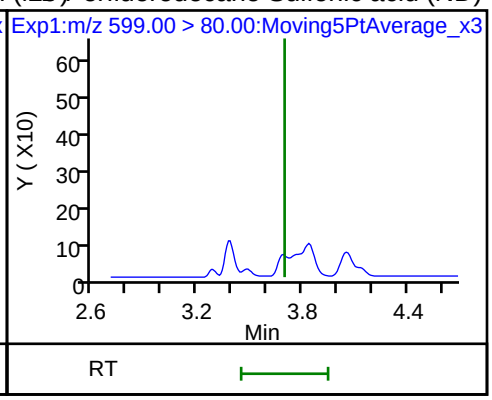
D 27 d3-NMeFOSAA



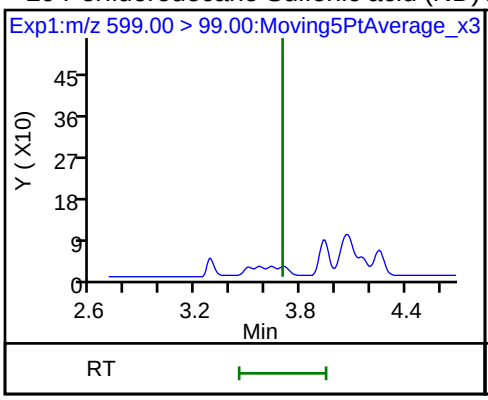
28 N-methyl perfluorooctane sulfonami (ND)



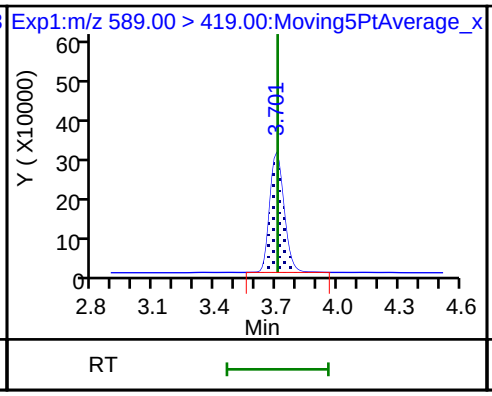
29 Perfluorodecane Sulfonic acid (ND)



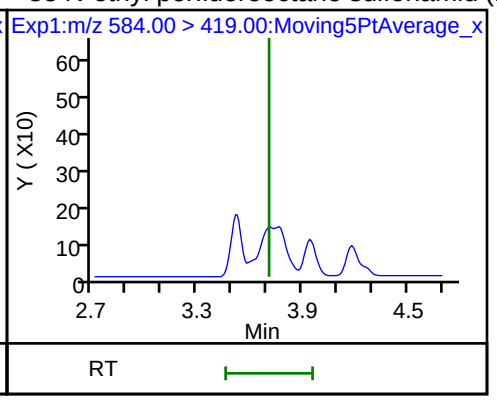
29 Perfluorodecane Sulfonic acid (ND)



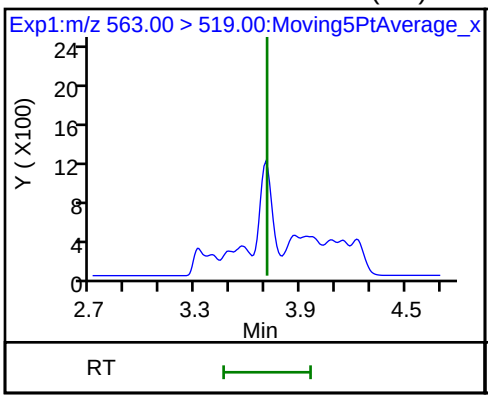
D 32 d5-NEtFOSAA



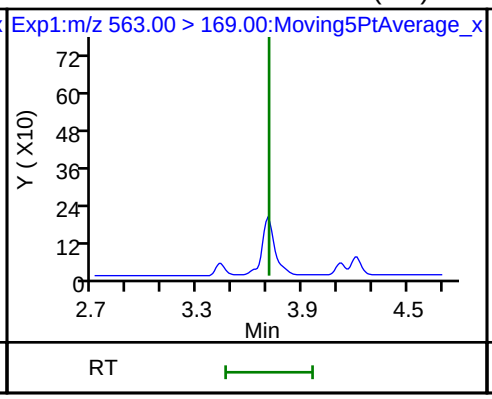
33 N-ethyl perfluorooctane sulfonamid (ND)



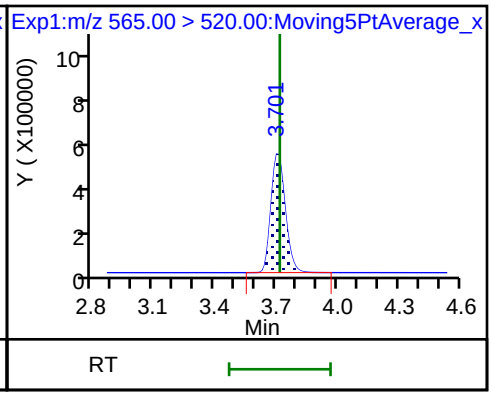
31 Perfluoroundecanoic acid (ND)



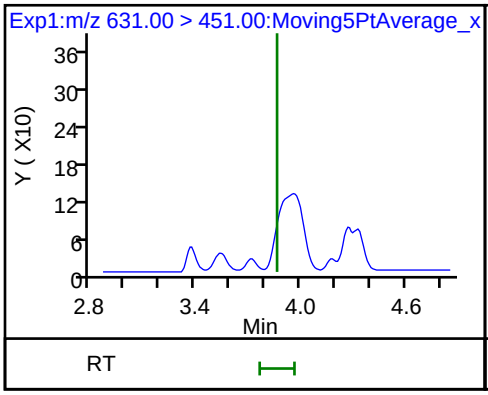
31 Perfluoroundecanoic acid (ND)



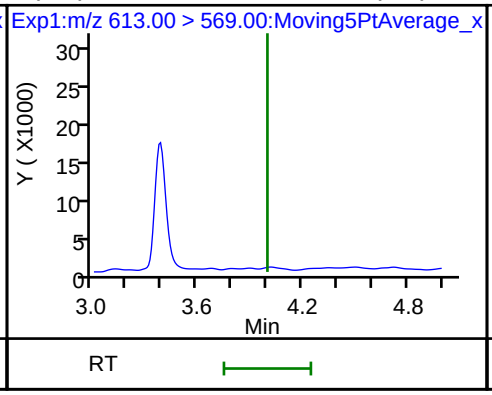
D 30 13C2 PFUnA



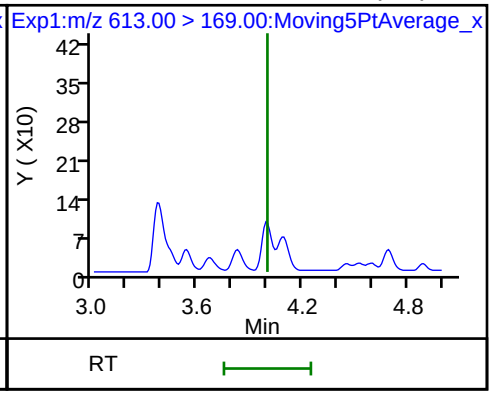
66 11-Chloroeicosafluoro-3-oxaundecan (ND)



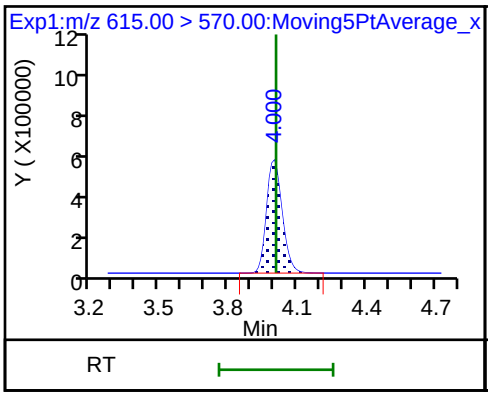
37 Perfluorododecanoic acid (ND)



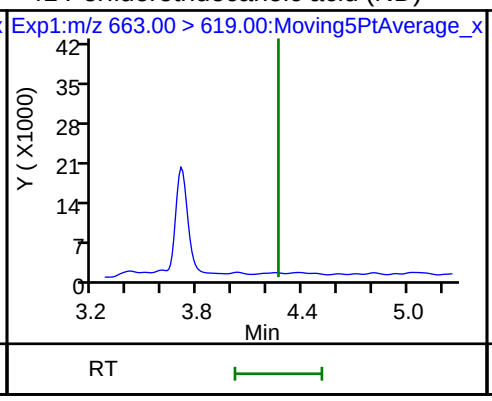
37 Perfluorododecanoic acid (ND)



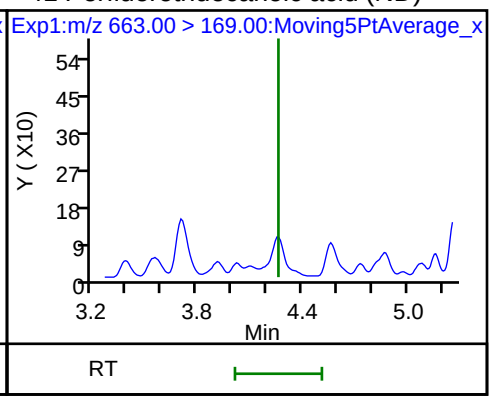
D 36 13C2 PFDoA



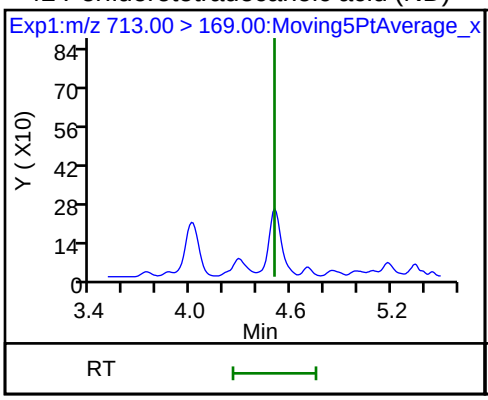
41 Perfluorotridecanoic acid (ND)



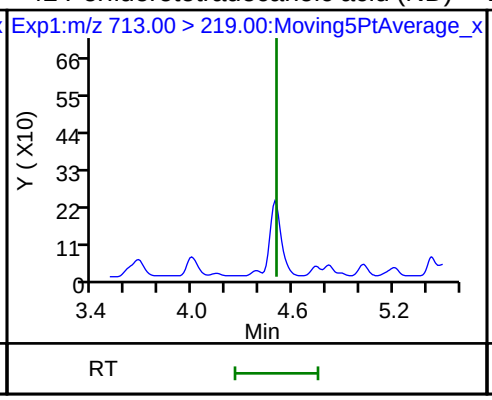
41 Perfluorotridecanoic acid (ND)



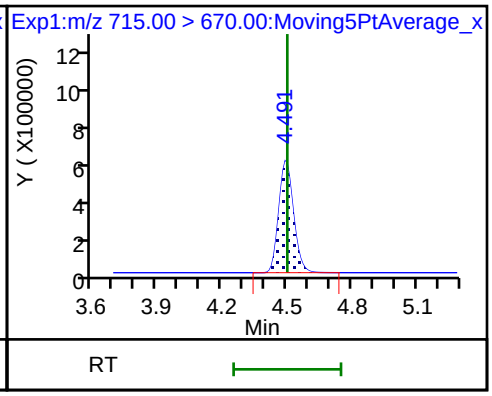
42 Perfluorotetradecanoic acid (ND)



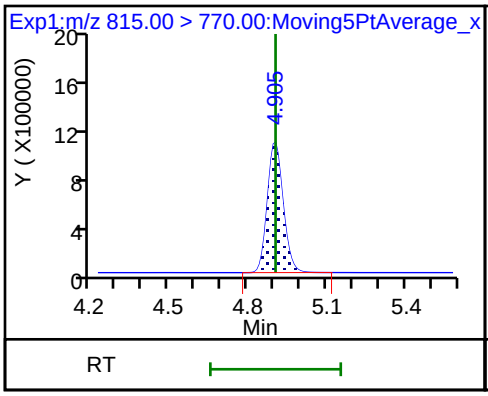
42 Perfluorotetradecanoic acid (ND)



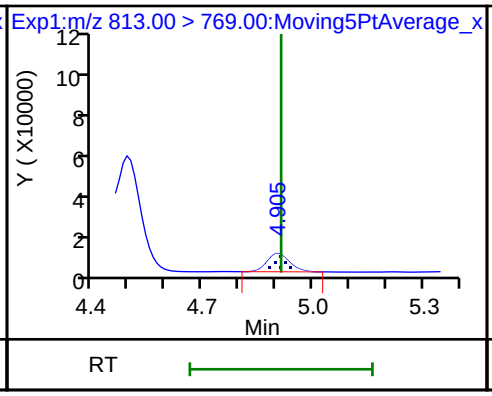
D 43 13C2-PFTeDA



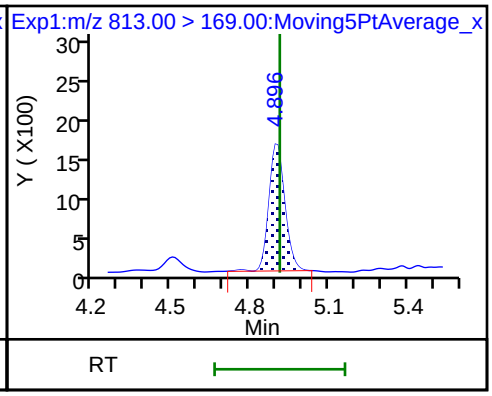
D 44 13C2-PFHxDA



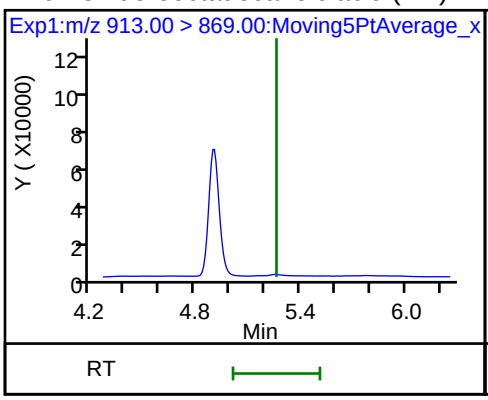
45 Perfluorohexadecanoic acid



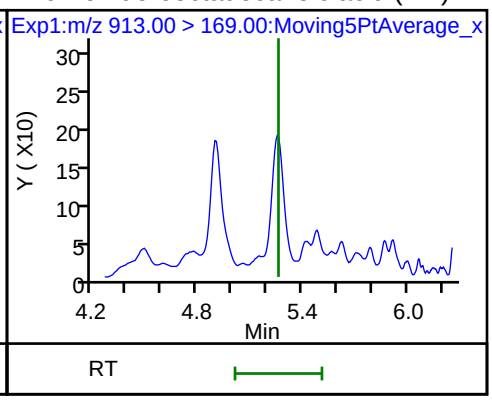
45 Perfluorohexadecanoic acid



46 Perfluorooctadecanoic acid (ND)



46 Perfluorooctadecanoic acid (ND)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID:
Lab Sample ID: CCB 320-233973/1
Matrix: Water
Lab File ID: 2018.07.13LLAA_004.d
Analysis Method: 537 (modified)
Date Collected:
Extraction Method:
Date Extracted:
Sample wt/vol: 1(mL)
Date Analyzed: 07/13/2018 15:56
Con. Extract Vol.:
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 233973
Units: ng/mL

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	ND		0.050	0.0088
2706-90-3	Perfluoropentanoic acid (PFPeA)	ND		0.050	0.012
307-24-4	Perfluorohexanoic acid (PFHxA)	ND		0.050	0.015
375-85-9	Perfluoroheptanoic acid (PFHpA)	ND		0.050	0.0063
335-67-1	Perfluorooctanoic acid (PFOA)	ND		0.050	0.021
375-95-1	Perfluorononanoic acid (PFNA)	ND		0.050	0.0068
335-76-2	Perfluorodecanoic acid (PFDA)	ND		0.050	0.0078
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		0.050	0.028
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		0.050	0.014
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		0.050	0.033
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		0.050	0.0073
375-73-5	Perfluorobutanesulfonic acid (PFBS)	ND		0.050	0.0050
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	ND		0.050	0.030
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.00642	J	0.050	0.0043
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.050	0.0048
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	ND		0.050	0.014
8789-57-2	Perfluorononanesulfonic acid (PFNS)	ND		0.050	0.016
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		0.050	0.0080
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		0.050	0.0088
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.50	0.078
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.50	0.048
757124-72-4	4:2 FTS	ND		0.50	0.052
27619-97-2	6:2 FTS	ND		0.50	0.050
39108-34-4	8:2 FTS	ND		0.50	0.050

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID:
Lab Sample ID: CCB 320-233973/1
Matrix: Water
Lab File ID: 2018.07.13LLAA_004.d
Analysis Method: 537 (modified)
Date Collected:
Extraction Method:
Date Extracted:
Sample wt/vol: 1(mL)
Date Analyzed: 07/13/2018 15:56
Con. Extract Vol.:
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 233973
Units: ng/mL

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00992	13C4 PFBA	101		25-150
STL01893	13C5 PFPeA	102		25-150
STL00993	13C2 PFHxA	106		25-150
STL01892	13C4-PFHpA	107		25-150
STL00990	13C4 PFOA	102		25-150
STL00995	13C5 PFNA	101		25-150
STL00996	13C2 PFDA	103		25-150
STL00997	13C2 PFUnA	102		25-150
STL00998	13C2 PFDoA	112		25-150
STL02116	13C2-PFTeDA	99		25-150
STL02337	13C3-PFBS	106		25-150
STL00994	18O2 PFHxS	100		25-150
STL00991	13C4 PFOS	103		25-150
STL01056	13C8 FOSA	105		25-150
STL02118	d3-NMeFOSAA	111		25-150
STL02117	d5-NEtFOSAA	113		25-150
STL02279	M2-6:2FTS	100		25-150
STL02280	M2-8:2FTS	90		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61052.b\2018.07.13LLAA_004.d
Lims ID: CCB
Client ID:
Sample Type: CCB
Inject. Date: 13-Jul-2018 15:56:45 ALS Bottle#: 20 Worklist Smp#: 1
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCB
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61052.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 15-Jul-2018 14:29:58 Calib Date: 11-Jul-2018 15:38:42
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK007

First Level Reviewer: hannigana Date: 13-Jul-2018 16:15:30

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.435	1.430	0.005	0.540	5111922	2.52		101	22900	
D 3 13C5-PFPeA										
267.90 > 223.00	1.720	1.711	0.009	0.647	3593168	2.55		102	46711	
D 47 13C3-PFBS										
301.90 > 83.00	1.756	1.756	0.0	0.660	87018	2.46		106	542	
D 60 M2-4:2FTS										
329.00 > 81.00	1.959	1.959	0.0	0.737	465780	2.45		105	6947	
D 7 13C2 PFHxA										
315.00 > 270.00	2.003	1.992	0.011	0.753	4035272	2.65		106	49962	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.093	2.094	-0.001	0.787	306409	2.83		113	7960	
D 9 13C4-PFHpA										
367.00 > 322.00	2.319	2.306	0.013	0.872	3750666	2.68		107	47781	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.319	2.329	-0.010	0.994	14674	0.006422			196	
399.00 > 99.00	2.332	2.329	0.003	1.000	5574		2.63(1.50-4.49)		44.7	
D 11 18O2 PFHxS										
403.00 > 84.00	2.332	2.333	-0.001	0.877	4707410	2.37		100	55627	
D 12 M2-6:2FTS										
429.00 > 81.00	2.636	2.636	0.0	0.991	712993	2.37		100.0	15553	
* 62 13C2-PFOA										
415.00 > 370.00	2.659	2.658	0.001		3737523	2.50			32813	
D 14 13C4 PFOA										
417.00 > 372.00	2.659	2.660	-0.001	1.000	3642848	2.55		102	33277	
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.659	2.666	-0.007	1.000	10334	0.005759			5.3	
413.00 > 169.00	2.659	2.666	-0.007	1.000	3469		2.98(0.84-2.52)		17.4	M

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 18 13C4 PFOS										
503.00 > 80.00	3.021	3.023	-0.002	1.136	3581007	2.46		103	30392	
D 19 13C5 PFNA										
468.00 > 423.00	3.021	3.023	-0.002	1.136	3210882	2.51		101	52596	
D 26 M2-8:2FTS										
529.00 > 81.00	3.365	3.369	-0.004	1.265	950657	2.16		90.3	12586	
D 21 13C8 FOSA										
506.00 > 78.00	3.365	3.369	-0.004	1.265	5524863	2.63		105	28438	
D 23 13C2 PFDA										
515.00 > 470.00	3.374	3.378	-0.004	1.269	2885924	2.57		103	30700	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.533	3.537	-0.003	1.329	1273793	2.77		111	20186	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.701	3.696	0.005	1.392	1333029	2.83		113	3344	
D 30 13C2 PFUnA										
565.00 > 520.00	3.701	3.707	-0.006	1.392	2397751	2.56		102	27593	
D 36 13C2 PFDoA										
615.00 > 570.00	3.999	3.997	0.002	1.504	2707307	2.79		112	17442	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.491	4.490	0.001	1.689	2500959	2.48		99.3	14318	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.896	4.896	0.0	1.841	3851185	2.40		96.0	10172	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.896	4.898	-0.002	1.000	33617	0.001402			10.0	
813.00 > 169.00	4.896	4.898	-0.002	1.000	6364		5.28(2.86-8.58)		80.8	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

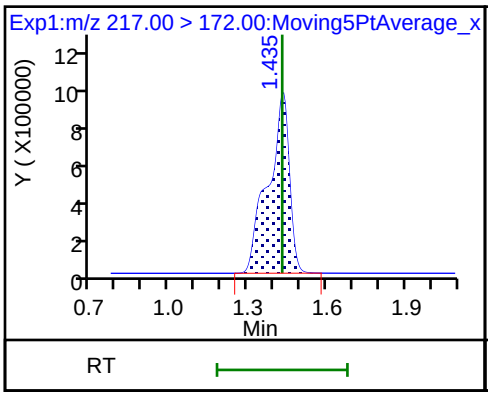
LCPFC_LL0_00007 Amount Added: 1.00 Units: mL

Report Date: 15-Jul-2018 14:30:22 Chrom Revision: 2.2 07-Jun-2018 07:41:54

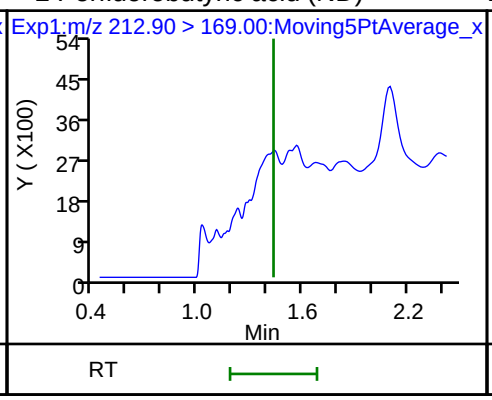
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61052.b\2018.07.13LLAA_004.d
Injection Date: 13-Jul-2018 15:56:45 Instrument ID: A8_N
Lims ID: CCB
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 20 Worklist Smp#: 1
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC ICAL

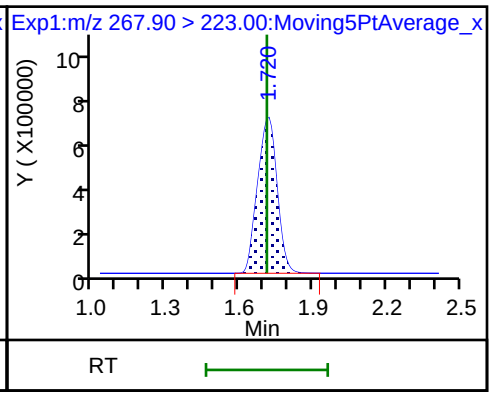
D 1 13C4 PFBA



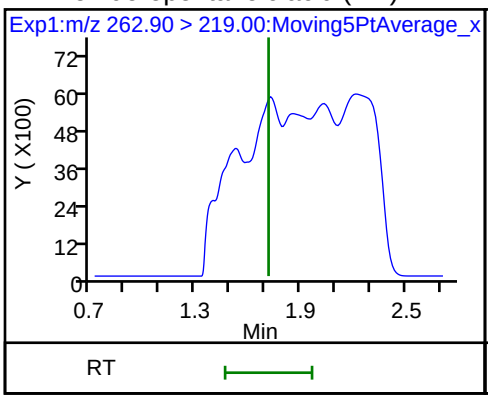
2 Perfluorobutyric acid (ND)



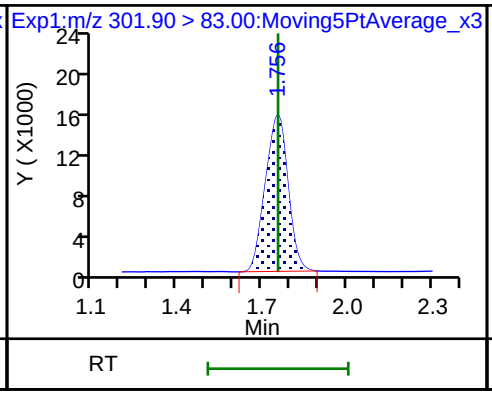
D 3 13C5-PFPeA



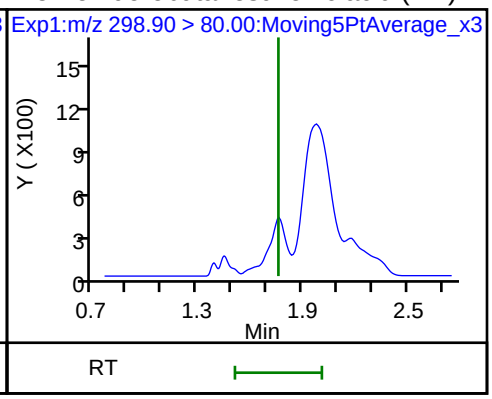
4 Perfluoropentanoic acid (ND)



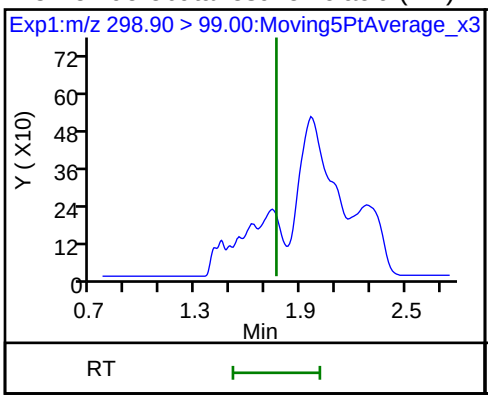
D 47 13C3-PFBS



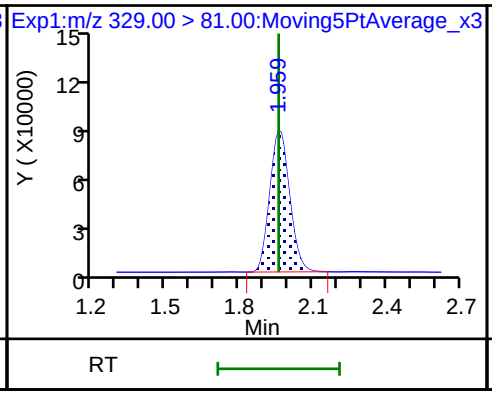
5 Perfluorobutanesulfonic acid (ND)



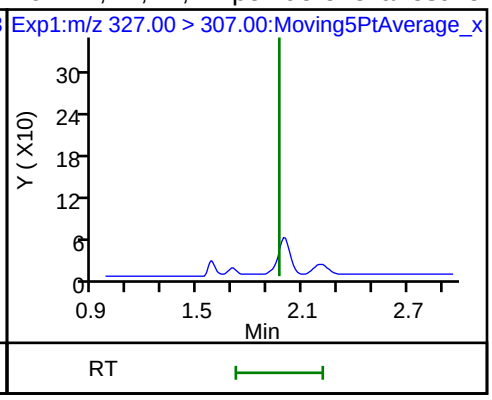
5 Perfluorobutanesulfonic acid (ND)



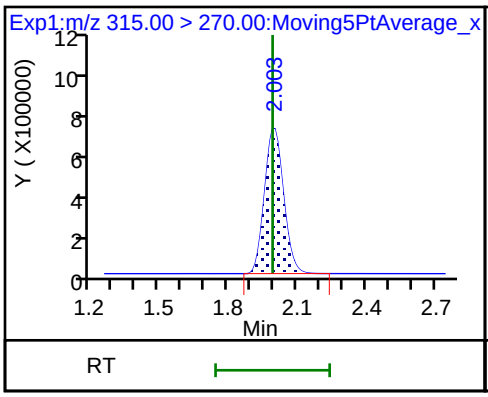
D 60 M2-4:2FTS



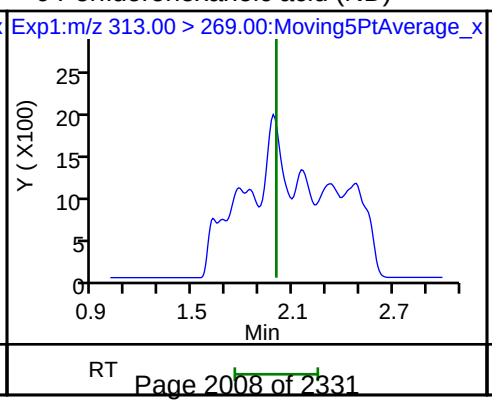
61 1H,1H,2H,2H-perfluorohexanesulfoni (ND)



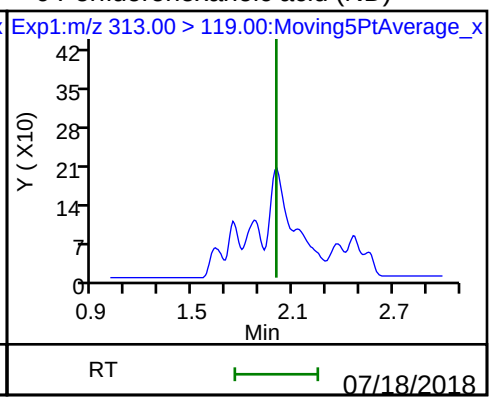
D 7 13C2 PFHxA



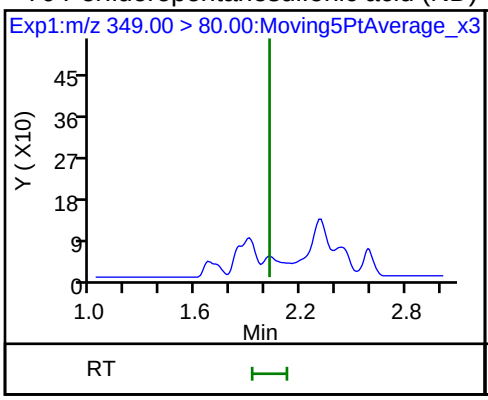
6 Perfluorohexanoic acid (ND)



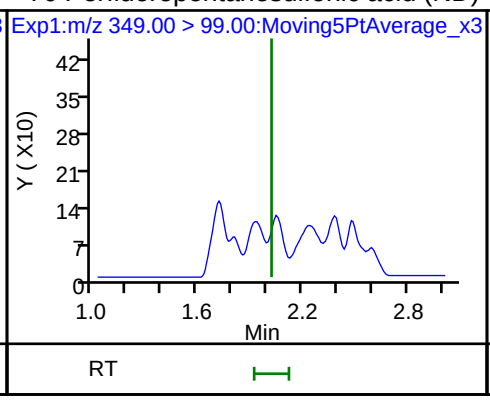
6 Perfluorohexanoic acid (ND)



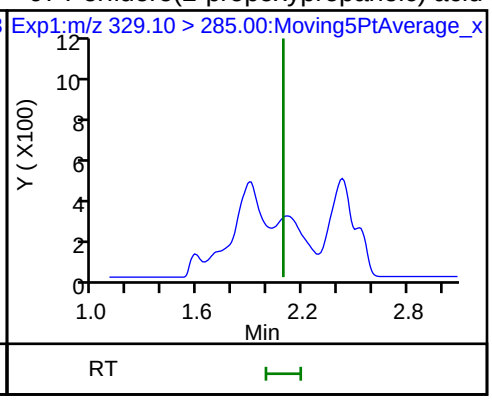
70 Perfluoropentanesulfonic acid (ND)



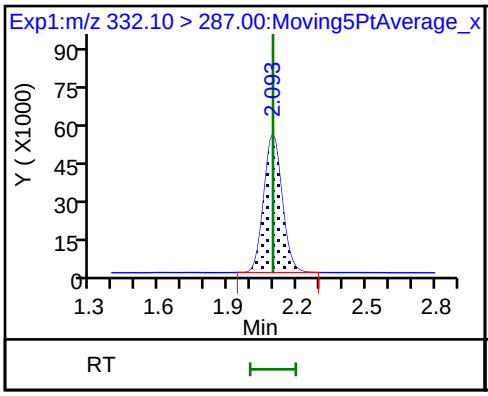
70 Perfluoropentanesulfonic acid (ND)



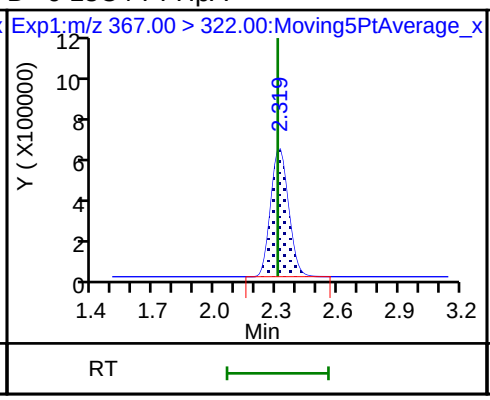
67 Perfluoro(2-propoxypropanoic) acid (ND)



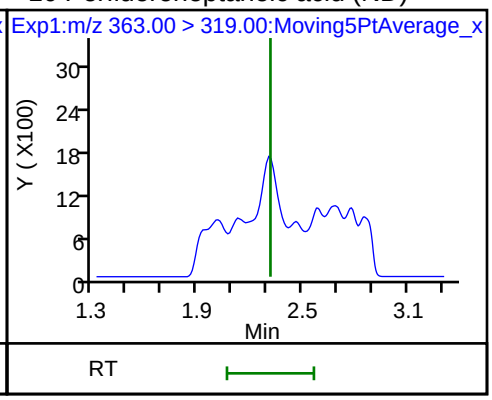
D 64 13C3 HFPO-DA



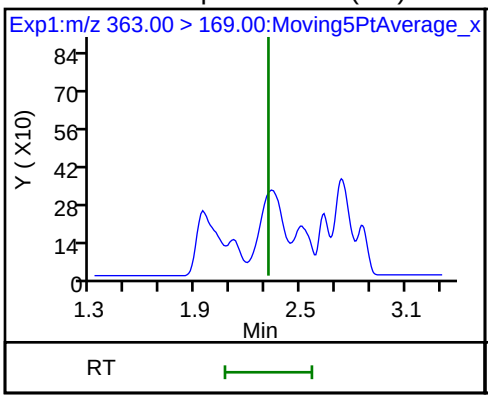
D 9 13C4-PFHpA



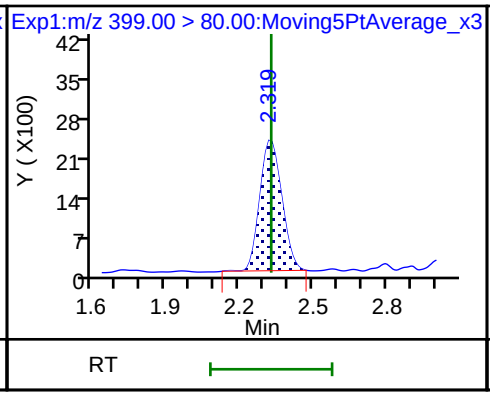
10 Perfluoroheptanoic acid (ND)



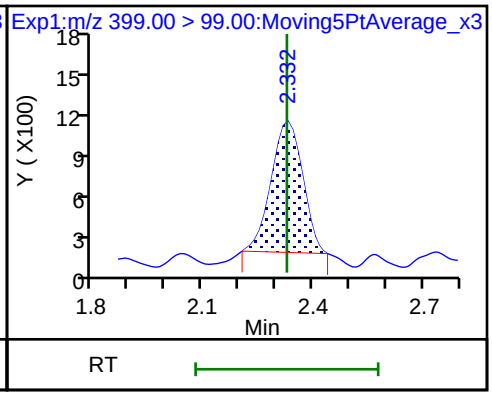
10 Perfluoroheptanoic acid (ND)



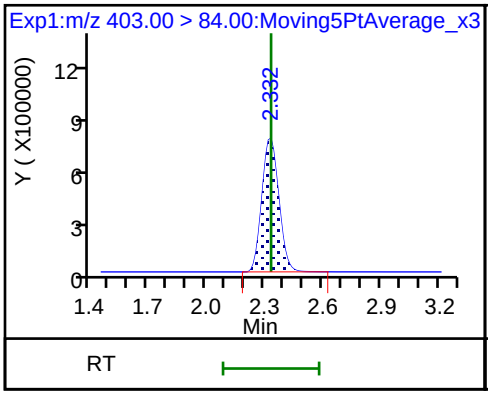
8 Perfluorohexanesulfonic acid



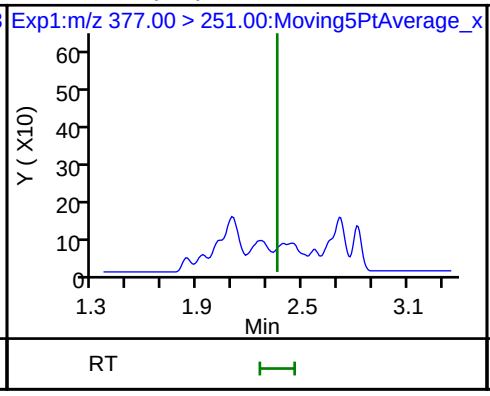
8 Perfluorohexanesulfonic acid



D 11 18O2 PFHxS



65 Adona (ND)



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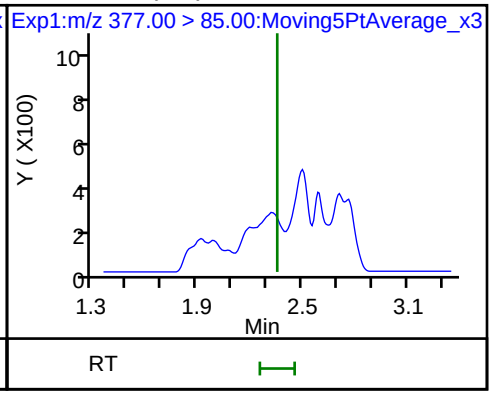
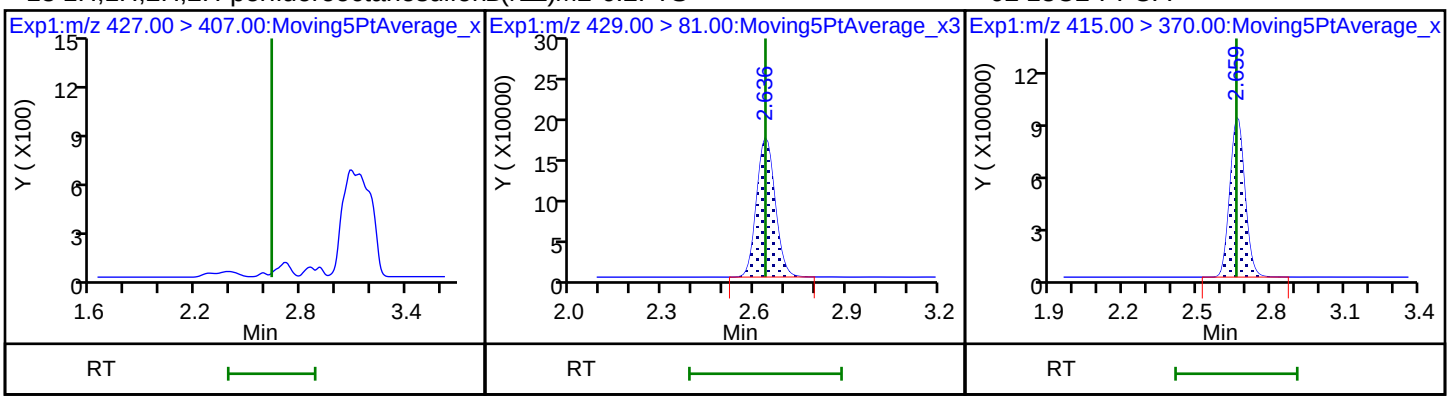
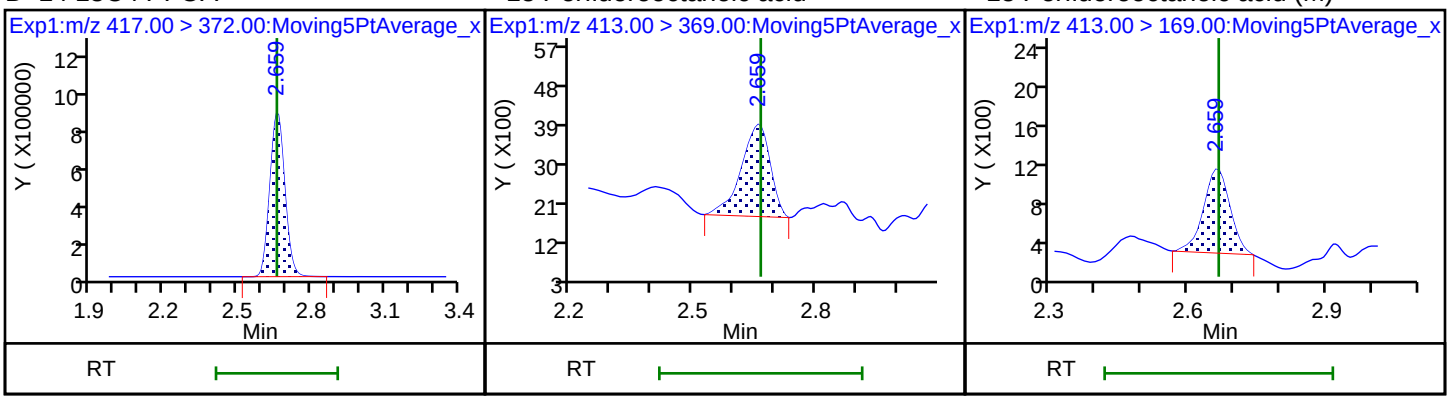


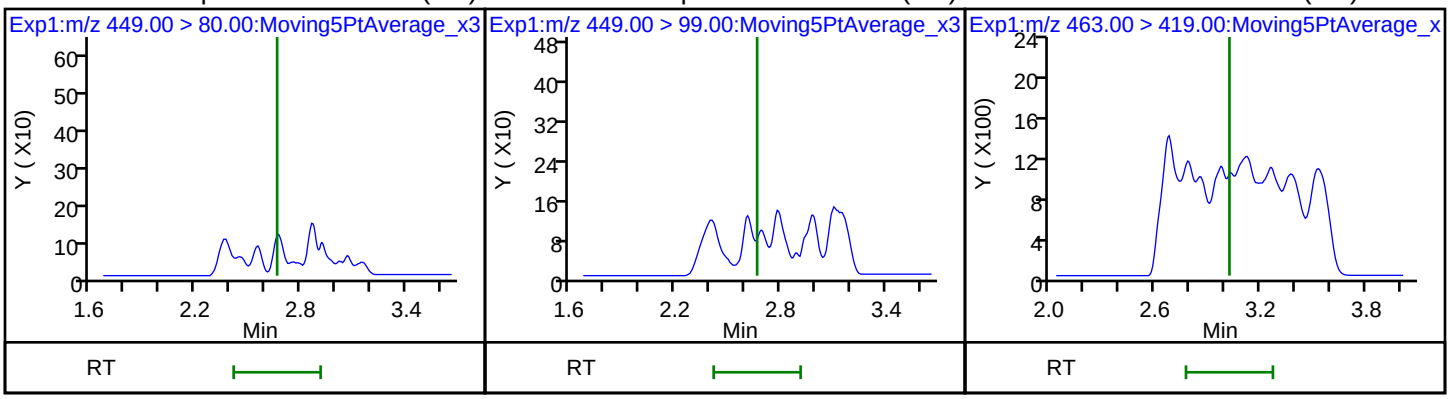
13 1H,1H,2H,2H-perfluorooctanesulfonic (ND) D 12 M2-6:2FTS * 62 13C2-PFOA



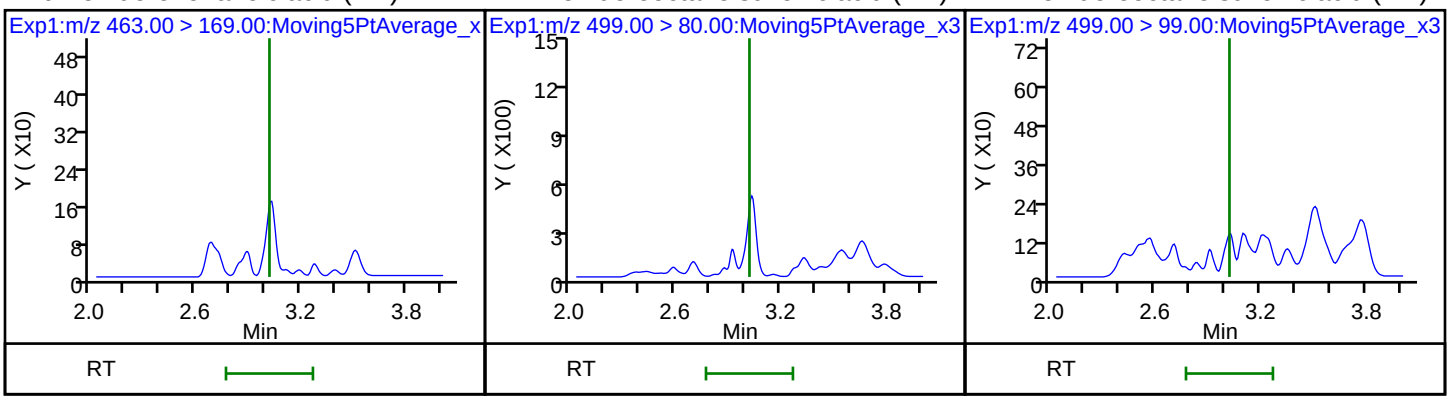
D 14 13C4 PFOA 15 Perfluorooctanoic acid 15 Perfluorooctanoic acid (M)



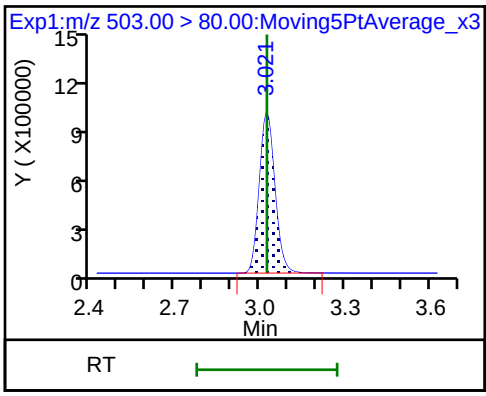
16 Perfluoroheptanesulfonic acid (ND) 16 Perfluoroheptanesulfonic acid (ND) 20 Perfluorononanoic acid (ND)



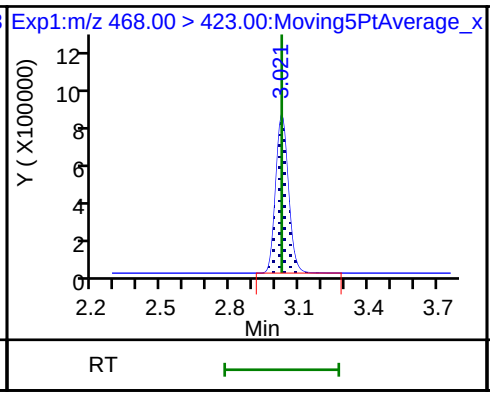
20 Perfluorononanoic acid (ND) 17 Perfluorooctane sulfonic acid (ND) 17 Perfluorooctane sulfonic acid (ND)



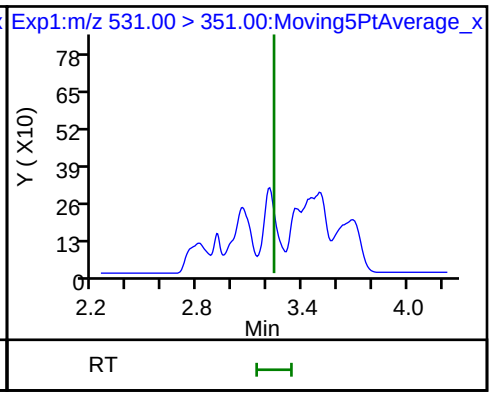
D 18 13C4 PFOS



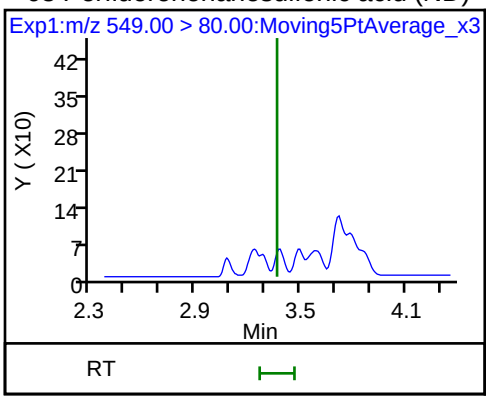
D 19 13C5 PFNA



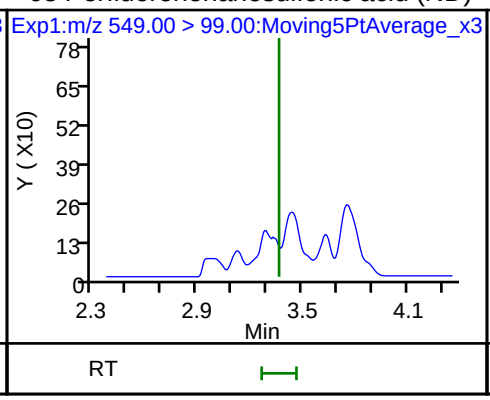
69 9-Chlorohexadecafluoro-3-oxanonane (ND)



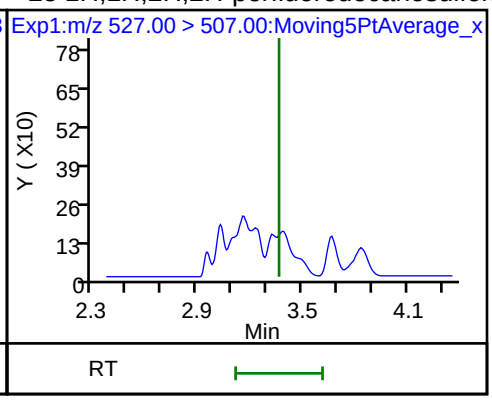
68 Perfluorononanesulfonic acid (ND)



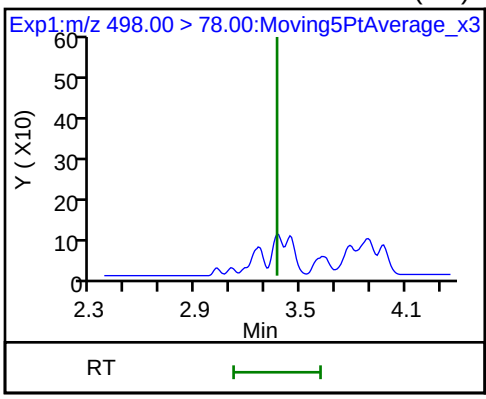
68 Perfluorononanesulfonic acid (ND)



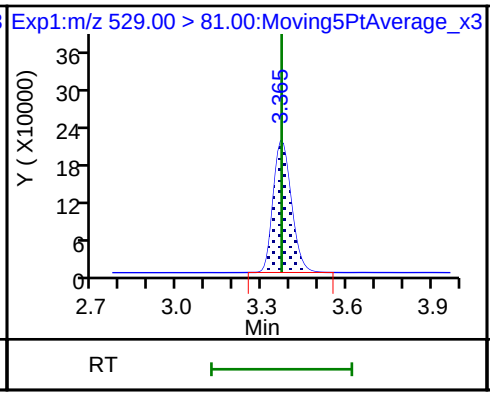
25 1H,1H,2H,2H-perfluorodecanesulfoni (ND)



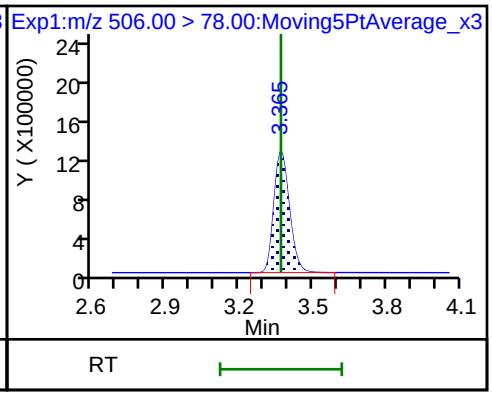
22 Perfluorooctane Sulfonamide (ND)



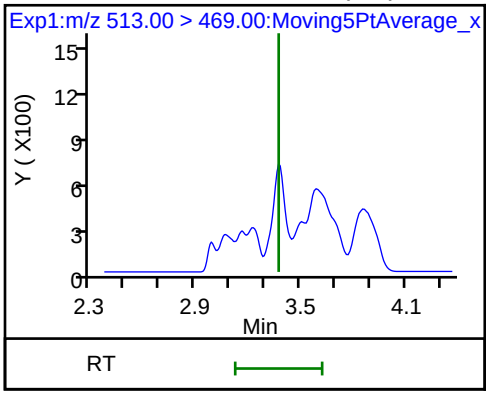
D 26 M2-8:2FTS



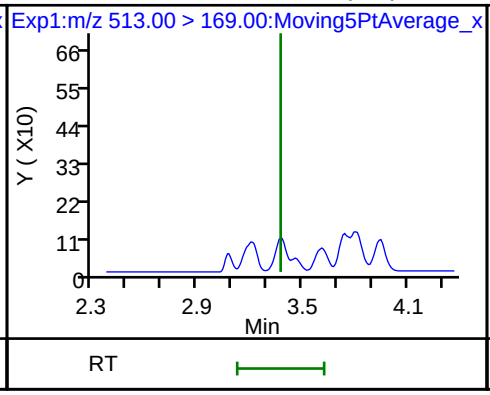
D 21 13C8 FOSA



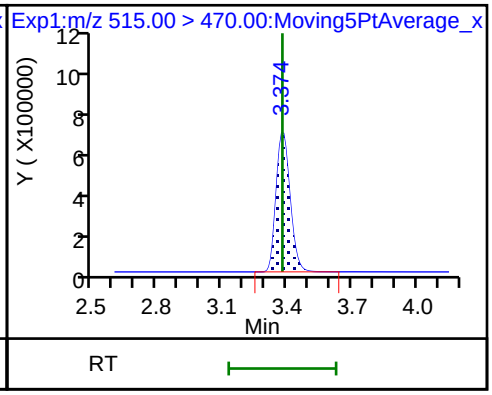
24 Perfluorodecanoic acid (ND)



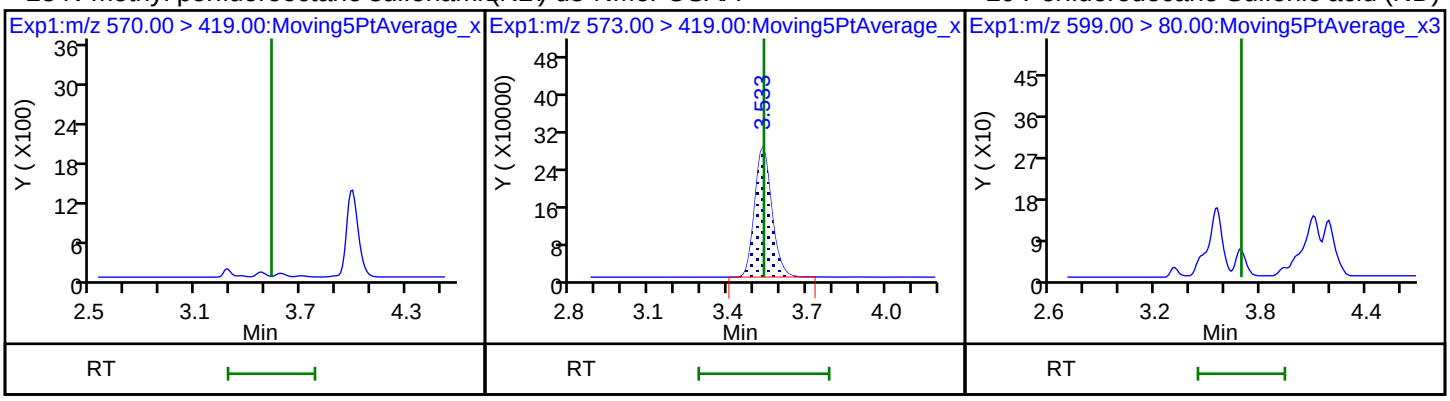
24 Perfluorodecanoic acid (ND)



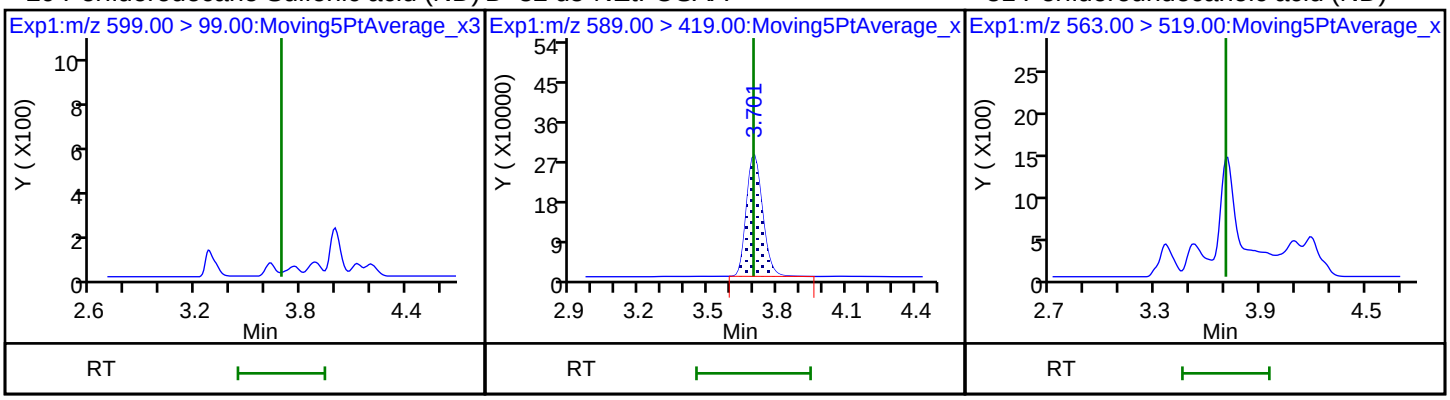
D 23 13C2 PFDA



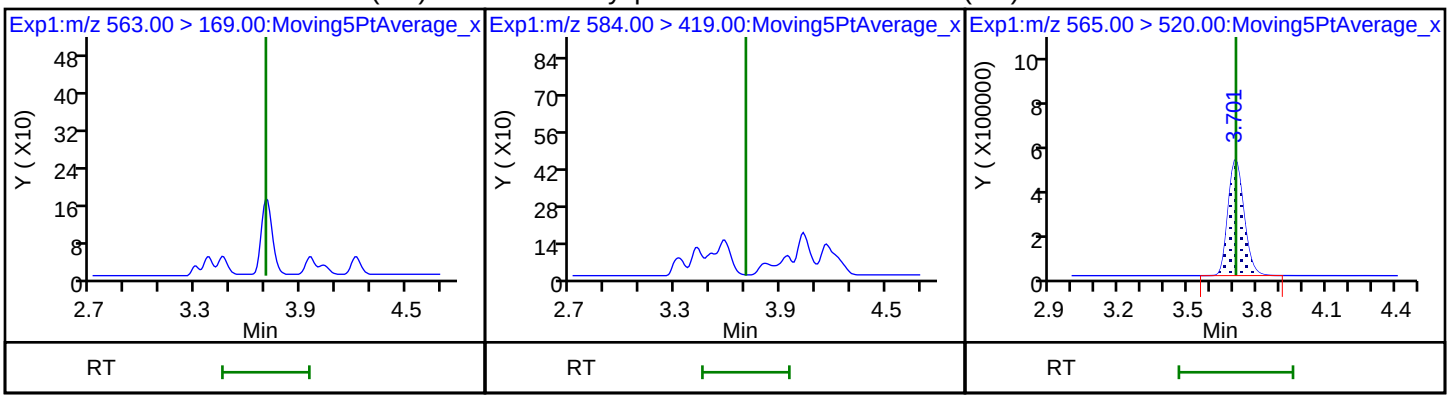
28 N-methyl perfluorooctane sulfonamid (ND) D 27 d3-NMeFOSAA 29 Perfluorodecane Sulfonic acid (ND)



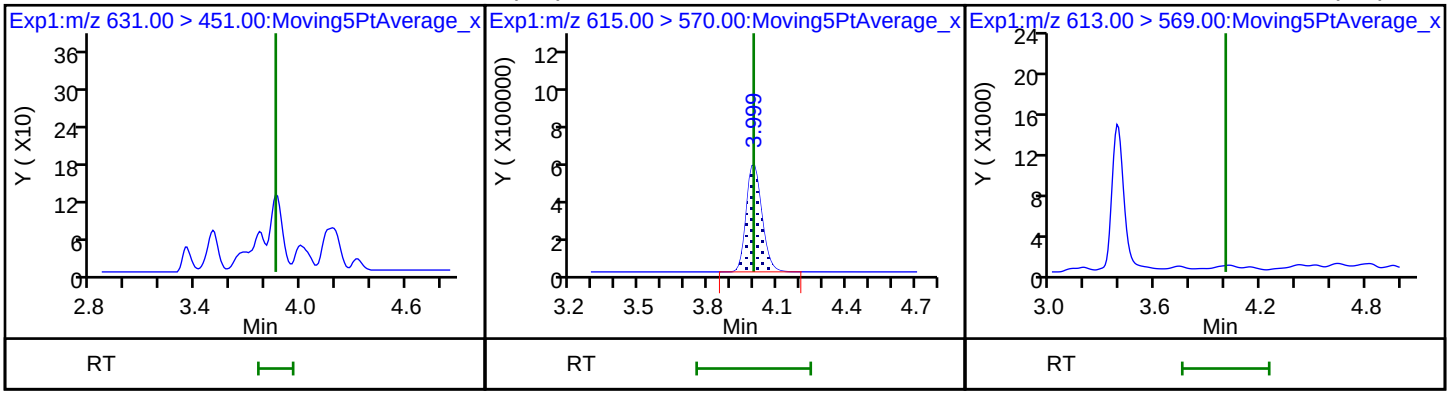
29 Perfluorodecane Sulfonic acid (ND) D 32 d5-NEtFOSAA 31 Perfluoroundecanoic acid (ND)



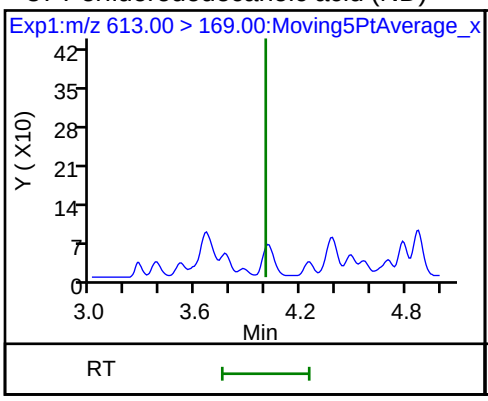
31 Perfluoroundecanoic acid (ND) 33 N-ethyl perfluorooctane sulfonamid (ND) D 30 13C2 PFUnA



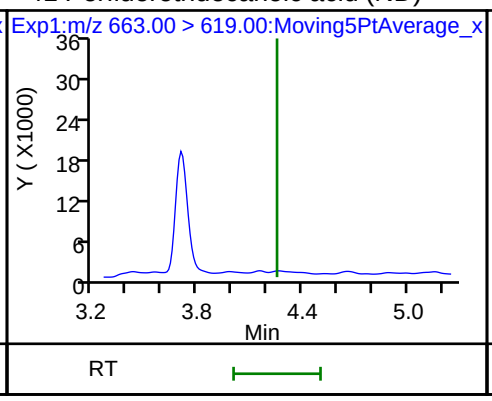
66 11-Chloroeicosafluoro-3-oxaundecan (ND) D 36 13C2 PFDoA 37 Perfluorododecanoic acid (ND)



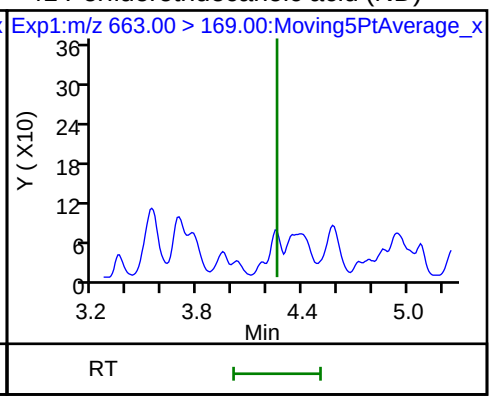
37 Perfluorododecanoic acid (ND)



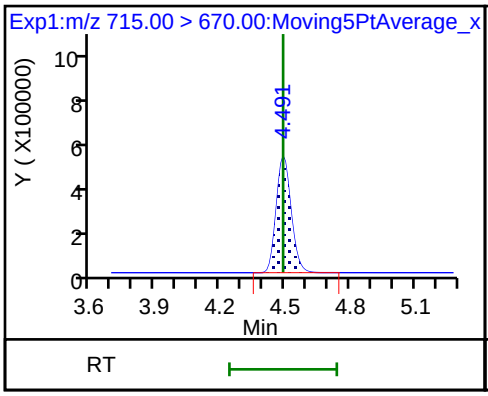
41 Perfluorotridecanoic acid (ND)



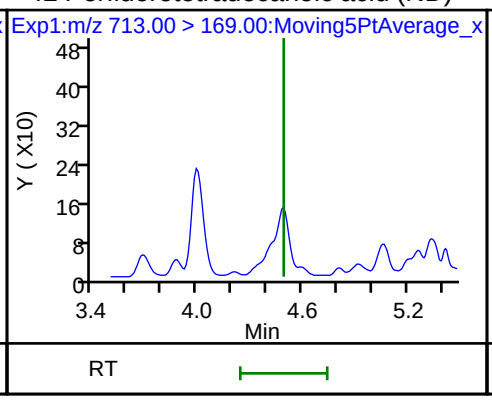
41 Perfluorotridecanoic acid (ND)



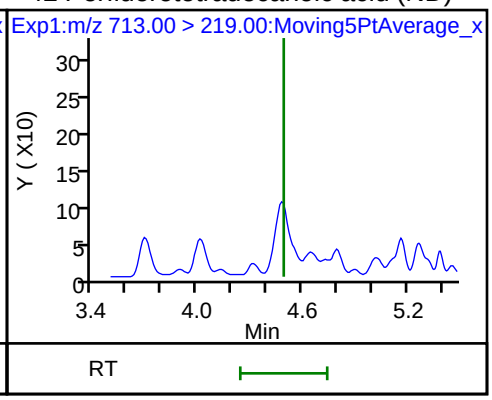
D 43 13C2-PFTeDA



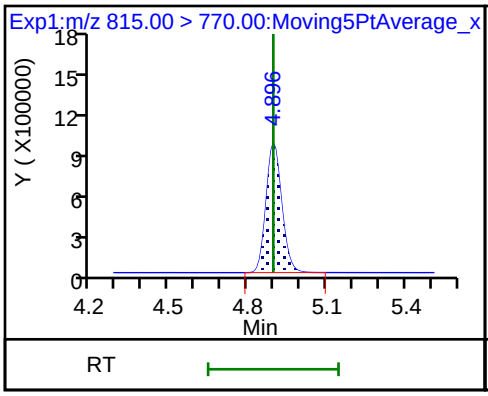
42 Perfluorotetradecanoic acid (ND)



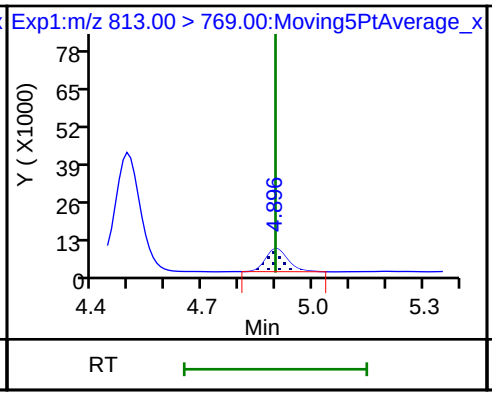
42 Perfluorotetradecanoic acid (ND)



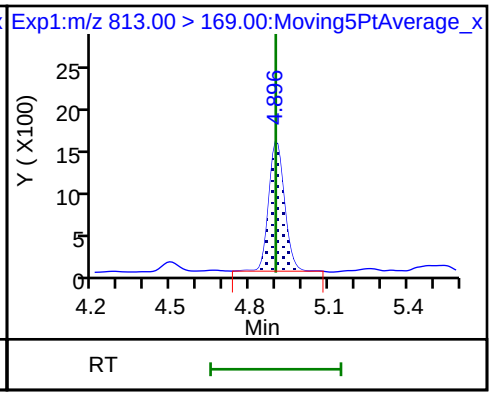
D 44 13C2-PFHxDA



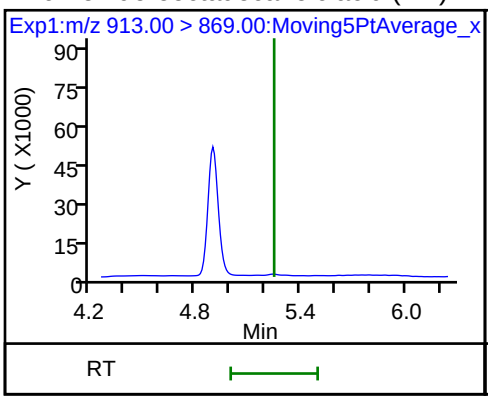
45 Perfluorohexadecanoic acid



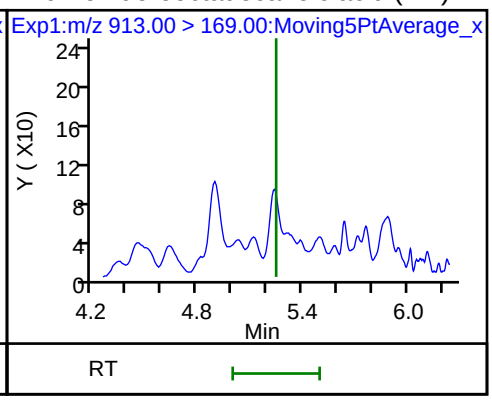
45 Perfluorohexadecanoic acid



46 Perfluorooctadecanoic acid (ND)



46 Perfluorooctadecanoic acid (ND)



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

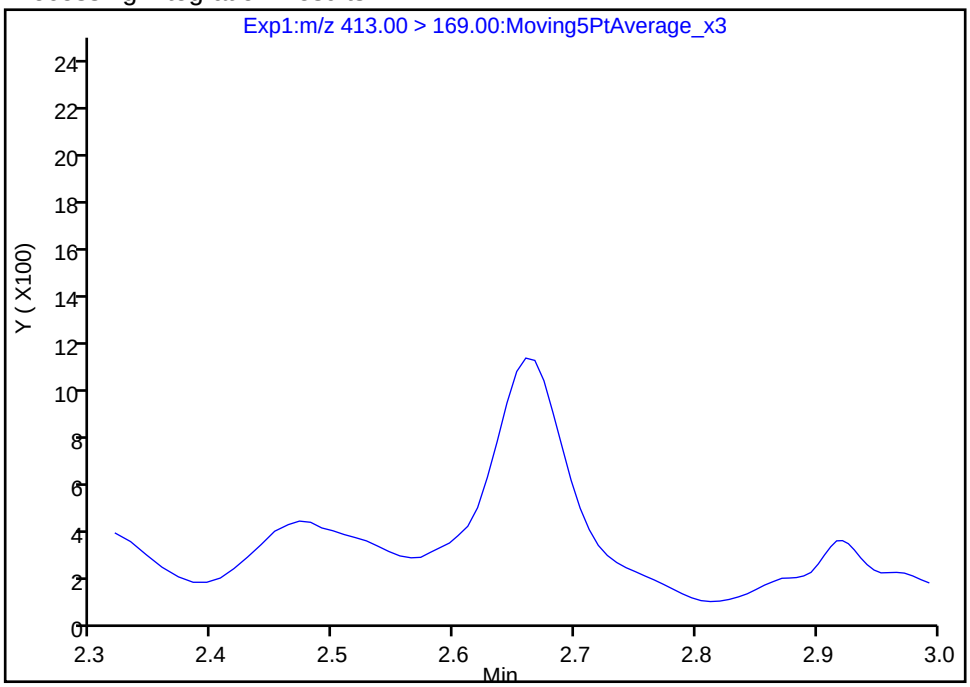
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61052.b\2018.07.13LLAA_004.d				
Injection Date:	13-Jul-2018 15:56:45	Instrument ID:	A8_N		
Lims ID:	CCB				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	20	Worklist Smp#:	1
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 2

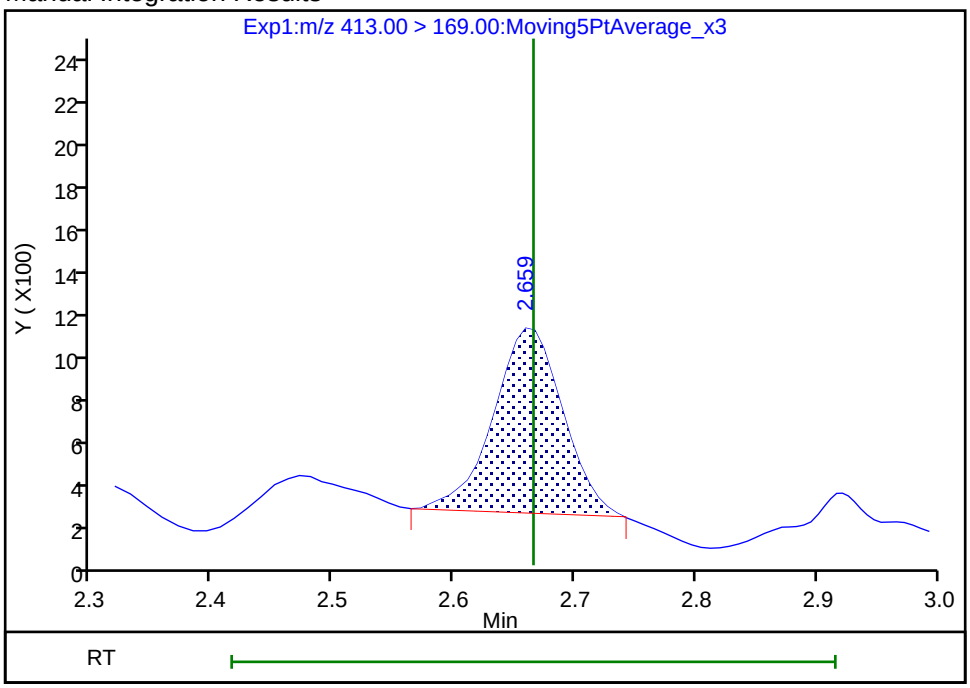
Processing Integration Results

RT: 2.66
Area: 0
Amount: 0.005759
Amount Units: ng/ml



Manual Integration Results

RT: 2.66
Area: 3469
Amount: 0.005759
Amount Units: ng/ml



Reviewer: hannigana, 13-Jul-2018 16:15:06

Audit Action: Manually Integrated Audit Reason: Assign Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID:
Lab Sample ID: CCB 320-233992/1
Matrix: Solid
Lab File ID: 2018.07.13LLB_004.d
Analysis Method: 537 (modified)
Date Collected:
Extraction Method:
Date Extracted:
Sample wt/vol: 1(mL)
Date Analyzed: 07/13/2018 22:51
Con. Extract Vol.:
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 233992
Units: ng/mL

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	ND		0.050	0.0088
2706-90-3	Perfluoropentanoic acid (PFPeA)	ND		0.050	0.012
307-24-4	Perfluorohexanoic acid (PFHxA)	ND		0.050	0.015
375-85-9	Perfluoroheptanoic acid (PFHpA)	ND		0.050	0.0063
335-67-1	Perfluorooctanoic acid (PFOA)	ND		0.050	0.021
375-95-1	Perfluorononanoic acid (PFNA)	ND		0.050	0.0068
335-76-2	Perfluorodecanoic acid (PFDA)	ND		0.050	0.0078
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		0.050	0.028
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		0.050	0.014
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		0.050	0.033
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		0.050	0.0073
375-73-5	Perfluorobutanesulfonic acid (PFBS)	ND		0.050	0.0050
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	ND		0.050	0.0043
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.050	0.0048
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	ND		0.050	0.014
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		0.050	0.0080
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		0.050	0.0088
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.50	0.078
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.50	0.048
27619-97-2	6:2 FTS	ND		0.50	0.050
39108-34-4	8:2 FTS	ND		0.50	0.050

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID:
Lab Sample ID: CCB 320-233992/1
Matrix: Solid
Lab File ID: 2018.07.13LLB_004.d
Analysis Method: 537 (modified)
Date Collected:
Extraction Method:
Date Extracted:
Sample wt/vol: 1(mL)
Date Analyzed: 07/13/2018 22:51
Con. Extract Vol.:
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 233992
Units: ng/mL

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00992	13C4 PFBA	93		25-150
STL01893	13C5 PFPeA	98		25-150
STL00993	13C2 PFHxA	101		25-150
STL01892	13C4-PFHpA	104		25-150
STL00990	13C4 PFOA	96		25-150
STL00995	13C5 PFNA	92		25-150
STL00996	13C2 PFDA	99		25-150
STL00997	13C2 PFUnA	101		25-150
STL00998	13C2 PFDoA	102		25-150
STL02116	13C2-PFTeDA	102		25-150
STL02337	13C3-PFBS	100		25-150
STL00994	18O2 PFHxS	97		25-150
STL00991	13C4 PFOS	98		25-150
STL01056	13C8 FOSA	102		25-150
STL02118	d3-NMeFOSAA	106		25-150
STL02117	d5-NEtFOSAA	118		25-150
STL02279	M2-6:2FTS	90		25-150
STL02280	M2-8:2FTS	81		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61058.b\2018.07.13LLB_004.d
Lims ID: CCB
Client ID:
Sample Type: CCB
Inject. Date: 13-Jul-2018 22:51:34 ALS Bottle#: 20 Worklist Smp#: 1
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCB
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61058.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 16-Jul-2018 12:49:37 Calib Date: 11-Jul-2018 15:38:42
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK023

First Level Reviewer: mongkols Date: 16-Jul-2018 12:49:37

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.441	1.441	0.0	0.542	5018367	2.34		93.5	30003	
D 3 13C5-PFPeA										
267.90 > 223.00	1.720	1.729	-0.009	0.646	3649193	2.44		97.8	51984	
D 47 13C3-PFBS										
301.90 > 83.00	1.756	1.765	-0.009	0.660	87164	2.32		99.9	527	
D 60 M2-4:2FTS										
329.00 > 81.00	1.970	1.970	0.0	0.741	442405	2.19		94.0	7180	
D 7 13C2 PFHxA										
315.00 > 270.00	2.004	2.004	0.0	0.753	4075764	2.53		101	64889	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.105	2.105	0.0	0.791	311814	2.72		109	5478	
D 9 13C4-PFHpA										
367.00 > 322.00	2.320	2.320	0.0	0.872	3862930	2.60		104	49830	
D 11 18O2 PFHxS										
403.00 > 84.00	2.333	2.333	0.0	0.877	4847664	2.31		97.5	32667	
D 12 M2-6:2FTS										
429.00 > 81.00	2.645	2.645	0.0	0.994	678558	2.13		89.8	13105	
* 62 13C2-PFOA										
415.00 > 370.00	2.661	2.661	-0.001		3960372	2.50			50064	
D 14 13C4 PFOA										
417.00 > 372.00	2.668	2.668	0.0	1.003	3649672	2.41		96.4	48317	
D 18 13C4 PFOS										
503.00 > 80.00	3.022	3.031	-0.009	1.136	3604682	2.34		97.7	39500	
D 19 13C5 PFNA										
468.00 > 423.00	3.022	3.031	-0.009	1.136	3108376	2.30		91.8	47775	
D 26 M2-8:2FTS										
529.00 > 81.00	3.367	3.380	-0.013	1.266	904082	1.94		81.1	14514	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 21 13C8 FOSA										
506.00 > 78.00	3.367	3.380	-0.013	1.266	5662375	2.54		102	38913	
D 23 13C2 PFDA										
515.00 > 470.00	3.376	3.389	-0.013	1.269	2927132	2.46		98.5	28786	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.535	3.539	-0.004	1.329	1292797	2.65		106	31463	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.695	3.709	-0.014	1.389	1472258	2.95		118	4141	
D 30 13C2 PFUnA										
565.00 > 520.00	3.705	3.719	-0.014	1.393	2510578	2.53		101	43516	
D 36 13C2 PFDoA										
615.00 > 570.00	4.006	4.009	-0.003	1.506	2617577	2.54		102	23094	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.499	4.501	-0.002	1.691	2721092	2.55		102	14072	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.903	4.905	-0.002	1.843	4278355	2.52		101	15174	

Reagents:

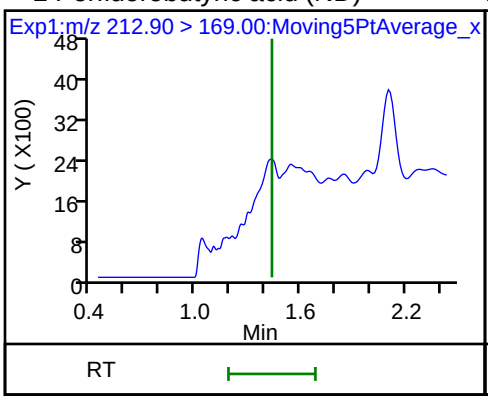
LCPFC_LL0_00007 Amount Added: 1.00 Units: mL

Report Date: 16-Jul-2018 12:49:38 Chrom Revision: 2.2 07-Jun-2018 07:41:54

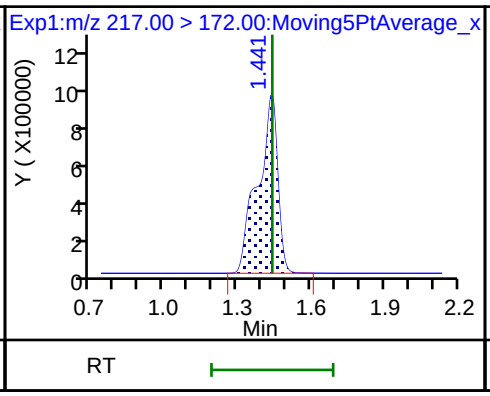
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61058.b\2018.07.13LLB_004.d
Injection Date: 13-Jul-2018 22:51:34 Instrument ID: A8_N
Lims ID: CCB
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 20 Worklist Smp#: 1
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC ICAL

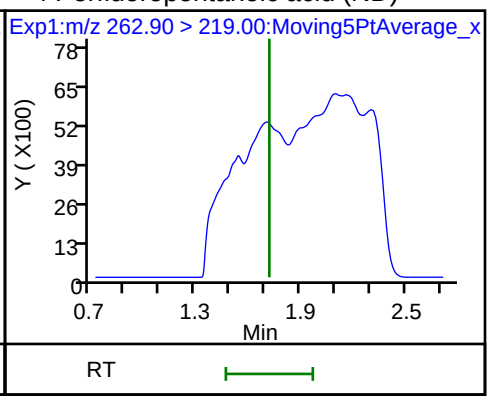
2 Perfluorobutyric acid (ND)



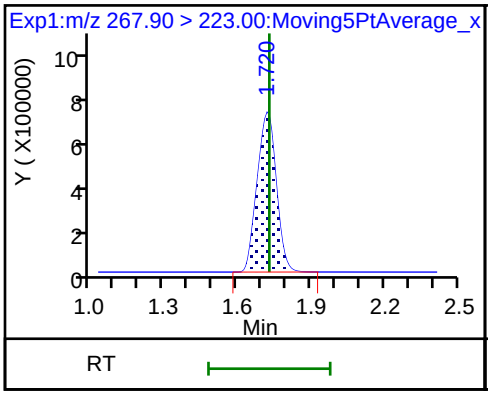
D 1 13C4 PFBA



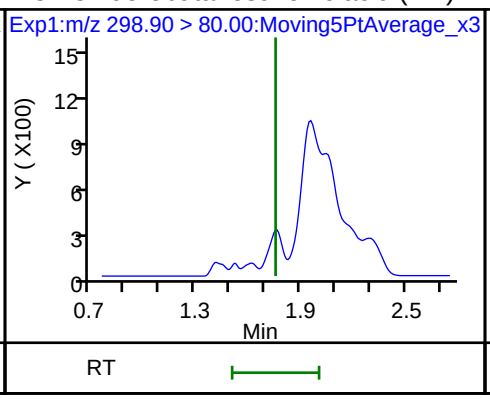
4 Perfluoropentanoic acid (ND)



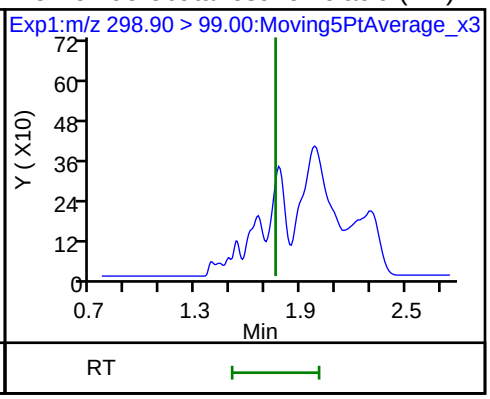
D 3 13C5-PFPeA



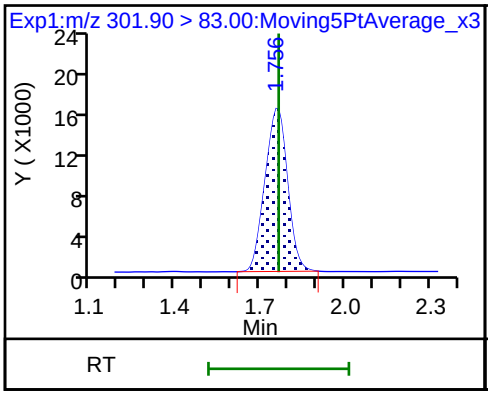
5 Perfluorobutanesulfonic acid (ND)



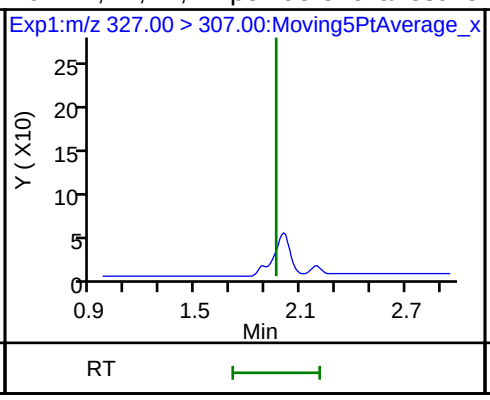
5 Perfluorobutanesulfonic acid (ND)



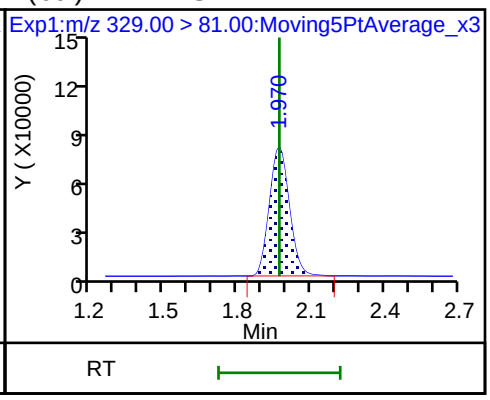
D 47 13C3-PFBS



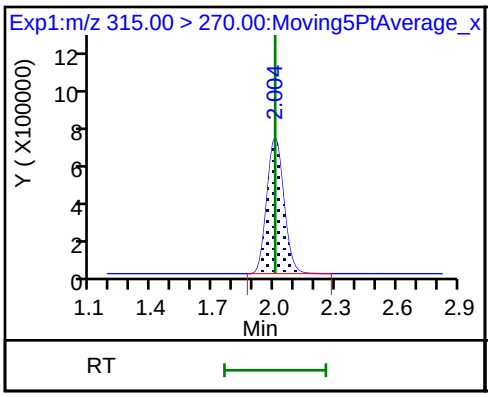
61 1H,1H,2H,2H-perfluorohexanesulfonic acid (ND)



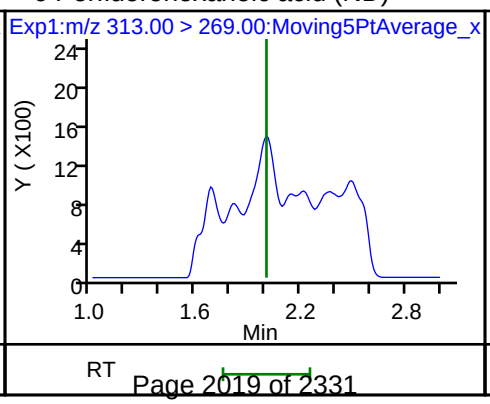
D 50 M2-4:2FTS



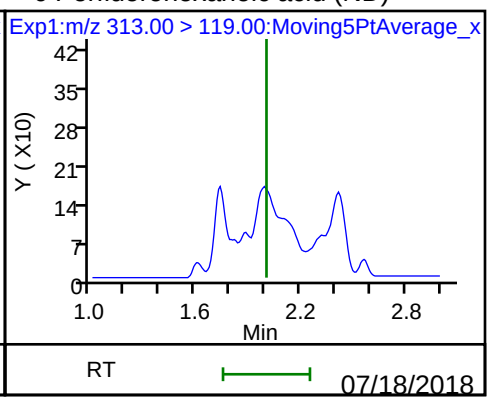
D 7 13C2 PFHxA



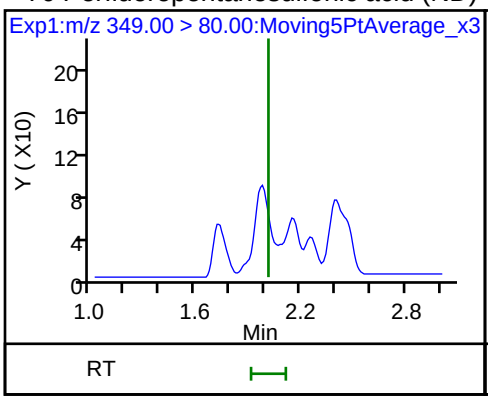
6 Perfluorohexanoic acid (ND)



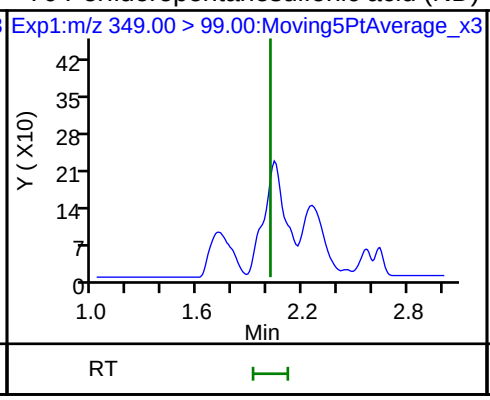
6 Perfluorohexanoic acid (ND)



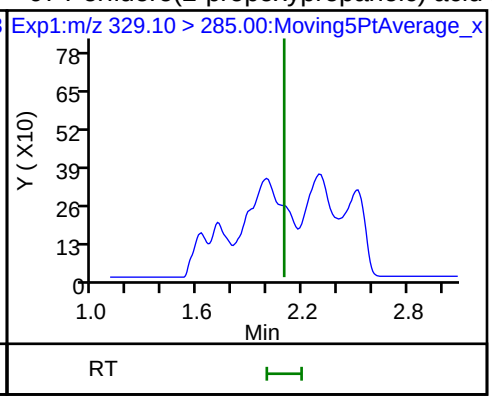
70 Perfluoropentanesulfonic acid (ND)



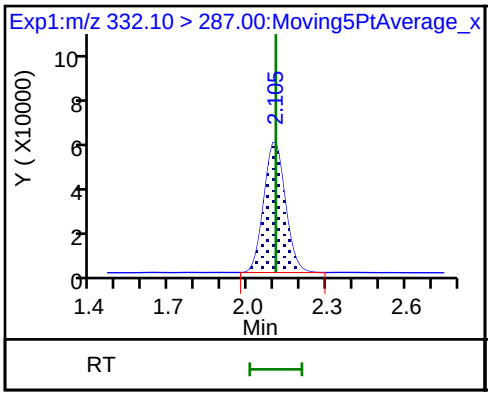
70 Perfluoropentanesulfonic acid (ND)



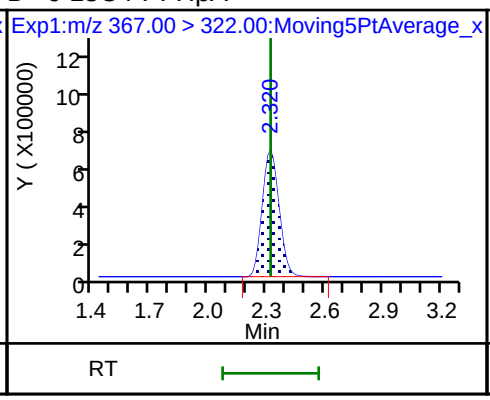
67 Perfluoro(2-propoxypropanoic) acid (ND)



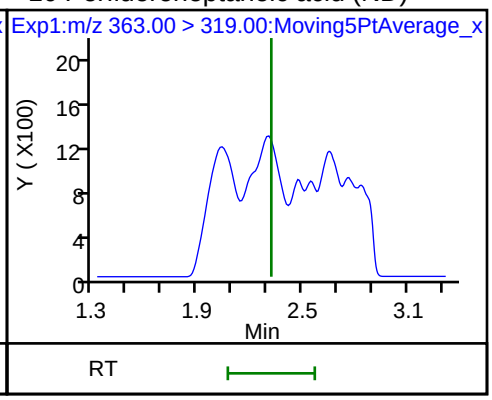
D 64 13C3 HFPO-DA



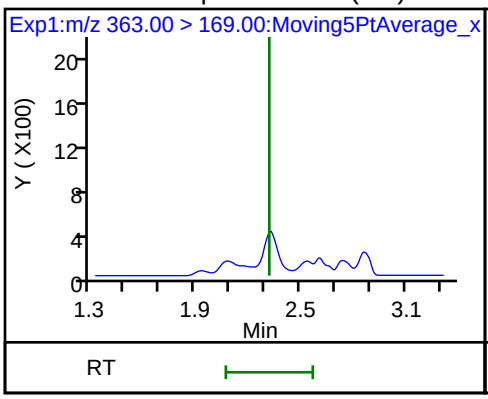
D 9 13C4-PFHpA



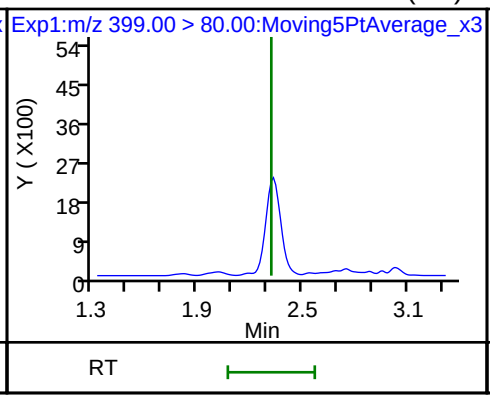
10 Perfluoroheptanoic acid (ND)



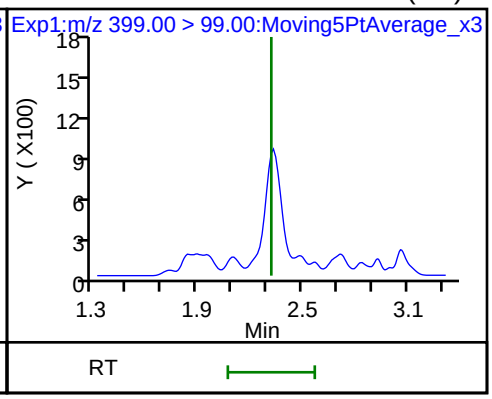
10 Perfluoroheptanoic acid (ND)



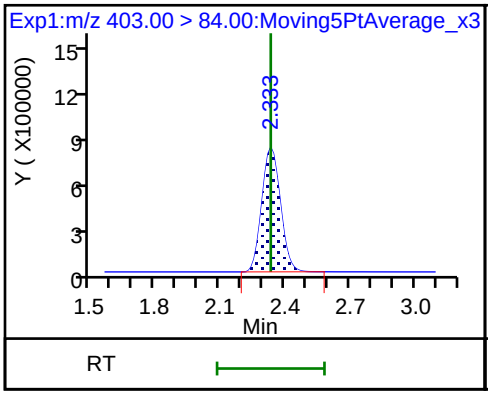
8 Perfluorohexanesulfonic acid (ND)



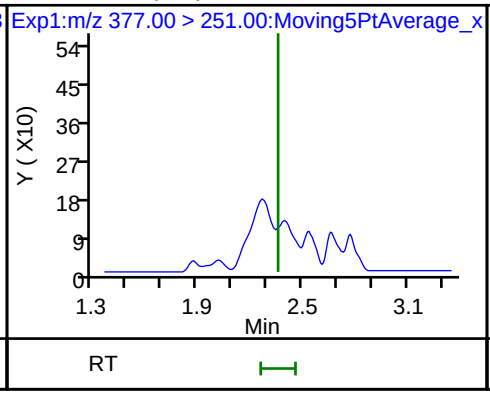
8 Perfluorohexanesulfonic acid (ND)



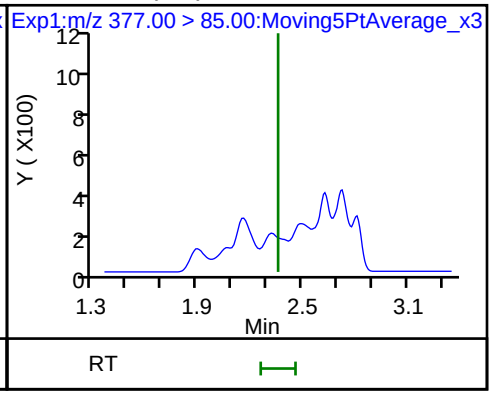
D 11 18O2 PFHxS



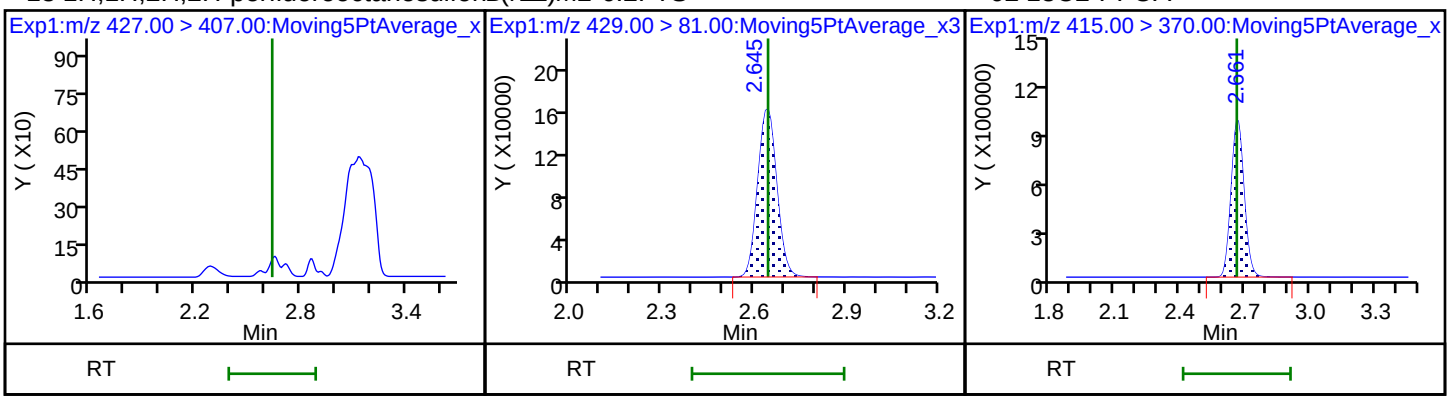
65 Adona (ND)



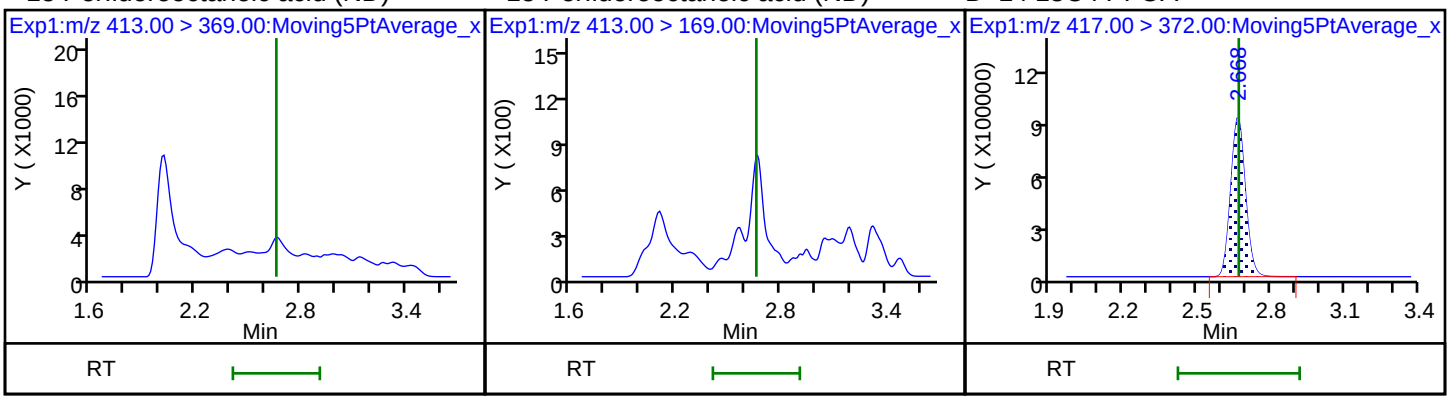
65 Adona (ND)



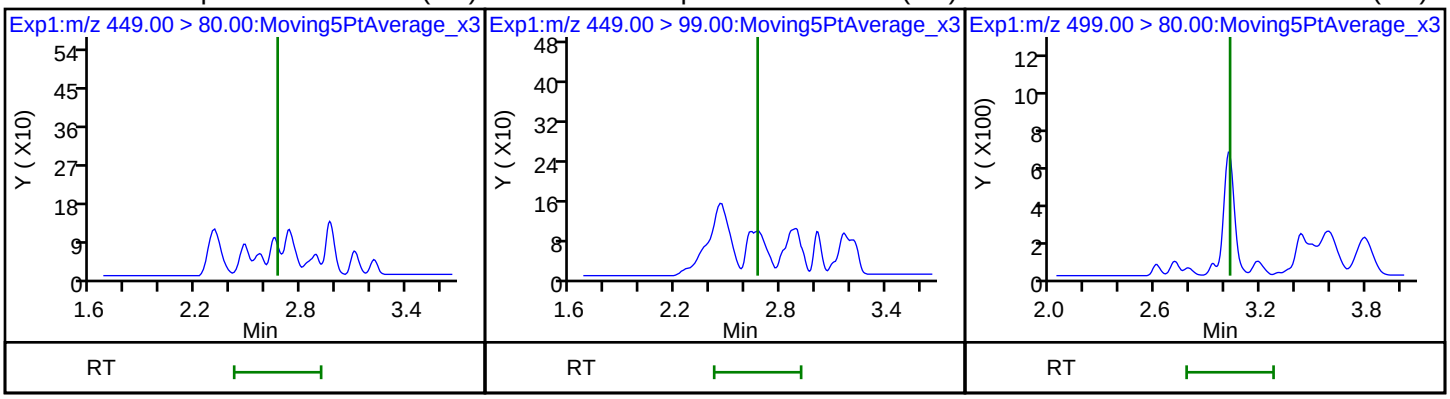
13 1H,1H,2H,2H-perfluorooctanesulfonic (ND) D 12 M2-6:2FTS * 62 13C2-PFOA



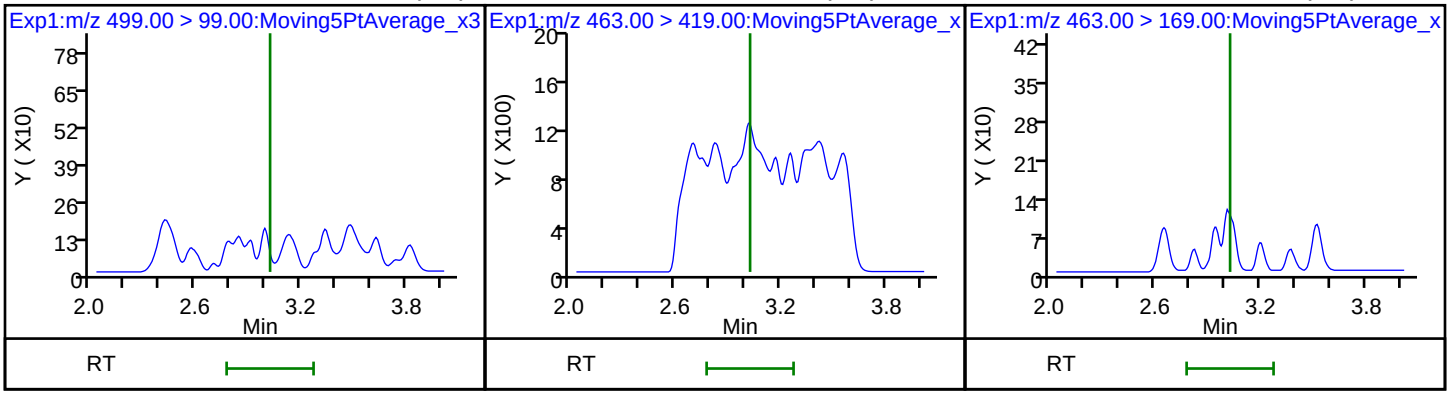
15 Perfluorooctanoic acid (ND) 15 Perfluorooctanoic acid (ND) D 14 13C4 PFOA



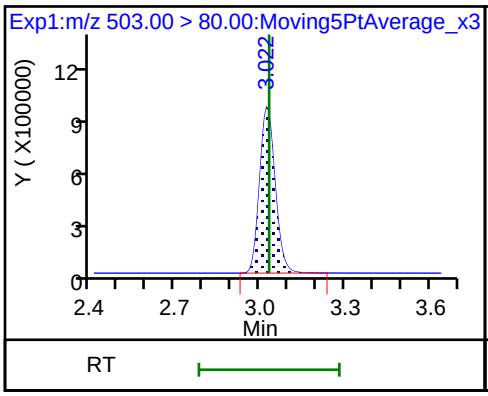
16 Perfluoroheptanesulfonic acid (ND) 16 Perfluoroheptanesulfonic acid (ND) 17 Perfluorooctane sulfonic acid (ND)



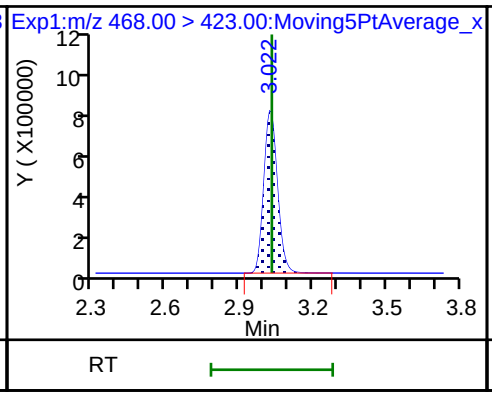
17 Perfluorooctane sulfonic acid (ND) 20 Perfluorononanoic acid (ND) 20 Perfluorononanoic acid (ND)



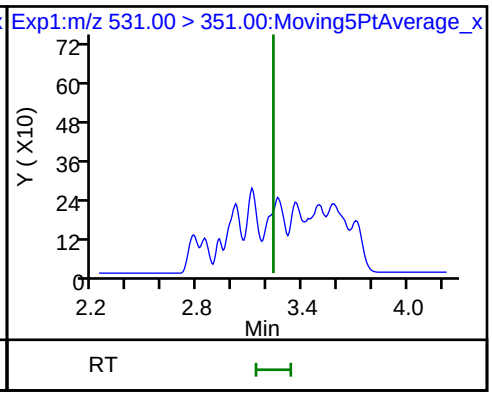
D 18 13C4 PFOS



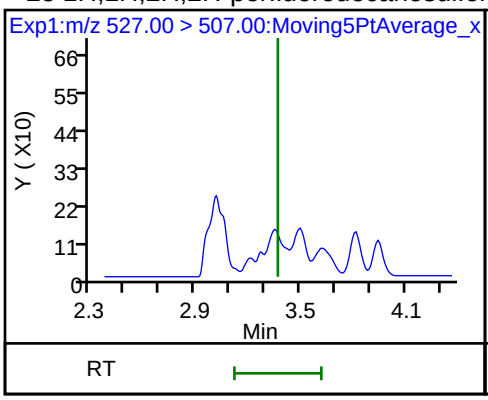
D 19 13C5 PFNA



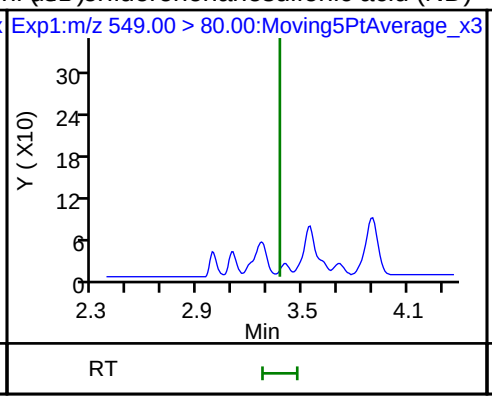
69 9-Chlorohexadecafluoro-3-oxanonane (ND)



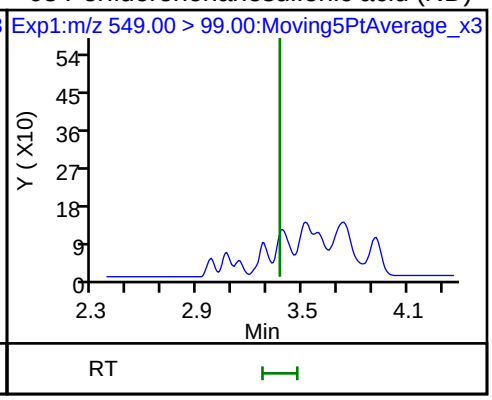
25 1H,1H,2H,2H-perfluorodecanesulfoni (ND)



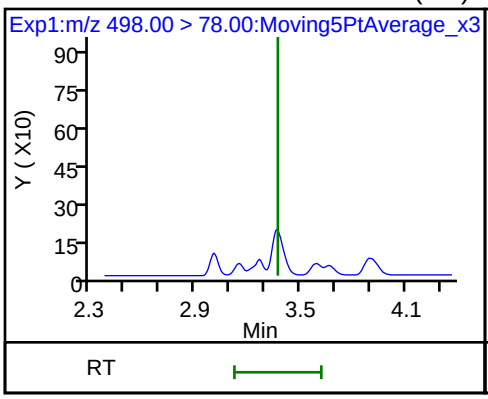
68 Perfluorononanesulfonic acid (ND)



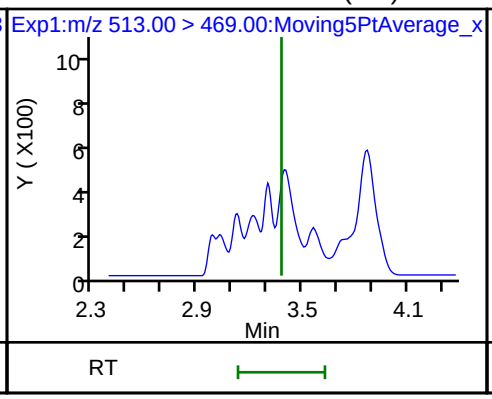
68 Perfluorononanesulfonic acid (ND)



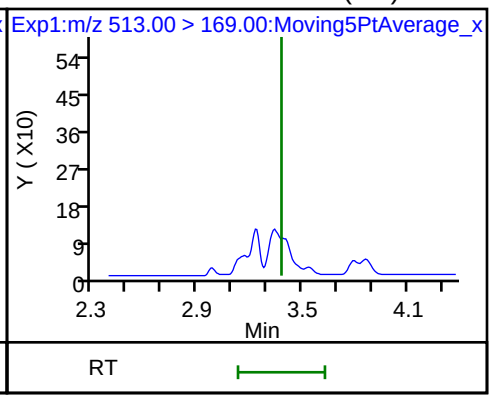
22 Perfluorooctane Sulfonamide (ND)



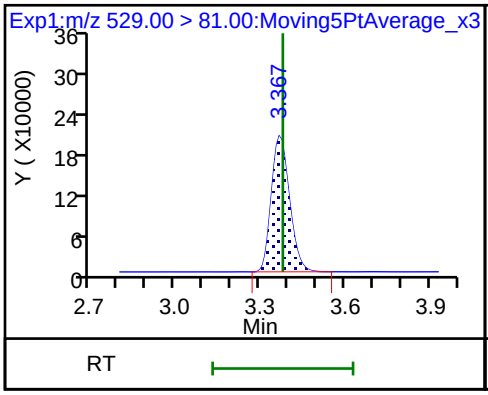
24 Perfluorodecanoic acid (ND)



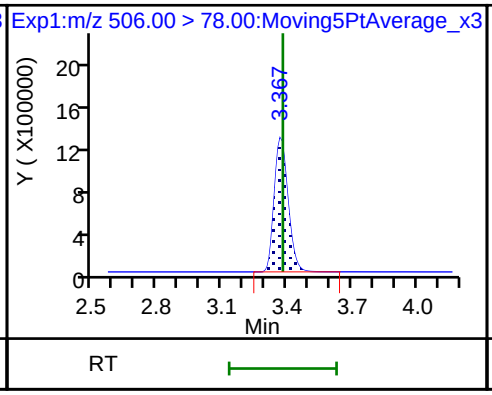
24 Perfluorodecanoic acid (ND)



D 26 M2-8:2FTS



D 21 13C8 FOSA



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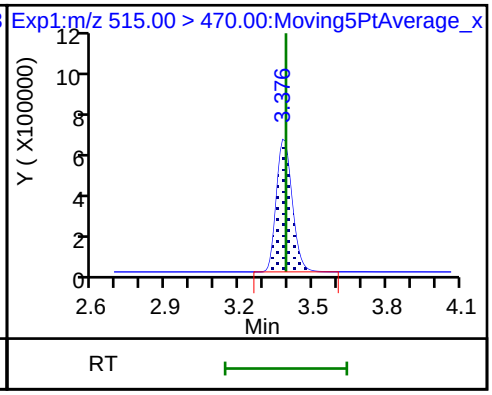
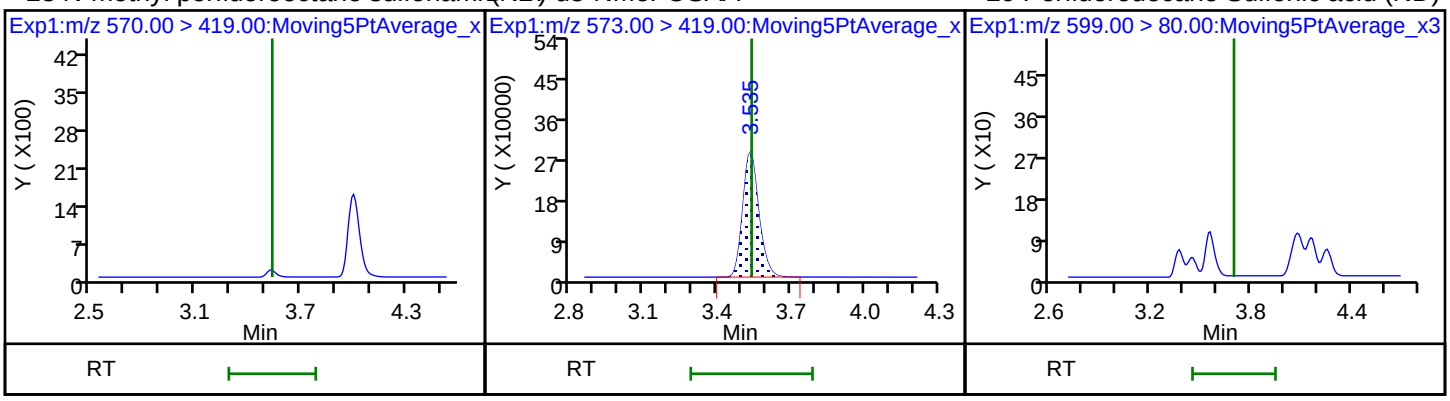
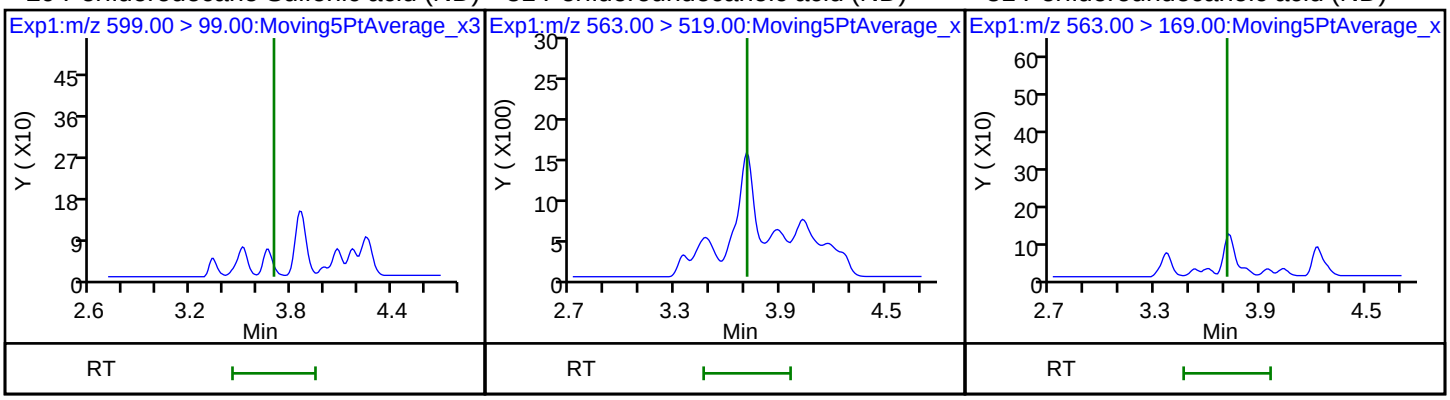


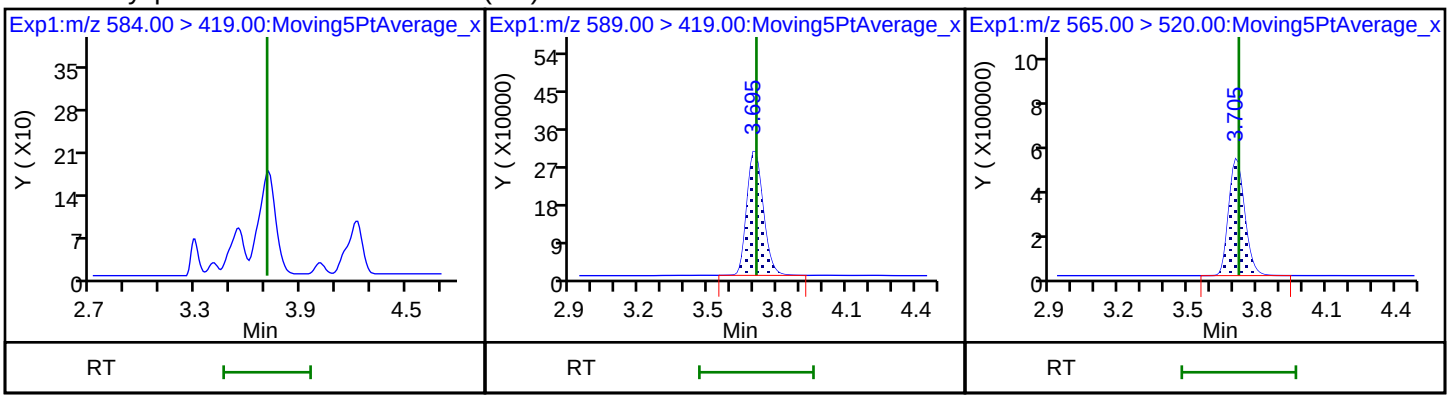
28 N-methyl perfluorooctane sulfonamid (ND) D 27 d3-NMeFOSAA 29 Perfluorodecane Sulfonic acid (ND)



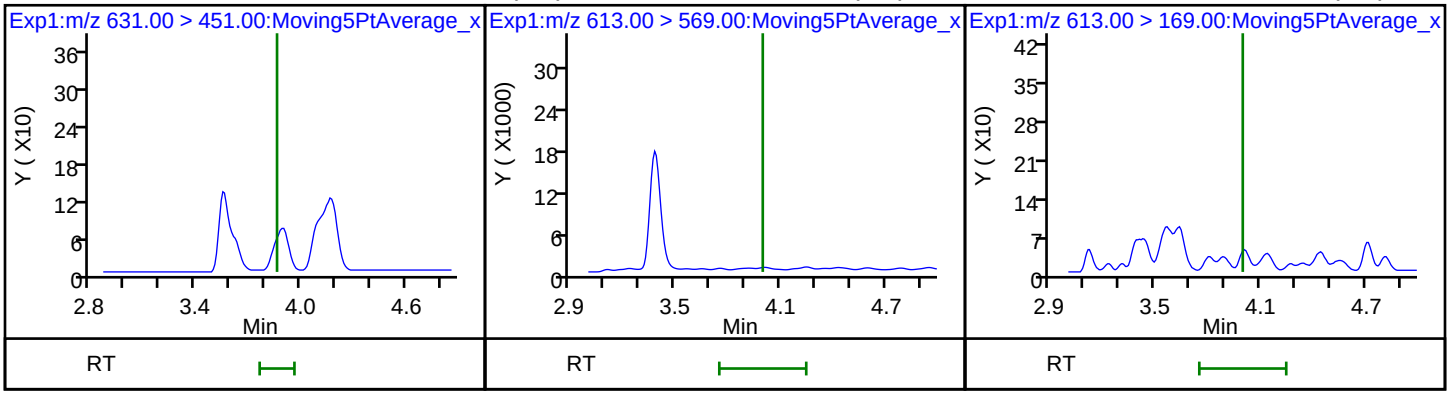
29 Perfluorodecane Sulfonic acid (ND) 31 Perfluoroundecanoic acid (ND) 31 Perfluoroundecanoic acid (ND)



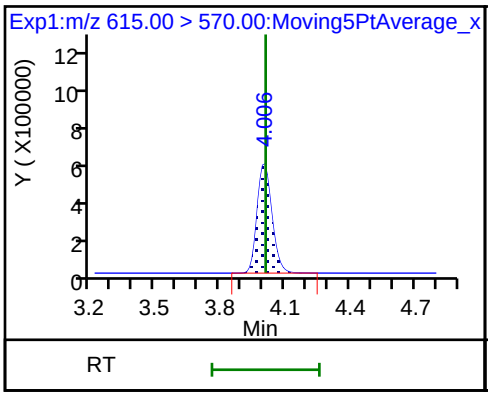
33 N-ethyl perfluorooctane sulfonamid (ND) D 32 d5-NEtFOSAA D 30 13C2 PFUnA



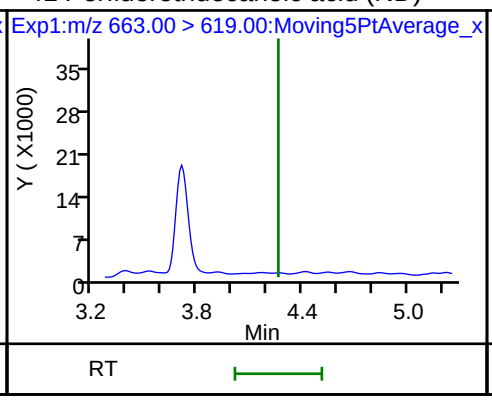
66 11-Chloroeicosafluoro-3-oxaundecan (ND) 36 Perfluorododecanoic acid (ND) 37 Perfluorododecanoic acid (ND)



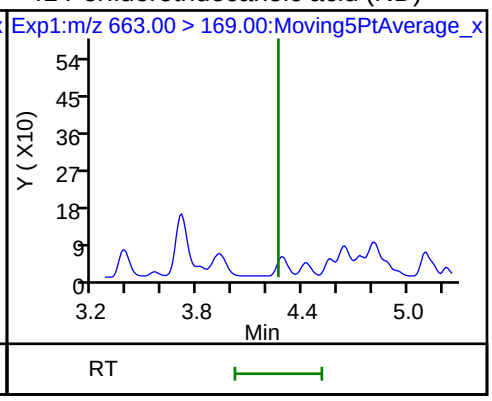
D 36 13C2 PFDoA



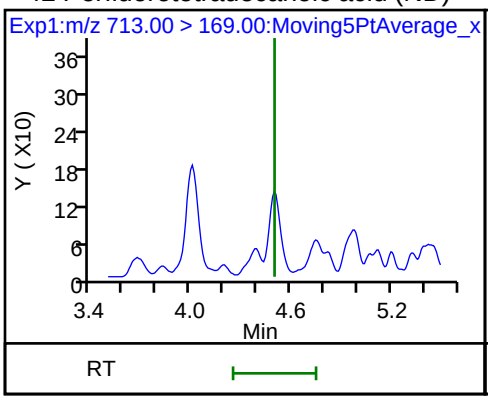
41 Perfluorotridecanoic acid (ND)



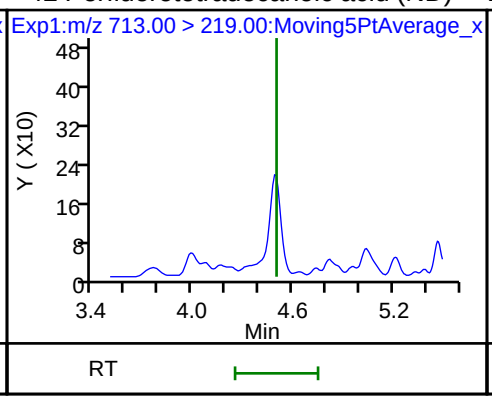
41 Perfluorotridecanoic acid (ND)



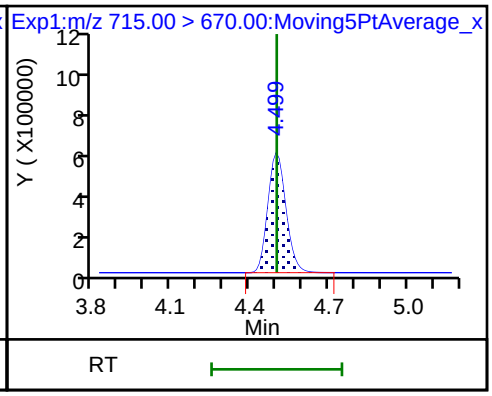
42 Perfluorotetradecanoic acid (ND)



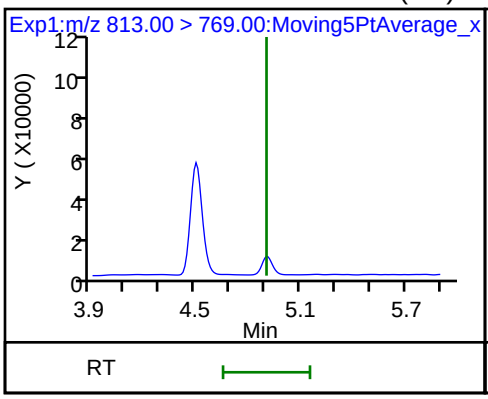
42 Perfluorotetradecanoic acid (ND)



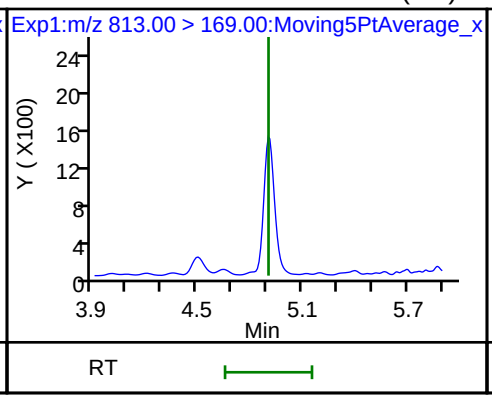
D 43 13C2-PFTeDA



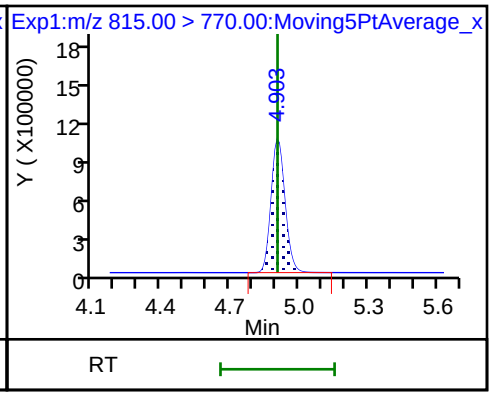
45 Perfluorohexadecanoic acid (ND)



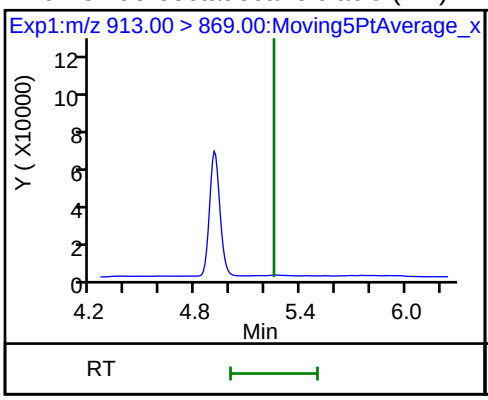
45 Perfluorohexadecanoic acid (ND)



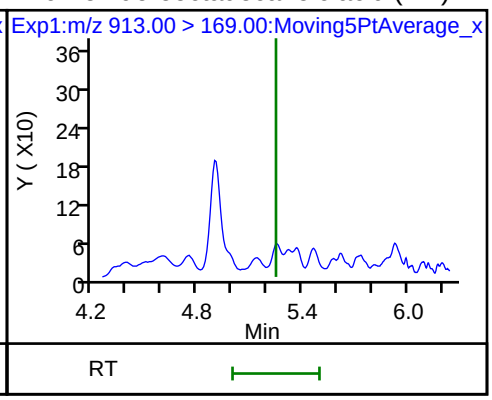
D 44 13C2-PFHxDA



46 Perfluorooctadecanoic acid (ND)



46 Perfluorooctadecanoic acid (ND)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID:
Lab Sample ID: CCB 320-234011/1
Matrix: Solid
Lab File ID: 2018.07.14LLA_004.d
Analysis Method: 537 (modified)
Date Collected:
Extraction Method:
Date Extracted:
Sample wt/vol: 1(mL)
Date Analyzed: 07/14/2018 11:08
Con. Extract Vol.:
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 234011
Units: ng/mL

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	ND		0.050	0.0088
2706-90-3	Perfluoropentanoic acid (PFPeA)	ND		0.050	0.012
307-24-4	Perfluorohexanoic acid (PFHxA)	ND		0.050	0.015
375-85-9	Perfluoroheptanoic acid (PFHpA)	ND		0.050	0.0063
335-67-1	Perfluorooctanoic acid (PFOA)	ND		0.050	0.021
375-95-1	Perfluorononanoic acid (PFNA)	ND		0.050	0.0068
335-76-2	Perfluorodecanoic acid (PFDA)	ND		0.050	0.0078
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		0.050	0.028
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		0.050	0.014
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		0.050	0.033
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		0.050	0.0073
375-73-5	Perfluorobutanesulfonic acid (PFBS)	ND		0.050	0.0050
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.00676	J	0.050	0.0043
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.050	0.0048
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	ND		0.050	0.014
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		0.050	0.0080
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		0.050	0.0088
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.50	0.078
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.50	0.048
27619-97-2	6:2 FTS	ND		0.50	0.050
39108-34-4	8:2 FTS	ND		0.50	0.050

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID:
Lab Sample ID: CCB 320-234011/1
Matrix: Solid
Lab File ID: 2018.07.14LLA_004.d
Analysis Method: 537 (modified)
Date Collected:
Extraction Method:
Date Extracted:
Sample wt/vol: 1(mL)
Date Analyzed: 07/14/2018 11:08
Con. Extract Vol.:
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 234011
Units: ng/mL

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00992	13C4 PFBA	96		25-150
STL01893	13C5 PFPeA	101		25-150
STL00993	13C2 PFHxA	107		25-150
STL01892	13C4-PFHpA	106		25-150
STL00990	13C4 PFOA	102		25-150
STL00995	13C5 PFNA	94		25-150
STL00996	13C2 PFDA	98		25-150
STL00997	13C2 PFUnA	106		25-150
STL00998	13C2 PFDoA	110		25-150
STL02116	13C2-PFTeDA	103		25-150
STL02337	13C3-PFBS	102		25-150
STL00994	18O2 PFHxS	104		25-150
STL00991	13C4 PFOS	98		25-150
STL01056	13C8 FOSA	108		25-150
STL02118	d3-NMeFOSAA	109		25-150
STL02117	d5-NEtFOSAA	120		25-150
STL02279	M2-6:2FTS	92		25-150
STL02280	M2-8:2FTS	84		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61062.b\2018.07.14LLA_004.d
Lims ID: CCB
Client ID:
Sample Type: CCB
Inject. Date: 14-Jul-2018 11:08:59 ALS Bottle#: 20 Worklist Smp#: 1
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCB
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61062.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 16-Jul-2018 14:48:07 Calib Date: 11-Jul-2018 15:38:42
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK023

First Level Reviewer: mongkols Date: 16-Jul-2018 14:48:07

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.431	1.440	-0.009	0.539	4949328	2.41		96.2	33911	
D 3 13C5-PFPeA										
267.90 > 223.00	1.712	1.719	-0.007	0.645	3599263	2.52		101	54110	
D 47 13C3-PFBS										
301.90 > 83.00	1.748	1.755	-0.007	0.659	85008	2.37		102	480	
D 60 M2-4:2FTS										
329.00 > 81.00	1.961	1.959	0.002	0.739	451239	2.34		100	6167	
D 7 13C2 PFHxA										
315.00 > 270.00	1.994	2.002	-0.008	0.752	4136467	2.68		107	80474	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.084	2.093	-0.009	0.786	319520	2.91		116	6248	
D 9 13C4-PFHpA										
367.00 > 322.00	2.308	2.318	-0.010	0.870	3773063	2.65		106	44956	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.321	2.319	0.002	1.000	16265	0.006758			197	
399.00 > 99.00	2.308	2.319	-0.011	0.994	5450		2.98(1.50-4.49)		40.7	
D 11 18O2 PFHxS										
403.00 > 84.00	2.321	2.331	-0.010	0.875	4958578	2.46		104	33094	
D 12 M2-6:2FTS										
429.00 > 81.00	2.628	2.635	-0.007	0.991	665515	2.18		91.9	14193	
D 14 13C4 PFOA										
417.00 > 372.00	2.653	2.659	-0.006	1.000	3700862	2.55		102	48300	
* 62 13C2-PFOA										
415.00 > 370.00	2.653	2.659	-0.006		3793498	2.50			38882	
D 18 13C4 PFOS										
503.00 > 80.00	3.008	3.025	-0.017	1.134	3470977	2.35		98.2	30627	
D 19 13C5 PFNA										
468.00 > 423.00	3.008	3.025	-0.017	1.134	3031784	2.34		93.5	29446	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 21 13C8 FOSA										
506.00 > 78.00	3.367	3.370	-0.003	1.269	5745721	2.70		108	54636	
D 26 M2-8:2FTS										
529.00 > 81.00	3.349	3.370	-0.021	1.262	901722	2.02		84.4	14933	
D 23 13C2 PFDA										
515.00 > 470.00	3.367	3.379	-0.012	1.269	2798007	2.46		98.3	30368	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.516	3.528	-0.012	1.326	1273530	2.73		109	31236	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.684	3.697	-0.013	1.389	1431509	2.99		120	3339	
D 30 13C2 PFUnA										
565.00 > 520.00	3.684	3.708	-0.024	1.389	2512395	2.64		106	52690	
D 36 13C2 PFDoA										
615.00 > 570.00	3.974	3.999	-0.025	1.498	2714746	2.75		110	24292	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.467	4.501	-0.034	1.684	2632444	2.57		103	17222	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.868	4.905	-0.037	1.835	4351895	2.67		107	14022	

Reagents:

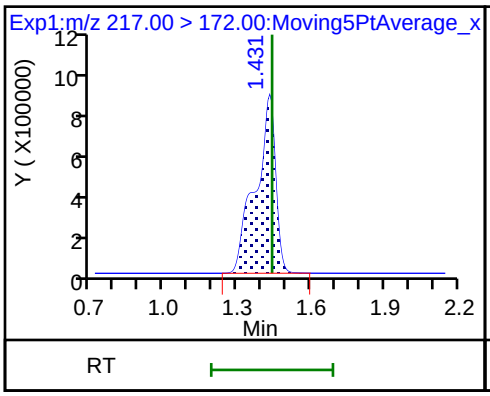
LCPFC_LL0_00007 Amount Added: 1.00 Units: mL

Report Date: 16-Jul-2018 14:48:08 Chrom Revision: 2.2 07-Jun-2018 07:41:54

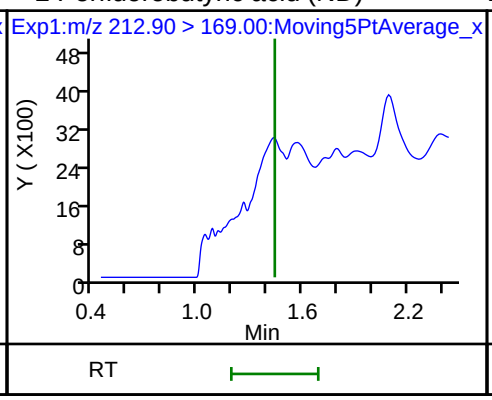
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61062.b\2018.07.14LLA_004.d
Injection Date: 14-Jul-2018 11:08:59 Instrument ID: A8_N
Lims ID: CCB
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 20 Worklist Smp#: 1
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC ICAL

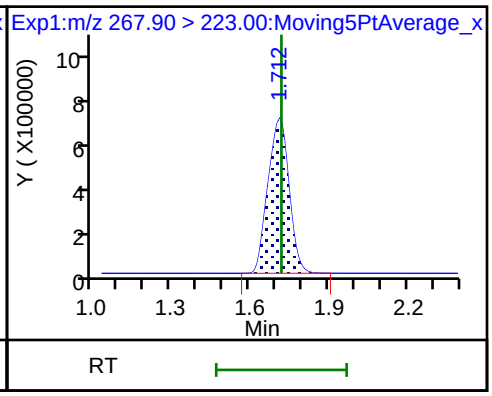
D 1 13C4 PFBA



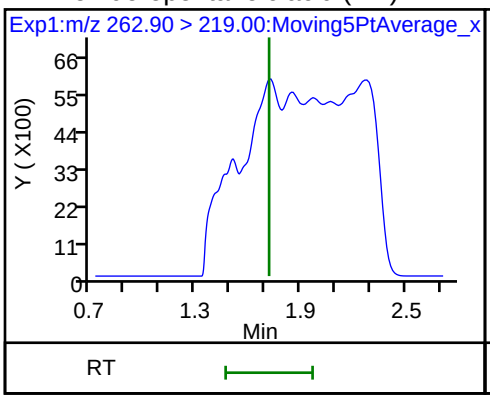
2 Perfluorobutyric acid (ND)



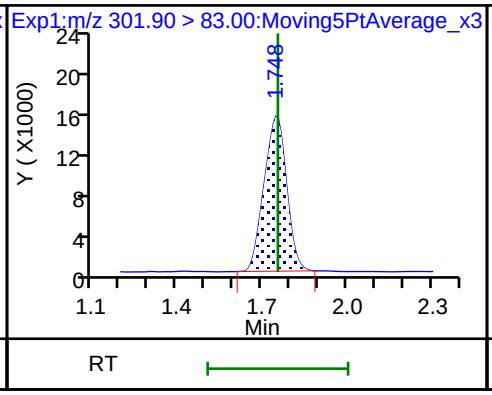
D 3 13C5-PFPeA



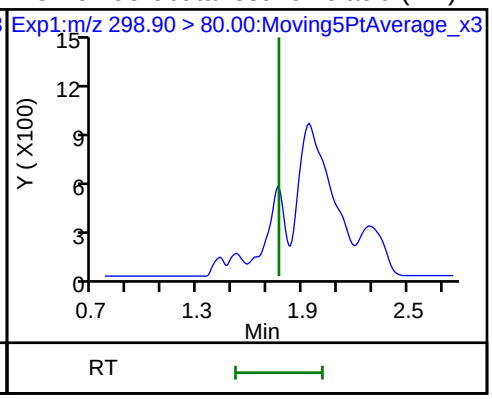
4 Perfluoropentanoic acid (ND)



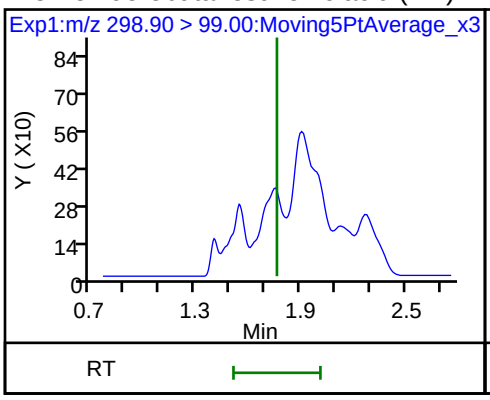
D 47 13C3-PFBS



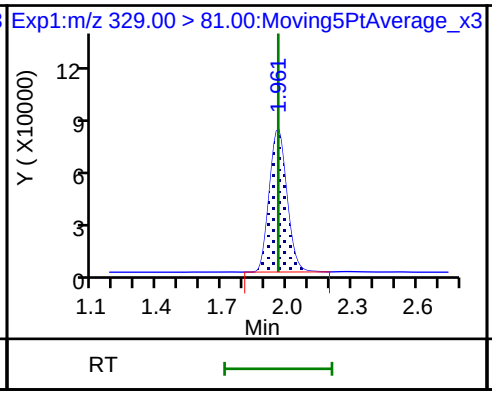
5 Perfluorobutanesulfonic acid (ND)



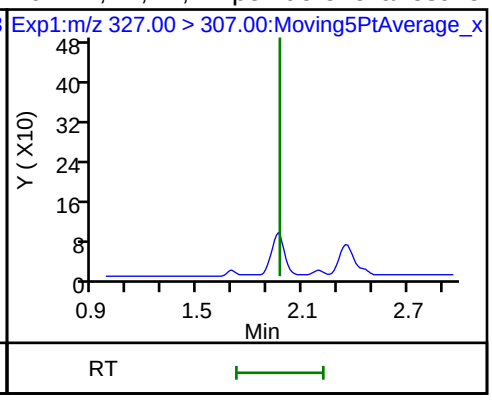
5 Perfluorobutanesulfonic acid (ND)



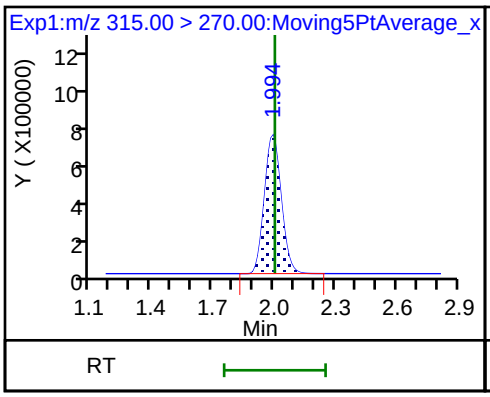
D 60 M2-4:2FTS



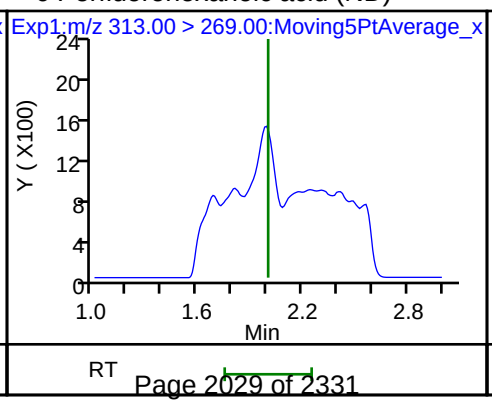
61 1H,1H,2H,2H-perfluorohexanesulfoni (ND)



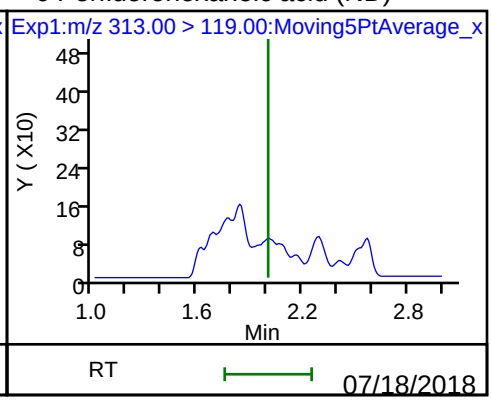
D 7 13C2 PFHxA



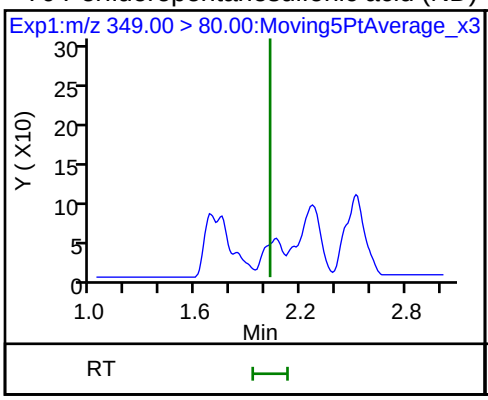
6 Perfluorohexanoic acid (ND)



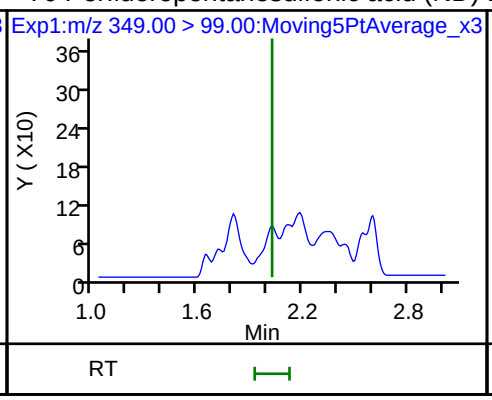
6 Perfluorohexanoic acid (ND)



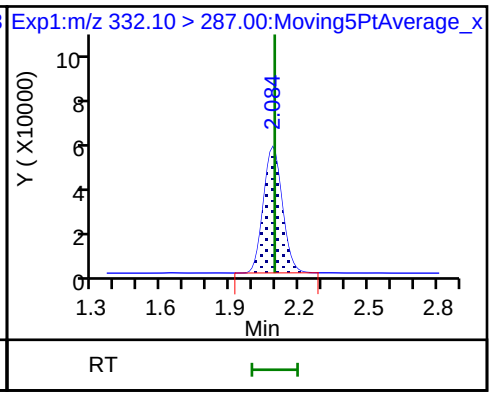
70 Perfluoropentanesulfonic acid (ND)



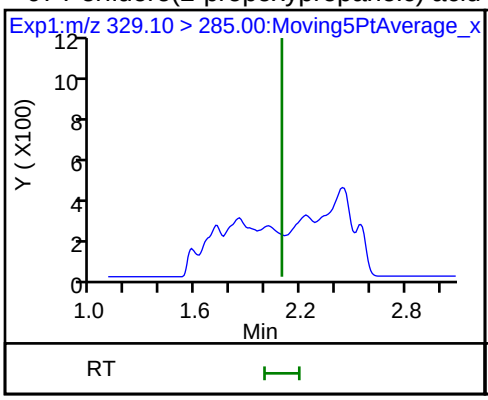
70 Perfluoropentanesulfonic acid (ND)



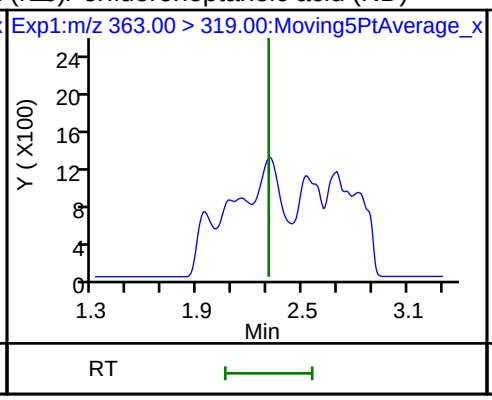
D 64 13C3 HFPO-DA



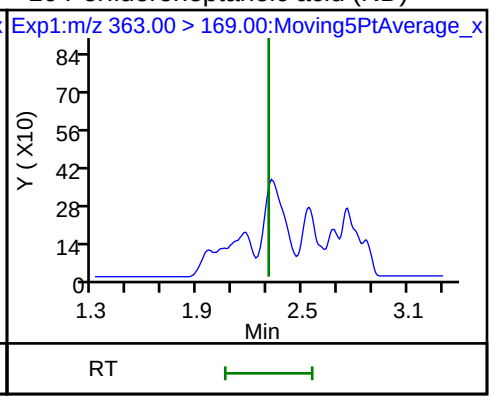
67 Perfluoro(2-propoxypropanoic) acid (ND)



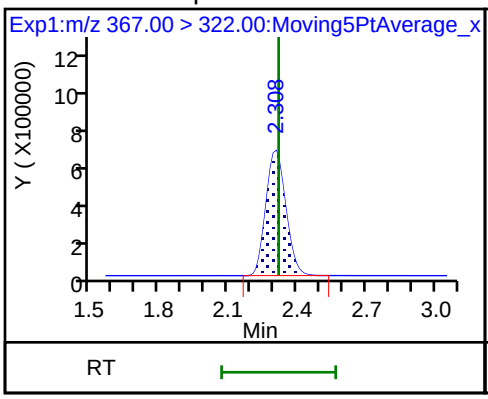
10 Perfluoroheptanoic acid (ND)



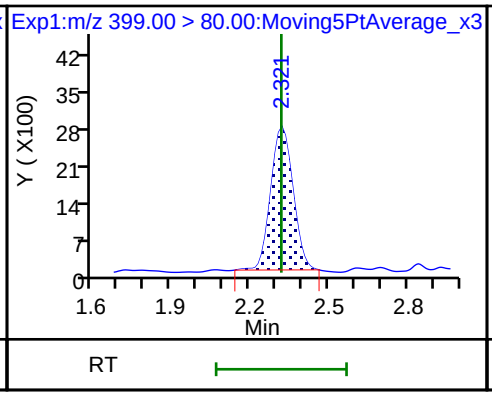
10 Perfluoroheptanoic acid (ND)



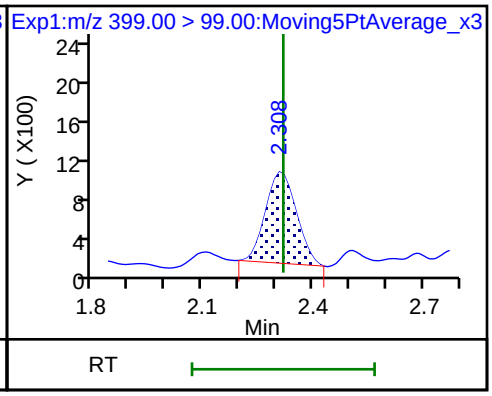
D 9 13C4-PFHpA



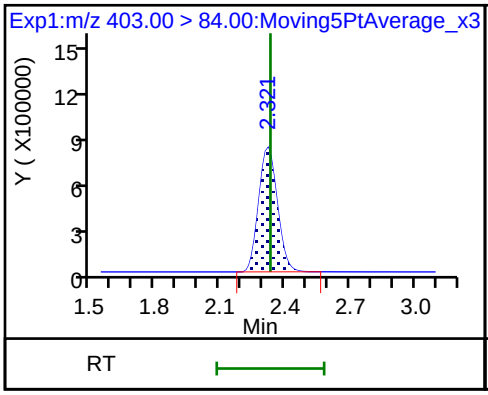
8 Perfluorohexanesulfonic acid



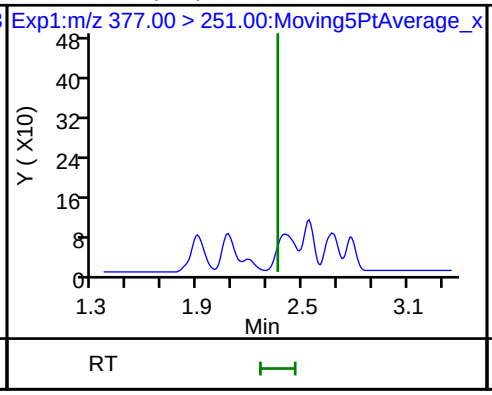
8 Perfluorohexanesulfonic acid



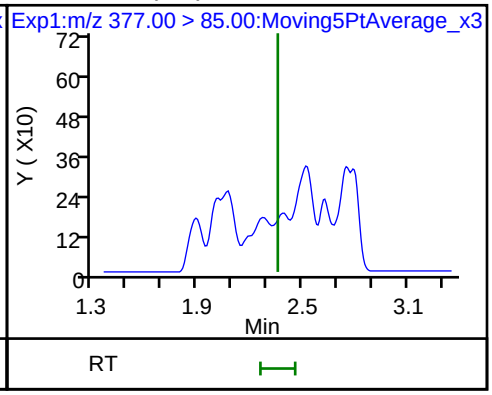
D 11 18O2 PFHxS



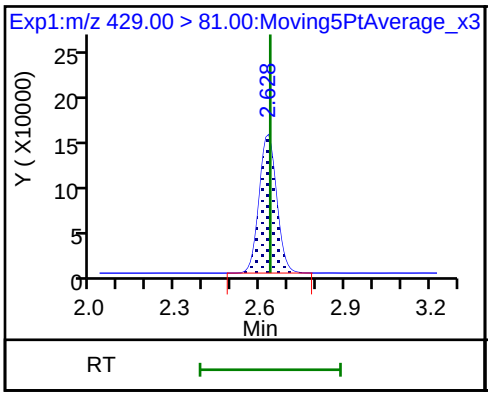
65 Adona (ND)



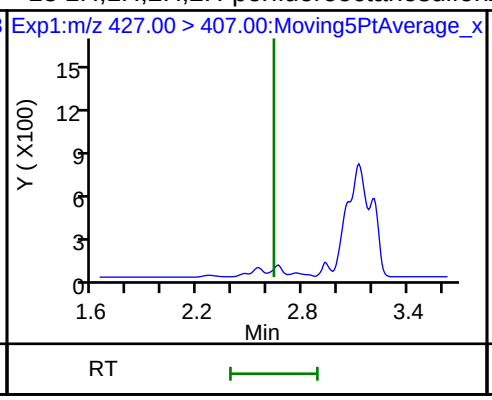
65 Adona (ND)



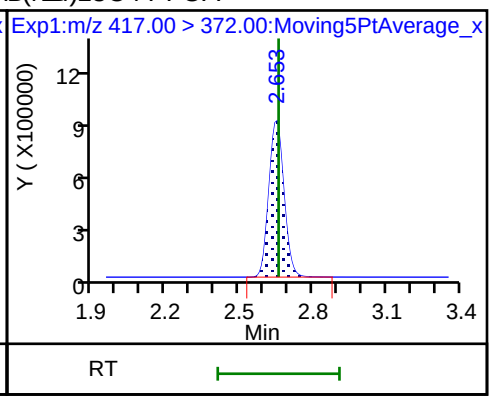
D 12 M2-6:2FTS



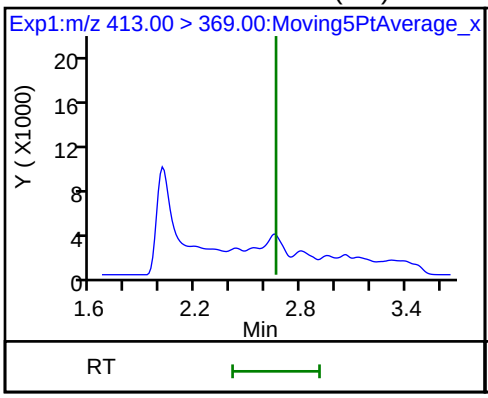
13 1H,1H,2H,2H-perfluorooctanesulfonic (ND)



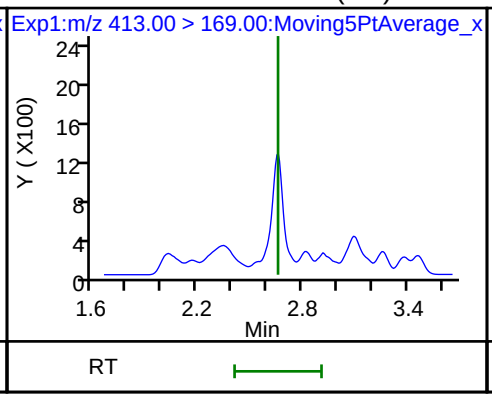
D 14 13C4 PFOA



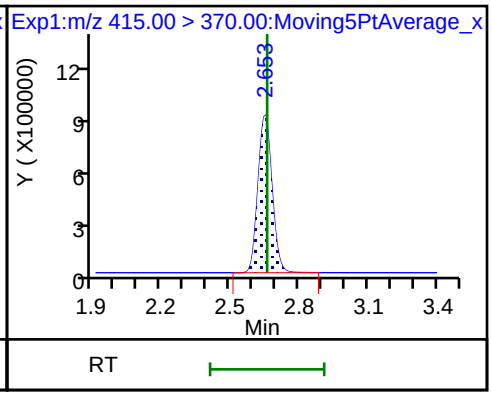
15 Perfluorooctanoic acid (ND)



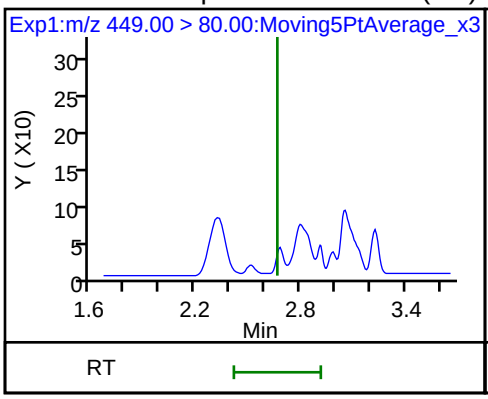
15 Perfluorooctanoic acid (ND)



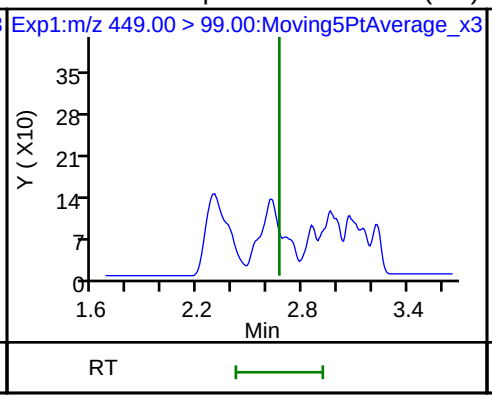
* 62 13C2-PFOA



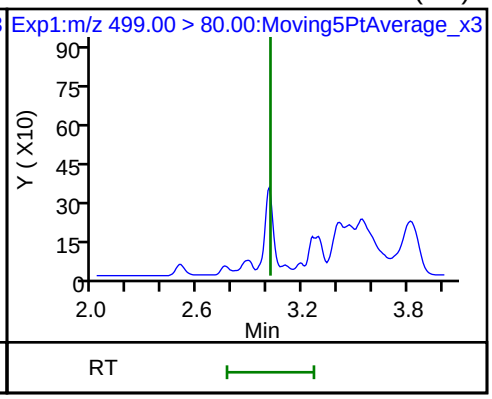
16 Perfluoroheptanesulfonic acid (ND)



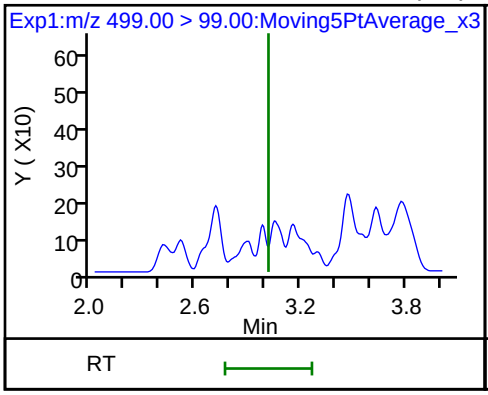
16 Perfluoroheptanesulfonic acid (ND)



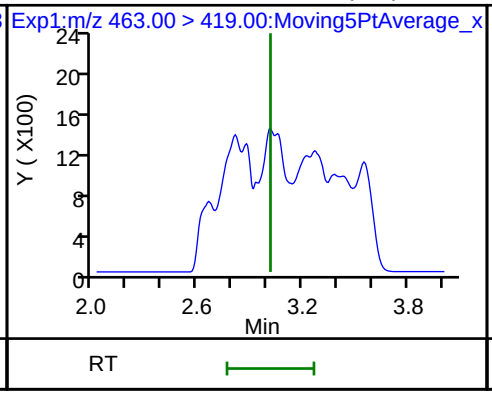
17 Perfluorooctane sulfonic acid (ND)



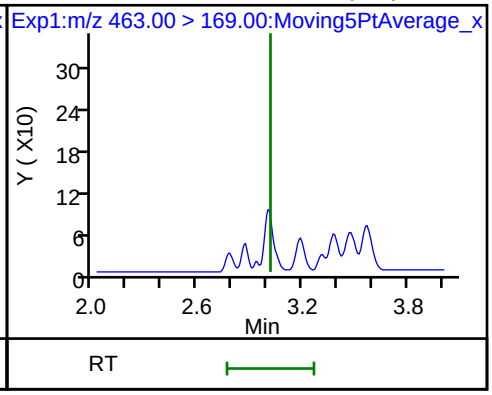
17 Perfluorooctane sulfonic acid (ND)



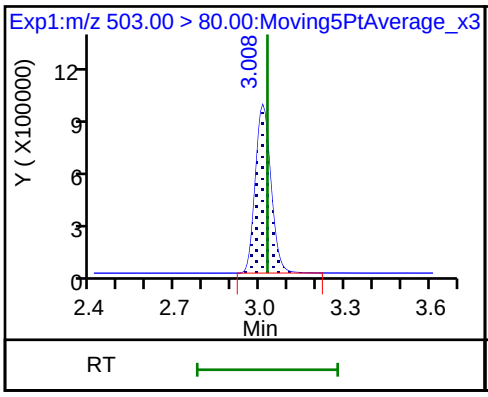
20 Perfluorononanoic acid (ND)



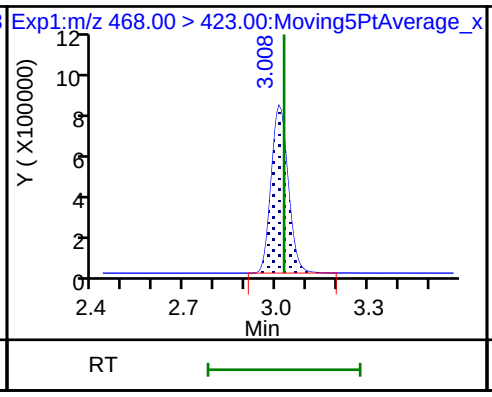
20 Perfluorononanoic acid (ND)



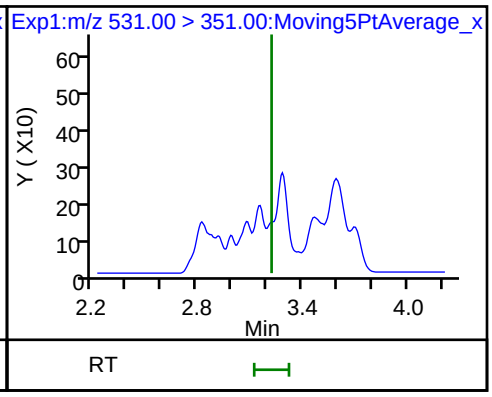
D 18 13C4 PFOS



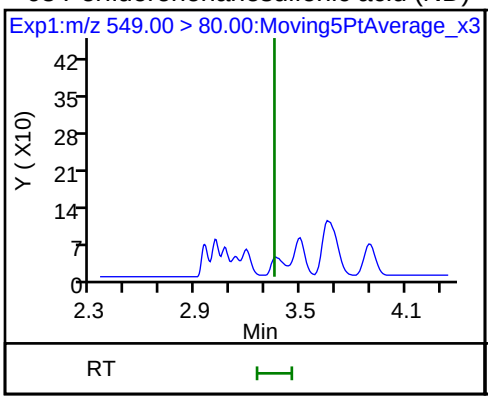
D 19 13C5 PFNA



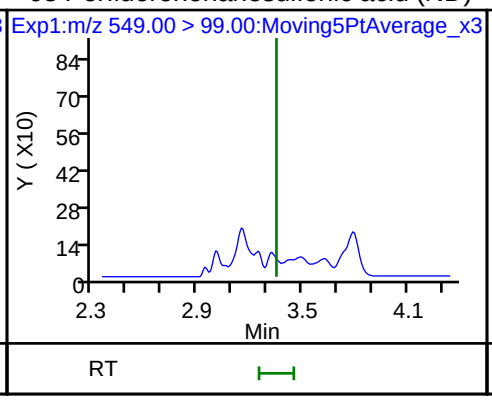
69 9-Chlorohexadecafluoro-3-oxanonane (ND)



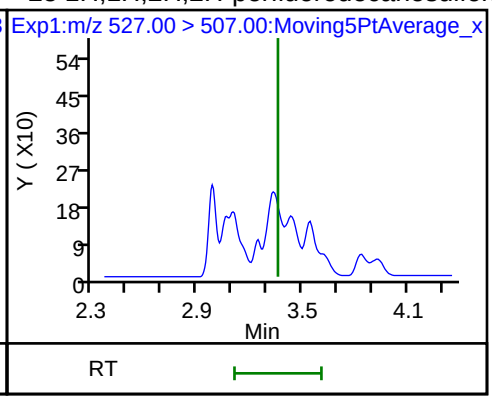
68 Perfluorononanesulfonic acid (ND)



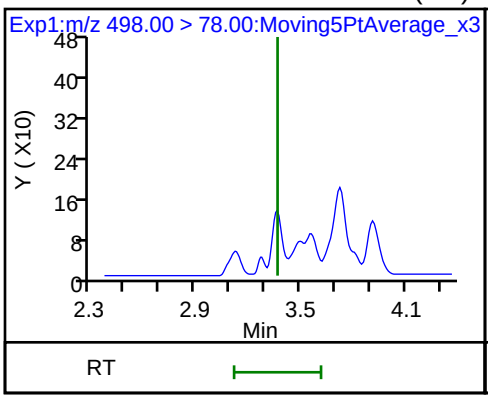
68 Perfluorononanesulfonic acid (ND)



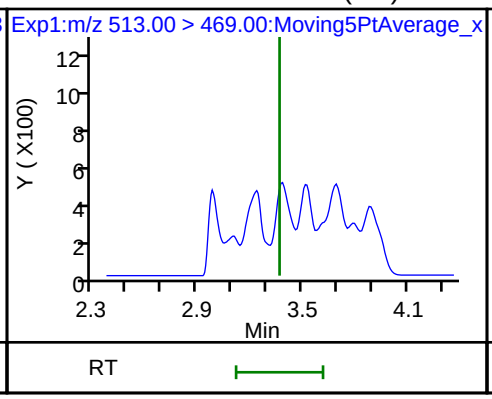
25 1H,1H,2H,2H-perfluorodecanesulfoni (ND)



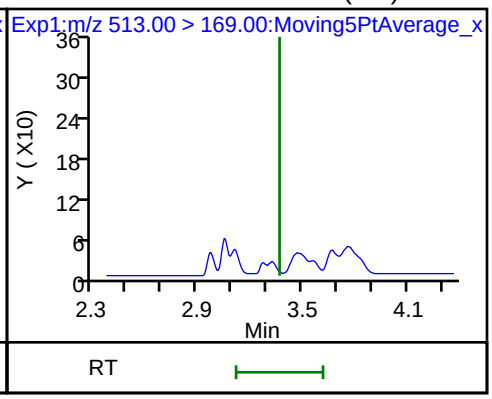
22 Perfluorooctane Sulfonamide (ND)



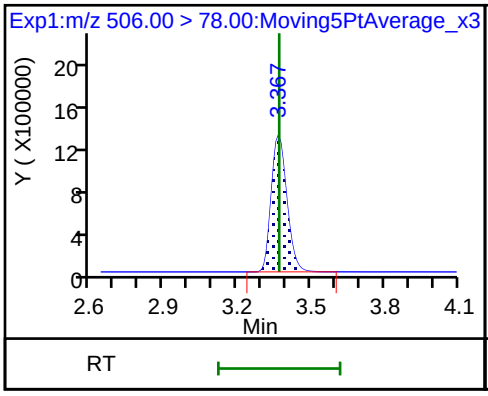
24 Perfluorodecanoic acid (ND)



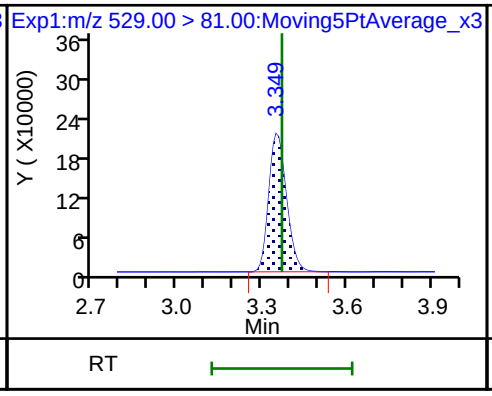
24 Perfluorodecanoic acid (ND)



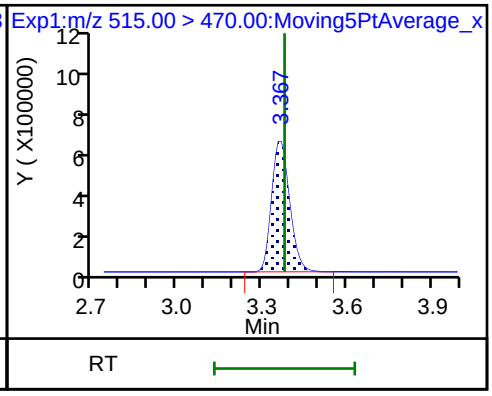
D 21 13C8 FOSA



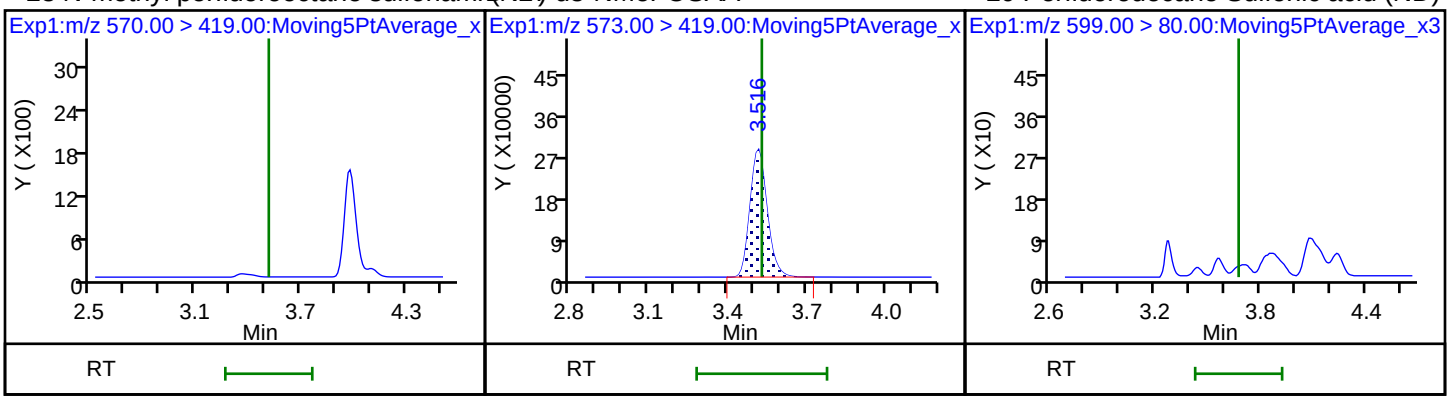
D 26 M2-8:2FTS



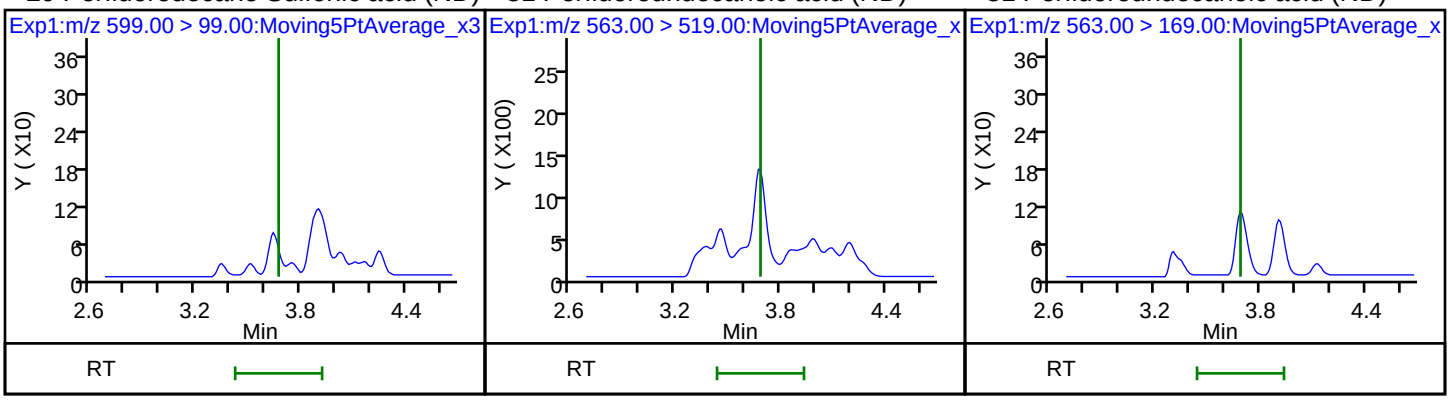
D 23 13C2 PFDA



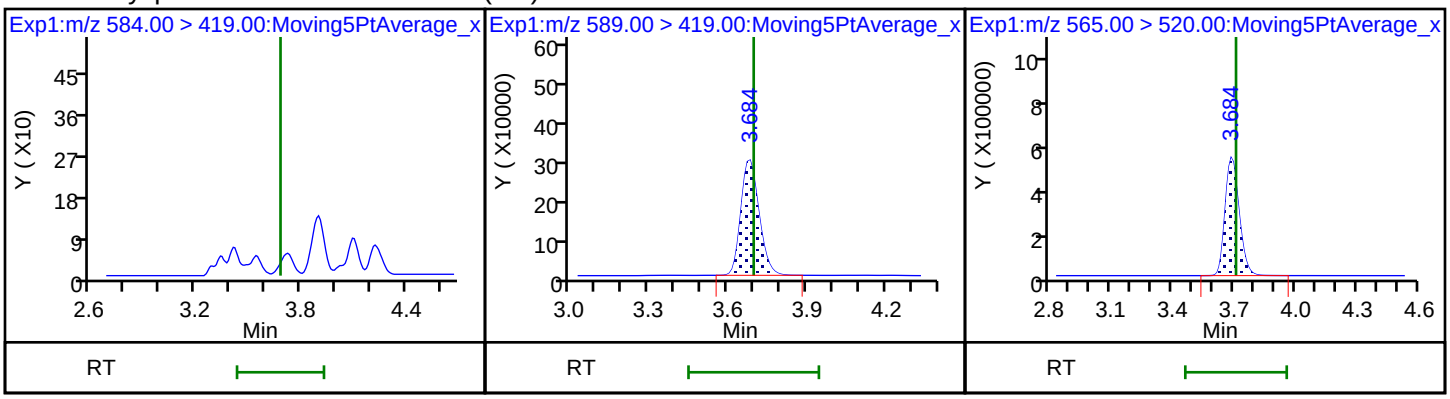
28 N-methyl perfluorooctane sulfonamid (ND) | D 27 d3-NMeFOSAA | 29 Perfluorodecane Sulfonic acid (ND)



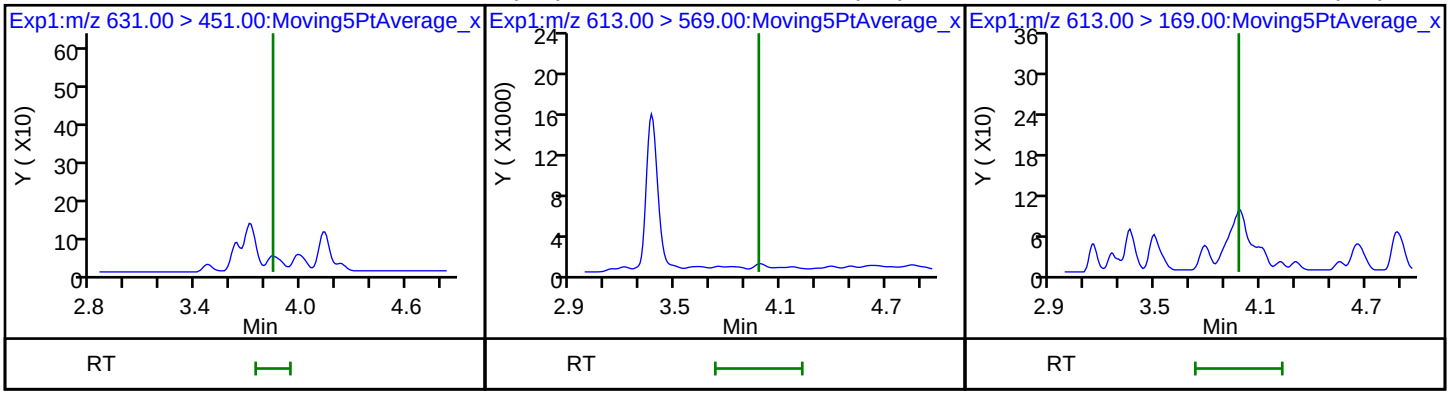
29 Perfluorodecane Sulfonic acid (ND) | 31 Perfluoroundecanoic acid (ND) | 31 Perfluoroundecanoic acid (ND)



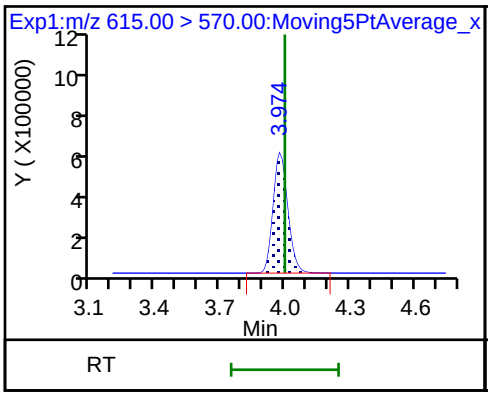
33 N-ethyl perfluorooctane sulfonamid (ND) | D 32 d5-NEtFOSAA | D 30 13C2 PFUnA



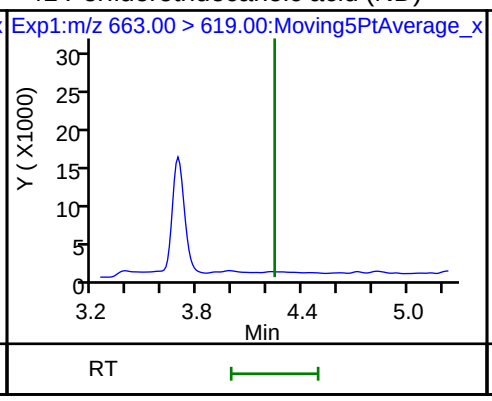
66 11-Chloroeicosafluoro-3-oxaundecan (ND) | 37 Perfluorododecanoic acid (ND) | 37 Perfluorododecanoic acid (ND)



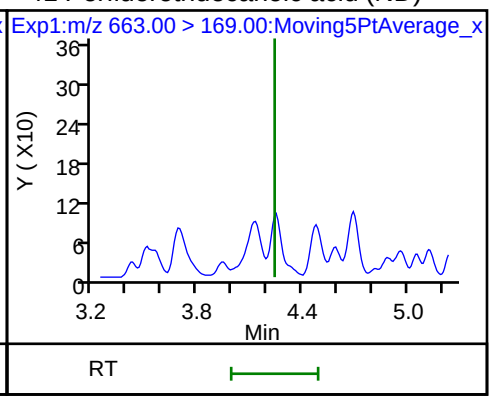
D 36 13C2 PFDoA



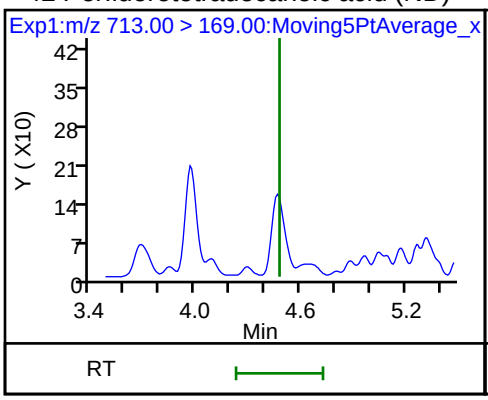
41 Perfluorotridecanoic acid (ND)



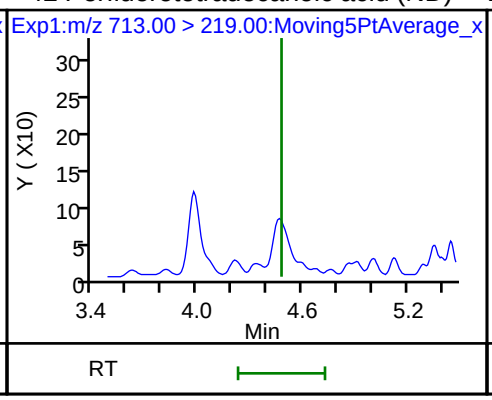
41 Perfluorotridecanoic acid (ND)



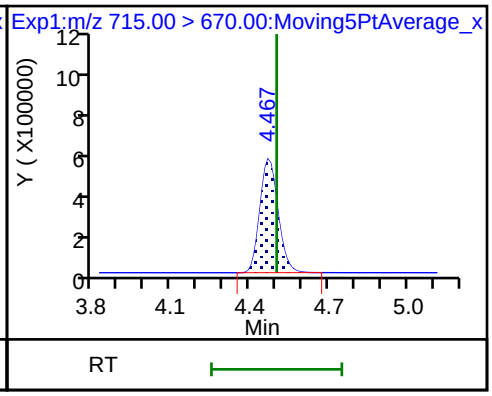
42 Perfluorotetradecanoic acid (ND)



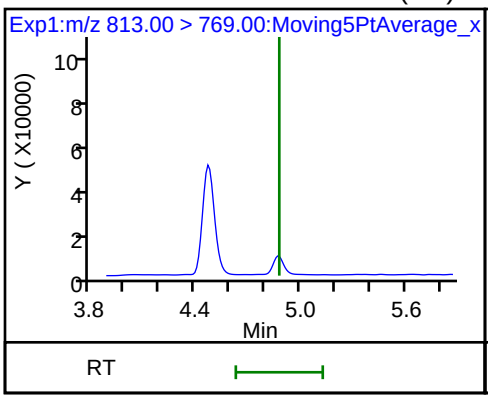
42 Perfluorotetradecanoic acid (ND)



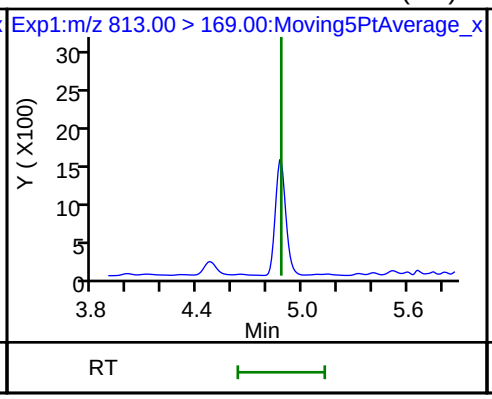
D 43 13C2-PFTeDA



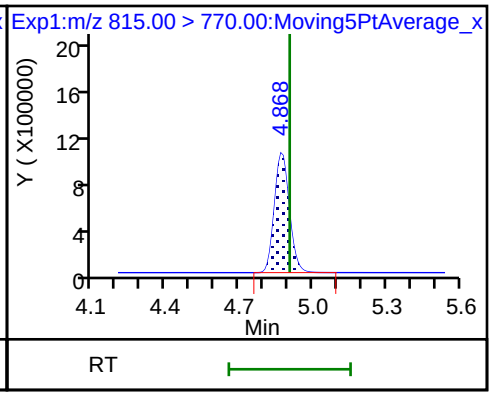
45 Perfluorohexadecanoic acid (ND)



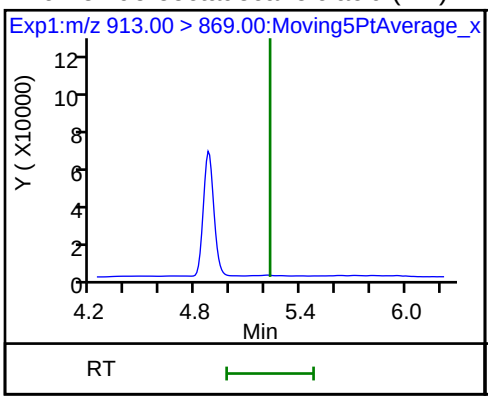
45 Perfluorohexadecanoic acid (ND)



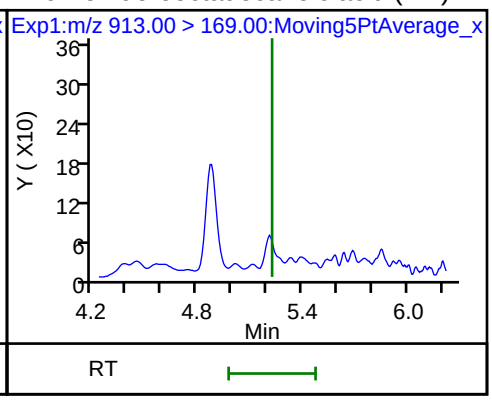
D 44 13C2-PFHxDA



46 Perfluorooctadecanoic acid (ND)



46 Perfluorooctadecanoic acid (ND)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID:
Lab Sample ID: CCB 320-234295/1
Matrix: Water
Lab File ID: 2018.07.16LLA_003.d
Analysis Method: 537 (modified)
Date Collected:
Extraction Method:
Date Extracted:
Sample wt/vol: 1(mL)
Date Analyzed: 07/16/2018 12:46
Con. Extract Vol.:
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 234295
Units: ng/mL

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	ND		0.050	0.0088
2706-90-3	Perfluoropentanoic acid (PFPeA)	ND		0.050	0.012
307-24-4	Perfluorohexanoic acid (PFHxA)	ND		0.050	0.015
375-85-9	Perfluoroheptanoic acid (PFHpA)	ND		0.050	0.0063
335-67-1	Perfluorooctanoic acid (PFOA)	ND		0.050	0.021
375-95-1	Perfluorononanoic acid (PFNA)	ND		0.050	0.0068
335-76-2	Perfluorodecanoic acid (PFDA)	ND		0.050	0.0078
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		0.050	0.028
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		0.050	0.014
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		0.050	0.033
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		0.050	0.0073
375-73-5	Perfluorobutanesulfonic acid (PFBS)	ND		0.050	0.0050
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	ND		0.050	0.030
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.00665	J	0.050	0.0043
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.050	0.0048
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	ND		0.050	0.014
8789-57-2	Perfluorononanesulfonic acid (PFNS)	ND		0.050	0.016
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		0.050	0.0080
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		0.050	0.0088
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.50	0.078
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.50	0.048
757124-72-4	4:2 FTS	ND		0.50	0.052
27619-97-2	6:2 FTS	ND		0.50	0.050
39108-34-4	8:2 FTS	ND		0.50	0.050

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID:
Lab Sample ID: CCB 320-234295/1
Matrix: Water
Lab File ID: 2018.07.16LLA_003.d
Analysis Method: 537 (modified)
Date Collected:
Extraction Method:
Date Extracted:
Sample wt/vol: 1(mL)
Date Analyzed: 07/16/2018 12:46
Con. Extract Vol.:
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 234295
Units: ng/mL

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00992	13C4 PFBA	94		25-150
STL01893	13C5 PFPeA	98		25-150
STL00993	13C2 PFHxA	104		25-150
STL01892	13C4-PFHpA	107		25-150
STL00990	13C4 PFOA	99		25-150
STL00995	13C5 PFNA	95		25-150
STL00996	13C2 PFDA	97		25-150
STL00997	13C2 PFUnA	100		25-150
STL00998	13C2 PFDoA	99		25-150
STL02116	13C2-PFTeDA	102		25-150
STL02337	13C3-PFBS	97		25-150
STL00994	18O2 PFHxS	104		25-150
STL00991	13C4 PFOS	100		25-150
STL01056	13C8 FOSA	103		25-150
STL02118	d3-NMeFOSAA	108		25-150
STL02117	d5-NEtFOSAA	123		25-150
STL02279	M2-6:2FTS	107		25-150
STL02280	M2-8:2FTS	90		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180716-61126.b\2018.07.16LLA_003.d
Lims ID: CCB
Client ID:
Sample Type: CCB
Inject. Date: 16-Jul-2018 12:46:43 ALS Bottle#: 20 Worklist Smp#: 1
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCB
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180716-61126.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 16-Jul-2018 16:17:24 Calib Date: 11-Jul-2018 15:38:42
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK023

First Level Reviewer: westendorfc Date: 16-Jul-2018 16:14:38

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										M
217.00 > 172.00	1.441	1.442	-0.001	0.536	5425094	2.36		94.2	61826	M
D 3 13C5-PFPeA										
267.90 > 223.00	1.739	1.721	0.018	0.646	3914243	2.45		97.8	55403	
D 47 13C3-PFBS										
301.90 > 83.00	1.775	1.757	0.018	0.660	91026	2.26		97.3	530	
D 60 M2-4:2FTS										
329.00 > 81.00	1.993	1.971	0.022	0.741	480685	2.22		95.3	6042	
D 7 13C2 PFHxA										
315.00 > 270.00	2.027	2.005	0.022	0.753	4472278	2.59		104	72197	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.118	2.095	0.023	0.787	255921	2.08		83.3	5053	
D 9 13C4-PFHpA										
367.00 > 322.00	2.347	2.321	0.026	0.872	4273445	2.69		107	55908	
D 11 18O2 PFHxS										
403.00 > 84.00	2.360	2.334	0.026	0.877	5554938	2.46		104	45568	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.360	2.355	0.005	1.000	17925	0.006648			220	
399.00 > 99.00	2.360	2.355	0.005	1.000	6700		2.68(1.50-4.49)		43.4	
D 12 M2-6:2FTS										
429.00 > 81.00	2.669	2.644	0.025	0.992	868544	2.55		107	16308	
D 14 13C4 PFOA										
417.00 > 372.00	2.691	2.668	0.023	1.000	4017410	2.47		99.0	39073	
* 62 13C2-PFOA										
415.00 > 370.00	2.691	2.696	-0.005		4245827	2.50			57856	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.691	2.696	-0.005	1.000	11370	0.005745			4.2	
413.00 > 169.00	2.668	2.696	-0.028	0.991	0		0.00(0.84-2.52)			

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 18 13C4 PFOS										
503.00 > 80.00	3.044	3.031	0.013	1.131	3968146	2.40		100	47077	
D 19 13C5 PFNA										
468.00 > 423.00	3.051	3.031	0.020	1.134	3452385	2.38		95.1	40896	
D 21 13C8 FOSA										
506.00 > 78.00	3.387	3.379	0.008	1.259	6123531	2.57		103	81678	
D 26 M2-8:2FTS										
529.00 > 81.00	3.387	3.379	0.008	1.259	1075502	2.15		90.0	15166	
D 23 13C2 PFDA										
515.00 > 470.00	3.396	3.388	0.008	1.262	3076088	2.41		96.6	38392	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.554	3.538	0.016	1.321	1412860	2.71		108	38278	
D 30 13C2 PFUnA										
565.00 > 520.00	3.728	3.708	0.020	1.385	2664464	2.50		100	42188	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.717	3.708	0.009	1.381	1646823	3.08		123	4120	
D 36 13C2 PFDoA										
615.00 > 570.00	4.017	4.008	0.009	1.493	2724971	2.47		98.8	24080	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.510	4.501	0.009	1.676	2909171	2.54		102	16260	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.922	4.905	0.017	1.829	4597498	2.52		101	13999	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.922	4.931	-0.009	1.000	38607	0.000529			8.5	
813.00 > 169.00	4.922	4.931	-0.009	1.000	6938		5.56(2.86-8.58)		98.9	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

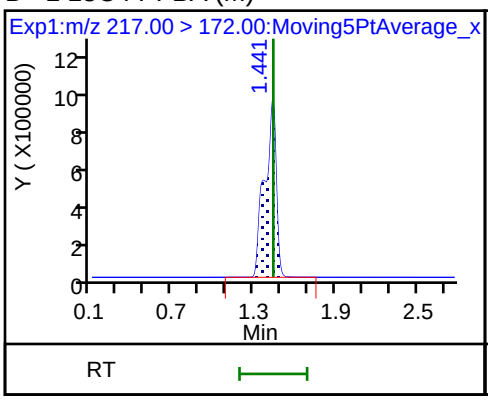
LCPFC_LL0_00007 Amount Added: 1.00 Units: mL

Report Date: 16-Jul-2018 16:17:36 Chrom Revision: 2.2 07-Jun-2018 07:41:54

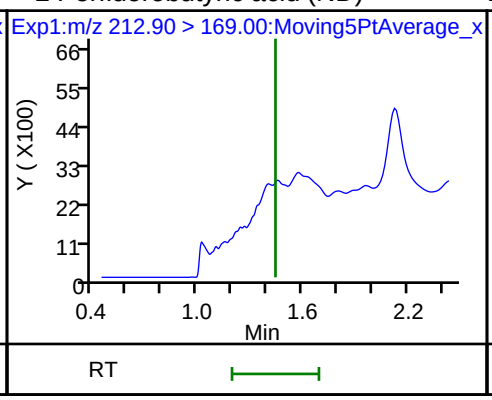
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180716-61126.b\2018.07.16LLA_003.d
Injection Date: 16-Jul-2018 12:46:43 Instrument ID: A8_N
Lims ID: CCB
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 20 Worklist Smp#: 1
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC ICAL

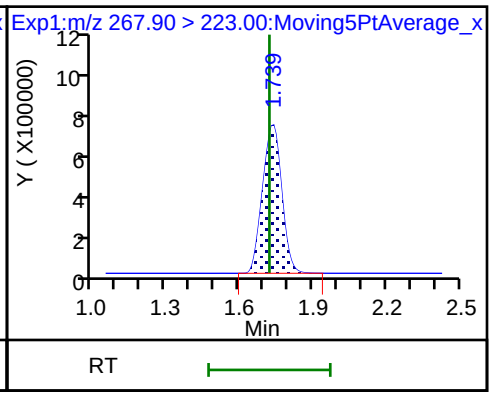
D 1 13C4 PFBA (M)



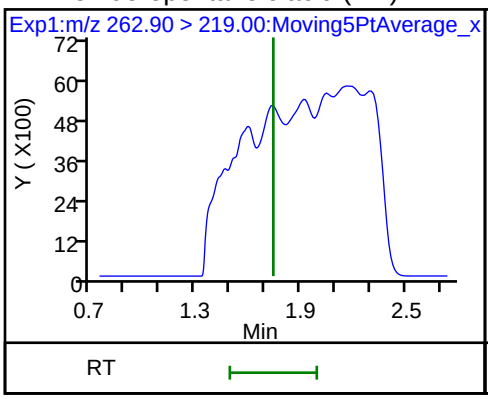
2 Perfluorobutyric acid (ND)



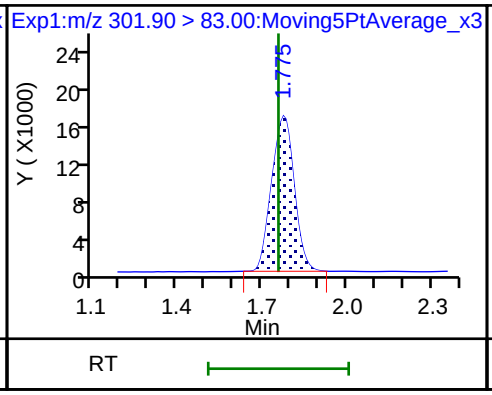
D 3 13C5-PFPeA



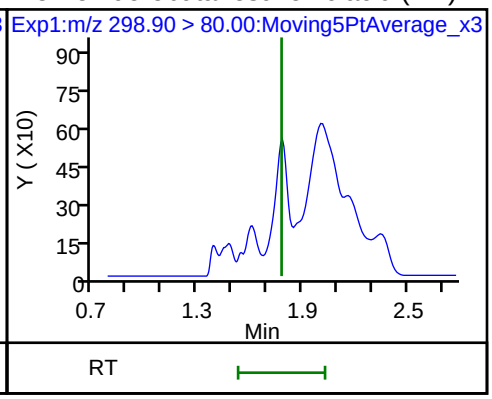
4 Perfluoropentanoic acid (ND)



D 47 13C3-PFBS



5 Perfluorobutanesulfonic acid (ND)



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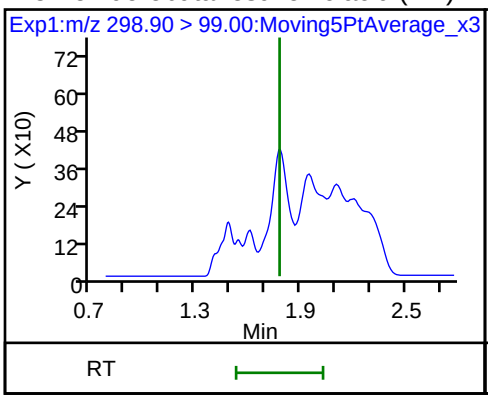
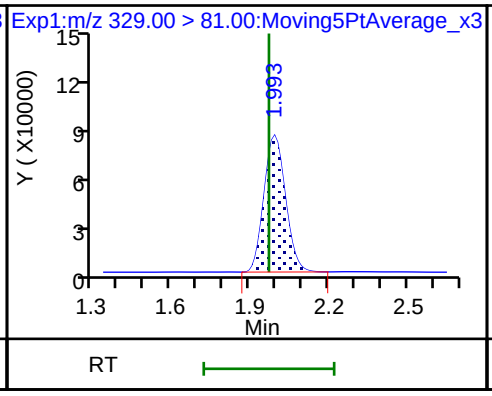
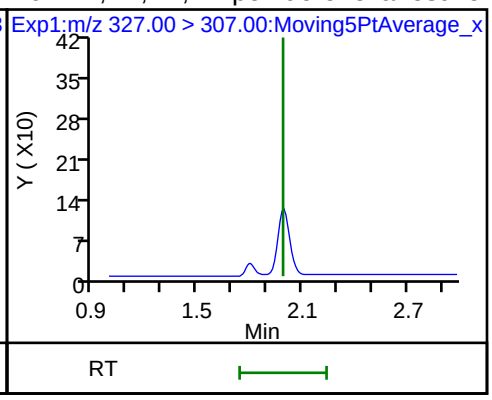


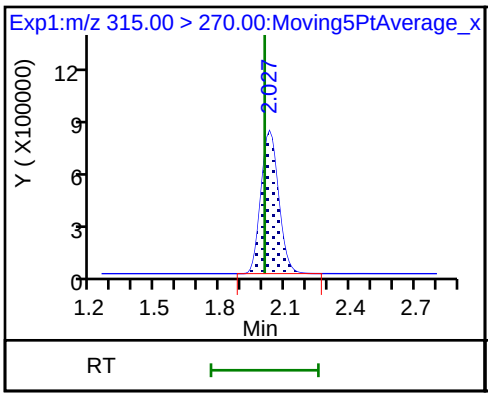
D 60 M2-4:2FTS



61 1H,1H,2H,2H-perfluorohexanesulfoni (ND)



D 7 13C2 PFHxA



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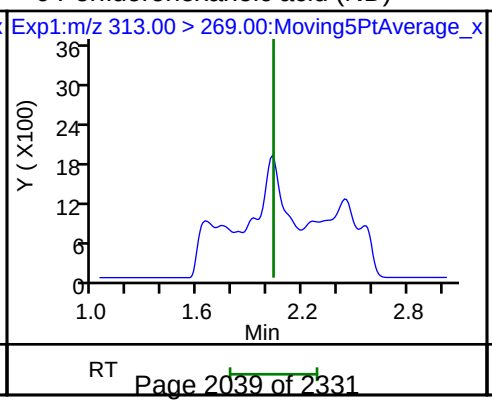
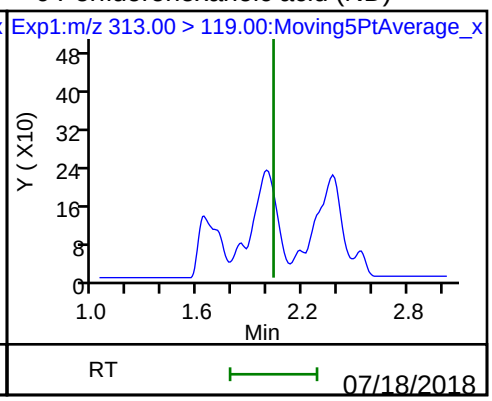
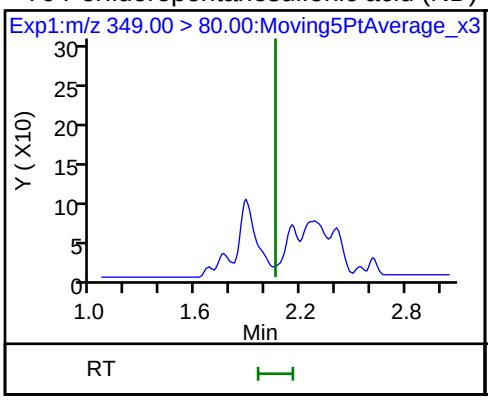


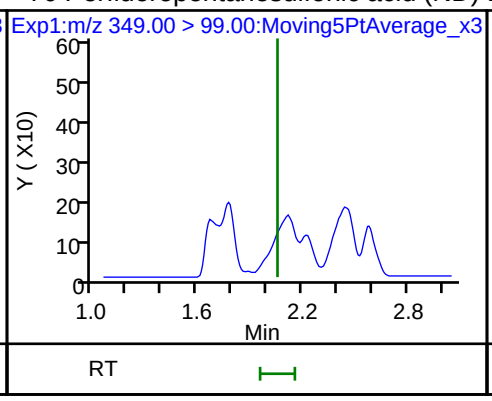
6 Perfluorohexanoic acid (ND)



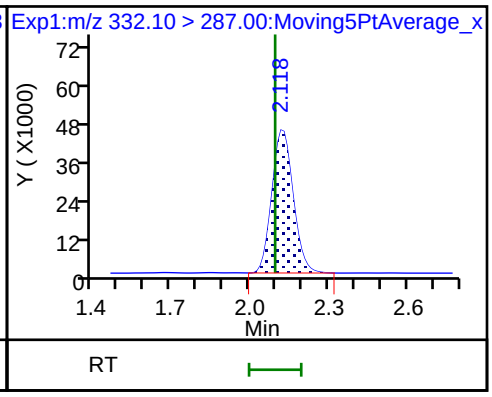
70 Perfluoropentanesulfonic acid (ND)



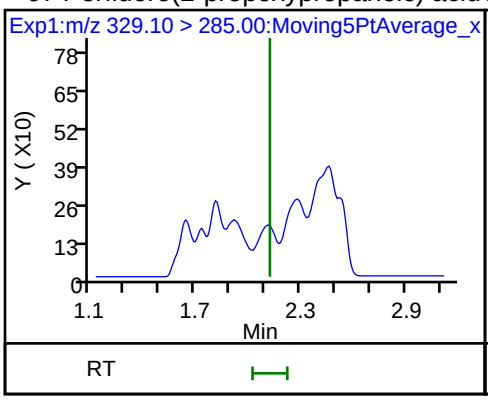
70 Perfluoropentanesulfonic acid (ND)



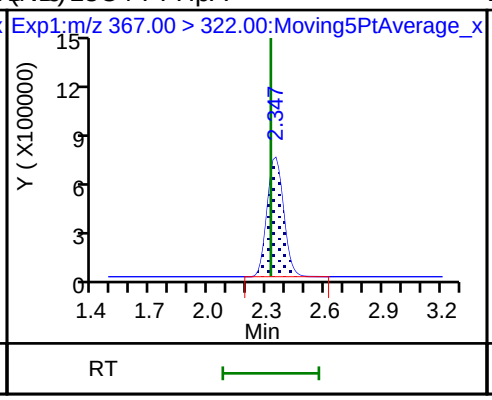
D 64 13C3 HFPO-DA



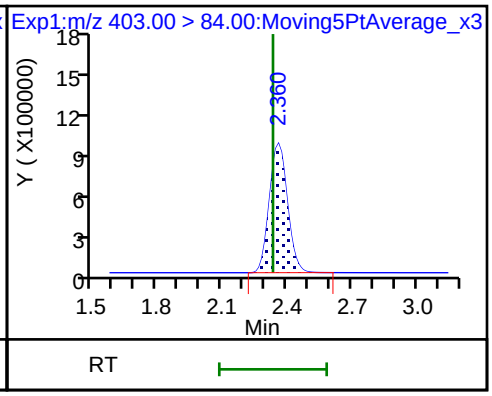
67 Perfluoro(2-propoxypropanoic) acid (ND)



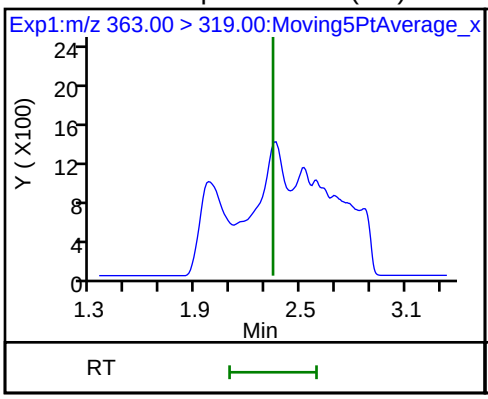
D 9 13C4-PFHpA



D 11 18O2 PFHxS



10 Perfluoroheptanoic acid (ND)



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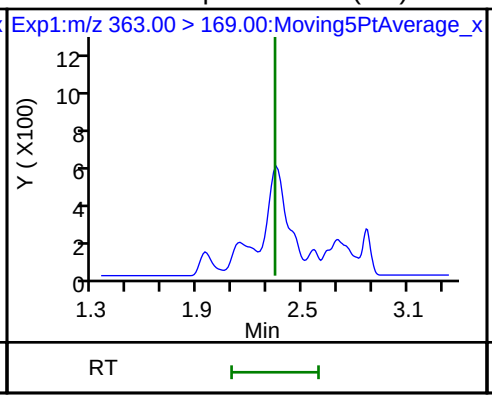
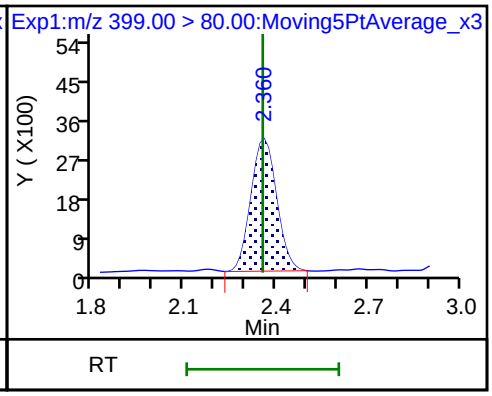
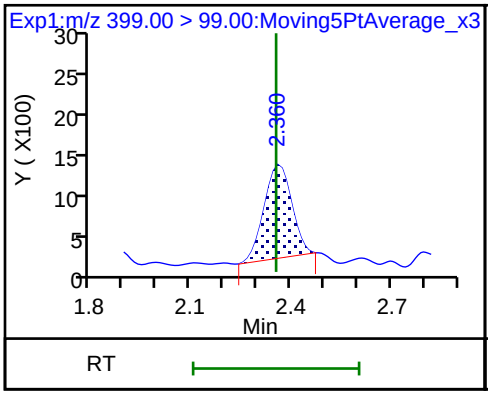


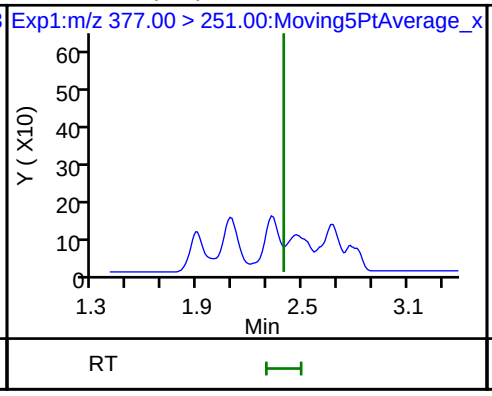
8 Perfluorohexanesulfonic acid



8 Perfluorohexanesulfonic acid



65 Adona (ND)



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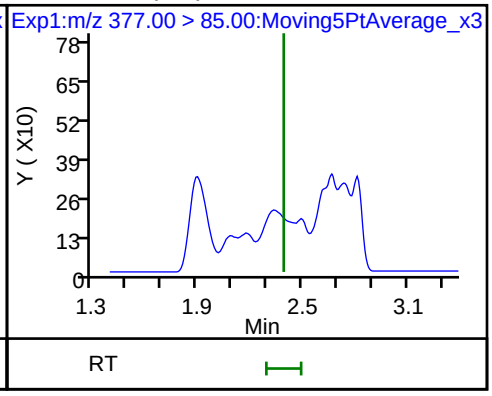
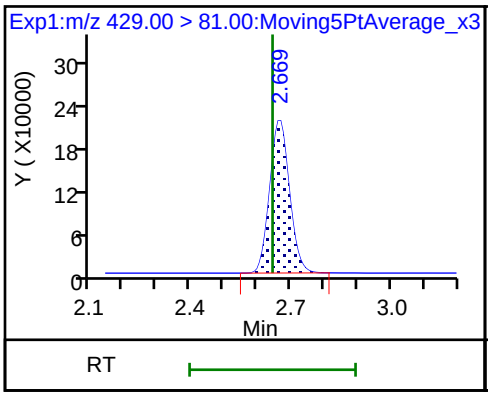
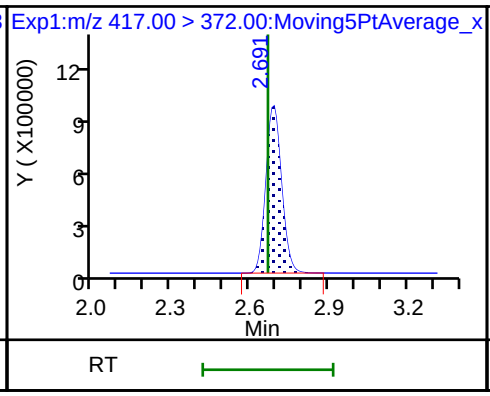


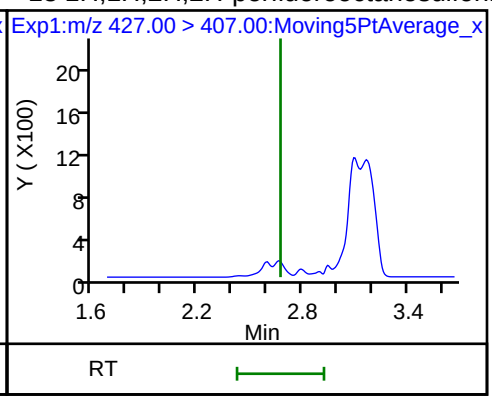
D 12 M2-6:2FTS



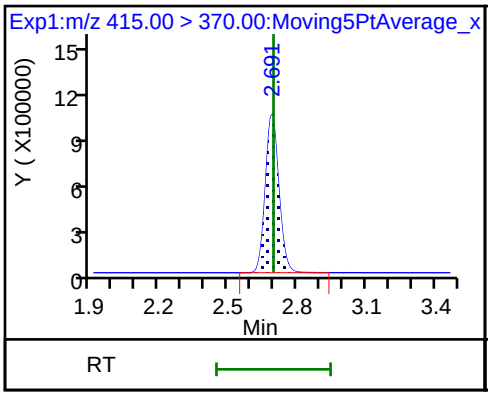
D 14 13C4 PFOA



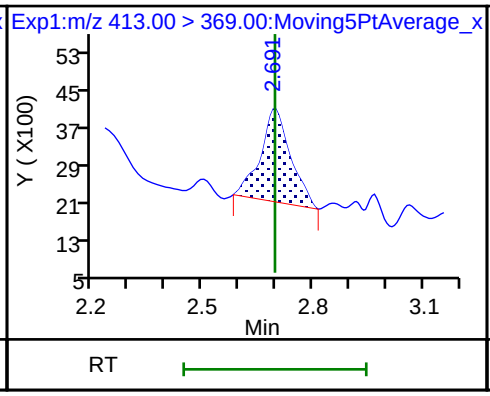
13 1H,1H,2H,2H-perfluorooctanesulfoni (ND)



* 62 13C2-PFOA



15 Perfluorooctanoic acid



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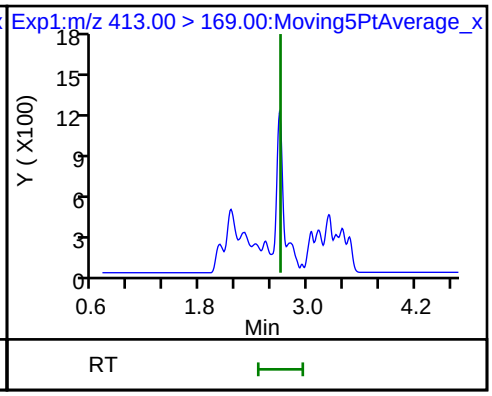
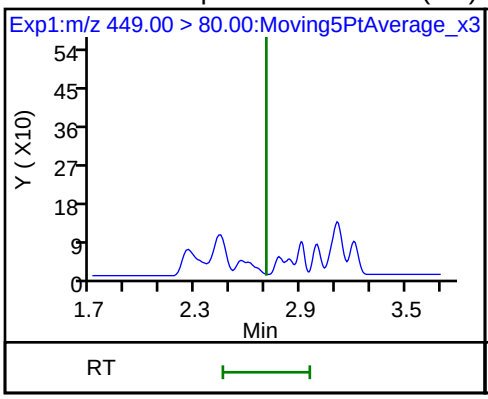
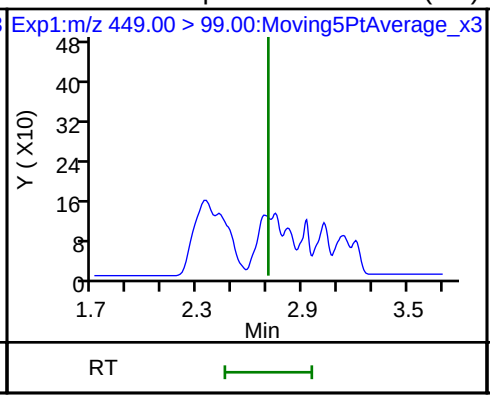


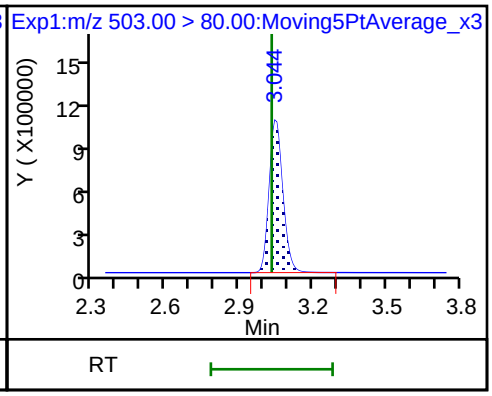
16 Perfluoroheptanesulfonic acid (ND)



16 Perfluoroheptanesulfonic acid (ND)



D 18 13C4 PFOS



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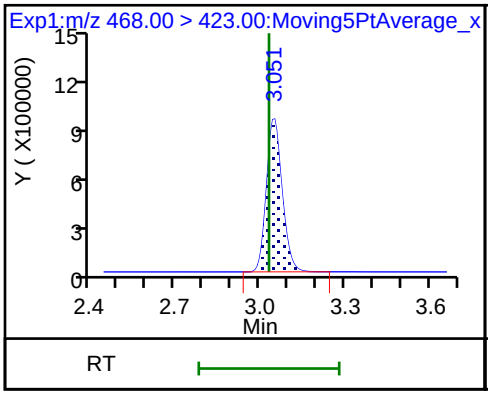
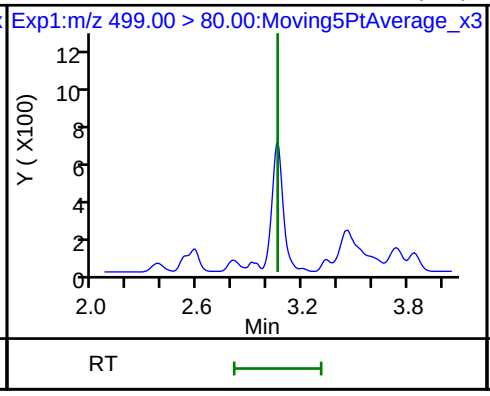
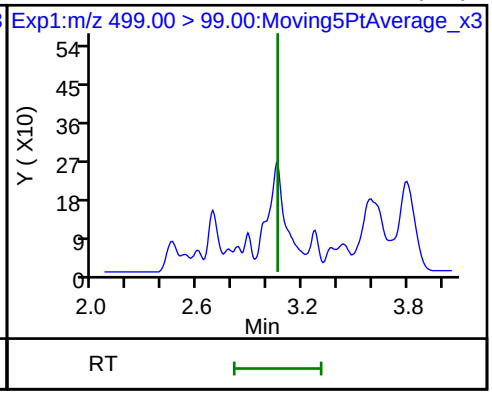


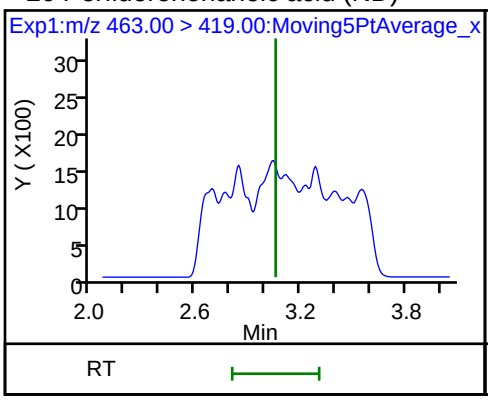
17 Perfluorooctane sulfonic acid (ND)



17 Perfluorooctane sulfonic acid (ND)



20 Perfluorononanoic acid (ND)



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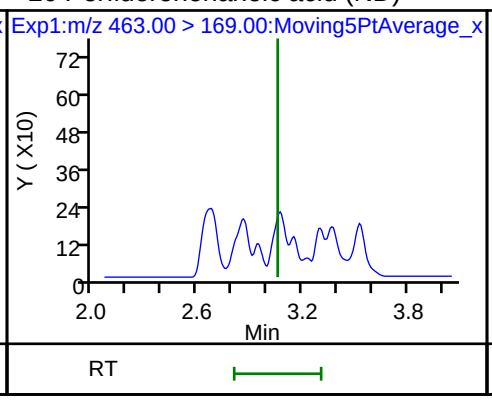
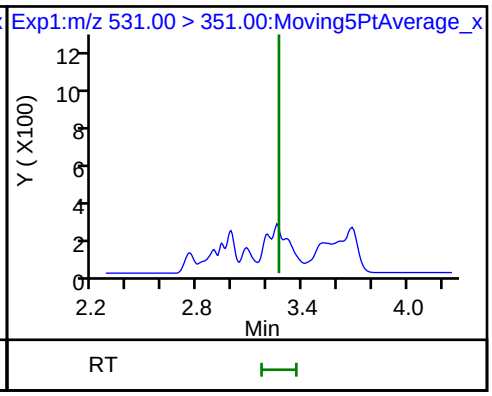
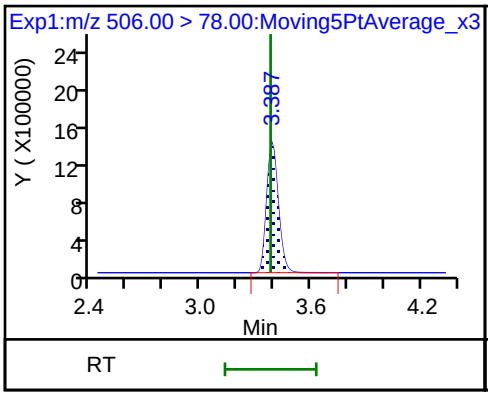


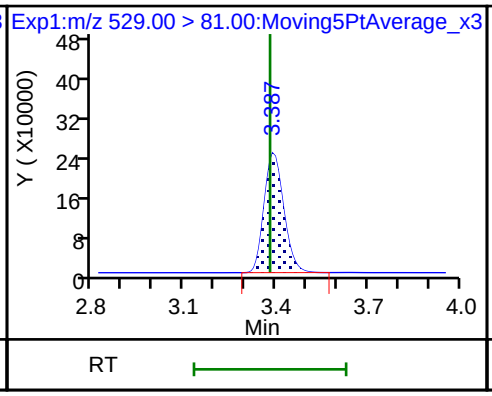
69 9-Chlorohexadecafluoro-3-oxanonane (ND)



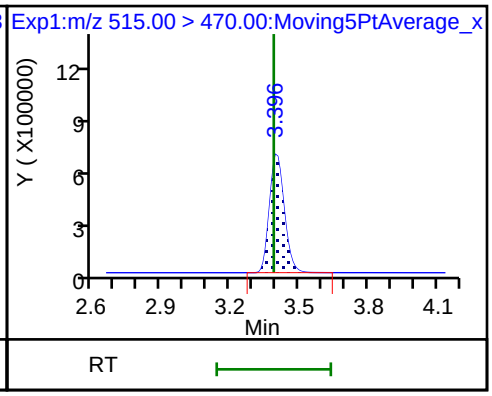
D 21 13C8 FOSA



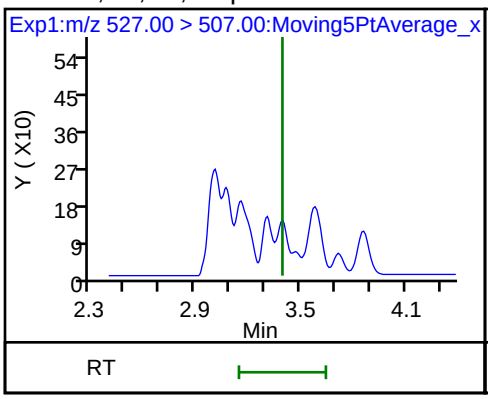
D 26 M2-8:2FTS



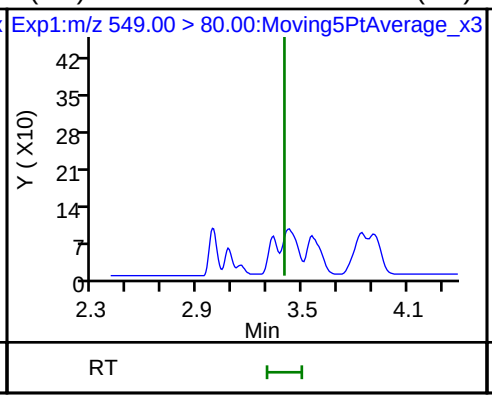
D 23 13C2 PFDA



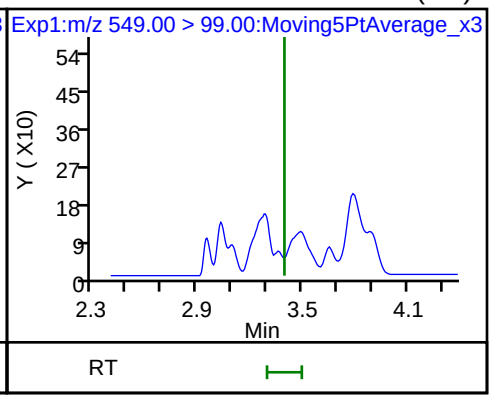
25 1H,1H,2H,2H-perfluorodecanesulfoni (ND)



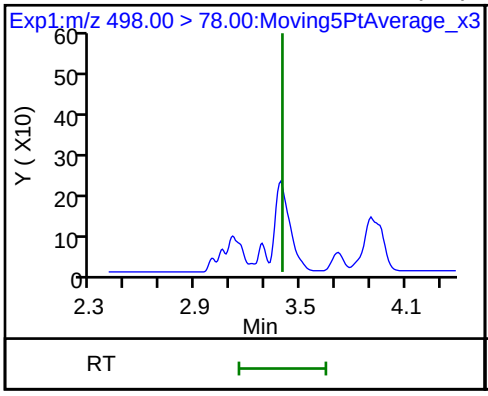
68 Perfluorononanesulfonic acid (ND)



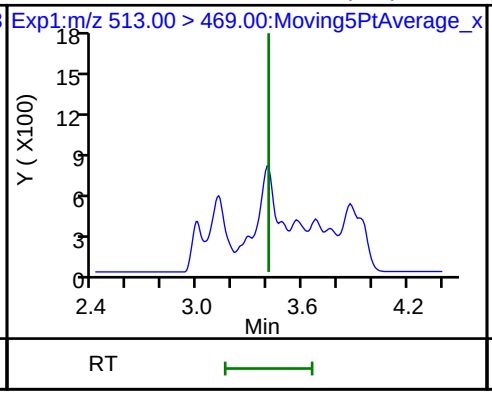
68 Perfluorononanesulfonic acid (ND)



22 Perfluorooctane Sulfonamide (ND)



24 Perfluorodecanoic acid (ND)



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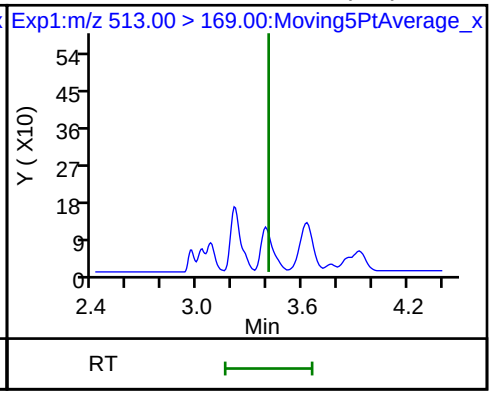
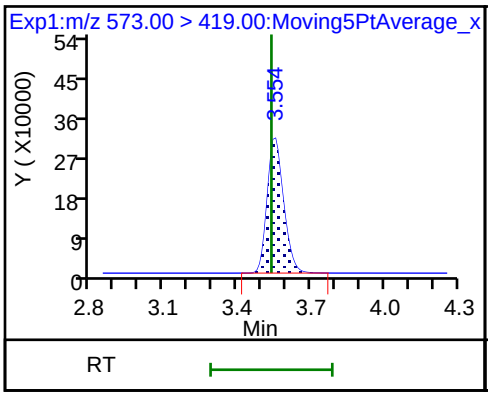
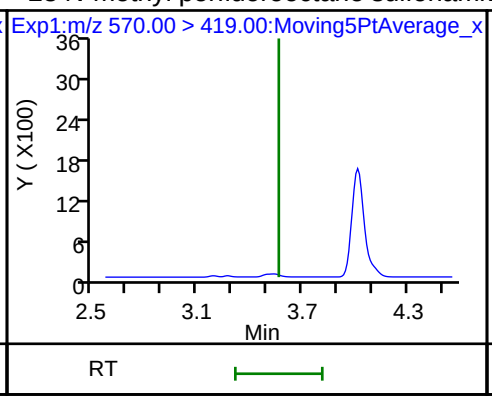


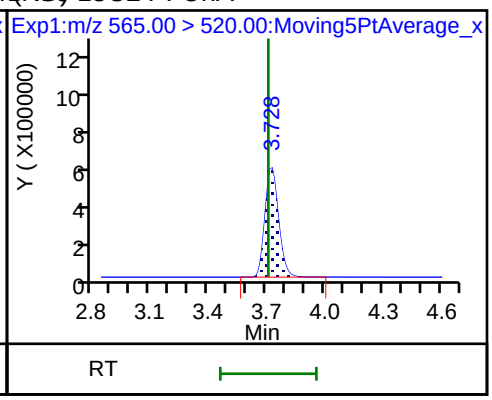
D 27 d3-NMeFOSAA



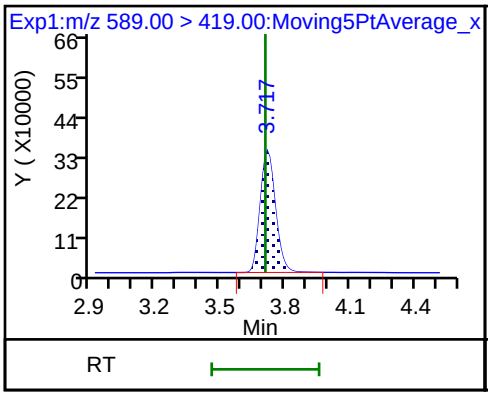
28 N-methyl perfluorooctane sulfonamid (ND)



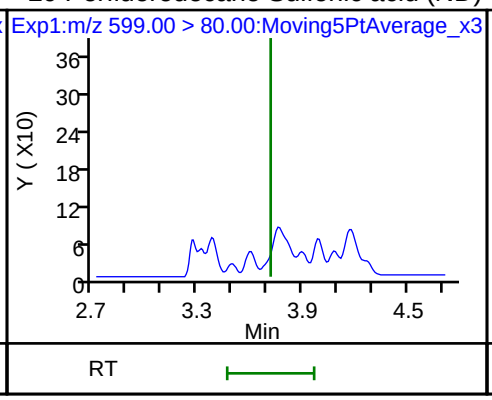
D 30 13C2 PFUnA



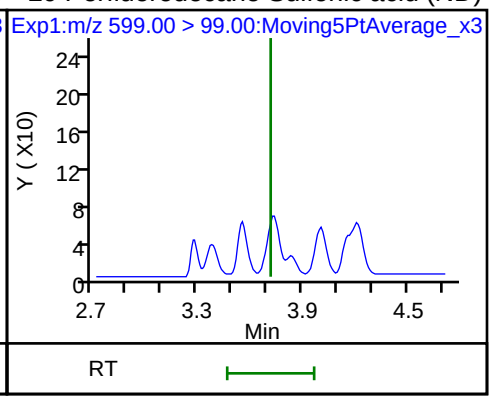
D 32 d5-NEtFOSAA



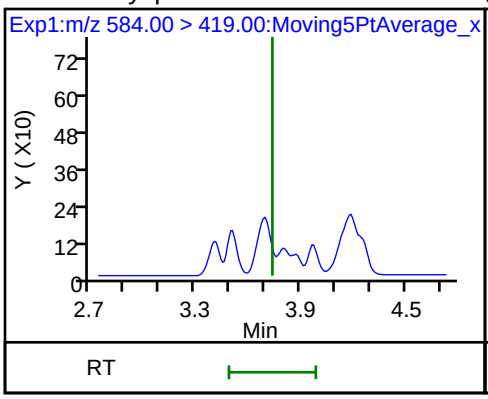
29 Perfluorodecane Sulfonic acid (ND)



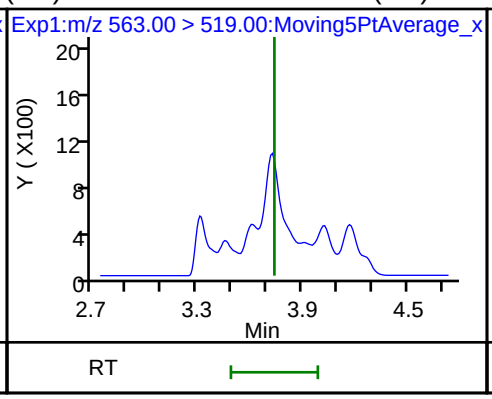
29 Perfluorodecane Sulfonic acid (ND)



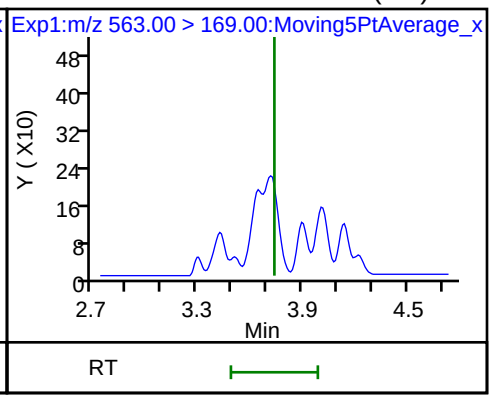
33 N-ethyl perfluorooctane sulfonamid (ND)



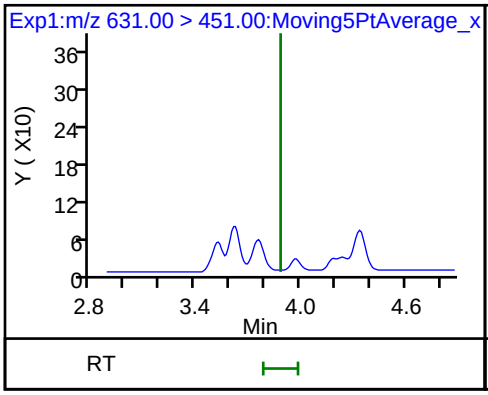
31 Perfluoroundecanoic acid (ND)



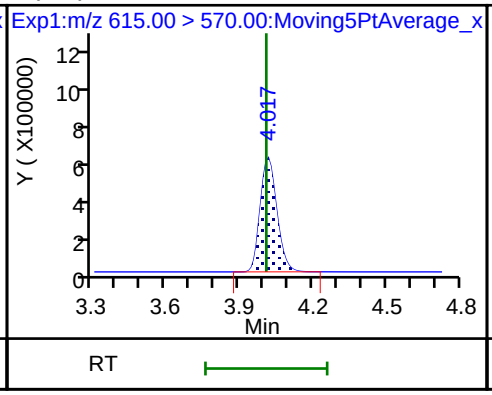
31 Perfluoroundecanoic acid (ND)



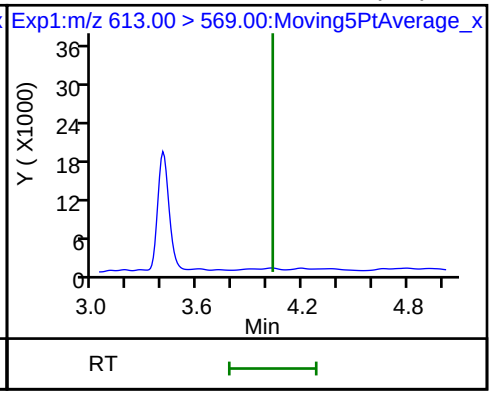
66 11-Chloroeicosafluoro-3-oxaundecan (ND)



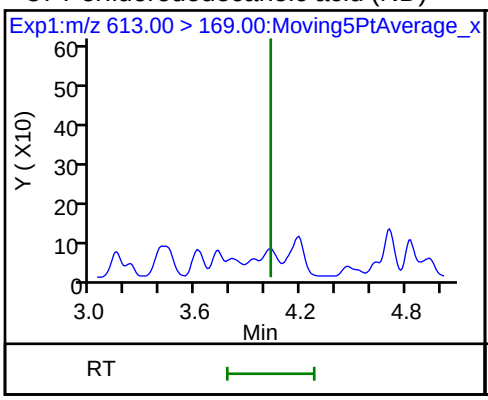
D 36 13C2 PFDoA



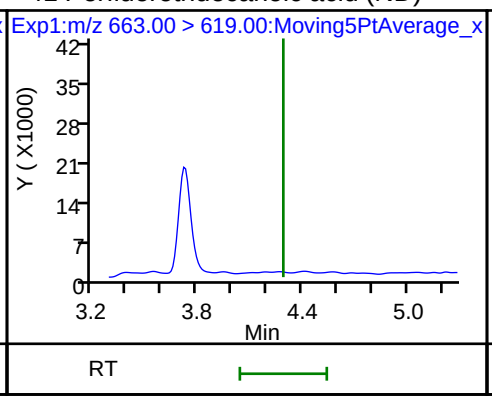
37 Perfluorododecanoic acid (ND)



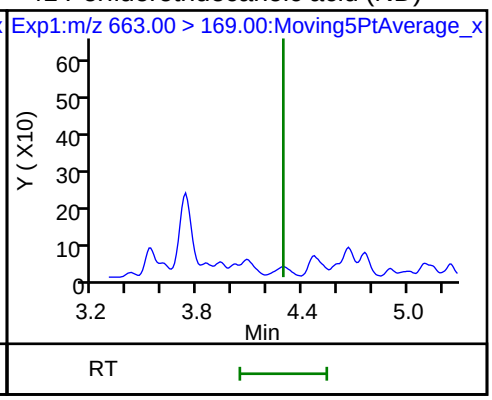
37 Perfluorododecanoic acid (ND)



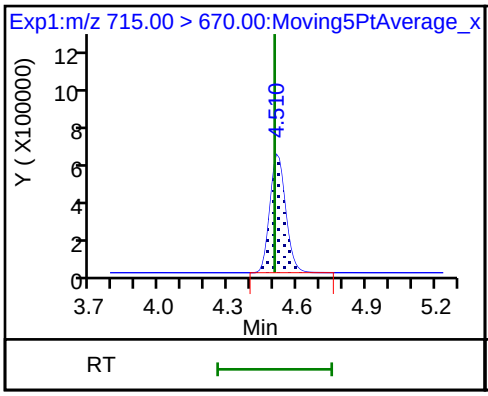
41 Perfluorotridecanoic acid (ND)



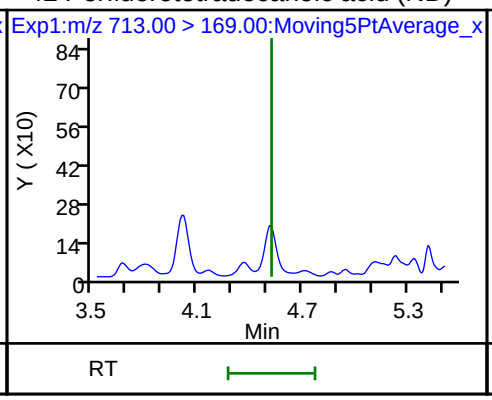
41 Perfluorotridecanoic acid (ND)



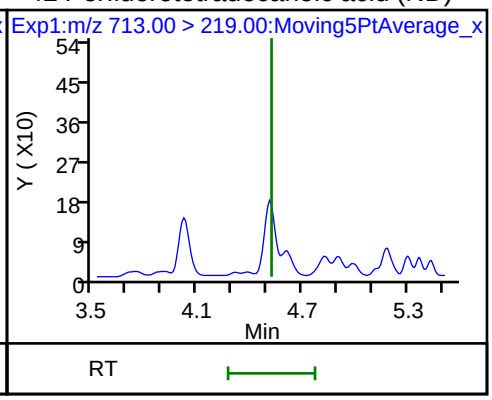
D 43 13C2-PFTeDA



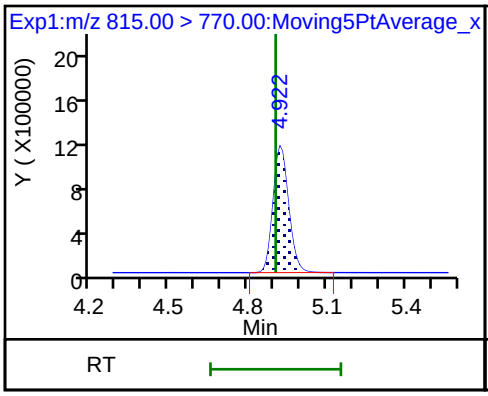
42 Perfluorotetradecanoic acid (ND)



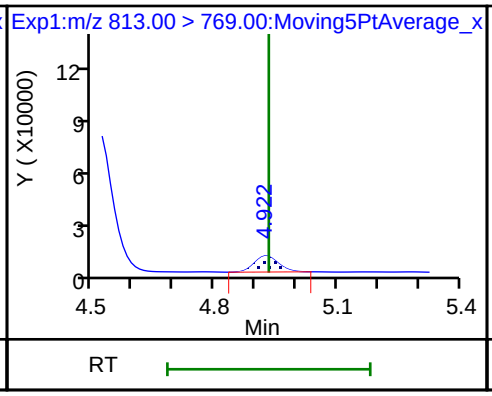
42 Perfluorotetradecanoic acid (ND)



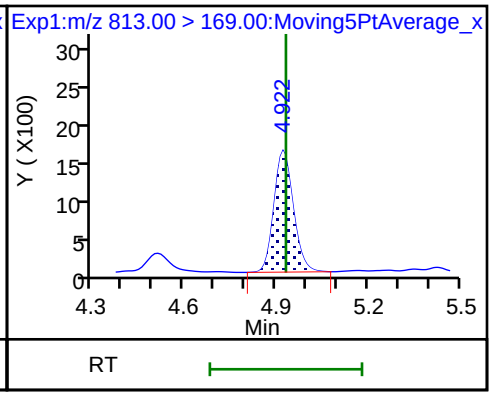
D 44 13C2-PFHxDA



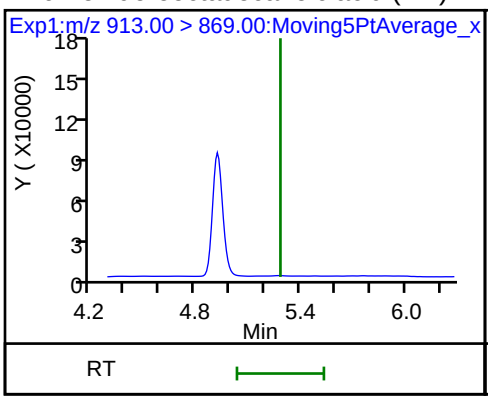
45 Perfluorohexadecanoic acid



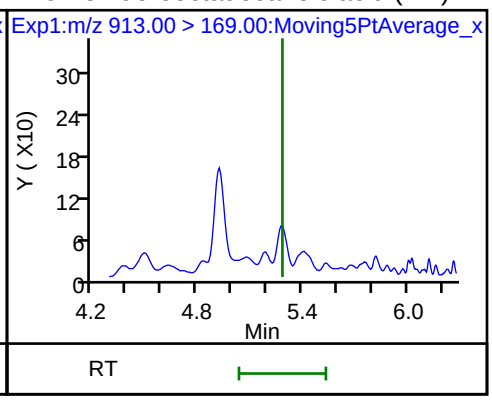
45 Perfluorohexadecanoic acid



46 Perfluorooctadecanoic acid (ND)



46 Perfluorooctadecanoic acid (ND)



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

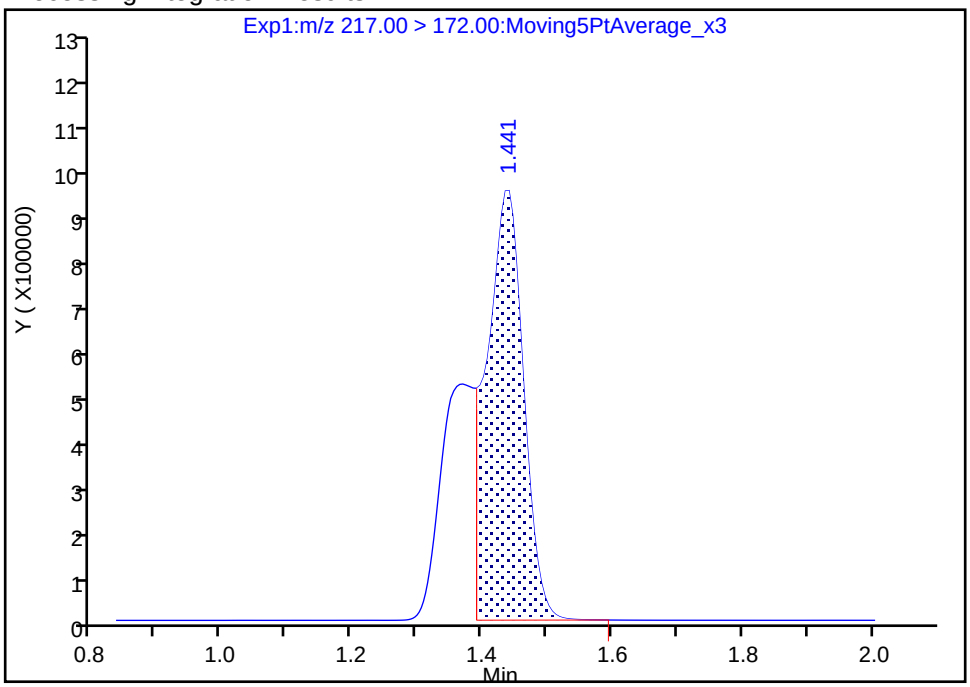
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180716-61126.b\2018.07.16LLA_003.d				
Injection Date:	16-Jul-2018 12:46:43	Instrument ID:	A8_N		
Lims ID:	CCB				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	20	Worklist Smp#:	1
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

D 1 13C4 PFBA, CAS: STL00992

Signal: 1

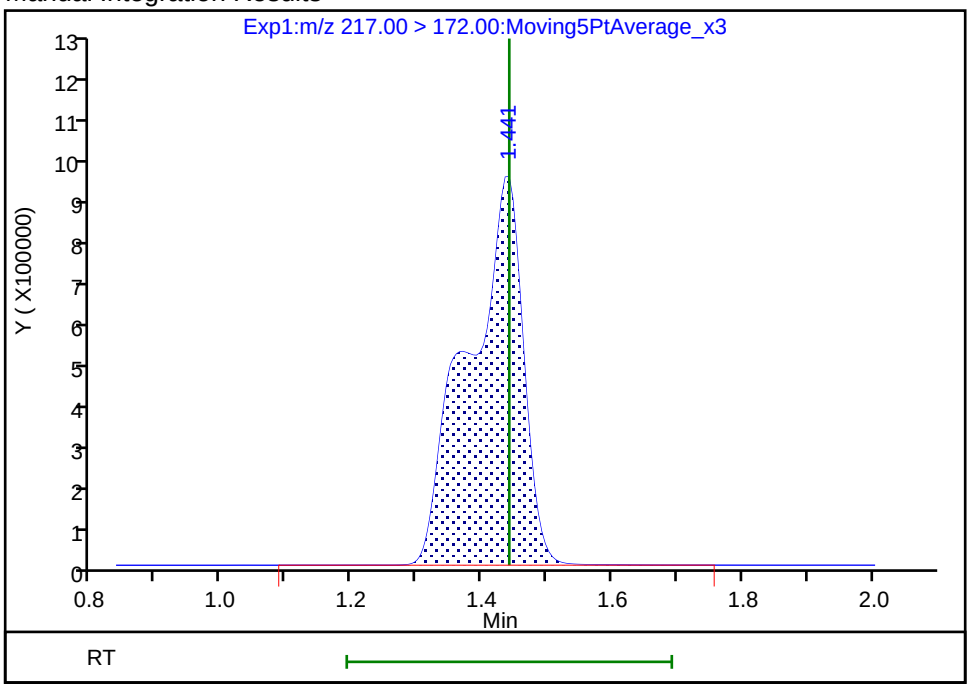
Processing Integration Results

RT: 1.44
Area: 3567451
Amount: 1.549191
Amount Units: ng/ml



Manual Integration Results

RT: 1.44
Area: 5425094
Amount: 2.355886
Amount Units: ng/ml



Reviewer: westendorfc, 16-Jul-2018 16:14:36

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID:
Lab Sample ID: ICB 320-232544/9
Matrix: Water
Lab File ID: 2018.07.05LLICALAA_009.d
Analysis Method: 537 (modified)
Date Collected:
Extraction Method:
Date Extracted:
Sample wt/vol: 1(mL)
Date Analyzed: 07/05/2018 09:46
Con. Extract Vol.:
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 232544
Units: ng/mL

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	ND		0.050	0.0088
2706-90-3	Perfluoropentanoic acid (PFPeA)	ND		0.050	0.012
307-24-4	Perfluorohexanoic acid (PFHxA)	ND		0.050	0.015
375-85-9	Perfluoroheptanoic acid (PFHpA)	ND		0.050	0.0063
335-67-1	Perfluorooctanoic acid (PFOA)	ND		0.050	0.021
375-95-1	Perfluorononanoic acid (PFNA)	ND		0.050	0.0068
335-76-2	Perfluorodecanoic acid (PFDA)	ND		0.050	0.0078
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		0.050	0.028
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		0.050	0.014
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		0.050	0.033
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		0.050	0.0073
375-73-5	Perfluorobutanesulfonic acid (PFBS)	ND		0.050	0.0050
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	ND		0.050	0.030
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.00675	J	0.050	0.0043
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.050	0.0048
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	ND		0.050	0.014
8789-57-2	Perfluorononanesulfonic acid (PFNS)	ND		0.050	0.016
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		0.050	0.0080
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		0.050	0.0088
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.50	0.078
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.50	0.048
757124-72-4	4:2 FTS	ND		0.50	0.052
27619-97-2	6:2 FTS	ND		0.50	0.050
39108-34-4	8:2 FTS	ND		0.50	0.050

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID:
Lab Sample ID: ICB 320-232544/9
Matrix: Water
Lab File ID: 2018.07.05LLICALAA_009.d
Analysis Method: 537 (modified)
Date Collected:
Extraction Method:
Date Extracted:
Sample wt/vol: 1(mL)
Date Analyzed: 07/05/2018 09:46
Con. Extract Vol.:
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 232544
Units: ng/mL

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00992	13C4 PFBA	97		25-150
STL01893	13C5 PFPeA	100		25-150
STL00993	13C2 PFHxA	100		25-150
STL01892	13C4-PFHpA	100		25-150
STL00990	13C4 PFOA	107		25-150
STL00995	13C5 PFNA	101		25-150
STL00996	13C2 PFDA	98		25-150
STL00997	13C2 PFUnA	102		25-150
STL00998	13C2 PFDoA	95		25-150
STL02116	13C2-PFTeDA	99		25-150
STL02337	13C3-PFBS	98		25-150
STL00994	18O2 PFHxS	101		25-150
STL00991	13C4 PFOS	103		25-150
STL01056	13C8 FOSA	103		25-150
STL02118	d3-NMeFOSAA	102		25-150
STL02117	d5-NEtFOSAA	104		25-150
STL02279	M2-6:2FTS	97		25-150
STL02280	M2-8:2FTS	104		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180705-60684.b\2018.07.05LLICALAA_009.d
Lims ID: ICB
Client ID:
Sample Type: ICB
Inject. Date: 05-Jul-2018 09:46:07 ALS Bottle#: 20 Worklist Smp#: 9
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: ICB
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180705-60684.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 05-Jul-2018 12:40:39 Calib Date: 05-Jul-2018 09:38:17
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180705-60684.b\2018.07.05LLICALAA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK035

First Level Reviewer: hannigana Date: 05-Jul-2018 12:14:54

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.430	1.432	-0.002	0.536	5987181	2.43		97.2	25382	
D 3 13C5-PFPeA										
267.90 > 223.00	1.720	1.716	0.004	0.645	4564583	2.50		100	41339	
D 47 13C3-PFBS										
301.90 > 83.00	1.756	1.756	0.0	0.658	99335	2.28		98.0	759	
D 60 M2-4:2FTS										
329.00 > 81.00	1.959	1.966	-0.007	0.735	680121	2.43		104	8716	
D 7 13C2 PFHxA										
315.00 > 270.00	2.003	2.000	0.003	0.751	4875018	2.50		99.9	63194	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.093	2.099	-0.006	0.785	376588	2.35		94.2	6796	
D 9 13C4-PFHpA										
367.00 > 322.00	2.319	2.318	0.001	0.870	4316771	2.49		99.7	40197	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.332	2.331	0.001	1.000	16870	0.006749			155	
399.00 > 99.00	2.332	2.331	0.001	1.000	6152		2.74(1.50-4.49)		58.7	
D 11 18O2 PFHxS										
403.00 > 84.00	2.332	2.333	-0.001	0.874	5112837	2.40		101	27901	
65 Adona										
377.00 > 251.00	2.358	2.365	-0.007	0.781	5253	0.000902			46.8	
377.00 > 85.00	2.358	2.365	-0.007	0.781	3163		1.66(0.84-2.53)		50.3	
D 12 M2-6:2FTS										
429.00 > 81.00	2.636	2.645	-0.009	0.988	899977	2.31		97.4	13377	
D 14 13C4 PFOA										
417.00 > 372.00	2.660	2.670	-0.010	0.997	4554751	2.68		107	38172	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										
413.00 > 369.00	2.675	2.671	0.004	1.006	13433	0.006218			3.7	
413.00 > 169.00	2.660	2.671	-0.011	1.000	7829		1.72(0.84-2.52)		41.3	
* 62 13C2-PFOA										
415.00 > 370.00	2.667	2.671	-0.004		4449433	2.50			29895	
D 19 13C5 PFNA										
468.00 > 423.00	3.028	3.034	-0.006	1.135	3645758	2.53		101	53688	
D 18 13C4 PFOS										
503.00 > 80.00	3.021	3.034	-0.013	1.133	3757018	2.47		103	29396	
20 Perfluorononanoic acid										
463.00 > 419.00	3.028	3.036	-0.008	1.000	3947	0.002512			6.9	
463.00 > 169.00	3.028	3.036	-0.008	1.000	939		4.20(1.90-5.69)		31.2	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.244	3.246	-0.002	1.074	5291	0.001780			97.3	
D 21 13C8 FOSA										
506.00 > 78.00	3.356	3.357	-0.001	1.258	5437534	2.57		103	42054	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.347	3.358	-0.011	0.997	7861	0.003645			79.6	
D 26 M2-8:2FTS										
529.00 > 81.00	3.375	3.382	-0.007	1.265	1077572	2.49		104	13511	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.384	3.393	-0.009	1.000	4042	0.003172			11.9	
513.00 > 169.00	3.365	3.393	-0.028	0.995	1085		3.73(2.36-7.09)		37.3	
D 23 13C2 PFDA										
515.00 > 470.00	3.384	3.393	-0.009	1.269	3056727	2.46		98.3	46072	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.533	3.543	-0.010	1.325	1877986	2.56		102	34839	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.543	3.551	-0.008	1.003	10267	0.0133			68.4	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.701	3.713	-0.012	1.388	1876083	2.59		104	15544	
33 N-ethyl perfluorooctane sulfonamid										M
584.00 > 419.00	3.712	3.721	-0.009	1.003	15117	0.0223			212	M
D 30 13C2 PFUnA										
565.00 > 520.00	3.712	3.721	-0.009	1.392	2666444	2.55		102	37100	
66 11-Chloroeicosafluoro-3-oxaundecan										
631.00 > 451.00	3.869	3.879	-0.010	1.280	9285	0.002048			157	
D 36 13C2 PFDoA										
615.00 > 570.00	4.000	4.016	-0.016	1.500	2651947	2.37		94.7	16125	
41 Perfluorotridecanoic acid										R
663.00 > 619.00	4.270	4.284	-0.014	1.068	6059	0.004653			6.7	R
663.00 > 169.00	4.270	4.284	-0.014	1.068	1394		4.35(1.25-3.76)		26.6	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.510	4.524	-0.014	1.691	3386005	2.48		99.2	14970	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.510	4.524	-0.014	1.000	2285	0.006231			48.4	
713.00 > 219.00	4.500	4.524	-0.024	0.998	1677		1.36(0.71-2.13)		27.5	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 44 13C2-PFHxDA										
815.00 > 770.00	4.921	4.940	-0.019	1.845	6243888	2.47		98.8	13211	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.921	4.941	-0.020	1.000	67571	0.005614			28.3	
813.00 > 169.00	4.921	4.941	-0.020	1.000	12135		5.57(2.86-8.58)		114	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.283	5.302	-0.019	1.074	24067	0.008278			7.6	
913.00 > 169.00	5.283	5.302	-0.019	1.074	3273		7.35(3.83-11.48)		30.5	

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Review Flags

M - Manually Integrated

Reagents:

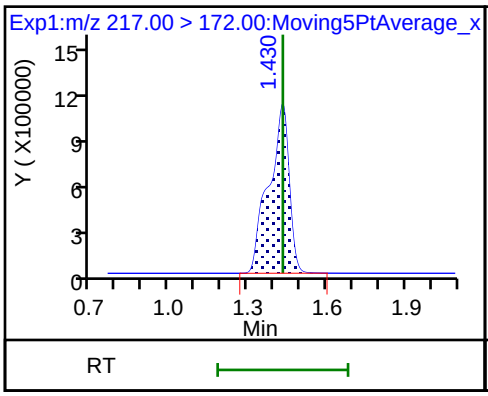
LCPFC_LL0_00007 Amount Added: 1.00 Units: mL

Report Date: 05-Jul-2018 12:40:50 Chrom Revision: 2.2 07-Jun-2018 07:41:54

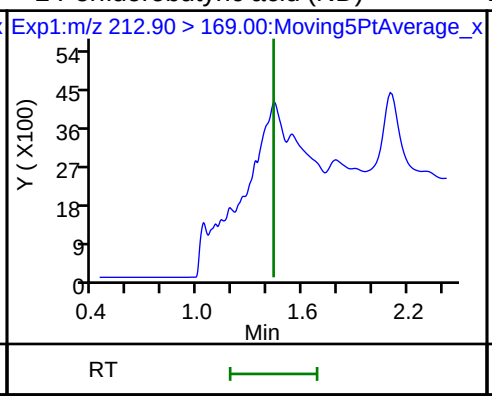
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180705-60684.b\2018.07.05LLICALAA_009.d
Injection Date: 05-Jul-2018 09:46:07 Instrument ID: A8_N
Lims ID: ICB
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 20 Worklist Smp#: 9
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC ICAL

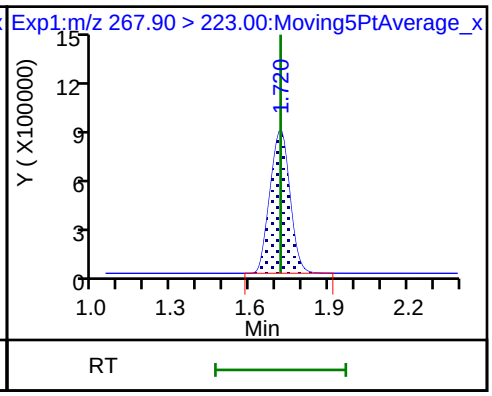
D 1 13C4 PFBA



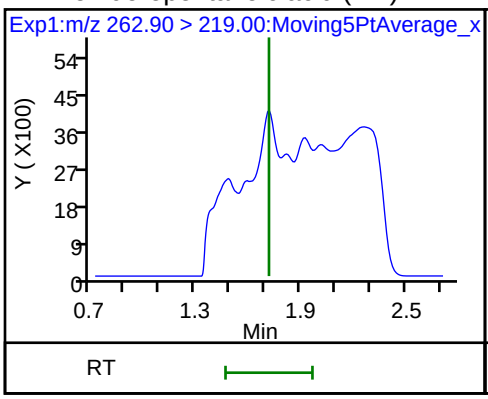
2 Perfluorobutyric acid (ND)



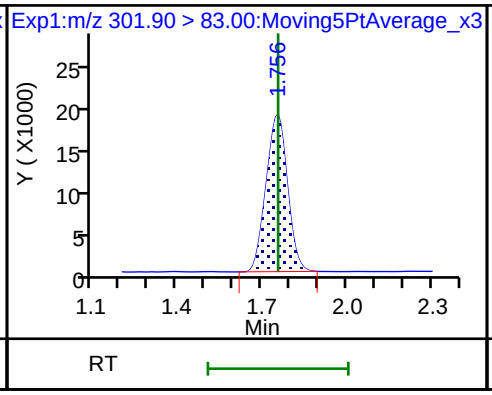
D 3 13C5-PFPeA



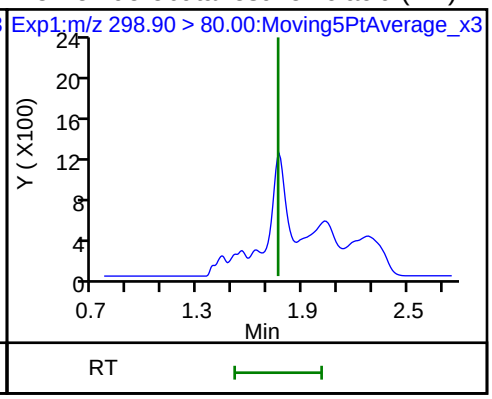
4 Perfluoropentanoic acid (ND)



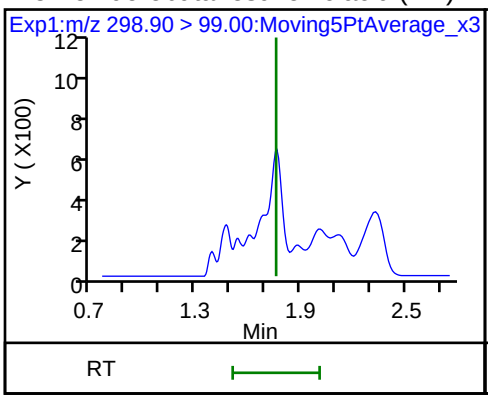
D 47 13C3-PFBS



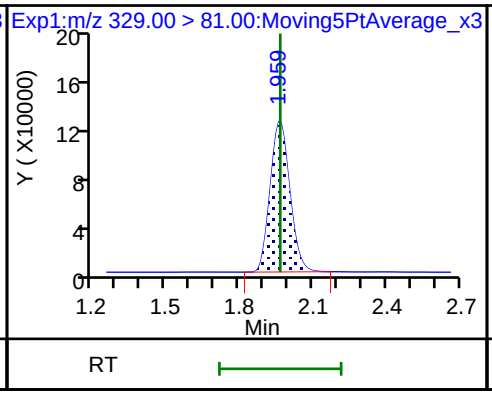
5 Perfluorobutanesulfonic acid (ND)



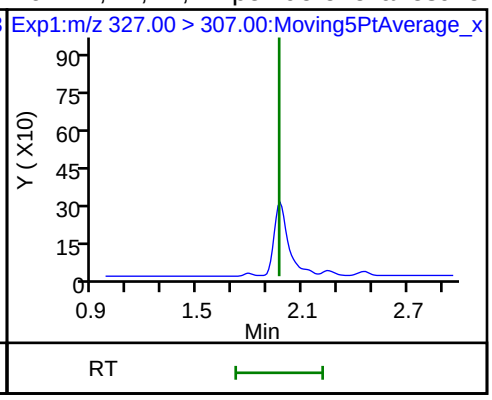
5 Perfluorobutanesulfonic acid (ND)



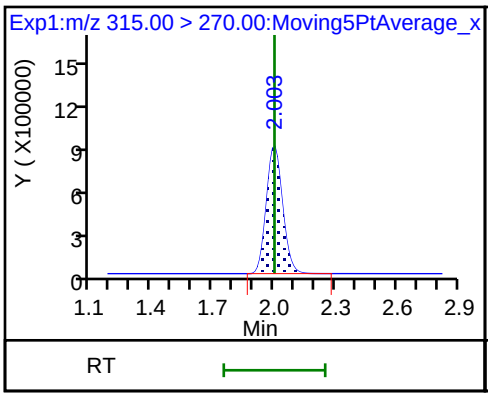
D 60 M2-4:2FTS



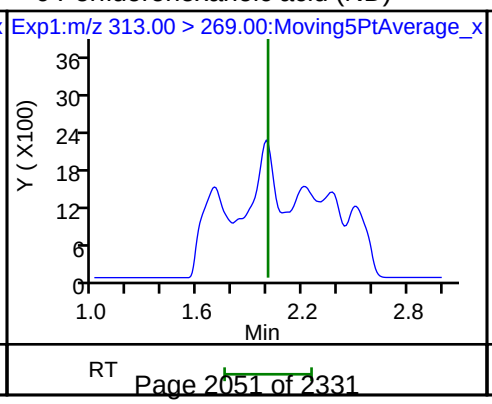
61 1H,1H,2H,2H-perfluorohexanesulfoni (ND)



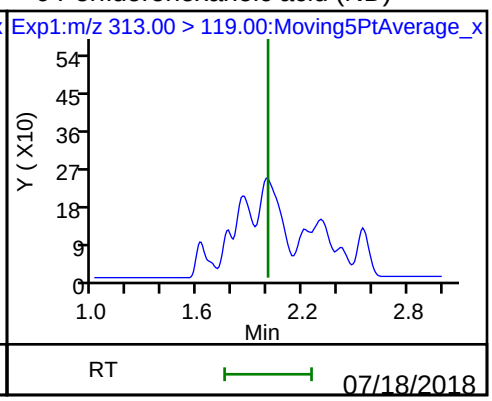
D 7 13C2 PFHxA



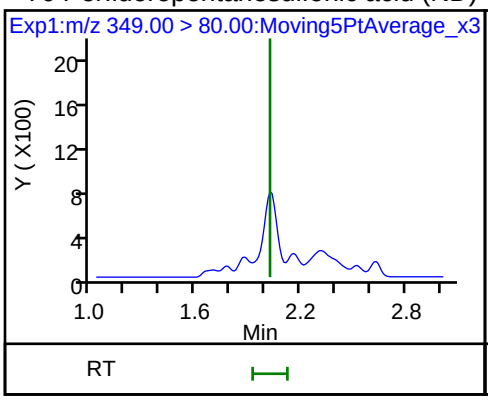
6 Perfluorohexanoic acid (ND)



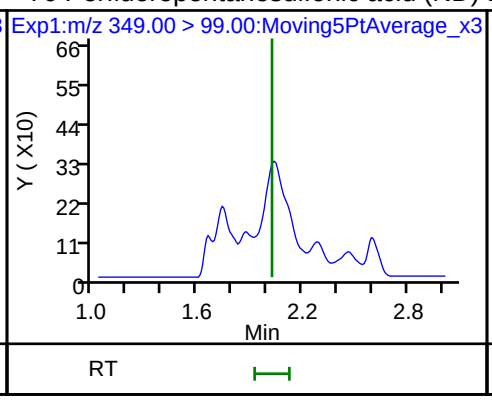
6 Perfluorohexanoic acid (ND)



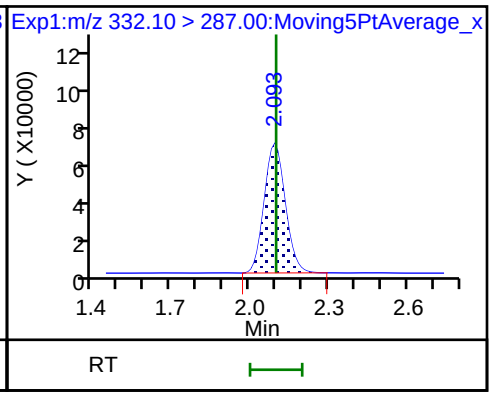
70 Perfluoropentanesulfonic acid (ND)



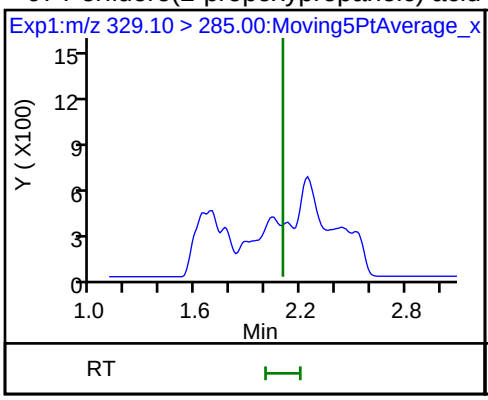
70 Perfluoropentanesulfonic acid (ND)



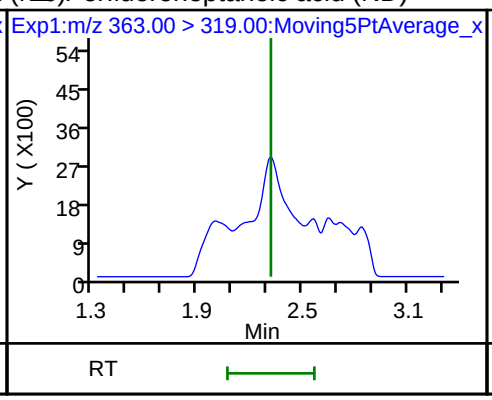
D 64 13C3 HFPO-DA



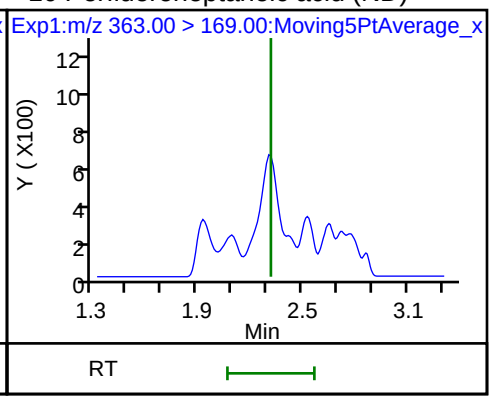
67 Perfluoro(2-propoxypropanoic) acid (ND)



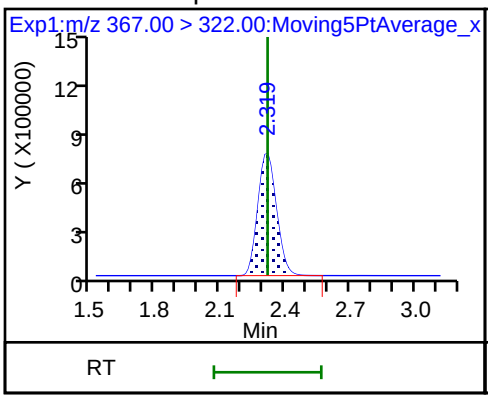
10 Perfluoroheptanoic acid (ND)



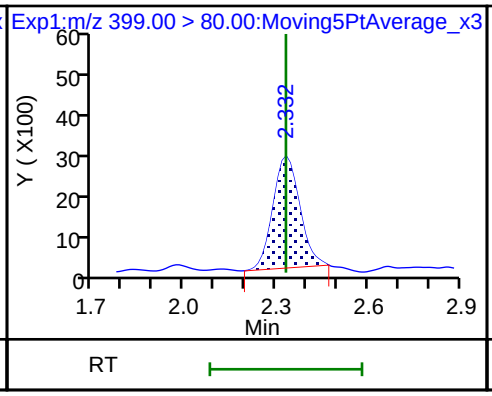
10 Perfluoroheptanoic acid (ND)



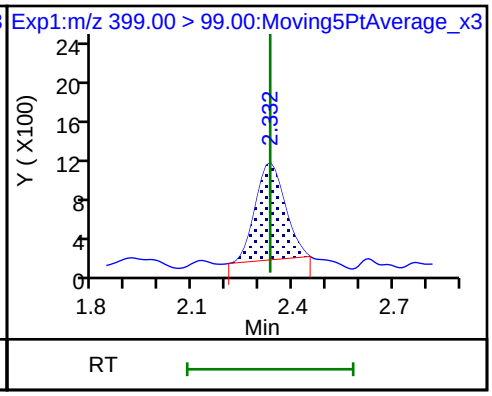
D 9 13C4-PFHpA



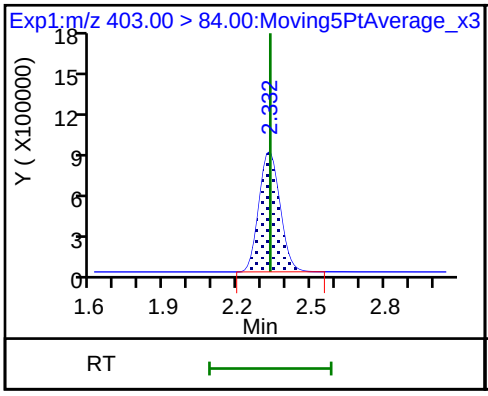
8 Perfluorohexanesulfonic acid



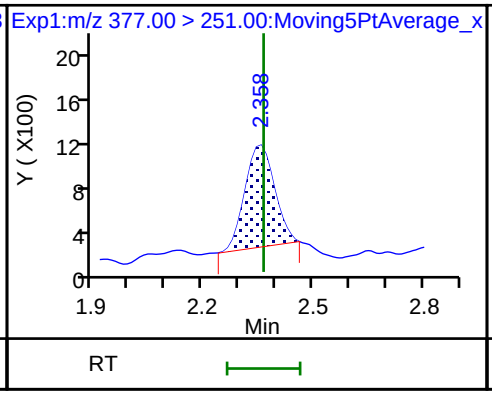
8 Perfluorohexanesulfonic acid



D 11 18O2 PFHxS



65 Adona



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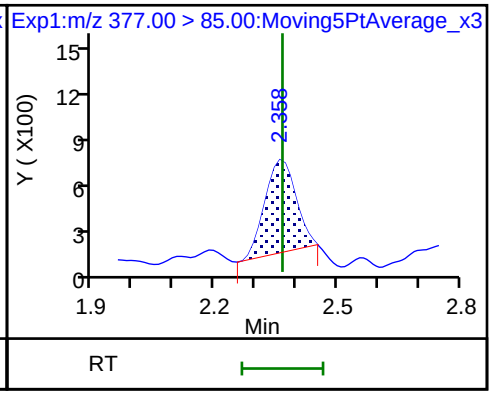
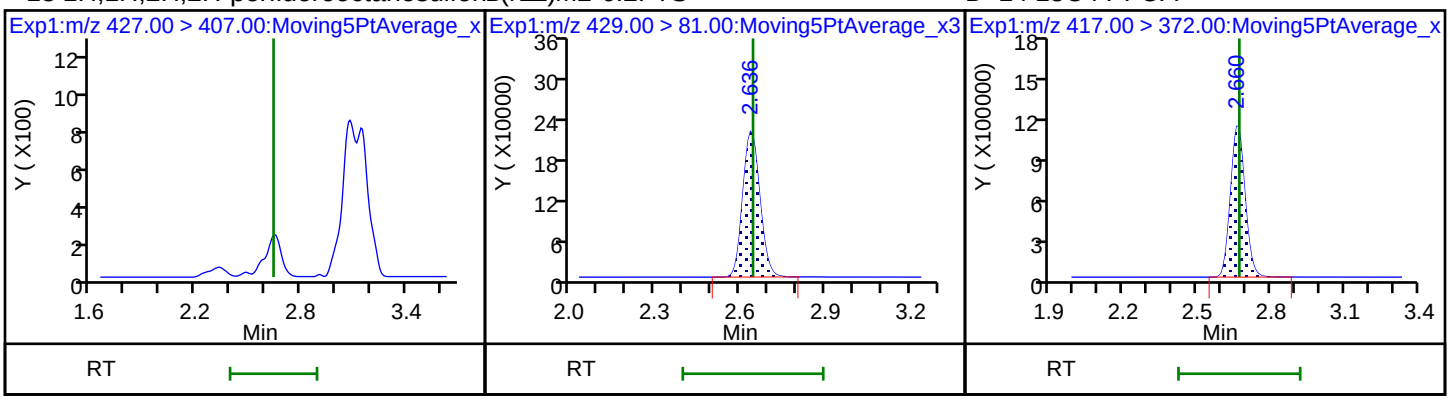
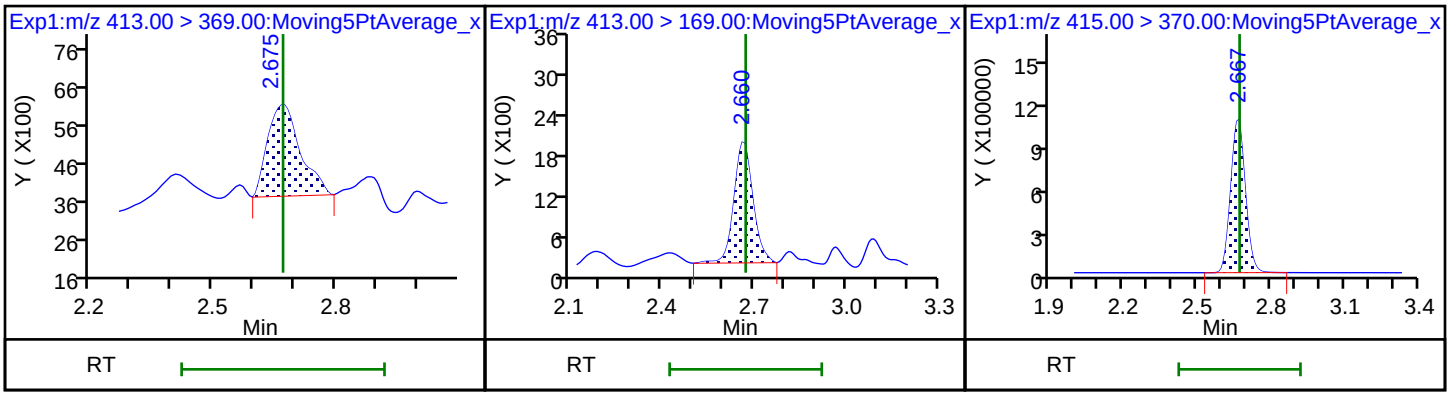


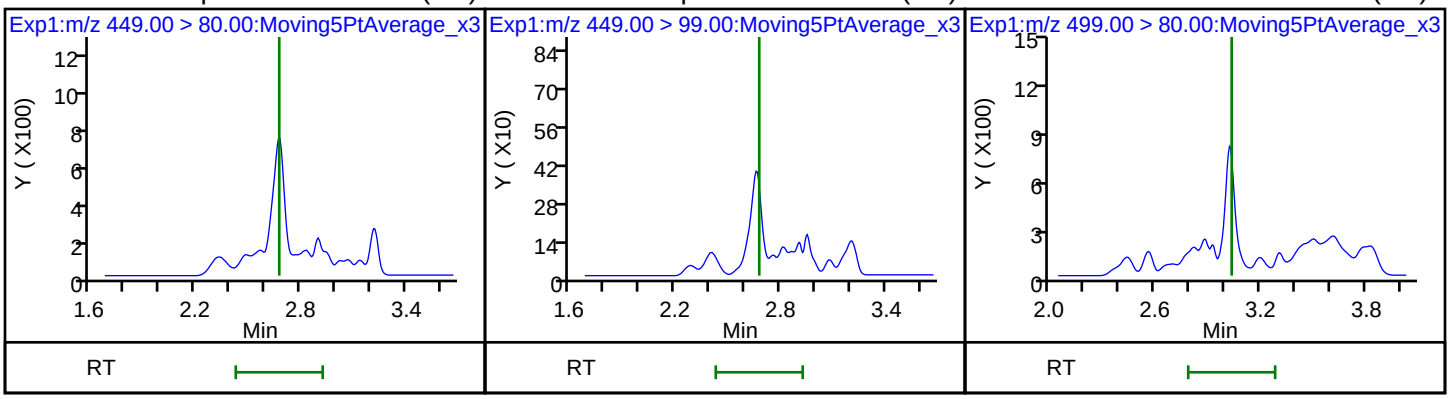
13 1H,1H,2H,2H-perfluorooctanesulfonic (ND) | D 12 M2-6:2FTS | D 14 13C4 PFOA



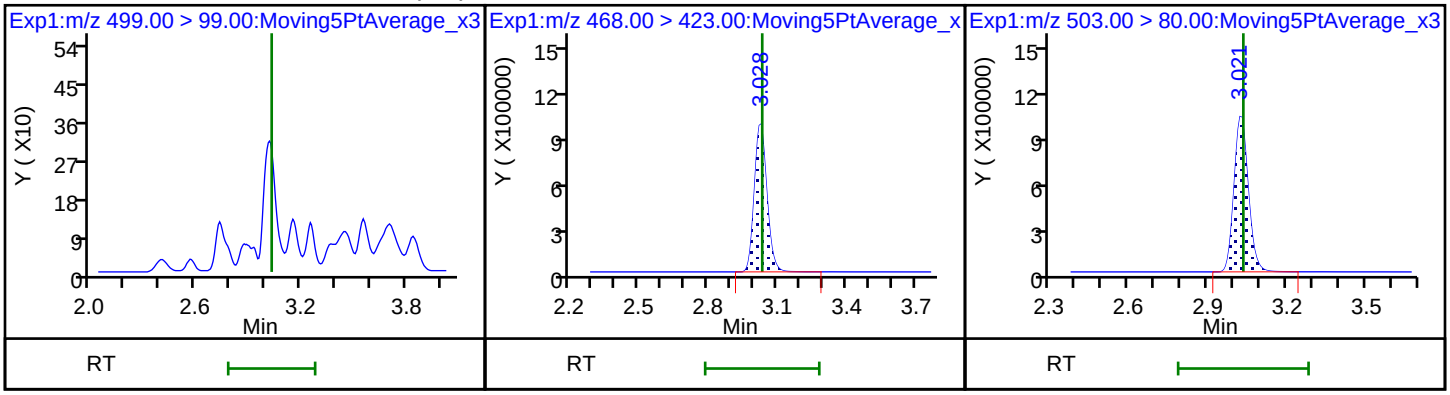
15 Perfluorooctanoic acid | 15 Perfluorooctanoic acid | * 62 13C2-PFOA



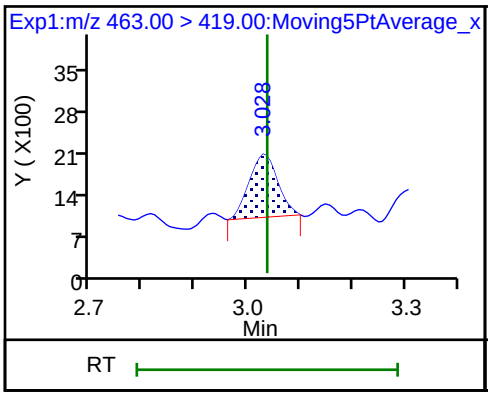
16 Perfluoroheptanesulfonic acid (ND) | 16 Perfluoroheptanesulfonic acid (ND) | 17 Perfluorooctane sulfonic acid (ND)



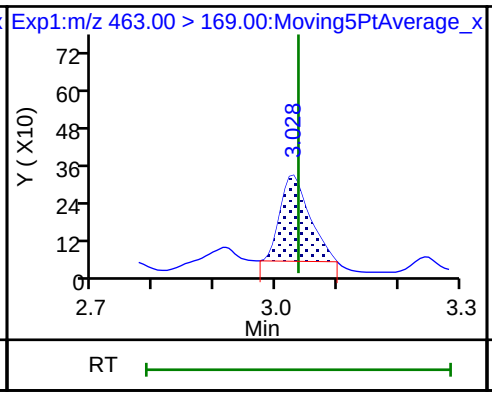
17 Perfluorooctane sulfonic acid (ND) | D 19 13C5 PFNA | D 18 13C4 PFOS



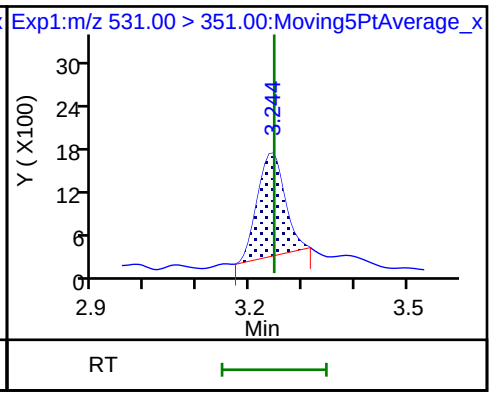
20 Perfluorononanoic acid



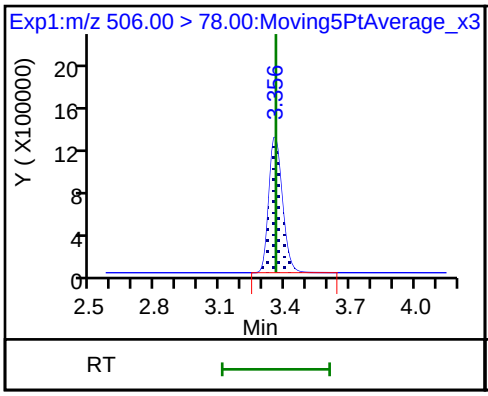
20 Perfluorononanoic acid



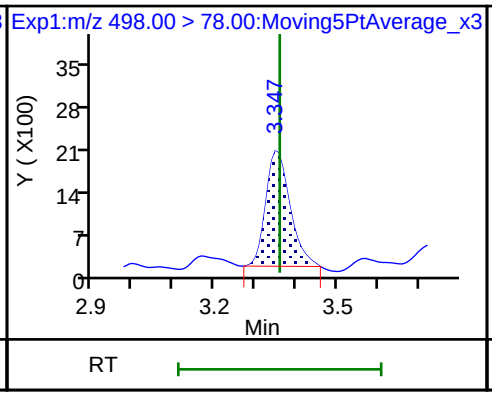
69 9-Chlorohexadecafluoro-3-oxanonane



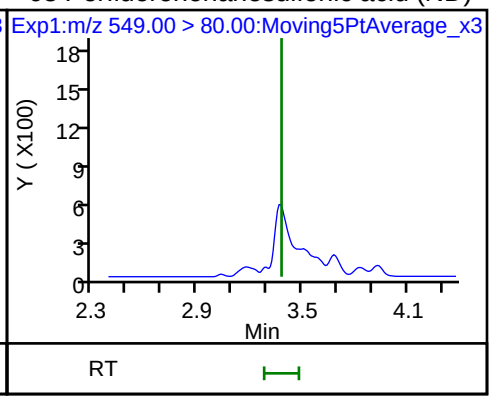
D 21 13C8 FOSA



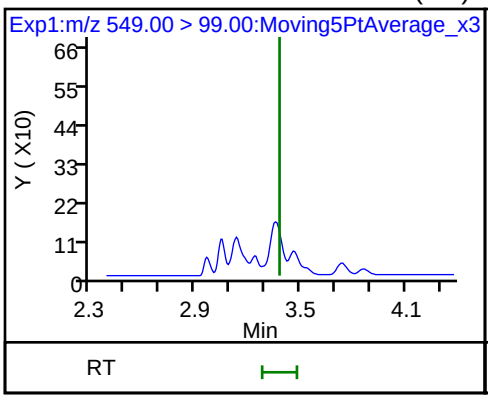
22 Perfluorooctane Sulfonamide



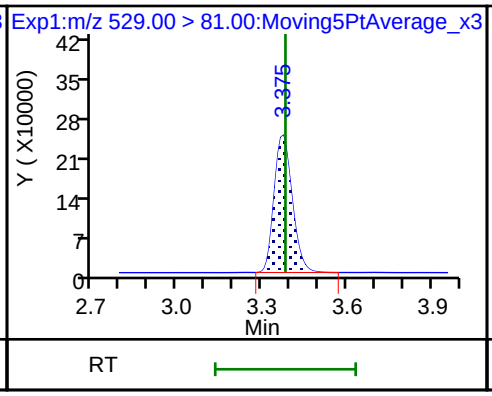
68 Perfluorononanesulfonic acid (ND)



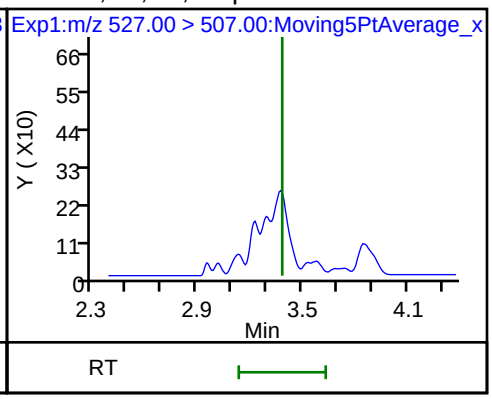
68 Perfluorononanesulfonic acid (ND)



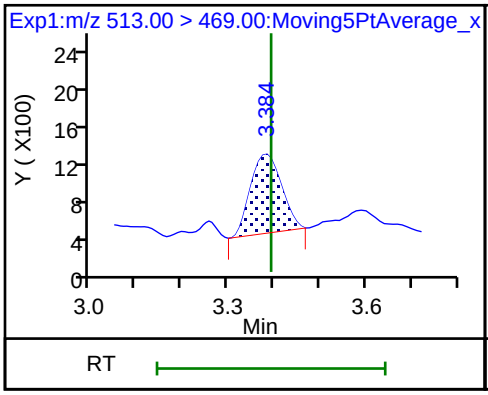
D 26 M2-8:2FTS



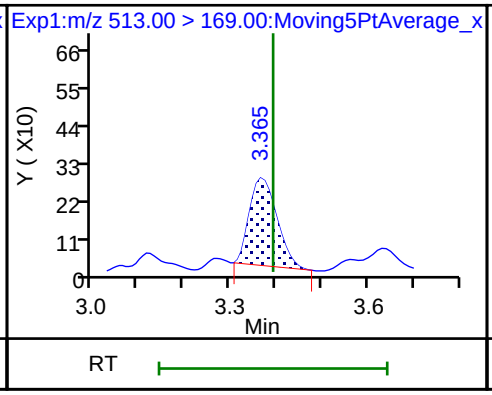
25 1H,1H,2H,2H-perfluorodecanesulfoni (ND)



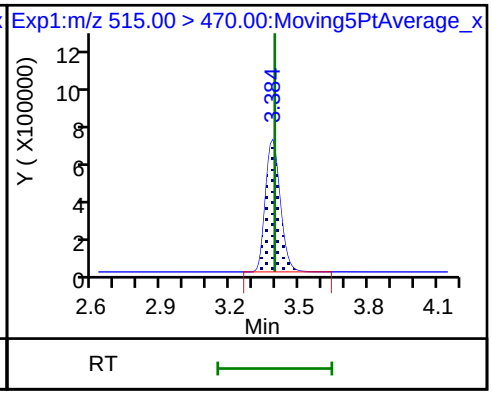
24 Perfluorodecanoic acid



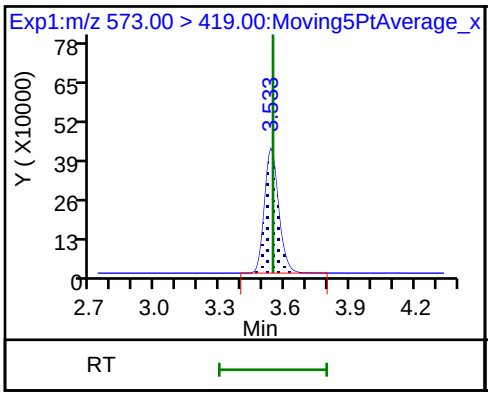
24 Perfluorodecanoic acid



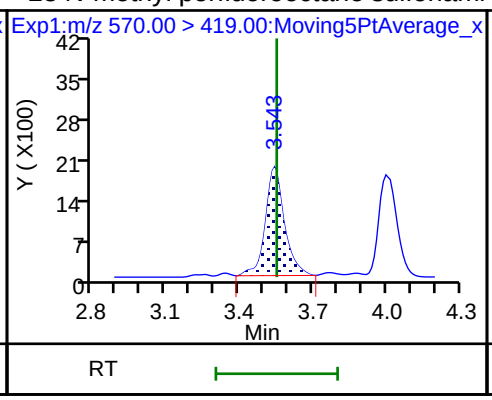
D 23 13C2 PFDA



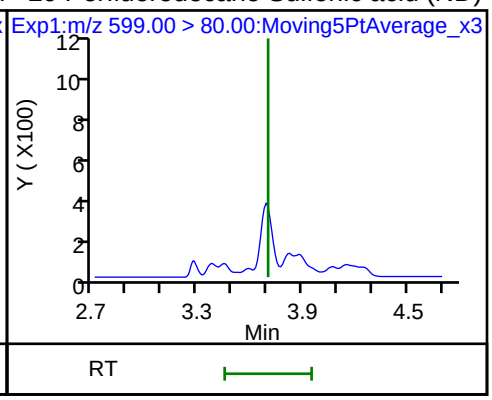
D 27 d3-NMeFOSAA



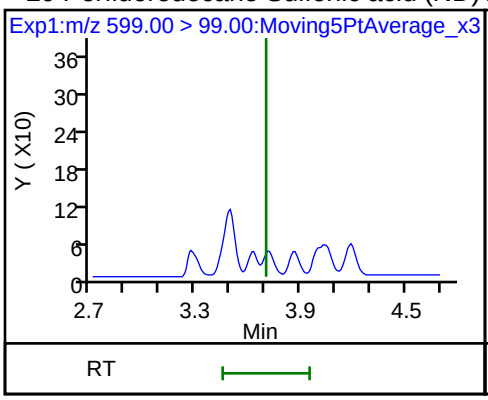
28 N-methyl perfluorooctane sulfonami



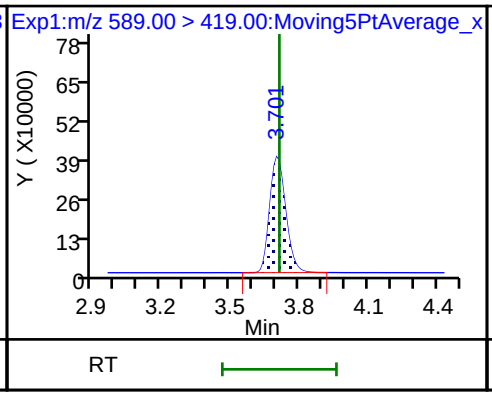
29 Perfluorodecane Sulfonic acid (ND)



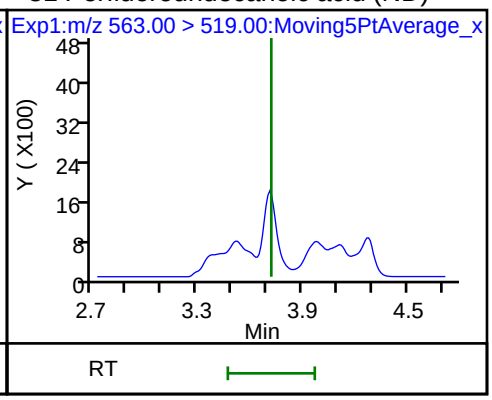
29 Perfluorodecane Sulfonic acid (ND)



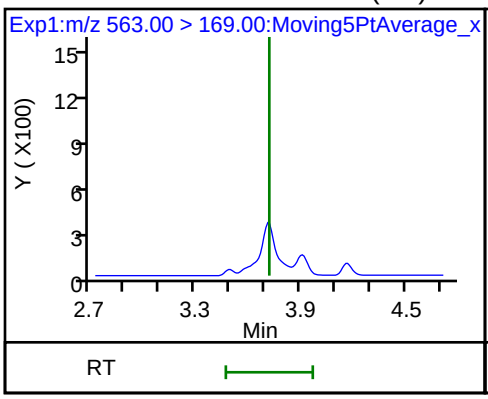
D 32 d5-NEtFOSAA



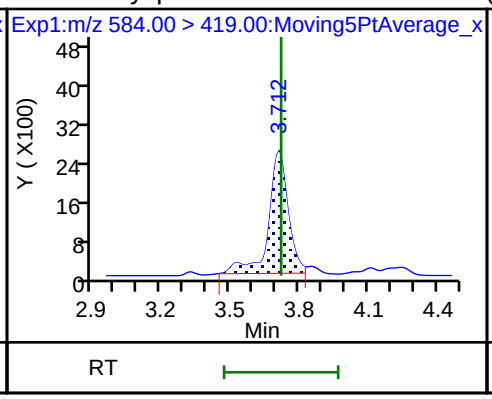
31 Perfluoroundecanoic acid (ND)



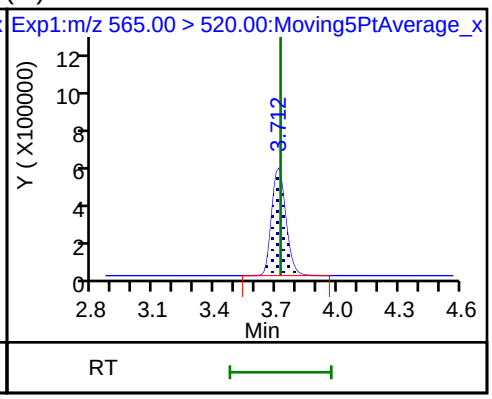
31 Perfluoroundecanoic acid (ND)



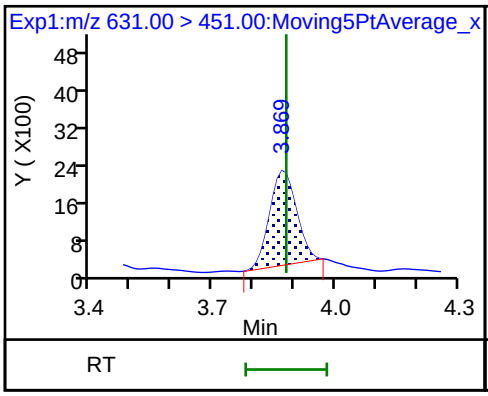
33 N-ethyl perfluorooctane sulfonamid (M)



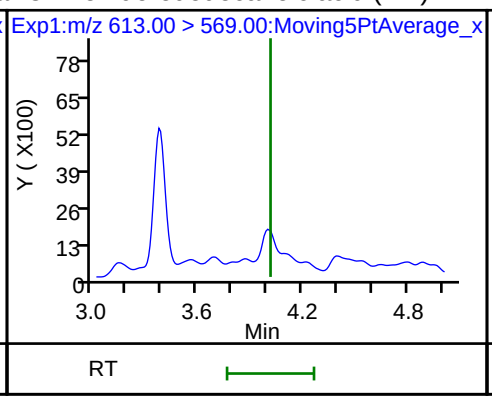
D 30 13C2 PFUnA



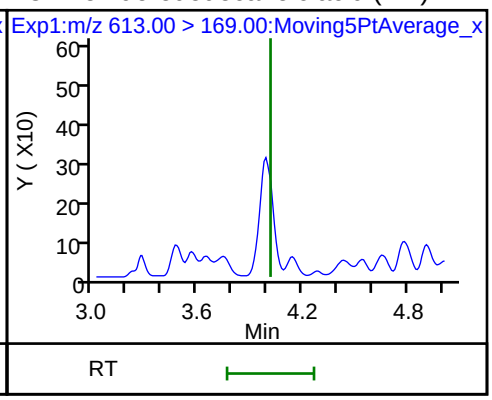
66 11-Chloroeicosafluoro-3-oxaundecan



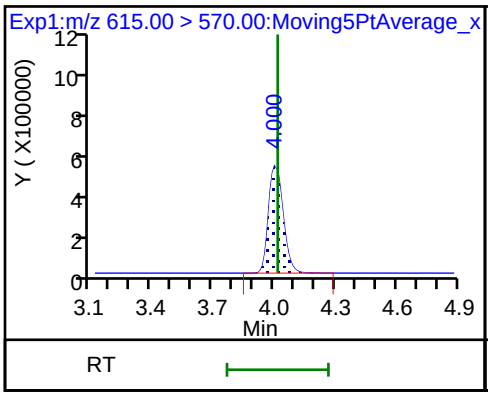
37 Perfluorododecanoic acid (ND)



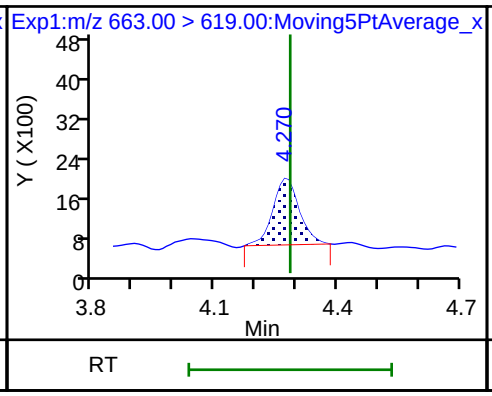
37 Perfluorododecanoic acid (ND)



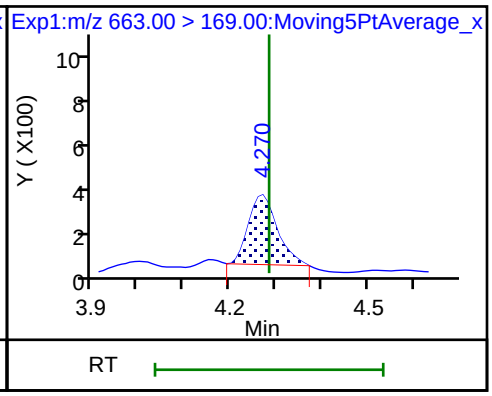
D 36 13C2 PFDoA



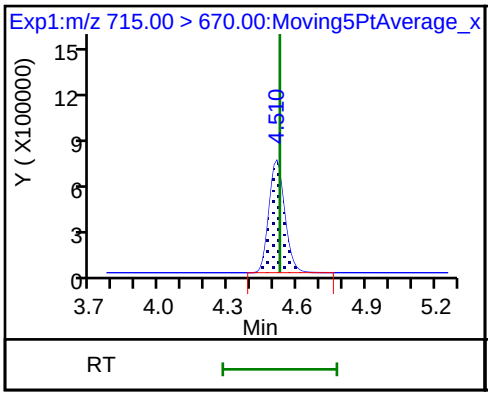
41 Perfluorotridecanoic acid



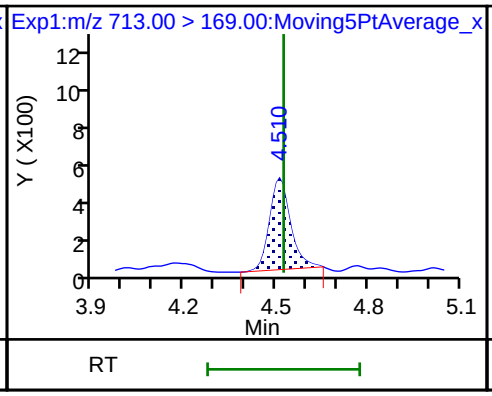
41 Perfluorotridecanoic acid



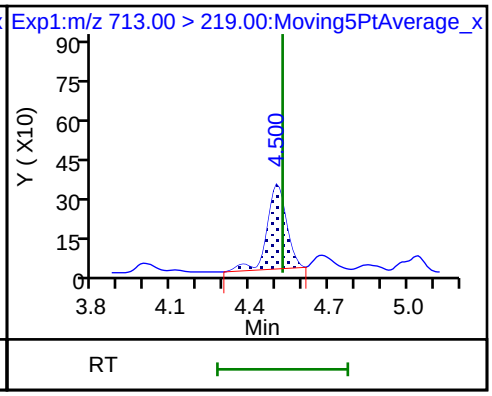
D 43 13C2-PFTeDA



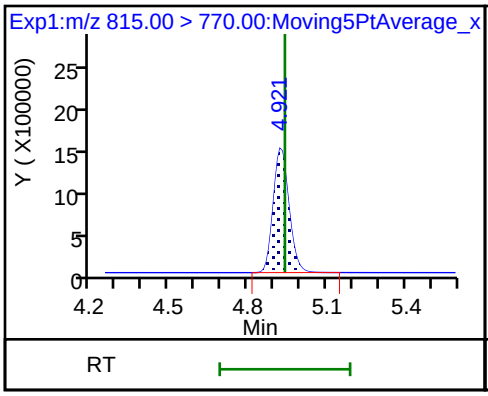
42 Perfluorotetradecanoic acid



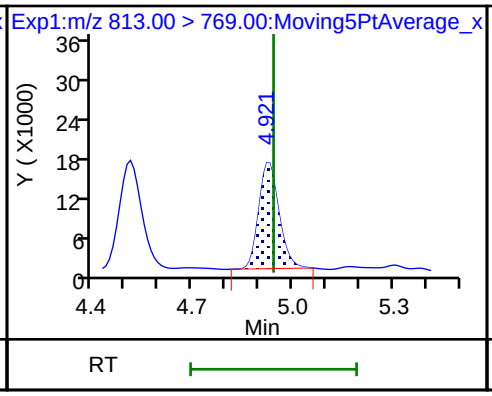
42 Perfluorotetradecanoic acid



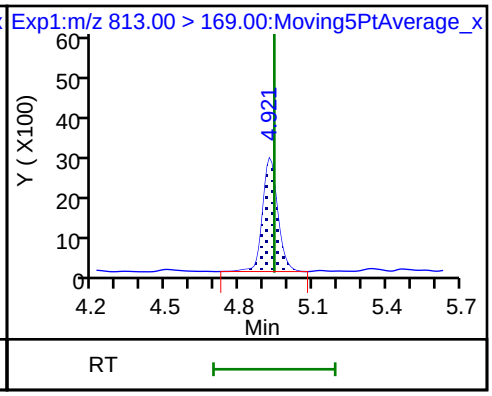
D 44 13C2-PFHxDA



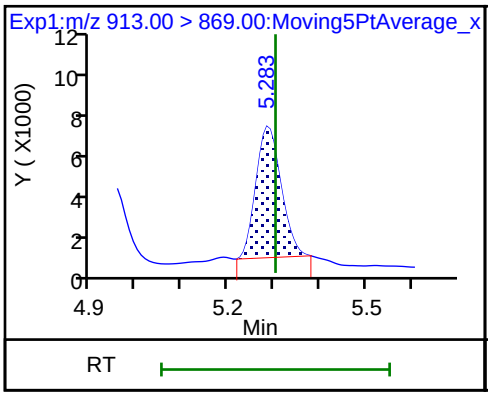
45 Perfluorohexadecanoic acid



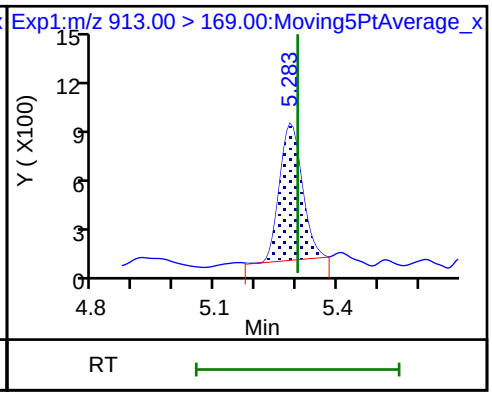
45 Perfluorohexadecanoic acid



46 Perfluorooctadecanoic acid



46 Perfluorooctadecanoic acid



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

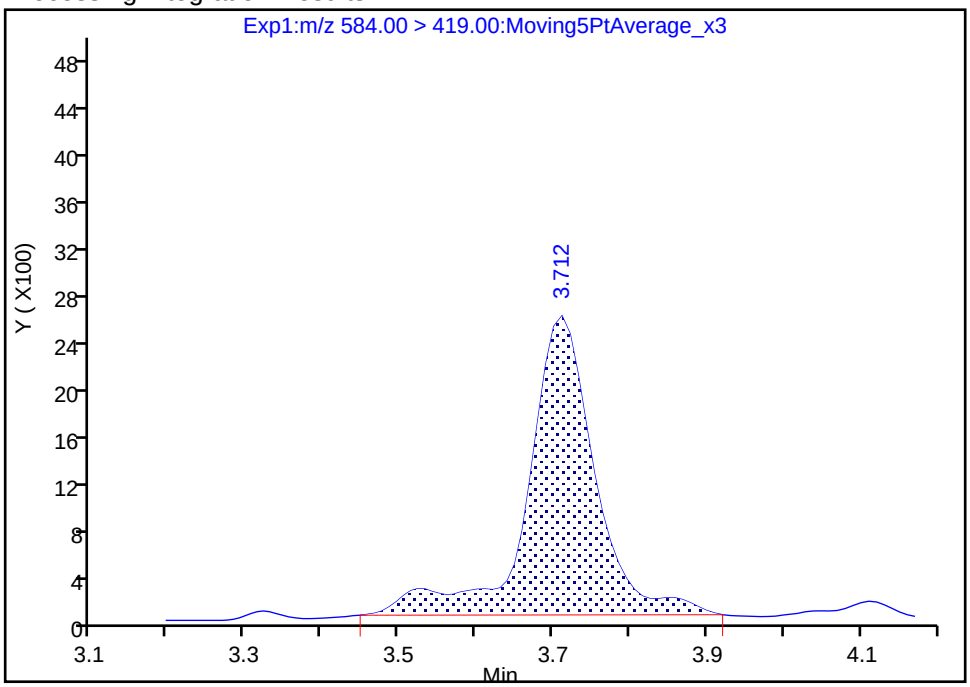
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180705-60684.b\2018.07.05LLICALAA_009.d				
Injection Date:	05-Jul-2018 09:46:07	Instrument ID:	A8_N		
Lims ID:	ICB				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	20	Worklist Smp#:	9
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

33 N-ethyl perfluorooctane sulfonamidoacetic ac, CAS: 2991-50-6

Signal: 1

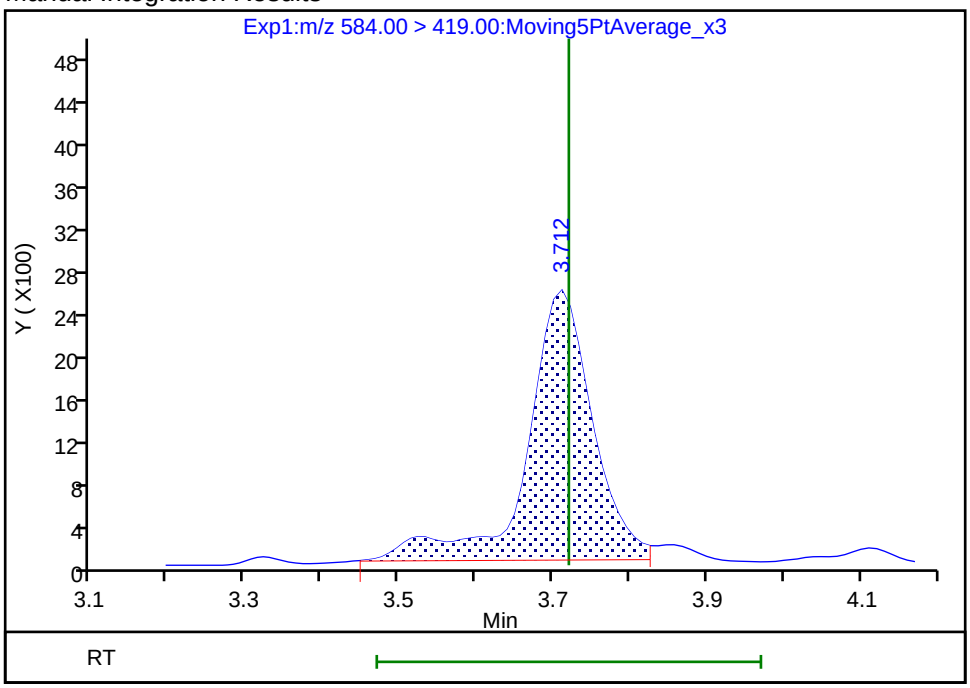
Processing Integration Results

RT: 3.71
Area: 15656
Amount: 0.023138
Amount Units: ng/ml



Manual Integration Results

RT: 3.71
Area: 15117
Amount: 0.022342
Amount Units: ng/ml



Reviewer: hannigana, 05-Jul-2018 12:14:47

Audit Action: Manually Integrated Audit Reason: Split Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID:
Lab Sample ID: ICB 320-233476/9
Matrix: Water
Lab File ID: 2018.07.11LLICALA_009.d
Analysis Method: 537 (modified)
Date Collected:
Extraction Method:
Date Extracted:
Sample wt/vol: 1(mL)
Date Analyzed: 07/11/2018 15:46
Con. Extract Vol.:
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 233476
Units: ng/mL

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	ND		0.050	0.0088
2706-90-3	Perfluoropentanoic acid (PFPeA)	ND		0.050	0.012
307-24-4	Perfluorohexanoic acid (PFHxA)	ND		0.050	0.015
375-85-9	Perfluoroheptanoic acid (PFHpA)	ND		0.050	0.0063
335-67-1	Perfluorooctanoic acid (PFOA)	ND		0.050	0.021
375-95-1	Perfluorononanoic acid (PFNA)	ND		0.050	0.0068
335-76-2	Perfluorodecanoic acid (PFDA)	ND		0.050	0.0078
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		0.050	0.028
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		0.050	0.014
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		0.050	0.033
376-06-7	Perfluorotetradecanoic acid (PFTeA)	0.00831	J	0.050	0.0073
375-73-5	Perfluorobutanesulfonic acid (PFBS)	ND		0.050	0.0050
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	ND		0.050	0.030
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.00769	J	0.050	0.0043
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.050	0.0048
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	ND		0.050	0.014
8789-57-2	Perfluorononanesulfonic acid (PFNS)	ND		0.050	0.016
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		0.050	0.0080
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		0.050	0.0088
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.50	0.078
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.50	0.048
757124-72-4	4:2 FTS	ND		0.50	0.052
27619-97-2	6:2 FTS	ND		0.50	0.050
39108-34-4	8:2 FTS	ND		0.50	0.050

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID:
Lab Sample ID: ICB 320-233476/9
Matrix: Water
Lab File ID: 2018.07.11LLICALA_009.d
Analysis Method: 537 (modified)
Date Collected:
Extraction Method:
Date Extracted:
Sample wt/vol: 1(mL)
Date Analyzed: 07/11/2018 15:46
Con. Extract Vol.:
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 233476
Units: ng/mL

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00992	13C4 PFBA	95		25-150
STL01893	13C5 PFPeA	98		25-150
STL00993	13C2 PFHxA	95		25-150
STL01892	13C4-PFHpA	100		25-150
STL00990	13C4 PFOA	99		25-150
STL00995	13C5 PFNA	103		25-150
STL00996	13C2 PFDA	105		25-150
STL00997	13C2 PFUnA	103		25-150
STL00998	13C2 PFDoA	98		25-150
STL02116	13C2-PFTeDA	99		25-150
STL02337	13C3-PFBS	97		25-150
STL00994	18O2 PFHxS	97		25-150
STL00991	13C4 PFOS	95		25-150
STL01056	13C8 FOSA	106		25-150
STL02118	d3-NMeFOSAA	102		25-150
STL02117	d5-NEtFOSAA	107		25-150
STL02279	M2-6:2FTS	100		25-150
STL02280	M2-8:2FTS	107		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_009.d
Lims ID: ICB
Client ID:
Sample Type: ICB
Inject. Date: 11-Jul-2018 15:46:32 ALS Bottle#: 20 Worklist Smp#: 9
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: ICB
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180711-60919.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 11-Jul-2018 16:33:54 Calib Date: 11-Jul-2018 15:38:42
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK024

First Level Reviewer: westendorfc Date: 11-Jul-2018 16:22:41

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.424	1.431	-0.007	0.535	5105449	2.38		95.3	26366	
2 Perfluorobutyric acid										
212.90 > 169.00	1.430	1.431	-0.001	1.004	3363	0.001671			2.5	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.711	1.702	0.009	1.000	14347	0.008110			5.4	
D 3 13C5-PFPeA										
267.90 > 223.00	1.711	1.702	0.009	0.643	3645379	2.45		97.9	48729	
D 47 13C3-PFBS										
301.90 > 83.00	1.747	1.748	-0.001	0.657	84496	2.26		97.1	497	
D 60 M2-4:2FTS										
329.00 > 81.00	1.959	1.962	-0.003	0.737	417425	2.08		88.9	6292	
D 7 13C2 PFHxA										
315.00 > 270.00	1.991	1.996	-0.005	0.749	3834063	2.38		95.4	56611	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.082	2.093	-0.011	0.783	273473	2.39		95.6	6925	
D 9 13C4-PFHpA										
367.00 > 322.00	2.306	2.319	-0.013	0.867	3706447	2.50		100	38600	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.332	2.332	0.0	1.006	18024	0.007688			263	
399.00 > 99.00	2.332	2.332	0.0	1.006	5211		3.46(1.50-4.49)		47.2	
D 11 18O2 PFHxS										
403.00 > 84.00	2.319	2.334	-0.015	0.872	4830258	2.30		97.3	28662	
65 Adona										
377.00 > 251.00	2.358	2.360	-0.002	0.780	8760	0.001855			94.9	
377.00 > 85.00	2.358	2.360	-0.002	0.780	5310		1.65(0.84-2.53)		33.0	
D 12 M2-6:2FTS										
429.00 > 81.00	2.636	2.645	-0.009	0.991	755428	2.38		100	13924	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										
413.00 > 369.00	2.659	2.672	-0.013	1.000	12631	0.006863			8.1	
413.00 > 169.00	2.667	2.672	-0.005	1.003	6539		1.93(0.84-2.52)		30.4	
* 62 13C2-PFOA										
415.00 > 370.00	2.659	2.672	-0.013		3951281	2.50			32573	
D 14 13C4 PFOA										
417.00 > 372.00	2.659	2.672	-0.013	1.000	3736078	2.47		98.9	44719	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.667	2.678	-0.011	0.883	3908	0.002022			118	
449.00 > 99.00	2.674	2.678	-0.004	0.885	1924		2.03(1.94-5.82)		36.2	
D 18 13C4 PFOS										
503.00 > 80.00	3.021	3.034	-0.013	1.136	3505886	2.28		95.3	21609	
D 19 13C5 PFNA										
468.00 > 423.00	3.021	3.035	-0.014	1.136	3473100	2.57		103	48187	
20 Perfluorononanoic acid										
463.00 > 419.00	3.028	3.036	-0.008	1.002	5793	0.003759			12.8	
463.00 > 169.00	3.028	3.036	-0.008	1.002	1384		4.19(1.90-5.69)		59.2	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.244	3.245	-0.001	1.074	10185	0.003782			75.6	
D 21 13C8 FOSA										
506.00 > 78.00	3.356	3.367	-0.011	1.262	5882153	2.65		106	32072	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.356	3.371	-0.015	1.000	8648	0.003729			91.7	
25 1H,1H,2H,2H-perfluorodecanesulfoni										
527.00 > 507.00	3.365	3.380	-0.015	1.000	1962	0.003065			23.8	
D 26 M2-8:2FTS										
529.00 > 81.00	3.365	3.380	-0.015	1.265	1188636	2.56		107	14090	
D 23 13C2 PFDA										
515.00 > 470.00	3.374	3.391	-0.017	1.269	3120753	2.63		105	38969	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.384	3.392	-0.008	1.003	5226	0.003990			30.8	
513.00 > 169.00	3.384	3.392	-0.008	1.003	1124		4.65(2.36-7.09)		59.0	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.533	3.544	-0.011	1.329	1238407	2.55		102	19554	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.533	3.548	-0.015	1.000	9019	0.0185			87.7	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.679	3.701	-0.022	1.218	2331	0.002367			56.6	
599.00 > 99.00	3.679	3.701	-0.022	1.218	1542		1.51(1.39-4.16)		33.6	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.701	3.710	-0.009	1.392	1336727	2.68		107	3379	
D 30 13C2 PFUnA										
565.00 > 520.00	3.701	3.716	-0.015	1.392	2544489	2.57		103	37707	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.701	3.718	-0.017	1.000	9874	0.0209			202	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.701	3.718	-0.017	1.000	7096	0.008508			30.8	
563.00 > 169.00	3.722	3.718	0.004	1.006	2730		2.60(2.12-6.36)		107	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
66 11-Chloroeicosafluoro-3-oxaundecan										
631.00 > 451.00	3.868	3.874	-0.006	1.280	14206	0.003650			196	
D 36 13C2 PFDoA										
615.00 > 570.00	4.000	4.009	-0.009	1.504	2521880	2.46		98.2	20619	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.000	4.011	-0.011	1.000	6793	0.006167			3.7	
613.00 > 169.00	4.000	4.011	-0.011	1.000	1248		5.44(2.13-6.40)		30.7	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.263	4.273	-0.010	1.066	5790	0.005376			2.7	
663.00 > 169.00	4.243	4.273	-0.030	1.061	1939		2.99(1.25-3.76)		34.3	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.491	4.508	-0.017	1.689	2645796	2.48		99.3	18076	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.491	4.508	-0.017	1.000	2288	0.008309			35.8	
713.00 > 219.00	4.491	4.508	-0.017	1.000	2047		1.12(0.71-2.13)		50.1	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.905	4.918	-0.013	1.844	4322992	2.55		102	12800	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.905	4.918	-0.013	1.000	45931	0.006390			10.1	
813.00 > 169.00	4.905	4.918	-0.013	1.000	7683		5.98(2.86-8.58)		78.0	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.255	5.271	-0.016	1.071	19675	0.0100			3.7	
913.00 > 169.00	5.262	5.271	-0.009	1.073	2696		7.30(3.83-11.48)		29.2	

Reagents:

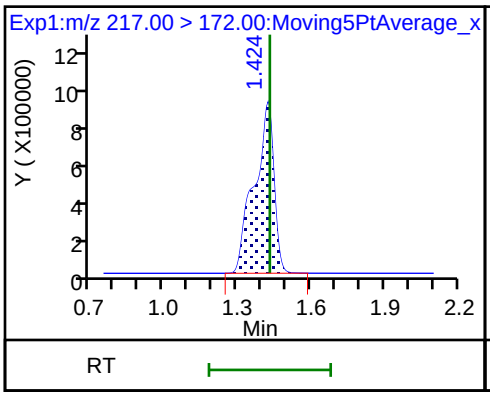
LCPFC_LL0_00007 Amount Added: 1.00 Units: mL

Report Date: 11-Jul-2018 16:34:20 Chrom Revision: 2.2 07-Jun-2018 07:41:54

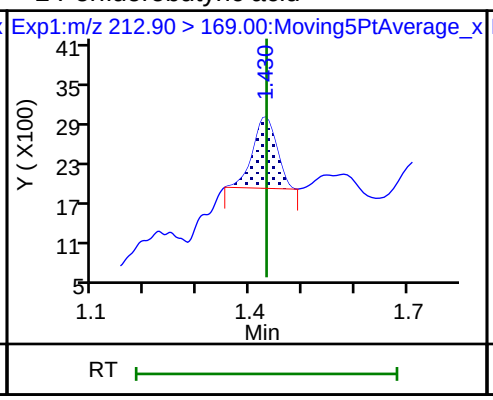
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_009.d
Injection Date: 11-Jul-2018 15:46:32 Instrument ID: A8_N
Lims ID: ICB
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 20 Worklist Smp#: 9
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC ICAL

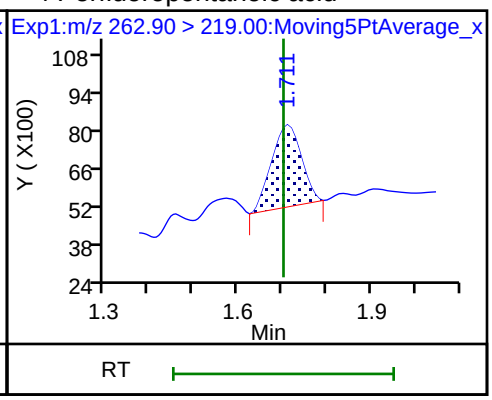
D 1 13C4 PFBA



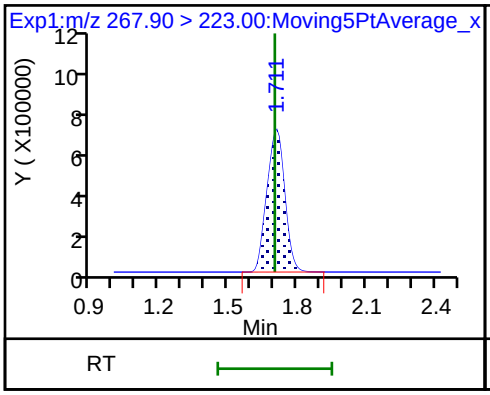
2 Perfluorobutyric acid



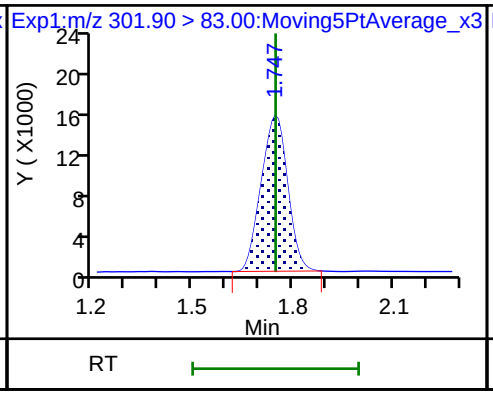
4 Perfluoropentanoic acid



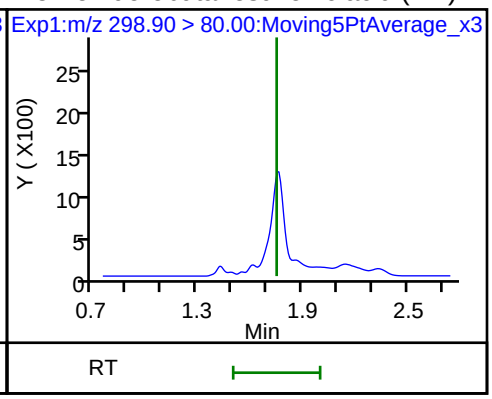
D 3 13C5-PFPeA



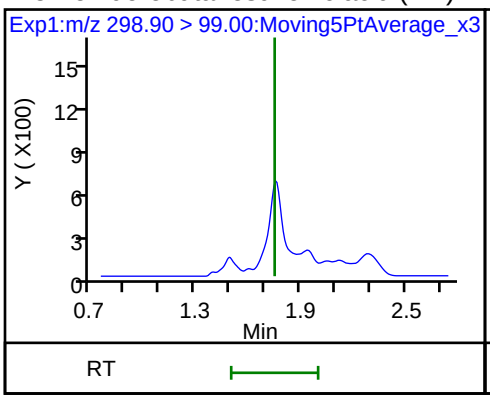
D 47 13C3-PFBS



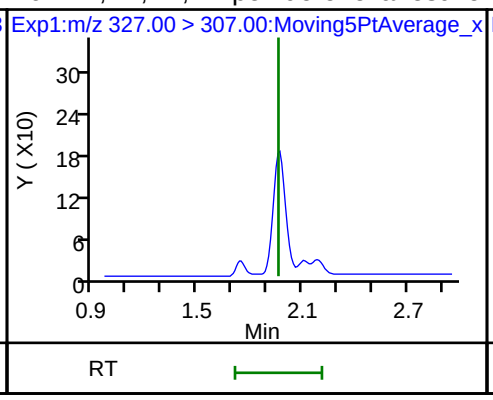
5 Perfluorobutanesulfonic acid (ND)



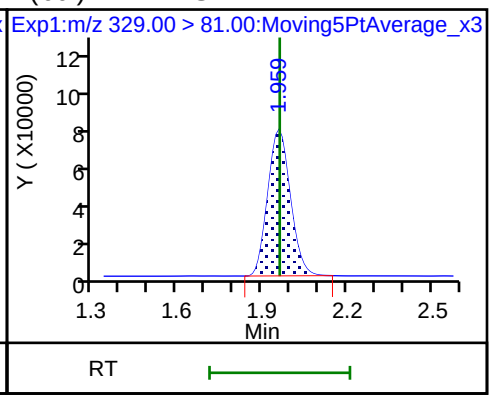
5 Perfluorobutanesulfonic acid (ND)



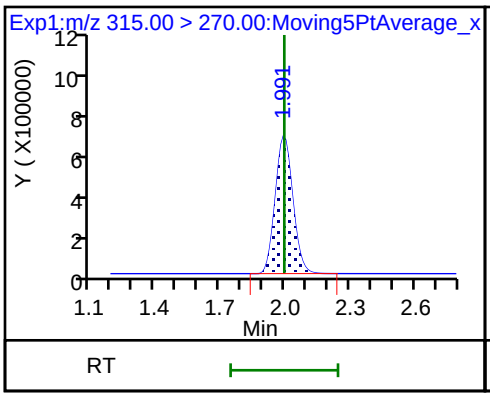
61 1H,1H,2H,2H-perfluorohexanesulfonic acid (ND)



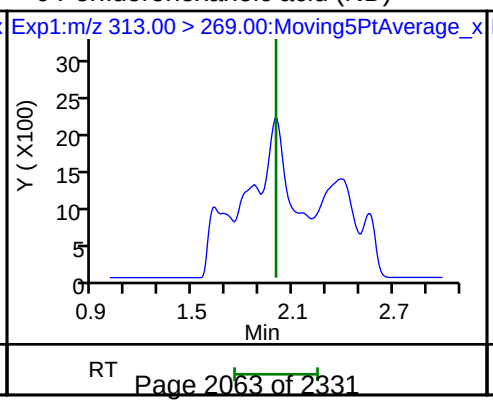
D 13C2-4:2FTS



D 7 13C2 PFHxA



6 Perfluorohexanoic acid (ND)



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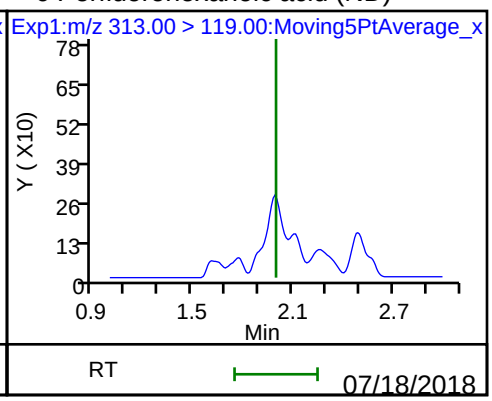
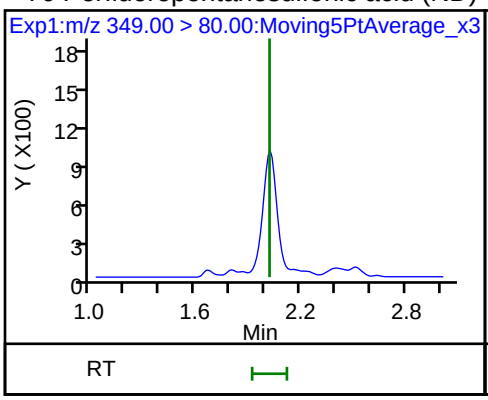
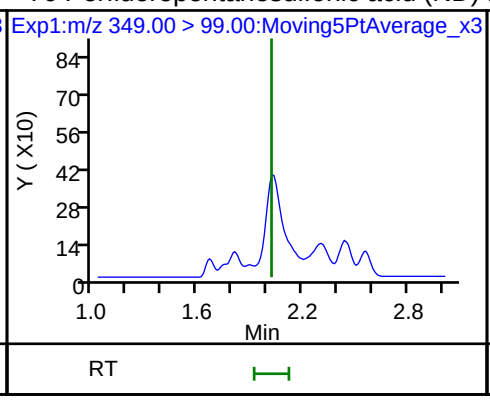


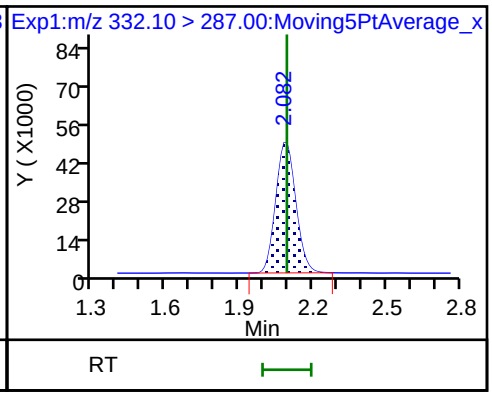
70 Perfluoropentanesulfonic acid (ND)



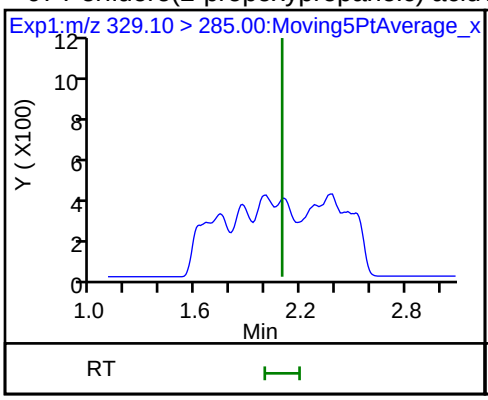
70 Perfluoropentanesulfonic acid (ND)



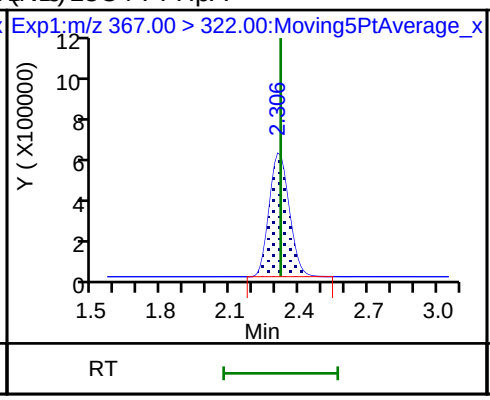
D 64 13C3 HFPO-DA



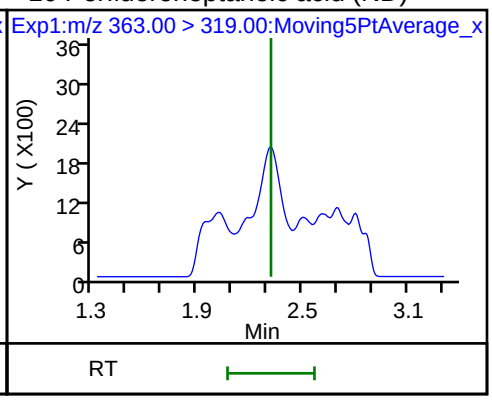
67 Perfluoro(2-propoxypropanoic) acid (ND)



D 9 13C4-PFHpA



10 Perfluoroheptanoic acid (ND)



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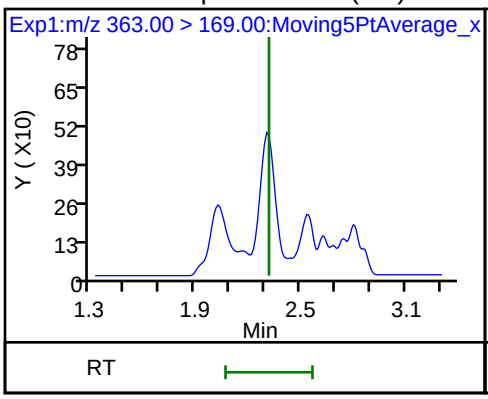
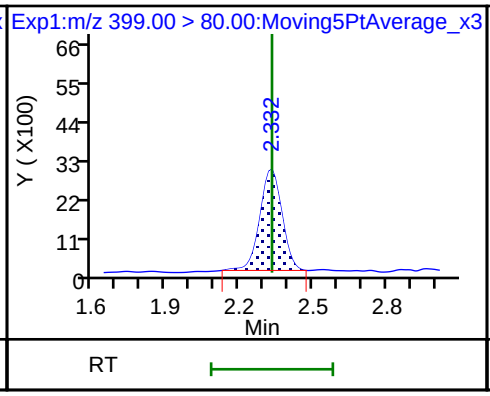
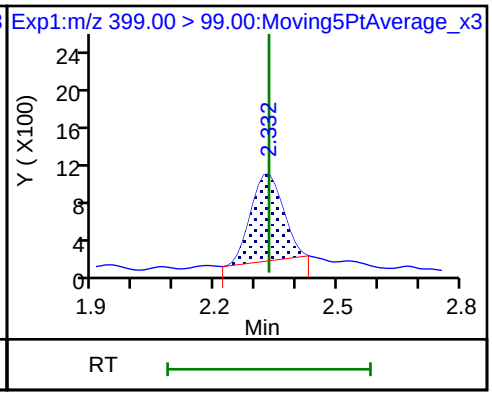


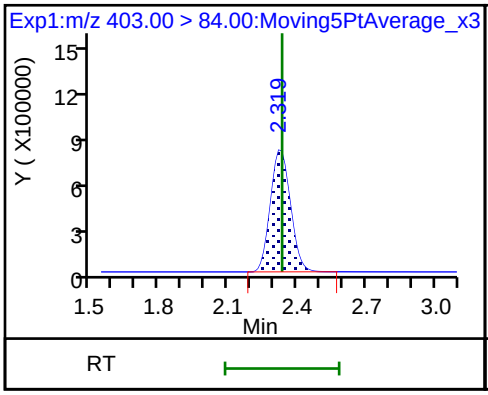
8 Perfluorohexanesulfonic acid



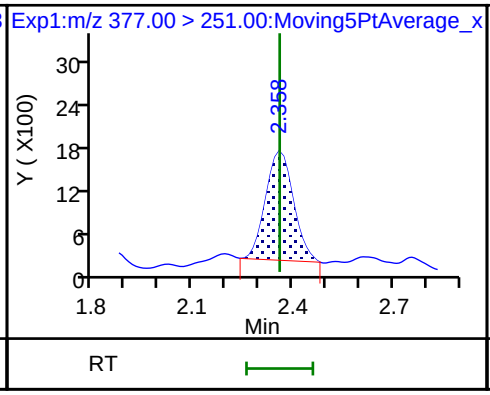
8 Perfluorohexanesulfonic acid



D 11 18O2 PFHxS



65 Adona



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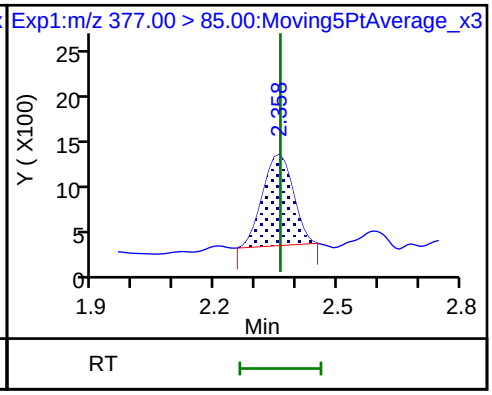
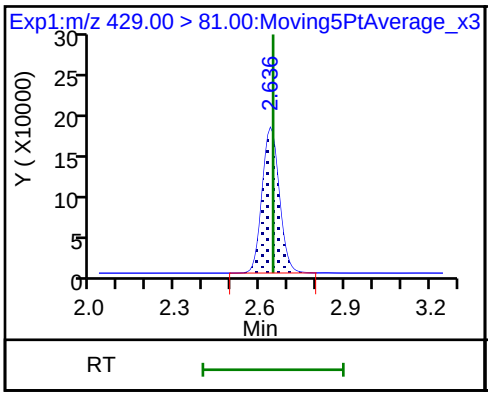
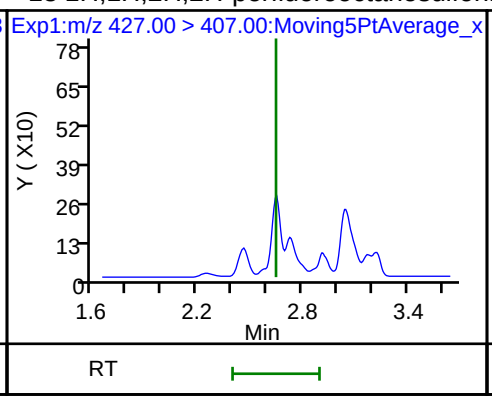


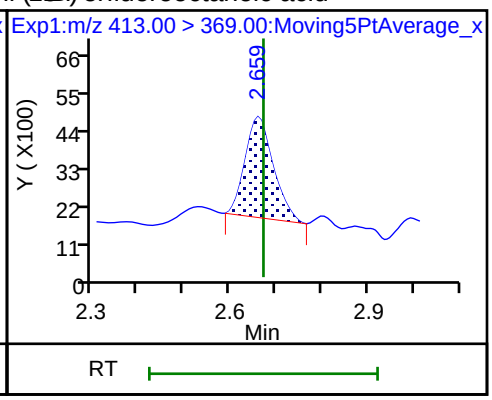
D 12 M2-6:2FTS



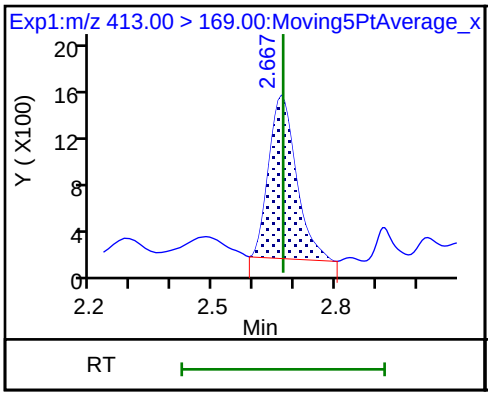
13 1H,1H,2H,2H-perfluorooctanesulfoni (ND)



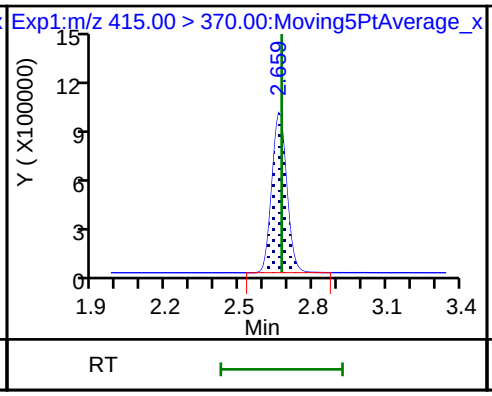
11 Perfluorooctanoic acid



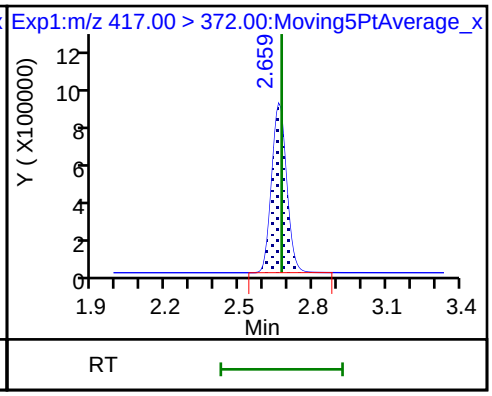
15 Perfluorooctanoic acid



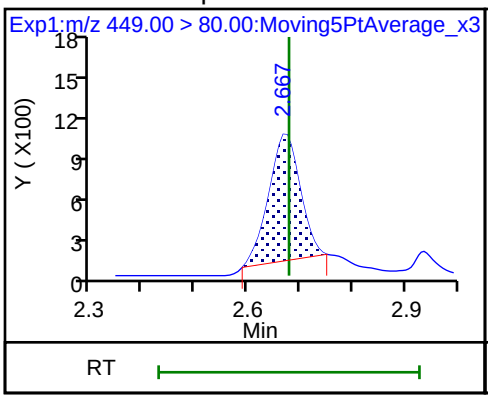
* 62 13C2-PFOA



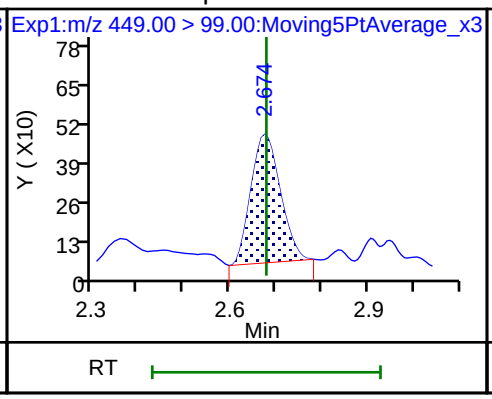
D 14 13C4 PFOA



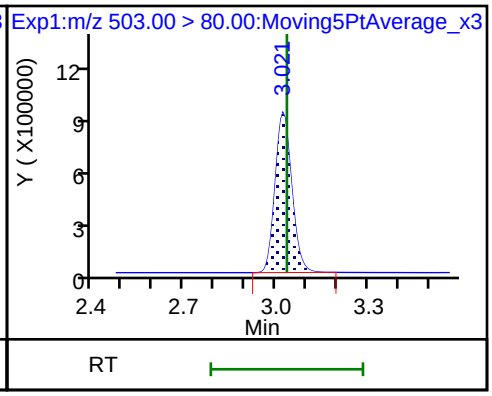
16 Perfluoroheptanesulfonic acid



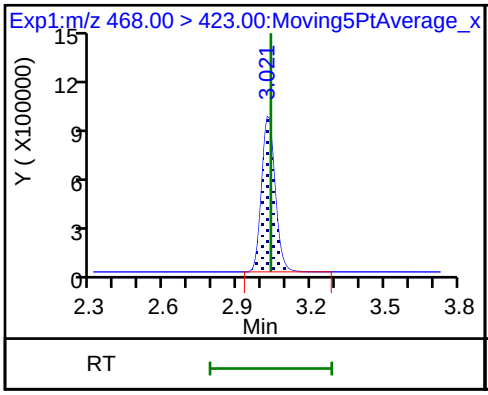
16 Perfluoroheptanesulfonic acid



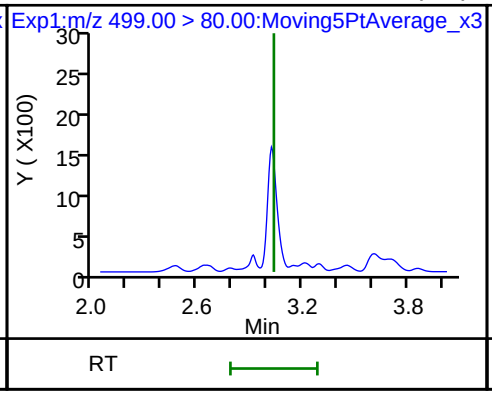
D 18 13C4 PFOS



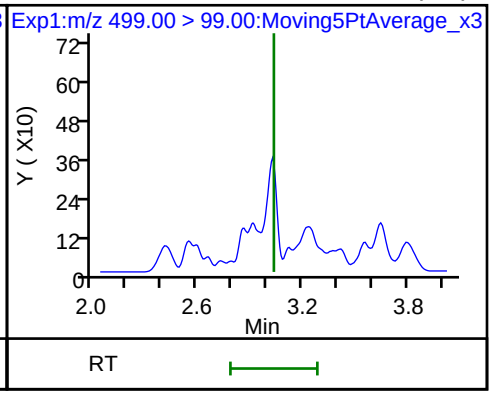
D 19 13C5 PFNA



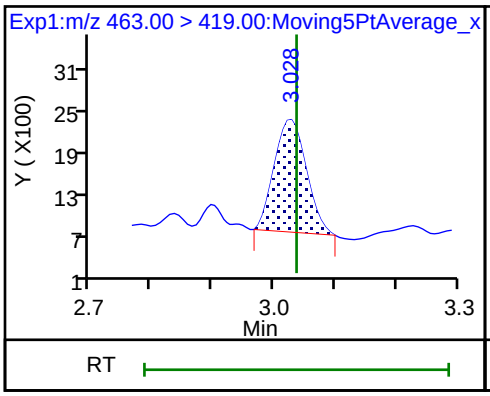
17 Perfluorooctane sulfonic acid (ND)



17 Perfluorooctane sulfonic acid (ND)



20 Perfluorononanoic acid



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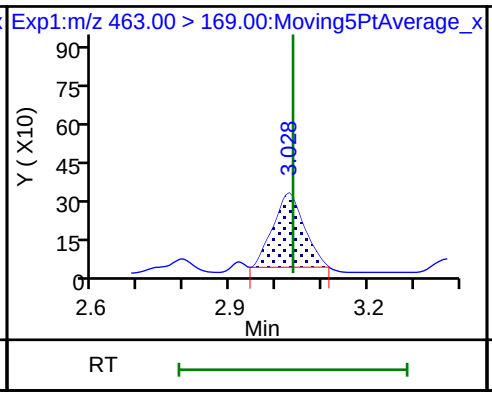
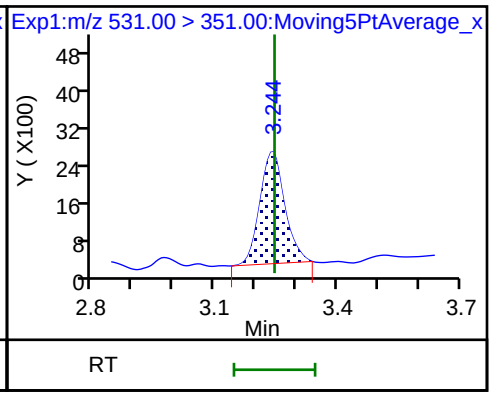
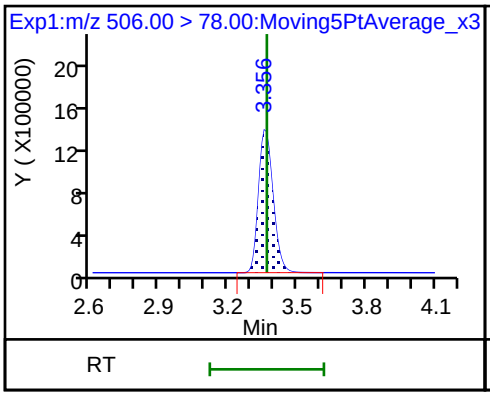


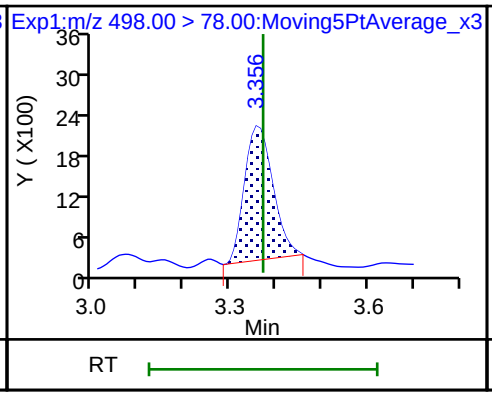
69 9-Chlorohexadecafluoro-3-oxanonane



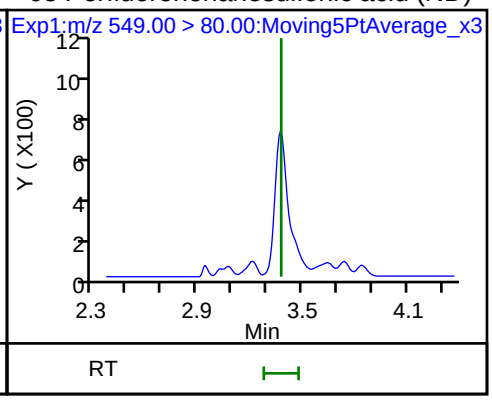
D 21 13C8 FOSA



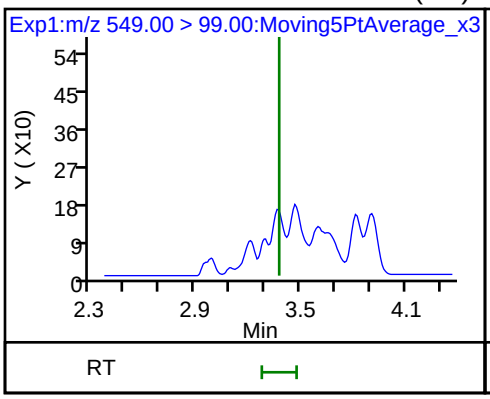
22 Perfluorooctane Sulfonamide



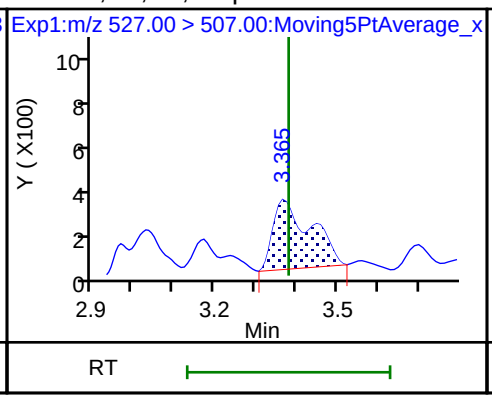
68 Perfluorononanesulfonic acid (ND)



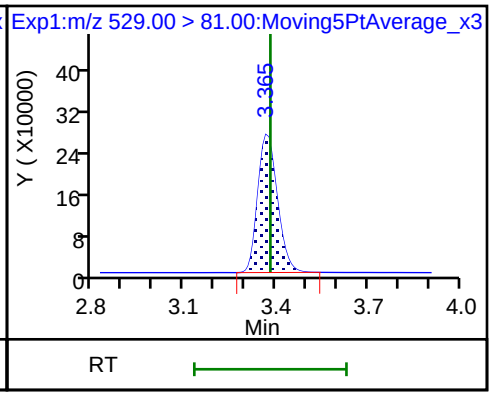
68 Perfluorononanesulfonic acid (ND)



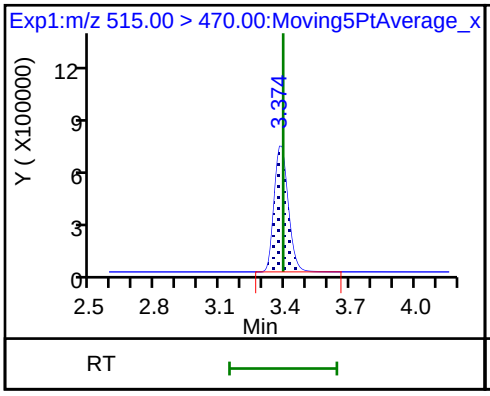
25 1H,1H,2H,2H-perfluorodecanesulfon



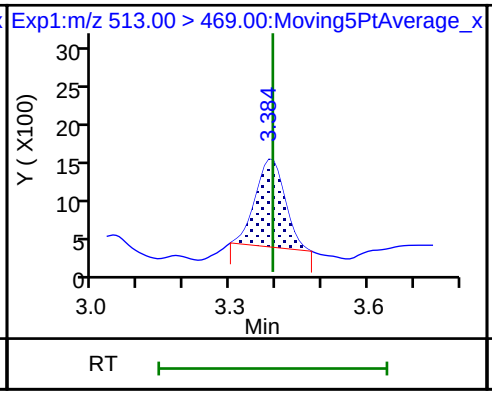
D 26 M2-8:2FTS



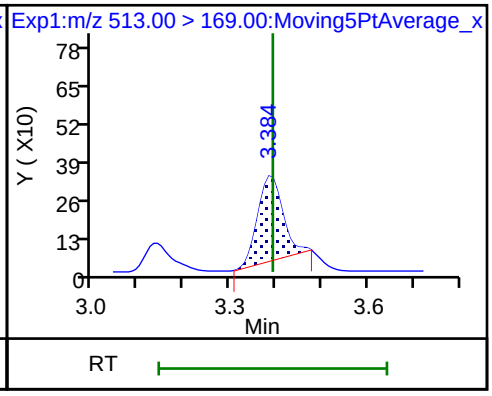
D 23 13C2 PFDA



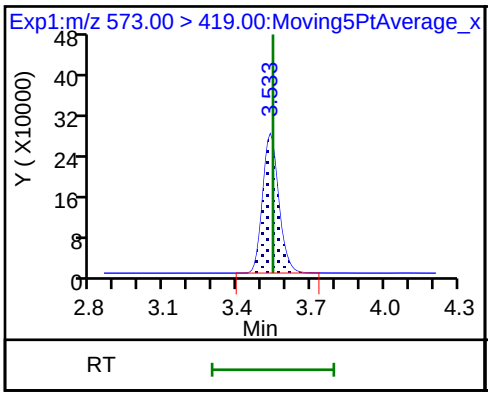
24 Perfluorodecanoic acid



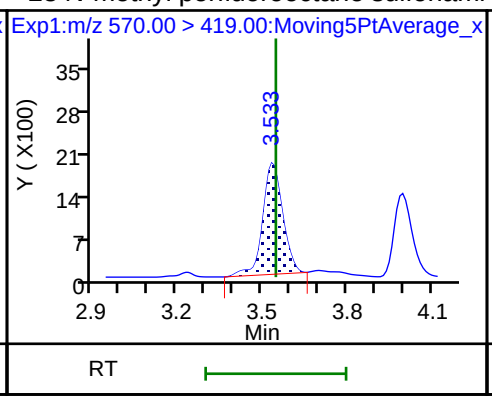
24 Perfluorodecanoic acid



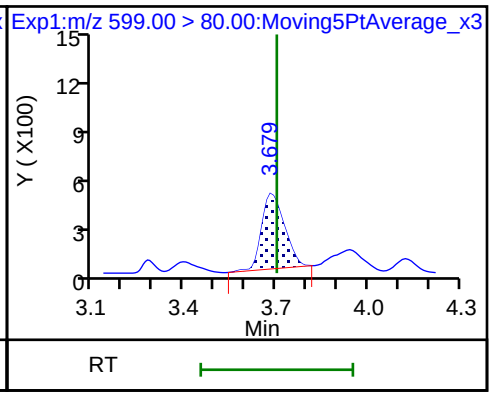
D 27 d3-NMeFOSAA



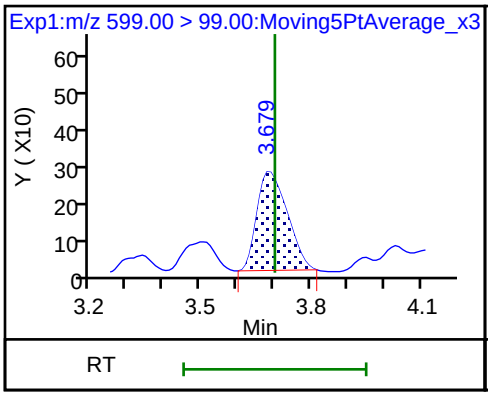
28 N-methyl perfluorooctane sulfonami



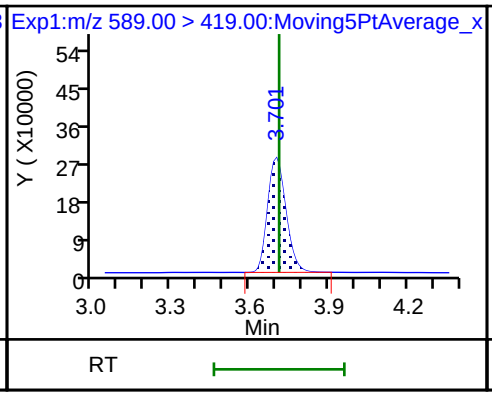
29 Perfluorodecane Sulfonic acid



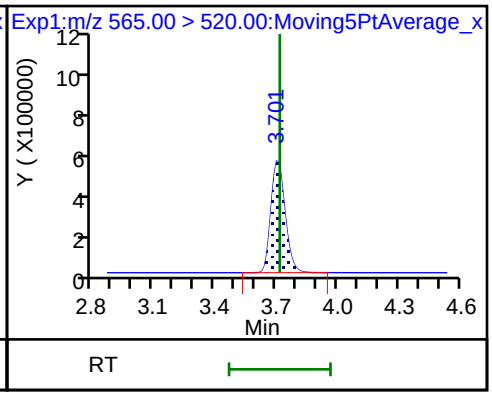
29 Perfluorodecane Sulfonic acid



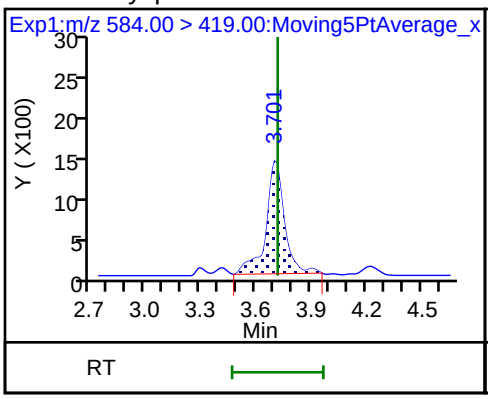
D 32 d5-NEtFOSAA



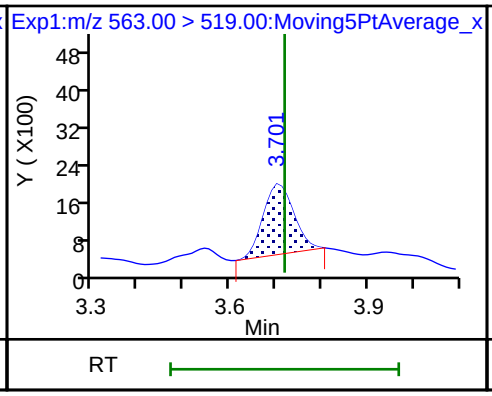
D 30 13C2 PFUnA



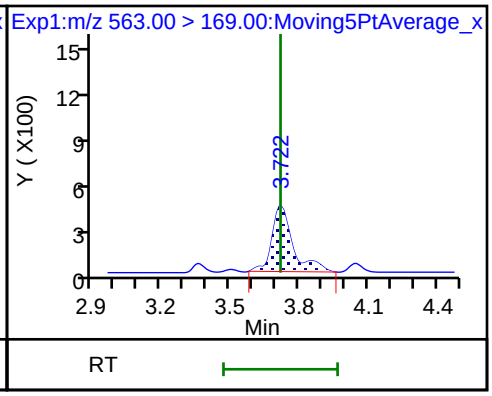
33 N-ethyl perfluorooctane sulfonamid



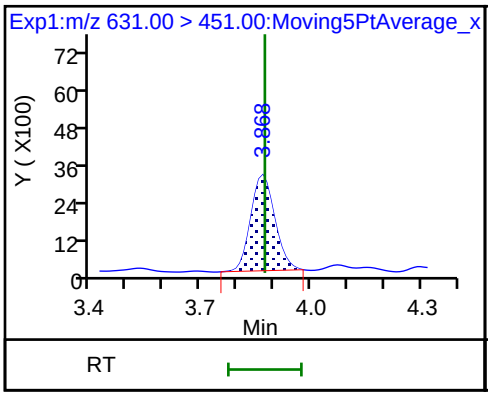
31 Perfluoroundecanoic acid



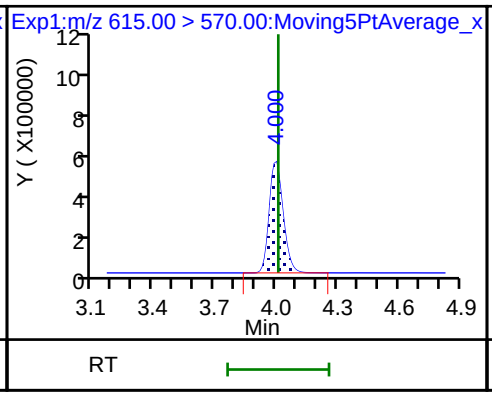
31 Perfluoroundecanoic acid



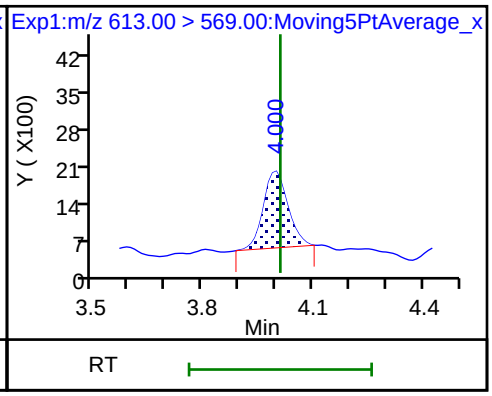
66 11-Chloroeicosafluoro-3-oxaundecan



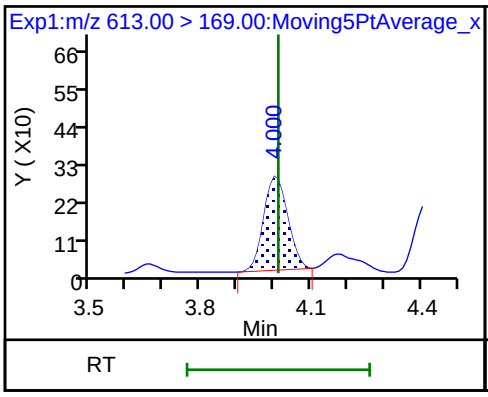
D 36 13C2 PFDoA



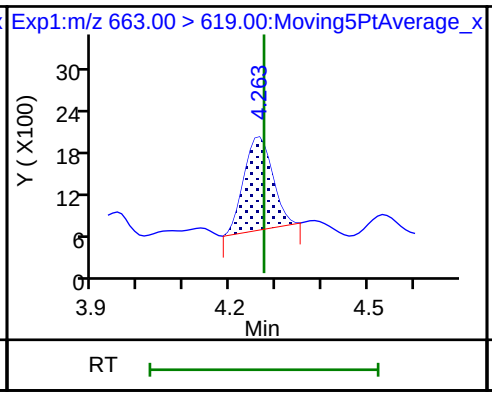
37 Perfluorododecanoic acid



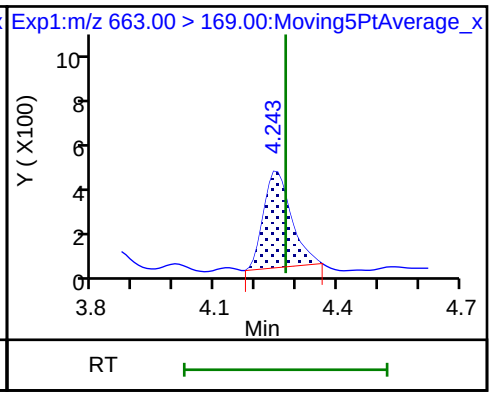
37 Perfluorododecanoic acid



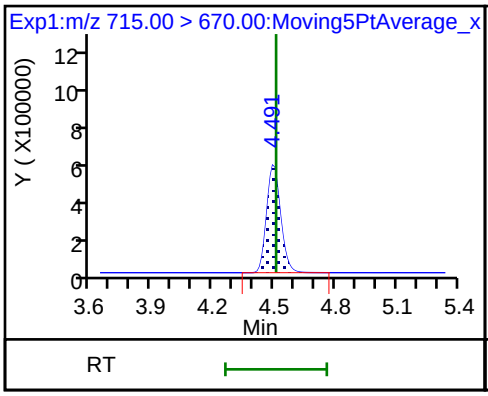
41 Perfluorotridecanoic acid



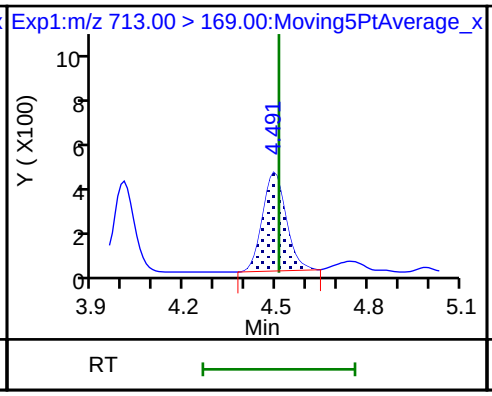
41 Perfluorotridecanoic acid



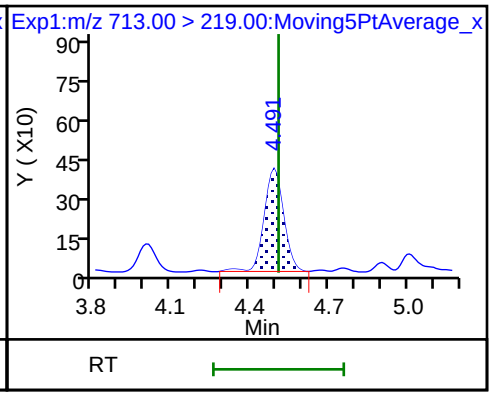
D 43 13C2-PFTeDA



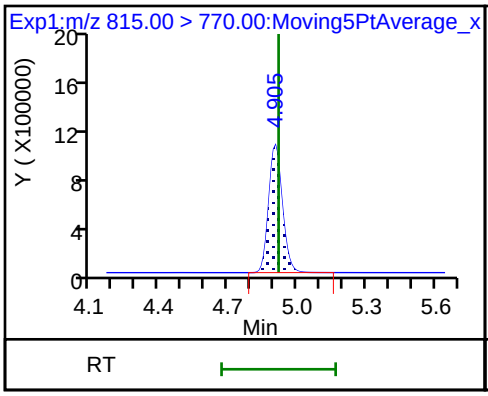
42 Perfluorotetradecanoic acid



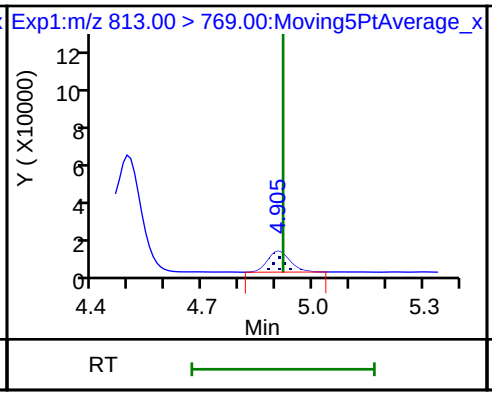
42 Perfluorotetradecanoic acid



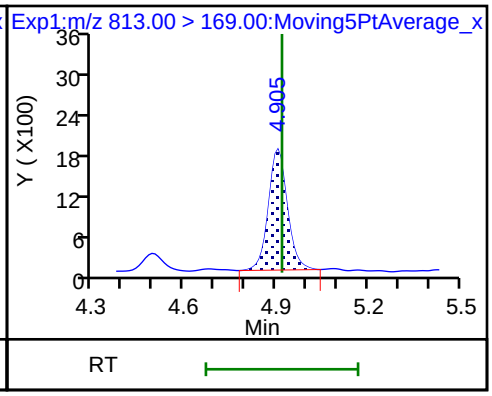
D 44 13C2-PFHxDA



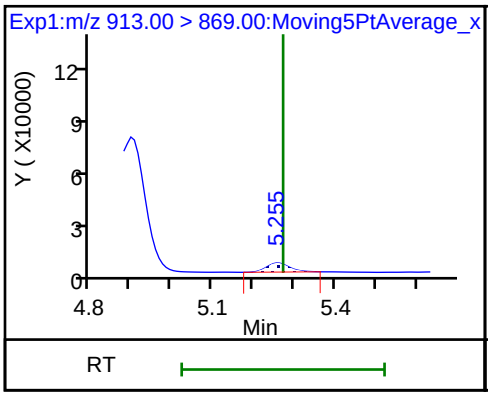
45 Perfluorohexadecanoic acid



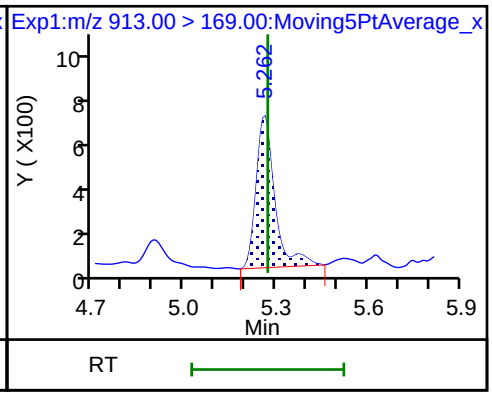
45 Perfluorohexadecanoic acid



46 Perfluorooctadecanoic acid



46 Perfluorooctadecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID:
Lab Sample ID: LCS 320-231392/2-A
Matrix: Solid
Lab File ID: 2018.07.13LLB_054.d
Analysis Method: 537 (modified)
Date Collected:
Extraction Method: SHAKE
Date Extracted: 06/28/2018 05:15
Sample wt/vol: 5.00(g)
Date Analyzed: 07/14/2018 03:49
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 233997
Units: mg/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	0.00187		0.00020	0.000028
2706-90-3	Perfluoropentanoic acid (PFPeA)	0.00181		0.00020	0.000077
307-24-4	Perfluorohexanoic acid (PFHxA)	0.00192		0.00020	0.000042
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.00179		0.00020	0.000029
335-67-1	Perfluorooctanoic acid (PFOA)	0.00180		0.00020	0.000086
375-95-1	Perfluorononanoic acid (PFNA)	0.00178		0.00020	0.000036
335-76-2	Perfluorodecanoic acid (PFDA)	0.00190		0.00020	0.000022
2058-94-8	Perfluoroundecanoic acid (PFUnA)	0.00184		0.00020	0.000036
307-55-1	Perfluorododecanoic acid (PFDoA)	0.00184		0.00020	0.000067
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	0.00185		0.00020	0.000051
376-06-7	Perfluorotetradecanoic acid (PFTeA)	0.00190		0.00020	0.000054
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.00171		0.00020	0.000025
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.00160		0.00020	0.000031
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	0.00189		0.00020	0.000035
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.00174		0.00050	0.00020
335-77-3	Perfluorodecanesulfonic acid (PFDS)	0.00189		0.00020	0.000039
754-91-6	Perfluorooctane Sulfonamide (FOSA)	0.00200		0.00020	0.000082
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	0.00189	J	0.0020	0.00039
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	0.00180	J	0.0020	0.00037
27619-97-2	6:2 FTS	0.00172	J	0.0020	0.00015
39108-34-4	8:2 FTS	0.00180	J	0.0020	0.00025

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID:
Lab Sample ID: LCS 320-231392/2-A
Matrix: Solid
Lab File ID: 2018.07.13LLB_054.d
Analysis Method: 537 (modified)
Date Collected:
Extraction Method: SHAKE
Date Extracted: 06/28/2018 05:15
Sample wt/vol: 5.00(g)
Date Analyzed: 07/14/2018 03:49
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 233997
Units: mg/Kg

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00992	13C4 PFBA	86		25-150
STL01893	13C5 PFPeA	93		25-150
STL00993	13C2 PFHxA	93		25-150
STL01892	13C4-PFHpA	98		25-150
STL00990	13C4 PFOA	95		25-150
STL00995	13C5 PFNA	88		25-150
STL00996	13C2 PFDA	90		25-150
STL00997	13C2 PFUnA	89		25-150
STL00998	13C2 PFDoA	97		25-150
STL02116	13C2-PFTeDA	96		25-150
STL02337	13C3-PFBS	91		25-150
STL00994	18O2 PFHxS	92		25-150
STL00991	13C4 PFOS	88		25-150
STL01056	13C8 FOSA	84		25-150
STL02118	d3-NMeFOSAA	89		25-150
STL02117	d5-NEtFOSAA	95		25-150
STL02279	M2-6:2FTS	86		25-150
STL02280	M2-8:2FTS	71		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\2018.07.13LLB_054.d
Lims ID: LCS 320-231392/2-A
Client ID:
Sample Type: LCS
Inject. Date: 14-Jul-2018 03:49:19 ALS Bottle#: 39 Worklist Smp#: 3
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: lcs 320-231392
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 16-Jul-2018 14:12:31 Calib Date: 11-Jul-2018 15:38:42
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK023

First Level Reviewer: mongkols Date: 16-Jul-2018 14:12:31

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										M
217.00 > 172.00	1.433	1.441	-0.008	0.538	4989162	2.15		85.9	71158	M
2 Perfluorobutyric acid										M
212.90 > 169.00	1.439	1.444	-0.005	1.004	1842666	0.9368		93.7	868	M
D 3 13C5-PFPeA										
267.90 > 223.00	1.717	1.720	-0.003	0.644	3741004	2.32		92.6	37439	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.717	1.725	-0.008	1.000	1638564	0.9026		90.3	749	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.762	1.761	0.001	1.005	2411254	0.8530		96.5	15682	
298.90 > 99.00	1.762	1.761	0.001	1.005	970148		2.49(1.25-3.74)		10964	
D 47 13C3-PFBS										
301.90 > 83.00	1.753	1.765	-0.012	0.657	85916	2.12		91.0	553	
61 1H,1H,2H,2H-perfluorohexanesulfoni										
327.00 > 307.00	1.967	1.967	0.0	1.122	409915	0.8534		91.4	23484	
D 7 13C2 PFHxA										
315.00 > 270.00	2.000	2.003	-0.003	0.750	4067964	2.33		93.3	69339	
6 Perfluorohexanoic acid										
313.00 > 269.00	2.000	2.011	-0.011	1.000	1611133	0.9619		96.2	3350	
313.00 > 119.00	2.000	2.011	-0.011	1.000	145921		11.04(5.03-15.10)		2727	
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.022	2.033	-0.011	1.154	2280082	0.8842		94.3	42986	
349.00 > 99.00	2.022	2.033	-0.011	1.154	865214		2.64(1.36-4.07)		12256	
67 Perfluoro(2-propoxypropanoic) acid										
329.10 > 285.00	2.090	2.101	-0.011	1.000	298716	0.8290		82.9	2483	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.090	2.105	-0.015	0.784	339409	2.74		109	7310	
D 9 13C4-PFHpA										
367.00 > 322.00	2.316	2.319	-0.003	0.869	3929273	2.45		97.8	46698	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.316	2.329	-0.013	1.000	1623128	0.8929		89.3	3496	
363.00 > 169.00	2.316	2.329	-0.013	1.000	640945		2.53(1.13-3.40)		8933	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.329	2.329	0.0	1.000	1916779	0.8018		88.1	14447	
399.00 > 99.00	2.329	2.329	0.0	1.000	656182		2.92(1.50-4.49)		3429	
D 11 18O2 PFHxS										
403.00 > 84.00	2.329	2.332	-0.003	0.874	4925382	2.16		91.5	45630	
65 Adona										
377.00 > 251.00	2.355	2.368	-0.013	0.779	4820702	1.02		102	43411	
377.00 > 85.00	2.355	2.368	-0.013	0.779	2814563		1.71(0.84-2.53)		18614	
D 12 M2-6:2FTS										
429.00 > 81.00	2.635	2.644	-0.009	0.988	704820	2.05		86.2	16260	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.643	2.651	-0.008	1.003	398766	0.8589		90.6	3560	
D 14 13C4 PFOA										
417.00 > 372.00	2.666	2.667	-0.001	1.000	3878276	2.37		94.7	38454	
* 62 13C2-PFOA										
415.00 > 370.00	2.666	2.673	-0.007		4285601	2.50			57213	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.666	2.673	-0.007	1.000	1720048	0.9003		89.9	1167	
413.00 > 169.00	2.666	2.673	-0.007	1.000	864766		1.99(0.84-2.52)		5166	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.673	2.681	-0.008	0.885	1836758	0.9457		99.3	31601	
449.00 > 99.00	2.673	2.681	-0.008	0.885	482518		3.81(1.94-5.82)		10520	
D 18 13C4 PFOS										
503.00 > 80.00	3.022	3.027	-0.005	1.134	3523348	2.11		88.3	35953	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.022	3.033	-0.011	1.000	1455547	0.8713		93.9	12515	
499.00 > 99.00	3.022	3.033	-0.011	1.000	338259		4.30(2.31-6.93)		6029	
20 Perfluorononanoic acid										
463.00 > 419.00	3.029	3.033	-0.004	1.002	1269014	0.8921		89.2	2776	
463.00 > 169.00	3.029	3.033	-0.004	1.002	313004		4.05(1.90-5.69)		13476	
D 19 13C5 PFNA										
468.00 > 423.00	3.022	3.034	-0.012	1.134	3205769	2.19		87.5	35183	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.237	3.241	-0.004	1.071	2351542	0.8689		93.2	23508	
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.368	3.371	-0.003	1.114	1108892	0.9703		101	21595	
549.00 > 99.00	3.368	3.371	-0.003	1.114	423622		2.62(1.33-3.97)		8261	
D 26 M2-8:2FTS										
529.00 > 81.00	3.368	3.379	-0.011	1.263	857337	1.70		71.1	15058	
D 21 13C8 FOSA										
506.00 > 78.00	3.368	3.379	-0.011	1.263	5063395	2.10		84.1	36984	
25 1H,1H,2H,2H-perfluorodecanesulfoni										
527.00 > 507.00	3.368	3.380	-0.012	1.000	415280	0.8993		93.9	7846	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.368	3.380	-0.012	1.000	1998524	1.00		100	20570	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 23 13C2 PFDA										
515.00 > 470.00	3.377	3.389	-0.012	1.267	2880992	2.24		89.6	38074	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.386	3.389	-0.003	1.003	1147926	0.9493		94.9	6947	
513.00 > 169.00	3.377	3.389	-0.012	1.000	201570		5.69(2.36-7.09)		7552	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.536	3.538	-0.002	1.326	1177450	2.23		89.3	19826	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.536	3.548	-0.012	1.000	439603	0.9468		94.7	4483	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.685	3.698	-0.013	1.219	936878	0.9465		98.2	17834	
599.00 > 99.00	3.685	3.698	-0.013	1.219	307904		3.04(1.39-4.16)		9193	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.695	3.708	-0.013	1.386	1284050	2.38		95.1	3043	
D 30 13C2 PFUnA										
565.00 > 520.00	3.706	3.708	-0.002	1.390	2393402	2.23		89.1	61740	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.706	3.709	-0.003	1.000	721406	0.9196		92.0	3643	
563.00 > 169.00	3.706	3.709	-0.003	1.000	202262		3.57(2.12-6.36)		8444	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.706	3.709	-0.003	1.003	409561	0.9020		90.2	9781	
66 11-Chloroeicosafluoro-3-oxaundecan										
631.00 > 451.00	3.863	3.866	-0.003	1.278	3666181	0.9372		99.5	51784	
D 36 13C2 PFDoA										
615.00 > 570.00	3.996	3.999	-0.003	1.499	2702740	2.43		97.1	26136	
37 Perfluorododecanoic acid										
613.00 > 569.00	3.996	4.010	-0.014	1.000	1086894	0.9208		92.1	706	
613.00 > 169.00	3.996	4.010	-0.014	1.000	262515		4.14(2.13-6.40)		5606	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.259	4.263	-0.004	1.066	1066552	0.9240		92.4	576	
663.00 > 169.00	4.259	4.263	-0.004	1.066	322063		3.31(1.25-3.76)		5890	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.490	4.501	-0.011	1.684	2780484	2.41		96.3	15032	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.490	4.502	-0.012	1.000	274793	0.9496		95.0	4387	
713.00 > 219.00	4.490	4.502	-0.012	1.000	187400		1.47(0.71-2.13)		3917	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.904	4.905	-0.001	1.839	4410997	2.40		95.9	14025	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.904	4.914	-0.010	1.000	1648128	0.9615		96.1	380	
813.00 > 169.00	4.904	4.914	-0.010	1.000	265350		6.21(2.86-8.58)		2459	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.254	5.256	-0.002	1.071	1942055	0.9631		96.3	386	
913.00 > 169.00	5.247	5.256	-0.009	1.070	235425		8.25(3.83-11.48)		2870	

QC Flag Legend

Review Flags

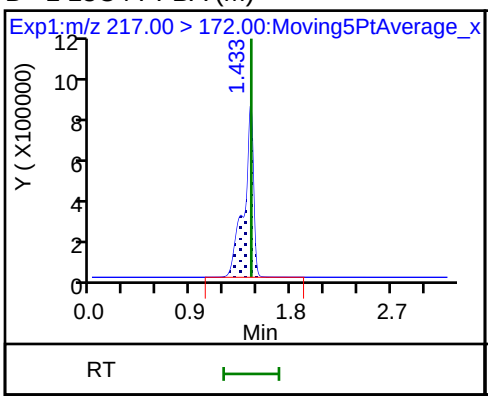
M - Manually Integrated

Report Date: 16-Jul-2018 14:12:32 Chrom Revision: 2.2 07-Jun-2018 07:41:54

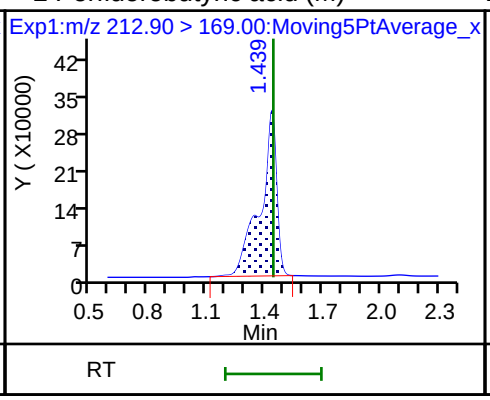
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\2018.07.13LLB_054.d
Injection Date: 14-Jul-2018 03:49:19 Instrument ID: A8_N
Lims ID: LCS 320-231392/2-A
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 39 Worklist Smp#: 3
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC ICAL

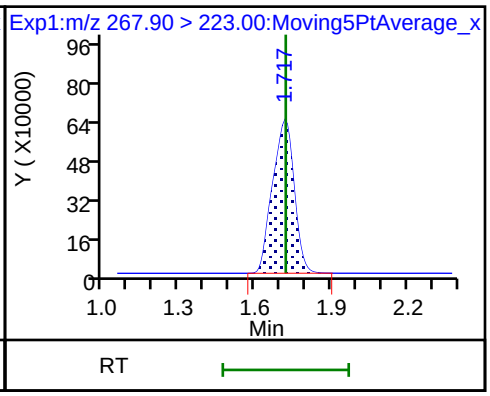
D 1 13C4 PFBA (M)



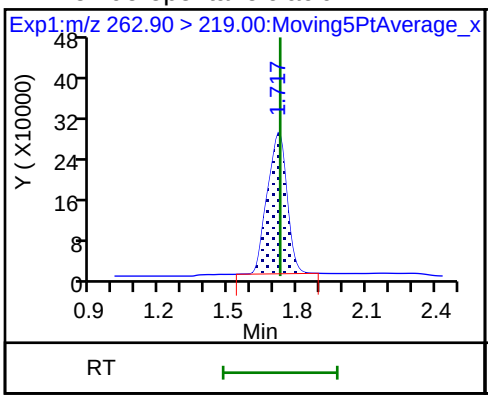
2 Perfluorobutyric acid (M)



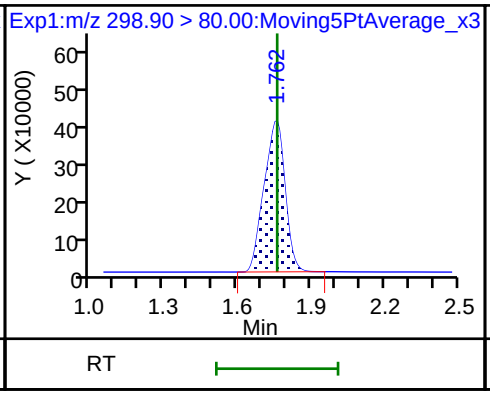
D 3 13C5-PFPeA



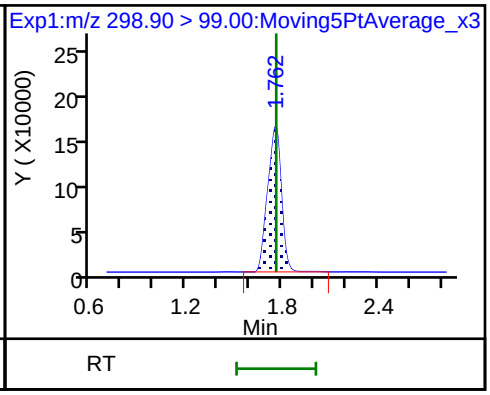
4 Perfluoropentanoic acid



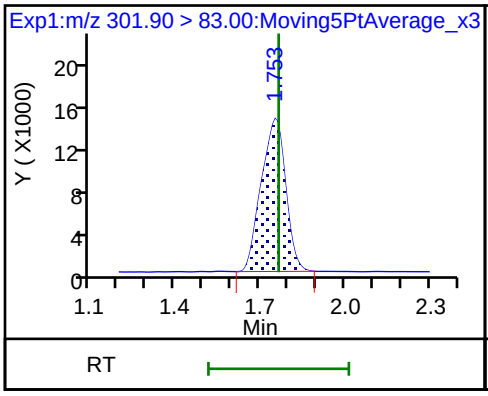
5 Perfluorobutanesulfonic acid



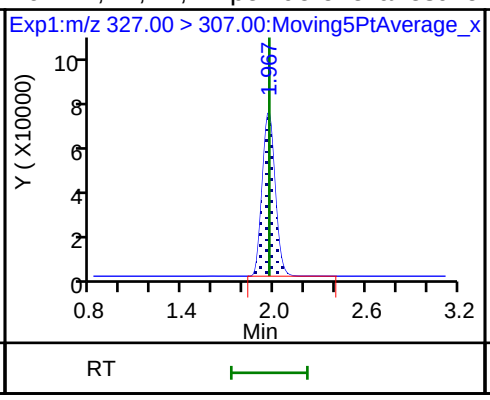
5 Perfluorobutanesulfonic acid



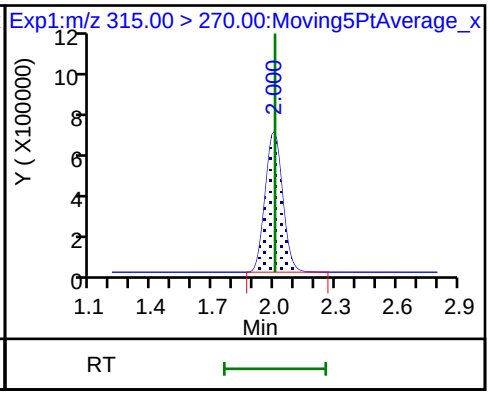
D 47 13C3-PFBS



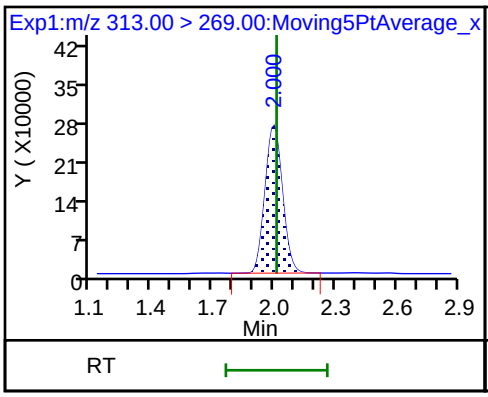
61 1H,1H,2H,2H-perfluorohexanesulfon



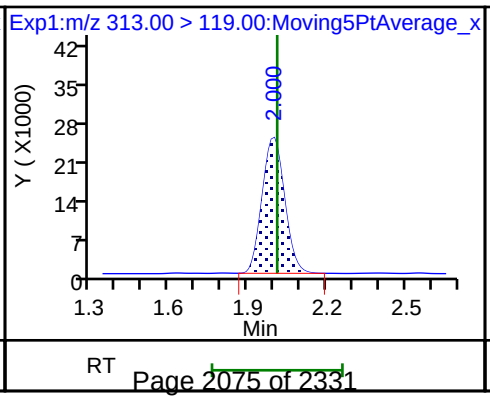
D 7 13C2 PFHxA



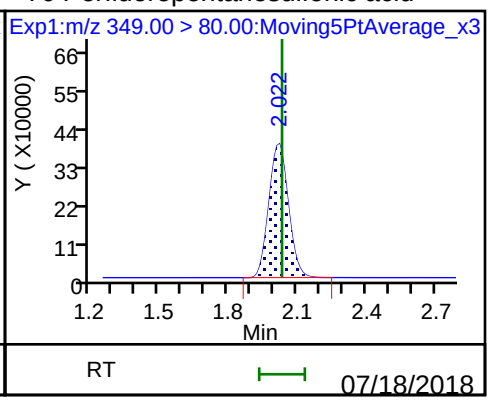
6 Perfluorohexanoic acid



6 Perfluorohexanoic acid



70 Perfluoropentanesulfonic acid



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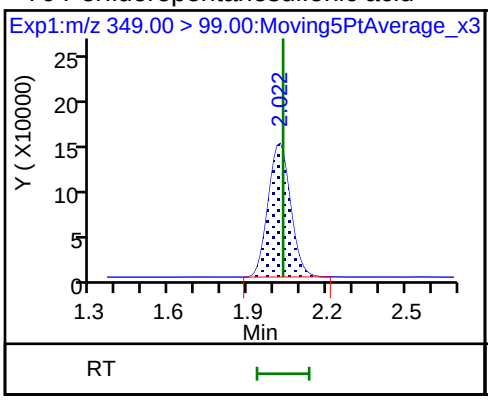
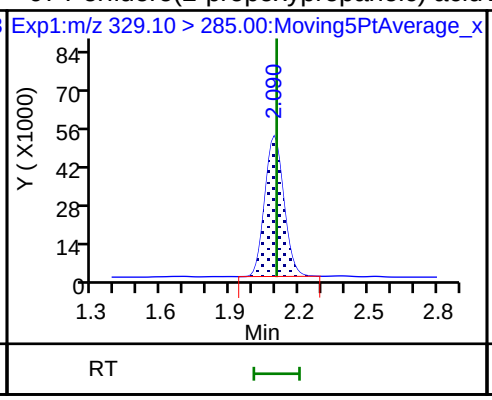
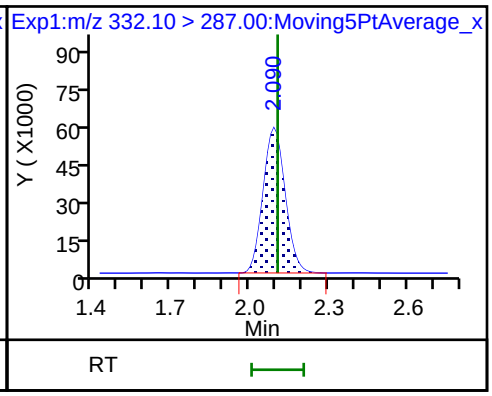


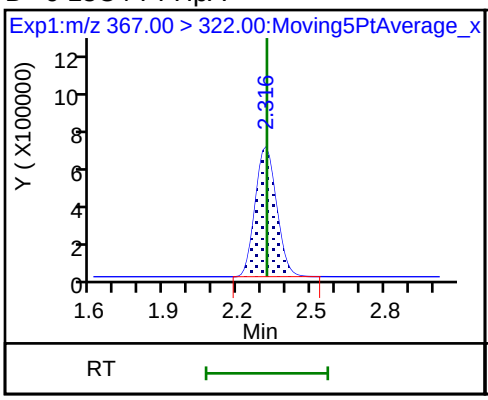
67 Perfluoro(2-propoxypropanoic) acid



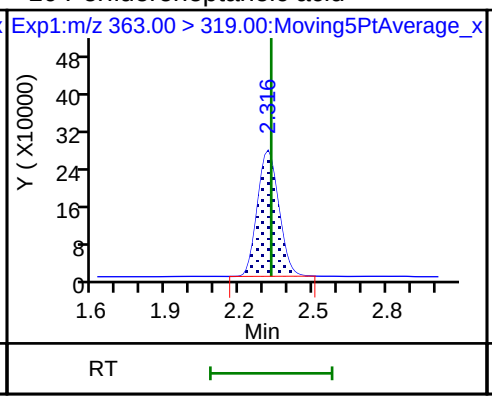
D 64 13C3 HFPO-DA



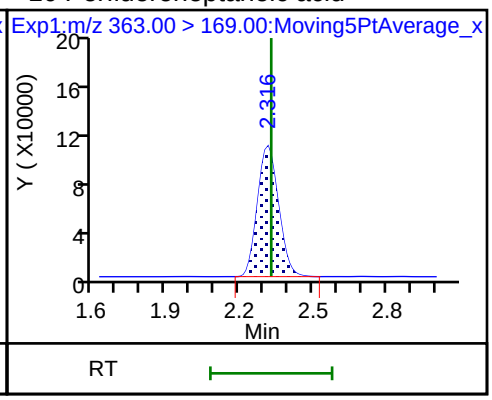
D 9 13C4-PFHpA



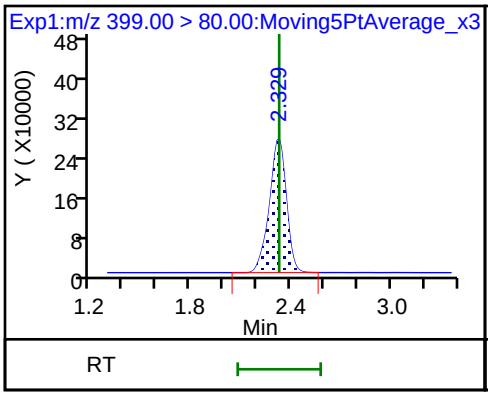
10 Perfluoroheptanoic acid



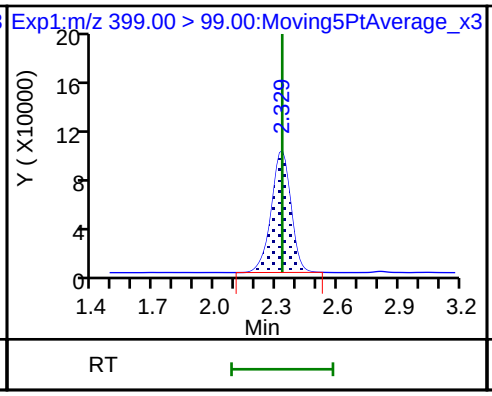
10 Perfluoroheptanoic acid



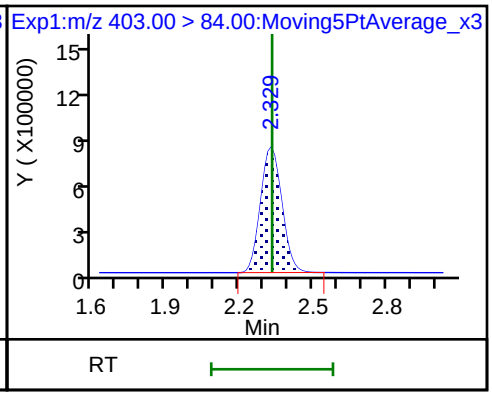
8 Perfluorohexanesulfonic acid



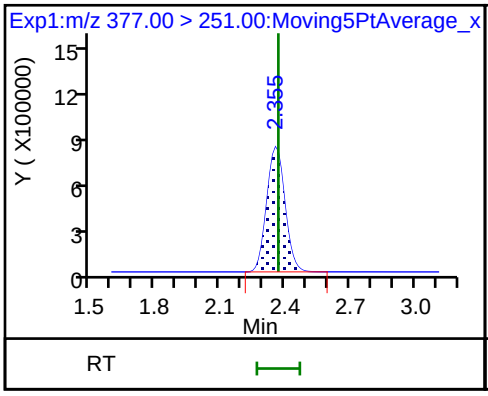
8 Perfluorohexanesulfonic acid



D 11 18O2 PFHxS



65 Adona



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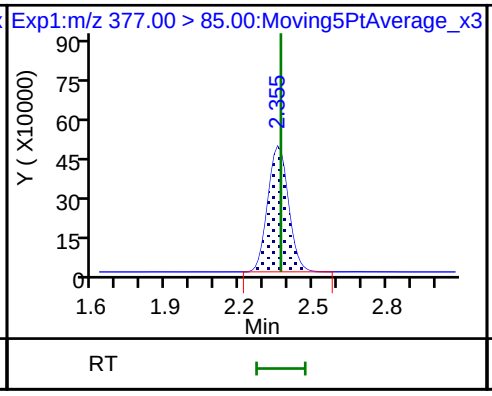
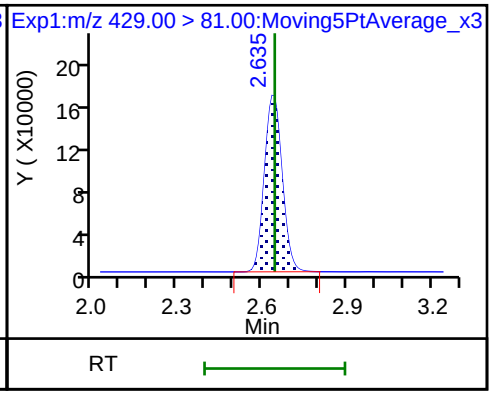
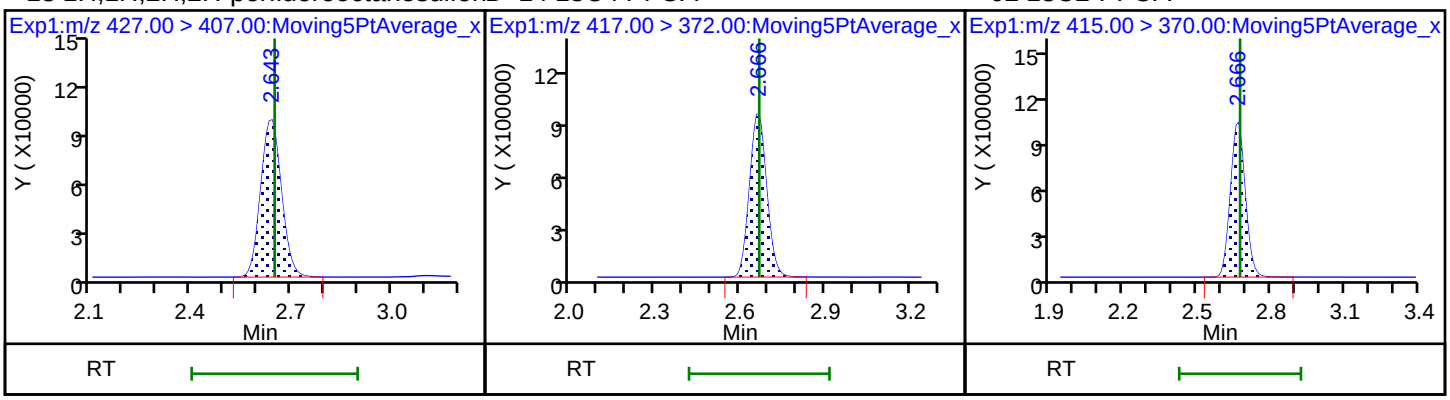


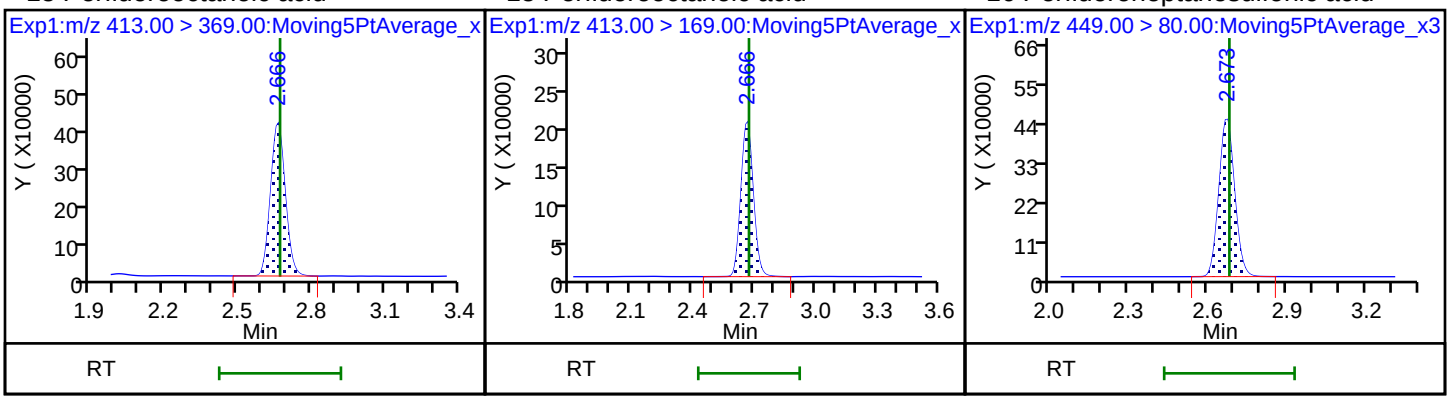
D 12 M2-6:2FTS



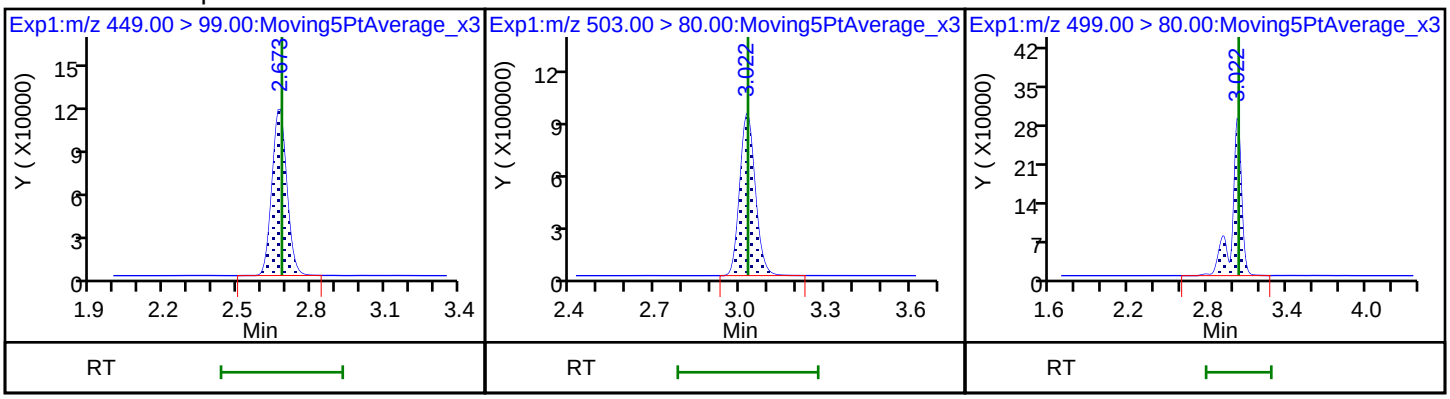
13 1H,1H,2H,2H-perfluorooctanesulfon D 14 13C4 PFOA * 62 13C2-PFOA



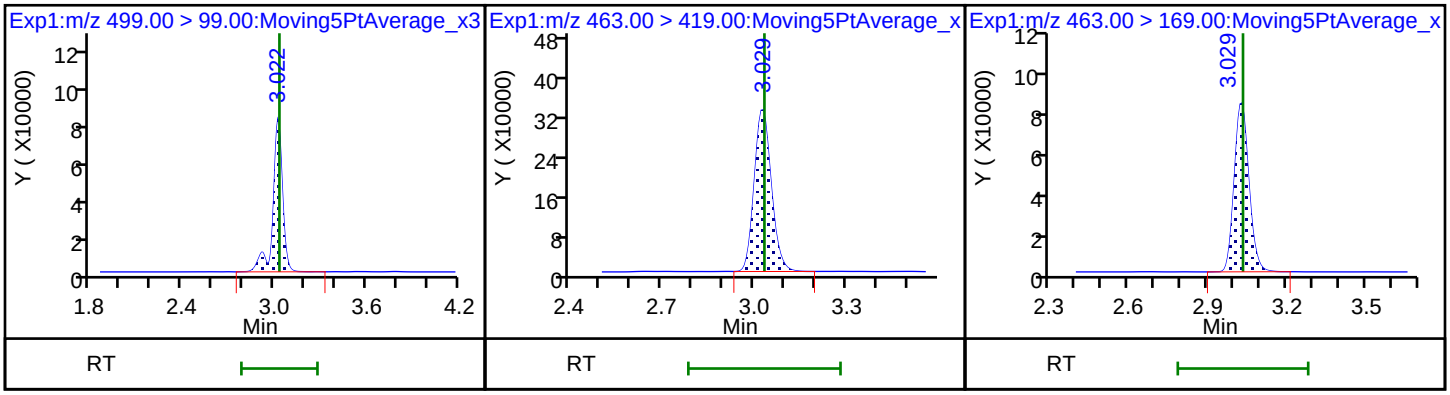
15 Perfluorooctanoic acid 15 Perfluorooctanoic acid 16 Perfluoroheptanesulfonic acid



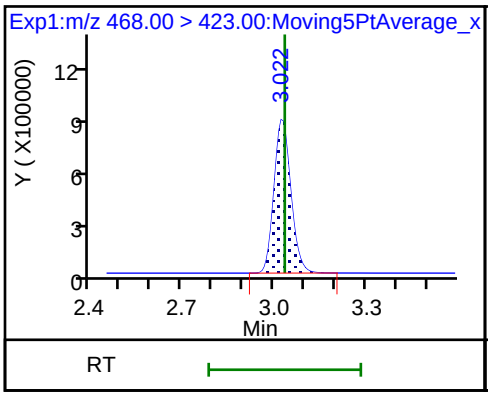
16 Perfluoroheptanesulfonic acid D 18 13C4 PFOS 17 Perfluorooctane sulfonic acid



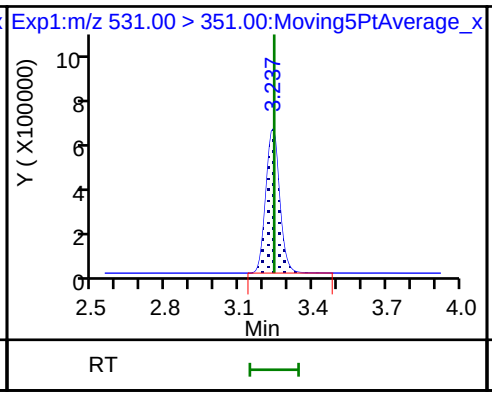
17 Perfluorooctane sulfonic acid 20 Perfluorononanoic acid 20 Perfluorononanoic acid



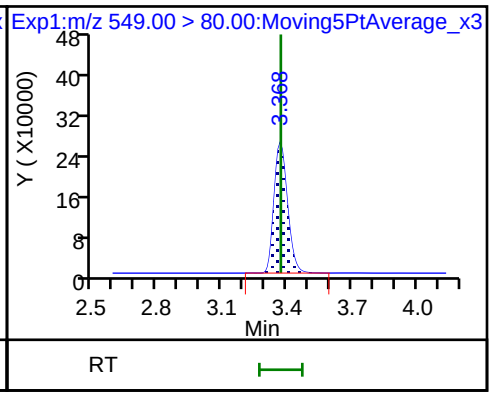
D 19 13C5 PFNA



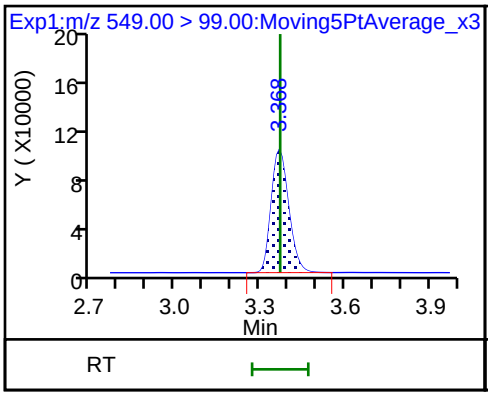
69 9-Chlorohexadecafluoro-3-oxanonane



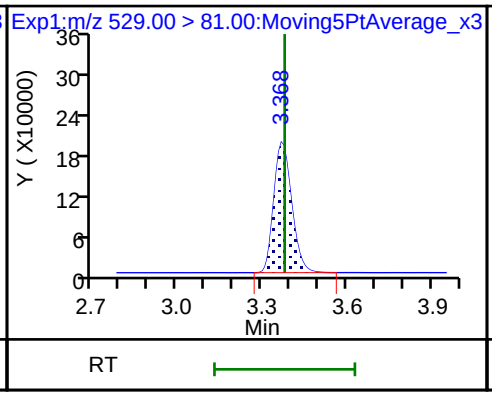
68 Perfluorononanesulfonic acid



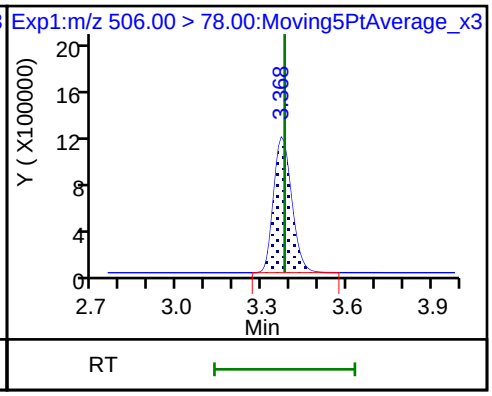
68 Perfluorononanesulfonic acid



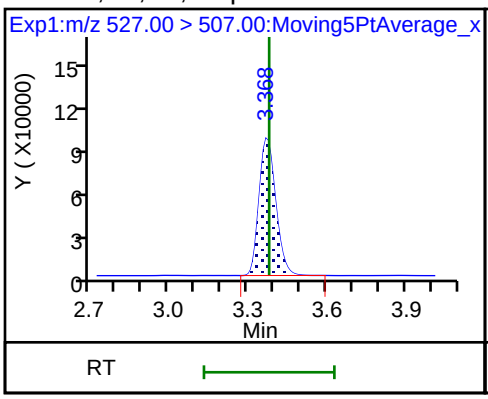
D 26 M2-8:2FTS



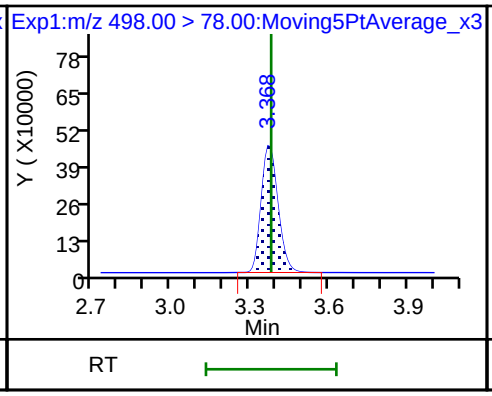
D 21 13C8 FOSA



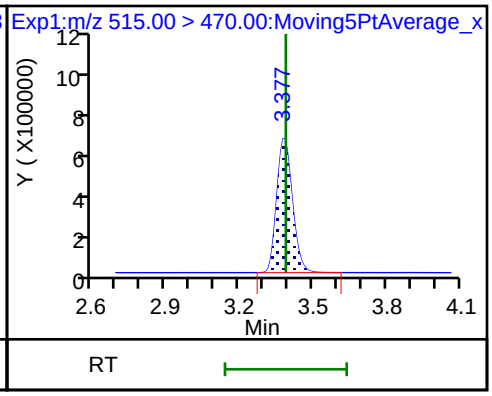
25 1H,1H,2H,2H-perfluorodecanesulfoni



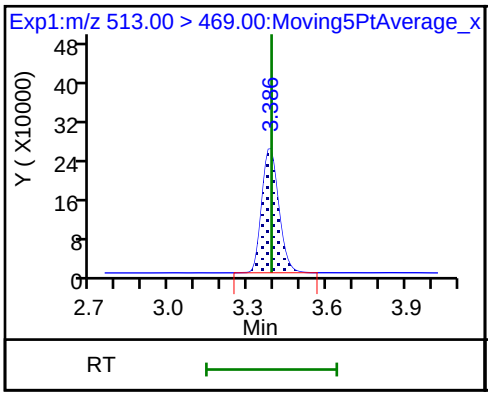
22 Perfluorooctane Sulfonamide



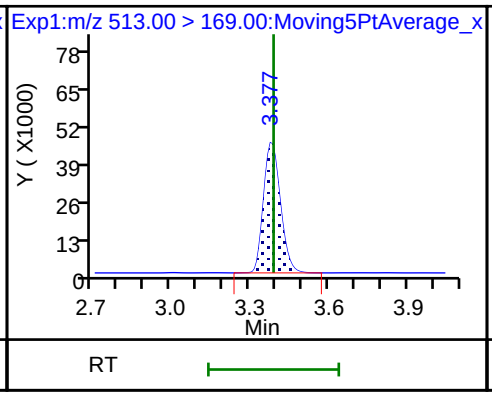
D 23 13C2 PFDA



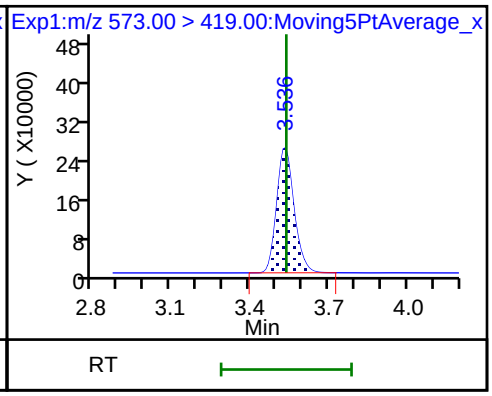
24 Perfluorodecanoic acid



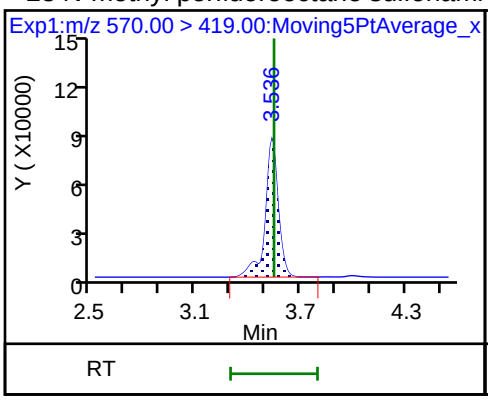
24 Perfluorodecanoic acid



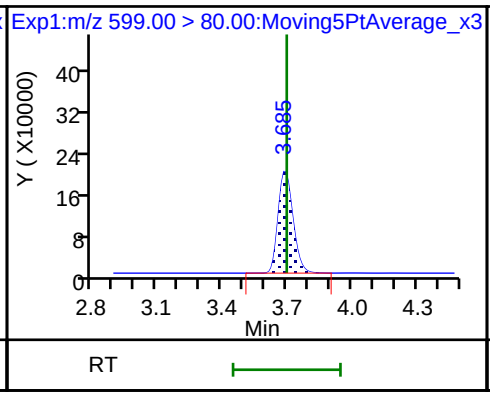
D 27 d3-NMeFOSAA



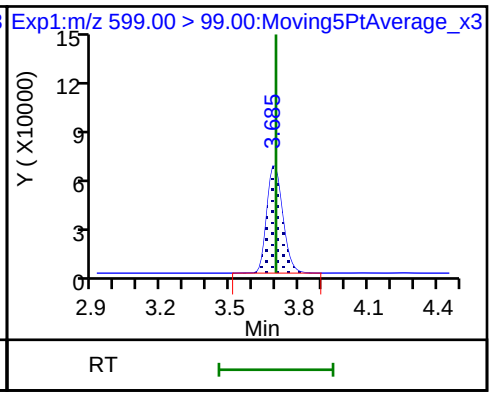
28 N-methyl perfluorooctane sulfonami



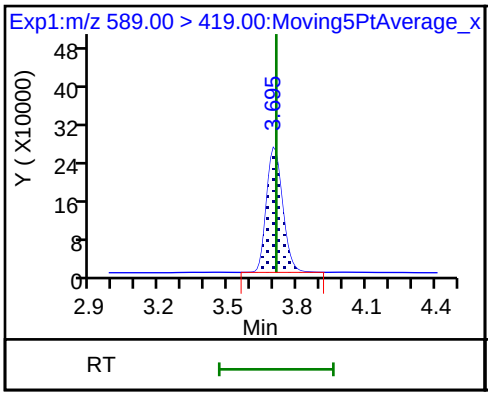
29 Perfluorodecane Sulfonic acid



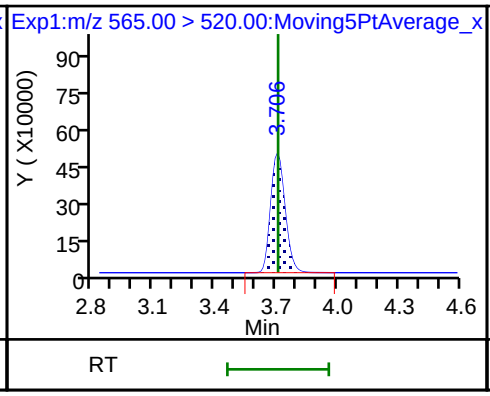
29 Perfluorodecane Sulfonic acid



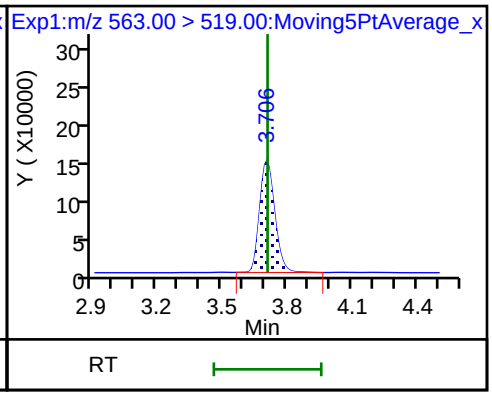
D 32 d5-NEtFOSAA



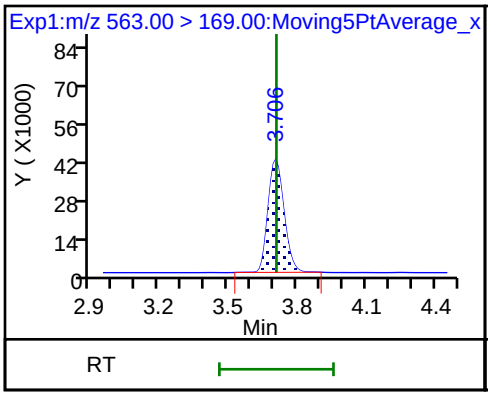
D 30 13C2 PFUnA



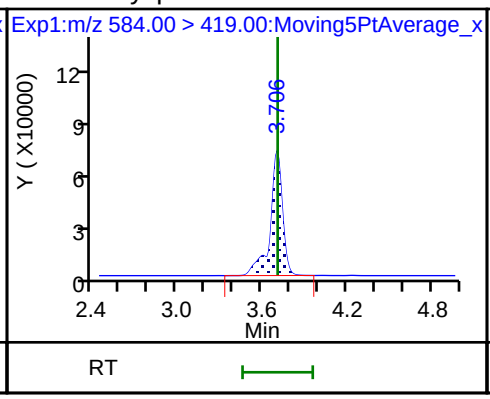
31 Perfluoroundecanoic acid



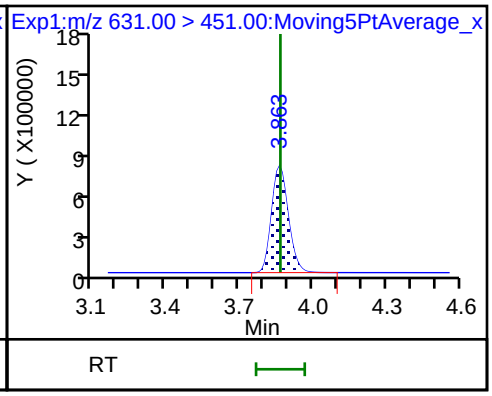
31 Perfluoroundecanoic acid



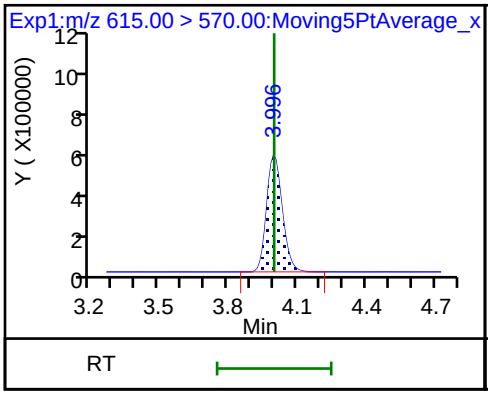
33 N-ethyl perfluorooctane sulfonamid



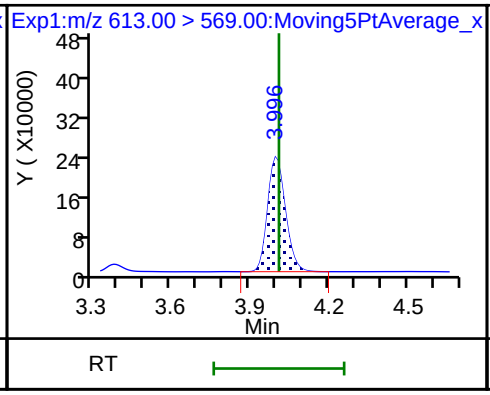
66 11-Chloroeicosafluoro-3-oxaundecan



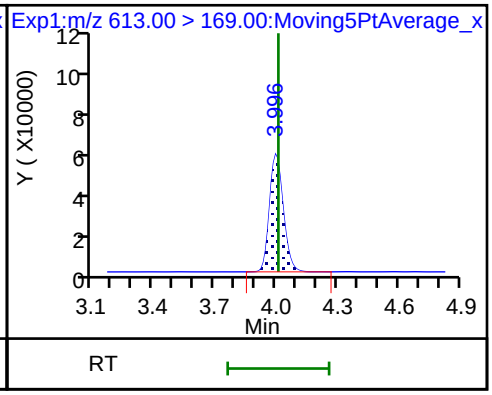
D 36 13C2 PFDoA



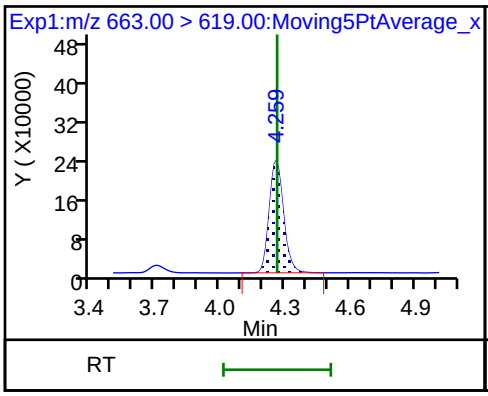
37 Perfluorododecanoic acid



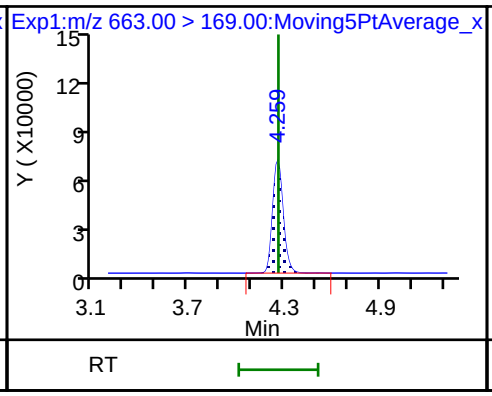
37 Perfluorododecanoic acid



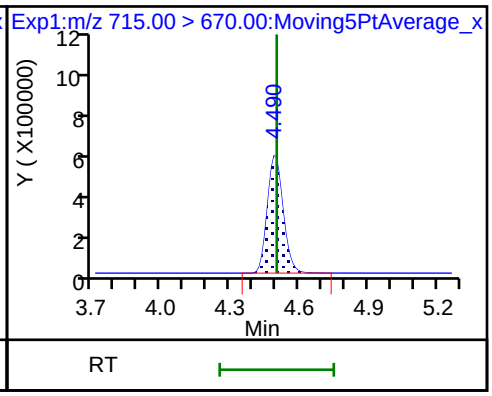
41 Perfluorotridecanoic acid



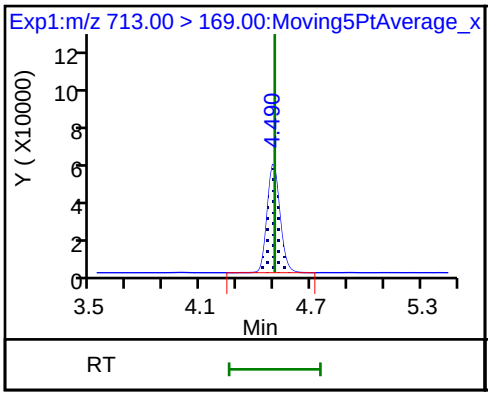
41 Perfluorotridecanoic acid



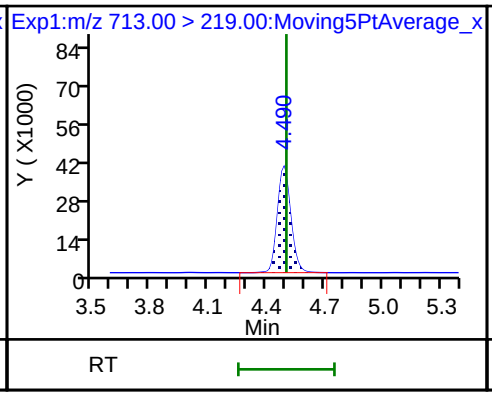
D 43 13C2-PFTeDA



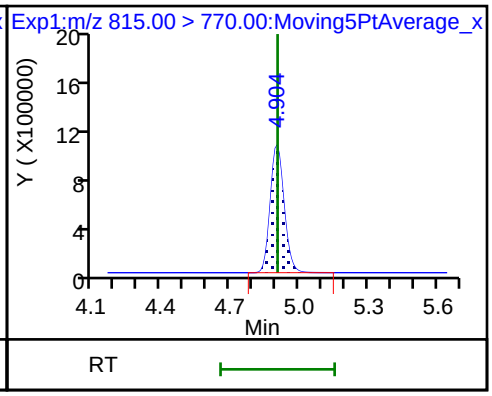
42 Perfluorotetradecanoic acid



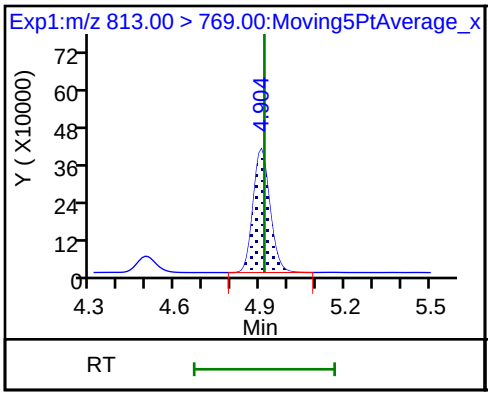
42 Perfluorotetradecanoic acid



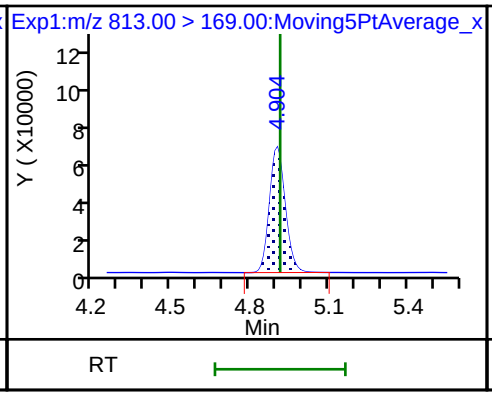
D 44 13C2-PFHxDA



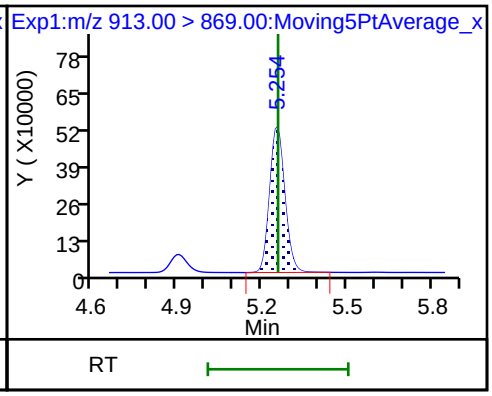
45 Perfluorohexadecanoic acid



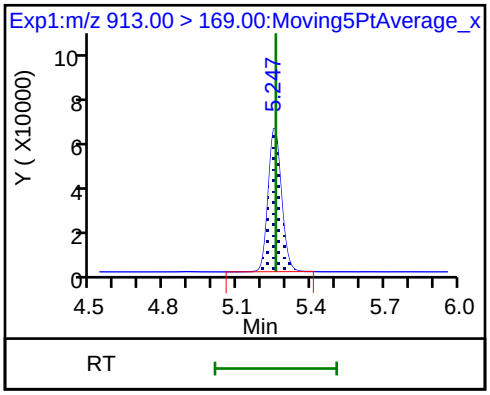
45 Perfluorohexadecanoic acid



46 Perfluorooctadecanoic acid



46 Perfluorooctadecanoic acid



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

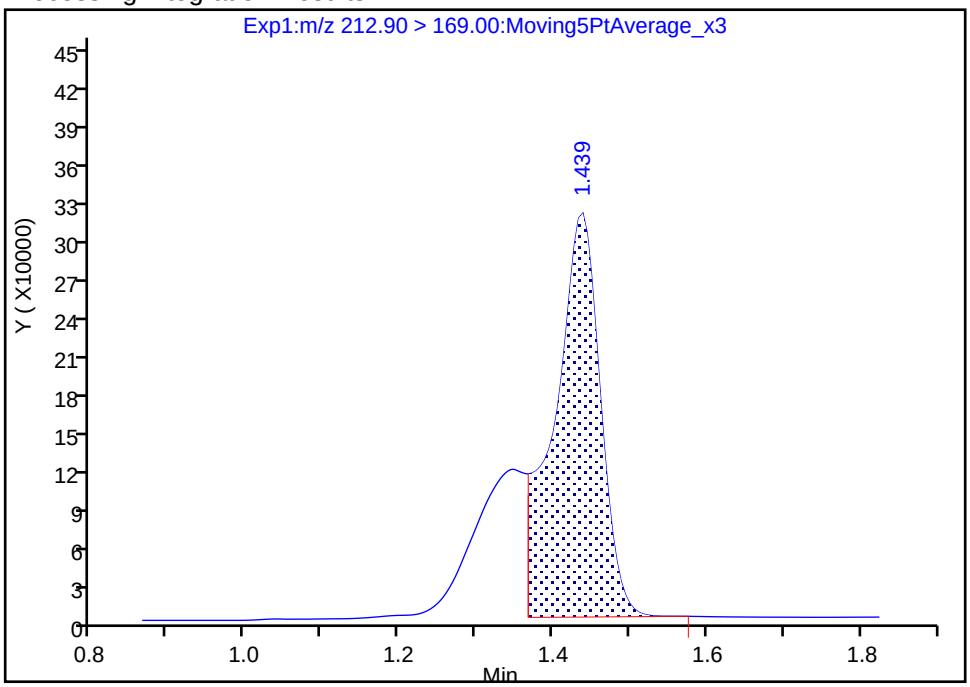
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\2018.07.13LLB_054.d				
Injection Date:	14-Jul-2018 03:49:19	Instrument ID:	A8_N		
Lims ID:	LCS 320-231392/2-A				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	39	Worklist Smp#:	3
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

2 Perfluorobutyric acid, CAS: 375-22-4

Signal: 1

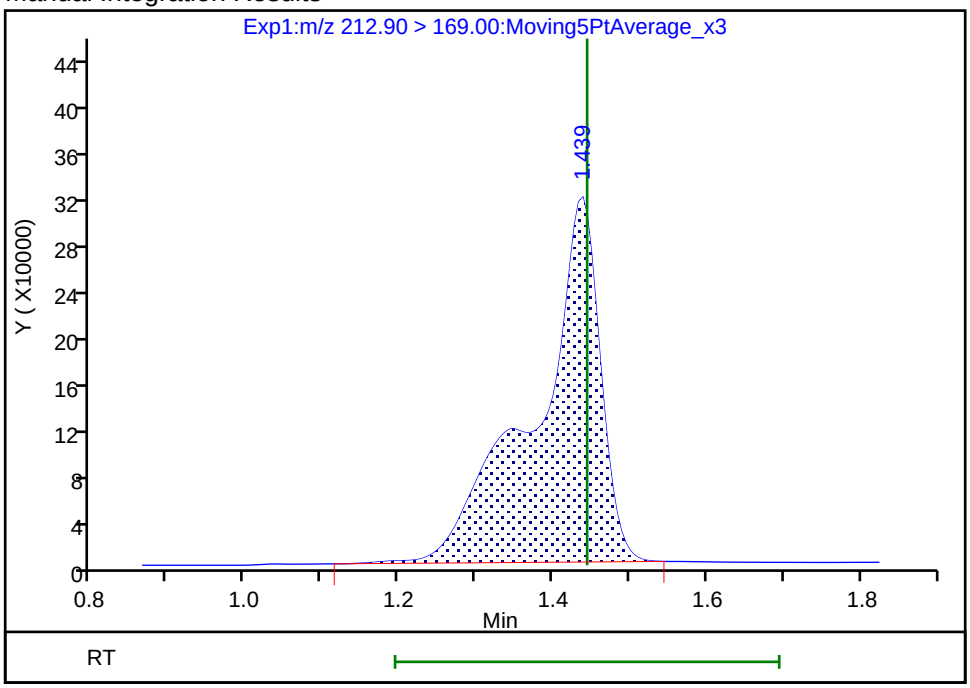
Processing Integration Results

RT: 1.44
Area: 1297597
Amount: 0.659723
Amount Units: ng/ml



Manual Integration Results

RT: 1.44
Area: 1842666
Amount: 0.936847
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 14:12:17

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

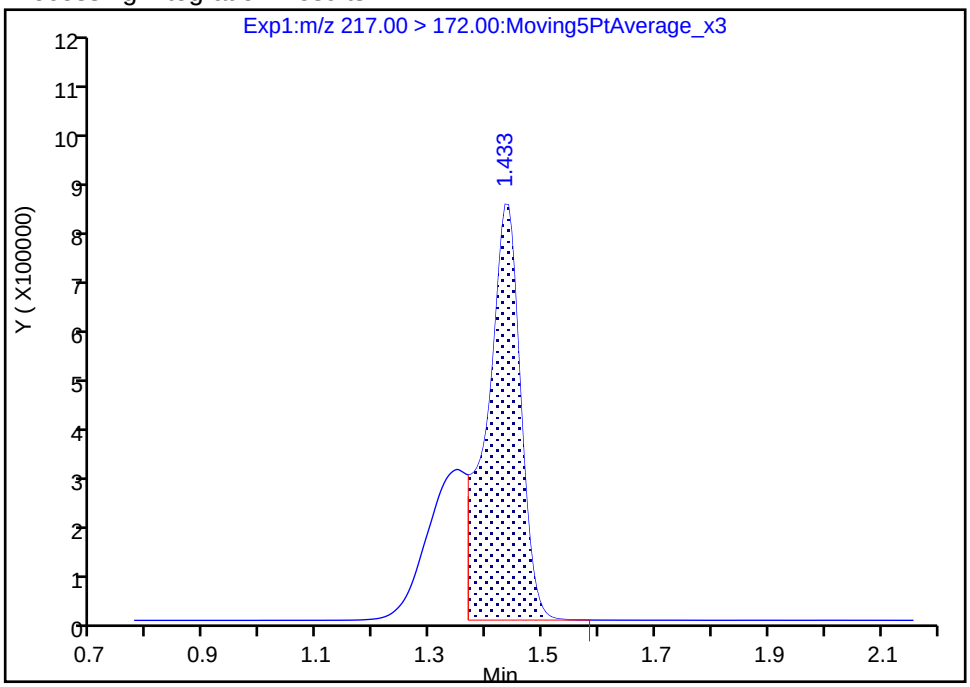
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\2018.07.13LLB_054.d				
Injection Date:	14-Jul-2018 03:49:19	Instrument ID:	A8_N		
Lims ID:	LCS 320-231392/2-A				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	39	Worklist Smp#:	3
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

D 1 13C4 PFBA, CAS: STL00992

Signal: 1

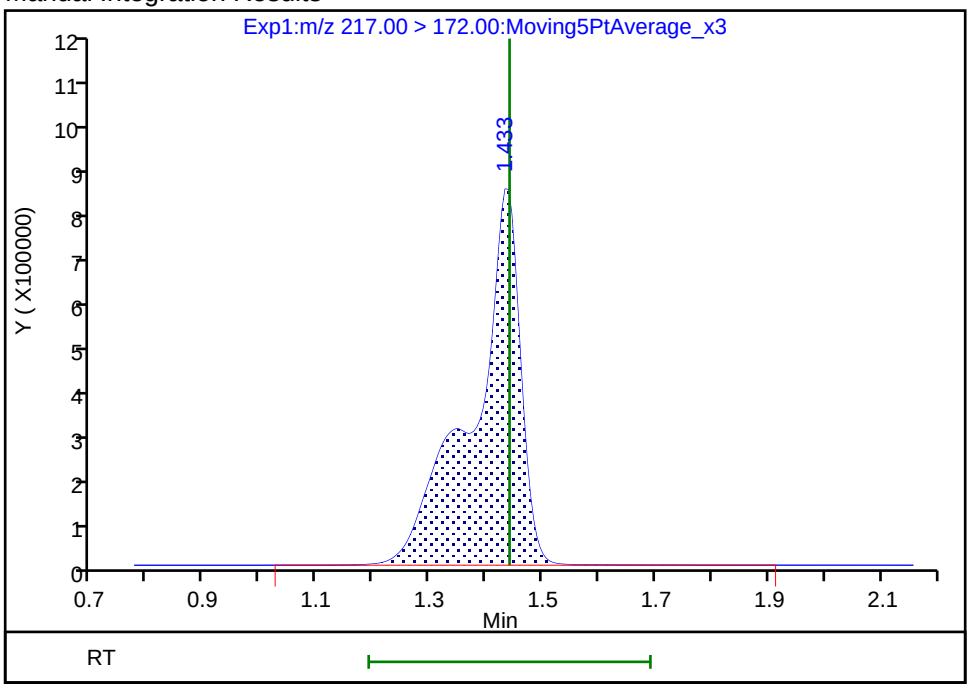
Processing Integration Results

RT: 1.43
Area: 3484366
Amount: 1.499068
Amount Units: ng/ml



Manual Integration Results

RT: 1.43
Area: 4989162
Amount: 2.146472
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 14:12:04

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID:
Lab Sample ID: LCS 320-231393/2-A
Matrix: Solid
Lab File ID: 2018.07.14LLA_020.d
Analysis Method: 537 (modified)
Date Collected:
Extraction Method: SHAKE
Date Extracted: 06/28/2018 06:06
Sample wt/vol: 5.00(g)
Date Analyzed: 07/14/2018 13:14
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 234231
Units: mg/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	0.00192		0.00020	0.000028
2706-90-3	Perfluoropentanoic acid (PFPeA)	0.00182		0.00020	0.000077
307-24-4	Perfluorohexanoic acid (PFHxA)	0.00199		0.00020	0.000042
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.00180		0.00020	0.000029
335-67-1	Perfluorooctanoic acid (PFOA)	0.00177		0.00020	0.000086
375-95-1	Perfluorononanoic acid (PFNA)	0.00193		0.00020	0.000036
335-76-2	Perfluorodecanoic acid (PFDA)	0.00195		0.00020	0.000022
2058-94-8	Perfluoroundecanoic acid (PFUnA)	0.00184		0.00020	0.000036
307-55-1	Perfluorododecanoic acid (PFDoA)	0.00204		0.00020	0.000067
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	0.00188		0.00020	0.000051
376-06-7	Perfluorotetradecanoic acid (PFTeA)	0.00191		0.00020	0.000054
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.00171		0.00020	0.000025
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.00164		0.00020	0.000031
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	0.00186		0.00020	0.000035
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.00189		0.00050	0.00020
335-77-3	Perfluorodecanesulfonic acid (PFDS)	0.00185		0.00020	0.000039
754-91-6	Perfluorooctane Sulfonamide (FOSA)	0.00201		0.00020	0.000082
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	0.00193	J	0.0020	0.00039
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	0.00186	J	0.0020	0.00037
27619-97-2	6:2 FTS	0.00206		0.0020	0.00015
39108-34-4	8:2 FTS	0.00195	J	0.0020	0.00025

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID:
Lab Sample ID: LCS 320-231393/2-A
Matrix: Solid
Lab File ID: 2018.07.14LLA_020.d
Analysis Method: 537 (modified)
Date Collected:
Extraction Method: SHAKE
Date Extracted: 06/28/2018 06:06
Sample wt/vol: 5.00(g)
Date Analyzed: 07/14/2018 13:14
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 234231
Units: mg/Kg

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00992	13C4 PFBA	86		25-150
STL01893	13C5 PFPeA	92		25-150
STL00993	13C2 PFHxA	92		25-150
STL01892	13C4-PFHpA	99		25-150
STL00990	13C4 PFOA	94		25-150
STL00995	13C5 PFNA	84		25-150
STL00996	13C2 PFDA	86		25-150
STL00997	13C2 PFUnA	91		25-150
STL00998	13C2 PFDoA	91		25-150
STL02116	13C2-PFTeDA	97		25-150
STL02337	13C3-PFBS	90		25-150
STL00994	18O2 PFHxS	91		25-150
STL00991	13C4 PFOS	89		25-150
STL01056	13C8 FOSA	84		25-150
STL02118	d3-NMeFOSAA	84		25-150
STL02117	d5-NEtFOSAA	92		25-150
STL02279	M2-6:2FTS	78		25-150
STL02280	M2-8:2FTS	67		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180716-61105.b\2018.07.14LLA_020.d
Lims ID: LCS 320-231393/2-A
Client ID:
Sample Type: LCS
Inject. Date: 14-Jul-2018 13:14:15 ALS Bottle#: 12 Worklist Smp#: 3
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: lcs 320-231393/2
Misc. Info.: Plate: 1 Rack: 5
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180716-61105.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 17-Jul-2018 08:11:37 Calib Date: 11-Jul-2018 15:38:42
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK016

First Level Reviewer: mongkols Date: 17-Jul-2018 08:11:37

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										M
212.90 > 169.00	1.435	1.435	0.0	1.000	1926579	0.9623		96.2	548	M
D 1 13C4 PFBA										M
217.00 > 172.00	1.435	1.436	-0.001	0.538	5078494	2.15		86.0	39554	M
4 Perfluoropentanoic acid										
262.90 > 219.00	1.720	1.719	0.001	1.000	1659580	0.9097		91.0	774	
D 3 13C5-PFPeA										
267.90 > 223.00	1.720	1.720	0.0	0.645	3759405	2.29		91.6	40208	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.756	1.755	0.001	1.000	2438649	0.8552		96.7	12154	
298.90 > 99.00	1.756	1.755	0.001	1.000	1011004		2.41(1.25-3.74)		6594	
D 47 13C3-PFBS										
301.90 > 83.00	1.756	1.756	0.0	0.658	86666	2.10		90.4	431	
61 1H,1H,2H,2H-perfluorohexanesulfoni										
327.00 > 307.00	1.959	1.959	0.0	1.116	411164	0.8486		90.9	17814	
6 Perfluorohexanoic acid										
313.00 > 269.00	2.003	1.991	0.012	1.006	1674681	0.99		99.4	3458	
313.00 > 119.00	1.991	1.991	0.0	1.000	154178		10.86(5.03-15.10)		2627	
D 7 13C2 PFHxA										
315.00 > 270.00	1.991	1.992	-0.001	0.747	4091910	2.31		92.4	77082	
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.014	2.014	0.0	1.147	2406088	0.9250		98.6	40765	
349.00 > 99.00	2.014	2.014	0.0	1.147	876399		2.75(1.36-4.07)		14920	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.093	2.082	0.011	0.785	388449	3.08		123	8378	
67 Perfluoro(2-propoxypropanoic) acid										
329.10 > 285.00	2.093	2.093	0.0	1.000	317749	0.7705		77.0	2419	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.319	2.306	0.013	1.000	1685502	0.8990		89.9	2939	
363.00 > 169.00	2.319	2.306	0.013	1.000	629434		2.68(1.13-3.40)		5767	
D 9 13C4-PFHpA										
367.00 > 322.00	2.319	2.306	0.013	0.869	4052558	2.48		99.4	51833	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.319	2.319	0.0	0.994	1969393	0.8184		89.9	13399	
399.00 > 99.00	2.332	2.319	0.013	1.000	687055		2.87(1.50-4.49)		2723	
D 11 18O2 PFHxS										
403.00 > 84.00	2.332	2.319	0.013	0.874	4957830	2.14		90.7	63224	
65 Adona										
377.00 > 251.00	2.358	2.358	0.0	0.780	4792079	0.99		99.0	48340	
377.00 > 85.00	2.358	2.358	0.0	0.780	2861841		1.67(0.84-2.53)		19640	
D 12 M2-6:2FTS										
429.00 > 81.00	2.644	2.628	0.016	0.991	651766	1.86		78.5	14085	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.636	2.635	0.001	0.997	442257	1.03		109	3983	
D 14 13C4 PFOA										
417.00 > 372.00	2.660	2.652	0.008	0.997	3918647	2.35		94.2	42663	
* 62 13C2-PFOA										
415.00 > 370.00	2.667	2.659	0.008		4352830	2.50			44672	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.667	2.659	0.008	1.003	1712108	0.8869		88.6	1101	
413.00 > 169.00	2.667	2.659	0.008	1.003	884251		1.94(0.84-2.52)		4559	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.667	2.667	0.0	0.882	1843544	0.9309		97.8	29577	
449.00 > 99.00	2.667	2.667	0.0	0.882	489896		3.76(1.94-5.82)		9084	
D 19 13C5 PFNA										
468.00 > 423.00	3.023	3.018	0.005	1.133	3115178	2.09		83.7	45332	
D 18 13C4 PFOS										
503.00 > 80.00	3.023	3.018	0.005	1.133	3592586	2.12		88.6	36967	
20 Perfluorononanoic acid										
463.00 > 419.00	3.023	3.019	0.005	1.000	1335843	0.9664		96.6	2770	
463.00 > 169.00	3.023	3.019	0.005	1.000	329268		4.06(1.90-5.69)		17333	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.023	3.019	0.005	1.000	1612519	0.9467		102	14420	
499.00 > 99.00	3.023	3.019	0.005	1.000	355385		4.54(2.31-6.93)		6284	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.230	3.225	0.005	1.069	2476256	0.8974		96.3	26577	
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.368	3.361	0.007	1.114	1084470	0.9307		96.9	20958	
549.00 > 99.00	3.368	3.361	0.007	1.114	411356		2.64(1.33-3.97)		5574	
25 1H,1H,2H,2H-perfluorodecanesulfoni										
527.00 > 507.00	3.368	3.361	0.007	1.000	430622	0.9754		102	6978	
D 26 M2-8:2FTS										
529.00 > 81.00	3.368	3.361	0.007	1.263	819670	1.60		66.9	12393	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.378	3.370	0.008	1.003	2042800	1.00		100	25336	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
24 Perfluorodecanoic acid										
513.00 > 469.00	3.378	3.370	0.008	1.000	1157422	0.9770		97.7	6123	
513.00 > 169.00	3.378	3.370	0.008	1.000	197816		5.85(2.36-7.09)		5678	
D 21 13C8 FOSA										
506.00 > 78.00	3.368	3.370	-0.002	1.263	5162501	2.11		84.4	48501	
D 23 13C2 PFDA										
515.00 > 470.00	3.378	3.370	0.008	1.266	2822242	2.16		86.4	30506	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.527	3.520	0.007	1.322	1121551	2.09		83.8	30729	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.536	3.529	0.007	1.003	427505	0.9666		96.7	4651	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.685	3.676	0.009	1.219	931726	0.9232		95.8	17982	
599.00 > 99.00	3.685	3.676	0.009	1.219	335134		2.78(1.39-4.16)		14243	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.696	3.687	0.009	1.386	1264571	2.31		92.2	2987	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.707	3.698	0.009	1.000	744567	0.9188		91.9	3458	
563.00 > 169.00	3.696	3.698	-0.002	0.997	178756		4.17(2.12-6.36)		5310	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.696	3.698	-0.002	1.000	416159	0.9306		93.1	14271	
D 30 13C2 PFUnA										
565.00 > 520.00	3.707	3.698	0.009	1.390	2472155	2.27		90.6	42621	
66 11-Chloroeicosafluoro-3-oxaundecan										
631.00 > 451.00	3.853	3.855	-0.002	1.275	3601052	0.9028		95.8	47007	
37 Perfluorododecanoic acid										
613.00 > 569.00	3.986	3.988	-0.002	1.000	1146290	1.02		102	812	
613.00 > 169.00	3.997	3.988	0.009	1.003	270123		4.24(2.13-6.40)		5198	
D 36 13C2 PFDoA										
615.00 > 570.00	3.986	3.988	-0.002	1.495	2576525	2.28		91.1	23455	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.250	4.252	-0.002	1.066	1036032	0.9415		94.2	553	
663.00 > 169.00	4.250	4.252	-0.002	1.066	326050		3.18(1.25-3.76)		4802	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.490	4.480	0.010	1.683	2860477	2.44		97.5	21369	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.490	4.480	0.010	1.000	284087	0.9543		95.4	4219	
713.00 > 219.00	4.479	4.480	-0.001	0.998	192446		1.48(0.71-2.13)		3360	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.887	4.887	0.0	1.000	1770643	1.00		99.7	423	
813.00 > 169.00	4.887	4.887	0.0	1.000	280452		6.31(2.86-8.58)		2702	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.887	4.887	0.0	1.832	4573011	2.45		97.9	13680	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.233	5.233	0.0	1.071	1986857	0.9504		95.0	380	
913.00 > 169.00	5.233	5.233	0.0	1.071	232520		8.54(3.83-11.48)		2860	

QC Flag Legend

Review Flags

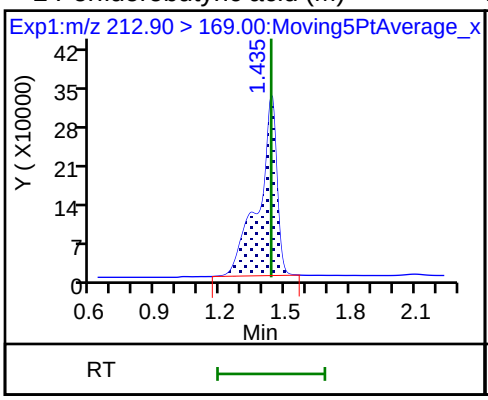
M - Manually Integrated

Report Date: 17-Jul-2018 08:11:38 Chrom Revision: 2.2 07-Jun-2018 07:41:54

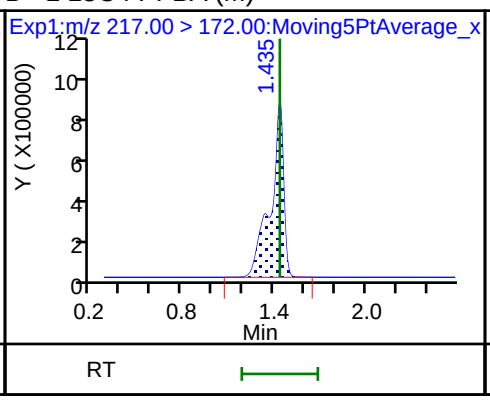
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180716-61105.b\2018.07.14LLA_020.d
Injection Date: 14-Jul-2018 13:14:15 Instrument ID: A8_N
Lims ID: LCS 320-231393/2-A
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 12 Worklist Smp#: 3
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC ICAL

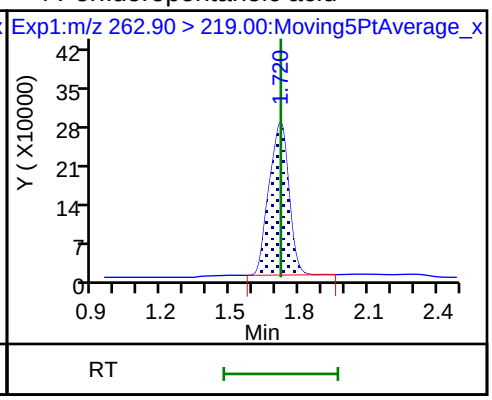
2 Perfluorobutyric acid (M)



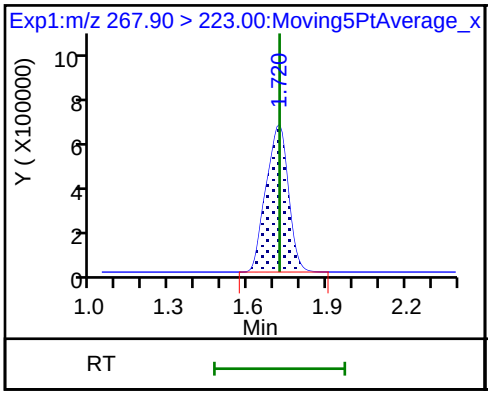
D 1 13C4 PFBA (M)



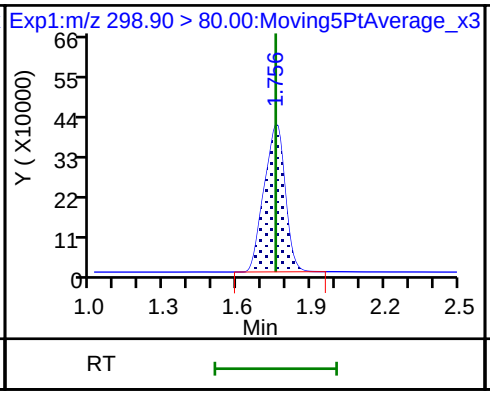
4 Perfluoropentanoic acid



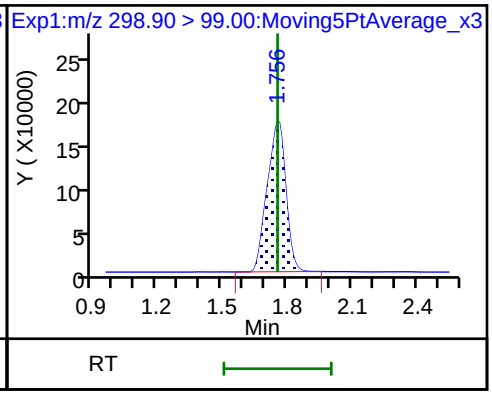
D 3 13C5-PFPeA



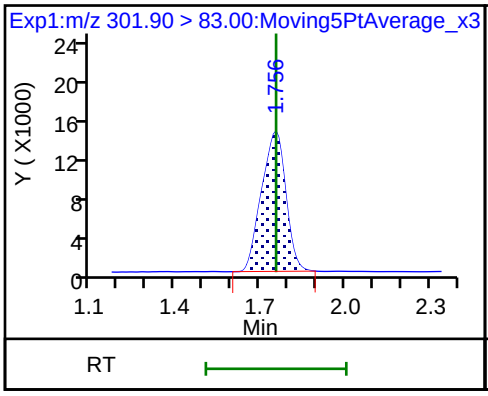
5 Perfluorobutanesulfonic acid



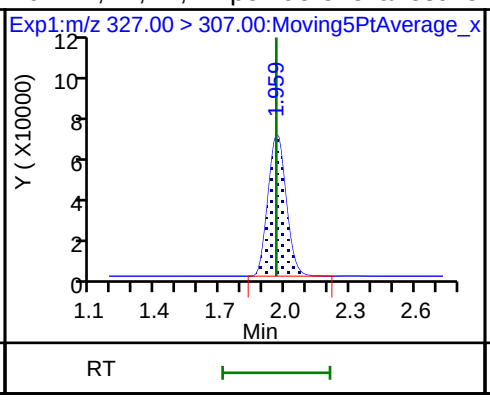
5 Perfluorobutanesulfonic acid



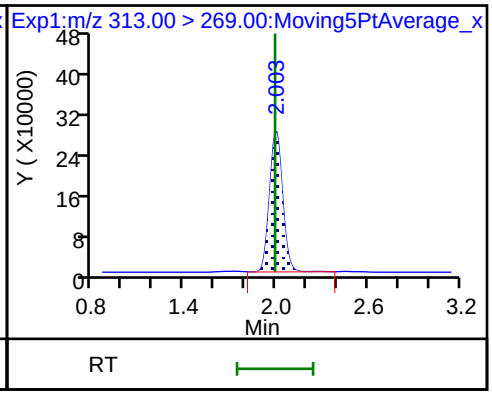
D 47 13C3-PFBS



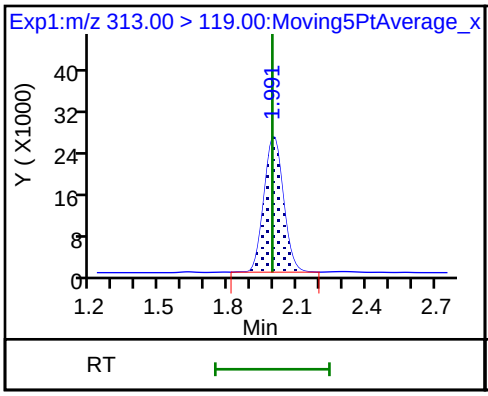
61 1H,1H,2H,2H-perfluorohexanesulfoni



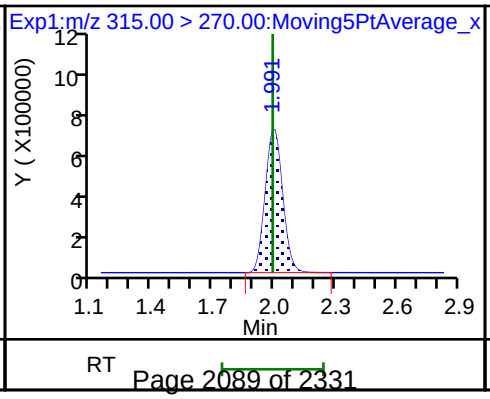
6 Perfluorohexanoic acid



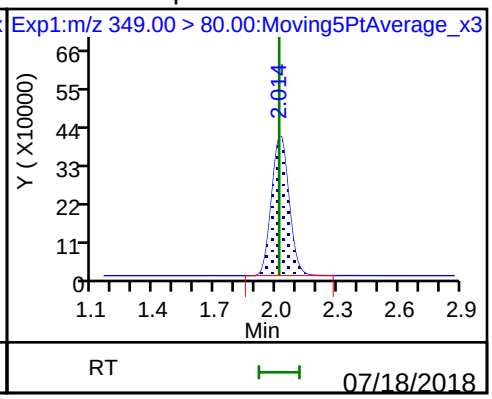
6 Perfluorohexanoic acid



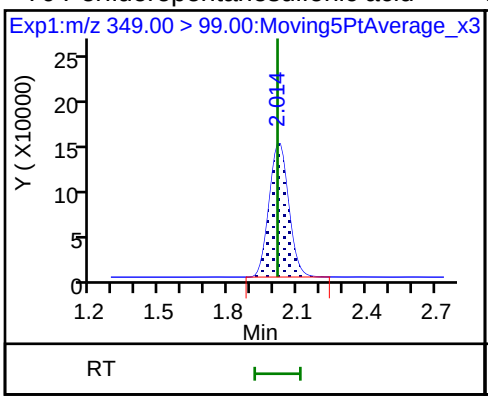
D 7 13C2 PFHxA



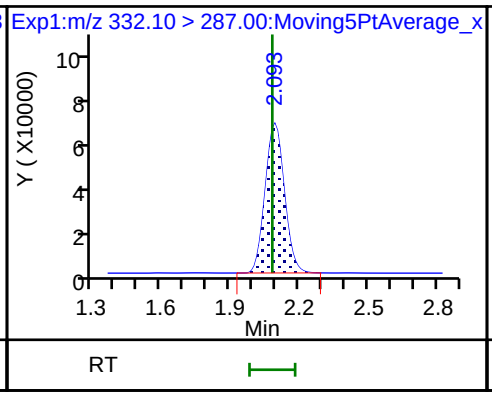
70 Perfluoropentanesulfonic acid



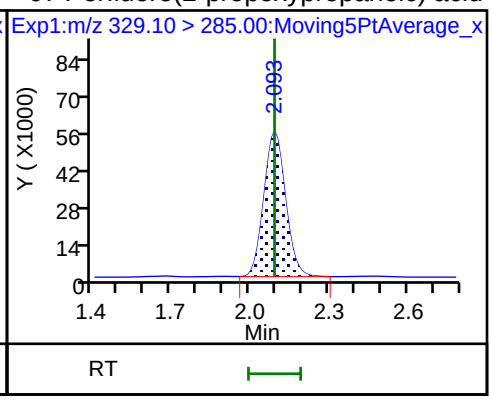
70 Perfluoropentanesulfonic acid



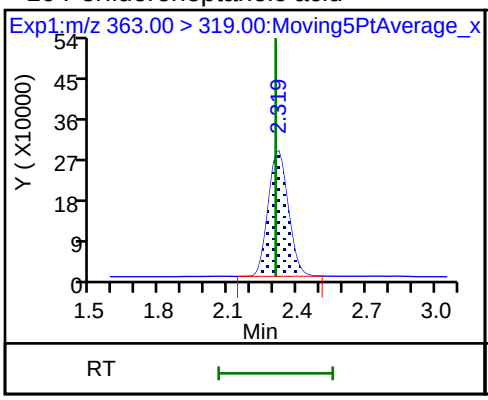
D 64 13C3 HFPO-DA



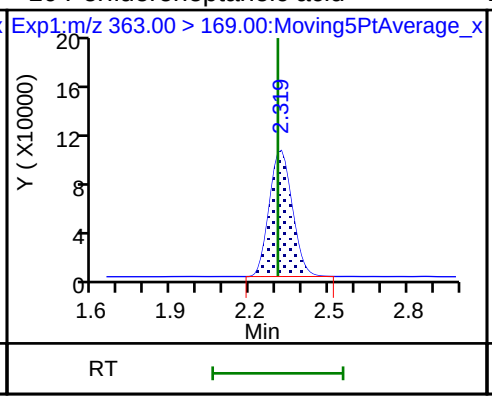
67 Perfluoro(2-propoxypropanoic) acid



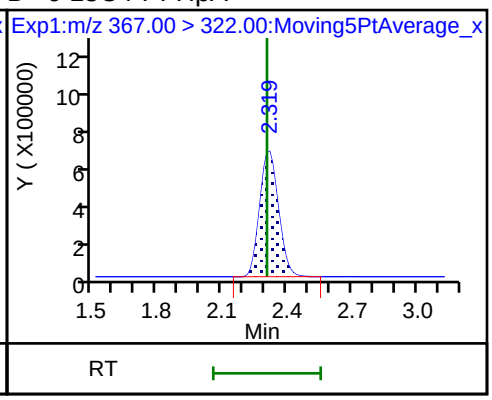
10 Perfluoroheptanoic acid



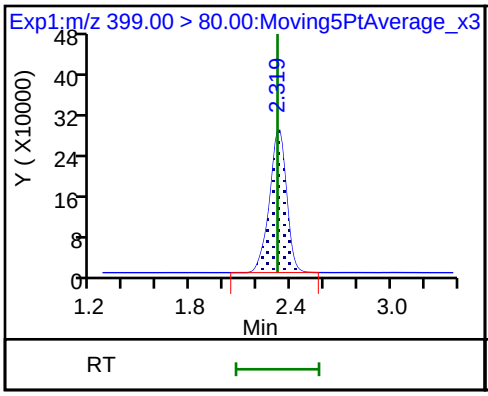
10 Perfluoroheptanoic acid



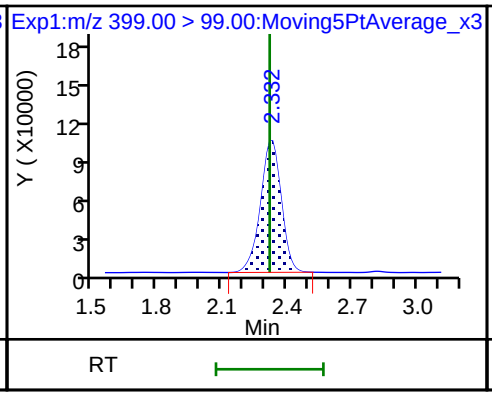
D 9 13C4-PFHpA



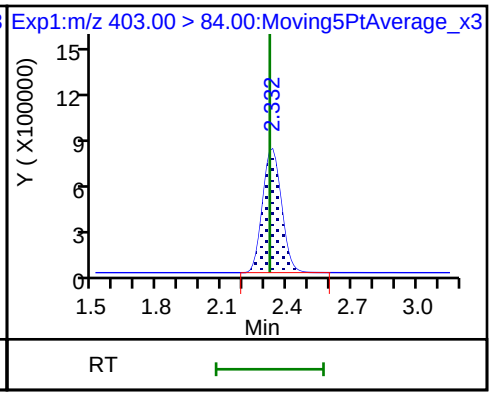
8 Perfluorohexanesulfonic acid



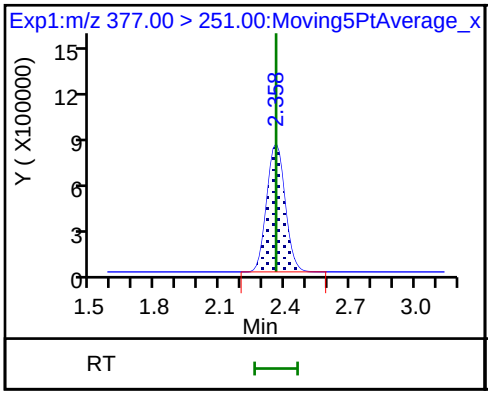
8 Perfluorohexanesulfonic acid



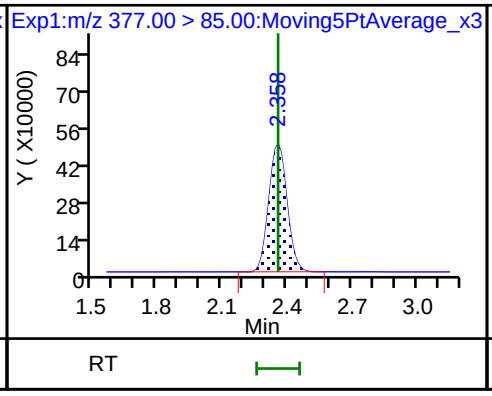
D 11 18O2 PFHxS



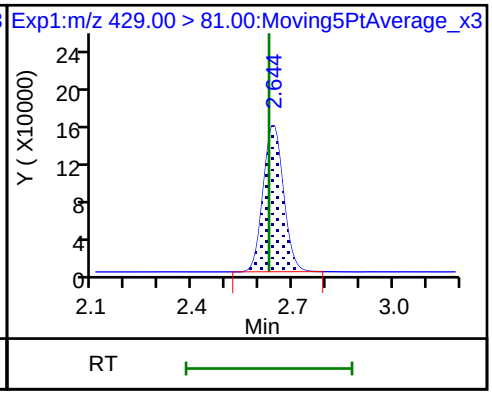
65 Adona



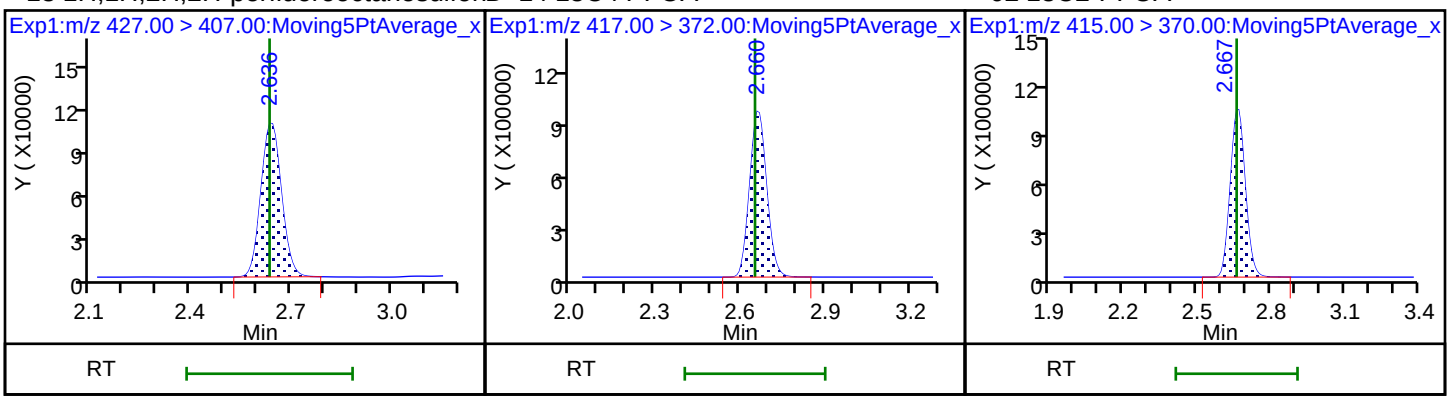
65 Adona



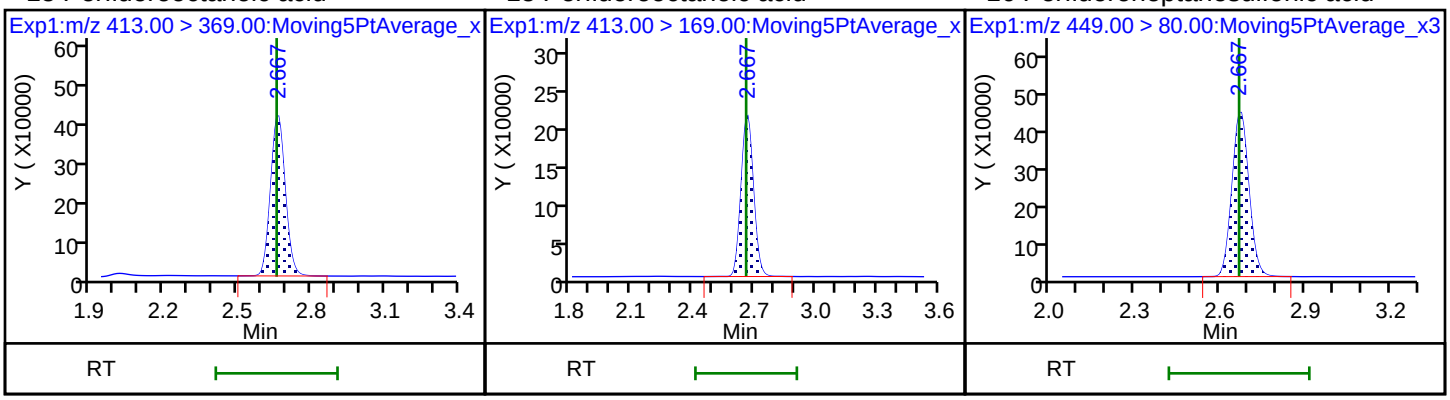
D 12 M2-6:2FTS



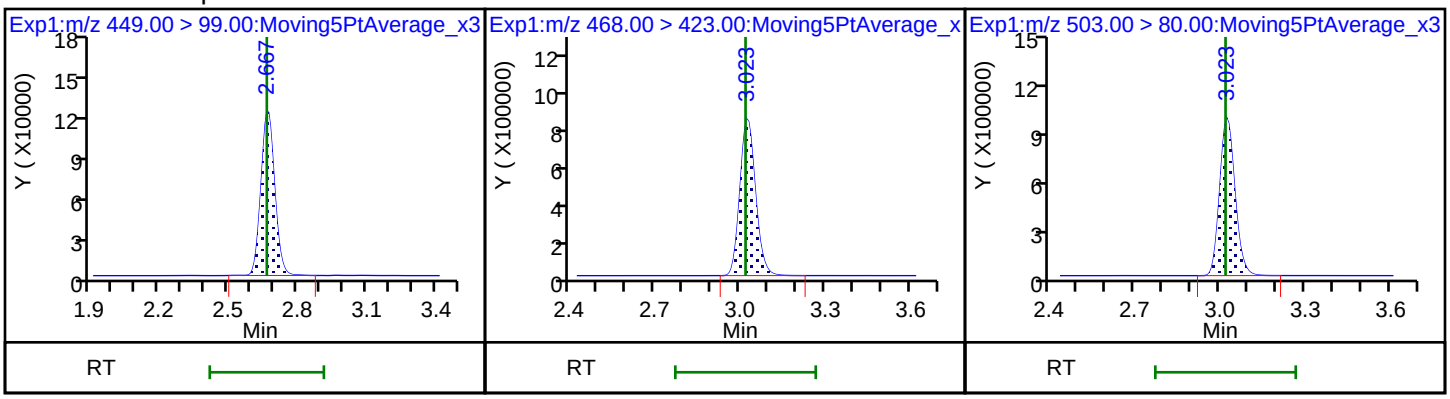
13 1H,1H,2H,2H-perfluorooctanesulfonD 14 13C4 PFOA * 62 13C2-PFOA



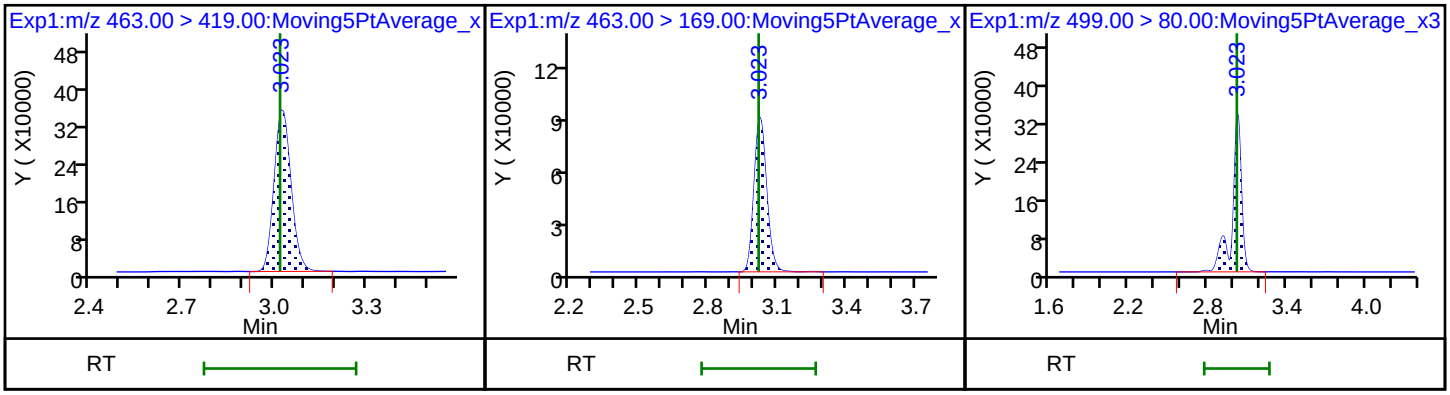
15 Perfluorooctanoic acid 15 Perfluorooctanoic acid 16 Perfluoroheptanesulfonic acid



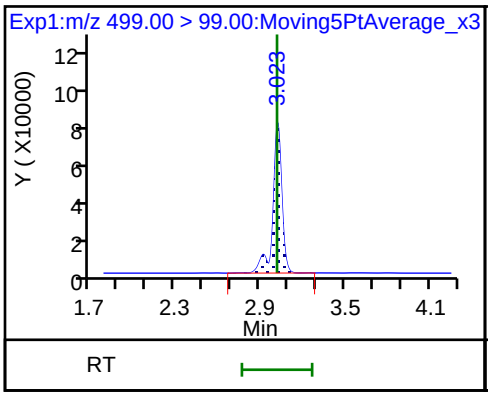
16 Perfluoroheptanesulfonic acid D 19 13C5 PFNA D 18 13C4 PFOS



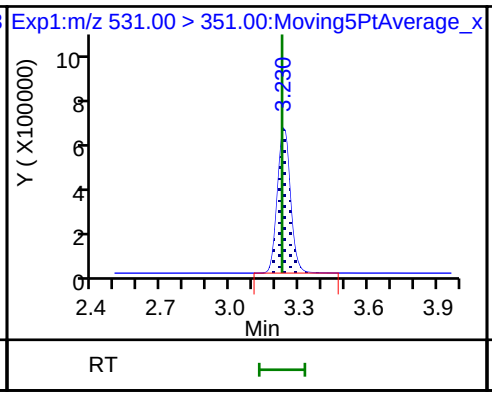
20 Perfluorononanoic acid 20 Perfluorononanoic acid 17 Perfluorooctane sulfonic acid



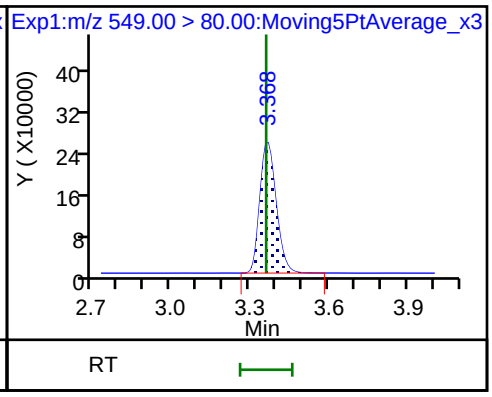
17 Perfluorooctane sulfonic acid



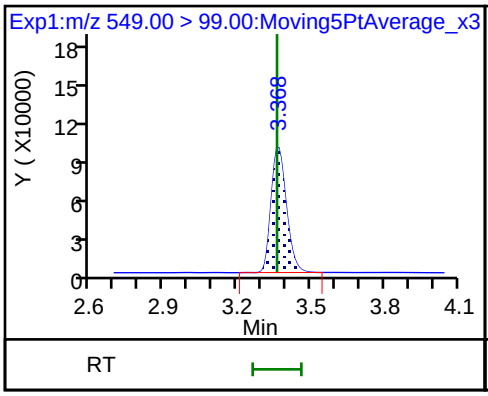
69 9-Chlorohexadecafluoro-3-oxanonane



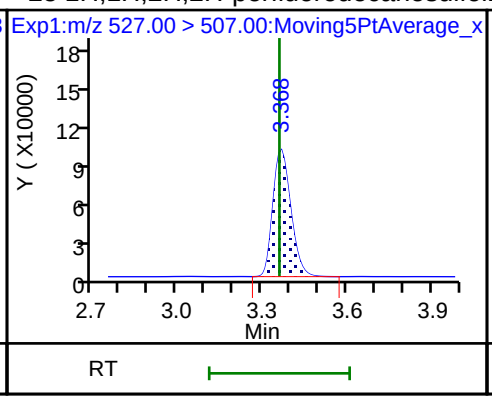
D 68 Perfluorononanesulfonic acid



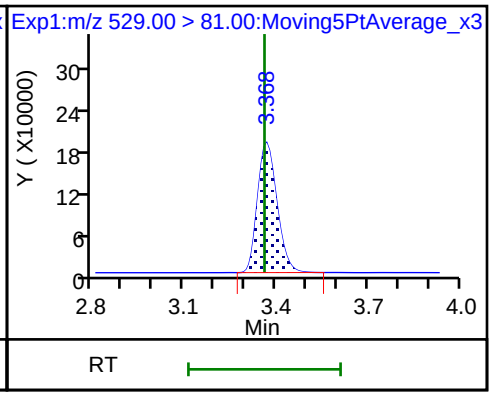
68 Perfluorononanesulfonic acid



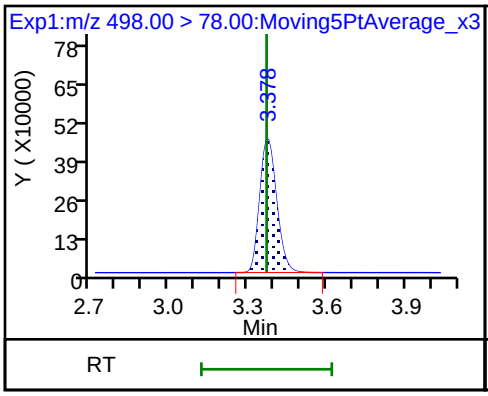
25 1H,1H,2H,2H-perfluorodecanesulfon



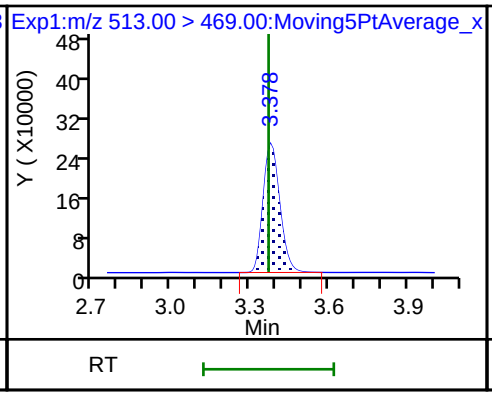
D 26 M2-8:2FTS



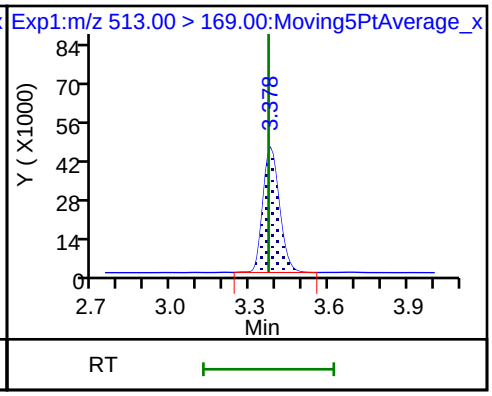
22 Perfluorooctane Sulfonamide



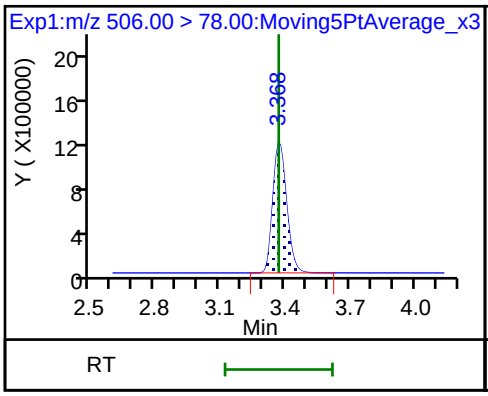
24 Perfluorodecanoic acid



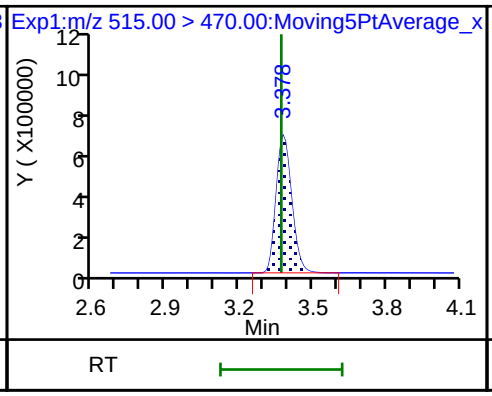
24 Perfluorodecanoic acid



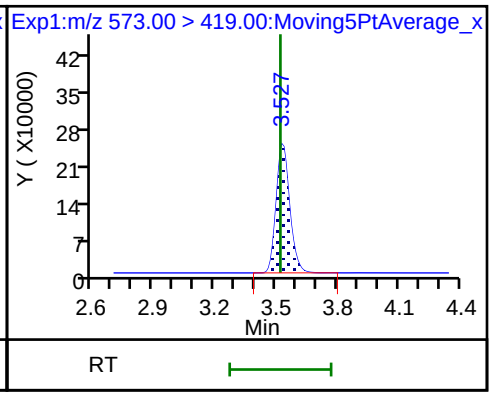
D 21 13C8 FOSA



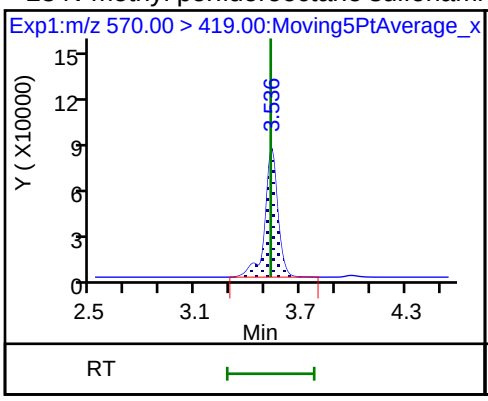
D 23 13C2 PFDA



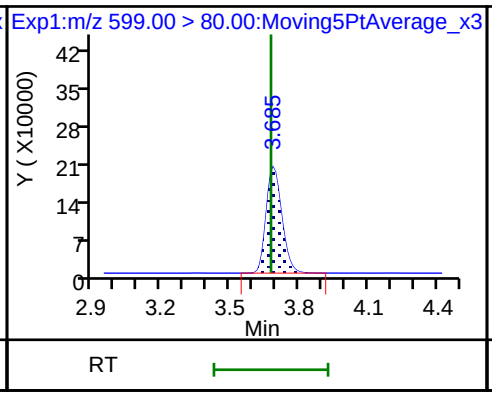
D 27 d3-NMeFOSAA



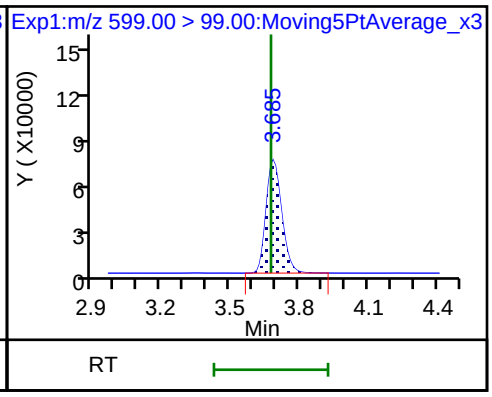
28 N-methyl perfluorooctane sulfonami



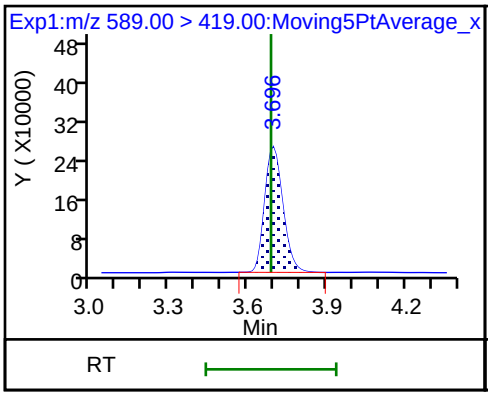
29 Perfluorodecane Sulfonic acid



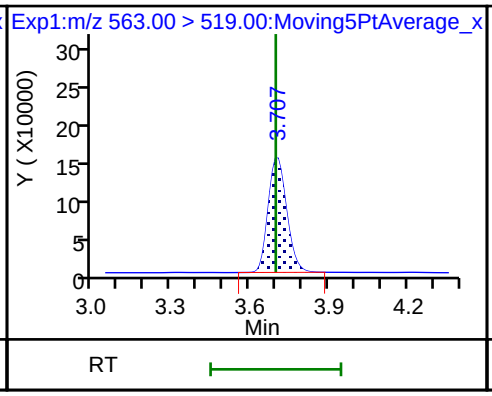
29 Perfluorodecane Sulfonic acid



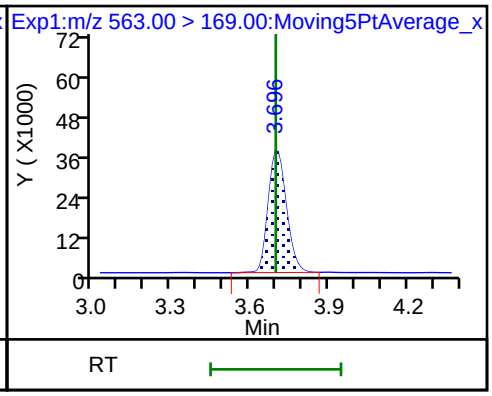
D 32 d5-NEtFOSAA



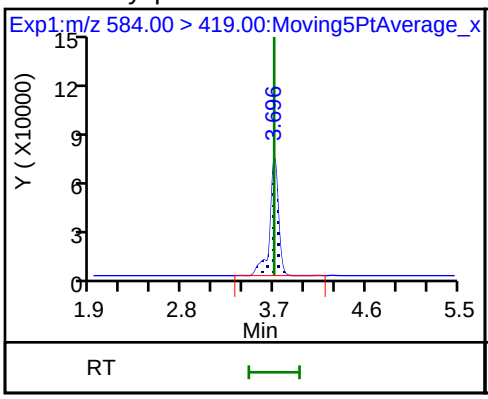
31 Perfluoroundecanoic acid



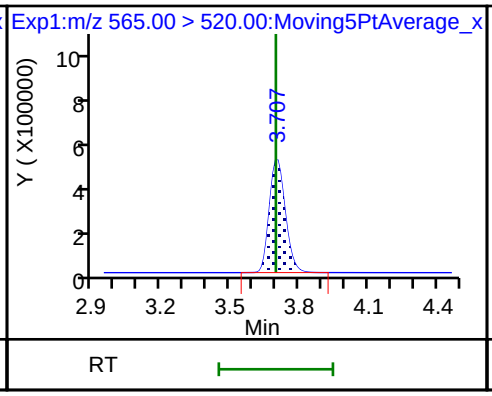
31 Perfluoroundecanoic acid



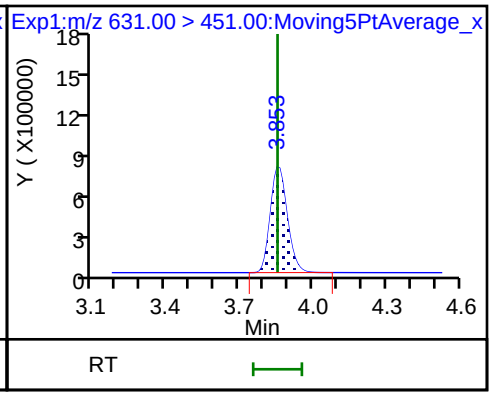
33 N-ethyl perfluorooctane sulfonamid



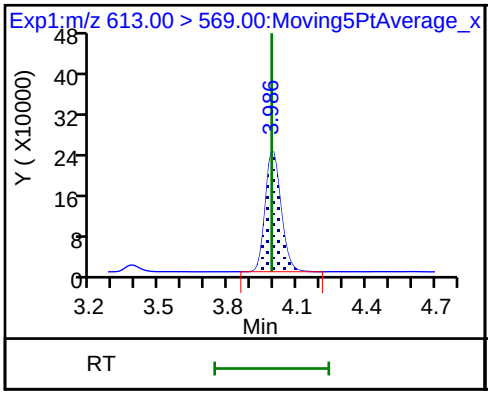
D 30 13C2 PFUnA



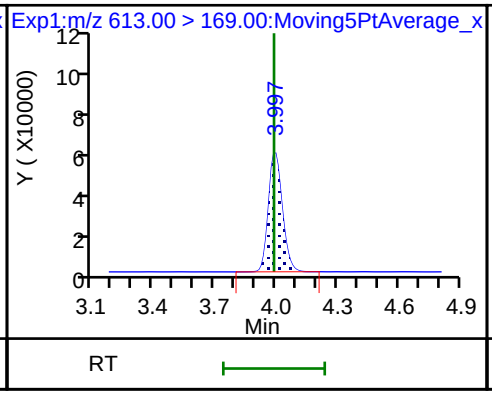
66 11-Chloroeicosafluoro-3-oxaundecan



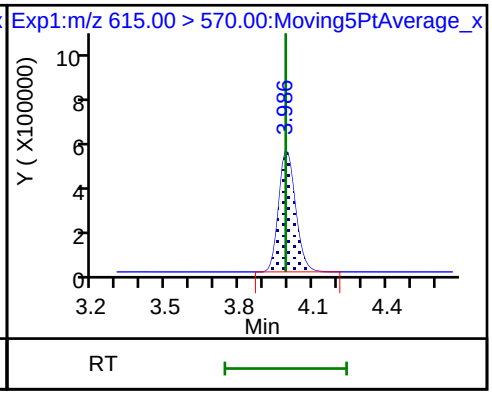
37 Perfluorododecanoic acid



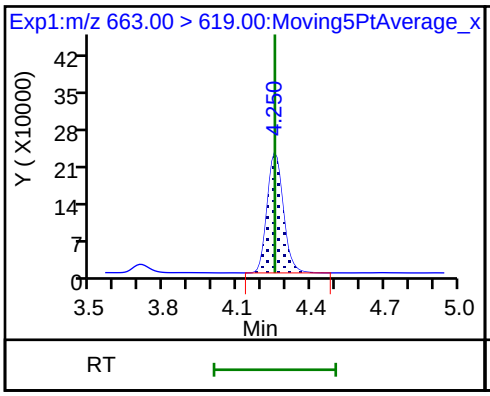
37 Perfluorododecanoic acid



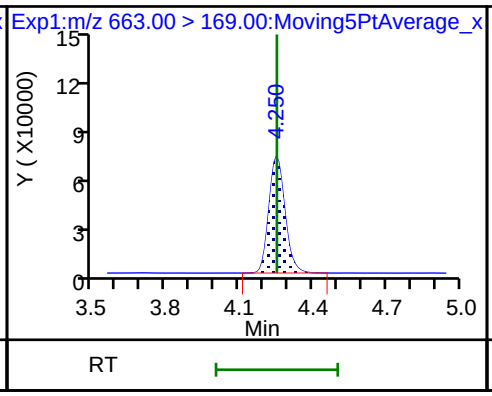
D 36 13C2 PFDoA



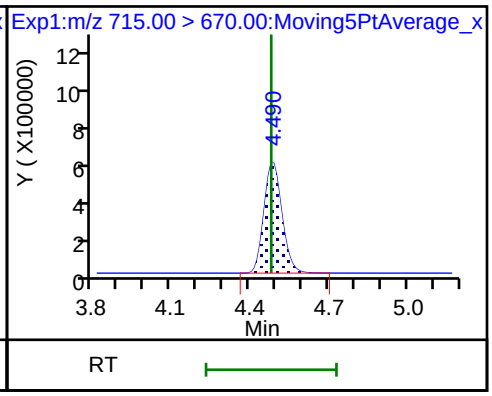
41 Perfluorotridecanoic acid



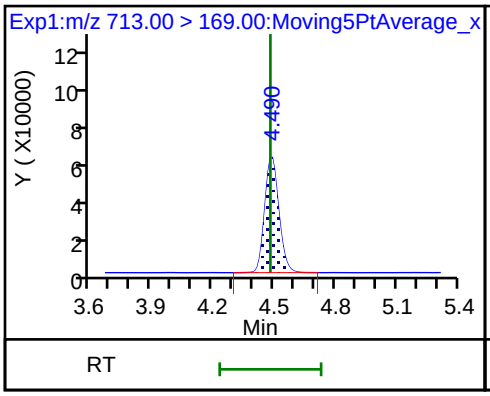
41 Perfluorotridecanoic acid



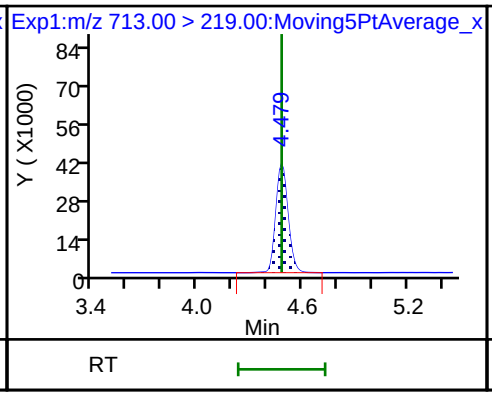
D 43 13C2-PFTeDA



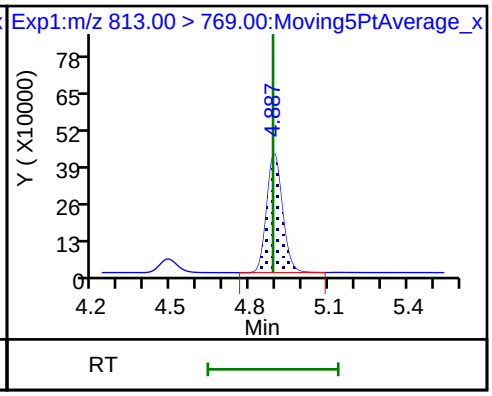
42 Perfluorotetradecanoic acid



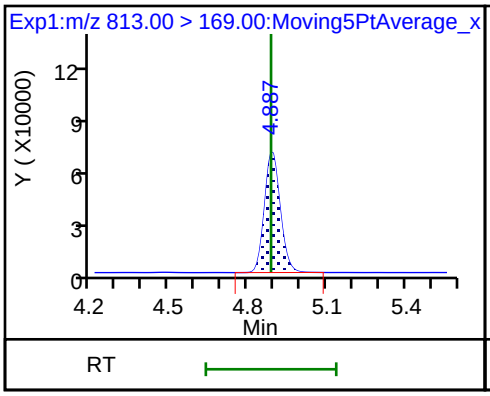
42 Perfluorotetradecanoic acid



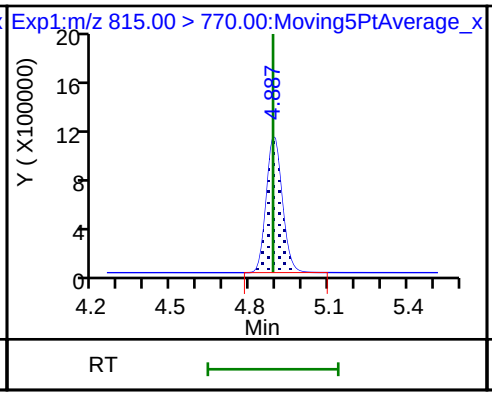
45 Perfluorohexadecanoic acid



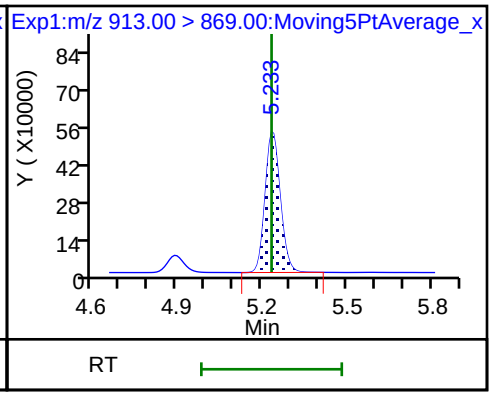
45 Perfluorohexadecanoic acid



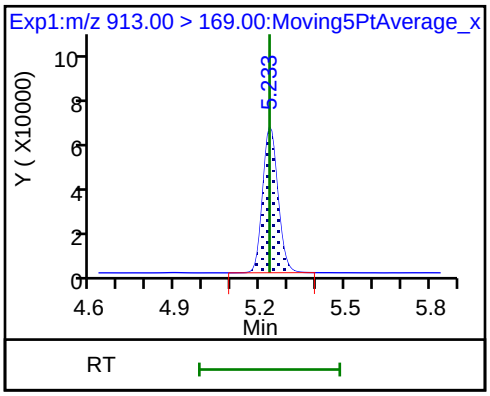
D 44 13C2-PFHxDA



46 Perfluorooctadecanoic acid



46 Perfluorooctadecanoic acid



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

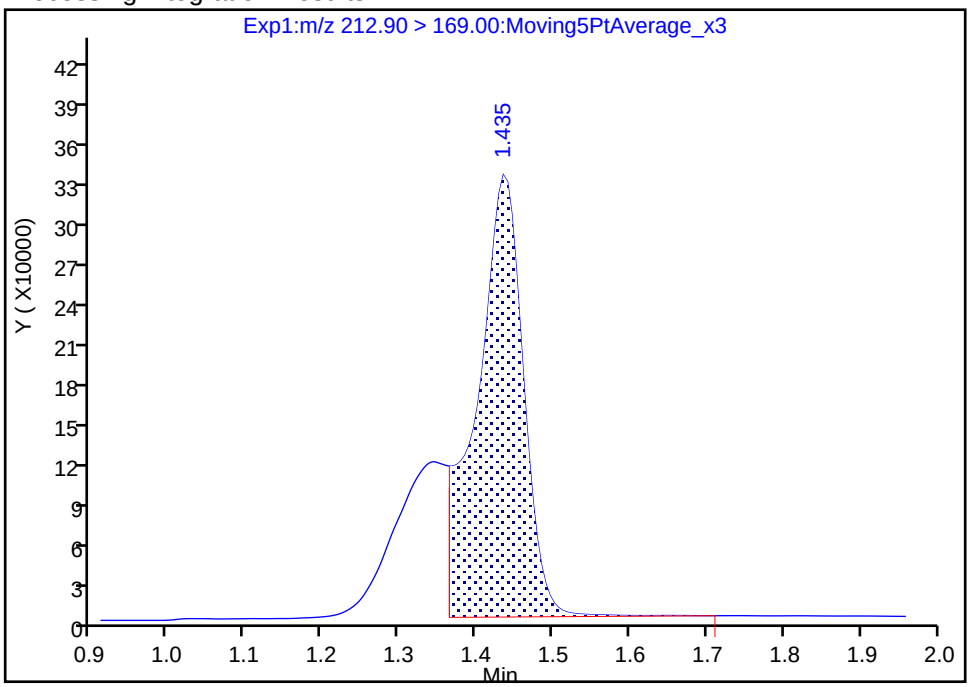
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180716-61105.b\2018.07.14LLA_020.d				
Injection Date:	14-Jul-2018 13:14:15	Instrument ID:	A8_N		
Lims ID:	LCS 320-231393/2-A				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	12	Worklist Smp#:	3
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

2 Perfluorobutyric acid, CAS: 375-22-4

Signal: 1

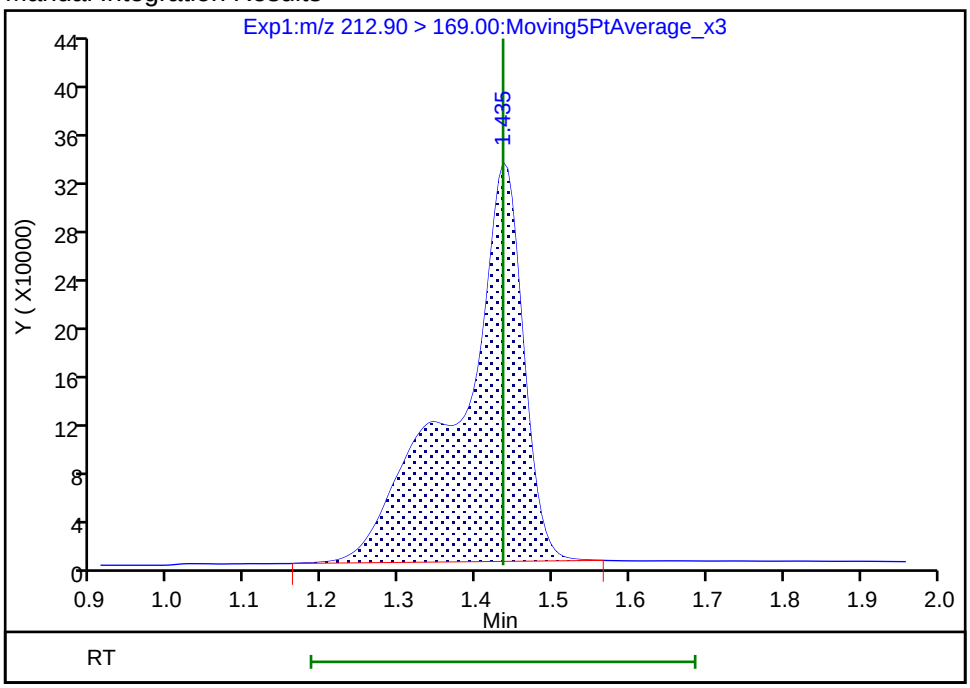
Processing Integration Results

RT: 1.44
Area: 1388409
Amount: 0.693477
Amount Units: ng/ml



Manual Integration Results

RT: 1.44
Area: 1926579
Amount: 0.962280
Amount Units: ng/ml



Reviewer: mongkols, 17-Jul-2018 08:11:24

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

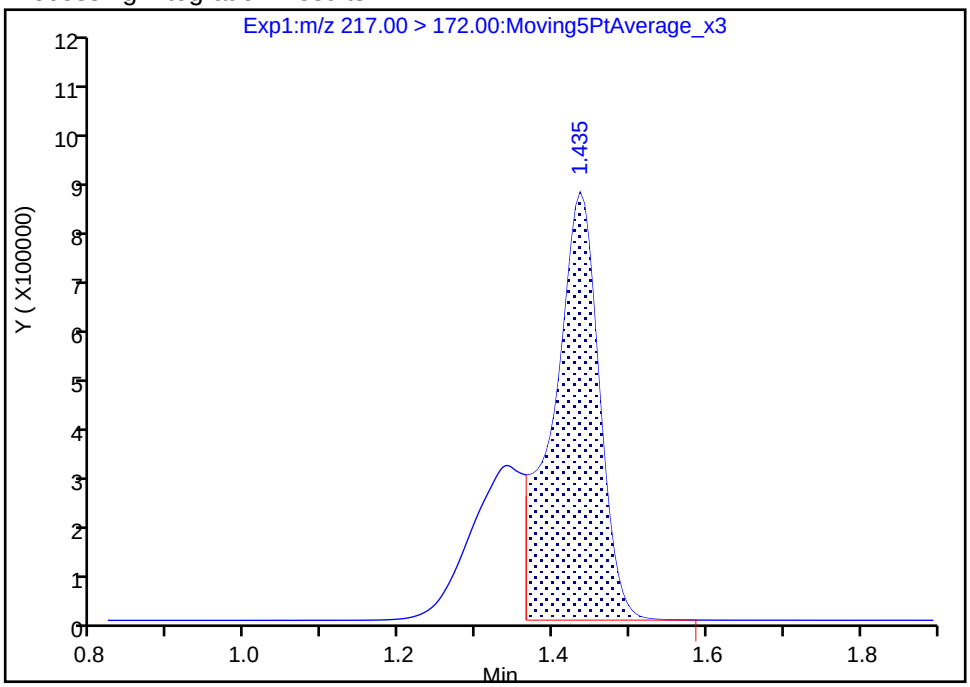
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180716-61105.b\2018.07.14LLA_020.d				
Injection Date:	14-Jul-2018 13:14:15	Instrument ID:	A8_N		
Lims ID:	LCS 320-231393/2-A				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	12	Worklist Smp#:	3
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

D 1 13C4 PFBA, CAS: STL00992

Signal: 1

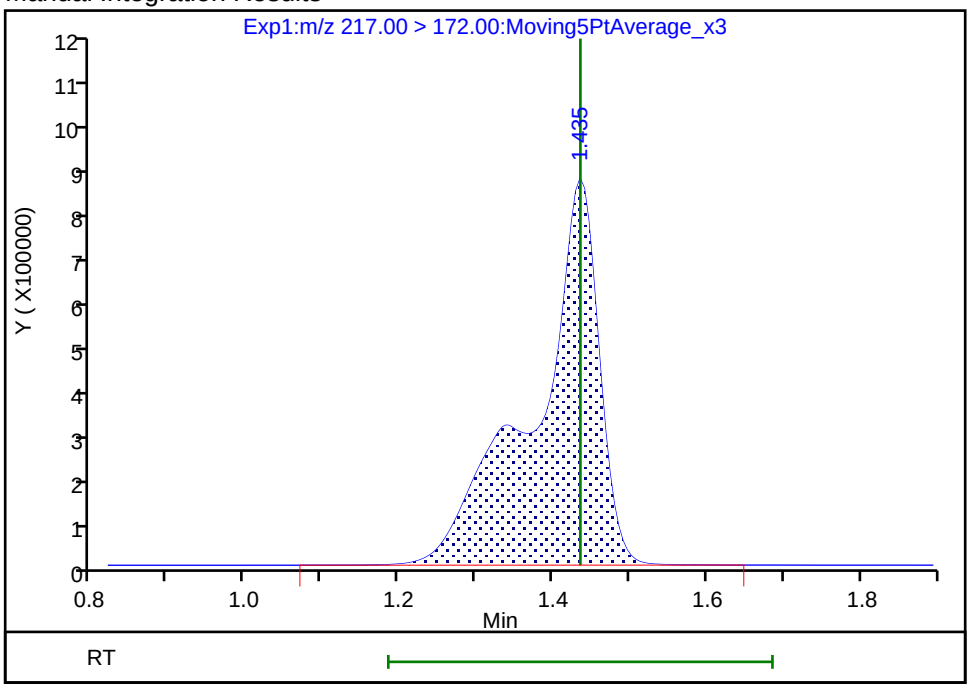
Processing Integration Results

RT: 1.44
Area: 3580174
Amount: 1.516498
Amount Units: ng/ml



Manual Integration Results

RT: 1.44
Area: 5078494
Amount: 2.151159
Amount Units: ng/ml



Reviewer: mongkols, 17-Jul-2018 08:11:10

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID:
Lab Sample ID: LCS 320-232121/2-A
Matrix: Water
Lab File ID: 2018.07.06LLC_015.d
Analysis Method: 537 (modified)
Date Collected:
Extraction Method: 3535
Date Extracted: 07/02/2018 14:58
Sample wt/vol: 250.00(mL)
Date Analyzed: 07/07/2018 01:12
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 232800
Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	0.0364		0.0020	0.00035
2706-90-3	Perfluoropentanoic acid (PFPeA)	0.0363		0.0020	0.00049
307-24-4	Perfluorohexanoic acid (PFHxA)	0.0384		0.0020	0.00058
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.0381		0.0020	0.00025
335-67-1	Perfluorooctanoic acid (PFOA)	0.0373		0.0020	0.00085
375-95-1	Perfluorononanoic acid (PFNA)	0.0366		0.0020	0.00027
335-76-2	Perfluorodecanoic acid (PFDA)	0.0368		0.0020	0.00031
2058-94-8	Perfluoroundecanoic acid (PFUnA)	0.0358		0.0020	0.0011
307-55-1	Perfluorododecanoic acid (PFDoA)	0.0361		0.0020	0.00055
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	0.0327		0.0020	0.0013
376-06-7	Perfluorotetradecanoic acid (PFTeA)	0.0366		0.0020	0.00029
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.0337		0.0020	0.00020
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	0.0365		0.0020	0.00030
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.0309		0.0020	0.00017
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	0.0353		0.0020	0.00019
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.0329		0.0020	0.00054
8789-57-2	Perfluorononanesulfonic acid (PFNS)	0.0333		0.0020	0.00016
335-77-3	Perfluorodecanesulfonic acid (PFDS)	0.0326		0.0020	0.00032
754-91-6	Perfluorooctane Sulfonamide (FOSA)	0.0374		0.0020	0.00035
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	0.0337		0.020	0.0031
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	0.0365		0.020	0.0019
757124-72-4	4:2 FTS	0.0402		0.020	0.0052
27619-97-2	6:2 FTS	0.0379		0.020	0.0020
39108-34-4	8:2 FTS	0.0336		0.020	0.0020

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID:
Lab Sample ID: LCS 320-232121/2-A
Matrix: Water
Lab File ID: 2018.07.06LLC_015.d
Analysis Method: 537 (modified)
Date Collected:
Extraction Method: 3535
Date Extracted: 07/02/2018 14:58
Sample wt/vol: 250.00(mL)
Date Analyzed: 07/07/2018 01:12
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 232800
Units: ug/L

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00992	13C4 PFBA	88		25-150
STL01893	13C5 PFPeA	94		25-150
STL00993	13C2 PFHxA	98		25-150
STL01892	13C4-PFHpA	96		25-150
STL00990	13C4 PFOA	105		25-150
STL00995	13C5 PFNA	105		25-150
STL00996	13C2 PFDA	110		25-150
STL00997	13C2 PFUnA	103		25-150
STL00998	13C2 PFDoA	102		25-150
STL02116	13C2-PFTeDA	98		25-150
STL02337	13C3-PFBS	96		25-150
STL00994	18O2 PFHxS	108		25-150
STL00991	13C4 PFOS	101		25-150
STL01056	13C8 FOSA	88		25-150
STL02118	d3-NMeFOSAA	105		25-150
STL02117	d5-NEtFOSAA	100		25-150
STL02279	M2-6:2FTS	102		25-150
STL02280	M2-8:2FTS	114		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\2018.07.06LLC_015.d
Lims ID: LCS 320-232121/2-A
Client ID:
Sample Type: LCS
Inject. Date: 07-Jul-2018 01:12:02 ALS Bottle#: 8 Worklist Smp#: 3
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: lcs 320-232121/2-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 09-Jul-2018 13:01:41 Calib Date: 05-Jul-2018 09:38:17
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180705-60684.b\2018.07.05LLICALAA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK010

First Level Reviewer: mongkols Date: 09-Jul-2018 13:02:03

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.428	1.428	0.0	0.537	5661014	2.19		87.7	23867	
2 Perfluorobutyric acid										
212.90 > 169.00	1.428	1.428	0.0	1.000	2106555	0.9108		91.1	954	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.707	1.698	0.009	1.000	1936916	0.9066		90.7	1579	
D 3 13C5-PFPeA										
267.90 > 223.00	1.707	1.707	0.0	0.642	4485185	2.35		93.9	46011	
D 47 13C3-PFBS										
301.90 > 83.00	1.743	1.743	0.0	0.656	102366	2.24		96.4	788	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.743	1.743	0.0	1.000	2813589	0.8430		95.4	15737	
298.90 > 99.00	1.743	1.743	0.0	1.000	1141920		2.46(1.25-3.74)		8846	
61 1H,1H,2H,2H-perfluorohexanesulfoni										
327.00 > 307.00	1.956	1.945	0.011	1.122	694754	1.01		108	33804	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.988	1.978	0.010	1.000	1960442	0.9593		95.9	3261	
313.00 > 119.00	1.988	1.978	0.010	1.000	184358		10.63(5.03-15.10)		2972	
D 7 13C2 PFHxA										
315.00 > 270.00	1.988	1.988	0.0	0.748	5017415	2.45		98.1	69388	
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.010	2.000	0.010	1.153	2608346	0.9136		97.4	41822	
349.00 > 99.00	2.010	2.000	0.010	1.153	928037		2.81(1.36-4.07)		13707	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.090	2.078	0.012	0.786	482561	2.88		115	7694	
67 Perfluoro(2-propoxypropanoic) acid										
329.10 > 285.00	2.078	2.079	-0.001	0.995	353749	0.7972		79.7	2489	
D 9 13C4-PFHpA										
367.00 > 322.00	2.302	2.302	0.0	0.866	4357629	2.40		96.0	37992	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.302	2.303	-0.001	1.000	1875760	0.9526		95.3	2666	
363.00 > 169.00	2.302	2.303	-0.001	1.000	727069		2.58(1.13-3.40)		5493	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.315	2.303	0.012	1.000	2154277	0.7723		84.9	13142	
399.00 > 99.00	2.315	2.303	0.012	1.000	698874		3.08(1.50-4.49)		4574	
D 11 18O2 PFHxS										
403.00 > 84.00	2.315	2.315	0.0	0.871	5705860	2.55		108	55322	
65 Adona										
377.00 > 251.00	2.355	2.342	0.013	0.779	5535489	0.9265		92.7	39486	
377.00 > 85.00	2.355	2.342	0.013	0.779	3284323		1.69(0.84-2.53)		30638	
D 12 M2-6:2FTS										
429.00 > 81.00	2.634	2.626	0.008	0.991	990688	2.43		102	16757	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.634	2.627	0.008	1.000	619146	0.9475		99.9	3630	
D 14 13C4 PFOA										
417.00 > 372.00	2.658	2.650	0.008	1.000	4678663	2.63		105	54547	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.658	2.651	0.007	1.000	2067132	0.9315		93.1	841	
413.00 > 169.00	2.658	2.651	0.007	1.000	1025499		2.02(0.84-2.52)		4796	
* 62 13C2-PFOA										
415.00 > 370.00	2.658	2.651	0.007		4662128	2.50			46808	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.665	2.658	0.007	0.882	1907050	0.8832		92.8	24493	
449.00 > 99.00	2.665	2.658	0.007	0.882	514860		3.70(1.94-5.82)		10097	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.022	3.008	0.014	1.000	1550787	0.8236		88.7	11315	
499.00 > 99.00	3.022	3.008	0.014	1.000	349788		4.43(2.31-6.93)		5537	
20 Perfluorononanoic acid										
463.00 > 419.00	3.022	3.015	0.007	1.000	1568370	0.9143		91.4	3585	
463.00 > 169.00	3.022	3.015	0.007	1.000	393683		3.98(1.90-5.69)		15243	
D 18 13C4 PFOS										
503.00 > 80.00	3.022	3.015	0.007	1.137	3852697	2.42		101	29473	
D 19 13C5 PFNA										
468.00 > 423.00	3.022	3.015	0.007	1.137	3979433	2.63		105	56337	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.229	3.221	0.008	1.068	2539272	0.8332		89.4	29946	
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.367	3.357	0.010	1.114	1090346	0.8324		86.7	14060	
549.00 > 99.00	3.367	3.357	0.010	1.114	433836		2.51(1.33-3.97)		12594	
25 1H,1H,2H,2H-perfluorodecanesulfoni										
527.00 > 507.00	3.367	3.357	0.010	1.000	572003	0.8396		87.6	16391	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.367	3.357	0.010	1.000	1804688	0.9338		93.4	26114	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.376	3.367	0.009	1.000	1369849	0.9200		92.0	4259	
513.00 > 169.00	3.376	3.367	0.009	1.000	235508		5.82(2.36-7.09)		10831	
D 26 M2-8:2FTS										
529.00 > 81.00	3.367	3.367	0.0	1.267	1235010	2.72		114	25003	

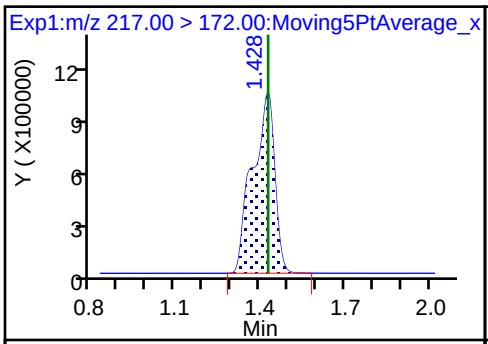
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 21 13C8 FOSA										
506.00 > 78.00	3.367	3.367	0.0	1.267	4872011	2.20		88.0	40373	
D 23 13C2 PFDA										
515.00 > 470.00	3.376	3.376	0.0	1.270	3571425	2.74		110	48615	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.535	3.525	0.010	1.003	697177	0.8435		84.3	4963	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.526	3.525	0.001	1.326	2007791	2.61		105	34232	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.684	3.683	0.001	1.219	944426	0.8143		84.5	11166	
599.00 > 99.00	3.684	3.683	0.001	1.219	310250		3.04(1.39-4.16)		6566	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.694	3.694	0.0	1.000	622807	0.9133		91.3	9692	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.705	3.694	0.011	1.000	854569	0.8948		89.5	4875	
563.00 > 169.00	3.705	3.694	0.011	1.000	202262		4.23(2.12-6.36)		8304	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.694	3.694	0.0	1.390	1890736	2.49		99.6	19528	
D 30 13C2 PFUnA										
565.00 > 520.00	3.705	3.705	0.0	1.394	2808501	2.56		103	32379	
66 11-Chloroeicosafluoro-3-oxaundecan										
631.00 > 451.00	3.862	3.851	0.011	1.278	4156490	0.8940		94.9	45863	
37 Perfluorododecanoic acid										
613.00 > 569.00	3.995	3.984	0.011	1.000	1195015	0.9032		90.3	1367	
613.00 > 169.00	3.995	3.984	0.011	1.000	293985		4.06(2.13-6.40)		4750	
D 36 13C2 PFDoA										
615.00 > 570.00	3.995	3.995	0.0	1.503	3001750	2.56		102	17290	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.249	4.249	0.0	1.064	1203064	0.8163		81.6	1236	
663.00 > 169.00	4.249	4.249	0.0	1.064	378180		3.18(1.25-3.76)		4873	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.490	4.489	0.001	1.000	347021	0.9149		91.5	7281	
713.00 > 219.00	4.490	4.489	0.001	1.000	234812		1.48(0.71-2.13)		3721	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.490	4.489	0.001	1.689	3502070	2.45		97.9	15406	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.895	4.895	0.0	1.000	2404056	0.9366		93.7	1010	
813.00 > 169.00	4.895	4.895	0.0	1.000	409759		5.87(2.86-8.58)		4131	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.895	4.895	0.0	1.842	6594377	2.49		99.6	15506	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.247	5.246	0.0	1.072	2926102	0.9530		95.3	902	
913.00 > 169.00	5.239	5.246	-0.007	1.070	357133		8.19(3.83-11.48)		4576	

Report Date: 09-Jul-2018 13:02:03 Chrom Revision: 2.2 07-Jun-2018 07:41:54

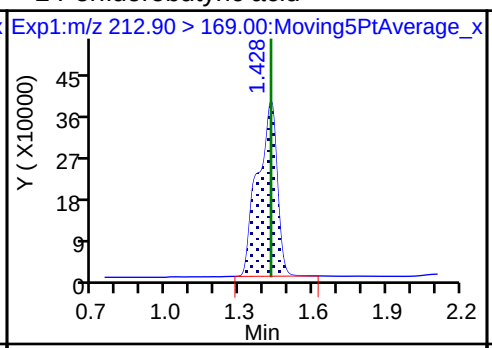
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\2018.07.06LLC_015.d
Injection Date: 07-Jul-2018 01:12:02 Instrument ID: A8_N
Lims ID: LCS 320-232121/2-A
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 8 Worklist Smp#: 3
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC ICAL

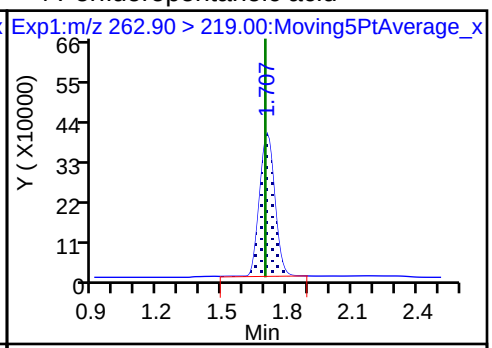
D 1 13C4 PFBA



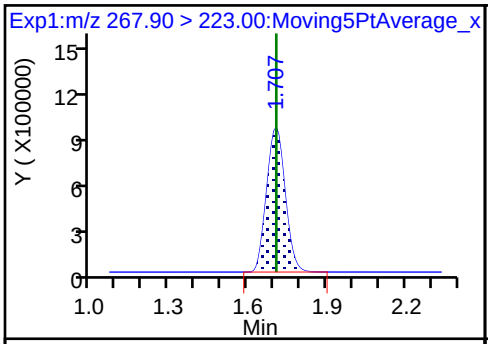
2 Perfluorobutyric acid



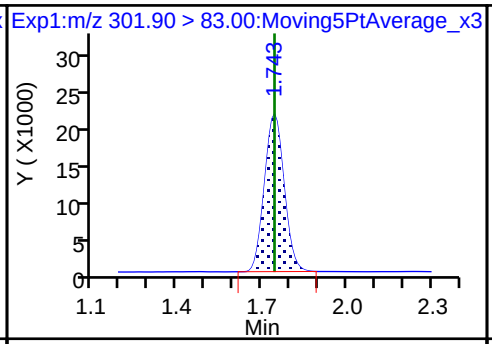
4 Perfluoropentanoic acid



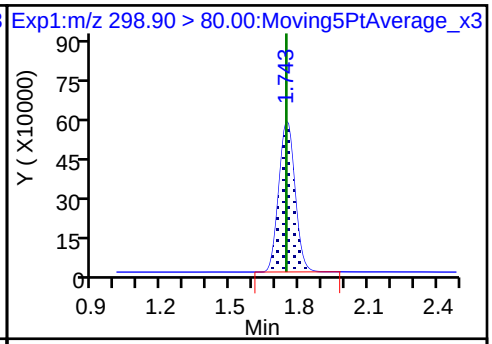
D 3 13C5-PFPeA



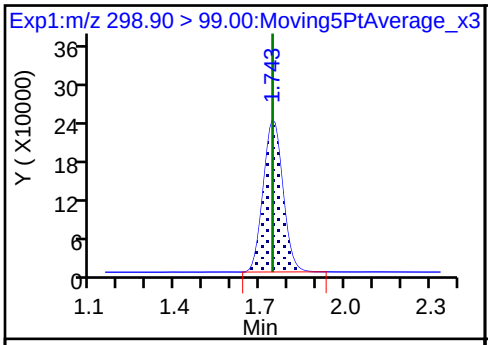
D 47 13C3-PFBS



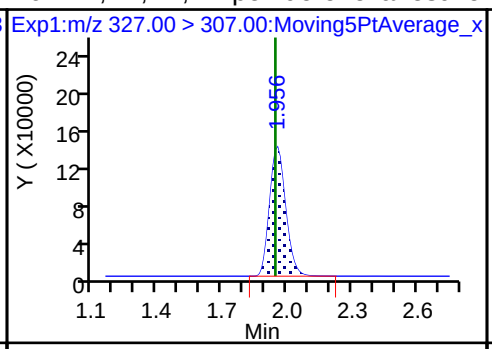
5 Perfluorobutanesulfonic acid



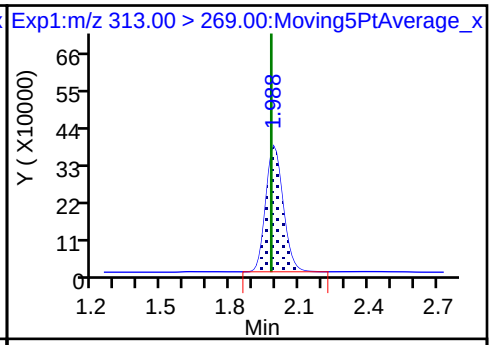
5 Perfluorobutanesulfonic acid



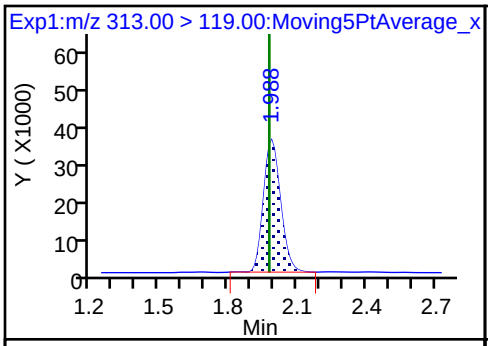
61 1H,1H,2H,2H-perfluorohexanesulfoni



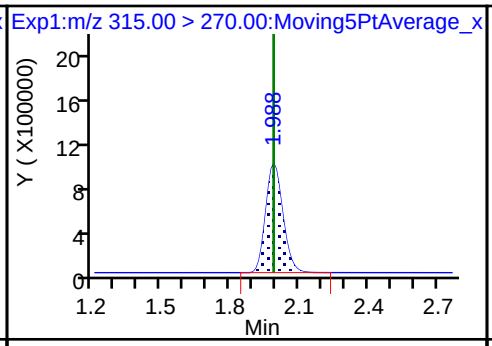
6 Perfluorohexanoic acid



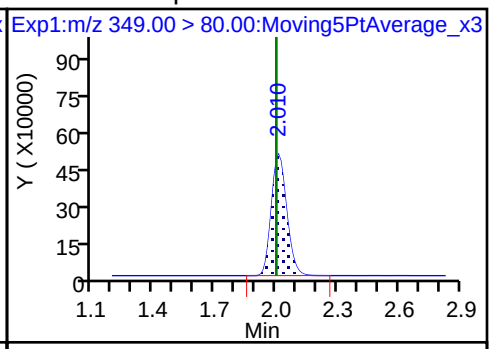
6 Perfluorohexanoic acid



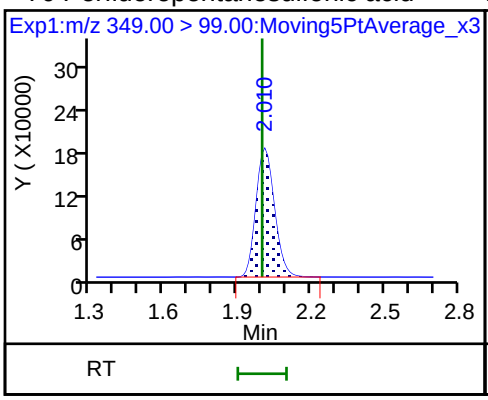
D 7 13C2 PFHxA



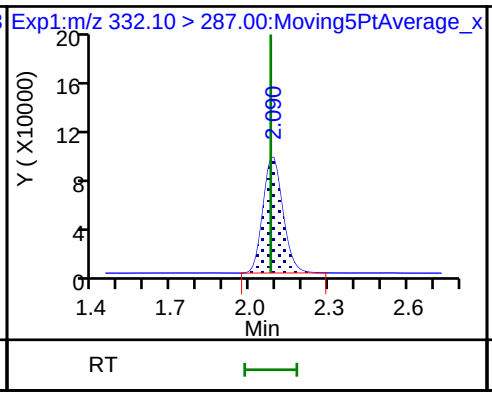
70 Perfluoropentanesulfonic acid



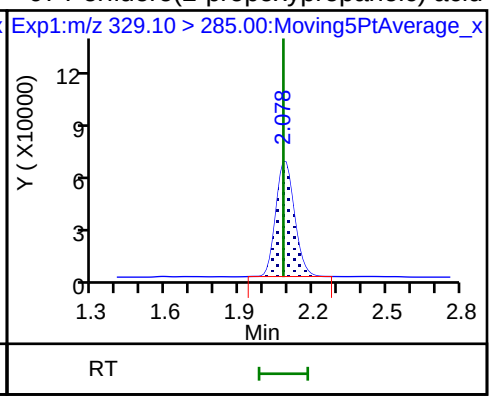
70 Perfluoropentanesulfonic acid



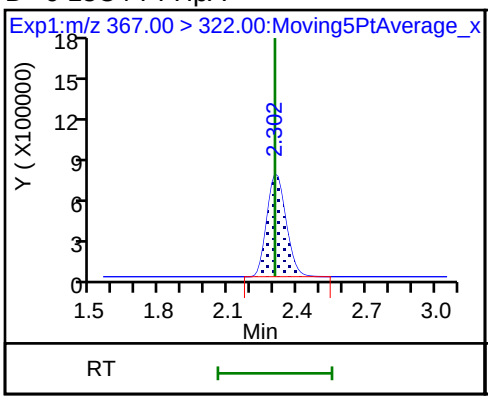
D 64 13C3 HFPO-DA



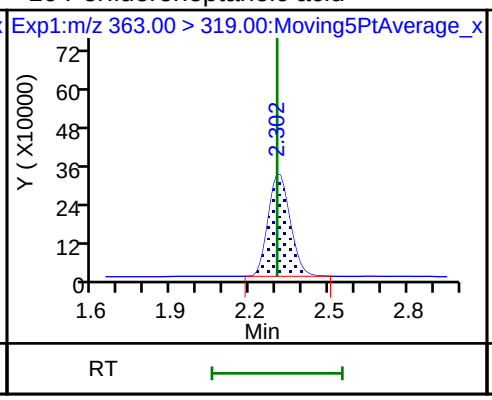
67 Perfluoro(2-propoxypropanoic) acid



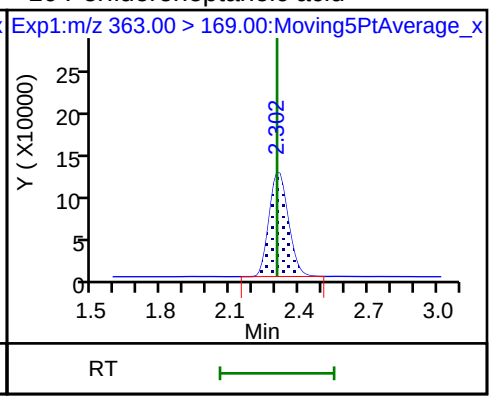
D 9 13C4-PFHpA



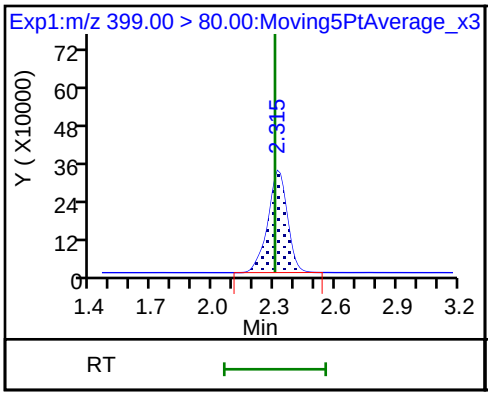
10 Perfluoroheptanoic acid



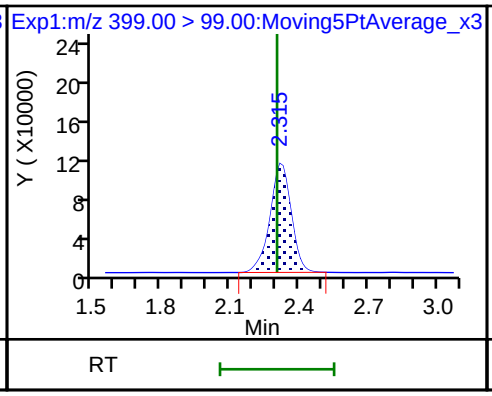
10 Perfluoroheptanoic acid



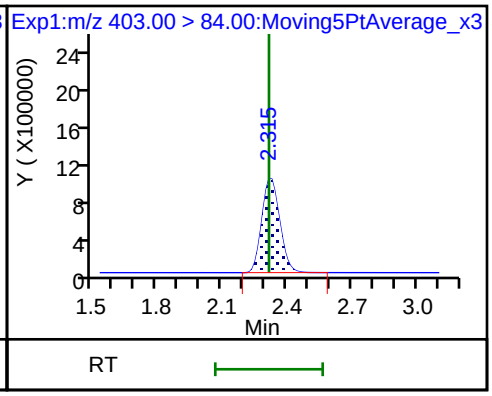
8 Perfluorohexanesulfonic acid



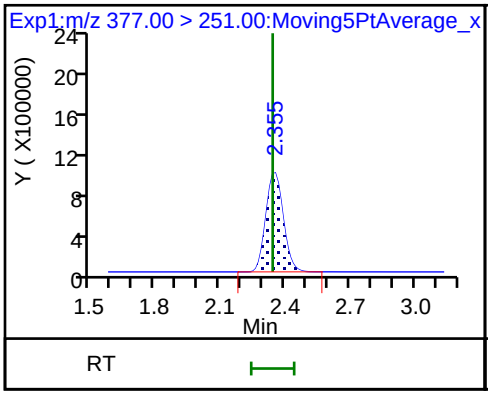
8 Perfluorohexanesulfonic acid



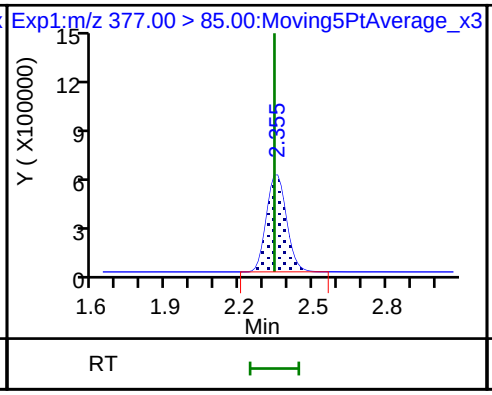
D 11 18O2 PFHxS



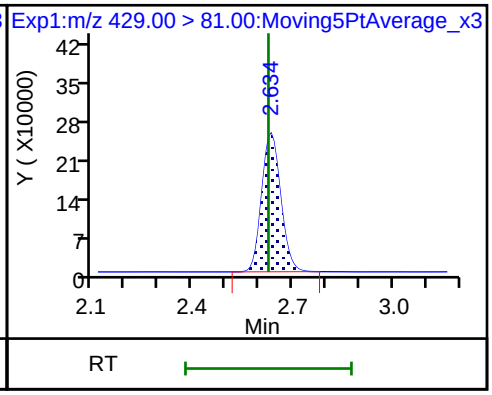
65 Adona



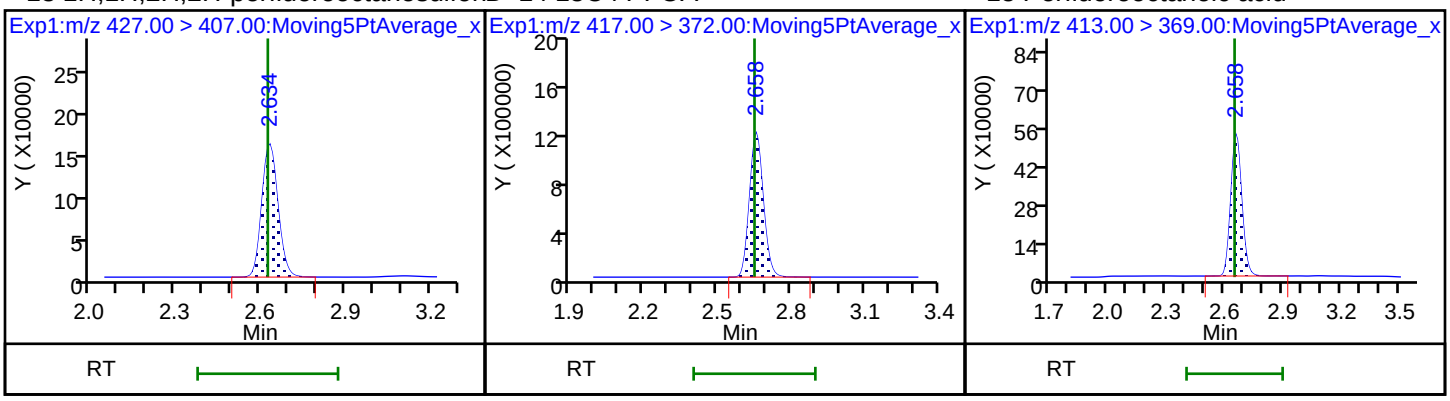
65 Adona



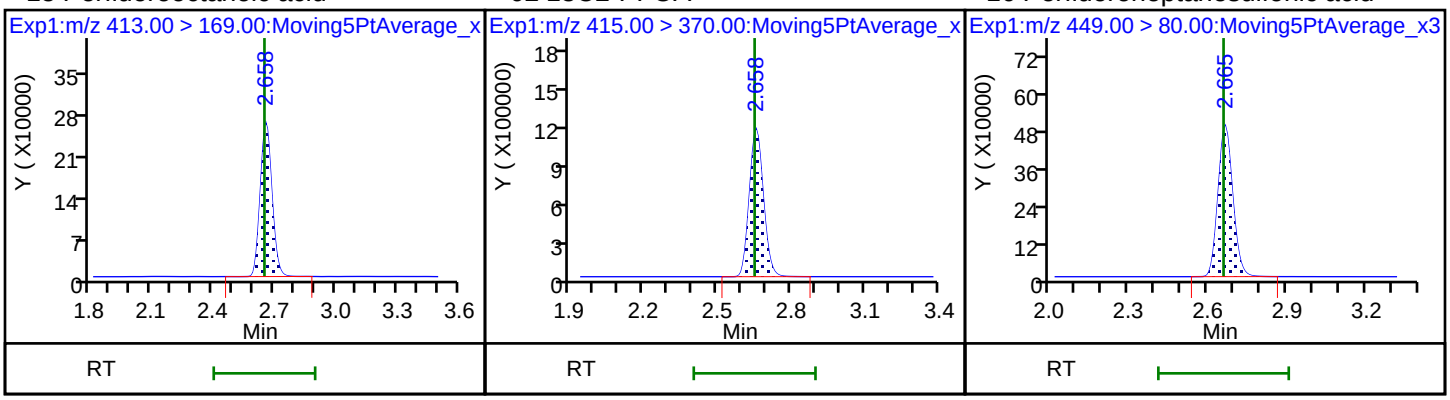
D 12 M2-6:2FTS



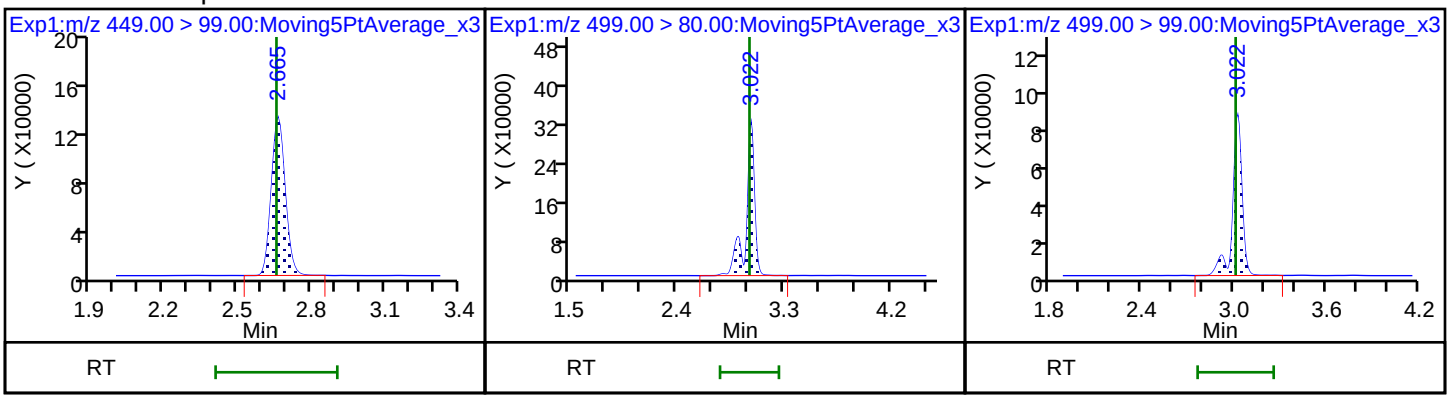
13 1H,1H,2H,2H-perfluorooctanesulfonD 14 13C4 PFOA 15 Perfluorooctanoic acid



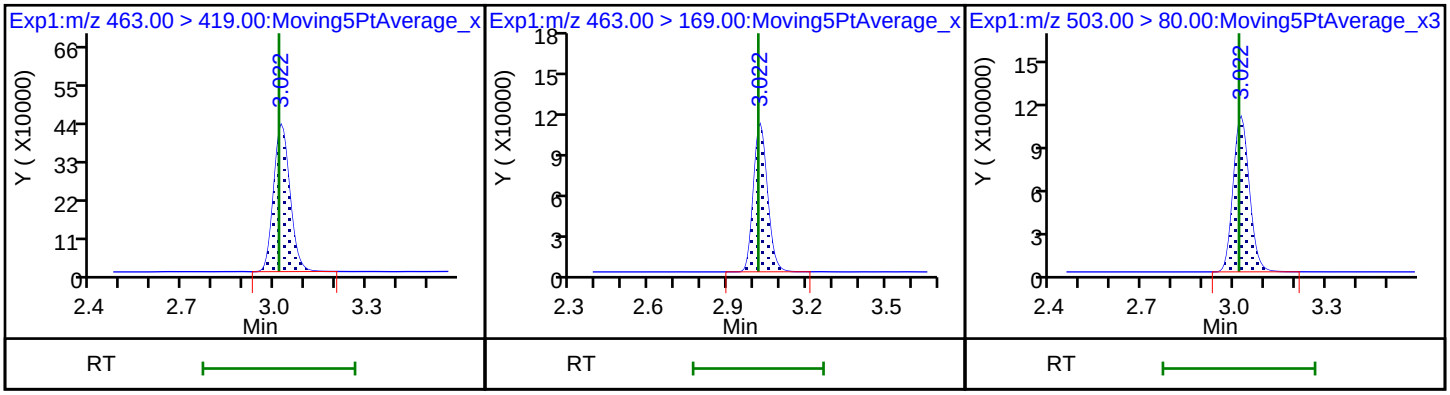
15 Perfluorooctanoic acid * 62 13C2-PFOA 16 Perfluoroheptanesulfonic acid



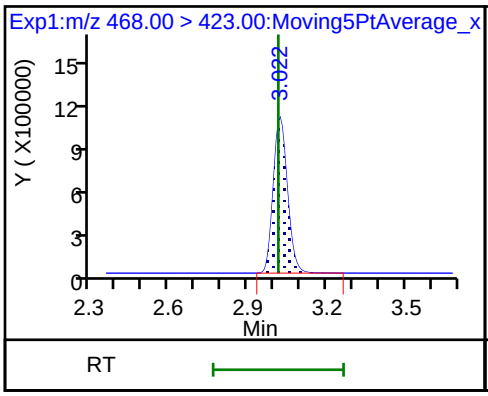
16 Perfluoroheptanesulfonic acid 17 Perfluorooctane sulfonic acid 17 Perfluorooctane sulfonic acid



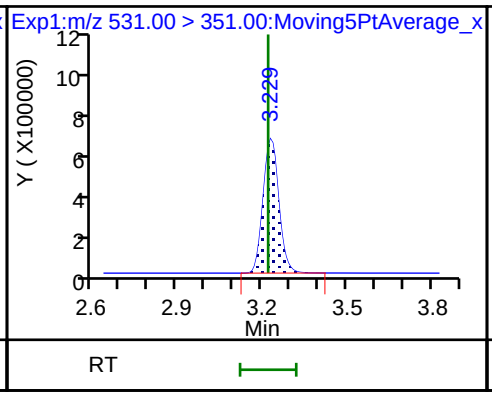
20 Perfluorononanoic acid 20 Perfluorononanoic acid D 18 13C4 PFOS



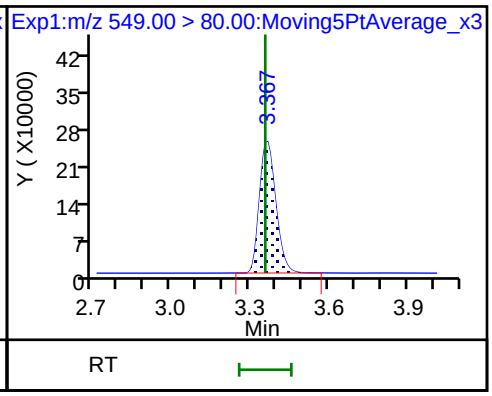
D 19 13C5 PFNA



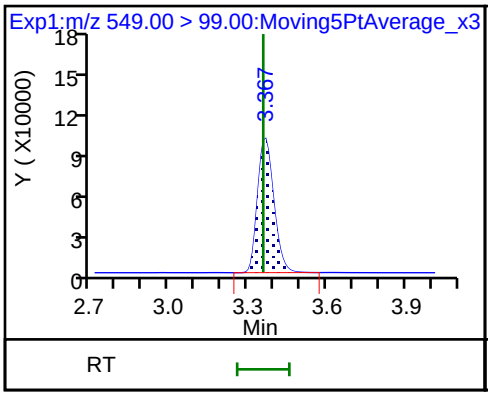
69 9-Chlorohexadecafluoro-3-oxanonane



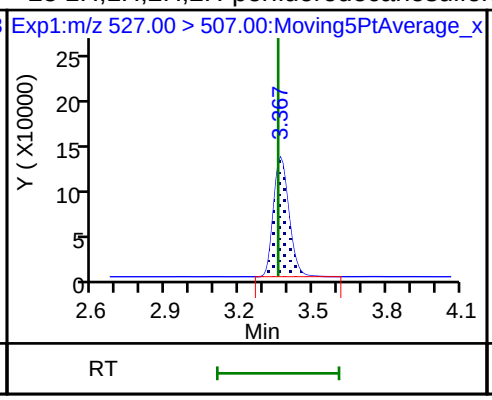
68 Perfluorononanesulfonic acid



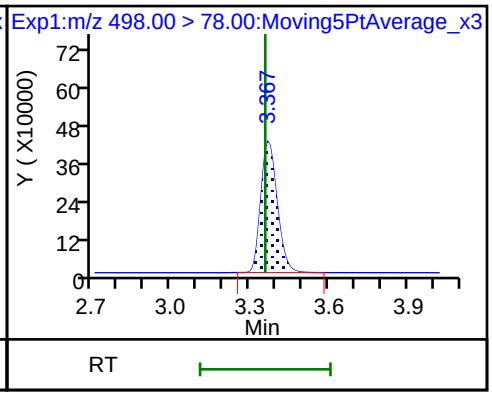
68 Perfluorononanesulfonic acid



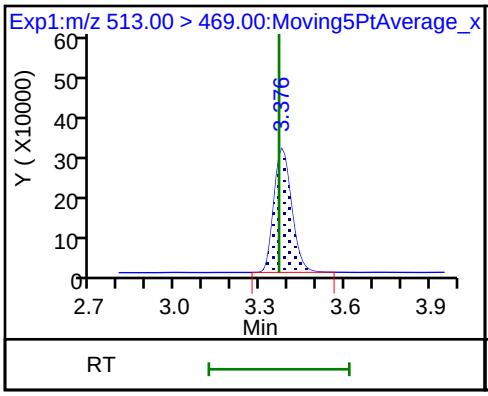
25 1H,1H,2H,2H-perfluorodecanesulfoni



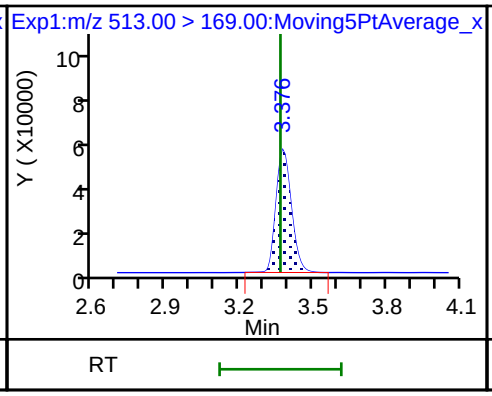
22 Perfluorooctane Sulfonamide



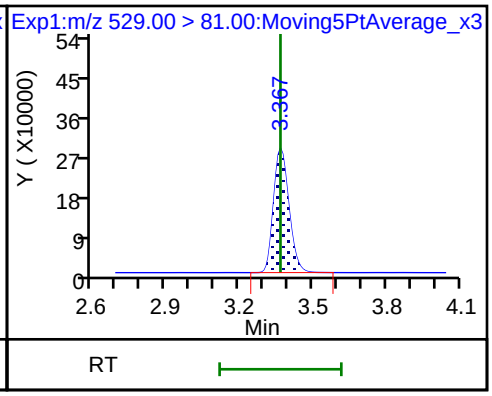
24 Perfluorodecanoic acid



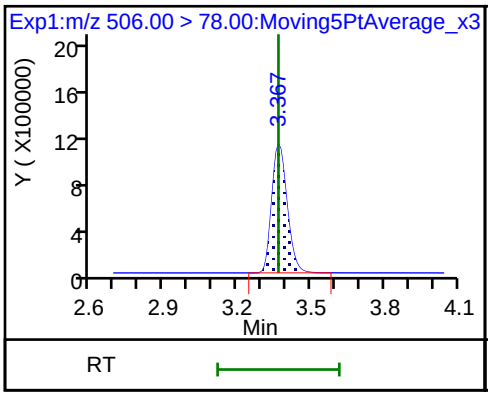
24 Perfluorodecanoic acid



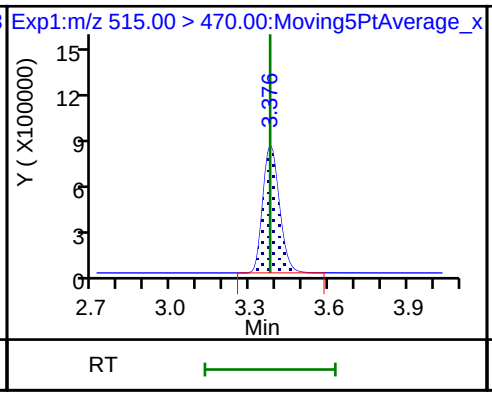
D 26 M2-8:2FTS



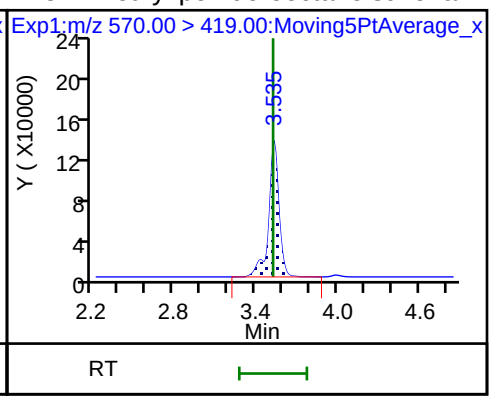
D 21 13C8 FOSA



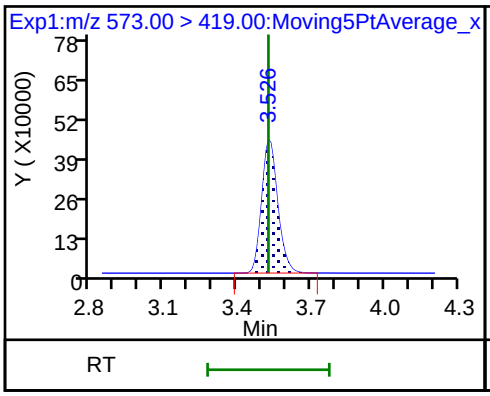
D 23 13C2 PFDA



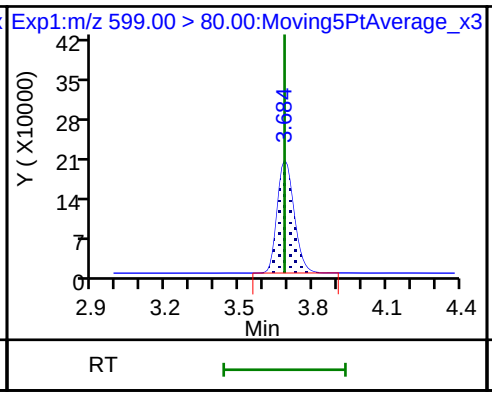
28 N-methyl perfluorooctane sulfonami



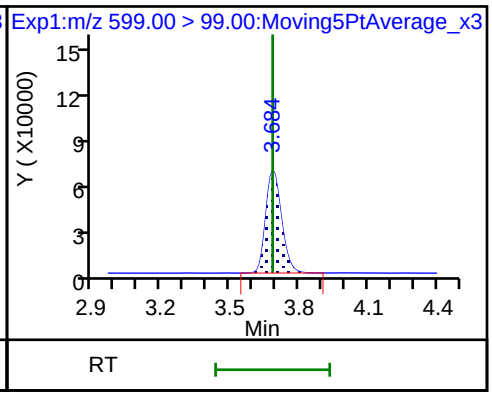
D 27 d3-NMeFOSAA



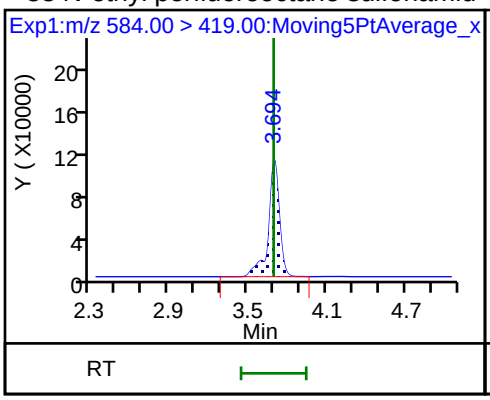
29 Perfluorodecane Sulfonic acid



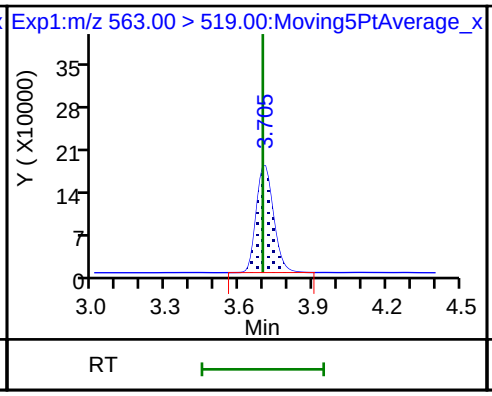
29 Perfluorodecane Sulfonic acid



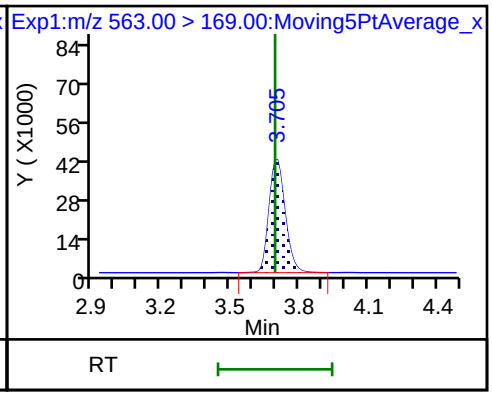
33 N-ethyl perfluorooctane sulfonamid



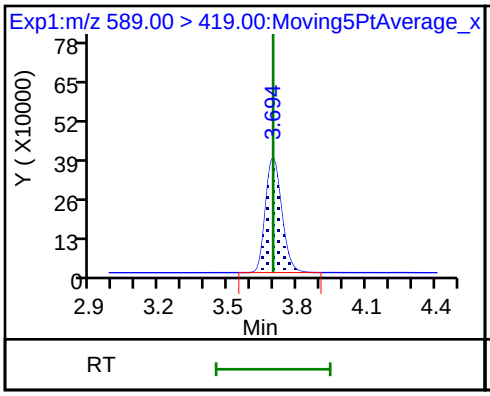
31 Perfluoroundecanoic acid



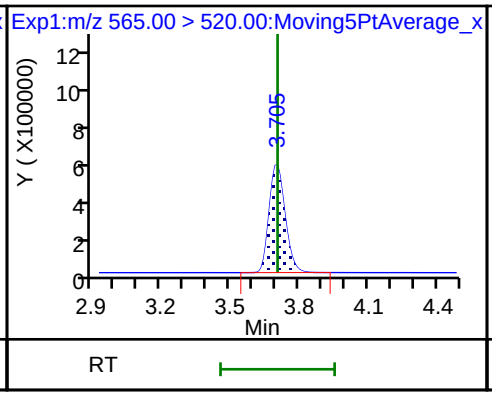
31 Perfluoroundecanoic acid



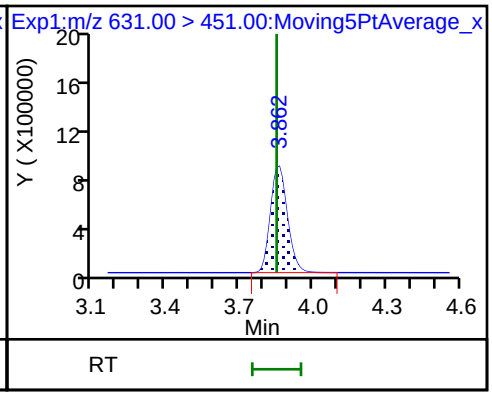
D 32 d5-NEtFOSAA



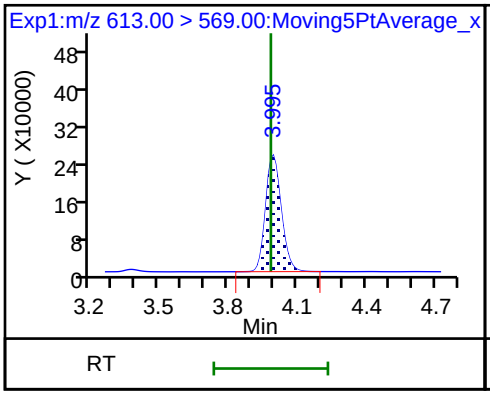
D 30 13C2 PFUnA



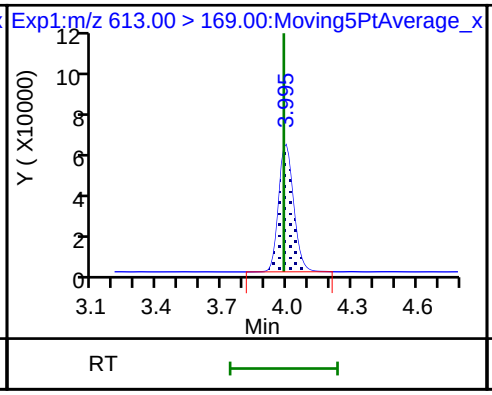
66 11-Chloroeicosafluoro-3-oxaundecan



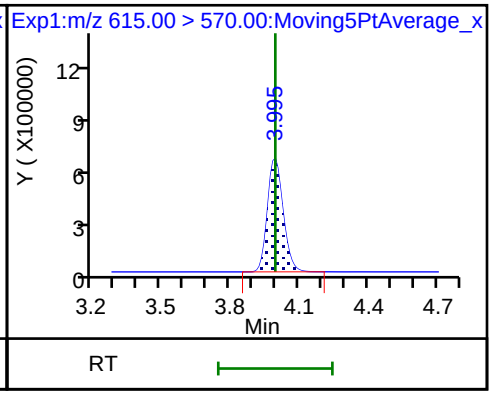
37 Perfluorododecanoic acid



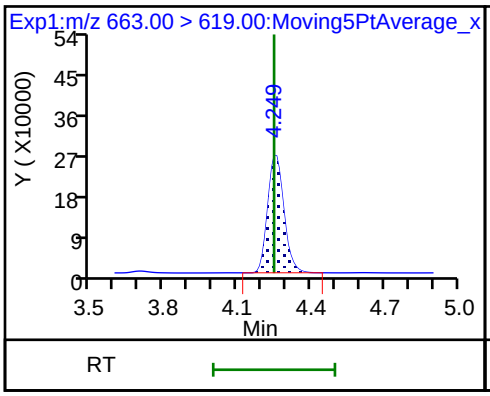
37 Perfluorododecanoic acid



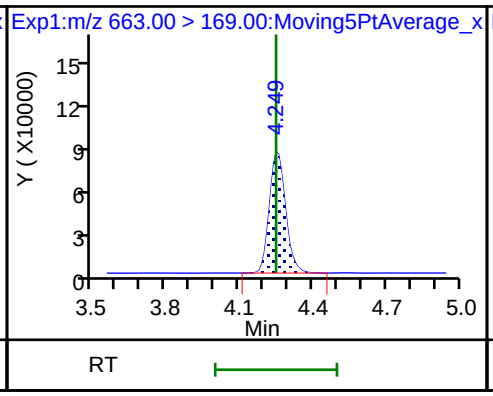
D 36 13C2 PFDoA



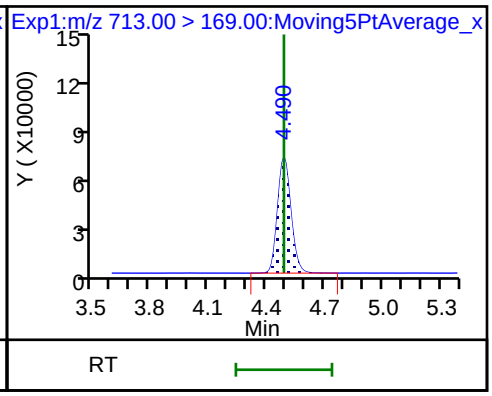
41 Perfluorotridecanoic acid



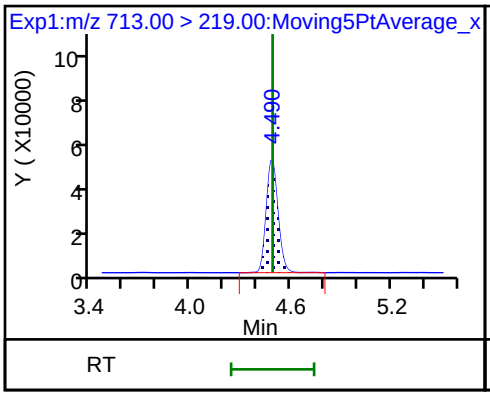
41 Perfluorotridecanoic acid



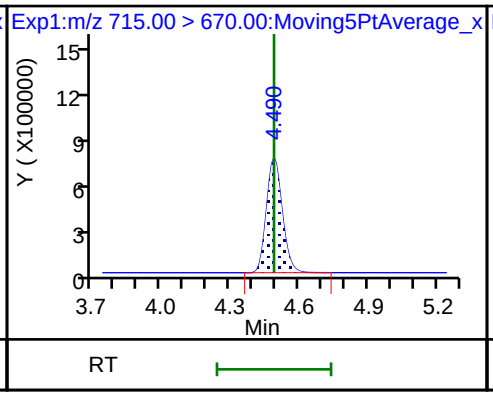
42 Perfluorotetradecanoic acid



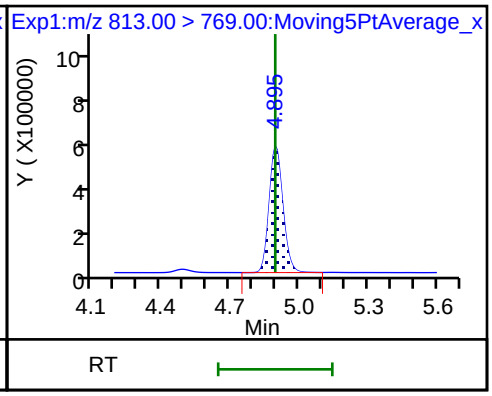
42 Perfluorotetradecanoic acid



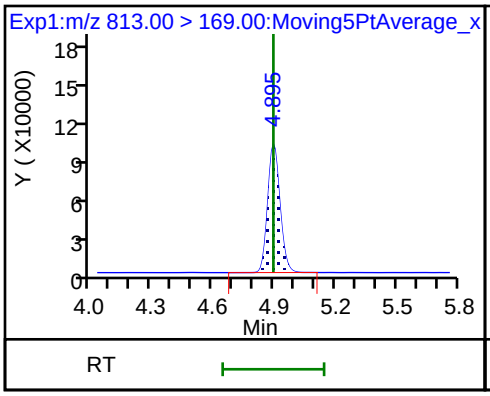
D 43 13C2-PFTeDA



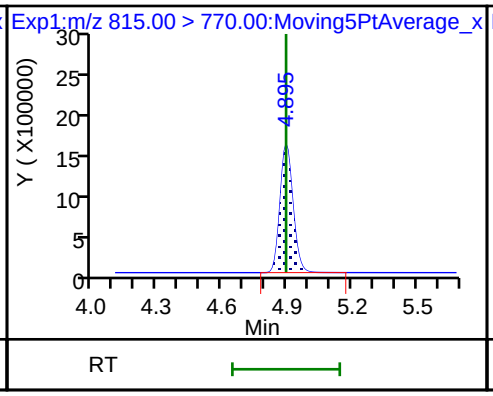
45 Perfluorohexadecanoic acid



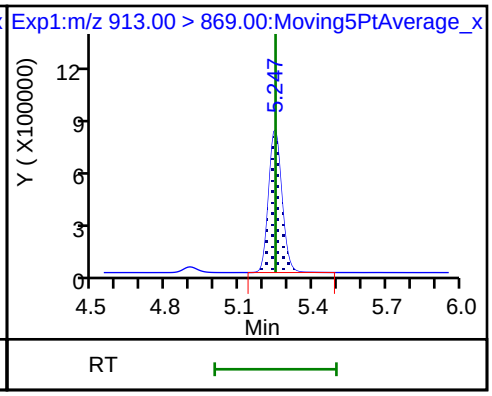
45 Perfluorohexadecanoic acid



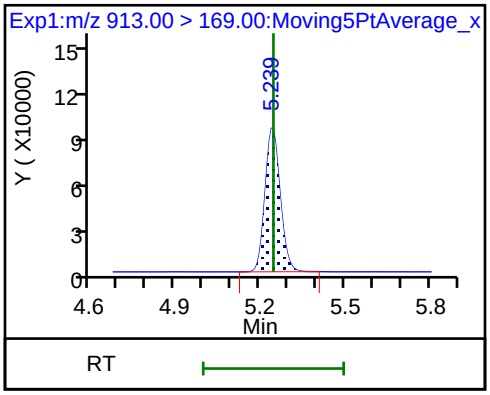
D 44 13C2-PFHxDA



46 Perfluorooctadecanoic acid



46 Perfluorooctadecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID:
Lab Sample ID: LCS 320-232150/2-A
Matrix: Water
Lab File ID: 2018.07.06LLAAA_033.d
Analysis Method: 537 (modified)
Date Collected:
Extraction Method: 3535
Date Extracted: 07/02/2018 16:10
Sample wt/vol: 250.00(mL)
Date Analyzed: 07/06/2018 17:45
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 232788
Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	0.0358		0.0020	0.00035
2706-90-3	Perfluoropentanoic acid (PFPeA)	0.0369		0.0020	0.00049
307-24-4	Perfluorohexanoic acid (PFHxA)	0.0387		0.0020	0.00058
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.0355		0.0020	0.00025
335-67-1	Perfluorooctanoic acid (PFOA)	0.0367		0.0020	0.00085
375-95-1	Perfluorononanoic acid (PFNA)	0.0367		0.0020	0.00027
335-76-2	Perfluorodecanoic acid (PFDA)	0.0376		0.0020	0.00031
2058-94-8	Perfluoroundecanoic acid (PFUnA)	0.0349		0.0020	0.0011
307-55-1	Perfluorododecanoic acid (PFDoA)	0.0359		0.0020	0.00055
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	0.0323		0.0020	0.0013
376-06-7	Perfluorotetradecanoic acid (PFTeA)	0.0365		0.0020	0.00029
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.0335		0.0020	0.00020
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	0.0376		0.0020	0.00030
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.0310		0.0020	0.00017
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	0.0356		0.0020	0.00019
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.0333		0.0020	0.00054
8789-57-2	Perfluorononanesulfonic acid (PFNS)	0.0330		0.0020	0.00016
335-77-3	Perfluorodecanesulfonic acid (PFDS)	0.0340		0.0020	0.00032
754-91-6	Perfluorooctane Sulfonamide (FOSA)	0.0370		0.0020	0.00035
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	0.0368		0.020	0.0031
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	0.0341		0.020	0.0019
757124-72-4	4:2 FTS	0.0371		0.020	0.0052
27619-97-2	6:2 FTS	0.0368		0.020	0.0020
39108-34-4	8:2 FTS	0.0330		0.020	0.0020

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID:
Lab Sample ID: LCS 320-232150/2-A
Matrix: Water
Lab File ID: 2018.07.06LLAAA_033.d
Analysis Method: 537 (modified)
Date Collected:
Extraction Method: 3535
Date Extracted: 07/02/2018 16:10
Sample wt/vol: 250.00(mL)
Date Analyzed: 07/06/2018 17:45
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 232788
Units: ug/L

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00992	13C4 PFBA	102		25-150
STL01893	13C5 PFPeA	98		25-150
STL00993	13C2 PFHxA	100		25-150
STL01892	13C4-PFHpA	110		25-150
STL00990	13C4 PFOA	103		25-150
STL00995	13C5 PFNA	109		25-150
STL00996	13C2 PFDA	108		25-150
STL00997	13C2 PFUnA	103		25-150
STL00998	13C2 PFDoA	103		25-150
STL02116	13C2-PFTeDA	100		25-150
STL02337	13C3-PFBS	99		25-150
STL00994	18O2 PFHxS	111		25-150
STL00991	13C4 PFOS	106		25-150
STL01056	13C8 FOSA	94		25-150
STL02118	d3-NMeFOSAA	97		25-150
STL02117	d5-NEtFOSAA	99		25-150
STL02279	M2-6:2FTS	113		25-150
STL02280	M2-8:2FTS	108		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180706-60751.b\2018.07.06LLAAA_033.d
Lims ID: LCS 320-232150/2-A
Client ID:
Sample Type: LCS
Inject. Date: 06-Jul-2018 17:45:53 ALS Bottle#: 23 Worklist Smp#: 3
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: lcs 320-232150/2-
Misc. Info.: Plate: 1 Rack: 5
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180706-60751.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 09-Jul-2018 10:12:30 Calib Date: 05-Jul-2018 09:38:17
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180705-60684.b\2018.07.05LLICALAA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK010

First Level Reviewer: mongkols Date: 09-Jul-2018 10:12:56

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.428	1.424	0.004	0.539	6685931	2.56		102	26687	
2 Perfluorobutyric acid										
212.90 > 169.00	1.428	1.433	-0.005	1.000	2442388	0.8941		89.4	1099	
D 3 13C5-PFPeA										
267.90 > 223.00	1.707	1.702	0.005	0.644	4715455	2.44		97.6	46619	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.707	1.707	0.0	1.000	2070314	0.9217		92.2	1566	
D 47 13C3-PFBS										
301.90 > 83.00	1.743	1.738	0.005	0.658	106216	2.30		98.8	830	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.743	1.752	-0.009	1.000	2901541	0.8379		94.8	14263	
298.90 > 99.00	1.743	1.752	-0.009	1.000	1143696		2.54(1.25-3.74)		7967	
61 1H,1H,2H,2H-perfluorohexanesulfoni										
327.00 > 307.00	1.956	1.956	0.0	1.122	663699	0.9264		99.2	32271	
D 7 13C2 PFHxA										
315.00 > 270.00	1.988	1.981	0.007	0.750	5182564	2.50		100	90910	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.988	1.988	0.0	1.000	2044352	0.9685		96.8	5052	
313.00 > 119.00	1.988	1.988	0.0	1.000	181242		11.28(5.03-15.10)		3475	
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.011	2.010	0.001	1.153	2785105	0.9401		100	41490	
349.00 > 99.00	2.011	2.010	0.001	1.153	981547		2.84(1.36-4.07)		14511	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.078	2.070	0.008	0.784	396692	2.34		93.6	7679	
67 Perfluoro(2-propoxypropanoic) acid										
329.10 > 285.00	2.078	2.078	0.0	1.000	347695	0.9531		95.3	2367	
D 9 13C4-PFHpA										
367.00 > 322.00	2.303	2.293	0.010	0.869	5043573	2.75		110	44309	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.303	2.302	0.001	1.000	2023197	0.8877		88.8	3057	
363.00 > 169.00	2.303	2.302	0.001	1.000	775048		2.61(1.13-3.40)		6172	
D 11 18O2 PFHxS										
403.00 > 84.00	2.316	2.306	0.010	0.874	5957393	2.64		111	69851	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.316	2.315	0.001	1.000	2254881	0.7742		85.1	14847	
399.00 > 99.00	2.316	2.315	0.001	1.000	765403		2.95(1.50-4.49)		3840	
65 Adona										
377.00 > 251.00	2.342	2.355	-0.013	0.777	5795081	0.9106		91.1	47160	
377.00 > 85.00	2.342	2.355	-0.013	0.777	3604809		1.61(0.84-2.53)		29393	
D 12 M2-6:2FTS										
429.00 > 81.00	2.626	2.627	-0.001	0.991	1108706	2.69		113	17345	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.626	2.634	-0.008	1.000	672076	0.9190		96.9	3348	
D 14 13C4 PFOA										
417.00 > 372.00	2.651	2.652	-0.001	1.000	4648645	2.58		103	35728	
* 62 13C2-PFOA										
415.00 > 370.00	2.651	2.658	-0.007		4718064	2.50			51888	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.651	2.658	-0.007	1.000	2021147	0.9167		91.6	798	
413.00 > 169.00	2.651	2.658	-0.007	1.000	1068419		1.89(0.84-2.52)		4040	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.658	2.665	-0.007	0.882	2047402	0.8902		93.5	30899	
449.00 > 99.00	2.658	2.665	-0.007	0.882	542332		3.78(1.94-5.82)		8736	
D 19 13C5 PFNA										
468.00 > 423.00	3.015	3.009	0.006	1.138	4160870	2.72		109	54250	
D 18 13C4 PFOS										
503.00 > 80.00	3.015	3.009	0.006	1.138	4103776	2.54		106	35152	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.015	3.022	-0.007	1.000	1671239	0.8332		89.8	11759	
499.00 > 99.00	3.015	3.022	-0.007	1.000	366955		4.55(2.31-6.93)		4797	
20 Perfluorononanoic acid										
463.00 > 419.00	3.015	3.022	-0.007	1.000	1647016	0.9183		91.8	3229	
463.00 > 169.00	3.015	3.022	-0.007	1.000	421911		3.90(1.90-5.69)		14438	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.221	3.237	-0.016	1.068	2546409	0.7844		84.2	44093	
D 21 13C8 FOSA										
506.00 > 78.00	3.357	3.359	-0.002	1.267	5256997	2.35		93.9	42670	
D 26 M2-8:2FTS										
529.00 > 81.00	3.357	3.359	-0.002	1.267	1189521	2.59		108	17271	
25 1H,1H,2H,2H-perfluorodecanesulfoni										
527.00 > 507.00	3.357	3.367	-0.010	1.000	541812	0.8257		86.2	15523	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.357	3.367	-0.010	1.000	1931014	0.9260		92.6	18041	
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.357	3.367	-0.010	1.113	1150594	0.8246		85.9	15146	
549.00 > 99.00	3.357	3.367	-0.010	1.113	431446		2.67(1.33-3.97)		6790	

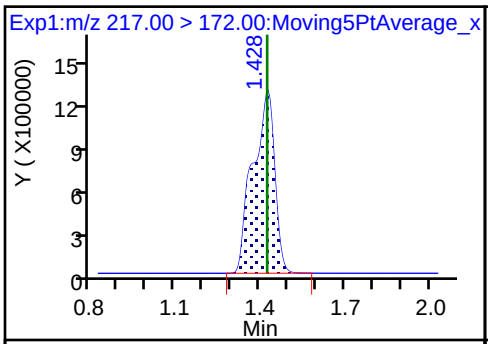
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 23 13C2 PFDA										
515.00 > 470.00	3.367	3.368	-0.001	1.270	3555220	2.69		108	55264	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.367	3.376	-0.009	1.000	1392441	0.9394		93.9	6853	
513.00 > 169.00	3.367	3.376	-0.009	1.000	242782		5.74(2.36-7.09)		7041	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.516	3.518	-0.002	1.327	1894981	2.44		97.5	35415	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.526	3.535	-0.009	1.003	717869	0.9202		92.0	4909	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.673	3.684	-0.011	1.218	1048620	0.8488		88.0	17160	
599.00 > 99.00	3.673	3.684	-0.011	1.218	370962		2.83(1.39-4.16)		9917	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.684	3.685	-0.001	1.390	1894042	2.47		98.6	13263	
D 30 13C2 PFUnA										
565.00 > 520.00	3.694	3.696	-0.002	1.394	2851784	2.57		103	45996	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.694	3.705	-0.011	1.000	846438	0.8729		87.3	3057	
563.00 > 169.00	3.694	3.705	-0.011	1.000	202935		4.17(2.12-6.36)		5987	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.694	3.705	-0.011	1.003	582099	0.8521		85.2	9797	
66 11-Chloroeicosafluoro-3-oxaundecan										
631.00 > 451.00	3.851	3.862	-0.011	1.277	4359691	0.8804		93.5	61122	
D 36 13C2 PFDoA										
615.00 > 570.00	3.985	3.986	-0.001	1.503	3059898	2.58		103	17207	
37 Perfluorododecanoic acid										
613.00 > 569.00	3.985	3.995	-0.010	1.000	1211432	0.8982		89.8	1256	
613.00 > 169.00	3.985	3.995	-0.010	1.000	297144		4.08(2.13-6.40)		6299	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.249	4.259	-0.010	1.066	1214640	0.8085		80.8	1280	
663.00 > 169.00	4.249	4.259	-0.010	1.066	384984		3.16(1.25-3.76)		7680	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.478	4.479	-0.001	1.690	3627389	2.51		100	14696	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.478	4.491	-0.013	1.000	358860	0.9134		91.3	5769	
713.00 > 219.00	4.478	4.491	-0.013	1.000	248790		1.44(0.71-2.13)		4324	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.886	4.896	-0.010	1.843	6890721	2.57		103	15226	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.886	4.905	-0.019	1.000	2504980	0.9339		93.4	1034	
813.00 > 169.00	4.886	4.905	-0.019	1.000	420371		5.96(2.86-8.58)		4374	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.239	5.247	-0.008	1.072	2900490	0.9040		90.4	910	
913.00 > 169.00	5.239	5.247	-0.008	1.072	351470		8.25(3.83-11.48)		3744	

Report Date: 09-Jul-2018 10:12:56 Chrom Revision: 2.2 07-Jun-2018 07:41:54

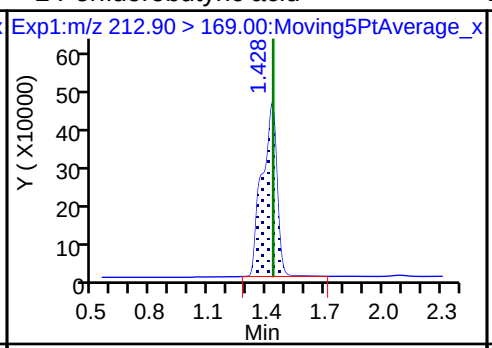
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180706-60751.b\2018.07.06LLAAA_033.d
Injection Date: 06-Jul-2018 17:45:53 Instrument ID: A8_N
Lims ID: LCS 320-232150/2-A
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 23 Worklist Smp#: 3
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC ICAL

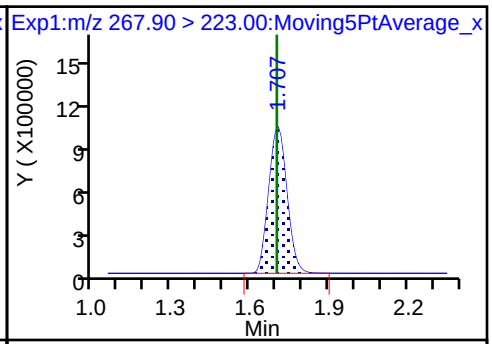
D 1 13C4 PFBA



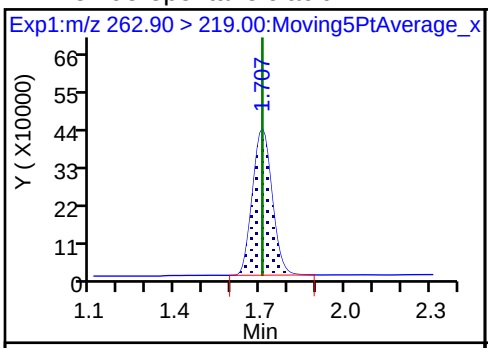
2 Perfluorobutyric acid



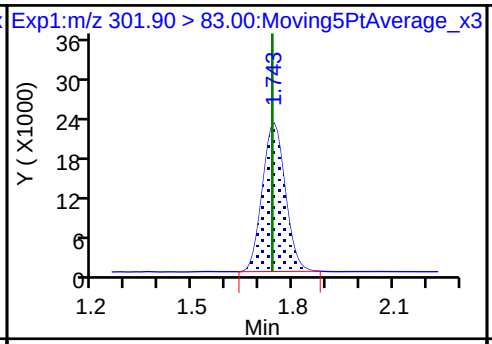
D 3 13C5-PFPeA



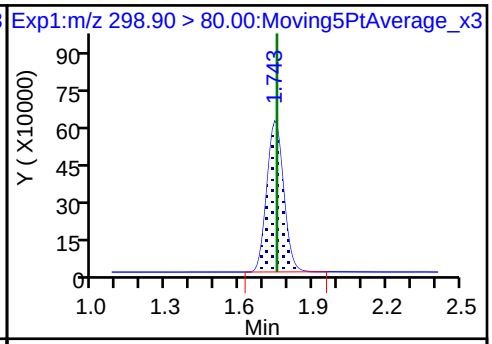
4 Perfluoropentanoic acid



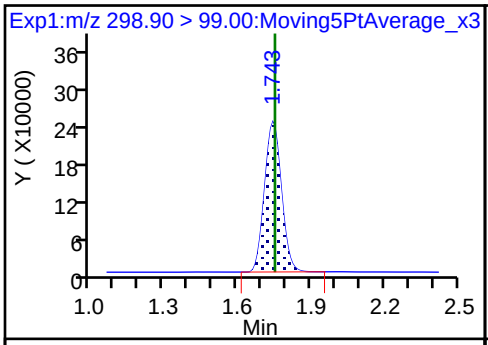
D 47 13C3-PFBS



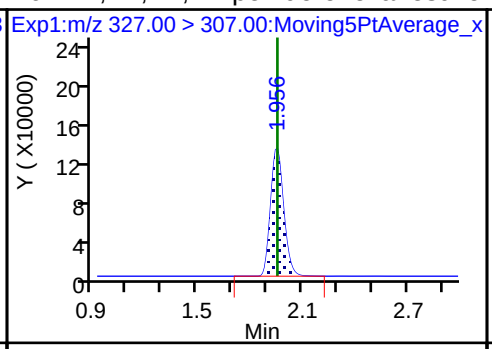
5 Perfluorobutanesulfonic acid



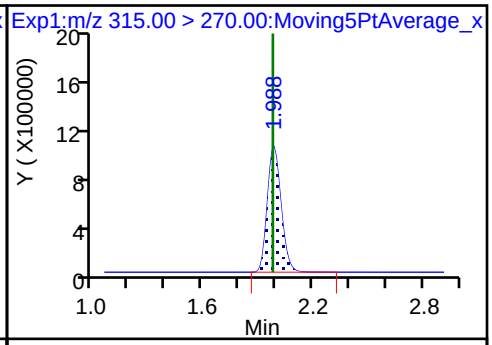
5 Perfluorobutanesulfonic acid



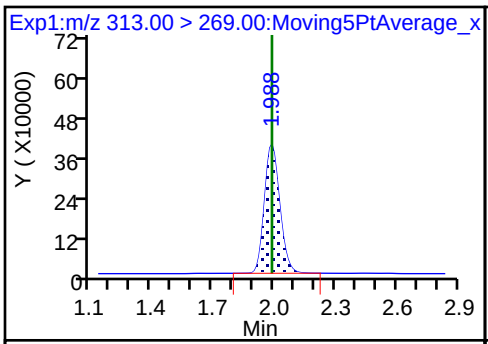
61 1H,1H,2H,2H-perfluorohexanesulfon



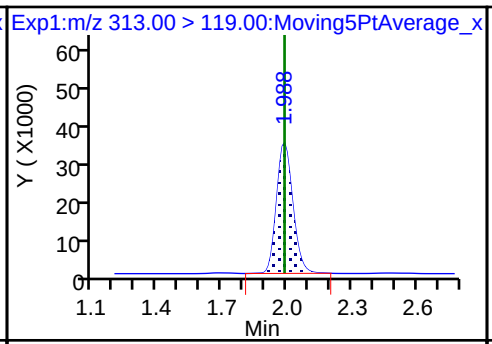
D 7 13C2 PFHxA



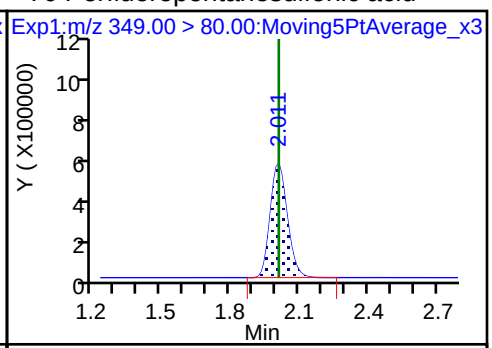
6 Perfluorohexanoic acid



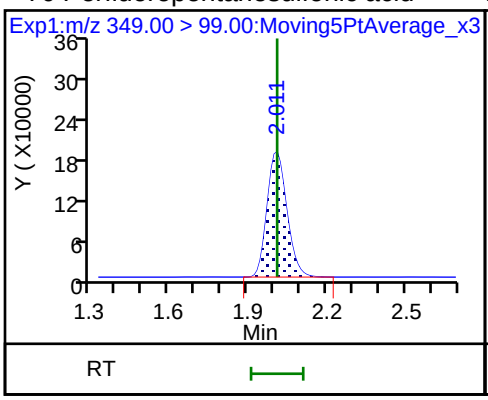
6 Perfluorohexanoic acid



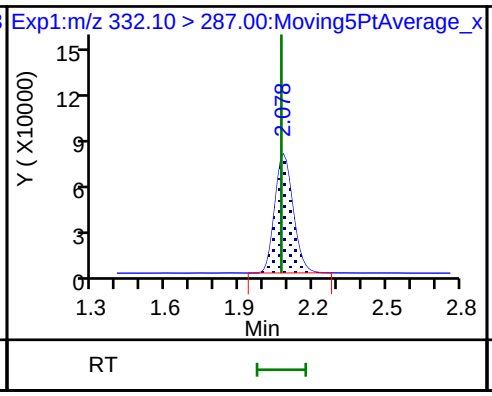
70 Perfluoropentanesulfonic acid



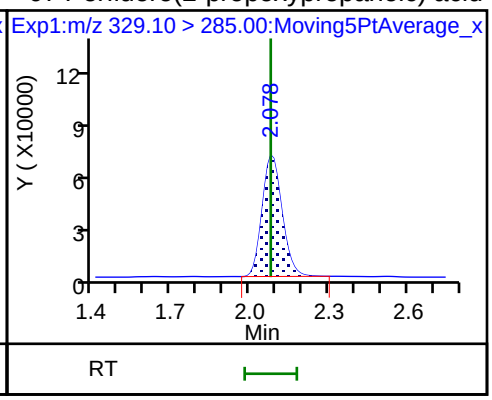
70 Perfluoropentanesulfonic acid



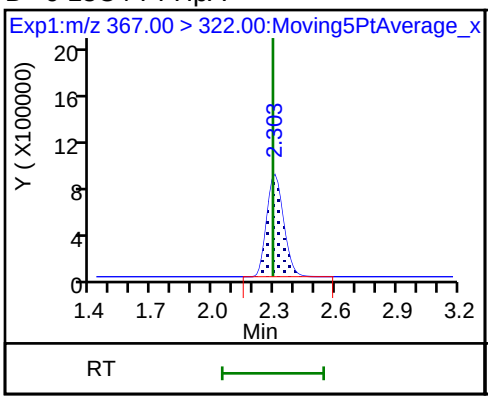
D 64 13C3 HFPO-DA



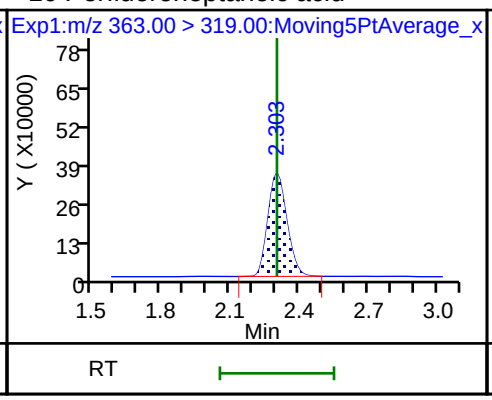
67 Perfluoro(2-propoxypropanoic) acid



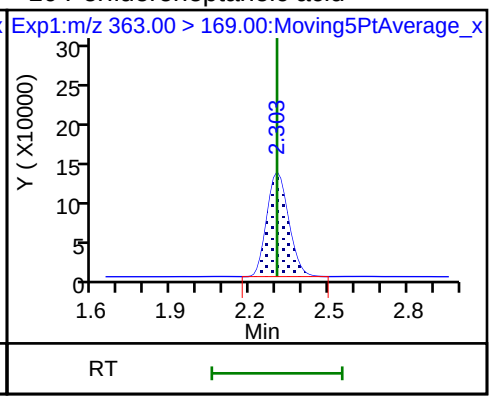
D 9 13C4-PFHpA



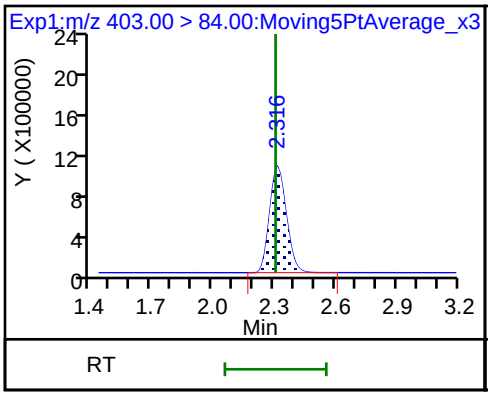
10 Perfluoroheptanoic acid



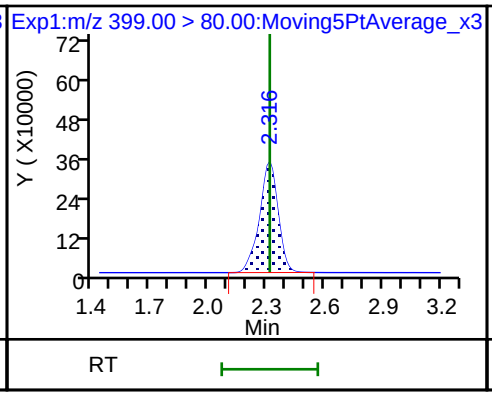
10 Perfluoroheptanoic acid



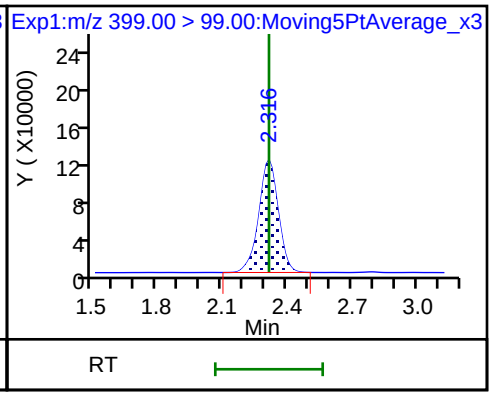
D 11 18O2 PFHxS



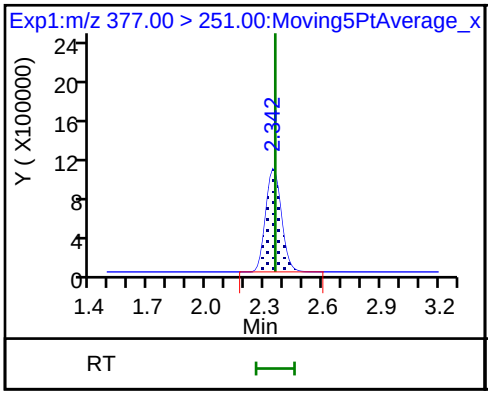
8 Perfluorohexanesulfonic acid



8 Perfluorohexanesulfonic acid



65 Adona



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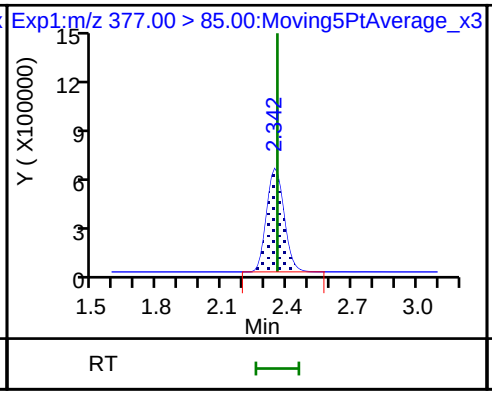
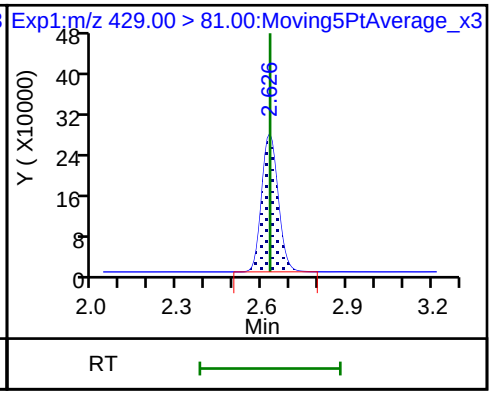


D 12 M2-6:2FTS



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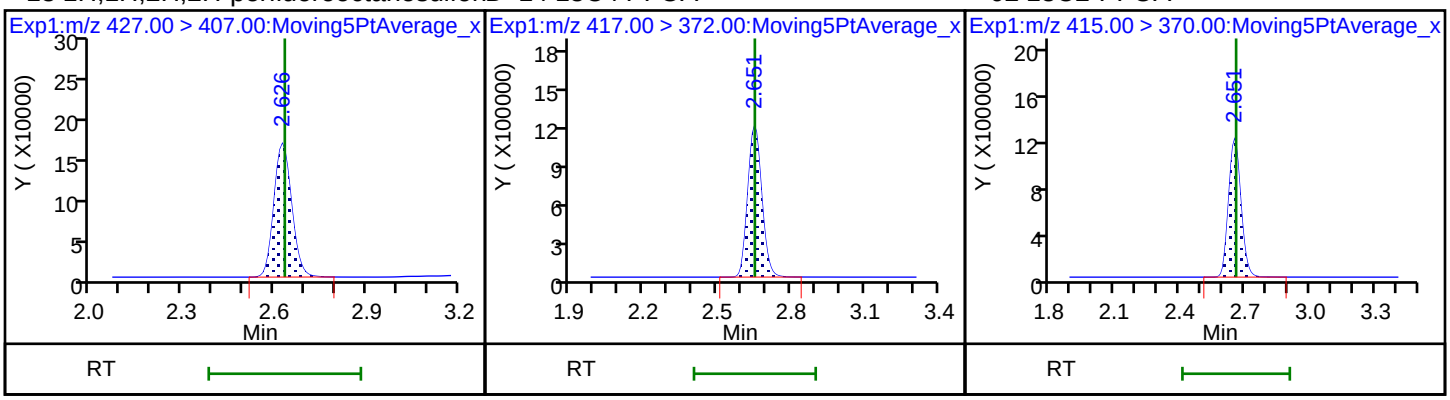
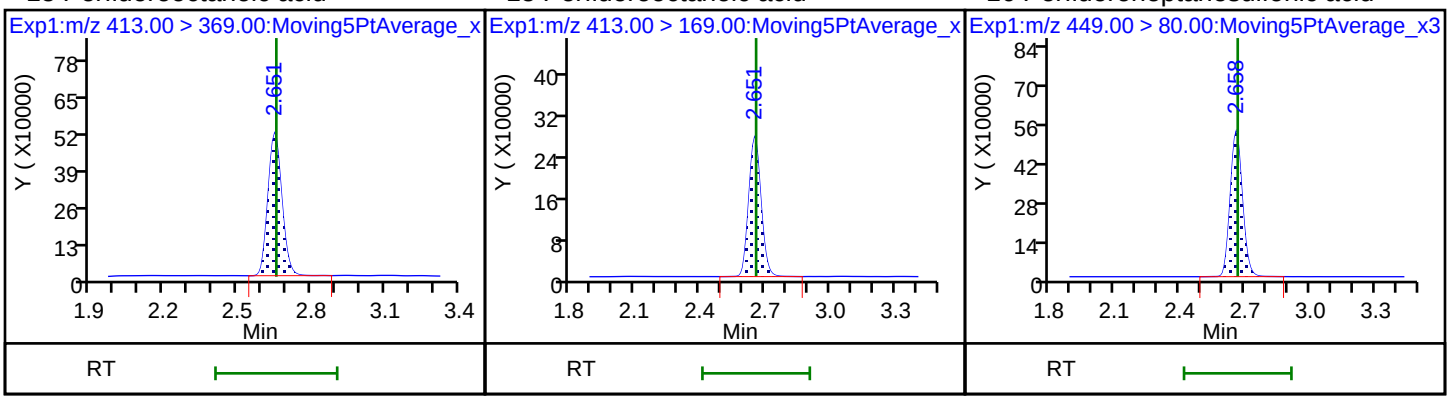
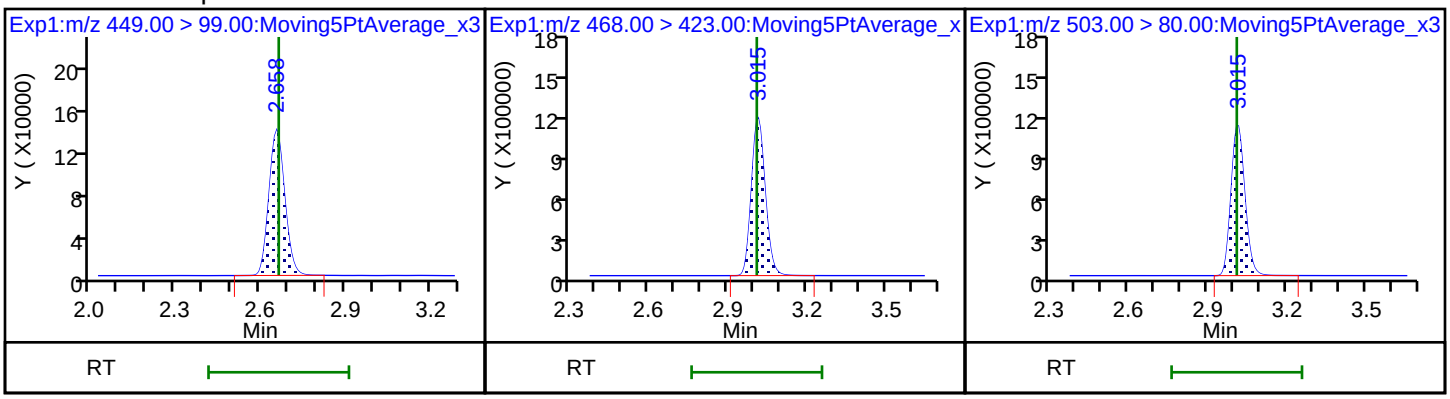


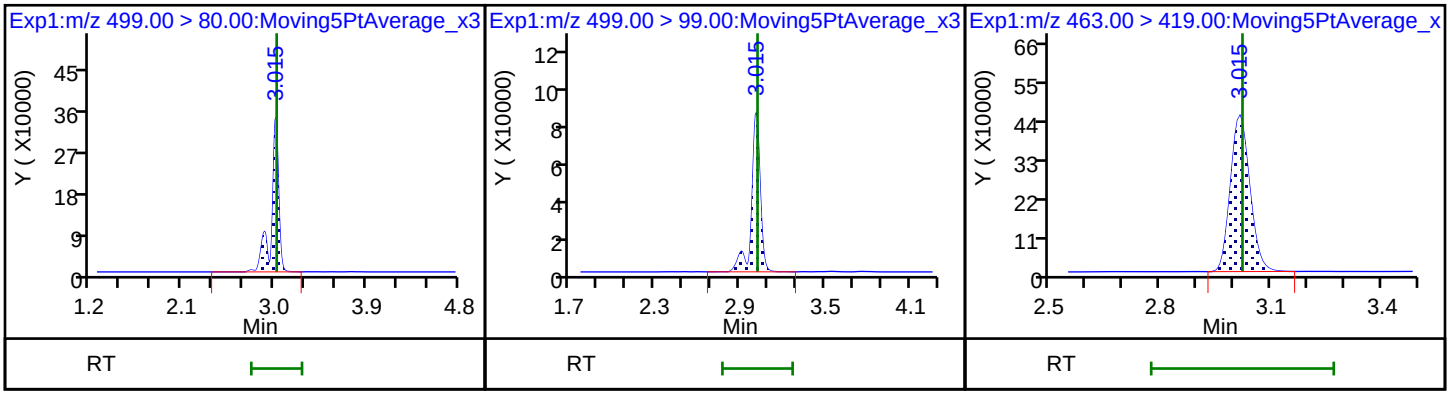
15 Perfluorooctanoic acid 15 Perfluorooctanoic acid 16 Perfluoroheptanesulfonic acid



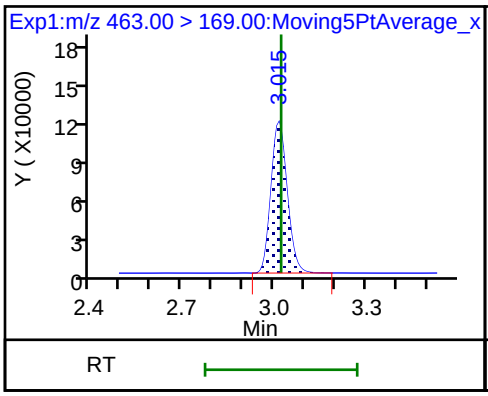
16 Perfluoroheptanesulfonic acid D 19 13C5 PFNA D 18 13C4 PFOS



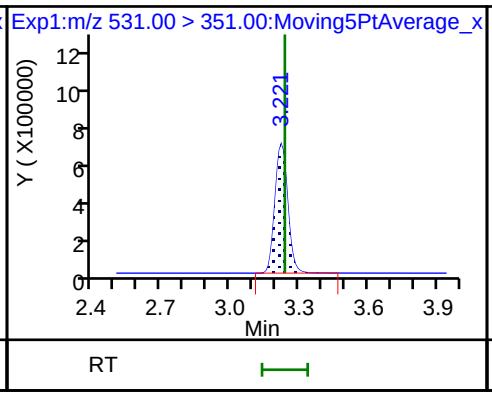
17 Perfluorooctane sulfonic acid 17 Perfluorooctane sulfonic acid 20 Perfluorononanoic acid



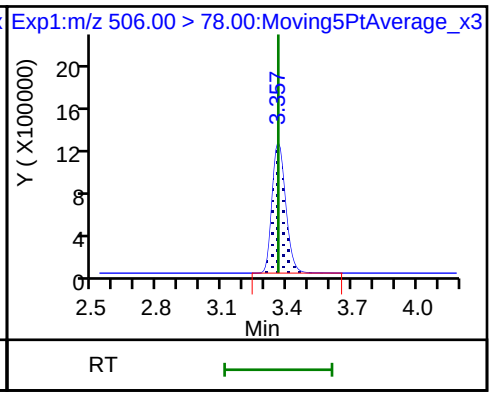
20 Perfluorononanoic acid



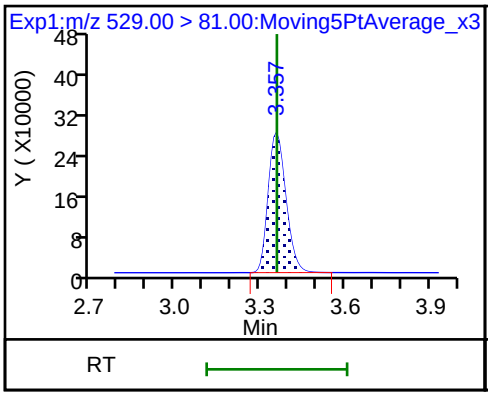
69 9-Chlorohexadecafluoro-3-oxanonane



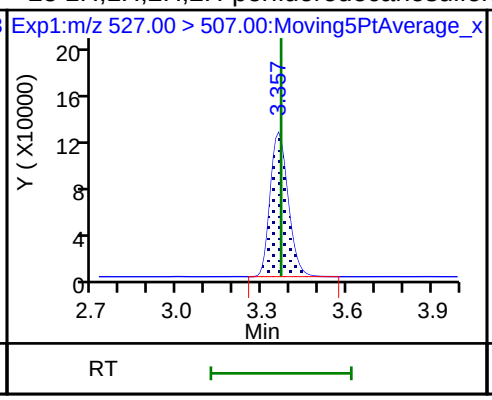
D 21 13C8 FOSA



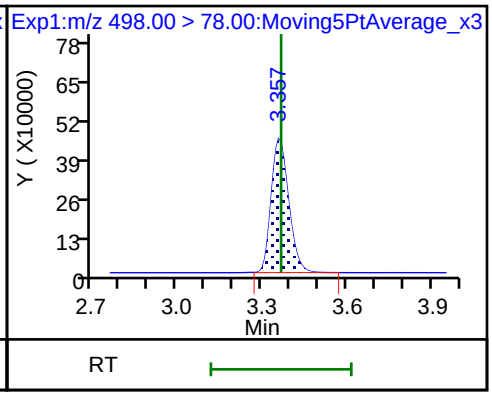
D 26 M2-8:2FTS



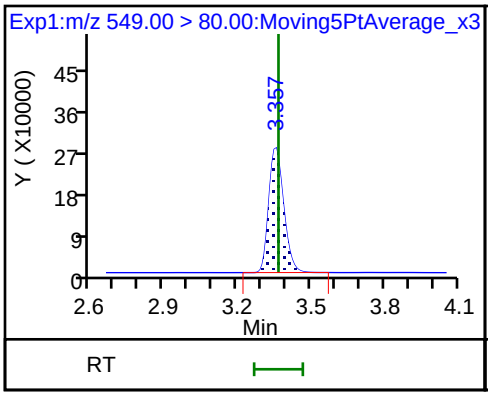
25 1H,1H,2H,2H-perfluorodecanesulfoni



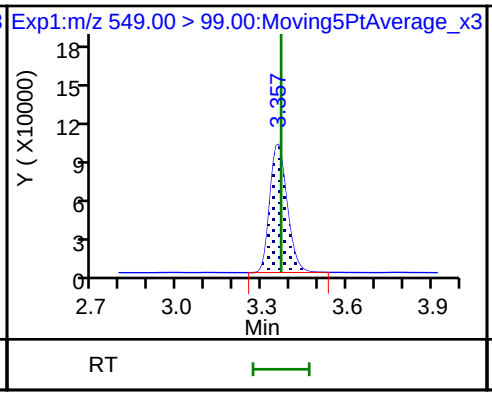
22 Perfluorooctane Sulfonamide



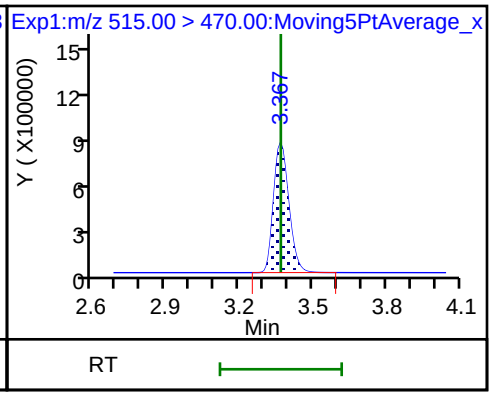
68 Perfluorononanesulfonic acid



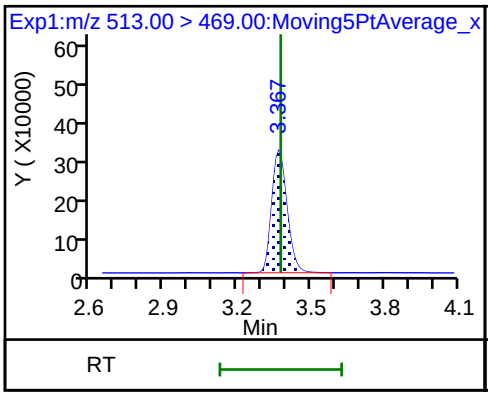
68 Perfluorononanesulfonic acid



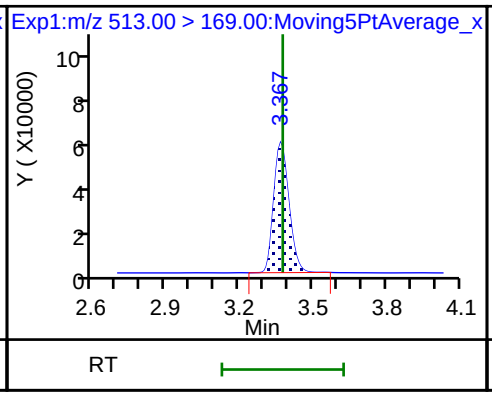
D 23 13C2 PFDA



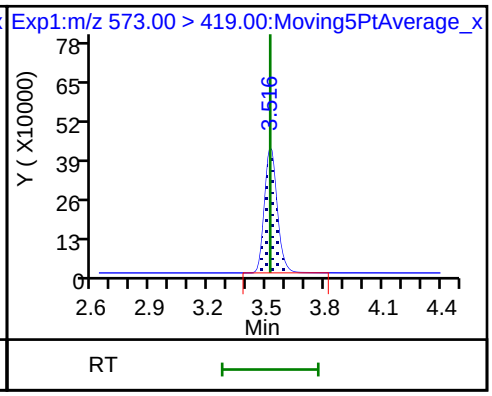
24 Perfluorodecanoic acid



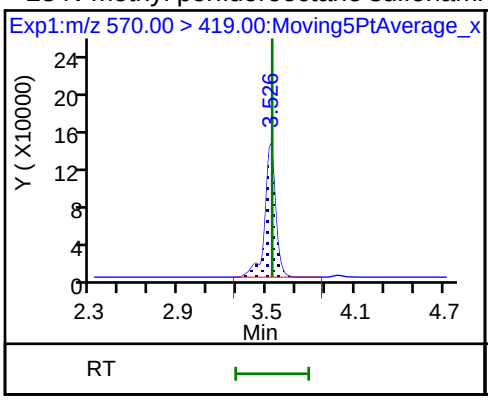
24 Perfluorodecanoic acid



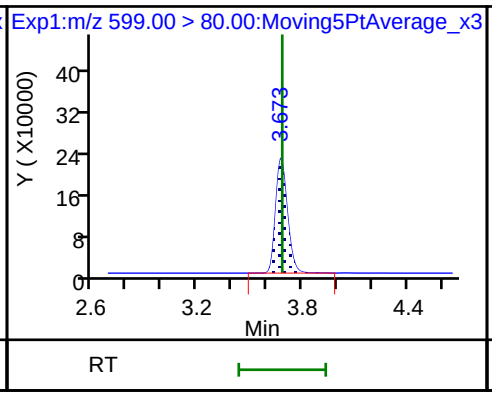
D 27 d3-NMeFOSAA



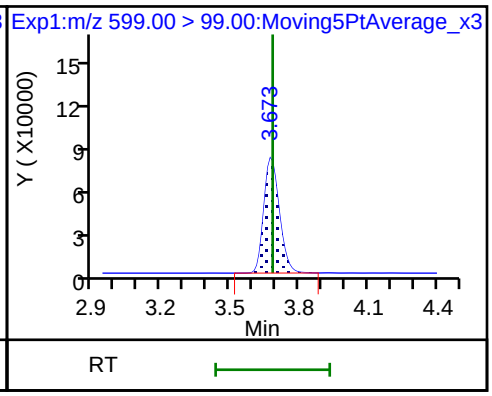
28 N-methyl perfluorooctane sulfonami



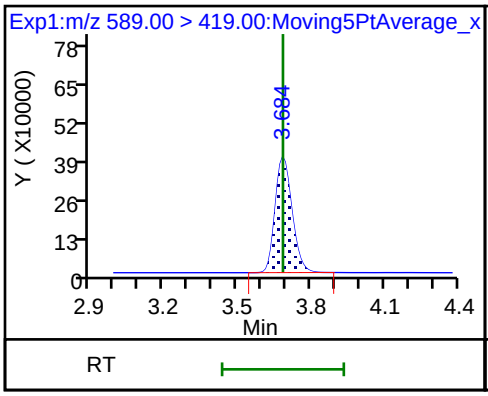
29 Perfluorodecane Sulfonic acid



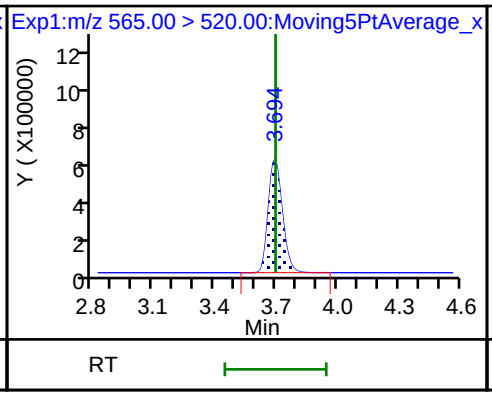
29 Perfluorodecane Sulfonic acid



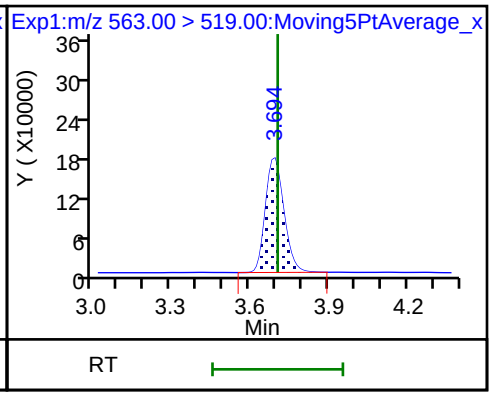
D 32 d5-NEtFOSAA



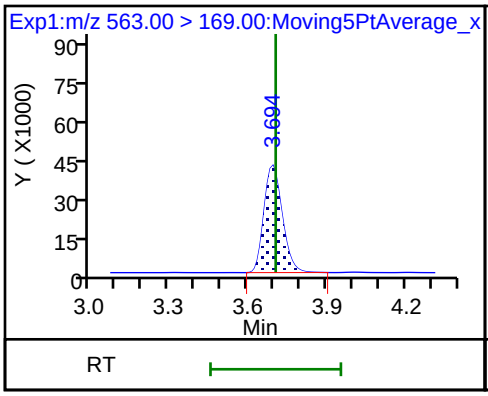
D 30 13C2 PFUnA



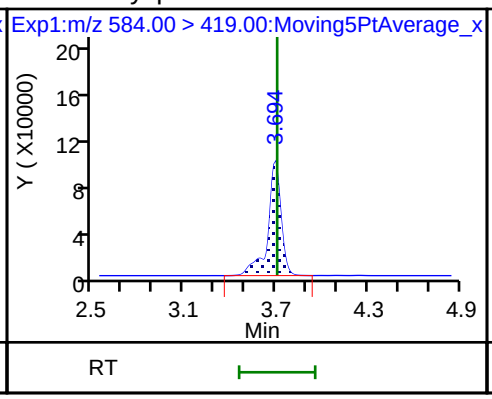
31 Perfluoroundecanoic acid



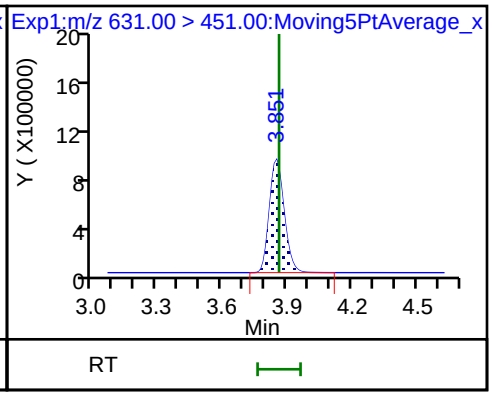
31 Perfluoroundecanoic acid



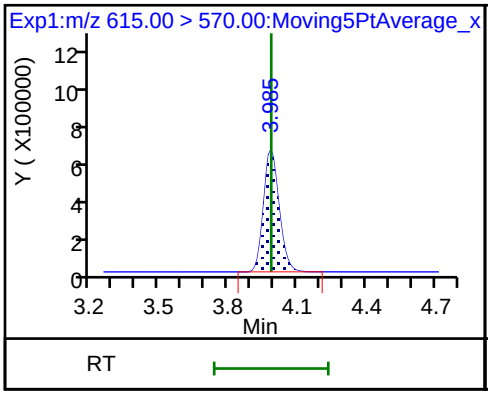
33 N-ethyl perfluorooctane sulfonamid



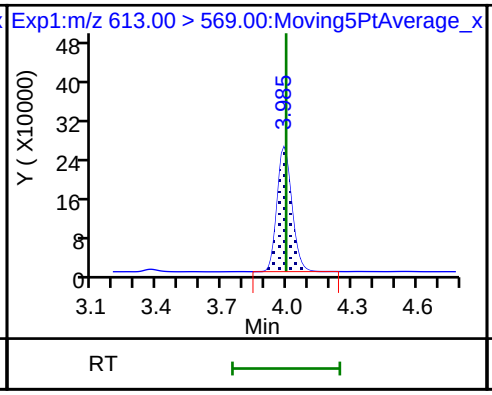
66 11-Chloroeicosafluoro-3-oxaundecan



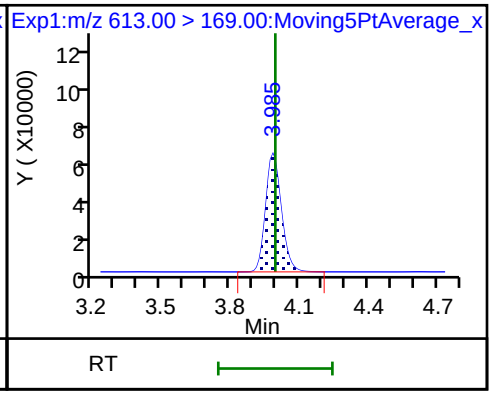
D 36 13C2 PFDoA



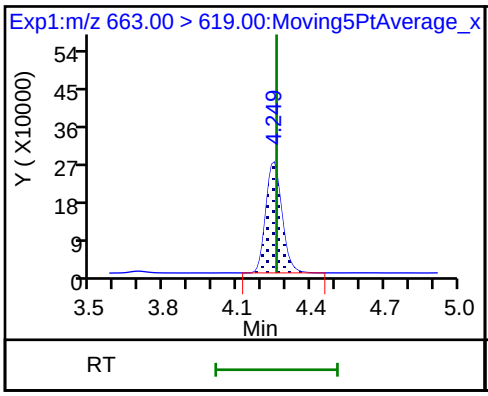
37 Perfluorododecanoic acid



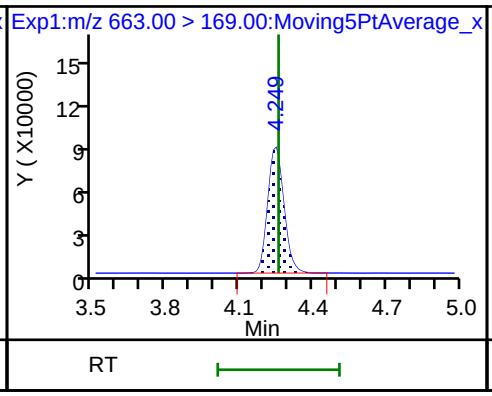
37 Perfluorododecanoic acid



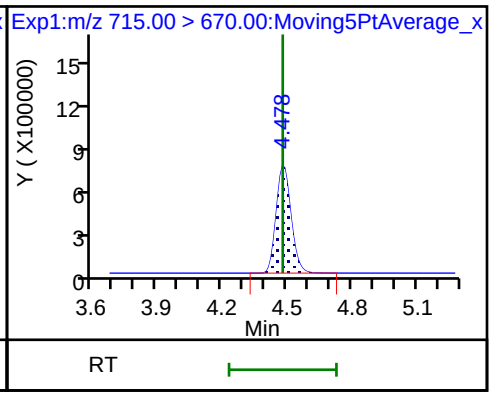
41 Perfluorotridecanoic acid



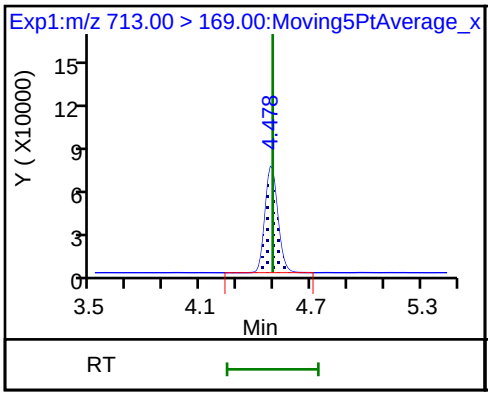
41 Perfluorotridecanoic acid



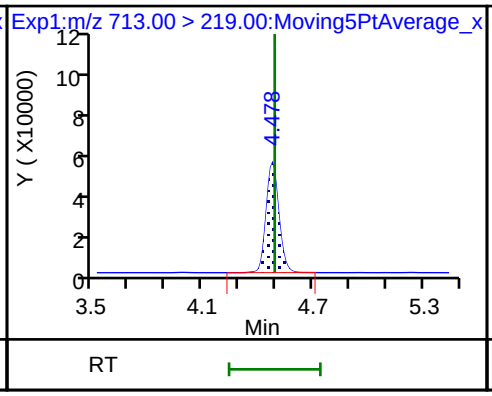
D 43 13C2-PFTeDA



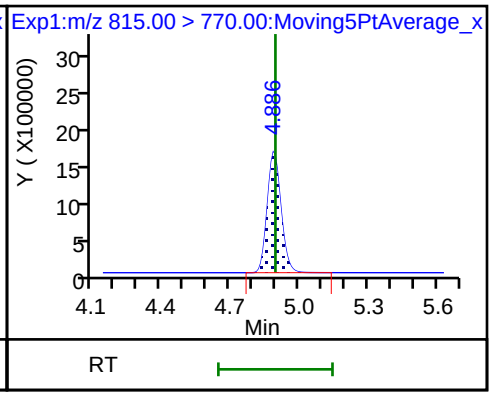
42 Perfluorotetradecanoic acid



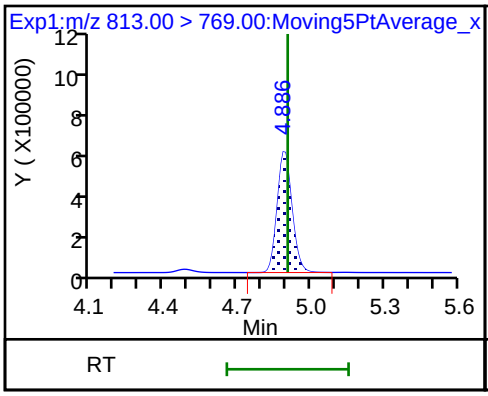
42 Perfluorotetradecanoic acid



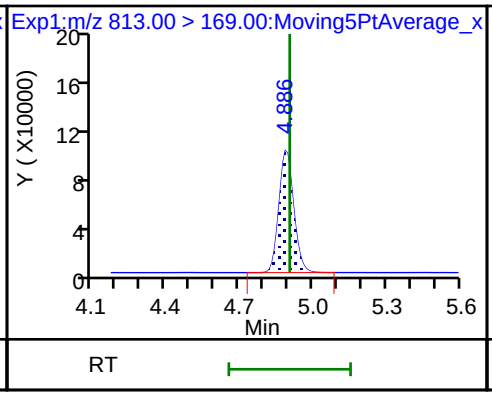
D 44 13C2-PFHxDA



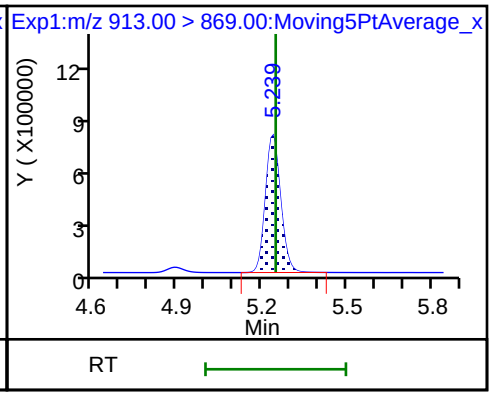
45 Perfluorohexadecanoic acid



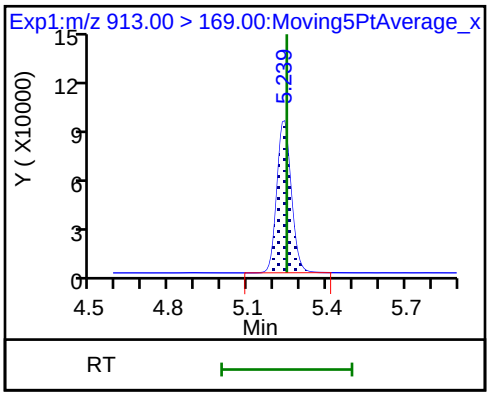
45 Perfluorohexadecanoic acid



46 Perfluorooctadecanoic acid



46 Perfluorooctadecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID:
Lab Sample ID: LCSD 320-231392/3-A
Matrix: Solid
Lab File ID: 2018.07.13LLB_055.d
Analysis Method: 537 (modified)
Date Collected:
Extraction Method: SHAKE
Date Extracted: 06/28/2018 05:15
Sample wt/vol: 5.00(g)
Date Analyzed: 07/14/2018 03:57
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 233997
Units: mg/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	0.00188		0.00020	0.000028
2706-90-3	Perfluoropentanoic acid (PFPeA)	0.00175		0.00020	0.000077
307-24-4	Perfluorohexanoic acid (PFHxA)	0.00186		0.00020	0.000042
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.00176		0.00020	0.000029
335-67-1	Perfluorooctanoic acid (PFOA)	0.00178		0.00020	0.000086
375-95-1	Perfluorononanoic acid (PFNA)	0.00191		0.00020	0.000036
335-76-2	Perfluorodecanoic acid (PFDA)	0.00186		0.00020	0.000022
2058-94-8	Perfluoroundecanoic acid (PFUnA)	0.00174		0.00020	0.000036
307-55-1	Perfluorododecanoic acid (PFDoA)	0.00188		0.00020	0.000067
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	0.00193		0.00020	0.000051
376-06-7	Perfluorotetradecanoic acid (PFTeA)	0.00185		0.00020	0.000054
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.00164		0.00020	0.000025
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.00155		0.00020	0.000031
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	0.00183		0.00020	0.000035
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.00177		0.00050	0.00020
335-77-3	Perfluorodecanesulfonic acid (PFDS)	0.00190		0.00020	0.000039
754-91-6	Perfluorooctane Sulfonamide (FOSA)	0.00188		0.00020	0.000082
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	0.00187	J	0.0020	0.00039
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	0.00182	J	0.0020	0.00037
27619-97-2	6:2 FTS	0.00193	J	0.0020	0.00015
39108-34-4	8:2 FTS	0.00165	J	0.0020	0.00025

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID:
Lab Sample ID: LCSD 320-231392/3-A
Matrix: Solid
Lab File ID: 2018.07.13LLB_055.d
Analysis Method: 537 (modified)
Date Collected:
Extraction Method: SHAKE
Date Extracted: 06/28/2018 05:15
Sample wt/vol: 5.00(g)
Date Analyzed: 07/14/2018 03:57
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 233997
Units: mg/Kg

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00992	13C4 PFBA	60		25-150
STL01893	13C5 PFPeA	94		25-150
STL00993	13C2 PFHxA	96		25-150
STL01892	13C4-PFHpA	99		25-150
STL00990	13C4 PFOA	94		25-150
STL00995	13C5 PFNA	86		25-150
STL00996	13C2 PFDA	92		25-150
STL00997	13C2 PFUnA	95		25-150
STL00998	13C2 PFDoA	93		25-150
STL02116	13C2-PFTeDA	96		25-150
STL02337	13C3-PFBS	93		25-150
STL00994	18O2 PFHxS	93		25-150
STL00991	13C4 PFOS	88		25-150
STL01056	13C8 FOSA	92		25-150
STL02118	d3-NMeFOSAA	93		25-150
STL02117	d5-NEtFOSAA	100		25-150
STL02279	M2-6:2FTS	80		25-150
STL02280	M2-8:2FTS	75		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\2018.07.13LLB_055.d
Lims ID: LCSD 320-231392/3-A
Client ID:
Sample Type: LCSD
Inject. Date: 14-Jul-2018 03:57:08 ALS Bottle#: 40 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: lcsd 320-231392/3-
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 16-Jul-2018 14:13:25 Calib Date: 11-Jul-2018 15:38:42
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK023

First Level Reviewer: mongkols Date: 16-Jul-2018 14:13:25

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										M
217.00 > 172.00	1.441	1.441	0.0	0.540	3570791	1.51		60.3	31470	M
2 Perfluorobutyric acid										M
212.90 > 169.00	1.441	1.444	-0.003	1.000	1321217	0.9386		93.9	615	M
D 3 13C5-PFPeA										
267.90 > 223.00	1.720	1.720	0.0	0.645	3875518	2.36		94.2	45937	
4 Perfluoropentanoic acid										M
262.90 > 219.00	1.720	1.725	-0.005	1.000	1648788	0.8767		87.7	729	M
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.765	1.761	0.004	1.005	2421541	0.8202		92.8	13831	
298.90 > 99.00	1.756	1.761	-0.005	1.000	986166		2.46(1.25-3.74)		13142	
D 47 13C3-PFBS										
301.90 > 83.00	1.756	1.765	-0.009	0.658	89730	2.17		93.3	559	
61 1H,1H,2H,2H-perfluorohexanesulfoni										
327.00 > 307.00	1.959	1.967	-0.008	1.116	422094	0.8414		90.1	18509	
D 7 13C2 PFHxA										
315.00 > 270.00	2.003	2.003	0.0	0.751	4266260	2.40		96.1	83267	
6 Perfluorohexanoic acid										
313.00 > 269.00	2.003	2.011	-0.008	1.000	1636468	0.9317		93.2	4239	
313.00 > 119.00	2.003	2.011	-0.008	1.000	154243		10.61(5.03-15.10)		3392	
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.025	2.033	-0.008	1.154	2330913	0.8655		92.3	51008	
349.00 > 99.00	2.025	2.033	-0.008	1.154	830391		2.81(1.36-4.07)		16079	
67 Perfluoro(2-propoxypropanoic) acid										
329.10 > 285.00	2.093	2.101	-0.008	1.000	303223	0.7947		79.5	2455	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.093	2.105	-0.012	0.785	359411	2.85		114	9241	
D 9 13C4-PFHpA										
367.00 > 322.00	2.319	2.319	0.0	0.870	4062405	2.48		99.3	76107	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.319	2.329	-0.010	1.000	1656612	0.8814		88.1	3533	
363.00 > 169.00	2.319	2.329	-0.010	1.000	602509		2.75(1.13-3.40)		7787	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.332	2.329	0.003	1.000	1910613	0.7741		85.1	13033	
399.00 > 99.00	2.332	2.329	0.003	1.000	649327		2.94(1.50-4.49)		4494	
D 11 18O2 PFHxS										
403.00 > 84.00	2.332	2.332	0.0	0.874	5085267	2.19		92.8	71708	
65 Adona										
377.00 > 251.00	2.358	2.368	-0.010	0.778	4861100	1.01		101	44659	
377.00 > 85.00	2.358	2.368	-0.010	0.778	2899233		1.68(0.84-2.53)		18016	
D 12 M2-6:2FTS										
429.00 > 81.00	2.644	2.644	0.0	0.991	667653	1.90		80.2	14486	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.644	2.651	-0.007	1.000	424676	0.9657		102	3805	
D 14 13C4 PFOA										
417.00 > 372.00	2.667	2.667	0.0	1.000	3912119	2.34		93.8	39611	
* 62 13C2-PFOA										
415.00 > 370.00	2.667	2.673	-0.006		4363780	2.50			55692	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.667	2.673	-0.006	1.000	1710834	0.8877		88.7	1174	
413.00 > 169.00	2.667	2.673	-0.006	1.000	903028		1.89(0.84-2.52)		4773	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.674	2.681	-0.007	0.883	1799531	0.9162		96.2	39945	
449.00 > 99.00	2.674	2.681	-0.007	0.883	480841		3.74(1.94-5.82)		9743	
D 18 13C4 PFOS										
503.00 > 80.00	3.029	3.027	0.002	1.136	3562820	2.10		87.7	37688	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.029	3.033	-0.004	1.000	1496969	0.8862		95.5	15765	
499.00 > 99.00	3.023	3.033	-0.010	0.998	349745		4.28(2.31-6.93)		6661	
20 Perfluorononanoic acid										
463.00 > 419.00	3.029	3.033	-0.004	1.000	1363151	0.9567		95.7	2921	
463.00 > 169.00	3.029	3.033	-0.004	1.000	317104		4.30(1.90-5.69)		11978	
D 19 13C5 PFNA										
468.00 > 423.00	3.029	3.034	-0.005	1.136	3211107	2.15		86.1	42081	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.238	3.241	-0.003	1.069	2451052	0.8957		96.1	22655	
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.368	3.371	-0.003	1.112	1081369	0.9358		97.5	22724	
549.00 > 99.00	3.368	3.371	-0.003	1.112	404877		2.67(1.33-3.97)		6591	
D 26 M2-8:2FTS										
529.00 > 81.00	3.368	3.379	-0.011	1.263	923747	1.80		75.2	12233	
D 21 13C8 FOSA										
506.00 > 78.00	3.377	3.379	-0.002	1.266	5653570	2.31		92.2	52773	
25 1H,1H,2H,2H-perfluorodecanesulfoni										
527.00 > 507.00	3.377	3.380	-0.003	1.003	410992	0.8261		86.2	5437	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.377	3.380	-0.003	1.000	2092599	0.9389		93.9	22552	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 23 13C2 PFDA										
515.00 > 470.00	3.386	3.389	-0.003	1.270	2998782	2.29		91.6	48797	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.386	3.389	-0.003	1.000	1169961	0.9295		92.9	7553	
513.00 > 169.00	3.386	3.389	-0.003	1.000	199458		5.87(2.36-7.09)		5718	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.536	3.538	-0.002	1.326	1253021	2.33		93.4	34697	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.536	3.548	-0.012	1.000	461335	0.9337		93.4	3585	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.695	3.698	-0.003	1.220	953287	0.9524		98.8	25317	
599.00 > 99.00	3.695	3.698	-0.003	1.220	318481		2.99(1.39-4.16)		11138	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.706	3.708	-0.002	1.390	1381072	2.51		100	3199	
D 30 13C2 PFUnA										
565.00 > 520.00	3.706	3.708	-0.002	1.390	2592157	2.37		94.8	38413	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.706	3.709	-0.003	1.000	740409	0.8714		87.1	4499	
563.00 > 169.00	3.706	3.709	-0.003	1.000	193479		3.83(2.12-6.36)		6671	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.706	3.709	-0.003	1.000	443487	0.9081		90.8	5945	
66 11-Chloroeicosafluoro-3-oxaundecan										
631.00 > 451.00	3.863	3.866	-0.003	1.275	3710694	0.9381		99.6	45959	
D 36 13C2 PFDoA										
615.00 > 570.00	3.996	3.999	-0.003	1.498	2631865	2.32		92.8	26326	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.006	4.010	-0.004	1.003	1079524	0.9392		93.9	710	
613.00 > 169.00	3.996	4.010	-0.014	1.000	271345		3.98(2.13-6.40)		5141	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.259	4.263	-0.004	1.066	1086910	0.9670		96.7	520	
663.00 > 169.00	4.259	4.263	-0.004	1.066	325524		3.34(1.25-3.76)		4792	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.500	4.501	-0.001	1.688	2832676	2.41		96.3	19129	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.500	4.502	-0.002	1.000	272898	0.9257		92.6	4063	
713.00 > 219.00	4.490	4.502	-0.012	0.998	202369		1.35(0.71-2.13)		4262	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.904	4.905	-0.001	1.839	4481304	2.39		95.7	13579	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.904	4.914	-0.010	1.000	1632615	0.9370		93.7	377	
813.00 > 169.00	4.904	4.914	-0.010	1.000	267700		6.10(2.86-8.58)		2382	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.254	5.256	-0.002	1.071	1851115	0.9036		90.4	356	
913.00 > 169.00	5.247	5.256	-0.009	1.070	231108		8.01(3.83-11.48)		2840	

QC Flag Legend

Review Flags

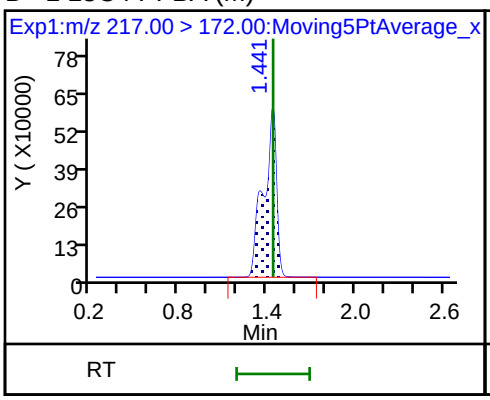
M - Manually Integrated

Report Date: 16-Jul-2018 14:13:26 Chrom Revision: 2.2 07-Jun-2018 07:41:54

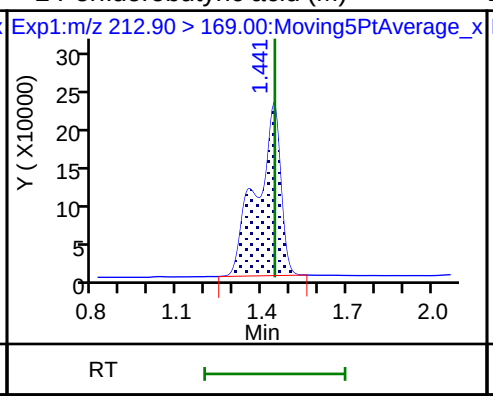
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\2018.07.13LLB_055.d
Injection Date: 14-Jul-2018 03:57:08 Instrument ID: A8_N
Lims ID: LCSD 320-231392/3-A
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 40 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC ICAL

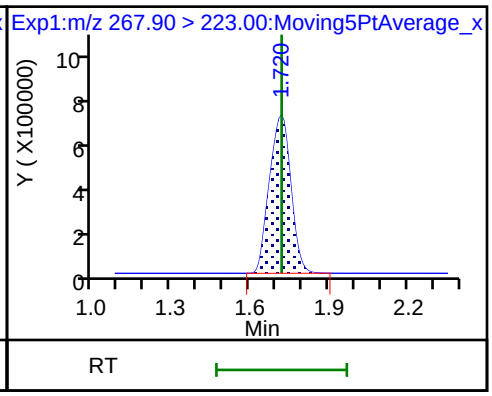
D 1 13C4 PFBA (M)



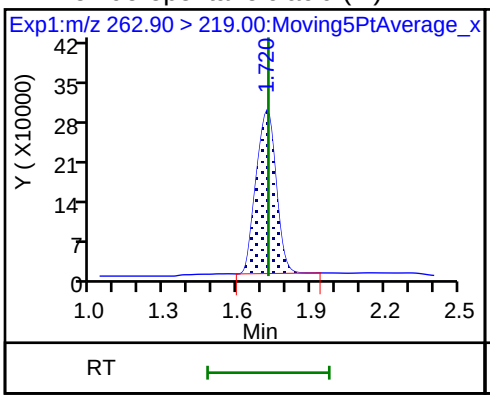
2 Perfluorobutyric acid (M)



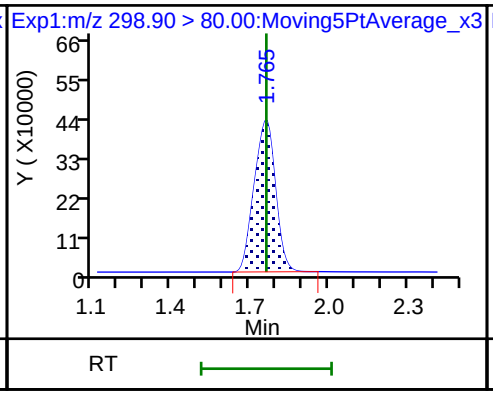
D 3 13C5-PFPeA



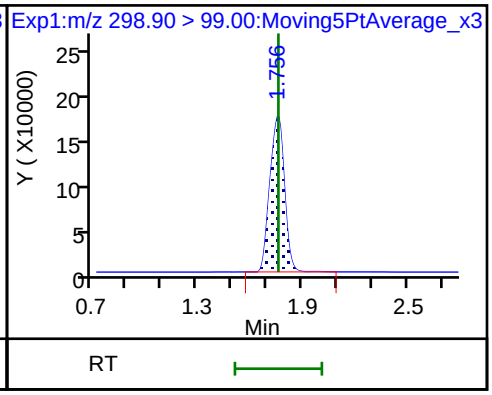
4 Perfluoropentanoic acid (M)



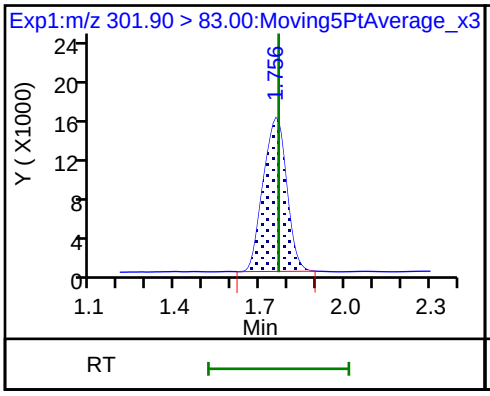
5 Perfluorobutanesulfonic acid



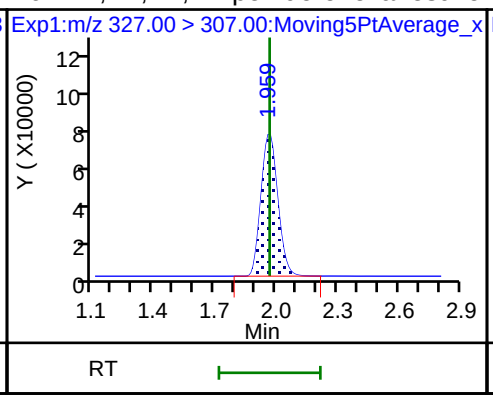
5 Perfluorobutanesulfonic acid



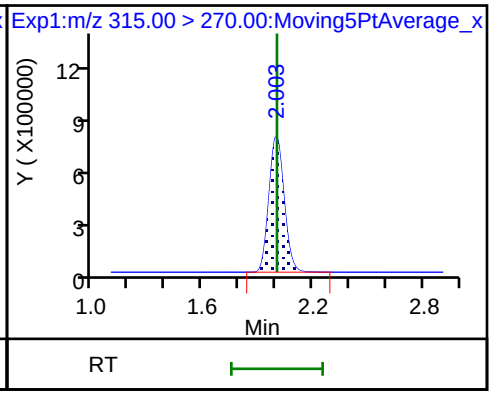
D 47 13C3-PFBS



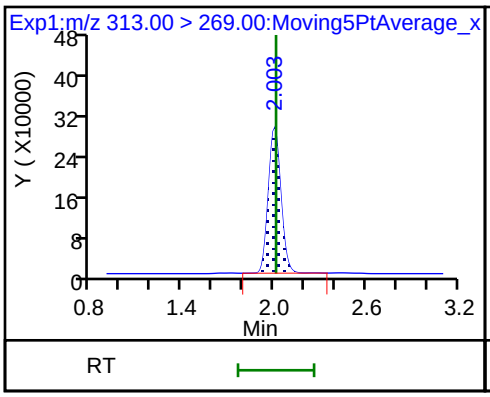
61 1H,1H,2H,2H-perfluorohexanesulfon



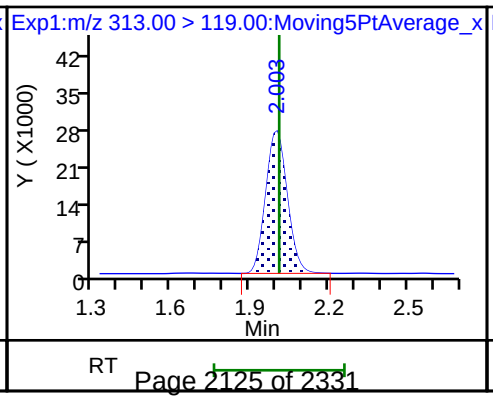
D 7 13C2 PFHxA



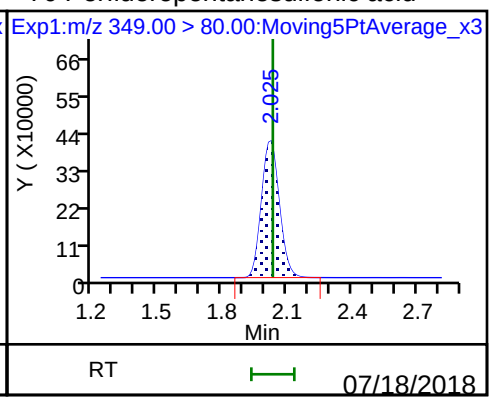
6 Perfluorohexanoic acid



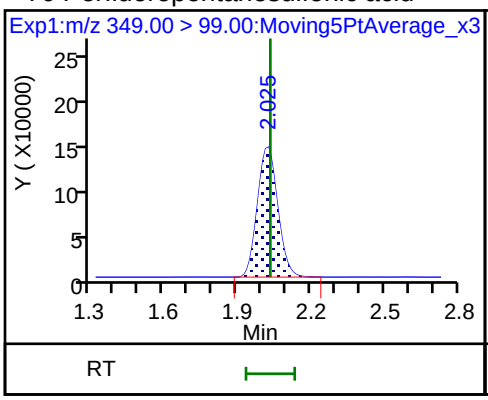
6 Perfluorohexanoic acid



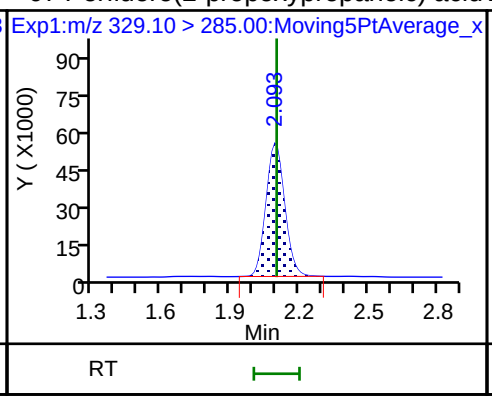
70 Perfluoropentanesulfonic acid



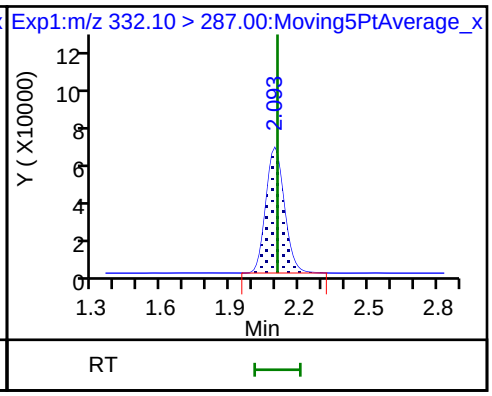
70 Perfluoropentanesulfonic acid



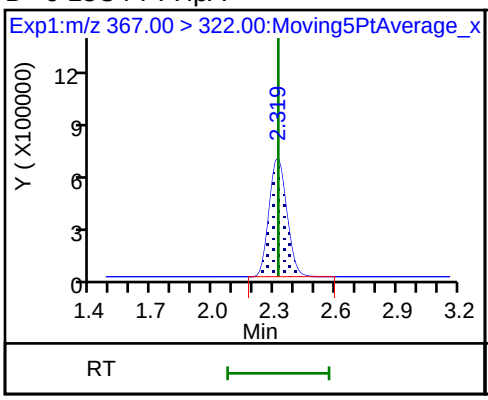
67 Perfluoro(2-propoxypropanoic) acid



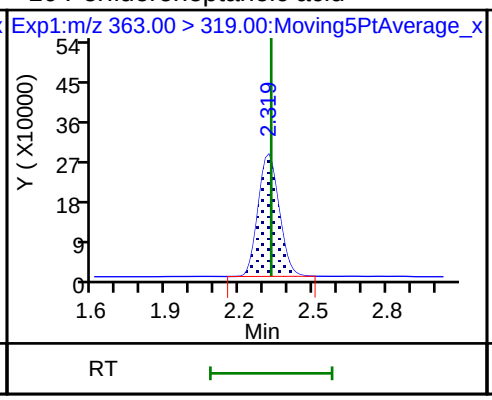
D 64 13C3 HFPO-DA



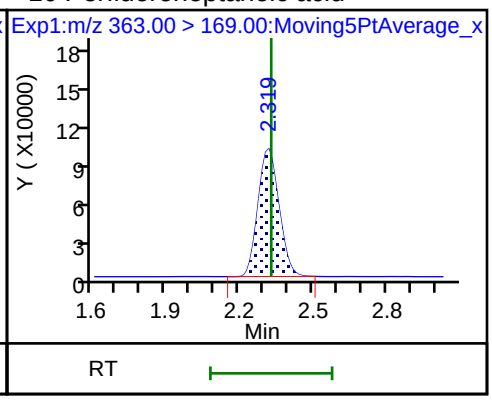
D 9 13C4-PFHpA



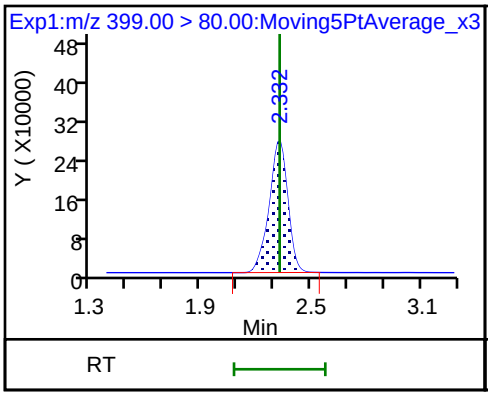
10 Perfluoroheptanoic acid



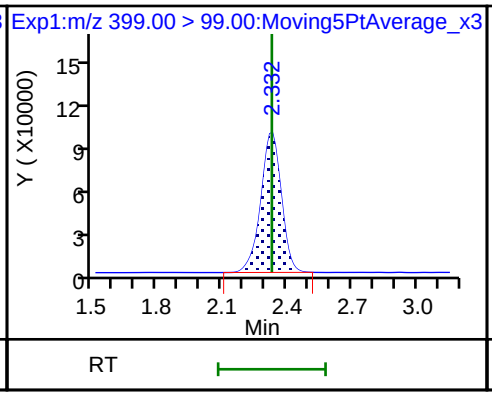
10 Perfluoroheptanoic acid



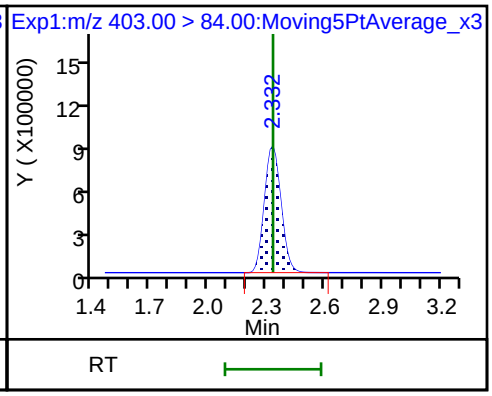
8 Perfluorohexanesulfonic acid



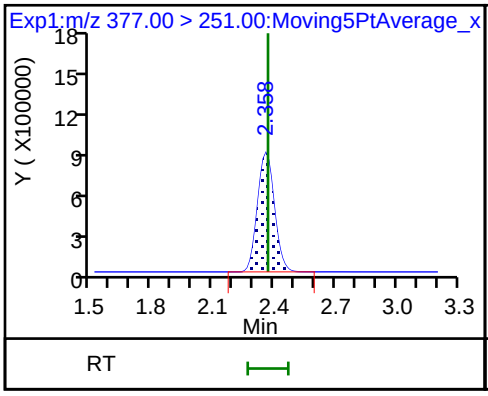
8 Perfluorohexanesulfonic acid



D 11 18O2 PFHxS



65 Adona



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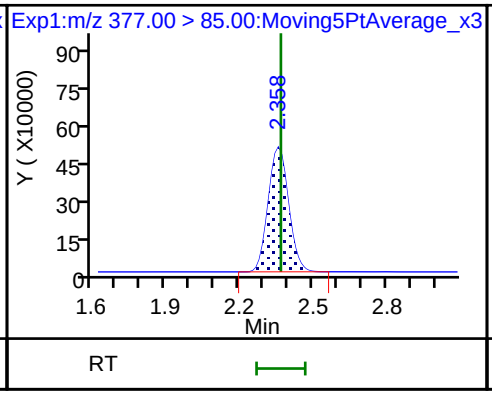
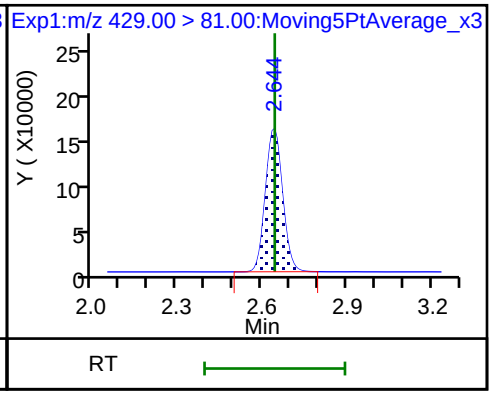
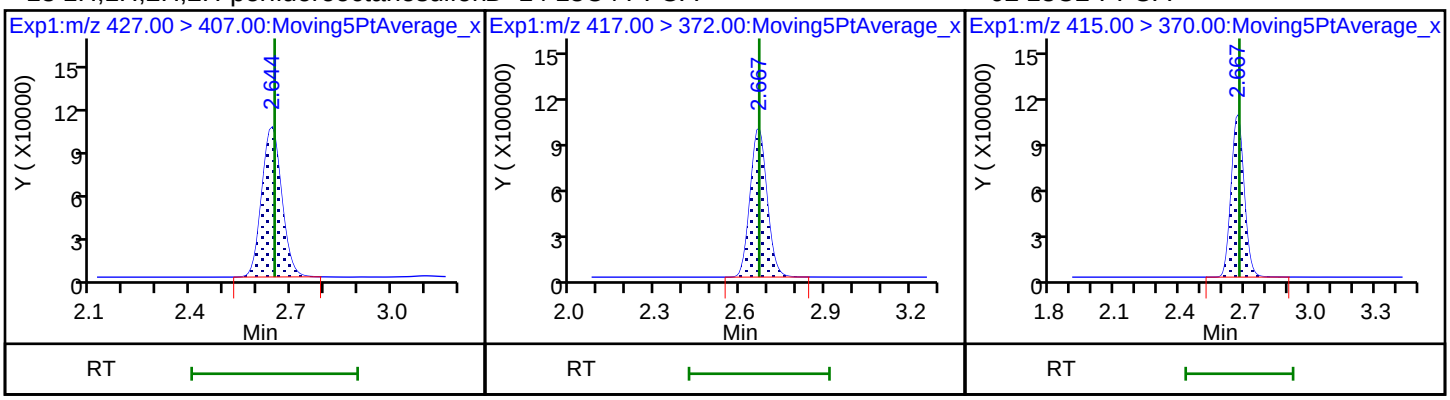


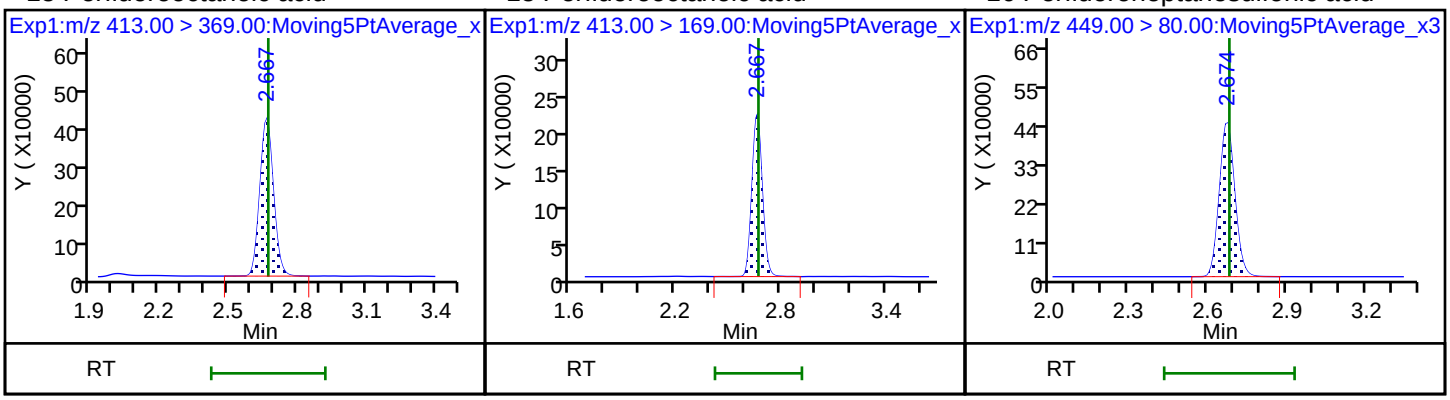
D 12 M2-6:2FTS



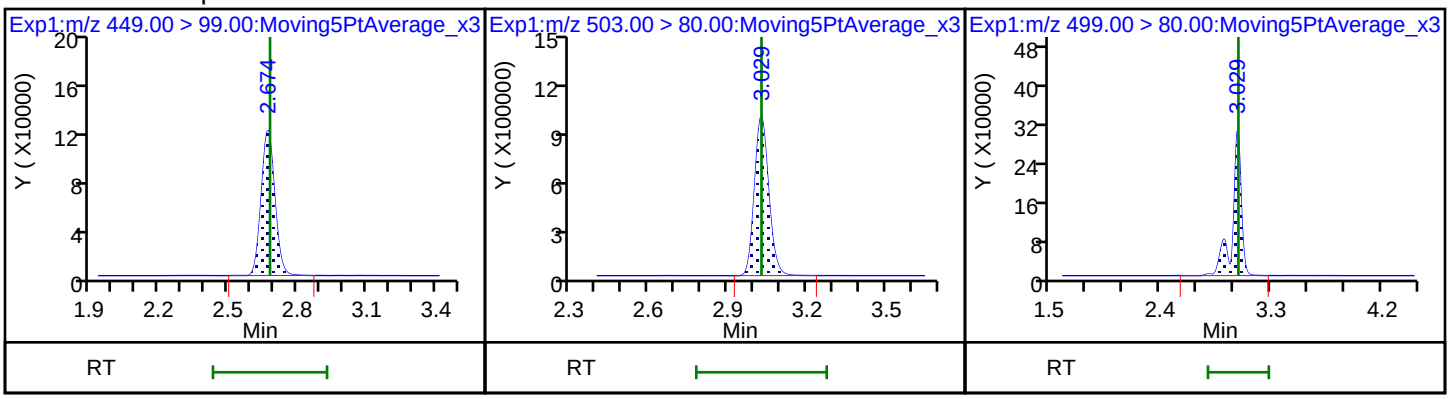
13 1H,1H,2H,2H-perfluorooctanesulfonD 14 13C4 PFOA * 62 13C2-PFOA



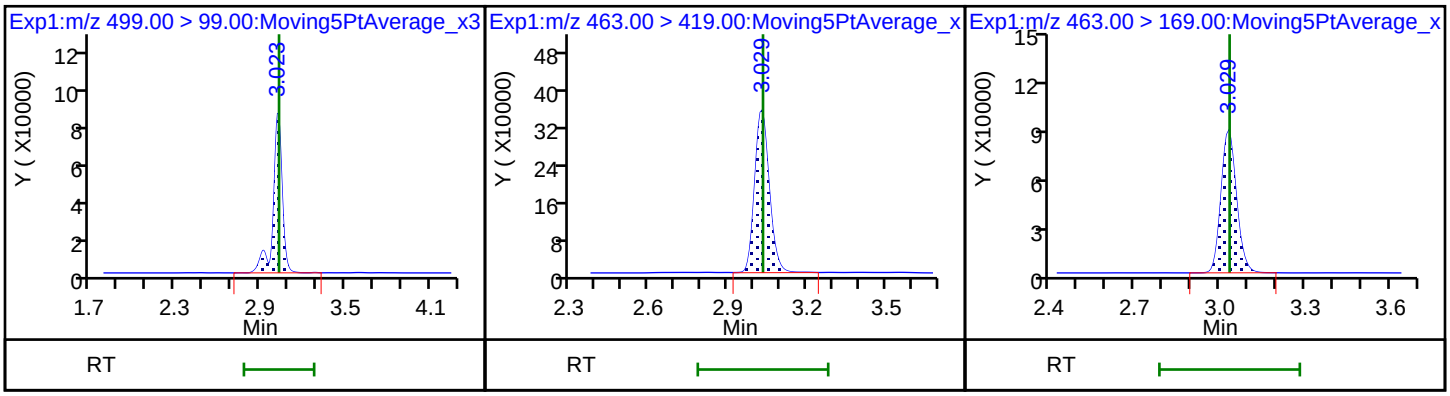
15 Perfluorooctanoic acid 15 Perfluorooctanoic acid 16 Perfluoroheptanesulfonic acid



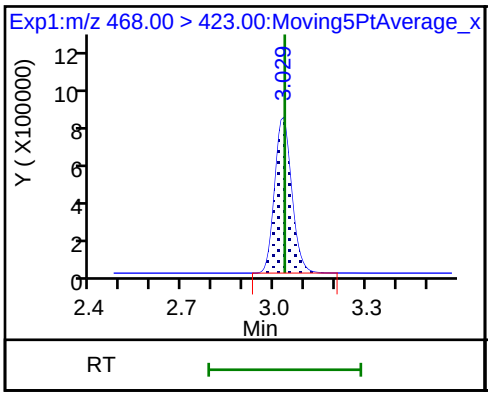
16 Perfluoroheptanesulfonic acid D 18 13C4 PFOS 17 Perfluorooctane sulfonic acid



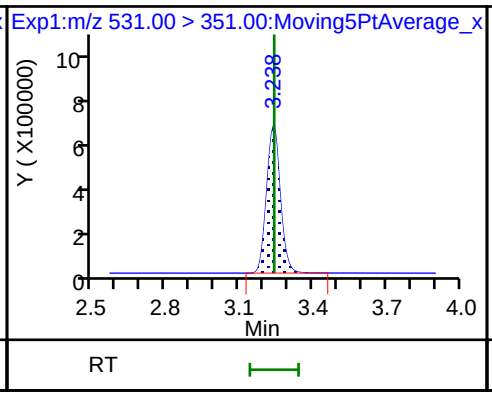
17 Perfluorooctane sulfonic acid 20 Perfluorononanoic acid 20 Perfluorononanoic acid



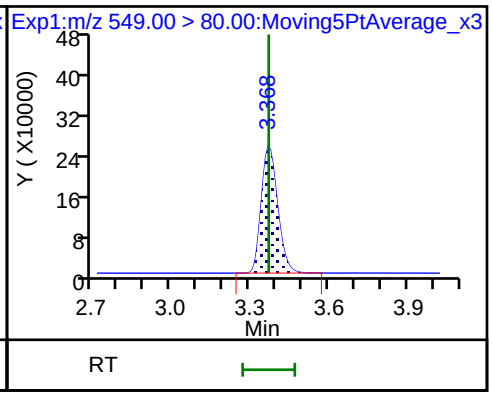
D 19 13C5 PFNA



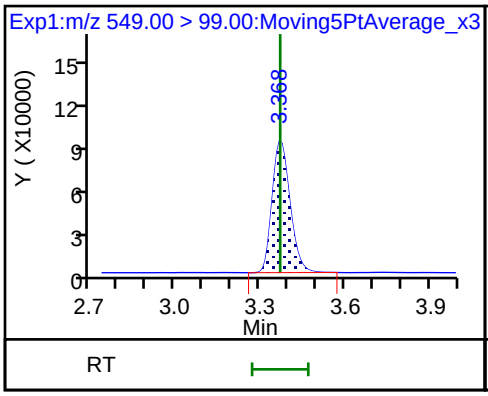
69 9-Chlorohexadecafluoro-3-oxanonane



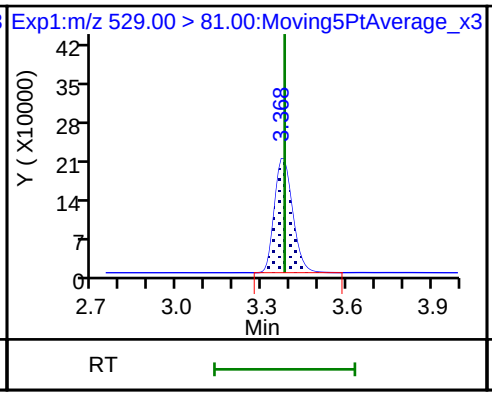
68 Perfluorononanesulfonic acid



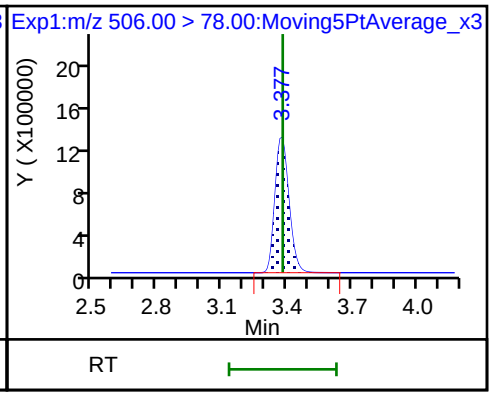
68 Perfluorononanesulfonic acid



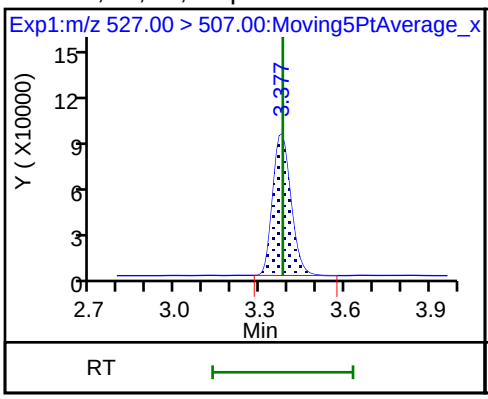
D 26 M2-8:2FTS



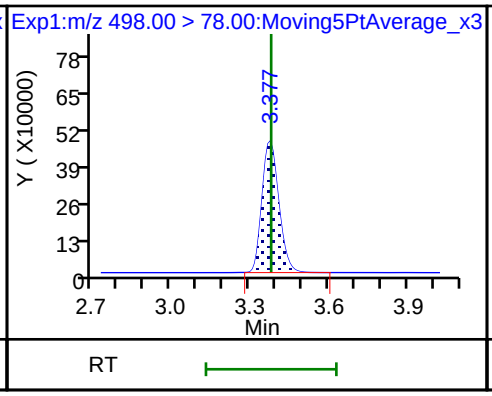
D 21 13C8 FOSA



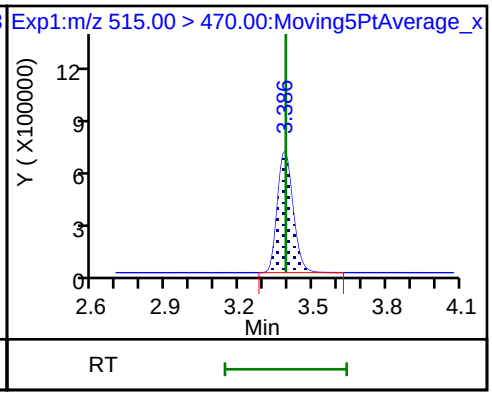
25 1H,1H,2H,2H-perfluorodecanesulfoni



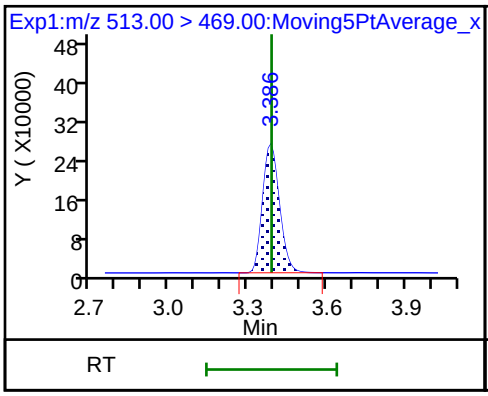
22 Perfluorooctane Sulfonamide



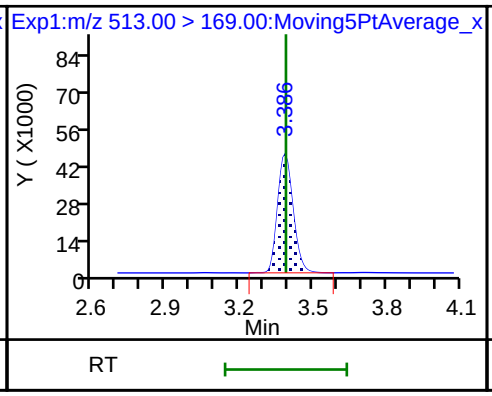
D 23 13C2 PFDA



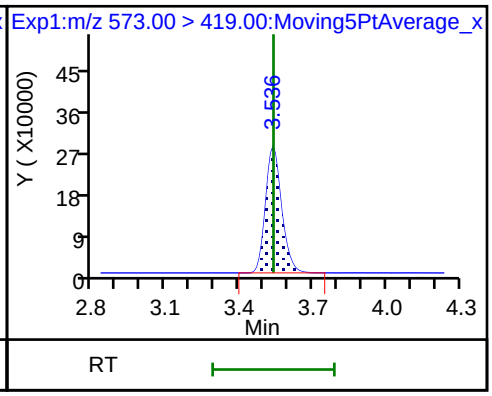
24 Perfluorodecanoic acid



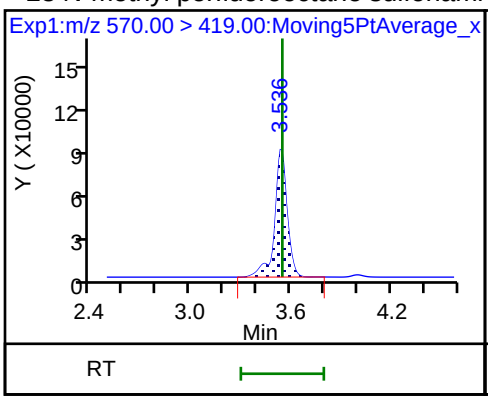
24 Perfluorodecanoic acid



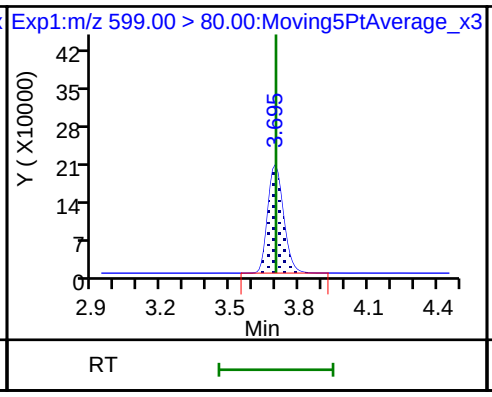
D 27 d3-NMeFOSAA



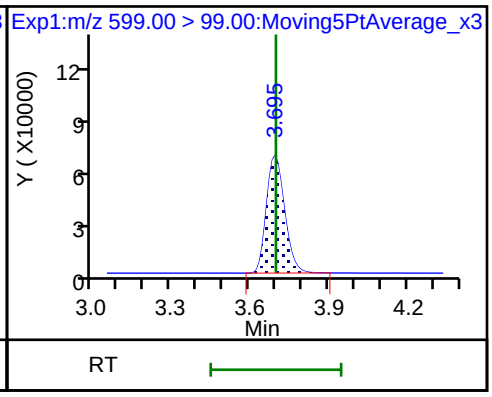
28 N-methyl perfluorooctane sulfonami



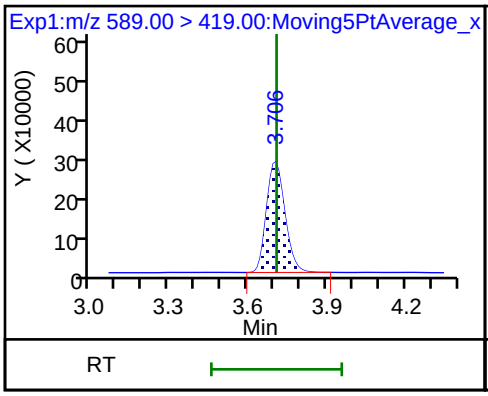
29 Perfluorodecane Sulfonic acid



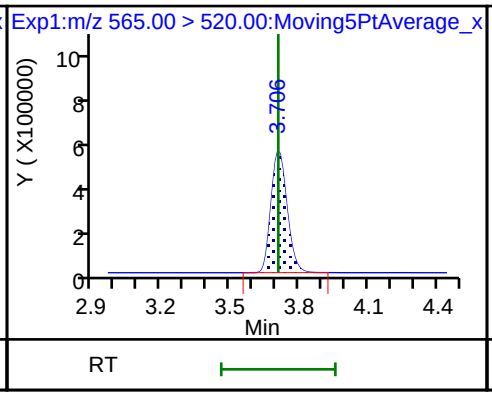
29 Perfluorodecane Sulfonic acid



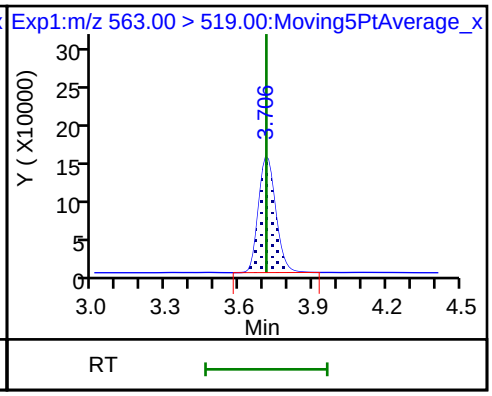
D 32 d5-NEtFOSAA



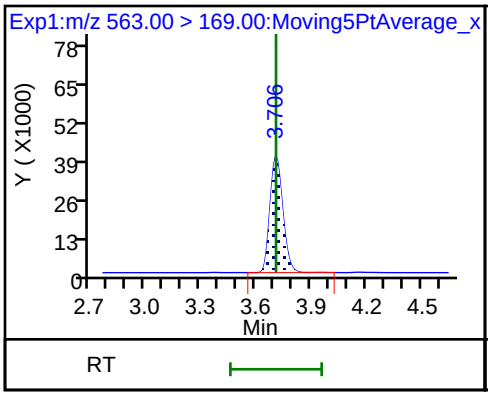
D 30 13C2 PFUnA



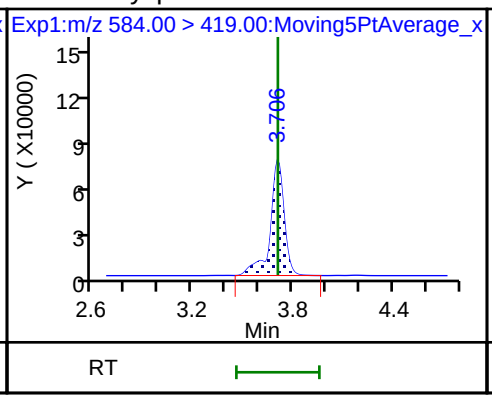
31 Perfluoroundecanoic acid



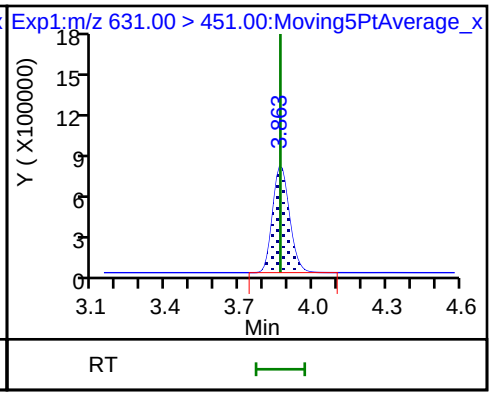
31 Perfluoroundecanoic acid



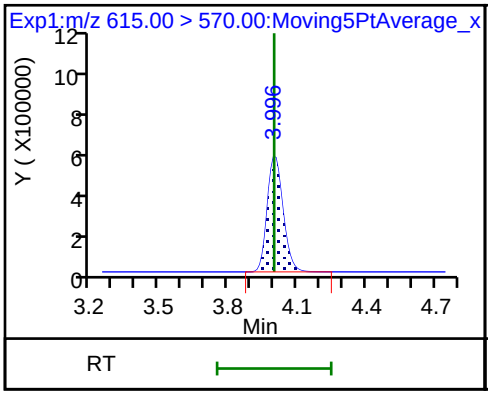
33 N-ethyl perfluorooctane sulfonamid



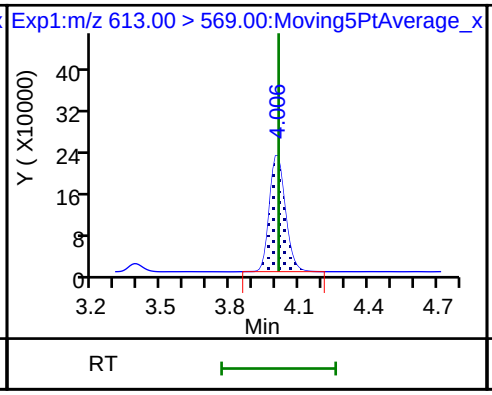
66 11-Chloroeicosafluoro-3-oxaundecan



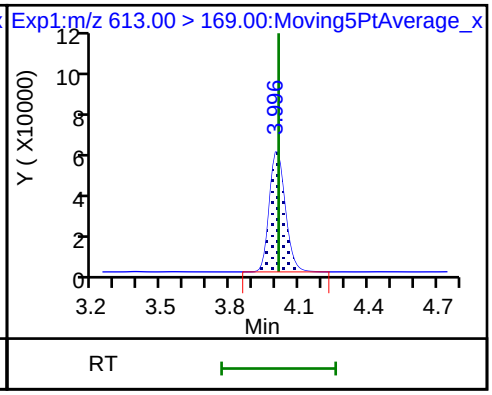
D 36 13C2 PFDoA



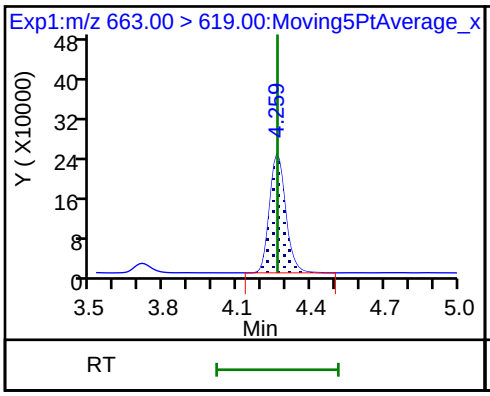
37 Perfluorododecanoic acid



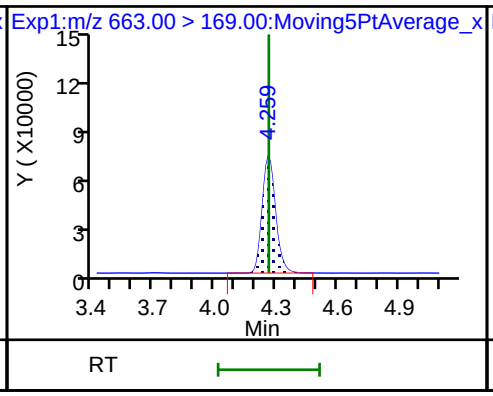
37 Perfluorododecanoic acid



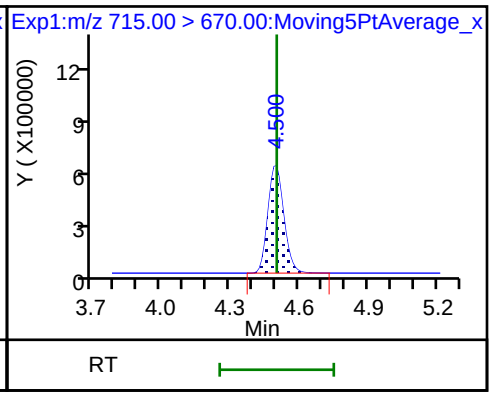
41 Perfluorotridecanoic acid



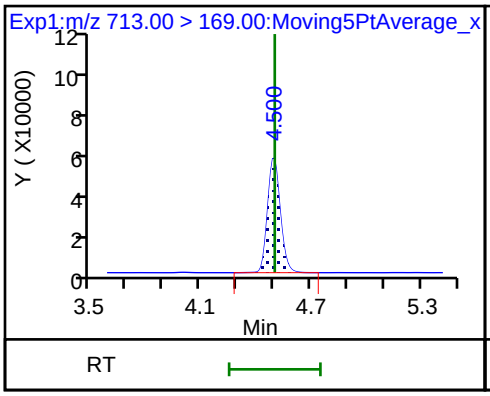
41 Perfluorotridecanoic acid



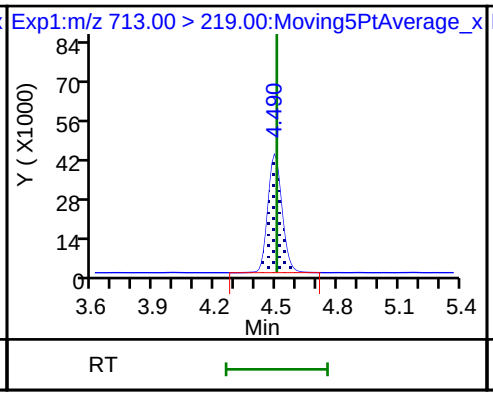
D 43 13C2-PFTeDA



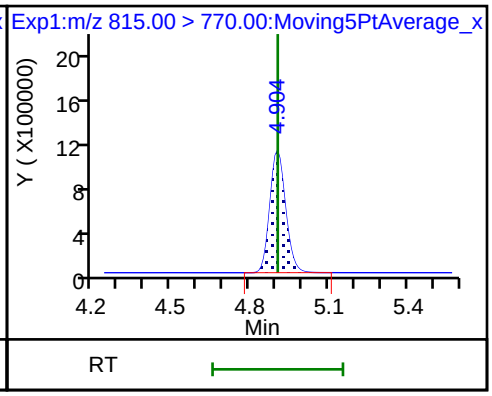
42 Perfluorotetradecanoic acid



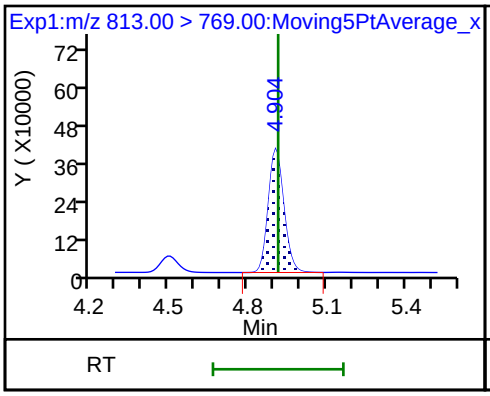
42 Perfluorotetradecanoic acid



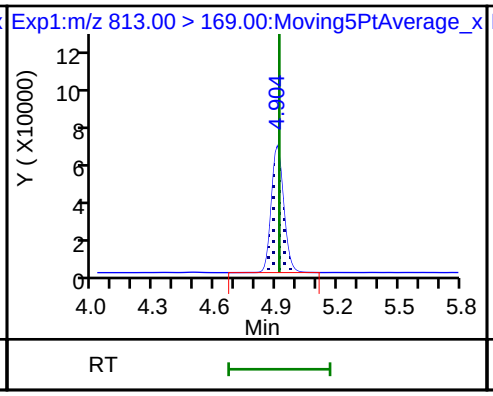
D 44 13C2-PFHxDA



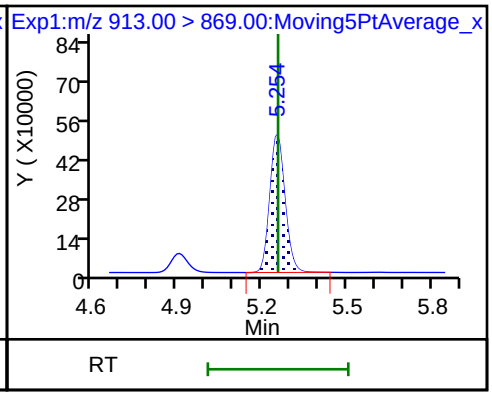
45 Perfluorohexadecanoic acid



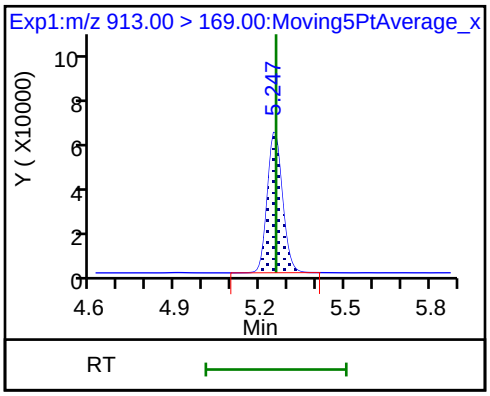
45 Perfluorohexadecanoic acid



46 Perfluorooctadecanoic acid



46 Perfluorooctadecanoic acid



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

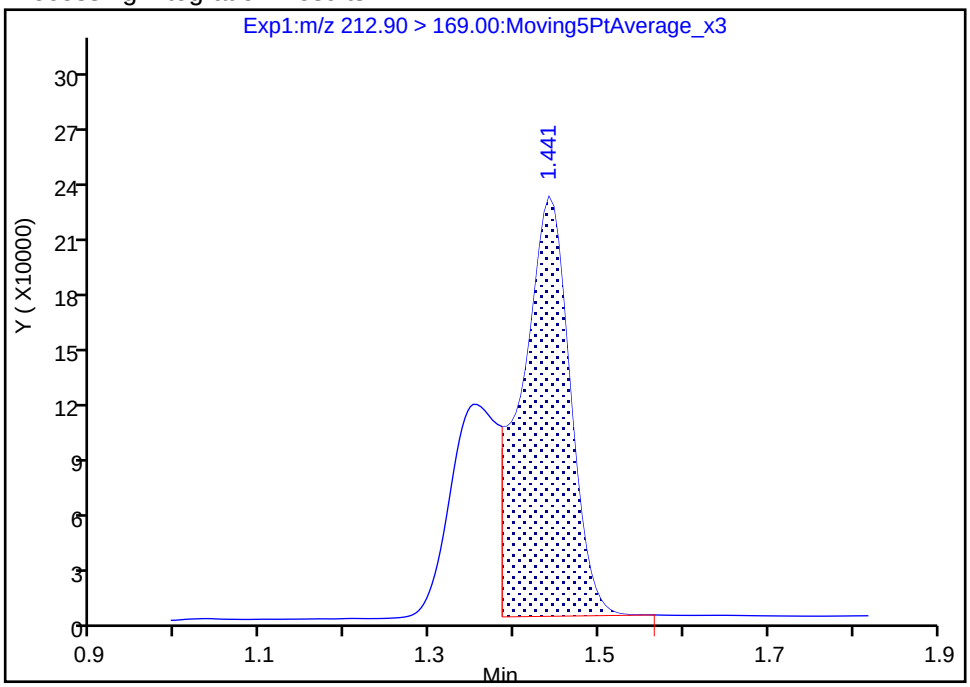
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\2018.07.13LLB_055.d				
Injection Date:	14-Jul-2018 03:57:08	Instrument ID:	A8_N		
Lims ID:	LCSD 320-231392/3-A				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	40	Worklist Smp#:	4
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

2 Perfluorobutyric acid, CAS: 375-22-4

Signal: 1

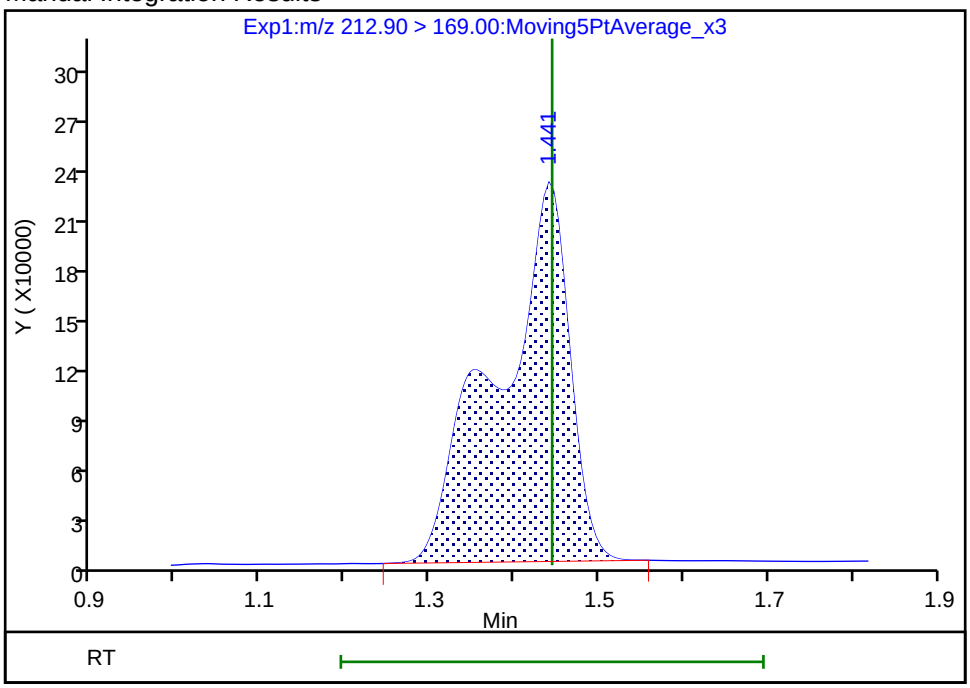
Processing Integration Results

RT: 1.44
Area: 879447
Amount: 0.624734
Amount Units: ng/ml



Manual Integration Results

RT: 1.44
Area: 1321217
Amount: 0.938554
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 14:12:58

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

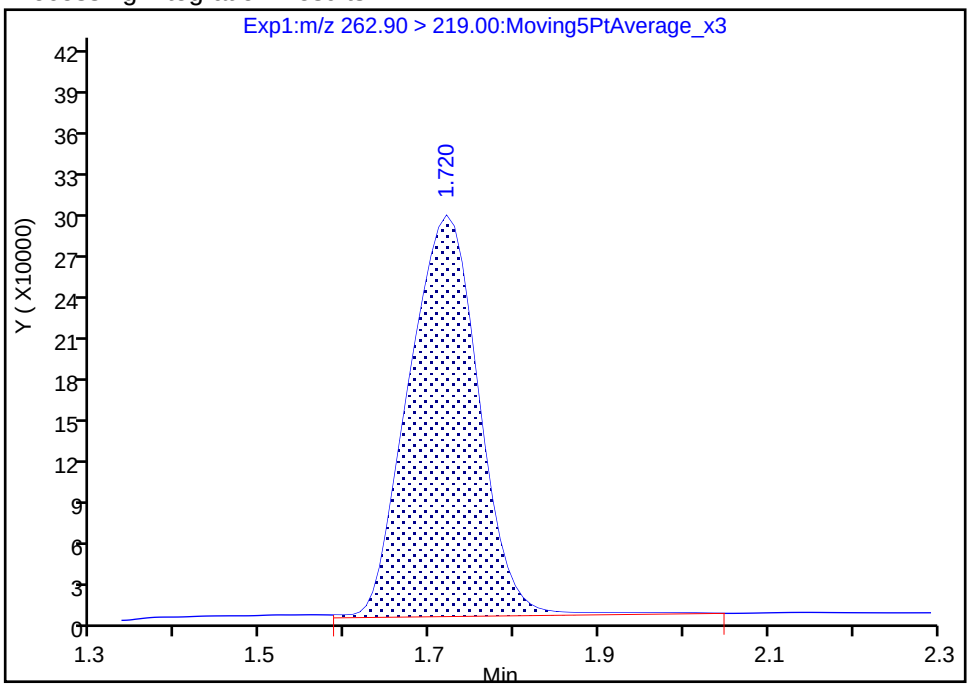
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\2018.07.13LLB_055.d				
Injection Date:	14-Jul-2018 03:57:08	Instrument ID:	A8_N		
Lims ID:	LCSD 320-231392/3-A				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	40	Worklist Smp#:	4
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

4 Perfluoropentanoic acid, CAS: 2706-90-3

Signal: 1

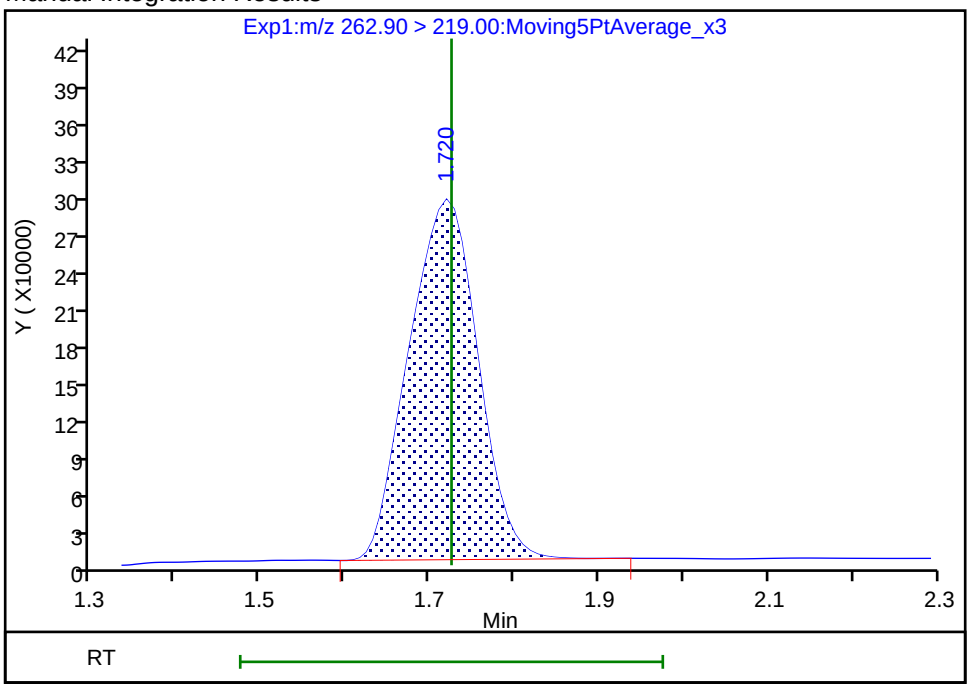
Processing Integration Results

RT: 1.72
Area: 1688189
Amount: 0.897678
Amount Units: ng/ml



Manual Integration Results

RT: 1.72
Area: 1648788
Amount: 0.876727
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 14:13:07

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

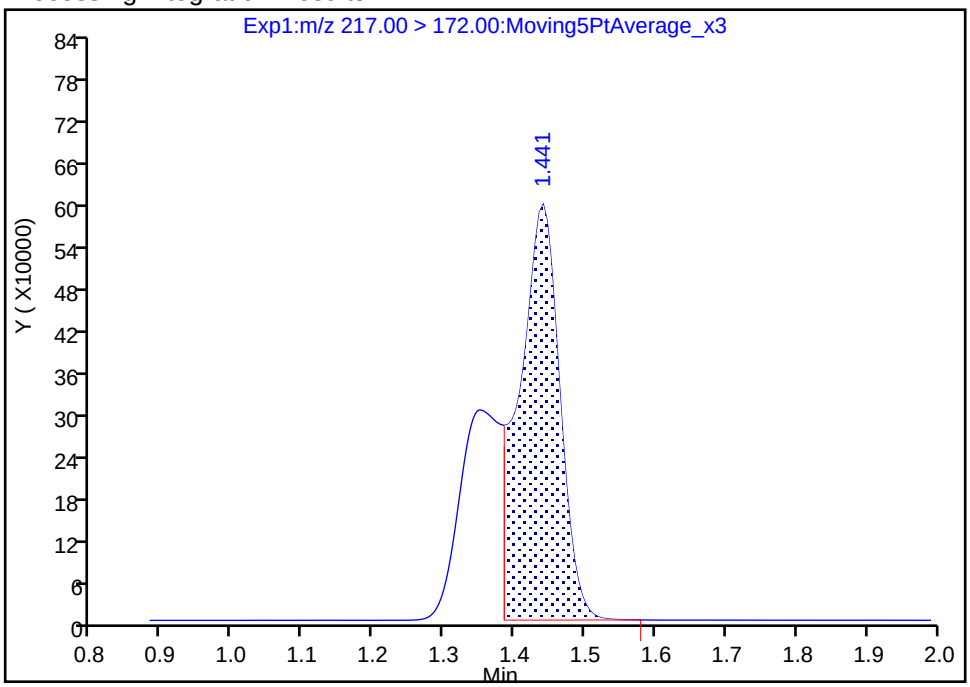
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\2018.07.13LLB_055.d				
Injection Date:	14-Jul-2018 03:57:08	Instrument ID:	A8_N		
Lims ID:	LCSD 320-231392/3-A				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	40	Worklist Smp#:	4
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

D 1 13C4 PFBA, CAS: STL00992

Signal: 1

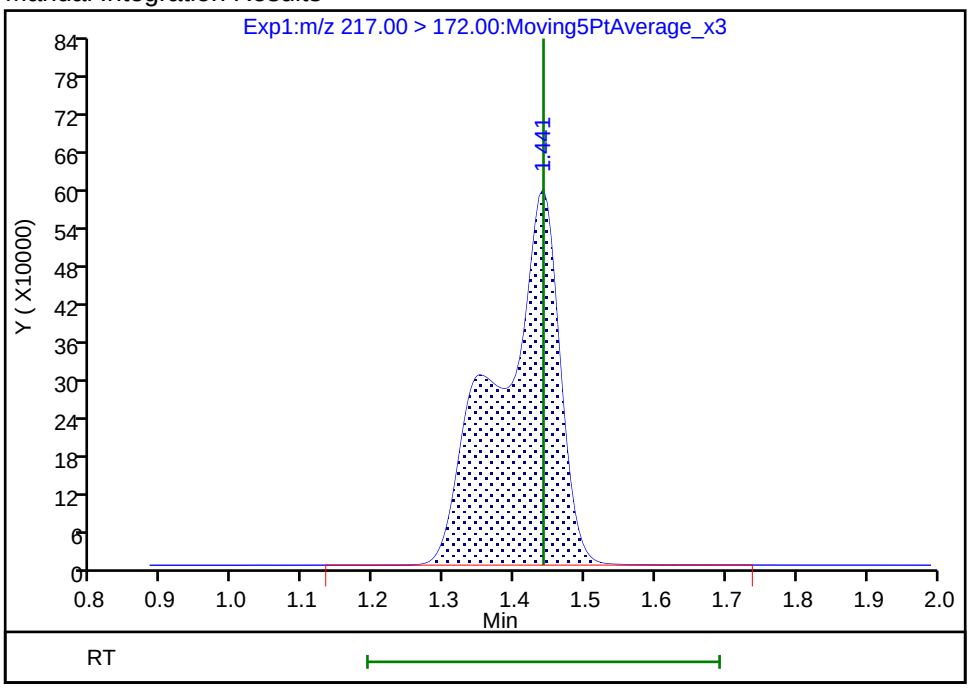
Processing Integration Results

RT: 1.44
Area: 2344664
Amount: 0.990666
Amount Units: ng/ml



Manual Integration Results

RT: 1.44
Area: 3570791
Amount: 1.508728
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 14:12:42

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID:
Lab Sample ID: LCSD 320-231393/3-A
Matrix: Solid
Lab File ID: 2018.07.14LLA_021.d
Analysis Method: 537 (modified)
Date Collected:
Extraction Method: SHAKE
Date Extracted: 06/28/2018 06:06
Sample wt/vol: 5.00(g)
Date Analyzed: 07/14/2018 13:22
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 234231
Units: mg/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	0.00189		0.00020	0.000028
2706-90-3	Perfluoropentanoic acid (PFPeA)	0.00183		0.00020	0.000077
307-24-4	Perfluorohexanoic acid (PFHxA)	0.00192		0.00020	0.000042
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.00175		0.00020	0.000029
335-67-1	Perfluorooctanoic acid (PFOA)	0.00189		0.00020	0.000086
375-95-1	Perfluorononanoic acid (PFNA)	0.00194		0.00020	0.000036
335-76-2	Perfluorodecanoic acid (PFDA)	0.00199		0.00020	0.000022
2058-94-8	Perfluoroundecanoic acid (PFUnA)	0.00176		0.00020	0.000036
307-55-1	Perfluorododecanoic acid (PFDoA)	0.00183		0.00020	0.000067
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	0.00184		0.00020	0.000051
376-06-7	Perfluorotetradecanoic acid (PFTeA)	0.00187		0.00020	0.000054
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.00177		0.00020	0.000025
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.00163		0.00020	0.000031
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	0.00184		0.00020	0.000035
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.00180		0.00050	0.00020
335-77-3	Perfluorodecanesulfonic acid (PFDS)	0.00186		0.00020	0.000039
754-91-6	Perfluorooctane Sulfonamide (FOSA)	0.00195		0.00020	0.000082
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	0.00188	J	0.0020	0.00039
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	0.00209		0.0020	0.00037
27619-97-2	6:2 FTS	0.00203		0.0020	0.00015
39108-34-4	8:2 FTS	0.00171	J	0.0020	0.00025

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID:
Lab Sample ID: LCSD 320-231393/3-A
Matrix: Solid
Lab File ID: 2018.07.14LLA_021.d
Analysis Method: 537 (modified)
Date Collected:
Extraction Method: SHAKE
Date Extracted: 06/28/2018 06:06
Sample wt/vol: 5.00(g)
Date Analyzed: 07/14/2018 13:22
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 234231
Units: mg/Kg

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00992	13C4 PFBA	88		25-150
STL01893	13C5 PFPeA	91		25-150
STL00993	13C2 PFHxA	93		25-150
STL01892	13C4-PFHpA	99		25-150
STL00990	13C4 PFOA	91		25-150
STL00995	13C5 PFNA	85		25-150
STL00996	13C2 PFDA	84		25-150
STL00997	13C2 PFUnA	92		25-150
STL00998	13C2 PFDoA	94		25-150
STL02116	13C2-PFTeDA	94		25-150
STL02337	13C3-PFBS	89		25-150
STL00994	18O2 PFHxS	93		25-150
STL00991	13C4 PFOS	89		25-150
STL01056	13C8 FOSA	84		25-150
STL02118	d3-NMeFOSAA	91		25-150
STL02117	d5-NEtFOSAA	85		25-150
STL02279	M2-6:2FTS	81		25-150
STL02280	M2-8:2FTS	70		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180716-61105.b\2018.07.14LLA_021.d
Lims ID: LCSD 320-231393/3-A
Client ID:
Sample Type: LCSD
Inject. Date: 14-Jul-2018 13:22:07 ALS Bottle#: 13 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: lcsd 320-231393/3-a
Misc. Info.: Plate: 1 Rack: 5
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180716-61105.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 17-Jul-2018 08:12:30 Calib Date: 11-Jul-2018 15:38:42
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK016

First Level Reviewer: mongkols Date: 17-Jul-2018 08:12:30

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										M
212.90 > 169.00	1.441	1.435	0.006	1.000	1915365	0.9440		94.4	547	M
D 1 13C4 PFBA										M
217.00 > 172.00	1.441	1.436	0.005	0.542	5146660	2.19		87.6	35059	M
4 Perfluoropentanoic acid										M
262.90 > 219.00	1.721	1.719	0.002	1.000	1648994	0.9156		91.6	674	M
D 3 13C5-PFPeA										
267.90 > 223.00	1.721	1.720	0.001	0.647	3711506	2.27		90.9	45501	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.757	1.755	0.002	1.000	2475765	0.8836		100.0	14065	
298.90 > 99.00	1.757	1.755	0.002	1.000	974929		2.54(1.25-3.74)		5455	
D 47 13C3-PFBS										
301.90 > 83.00	1.757	1.756	0.001	0.661	85157	2.07		89.2	518	
61 1H,1H,2H,2H-perfluorohexanesulfoni										
327.00 > 307.00	1.960	1.959	0.001	1.116	406202	0.8532		91.3	17687	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.993	1.991	0.002	1.000	1619998	0.9596		96.0	2839	
313.00 > 119.00	1.993	1.991	0.002	1.000	148077		10.94(5.03-15.10)		2288	
D 7 13C2 PFHxA										
315.00 > 270.00	1.993	1.992	0.001	0.749	4100494	2.33		93.0	50079	
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.016	2.014	0.002	1.147	2342206	0.9164		97.7	39879	
349.00 > 99.00	2.016	2.014	0.002	1.147	835629		2.80(1.36-4.07)		14312	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.095	2.082	0.013	0.788	311857	2.49		99.5	5944	
67 Perfluoro(2-propoxypropanoic) acid										
329.10 > 285.00	2.095	2.093	0.002	1.000	306439	0.9256		92.6	1676	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.308	2.306	0.002	1.000	1616993	0.8736		87.4	2862	
363.00 > 169.00	2.308	2.306	0.002	1.000	664246		2.43(1.13-3.40)		6911	
D 9 13C4-PFHpA										
367.00 > 322.00	2.308	2.306	0.002	0.868	4000896	2.46		98.5	44721	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.321	2.319	0.002	1.000	2006572	0.8157		89.6	14529	
399.00 > 99.00	2.321	2.319	0.002	1.000	657446		3.05(1.50-4.49)		3564	
D 11 18O2 PFHxS										
403.00 > 84.00	2.321	2.319	0.002	0.873	5068230	2.20		93.1	52865	
65 Adona										
377.00 > 251.00	2.360	2.358	0.002	0.782	4810875	0.99		99.2	58649	
377.00 > 85.00	2.360	2.358	0.002	0.782	2786688		1.73(0.84-2.53)		17014	
D 12 M2-6:2FTS										
429.00 > 81.00	2.636	2.628	0.008	0.991	668205	1.92		80.8	17457	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.636	2.635	0.001	1.000	446584	1.01		107	4228	
D 14 13C4 PFOA										
417.00 > 372.00	2.660	2.652	0.008	1.000	3759366	2.27		90.8	45378	
* 62 13C2-PFOA										
415.00 > 370.00	2.660	2.659	0.001		4332976	2.50			43541	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.660	2.659	0.001	1.000	1751126	0.9456		94.5	1091	
413.00 > 169.00	2.660	2.659	0.001	1.000	859246		2.04(0.84-2.52)		4731	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.667	2.667	0.0	0.884	1822494	0.9183		96.5	26051	
449.00 > 99.00	2.667	2.667	0.0	0.884	486497		3.75(1.94-5.82)		7858	
D 19 13C5 PFNA										
468.00 > 423.00	3.023	3.018	0.005	1.137	3163387	2.14		85.4	45644	
D 18 13C4 PFOS										
503.00 > 80.00	3.016	3.018	-0.002	1.134	3600175	2.13		89.2	36426	
20 Perfluorononanoic acid										
463.00 > 419.00	3.023	3.019	0.005	1.000	1364571	0.9721		97.2	2504	
463.00 > 169.00	3.023	3.019	0.005	1.000	314292		4.34(1.90-5.69)		10284	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.023	3.019	0.005	1.002	1537105	0.9005		97.0	19249	
499.00 > 99.00	3.016	3.019	-0.002	1.000	357895		4.29(2.31-6.93)		5490	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.230	3.225	0.005	1.071	2469444	0.8930		95.8	25365	
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.359	3.361	-0.002	1.114	1034256	0.8857		92.3	21913	
549.00 > 99.00	3.359	3.361	-0.002	1.114	398102		2.60(1.33-3.97)		6644	
25 1H,1H,2H,2H-perfluorodecanesulfoni										
527.00 > 507.00	3.368	3.361	0.007	1.000	393029	0.8554		89.3	8901	
D 26 M2-8:2FTS										
529.00 > 81.00	3.368	3.361	0.007	1.266	853119	1.67		69.9	13831	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.368	3.370	-0.002	1.000	1959980	0.9739		97.4	20187	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
24 Perfluorodecanoic acid										
513.00 > 469.00	3.377	3.370	0.007	1.000	1146601	1.00		99.5	7937	
513.00 > 169.00	3.377	3.370	0.007	1.000	195293		5.87(2.36-7.09)		7424	
D 21 13C8 FOSA										
506.00 > 78.00	3.368	3.370	-0.002	1.266	5104902	2.10		83.9	40008	
D 23 13C2 PFDA										
515.00 > 470.00	3.377	3.370	0.007	1.270	2744533	2.11		84.4	34614	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.527	3.520	0.007	1.326	1208478	2.27		90.7	29605	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.527	3.529	-0.002	1.000	448759	0.9417		94.2	4597	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.685	3.676	0.009	1.222	938265	0.9277		96.2	22145	
599.00 > 99.00	3.685	3.676	0.009	1.222	332402		2.82(1.39-4.16)		10075	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.696	3.687	0.009	1.390	1166094	2.14		85.4	3251	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.696	3.698	-0.002	1.000	717439	0.8798		88.0	3531	
563.00 > 169.00	3.696	3.698	-0.002	1.000	198044		3.62(2.12-6.36)		8132	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.696	3.698	-0.002	1.000	430284	1.04		104	9372	
D 30 13C2 PFUnA										
565.00 > 520.00	3.696	3.698	-0.002	1.390	2487780	2.29		91.6	40126	
66 11-Chloroeicosafluoro-3-oxaundecan										
631.00 > 451.00	3.853	3.855	-0.002	1.277	3784644	0.9468		101	66465	
37 Perfluorododecanoic acid										
613.00 > 569.00	3.986	3.988	-0.002	1.000	1055303	0.9138		91.4	677	
613.00 > 169.00	3.986	3.988	-0.002	1.000	251042		4.20(2.13-6.40)		4796	
D 36 13C2 PFDoA										
615.00 > 570.00	3.986	3.988	-0.002	1.499	2644360	2.35		93.9	27970	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.250	4.252	-0.002	1.066	1037001	0.9182		91.8	562	
663.00 > 169.00	4.250	4.252	-0.002	1.066	330159		3.14(1.25-3.76)		5546	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.490	4.480	0.010	1.688	2742048	2.35		93.9	16403	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.490	4.480	0.010	1.000	266572	0.9341		93.4	4276	
713.00 > 219.00	4.479	4.480	-0.001	0.998	192620		1.38(0.71-2.13)		3365	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.895	4.887	0.008	1.000	1739995	0.9870		98.7	424	
813.00 > 169.00	4.895	4.887	0.008	1.000	279492		6.23(2.86-8.58)		2702	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.895	4.887	0.008	1.841	4538898	2.44		97.6	14203	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.239	5.233	0.006	1.070	1951149	0.9403		94.0	384	
913.00 > 169.00	5.239	5.233	0.006	1.070	236647		8.24(3.83-11.48)		3202	

QC Flag Legend

Review Flags

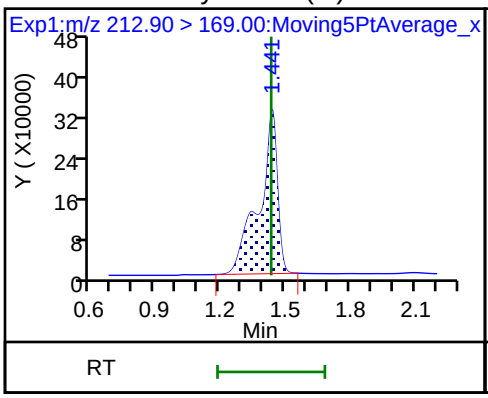
M - Manually Integrated

Report Date: 17-Jul-2018 08:12:32 Chrom Revision: 2.2 07-Jun-2018 07:41:54

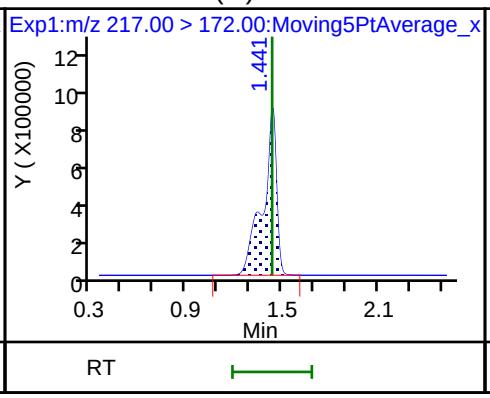
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180716-61105.b\2018.07.14LLA_021.d
Injection Date: 14-Jul-2018 13:22:07 Instrument ID: A8_N
Lims ID: LCSD 320-231393/3-A
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 13 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC ICAL

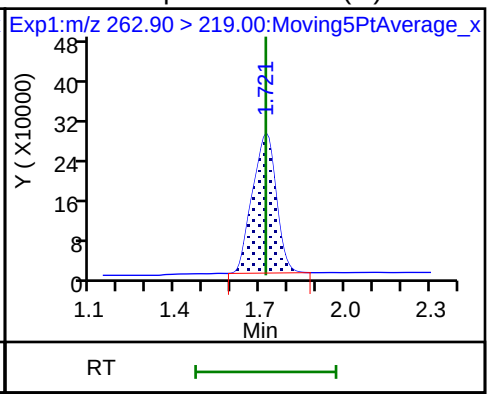
2 Perfluorobutyric acid (M)



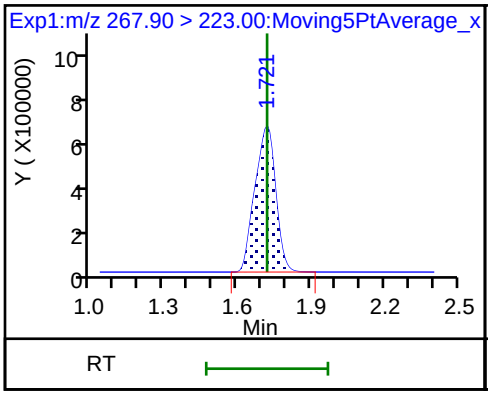
D 1 13C4 PFBA (M)



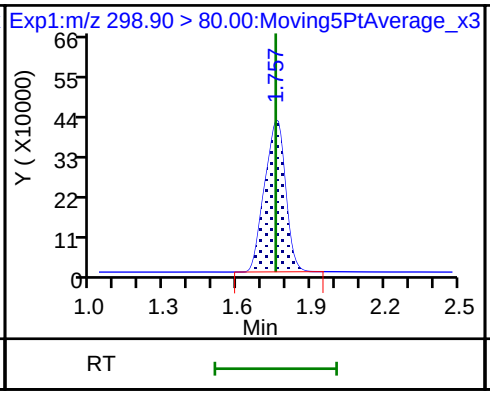
4 Perfluoropentanoic acid (M)



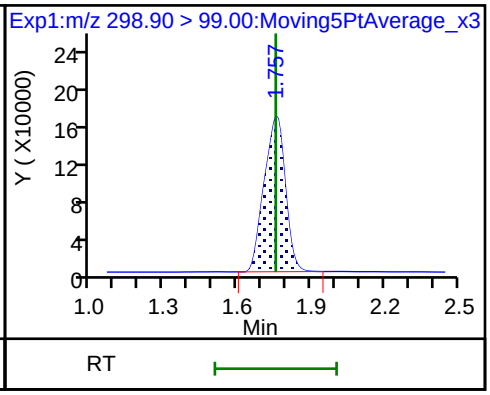
D 3 13C5-PFPeA



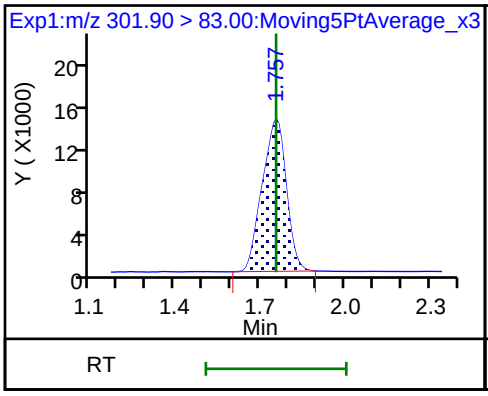
5 Perfluorobutanesulfonic acid



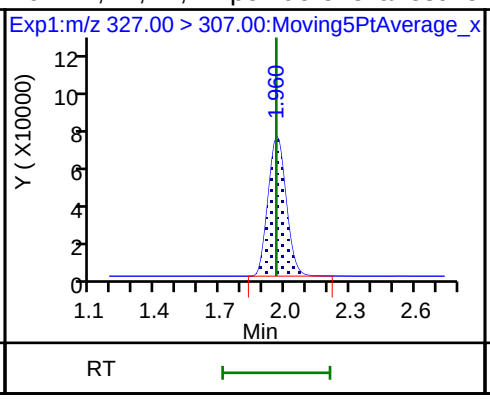
5 Perfluorobutanesulfonic acid



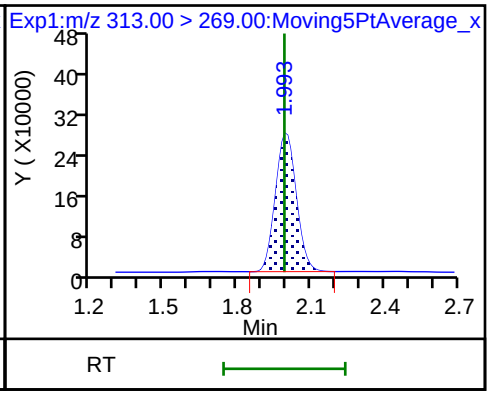
D 47 13C3-PFBS



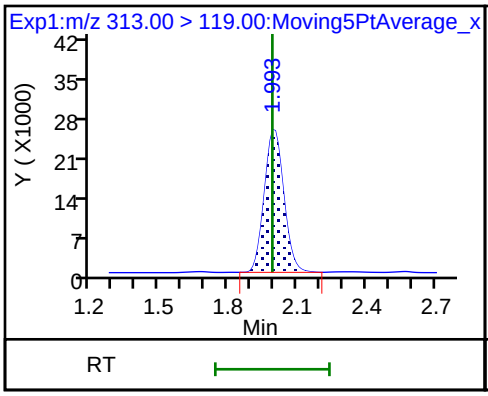
61 1H,1H,2H,2H-perfluorohexanesulfoni



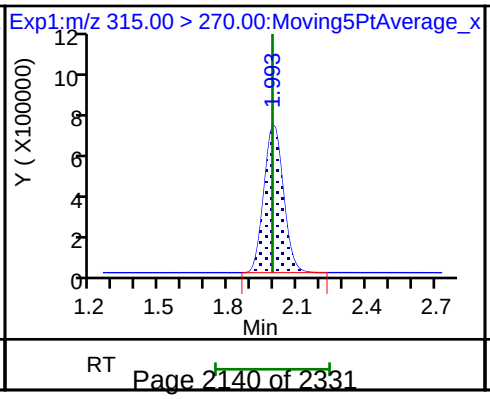
6 Perfluorohexanoic acid



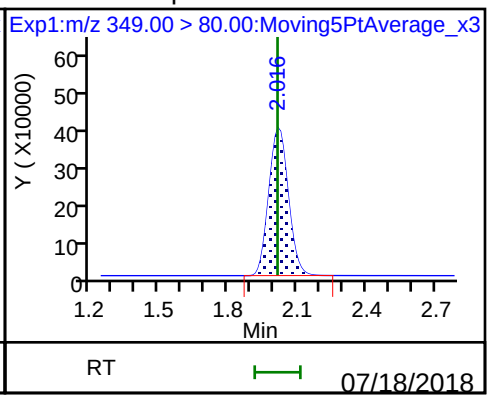
6 Perfluorohexanoic acid



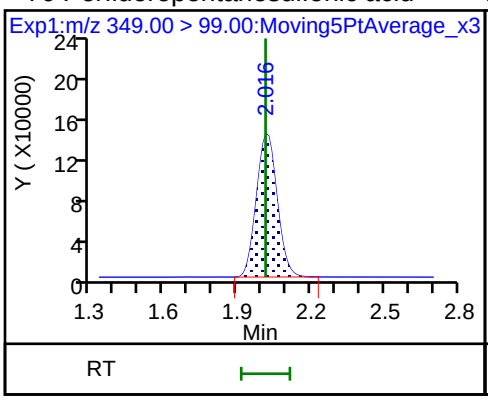
D 7 13C2 PFHxA



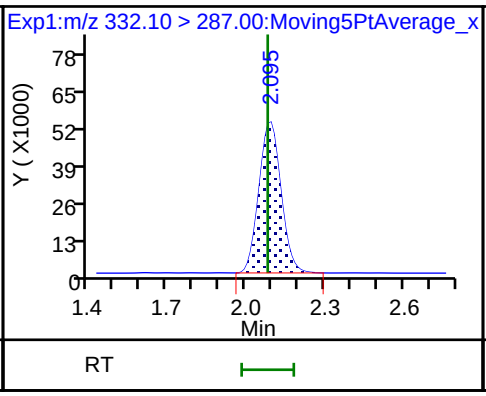
70 Perfluoropentanesulfonic acid



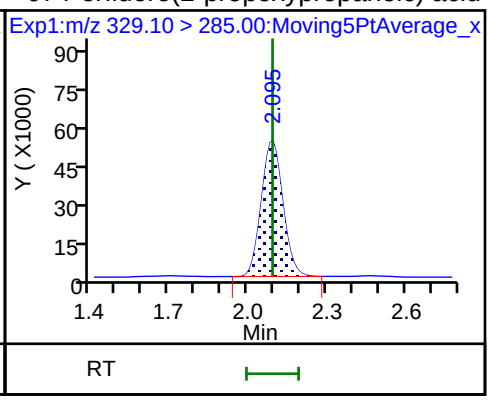
70 Perfluoropentanesulfonic acid



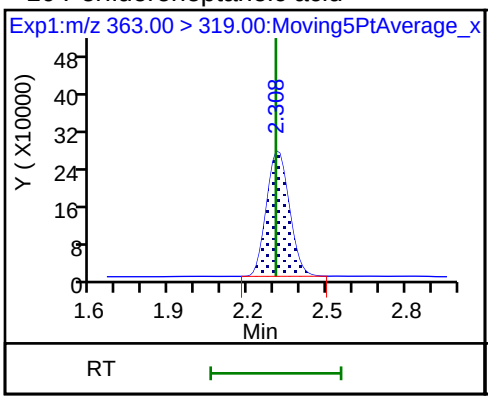
D 64 13C3 HFPO-DA



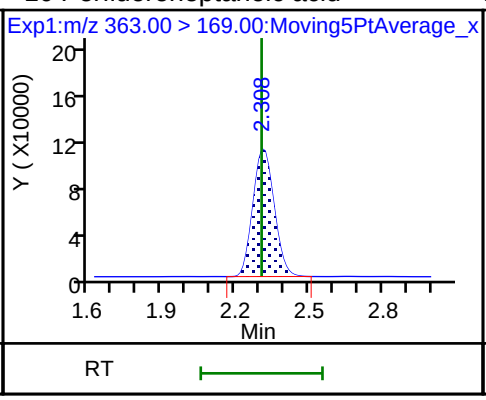
67 Perfluoro(2-propoxypropanoic) acid



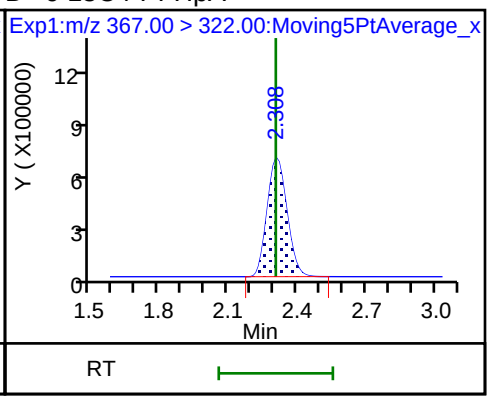
10 Perfluoroheptanoic acid



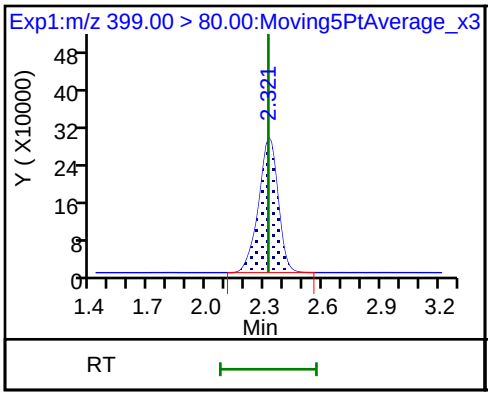
10 Perfluoroheptanoic acid



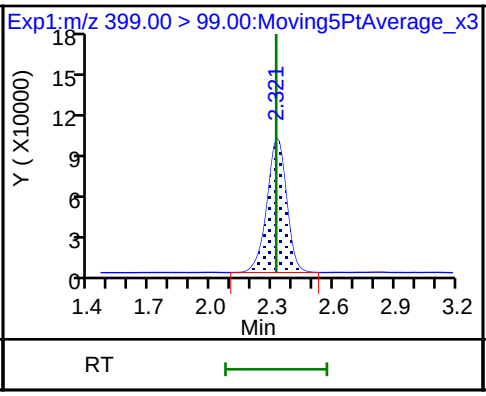
D 9 13C4-PFHpA



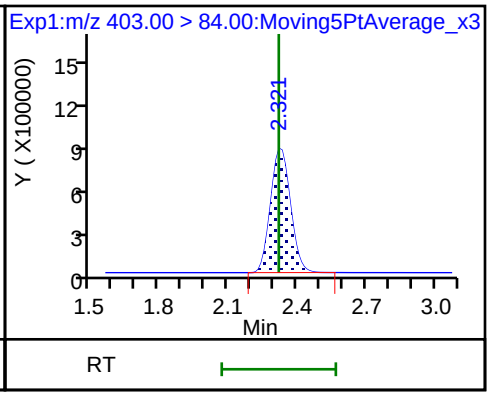
8 Perfluorohexanesulfonic acid



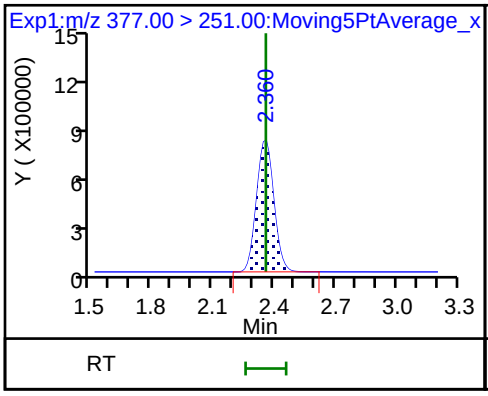
8 Perfluorohexanesulfonic acid



D 11 18O2 PFHxS



65 Adona



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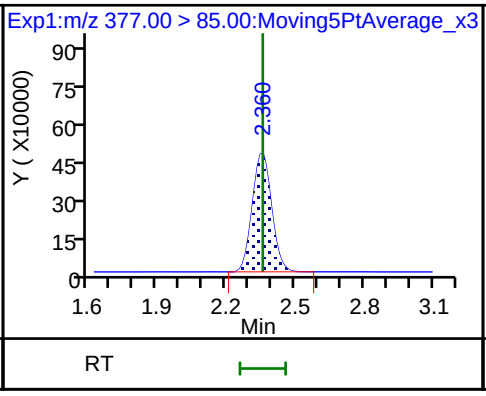
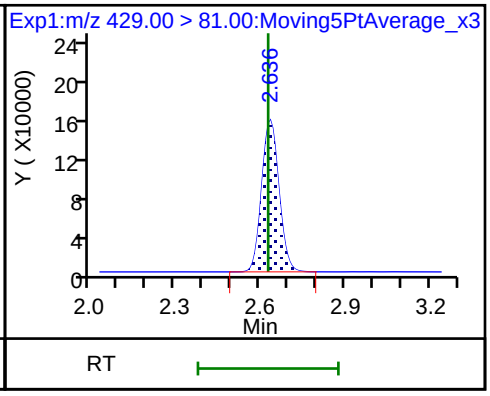
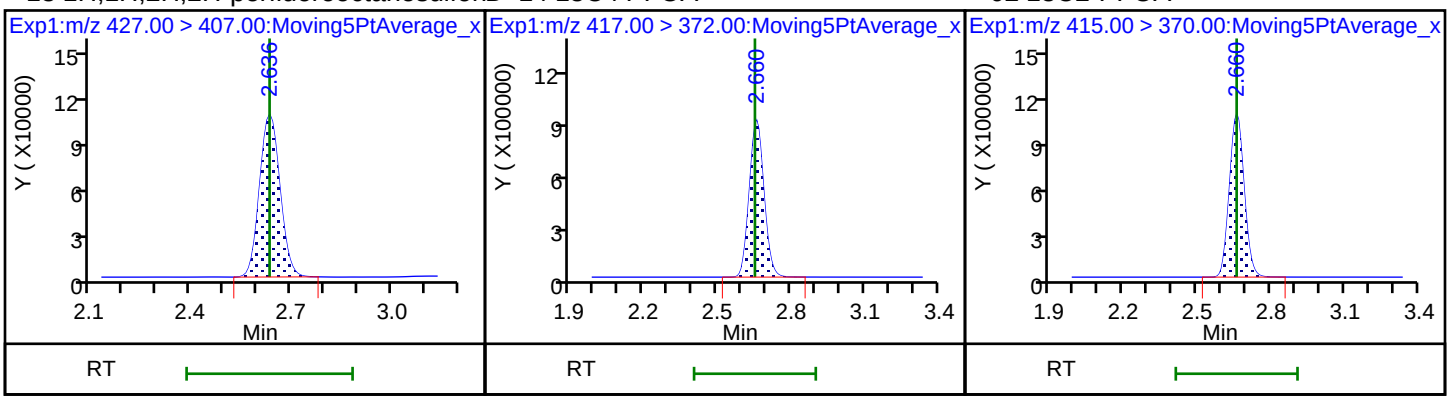


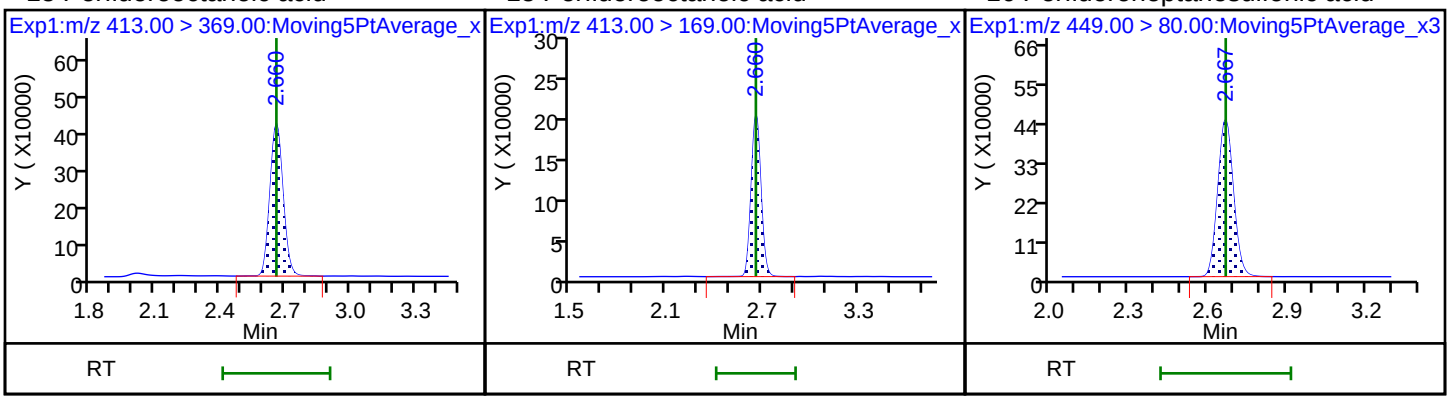
D 12 M2-6:2FTS



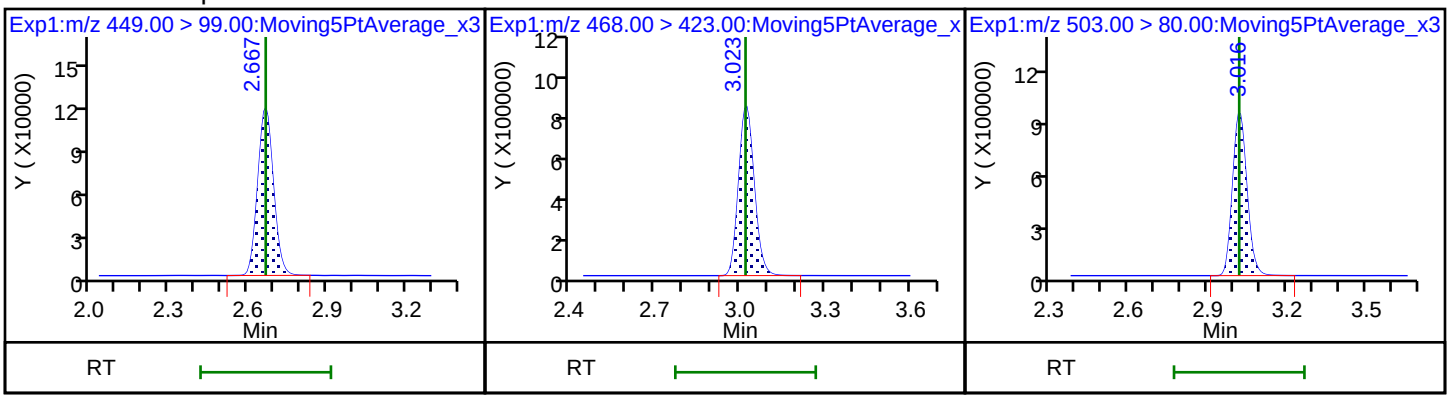
13 1H,1H,2H,2H-perfluorooctanesulfonD 14 13C4 PFOA * 62 13C2-PFOA



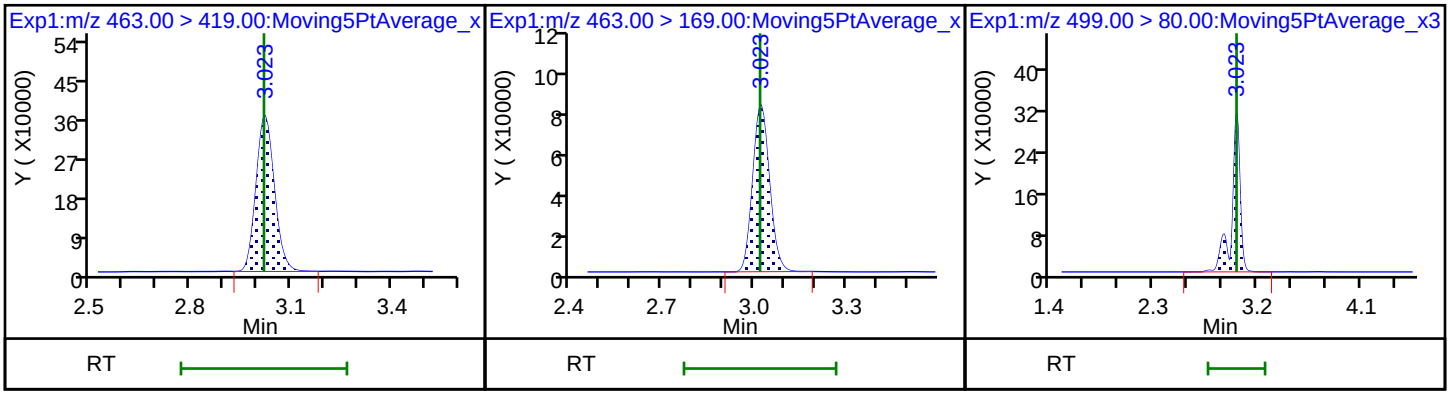
15 Perfluorooctanoic acid 15 Perfluorooctanoic acid 16 Perfluoroheptanesulfonic acid



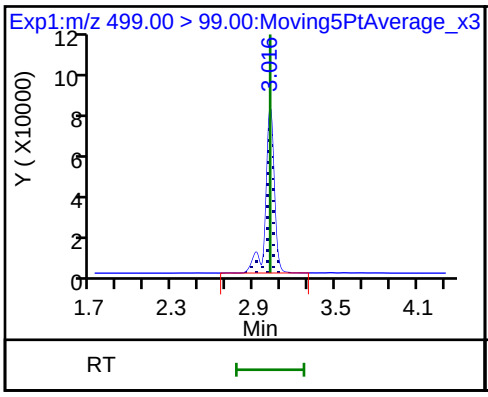
16 Perfluoroheptanesulfonic acid D 19 13C5 PFNA D 18 13C4 PFOS



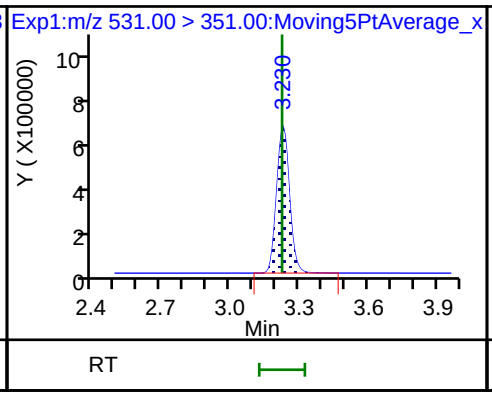
20 Perfluorononanoic acid 20 Perfluorononanoic acid 17 Perfluorooctane sulfonic acid



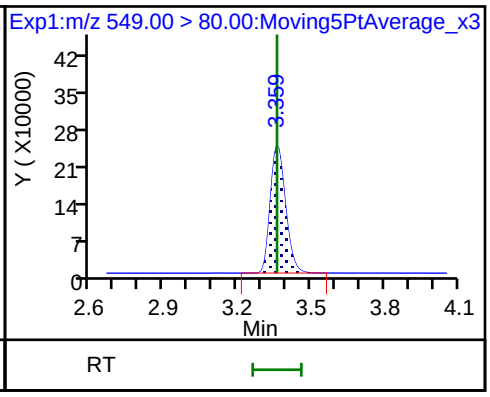
17 Perfluorooctane sulfonic acid



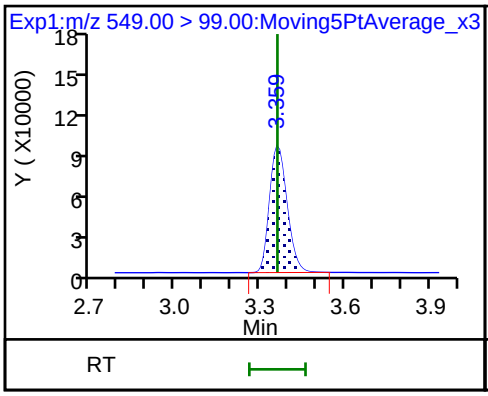
69 9-Chlorohexadecafluoro-3-oxanonane



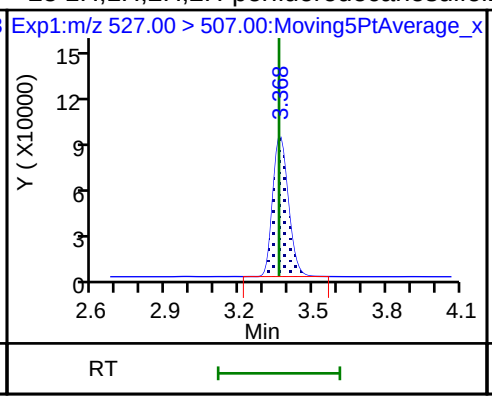
68 Perfluorononanesulfonic acid



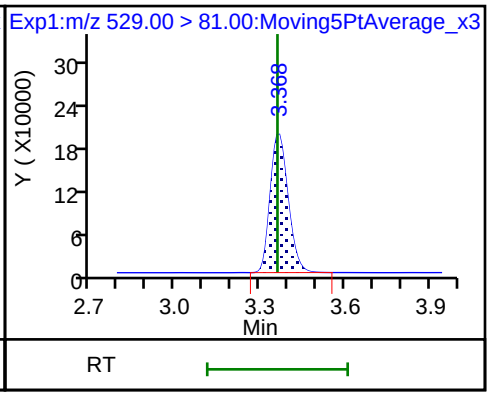
68 Perfluorononanesulfonic acid



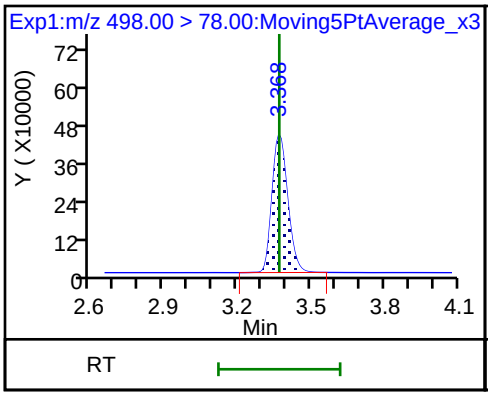
25 1H,1H,2H,2H-perfluorodecanesulfon



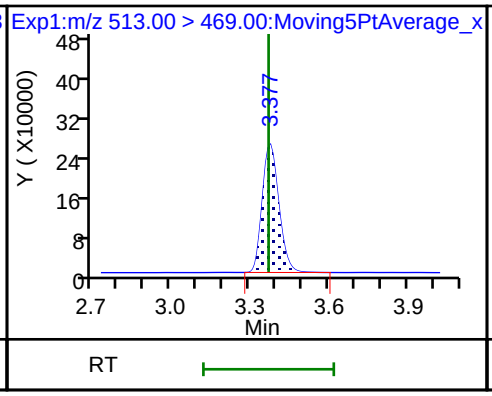
D 26 M2-8:2FTS



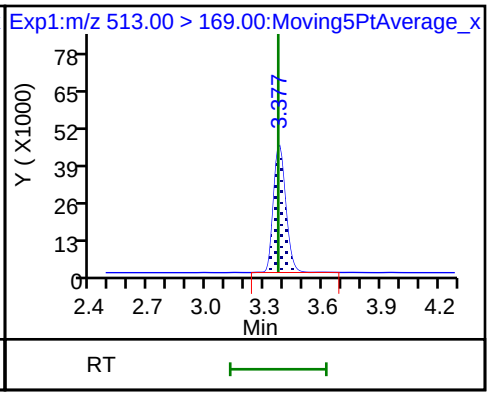
22 Perfluorooctane Sulfonamide



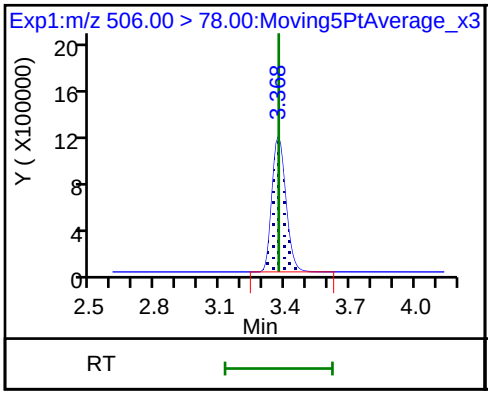
24 Perfluorodecanoic acid



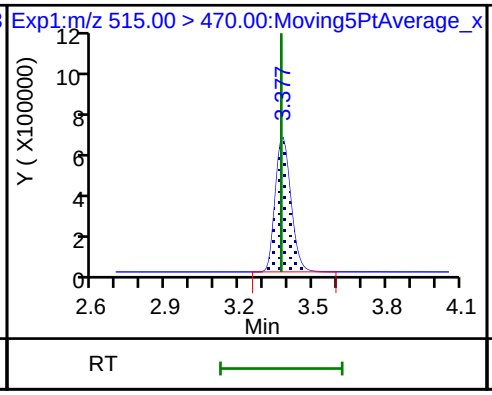
24 Perfluorodecanoic acid



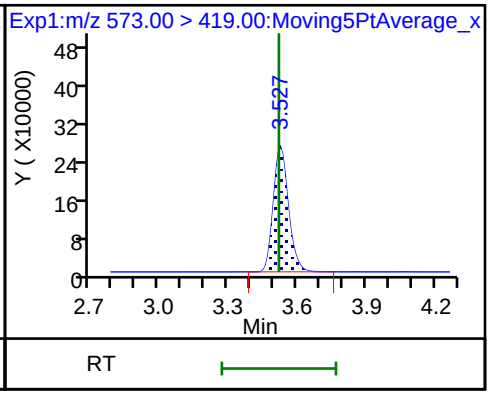
D 21 13C8 FOSA



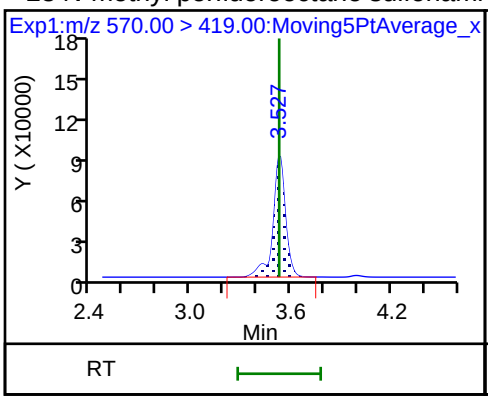
D 23 13C2 PFDA



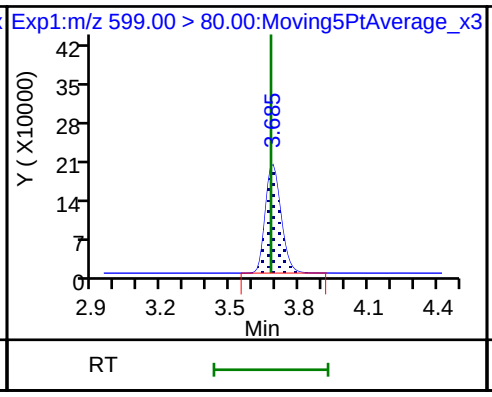
D 27 d3-NMeFOSAA



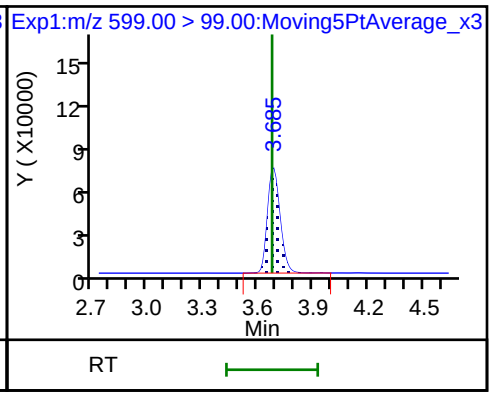
28 N-methyl perfluorooctane sulfonami



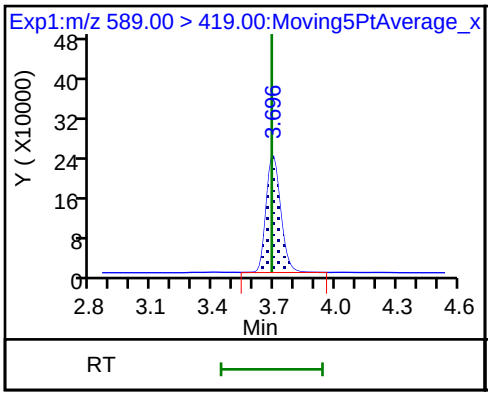
29 Perfluorodecane Sulfonic acid



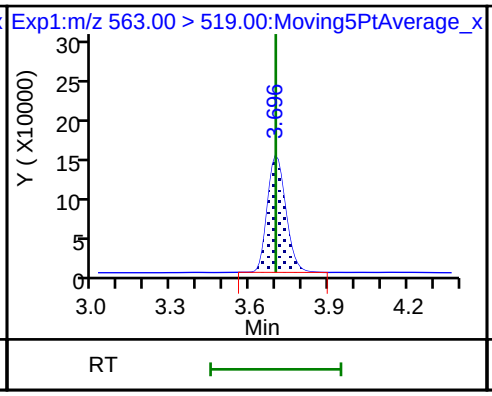
29 Perfluorodecane Sulfonic acid



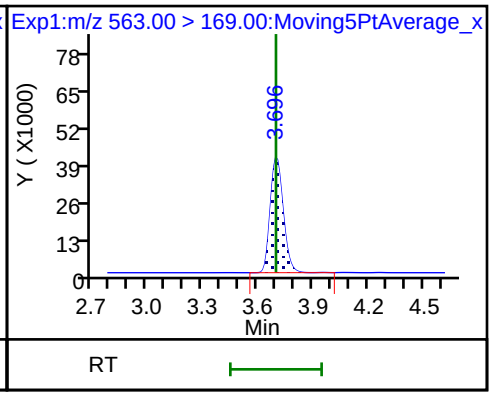
D 32 d5-NEtFOSAA



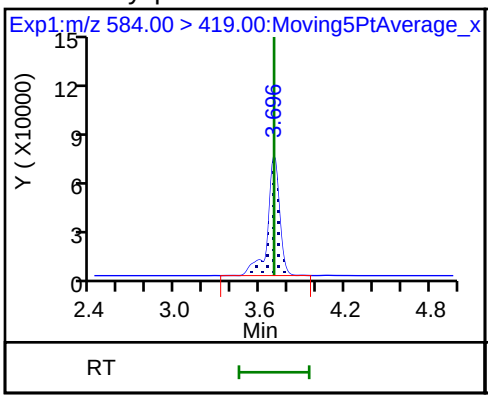
31 Perfluoroundecanoic acid



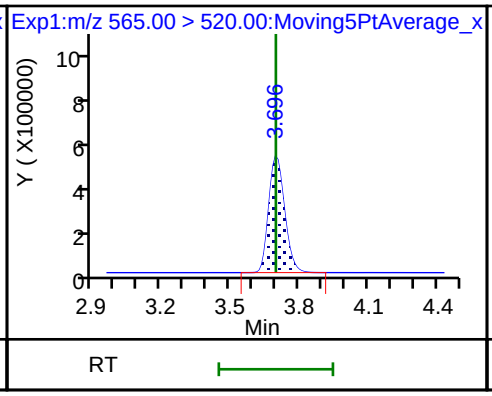
31 Perfluoroundecanoic acid



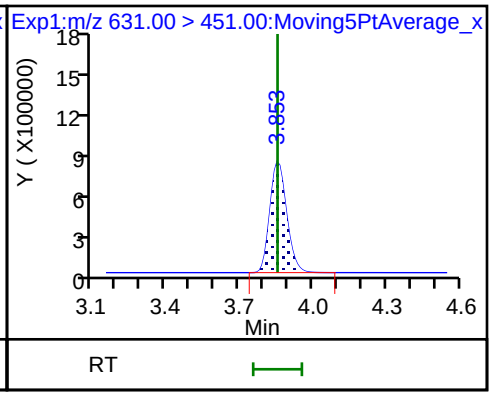
33 N-ethyl perfluorooctane sulfonamid



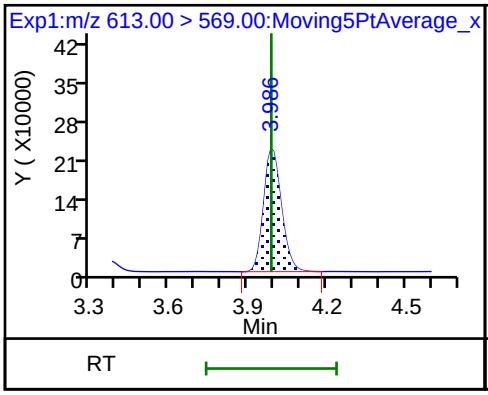
D 30 13C2 PFUnA



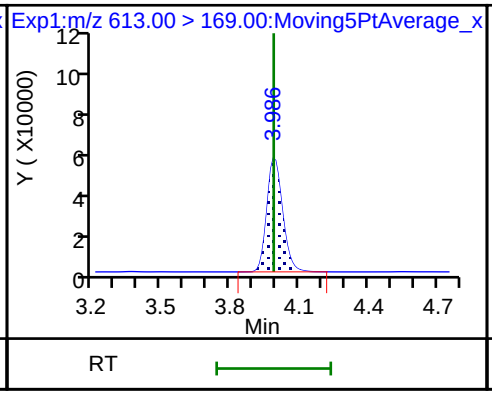
66 11-Chloroeicosafluoro-3-oxaundecan



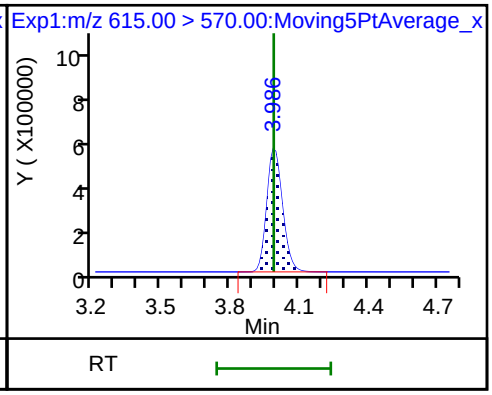
37 Perfluorododecanoic acid



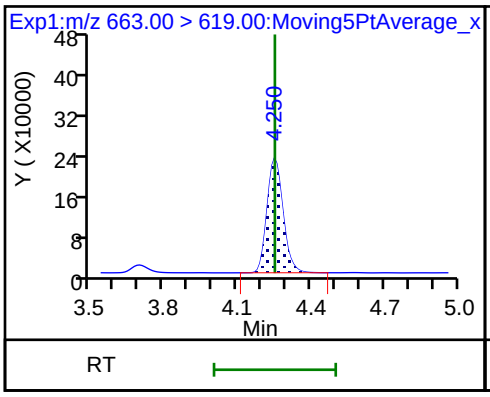
37 Perfluorododecanoic acid



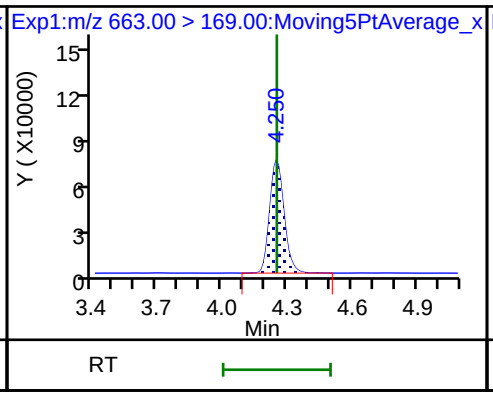
D 36 13C2 PFDoA



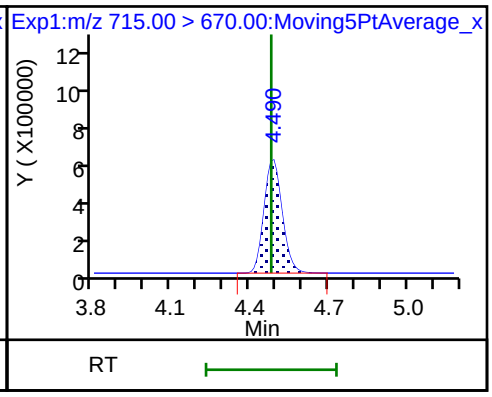
41 Perfluorotridecanoic acid



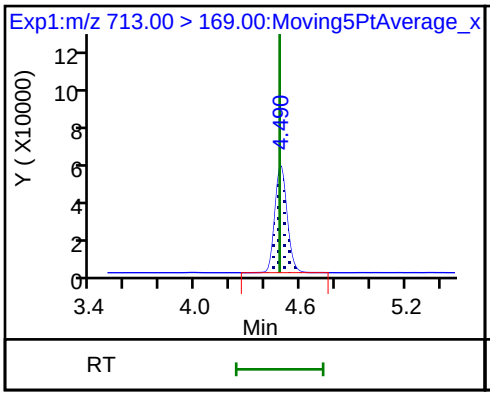
41 Perfluorotridecanoic acid



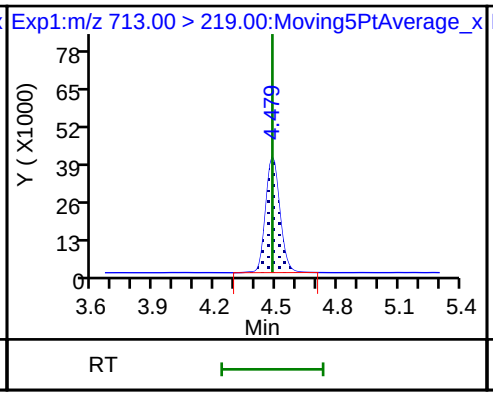
D 43 13C2-PFTeDA



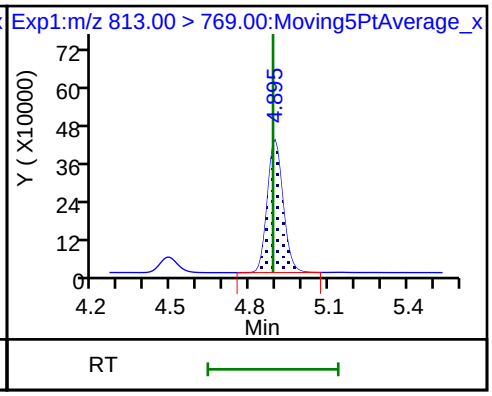
42 Perfluorotetradecanoic acid



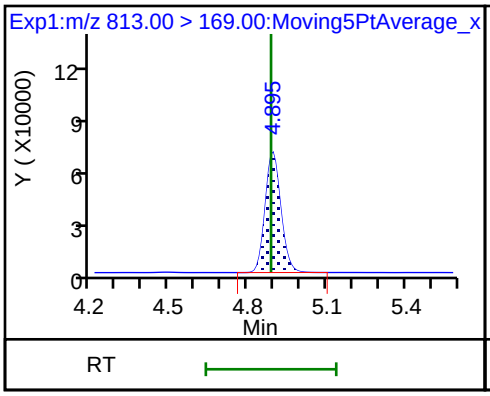
42 Perfluorotetradecanoic acid



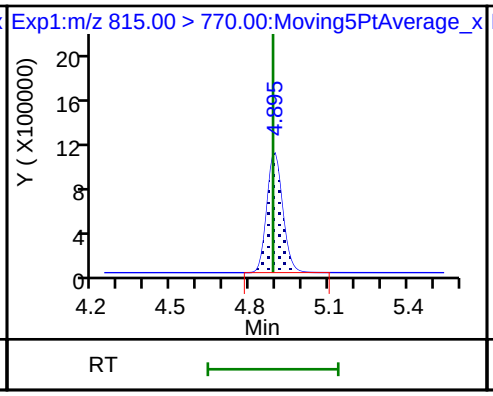
45 Perfluorohexadecanoic acid



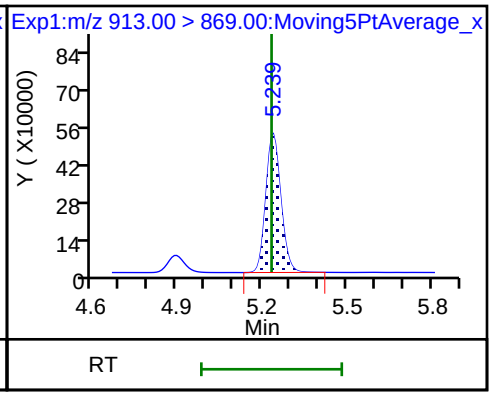
45 Perfluorohexadecanoic acid



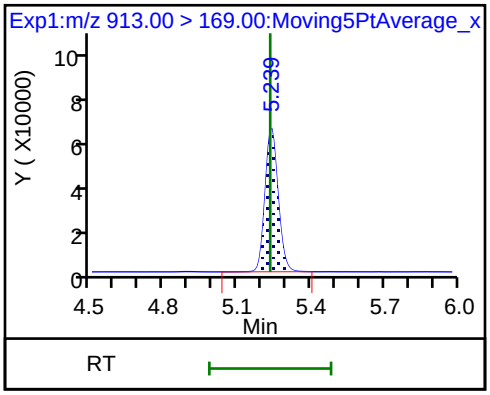
D 44 13C2-PFHxDA



46 Perfluorooctadecanoic acid



46 Perfluorooctadecanoic acid



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

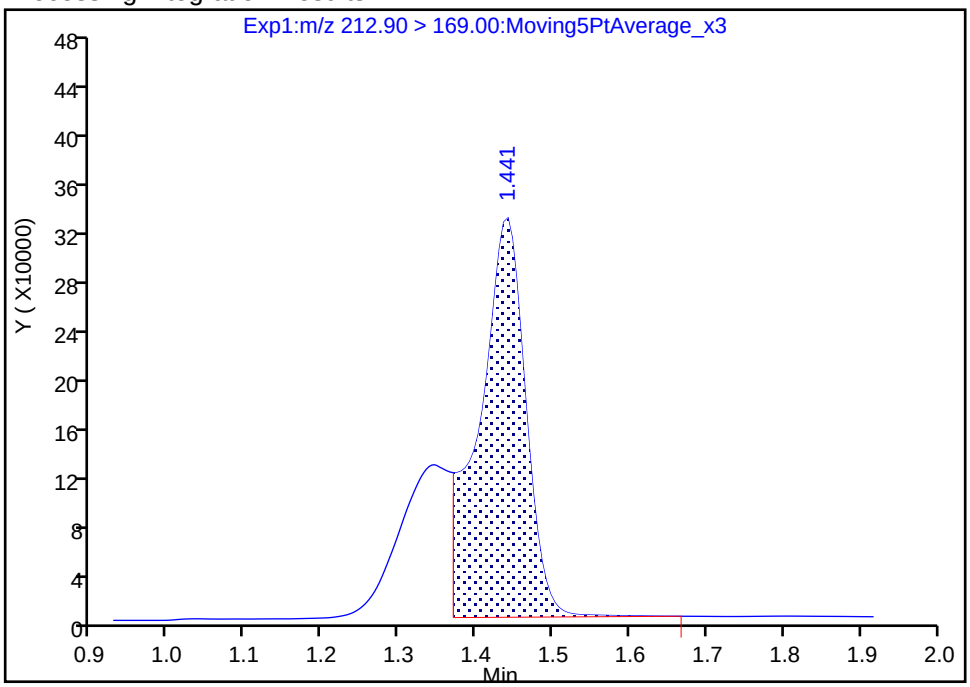
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180716-61105.b\2018.07.14LLA_021.d				
Injection Date:	14-Jul-2018 13:22:07	Instrument ID:	A8_N		
Lims ID:	LCSD 320-231393/3-A				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	13	Worklist Smp#:	4
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

2 Perfluorobutyric acid, CAS: 375-22-4

Signal: 1

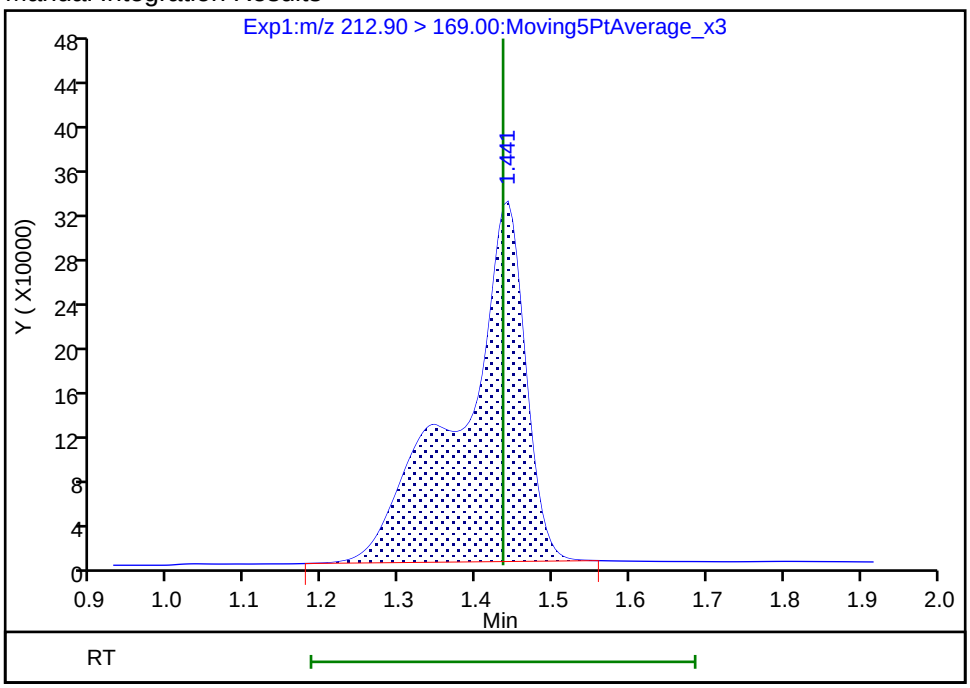
Processing Integration Results

RT: 1.44
Area: 1356891
Amount: 0.668758
Amount Units: ng/ml



Manual Integration Results

RT: 1.44
Area: 1915365
Amount: 0.944008
Amount Units: ng/ml



Reviewer: mongkols, 17-Jul-2018 08:12:05

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

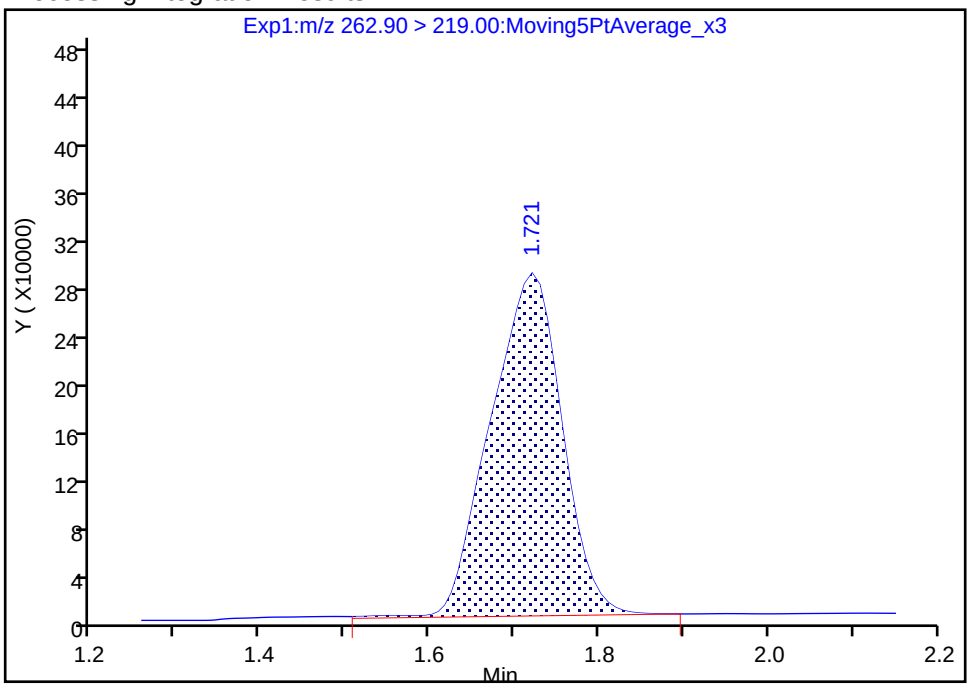
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180716-61105.b\2018.07.14LLA_021.d				
Injection Date:	14-Jul-2018 13:22:07	Instrument ID:	A8_N		
Lims ID:	LCSD 320-231393/3-A				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	13	Worklist Smp#:	4
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

4 Perfluoropentanoic acid, CAS: 2706-90-3

Signal: 1

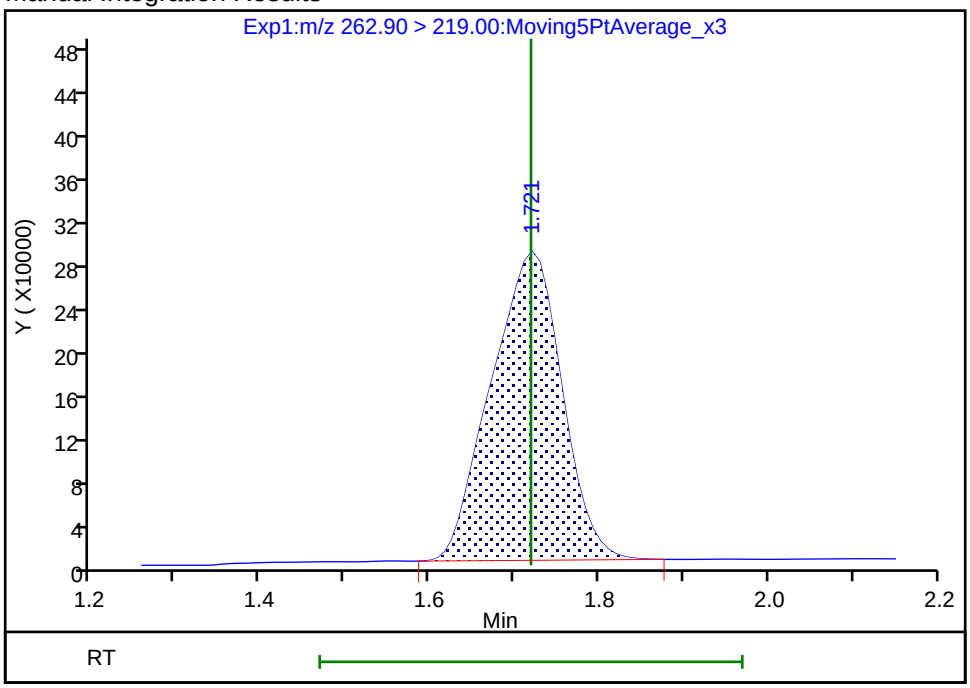
Processing Integration Results

RT: 1.72
Area: 1670890
Amount: 0.927741
Amount Units: ng/ml



Manual Integration Results

RT: 1.72
Area: 1648994
Amount: 0.915584
Amount Units: ng/ml



Reviewer: mongkols, 17-Jul-2018 08:12:16

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

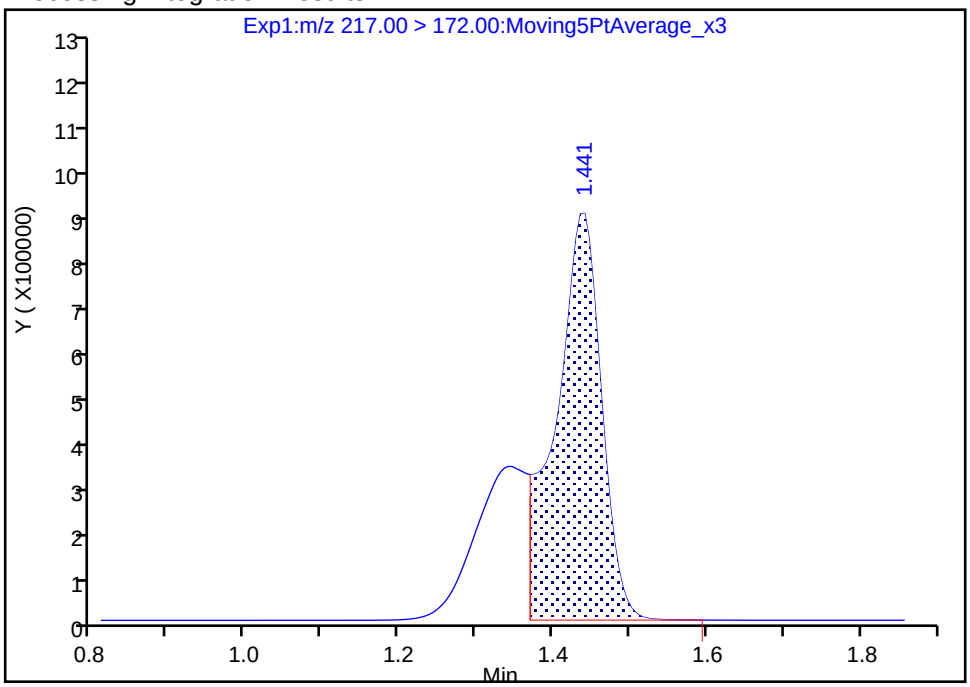
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180716-61105.b\2018.07.14LLA_021.d				
Injection Date:	14-Jul-2018 13:22:07	Instrument ID:	A8_N		
Lims ID:	LCSD 320-231393/3-A				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	13	Worklist Smp#:	4
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

D 1 13C4 PFBA, CAS: STL00992

Signal: 1

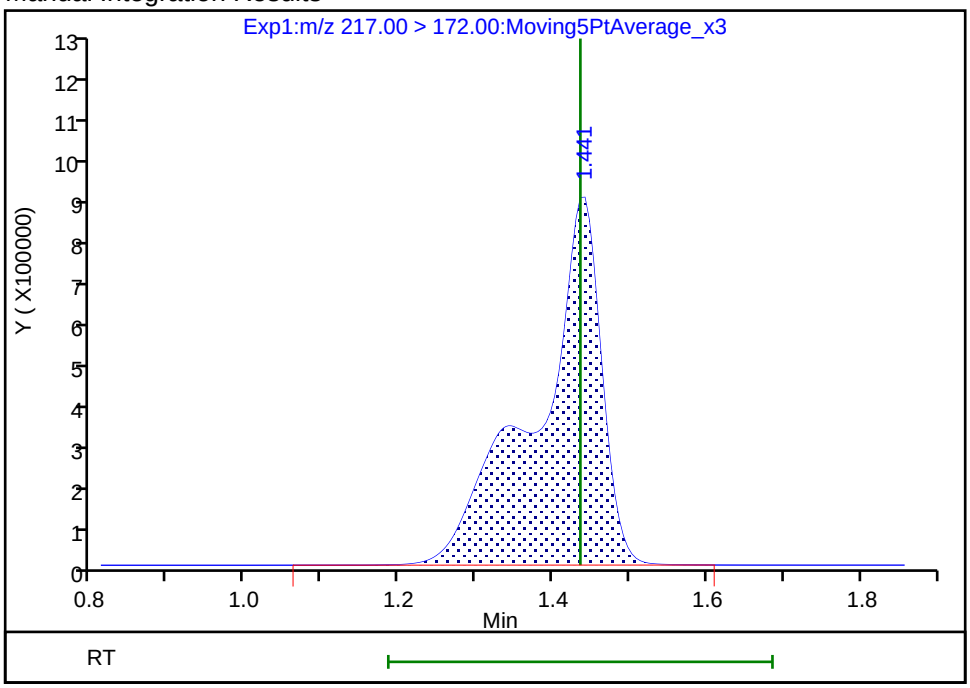
Processing Integration Results

RT: 1.44
Area: 3591861
Amount: 1.528419
Amount Units: ng/ml



Manual Integration Results

RT: 1.44
Area: 5146660
Amount: 2.190022
Amount Units: ng/ml



Reviewer: mongkols, 17-Jul-2018 08:11:54

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID:
Lab Sample ID: LCSD 320-232121/3-A
Matrix: Water
Lab File ID: 2018.07.06LLC_016.d
Analysis Method: 537 (modified)
Date Collected:
Extraction Method: 3535
Date Extracted: 07/02/2018 14:58
Sample wt/vol: 250.00(mL)
Date Analyzed: 07/07/2018 01:19
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 232800
Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	0.0357		0.0020	0.00035
2706-90-3	Perfluoropentanoic acid (PFPeA)	0.0356		0.0020	0.00049
307-24-4	Perfluorohexanoic acid (PFHxA)	0.0356		0.0020	0.00058
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.0365		0.0020	0.00025
335-67-1	Perfluorooctanoic acid (PFOA)	0.0350		0.0020	0.00085
375-95-1	Perfluorononanoic acid (PFNA)	0.0366		0.0020	0.00027
335-76-2	Perfluorodecanoic acid (PFDA)	0.0390		0.0020	0.00031
2058-94-8	Perfluoroundecanoic acid (PFUnA)	0.0340		0.0020	0.0011
307-55-1	Perfluorododecanoic acid (PFDoA)	0.0373		0.0020	0.00055
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	0.0367		0.0020	0.0013
376-06-7	Perfluorotetradecanoic acid (PFTeA)	0.0331		0.0020	0.00029
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.0331		0.0020	0.00020
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	0.0352		0.0020	0.00030
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.0290		0.0020	0.00017
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	0.0363		0.0020	0.00019
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.0351		0.0020	0.00054
8789-57-2	Perfluorononanesulfonic acid (PFNS)	0.0368		0.0020	0.00016
335-77-3	Perfluorodecanesulfonic acid (PFDS)	0.0342		0.0020	0.00032
754-91-6	Perfluorooctane Sulfonamide (FOSA)	0.0353		0.0020	0.00035
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	0.0345		0.020	0.0031
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	0.0330		0.020	0.0019
757124-72-4	4:2 FTS	0.0384		0.020	0.0052
27619-97-2	6:2 FTS	0.0345		0.020	0.0020
39108-34-4	8:2 FTS	0.0348		0.020	0.0020

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID:
Lab Sample ID: LCSD 320-232121/3-A
Matrix: Water
Lab File ID: 2018.07.06LLC_016.d
Analysis Method: 537 (modified)
Date Collected:
Extraction Method: 3535
Date Extracted: 07/02/2018 14:58
Sample wt/vol: 250.00(mL)
Date Analyzed: 07/07/2018 01:19
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 232800
Units: ug/L

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00992	13C4 PFBA	78		25-150
STL01893	13C5 PFPeA	93		25-150
STL00993	13C2 PFHxA	99		25-150
STL01892	13C4-PFHpA	100		25-150
STL00990	13C4 PFOA	104		25-150
STL00995	13C5 PFNA	105		25-150
STL00996	13C2 PFDA	102		25-150
STL00997	13C2 PFUnA	101		25-150
STL00998	13C2 PFDoA	93		25-150
STL02116	13C2-PFTeDA	100		25-150
STL02337	13C3-PFBS	94		25-150
STL00994	18O2 PFHxS	108		25-150
STL00991	13C4 PFOS	96		25-150
STL01056	13C8 FOSA	86		25-150
STL02118	d3-NMeFOSAA	99		25-150
STL02117	d5-NEtFOSAA	99		25-150
STL02279	M2-6:2FTS	109		25-150
STL02280	M2-8:2FTS	102		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\2018.07.06LLC_016.d
Lims ID: LCSD 320-232121/3-A
Client ID:
Sample Type: LCSD
Inject. Date: 07-Jul-2018 01:19:54 ALS Bottle#: 9 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: lcsd 320-232121/3-a
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 09-Jul-2018 13:01:41 Calib Date: 05-Jul-2018 09:38:17
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180705-60684.b\2018.07.05LLICALAA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK010

First Level Reviewer: mongkols Date: 09-Jul-2018 13:02:24

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.428	1.428	0.0	0.536	5188728	1.94		77.7	23510	
2 Perfluorobutyric acid										
212.90 > 169.00	1.433	1.428	0.005	1.004	1891506	0.8922		89.2	853	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.707	1.698	0.009	1.000	1949808	0.8904		89.0	1472	
D 3 13C5-PFPeA										
267.90 > 223.00	1.707	1.707	0.0	0.641	4597007	2.32		93.0	53273	
D 47 13C3-PFBS										
301.90 > 83.00	1.744	1.743	0.001	0.654	103862	2.20		94.5	840	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.753	1.743	0.009	1.005	2801389	0.8273		93.6	24553	
298.90 > 99.00	1.753	1.743	0.009	1.005	1139077		2.46(1.25-3.74)		10403	
61 1H,1H,2H,2H-perfluorohexanesulfoni										
327.00 > 307.00	1.956	1.945	0.011	1.122	673286	0.9611		103	44031	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.988	1.978	0.010	1.000	1901756	0.8906		89.1	2873	
313.00 > 119.00	1.988	1.978	0.010	1.000	174311		10.91(5.03-15.10)		2762	
D 7 13C2 PFHxA										
315.00 > 270.00	1.988	1.988	0.0	0.746	5242465	2.48		99.1	55603	
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.011	2.000	0.011	1.153	2549409	0.8800		93.8	37318	
349.00 > 99.00	2.011	2.000	0.011	1.153	915170		2.79(1.36-4.07)		13512	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.090	2.078	0.012	0.784	445650	2.57		103	7623	
67 Perfluoro(2-propoxypropanoic) acid										
329.10 > 285.00	2.090	2.079	0.011	1.000	370590	0.9043		90.4	2573	
D 9 13C4-PFHpA										
367.00 > 322.00	2.316	2.302	0.014	0.869	4711041	2.51		100	43086	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.316	2.303	0.013	1.000	1941992	0.9122		91.2	2912	
363.00 > 169.00	2.316	2.303	0.013	1.000	786522		2.47(1.13-3.40)		6877	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.329	2.303	0.026	1.000	2097135	0.7244		79.6	12651	
399.00 > 99.00	2.329	2.303	0.026	1.000	713671		2.94(1.50-4.49)		4777	
D 11 18O2 PFHxS										
403.00 > 84.00	2.329	2.315	0.014	0.874	5921419	2.56		108	45353	
65 Adona										
377.00 > 251.00	2.355	2.342	0.013	0.779	5604781	0.9583		95.8	45833	
377.00 > 85.00	2.355	2.342	0.013	0.779	3304407		1.70(0.84-2.53)		33250	
D 12 M2-6:2FTS										
429.00 > 81.00	2.643	2.626	0.017	0.991	1095862	2.60		109	16224	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.643	2.627	0.017	1.000	623742	0.8629		91.0	3629	
D 14 13C4 PFOA										
417.00 > 372.00	2.666	2.650	0.016	1.000	4778020	2.60		104	41782	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.666	2.651	0.015	1.000	1980576	0.8739		87.3	709	
413.00 > 169.00	2.666	2.651	0.015	1.000	1009407		1.96(0.84-2.52)		5146	
* 62 13C2-PFOA										
415.00 > 370.00	2.666	2.651	0.015		4825165	2.50			35920	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.666	2.658	0.008	0.882	1918269	0.9076		95.3	23337	
449.00 > 99.00	2.673	2.658	0.015	0.884	529639		3.62(1.94-5.82)		10499	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.023	3.008	0.015	1.000	1617426	0.8775		94.6	15152	
499.00 > 99.00	3.023	3.008	0.015	1.000	367766		4.40(2.31-6.93)		7131	
20 Perfluorononanoic acid										
463.00 > 419.00	3.030	3.015	0.015	1.000	1620013	0.9160		91.6	3907	
463.00 > 169.00	3.030	3.015	0.015	1.000	397233		4.08(1.90-5.69)		15353	
D 18 13C4 PFOS										
503.00 > 80.00	3.023	3.015	0.008	1.134	3771490	2.29		95.6	34254	
D 19 13C5 PFNA										
468.00 > 423.00	3.030	3.015	0.015	1.137	4103066	2.62		105	41232	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.238	3.221	0.017	1.071	2685901	0.9003		96.6	32525	
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.368	3.357	0.011	1.114	1179381	0.9197		95.8	16361	
549.00 > 99.00	3.368	3.357	0.011	1.114	402034		2.93(1.33-3.97)		11676	
25 1H,1H,2H,2H-perfluorodecanesulfoni										
527.00 > 507.00	3.368	3.357	0.011	1.000	548266	0.8695		90.8	13809	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.378	3.357	0.021	1.000	1729646	0.8823		88.2	18010	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.387	3.367	0.020	1.000	1403061	0.9744		97.4	6016	
513.00 > 169.00	3.387	3.367	0.020	1.000	228858		6.13(2.36-7.09)		8674	
D 26 M2-8:2FTS										
529.00 > 81.00	3.368	3.367	0.001	1.263	1142027	2.44		102	21713	

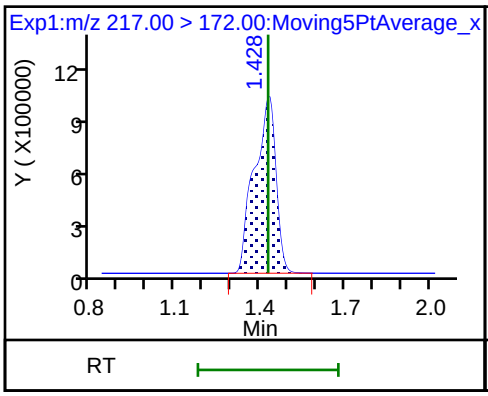
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 21 13C8 FOSA										
506.00 > 78.00	3.378	3.367	0.011	1.267	4942149	2.16		86.3	47033	
D 23 13C2 PFDA										
515.00 > 470.00	3.387	3.376	0.011	1.270	3453518	2.56		102	59974	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.536	3.525	0.011	1.000	702997	0.8635		86.3	4420	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.536	3.525	0.011	1.327	1977678	2.49		99.5	27327	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.696	3.683	0.013	1.223	971119	0.8553		88.7	11996	
599.00 > 99.00	3.696	3.683	0.013	1.223	319068		3.04(1.39-4.16)		9547	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.707	3.694	0.013	1.000	578642	0.8257		82.6	9769	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.707	3.694	0.013	1.000	826547	0.8500		85.0	3144	
563.00 > 169.00	3.707	3.694	0.013	1.000	204258		4.05(2.12-6.36)		8469	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.707	3.694	0.013	1.390	1943005	2.47		98.9	16475	
D 30 13C2 PFUnA										
565.00 > 520.00	3.707	3.705	0.002	1.390	2859614	2.52		101	49770	
66 11-Chloroeicosafluoro-3-oxaundecan										
631.00 > 451.00	3.864	3.851	0.013	1.278	4246767	0.9331		99.1	40954	
37 Perfluorododecanoic acid										
613.00 > 569.00	3.997	3.984	0.013	1.000	1166902	0.9327		93.3	1322	
613.00 > 169.00	3.997	3.984	0.013	1.000	262652		4.44(2.13-6.40)		5079	
D 36 13C2 PFDoA										
615.00 > 570.00	3.997	3.995	0.002	1.499	2838291	2.34		93.5	16084	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.260	4.249	0.011	1.066	1279525	0.9182		91.8	1498	
663.00 > 169.00	4.260	4.249	0.011	1.066	395484		3.24(1.25-3.76)		3474	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.501	4.489	0.012	1.002	329964	0.8266		82.7	4553	
713.00 > 219.00	4.491	4.489	0.002	1.000	229813		1.44(0.71-2.13)		4002	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.491	4.489	0.002	1.685	3685702	2.49		99.6	16367	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.905	4.895	0.010	1.000	2362571	0.9561		95.6	1005	
813.00 > 169.00	4.905	4.895	0.010	1.000	368899		6.40(2.86-8.58)		4031	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.905	4.895	0.010	1.840	6351315	2.32		92.7	14662	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.247	5.246	0.001	1.070	2751818	0.9305		93.1	891	
913.00 > 169.00	5.247	5.246	0.001	1.070	331577		8.30(3.83-11.48)		3445	

Report Date: 09-Jul-2018 13:02:24 Chrom Revision: 2.2 07-Jun-2018 07:41:54

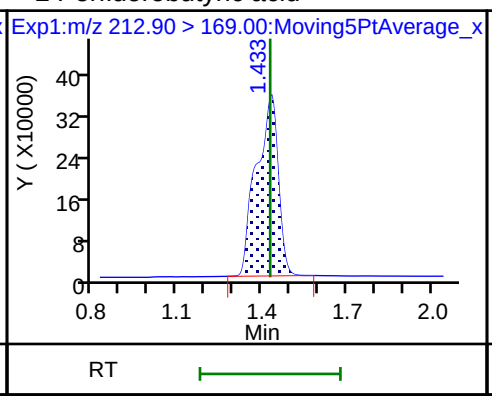
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180706-60755.b\2018.07.06LLC_016.d
Injection Date: 07-Jul-2018 01:19:54 Instrument ID: A8_N
Lims ID: LCSD 320-232121/3-A
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 9 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC ICAL

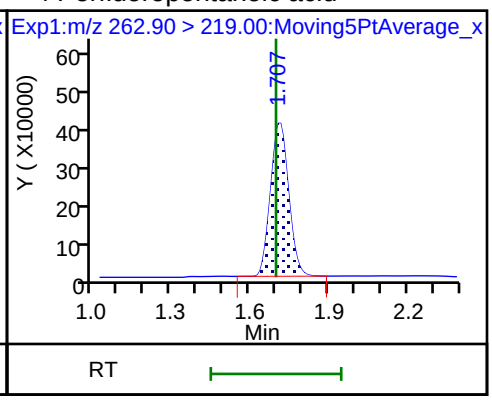
D 1 13C4 PFBA



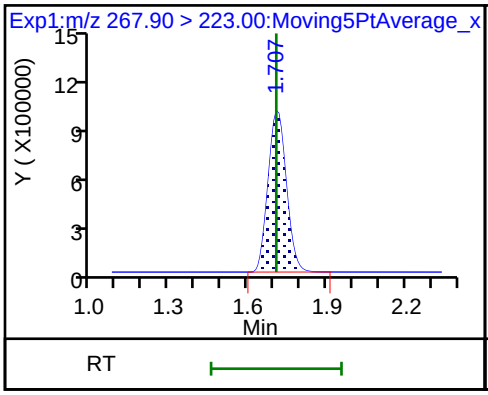
2 Perfluorobutyric acid



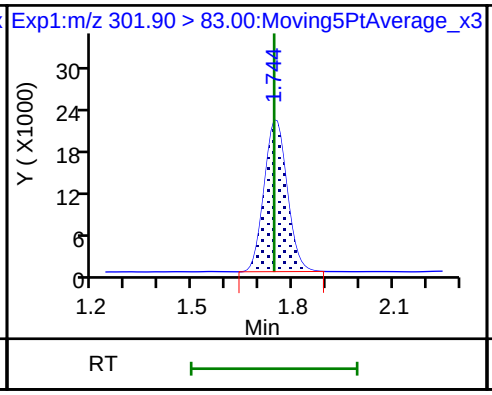
4 Perfluoropentanoic acid



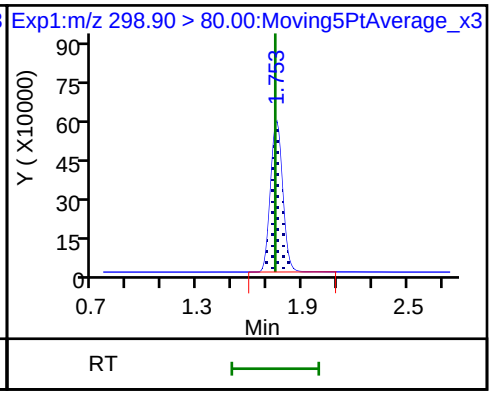
D 3 13C5-PFPeA



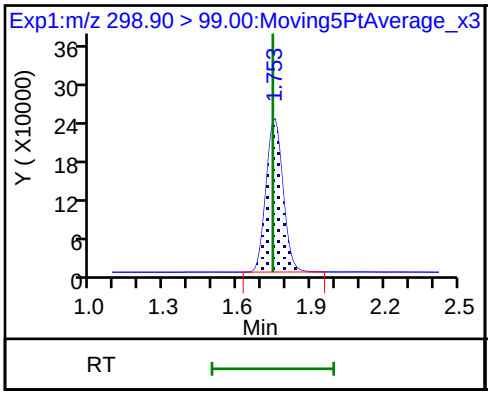
D 47 13C3-PFBS



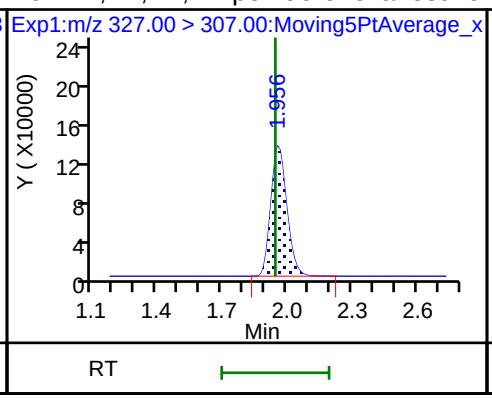
5 Perfluorobutanesulfonic acid



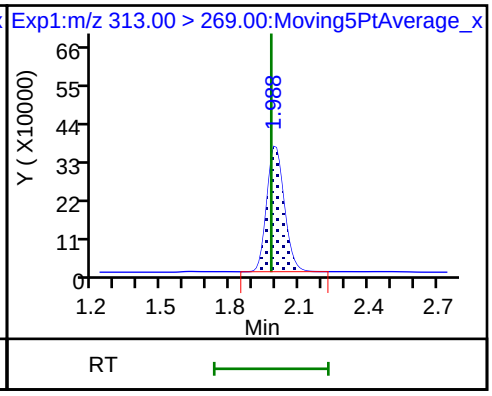
5 Perfluorobutanesulfonic acid



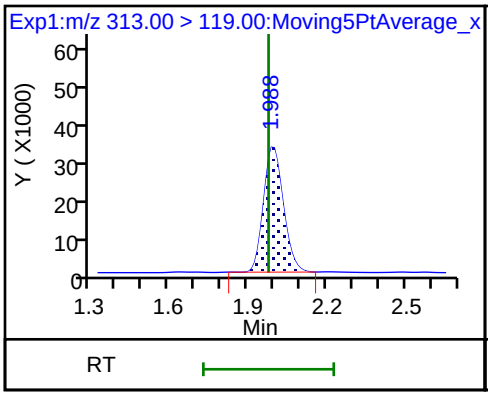
61 1H,1H,2H,2H-perfluorohexanesulfoni



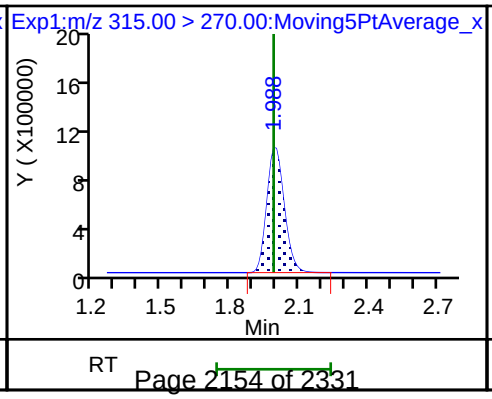
6 Perfluorohexanoic acid



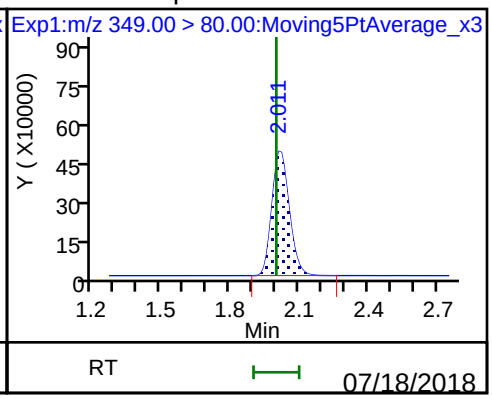
6 Perfluorohexanoic acid



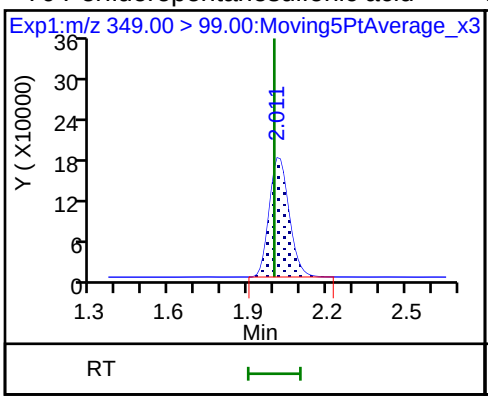
D 7 13C2 PFHxA



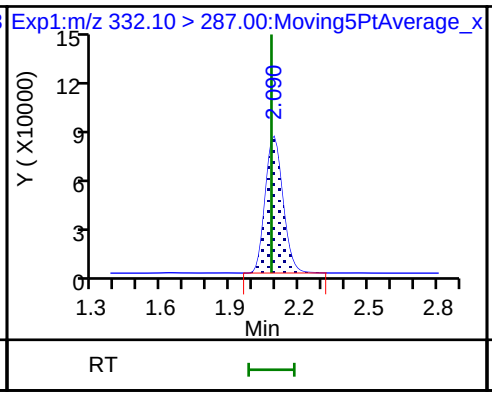
70 Perfluoropentanesulfonic acid



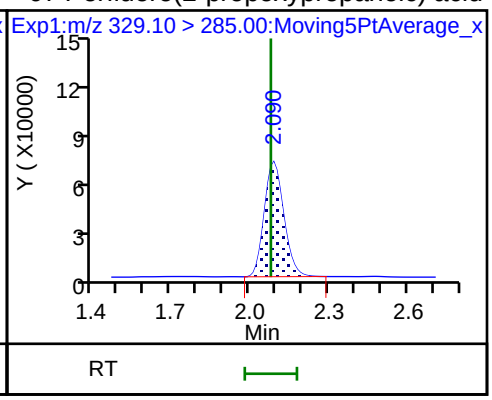
70 Perfluoropentanesulfonic acid



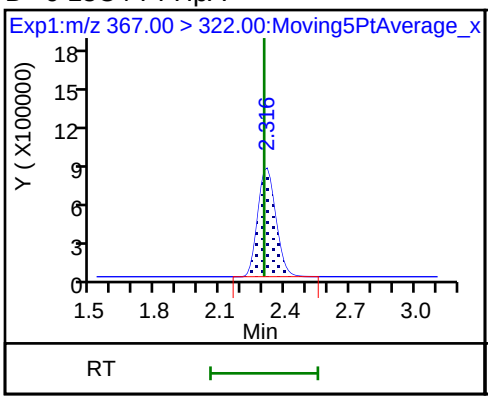
D 64 13C3 HFPO-DA



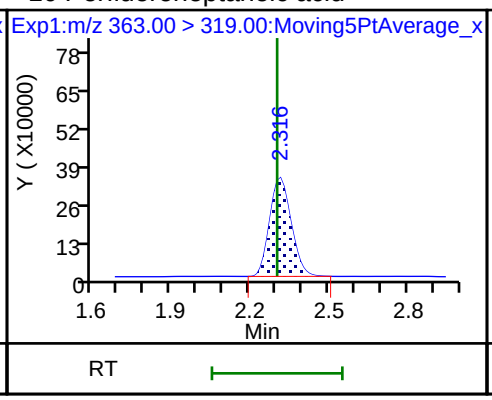
67 Perfluoro(2-propoxypropanoic) acid



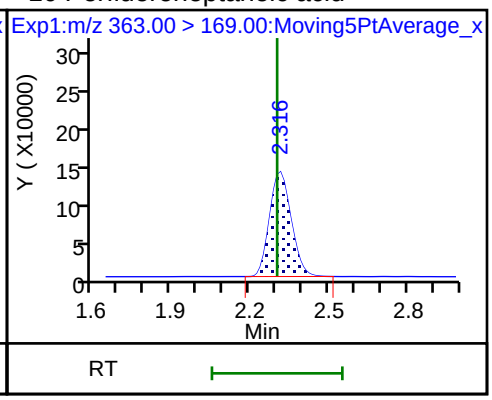
D 9 13C4-PFHpA



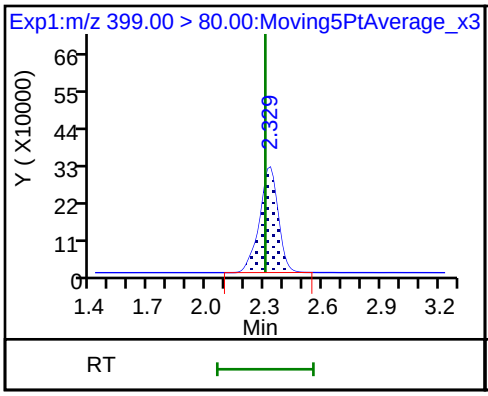
10 Perfluoroheptanoic acid



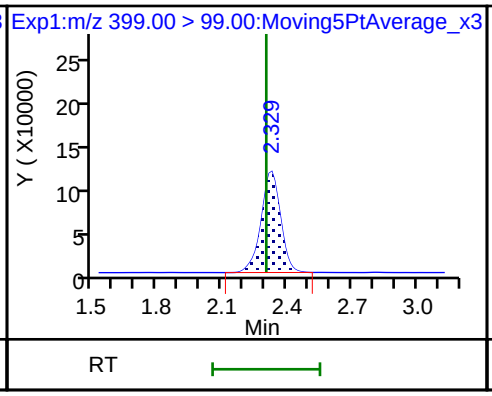
10 Perfluoroheptanoic acid



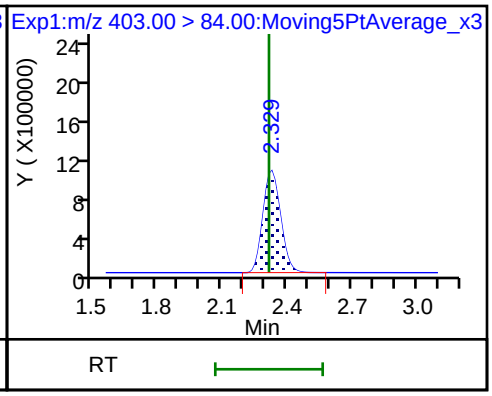
8 Perfluorohexanesulfonic acid



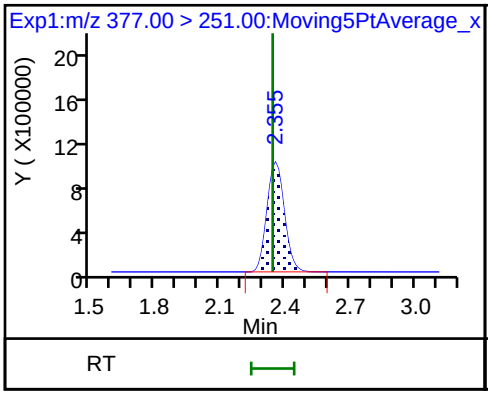
8 Perfluorohexanesulfonic acid



D 11 18O2 PFHxS



65 Adona



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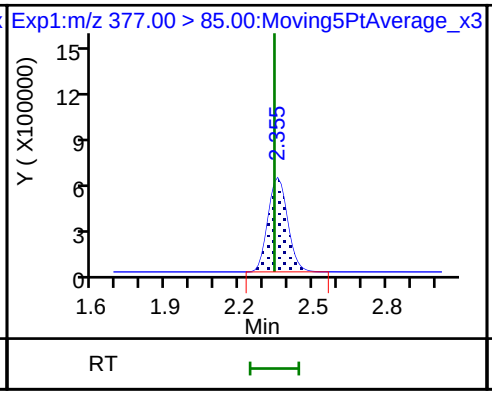
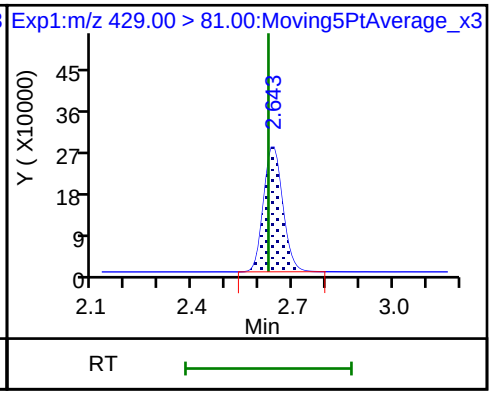
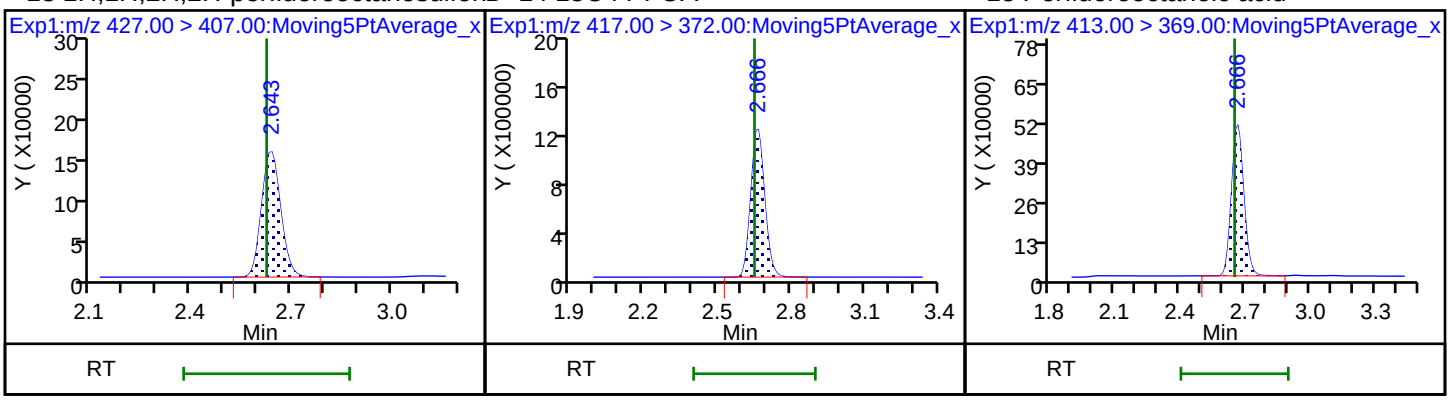


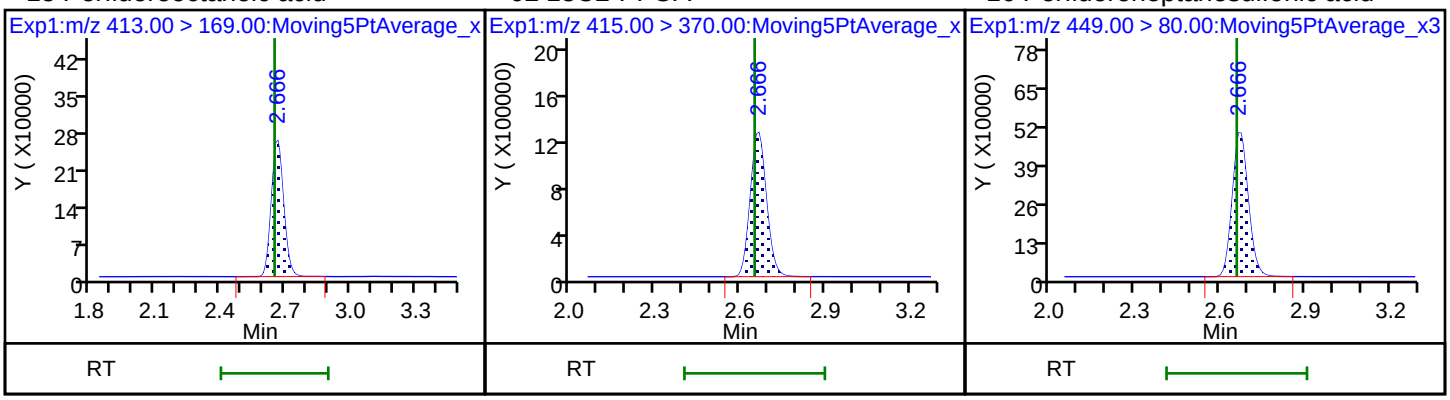
D 12 M2-6:2FTS



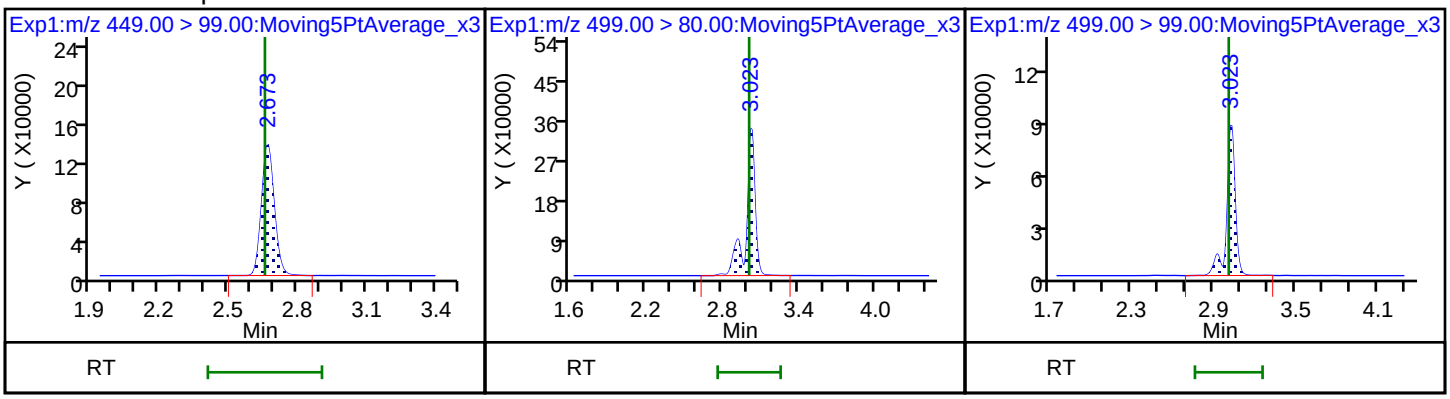
13 1H,1H,2H,2H-perfluorooctanesulfonD 14 13C4 PFOA 15 Perfluorooctanoic acid



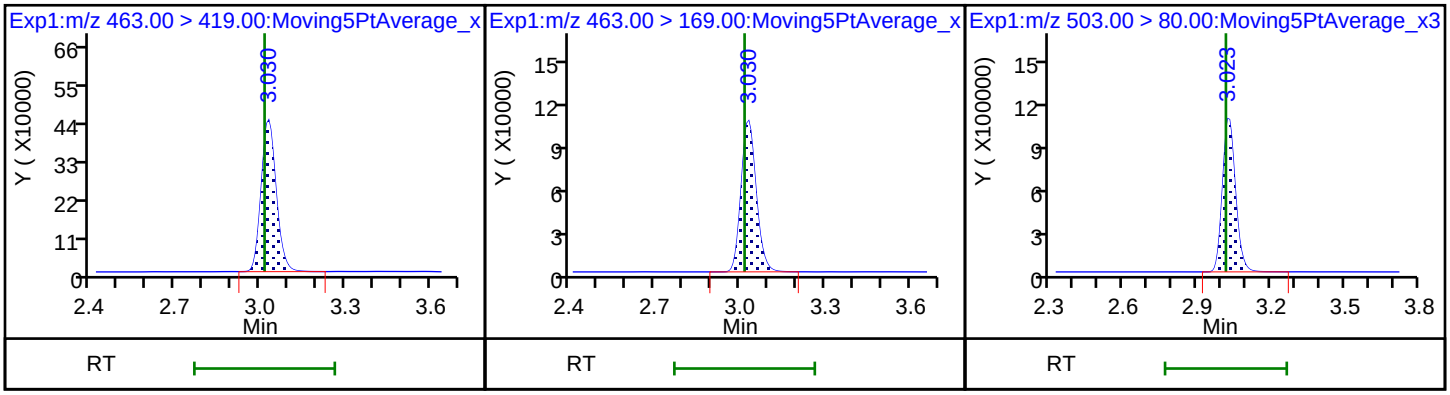
15 Perfluorooctanoic acid * 62 13C2-PFOA 16 Perfluoroheptanesulfonic acid



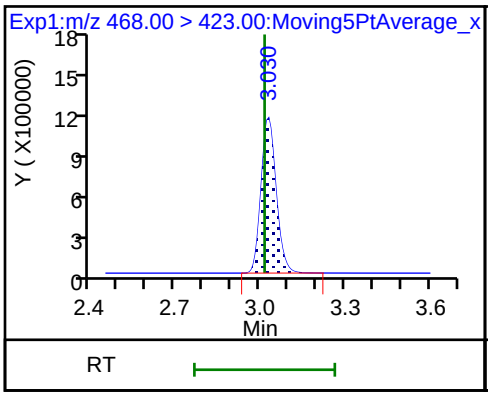
16 Perfluoroheptanesulfonic acid 17 Perfluorooctane sulfonic acid 17 Perfluorooctane sulfonic acid



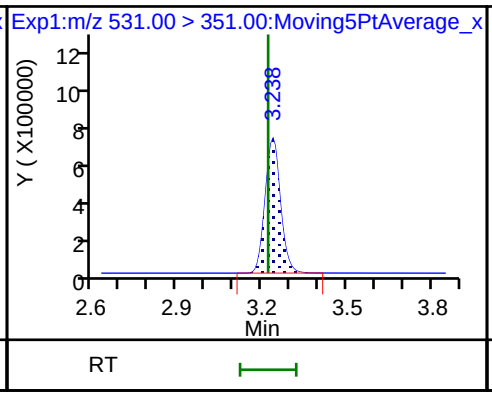
20 Perfluorononanoic acid 20 Perfluorononanoic acid D 18 13C4 PFOS



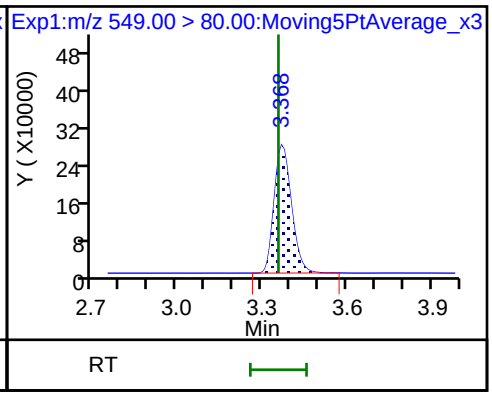
D 19 13C5 PFNA



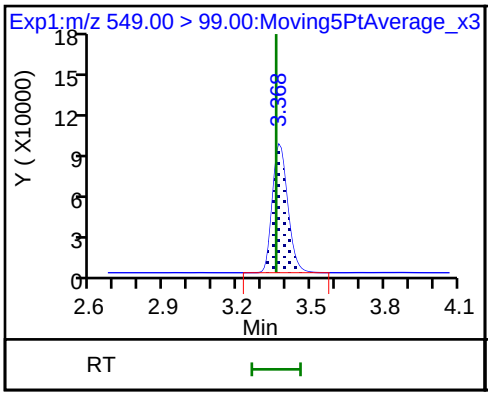
69 9-Chlorohexadecafluoro-3-oxanonane



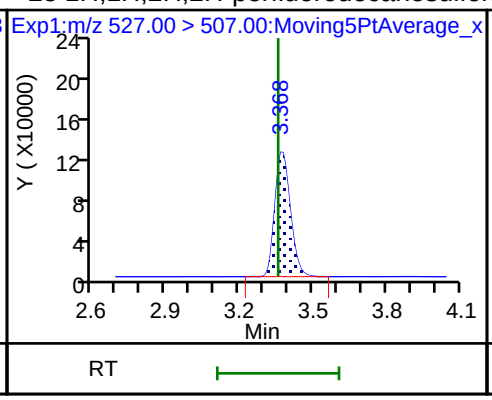
68 Perfluorononanesulfonic acid



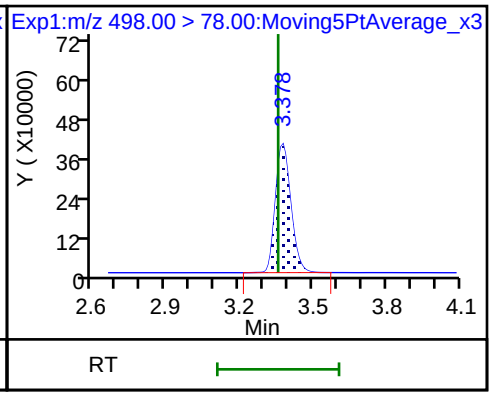
68 Perfluorononanesulfonic acid



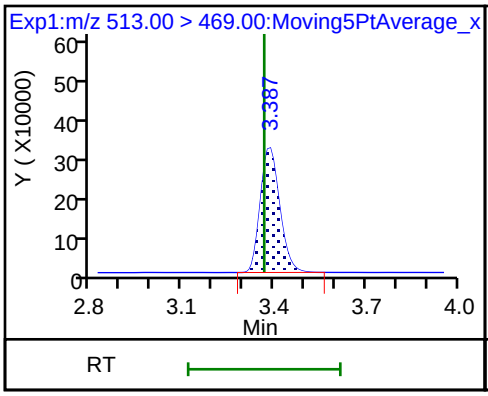
25 1H,1H,2H,2H-perfluorodecanesulfoni



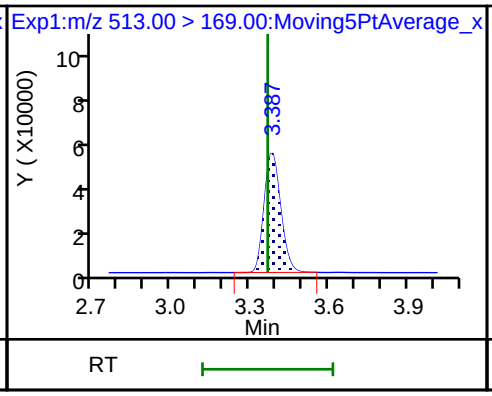
22 Perfluorooctane Sulfonamide



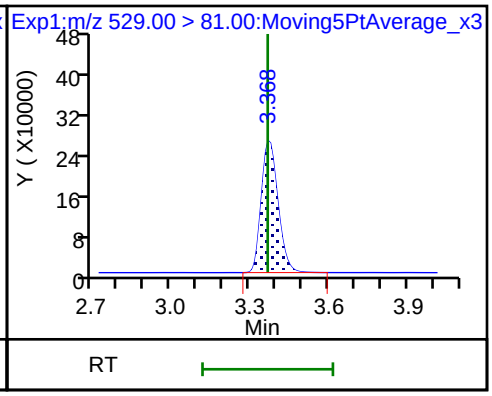
24 Perfluorodecanoic acid



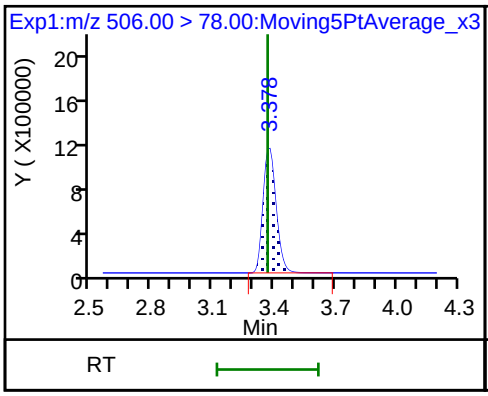
24 Perfluorodecanoic acid



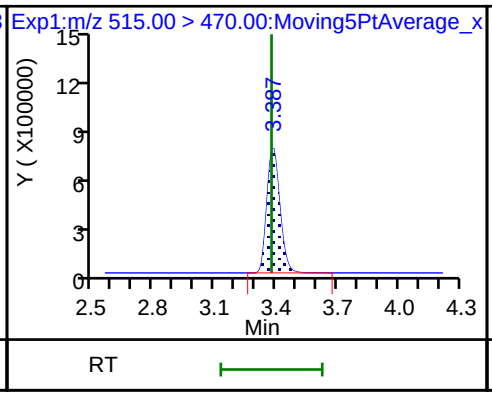
D 26 M2-8:2FTS



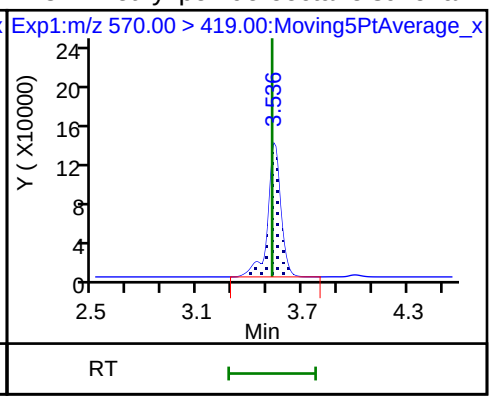
D 21 13C8 FOSA



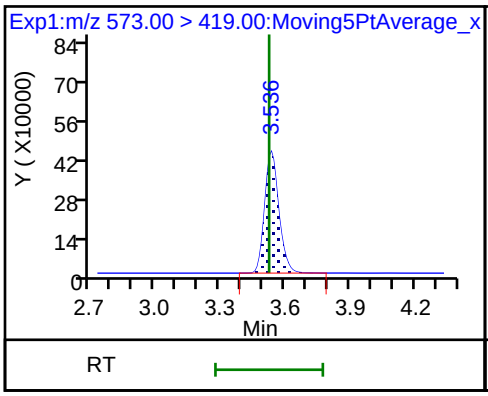
D 23 13C2 PFDA



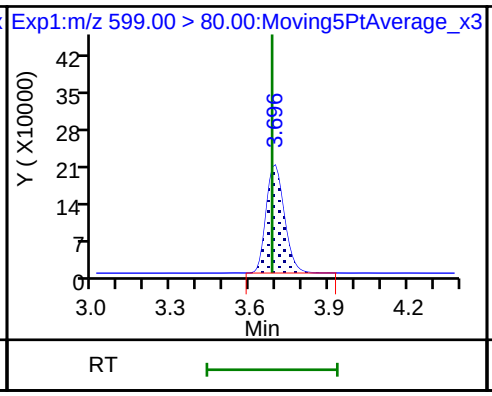
28 N-methyl perfluorooctane sulfonami



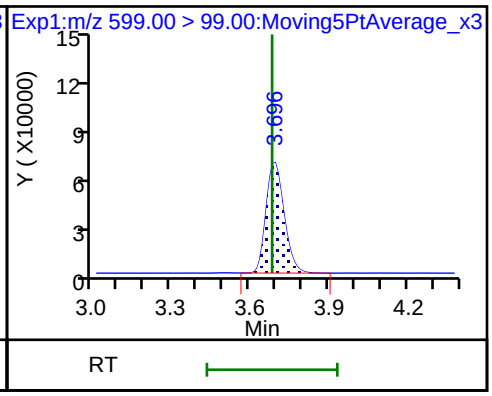
D 27 d3-NMeFOSAA



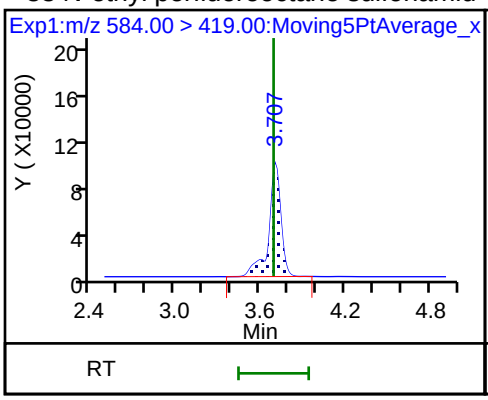
29 Perfluorodecane Sulfonic acid



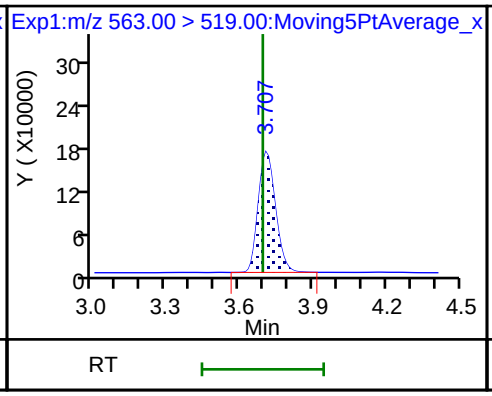
29 Perfluorodecane Sulfonic acid



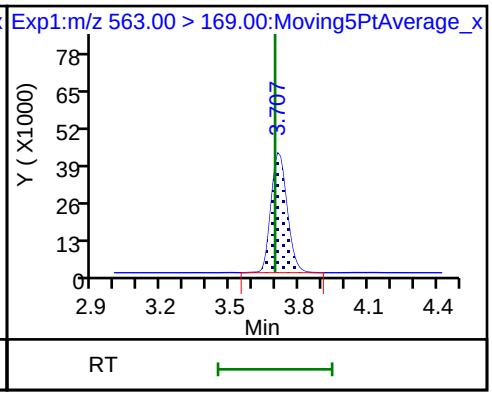
33 N-ethyl perfluorooctane sulfonamid



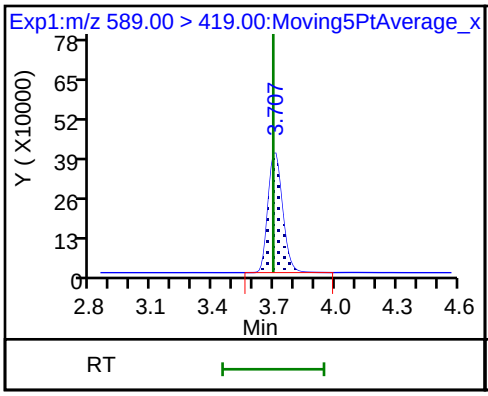
31 Perfluoroundecanoic acid



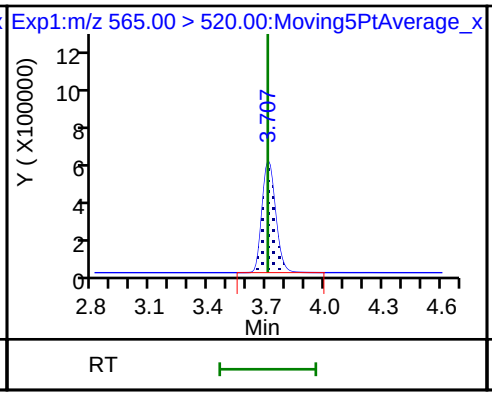
31 Perfluoroundecanoic acid



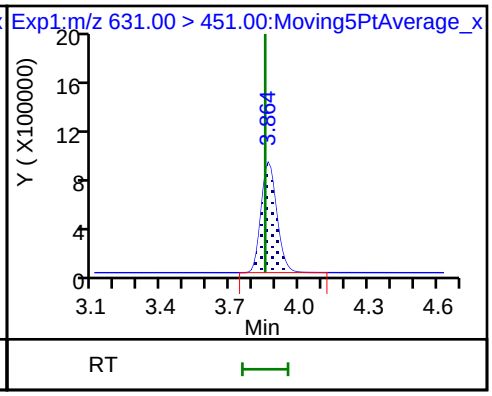
D 32 d5-NEtFOSAA



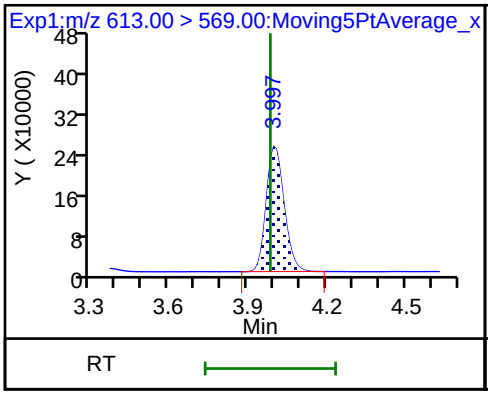
D 30 13C2 PFUnA



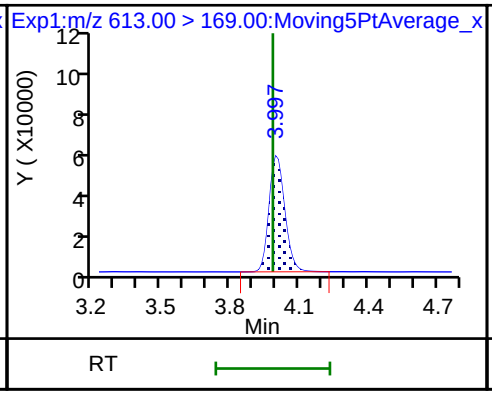
66 11-Chloroeicosafluoro-3-oxaundecan



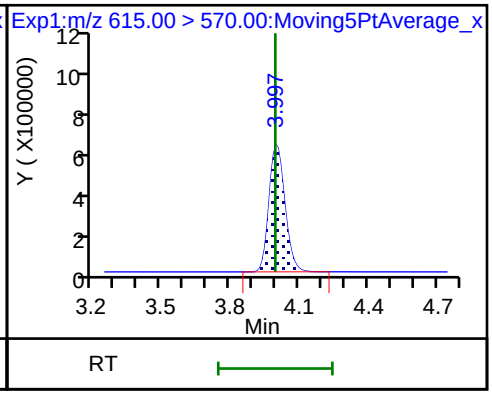
37 Perfluorododecanoic acid



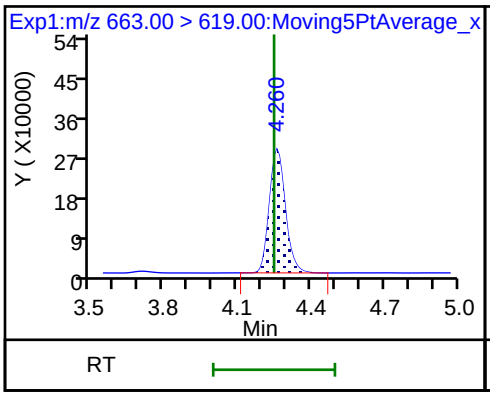
37 Perfluorododecanoic acid



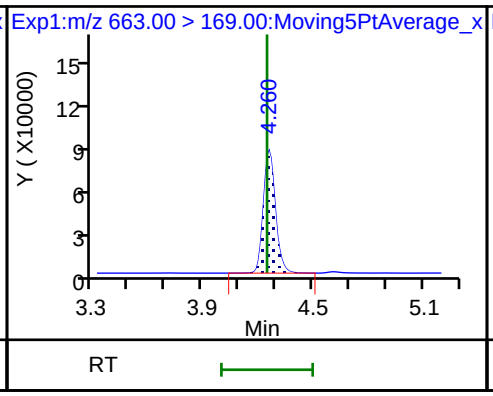
D 36 13C2 PFDoA



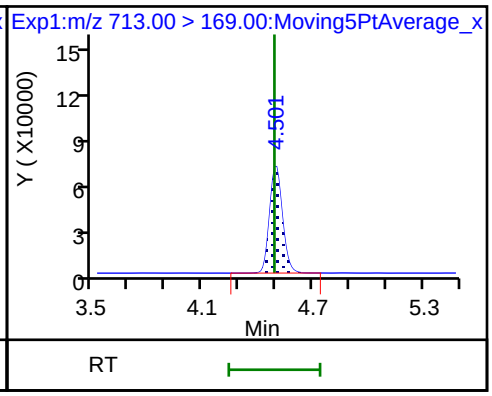
41 Perfluorotridecanoic acid



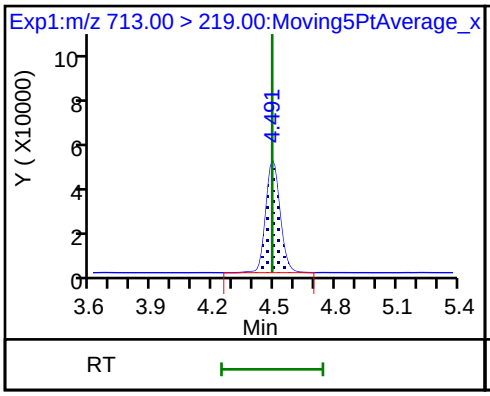
41 Perfluorotridecanoic acid



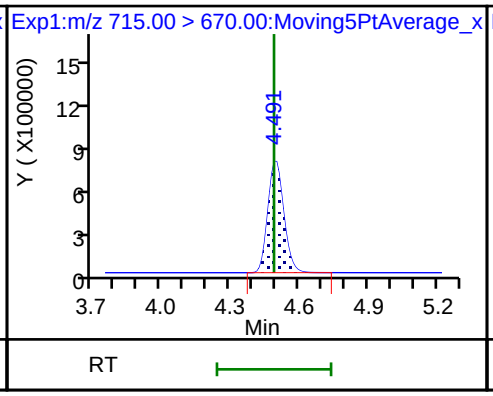
42 Perfluorotetradecanoic acid



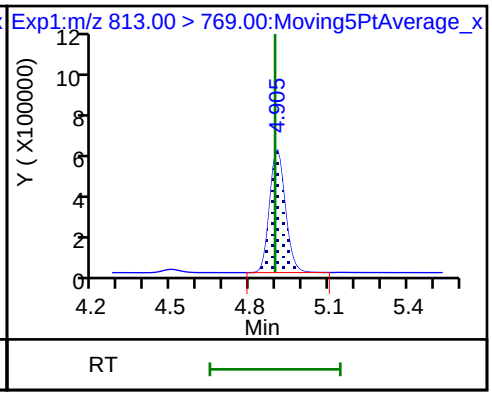
42 Perfluorotetradecanoic acid



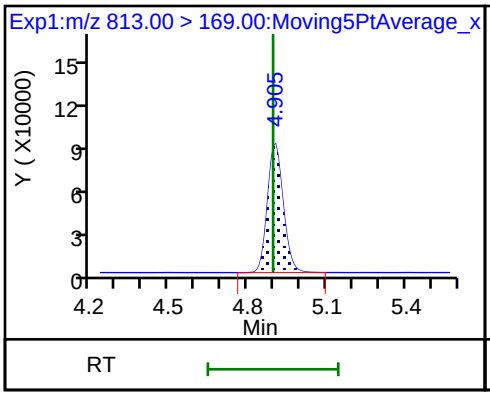
D 43 13C2-PFTeDA



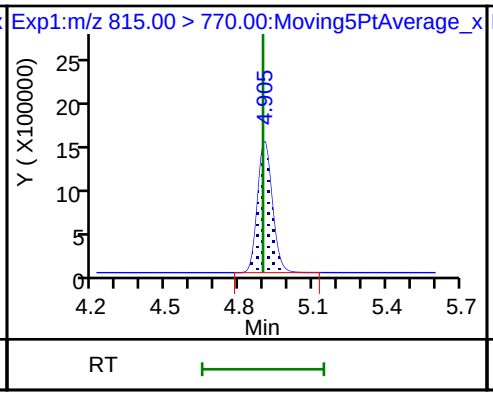
45 Perfluorohexadecanoic acid



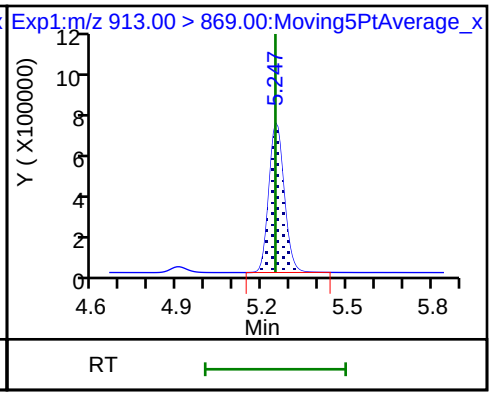
45 Perfluorohexadecanoic acid



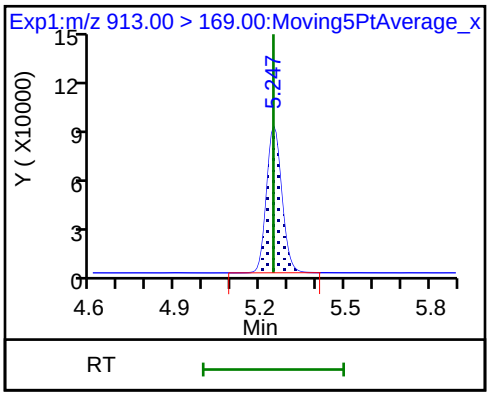
D 44 13C2-PFHxDA



46 Perfluorooctadecanoic acid



46 Perfluorooctadecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID:
Lab Sample ID: LCSD 320-232150/3-A
Matrix: Water
Lab File ID: 2018.07.06LLAAA_034.d
Analysis Method: 537 (modified)
Date Collected:
Extraction Method: 3535
Date Extracted: 07/02/2018 16:10
Sample wt/vol: 250.00(mL)
Date Analyzed: 07/06/2018 17:53
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 232788
Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	0.0369		0.0020	0.00035
2706-90-3	Perfluoropentanoic acid (PFPeA)	0.0348		0.0020	0.00049
307-24-4	Perfluorohexanoic acid (PFHxA)	0.0368		0.0020	0.00058
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.0367		0.0020	0.00025
335-67-1	Perfluorooctanoic acid (PFOA)	0.0363		0.0020	0.00085
375-95-1	Perfluorononanoic acid (PFNA)	0.0377		0.0020	0.00027
335-76-2	Perfluorodecanoic acid (PFDA)	0.0393		0.0020	0.00031
2058-94-8	Perfluoroundecanoic acid (PFUnA)	0.0350		0.0020	0.0011
307-55-1	Perfluorododecanoic acid (PFDoA)	0.0365		0.0020	0.00055
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	0.0309		0.0020	0.0013
376-06-7	Perfluorotetradecanoic acid (PFTeA)	0.0348		0.0020	0.00029
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.0341		0.0020	0.00020
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	0.0368		0.0020	0.00030
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.0313		0.0020	0.00017
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	0.0359		0.0020	0.00019
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.0338		0.0020	0.00054
8789-57-2	Perfluorononanesulfonic acid (PFNS)	0.0349		0.0020	0.00016
335-77-3	Perfluorodecanesulfonic acid (PFDS)	0.0349		0.0020	0.00032
754-91-6	Perfluorooctane Sulfonamide (FOSA)	0.0378		0.0020	0.00035
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	0.0348		0.020	0.0031
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	0.0345		0.020	0.0019
757124-72-4	4:2 FTS	0.0368		0.020	0.0052
27619-97-2	6:2 FTS	0.0347		0.020	0.0020
39108-34-4	8:2 FTS	0.0312		0.020	0.0020

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID:
Lab Sample ID: LCSD 320-232150/3-A
Matrix: Water
Lab File ID: 2018.07.06LLAAA_034.d
Analysis Method: 537 (modified)
Date Collected:
Extraction Method: 3535
Date Extracted: 07/02/2018 16:10
Sample wt/vol: 250.00(mL)
Date Analyzed: 07/06/2018 17:53
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 232788
Units: ug/L

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00992	13C4 PFBA	96		25-150
STL01893	13C5 PFPeA	95		25-150
STL00993	13C2 PFHxA	100		25-150
STL01892	13C4-PFHpA	101		25-150
STL00990	13C4 PFOA	102		25-150
STL00995	13C5 PFNA	100		25-150
STL00996	13C2 PFDA	97		25-150
STL00997	13C2 PFUnA	100		25-150
STL00998	13C2 PFDoA	102		25-150
STL02116	13C2-PFTeDA	98		25-150
STL02337	13C3-PFBS	96		25-150
STL00994	18O2 PFHxS	103		25-150
STL00991	13C4 PFOS	102		25-150
STL01056	13C8 FOSA	88		25-150
STL02118	d3-NMeFOSAA	96		25-150
STL02117	d5-NEtFOSAA	101		25-150
STL02279	M2-6:2FTS	110		25-150
STL02280	M2-8:2FTS	105		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180706-60751.b\2018.07.06LLAAA_034.d
Lims ID: LCSD 320-232150/3-A
Client ID:
Sample Type: LCSD
Inject. Date: 06-Jul-2018 17:53:45 ALS Bottle#: 24 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: lcsd 320-232150/3
Misc. Info.: Plate: 1 Rack: 5
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180706-60751.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 09-Jul-2018 10:13:33 Calib Date: 05-Jul-2018 09:38:17
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180705-60684.b\2018.07.05LLICALAA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK010

First Level Reviewer: mongkols Date: 09-Jul-2018 10:13:33

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										M
217.00 > 172.00	1.431	1.424	0.007	0.539	6463304	2.39		95.7	38574	M
2 Perfluorobutyric acid										
212.90 > 169.00	1.431	1.433	-0.002	1.000	2434734	0.9220		92.2	1097	
D 3 13C5-PFPeA										
267.90 > 223.00	1.703	1.702	0.001	0.642	4771428	2.39		95.5	44263	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.703	1.707	-0.004	1.000	1978289	0.8704		87.0	1622	
D 47 13C3-PFBS										
301.90 > 83.00	1.739	1.738	0.001	0.656	106320	2.22		95.7	827	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.748	1.752	-0.004	1.005	2957668	0.8532		96.5	14829	
298.90 > 99.00	1.748	1.752	-0.004	1.005	1184748		2.50(1.25-3.74)		8409	
61 1H,1H,2H,2H-perfluorohexanesulfoni										
327.00 > 307.00	1.950	1.956	-0.006	1.121	659577	0.9198		98.5	31798	
D 7 13C2 PFHxA										
315.00 > 270.00	1.982	1.981	0.001	0.747	5373499	2.51		100	59579	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.994	1.988	0.006	1.006	2016192	0.9212		92.1	4805	
313.00 > 119.00	1.994	1.988	0.006	1.006	186471		10.81(5.03-15.10)		3181	
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.005	2.010	-0.005	1.153	2726798	0.9195		98.0	46993	
349.00 > 99.00	2.005	2.010	-0.005	1.153	972483		2.80(1.36-4.07)		12204	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.084	2.070	0.014	0.786	438997	2.50		100	7642	
67 Perfluoro(2-propoxypropanoic) acid										
329.10 > 285.00	2.084	2.078	0.006	1.000	343245	0.8503		85.0	2345	
D 9 13C4-PFHpA										
367.00 > 322.00	2.308	2.293	0.015	0.870	4783338	2.52		101	49398	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.308	2.302	0.006	1.000	1983807	0.9178		91.8	2924	
363.00 > 169.00	2.308	2.302	0.006	1.000	777918		2.55(1.13-3.40)		6481	
D 11 18O2 PFHxS										
403.00 > 84.00	2.321	2.306	0.015	0.875	5689742	2.43		103	58711	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.321	2.315	0.006	1.000	2179963	0.7837		86.1	11280	
399.00 > 99.00	2.321	2.315	0.006	1.000	791995		2.75(1.50-4.49)		5510	
65 Adona										
377.00 > 251.00	2.347	2.355	-0.008	0.778	6030115	0.9609		96.1	47275	
377.00 > 85.00	2.347	2.355	-0.008	0.778	3584800		1.68(0.84-2.53)		27092	
D 12 M2-6:2FTS										
429.00 > 81.00	2.628	2.627	0.001	0.991	1116137	2.62		110	17226	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.628	2.634	-0.006	1.000	638428	0.8672		91.5	3360	
D 14 13C4 PFOA										
417.00 > 372.00	2.653	2.652	0.001	1.000	4740066	2.55		102	44587	
* 62 13C2-PFOA										
415.00 > 370.00	2.653	2.658	-0.005		4876893	2.50			42292	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.653	2.658	-0.005	1.000	2039930	0.9073		90.6	920	
413.00 > 169.00	2.653	2.658	-0.005	1.000	1089700		1.87(0.84-2.52)		4735	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.660	2.665	-0.005	0.882	2035619	0.8976		94.3	20819	
449.00 > 99.00	2.660	2.665	-0.005	0.882	548217		3.71(1.94-5.82)		9294	
D 19 13C5 PFNA										
468.00 > 423.00	3.017	3.009	0.008	1.137	3952933	2.50		100.0	51308	
D 18 13C4 PFOS										
503.00 > 80.00	3.017	3.009	0.008	1.137	4046800	2.43		102	25929	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.017	3.022	-0.005	1.000	1672255	0.8455		91.1	12030	
499.00 > 99.00	3.017	3.022	-0.005	1.000	370431		4.51(2.31-6.93)		5193	
20 Perfluorononanoic acid										
463.00 > 419.00	3.017	3.022	-0.005	1.000	1607805	0.9436		94.4	3049	
463.00 > 169.00	3.017	3.022	-0.005	1.000	411482		3.91(1.90-5.69)		11273	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.224	3.237	-0.013	1.069	2666969	0.8332		89.4	34820	
D 21 13C8 FOSA										
506.00 > 78.00	3.361	3.359	0.002	1.267	5090498	2.20		87.9	29369	
D 26 M2-8:2FTS										
529.00 > 81.00	3.361	3.359	0.002	1.267	1198035	2.53		105	17303	
25 1H,1H,2H,2H-perfluorodecanesulfoni										
527.00 > 507.00	3.361	3.367	-0.006	1.000	514845	0.7790		81.3	13116	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.361	3.367	-0.006	1.000	1906733	0.9443		94.4	25731	
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.361	3.367	-0.006	1.114	1201756	0.8734		91.0	11787	
549.00 > 99.00	3.361	3.367	-0.006	1.114	430602		2.79(1.33-3.97)		10068	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 23 13C2 PFDA										
515.00 > 470.00	3.371	3.368	0.003	1.271	3299919	2.42		96.8	35733	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.371	3.376	-0.005	1.000	1350595	0.9817		98.2	5323	
513.00 > 169.00	3.371	3.376	-0.005	1.000	227331		5.94(2.36-7.09)		5692	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.529	3.518	0.011	1.331	1937329	2.41		96.4	24983	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.529	3.535	-0.006	1.000	694550	0.8709		87.1	4319	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.687	3.684	0.003	1.222	1063619	0.8730		90.6	17205	
599.00 > 99.00	3.677	3.684	-0.007	1.219	357054		2.98(1.39-4.16)		5820	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.687	3.685	0.002	1.390	2001888	2.52		101	12959	
D 30 13C2 PFUnA										
565.00 > 520.00	3.698	3.696	0.002	1.394	2874514	2.51		100	43317	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.698	3.705	-0.007	1.000	854063	0.8738		87.4	3239	
563.00 > 169.00	3.698	3.705	-0.007	1.000	204281		4.18(2.12-6.36)		6115	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.698	3.705	-0.007	1.003	623519	0.8636		86.4	8220	
66 11-Chloroeicosafluoro-3-oxaundecan										
631.00 > 451.00	3.855	3.862	-0.007	1.278	4327982	0.8863		94.1	39668	
D 36 13C2 PFDoA										
615.00 > 570.00	3.989	3.986	0.003	1.504	3130252	2.55		102	19063	
37 Perfluorododecanoic acid										
613.00 > 569.00	3.989	3.995	-0.006	1.000	1260095	0.9133		91.3	1411	
613.00 > 169.00	3.989	3.995	-0.006	1.000	310663		4.06(2.13-6.40)		5483	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.252	4.259	-0.007	1.066	1187215	0.7725		77.2	1324	
663.00 > 169.00	4.252	4.259	-0.007	1.066	386586		3.07(1.25-3.76)		7761	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.491	4.479	0.012	1.693	3660765	2.45		97.8	18915	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.491	4.491	0.0	1.000	345051	0.8703		87.0	4881	
713.00 > 219.00	4.480	4.491	-0.011	0.998	246110		1.40(0.71-2.13)		5135	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.896	4.896	0.0	1.846	6316139	2.28		91.2	15020	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.896	4.905	-0.009	1.000	2212301	0.8990		89.9	889	
813.00 > 169.00	4.896	4.905	-0.009	1.000	389949		5.67(2.86-8.58)		3951	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.240	5.247	-0.007	1.070	2460668	0.8367		83.7	796	
913.00 > 169.00	5.240	5.247	-0.007	1.070	306757		8.02(3.83-11.48)		3615	

QC Flag Legend

Review Flags

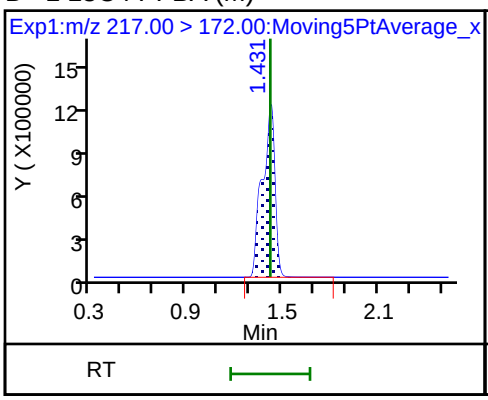
M - Manually Integrated

Report Date: 09-Jul-2018 10:13:34 Chrom Revision: 2.2 07-Jun-2018 07:41:54

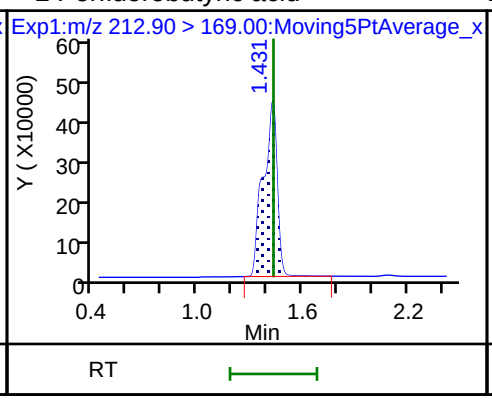
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180706-60751.b\2018.07.06LLAAA_034.d
Injection Date: 06-Jul-2018 17:53:45 Instrument ID: A8_N
Lims ID: LCSD 320-232150/3-A
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 24 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC ICAL

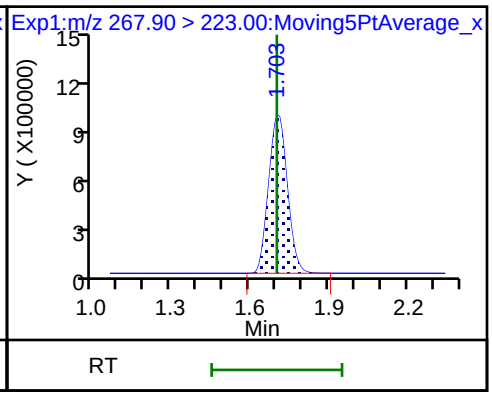
D 1 13C4 PFBA (M)



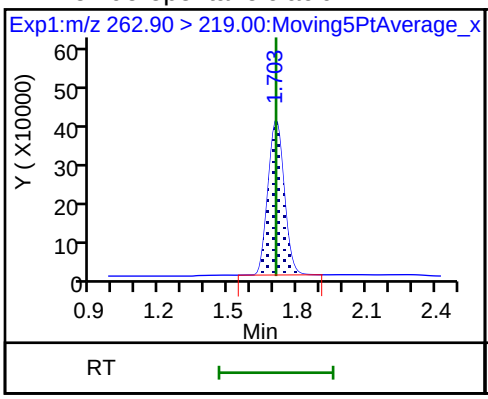
2 Perfluorobutyric acid



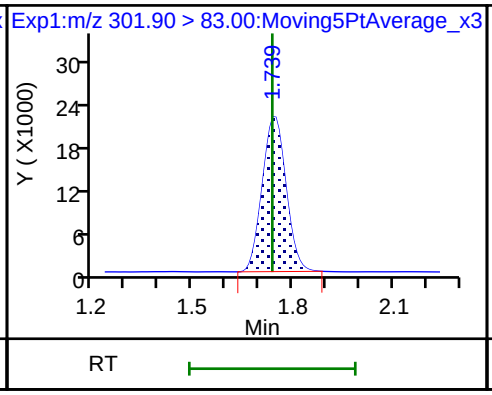
D 3 13C5-PFPeA



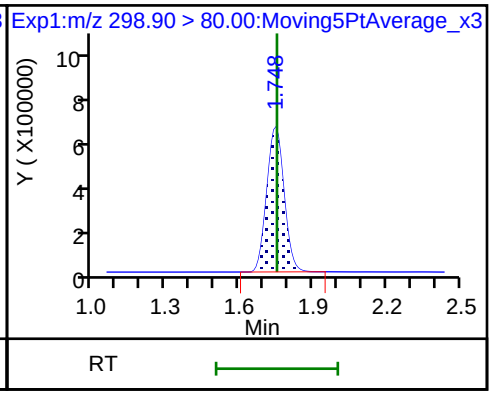
4 Perfluoropentanoic acid



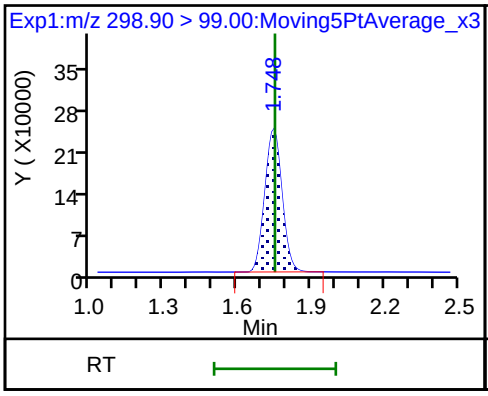
D 47 13C3-PFBS



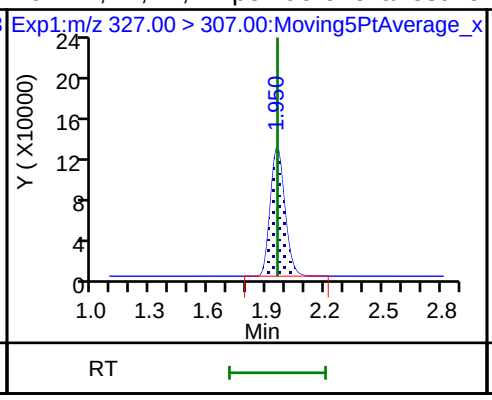
5 Perfluorobutanesulfonic acid



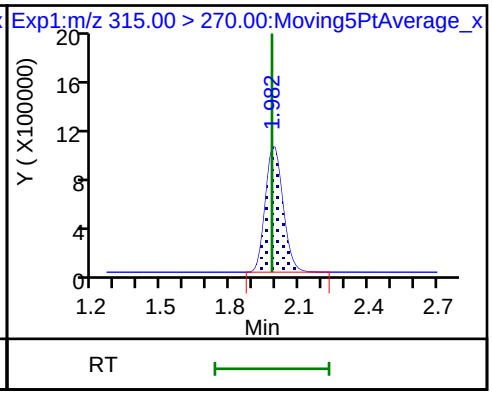
5 Perfluorobutanesulfonic acid



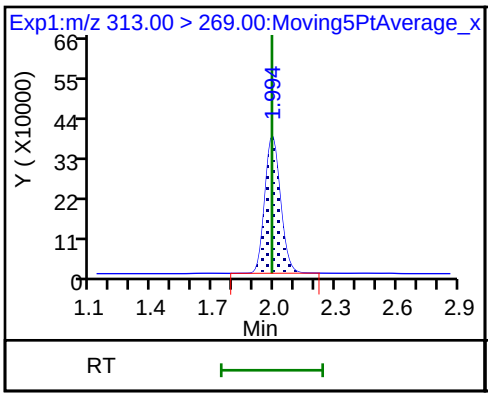
61 1H,1H,2H,2H-perfluorohexanesulfon



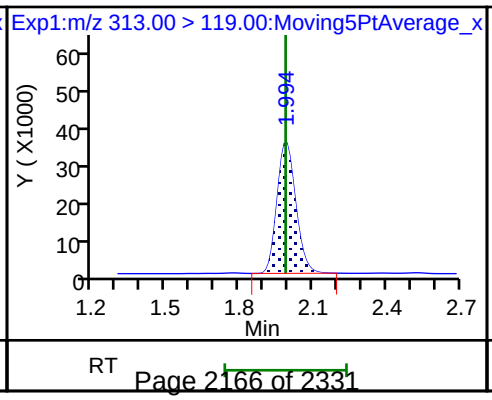
D 7 13C2 PFHxA



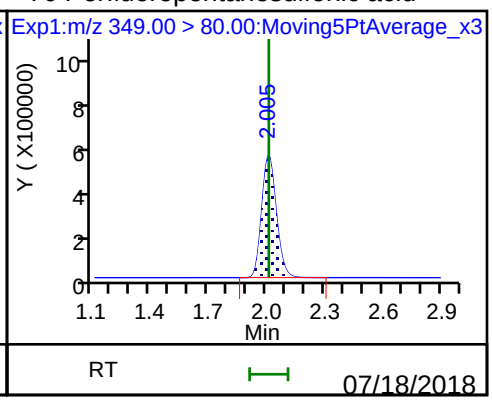
6 Perfluorohexanoic acid



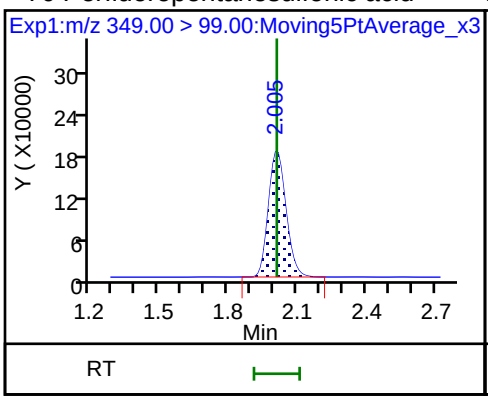
6 Perfluorohexanoic acid



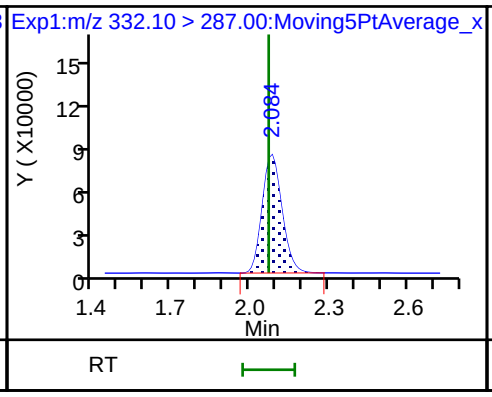
70 Perfluoropentanesulfonic acid



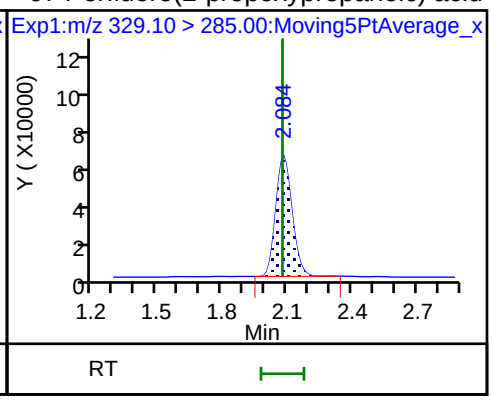
70 Perfluoropentanesulfonic acid



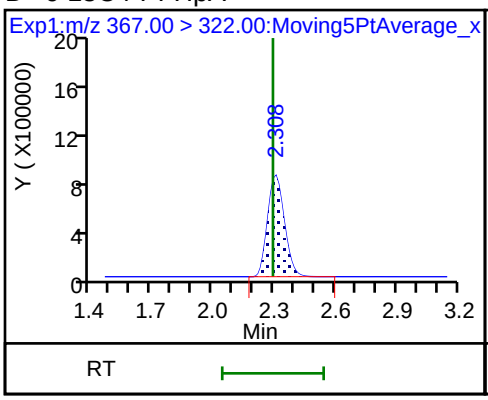
D 64 13C3 HFPO-DA



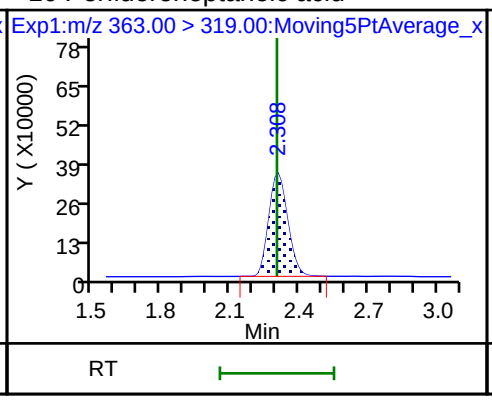
67 Perfluoro(2-propoxypropanoic) acid



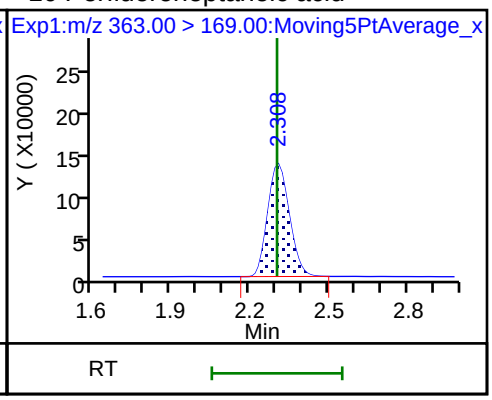
D 9 13C4-PFHpA



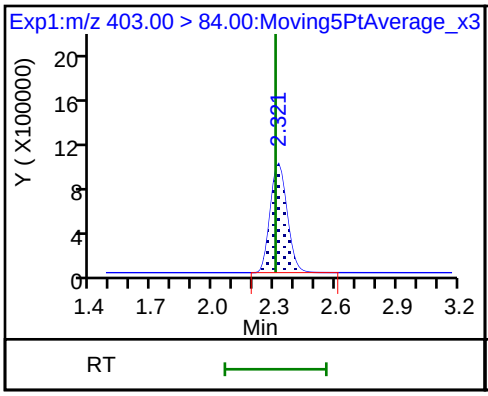
10 Perfluoroheptanoic acid



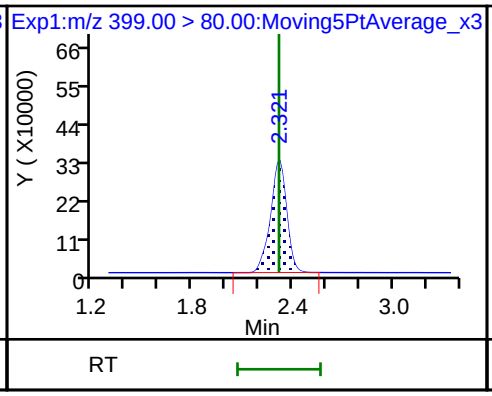
10 Perfluoroheptanoic acid



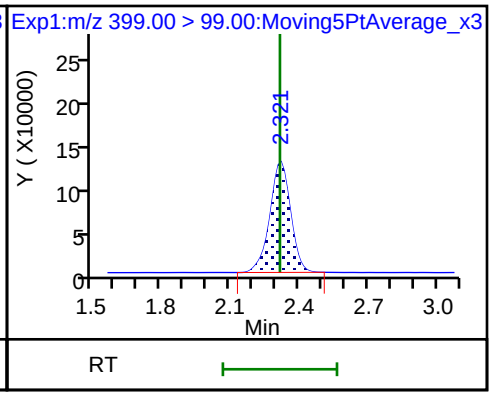
D 11 18O2 PFHxS



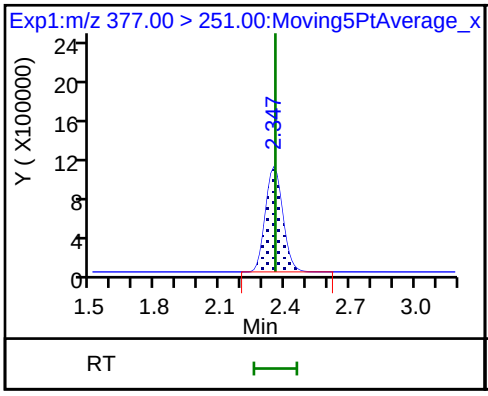
8 Perfluorohexanesulfonic acid



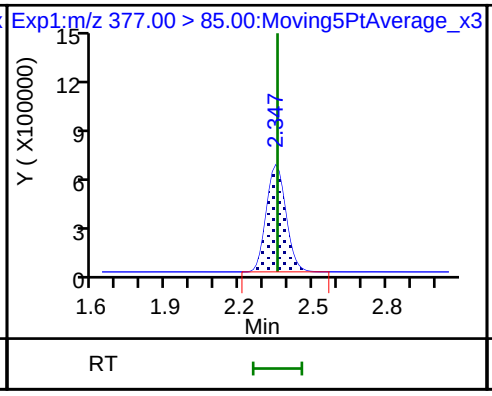
8 Perfluorohexanesulfonic acid



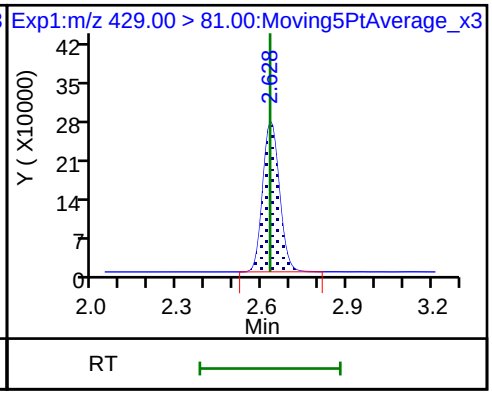
65 Adona



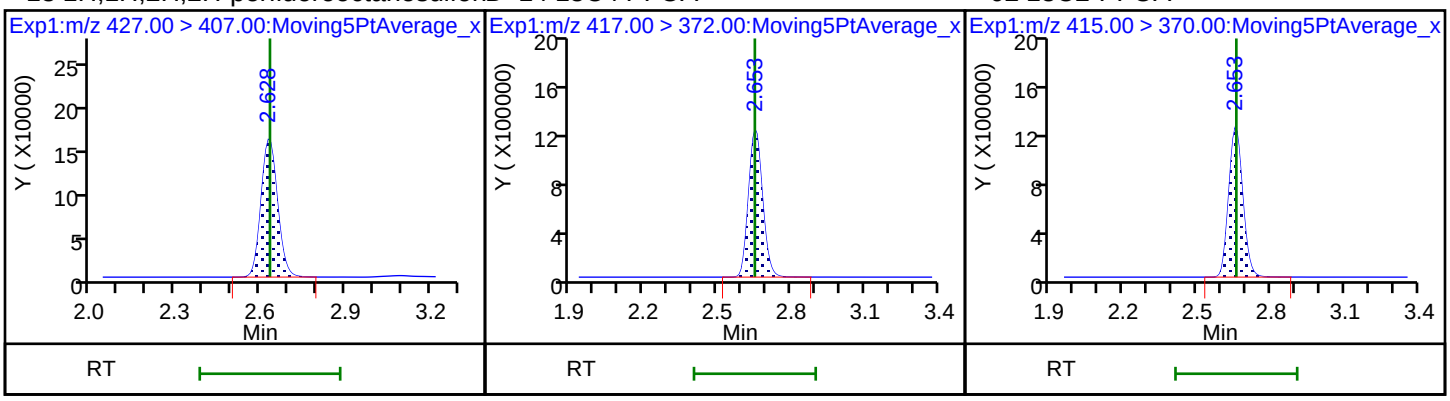
65 Adona



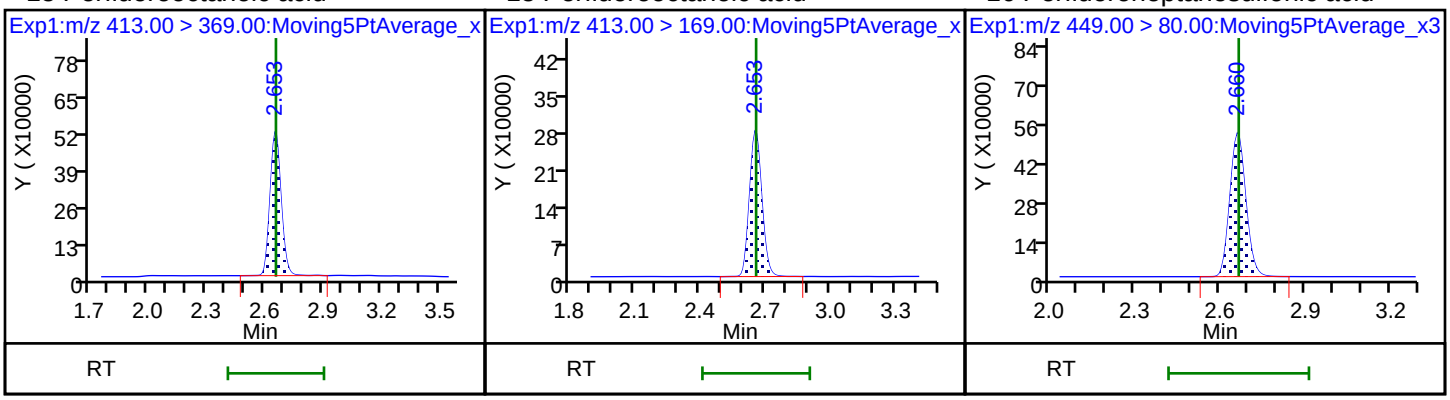
D 12 M2-6:2FTS



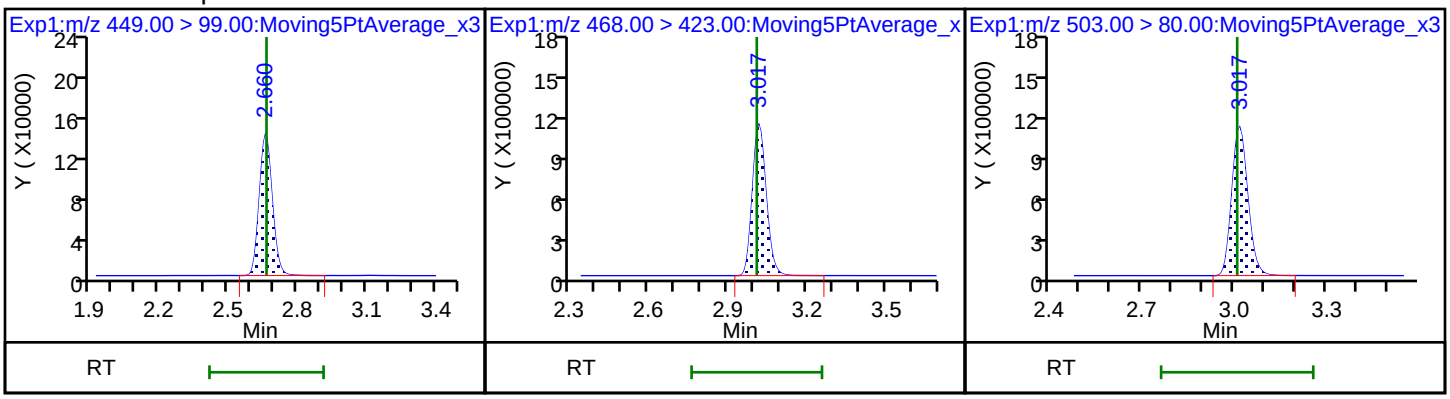
13 1H,1H,2H,2H-perfluorooctanesulfon D 14 13C4 PFOA * 62 13C2-PFOA



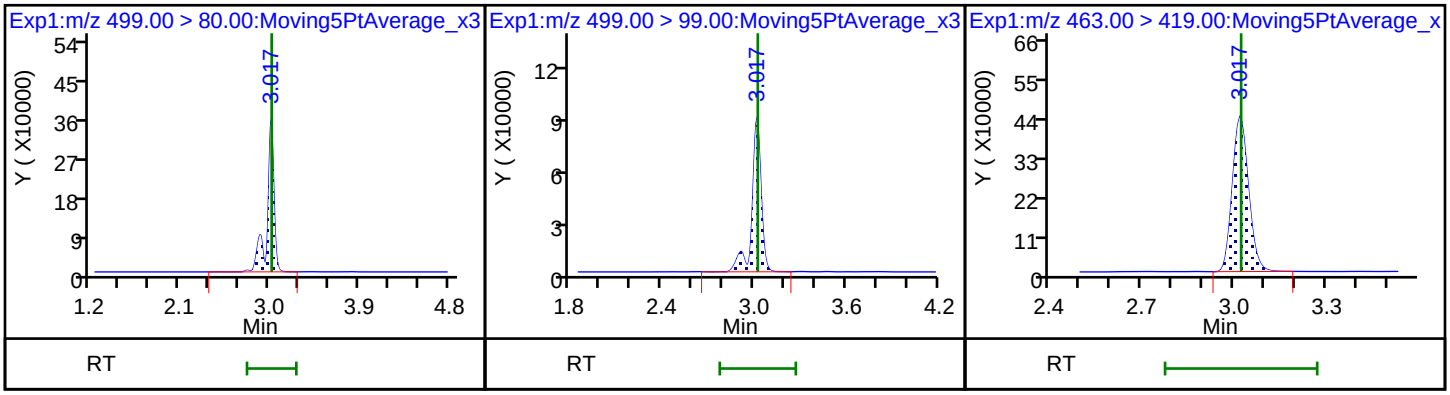
15 Perfluorooctanoic acid 15 Perfluorooctanoic acid 16 Perfluoroheptanesulfonic acid



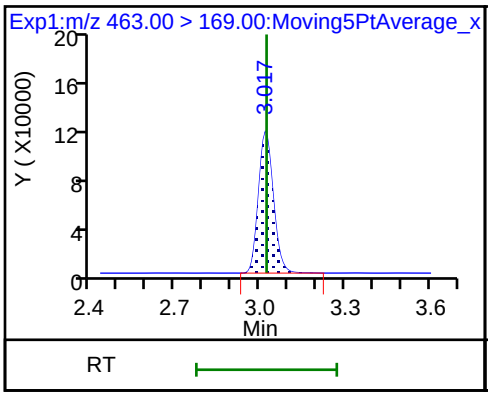
16 Perfluoroheptanesulfonic acid D 19 13C5 PFNA D 18 13C4 PFOS



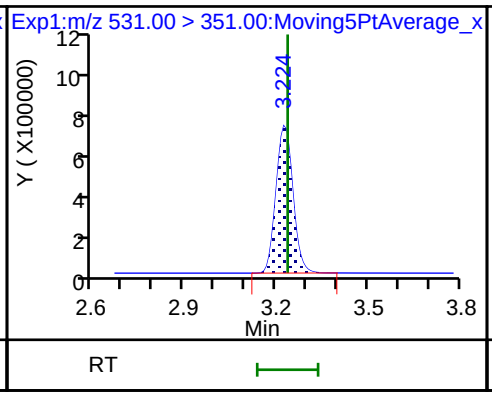
17 Perfluorooctane sulfonic acid 17 Perfluorooctane sulfonic acid 20 Perfluorononanoic acid



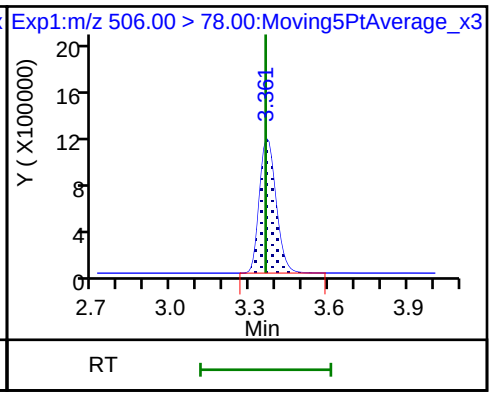
20 Perfluorononanoic acid



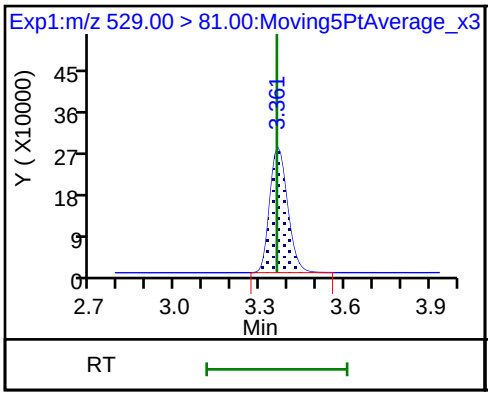
69 9-Chlorohexadecafluoro-3-oxanonane



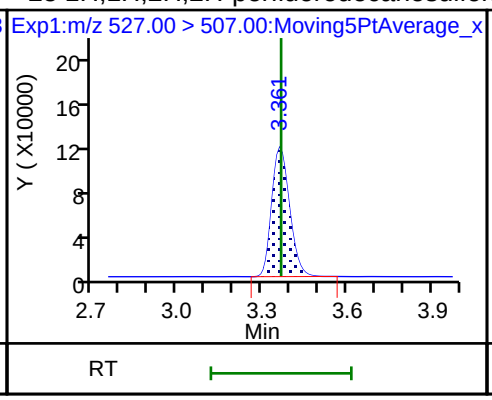
D 21 13C8 FOSA



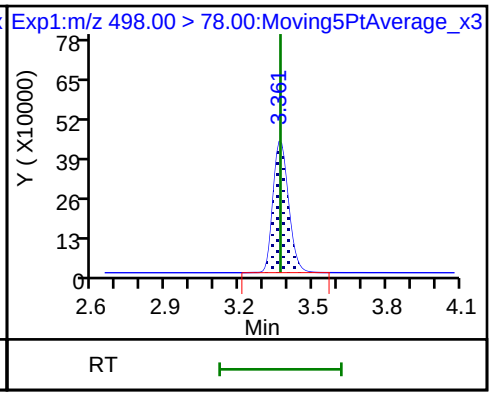
D 26 M2-8:2FTS



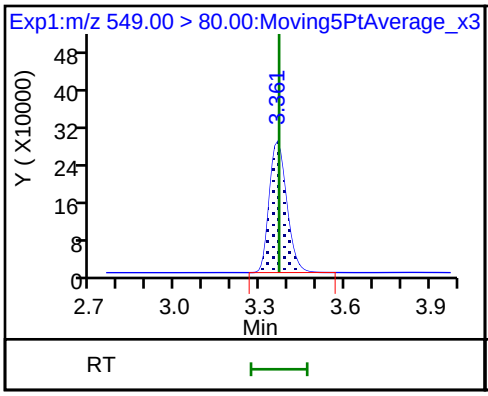
25 1H,1H,2H,2H-perfluorodecanesulfoni



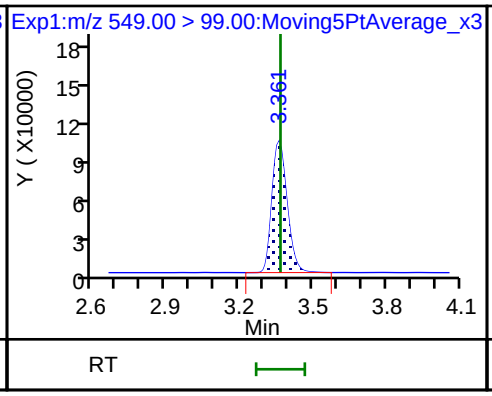
22 Perfluorooctane Sulfonamide



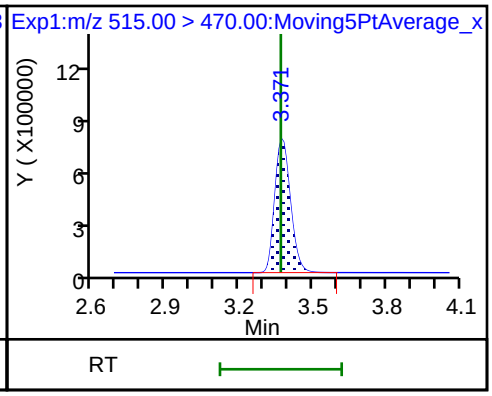
68 Perfluorononanesulfonic acid



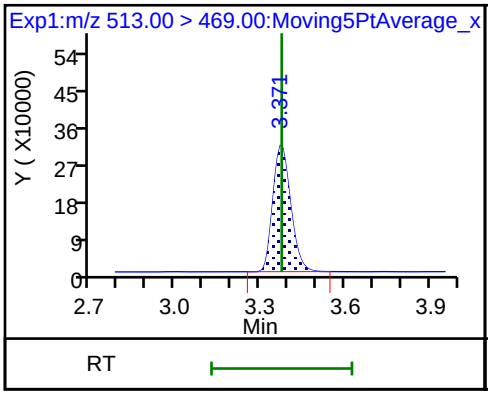
68 Perfluorononanesulfonic acid



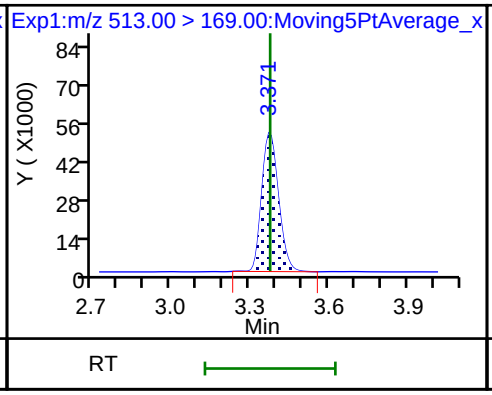
D 23 13C2 PFDA



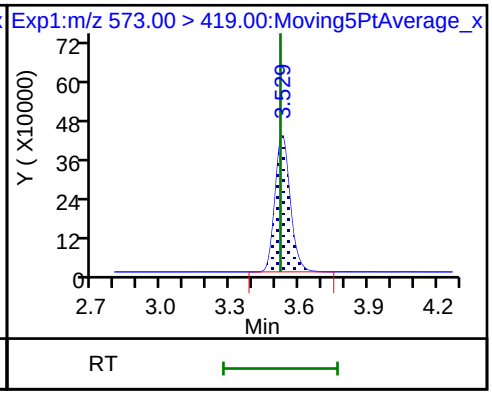
24 Perfluorodecanoic acid



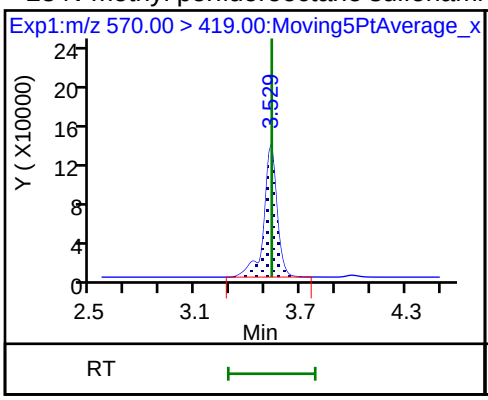
24 Perfluorodecanoic acid



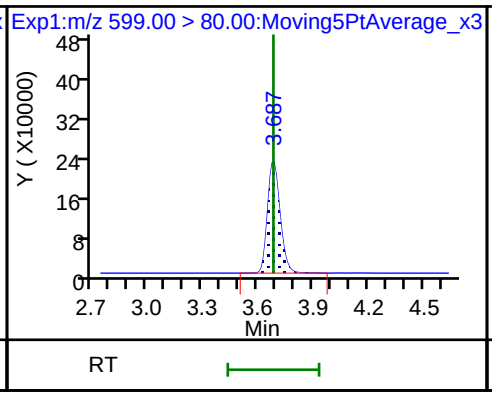
D 27 d3-NMeFOSAA



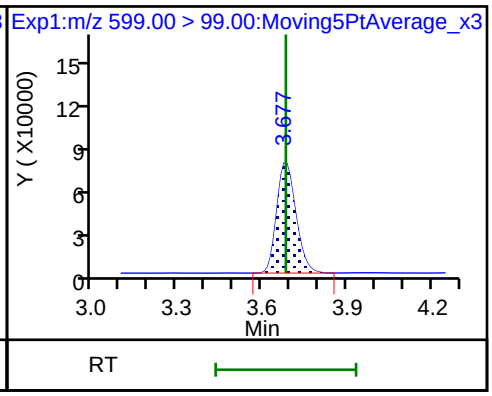
28 N-methyl perfluorooctane sulfonami



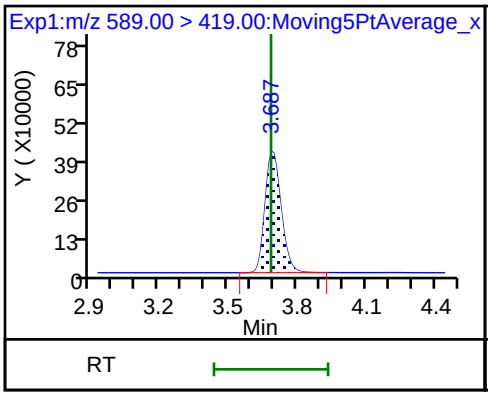
29 Perfluorodecane Sulfonic acid



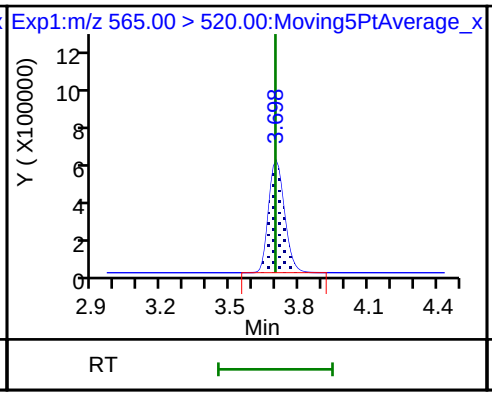
29 Perfluorodecane Sulfonic acid



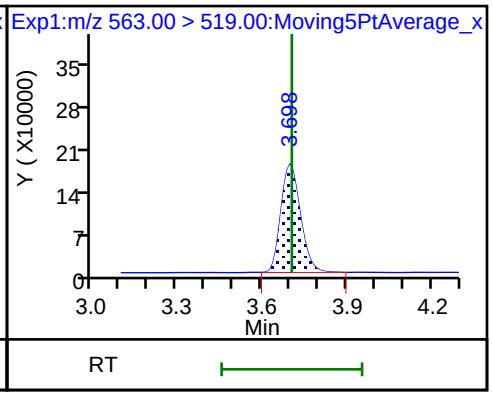
D 32 d5-NEtFOSAA



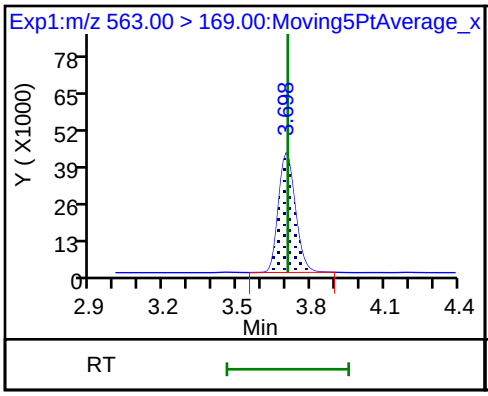
D 30 13C2 PFUnA



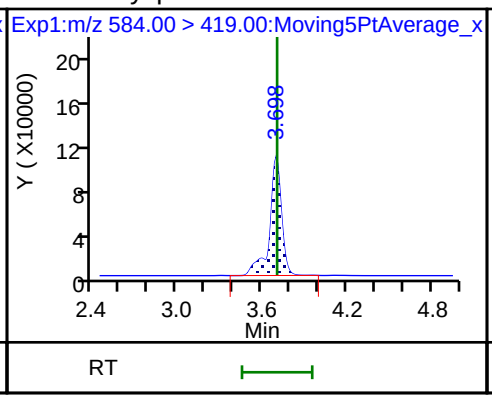
31 Perfluoroundecanoic acid



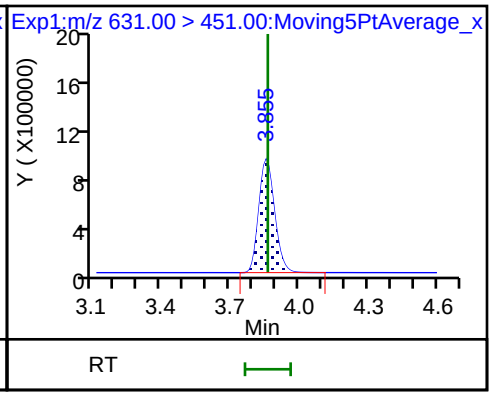
31 Perfluoroundecanoic acid



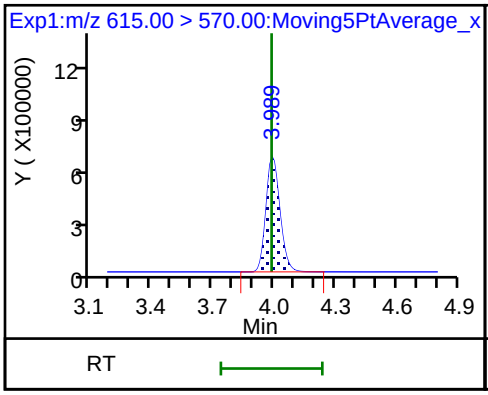
33 N-ethyl perfluorooctane sulfonamid



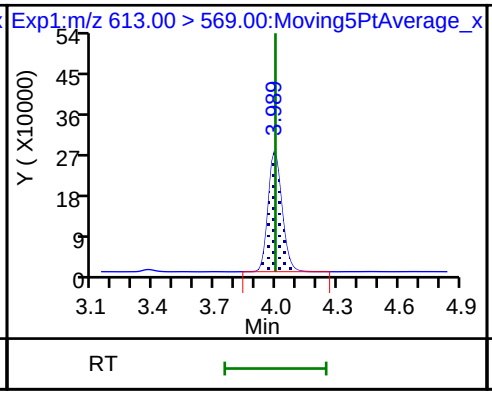
66 11-Chloroeicosafluoro-3-oxaundecan



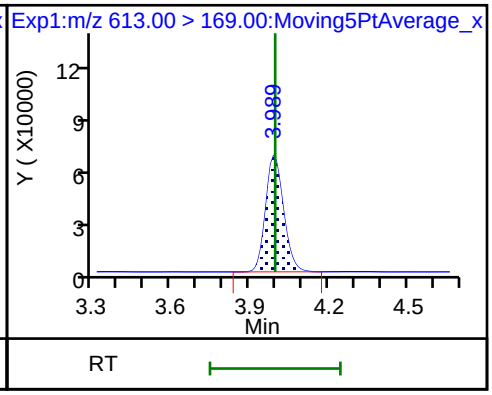
D 36 13C2 PFDoA



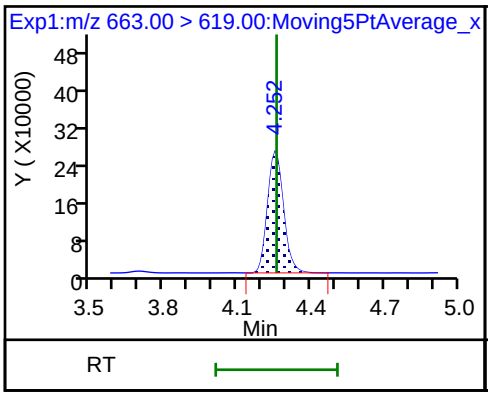
37 Perfluorododecanoic acid



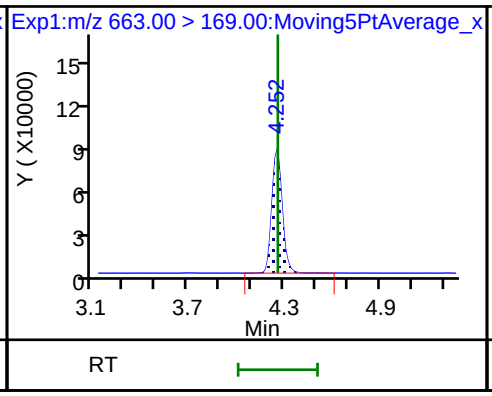
37 Perfluorododecanoic acid



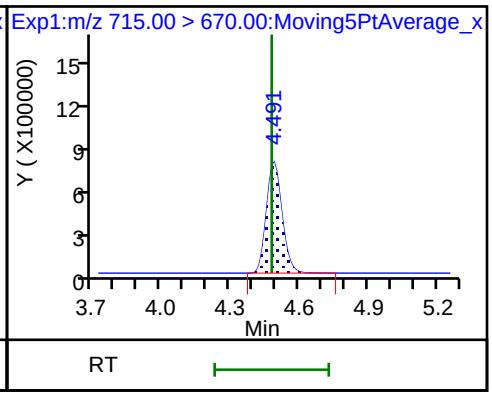
41 Perfluorotridecanoic acid



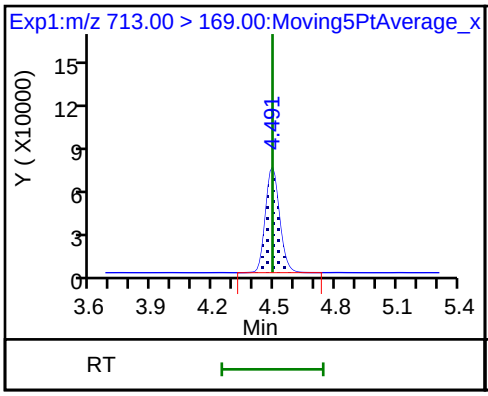
41 Perfluorotridecanoic acid



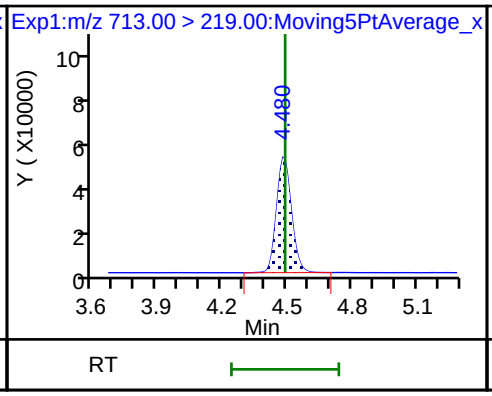
D 43 13C2-PFTeDA



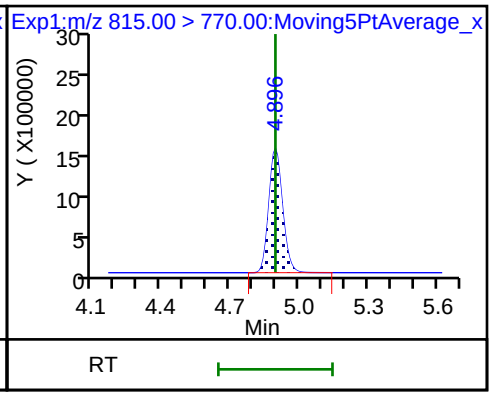
42 Perfluorotetradecanoic acid



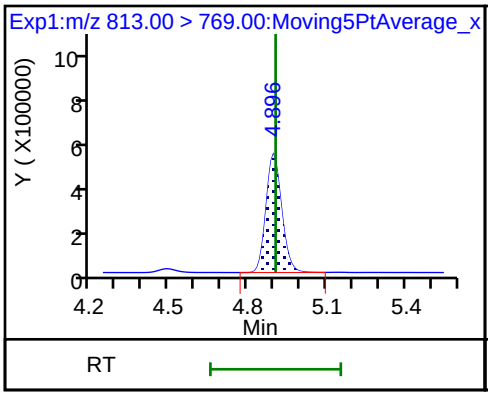
42 Perfluorotetradecanoic acid



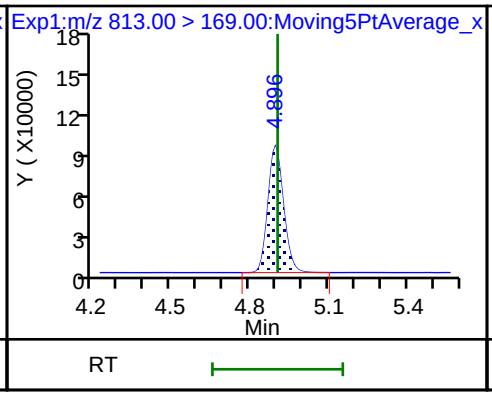
D 44 13C2-PFHxDA



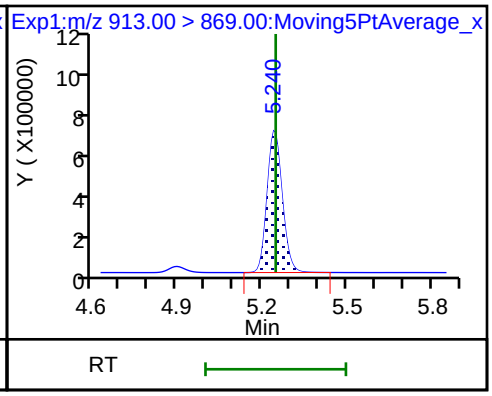
45 Perfluorohexadecanoic acid



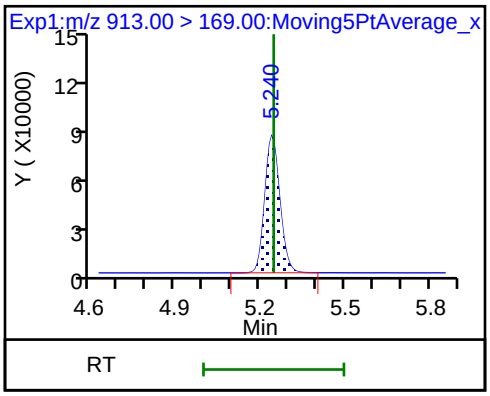
45 Perfluorohexadecanoic acid



46 Perfluorooctadecanoic acid



46 Perfluorooctadecanoic acid



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

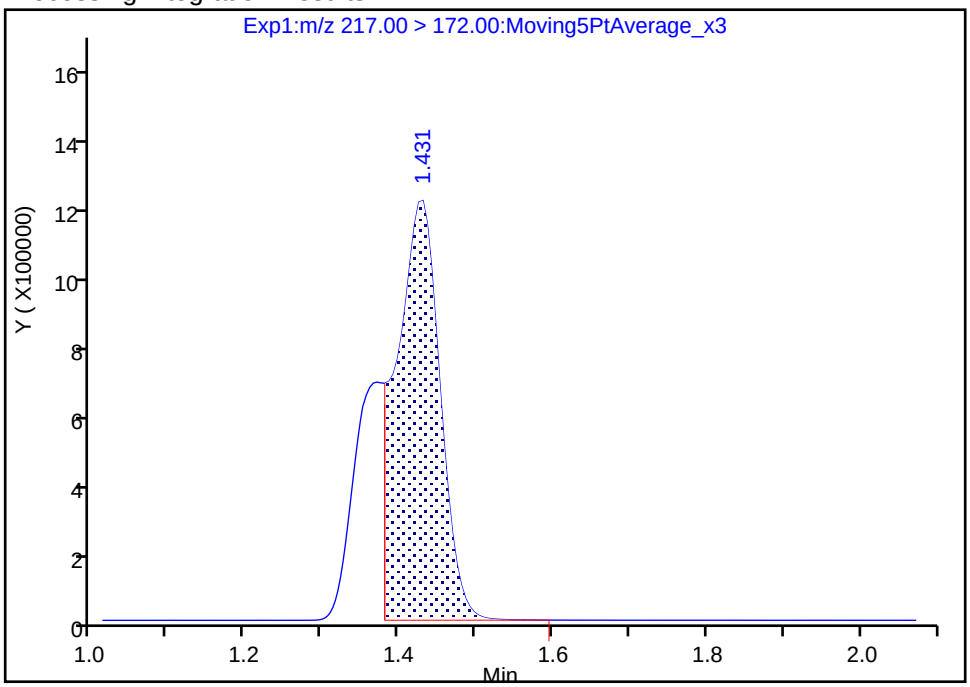
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180706-60751.b\2018.07.06LLAAA_034.d				
Injection Date:	06-Jul-2018 17:53:45	Instrument ID:	A8_N		
Lims ID:	LCSD 320-232150/3-A				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	24	Worklist Smp#:	4
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

D 1 13C4 PFBA, CAS: STL00992

Signal: 1

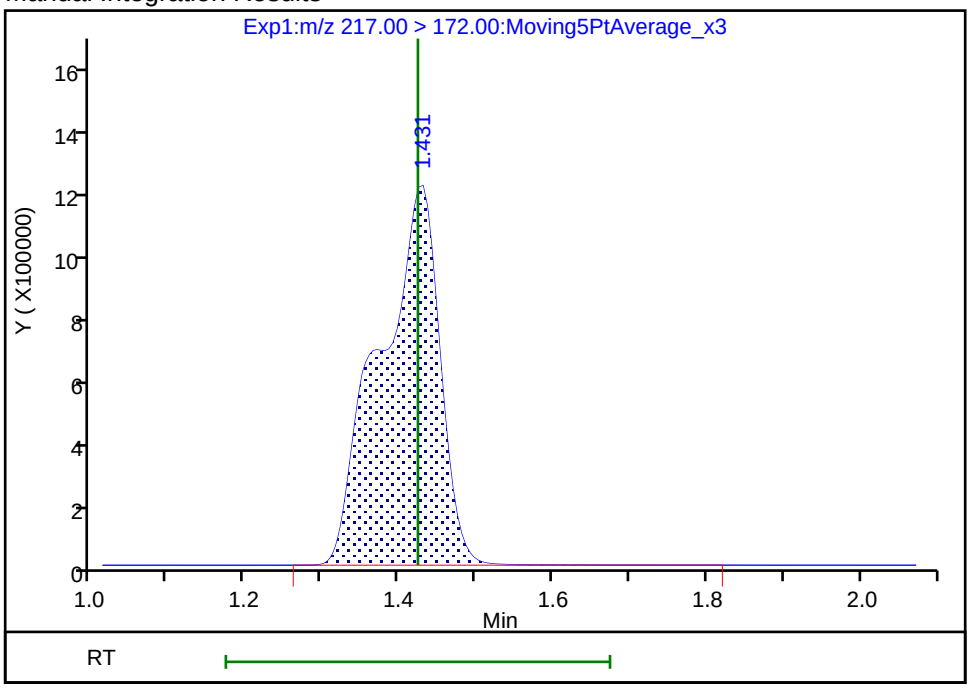
Processing Integration Results

RT: 1.43
Area: 4622576
Amount: 1.711866
Amount Units: ng/ml



Manual Integration Results

RT: 1.43
Area: 6463304
Amount: 2.393537
Amount Units: ng/ml



Reviewer: mongkols, 09-Jul-2018 10:13:15

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF27-GW-01 MS
Lab Sample ID: 320-40571-23 MS
Matrix: Water
Lab File ID: 2018.07.13LLC_013.d
Analysis Method: 537 (modified)
Date Collected: 06/21/2018 09:25
Extraction Method: 3535
Date Extracted: 07/02/2018 14:58
Sample wt/vol: 242.3(mL)
Date Analyzed: 07/13/2018 21:40
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 233989
Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	0.0537		0.0021	0.00036
2706-90-3	Perfluoropentanoic acid (PFPeA)	0.0483		0.0021	0.00051
307-24-4	Perfluorohexanoic acid (PFHxA)	0.0441		0.0021	0.00060
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.0413		0.0021	0.00026
335-67-1	Perfluorooctanoic acid (PFOA)	0.0405		0.0021	0.00088
375-95-1	Perfluorononanoic acid (PFNA)	0.0374		0.0021	0.00028
335-76-2	Perfluorodecanoic acid (PFDA)	0.0383		0.0021	0.00032
2058-94-8	Perfluoroundecanoic acid (PFUnA)	0.0349		0.0021	0.0011
307-55-1	Perfluorododecanoic acid (PFDoA)	0.0374		0.0021	0.00057
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	0.0371		0.0021	0.0013
376-06-7	Perfluorotetradecanoic acid (PFTeA)	0.0379		0.0021	0.00030
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.0347		0.0021	0.00021
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	0.0376		0.0021	0.00031
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.0334		0.0021	0.00018
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	0.0383		0.0021	0.00020
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.0367		0.0021	0.00056
8789-57-2	Perfluorononanesulfonic acid (PFNS)	0.0356		0.0021	0.00017
335-77-3	Perfluorodecanesulfonic acid (PFDS)	0.0331		0.0021	0.00033
754-91-6	Perfluorooctane Sulfonamide (FOSA)	0.0399		0.0021	0.00036
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	0.0368		0.021	0.0032
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	0.0378		0.021	0.0020
757124-72-4	4:2 FTS	0.0743		0.021	0.0054
27619-97-2	6:2 FTS	0.0436		0.021	0.0021
39108-34-4	8:2 FTS	0.0361		0.021	0.0021

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF27-GW-01 MS
Lab Sample ID: 320-40571-23 MS
Matrix: Water
Lab File ID: 2018.07.13LLC_013.d
Analysis Method: 537 (modified)
Date Collected: 06/21/2018 09:25
Extraction Method: 3535
Date Extracted: 07/02/2018 14:58
Sample wt/vol: 242.3(mL)
Date Analyzed: 07/13/2018 21:40
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 233989
Units: ug/L

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00992	13C4 PFBA	61		25-150
STL01893	13C5 PFPeA	81		25-150
STL00993	13C2 PFHxA	87		25-150
STL01892	13C4-PFHpA	100		25-150
STL00990	13C4 PFOA	105		25-150
STL00995	13C5 PFNA	101		25-150
STL00996	13C2 PFDA	96		25-150
STL00997	13C2 PFUnA	95		25-150
STL00998	13C2 PFDoA	90		25-150
STL02116	13C2-PFTeDA	91		25-150
STL02337	13C3-PFBS	90		25-150
STL00994	18O2 PFHxS	99		25-150
STL00991	13C4 PFOS	94		25-150
STL01056	13C8 FOSA	84		25-150
STL02118	d3-NMeFOSAA	99		25-150
STL02117	d5-NEtFOSAA	100		25-150
STL02279	M2-6:2FTS	125		25-150
STL02280	M2-8:2FTS	92		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\2018.07.13LLC_013.d
Lims ID: 320-40571-A-23-B MS
Client ID: NF27-GW-01
Sample Type: MS
Inject. Date: 13-Jul-2018 21:40:59 ALS Bottle#: 7 Worklist Smp#: 8
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-40571-a-23-b ms
Misc. Info.: Plate: 1 Rack: 4
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 16-Jul-2018 12:37:57 Calib Date: 11-Jul-2018 15:38:42
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK023

First Level Reviewer: mongkols Date: 16-Jul-2018 12:37:57

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										M
212.90 > 169.00	1.436	1.433	0.003	1.000	2043064	1.30		130	129	M
D 1 13C4 PFBA										
217.00 > 172.00	1.436	1.445	-0.009	0.537	3982292	1.52		60.8	18174	
4 Perfluoropentanoic acid										M
262.90 > 219.00	1.730	1.716	0.014	1.005	2092892	1.17		117	157	M
D 3 13C5-PFPeA										
267.90 > 223.00	1.721	1.725	-0.004	0.643	3681821	2.02		80.8	9788	
5 Perfluorobutanesulfonic acid										M
298.90 > 80.00	1.766	1.761	0.005	1.000	2651162	0.8407		95.1	404	M
298.90 > 99.00	1.766	1.761	0.005	1.000	1141309		2.32(1.25-3.74)		958	
D 47 13C3-PFBS										
301.90 > 83.00	1.766	1.762	0.004	0.660	95846	2.09		90.0	152	
61 1H,1H,2H,2H-perfluorohexanesulfoni										
327.00 > 307.00	1.972	1.967	0.005	1.116	965318	1.80		193	24129	
6 Perfluorohexanoic acid										
313.00 > 269.00	2.016	1.999	0.017	1.006	1880436	1.07		107	383	
313.00 > 119.00	2.005	1.999	0.006	1.000	185340		10.15(5.03-15.10)		1385	
D 7 13C2 PFHxA										
315.00 > 270.00	2.005	2.011	-0.006	0.749	4275371	2.17		87.0	55443	
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.028	2.022	0.006	1.148	2621330	0.9112		97.1	949	
349.00 > 99.00	2.028	2.022	0.006	1.148	980504		2.67(1.36-4.07)		1806	
67 Perfluoro(2-propoxypropanoic) acid										
329.10 > 285.00	2.107	2.090	0.017	1.000	325911	0.99		99.4	258	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.107	2.101	0.006	0.787	308903	2.21		88.3	3379	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.322	2.316	0.006	1.000	2091309	1.00		100	690	
363.00 > 169.00	2.322	2.316	0.006	1.000	798261		2.62(1.13-3.40)		4325	
D 9 13C4-PFHpA										
367.00 > 322.00	2.322	2.329	-0.007	0.868	4516804	2.49		99.7	50377	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.335	2.329	0.006	1.000	2360068	0.8094		88.9	938	
399.00 > 99.00	2.335	2.329	0.006	1.000	764882		3.09(1.50-4.49)		1015	
D 11 18O2 PFHxS										
403.00 > 84.00	2.335	2.342	-0.007	0.873	6007575	2.34		99.0	72062	
65 Adona										
377.00 > 251.00	2.374	2.355	0.019	0.783	5327886	0.9349		93.5	20104	
377.00 > 85.00	2.374	2.355	0.019	0.783	3115582		1.71(0.84-2.53)		6797	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.653	2.634	0.019	1.000	801059	1.06		111	4964	
D 12 M2-6:2FTS										
429.00 > 81.00	2.653	2.651	0.002	0.992	1151514	2.96		125	3349	
* 62 13C2-PFOA										
415.00 > 370.00	2.675	2.658	0.017		4833102	2.50			52177	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.675	2.658	0.017	1.000	2341935	0.9823		98.1	903	
413.00 > 169.00	2.675	2.658	0.017	1.000	1217777		1.92(0.84-2.52)		5152	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.683	2.666	0.017	0.885	2163915	0.9276		97.4	3358	
449.00 > 99.00	2.683	2.666	0.017	0.885	538127		4.02(1.94-5.82)		3510	
D 14 13C4 PFOA										
417.00 > 372.00	2.675	2.673	0.002	1.000	4839470	2.62		105	96330	
17 Perfluorooctane sulfonic acid										M
499.00 > 80.00	3.032	3.018	0.014	1.000	1786392	0.8904		95.9	3538	M
499.00 > 99.00	3.032	3.018	0.014	1.000	400476		4.46(2.31-6.93)		2466	M
20 Perfluorononanoic acid										
463.00 > 419.00	3.032	3.025	0.007	1.000	1671886	0.9051		90.5	2103	
463.00 > 169.00	3.032	3.025	0.007	1.000	432459		3.87(1.90-5.69)		5696	
D 18 13C4 PFOS										
503.00 > 80.00	3.032	3.036	-0.004	1.133	4231578	2.25		94.0	15863	
D 19 13C5 PFNA										
468.00 > 423.00	3.032	3.036	-0.004	1.133	4162968	2.52		101	60249	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.240	3.232	0.008	1.069	2927556	0.9007		96.6	22596	
25 1H,1H,2H,2H-perfluorodecanesulfoni										
527.00 > 507.00	3.379	3.361	0.018	1.000	587443	0.8756		91.4	14849	
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.379	3.361	0.018	1.114	1183937	0.8626		89.9	7328	
549.00 > 99.00	3.370	3.361	0.009	1.111	452891		2.61(1.33-3.97)		5150	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.379	3.371	0.008	1.000	2161927	0.9663		96.6	38158	
D 21 13C8 FOSA										
506.00 > 78.00	3.379	3.376	0.003	1.263	5674953	2.09		83.6	46539	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 26 M2-8:2FTS										
529.00 > 81.00	3.379	3.376	0.003	1.263	1245646	2.19		91.5	4860	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.388	3.380	0.008	1.000	1359264	0.9287		92.9	4022	
513.00 > 169.00	3.388	3.380	0.008	1.000	256756		5.29(2.36-7.09)		6480	
D 23 13C2 PFDA										
515.00 > 470.00	3.388	3.385	0.003	1.266	3486809	2.40		96.2	53036	
35 MeFOSA										
512.00 > 169.00	3.547	3.498	0.049		3727	NC			132	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.547	3.529	0.018	1.003	517300	0.8913		89.1	3363	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.538	3.544	-0.006	1.322	1471854	2.48		99.0	29793	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.697	3.687	0.010	1.219	952066	0.8009		83.1	5551	
599.00 > 99.00	3.697	3.687	0.010	1.219	342626		2.78(1.39-4.16)		5122	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.708	3.698	0.010	1.000	795785	0.8457		84.6	2719	
563.00 > 169.00	3.708	3.698	0.010	1.000	229172		3.47(2.12-6.36)		7931	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.708	3.698	0.010	1.000	494766	0.9155		91.6	8518	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.708	3.705	0.003	1.386	1528259	2.51		100	4485	
D 30 13C2 PFUnA										
565.00 > 520.00	3.708	3.715	-0.007	1.386	2870673	2.37		94.8	39594	
66 11-Chloroeicosafluoro-3-oxaundecan										
631.00 > 451.00	3.866	3.855	0.011	1.275	3905811	0.8313		88.3	48513	
37 Perfluorododecanoic acid										
613.00 > 569.00	3.999	3.999	0.0	1.000	1113419	0.9060		90.6	674	
613.00 > 169.00	3.999	3.999	0.0	1.000	272887		4.08(2.13-6.40)		5665	
D 36 13C2 PFDoA										
615.00 > 570.00	3.999	4.005	-0.006	1.495	2813938	2.24		89.6	24766	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.262	4.252	0.010	1.066	1078882	0.8978		89.8	563	
663.00 > 169.00	4.262	4.252	0.010	1.066	341845		3.16(1.25-3.76)		4779	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.501	4.491	0.010	1.000	283193	0.9186		91.9	3721	
713.00 > 219.00	4.491	4.491	0.0	0.998	202448		1.40(0.71-2.13)		3291	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.501	4.500	0.001	1.682	2962176	2.27		90.9	20209	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.905	4.905	-0.001	1.000	1781983	0.9231		92.3	444	
813.00 > 169.00	4.905	4.905	-0.001	1.000	299423		5.95(2.86-8.58)		3030	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.905	4.912	-0.008	1.833	4963308	2.39		95.7	18561	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.255	5.248	0.007	1.071	2039384	0.8988		89.9	391	
913.00 > 169.00	5.247	5.248	-0.001	1.070	252159		8.09(3.83-11.48)		2962	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Review Flags

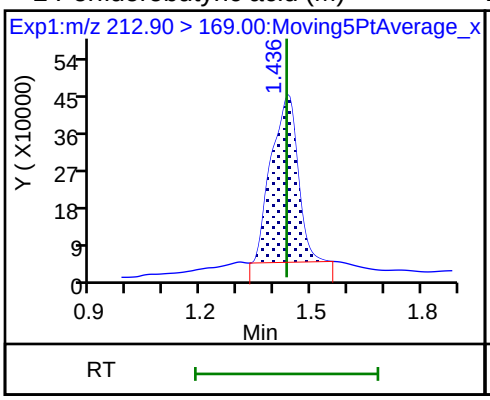
M - Manually Integrated

Report Date: 16-Jul-2018 12:37:58 Chrom Revision: 2.2 07-Jun-2018 07:41:54

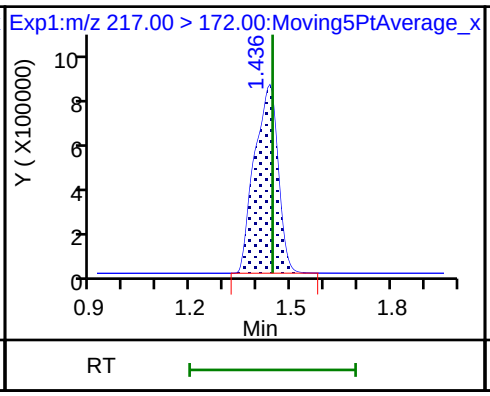
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\2018.07.13LLC_013.d
Injection Date: 13-Jul-2018 21:40:59 Instrument ID: A8_N
Lims ID: 320-40571-A-23-B MS
Client ID: NF27-GW-01
Operator ID: SACINSTLCMS01 ALS Bottle#: 7 Worklist Smp#: 8
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC ICAL

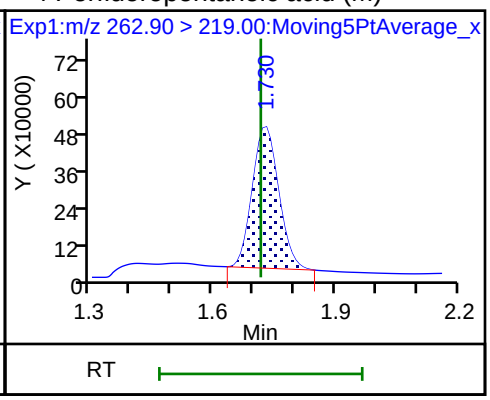
2 Perfluorobutyric acid (M)



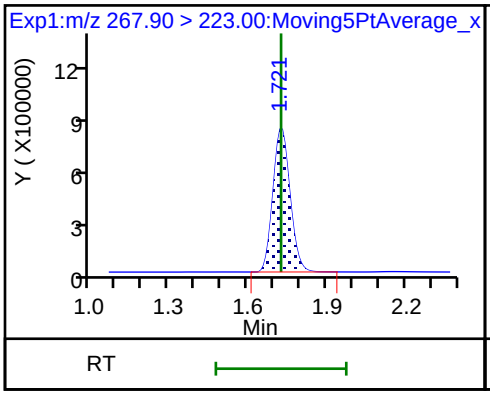
D 1 13C4 PFBA



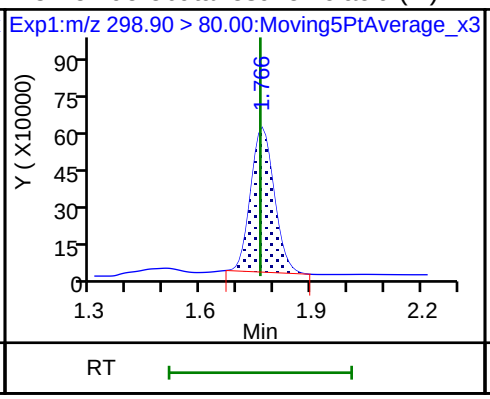
4 Perfluoropentanoic acid (M)



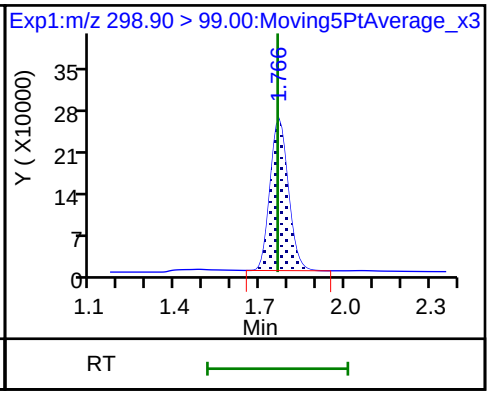
D 3 13C5-PFPeA



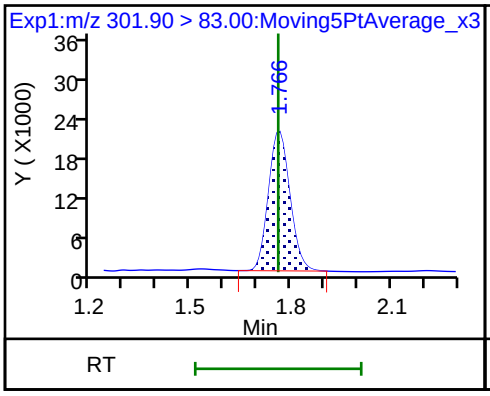
5 Perfluorobutanesulfonic acid (M)



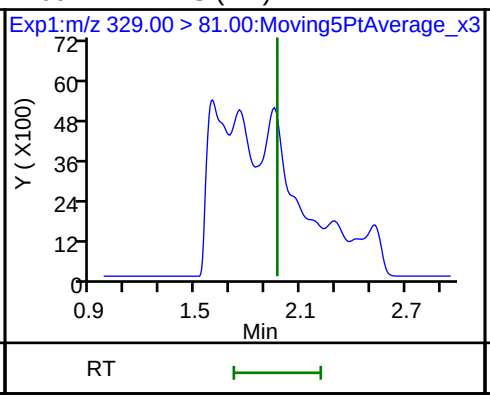
5 Perfluorobutanesulfonic acid



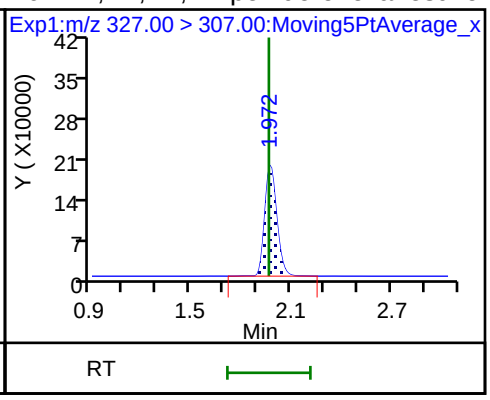
D 47 13C3-PFBS



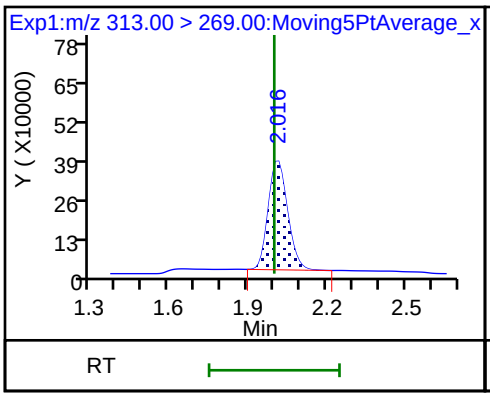
D 60 M2-4:2FTS (ND)



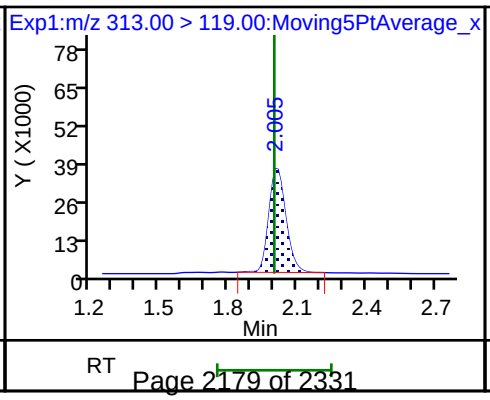
61 1H,1H,2H,2H-perfluorohexanesulfoni



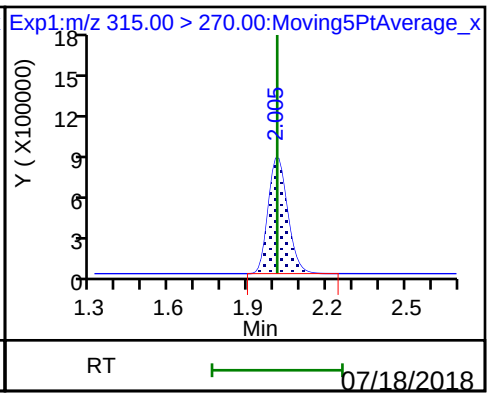
6 Perfluorohexanoic acid



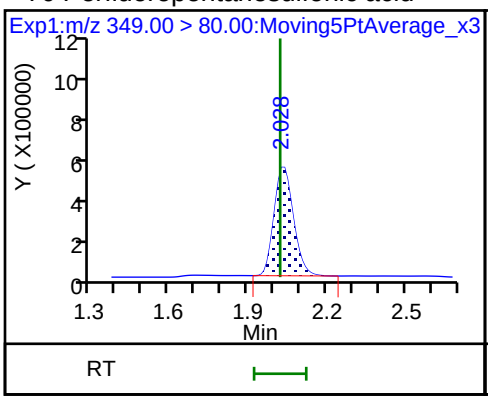
6 Perfluorohexanoic acid



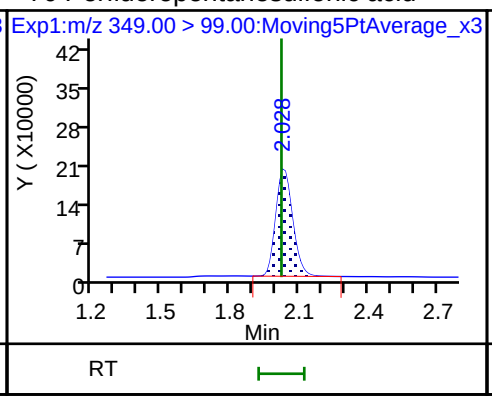
D 7 13C2 PFHxA



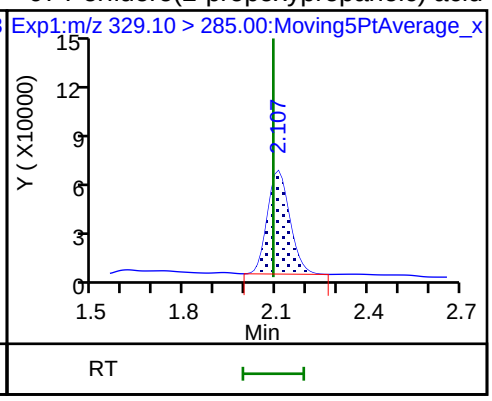
70 Perfluoropentanesulfonic acid



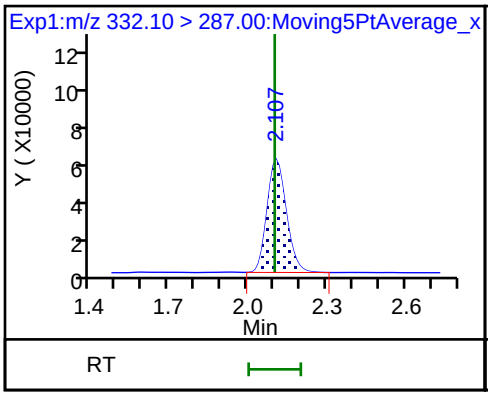
70 Perfluoropentanesulfonic acid



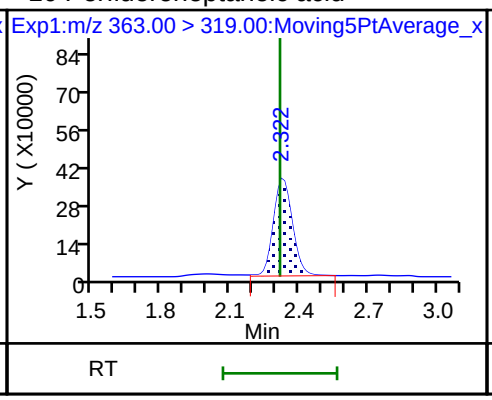
67 Perfluoro(2-propoxypropanoic) acid



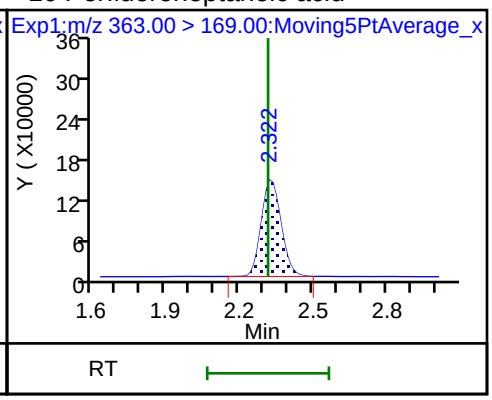
D 64 13C3 HFPO-DA



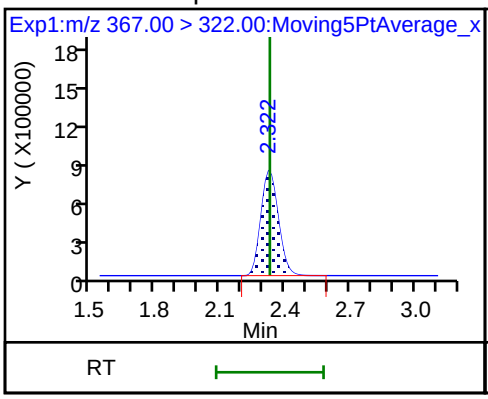
10 Perfluoroheptanoic acid



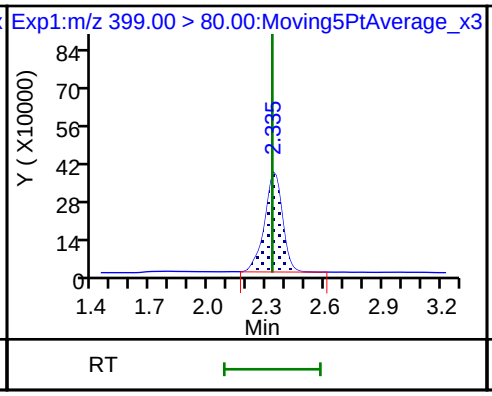
10 Perfluoroheptanoic acid



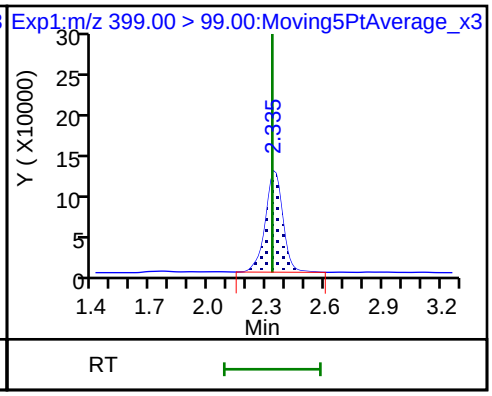
D 9 13C4-PFHpA



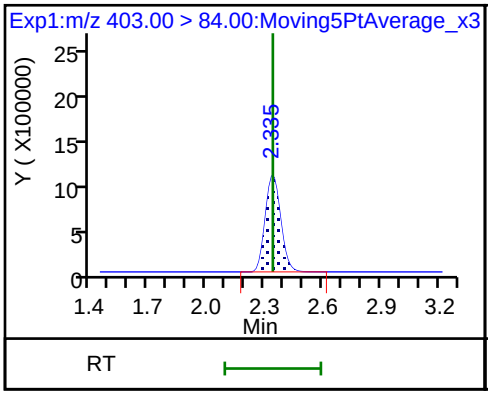
8 Perfluorohexanesulfonic acid



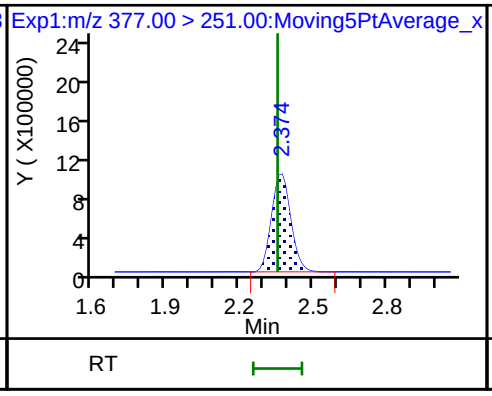
8 Perfluorohexanesulfonic acid



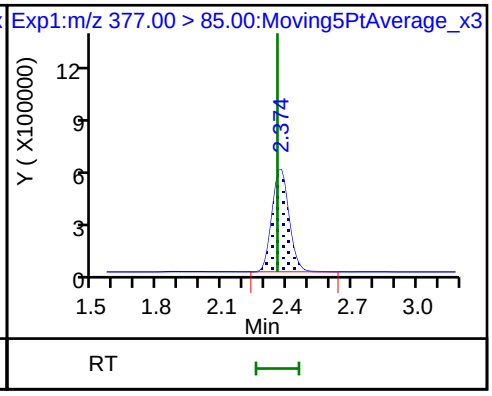
D 11 18O2 PFHxS



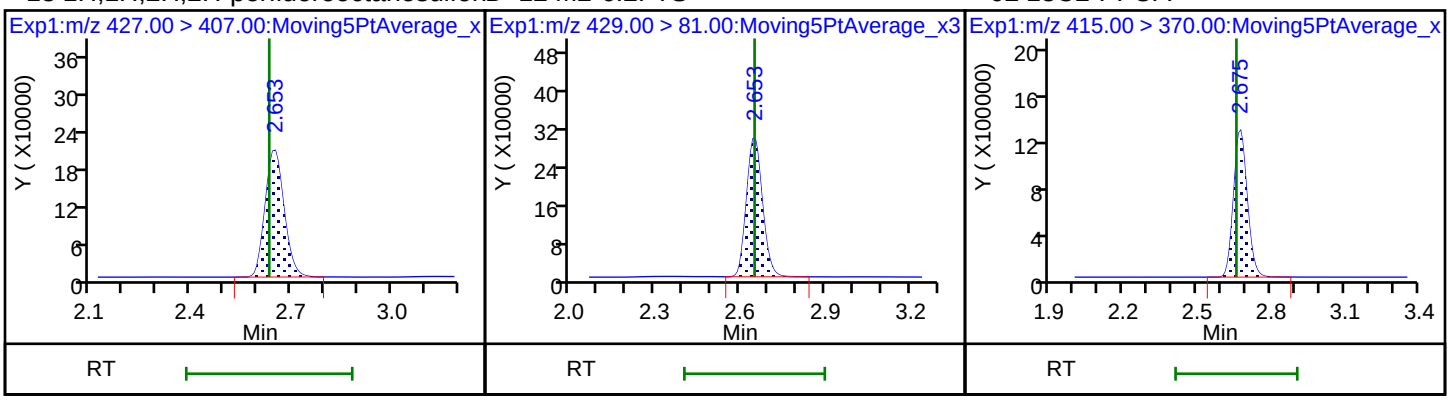
65 Adona



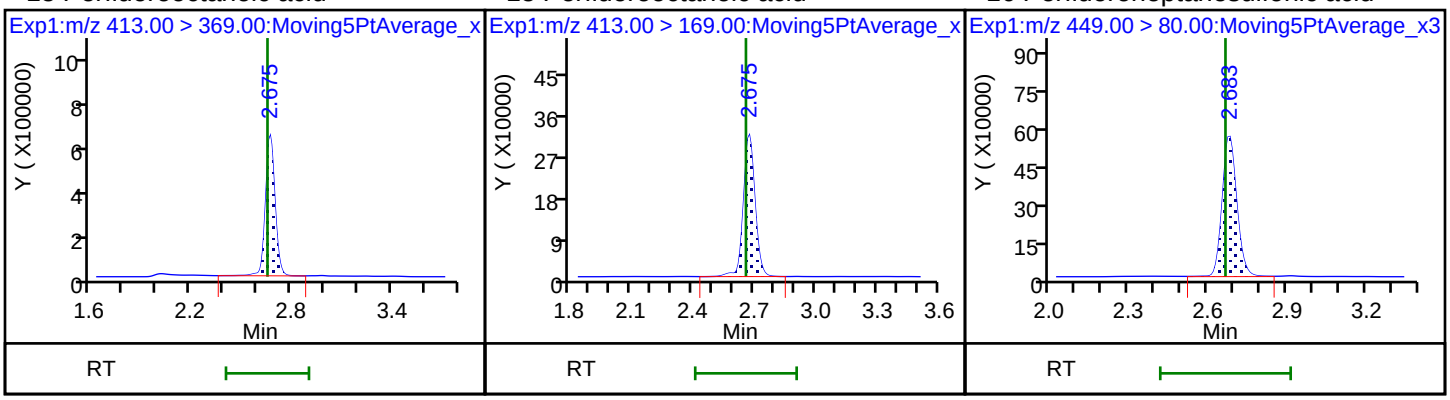
65 Adona



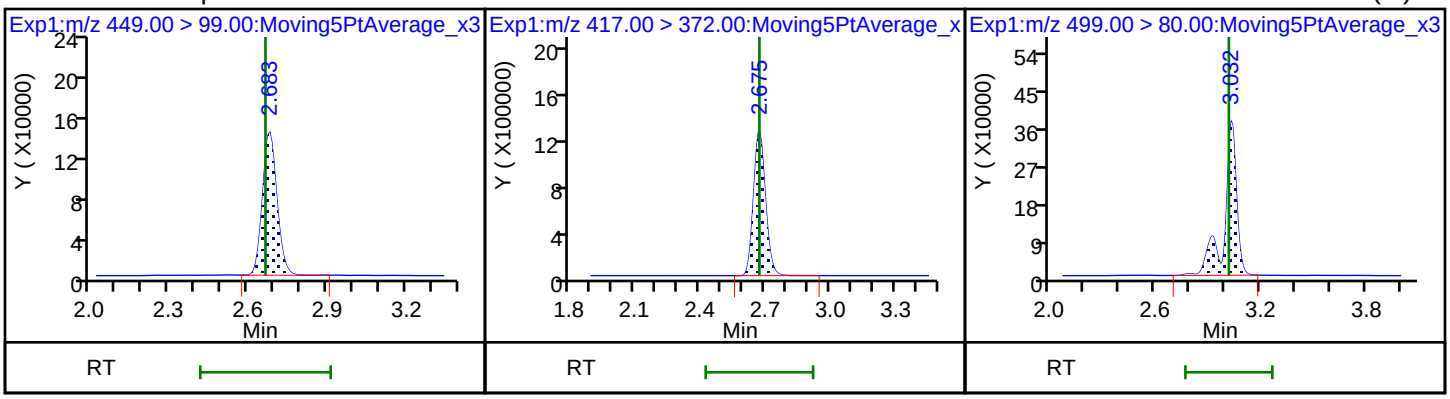
13 1H,1H,2H,2H-perfluorooctanesulfon D 12 M2-6:2FTS * 62 13C2-PFOA



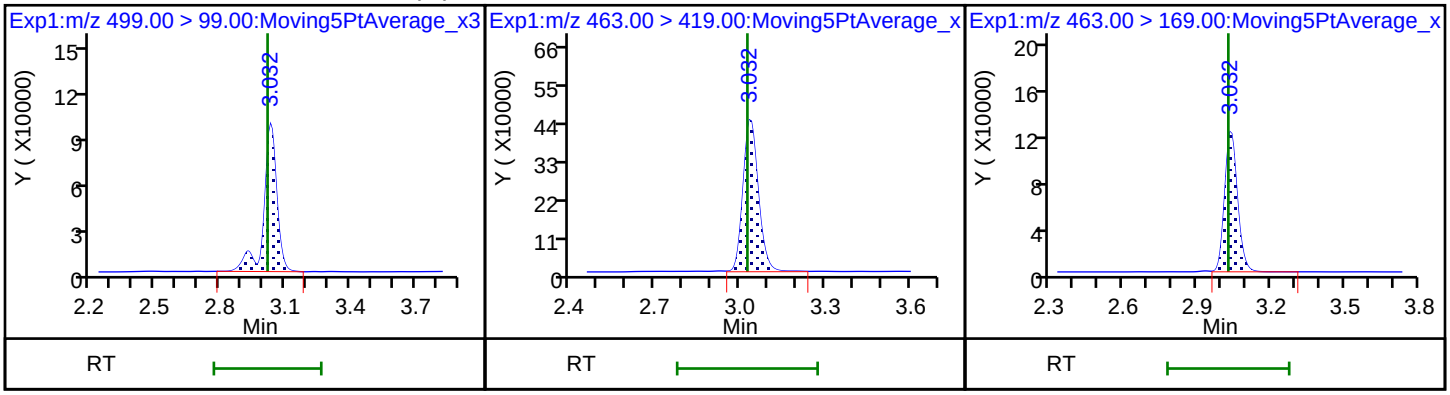
15 Perfluorooctanoic acid 15 Perfluorooctanoic acid 16 Perfluoroheptanesulfonic acid



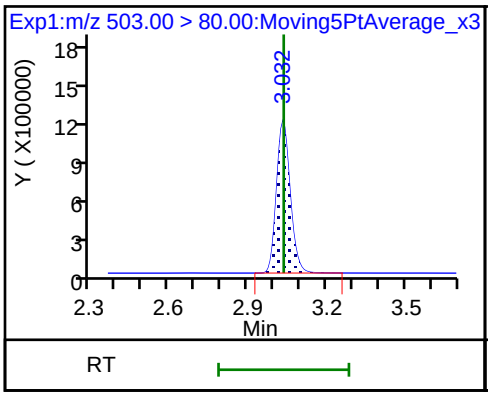
16 Perfluoroheptanesulfonic acid D 14 13C4 PFOA 17 Perfluorooctane sulfonic acid (M)



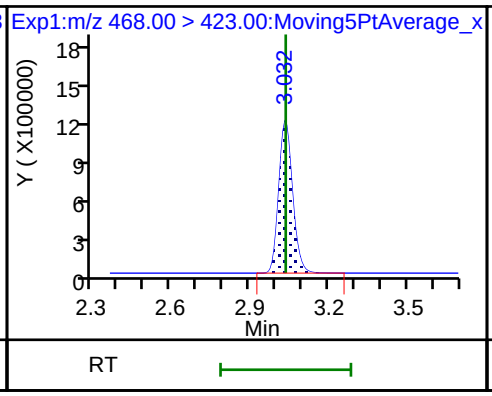
17 Perfluorooctane sulfonic acid (M) 20 Perfluorononanoic acid 20 Perfluorononanoic acid



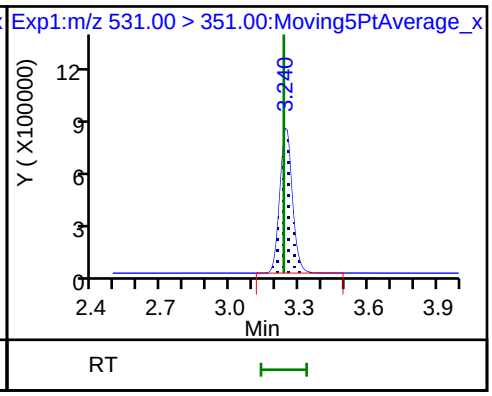
D 18 13C4 PFOS



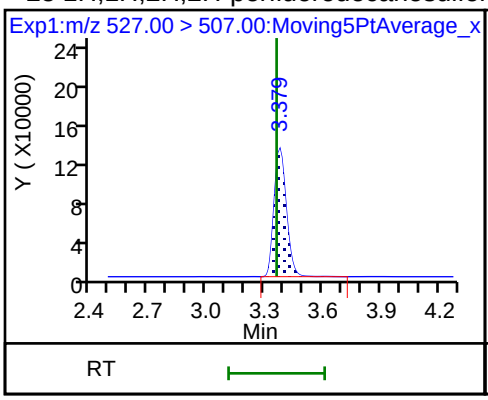
D 19 13C5 PFNA



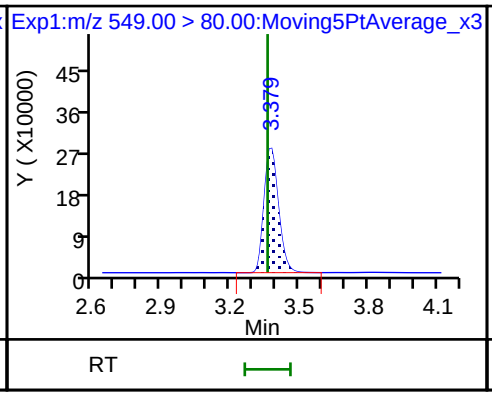
69 9-Chlorohexadecafluoro-3-oxanonane



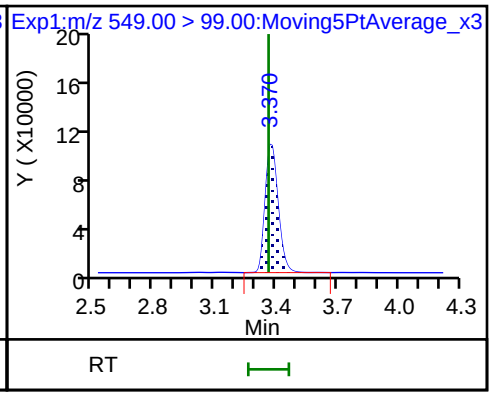
25 1H,1H,2H,2H-perfluorodecanesulfoni



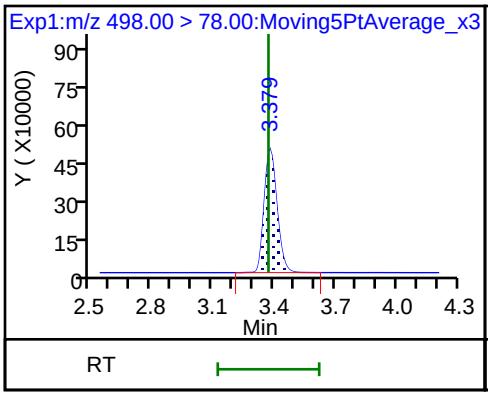
68 Perfluorononanesulfonic acid



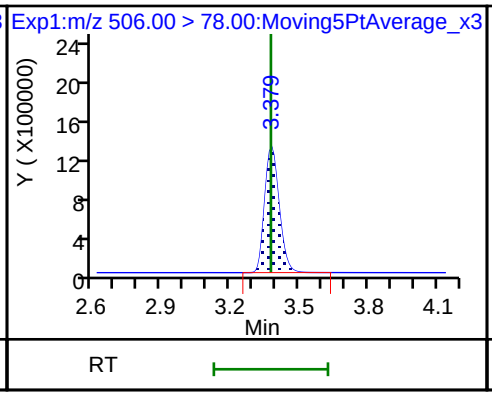
68 Perfluorononanesulfonic acid



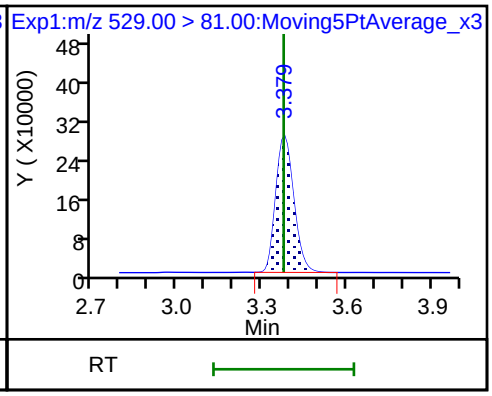
22 Perfluorooctane Sulfonamide



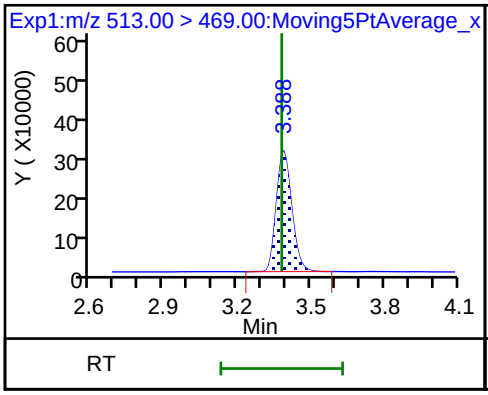
D 21 13C8 FOSA



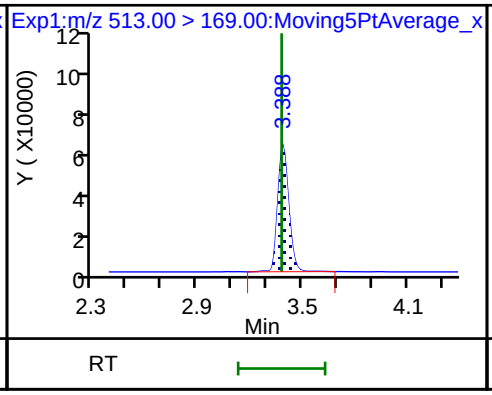
D 26 M2-8:2FTS



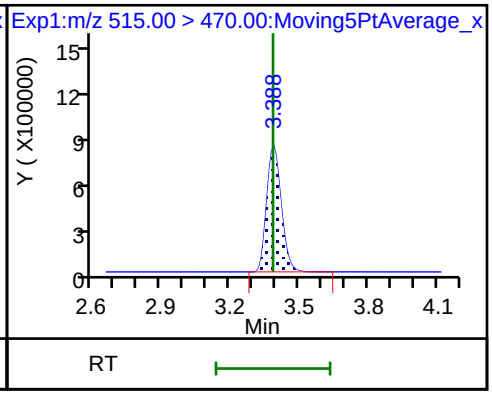
24 Perfluorodecanoic acid



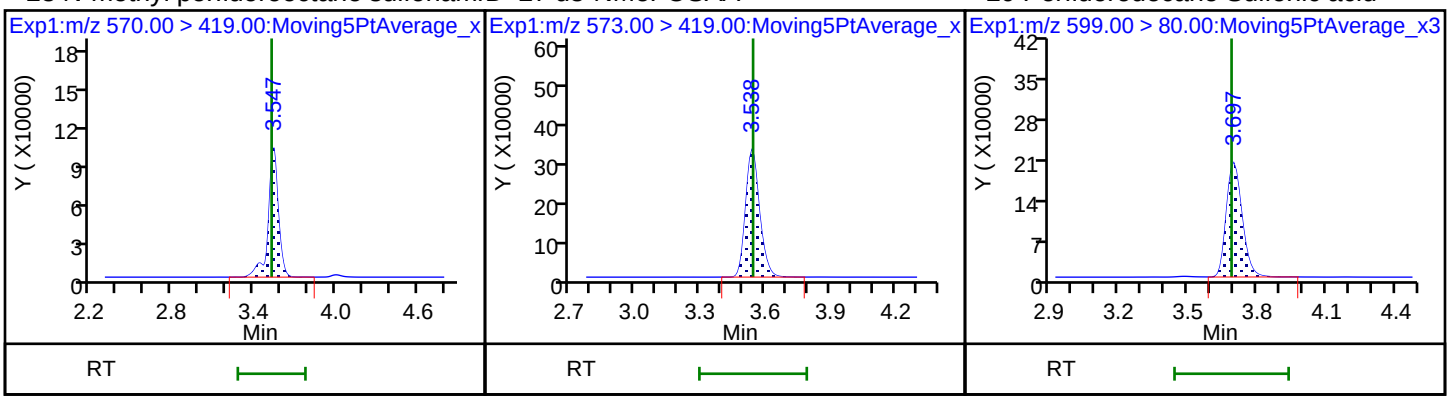
24 Perfluorodecanoic acid



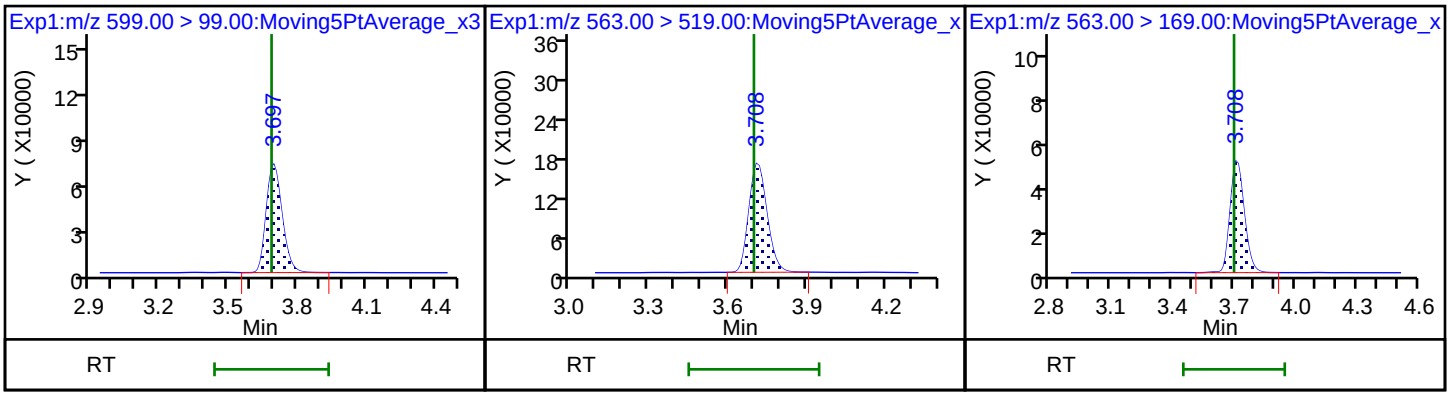
D 23 13C2 PFDA



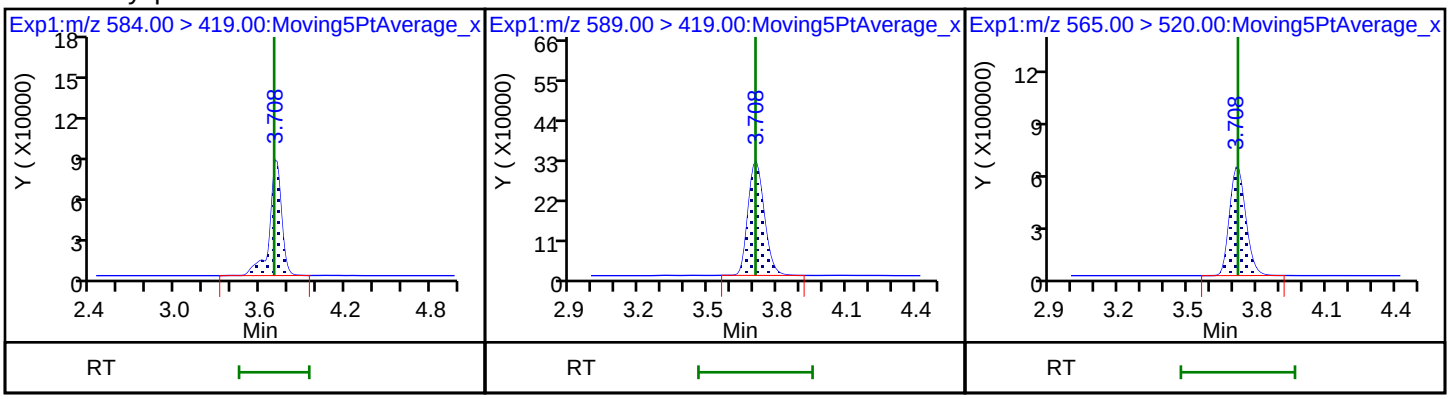
28 N-methyl perfluorooctane sulfonamiD 27 d3-NMeFOSAA 29 Perfluorodecane Sulfonic acid



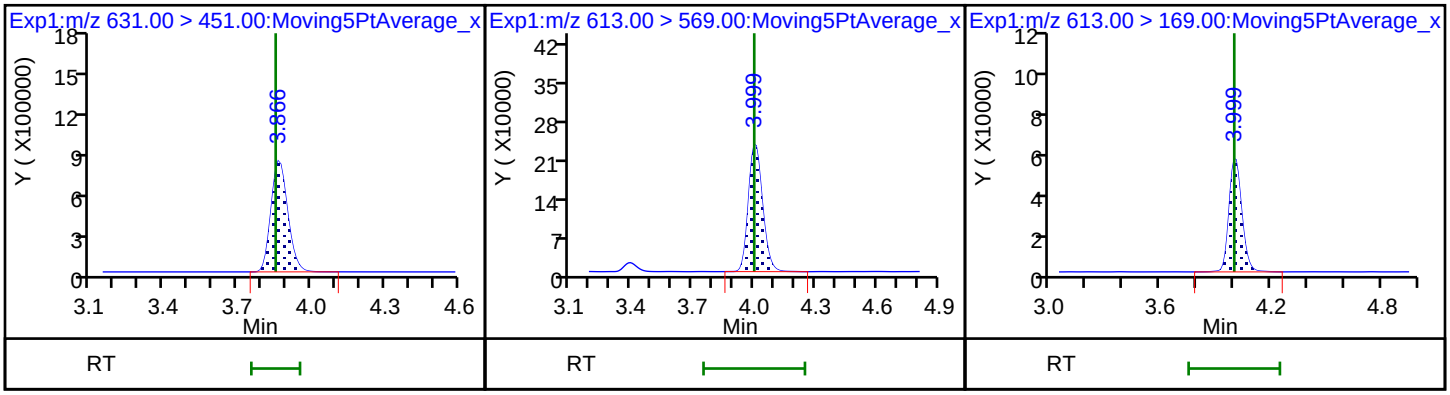
29 Perfluorodecane Sulfonic acid 31 Perfluoroundecanoic acid 31 Perfluoroundecanoic acid



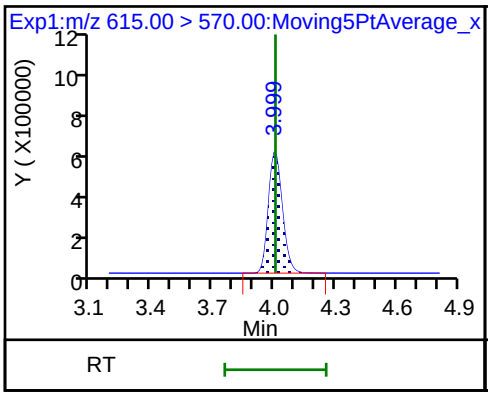
33 N-ethyl perfluorooctane sulfonamid D 32 d5-NEtFOSAA D 30 13C2 PFUnA



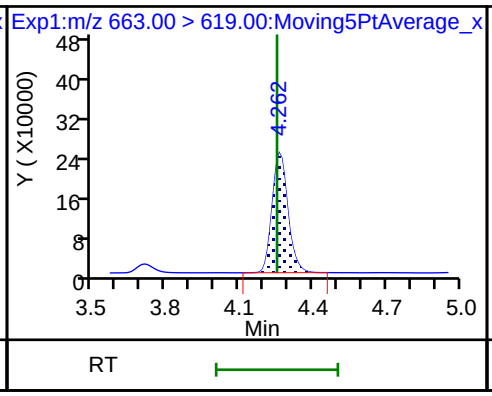
66 11-Chloroeicosafluoro-3-oxaundecan 37 Perfluorododecanoic acid 37 Perfluorododecanoic acid



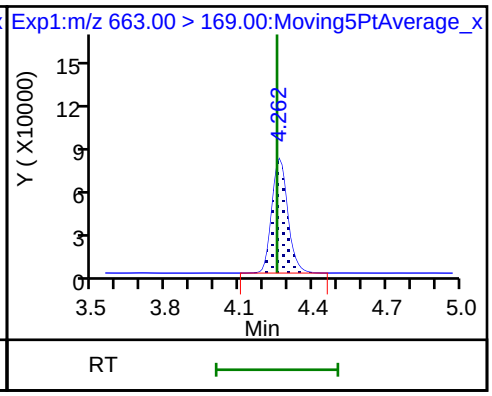
D 36 13C2 PFDoA



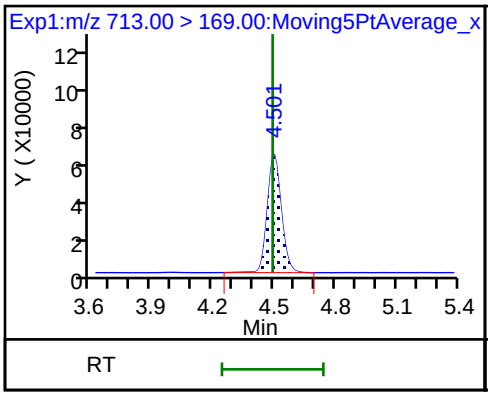
41 Perfluorotridecanoic acid



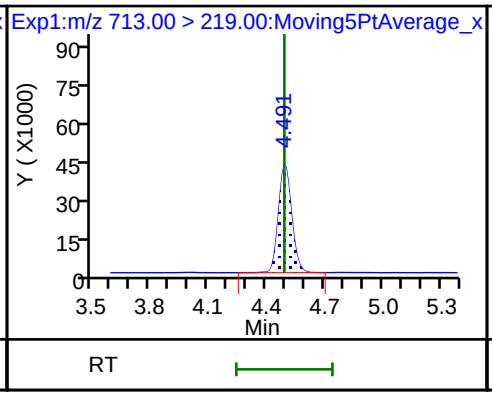
41 Perfluorotridecanoic acid



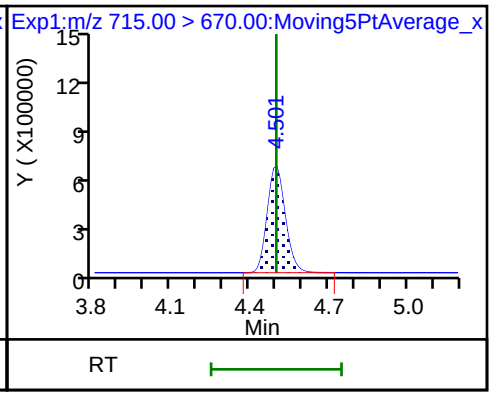
42 Perfluorotetradecanoic acid



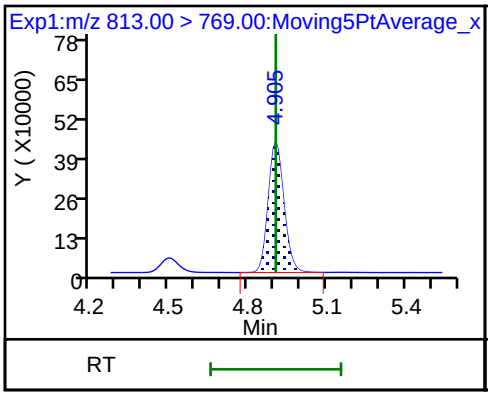
42 Perfluorotetradecanoic acid



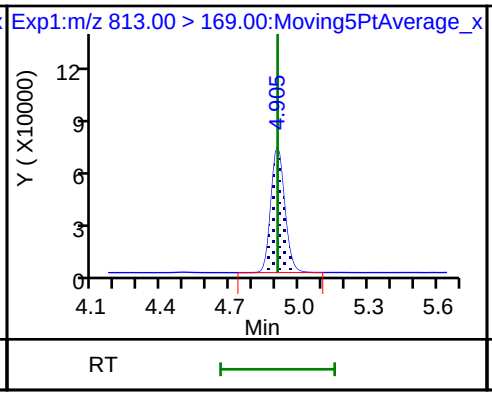
D 43 13C2-PFTeDA



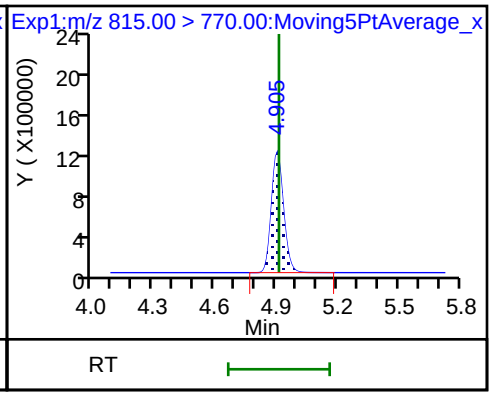
45 Perfluorohexadecanoic acid



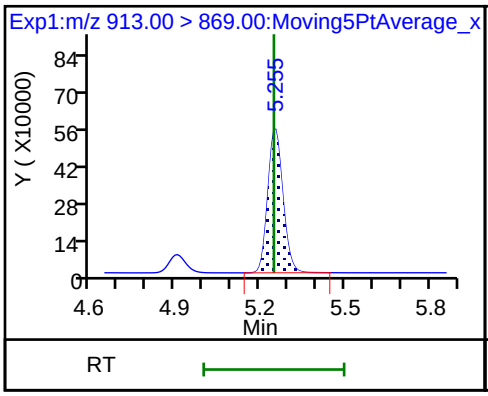
45 Perfluorohexadecanoic acid



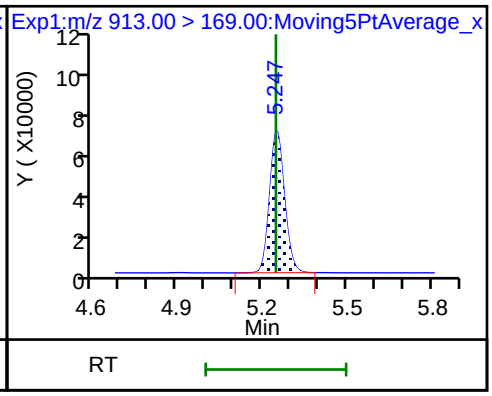
D 44 13C2-PFHxDA



46 Perfluorooctadecanoic acid



46 Perfluorooctadecanoic acid



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

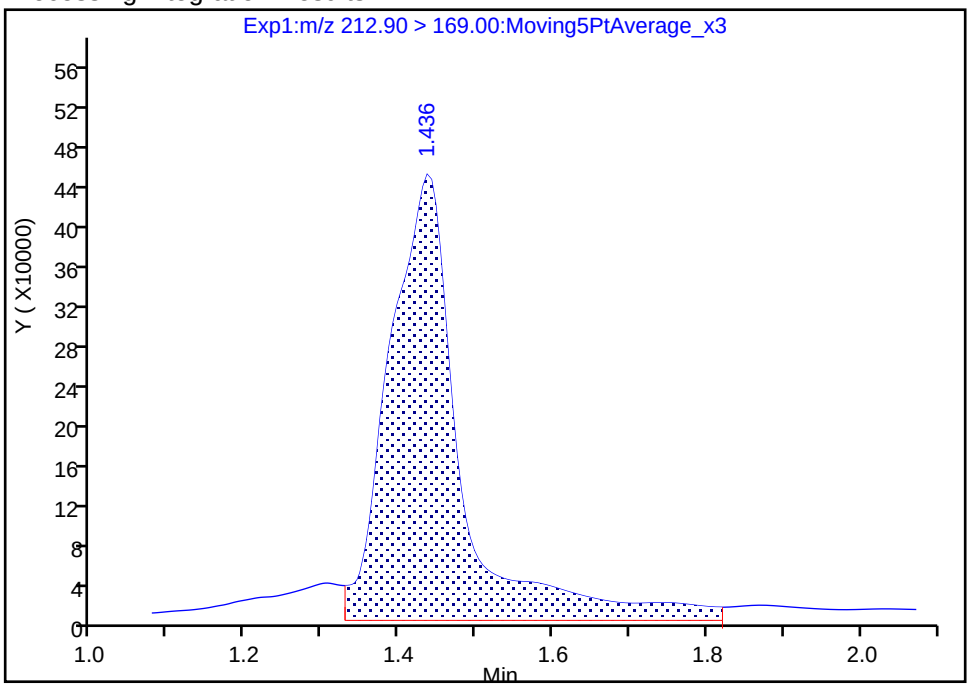
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\2018.07.13LLC_013.d				
Injection Date:	13-Jul-2018 21:40:59	Instrument ID:	A8_N		
Lims ID:	320-40571-A-23-B MS				
Client ID:	NF27-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	7	Worklist Smp#:	8
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

2 Perfluorobutyric acid, CAS: 375-22-4

Signal: 1

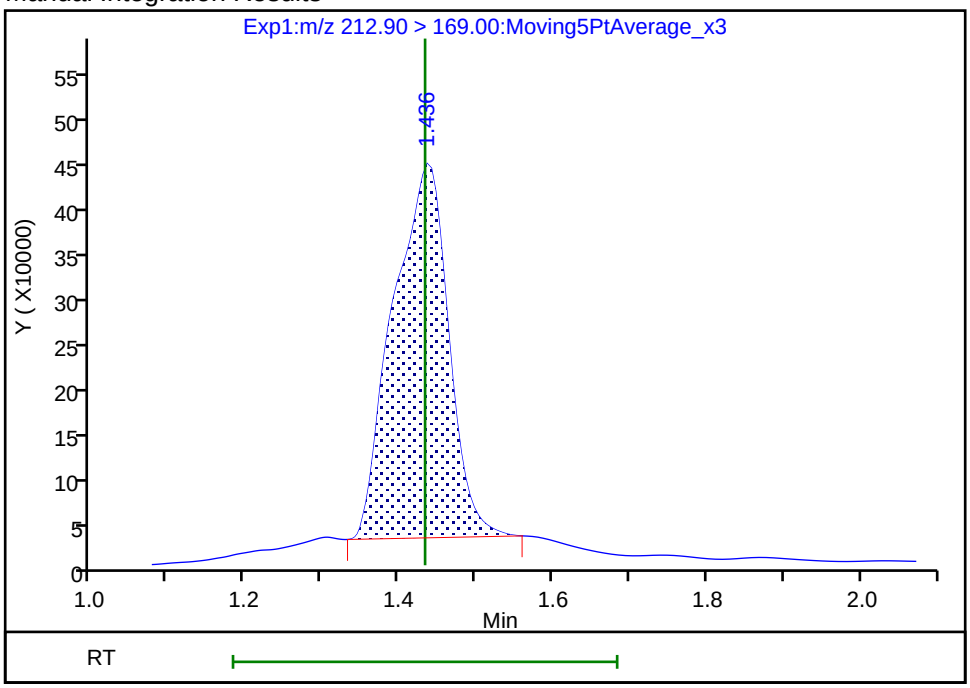
Processing Integration Results

RT: 1.44
Area: 2895697
Amount: 1.844462
Amount Units: ng/ml



Manual Integration Results

RT: 1.44
Area: 2043064
Amount: 1.301363
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 12:36:55

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

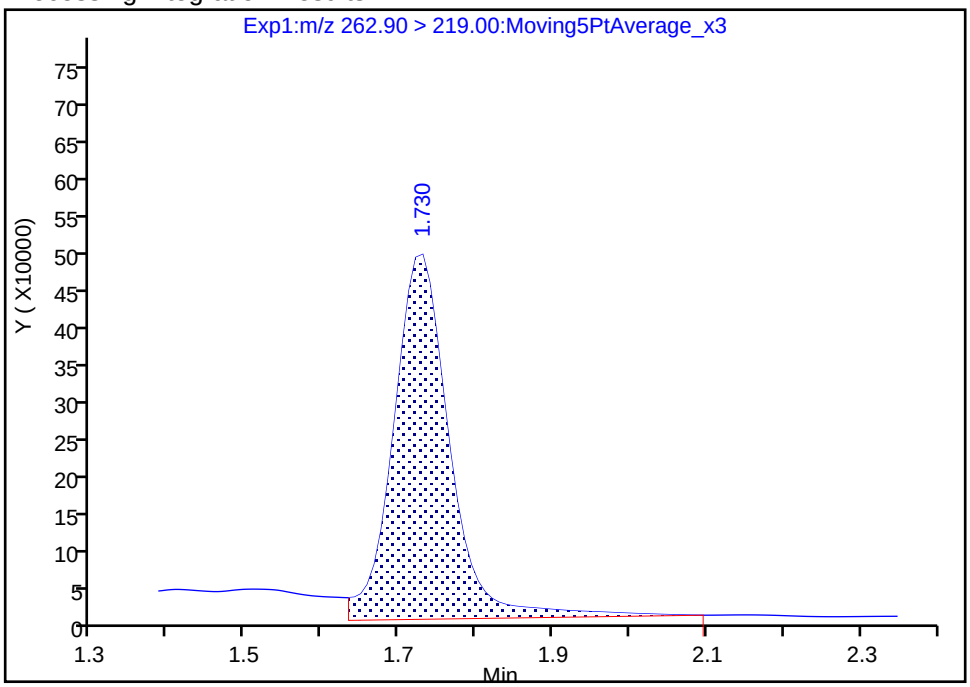
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\2018.07.13LLC_013.d				
Injection Date:	13-Jul-2018 21:40:59	Instrument ID:	A8_N		
Lims ID:	320-40571-A-23-B MS				
Client ID:	NF27-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	7	Worklist Smp#:	8
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

4 Perfluoropentanoic acid, CAS: 2706-90-3

Signal: 1

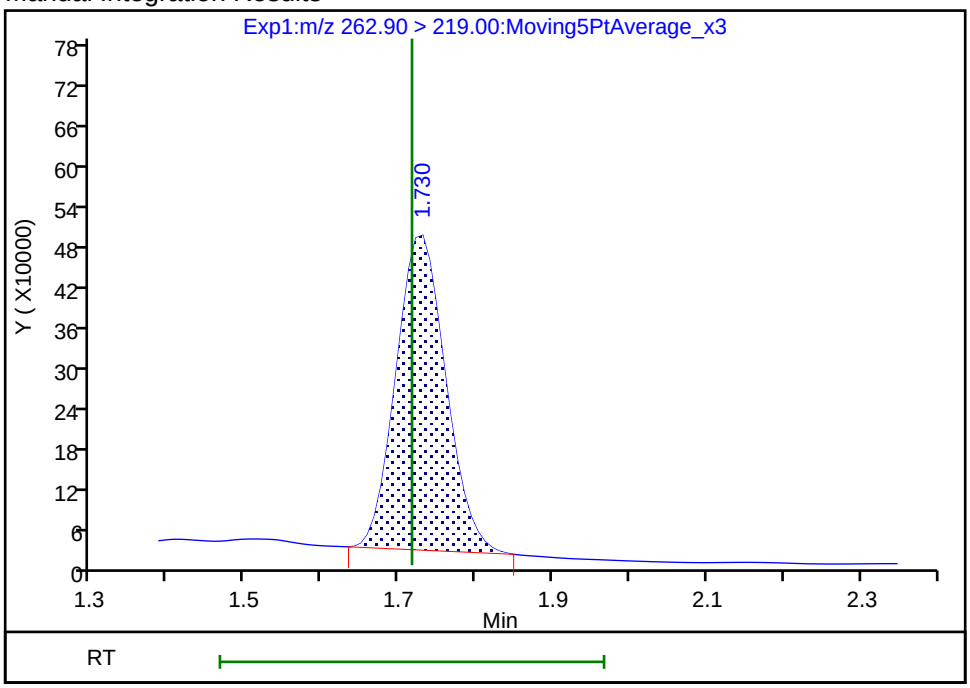
Processing Integration Results

RT: 1.73
Area: 2484774
Amount: 1.390764
Amount Units: ng/ml



Manual Integration Results

RT: 1.73
Area: 2092892
Amount: 1.171422
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 12:37:00

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

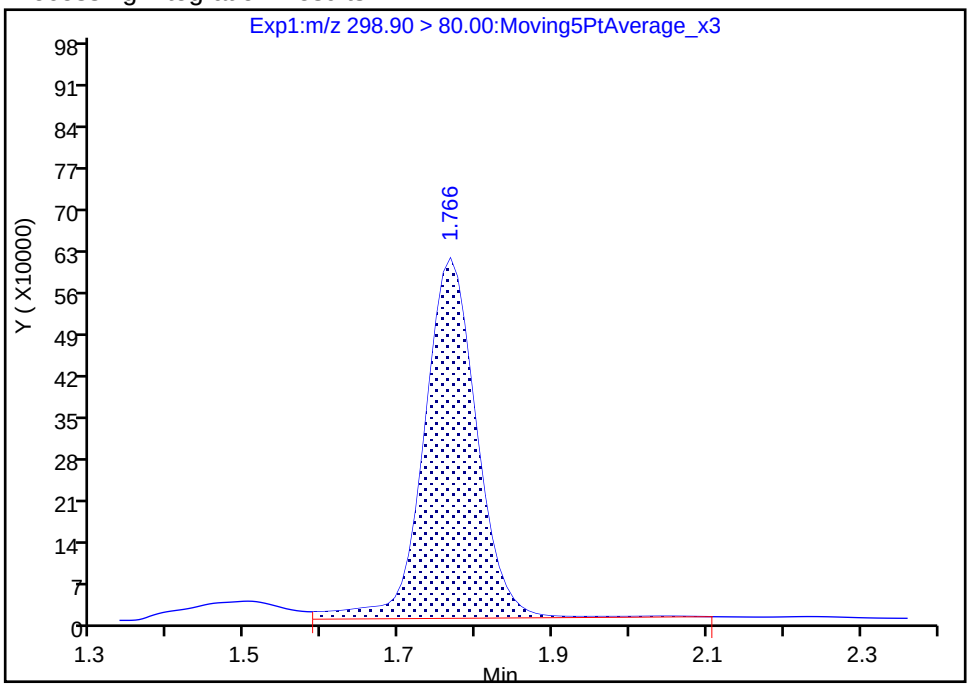
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\2018.07.13LLC_013.d				
Injection Date:	13-Jul-2018 21:40:59	Instrument ID:	A8_N		
Lims ID:	320-40571-A-23-B MS				
Client ID:	NF27-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	7	Worklist Smp#:	8
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

5 Perfluorobutanesulfonic acid, CAS: 375-73-5

Signal: 1

Processing Integration Results

RT: 1.77
Area: 2903934
Amount: 0.920873
Amount Units: ng/ml



Manual Integration Results

RT: 1.77
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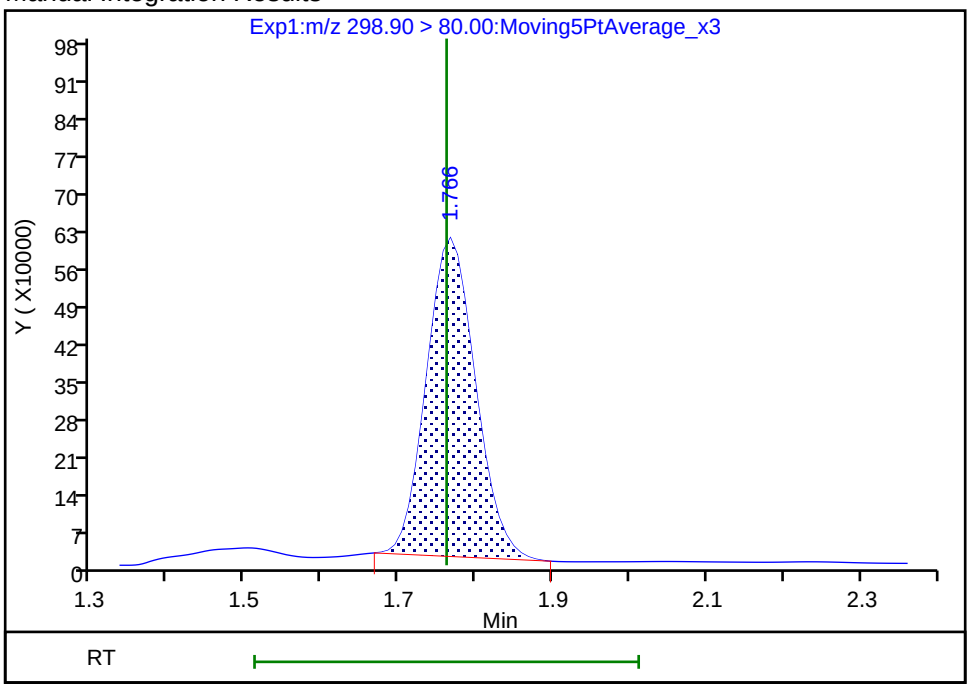
Amount: 0.840716
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 12:37:06

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

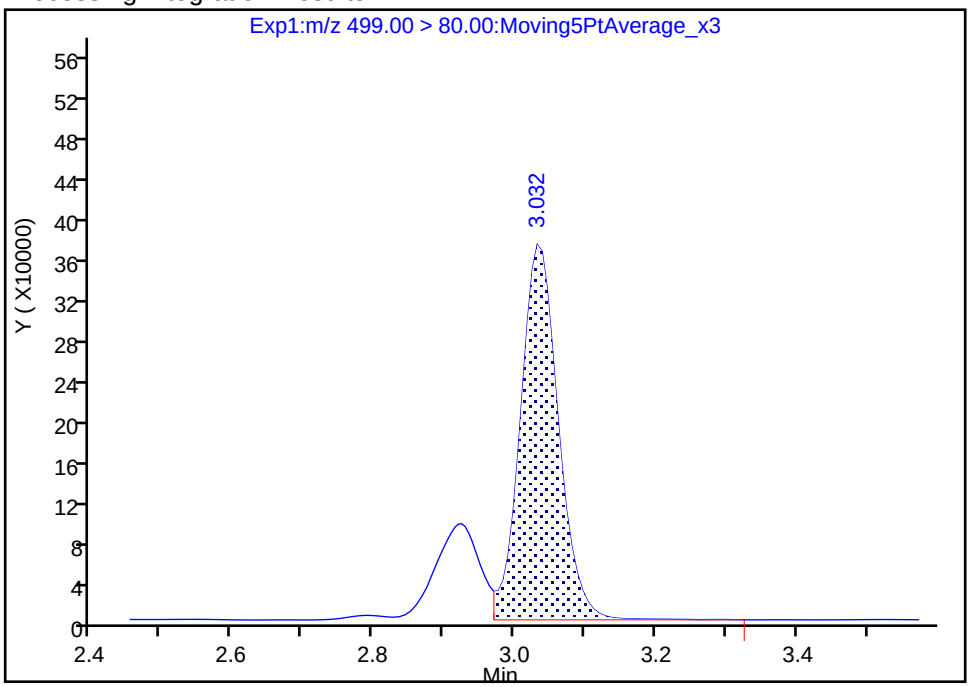
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\2018.07.13LLC_013.d				
Injection Date:	13-Jul-2018 21:40:59	Instrument ID:	A8_N		
Lims ID:	320-40571-A-23-B MS				
Client ID:	NF27-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	7	Worklist Smp#:	8
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

17 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

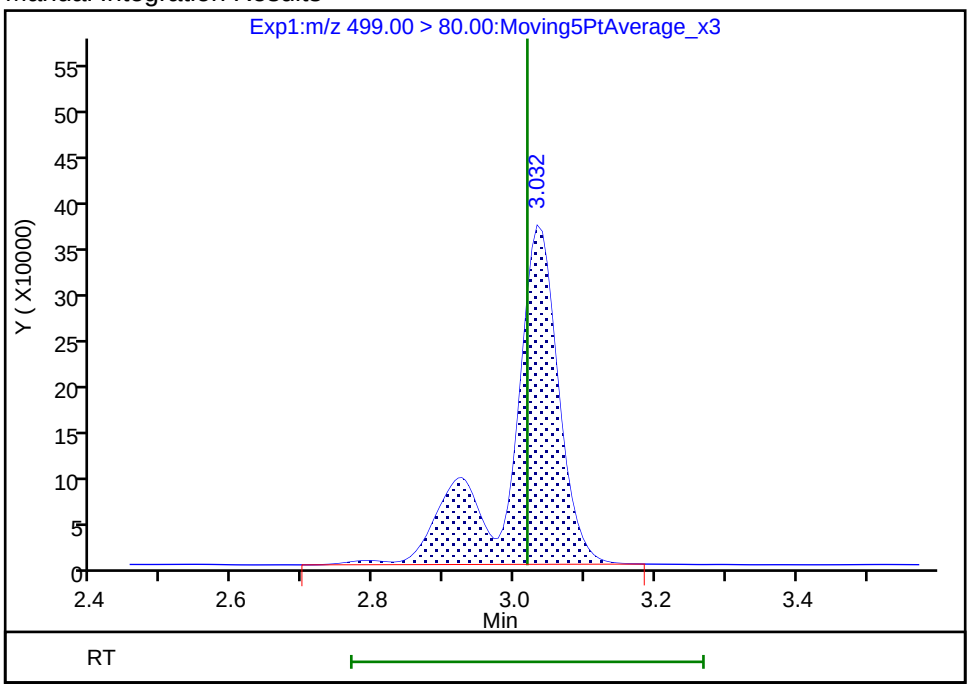
Processing Integration Results

RT: 3.03
Area: 1374979
Amount: 0.685331
Amount Units: ng/ml



Manual Integration Results

RT: 3.03
Area: 1786392
Amount: 0.890392
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 12:37:22

Audit Action: Manually Integrated Audit Reason: Isomers

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

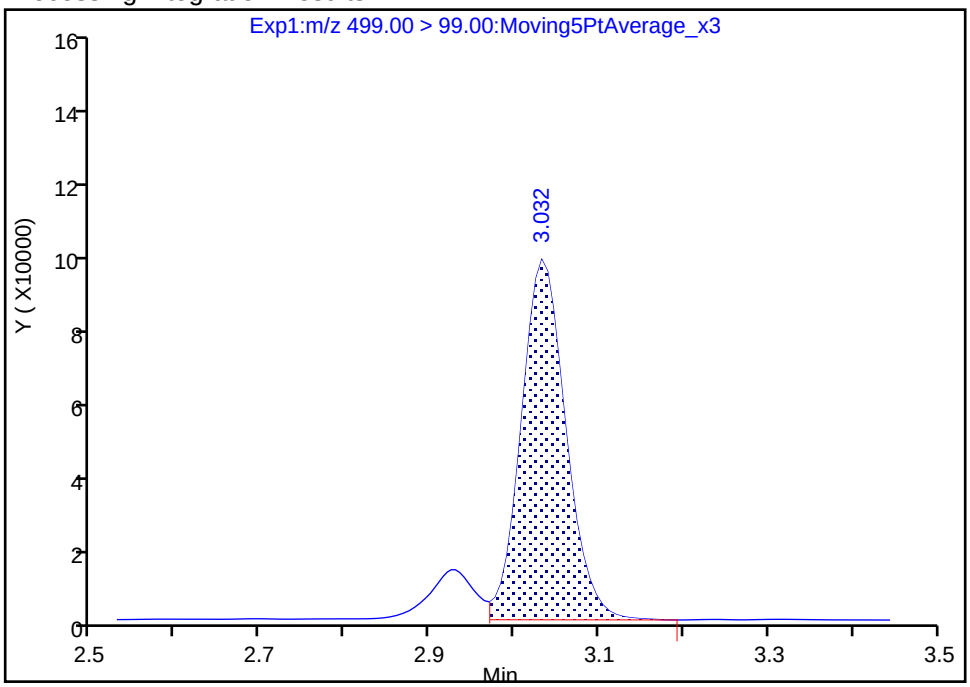
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\2018.07.13LLC_013.d				
Injection Date:	13-Jul-2018 21:40:59	Instrument ID:	A8_N		
Lims ID:	320-40571-A-23-B MS				
Client ID:	NF27-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	7	Worklist Smp#:	8
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

17 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 2

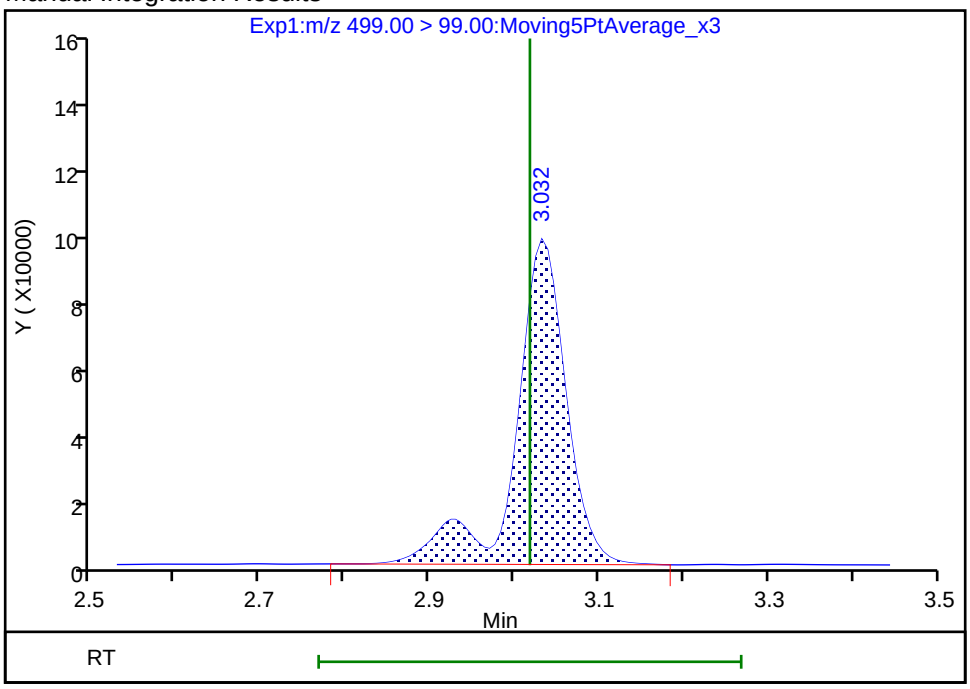
Processing Integration Results

RT: 3.03
Area: 352358
Amount: 0.685331
Amount Units: ng/ml



Manual Integration Results

RT: 3.03
Area: 400476
Amount: 0.890392
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 12:37:24

Audit Action: Manually Integrated Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF33-GW-01 MS
Lab Sample ID: 320-40571-35 MS
Matrix: Water
Lab File ID: 2018.07.06LLAAA_037.d
Analysis Method: 537 (modified)
Date Collected: 06/19/2018 17:00
Extraction Method: 3535
Date Extracted: 07/02/2018 16:10
Sample wt/vol: 266.6(mL)
Date Analyzed: 07/06/2018 18:17
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 232788
Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	0.0603		0.0019	0.00033
2706-90-3	Perfluoropentanoic acid (PFPeA)	0.0543		0.0019	0.00046
307-24-4	Perfluorohexanoic acid (PFHxA)	0.0381		0.0019	0.00054
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.0352		0.0019	0.00023
335-67-1	Perfluorooctanoic acid (PFOA)	0.0344		0.0019	0.00080
375-95-1	Perfluorononanoic acid (PFNA)	0.0351		0.0019	0.00025
335-76-2	Perfluorodecanoic acid (PFDA)	0.0333		0.0019	0.00029
2058-94-8	Perfluoroundecanoic acid (PFUnA)	0.0353		0.0019	0.0010
307-55-1	Perfluorododecanoic acid (PFDoA)	0.0344		0.0019	0.00052
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	0.0276		0.0019	0.0012
376-06-7	Perfluorotetradecanoic acid (PFTeA)	0.0300		0.0019	0.00027
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.0327		0.0019	0.00019
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	0.0355		0.0019	0.00028
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.0313		0.0019	0.00016
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	0.0329		0.0019	0.00018
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.0323		0.0019	0.00051
8789-57-2	Perfluorononanesulfonic acid (PFNS)	0.0315		0.0019	0.00015
335-77-3	Perfluorodecanesulfonic acid (PFDS)	0.0287		0.0019	0.00030
754-91-6	Perfluorooctane Sulfonamide (FOSA)	0.0339		0.0019	0.00033
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	0.0340		0.019	0.0029
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	0.0348		0.019	0.0018
757124-72-4	4:2 FTS	0.0509		0.019	0.0049
27619-97-2	6:2 FTS	0.0410		0.019	0.0019
39108-34-4	8:2 FTS	0.0307		0.019	0.0019

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF33-GW-01 MS
Lab Sample ID: 320-40571-35 MS
Matrix: Water
Lab File ID: 2018.07.06LLAAA_037.d
Analysis Method: 537 (modified)
Date Collected: 06/19/2018 17:00
Extraction Method: 3535
Date Extracted: 07/02/2018 16:10
Sample wt/vol: 266.6(mL)
Date Analyzed: 07/06/2018 18:17
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 232788
Units: ug/L

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00992	13C4 PFBA	90		25-150
STL01893	13C5 PFPeA	92		25-150
STL00993	13C2 PFHxA	96		25-150
STL01892	13C4-PFHpA	102		25-150
STL00990	13C4 PFOA	104		25-150
STL00995	13C5 PFNA	104		25-150
STL00996	13C2 PFDA	108		25-150
STL00997	13C2 PFUnA	95		25-150
STL00998	13C2 PFDoA	90		25-150
STL02116	13C2-PFTeDA	77		25-150
STL02337	13C3-PFBS	95		25-150
STL00994	18O2 PFHxS	104		25-150
STL00991	13C4 PFOS	101		25-150
STL01056	13C8 FOSA	91		25-150
STL02118	d3-NMeFOSAA	97		25-150
STL02117	d5-NEtFOSAA	91		25-150
STL02279	M2-6:2FTS	123		25-150
STL02280	M2-8:2FTS	114		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180706-60751.b\2018.07.06LLAAA_037.d
Lims ID: 320-40571-A-35-B MS
Client ID: NF33-GW-01
Sample Type: MS
Inject. Date: 06-Jul-2018 18:17:16 ALS Bottle#: 27 Worklist Smp#: 7
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-40571-a-35-b
Misc. Info.: Plate: 1 Rack: 5
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180706-60751.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 09-Jul-2018 10:17:13 Calib Date: 05-Jul-2018 09:38:17
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180705-60684.b\2018.07.05LLICALAA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK010

First Level Reviewer: mongkols Date: 09-Jul-2018 10:17:13

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.431	1.424	0.007	0.538	6221925	2.25		89.9	23375	
2 Perfluorobutyric acid										
212.90 > 169.00	1.431	1.433	-0.002	1.000	4083316	1.61		161	1350	
D 3 13C5-PFPeA										
267.90 > 223.00	1.712	1.702	0.010	0.644	4722096	2.30		92.2	40117	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.712	1.707	0.005	1.000	3254511	1.45		145	1575	
D 47 13C3-PFBS										
301.90 > 83.00	1.748	1.738	0.010	0.657	107847	2.20		94.7	495	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.748	1.752	-0.004	1.000	3067553	0.8724		98.7	3486	
298.90 > 99.00	1.748	1.752	-0.004	1.000	1239707		2.47(1.25-3.74)		3407	
61 1H,1H,2H,2H-perfluorohexanesulfoni										
327.00 > 307.00	1.961	1.956	0.005	1.122	987198	1.36		145	24330	
D 7 13C2 PFHxA										
315.00 > 270.00	1.993	1.981	0.012	0.749	5284168	2.41		96.4	60328	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.993	1.988	0.005	1.000	2186145	1.02		102	2000	
313.00 > 119.00	1.993	1.988	0.005	1.000	198442		11.02(5.03-15.10)		2586	
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.016	2.010	0.006	1.153	2843337	0.9452		101	4888	
349.00 > 99.00	2.016	2.010	0.006	1.153	987452		2.88(1.36-4.07)		3987	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.084	2.070	0.014	0.783	397544	2.21		88.5	986	
67 Perfluoro(2-propoxypropanoic) acid										
329.10 > 285.00	2.084	2.078	0.006	1.000	352756	0.9649		96.5	928	
D 9 13C4-PFHpA										
367.00 > 322.00	2.308	2.293	0.015	0.868	4977645	2.56		102	44052	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.308	2.302	0.006	1.000	2108751	0.9375		93.7	1920	
363.00 > 169.00	2.308	2.302	0.006	1.000	923408		2.28(1.13-3.40)		5273	
D 11 18O2 PFHxS										
403.00 > 84.00	2.321	2.306	0.015	0.873	5896890	2.46		104	69884	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.321	2.315	0.006	1.000	2405977	0.8346		91.7	2151	
399.00 > 99.00	2.321	2.315	0.006	1.000	738432		3.26(1.50-4.49)		1879	
65 Adona										
377.00 > 251.00	2.347	2.355	-0.008	0.778	5719542	0.8938		89.4	49225	
377.00 > 85.00	2.347	2.355	-0.008	0.778	3531331		1.62(0.84-2.53)		20031	
D 12 M2-6:2FTS										
429.00 > 81.00	2.636	2.627	0.009	0.991	1280416	2.93		123	7384	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.628	2.634	-0.006	0.997	923396	1.09		115	4310	
D 14 13C4 PFOA										
417.00 > 372.00	2.660	2.652	0.008	1.000	4978857	2.61		104	39589	
* 62 13C2-PFOA										
415.00 > 370.00	2.660	2.658	0.002		4999457	2.50			44085	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.660	2.658	0.002	1.000	2164097	0.9164		91.5	1094	
413.00 > 169.00	2.660	2.658	0.002	1.000	1100001		1.97(0.84-2.52)		5477	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.668	2.665	0.003	0.884	2028330	0.8771		92.1	8400	
449.00 > 99.00	2.668	2.665	0.003	0.884	548657		3.70(1.94-5.82)		6751	
D 19 13C5 PFNA										
468.00 > 423.00	3.018	3.009	0.009	1.135	4230794	2.61		104	45955	
D 18 13C4 PFOS										
503.00 > 80.00	3.018	3.009	0.009	1.135	4126636	2.41		101	21407	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.018	3.022	-0.004	1.000	1735250	0.8604		92.7	6049	
499.00 > 99.00	3.018	3.022	-0.004	1.000	384964		4.51(2.31-6.93)		3106	
20 Perfluorononanoic acid										
463.00 > 419.00	3.018	3.022	-0.004	1.000	1704989	0.9349		93.5	2021	
463.00 > 169.00	3.018	3.022	-0.004	1.000	406277		4.20(1.90-5.69)		4523	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.224	3.237	-0.013	1.068	2615590	0.8013		86.0	35463	
D 21 13C8 FOSA										
506.00 > 78.00	3.361	3.359	0.002	1.264	5393481	2.27		90.9	59157	
D 26 M2-8:2FTS										
529.00 > 81.00	3.361	3.359	0.002	1.264	1325736	2.73		114	13944	
25 1H,1H,2H,2H-perfluorodecanesulfoni										
527.00 > 507.00	3.361	3.367	-0.006	1.000	599373	0.8196		85.6	15160	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.371	3.367	0.004	1.003	1931083	0.9026		90.3	24623	
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.361	3.367	-0.006	1.114	1179982	0.8410		87.6	9621	
549.00 > 99.00	3.361	3.367	-0.006	1.114	442791		2.66(1.33-3.97)		5191	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 23 13C2 PFDA										
515.00 > 470.00	3.371	3.368	0.003	1.267	3783306	2.71		108	54193	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.371	3.376	-0.005	1.000	1398635	0.8867		88.7	5148	
513.00 > 169.00	3.371	3.376	-0.005	1.000	239798		5.83(2.36-7.09)		5462	
35 MeFOSA										
512.00 > 169.00	3.529	3.498	0.031		7094	NC			333	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.529	3.518	0.011	1.327	2004864	2.43		97.3	26235	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.529	3.535	-0.006	1.000	747792	0.9060		90.6	4629	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.688	3.684	0.004	1.222	950335	0.7650		79.4	9516	
599.00 > 99.00	3.688	3.684	0.004	1.222	314950		3.02(1.39-4.16)		6597	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.688	3.685	0.003	1.386	1853497	2.28		91.1	14734	
D 30 13C2 PFUnA										
565.00 > 520.00	3.698	3.696	0.002	1.390	2801938	2.39		95.4	49255	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.698	3.705	-0.007	1.000	897472	0.9420		94.2	3133	
563.00 > 169.00	3.698	3.705	-0.007	1.000	212044		4.23(2.12-6.36)		7411	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.698	3.705	-0.007	1.003	621059	0.9291		92.9	11629	
66 11-Chloroeicosafluoro-3-oxaundecan										
631.00 > 451.00	3.855	3.862	-0.007	1.277	3584956	0.7199		76.4	34451	
D 36 13C2 PFDoA										
615.00 > 570.00	3.989	3.986	0.003	1.499	2842977	2.26		90.4	18502	
37 Perfluorododecanoic acid										
613.00 > 569.00	3.989	3.995	-0.006	1.000	1150903	0.9184		91.8	1373	
613.00 > 169.00	3.989	3.995	-0.006	1.000	276441		4.16(2.13-6.40)		7400	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.252	4.259	-0.007	1.066	1027379	0.7360		73.6	1195	
663.00 > 169.00	4.252	4.259	-0.007	1.066	305301		3.37(1.25-3.76)		6100	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.491	4.479	0.012	1.688	2971749	1.94		77.5	17005	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.491	4.491	0.0	1.000	257725	0.8007		80.1	3382	
713.00 > 219.00	4.480	4.491	-0.011	0.998	198978		1.30(0.71-2.13)		3794	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.896	4.896	0.0	1.840	4656140	1.64		65.6	13326	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.896	4.905	-0.009	1.000	1608087	0.8861		88.6	700	
813.00 > 169.00	4.896	4.905	-0.009	1.000	267499		6.01(2.86-8.58)		3403	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.247	5.247	0.0	1.072	1178443	0.5436		54.4	470	
913.00 > 169.00	5.240	5.247	-0.007	1.070	147098		8.01(3.83-11.48)		2094	

QC Flag Legend

Processing Flags

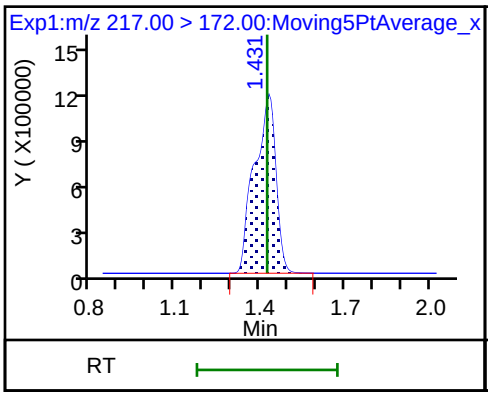
NC - Not Calibrated

Report Date: 09-Jul-2018 10:17:13 Chrom Revision: 2.2 07-Jun-2018 07:41:54

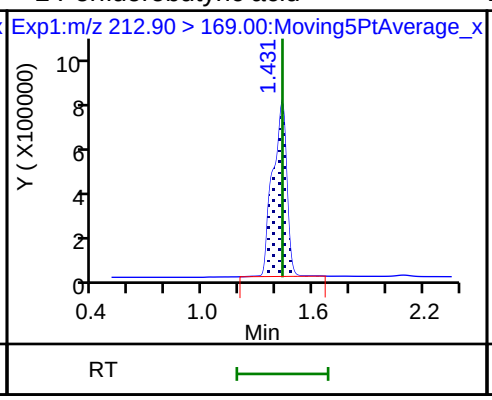
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180706-60751.b\2018.07.06LLAAA_037.d
Injection Date: 06-Jul-2018 18:17:16 Instrument ID: A8_N
Lims ID: 320-40571-A-35-B MS
Client ID: NF33-GW-01
Operator ID: SACINSTLCMS01 ALS Bottle#: 27 Worklist Smp#: 7
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC ICAL

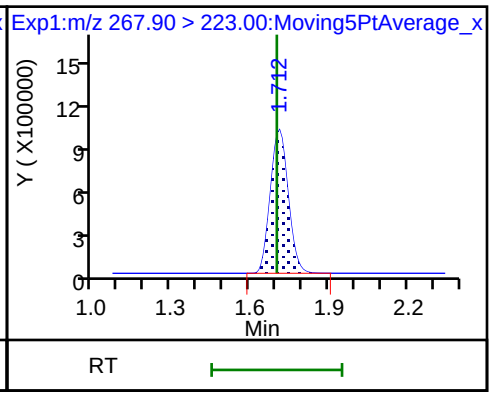
D 1 13C4 PFBA



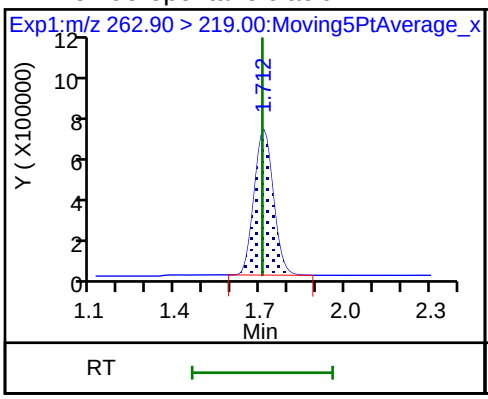
2 Perfluorobutyric acid



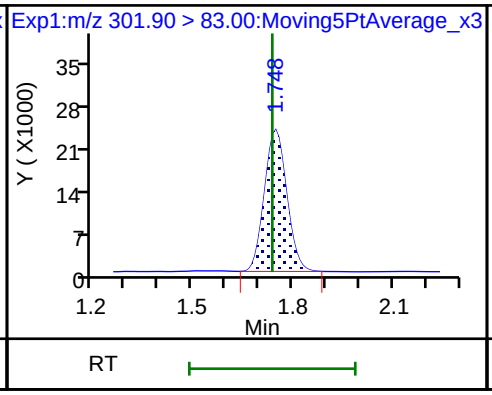
D 3 13C5-PFPeA



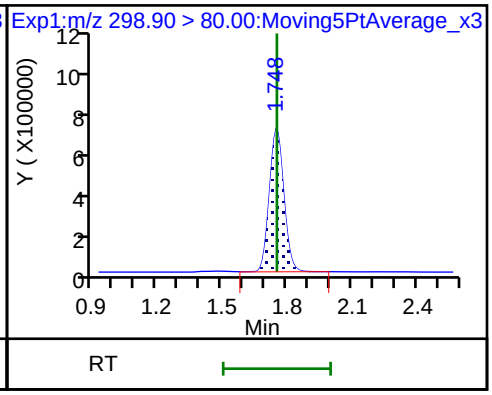
4 Perfluoropentanoic acid



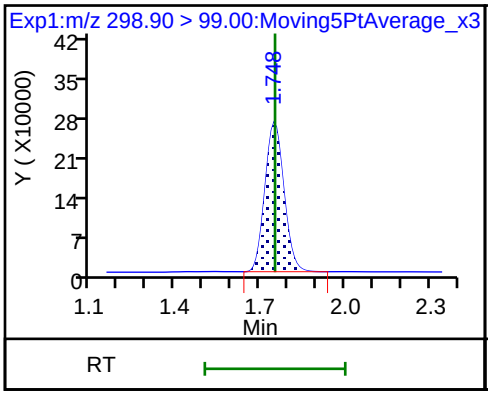
D 47 13C3-PFBS



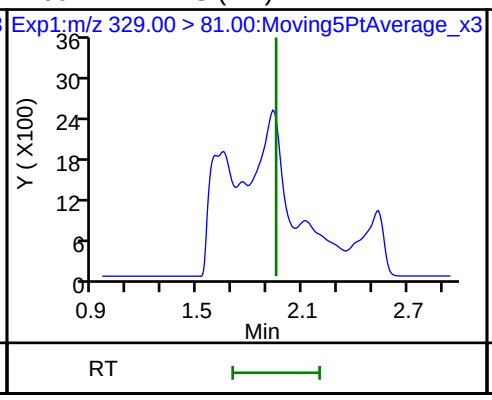
5 Perfluorobutanesulfonic acid



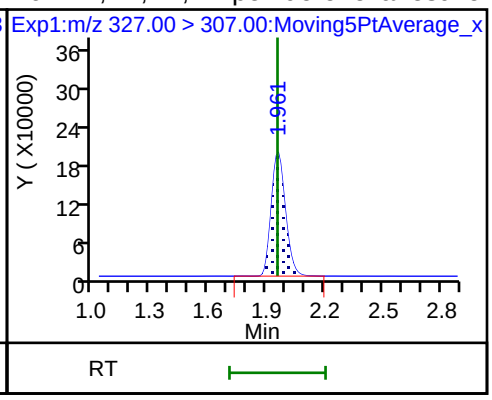
5 Perfluorobutanesulfonic acid



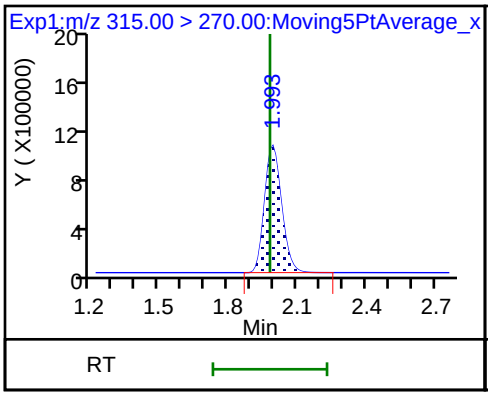
D 60 M2-4:2FTS (ND)



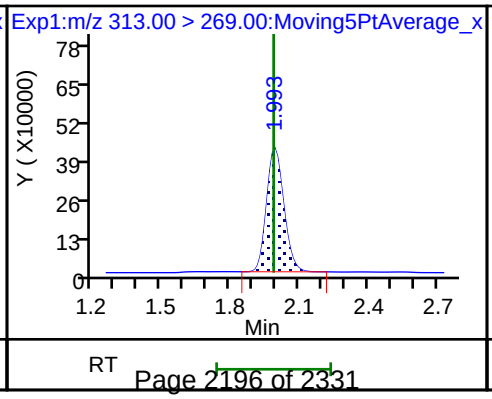
61 1H,1H,2H,2H-perfluorohexanesulfoni



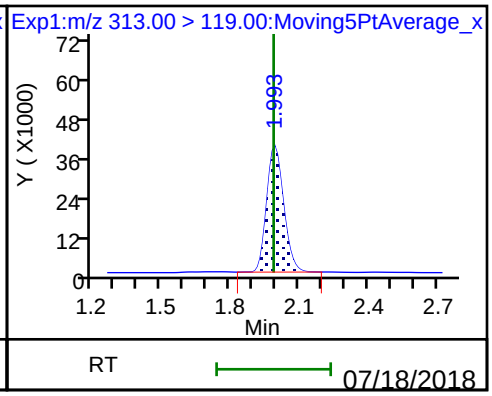
D 7 13C2 PFHxA



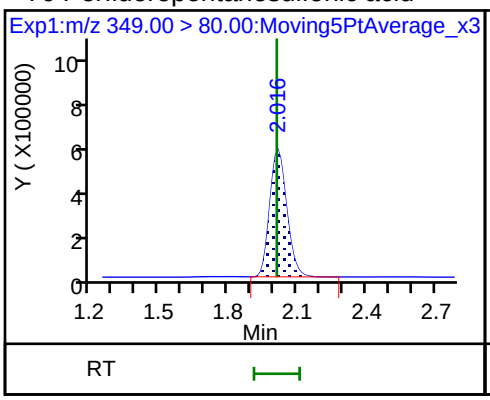
6 Perfluorohexanoic acid



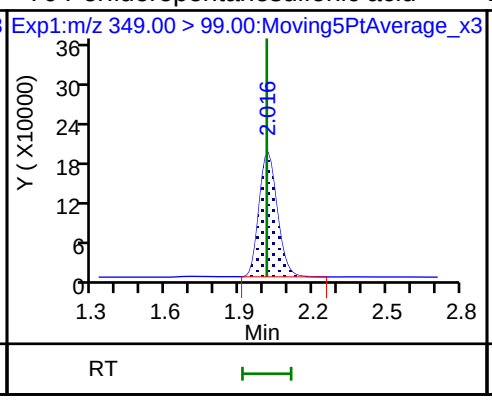
6 Perfluorohexanoic acid



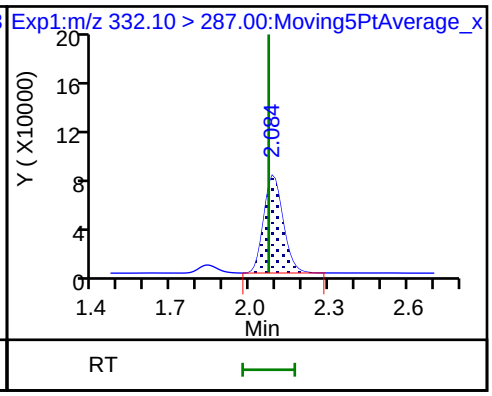
70 Perfluoropentanesulfonic acid



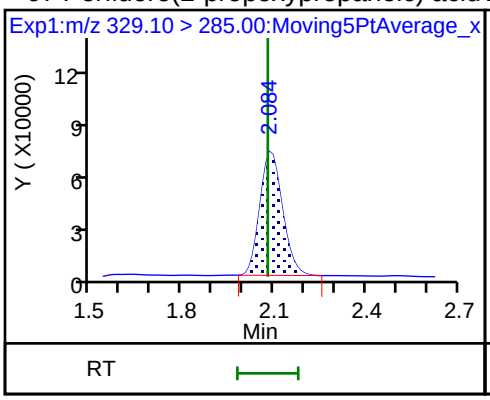
70 Perfluoropentanesulfonic acid



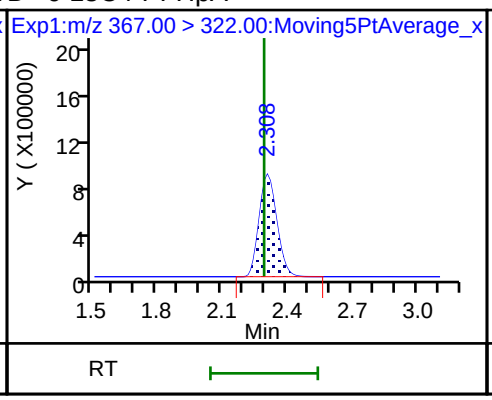
D 64 13C3 HFPO-DA



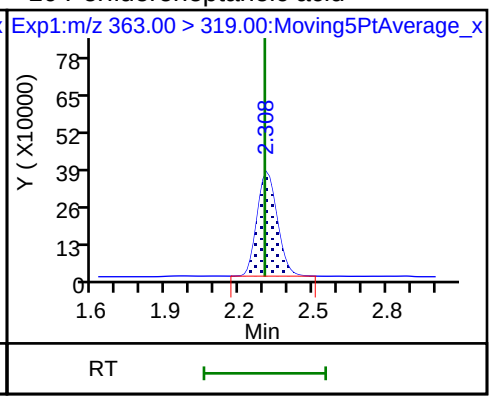
67 Perfluoro(2-propoxypropanoic) acid



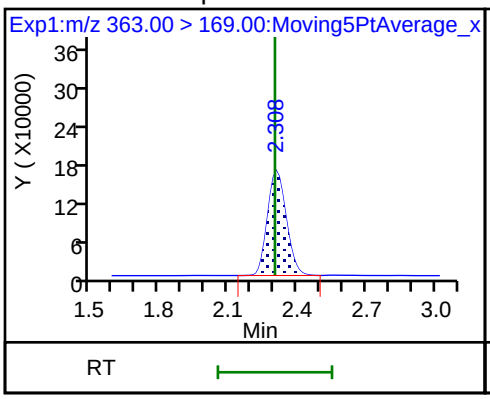
D 9 13C4-PFHpA



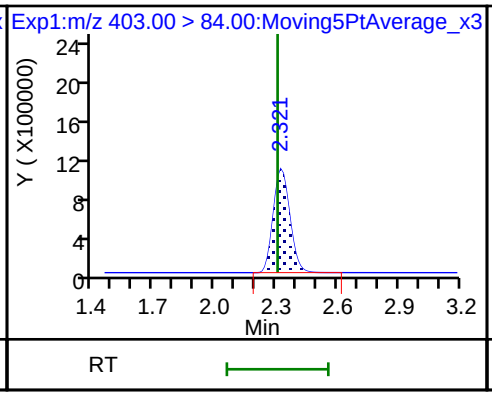
10 Perfluoroheptanoic acid



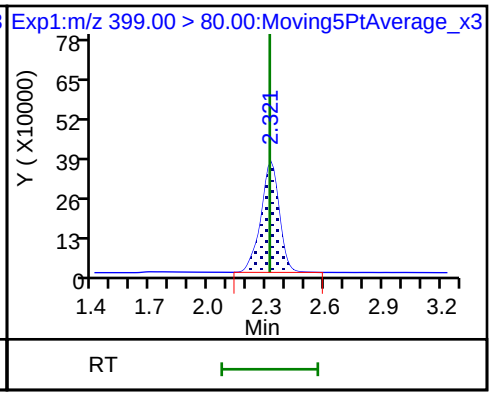
10 Perfluoroheptanoic acid



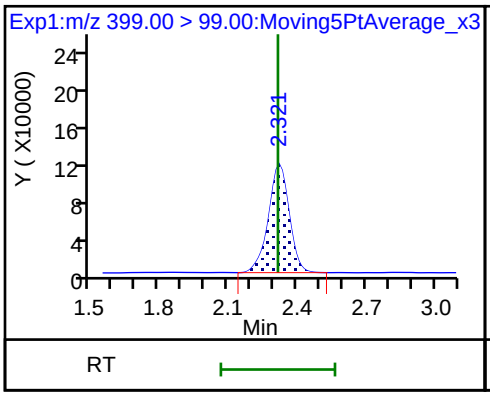
D 11 18O2 PFHxS



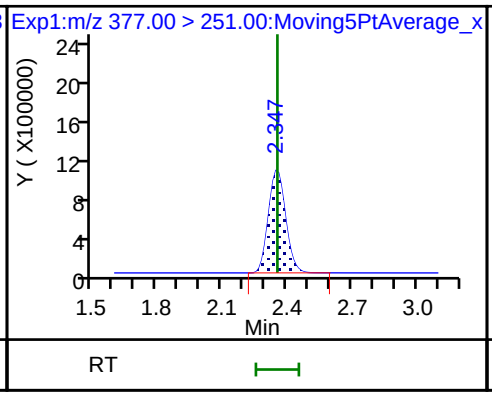
8 Perfluorohexanesulfonic acid



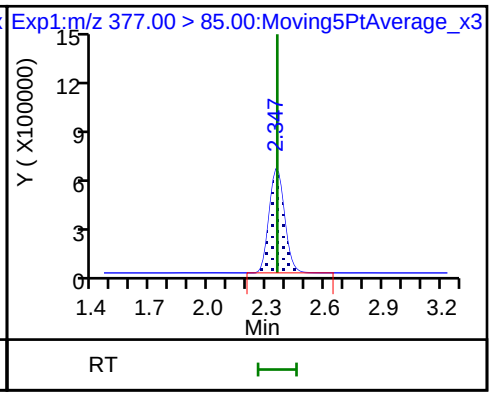
8 Perfluorohexanesulfonic acid



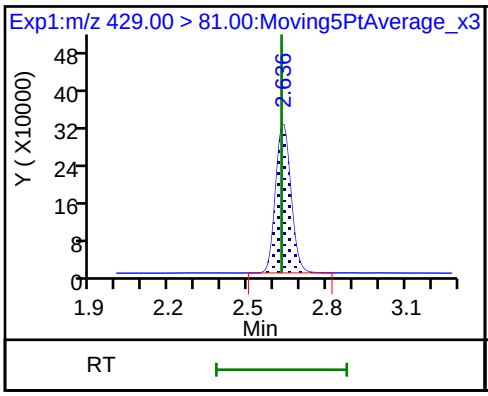
65 Adona



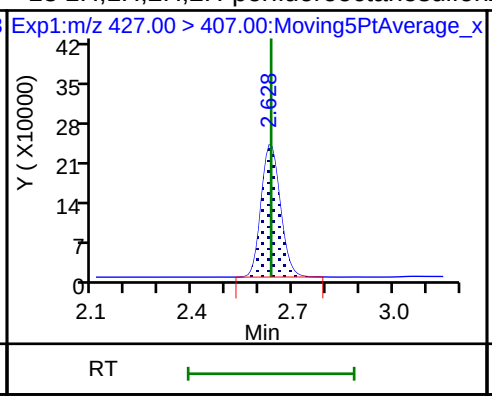
65 Adona



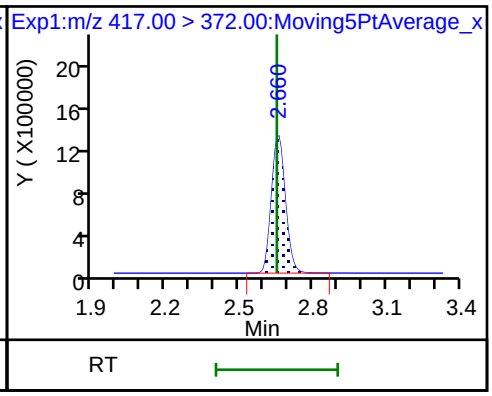
D 12 M2-6:2FTS



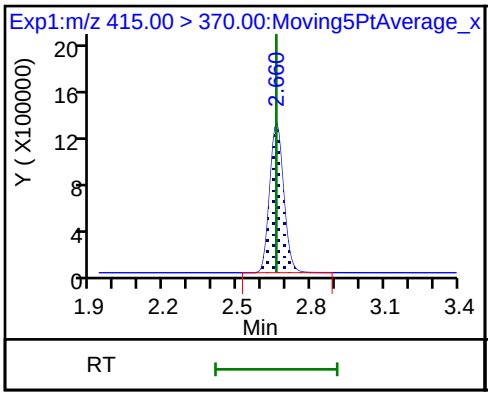
13 1H,1H,2H,2H-perfluorooctanesulfon



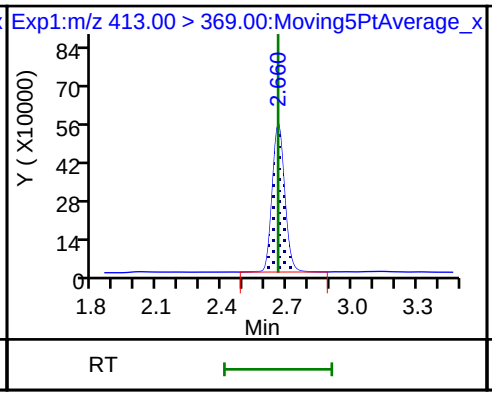
D 14 13C4 PFOA



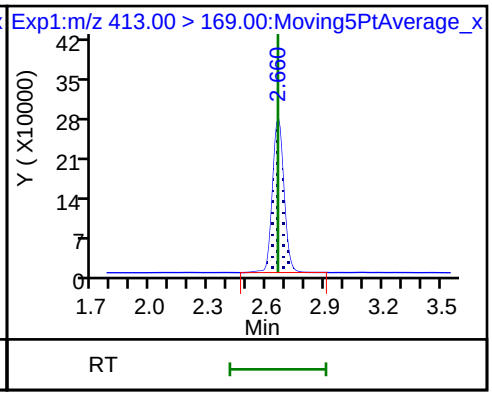
* 62 13C2-PFOA



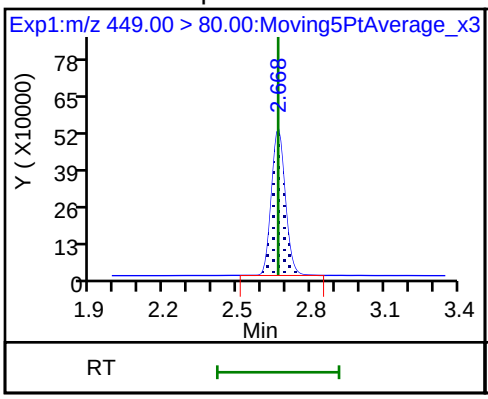
15 Perfluorooctanoic acid



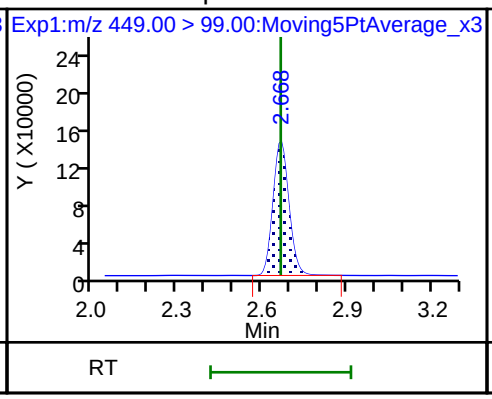
15 Perfluorooctanoic acid



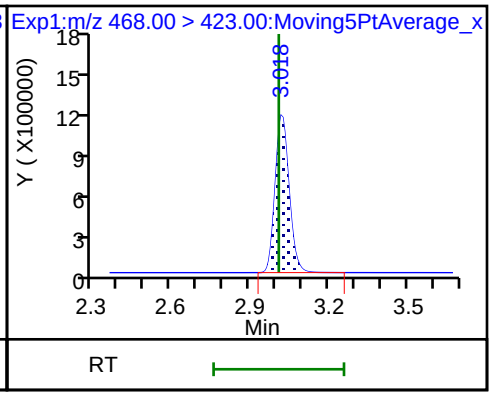
16 Perfluoroheptanesulfonic acid



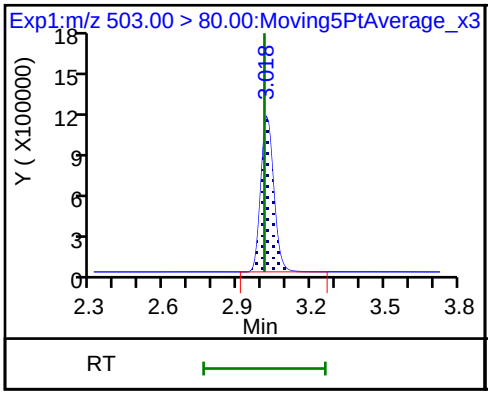
16 Perfluoroheptanesulfonic acid



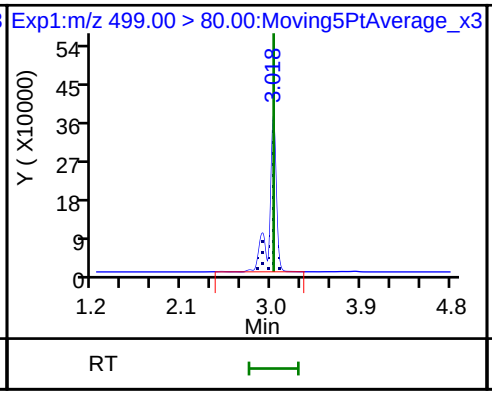
D 19 13C5 PFNA



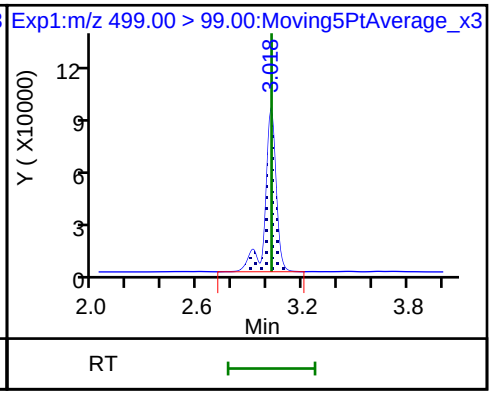
D 18 13C4 PFOS



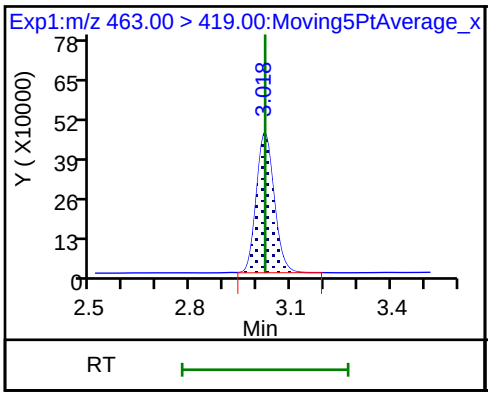
17 Perfluorooctane sulfonic acid



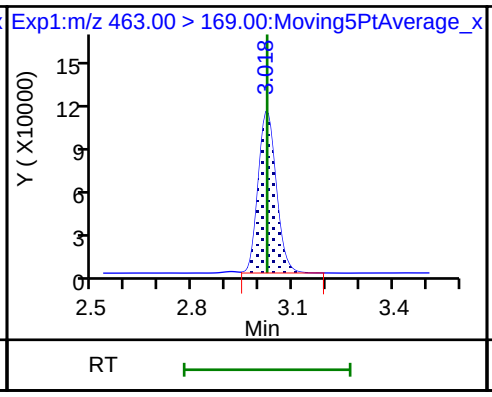
17 Perfluorooctane sulfonic acid



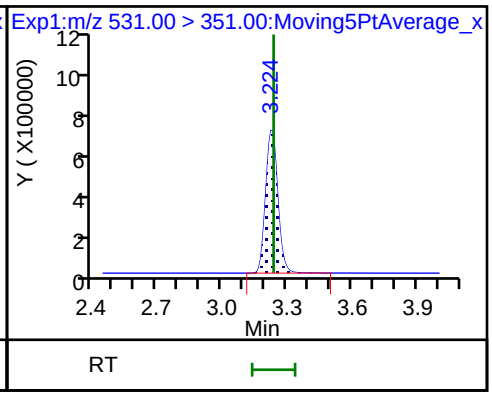
20 Perfluorononanoic acid



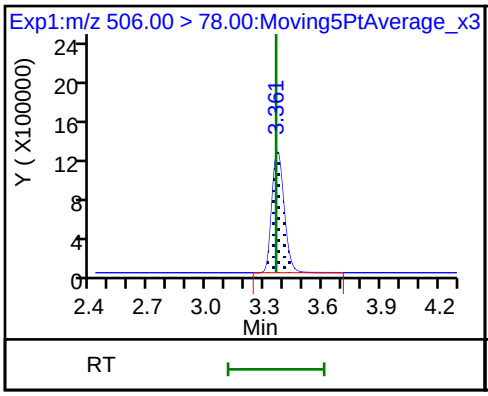
20 Perfluorononanoic acid



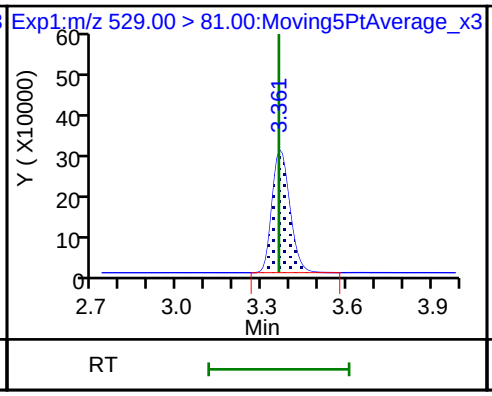
69 9-Chlorohexadecafluoro-3-oxanonane



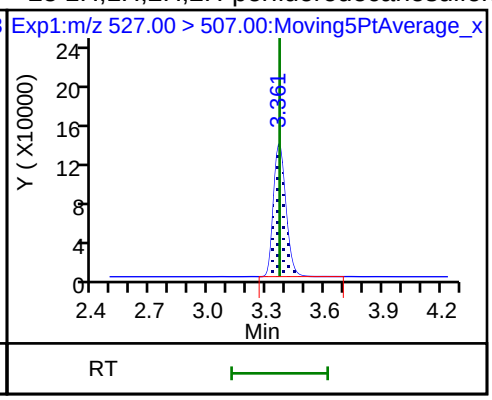
D 21 13C8 FOSA



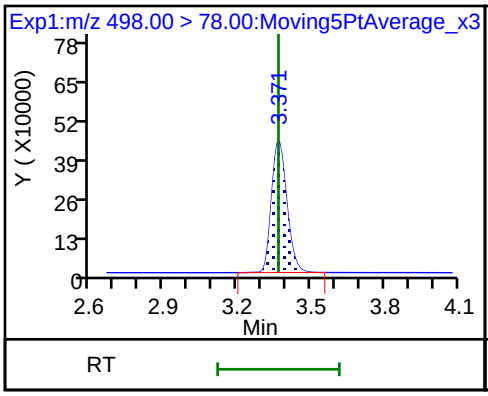
D 26 M2-8:2FTS



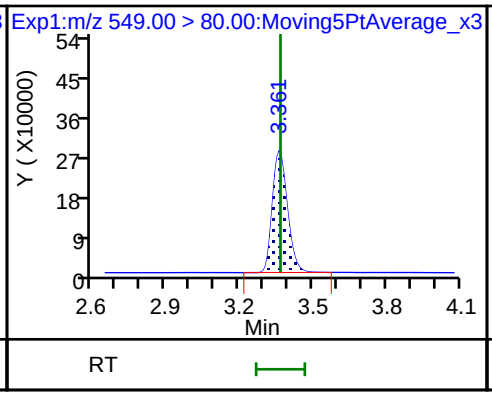
25 1H,1H,2H,2H-perfluorodecanesulfoni



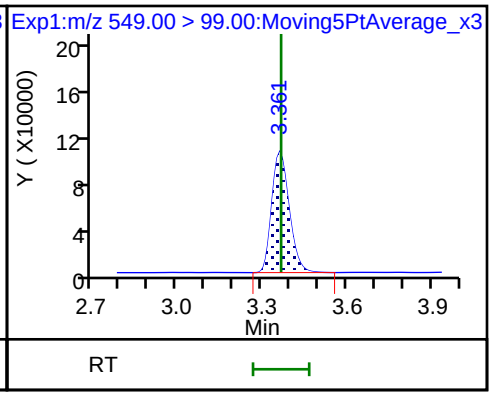
22 Perfluorooctane Sulfonamide



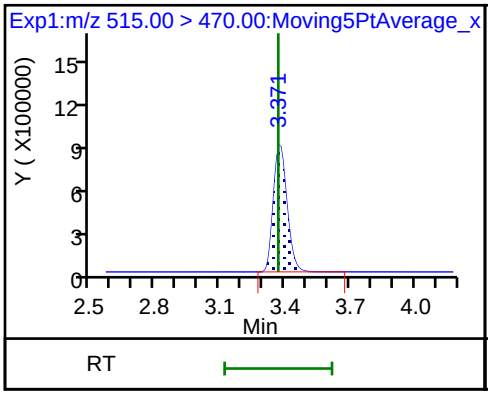
68 Perfluorononanesulfonic acid



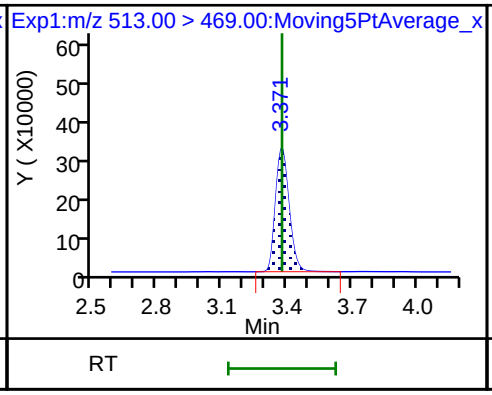
68 Perfluorononanesulfonic acid



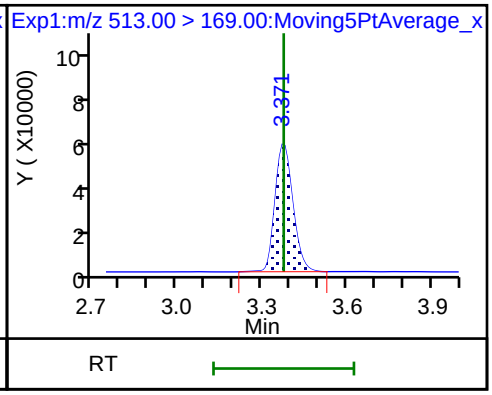
D 23 13C2 PFDA



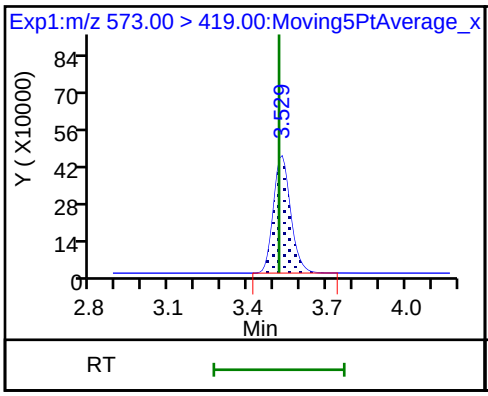
24 Perfluorodecanoic acid



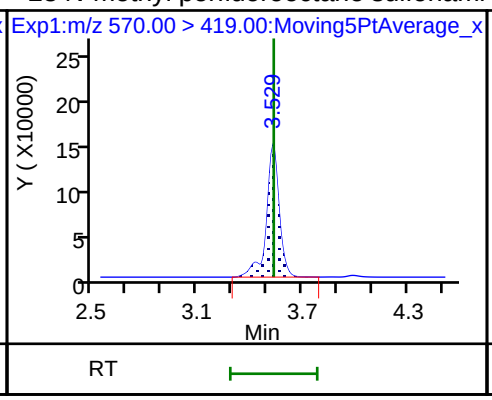
24 Perfluorodecanoic acid



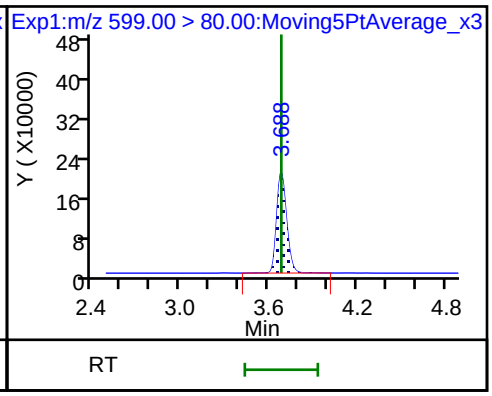
D 27 d3-NMeFOSAA



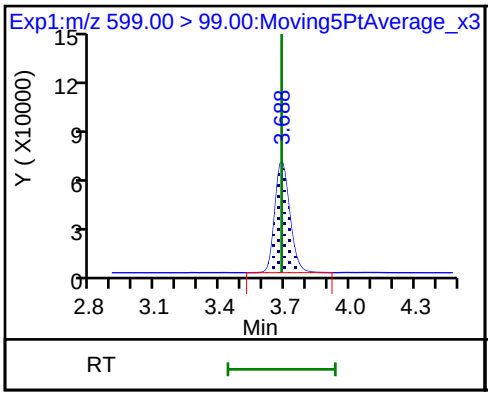
28 N-methyl perfluorooctane sulfonami



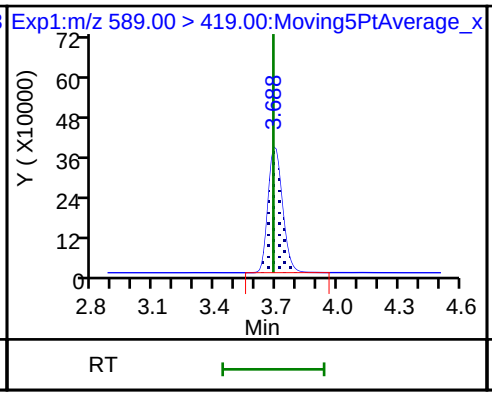
29 Perfluorodecane Sulfonic acid



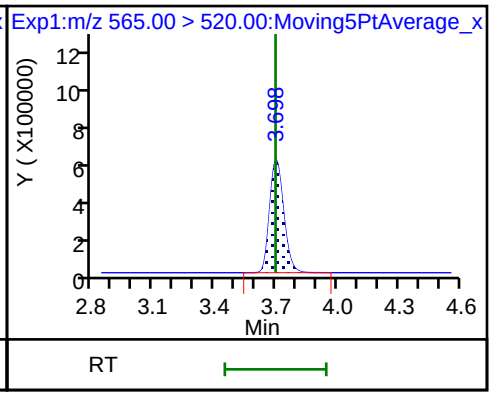
29 Perfluorodecane Sulfonic acid



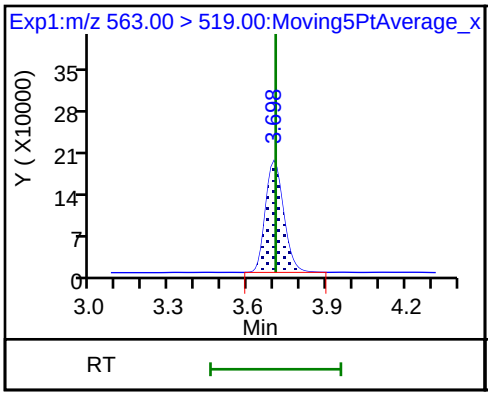
D 32 d5-NEtFOSAA



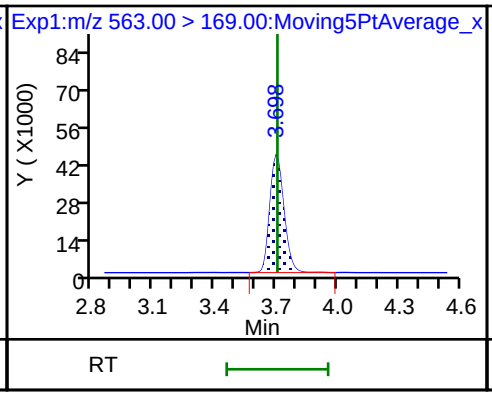
D 30 13C2 PFUnA



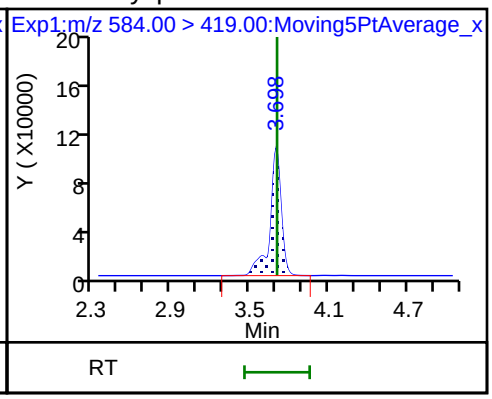
31 Perfluoroundecanoic acid



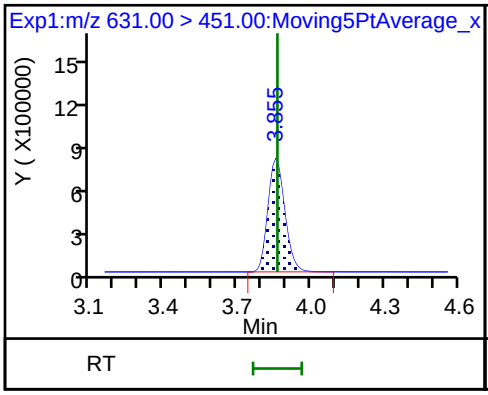
31 Perfluoroundecanoic acid



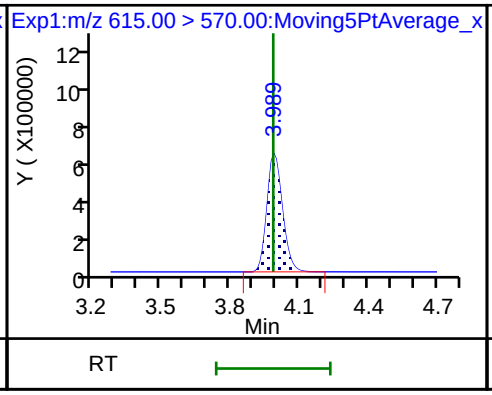
33 N-ethyl perfluorooctane sulfonamid



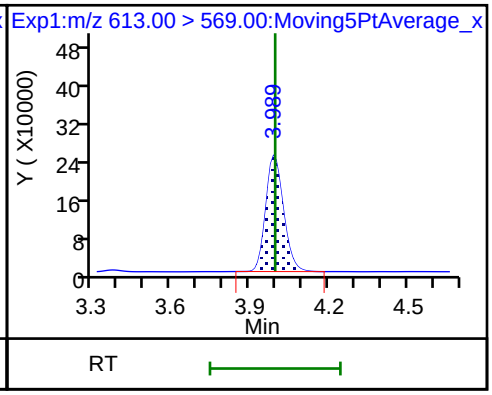
66 11-Chloroeicosafluoro-3-oxaundecan



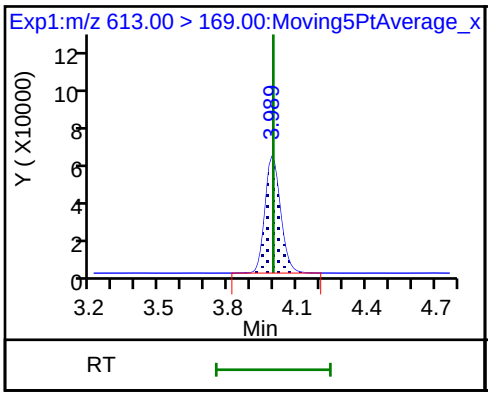
D 36 13C2 PFDoA



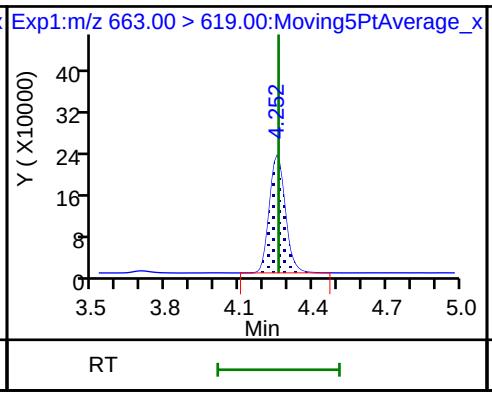
37 Perfluorododecanoic acid



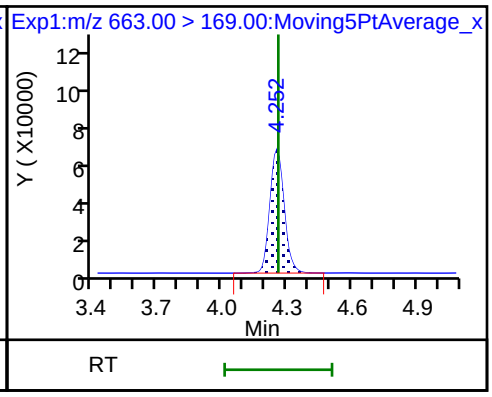
37 Perfluorododecanoic acid



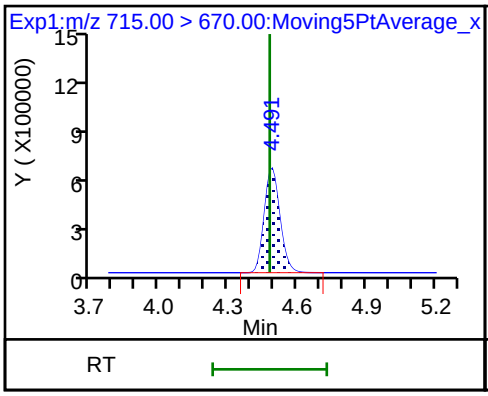
41 Perfluorotridecanoic acid



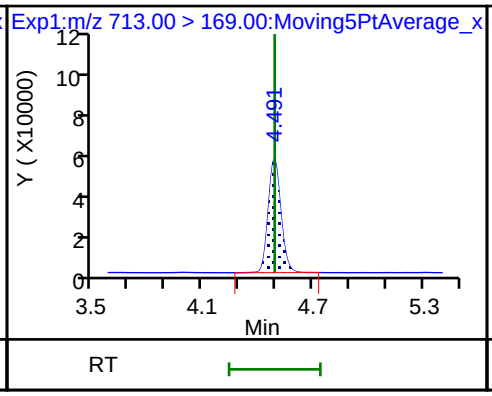
41 Perfluorotridecanoic acid



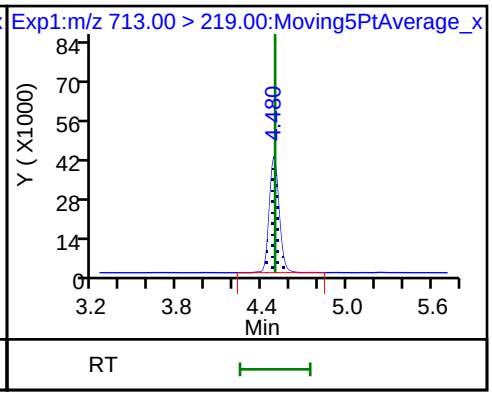
D 43 13C2-PFTeDA



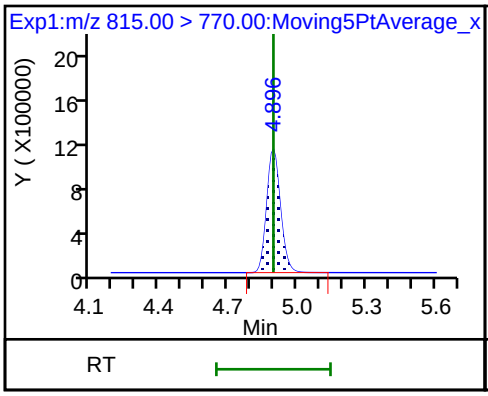
42 Perfluorotetradecanoic acid



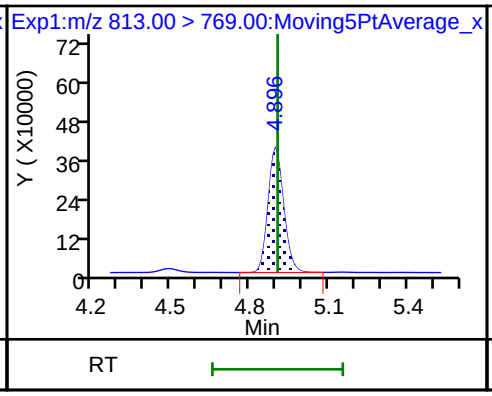
42 Perfluorotetradecanoic acid



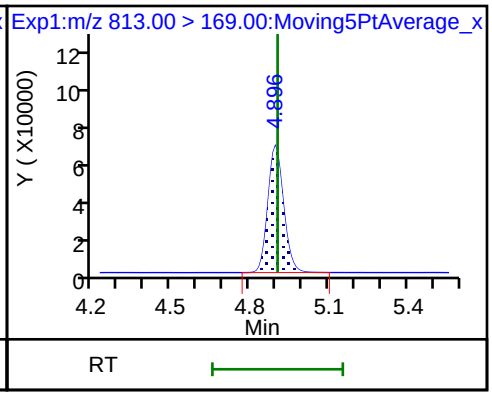
D 44 13C2-PFHxDA



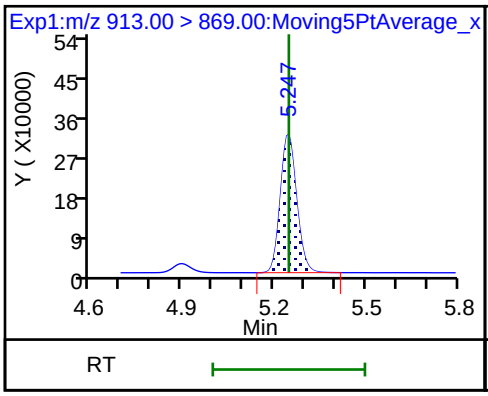
45 Perfluorohexadecanoic acid



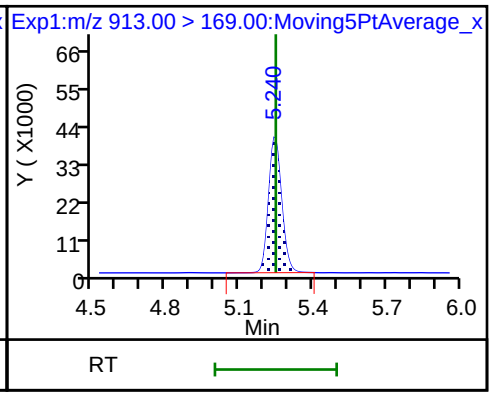
45 Perfluorohexadecanoic acid



46 Perfluorooctadecanoic acid



46 Perfluorooctadecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF33-SS-01 MS
Lab Sample ID: 320-40571-36 MS
Matrix: Solid
Lab File ID: 2018.07.13LLB_069.d
Analysis Method: 537 (modified)
Date Collected: 06/19/2018 16:10
Extraction Method: SHAKE
Date Extracted: 06/28/2018 05:15
Sample wt/vol: 5.05(g)
Date Analyzed: 07/14/2018 05:46
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture: 12.2
GPC Cleanup:(Y/N) N
Analysis Batch No.: 233997
Units: mg/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	0.00230		0.00023	0.000032
2706-90-3	Perfluoropentanoic acid (PFPeA)	0.00208		0.00023	0.000087
307-24-4	Perfluorohexanoic acid (PFHxA)	0.00236		0.00023	0.000047
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.00199		0.00023	0.000033
335-67-1	Perfluorooctanoic acid (PFOA)	0.00200		0.00023	0.000097
375-95-1	Perfluorononanoic acid (PFNA)	0.00203		0.00023	0.000041
335-76-2	Perfluorodecanoic acid (PFDA)	0.00213		0.00023	0.000025
2058-94-8	Perfluoroundecanoic acid (PFUnA)	0.00229		0.00023	0.000041
307-55-1	Perfluorododecanoic acid (PFDoA)	0.00216		0.00023	0.000076
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	0.00214		0.00023	0.000057
376-06-7	Perfluorotetradecanoic acid (PFTeA)	0.00212		0.00023	0.000061
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.00196		0.00023	0.000028
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.00183		0.00023	0.000035
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	0.00219		0.00023	0.000039
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.00201		0.00056	0.00023
335-77-3	Perfluorodecanesulfonic acid (PFDS)	0.00196		0.00023	0.000044
754-91-6	Perfluorooctane Sulfonamide (FOSA)	0.00226		0.00023	0.000092
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	0.00197	J	0.0023	0.00044
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	0.00213	J	0.0023	0.00042
27619-97-2	6:2 FTS	0.00219	J	0.0023	0.00017
39108-34-4	8:2 FTS	0.00213	J	0.0023	0.00028

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF33-SS-01 MS
Lab Sample ID: 320-40571-36 MS
Matrix: Solid
Lab File ID: 2018.07.13LLB_069.d
Analysis Method: 537 (modified)
Date Collected: 06/19/2018 16:10
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Date Extracted: 06/28/2018 05:15
Sample wt/vol: 5.05(g)
Date Analyzed: 07/14/2018 05:46
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture: 12.2
GPC Cleanup:(Y/N) N
Analysis Batch No.: 233997
Units: mg/Kg

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00992	13C4 PFBA	75		25-150
STL01893	13C5 PFPeA	79		25-150
STL00993	13C2 PFHxA	75		25-150
STL01892	13C4-PFHpA	85		25-150
STL00990	13C4 PFOA	86		25-150
STL00995	13C5 PFNA	86		25-150
STL00996	13C2 PFDA	89		25-150
STL00997	13C2 PFUnA	79		25-150
STL00998	13C2 PFDoA	72		25-150
STL02116	13C2-PFTeDA	75		25-150
STL02337	13C3-PFBS	73		25-150
STL00994	18O2 PFHxS	77		25-150
STL00991	13C4 PFOS	72		25-150
STL01056	13C8 FOSA	60		25-150
STL02118	d3-NMeFOSAA	93		25-150
STL02117	d5-NEtFOSAA	89		25-150
STL02279	M2-6:2FTS	107		25-150
STL02280	M2-8:2FTS	111		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\2018.07.13LLB_069.d
Lims ID: 320-40571-A-36-B MS
Client ID: NF33-SS-01
Sample Type: MS
Inject. Date: 14-Jul-2018 05:46:35 ALS Bottle#: 53 Worklist Smp#: 18
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-40571-a-36-b m
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 16-Jul-2018 14:27:56 Calib Date: 11-Jul-2018 15:38:42
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK023

First Level Reviewer: mongkols Date: 16-Jul-2018 14:27:56

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										M
217.00 > 172.00	1.436	1.441	-0.005	0.538	4929564	1.88		75.1	40356	M
2 Perfluorobutyric acid										M
212.90 > 169.00	1.436	1.445	-0.009	1.000	1981293	1.02		102	240	M
D 3 13C5-PFPeA										
267.90 > 223.00	1.721	1.720	0.001	0.645	3602023	1.97		79.0	31857	
4 Perfluoropentanoic acid										M
262.90 > 219.00	1.721	1.726	-0.005	1.000	1609839	0.9210		92.1	369	M
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.757	1.762	-0.005	1.000	2225486	0.8685		98.2	5009	
298.90 > 99.00	1.757	1.762	-0.005	1.000	925365		2.40(1.25-3.74)		5875	
D 47 13C3-PFBS										
301.90 > 83.00	1.757	1.765	-0.008	0.659	77883	1.70		73.1	364	
61 1H,1H,2H,2H-perfluorohexanesulfoni										
327.00 > 307.00	1.971	1.967	0.004	1.122	1235616	2.84		304	10451	
D 60 M2-4:2FTS										
329.00 > 81.00	1.950	1.970	-0.020	0.731	20956	0.0851		0.0	50.7	
6 Perfluorohexanoic acid										
313.00 > 269.00	2.005	2.000	0.005	1.000	1586029	1.05		105	971	
313.00 > 119.00	1.993	2.000	-0.007	0.994	135233		11.73(5.03-15.10)		1472	
D 7 13C2 PFHxA										
315.00 > 270.00	2.005	2.003	0.002	0.751	3680091	1.87		74.8	53296	
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.016	2.022	-0.006	1.147	2065092	0.8834		94.2	7215	
349.00 > 99.00	2.016	2.022	-0.006	1.147	739039		2.79(1.36-4.07)		7521	
67 Perfluoro(2-propoxypropanoic) acid										
329.10 > 285.00	2.095	2.101	-0.006	1.005	331015	0.9507		95.1	869	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.084	2.105	-0.021	0.781	327973	2.34		93.7	5229	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.321	2.316	0.005	1.006	1574435	0.8816		88.2	980	
363.00 > 169.00	2.308	2.316	-0.008	1.000	607729		2.59(1.13-3.40)		6742	
D 9 13C4-PFHpA										
367.00 > 322.00	2.308	2.319	-0.011	0.865	3860334	2.13		85.1	38065	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.321	2.329	-0.008	0.994	1839510	0.8128		89.3	2327	
399.00 > 99.00	2.321	2.329	-0.008	0.994	598593		3.07(1.50-4.49)		2869	
D 11 18O2 PFHxS										
403.00 > 84.00	2.334	2.332	0.002	0.875	4662990	1.81		76.7	46169	
65 Adona										
377.00 > 251.00	2.360	2.355	0.005	0.781	4783382	1.10		110	32137	
377.00 > 85.00	2.360	2.355	0.005	0.781	2748617		1.74(0.84-2.53)		14521	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.636	2.643	-0.007	1.000	628405	0.9693		102	2068	
D 12 M2-6:2FTS										
429.00 > 81.00	2.636	2.644	-0.008	0.988	984234	2.53		107	4887	
* 62 13C2-PFOA										
415.00 > 370.00	2.667	2.666	0.001		4838788	2.50			51437	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.660	2.666	-0.006	0.997	1747158	0.8884		88.8	677	
413.00 > 169.00	2.667	2.666	0.001	1.000	900627		1.94(0.84-2.52)		5045	
D 14 13C4 PFOA										
417.00 > 372.00	2.667	2.667	0.0	1.000	3992153	2.16		86.3	38449	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.667	2.673	-0.006	0.882	1723054	0.9693		102	6132	
449.00 > 99.00	2.667	2.673	-0.006	0.882	447677		3.85(1.94-5.82)		6828	
D 18 13C4 PFOS										
503.00 > 80.00	3.023	3.027	-0.004	1.133	3224466	1.71		71.6	17173	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.023	3.029	-0.006	1.000	1362116	0.8910		96.0	5261	
499.00 > 99.00	3.023	3.029	-0.006	1.000	300372		4.53(2.31-6.93)		3615	
20 Perfluorononanoic acid										
463.00 > 419.00	3.030	3.029	0.001	1.002	1425177	0.9013		90.1	1687	
463.00 > 169.00	3.030	3.029	0.001	1.002	354572		4.02(1.90-5.69)		6604	
D 19 13C5 PFNA										
468.00 > 423.00	3.023	3.034	-0.011	1.133	3563316	2.15		86.2	49019	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.238	3.237	0.001	1.071	2215935	0.8947		96.0	15548	
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.368	3.376	-0.008	1.114	930626	0.8898		92.7	6957	
549.00 > 99.00	3.368	3.376	-0.008	1.114	344553		2.70(1.33-3.97)		4984	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.378	3.376	0.002	1.000	1602338	1.00		100	25620	
25 1H,1H,2H,2H-perfluorodecanesulfoni										
527.00 > 507.00	3.368	3.376	-0.008	1.000	767406	0.9447		98.6	17470	
D 21 13C8 FOSA										
506.00 > 78.00	3.378	3.379	-0.001	1.266	4054922	1.49		59.7	37722	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 26 M2-8:2FTS										
529.00 > 81.00	3.368	3.379	-0.011	1.263	1508139	2.65		111	6990	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.387	3.385	0.002	1.000	1277272	0.9460		94.6	1938	
513.00 > 169.00	3.387	3.385	0.002	1.000	232668		5.49(2.36-7.09)		5356	
D 23 13C2 PFDA										
515.00 > 470.00	3.387	3.389	-0.002	1.270	3216628	2.21		88.6	36384	
35 MeFOSA										
512.00 > 169.00	3.546	3.498	0.048		6606	NC			153	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.536	3.538	-0.002	1.326	1388552	2.33		93.3	23471	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.536	3.544	-0.008	1.000	477574	0.8722		87.2	3847	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.696	3.694	0.002	1.223	788584	0.8705		90.3	8209	
599.00 > 99.00	3.696	3.694	0.002	1.223	262541		3.00(1.39-4.16)		5504	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.696	3.708	-0.012	1.386	1352819	2.22		88.7	5215	
D 30 13C2 PFUnA										
565.00 > 520.00	3.707	3.708	-0.001	1.390	2396106	1.98		79.0	35744	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.707	3.716	-0.009	1.000	796067	1.01		101	1551	
563.00 > 169.00	3.707	3.716	-0.009	1.000	192456		4.14(2.12-6.36)		6805	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.707	3.716	-0.009	1.003	451245	0.9433		94.3	6948	
66 11-Chloroeicosafluoro-3-oxaundecan										
631.00 > 451.00	3.864	3.873	-0.009	1.278	3171160	0.8858		94.0	39356	
D 36 13C2 PFDoA										
615.00 > 570.00	3.997	3.999	-0.002	1.498	2255812	1.79		71.8	19113	
37 Perfluorododecanoic acid										
613.00 > 569.00	3.997	4.006	-0.009	1.000	942437	0.9566		95.7	330	
613.00 > 169.00	3.997	4.006	-0.009	1.000	229988		4.10(2.13-6.40)		4405	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.260	4.269	-0.009	1.066	914559	0.9493		94.9	459	
663.00 > 169.00	4.260	4.269	-0.009	1.066	291793		3.13(1.25-3.76)		3604	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.500	4.500	0.0	1.000	240208	0.9384		93.8	3184	
713.00 > 219.00	4.490	4.500	-0.010	0.998	179713		1.34(0.71-2.13)		2506	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.500	4.501	-0.001	1.687	2459523	1.89		75.4	17926	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.904	4.905	-0.001	1.839	3936948	1.89		75.8	11672	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.904	4.912	-0.008	1.000	1512138	0.9890		98.9	426	
813.00 > 169.00	4.904	4.912	-0.008	1.000	246555		6.13(2.86-8.58)		2139	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.254	5.254	0.0	1.071	1748453	0.9715		97.1	453	
913.00 > 169.00	5.254	5.254	0.0	1.071	217635		8.03(3.83-11.48)		2260	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Review Flags

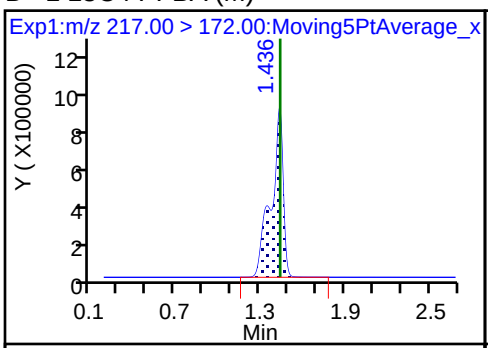
M - Manually Integrated

Report Date: 16-Jul-2018 14:27:56 Chrom Revision: 2.2 07-Jun-2018 07:41:54

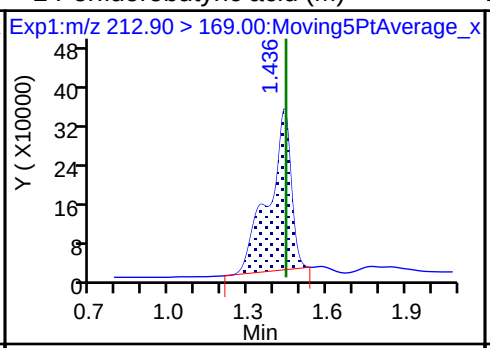
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\2018.07.13LLB_069.d
Injection Date: 14-Jul-2018 05:46:35 Instrument ID: A8_N
Lims ID: 320-40571-A-36-B MS
Client ID: NF33-SS-01
Operator ID: SACINSTLCMS01 ALS Bottle#: 53 Worklist Smp#: 18
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC ICAL

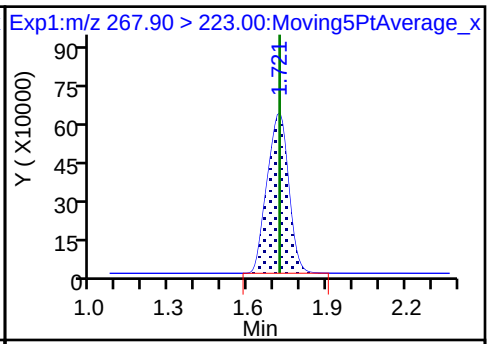
D 1 13C4 PFBA (M)



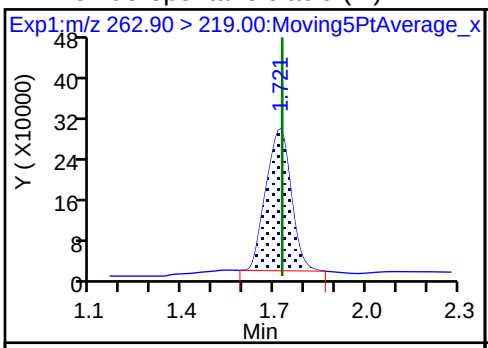
2 Perfluorobutyric acid (M)



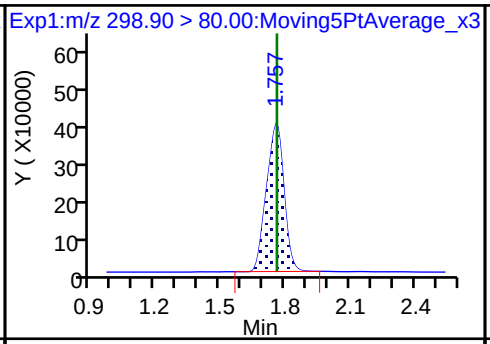
D 3 13C5-PFPeA



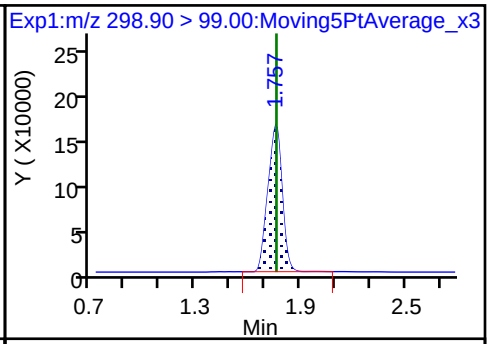
4 Perfluoropentanoic acid (M)



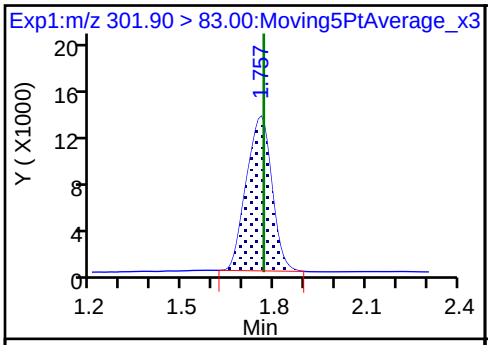
5 Perfluorobutanesulfonic acid



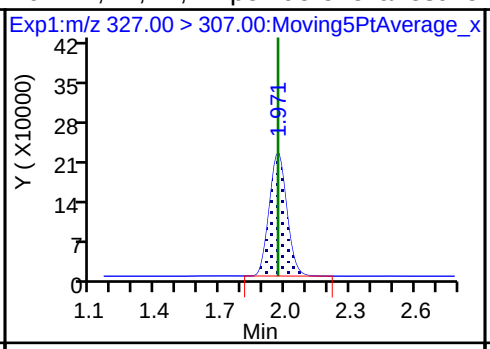
5 Perfluorobutanesulfonic acid



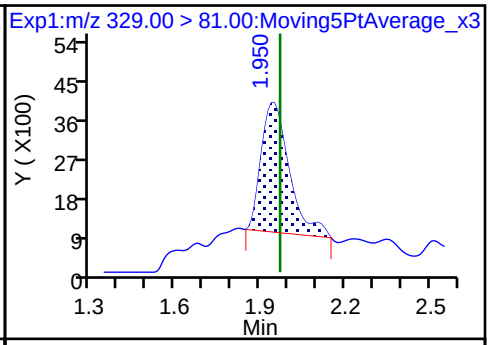
D 47 13C3-PFBS



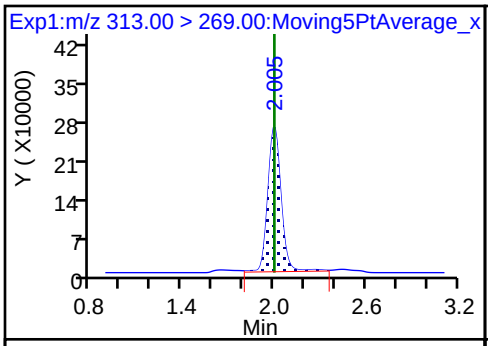
61 1H,1H,2H,2H-perfluorohexanesulfon



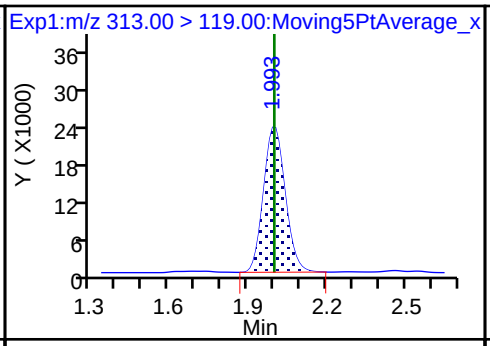
D 60 M2-4:2FTS



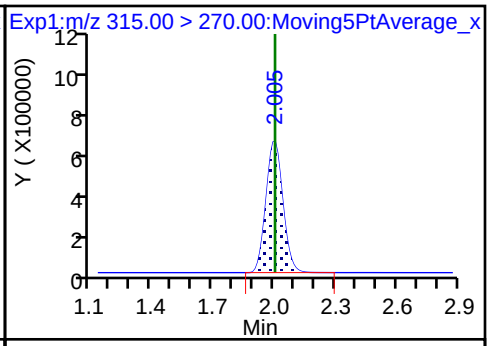
6 Perfluorohexanoic acid



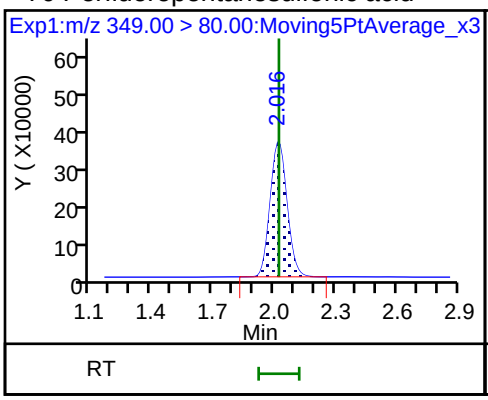
6 Perfluorohexanoic acid



D 7 13C2 PFHxA



70 Perfluoropentanesulfonic acid



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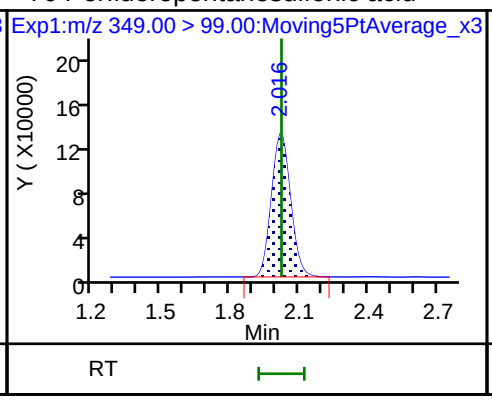
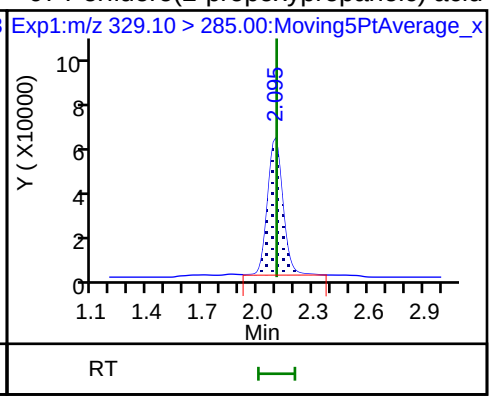
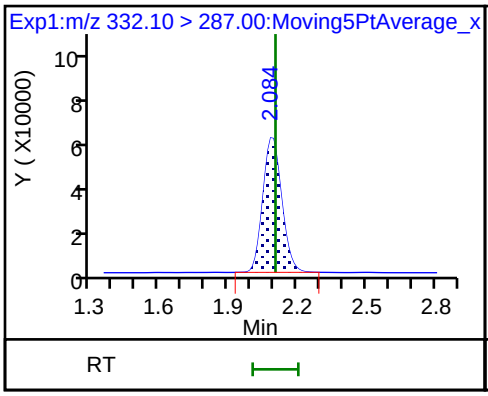


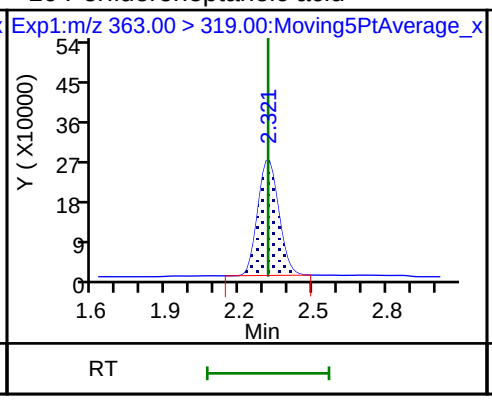
67 Perfluoro(2-propoxypropanoic) acid



D 64 13C3 HFPO-DA



10 Perfluoroheptanoic acid



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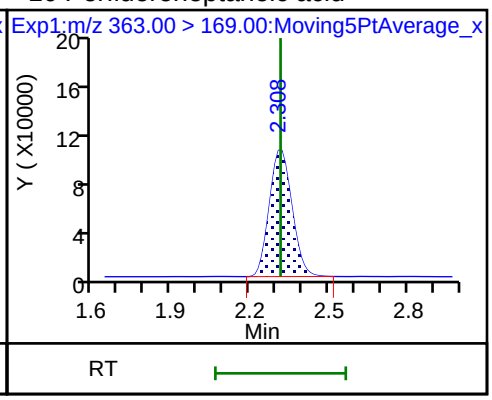
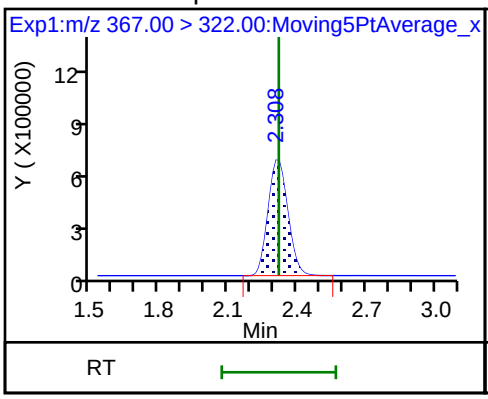
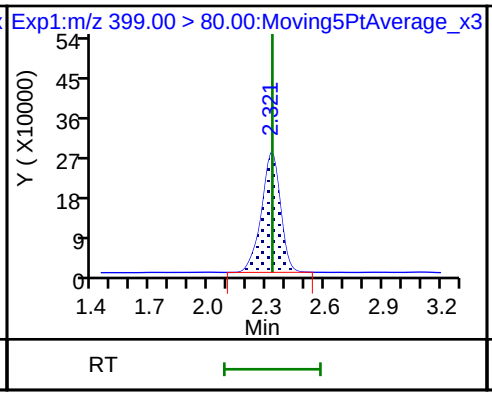


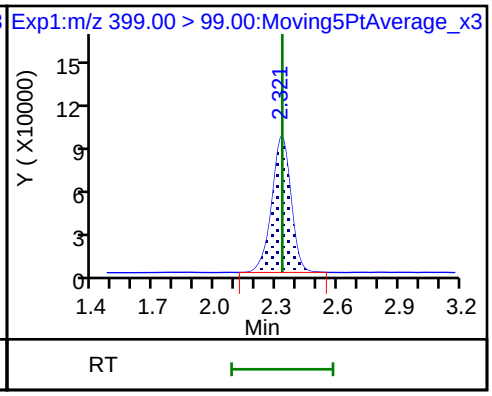
D 9 13C4-PFHpA



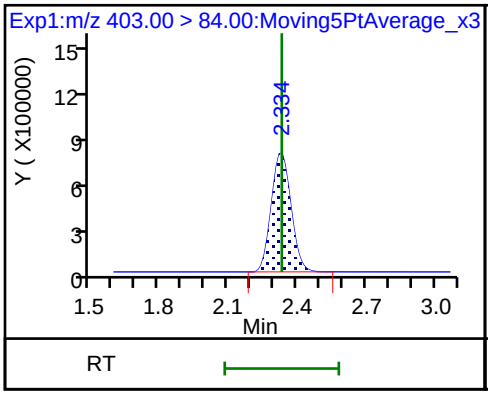
8 Perfluorohexanesulfonic acid



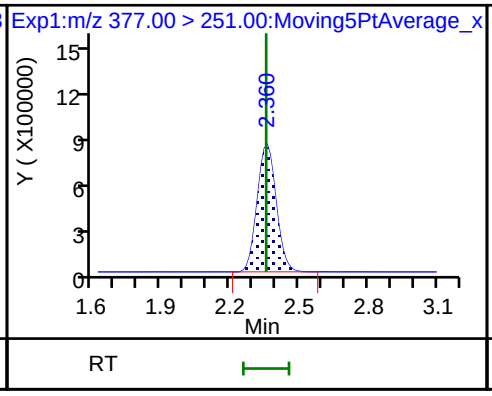
8 Perfluorohexanesulfonic acid



D 11 18O2 PFHxS



65 Adona



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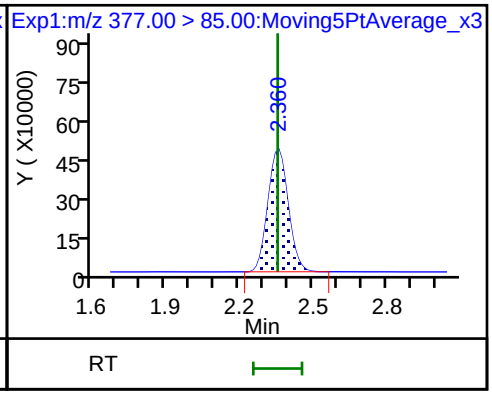
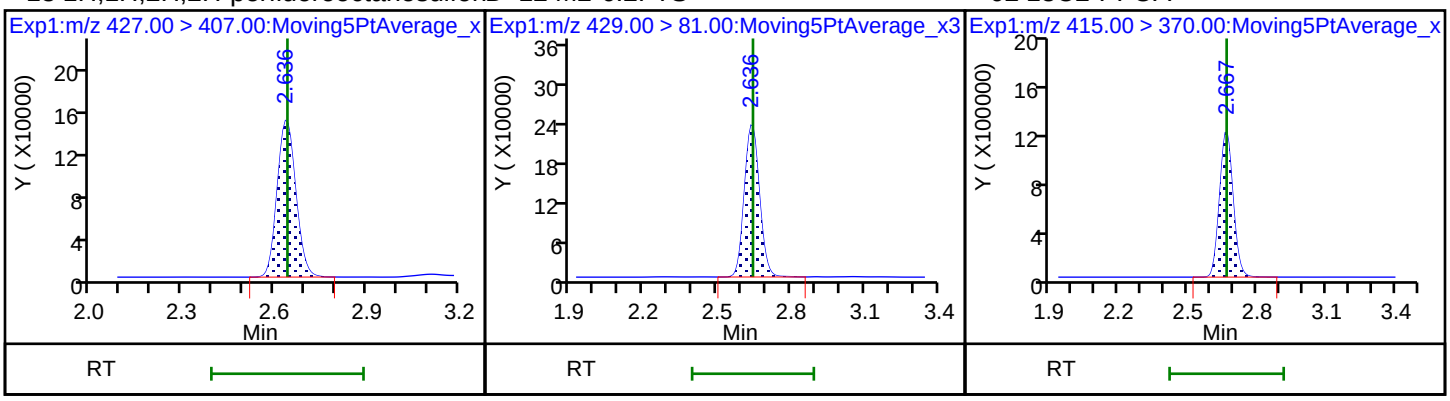
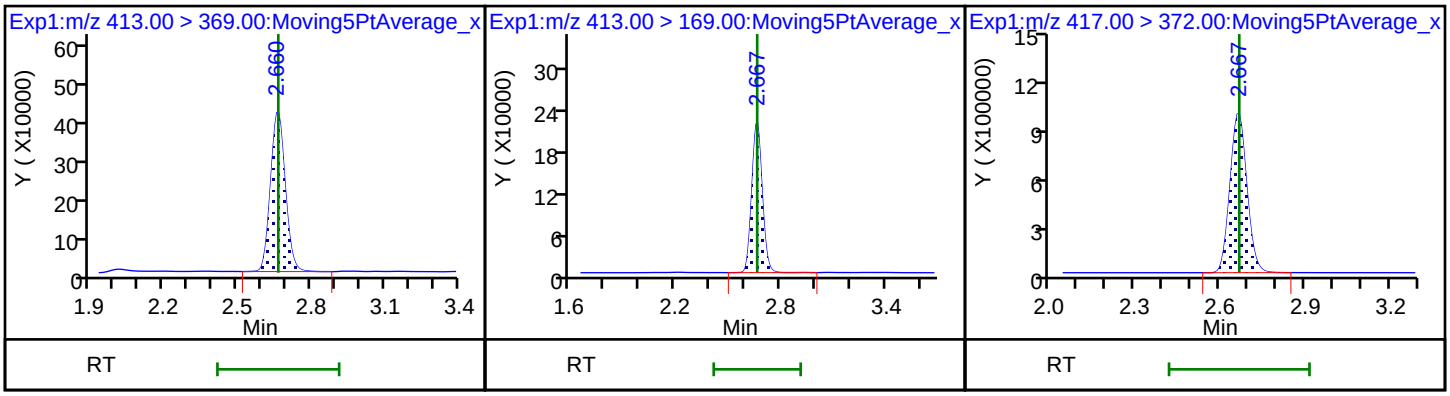


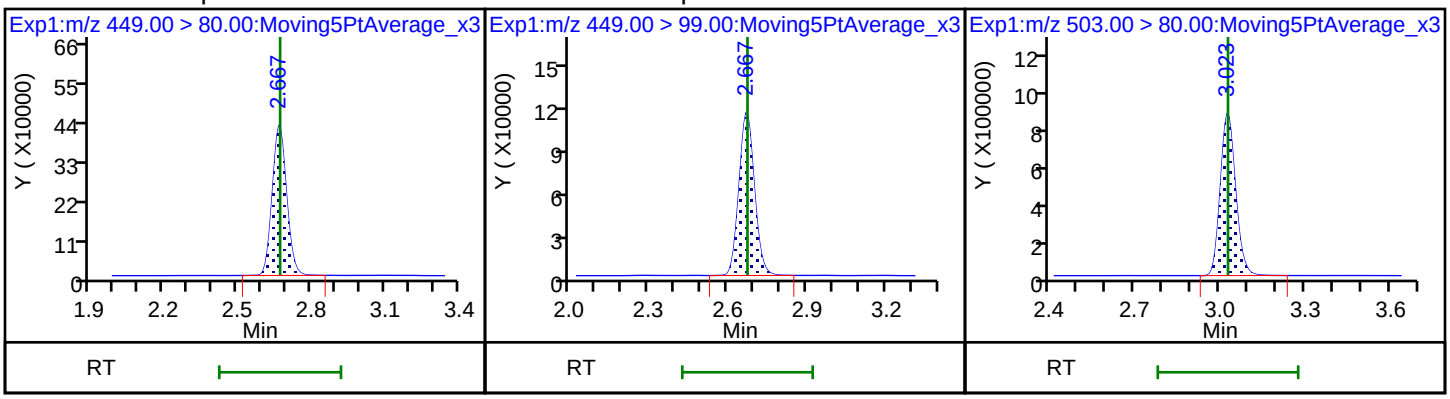
13 1H,1H,2H,2H-perfluorooctanesulfon D 12 M2-6:2FTS * 62 13C2-PFOA



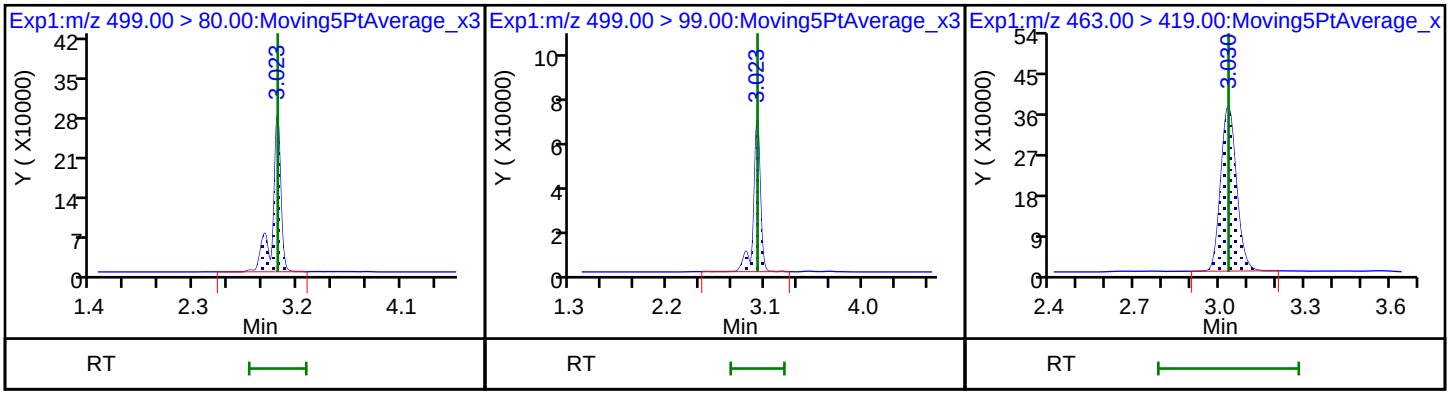
15 Perfluorooctanoic acid 15 Perfluorooctanoic acid D 14 13C4 PFOA



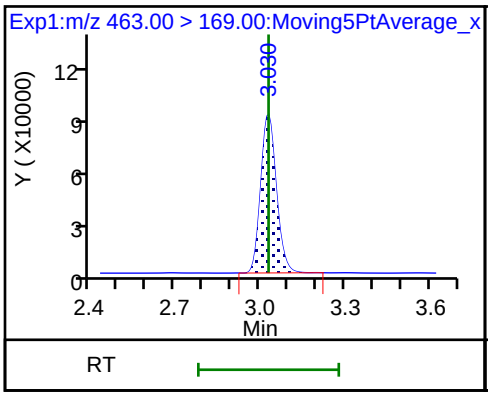
16 Perfluoroheptanesulfonic acid 16 Perfluoroheptanesulfonic acid D 18 13C4 PFOS



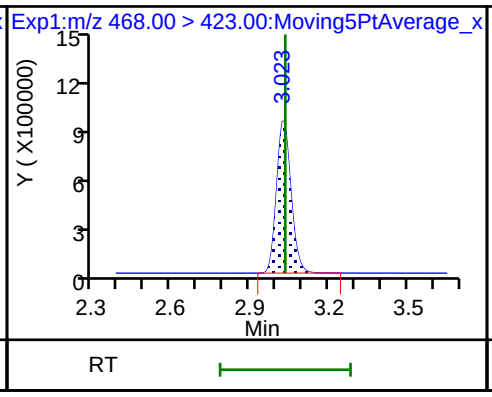
17 Perfluorooctane sulfonic acid 17 Perfluorooctane sulfonic acid 20 Perfluorononanoic acid



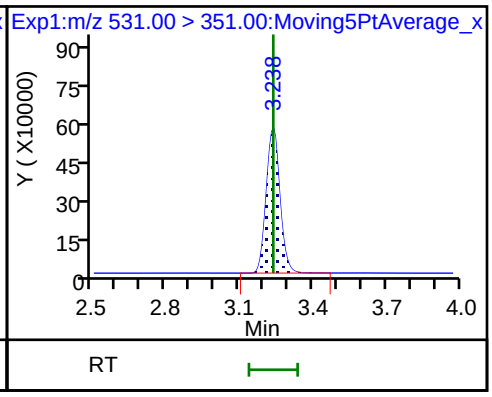
20 Perfluorononanoic acid



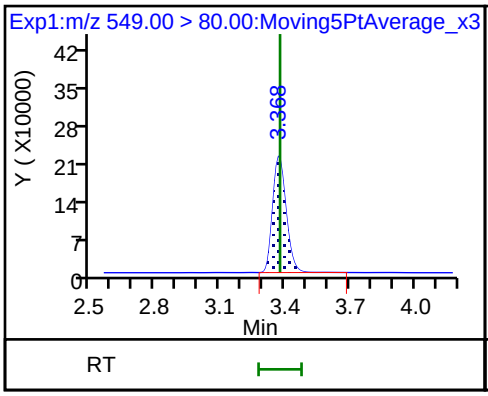
D 19 13C5 PFNA



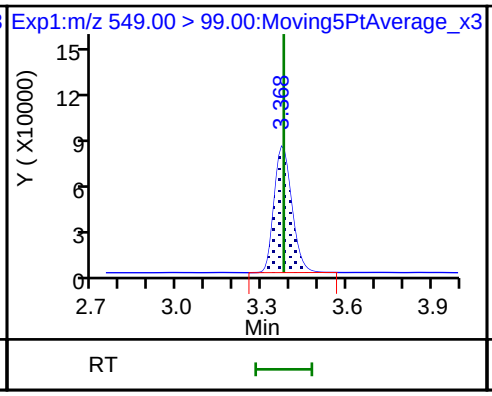
69 9-Chlorohexadecafluoro-3-oxanonane



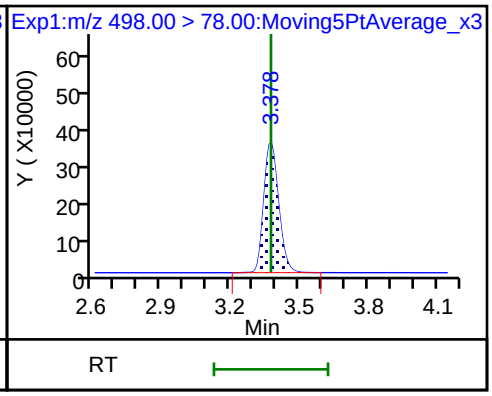
68 Perfluorononanesulfonic acid



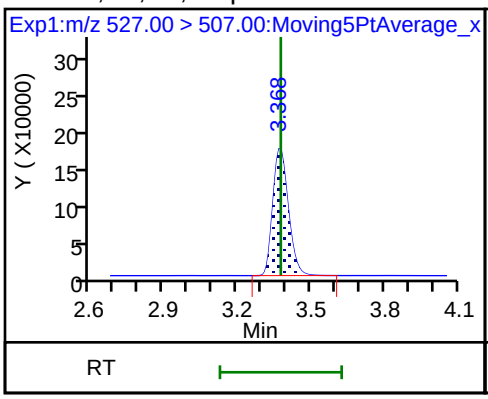
68 Perfluorononanesulfonic acid



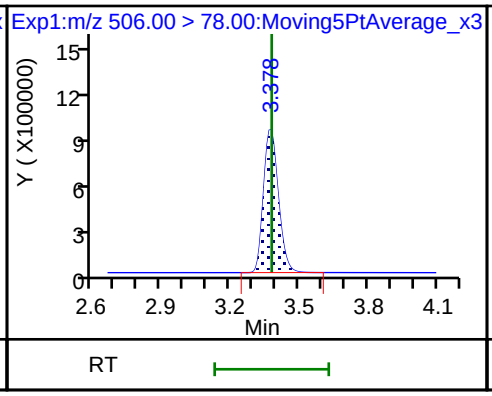
22 Perfluorooctane Sulfonamide



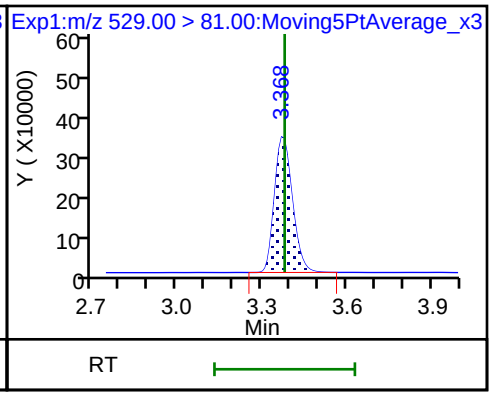
25 1H,1H,2H,2H-perfluorodecanesulfon



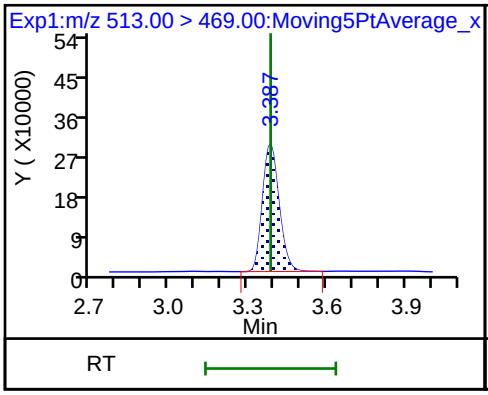
D 21 13C8 FOSA



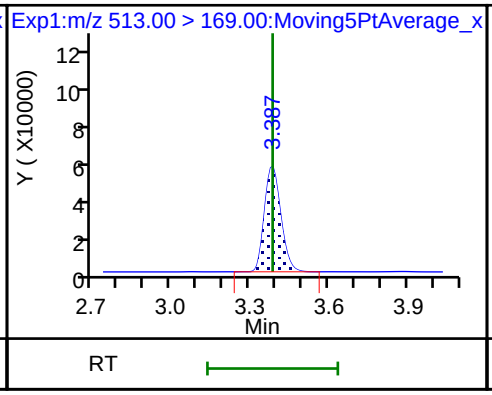
D 26 M2-8:2FTS



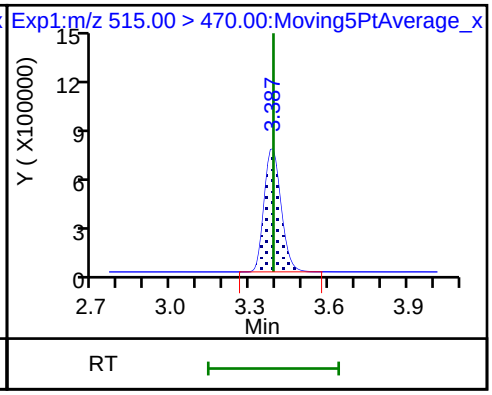
24 Perfluorodecanoic acid



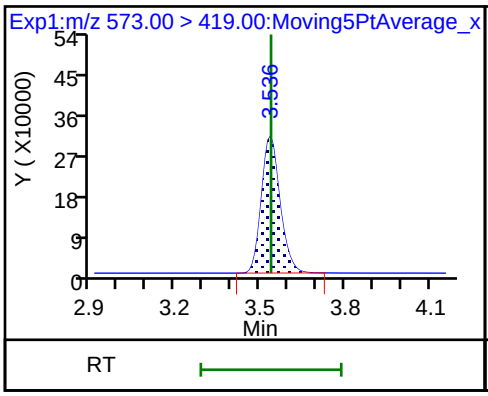
24 Perfluorodecanoic acid



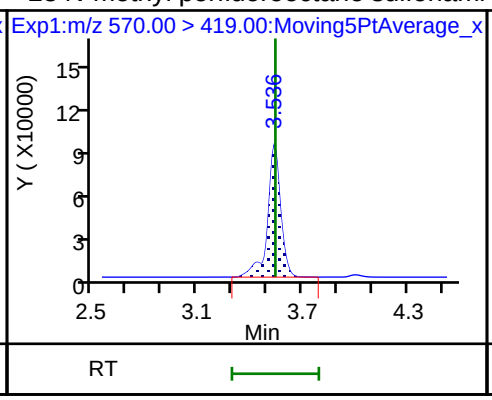
D 23 13C2 PFDA



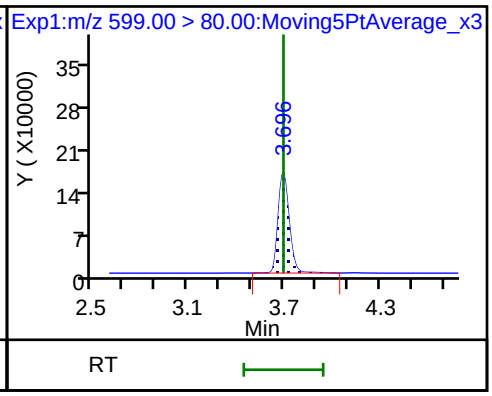
D 27 d3-NMeFOSAA



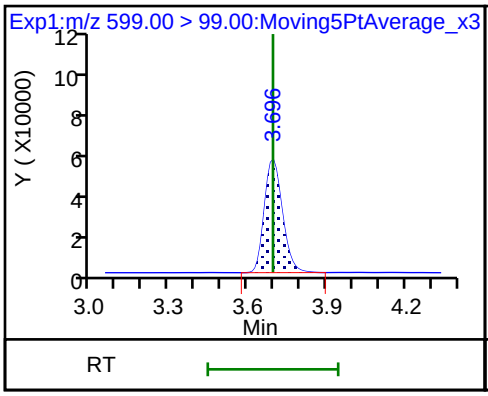
28 N-methyl perfluorooctane sulfonami



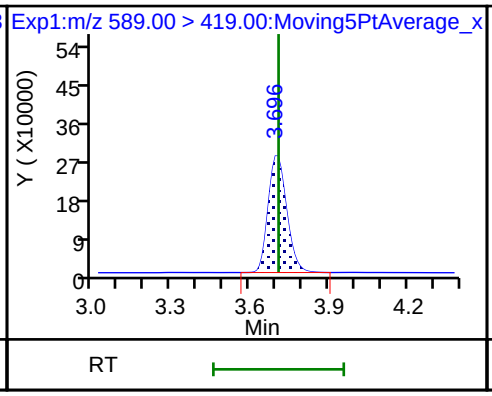
29 Perfluorodecane Sulfonic acid



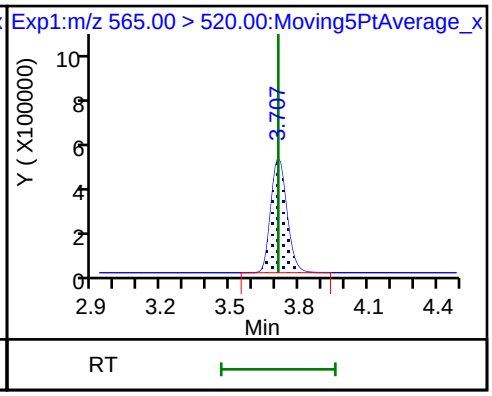
29 Perfluorodecane Sulfonic acid



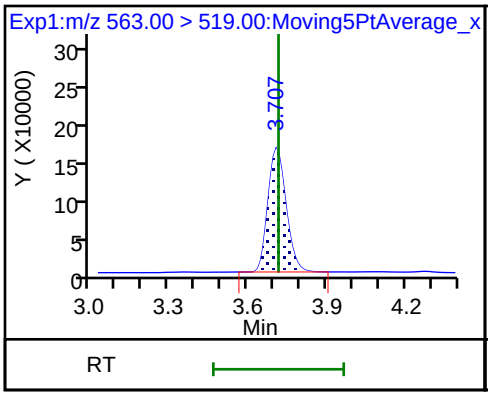
D 32 d5-NEtFOSAA



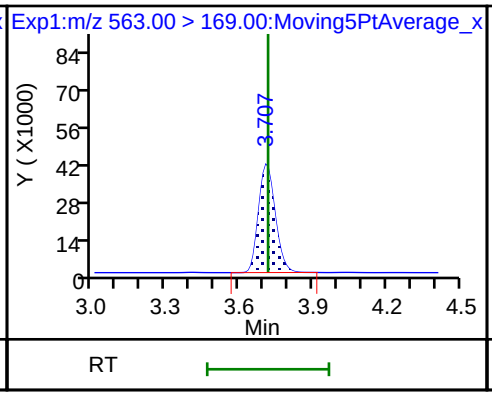
D 30 13C2 PFUnA



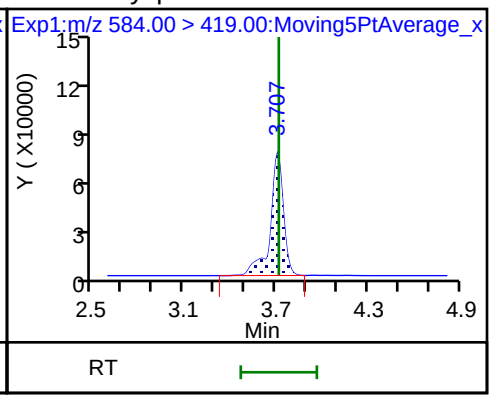
31 Perfluoroundecanoic acid



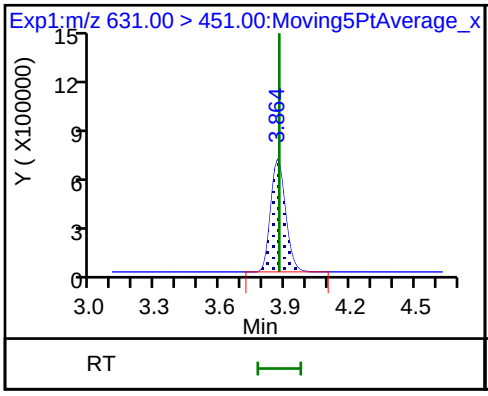
31 Perfluoroundecanoic acid



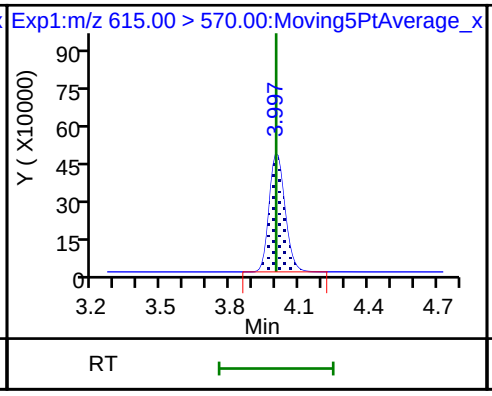
33 N-ethyl perfluorooctane sulfonamid



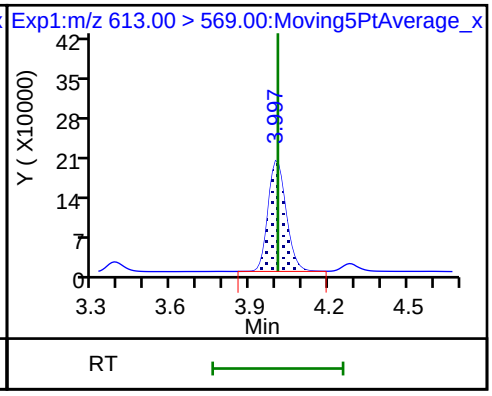
66 11-Chloroeicosafluoro-3-oxaundecan



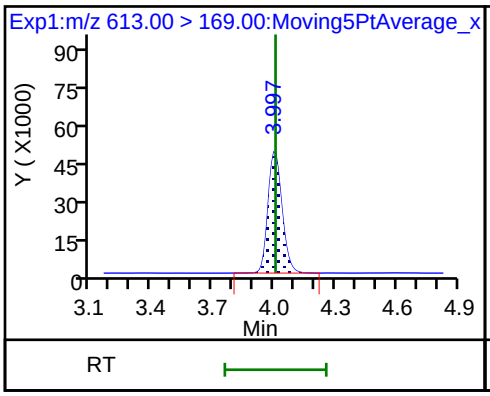
D 36 13C2 PFDoA



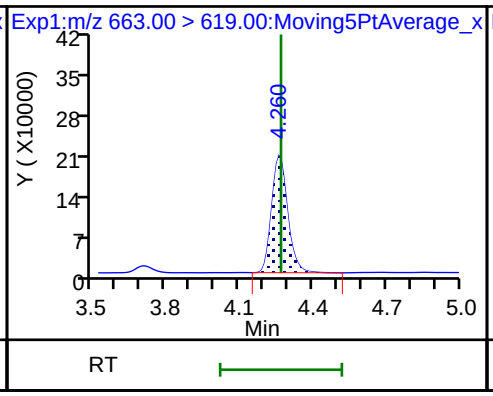
37 Perfluorododecanoic acid



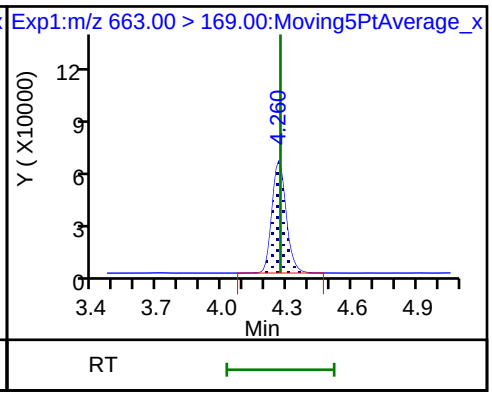
37 Perfluorododecanoic acid



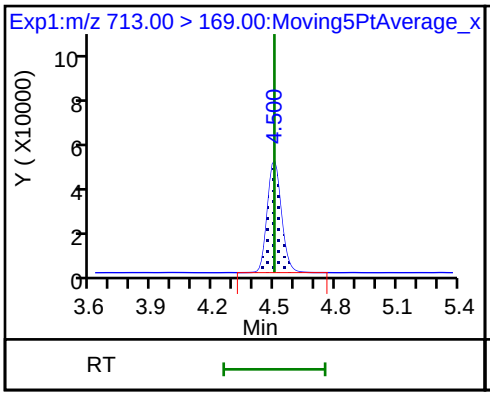
41 Perfluorotridecanoic acid



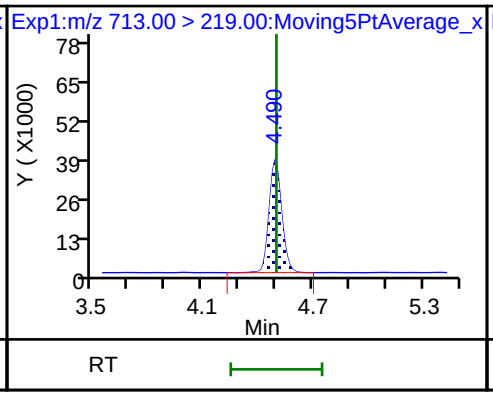
41 Perfluorotridecanoic acid



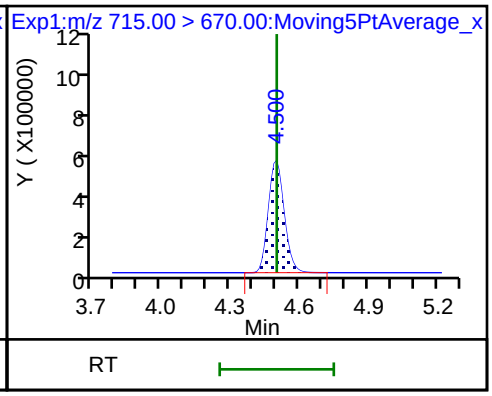
42 Perfluorotetradecanoic acid



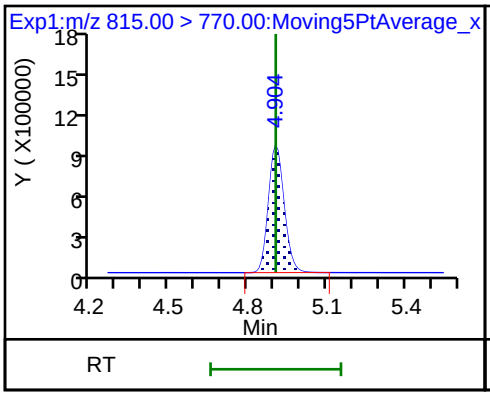
42 Perfluorotetradecanoic acid



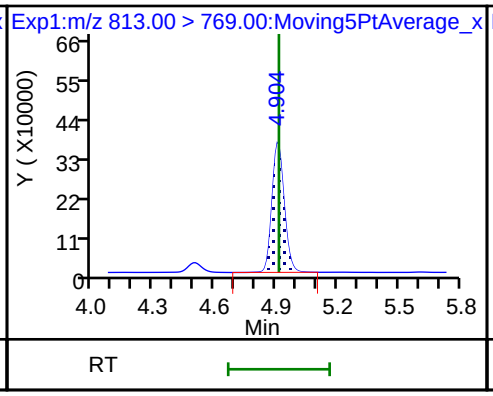
D 43 13C2-PFTeDA



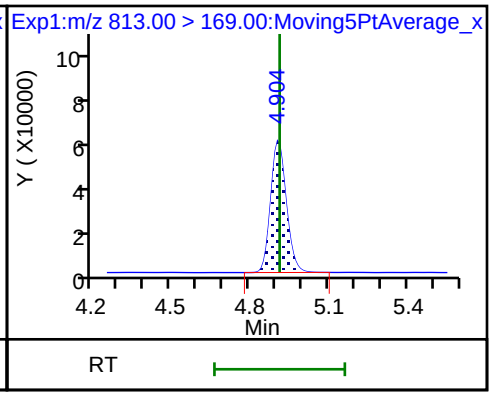
D 44 13C2-PFHxDA



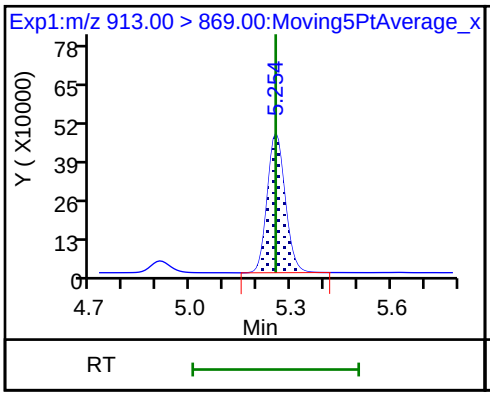
45 Perfluorohexadecanoic acid



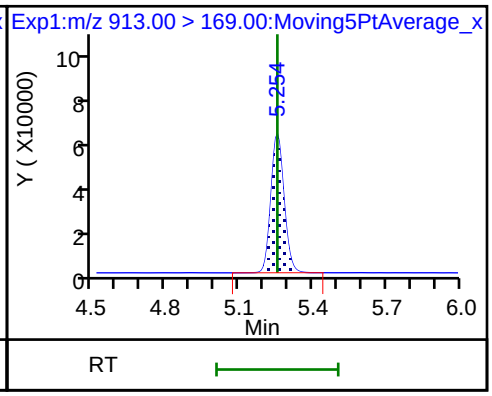
45 Perfluorohexadecanoic acid



46 Perfluorooctadecanoic acid



46 Perfluorooctadecanoic acid



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

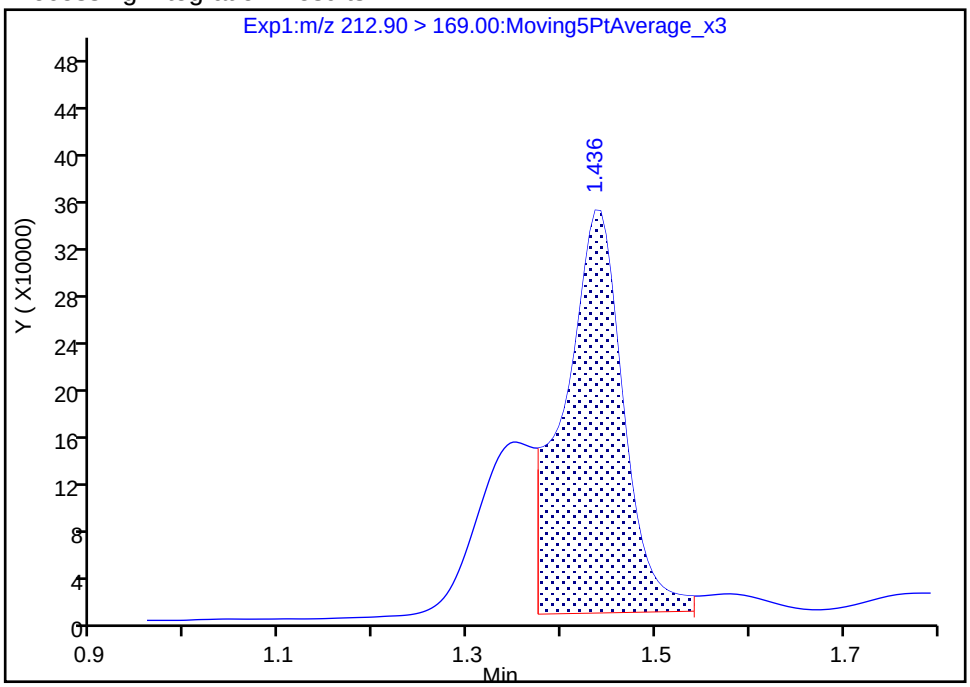
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\2018.07.13LLB_069.d				
Injection Date:	14-Jul-2018 05:46:35	Instrument ID:	A8_N		
Lims ID:	320-40571-A-36-B MS				
Client ID:	NF33-SS-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	53	Worklist Smp#:	18
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

2 Perfluorobutyric acid, CAS: 375-22-4

Signal: 1

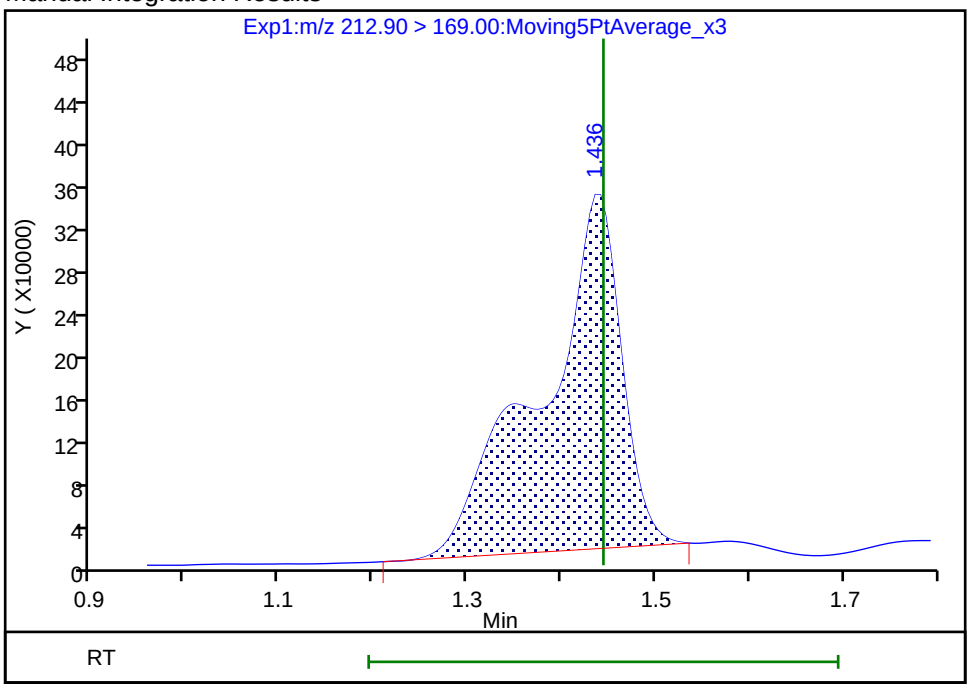
Processing Integration Results

RT: 1.44
Area: 1492154
Amount: 0.767812
Amount Units: ng/ml



Manual Integration Results

RT: 1.44
Area: 1981293
Amount: 1.019506
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 14:27:21

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

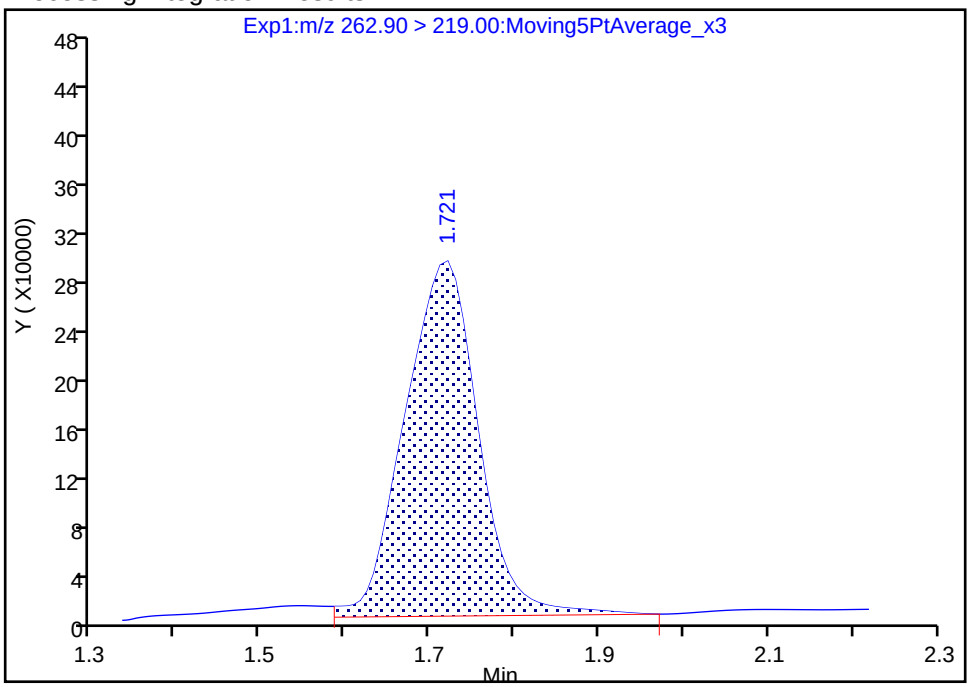
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\2018.07.13LLB_069.d				
Injection Date:	14-Jul-2018 05:46:35	Instrument ID:	A8_N		
Lims ID:	320-40571-A-36-B MS				
Client ID:	NF33-SS-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	53	Worklist Smp#:	18
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

4 Perfluoropentanoic acid, CAS: 2706-90-3

Signal: 1

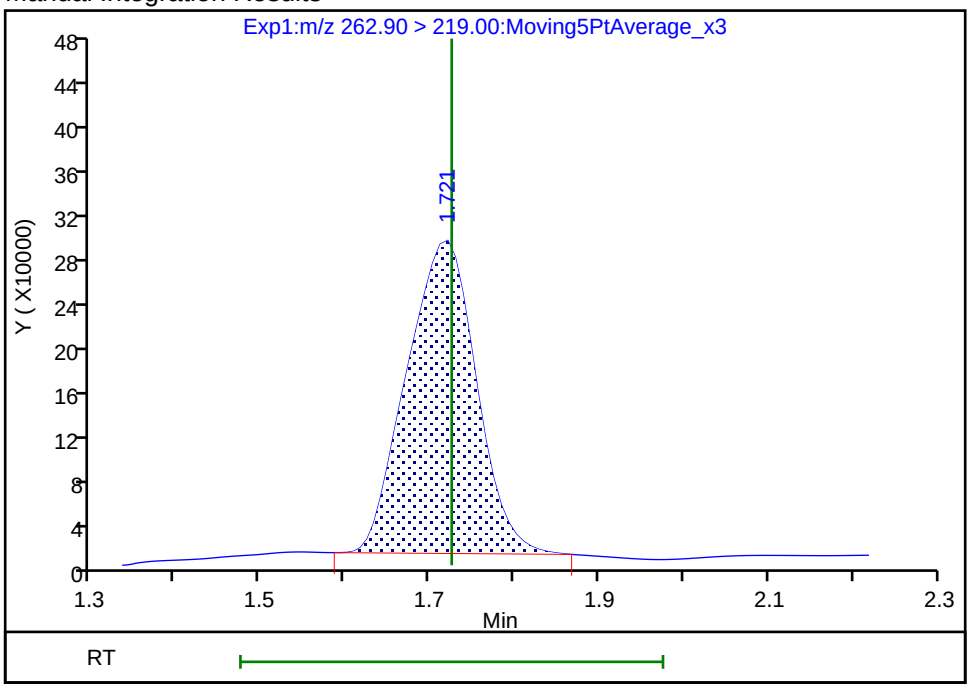
Processing Integration Results

RT: 1.72
Area: 1743766
Amount: 0.997633
Amount Units: ng/ml



Manual Integration Results

RT: 1.72
Area: 1609839
Amount: 0.921012
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 14:27:30

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

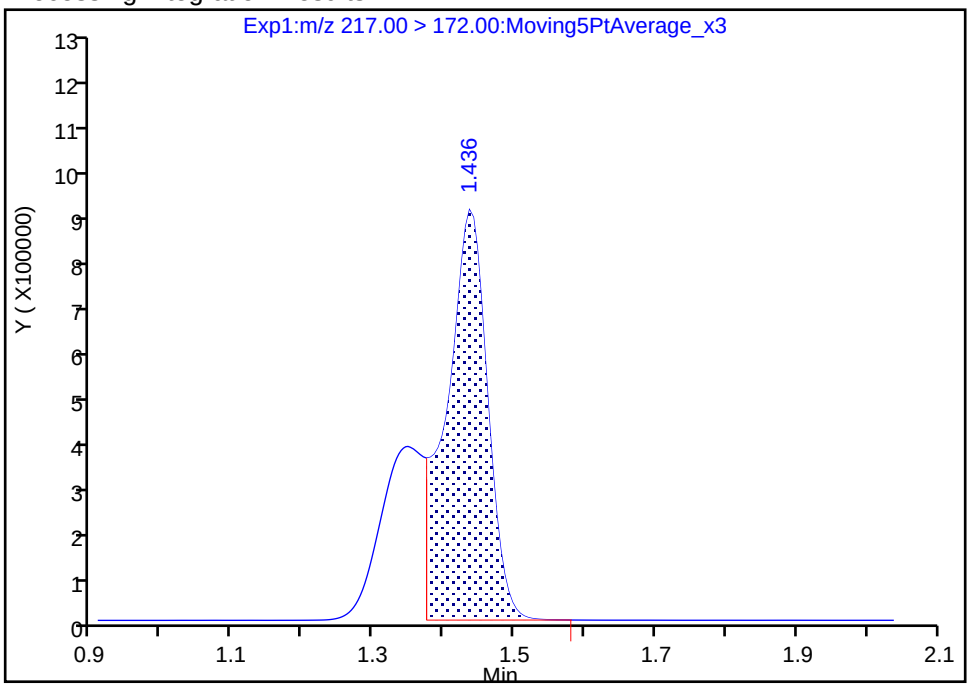
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\2018.07.13LLB_069.d				
Injection Date:	14-Jul-2018 05:46:35	Instrument ID:	A8_N		
Lims ID:	320-40571-A-36-B MS				
Client ID:	NF33-SS-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	53	Worklist Smp#:	18
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

D 1 13C4 PFBA, CAS: STL00992

Signal: 1

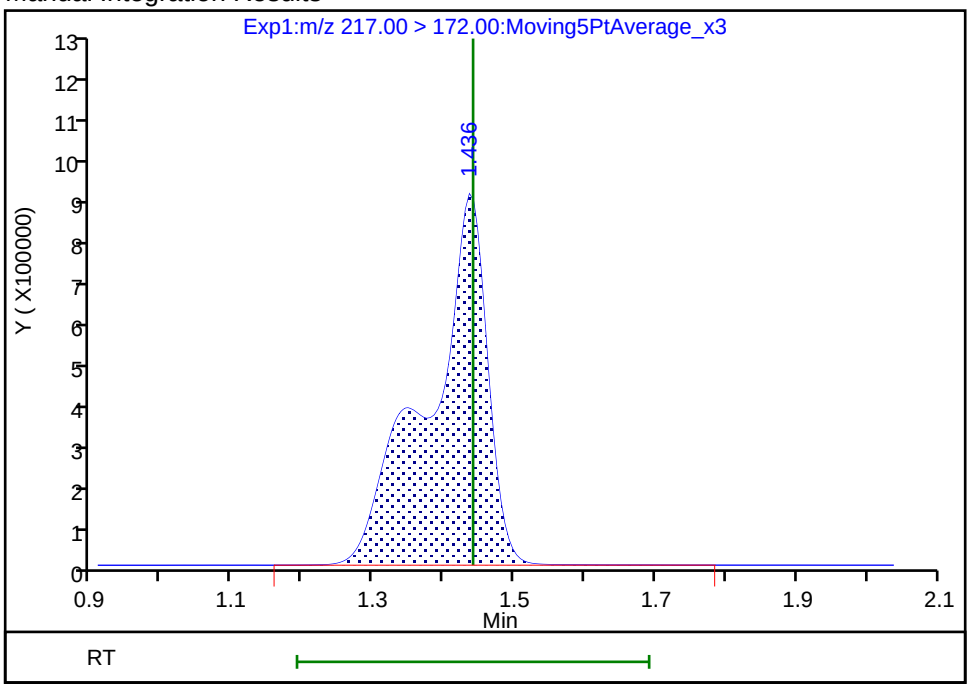
Processing Integration Results

RT: 1.44
Area: 3396112
Amount: 1.294061
Amount Units: ng/ml



Manual Integration Results

RT: 1.44
Area: 4929564
Amount: 1.878370
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 14:27:08

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF36-SS-02 MS
Lab Sample ID: 320-40571-42 MS
Matrix: Solid
Lab File ID: 2018.07.14LLA_033.d
Analysis Method: 537 (modified)
Date Collected: 06/20/2018 16:50
Extraction Method: SHAKE
Date Extracted: 06/28/2018 06:06
Sample wt/vol: 5.01(g)
Date Analyzed: 07/14/2018 14:56
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture: 16.5
GPC Cleanup:(Y/N) N
Analysis Batch No.: 234231
Units: mg/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	0.00232		0.00024	0.000033
2706-90-3	Perfluoropentanoic acid (PFPeA)	0.00222		0.00024	0.000092
307-24-4	Perfluorohexanoic acid (PFHxA)	0.00230		0.00024	0.000050
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.00213		0.00024	0.000035
335-67-1	Perfluorooctanoic acid (PFOA)	0.00209		0.00024	0.00010
375-95-1	Perfluorononanoic acid (PFNA)	0.00226		0.00024	0.000043
335-76-2	Perfluorodecanoic acid (PFDA)	0.00217		0.00024	0.000026
2058-94-8	Perfluoroundecanoic acid (PFUnA)	0.00218		0.00024	0.000043
307-55-1	Perfluorododecanoic acid (PFDoA)	0.00233		0.00024	0.000080
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	0.00242		0.00024	0.000061
376-06-7	Perfluorotetradecanoic acid (PFTeA)	0.00220		0.00024	0.000065
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.00206		0.00024	0.000030
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.00197		0.00024	0.000037
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	0.00230		0.00024	0.000042
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.00226		0.00060	0.00024
335-77-3	Perfluorodecanesulfonic acid (PFDS)	0.00224		0.00024	0.000047
754-91-6	Perfluorooctane Sulfonamide (FOSA)	0.00240		0.00024	0.000098
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	0.00235	J	0.0024	0.00047
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	0.00233	J	0.0024	0.00044
27619-97-2	6:2 FTS	0.00225	J	0.0024	0.00018
39108-34-4	8:2 FTS	0.00192	J	0.0024	0.00030

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF36-SS-02 MS
Lab Sample ID: 320-40571-42 MS
Matrix: Solid
Lab File ID: 2018.07.14LLA_033.d
Analysis Method: 537 (modified)
Date Collected: 06/20/2018 16:50
Extraction Method: SHAKE
Date Extracted: 06/28/2018 06:06
Sample wt/vol: 5.01(g)
Date Analyzed: 07/14/2018 14:56
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture: 16.5
GPC Cleanup:(Y/N) N
Analysis Batch No.: 234231
Units: mg/Kg

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00992	13C4 PFBA	80		25-150
STL01893	13C5 PFPeA	83		25-150
STL00993	13C2 PFHxA	86		25-150
STL01892	13C4-PFHpA	88		25-150
STL00990	13C4 PFOA	87		25-150
STL00995	13C5 PFNA	78		25-150
STL00996	13C2 PFDA	86		25-150
STL00997	13C2 PFUnA	81		25-150
STL00998	13C2 PFDoA	82		25-150
STL02116	13C2-PFTeDA	85		25-150
STL02337	13C3-PFBS	79		25-150
STL00994	18O2 PFHxS	79		25-150
STL00991	13C4 PFOS	74		25-150
STL01056	13C8 FOSA	68		25-150
STL02118	d3-NMeFOSAA	74		25-150
STL02117	d5-NEtFOSAA	78		25-150
STL02279	M2-6:2FTS	65		25-150
STL02280	M2-8:2FTS	69		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180716-61105.b\2018.07.14LLA_033.d
Lims ID: 320-40571-A-42-B MS
Client ID: NF36-SS-02
Sample Type: MS
Inject. Date: 14-Jul-2018 14:56:02 ALS Bottle#: 23 Worklist Smp#: 16
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-40571-a-42-b ms
Misc. Info.: Plate: 1 Rack: 5
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180716-61105.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 17-Jul-2018 08:31:34 Calib Date: 11-Jul-2018 15:38:42
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK016

First Level Reviewer: mongkols Date: 17-Jul-2018 08:31:34

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										M
217.00 > 172.00	1.441	1.436	0.005	0.540	4852313	2.00		79.8	39017	M
2 Perfluorobutyric acid										M
212.90 > 169.00	1.441	1.441	0.0	1.000	1853233	0.9688		96.9	639	M
4 Perfluoropentanoic acid										
262.90 > 219.00	1.719	1.719	0.0	1.000	1575805	0.9280		92.8	735	
D 3 13C5-PFPeA										
267.90 > 223.00	1.719	1.720	-0.001	0.645	3499242	2.07		82.8	50095	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.765	1.756	0.009	1.005	2201546	0.8630		97.6	12123	
298.90 > 99.00	1.765	1.756	0.009	1.005	907238		2.43(1.25-3.74)		6690	
D 47 13C3-PFBS										
301.90 > 83.00	1.756	1.756	0.0	0.658	77534	1.83		78.5	445	
61 1H,1H,2H,2H-perfluorohexanesulfoni										
327.00 > 307.00	1.970	1.959	0.011	1.122	350058	0.8075		86.5	20199	
D 7 13C2 PFHxA										
315.00 > 270.00	2.002	1.992	0.010	0.751	3928576	2.15		86.1	84163	
6 Perfluorohexanoic acid										
313.00 > 269.00	2.002	2.003	0.0	1.000	1553661	0.9605		96.1	3204	
313.00 > 119.00	2.002	2.003	0.0	1.000	147731		10.52(5.03-15.10)		3163	
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.025	2.025	0.0	1.154	2127934	0.9144		97.5	36436	
349.00 > 99.00	2.025	2.025	0.0	1.154	755077		2.82(1.36-4.07)		10763	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.093	2.082	0.011	0.785	325348	2.51		100	7953	
67 Perfluoro(2-propoxypropanoic) acid										
329.10 > 285.00	2.093	2.093	0.0	1.000	293486	0.8497		85.0	2146	
D 9 13C4-PFHpA										
367.00 > 322.00	2.319	2.306	0.013	0.870	3714735	2.21		88.4	47866	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.319	2.319	0.0	1.000	1534927	0.8931		89.3	2818	
363.00 > 169.00	2.319	2.319	0.0	1.000	598317		2.57(1.13-3.40)		6665	
D 11 18O2 PFHxS										
403.00 > 84.00	2.332	2.319	0.013	0.874	4473025	1.88		79.4	67943	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.332	2.332	0.0	1.000	1788358	0.8237		90.5	12348	
399.00 > 99.00	2.332	2.332	0.0	1.000	594048		3.01(1.50-4.49)		3613	
65 Adona										
377.00 > 251.00	2.358	2.358	0.0	0.778	4701655	1.13		113	62200	
377.00 > 85.00	2.358	2.358	0.0	0.778	2695477		1.74(0.84-2.53)		20129	
D 12 M2-6:2FTS										
429.00 > 81.00	2.644	2.628	0.016	0.991	559494	1.55		65.4	13164	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.644	2.644	0.0	1.000	346756	0.9409		99.3	2975	
D 14 13C4 PFOA										
417.00 > 372.00	2.667	2.652	0.015	1.000	3728129	2.17		87.0	37636	
* 62 13C2-PFOA										
415.00 > 370.00	2.667	2.667	0.0		4483425	2.50			54315	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.667	2.667	0.0	1.000	1604411	0.8736		87.3	1034	
413.00 > 169.00	2.667	2.667	0.0	1.000	842102		1.91(0.84-2.52)		5798	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.674	2.674	0.0	0.883	1629161	0.9606		101	28229	
449.00 > 99.00	2.674	2.674	0.0	0.883	432251		3.77(1.94-5.82)		7037	
D 19 13C5 PFNA										
468.00 > 423.00	3.030	3.018	0.012	1.136	3006295	1.96		78.5	65007	
D 18 13C4 PFOS										
503.00 > 80.00	3.030	3.018	0.012	1.136	3076384	1.76		73.7	31252	
20 Perfluorononanoic acid										
463.00 > 419.00	3.030	3.029	0.001	1.000	1260309	0.9448		94.5	2514	
463.00 > 169.00	3.030	3.029	0.001	1.000	300814		4.19(1.90-5.69)		13115	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.030	3.029	0.001	1.000	1379698	0.9459		102	17570	
499.00 > 99.00	3.030	3.029	0.001	1.000	308482		4.47(2.31-6.93)		5992	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.238	3.238	0.0	1.069	2299849	0.9733		104	21423	
D 26 M2-8:2FTS										
529.00 > 81.00	3.378	3.361	0.017	1.267	872934	1.66		69.2	14277	
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.378	3.368	0.010	1.115	925021	0.9270		96.6	17839	
549.00 > 99.00	3.378	3.368	0.010	1.115	376203		2.46(1.33-3.97)		9564	
25 1H,1H,2H,2H-perfluorodecanesulfoni										
527.00 > 507.00	3.378	3.368	0.010	1.000	377594	0.8031		83.8	5038	
D 23 13C2 PFDA										
515.00 > 470.00	3.387	3.370	0.017	1.270	2887670	2.15		85.8	43923	
D 21 13C8 FOSA										
506.00 > 78.00	3.378	3.370	0.008	1.267	4287686	1.70		68.1	35629	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
24 Perfluorodecanoic acid										
513.00 > 469.00	3.387	3.377	0.010	1.000	1101395	0.9087		90.9	5962	
513.00 > 169.00	3.387	3.377	0.010	1.000	191514		5.75(2.36-7.09)		8705	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.378	3.377	0.001	1.000	1696083	1.00		100	22350	
35 MeFOSA										
512.00 > 169.00	3.546	3.498	0.048		2913	NC			81.6	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.536	3.520	0.016	1.326	1016810	1.84		73.8	27681	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.546	3.536	0.010	1.003	393750	0.9820		98.2	3559	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.707	3.687	0.020	1.390	1100427	1.95		77.9	2950	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.696	3.695	0.001	1.220	811861	0.9394		97.4	12198	
599.00 > 99.00	3.696	3.695	0.001	1.220	302242		2.69(1.39-4.16)		6369	
D 30 13C2 PFUnA										
565.00 > 520.00	3.717	3.698	0.019	1.394	2279223	2.03		81.1	35987	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.717	3.706	0.011	1.000	683033	0.9143		91.4	3189	
563.00 > 169.00	3.707	3.706	0.001	0.997	184093		3.71(2.12-6.36)		12602	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.717	3.706	0.011	1.003	379168	0.9744		97.4	12684	
66 11-Chloroeicosafluoro-3-oxaundecan										
631.00 > 451.00	3.874	3.863	0.011	1.279	3293963	0.9644		102	42937	
D 36 13C2 PFDoA										
615.00 > 570.00	4.007	3.988	0.019	1.503	2386900	2.05		82.0	24113	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.007	3.996	0.011	1.000	1015037	0.9737		97.4	599	
613.00 > 169.00	4.007	3.996	0.011	1.000	240640		4.22(2.13-6.40)		5108	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.260	4.260	0.0	1.063	1031401	1.01		101	548	
663.00 > 169.00	4.260	4.260	0.0	1.063	312283		3.30(1.25-3.76)		5249	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.501	4.480	0.021	1.688	2565923	2.12		84.9	13991	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.501	4.501	0.001	1.000	245917	0.9209		92.1	3027	
713.00 > 219.00	4.490	4.501	-0.010	0.998	177931		1.38(0.71-2.13)		3115	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.904	4.887	0.017	1.839	4191327	2.18		87.1	12468	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.904	4.904	0.0	1.000	1515870	0.9300		93.0	390	
813.00 > 169.00	4.904	4.904	0.0	1.000	245867		6.17(2.86-8.58)		1852	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.247	5.247	0.0	1.070	1809774	0.9445		94.5	413	
913.00 > 169.00	5.247	5.247	0.0	1.070	222743		8.12(3.83-11.48)		2321	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Review Flags

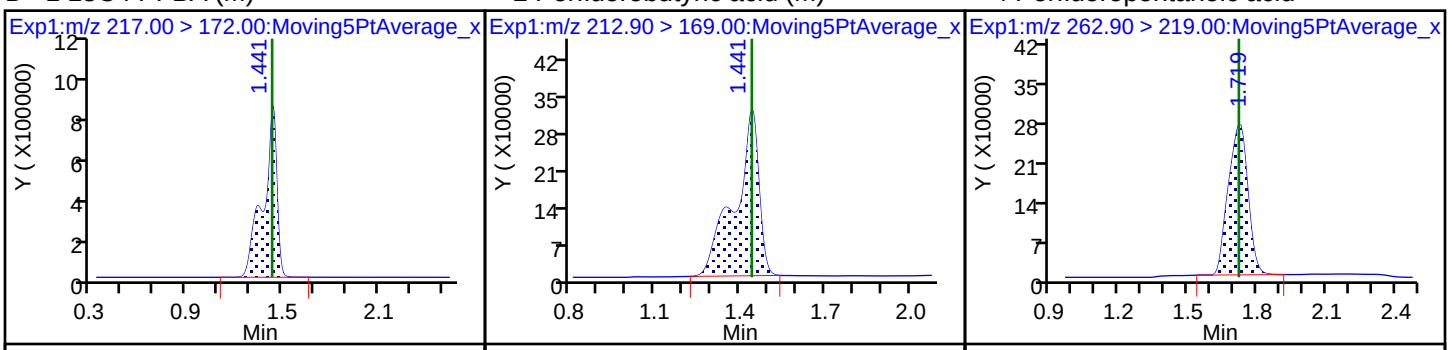
M - Manually Integrated

Report Date: 17-Jul-2018 08:31:35 Chrom Revision: 2.2 07-Jun-2018 07:41:54

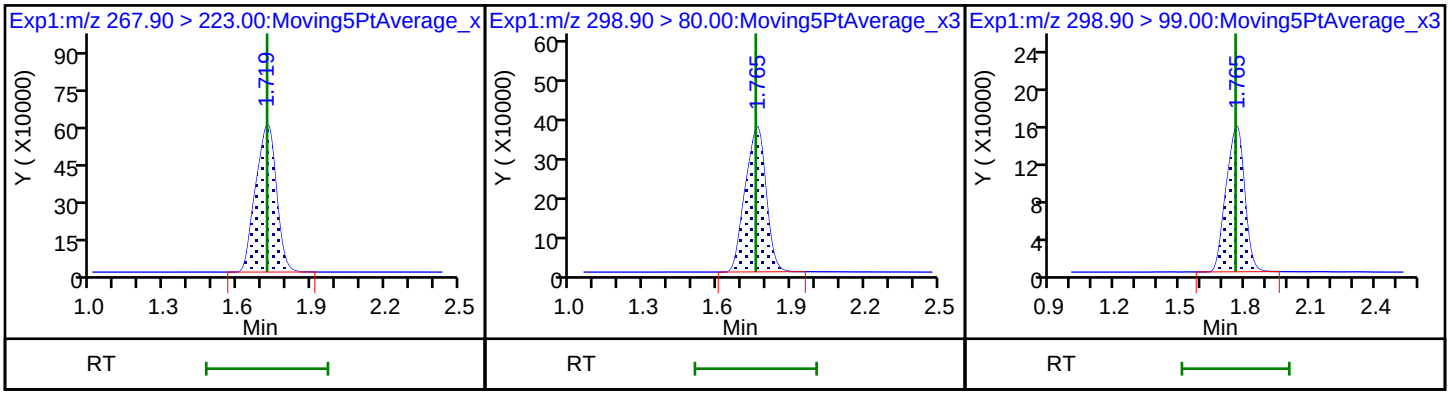
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180716-61105.b\2018.07.14LLA_033.d
Injection Date: 14-Jul-2018 14:56:02 Instrument ID: A8_N
Lims ID: 320-40571-A-42-B MS
Client ID: NF36-SS-02
Operator ID: SACINSTLCMS01 ALS Bottle#: 23 Worklist Smp#: 16
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC ICAL

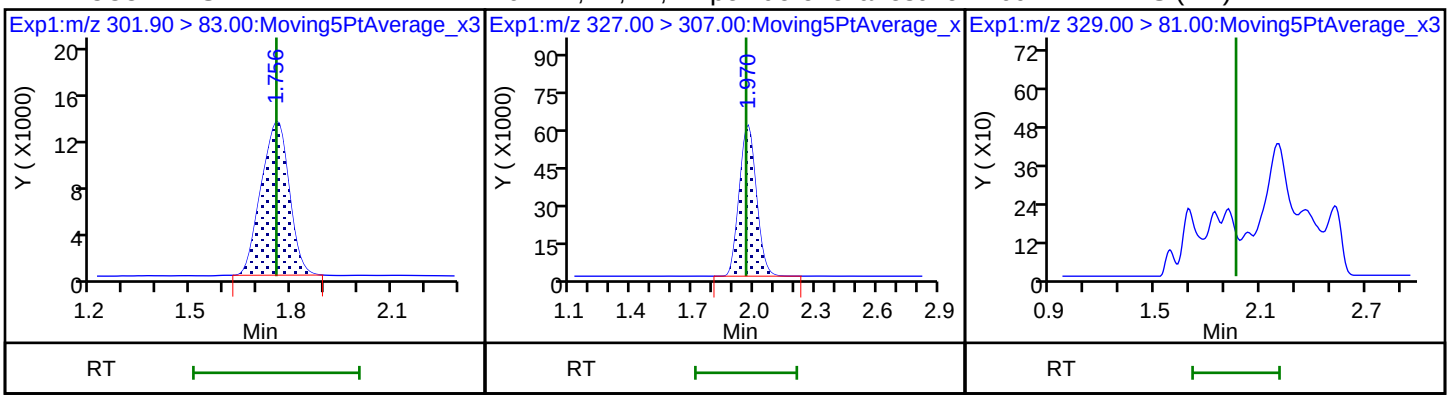
D 1 13C4 PFBA (M) | 2 Perfluorobutyric acid (M) | 4 Perfluoropentanoic acid



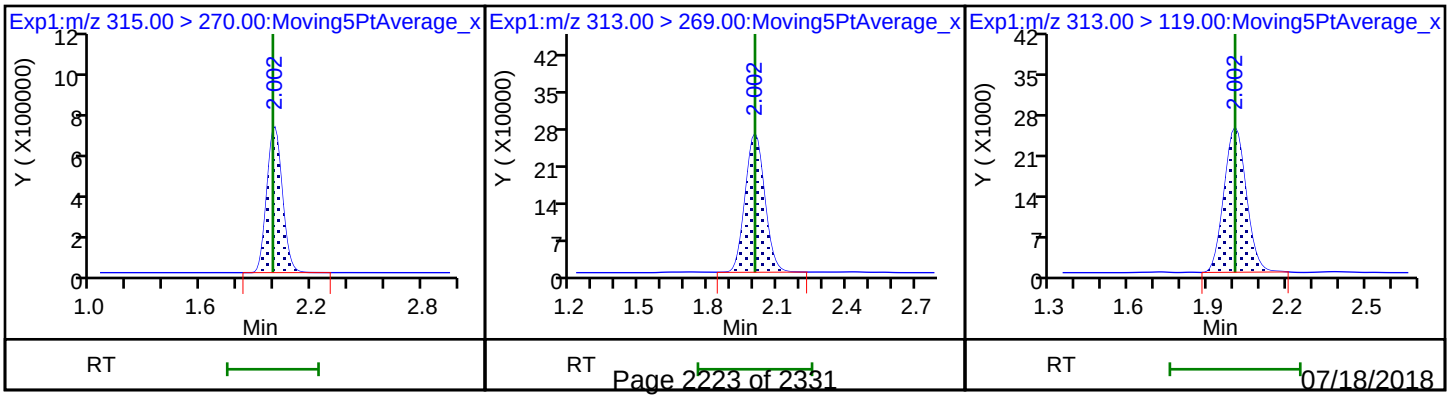
D 3 13C5-PFPeA | 5 Perfluorobutanesulfonic acid | 5 Perfluorobutanesulfonic acid



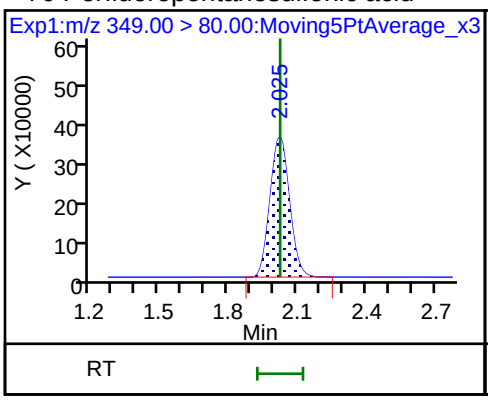
D 47 13C3-PFBS | 61 1H,1H,2H,2H-perfluorohexanesulfon | D 60 M2-4:2FTS (ND)



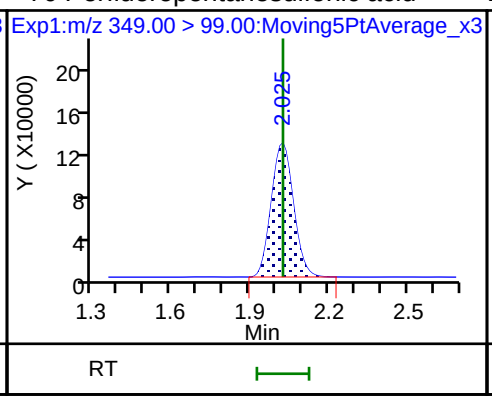
D 7 13C2 PFHxA | 6 Perfluorohexanoic acid | 6 Perfluorohexanoic acid



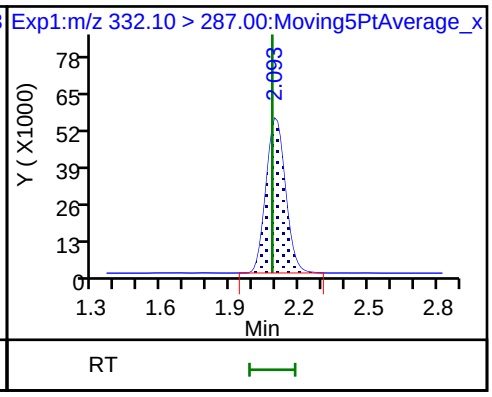
70 Perfluoropentanesulfonic acid



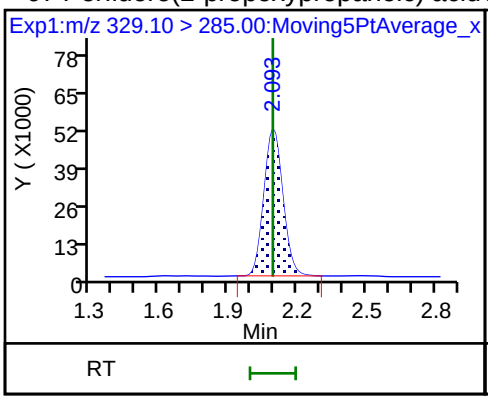
70 Perfluoropentanesulfonic acid



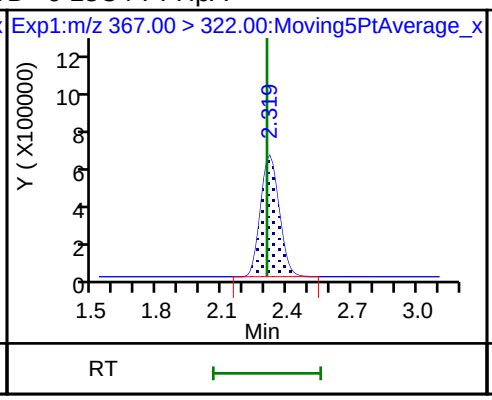
D 64 13C3 HFPO-DA



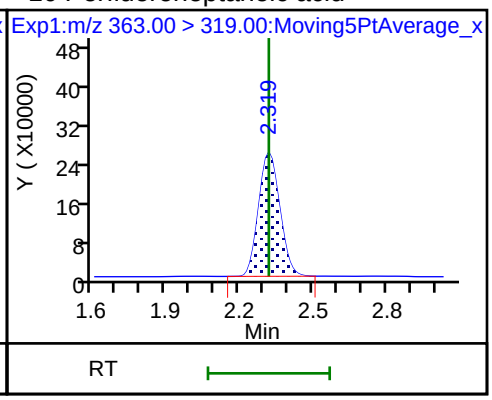
67 Perfluoro(2-propoxypropanoic) acid



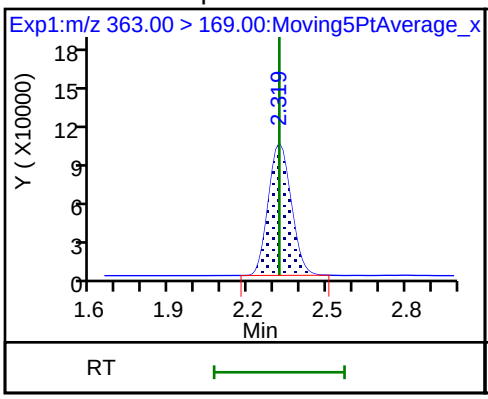
D 9 13C4-PFHpA



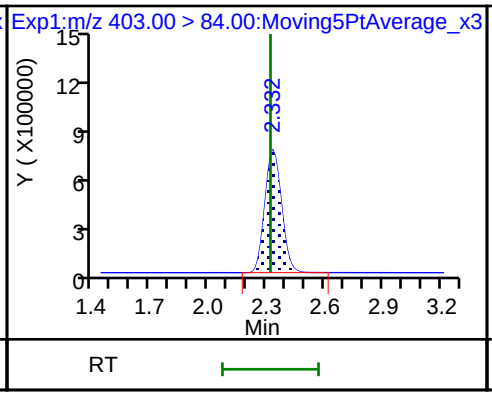
10 Perfluoroheptanoic acid



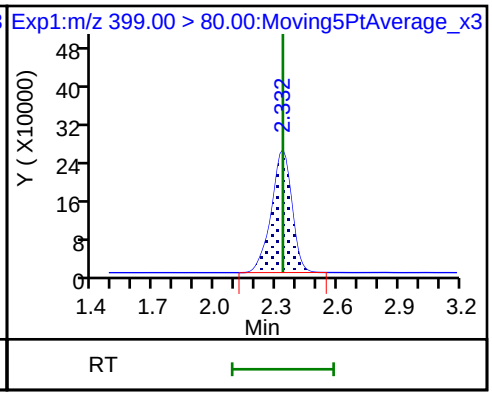
10 Perfluoroheptanoic acid



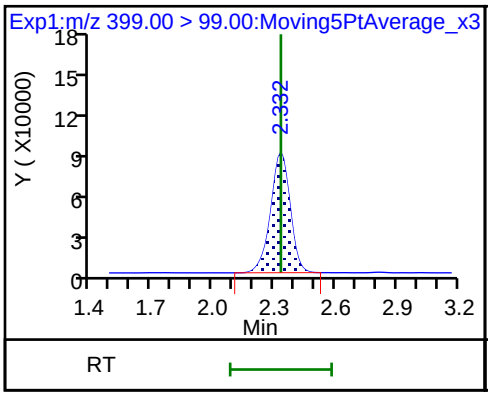
D 11 18O2 PFHxS



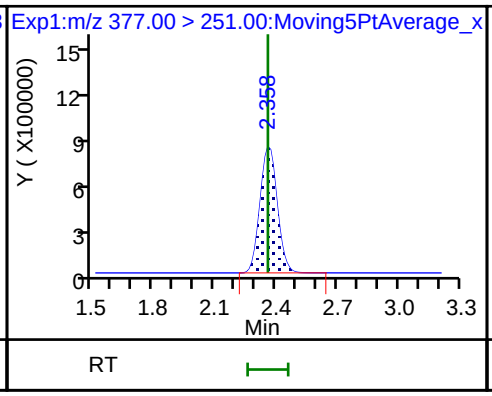
8 Perfluorohexanesulfonic acid



8 Perfluorohexanesulfonic acid



65 Adona



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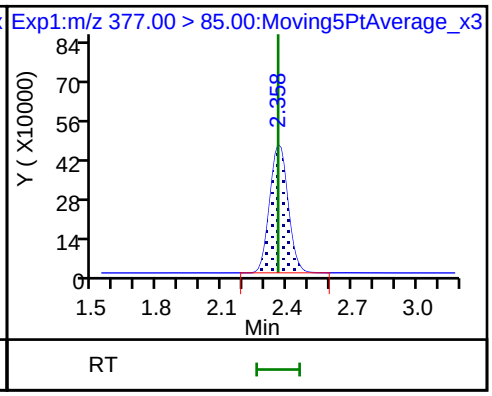
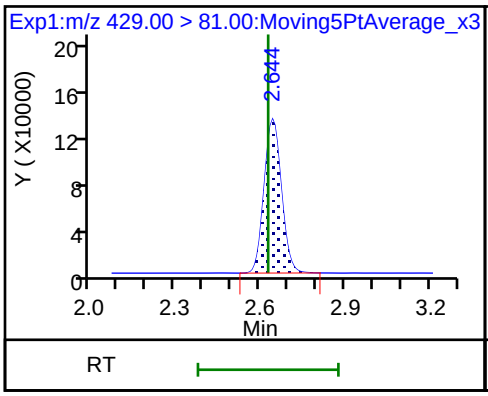
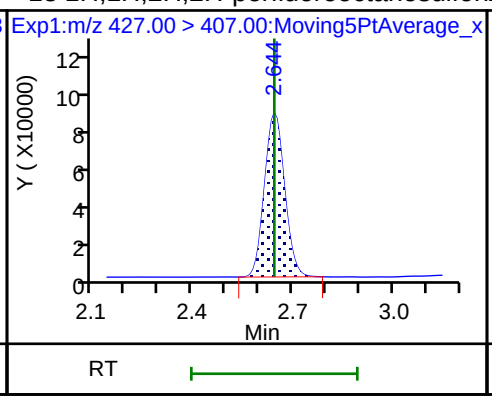


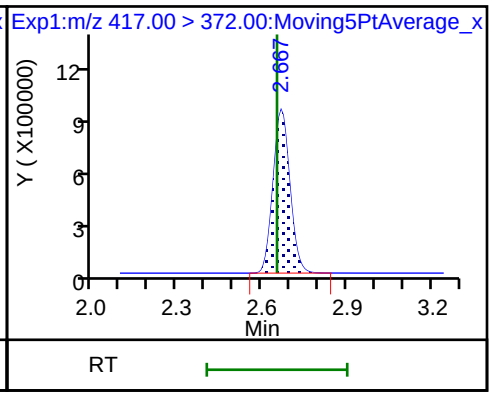
D 12 M2-6:2FTS



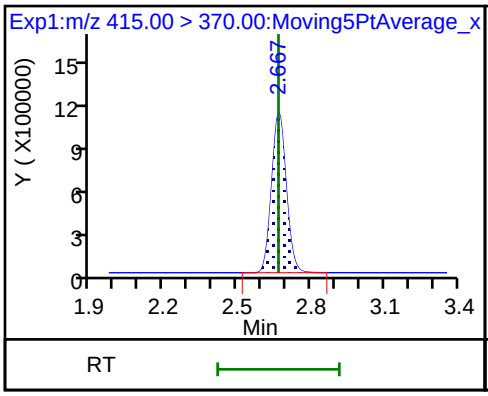
13 1H,1H,2H,2H-perfluorooctanesulfon



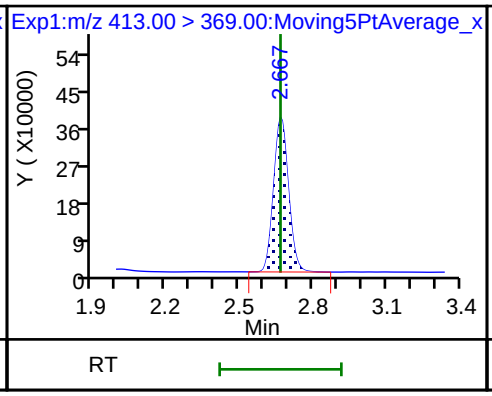
D 14 13C4 PFOA



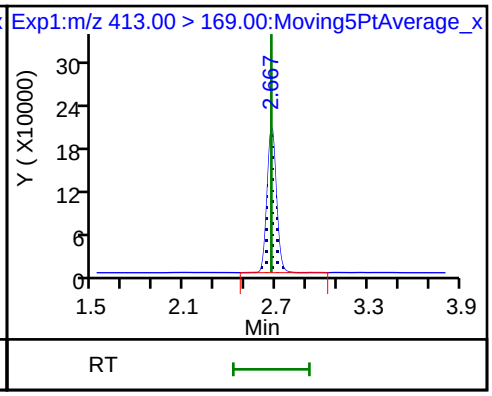
* 62 13C2-PFOA



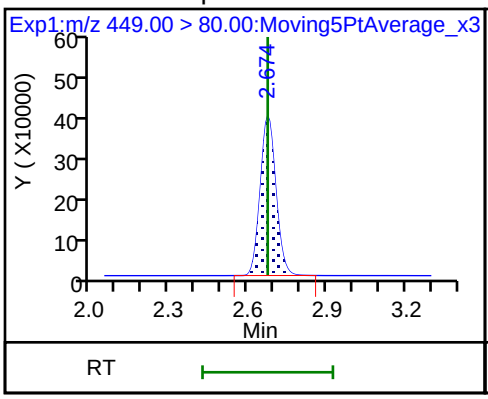
15 Perfluorooctanoic acid



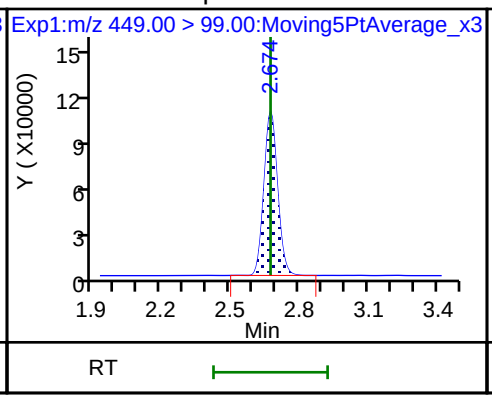
15 Perfluorooctanoic acid



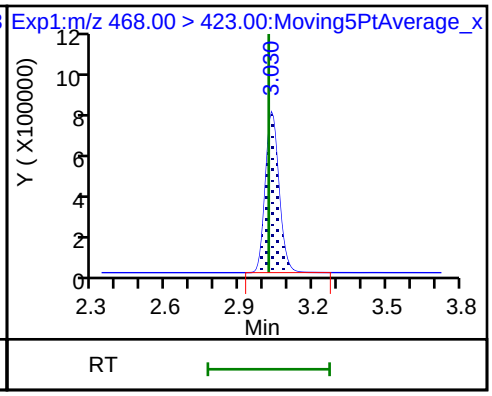
16 Perfluoroheptanesulfonic acid



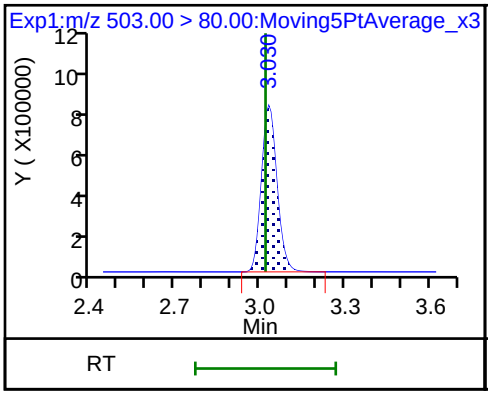
16 Perfluoroheptanesulfonic acid



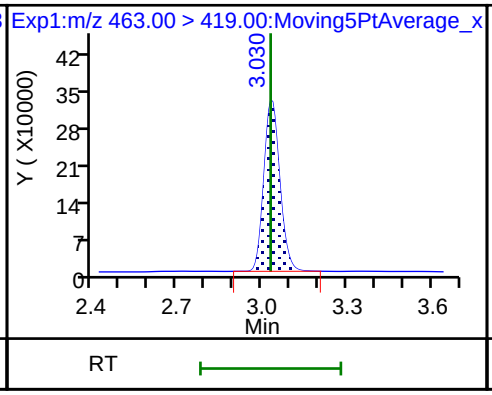
D 19 13C5 PFNA



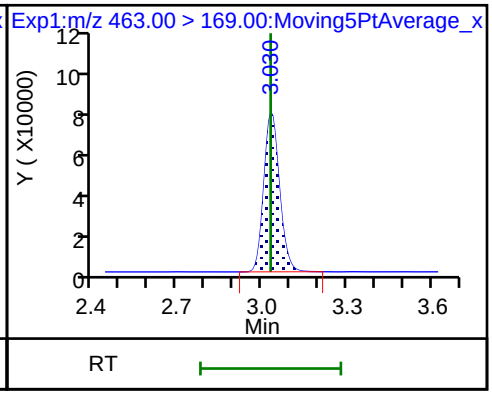
D 18 13C4 PFOS



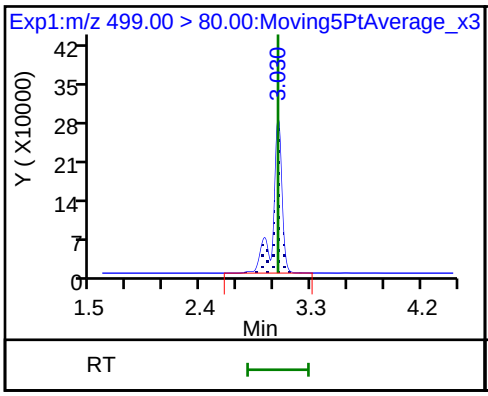
20 Perfluorononanoic acid



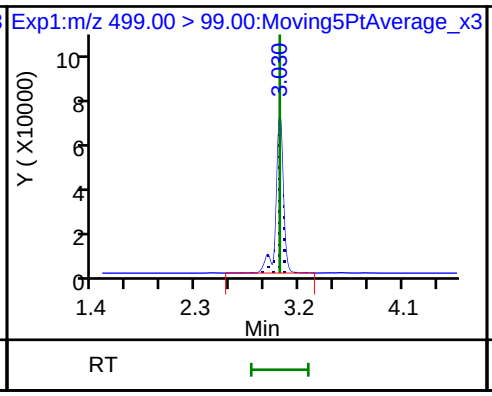
20 Perfluorononanoic acid



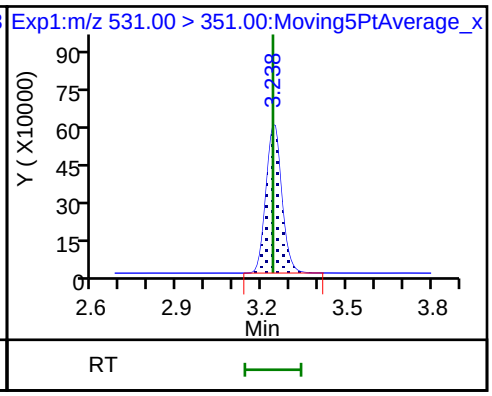
17 Perfluorooctane sulfonic acid



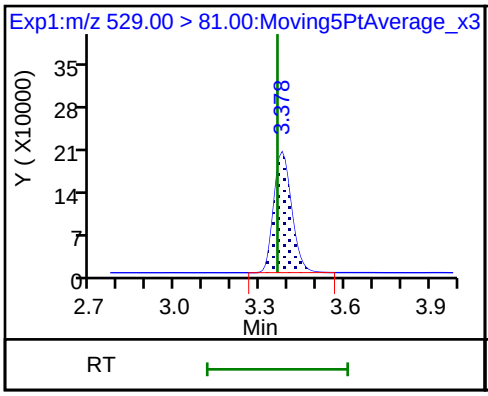
17 Perfluorooctane sulfonic acid



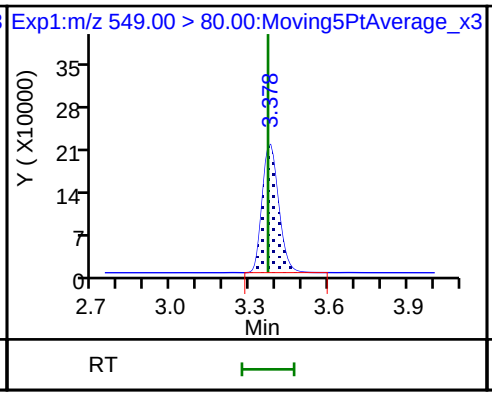
69 9-Chlorohexadecafluoro-3-oxanonane



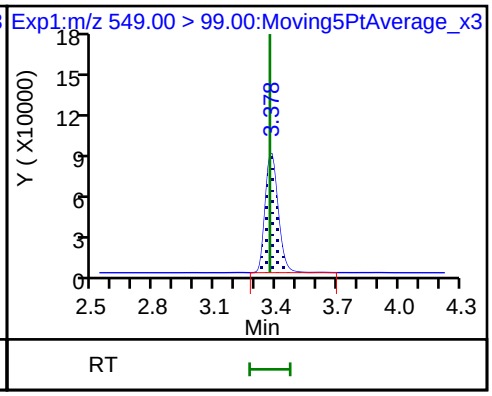
D 26 M2-8:2FTS



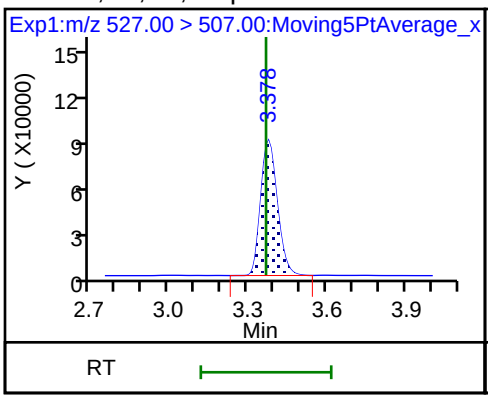
68 Perfluorononanesulfonic acid



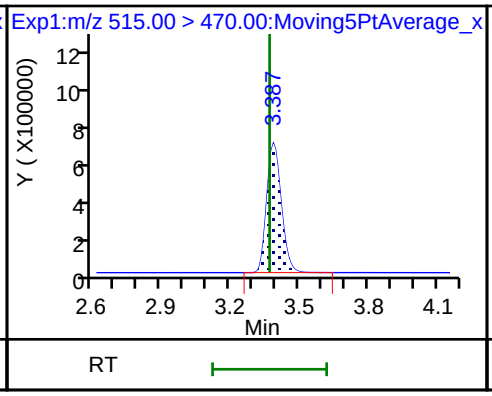
68 Perfluorononanesulfonic acid



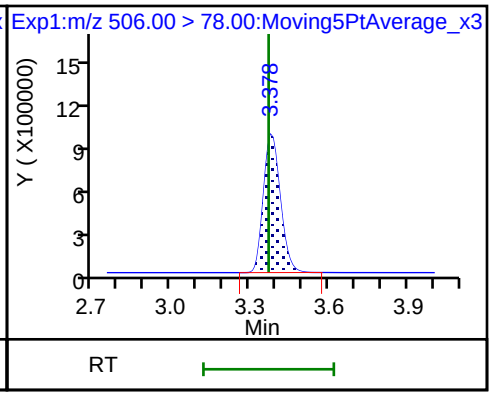
25 1H,1H,2H,2H-perfluorodecanesulfon



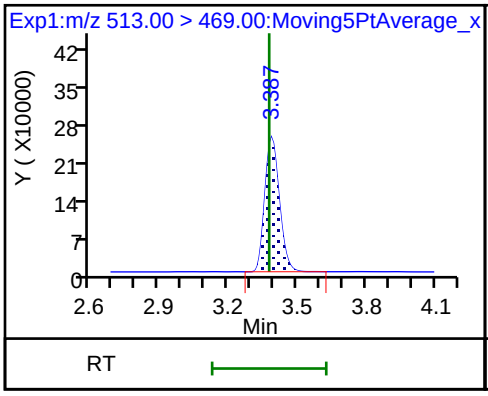
D 23 13C2 PFDA



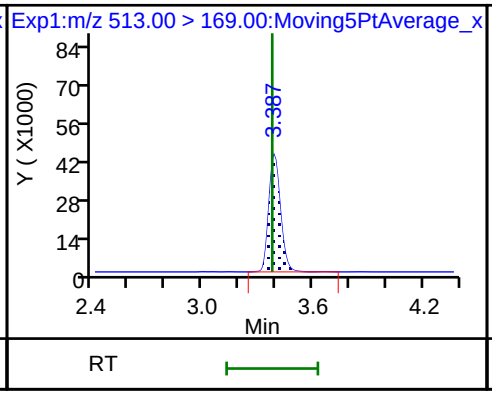
D 21 13C8 FOSA



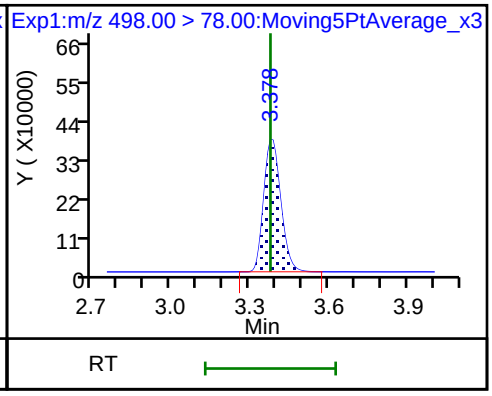
24 Perfluorodecanoic acid



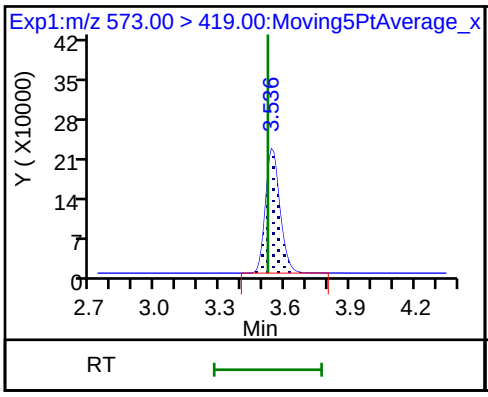
24 Perfluorodecanoic acid



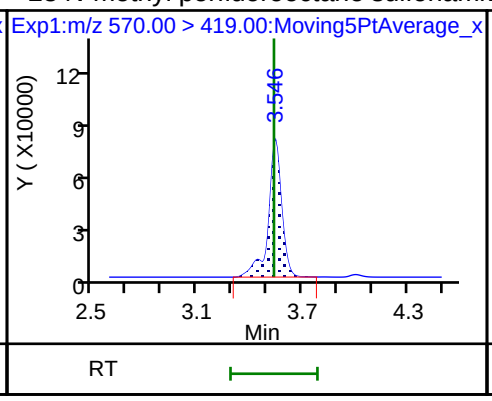
22 Perfluorooctane Sulfonamide



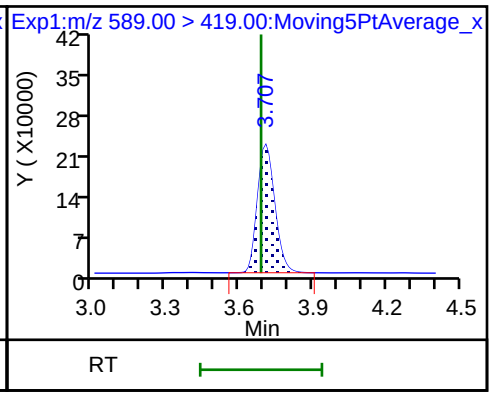
D 27 d3-NMeFOSAA



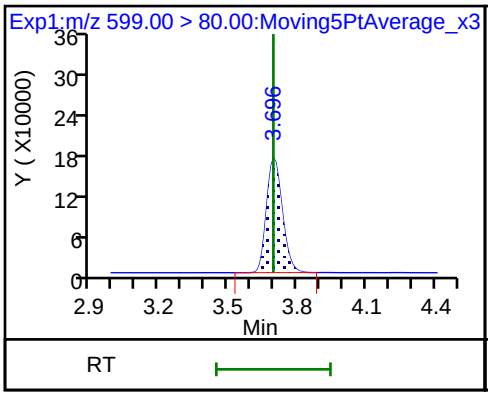
28 N-methyl perfluorooctane sulfonami



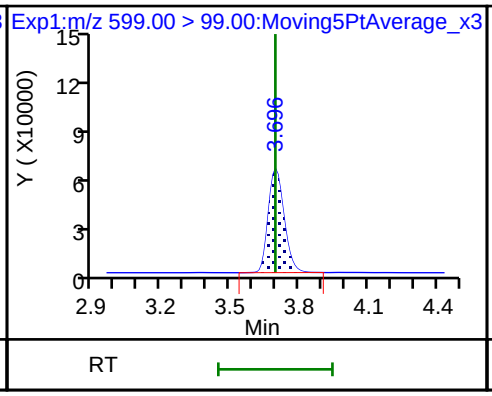
D 32 d5-NEtFOSAA



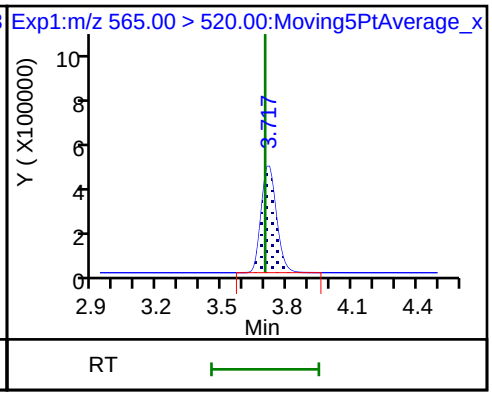
29 Perfluorodecane Sulfonic acid



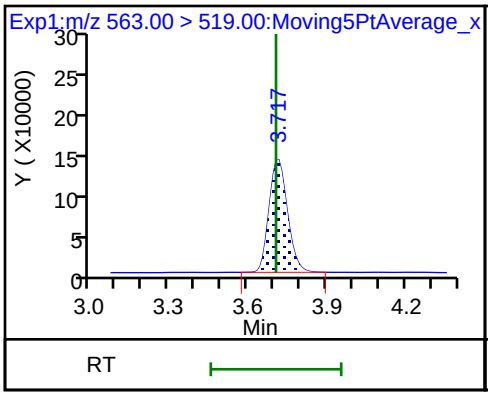
29 Perfluorodecane Sulfonic acid



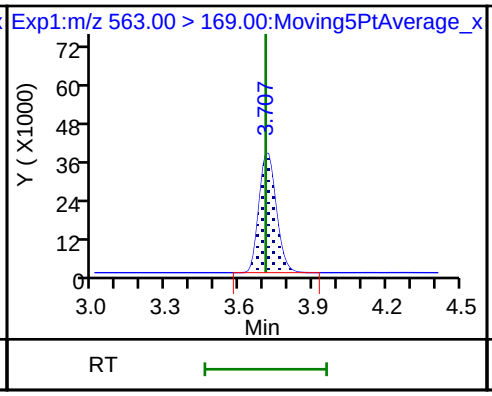
D 30 13C2 PFUnA



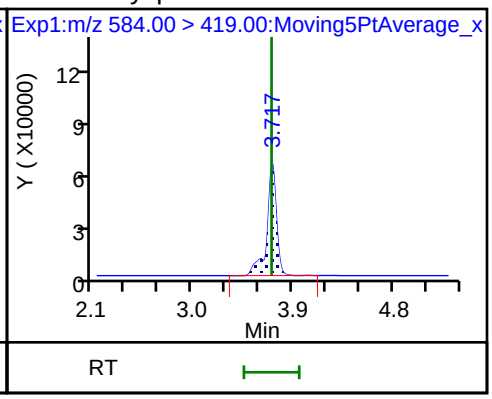
31 Perfluoroundecanoic acid



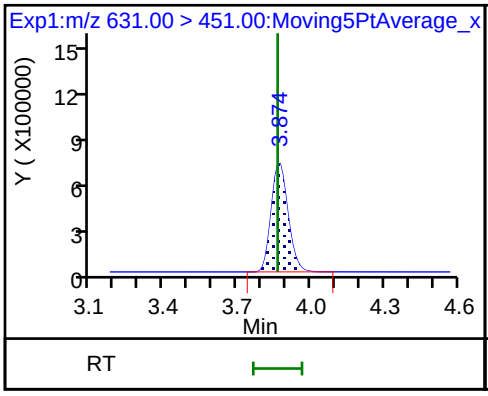
31 Perfluoroundecanoic acid



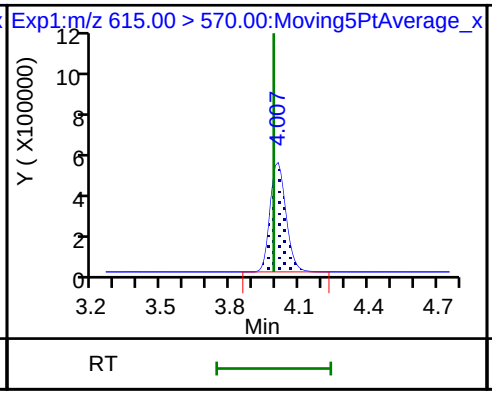
33 N-ethyl perfluorooctane sulfonamid



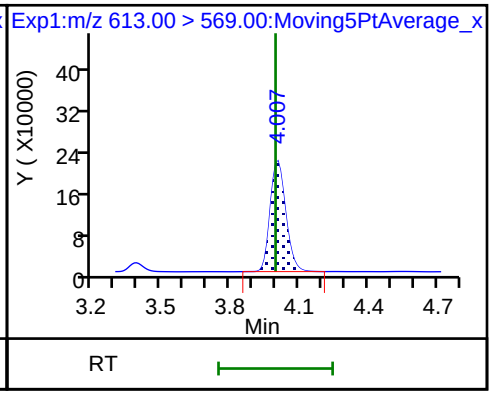
66 11-Chloroeicosafluoro-3-oxaundecan



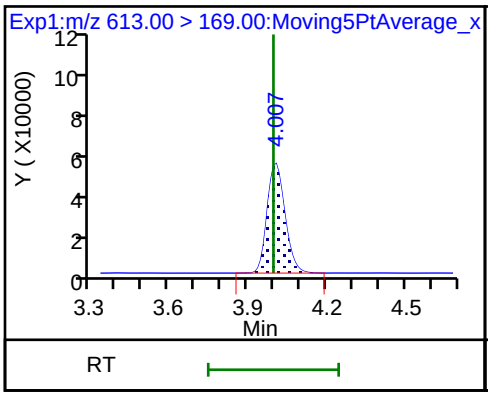
D 36 13C2 PFDoA



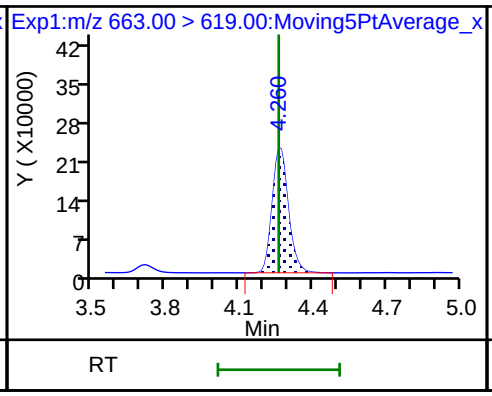
37 Perfluorododecanoic acid



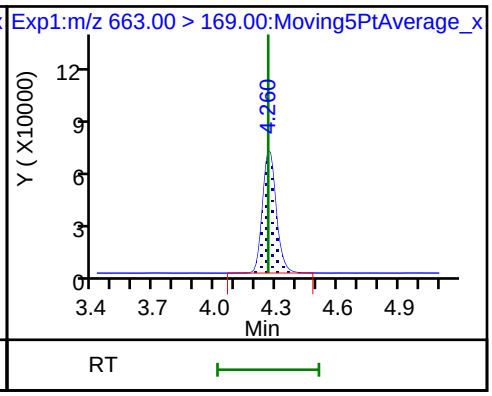
37 Perfluorododecanoic acid



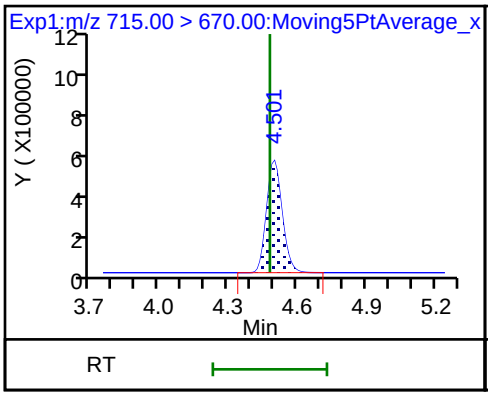
41 Perfluorotridecanoic acid



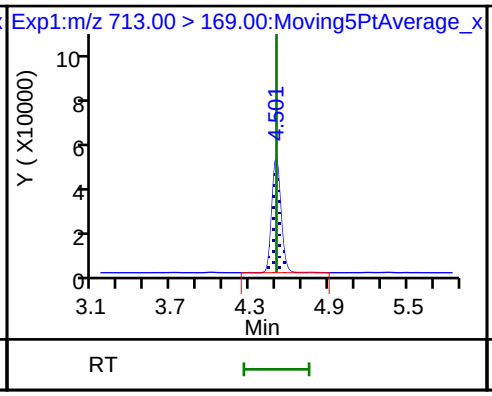
41 Perfluorotridecanoic acid



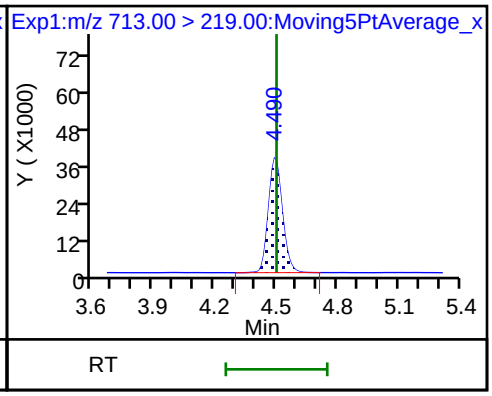
D 43 13C2-PFTeDA



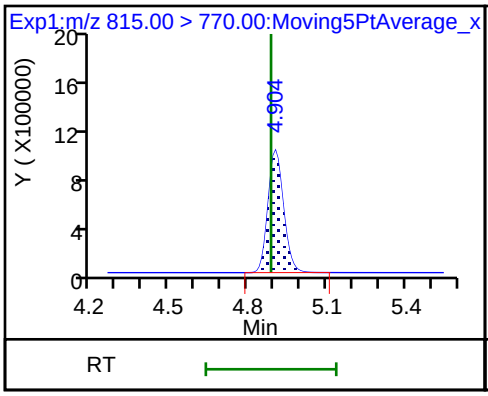
42 Perfluorotetradecanoic acid



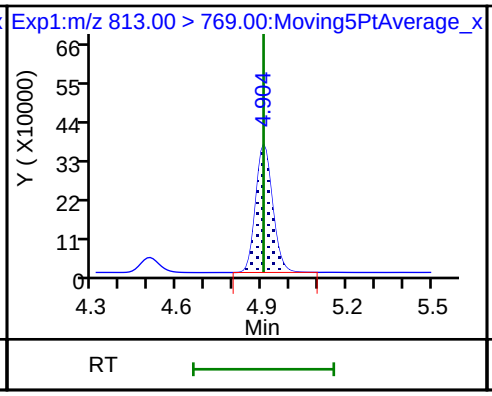
42 Perfluorotetradecanoic acid



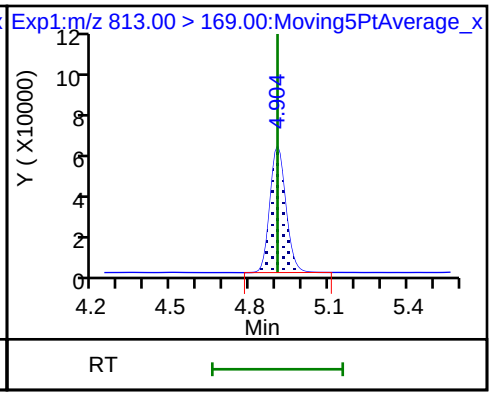
D 44 13C2-PFHxDA



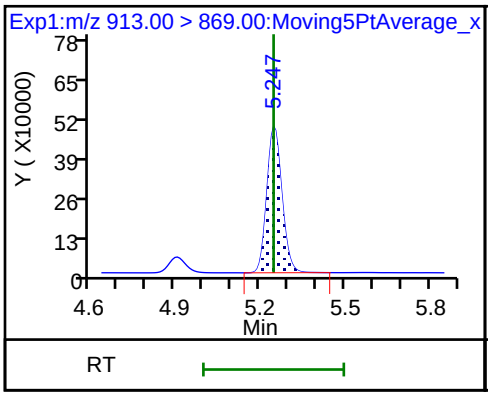
45 Perfluorohexadecanoic acid



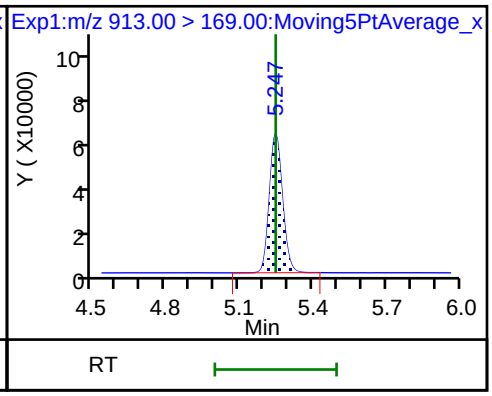
45 Perfluorohexadecanoic acid



46 Perfluorooctadecanoic acid



46 Perfluorooctadecanoic acid



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

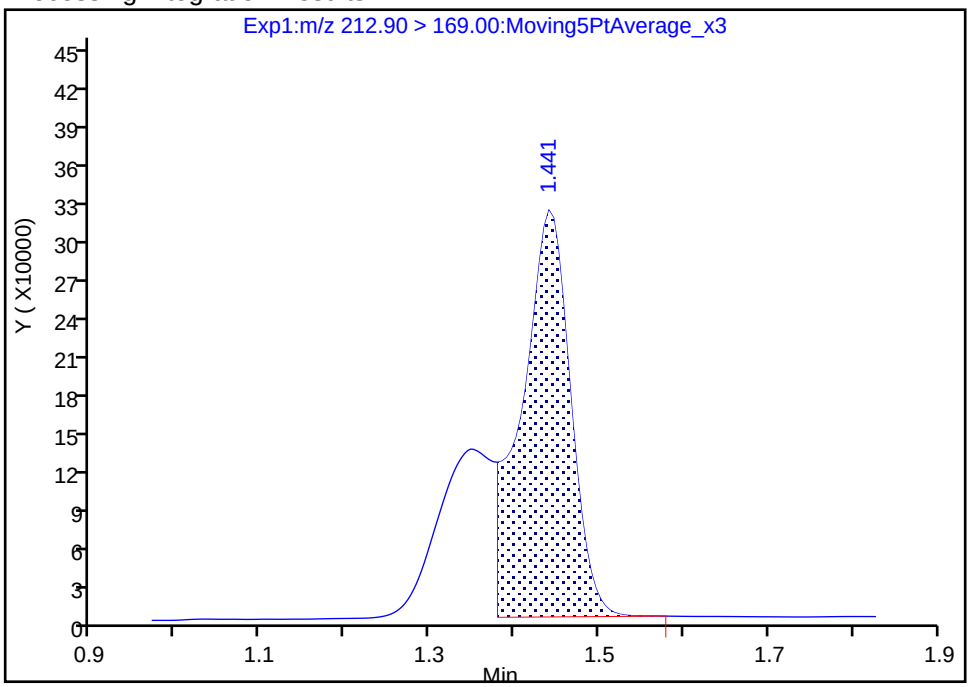
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180716-61105.b\2018.07.14LLA_033.d				
Injection Date:	14-Jul-2018 14:56:02	Instrument ID:	A8_N		
Lims ID:	320-40571-A-42-B MS				
Client ID:	NF36-SS-02				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	23	Worklist Smp#:	16
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

2 Perfluorobutyric acid, CAS: 375-22-4

Signal: 1

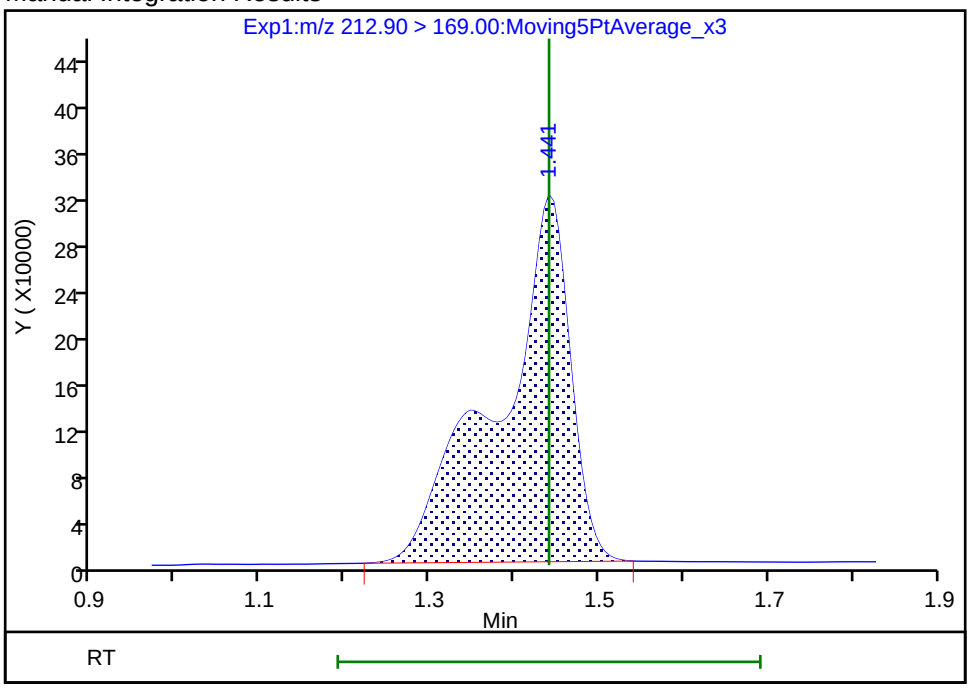
Processing Integration Results

RT: 1.44
Area: 1262409
Amount: 0.659935
Amount Units: ng/ml



Manual Integration Results

RT: 1.44
Area: 1853233
Amount: 0.968793
Amount Units: ng/ml



Reviewer: mongkols, 17-Jul-2018 08:31:04

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

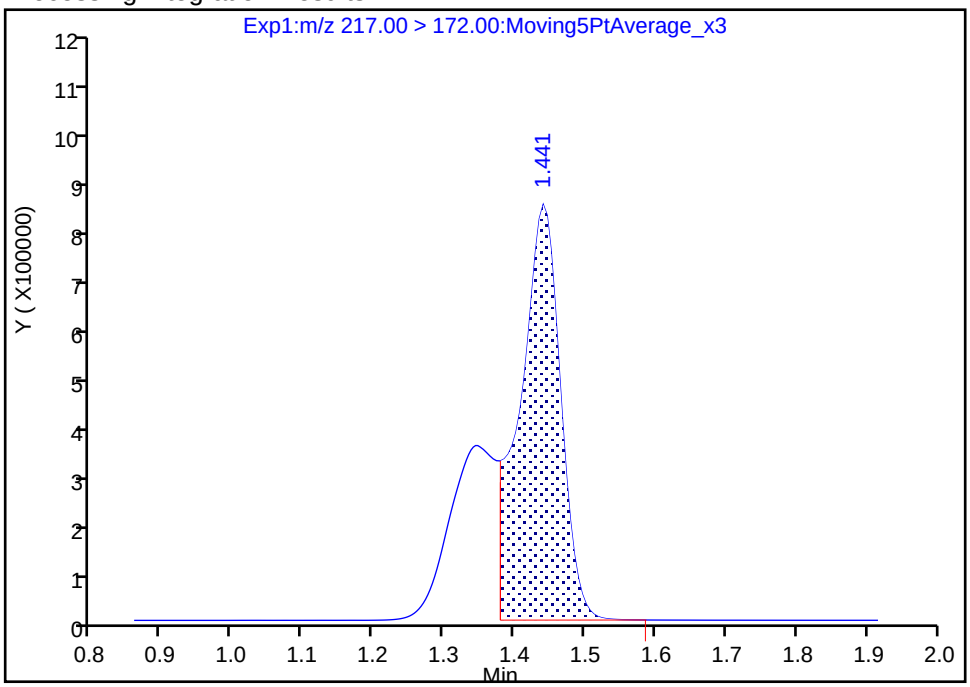
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180716-61105.b\2018.07.14LLA_033.d				
Injection Date:	14-Jul-2018 14:56:02	Instrument ID:	A8_N		
Lims ID:	320-40571-A-42-B MS				
Client ID:	NF36-SS-02				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	23	Worklist Smp#:	16
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

D 1 13C4 PFBA, CAS: STL00992

Signal: 1

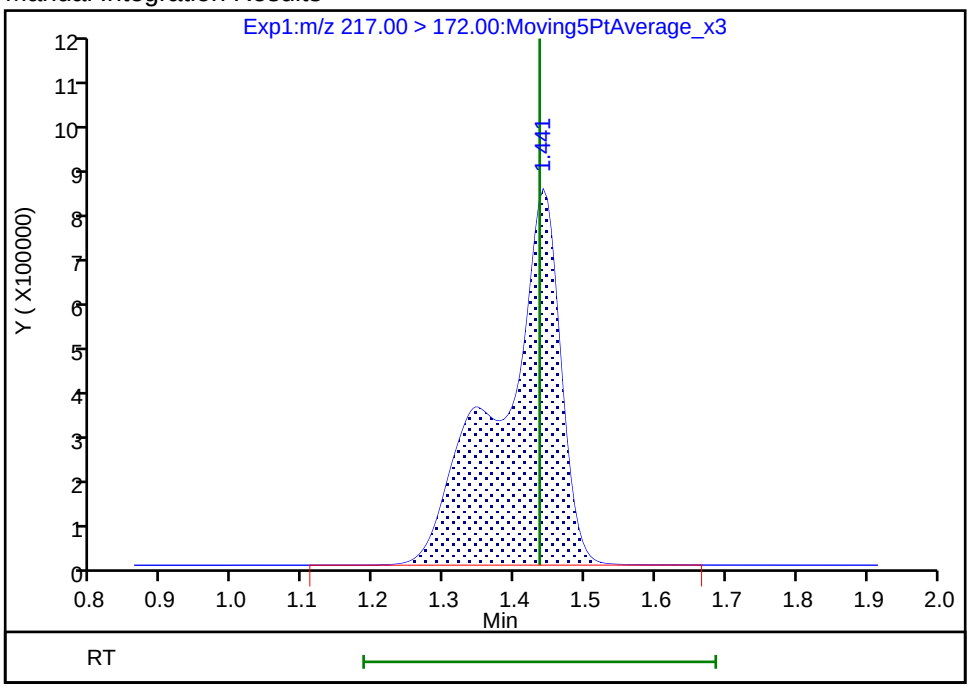
Processing Integration Results

RT: 1.44
Area: 3253920
Amount: 1.338154
Amount Units: ng/ml



Manual Integration Results

RT: 1.44
Area: 4852313
Amount: 1.995484
Amount Units: ng/ml



Reviewer: mongkols, 17-Jul-2018 08:30:49

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF27-GW-01 MSD
Lab Sample ID: 320-40571-23 MSD
Matrix: Water
Lab File ID: 2018.07.13LLC_014.d
Analysis Method: 537 (modified)
Date Collected: 06/21/2018 09:25
Extraction Method: 3535
Date Extracted: 07/02/2018 14:58
Sample wt/vol: 270.8(mL)
Date Analyzed: 07/13/2018 21:48
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 233989
Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	0.0550		0.0018	0.00032
2706-90-3	Perfluoropentanoic acid (PFPeA)	0.0500		0.0018	0.00045
307-24-4	Perfluorohexanoic acid (PFHxA)	0.0388		0.0018	0.00054
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.0382		0.0018	0.00023
335-67-1	Perfluorooctanoic acid (PFOA)	0.0348		0.0018	0.00078
375-95-1	Perfluorononanoic acid (PFNA)	0.0336		0.0018	0.00025
335-76-2	Perfluorodecanoic acid (PFDA)	0.0342		0.0018	0.00029
2058-94-8	Perfluoroundecanoic acid (PFUnA)	0.0314		0.0018	0.0010
307-55-1	Perfluorododecanoic acid (PFDoA)	0.0327		0.0018	0.00051
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	0.0318		0.0018	0.0012
376-06-7	Perfluorotetradecanoic acid (PFTeA)	0.0312		0.0018	0.00027
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.0330		0.0018	0.00018
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	0.0326		0.0018	0.00028
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.0305		0.0018	0.00016
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	0.0328		0.0018	0.00018
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.0327		0.0018	0.00050
8789-57-2	Perfluorononanesulfonic acid (PFNS)	0.0310		0.0018	0.00015
335-77-3	Perfluorodecanesulfonic acid (PFDS)	0.0300		0.0018	0.00030
754-91-6	Perfluorooctane Sulfonamide (FOSA)	0.0348		0.0018	0.00032
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	0.0323		0.018	0.0029
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	0.0323		0.018	0.0018
757124-72-4	4:2 FTS	0.0631		0.018	0.0048
27619-97-2	6:2 FTS	0.0367		0.018	0.0018
39108-34-4	8:2 FTS	0.0317		0.018	0.0018

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF27-GW-01 MSD
Lab Sample ID: 320-40571-23 MSD
Matrix: Water
Lab File ID: 2018.07.13LLC_014.d
Analysis Method: 537 (modified)
Date Collected: 06/21/2018 09:25
Extraction Method: 3535
Date Extracted: 07/02/2018 14:58
Sample wt/vol: 270.8(mL)
Date Analyzed: 07/13/2018 21:48
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 233989
Units: ug/L

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00992	13C4 PFBA	61		25-150
STL01893	13C5 PFPeA	81		25-150
STL00993	13C2 PFHxA	92		25-150
STL01892	13C4-PFHpA	98		25-150
STL00990	13C4 PFOA	99		25-150
STL00995	13C5 PFNA	95		25-150
STL00996	13C2 PFDA	92		25-150
STL00997	13C2 PFUnA	95		25-150
STL00998	13C2 PFDoA	89		25-150
STL02116	13C2-PFTeDA	93		25-150
STL02337	13C3-PFBS	85		25-150
STL00994	18O2 PFHxS	94		25-150
STL00991	13C4 PFOS	91		25-150
STL01056	13C8 FOSA	84		25-150
STL02118	d3-NMeFOSAA	96		25-150
STL02117	d5-NEtFOSAA	96		25-150
STL02279	M2-6:2FTS	112		25-150
STL02280	M2-8:2FTS	85		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\2018.07.13LLC_014.d
Lims ID: 320-40571-A-23-C MSD
Client ID: NF27-GW-01
Sample Type: MSD
Inject. Date: 13-Jul-2018 21:48:48 ALS Bottle#: 8 Worklist Smp#: 9
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-40571-a-23-c msd
Misc. Info.: Plate: 1 Rack: 4
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 16-Jul-2018 12:39:26 Calib Date: 11-Jul-2018 15:38:42
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK023

First Level Reviewer: mongkols Date: 16-Jul-2018 12:39:26

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										M
212.90 > 169.00	1.439	1.433	0.006	1.004	2279223	1.49		149	171	M
D 1 13C4 PFBA										
217.00 > 172.00	1.433	1.445	-0.012	0.536	3881324	1.52		60.9	19162	
4 Perfluoropentanoic acid										M
262.90 > 219.00	1.726	1.716	0.010	1.000	2362824	1.35		135	209	M
D 3 13C5-PFPeA										
267.90 > 223.00	1.726	1.725	0.001	0.646	3597986	2.03		81.1	9485	
5 Perfluorobutanesulfonic acid										M
298.90 > 80.00	1.762	1.761	0.001	1.000	2589232	0.8940		101	396	M
298.90 > 99.00	1.762	1.761	0.001	1.000	1066458		2.43(1.25-3.74)		1226	
D 47 13C3-PFBS										
301.90 > 83.00	1.762	1.762	0.0	0.659	88030	1.98		84.9	166	
61 1H,1H,2H,2H-perfluorohexanesulfoni										
327.00 > 307.00	1.967	1.967	0.0	1.116	840350	1.71		183	18336	
6 Perfluorohexanoic acid										M
313.00 > 269.00	2.011	1.999	0.012	1.000	1896024	1.05		105	402	M
313.00 > 119.00	2.011	1.999	0.012	1.000	169986		11.15(5.03-15.10)		1433	
D 7 13C2 PFHxA										
315.00 > 270.00	2.011	2.011	0.0	0.752	4387561	2.29		91.7	50453	
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.034	2.022	0.012	1.154	2328917	0.8815		94.0	891	
349.00 > 99.00	2.034	2.022	0.012	1.154	895681		2.60(1.36-4.07)		2044	
67 Perfluoro(2-propoxypropanoic) acid										
329.10 > 285.00	2.101	2.090	0.011	1.000	313276	0.8305		83.1	288	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.101	2.101	0.0	0.786	355290	2.61		104	4408	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.329	2.316	0.013	1.000	2064639	1.03		103	734	
363.00 > 169.00	2.329	2.316	0.013	1.000	765193		2.70(1.13-3.40)		4323	
D 9 13C4-PFHpA										
367.00 > 322.00	2.329	2.329	0.0	0.871	4312961	2.45		97.8	42353	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.342	2.329	0.013	1.000	2224152	0.8247		90.6	931	
399.00 > 99.00	2.342	2.329	0.013	1.000	732819		3.04(1.50-4.49)		1169	
D 11 18O2 PFHxS										
403.00 > 84.00	2.342	2.342	0.0	0.876	5556648	2.22		94.1	66257	
65 Adona										
377.00 > 251.00	2.369	2.355	0.014	0.782	5000013	0.9265		92.7	24939	
377.00 > 85.00	2.369	2.355	0.014	0.782	2928153		1.71(0.84-2.53)		6833	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.651	2.634	0.017	1.003	655225	0.99		105	5053	
D 12 M2-6:2FTS										
429.00 > 81.00	2.643	2.651	-0.008	0.989	1001804	2.65		112	3417	
* 62 13C2-PFOA										
415.00 > 370.00	2.673	2.658	0.015		4704125	2.50			50777	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.673	2.658	0.015	1.000	2062090	0.9415		94.1	882	
413.00 > 169.00	2.673	2.658	0.015	1.000	1075344		1.92(0.84-2.52)		6698	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.681	2.666	0.015	0.885	1963134	0.8887		93.3	3025	
449.00 > 99.00	2.681	2.666	0.015	0.885	529685		3.71(1.94-5.82)		4407	
D 14 13C4 PFOA										
417.00 > 372.00	2.673	2.673	0.0	1.000	4446106	2.47		98.9	49800	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.030	3.018	0.012	1.000	1680220	0.8843		95.3	4188	
499.00 > 99.00	3.030	3.018	0.012	1.000	374171		4.49(2.31-6.93)		3562	
20 Perfluorononanoic acid										
463.00 > 419.00	3.037	3.025	0.012	1.002	1539910	0.9105		91.0	1790	
463.00 > 169.00	3.037	3.025	0.012	1.002	371982		4.14(1.90-5.69)		5829	
D 18 13C4 PFOS										
503.00 > 80.00	3.030	3.036	-0.006	1.134	4007281	2.19		91.5	14168	
D 19 13C5 PFNA										
468.00 > 423.00	3.030	3.036	-0.006	1.134	3811514	2.37		94.8	39612	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.239	3.232	0.007	1.069	2594592	0.8430		90.4	19602	
25 1H,1H,2H,2H-perfluorodecanesulfoni										
527.00 > 507.00	3.379	3.361	0.018	1.000	521701	0.8572		89.5	8537	
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.379	3.361	0.018	1.115	1089625	0.8383		87.3	7364	
549.00 > 99.00	3.379	3.361	0.018	1.115	425052		2.56(1.33-3.97)		3732	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.379	3.371	0.008	1.000	2057836	0.9422		94.2	33472	
D 21 13C8 FOSA										
506.00 > 78.00	3.379	3.376	0.003	1.264	5539702	2.10		83.8	57521	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 26 M2-8:2FTS										
529.00 > 81.00	3.379	3.376	0.003	1.264	1129971	2.04		85.3	5413	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.388	3.380	0.008	1.000	1264336	0.9269		92.7	4393	
513.00 > 169.00	3.388	3.380	0.008	1.000	227288		5.56(2.36-7.09)		3038	
D 23 13C2 PFDA										
515.00 > 470.00	3.388	3.385	0.003	1.267	3249689	2.30		92.1	52910	
35 MeFOSA										
512.00 > 169.00	3.547	3.498	0.049		4263	NC			138	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.547	3.529	0.018	1.003	476495	0.8736		87.4	3748	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.537	3.544	-0.007	1.323	1383179	2.39		95.6	18125	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.697	3.687	0.010	1.220	914346	0.8122		84.3	7747	
599.00 > 99.00	3.697	3.687	0.010	1.220	305697		2.99(1.39-4.16)		5339	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.718	3.698	0.020	1.003	777042	0.8495		85.0	3058	
563.00 > 169.00	3.718	3.698	0.020	1.003	211378		3.68(2.12-6.36)		10687	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.718	3.698	0.020	1.003	439846	0.8750		87.5	5835	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.708	3.705	0.003	1.387	1421465	2.40		95.9	3636	
D 30 13C2 PFUnA										
565.00 > 520.00	3.708	3.715	-0.007	1.387	2790512	2.37		94.7	47915	
66 11-Chloroeicosafluoro-3-oxaundecan										
631.00 > 451.00	3.875	3.855	0.020	1.279	3738014	0.8402		89.2	35483	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.008	3.999	0.009	1.000	1046012	0.8845		88.4	675	
613.00 > 169.00	4.008	3.999	0.009	1.000	268437		3.90(2.13-6.40)		5190	
D 36 13C2 PFDoA										
615.00 > 570.00	4.008	4.005	0.003	1.499	2707791	2.22		88.6	24828	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.261	4.252	0.009	1.063	994446	0.8599		86.0	511	
663.00 > 169.00	4.261	4.252	0.009	1.063	338482		2.94(1.25-3.76)		5335	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.501	4.491	0.010	1.000	259198	0.8446		84.5	3660	
713.00 > 219.00	4.501	4.491	0.010	1.000	199942		1.30(0.71-2.13)		4109	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.501	4.500	0.001	1.684	2948985	2.33		93.0	20307	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.905	4.905	0.0	1.000	1597758	0.8958		89.6	399	
813.00 > 169.00	4.905	4.905	0.0	1.000	273352		5.85(2.86-8.58)		2999	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.905	4.912	-0.007	1.835	4582284	2.27		90.7	15190	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.255	5.248	0.007	1.071	1776558	0.8481		84.8	359	
913.00 > 169.00	5.255	5.248	0.007	1.071	223456		7.95(3.83-11.48)		2720	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Review Flags

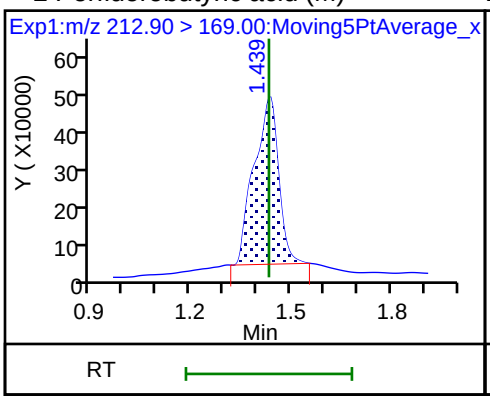
M - Manually Integrated

Report Date: 16-Jul-2018 12:39:26 Chrom Revision: 2.2 07-Jun-2018 07:41:54

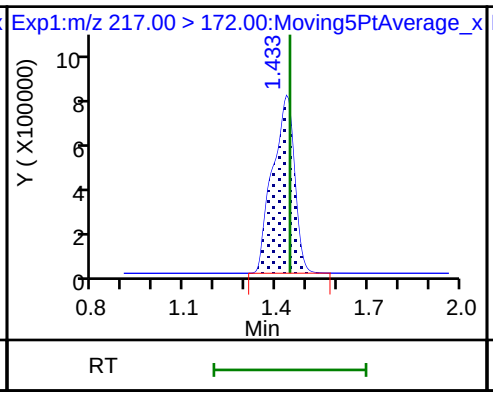
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\2018.07.13LLC_014.d
Injection Date: 13-Jul-2018 21:48:48 Instrument ID: A8_N
Lims ID: 320-40571-A-23-C MSD
Client ID: NF27-GW-01
Operator ID: SACINSTLCMS01 ALS Bottle#: 8 Worklist Smp#: 9
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC ICAL

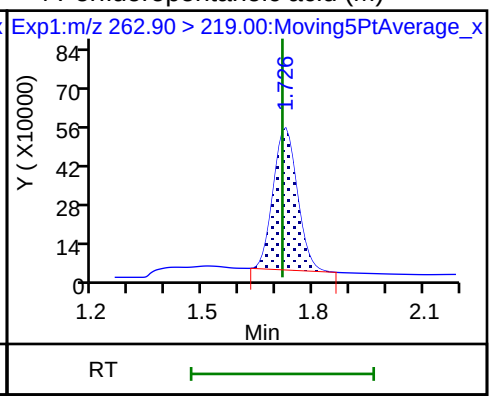
2 Perfluorobutyric acid (M)



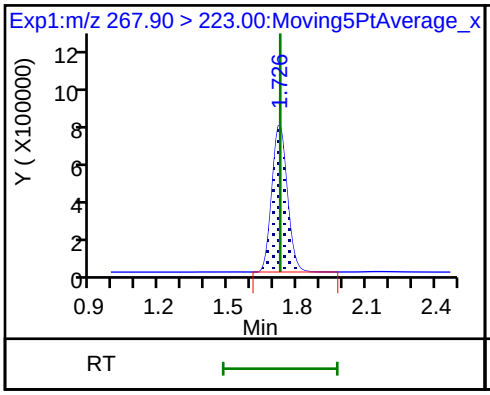
D 1 13C4 PFBA



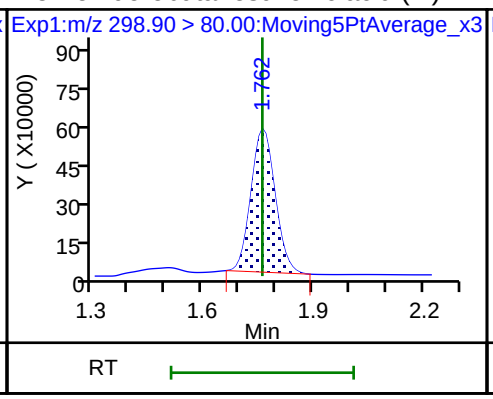
4 Perfluoropentanoic acid (M)



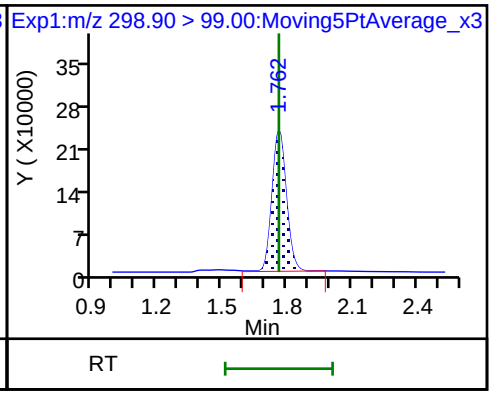
D 3 13C5-PFPeA



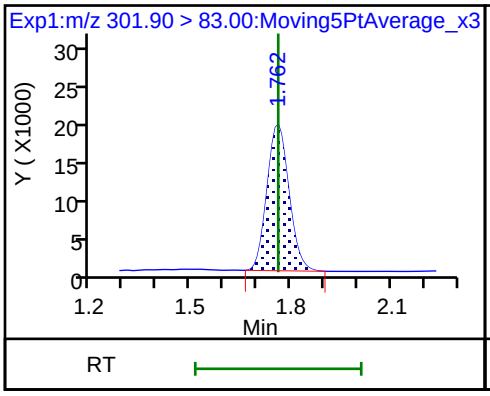
5 Perfluorobutanesulfonic acid (M)



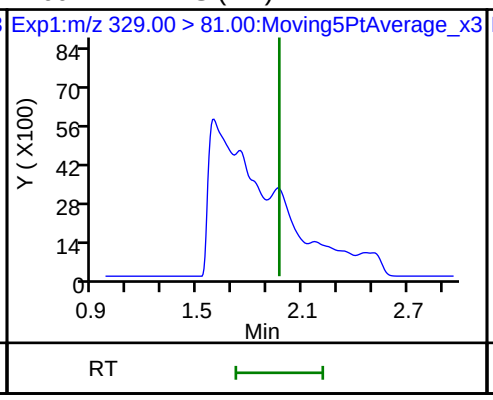
5 Perfluorobutanesulfonic acid



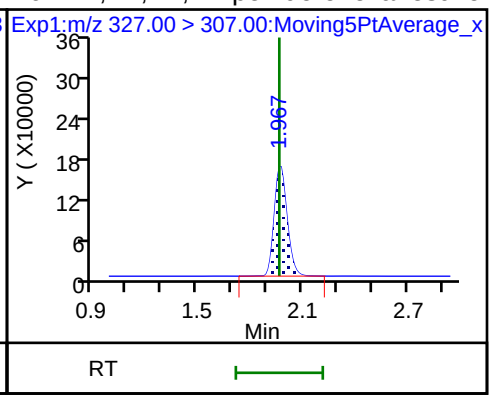
D 47 13C3-PFBS



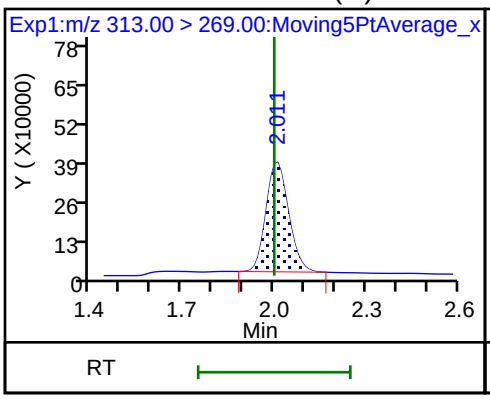
D 60 M2-4:2FTS (ND)



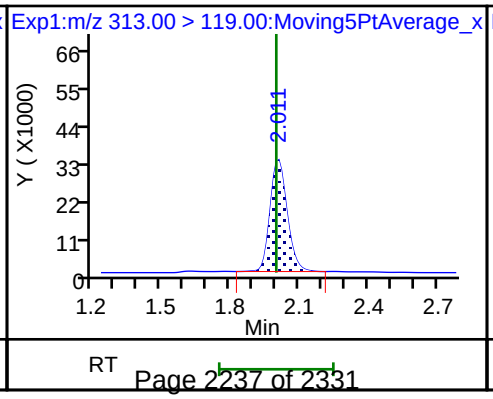
61 1H,1H,2H,2H-perfluorohexanesulfoni



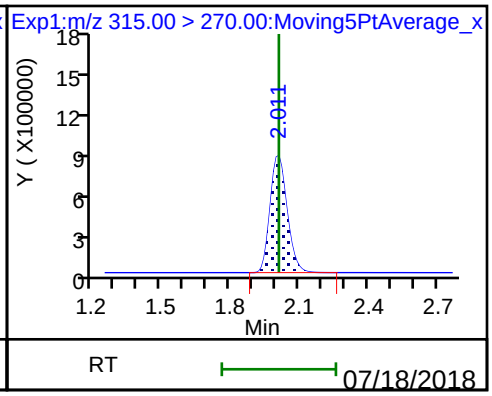
6 Perfluorohexanoic acid (M)



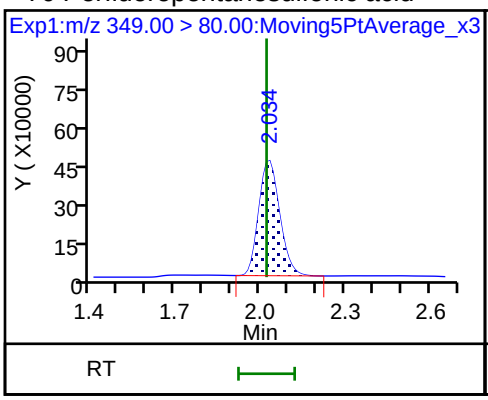
6 Perfluorohexanoic acid



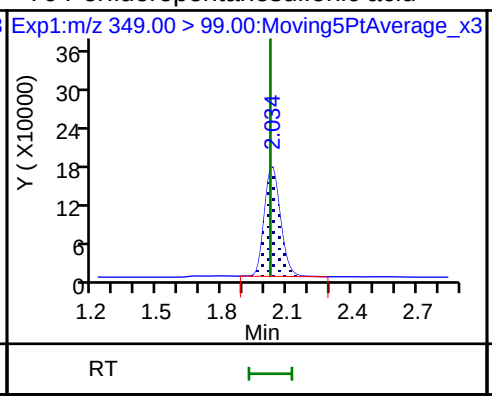
D 7 13C2 PFHxA



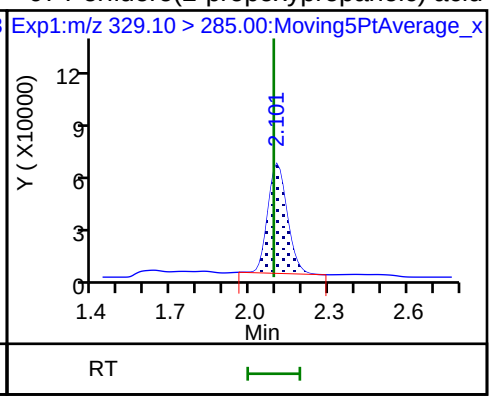
70 Perfluoropentanesulfonic acid



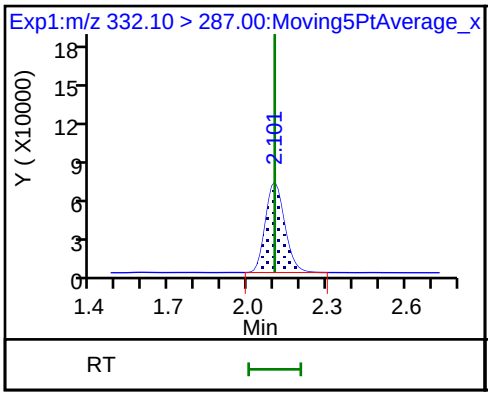
70 Perfluoropentanesulfonic acid



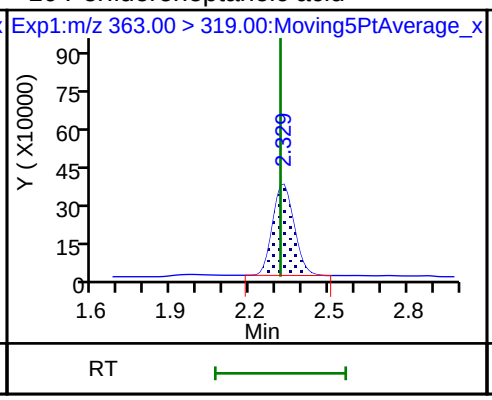
67 Perfluoro(2-propoxypropanoic) acid



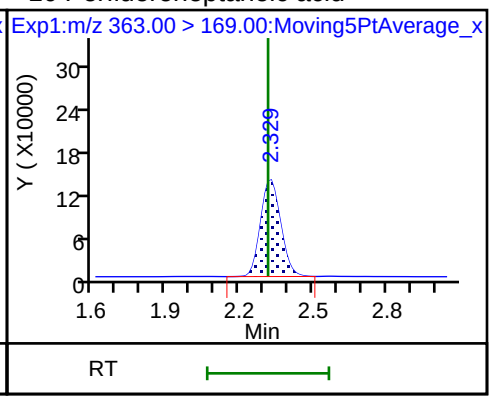
D 64 13C3 HFPO-DA



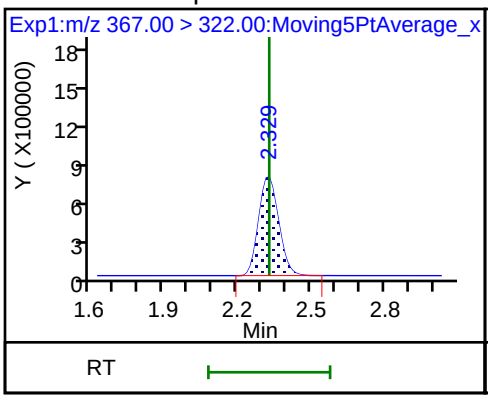
10 Perfluoroheptanoic acid



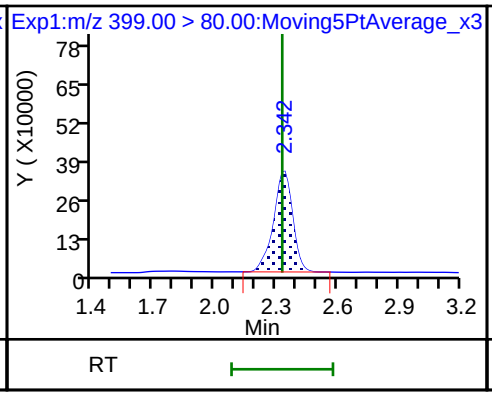
10 Perfluoroheptanoic acid



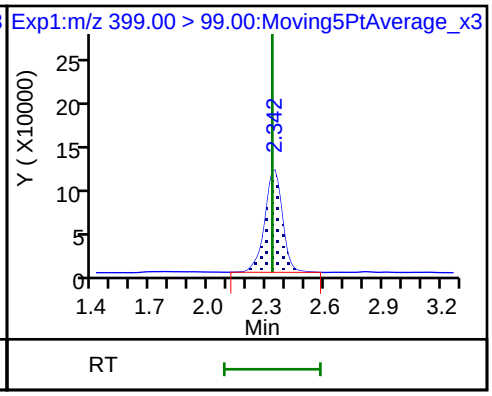
D 9 13C4-PFHpA



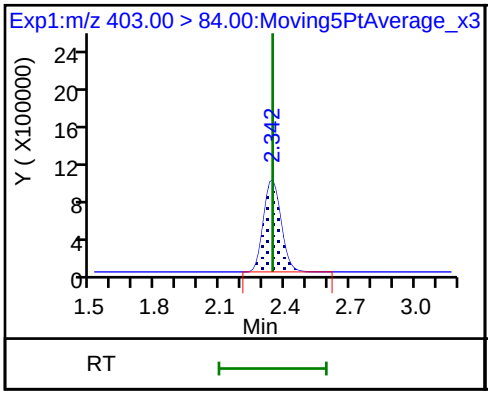
8 Perfluorohexanesulfonic acid



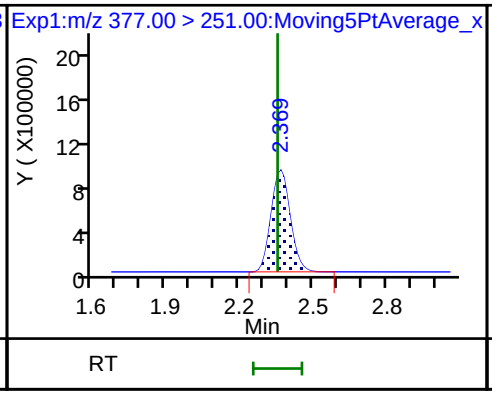
8 Perfluorohexanesulfonic acid



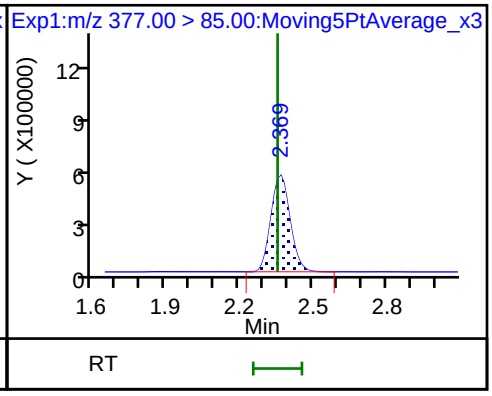
D 11 18O2 PFHxS



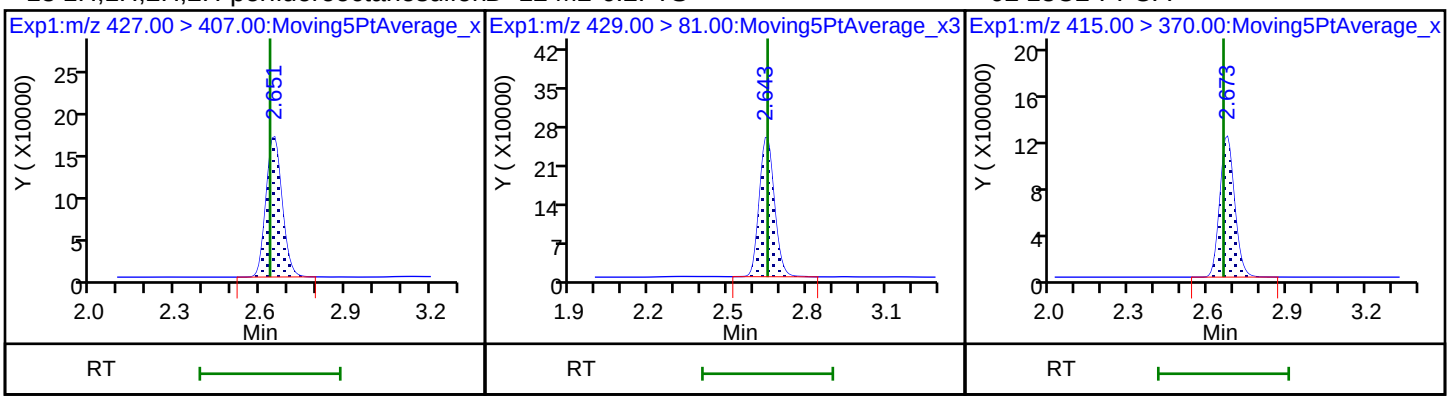
65 Adona



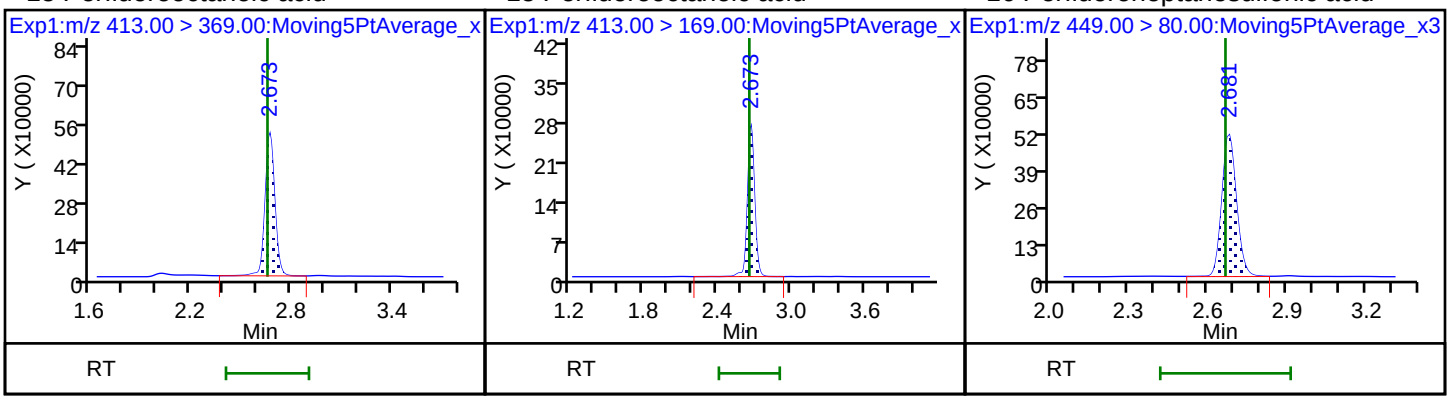
65 Adona



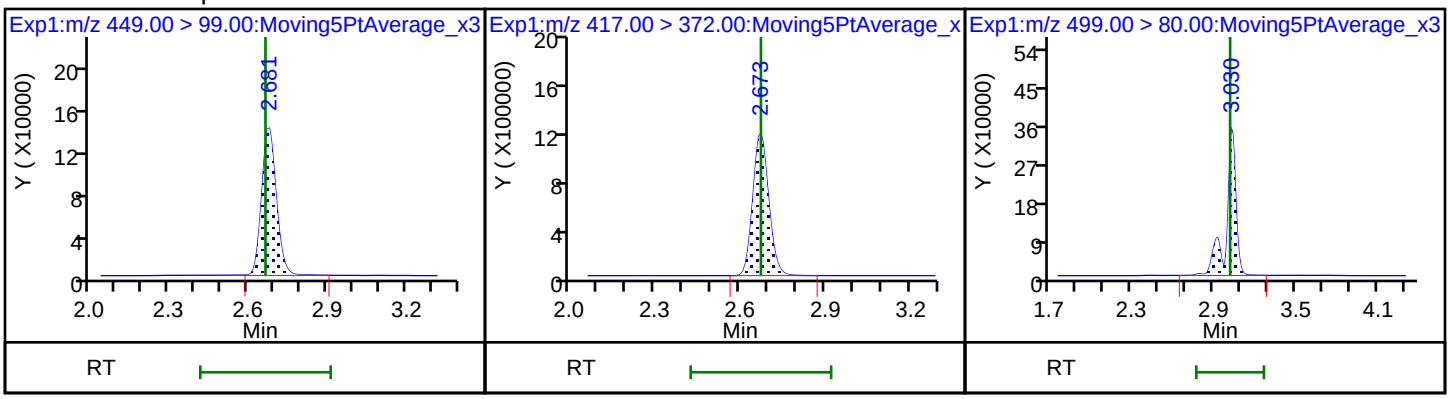
13 1H,1H,2H,2H-perfluorooctanesulfon D 12 M2-6:2FTS * 62 13C2-PFOA



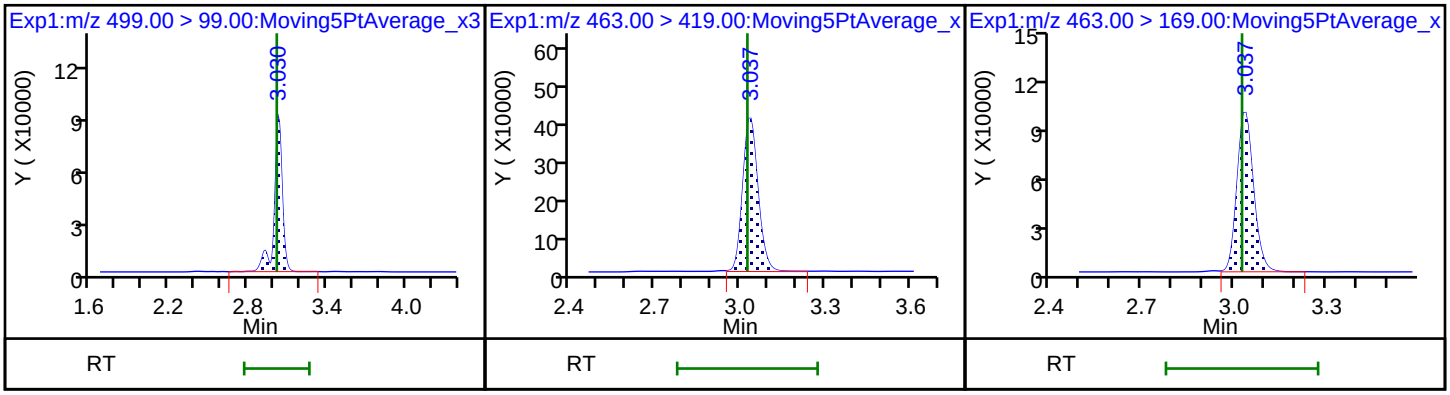
15 Perfluorooctanoic acid 15 Perfluorooctanoic acid 16 Perfluoroheptanesulfonic acid



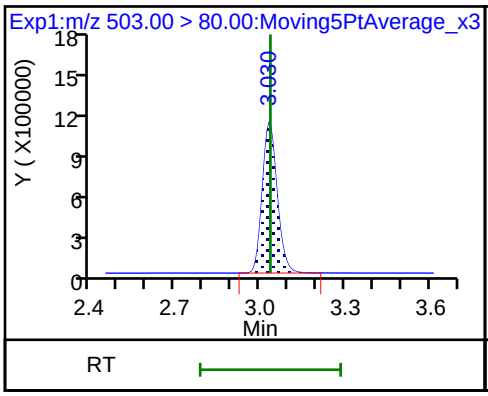
16 Perfluoroheptanesulfonic acid D 14 13C4 PFOA 17 Perfluorooctane sulfonic acid



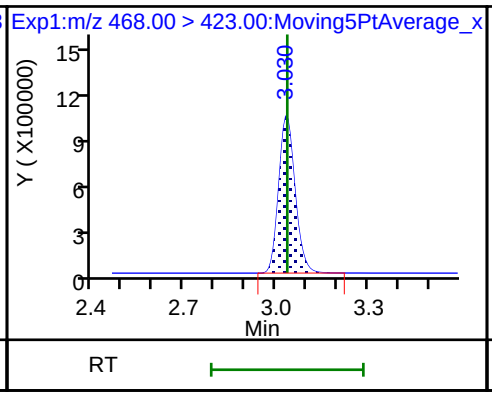
17 Perfluorooctane sulfonic acid 20 Perfluorononanoic acid 20 Perfluorononanoic acid



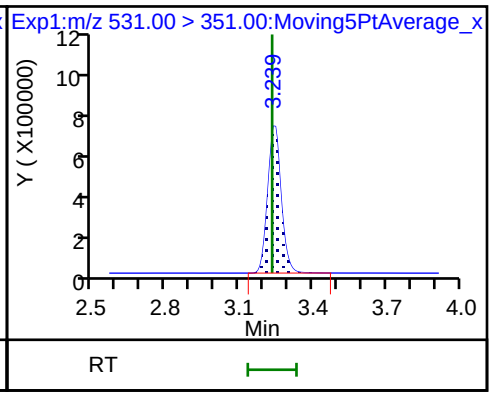
D 18 13C4 PFOS



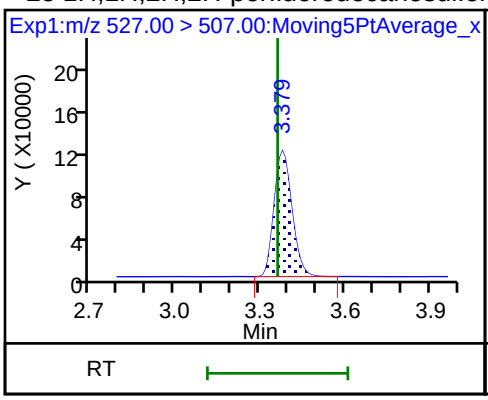
D 19 13C5 PFNA



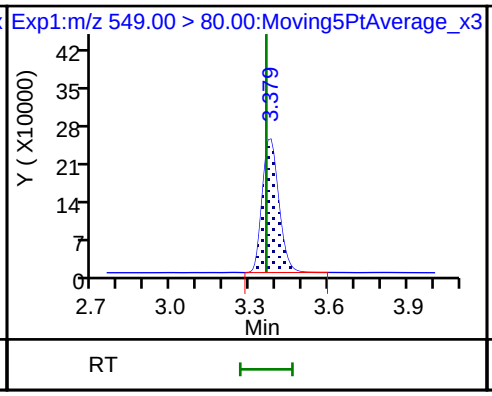
69 9-Chlorohexadecafluoro-3-oxanonane



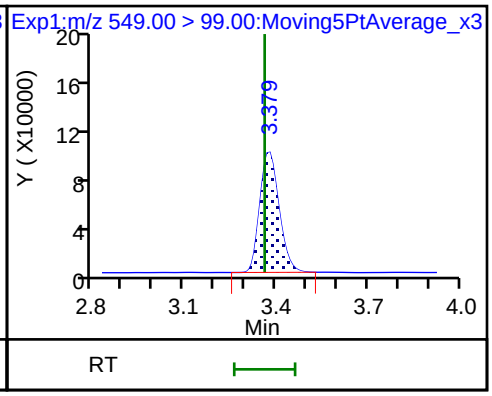
25 1H,1H,2H,2H-perfluorodecanesulfoni



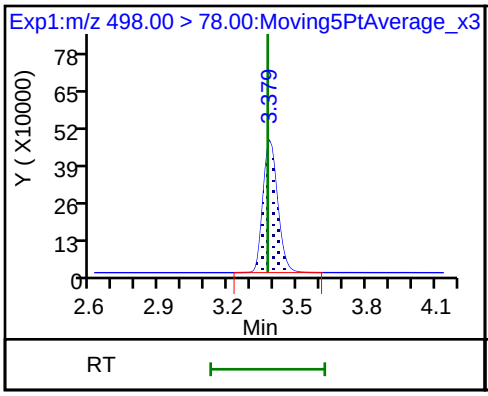
68 Perfluorononanesulfonic acid



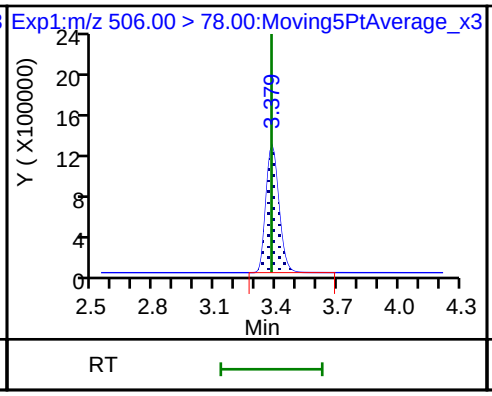
68 Perfluorononanesulfonic acid



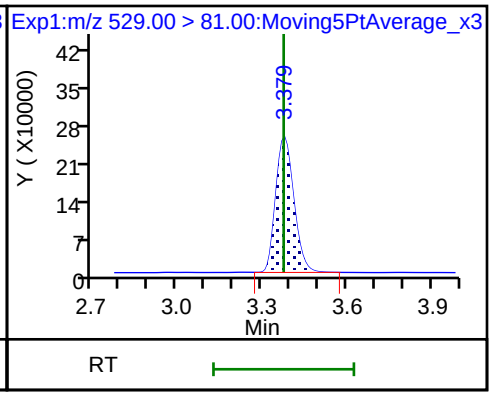
22 Perfluorooctane Sulfonamide



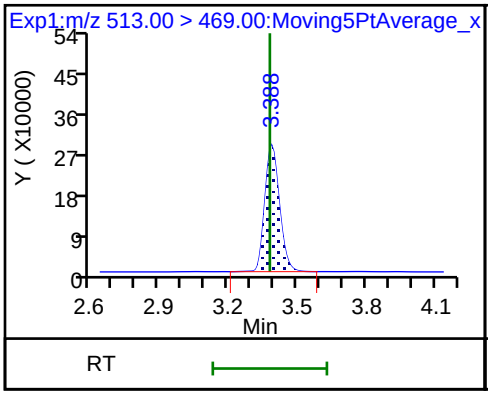
D 21 13C8 FOSA



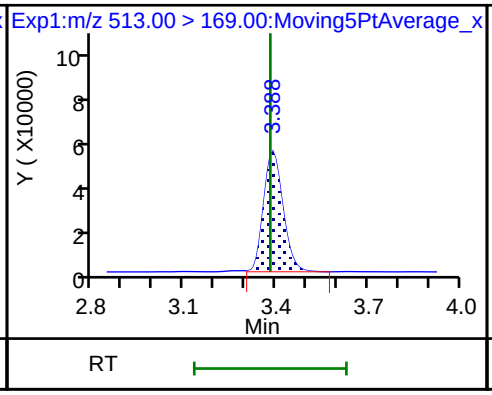
D 26 M2-8:2FTS



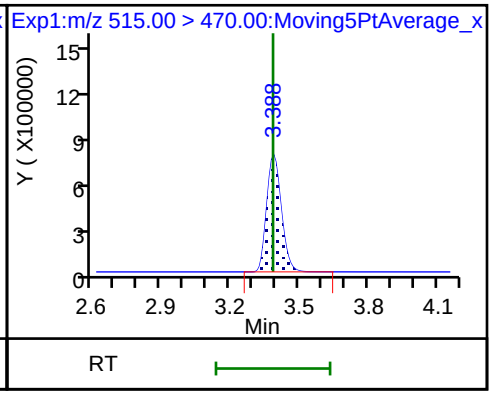
24 Perfluorodecanoic acid



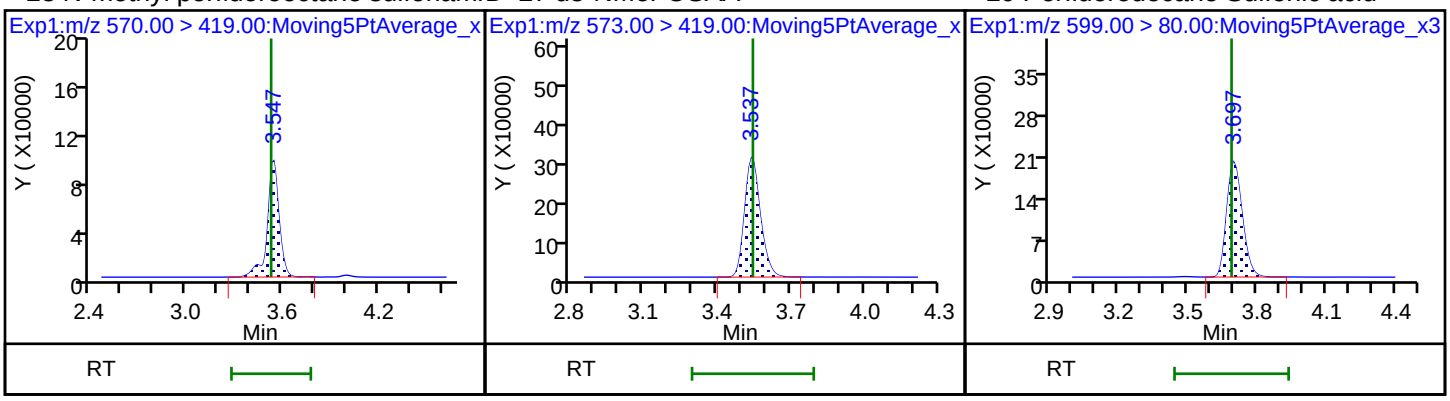
24 Perfluorodecanoic acid



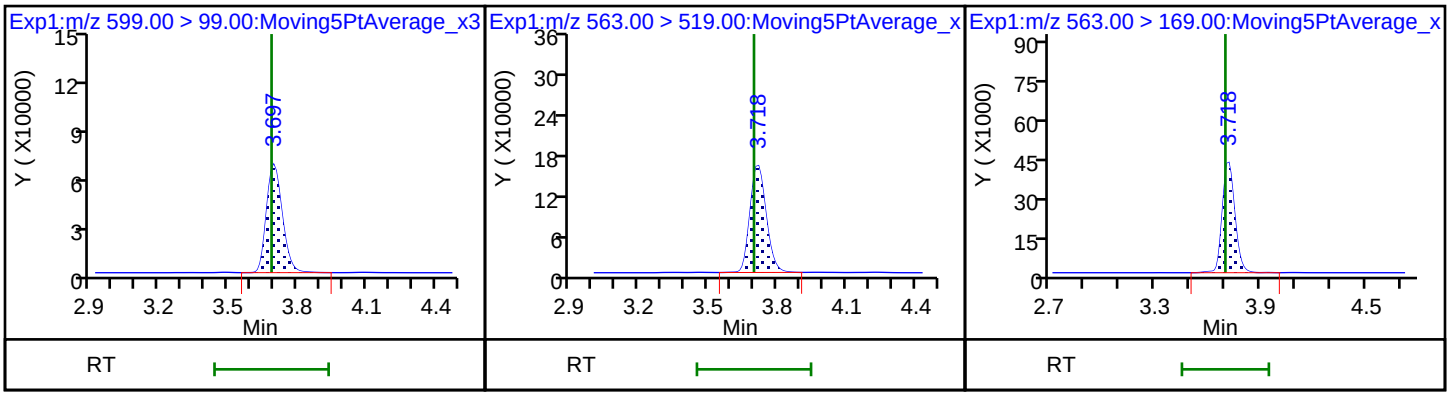
D 23 13C2 PFDA



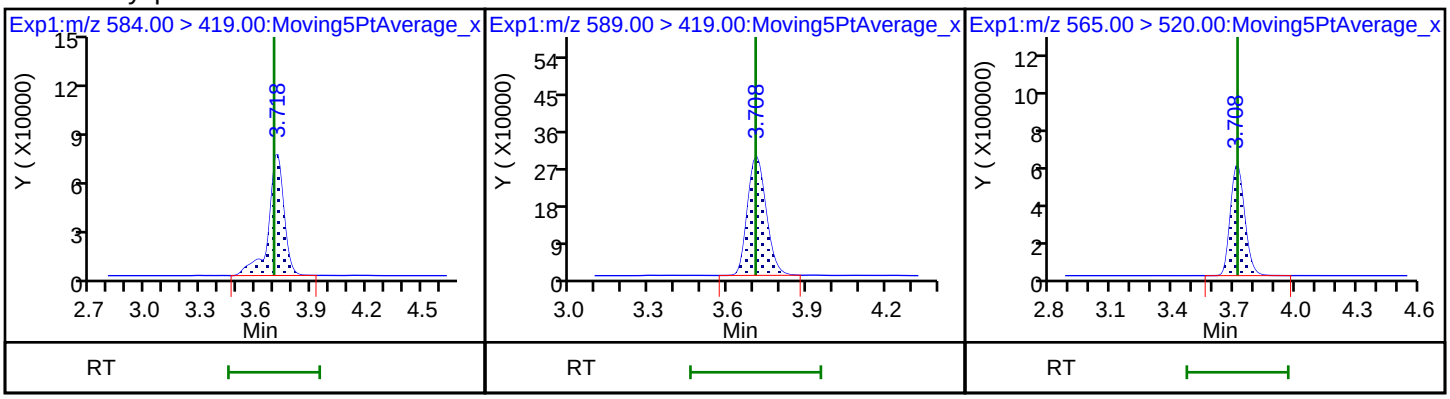
28 N-methyl perfluorooctane sulfonamiD 27 d3-NMeFOSAA 29 Perfluorodecane Sulfonic acid



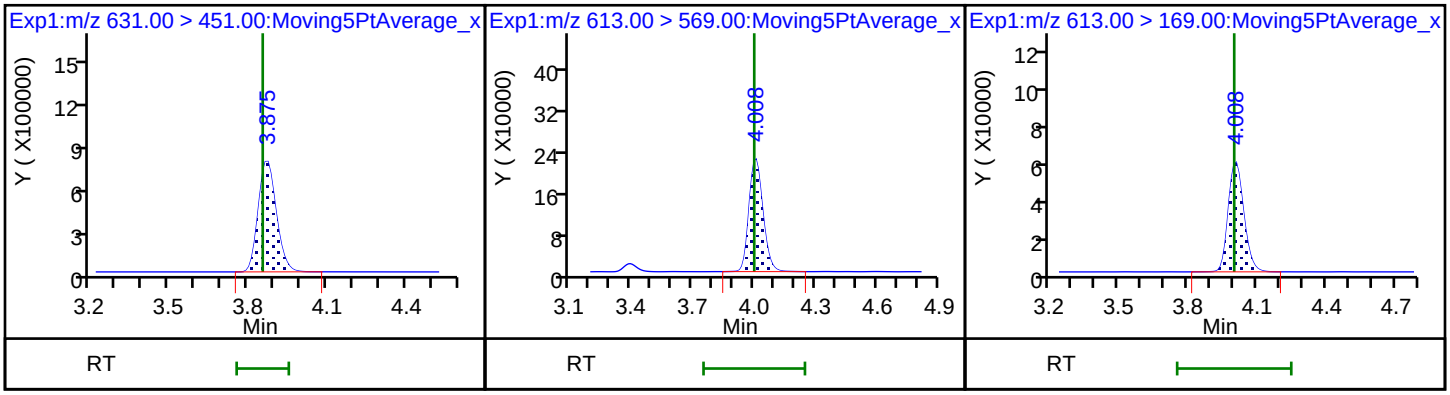
29 Perfluorodecane Sulfonic acid 31 Perfluoroundecanoic acid 31 Perfluoroundecanoic acid



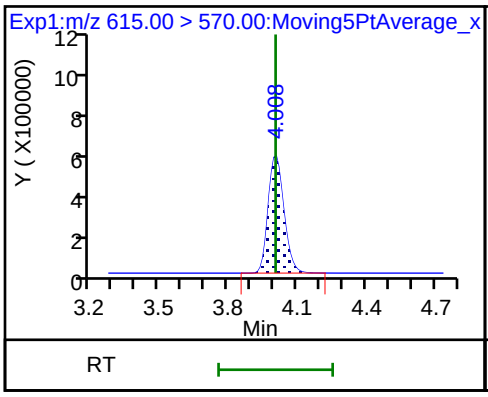
33 N-ethyl perfluorooctane sulfonamid D 32 d5-NEtFOSAA D 30 13C2 PFUnA



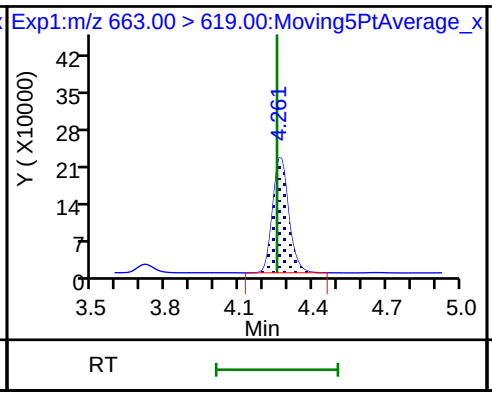
66 11-Chloroeicosafluoro-3-oxaundecan 37 Perfluorododecanoic acid 37 Perfluorododecanoic acid



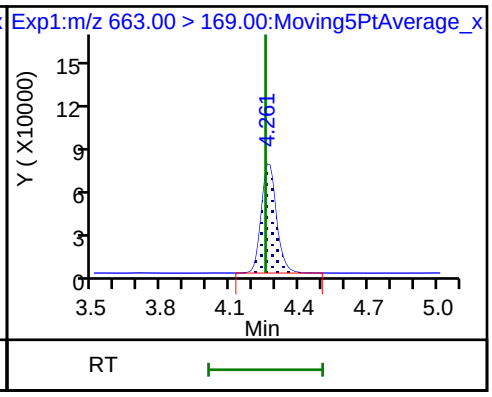
D 36 13C2 PFDoA



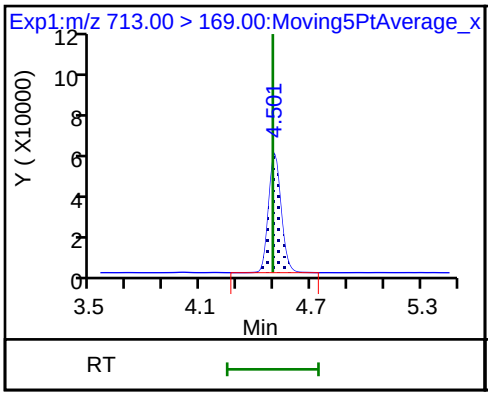
41 Perfluorotridecanoic acid



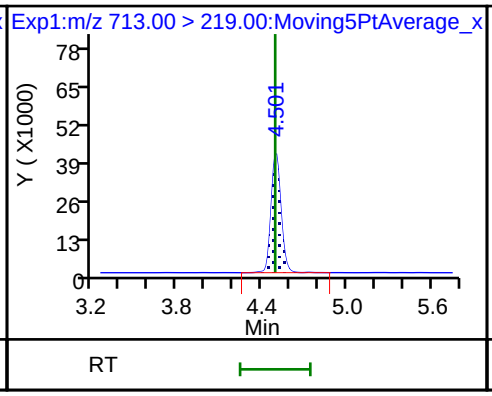
41 Perfluorotridecanoic acid



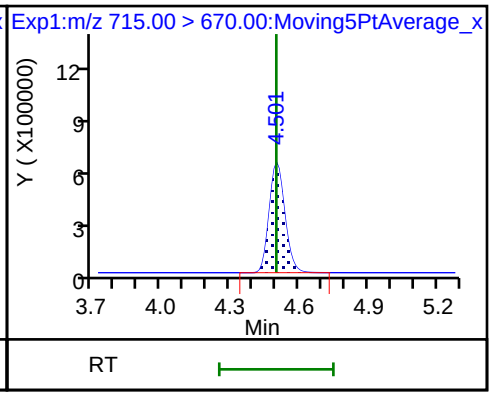
42 Perfluorotetradecanoic acid



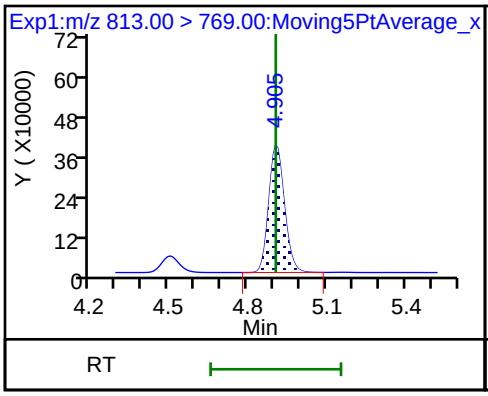
42 Perfluorotetradecanoic acid



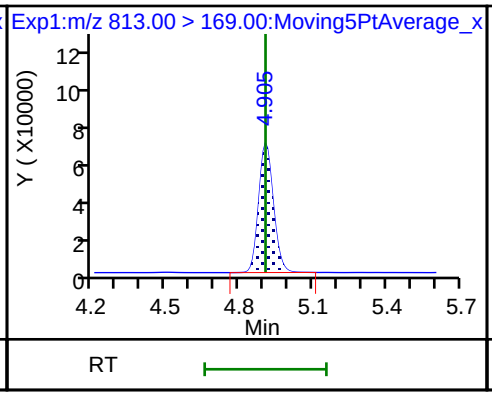
D 43 13C2-PFTeDA



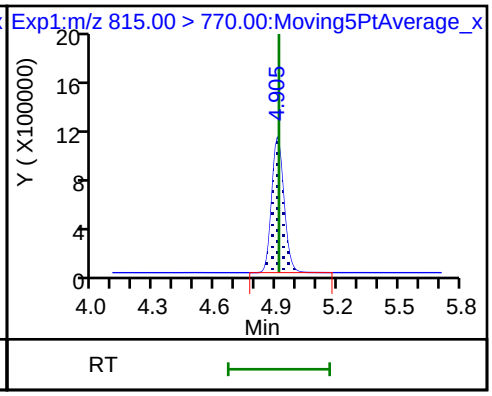
45 Perfluorohexadecanoic acid



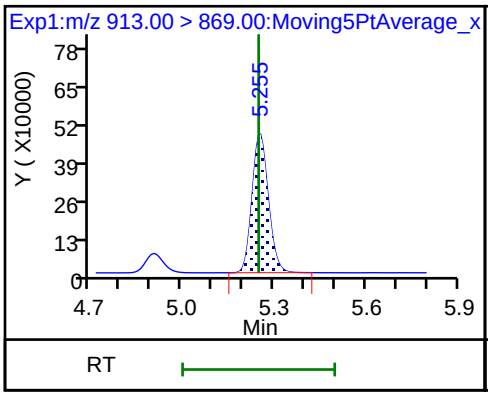
45 Perfluorohexadecanoic acid



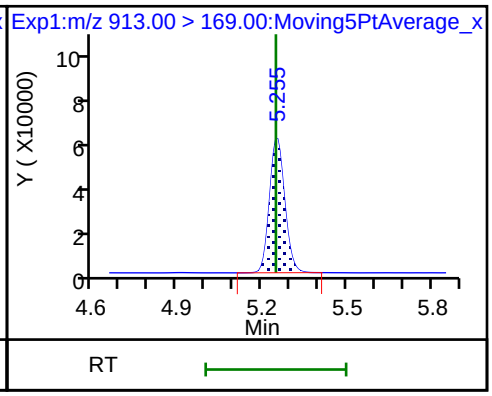
D 44 13C2-PFHxDA



46 Perfluorooctadecanoic acid



46 Perfluorooctadecanoic acid



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

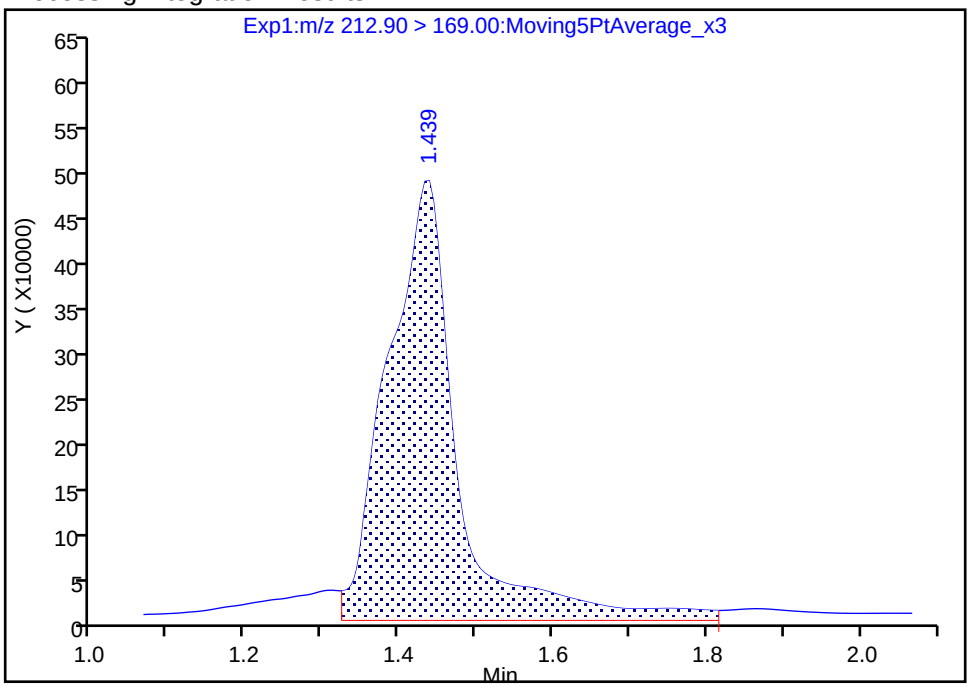
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\2018.07.13LLC_014.d				
Injection Date:	13-Jul-2018 21:48:48	Instrument ID:	A8_N		
Lims ID:	320-40571-A-23-C MSD				
Client ID:	NF27-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	8	Worklist Smp#:	9
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

2 Perfluorobutyric acid, CAS: 375-22-4

Signal: 1

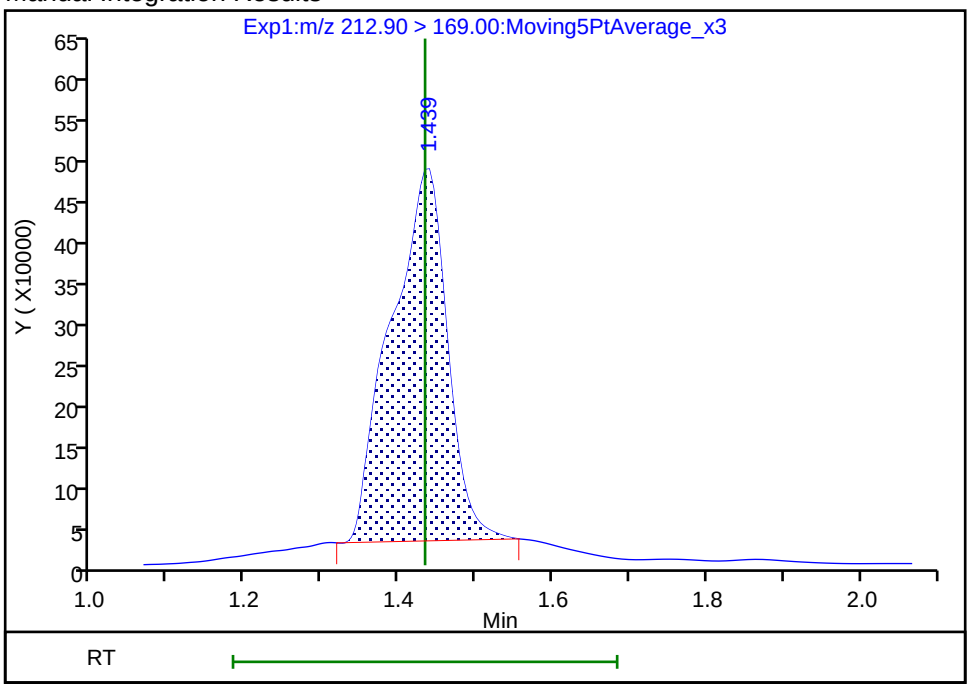
Processing Integration Results

RT: 1.44
Area: 3066206
Amount: 2.003877
Amount Units: ng/ml



Manual Integration Results

RT: 1.44
Area: 2279223
Amount: 1.489555
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 12:38:25

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

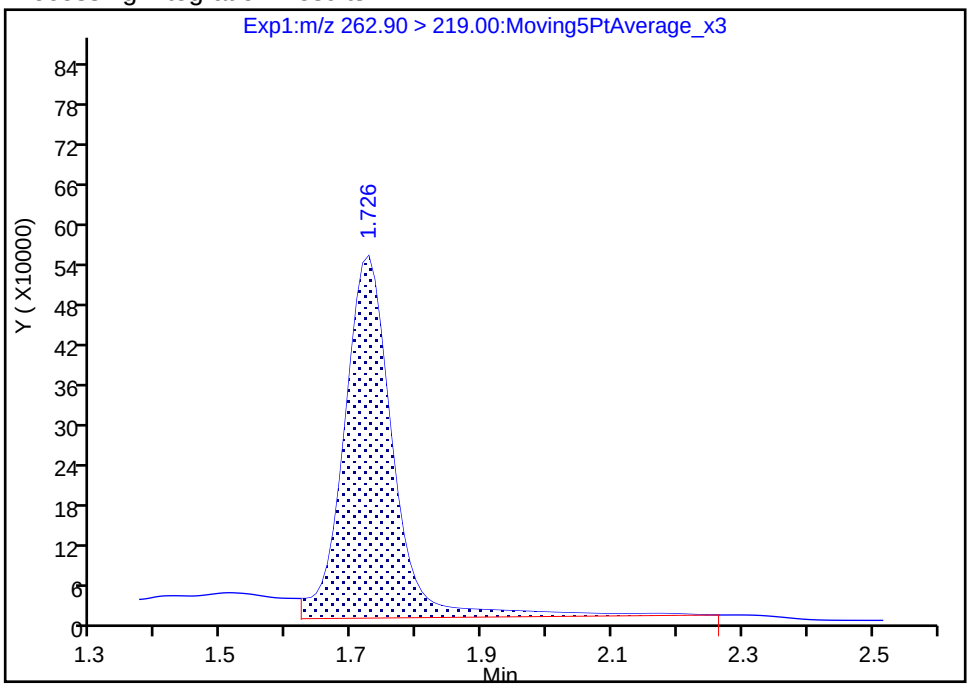
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\2018.07.13LLC_014.d				
Injection Date:	13-Jul-2018 21:48:48	Instrument ID:	A8_N		
Lims ID:	320-40571-A-23-C MSD				
Client ID:	NF27-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	8	Worklist Smp#:	9
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

4 Perfluoropentanoic acid, CAS: 2706-90-3

Signal: 1

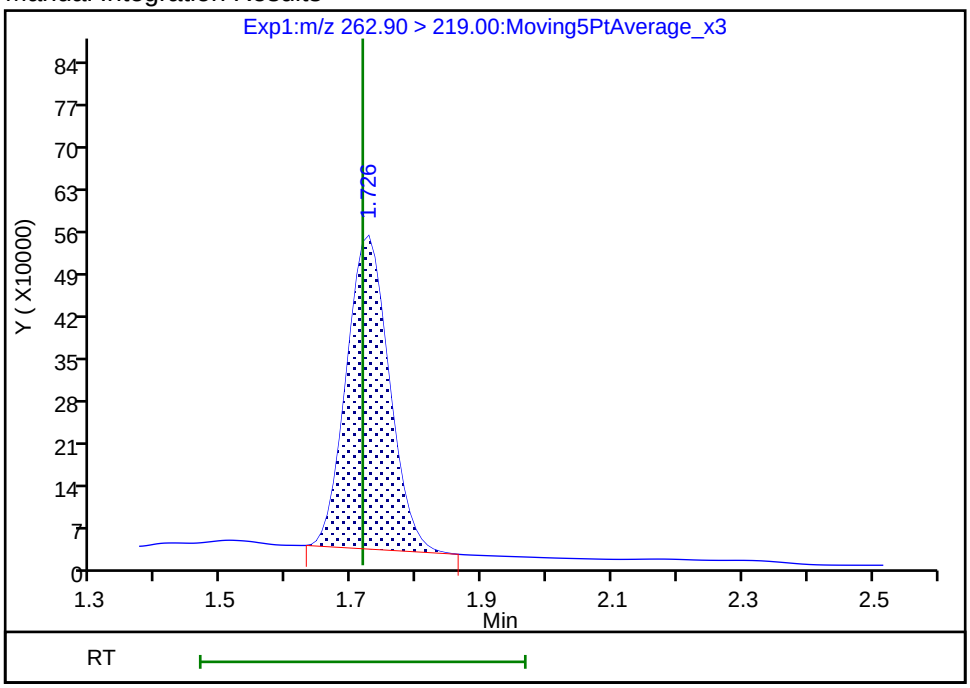
Processing Integration Results

RT: 1.73
Area: 2812871
Amount: 1.611089
Amount Units: ng/ml



Manual Integration Results

RT: 1.73
Area: 2362824
Amount: 1.353322
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 12:38:31

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

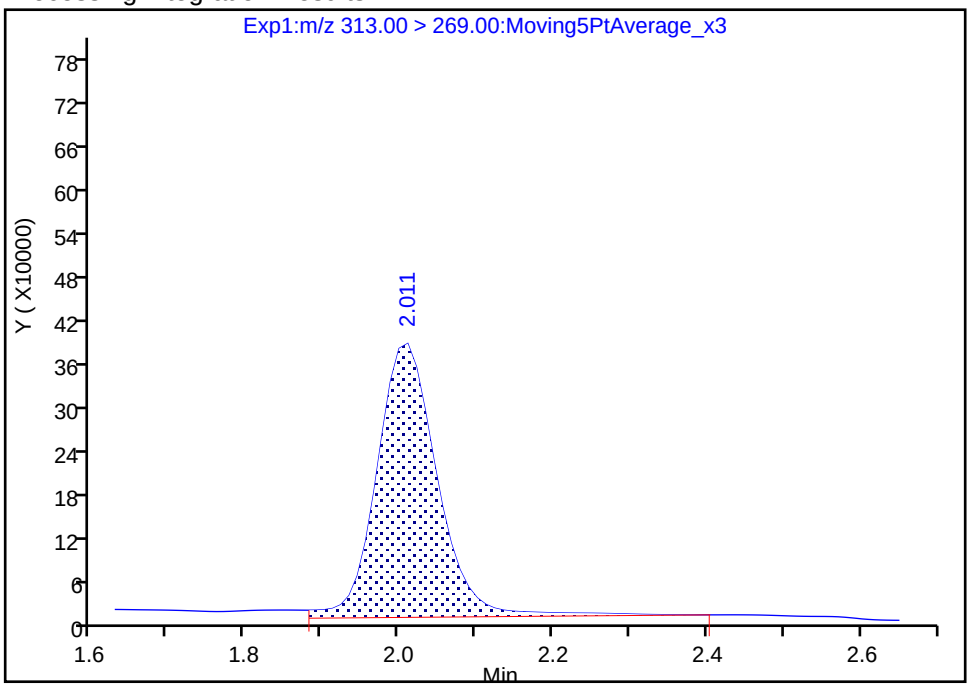
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\2018.07.13LLC_014.d				
Injection Date:	13-Jul-2018 21:48:48	Instrument ID:	A8_N		
Lims ID:	320-40571-A-23-C MSD				
Client ID:	NF27-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	8	Worklist Smp#:	9
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

6 Perfluorohexanoic acid, CAS: 307-24-4

Signal: 1

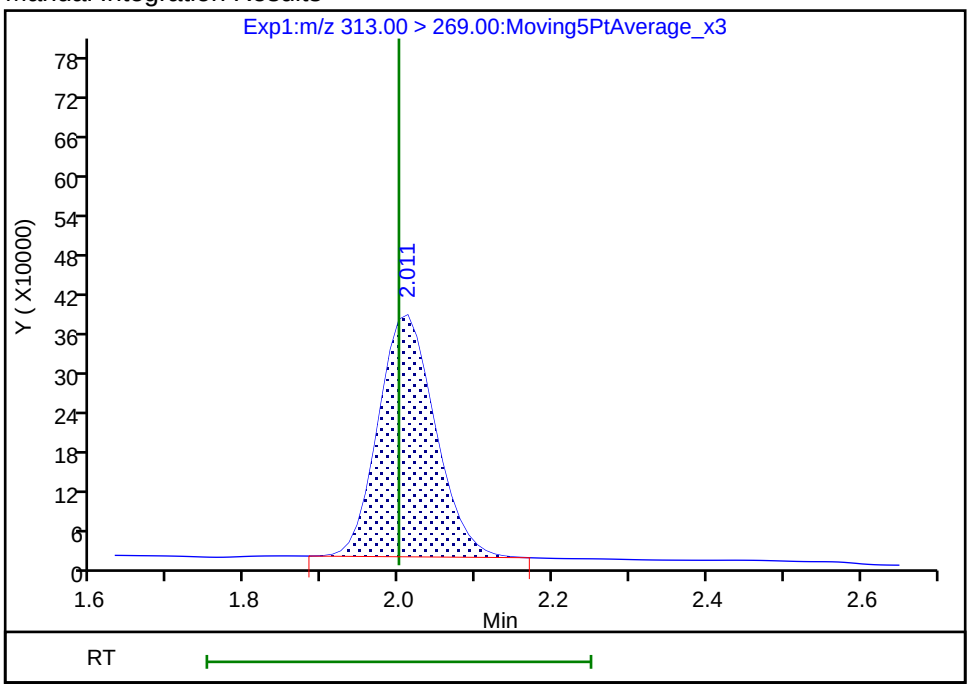
Processing Integration Results

RT: 2.01
Area: 2078010
Amount: 1.150326
Amount Units: ng/ml



Manual Integration Results

RT: 2.01
Area: 1896024
Amount: 1.049584
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 12:38:43

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

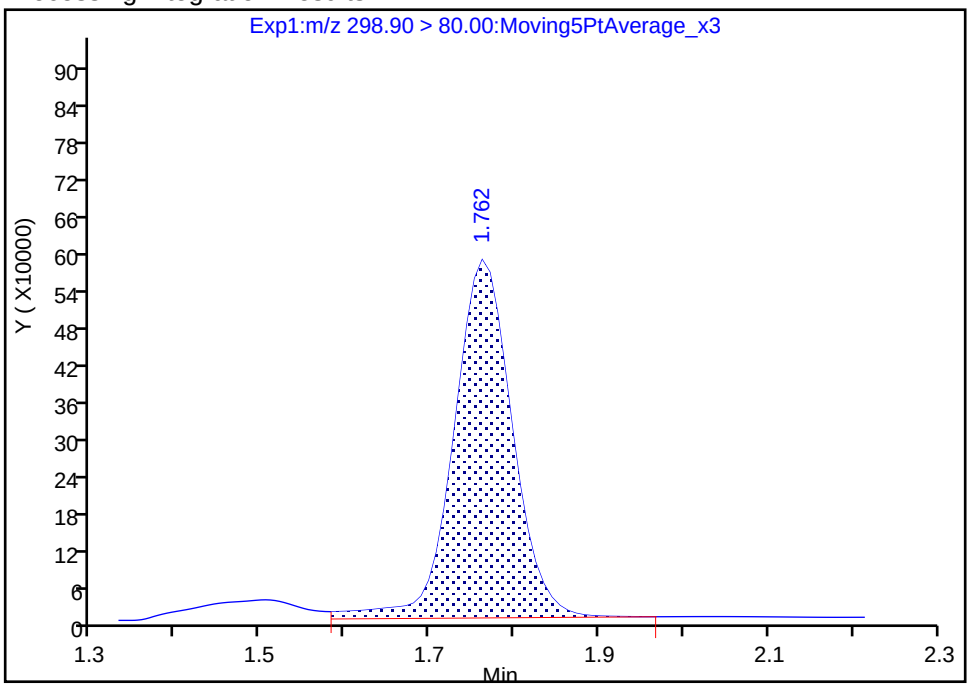
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61057.b\2018.07.13LLC_014.d				
Injection Date:	13-Jul-2018 21:48:48	Instrument ID:	A8_N		
Lims ID:	320-40571-A-23-C MSD				
Client ID:	NF27-GW-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	8	Worklist Smp#:	9
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

5 Perfluorobutanesulfonic acid, CAS: 375-73-5

Signal: 1

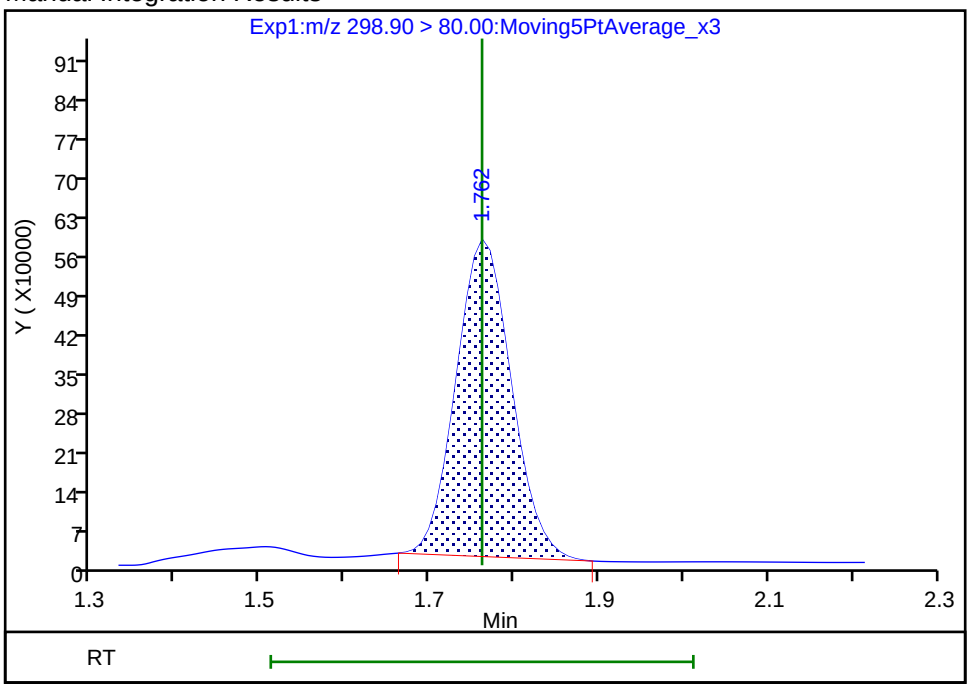
Processing Integration Results

RT: 1.76
Area: 2807731
Amount: 0.969420
Amount Units: ng/ml



Manual Integration Results

RT: 1.76
Area: 2589232
Amount: 0.893979
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 12:38:36

Audit Action: Manually Integrated Audit Reason: Baseline

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF33-GW-01 MSD
Lab Sample ID: 320-40571-35 MSD
Matrix: Water
Lab File ID: 2018.07.06LLAAA_038.d
Analysis Method: 537 (modified)
Date Collected: 06/19/2018 17:00
Extraction Method: 3535
Date Extracted: 07/02/2018 16:10
Sample wt/vol: 263(mL)
Date Analyzed: 07/06/2018 18:25
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 232788
Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	0.0430		0.0019	0.00033
2706-90-3	Perfluoropentanoic acid (PFPeA)	0.0388		0.0019	0.00047
307-24-4	Perfluorohexanoic acid (PFHxA)	0.0359		0.0019	0.00055
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.0349		0.0019	0.00024
335-67-1	Perfluorooctanoic acid (PFOA)	0.0330		0.0019	0.00081
375-95-1	Perfluorononanoic acid (PFNA)	0.0359		0.0019	0.00026
335-76-2	Perfluorodecanoic acid (PFDA)	0.0368		0.0019	0.00029
2058-94-8	Perfluoroundecanoic acid (PFUnA)	0.0323		0.0019	0.0010
307-55-1	Perfluorododecanoic acid (PFDoA)	0.0322		0.0019	0.00052
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	0.0306		0.0019	0.0012
376-06-7	Perfluorotetradecanoic acid (PFTeA)	0.0319		0.0019	0.00028
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.0329		0.0019	0.00019
2706-91-4	Perfluoropentanesulfonic acid (PFPeS)	0.0349		0.0019	0.00029
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.0288		0.0019	0.00016
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	0.0323		0.0019	0.00018
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.0315		0.0019	0.00051
8789-57-2	Perfluorononanesulfonic acid (PFNS)	0.0313		0.0019	0.00015
335-77-3	Perfluorodecanesulfonic acid (PFDS)	0.0294		0.0019	0.00030
754-91-6	Perfluorooctane Sulfonamide (FOSA)	0.0355		0.0019	0.00033
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	0.0321		0.019	0.0029
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	0.0344		0.019	0.0018
757124-72-4	4:2 FTS	0.0465		0.019	0.0049
27619-97-2	6:2 FTS	0.0373		0.019	0.0019
39108-34-4	8:2 FTS	0.0296		0.019	0.0019

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF33-GW-01 MSD
Lab Sample ID: 320-40571-35 MSD
Matrix: Water
Lab File ID: 2018.07.06LLAAA_038.d
Analysis Method: 537 (modified)
Date Collected: 06/19/2018 17:00
Extraction Method: 3535
Date Extracted: 07/02/2018 16:10
Sample wt/vol: 263(mL)
Date Analyzed: 07/06/2018 18:25
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 232788
Units: ug/L

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00992	13C4 PFBA	88		25-150
STL01893	13C5 PFPeA	94		25-150
STL00993	13C2 PFHxA	94		25-150
STL01892	13C4-PFHpA	103		25-150
STL00990	13C4 PFOA	100		25-150
STL00995	13C5 PFNA	104		25-150
STL00996	13C2 PFDA	98		25-150
STL00997	13C2 PFUnA	104		25-150
STL00998	13C2 PFDoA	98		25-150
STL02116	13C2-PFTeDA	90		25-150
STL02337	13C3-PFBS	93		25-150
STL00994	18O2 PFHxS	109		25-150
STL00991	13C4 PFOS	104		25-150
STL01056	13C8 FOSA	89		25-150
STL02118	d3-NMeFOSAA	105		25-150
STL02117	d5-NEtFOSAA	96		25-150
STL02279	M2-6:2FTS	125		25-150
STL02280	M2-8:2FTS	127		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180706-60751.b\2018.07.06LLAAA_038.d
Lims ID: 320-40571-A-35-C MSD
Client ID: NF33-GW-01
Sample Type: MSD
Inject. Date: 06-Jul-2018 18:25:04 ALS Bottle#: 28 Worklist Smp#: 8
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-40571-a-35-c msd
Misc. Info.: Plate: 1 Rack: 5
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180706-60751.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 09-Jul-2018 10:17:43 Calib Date: 05-Jul-2018 09:38:17
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180705-60684.b\2018.07.05LLICALAA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK010

First Level Reviewer: mongkols Date: 09-Jul-2018 10:17:43

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.428	1.424	0.004	0.536	6349733	2.20		87.8	27446	
2 Perfluorobutyric acid										
212.90 > 169.00	1.428	1.433	-0.005	1.000	2936395	1.13		113	906	
D 3 13C5-PFPeA										
267.90 > 223.00	1.707	1.702	0.005	0.641	5054348	2.36		94.5	40010	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.707	1.707	0.0	1.000	2454856	1.02		102	1325	
D 47 13C3-PFBS										
301.90 > 83.00	1.743	1.738	0.005	0.654	110780	2.16		93.1	524	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.752	1.752	0.0	1.005	3128265	0.8661		98.0	4057	
298.90 > 99.00	1.752	1.752	0.0	1.005	1223777		2.56(1.25-3.74)		3849	
61 1H,1H,2H,2H-perfluorohexanesulfoni										
327.00 > 307.00	1.956	1.956	0.0	1.122	913688	1.22		131	22857	
D 7 13C2 PFHxA										
315.00 > 270.00	1.988	1.981	0.007	0.746	5359669	2.34		93.6	49945	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.999	1.988	0.011	1.006	2063332	0.9452		94.5	1987	
313.00 > 119.00	1.999	1.988	0.011	1.006	195051		10.58(5.03-15.10)		3496	
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.011	2.010	0.001	1.153	2833042	0.9169		97.7	5349	
349.00 > 99.00	2.011	2.010	0.001	1.153	1012081		2.80(1.36-4.07)		4488	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.090	2.070	0.020	0.784	402709	2.14		85.8	978	
67 Perfluoro(2-propoxypropanoic) acid										
329.10 > 285.00	2.090	2.078	0.012	1.000	374395	1.01		101	1241	
D 9 13C4-PFHpA										
367.00 > 322.00	2.315	2.293	0.022	0.869	5247998	2.58		103	58164	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.315	2.302	0.013	1.000	2177564	0.9182		91.8	2098	
363.00 > 169.00	2.315	2.302	0.013	1.000	842201		2.59(1.13-3.40)		4152	
D 11 18O2 PFHxS										
403.00 > 84.00	2.329	2.306	0.023	0.874	6433179	2.57		109	76781	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.329	2.315	0.014	1.000	2383766	0.7579		83.3	2236	
399.00 > 99.00	2.329	2.315	0.014	1.000	811614		2.94(1.50-4.49)		1912	
65 Adona										
377.00 > 251.00	2.355	2.355	0.0	0.779	5749551	0.8382		83.8	43788	
377.00 > 85.00	2.355	2.355	0.0	0.779	3344956		1.72(0.84-2.53)		12987	
D 12 M2-6:2FTS										
429.00 > 81.00	2.634	2.627	0.007	0.988	1351049	2.96		125	6847	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.634	2.634	0.0	1.000	873908	0.9807		103	3433	
D 14 13C4 PFOA										
417.00 > 372.00	2.665	2.652	0.013	1.000	4969145	2.49		99.7	46977	
* 62 13C2-PFOA										
415.00 > 370.00	2.665	2.658	0.007		5222940	2.50			39174	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.665	2.658	0.007	1.000	2044369	0.8674		86.7	924	
413.00 > 169.00	2.665	2.658	0.007	1.000	1104038		1.85(0.84-2.52)		4525	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.673	2.665	0.008	0.884	2105535	0.8494		89.2	8959	
449.00 > 99.00	2.665	2.665	0.0	0.882	550595		3.82(1.94-5.82)		5294	
D 19 13C5 PFNA										
468.00 > 423.00	3.030	3.009	0.021	1.137	4414435	2.61		104	56568	
D 18 13C4 PFOS										
503.00 > 80.00	3.023	3.009	0.014	1.134	4423166	2.48		104	21953	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.030	3.022	0.008	1.002	1791559	0.8287		89.3	6893	
499.00 > 99.00	3.023	3.022	0.001	1.000	385106		4.65(2.31-6.93)		3932	
20 Perfluorononanoic acid										
463.00 > 419.00	3.030	3.022	0.008	1.000	1796838	0.9443		94.4	2600	
463.00 > 169.00	3.030	3.022	0.008	1.000	446622		4.02(1.90-5.69)		7057	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.238	3.237	0.001	1.071	2752429	0.7867		84.4	30413	
D 21 13C8 FOSA										
506.00 > 78.00	3.377	3.359	0.018	1.267	5545468	2.24		89.4	43876	
D 26 M2-8:2FTS										
529.00 > 81.00	3.377	3.359	0.018	1.267	1548943	3.05		127	11191	
25 1H,1H,2H,2H-perfluorodecanesulfoni										
527.00 > 507.00	3.368	3.367	0.001	0.997	664383	0.7776		81.2	22020	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.377	3.367	0.010	1.000	2055502	0.9344		93.4	20676	
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.368	3.367	0.001	1.114	1239201	0.8240		85.8	13827	
549.00 > 99.00	3.368	3.367	0.001	1.114	456801		2.71(1.33-3.97)		5920	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 23 13C2 PFDA										
515.00 > 470.00	3.387	3.368	0.019	1.271	3577811	2.45		98.0	42725	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.387	3.376	0.011	1.000	1443021	0.9674		96.7	4896	
513.00 > 169.00	3.387	3.376	0.011	1.000	245343		5.88(2.36-7.09)		5501	
35 MeFOSA										
512.00 > 169.00	3.545	3.498	0.047		6568	NC			303	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.536	3.518	0.018	1.327	2267491	2.63		105	38262	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.536	3.535	0.001	1.000	788533	0.8447		84.5	5481	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.685	3.684	0.001	1.219	1030407	0.7738		80.3	8715	
599.00 > 99.00	3.685	3.684	0.001	1.219	326258		3.16(1.39-4.16)		3635	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.696	3.685	0.011	1.387	2032337	2.39		95.6	17435	
D 30 13C2 PFUnA										
565.00 > 520.00	3.706	3.696	0.010	1.391	3181719	2.59		104	41428	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.706	3.705	0.001	1.000	918610	0.8491		84.9	3552	
563.00 > 169.00	3.706	3.705	0.001	1.000	229429		4.00(2.12-6.36)		5893	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.706	3.705	0.001	1.003	663482	0.9052		90.5	18360	
66 11-Chloroeicosafluoro-3-oxaundecan										
631.00 > 451.00	3.864	3.862	0.002	1.278	3907808	0.7321		77.7	39109	
D 36 13C2 PFDoA										
615.00 > 570.00	3.997	3.986	0.011	1.499	3208562	2.44		97.6	22729	
37 Perfluorododecanoic acid										
613.00 > 569.00	3.997	3.995	0.002	1.000	1197432	0.8467		84.7	1252	
613.00 > 169.00	3.997	3.995	0.002	1.000	293401		4.08(2.13-6.40)		5213	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.250	4.259	-0.009	1.063	1266097	0.8037		80.4	1446	
663.00 > 169.00	4.250	4.259	-0.009	1.063	393622		3.22(1.25-3.76)		6649	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.490	4.479	0.011	1.685	3594232	2.24		89.7	19461	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.490	4.491	-0.001	1.000	327047	0.8401		84.0	4908	
713.00 > 219.00	4.480	4.491	-0.011	0.998	233745		1.40(0.71-2.13)		4827	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.896	4.896	0.0	1.837	6394737	2.16		86.2	15059	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.896	4.905	-0.009	1.000	2137596	0.8569		85.7	845	
813.00 > 169.00	4.896	4.905	-0.009	1.000	347374		6.15(2.86-8.58)		3655	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.247	5.247	0.0	1.072	2137131	0.7177		71.8	721	
913.00 > 169.00	5.247	5.247	0.0	1.072	253976		8.41(3.83-11.48)		2993	

QC Flag Legend

Processing Flags

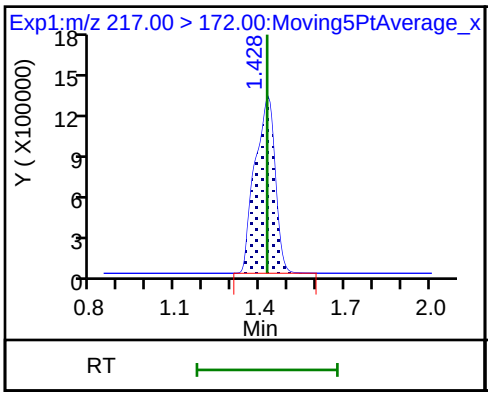
NC - Not Calibrated

Report Date: 09-Jul-2018 10:17:44 Chrom Revision: 2.2 07-Jun-2018 07:41:54

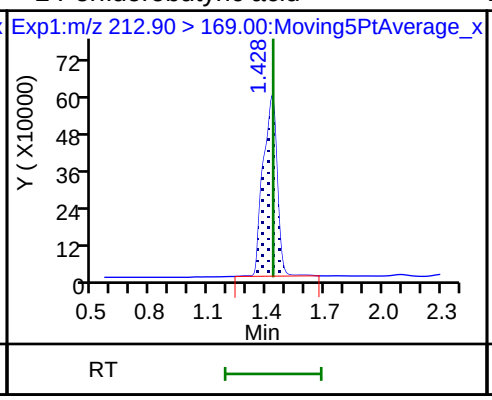
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180706-60751.b\2018.07.06LLAAA_038.d
Injection Date: 06-Jul-2018 18:25:04 Instrument ID: A8_N
Lims ID: 320-40571-A-35-C MSD
Client ID: NF33-GW-01
Operator ID: SACINSTLCMS01 ALS Bottle#: 28 Worklist Smp#: 8
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC ICAL

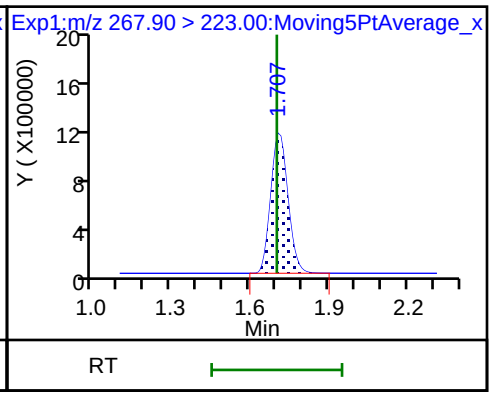
D 1 13C4 PFBA



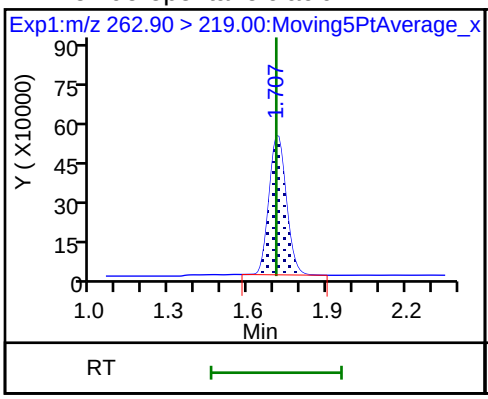
2 Perfluorobutyric acid



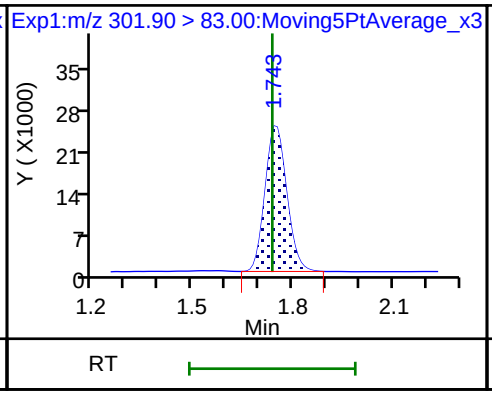
D 3 13C5-PFPeA



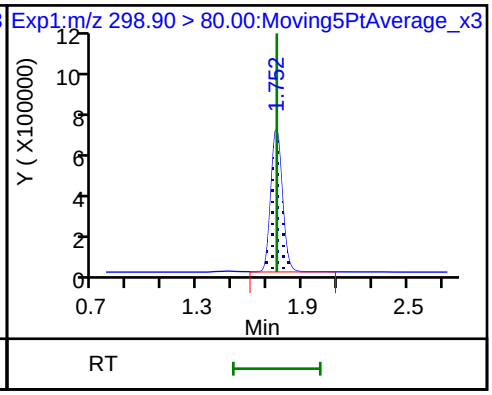
4 Perfluoropentanoic acid



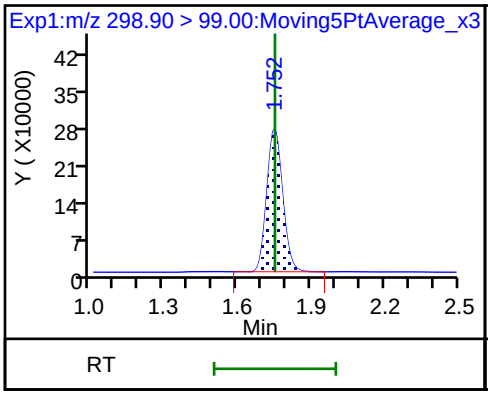
D 47 13C3-PFBS



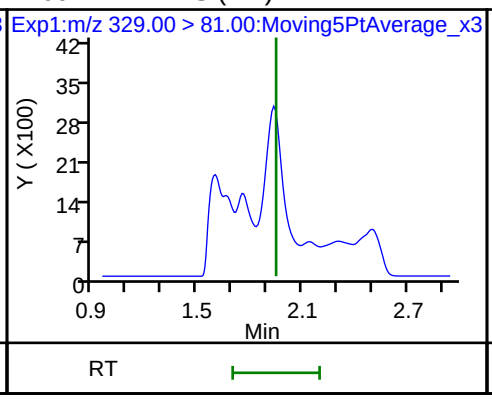
5 Perfluorobutanesulfonic acid



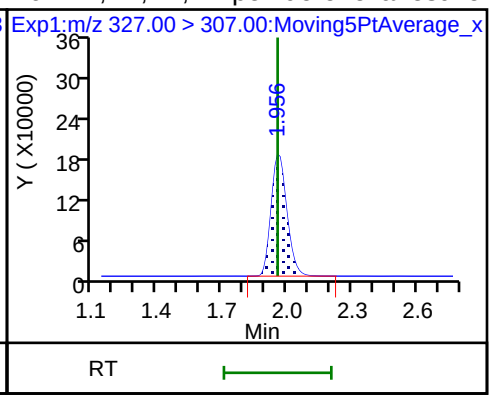
5 Perfluorobutanesulfonic acid



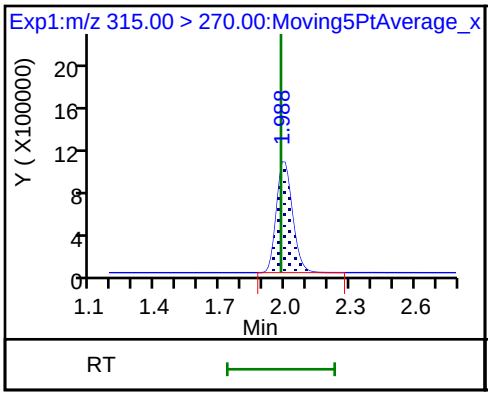
D 60 M2-4:2FTS (ND)



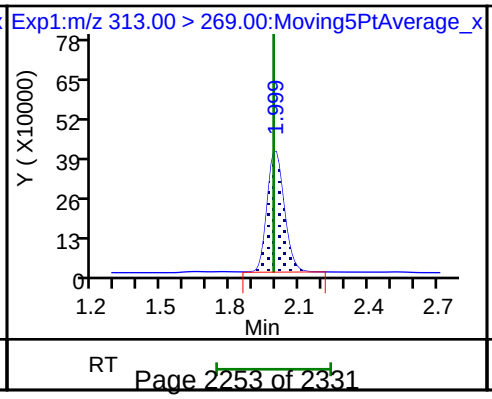
61 1H,1H,2H,2H-perfluorohexanesulfoni



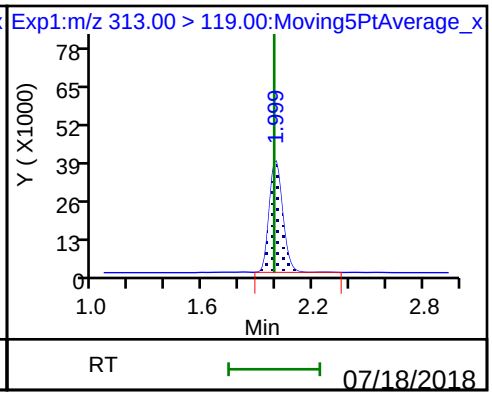
D 7 13C2 PFHxA



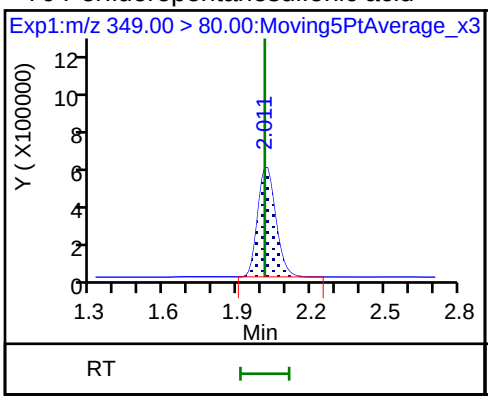
6 Perfluorohexanoic acid



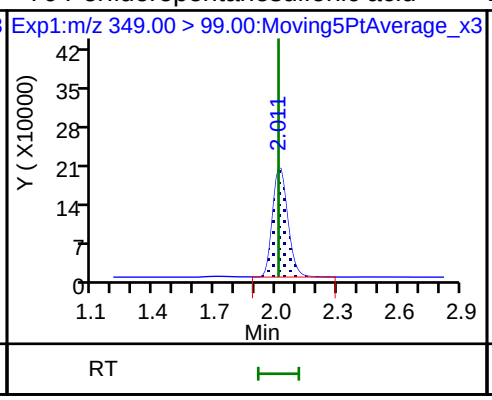
6 Perfluorohexanoic acid



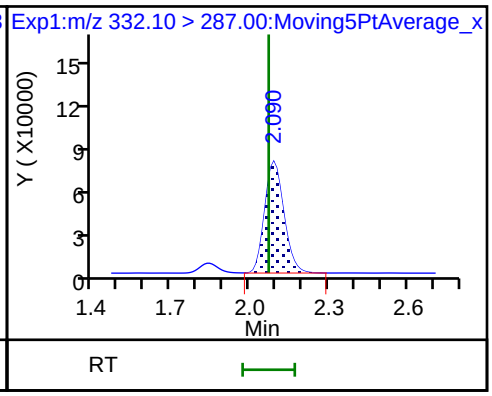
70 Perfluoropentanesulfonic acid



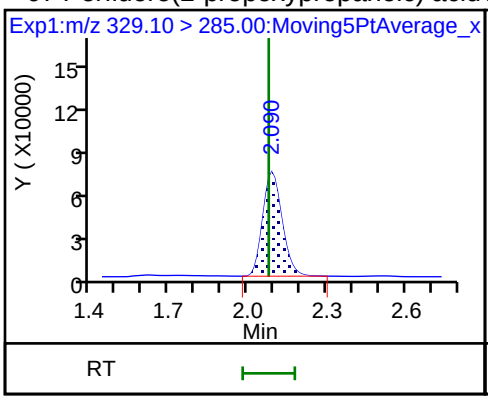
70 Perfluoropentanesulfonic acid



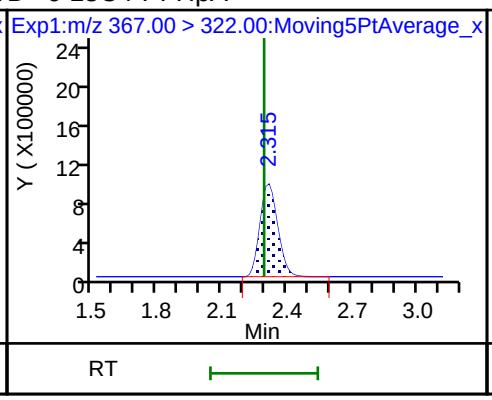
D 64 13C3 HFPO-DA



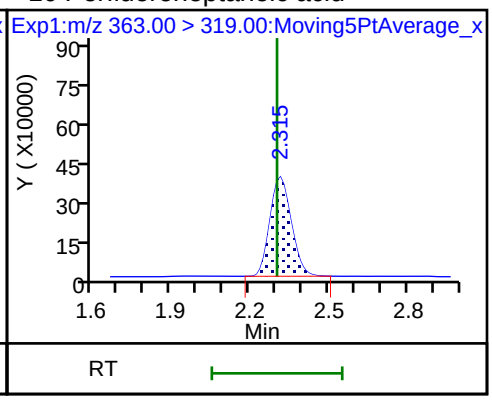
67 Perfluoro(2-propoxypropanoic) acid



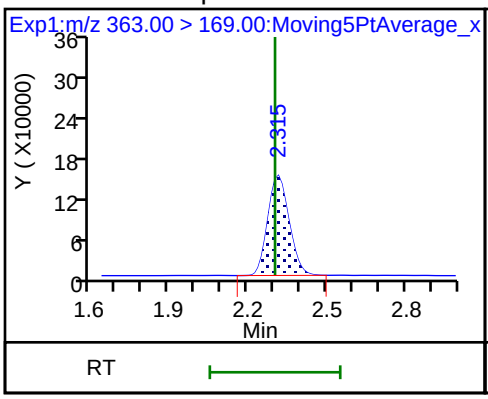
D 9 13C4-PFHpA



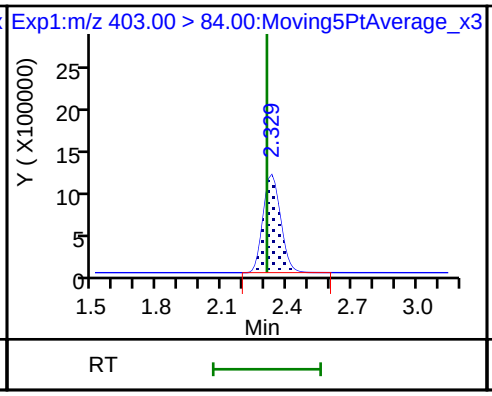
10 Perfluoroheptanoic acid



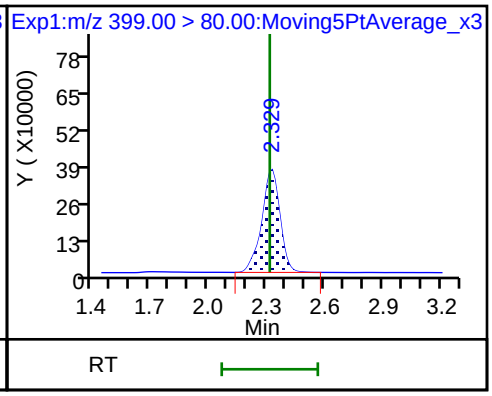
10 Perfluoroheptanoic acid



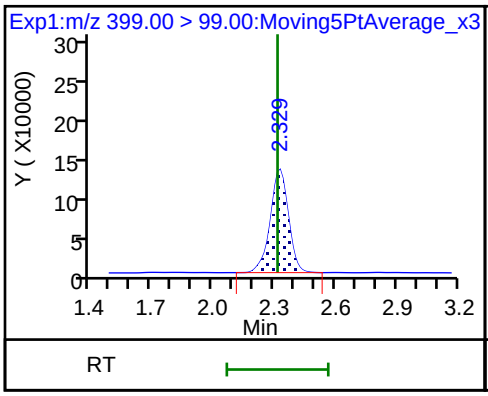
D 11 18O2 PFHxS



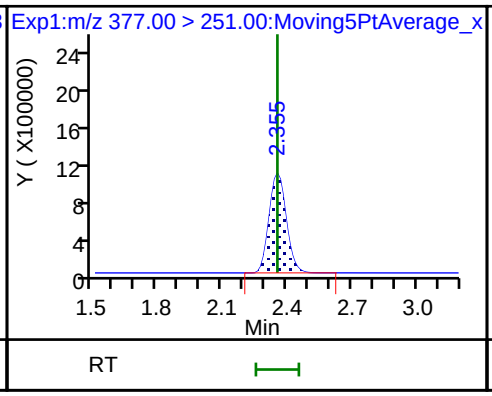
8 Perfluorohexanesulfonic acid



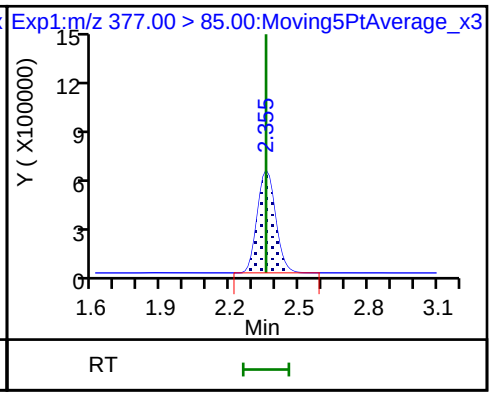
8 Perfluorohexanesulfonic acid



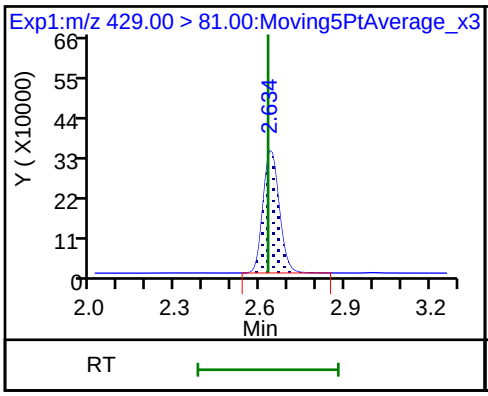
65 Adona



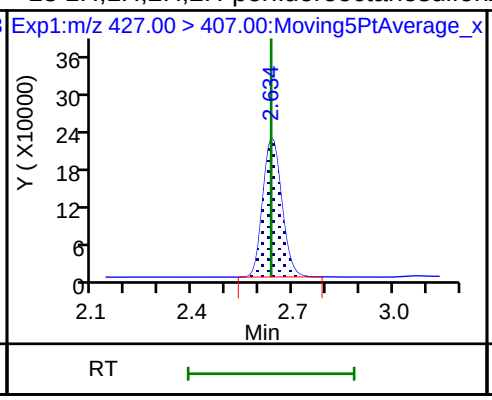
65 Adona



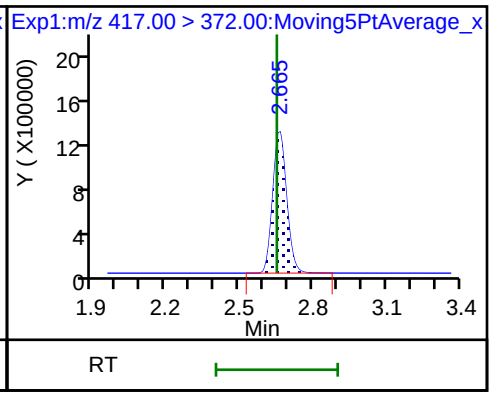
D 12 M2-6:2FTS



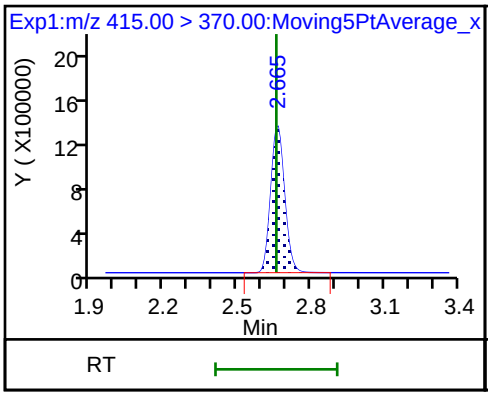
13 1H,1H,2H,2H-perfluorooctanesulfon



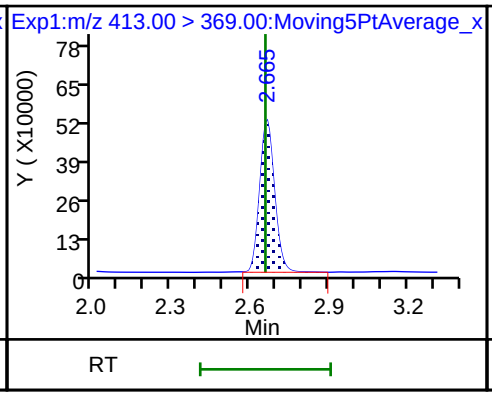
D 14 13C4 PFOA



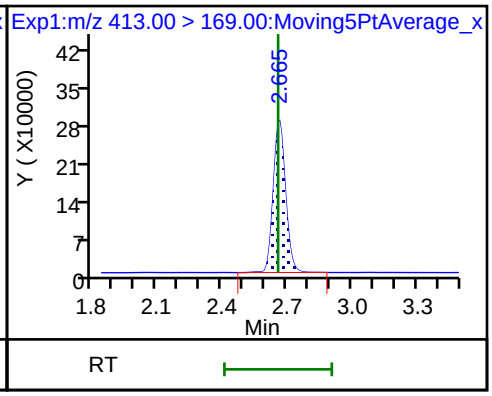
* 62 13C2-PFOA



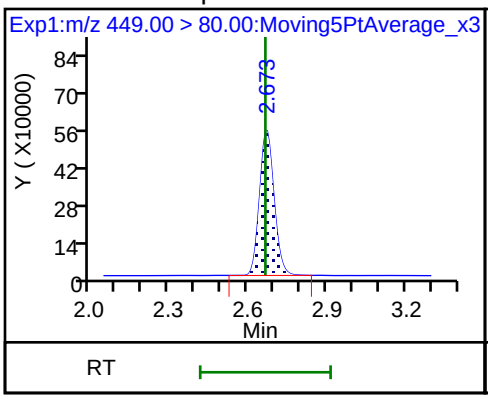
15 Perfluorooctanoic acid



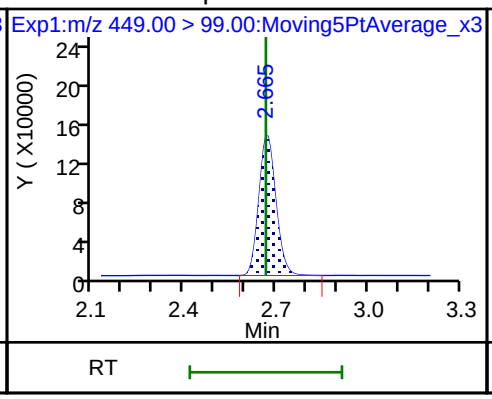
15 Perfluorooctanoic acid



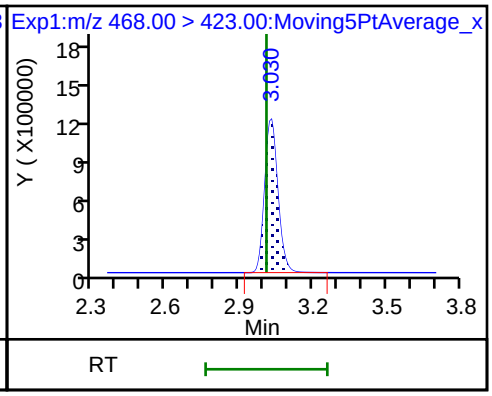
16 Perfluoroheptanesulfonic acid



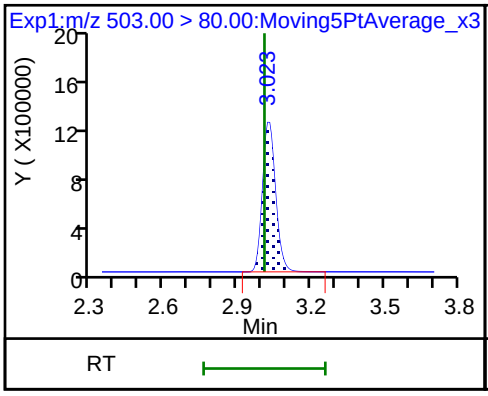
16 Perfluoroheptanesulfonic acid



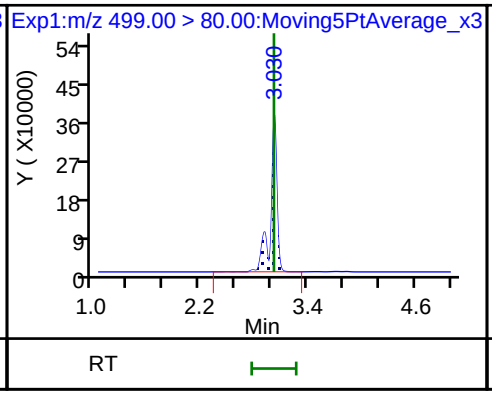
D 19 13C5 PFNA



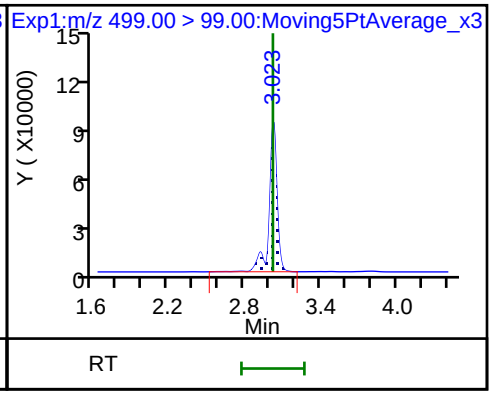
D 18 13C4 PFOS



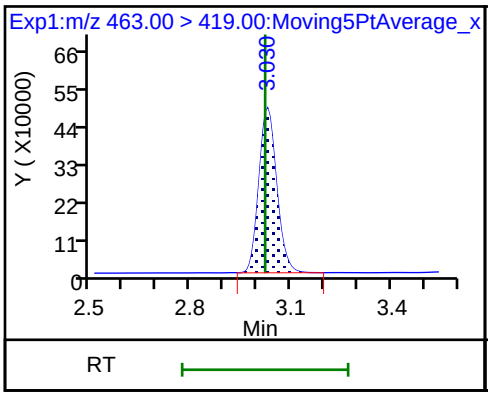
17 Perfluorooctane sulfonic acid



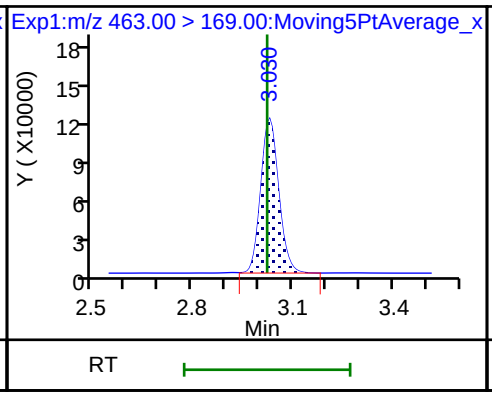
17 Perfluorooctane sulfonic acid



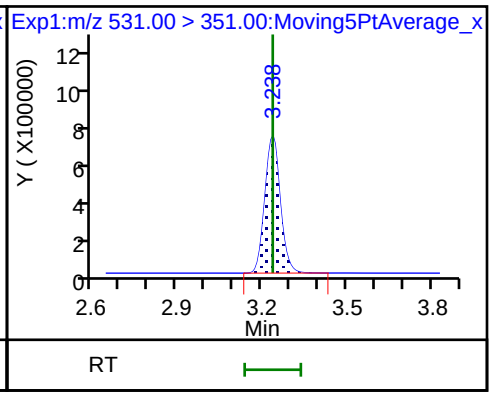
20 Perfluorononanoic acid



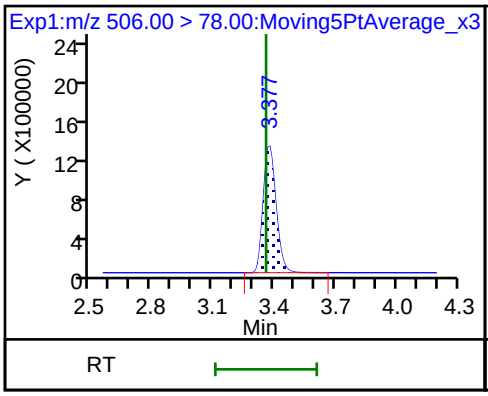
20 Perfluorononanoic acid



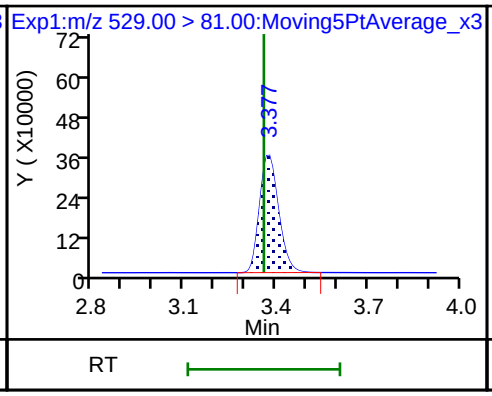
69 9-Chlorohexadecafluoro-3-oxanonane



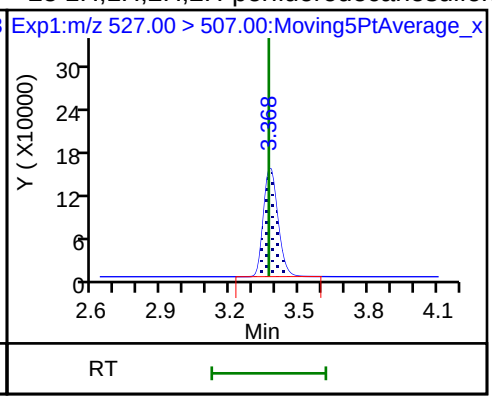
D 21 13C8 FOSA



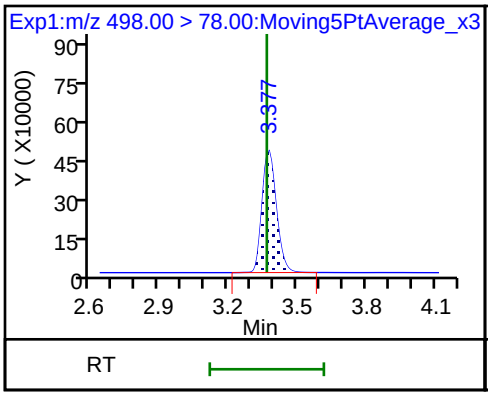
D 26 M2-8:2FTS



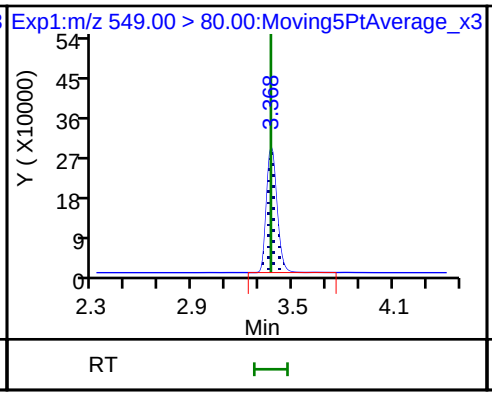
25 1H,1H,2H,2H-perfluorodecanesulfoni



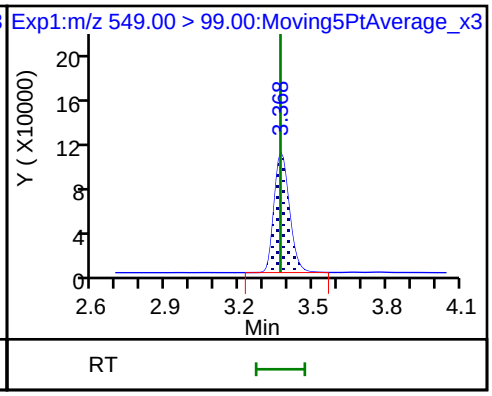
22 Perfluorooctane Sulfonamide



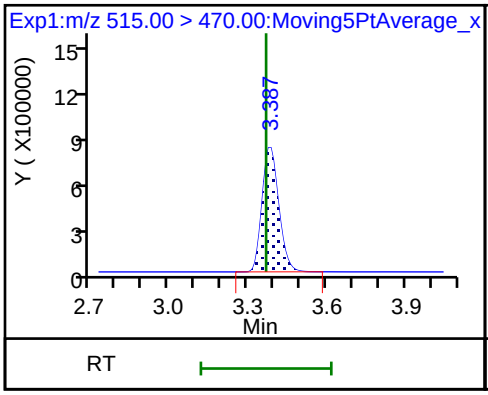
68 Perfluorononanesulfonic acid



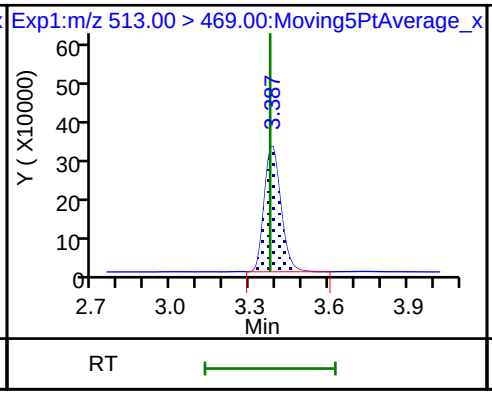
68 Perfluorononanesulfonic acid



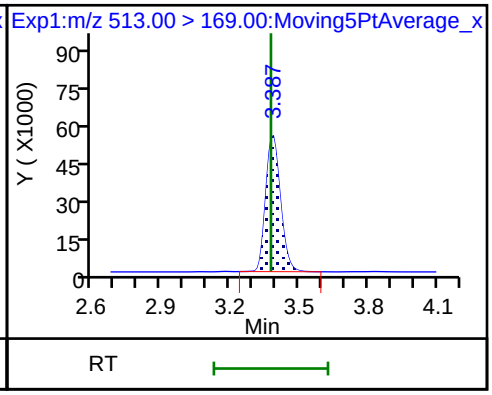
D 23 13C2 PFDA



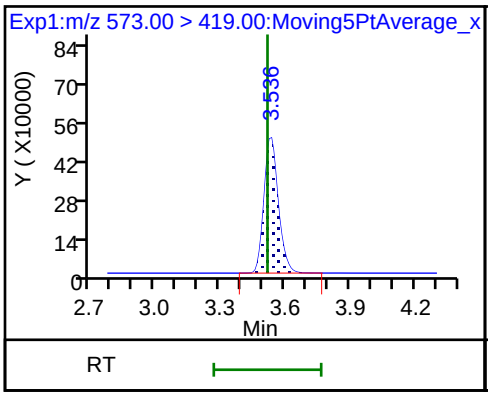
24 Perfluorodecanoic acid



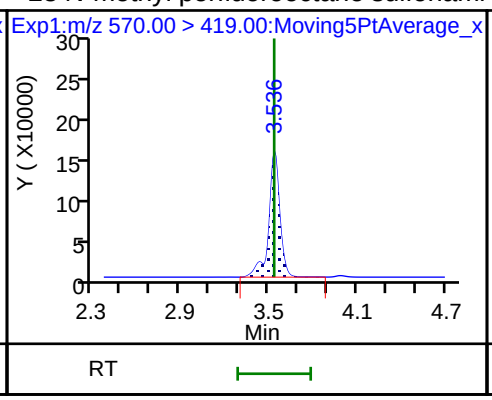
24 Perfluorodecanoic acid



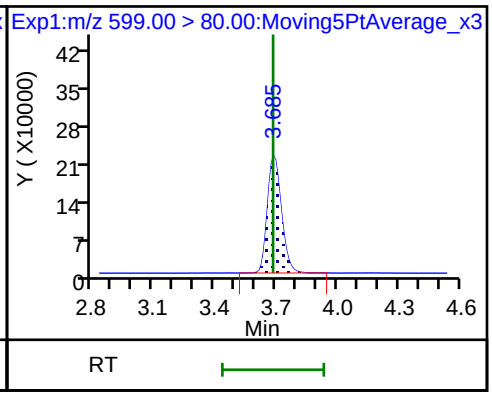
D 27 d3-NMeFOSAA



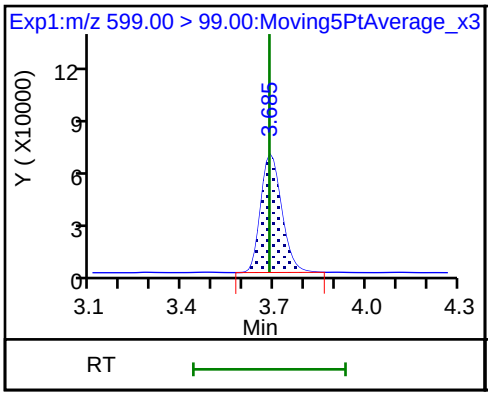
28 N-methyl perfluorooctane sulfonami



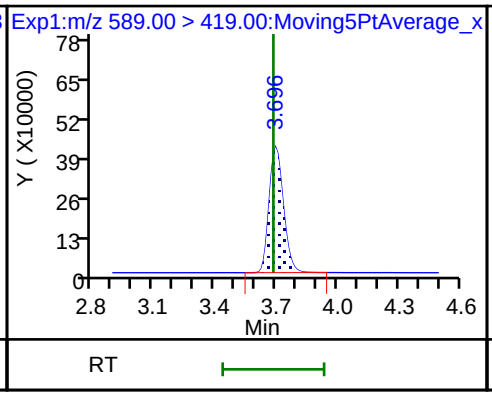
29 Perfluorodecane Sulfonic acid



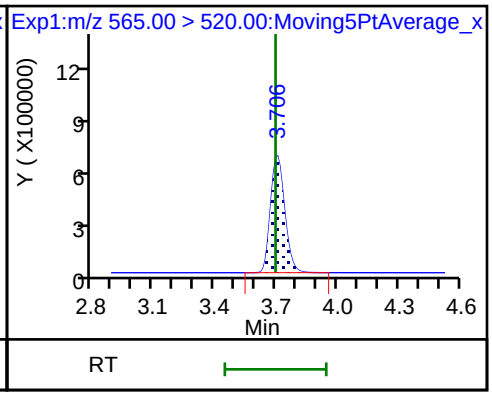
29 Perfluorodecane Sulfonic acid



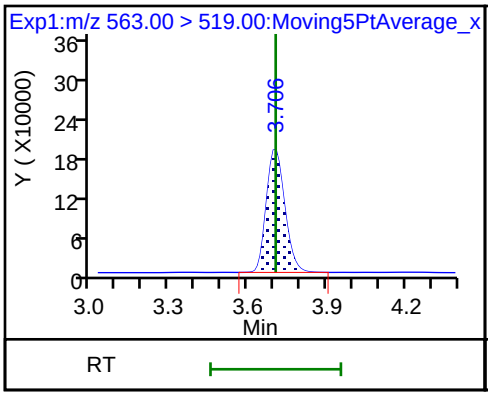
D 32 d5-NEtFOSAA



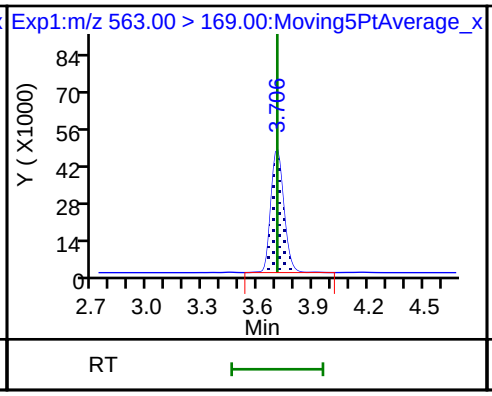
D 30 13C2 PFUnA



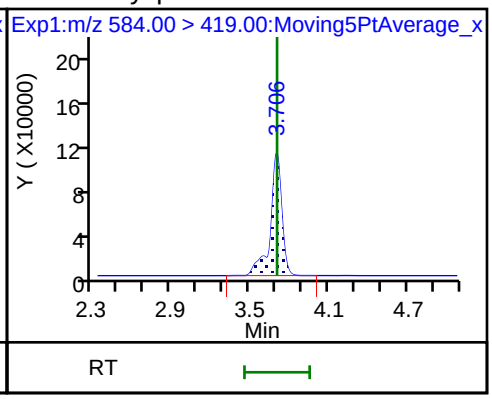
31 Perfluoroundecanoic acid



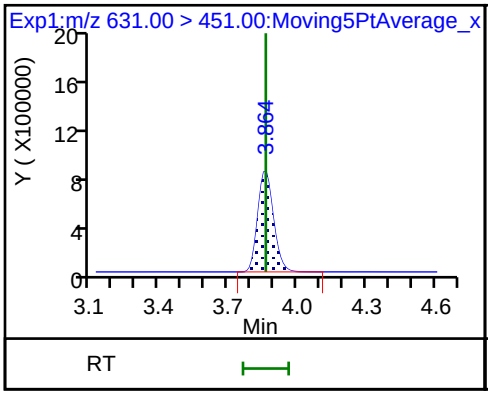
31 Perfluoroundecanoic acid



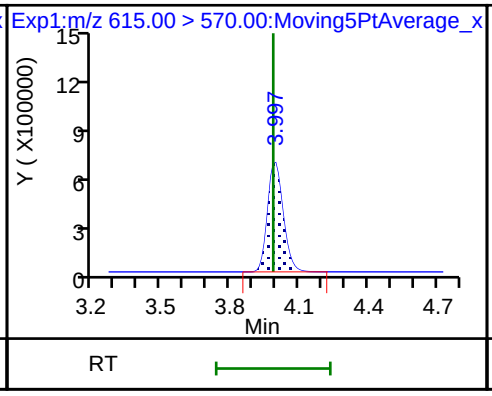
33 N-ethyl perfluorooctane sulfonamid



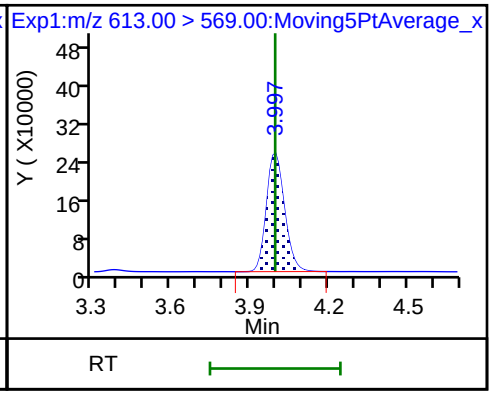
66 11-Chloroeicosafluoro-3-oxaundecan



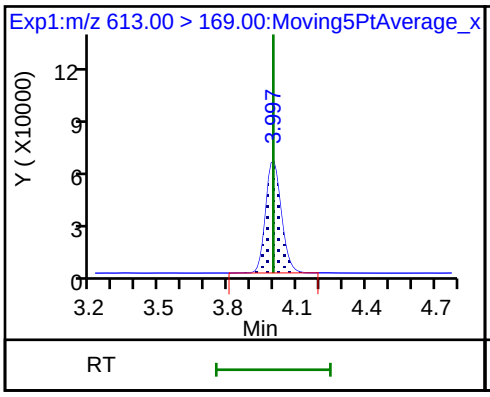
D 36 13C2 PFDoA



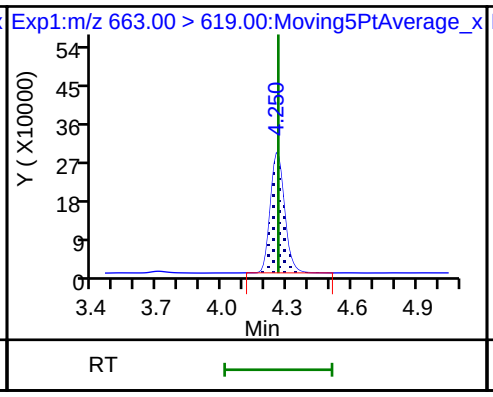
37 Perfluorododecanoic acid



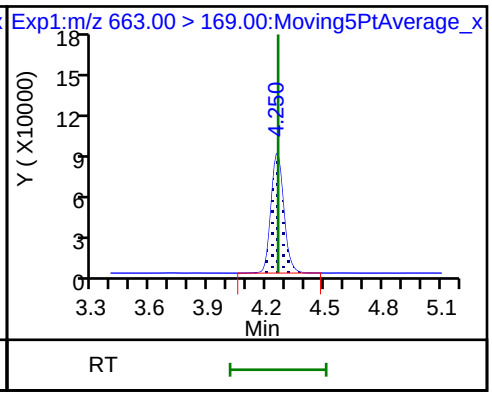
37 Perfluorododecanoic acid



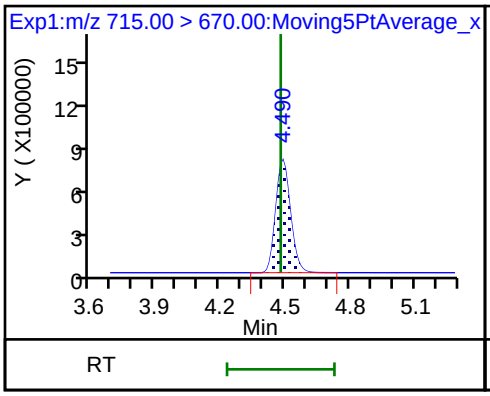
41 Perfluorotridecanoic acid



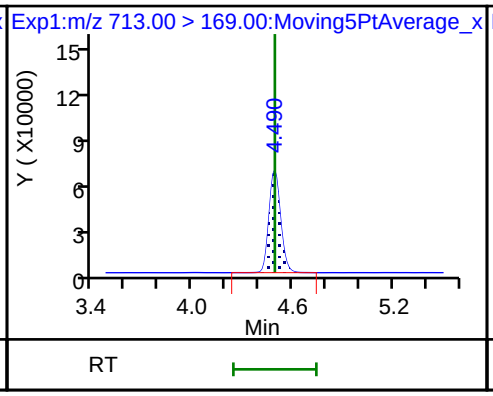
41 Perfluorotridecanoic acid



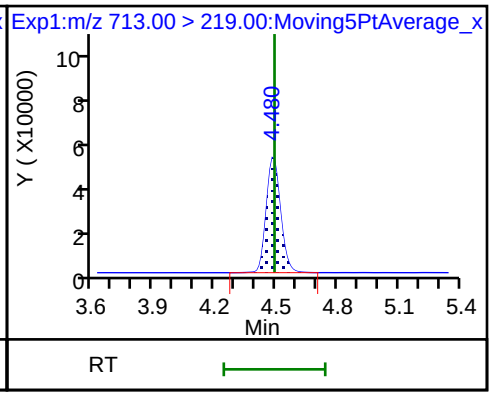
D 43 13C2-PFTeDA



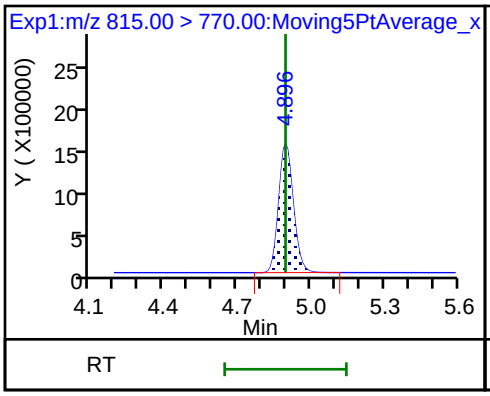
42 Perfluorotetradecanoic acid



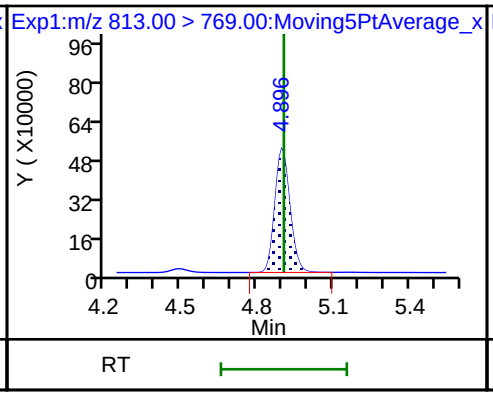
42 Perfluorotetradecanoic acid



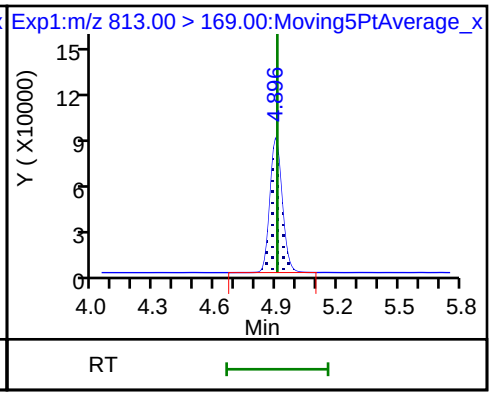
D 44 13C2-PFHxDA



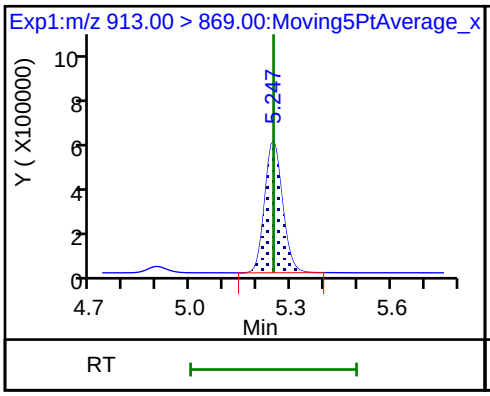
45 Perfluorohexadecanoic acid



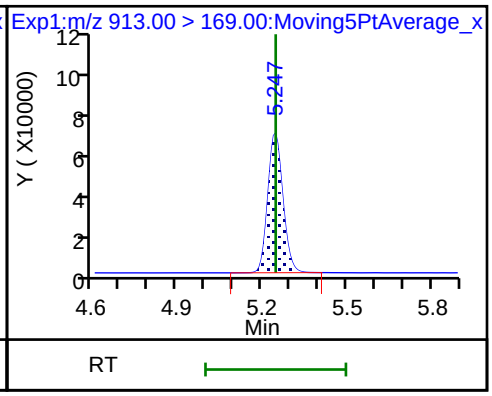
45 Perfluorohexadecanoic acid



46 Perfluorooctadecanoic acid



46 Perfluorooctadecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF33-SS-01 MSD
Lab Sample ID: 320-40571-36 MSD
Matrix: Solid
Lab File ID: 2018.07.13LLB_070.d
Analysis Method: 537 (modified)
Date Collected: 06/19/2018 16:10
Extraction Method: SHAKE
Date Extracted: 06/28/2018 05:15
Sample wt/vol: 5.07(g)
Date Analyzed: 07/14/2018 05:54
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture: 12.2
GPC Cleanup:(Y/N) N
Analysis Batch No.: 233997
Units: mg/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	0.00228		0.00022	0.000031
2706-90-3	Perfluoropentanoic acid (PFPeA)	0.00209		0.00022	0.000086
307-24-4	Perfluorohexanoic acid (PFHxA)	0.00204		0.00022	0.000047
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.00196		0.00022	0.000033
335-67-1	Perfluorooctanoic acid (PFOA)	0.00197		0.00022	0.000097
375-95-1	Perfluorononanoic acid (PFNA)	0.00208		0.00022	0.000040
335-76-2	Perfluorodecanoic acid (PFDA)	0.00210		0.00022	0.000025
2058-94-8	Perfluoroundecanoic acid (PFUnA)	0.00217		0.00022	0.000040
307-55-1	Perfluorododecanoic acid (PFDoA)	0.00212		0.00022	0.000075
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	0.00223		0.00022	0.000057
376-06-7	Perfluorotetradecanoic acid (PFTeA)	0.00198		0.00022	0.000061
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.00189		0.00022	0.000028
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.00180		0.00022	0.000035
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	0.00213		0.00022	0.000039
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.00201		0.00056	0.00022
335-77-3	Perfluorodecanesulfonic acid (PFDS)	0.00213		0.00022	0.000044
754-91-6	Perfluorooctane Sulfonamide (FOSA)	0.00224		0.00022	0.000092
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	0.00225		0.0022	0.00044
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	0.00233		0.0022	0.00042
27619-97-2	6:2 FTS	0.00224		0.0022	0.00017
39108-34-4	8:2 FTS	0.00210	J	0.0022	0.00028

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF33-SS-01 MSD
Lab Sample ID: 320-40571-36 MSD
Matrix: Solid
Lab File ID: 2018.07.13LLB_070.d
Analysis Method: 537 (modified)
Date Collected: 06/19/2018 16:10
Extraction Method: SHAKE
Date Extracted: 06/28/2018 05:15
Sample wt/vol: 5.07(g)
Date Analyzed: 07/14/2018 05:54
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture: 12.2
GPC Cleanup:(Y/N) N
Analysis Batch No.: 233997
Units: mg/Kg

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00992	13C4 PFBA	80		25-150
STL01893	13C5 PFPeA	85		25-150
STL00993	13C2 PFHxA	84		25-150
STL01892	13C4-PFHpA	91		25-150
STL00990	13C4 PFOA	93		25-150
STL00995	13C5 PFNA	92		25-150
STL00996	13C2 PFDA	93		25-150
STL00997	13C2 PFUnA	91		25-150
STL00998	13C2 PFDoA	88		25-150
STL02116	13C2-PFTeDA	98		25-150
STL02337	13C3-PFBS	79		25-150
STL00994	18O2 PFHxS	80		25-150
STL00991	13C4 PFOS	76		25-150
STL01056	13C8 FOSA	68		25-150
STL02118	d3-NMeFOSAA	98		25-150
STL02117	d5-NEtFOSAA	95		25-150
STL02279	M2-6:2FTS	103		25-150
STL02280	M2-8:2FTS	116		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\2018.07.13LLB_070.d
Lims ID: 320-40571-A-36-C MSD
Client ID: NF33-SS-01
Sample Type: MSD
Inject. Date: 14-Jul-2018 05:54:24 ALS Bottle#: 54 Worklist Smp#: 19
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-40571-a-36-c msd
Misc. Info.: Plate: 1 Rack: 3
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 16-Jul-2018 14:28:46 Calib Date: 11-Jul-2018 15:38:42
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK023

First Level Reviewer: mongkols Date: 16-Jul-2018 14:28:46

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										M
217.00 > 172.00	1.435	1.441	-0.006	0.540	4998214	2.01		80.3	50765	M
2 Perfluorobutyric acid										M
212.90 > 169.00	1.435	1.445	-0.010	1.000	2001504	1.02		102	255	M
D 3 13C5-PFPeA										
267.90 > 223.00	1.720	1.720	0.0	0.647	3688197	2.13		85.3	36157	
4 Perfluoropentanoic acid										M
262.90 > 219.00	1.720	1.726	-0.006	1.000	1663432	0.9294		92.9	362	M
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.756	1.762	-0.006	1.000	2204046	0.8422		95.3	5183	
298.90 > 99.00	1.756	1.762	-0.006	1.000	914077		2.41(1.25-3.74)		4609	
D 47 13C3-PFBS										
301.90 > 83.00	1.756	1.765	-0.009	0.660	79541	1.83		78.7	491	
61 1H,1H,2H,2H-perfluorohexanesulfoni										
327.00 > 307.00	1.959	1.967	-0.008	1.116	1252997	2.82		302	18475	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.991	2.000	-0.009	1.000	1472462	0.9075		90.8	740	
313.00 > 119.00	1.991	2.000	-0.009	1.000	142151		10.36(5.03-15.10)		1671	
D 7 13C2 PFHxA										
315.00 > 270.00	1.991	2.003	-0.012	0.749	3940841	2.11		84.4	49276	
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.014	2.022	-0.008	1.147	2032614	0.8514		90.8	7686	
349.00 > 99.00	2.014	2.022	-0.008	1.147	750547		2.71(1.36-4.07)		7352	
67 Perfluoro(2-propoxypropanoic) acid										
329.10 > 285.00	2.093	2.101	-0.008	1.000	295100	0.9036		90.4	779	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.093	2.105	-0.012	0.787	307611	2.32		92.6	4997	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.306	2.316	-0.010	1.000	1579939	0.8738		87.4	929	
363.00 > 169.00	2.306	2.316	-0.010	1.000	613148		2.58(1.13-3.40)		5690	
D 9 13C4-PFHpA										
367.00 > 322.00	2.306	2.319	-0.013	0.867	3908120	2.27		90.9	41044	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.319	2.329	-0.010	1.000	1802739	0.8037		88.3	2620	
399.00 > 99.00	2.319	2.329	-0.010	1.000	611970		2.95(1.50-4.49)		2445	
D 11 18O2 PFHxS										
403.00 > 84.00	2.319	2.332	-0.013	0.872	4621092	1.90		80.2	51766	
65 Adona										
377.00 > 251.00	2.358	2.355	0.003	0.782	4618911	1.06		106	31710	
377.00 > 85.00	2.358	2.355	0.003	0.782	2657384		1.74(0.84-2.53)		15715	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.636	2.643	-0.007	1.000	594852	1.00		105	2534	
D 12 M2-6:2FTS										
429.00 > 81.00	2.636	2.644	-0.008	0.991	904681	2.45		103	3889	
* 62 13C2-PFOA										
415.00 > 370.00	2.659	2.666	-0.007		4588783	2.50			37355	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.659	2.666	-0.007	1.000	1759942	0.8795		87.9	700	
413.00 > 169.00	2.659	2.666	-0.007	1.000	924873		1.90(0.84-2.52)		5108	
D 14 13C4 PFOA										
417.00 > 372.00	2.659	2.667	-0.008	1.000	4062025	2.31		92.6	55339	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.667	2.673	-0.006	0.884	1691209	0.9501		99.8	7674	
449.00 > 99.00	2.667	2.673	-0.006	0.884	463732		3.65(1.94-5.82)		5231	
D 18 13C4 PFOS										
503.00 > 80.00	3.016	3.027	-0.011	1.134	3229062	1.81		75.6	16987	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.023	3.029	-0.006	1.002	1368828	0.8941		96.3	4637	
499.00 > 99.00	3.016	3.029	-0.013	1.000	307920		4.45(2.31-6.93)		2975	
20 Perfluorononanoic acid										
463.00 > 419.00	3.023	3.029	-0.006	1.000	1483800	0.9270		92.7	1503	
463.00 > 169.00	3.023	3.029	-0.006	1.000	375830		3.95(1.90-5.69)		9971	
D 19 13C5 PFNA										
468.00 > 423.00	3.023	3.034	-0.011	1.137	3607190	2.30		92.0	41445	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.230	3.237	-0.007	1.071	2387999	0.9628		103	19458	
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.358	3.376	-0.018	1.114	943605	0.9010		93.8	6795	
549.00 > 99.00	3.358	3.376	-0.018	1.114	365352		2.58(1.33-3.97)		5283	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.368	3.376	-0.008	1.000	1731601	1.00		99.6	27825	
25 1H,1H,2H,2H-perfluorodecanesulfoni										
527.00 > 507.00	3.368	3.376	-0.008	1.000	755340	0.9363		97.7	15843	
D 21 13C8 FOSA										
506.00 > 78.00	3.368	3.379	-0.011	1.266	4409112	1.71		68.4	39862	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 26 M2-8:2FTS										
529.00 > 81.00	3.368	3.379	-0.011	1.266	1497804	2.78		116	6655	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.377	3.385	-0.008	1.000	1251129	0.9341		93.4	1963	
513.00 > 169.00	3.377	3.385	-0.008	1.000	216568		5.78(2.36-7.09)		4494	
D 23 13C2 PFDA										
515.00 > 470.00	3.377	3.389	-0.012	1.270	3190783	2.32		92.7	56323	
35 MeFOSA										
512.00 > 169.00	3.536	3.498	0.038		6216	NC			186	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.527	3.538	-0.011	1.326	1385033	2.45		98.2	21848	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.536	3.544	-0.008	1.003	546507	1.00		100	4445	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.685	3.694	-0.009	1.222	858843	0.9468		98.2	7176	
599.00 > 99.00	3.685	3.694	-0.009	1.222	306624		2.80(1.39-4.16)		6498	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.695	3.708	-0.013	1.390	1374757	2.38		95.1	5339	
D 30 13C2 PFUnA										
565.00 > 520.00	3.706	3.708	-0.002	1.394	2609419	2.27		90.8	28366	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.706	3.716	-0.010	1.000	827012	0.9669		96.7	1501	
563.00 > 169.00	3.706	3.716	-0.010	1.000	208556		3.97(2.12-6.36)		7240	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.706	3.716	-0.010	1.003	503804	1.04		104	14229	
66 11-Chloroeicosafluoro-3-oxaundecan										
631.00 > 451.00	3.863	3.873	-0.010	1.281	3540877	0.9877		105	30889	
D 36 13C2 PFDoA										
615.00 > 570.00	3.996	3.999	-0.003	1.503	2630615	2.21		88.2	21497	
37 Perfluorododecanoic acid										
613.00 > 569.00	3.996	4.006	-0.010	1.000	1086912	0.9460		94.6	407	
613.00 > 169.00	3.996	4.006	-0.010	1.000	273751		3.97(2.13-6.40)		3449	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.259	4.269	-0.010	1.066	1114984	0.99		99.2	549	
663.00 > 169.00	4.259	4.269	-0.010	1.066	355456		3.14(1.25-3.76)		4590	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.490	4.500	-0.010	1.000	277184	0.8797		88.0	2899	
713.00 > 219.00	4.490	4.500	-0.010	1.000	199885		1.39(0.71-2.13)		2806	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.490	4.501	-0.011	1.688	3027506	2.45		97.9	15622	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.904	4.905	-0.001	1.844	4533548	2.30		92.0	11143	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.904	4.912	-0.008	1.000	1710483	0.9711		97.1	437	
813.00 > 169.00	4.904	4.912	-0.008	1.000	290560		5.89(2.86-8.58)		2420	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.247	5.254	-0.007	1.070	2077239	1.00		100	478	
913.00 > 169.00	5.247	5.254	-0.007	1.070	258505		8.04(3.83-11.48)		2340	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Review Flags

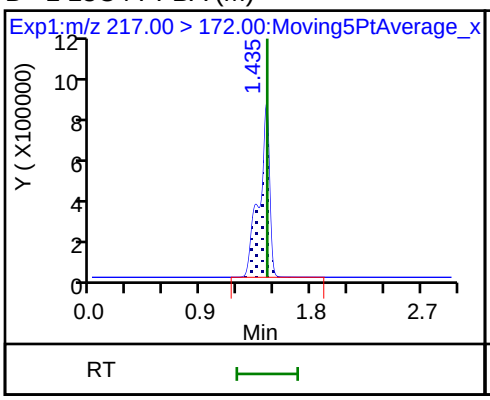
M - Manually Integrated

Report Date: 16-Jul-2018 14:28:47 Chrom Revision: 2.2 07-Jun-2018 07:41:54

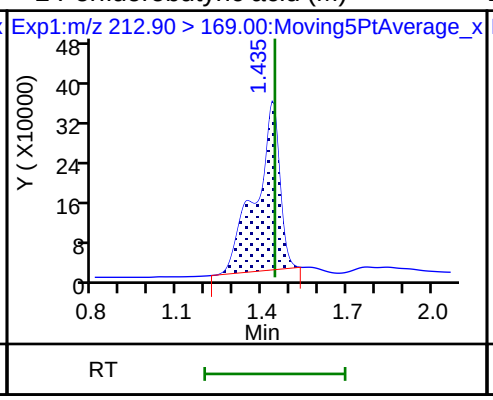
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\2018.07.13LLB_070.d
Injection Date: 14-Jul-2018 05:54:24 Instrument ID: A8_N
Lims ID: 320-40571-A-36-C MSD
Client ID: NF33-SS-01
Operator ID: SACINSTLCMS01 ALS Bottle#: 54 Worklist Smp#: 19
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC ICAL

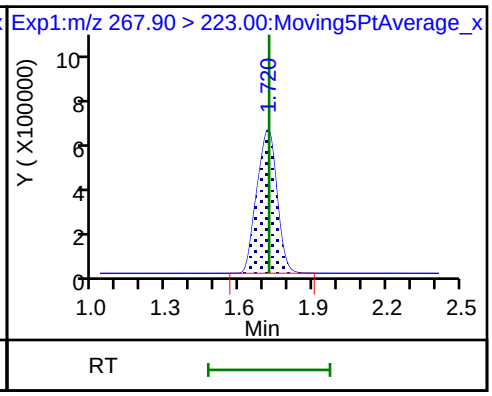
D 1 13C4 PFBA (M)



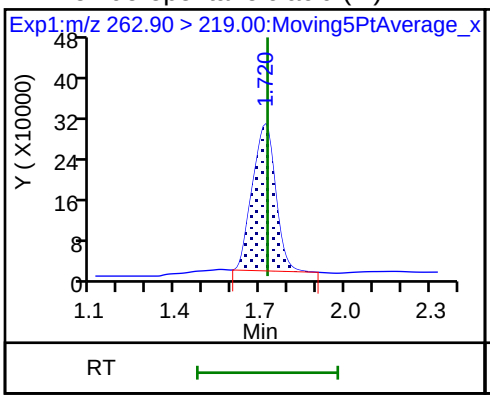
2 Perfluorobutyric acid (M)



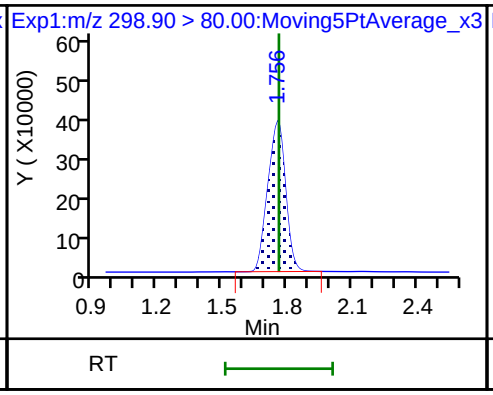
D 3 13C5-PFPeA



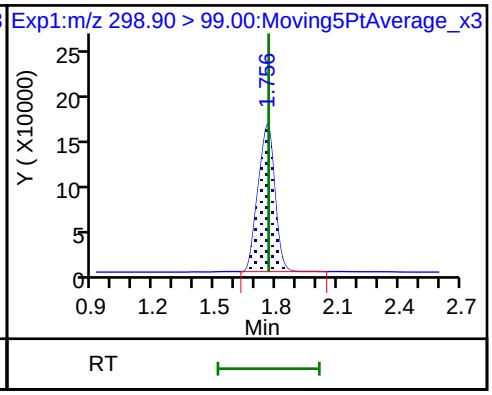
4 Perfluoropentanoic acid (M)



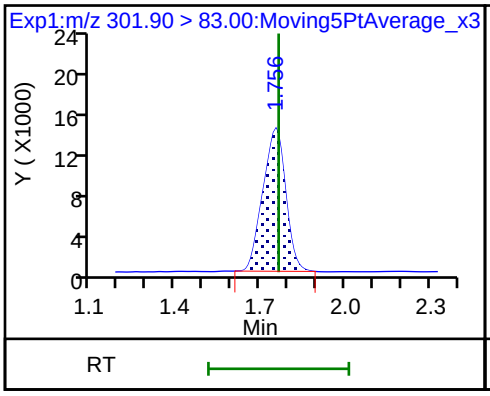
5 Perfluorobutanesulfonic acid



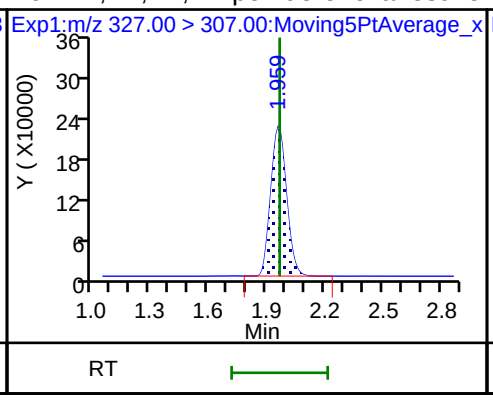
5 Perfluorobutanesulfonic acid



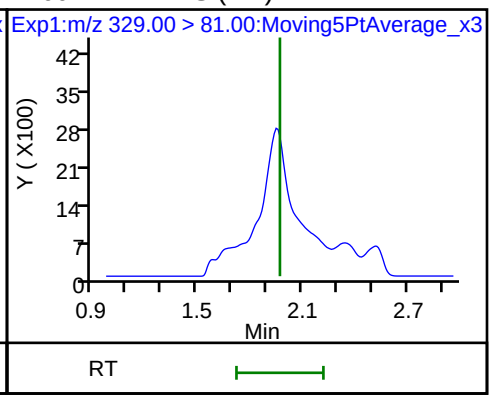
D 47 13C3-PFBS



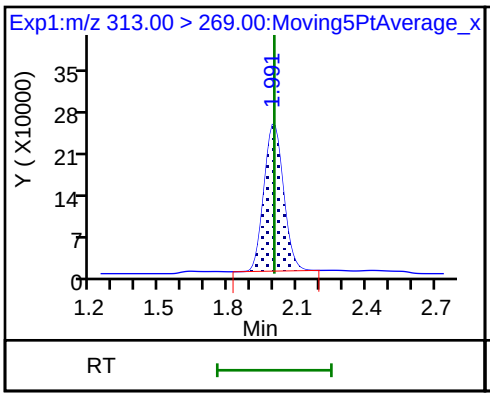
61 1H,1H,2H,2H-perfluorohexanesulfon



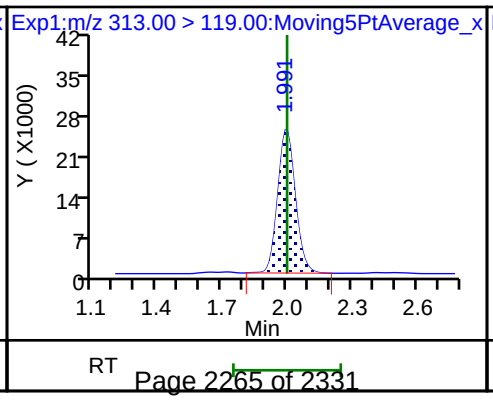
D 60 M2-4:2FTS (ND)



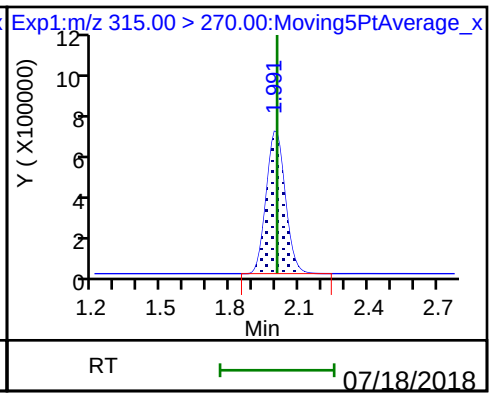
6 Perfluorohexanoic acid



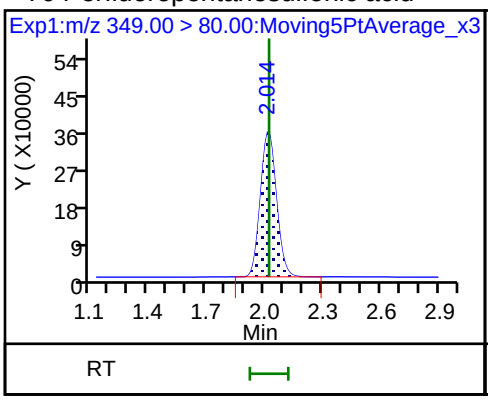
6 Perfluorohexanoic acid



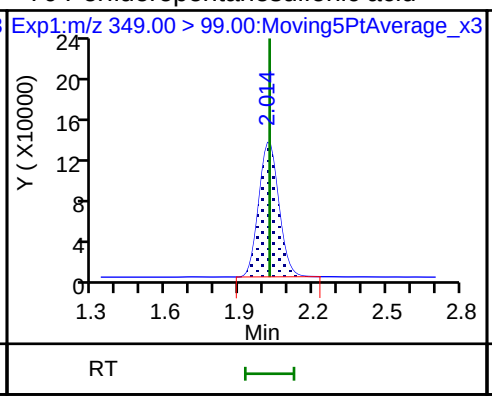
D 7 13C2 PFHxA



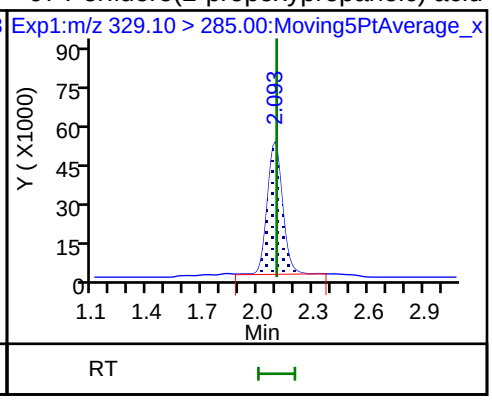
70 Perfluoropentanesulfonic acid



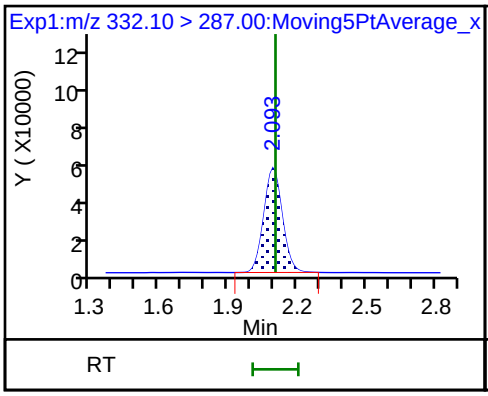
70 Perfluoropentanesulfonic acid



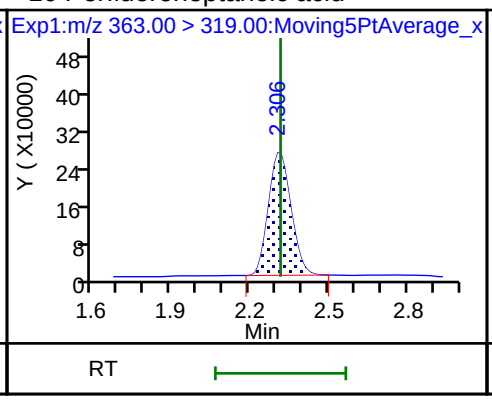
67 Perfluoro(2-propoxypropanoic) acid



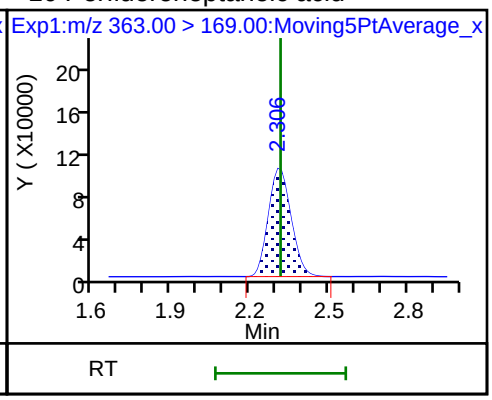
D 64 13C3 HFPO-DA



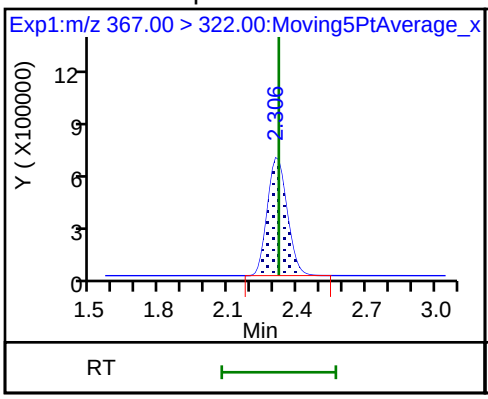
10 Perfluoroheptanoic acid



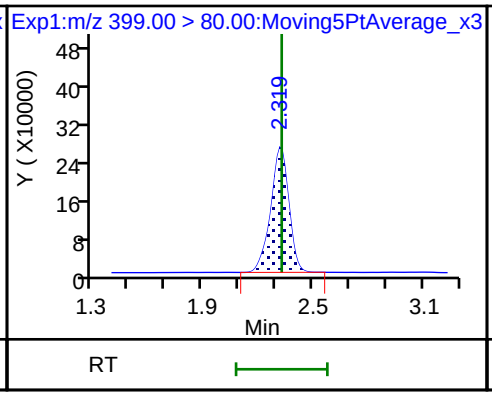
10 Perfluoroheptanoic acid



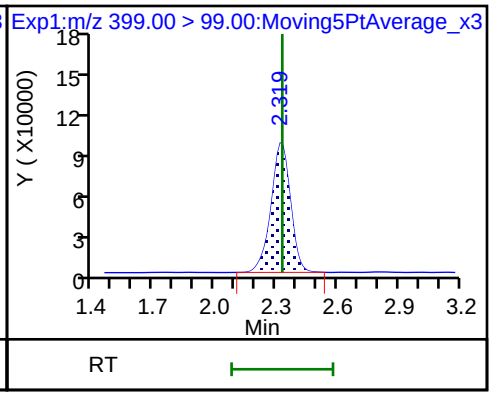
D 9 13C4-PFHpA



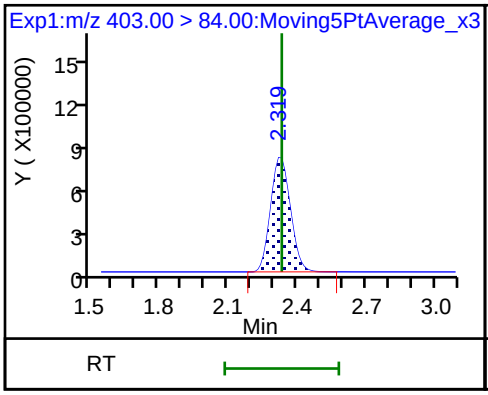
8 Perfluorohexanesulfonic acid



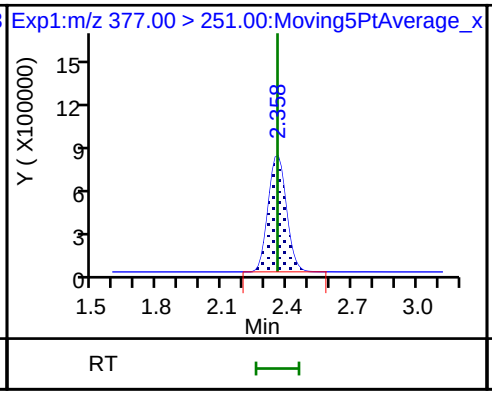
8 Perfluorohexanesulfonic acid



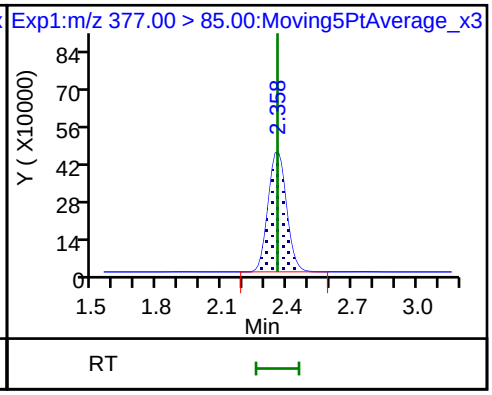
D 11 18O2 PFHxS



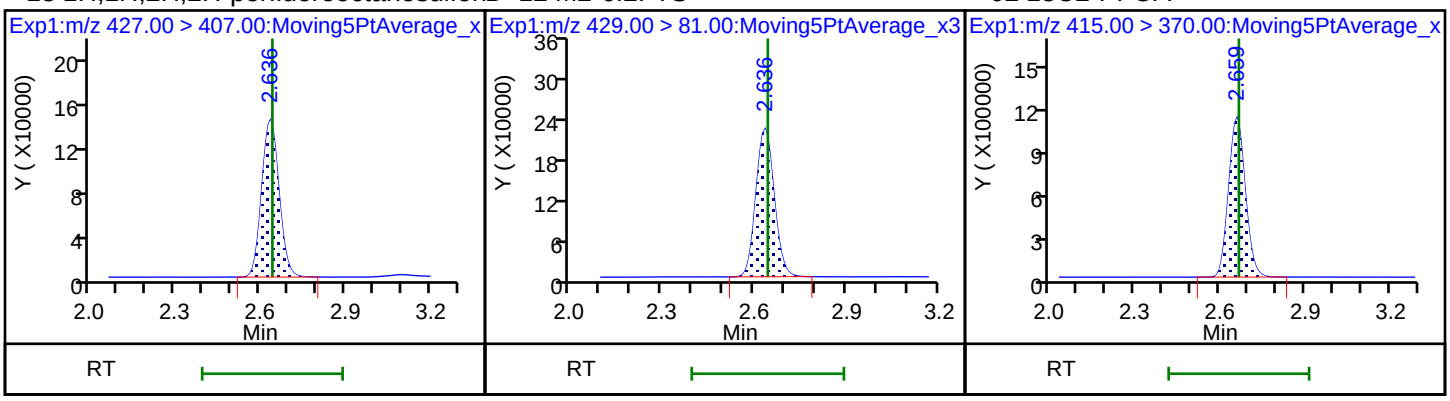
65 Adona



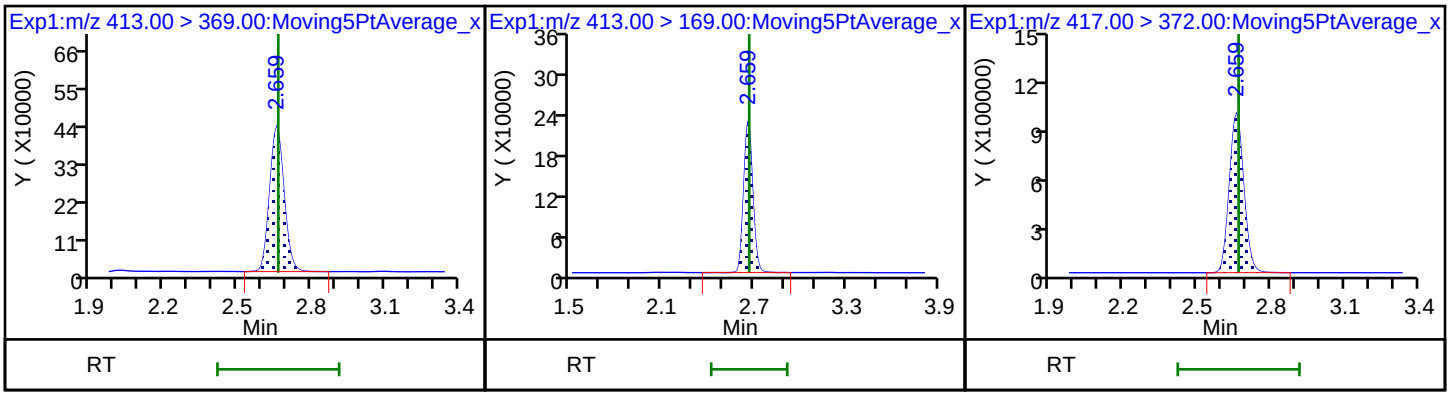
65 Adona



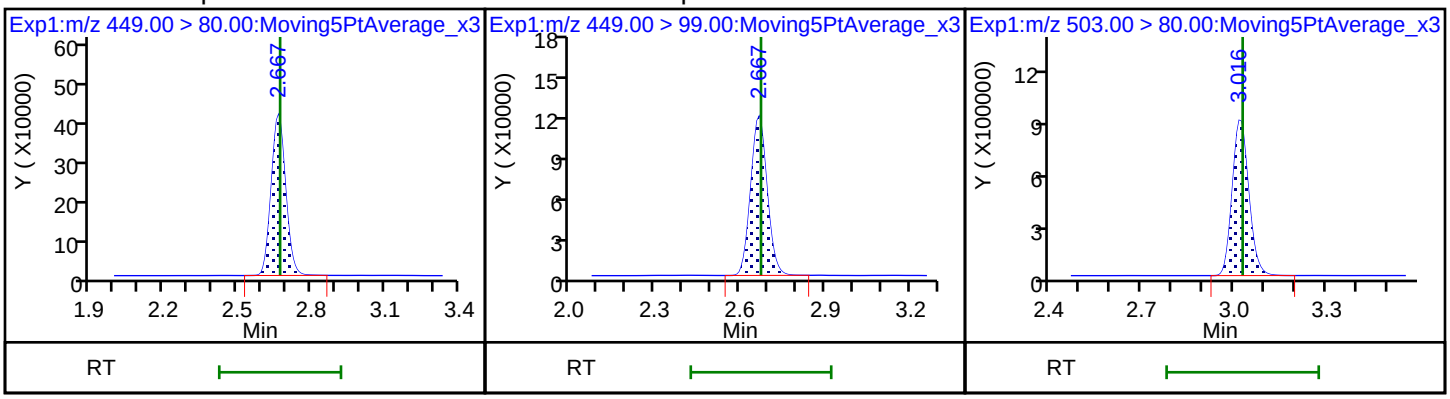
13 1H,1H,2H,2H-perfluorooctanesulfon D 12 M2-6:2FTS * 62 13C2-PFOA



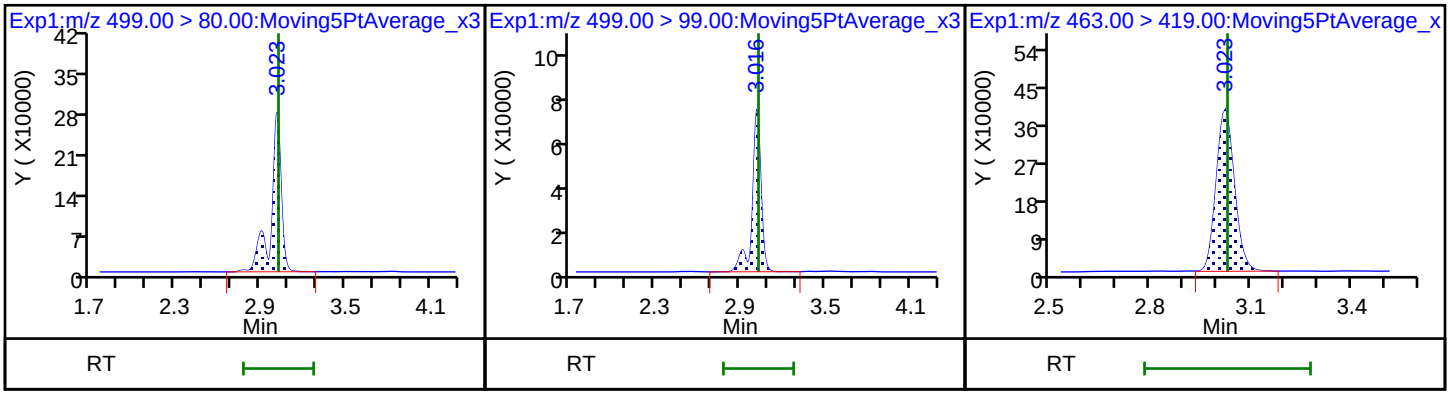
15 Perfluorooctanoic acid 15 Perfluorooctanoic acid D 14 13C4 PFOA



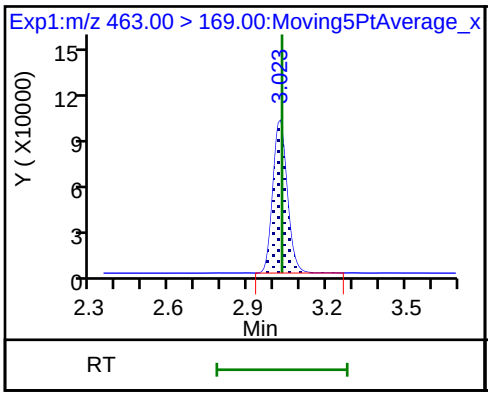
16 Perfluoroheptanesulfonic acid 16 Perfluoroheptanesulfonic acid D 18 13C4 PFOS



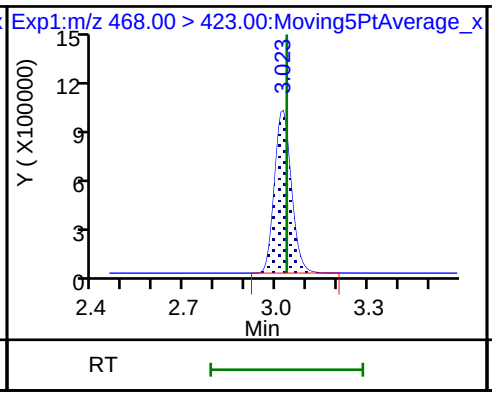
17 Perfluorooctane sulfonic acid 17 Perfluorooctane sulfonic acid 20 Perfluorononanoic acid



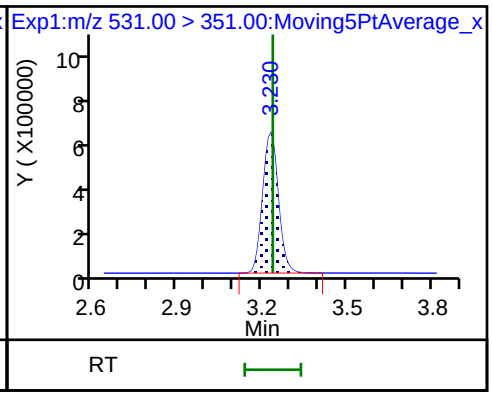
20 Perfluorononanoic acid



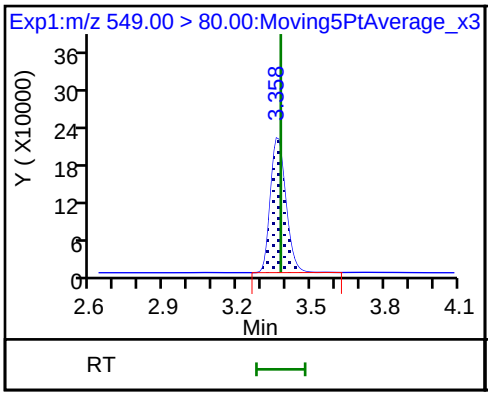
D 19 13C5 PFNA



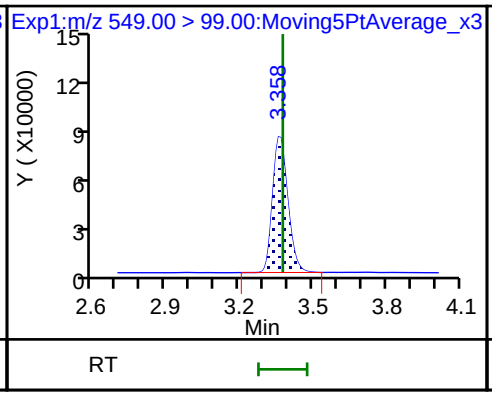
69 9-Chlorohexadecafluoro-3-oxanonane



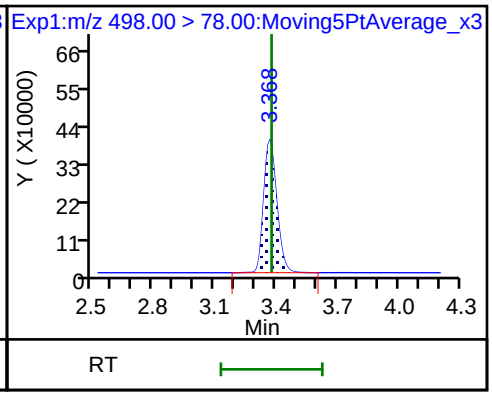
68 Perfluorononanesulfonic acid



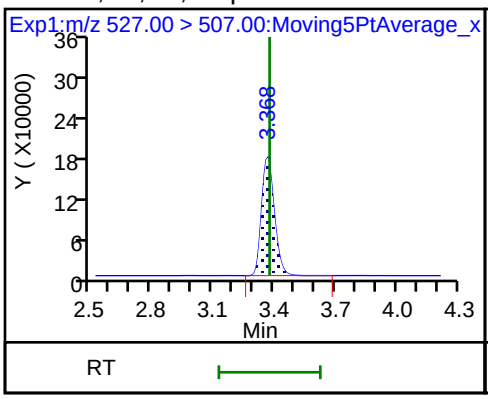
68 Perfluorononanesulfonic acid



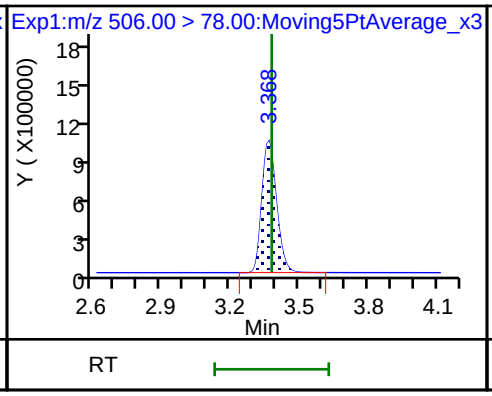
22 Perfluorooctane Sulfonamide



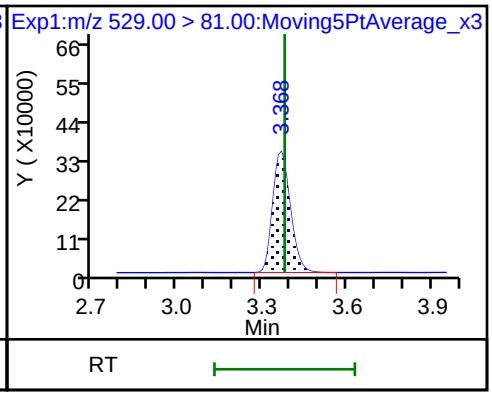
25 1H,1H,2H,2H-perfluorodecanesulfon



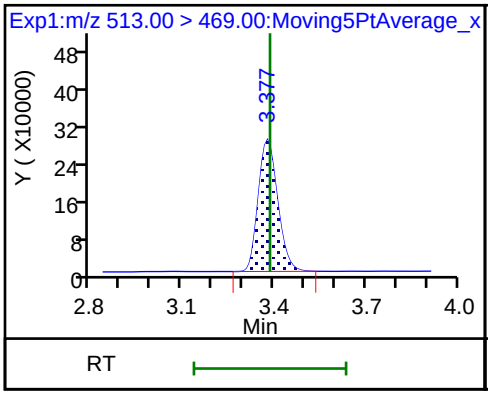
D 21 13C8 FOSA



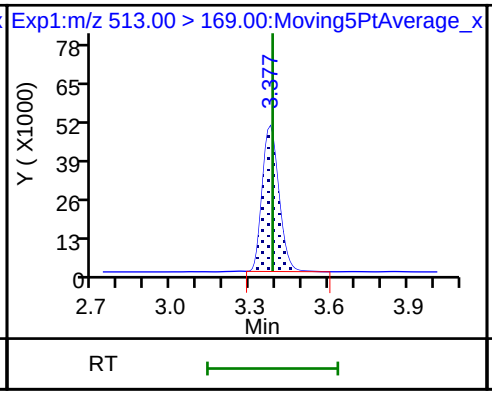
D 26 M2-8:2FTS



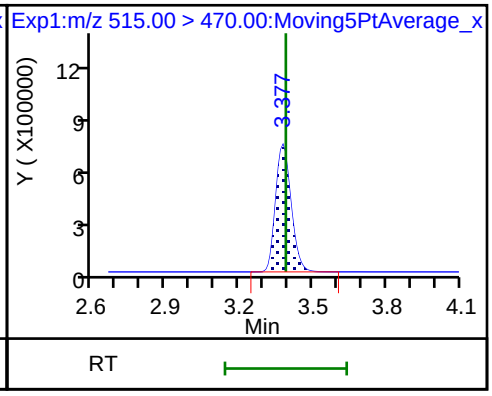
24 Perfluorodecanoic acid



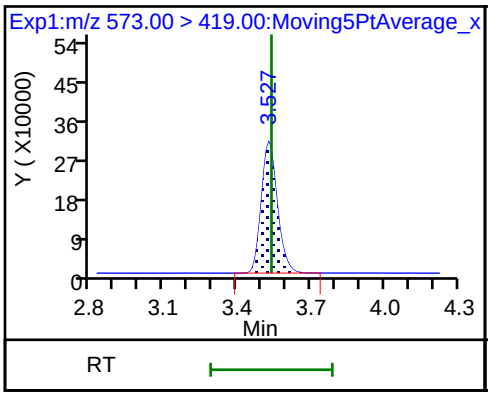
24 Perfluorodecanoic acid



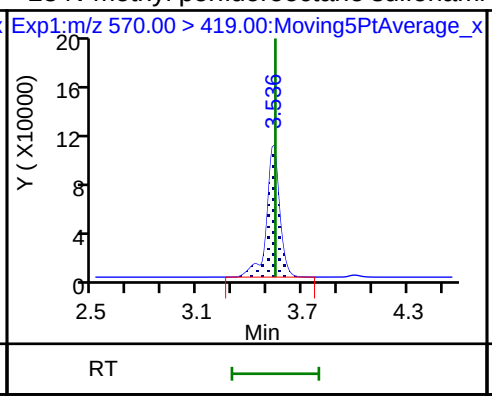
D 23 13C2 PFDA



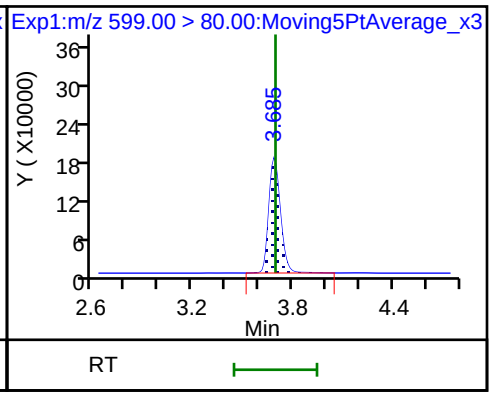
D 27 d3-NMeFOSAA



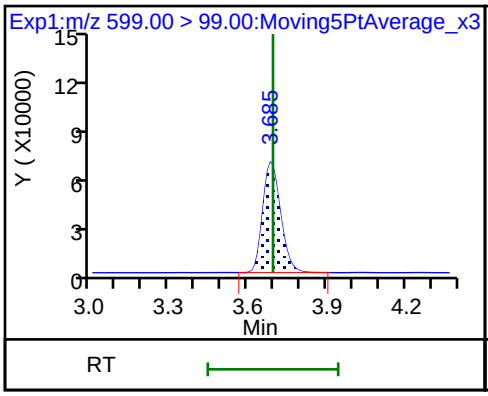
28 N-methyl perfluorooctane sulfonami



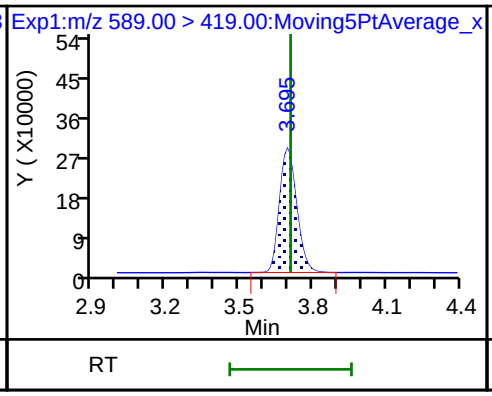
29 Perfluorodecane Sulfonic acid



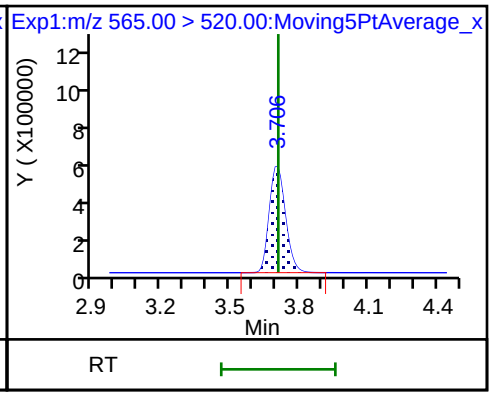
29 Perfluorodecane Sulfonic acid



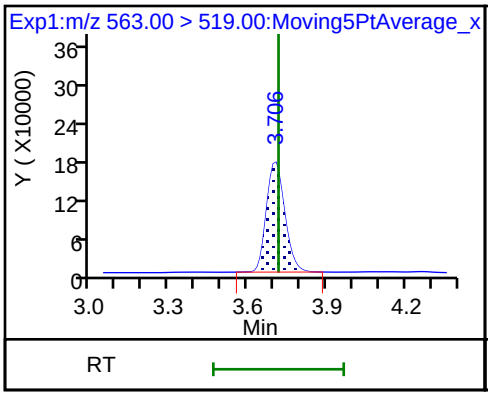
D 32 d5-NEtFOSAA



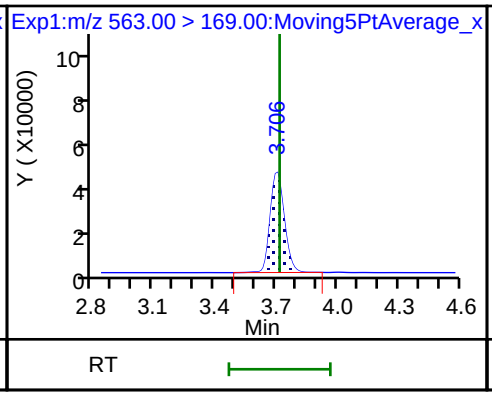
D 30 13C2 PFUnA



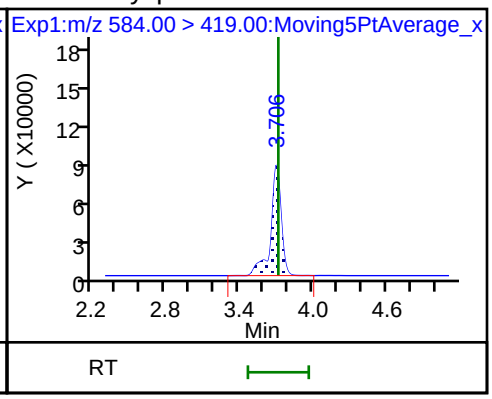
31 Perfluoroundecanoic acid



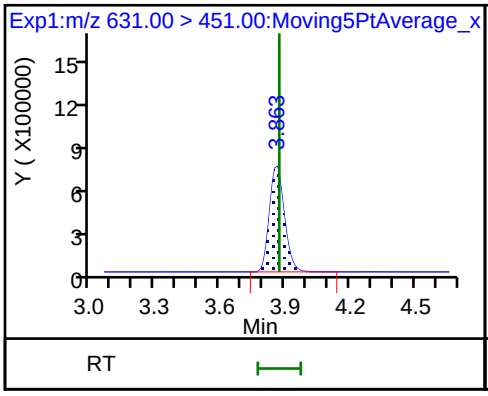
31 Perfluoroundecanoic acid



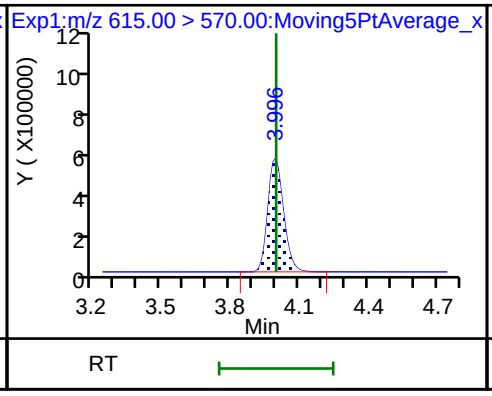
33 N-ethyl perfluorooctane sulfonamid



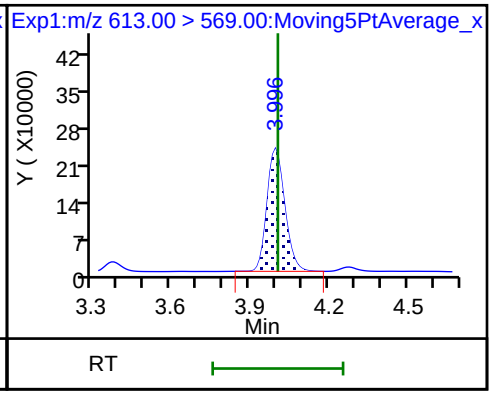
66 11-Chloroeicosafluoro-3-oxaundecan



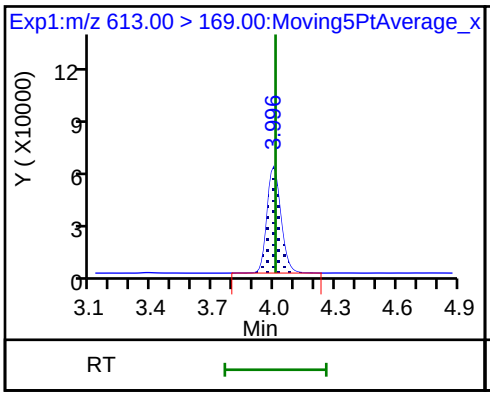
D 36 13C2 PFDoA



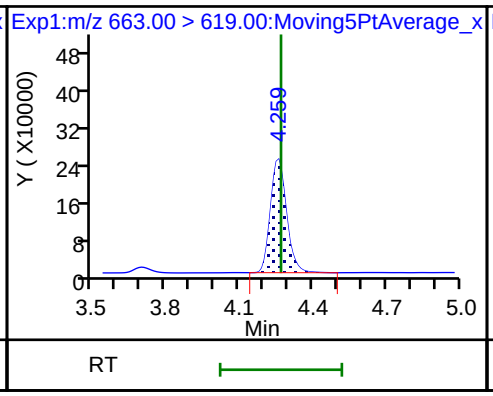
37 Perfluorododecanoic acid



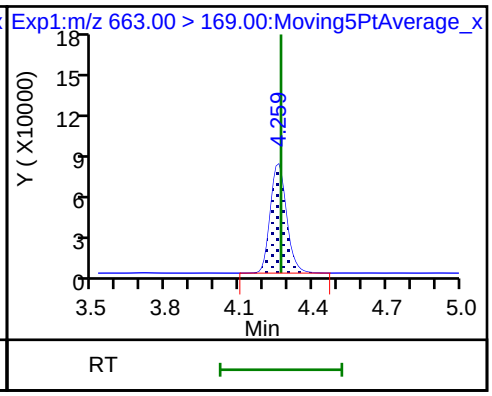
37 Perfluorododecanoic acid



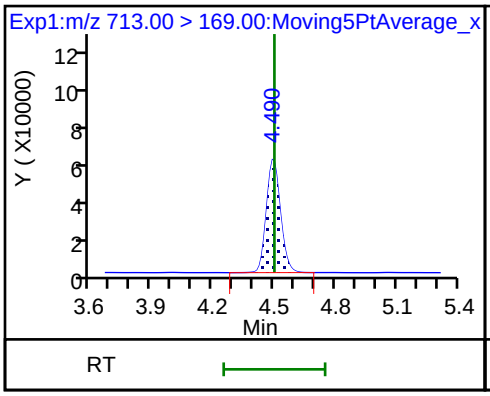
41 Perfluorotridecanoic acid



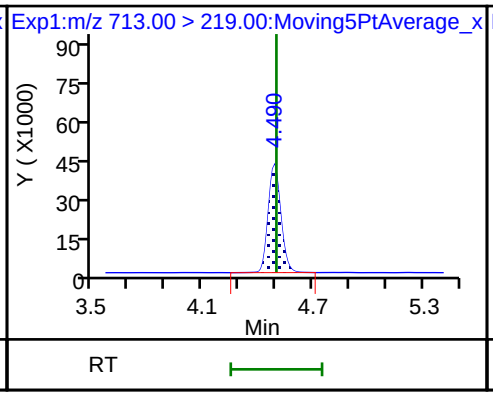
41 Perfluorotridecanoic acid



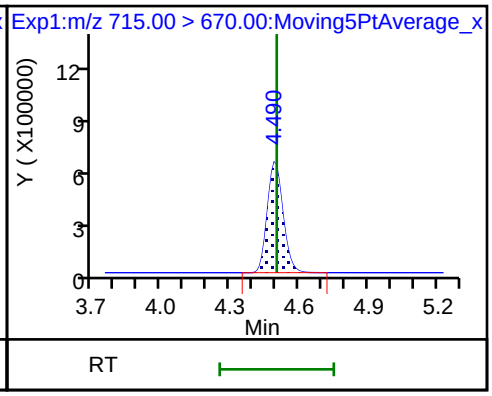
42 Perfluorotetradecanoic acid



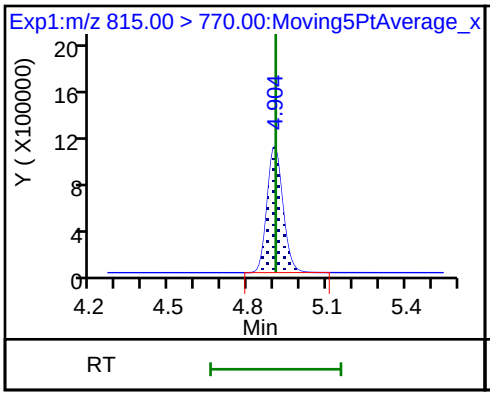
42 Perfluorotetradecanoic acid



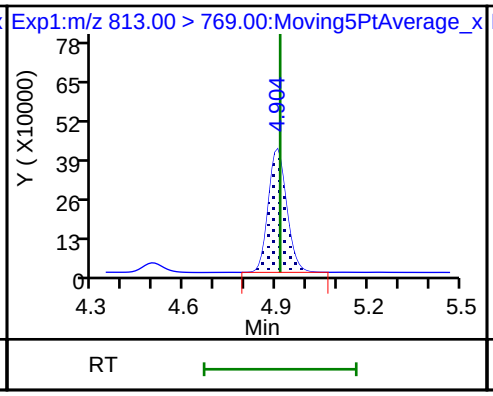
D 43 13C2-PFTeDA



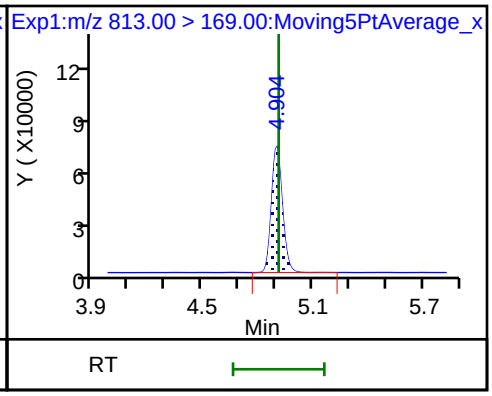
D 44 13C2-PFHxDA



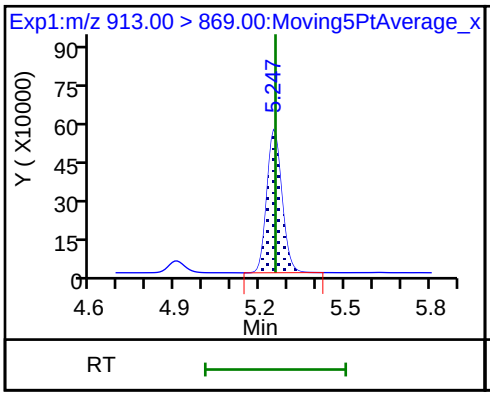
45 Perfluorohexadecanoic acid



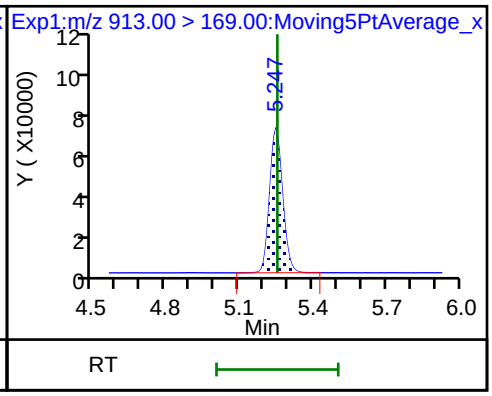
45 Perfluorohexadecanoic acid



46 Perfluorooctadecanoic acid



46 Perfluorooctadecanoic acid



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

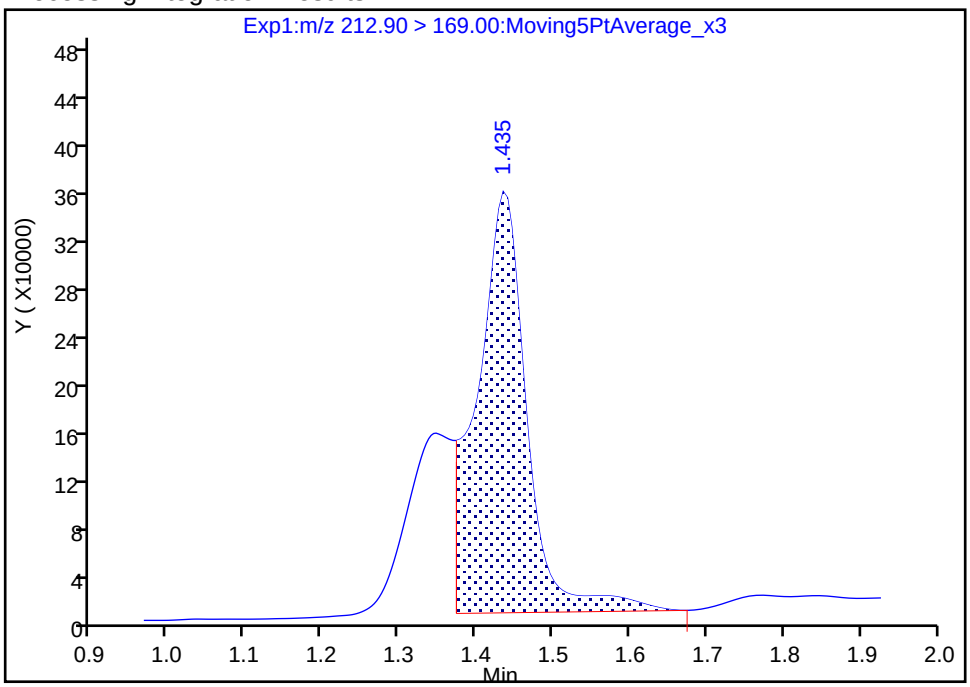
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\2018.07.13LLB_070.d				
Injection Date:	14-Jul-2018 05:54:24	Instrument ID:	A8_N		
Lims ID:	320-40571-A-36-C MSD				
Client ID:	NF33-SS-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	54	Worklist Smp#:	19
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

2 Perfluorobutyric acid, CAS: 375-22-4

Signal: 1

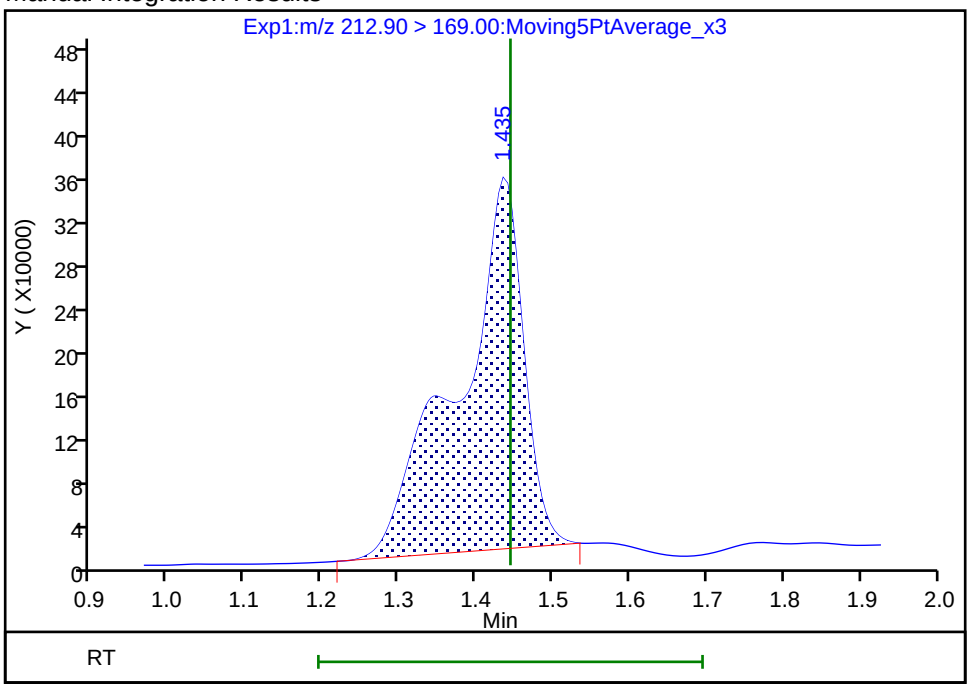
Processing Integration Results

RT: 1.44
Area: 1555475
Amount: 0.789401
Amount Units: ng/ml



Manual Integration Results

RT: 1.44
Area: 2001504
Amount: 1.015760
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 14:28:22

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

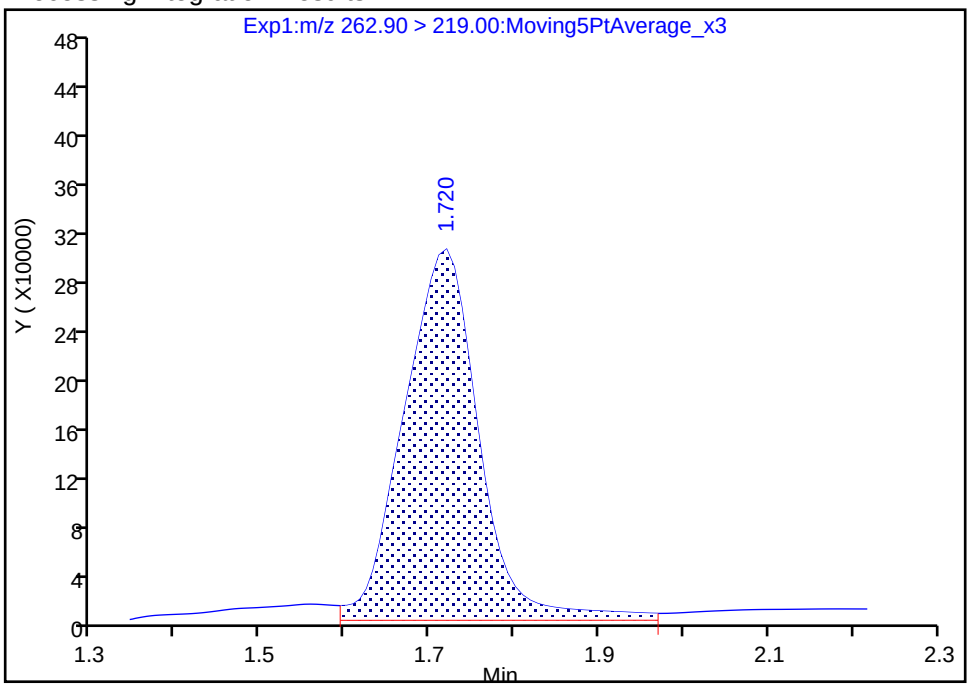
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\2018.07.13LLB_070.d				
Injection Date:	14-Jul-2018 05:54:24	Instrument ID:	A8_N		
Lims ID:	320-40571-A-36-C MSD				
Client ID:	NF33-SS-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	54	Worklist Smp#:	19
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

4 Perfluoropentanoic acid, CAS: 2706-90-3

Signal: 1

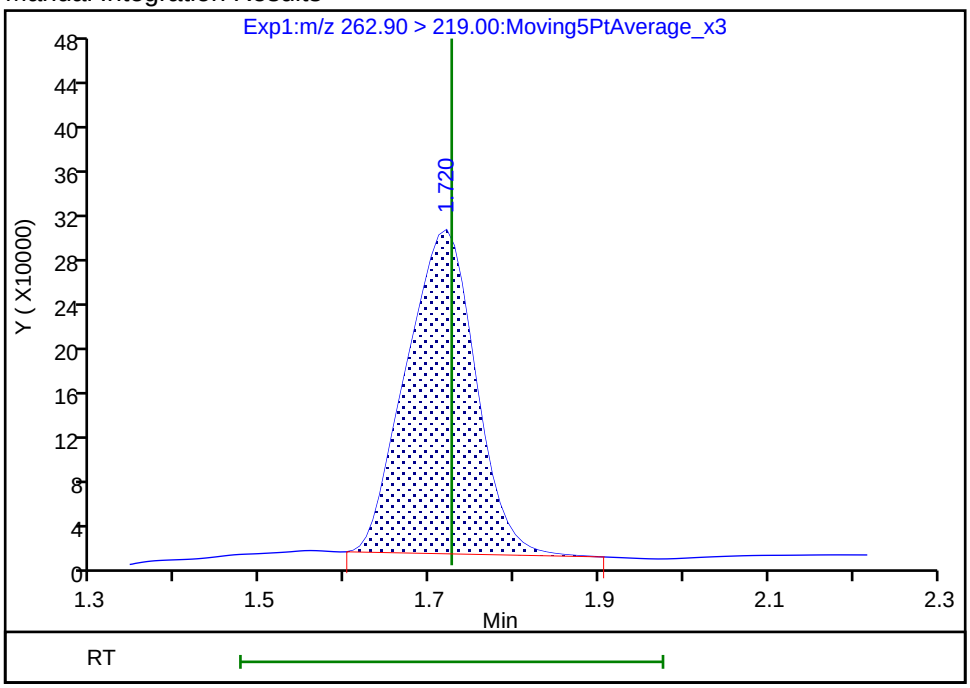
Processing Integration Results

RT: 1.72
Area: 1871604
Amount: 1.045753
Amount Units: ng/ml



Manual Integration Results

RT: 1.72
Area: 1663432
Amount: 0.929437
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 14:28:30

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

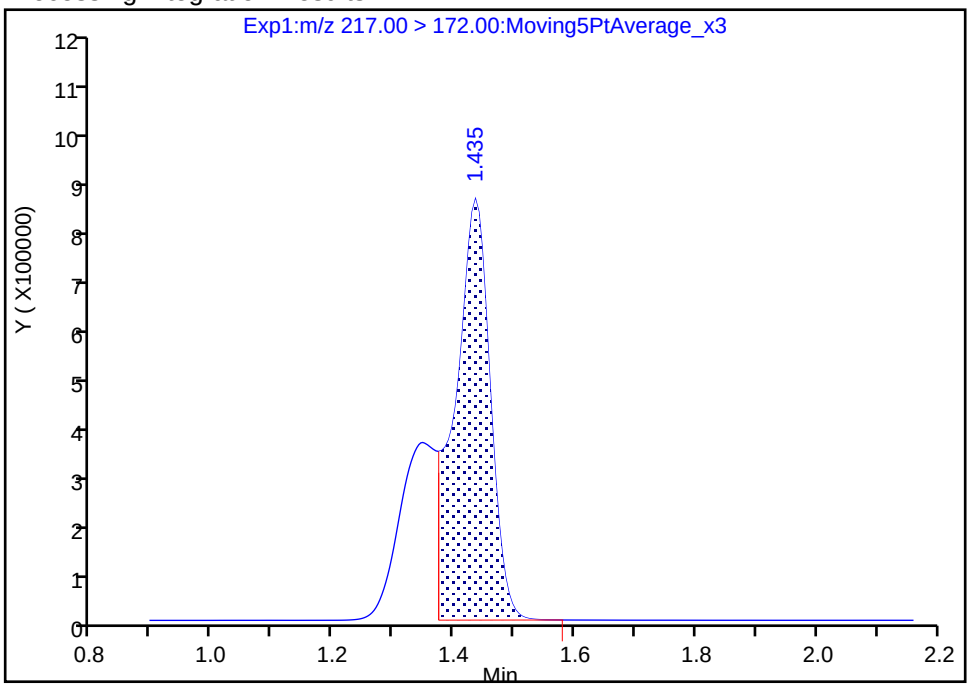
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180713-61060.b\2018.07.13LLB_070.d				
Injection Date:	14-Jul-2018 05:54:24	Instrument ID:	A8_N		
Lims ID:	320-40571-A-36-C MSD				
Client ID:	NF33-SS-01				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	54	Worklist Smp#:	19
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

D 1 13C4 PFBA, CAS: STL00992

Signal: 1

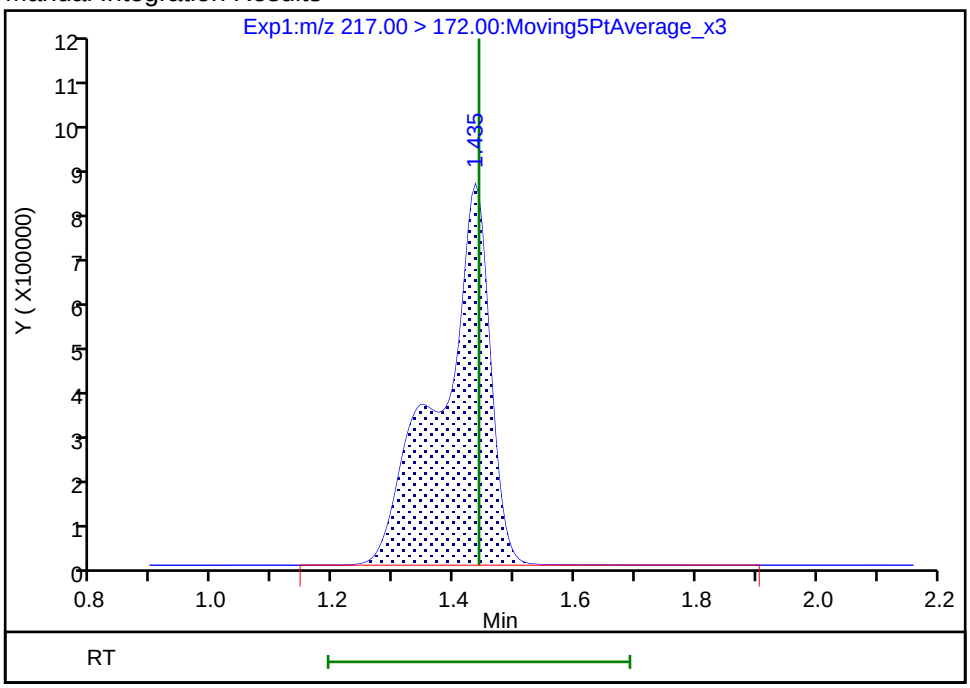
Processing Integration Results

RT: 1.44
Area: 3438745
Amount: 1.381694
Amount Units: ng/ml



Manual Integration Results

RT: 1.44
Area: 4998214
Amount: 2.008291
Amount Units: ng/ml



Reviewer: mongkols, 16-Jul-2018 14:28:08

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF36-SS-02 MSD
Lab Sample ID: 320-40571-42 MSD
Matrix: Solid
Lab File ID: 2018.07.14LLA_034.d
Analysis Method: 537 (modified)
Date Collected: 06/20/2018 16:50
Extraction Method: SHAKE
Date Extracted: 06/28/2018 06:06
Sample wt/vol: 5.05(g)
Date Analyzed: 07/14/2018 15:03
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture: 16.5
GPC Cleanup:(Y/N) N
Analysis Batch No.: 234231
Units: mg/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	0.00229		0.00024	0.000033
2706-90-3	Perfluoropentanoic acid (PFPeA)	0.00223		0.00024	0.000091
307-24-4	Perfluorohexanoic acid (PFHxA)	0.00228		0.00024	0.000050
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.00209		0.00024	0.000034
335-67-1	Perfluorooctanoic acid (PFOA)	0.00216		0.00024	0.00010
375-95-1	Perfluorononanoic acid (PFNA)	0.00226		0.00024	0.000043
335-76-2	Perfluorodecanoic acid (PFDA)	0.00231		0.00024	0.000026
2058-94-8	Perfluoroundecanoic acid (PFUnA)	0.00208		0.00024	0.000043
307-55-1	Perfluorododecanoic acid (PFDoA)	0.00225		0.00024	0.000079
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	0.00237		0.00024	0.000060
376-06-7	Perfluorotetradecanoic acid (PFTeA)	0.00229		0.00024	0.000064
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.00198		0.00024	0.000030
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.00191		0.00024	0.000037
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	0.00222		0.00024	0.000041
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.00215		0.00059	0.00024
335-77-3	Perfluorodecanesulfonic acid (PFDS)	0.00220		0.00024	0.000046
754-91-6	Perfluorooctane Sulfonamide (FOSA)	0.00237		0.00024	0.000097
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	0.00232	J	0.0024	0.00046
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	0.00216	J	0.0024	0.00044
27619-97-2	6:2 FTS	0.00222	J	0.0024	0.00018
39108-34-4	8:2 FTS	0.00216	J	0.0024	0.00030

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 320-40571-1
SDG No.:
Client Sample ID: NF36-SS-02 MSD
Lab Sample ID: 320-40571-42 MSD
Matrix: Solid
Lab File ID: 2018.07.14LLA_034.d
Analysis Method: 537 (modified)
Date Collected: 06/20/2018 16:50
Extraction Method: SHAKE
Date Extracted: 06/28/2018 06:06
Sample wt/vol: 5.05(g)
Date Analyzed: 07/14/2018 15:03
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture: 16.5
GPC Cleanup:(Y/N) N
Analysis Batch No.: 234231
Units: mg/Kg

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00992	13C4 PFBA	79		25-150
STL01893	13C5 PFPeA	84		25-150
STL00993	13C2 PFHxA	87		25-150
STL01892	13C4-PFHpA	91		25-150
STL00990	13C4 PFOA	86		25-150
STL00995	13C5 PFNA	79		25-150
STL00996	13C2 PFDA	84		25-150
STL00997	13C2 PFUnA	86		25-150
STL00998	13C2 PFDoA	84		25-150
STL02116	13C2-PFTeDA	85		25-150
STL02337	13C3-PFBS	80		25-150
STL00994	18O2 PFHxS	82		25-150
STL00991	13C4 PFOS	76		25-150
STL01056	13C8 FOSA	70		25-150
STL02118	d3-NMeFOSAA	75		25-150
STL02117	d5-NEtFOSAA	80		25-150
STL02279	M2-6:2FTS	66		25-150
STL02280	M2-8:2FTS	63		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180716-61105.b\2018.07.14LLA_034.d
Lims ID: 320-40571-A-42-C MSD
Client ID: NF36-SS-02
Sample Type: MSD
Inject. Date: 14-Jul-2018 15:03:55 ALS Bottle#: 24 Worklist Smp#: 17
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-40571-a-42-c msd
Misc. Info.: Plate: 1 Rack: 5
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180716-61105.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 17-Jul-2018 08:32:21 Calib Date: 11-Jul-2018 15:38:42
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK016

First Level Reviewer: mongkols Date: 17-Jul-2018 08:32:21

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										M
217.00 > 172.00	1.441	1.436	0.005	0.540	4695586	1.98		79.1	42608	M
2 Perfluorobutyric acid										M
212.90 > 169.00	1.441	1.441	0.0	1.000	1789156	0.9665		96.7	647	M
4 Perfluoropentanoic acid										
262.90 > 219.00	1.720	1.719	0.001	1.000	1590192	0.9417		94.2	1018	
D 3 13C5-PFPeA										
267.90 > 223.00	1.720	1.720	0.0	0.645	3479957	2.11		84.3	49969	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.765	1.756	0.009	1.005	2125755	0.8344		94.4	11860	
298.90 > 99.00	1.765	1.756	0.009	1.005	891025		2.39(1.25-3.74)		6318	
D 47 13C3-PFBS										
301.90 > 83.00	1.756	1.756	0.0	0.658	77433	1.87		80.3	476	
61 1H,1H,2H,2H-perfluorohexanesulfoni										
327.00 > 307.00	1.970	1.959	0.011	1.122	342194	0.7904		84.6	14897	
D 7 13C2 PFHxA										
315.00 > 270.00	2.003	1.992	0.011	0.751	3860927	2.17		86.7	60237	
6 Perfluorohexanoic acid										
313.00 > 269.00	2.003	2.003	0.001	1.000	1530995	0.9631		96.3	2910	
313.00 > 119.00	2.003	2.003	0.001	1.000	142464		10.75(5.03-15.10)		2691	
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.025	2.025	0.0	1.154	2080883	0.8954		95.5	43943	
349.00 > 99.00	2.025	2.025	0.0	1.154	770778		2.70(1.36-4.07)		16210	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.093	2.082	0.011	0.785	361371	2.85		114	8006	
67 Perfluoro(2-propoxypropanoic) acid										
329.10 > 285.00	2.093	2.093	0.0	1.000	289232	0.7539		75.4	1729	
D 9 13C4-PFHpA										
367.00 > 322.00	2.319	2.306	0.013	0.870	3753615	2.29		91.5	52081	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.319	2.319	0.0	1.000	1529195	0.8806		88.1	2878	
363.00 > 169.00	2.319	2.319	0.0	1.000	601517		2.54(1.13-3.40)		6663	
D 11 18O2 PFHxS										
403.00 > 84.00	2.332	2.319	0.013	0.874	4499393	1.93		81.8	68249	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.332	2.332	0.0	1.000	1757693	0.8048		88.4	11531	
399.00 > 99.00	2.332	2.332	0.0	1.000	564366		3.11(1.50-4.49)		2925	
65 Adona										
377.00 > 251.00	2.358	2.358	0.0	0.778	4521562	1.09		109	38842	
377.00 > 85.00	2.358	2.358	0.0	0.778	2591471		1.74(0.84-2.53)		19354	
D 12 M2-6:2FTS										
429.00 > 81.00	2.644	2.628	0.016	0.991	550039	1.56		65.8	10942	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.644	2.644	0.0	1.000	339307	0.9365		98.8	2777	
D 14 13C4 PFOA										
417.00 > 372.00	2.667	2.652	0.015	1.000	3591318	2.14		85.8	54225	
* 62 13C2-PFOA										
415.00 > 370.00	2.667	2.667	0.0		4379904	2.50			58811	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.667	2.667	0.0	1.000	1614921	0.9128		91.2	1018	
413.00 > 169.00	2.667	2.667	0.0	1.000	798394		2.02(0.84-2.52)		5111	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.675	2.674	0.001	0.883	1593931	0.9382		98.5	26037	
449.00 > 99.00	2.675	2.674	0.001	0.883	430968		3.70(1.94-5.82)		7019	
D 19 13C5 PFNA										
468.00 > 423.00	3.030	3.018	0.012	1.136	2943559	1.97		78.6	70174	
D 18 13C4 PFOS										
503.00 > 80.00	3.030	3.018	0.012	1.136	3081975	1.81		75.6	35814	
20 Perfluorononanoic acid										
463.00 > 419.00	3.030	3.029	0.001	1.000	1244497	0.9528		95.3	2566	
463.00 > 169.00	3.030	3.029	0.001	1.000	292566		4.25(1.90-5.69)		12697	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.030	3.029	0.001	1.000	1327936	0.9088		97.9	13756	
499.00 > 99.00	3.030	3.029	0.001	1.000	307589		4.32(2.31-6.93)		6409	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.238	3.238	0.0	1.069	2116722	0.8942		95.9	17670	
D 26 M2-8:2FTS										
529.00 > 81.00	3.377	3.361	0.016	1.266	776761	1.51		63.0	12675	
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.377	3.368	0.009	1.115	903189	0.9035		94.1	22906	
549.00 > 99.00	3.368	3.368	0.0	1.112	354469		2.55(1.33-3.97)		8146	
25 1H,1H,2H,2H-perfluorodecanesulfoni										
527.00 > 507.00	3.377	3.368	0.009	1.000	380864	0.9104		95.0	7182	
D 23 13C2 PFDA										
515.00 > 470.00	3.387	3.370	0.017	1.270	2776383	2.11		84.5	35162	
D 21 13C8 FOSA										
506.00 > 78.00	3.377	3.370	0.007	1.266	4301404	1.75		69.9	45833	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
24 Perfluorodecanoic acid										
513.00 > 469.00	3.387	3.377	0.010	1.000	1137778	0.9763		97.6	7426	
513.00 > 169.00	3.387	3.377	0.010	1.000	207477		5.48(2.36-7.09)		5205	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.377	3.377	0.0	1.000	1693476	1.00		99.9	31441	
35 MeFOSA										
512.00 > 169.00	3.545	3.498	0.047		3981	NC			154	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.536	3.520	0.016	1.326	1006621	1.87		74.7	31565	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.545	3.536	0.009	1.003	388350	0.9783		97.8	3543	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.706	3.687	0.019	1.390	1103628	2.00		80.0	2897	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.696	3.695	0.001	1.220	804863	0.9296		96.4	21216	
599.00 > 99.00	3.696	3.695	0.001	1.220	278212		2.89(1.39-4.16)		6551	
D 30 13C2 PFUnA										
565.00 > 520.00	3.706	3.698	0.008	1.390	2359081	2.15		86.0	61344	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.706	3.706	0.0	1.000	677694	0.8764		87.6	3440	
563.00 > 169.00	3.706	3.706	0.0	1.000	186000		3.64(2.12-6.36)		9757	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.706	3.706	0.0	1.000	355202	0.9102		91.0	5523	
66 11-Chloroeicosafluoro-3-oxaundecan										
631.00 > 451.00	3.864	3.863	0.001	1.275	3361755	0.9825		104	59195	
D 36 13C2 PFDoA										
615.00 > 570.00	3.997	3.988	0.009	1.498	2378699	2.09		83.6	26661	
37 Perfluorododecanoic acid										
613.00 > 569.00	3.997	3.996	0.001	1.000	985019	0.9481		94.8	562	
613.00 > 169.00	3.997	3.996	0.001	1.000	228064		4.32(2.13-6.40)		3727	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.260	4.260	0.0	1.066	1013901	1.00		99.8	537	
663.00 > 169.00	4.260	4.260	0.0	1.066	310582		3.26(1.25-3.76)		6234	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.490	4.480	0.010	1.684	2523472	2.14		85.5	17072	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.490	4.501	-0.010	1.000	253872	0.9667		96.7	3819	
713.00 > 219.00	4.490	4.501	-0.010	1.000	176943		1.43(0.71-2.13)		4146	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.904	4.887	0.017	1.839	4208264	2.24		89.5	12040	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.904	4.904	0.0	1.000	1587210	0.9708		97.1	401	
813.00 > 169.00	4.904	4.904	0.0	1.000	258073		6.15(2.86-8.58)		2307	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.247	5.247	0.0	1.070	1833509	0.9530		95.3	399	
913.00 > 169.00	5.247	5.247	0.0	1.070	219777		8.34(3.83-11.48)		2370	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Review Flags

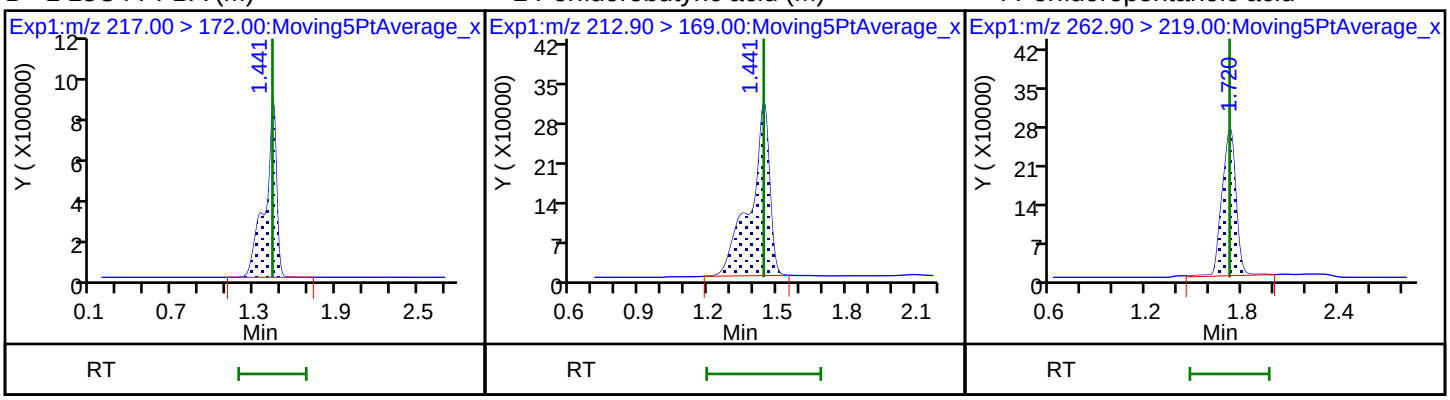
M - Manually Integrated

Report Date: 17-Jul-2018 08:32:22 Chrom Revision: 2.2 07-Jun-2018 07:41:54

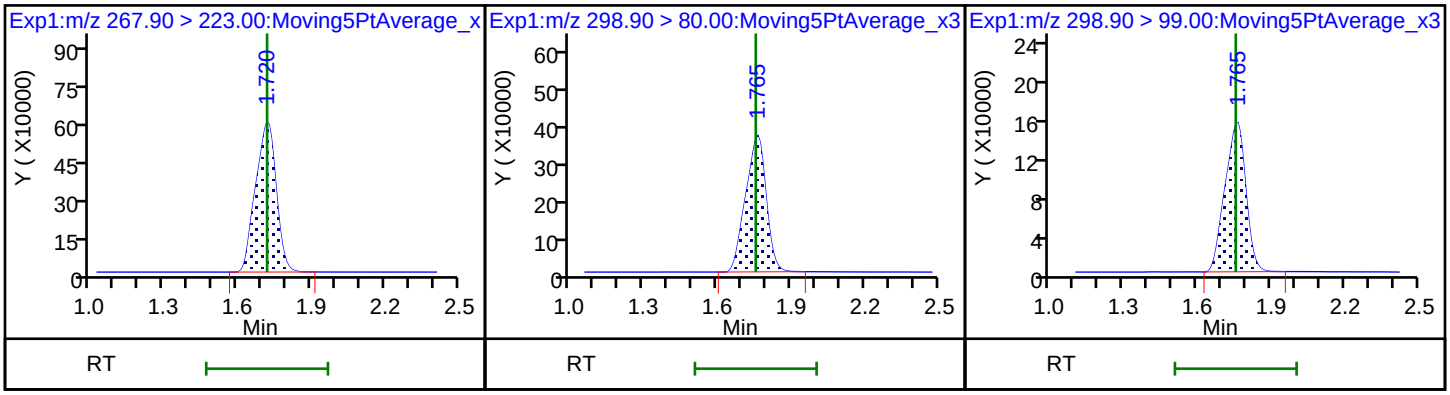
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180716-61105.b\2018.07.14LLA_034.d
Injection Date: 14-Jul-2018 15:03:55 Instrument ID: A8_N
Lims ID: 320-40571-A-42-C MSD
Client ID: NF36-SS-02
Operator ID: SACINSTLCMS01 ALS Bottle#: 24 Worklist Smp#: 17
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC ICAL

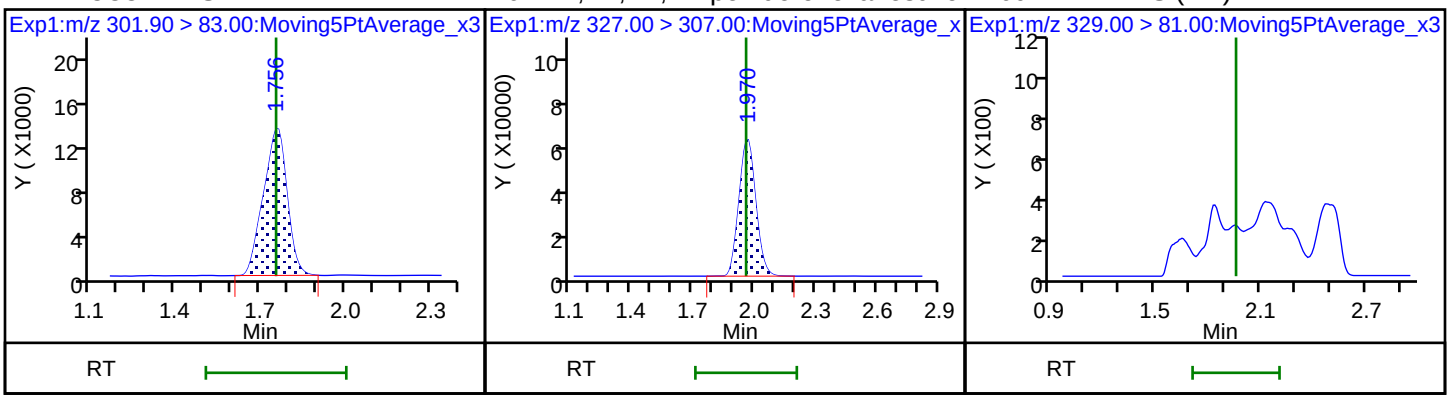
D 1 13C4 PFBA (M) | 2 Perfluorobutyric acid (M) | 4 Perfluoropentanoic acid



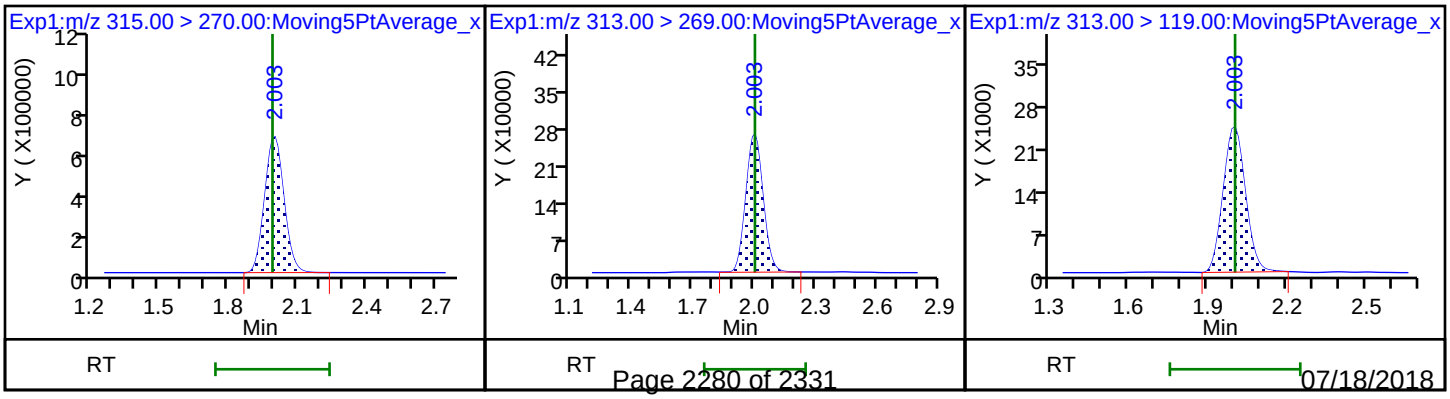
D 3 13C5-PFPeA | 5 Perfluorobutanesulfonic acid | 5 Perfluorobutanesulfonic acid



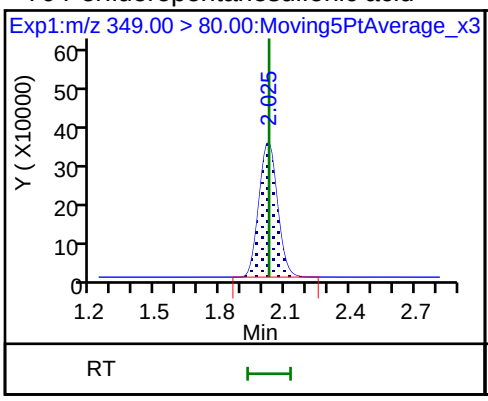
D 47 13C3-PFBS | 61 1H,1H,2H,2H-perfluorohexanesulfon | D 60 M2-4:2FTS (ND)



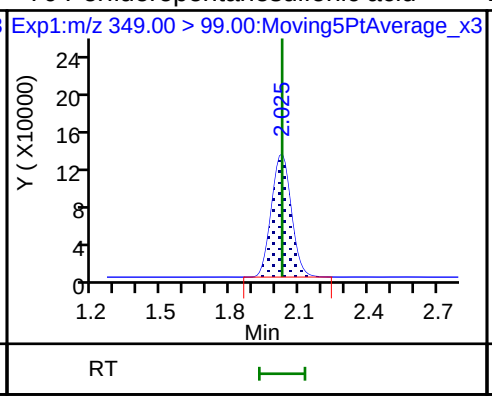
D 7 13C2 PFHxA | 6 Perfluorohexanoic acid | 6 Perfluorohexanoic acid



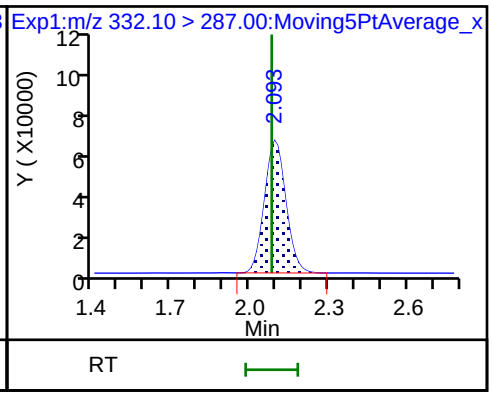
70 Perfluoropentanesulfonic acid



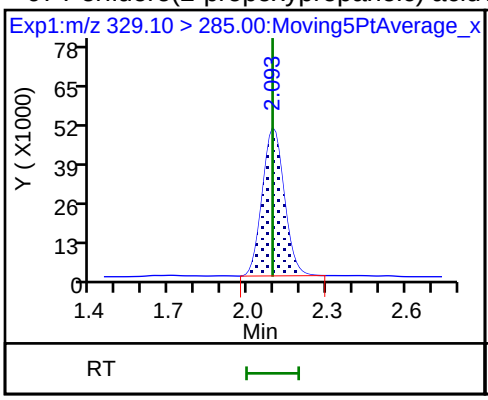
70 Perfluoropentanesulfonic acid



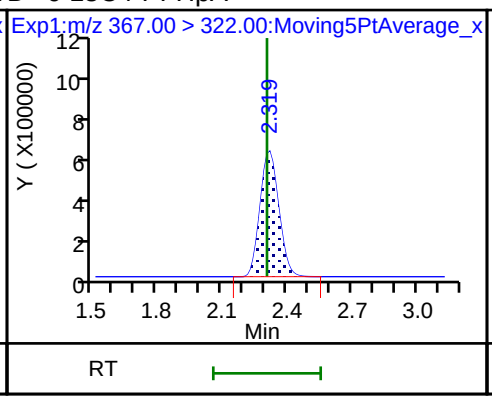
D 64 13C3 HFPO-DA



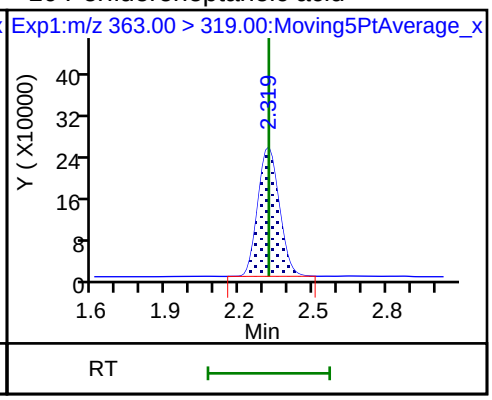
67 Perfluoro(2-propoxypropanoic) acid



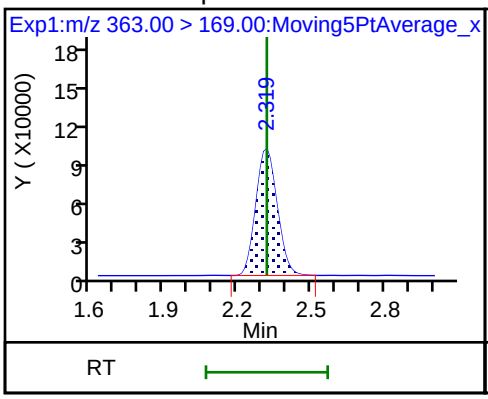
D 9 13C4-PFHpA



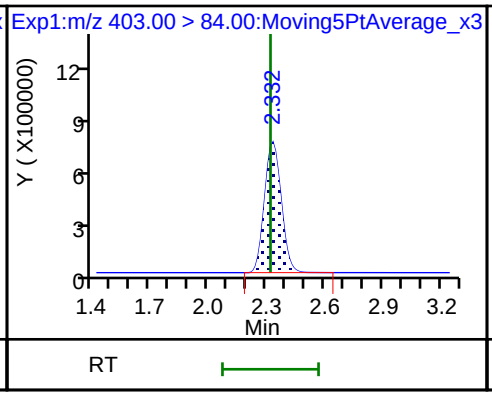
10 Perfluoroheptanoic acid



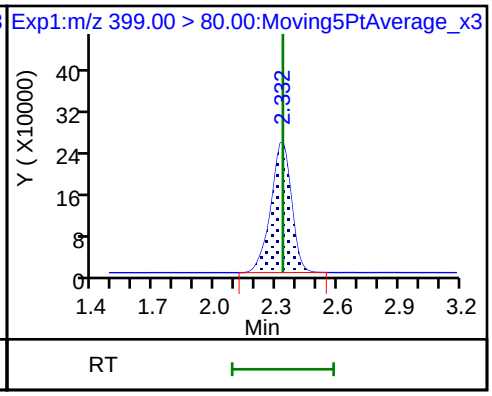
10 Perfluoroheptanoic acid



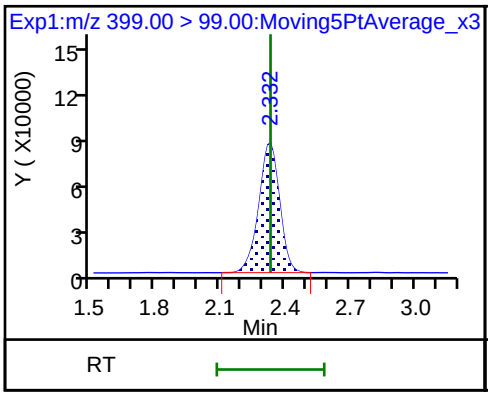
D 11 18O2 PFHxS



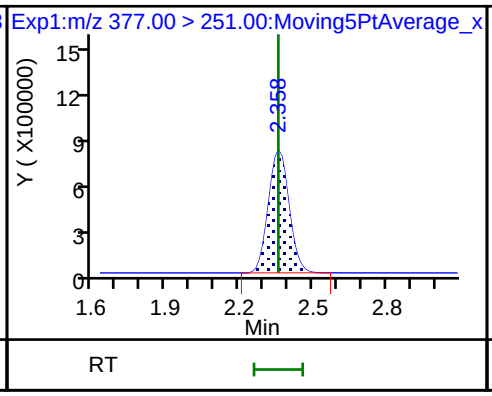
8 Perfluorohexanesulfonic acid



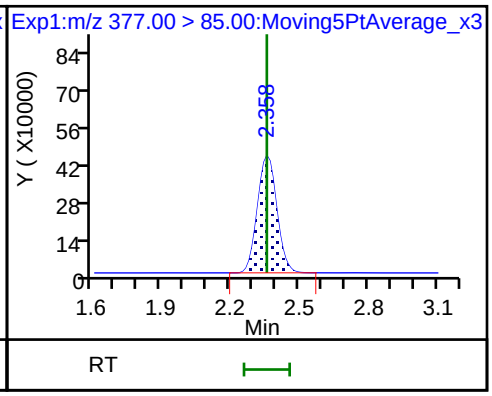
8 Perfluorohexanesulfonic acid



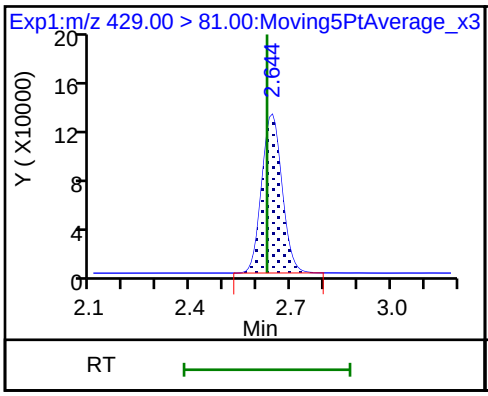
65 Adona



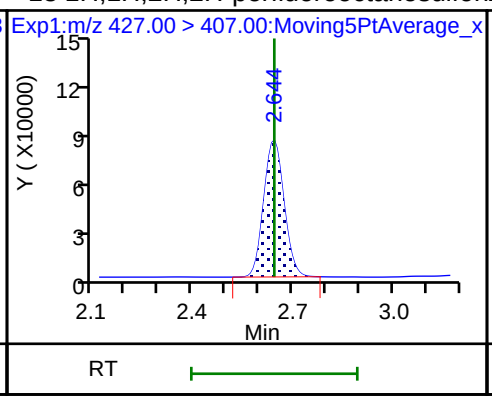
65 Adona



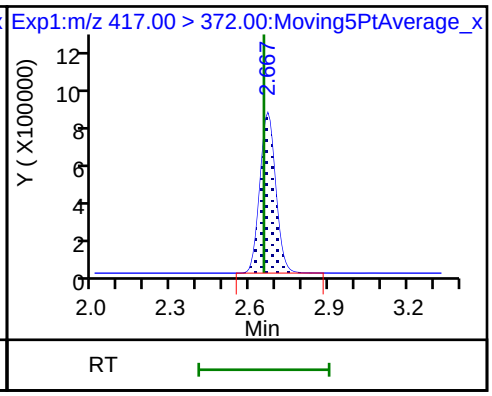
D 12 M2-6:2FTS



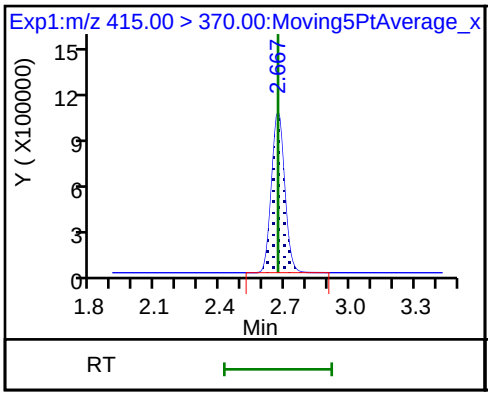
13 1H,1H,2H,2H-perfluorooctanesulfon



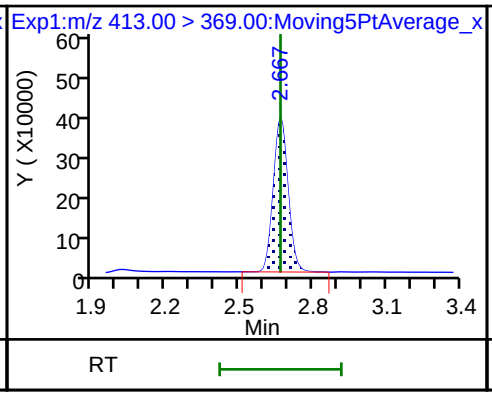
D 14 13C4 PFOA



* 62 13C2-PFOA



15 Perfluorooctanoic acid



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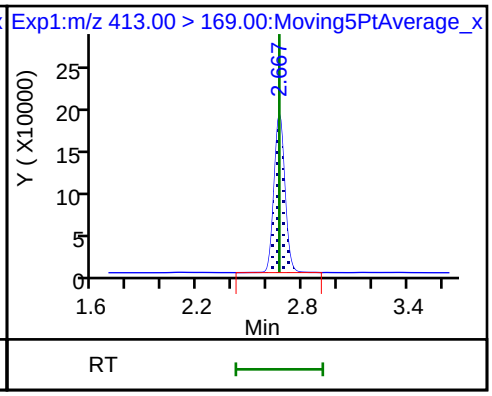
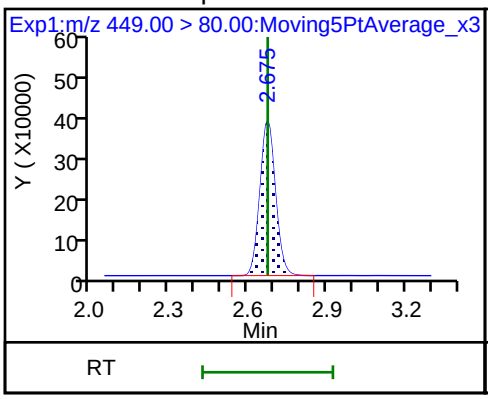
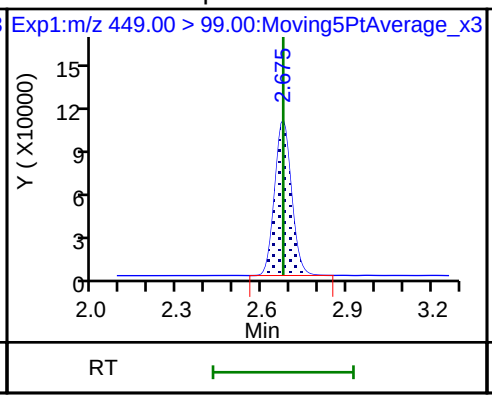


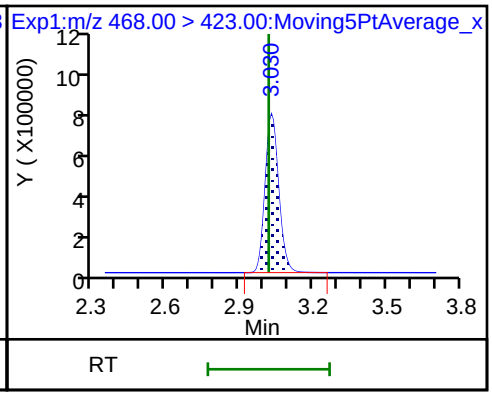
16 Perfluoroheptanesulfonic acid



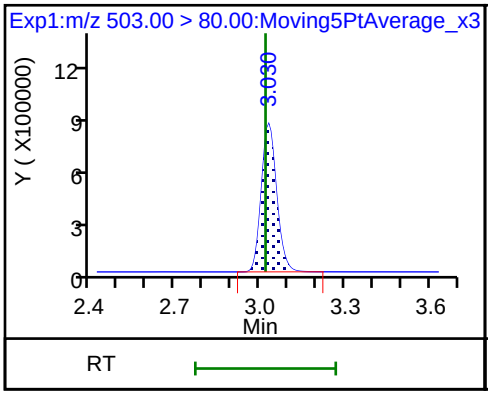
16 Perfluoroheptanesulfonic acid



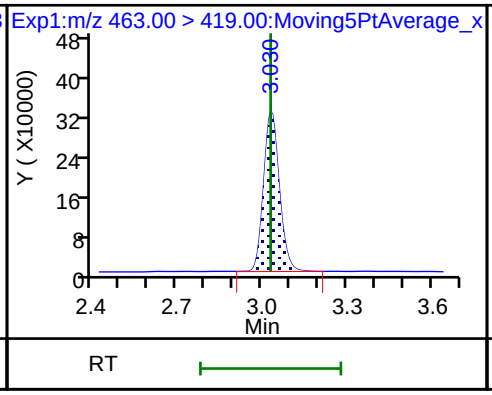
D 19 13C5 PFNA



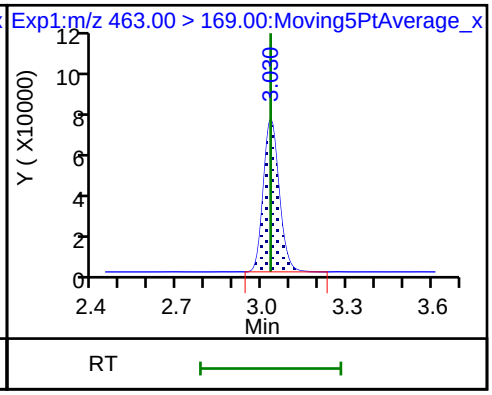
D 18 13C4 PFOS



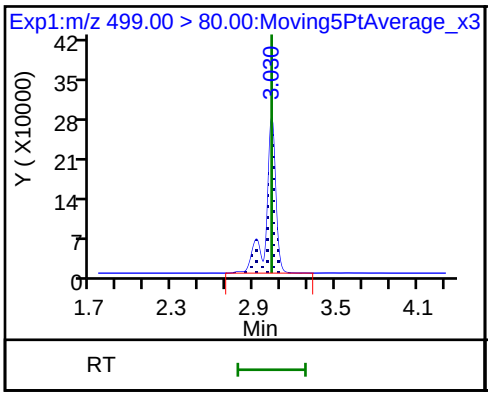
20 Perfluorononanoic acid



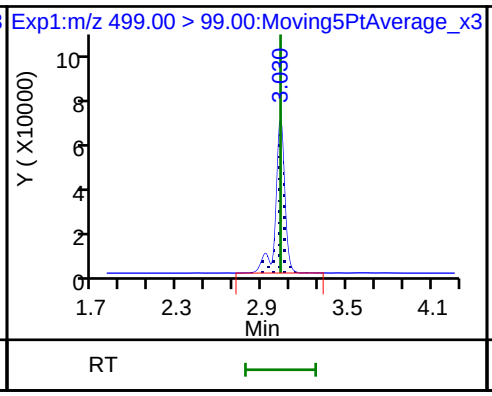
20 Perfluorononanoic acid



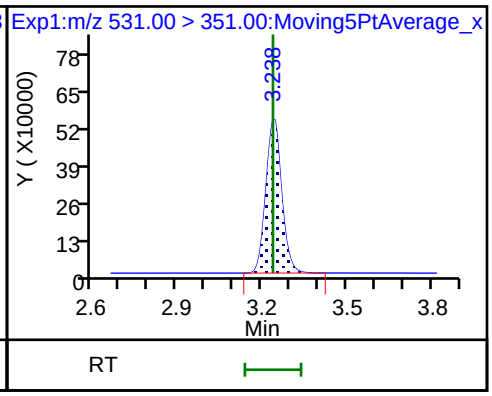
17 Perfluorooctane sulfonic acid



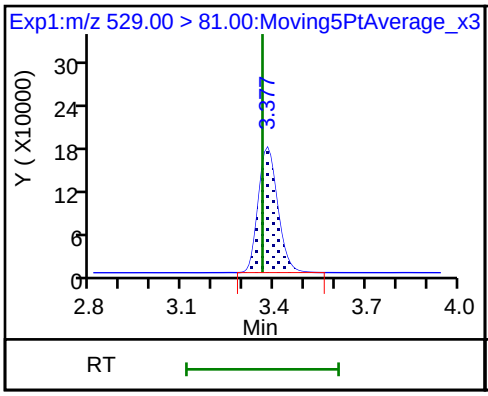
17 Perfluorooctane sulfonic acid



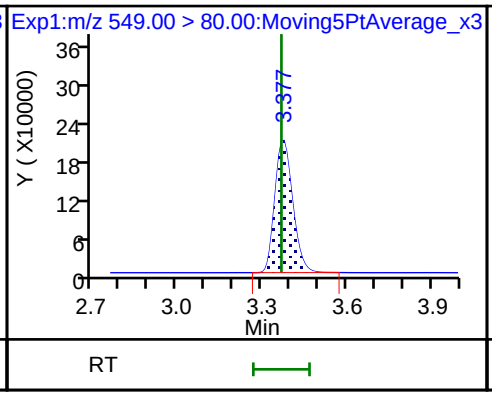
69 9-Chlorohexadecafluoro-3-oxanonane



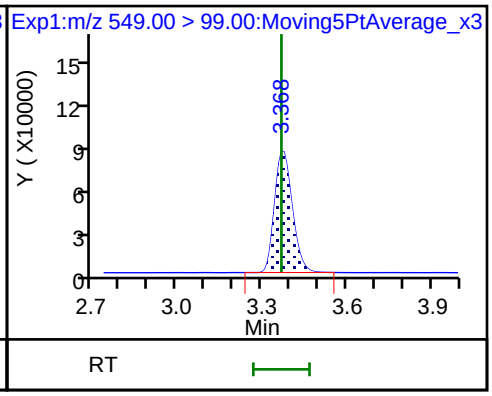
D 26 M2-8:2FTS



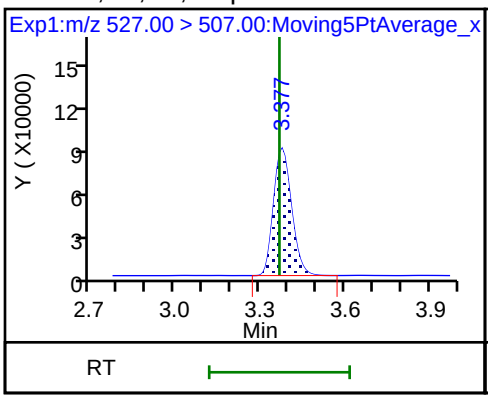
68 Perfluorononanesulfonic acid



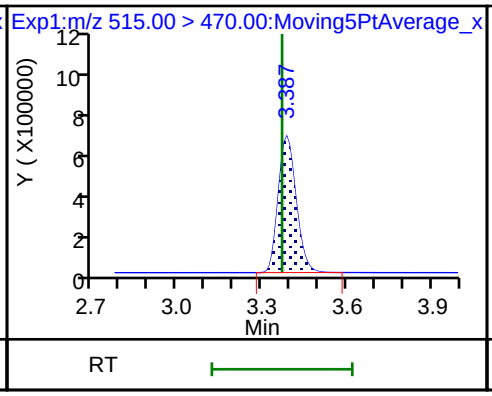
68 Perfluorononanesulfonic acid



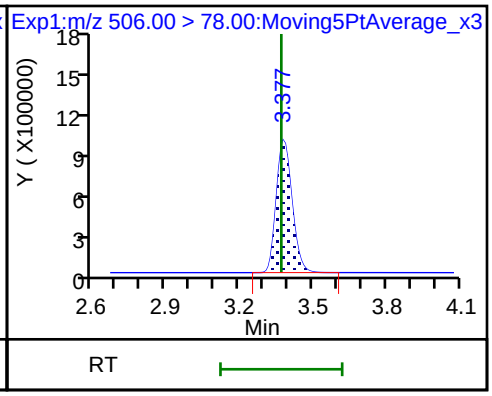
25 1H,1H,2H,2H-perfluorodecanesulfon



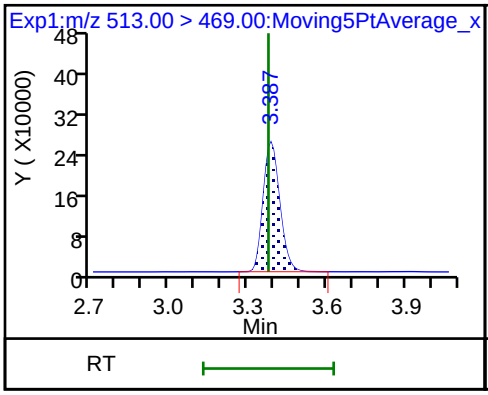
D 23 13C2 PFDA



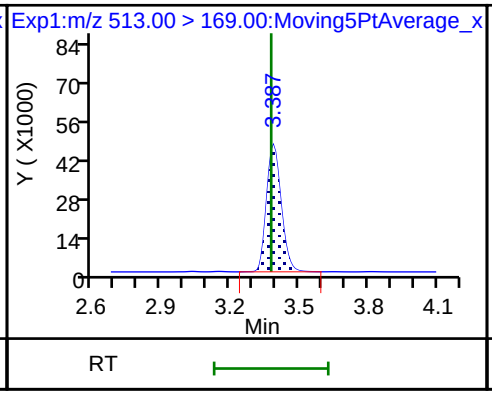
D 21 13C8 FOSA



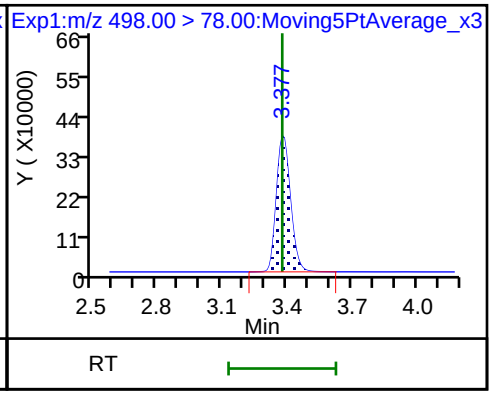
24 Perfluorodecanoic acid



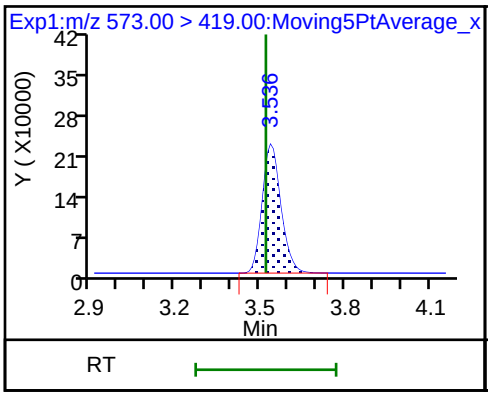
24 Perfluorodecanoic acid



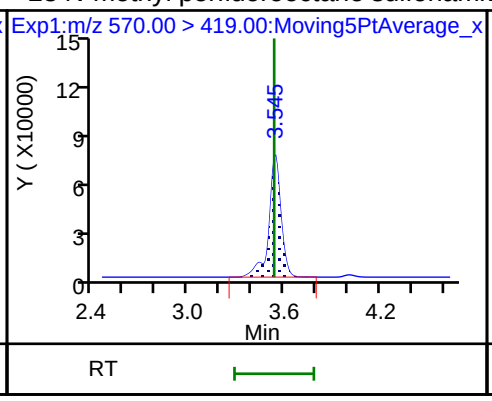
22 Perfluorooctane Sulfonamide



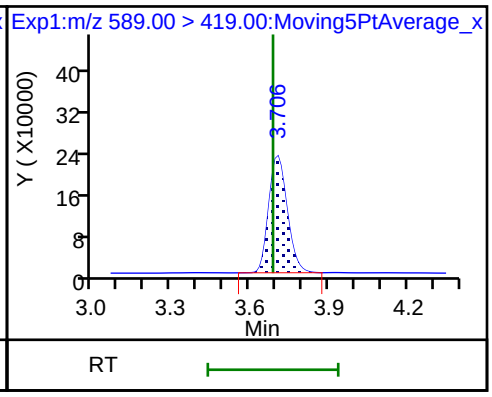
D 27 d3-NMeFOSAA



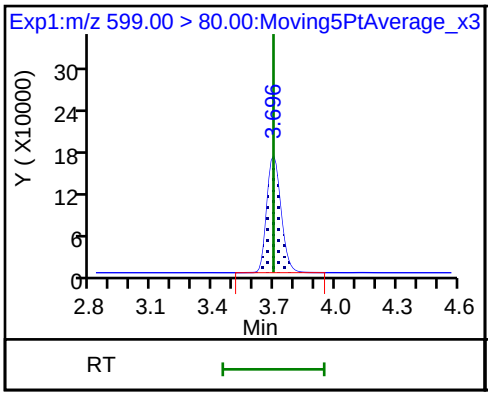
28 N-methyl perfluorooctane sulfonami



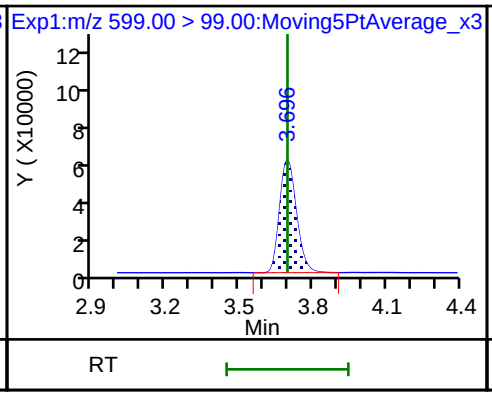
D 32 d5-NEtFOSAA



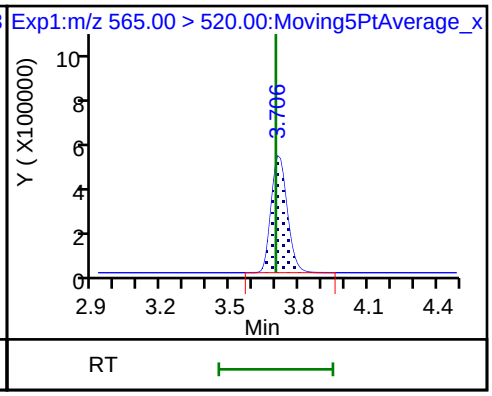
29 Perfluorodecane Sulfonic acid



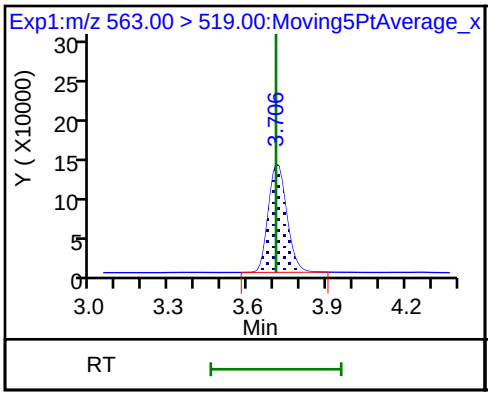
29 Perfluorodecane Sulfonic acid



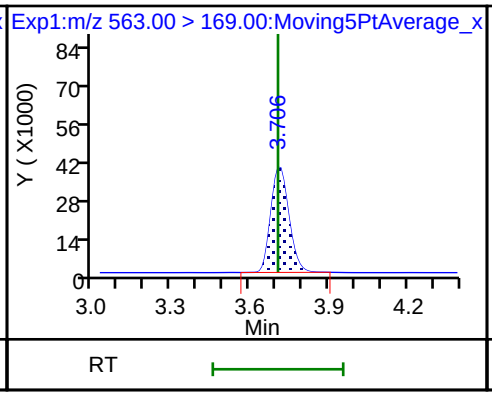
D 30 13C2 PFUnA



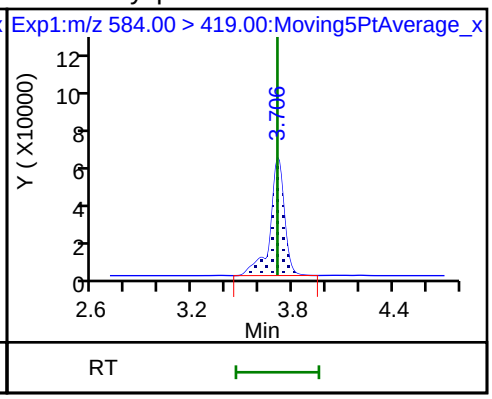
31 Perfluoroundecanoic acid



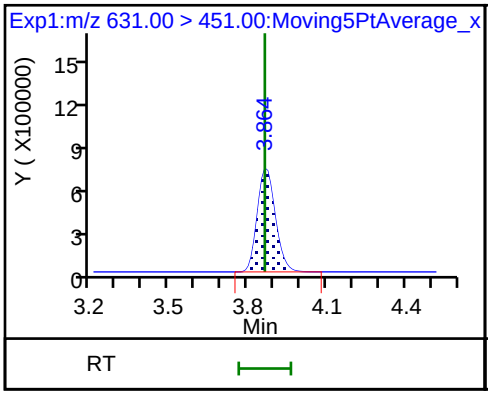
31 Perfluoroundecanoic acid



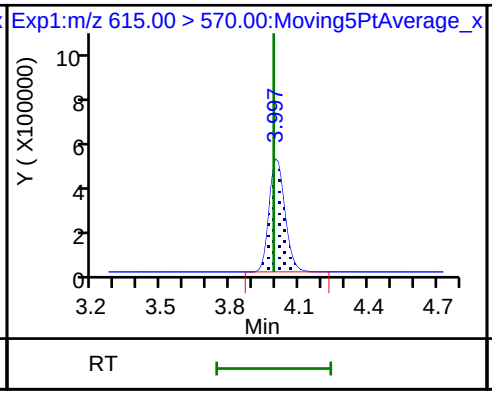
33 N-ethyl perfluorooctane sulfonamid



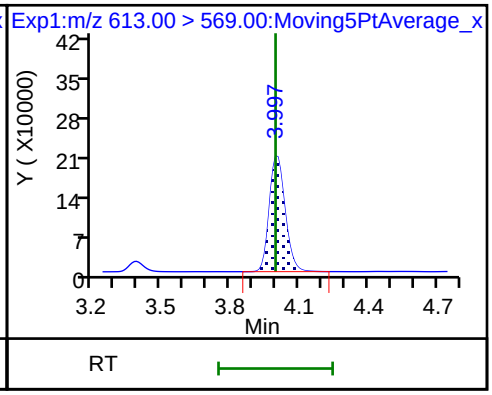
66 11-Chloroeicosafluoro-3-oxaundecan



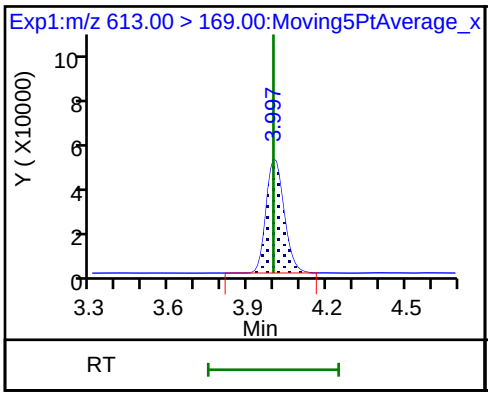
D 36 13C2 PFDoA



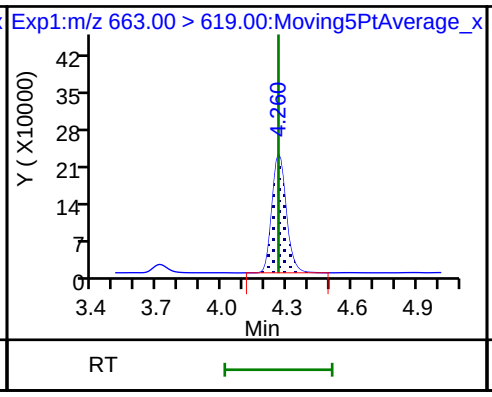
37 Perfluorododecanoic acid



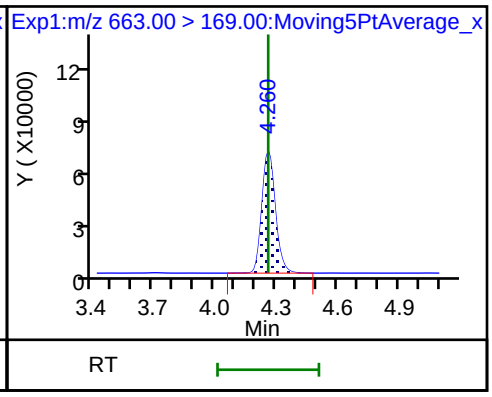
37 Perfluorododecanoic acid



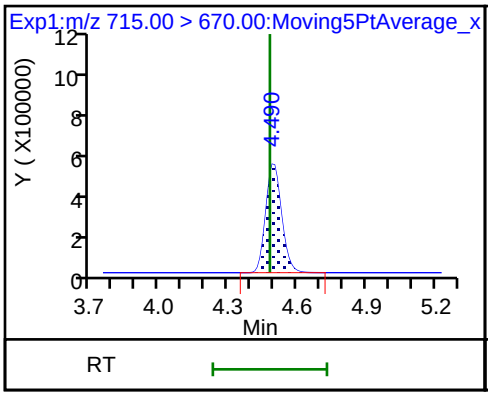
41 Perfluorotridecanoic acid



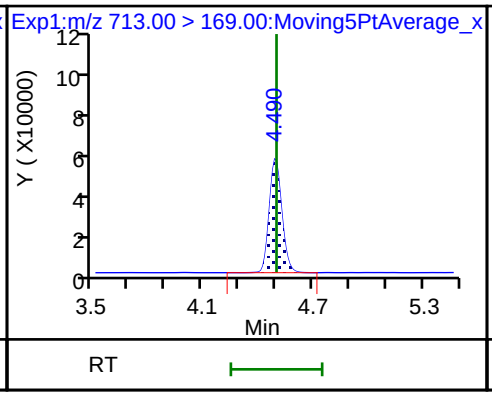
41 Perfluorotridecanoic acid



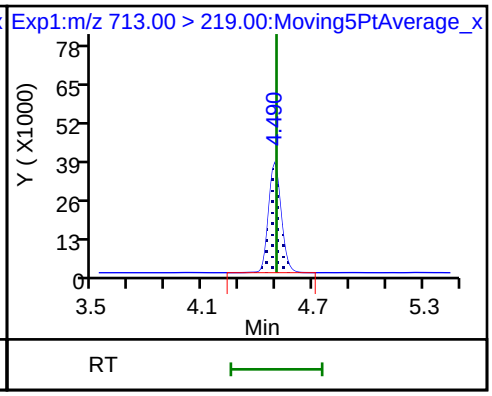
D 43 13C2-PFTeDA



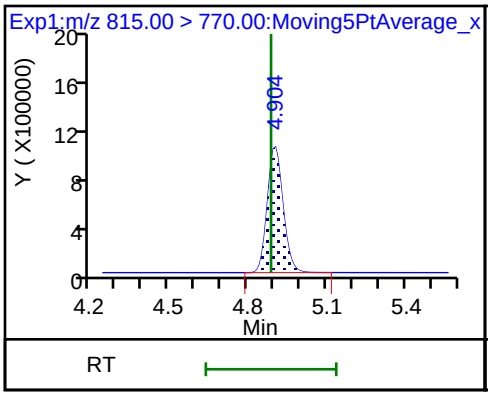
42 Perfluorotetradecanoic acid



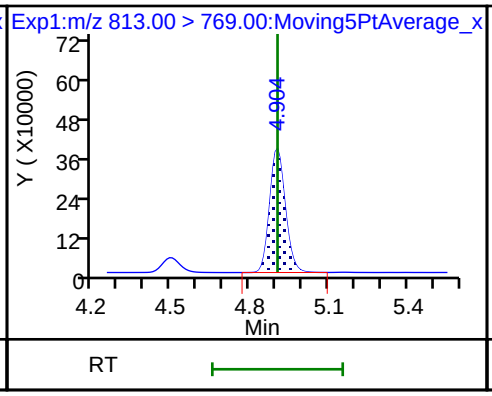
42 Perfluorotetradecanoic acid



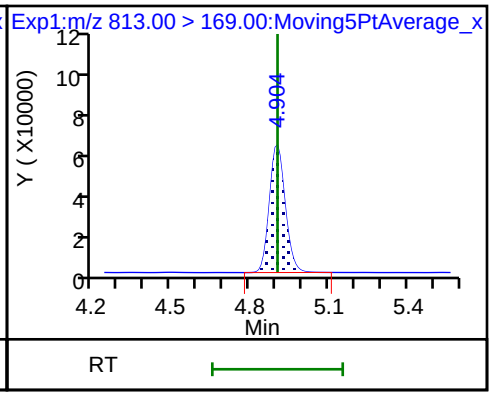
D 44 13C2-PFHxDA



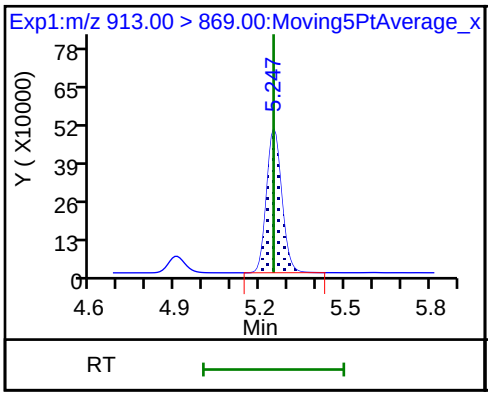
45 Perfluorohexadecanoic acid



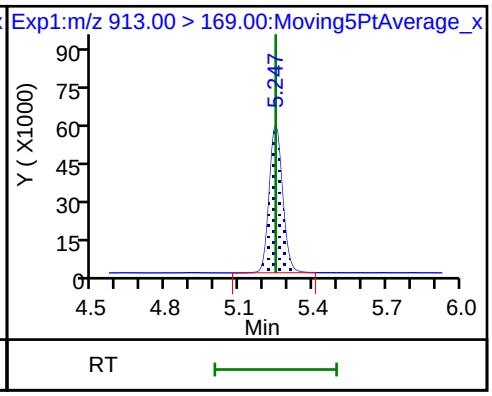
45 Perfluorohexadecanoic acid



46 Perfluorooctadecanoic acid



46 Perfluorooctadecanoic acid



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

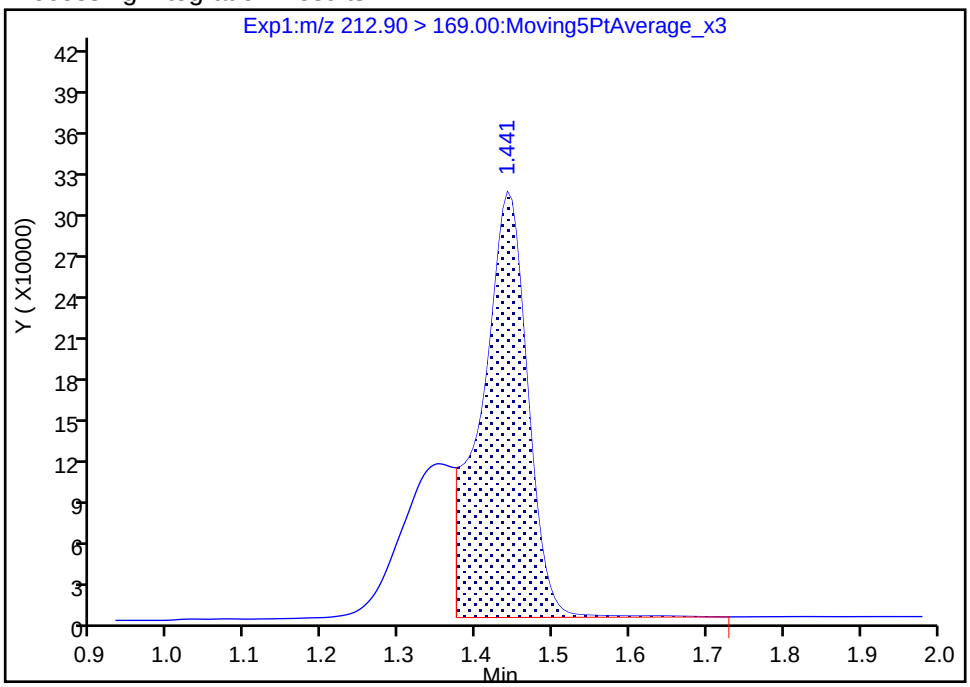
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180716-61105.b\2018.07.14LLA_034.d				
Injection Date:	14-Jul-2018 15:03:55	Instrument ID:	A8_N		
Lims ID:	320-40571-A-42-C MSD				
Client ID:	NF36-SS-02				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	24	Worklist Smp#:	17
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

2 Perfluorobutyric acid, CAS: 375-22-4

Signal: 1

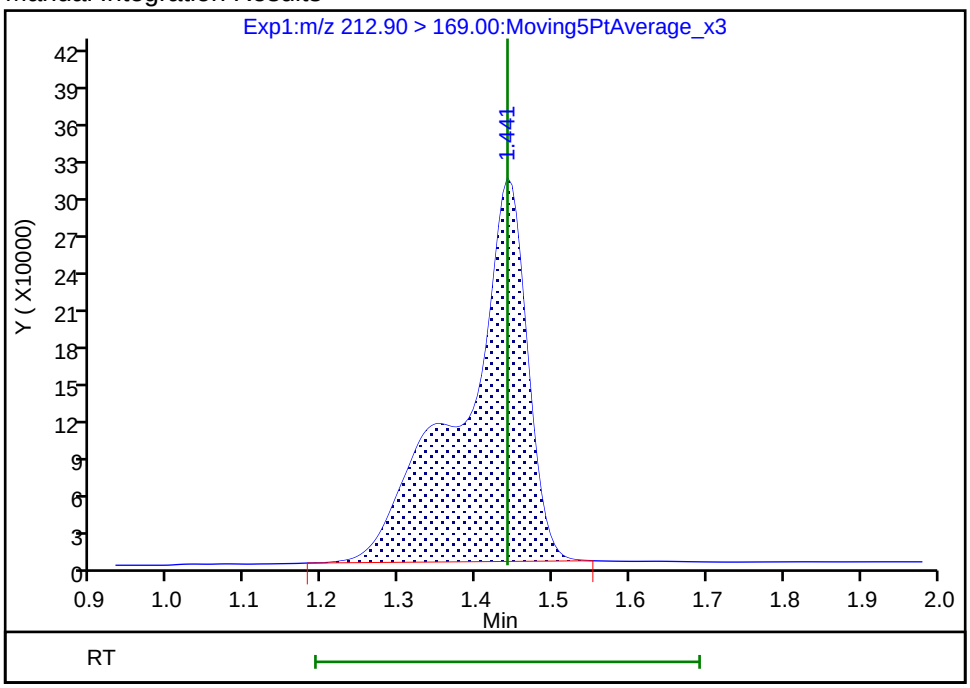
Processing Integration Results

RT: 1.44
Area: 1282684
Amount: 0.692914
Amount Units: ng/ml



Manual Integration Results

RT: 1.44
Area: 1789156
Amount: 0.966514
Amount Units: ng/ml



Reviewer: mongkols, 17-Jul-2018 08:32:10

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

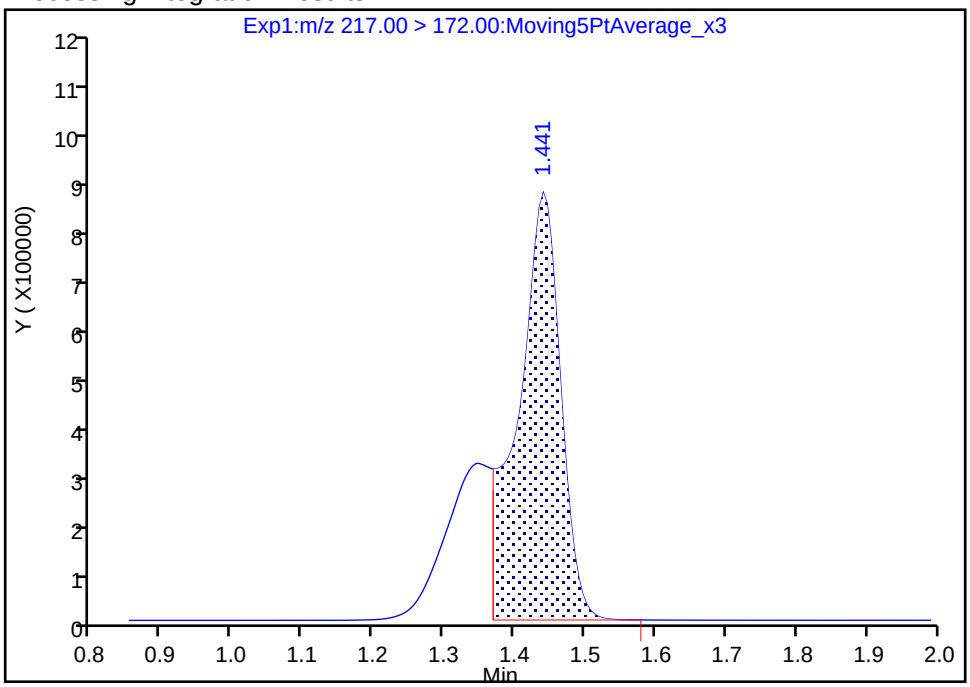
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180716-61105.b\2018.07.14LLA_034.d				
Injection Date:	14-Jul-2018 15:03:55	Instrument ID:	A8_N		
Lims ID:	320-40571-A-42-C MSD				
Client ID:	NF36-SS-02				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	24	Worklist Smp#:	17
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC ICAL		
Column:		Detector	EXP1		

D 1 13C4 PFBA, CAS: STL00992

Signal: 1

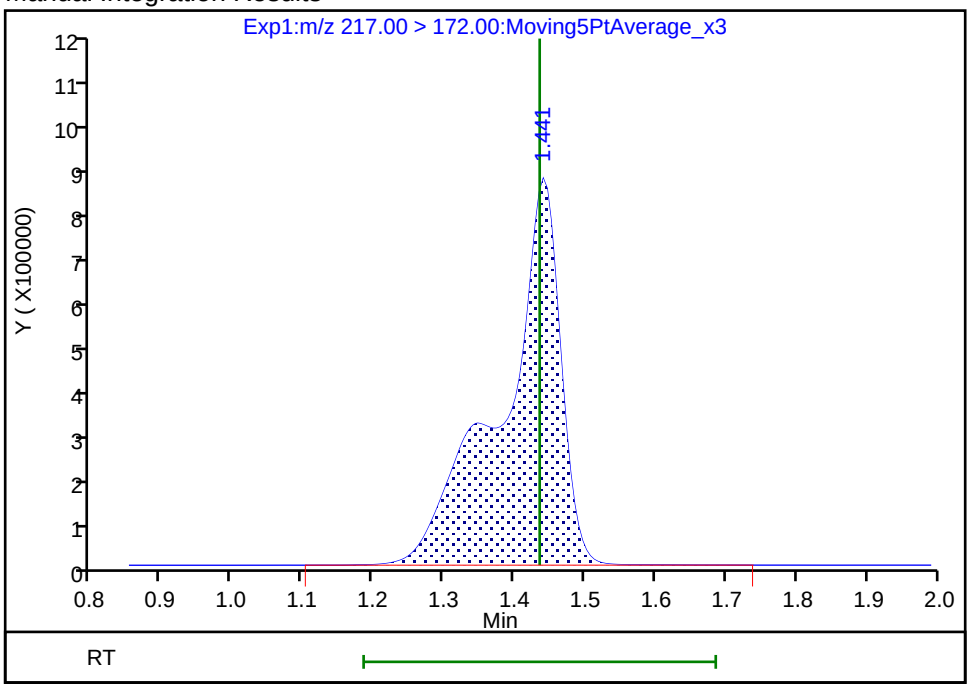
Processing Integration Results

RT: 1.44
Area: 3359624
Amount: 1.414280
Amount Units: ng/ml



Manual Integration Results

RT: 1.44
Area: 4695586
Amount: 1.976671
Amount Units: ng/ml



Reviewer: mongkols, 17-Jul-2018 08:31:47

Audit Action: Manually Integrated Audit Reason: Incomplete Integration

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Instrument ID: A8_N Start Date: 07/05/2018 08:51

Analysis Batch Number: 232544 End Date: 07/05/2018 12:10

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
IC 320-232544/2		07/05/2018 08:51	1	2018.07.05LLICA LAA 002.d	GeminiC18 3x100 3(mm)
IC 320-232544/3		07/05/2018 08:59	1	2018.07.05LLICA LAA 003.d	GeminiC18 3x100 3(mm)
IC 320-232544/4		07/05/2018 09:07	1	2018.07.05LLICA LAA 004.d	GeminiC18 3x100 3(mm)
IC 320-232544/5 ICIS		07/05/2018 09:14	1	2018.07.05LLICA LAA 005.d	GeminiC18 3x100 3(mm)
IC 320-232544/6		07/05/2018 09:22	1	2018.07.05LLICA LAA 006.d	GeminiC18 3x100 3(mm)
IC 320-232544/7		07/05/2018 09:30	1	2018.07.05LLICA LAA 007.d	GeminiC18 3x100 3(mm)
IC 320-232544/8		07/05/2018 09:38	1	2018.07.05LLICA LAA 008.d	GeminiC18 3x100 3(mm)
ICB 320-232544/9		07/05/2018 09:46	1	2018.07.05LLICA LAA 009.d	GeminiC18 3x100 3(mm)
ICV 320-232544/10		07/05/2018 12:02	1	2018.07.05LLICA LAAA 010.d	GeminiC18 3x100 3(mm)
CCB 320-232544/11		07/05/2018 12:10	1		GeminiC18 3x100 3(mm)

537 (modified)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Instrument ID: A8_N Start Date: 07/06/2018 15:40

Analysis Batch Number: 232772 End Date: 07/06/2018 17:22

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCB 320-232772/1		07/06/2018 15:40	1	2018.07.06LLAAA 003.d	GeminiC18 3x100 3(mm)
CCVL 320-232772/2		07/06/2018 15:48	1	2018.07.06LLAAA 004.d	GeminiC18 3x100 3(mm)
CCV 320-232772/3 CCVIS		07/06/2018 15:56	1	2018.07.06LLAAA 019.d	GeminiC18 3x100 3(mm)
CCV 320-232772/14		07/06/2018 17:22	1		GeminiC18 3x100 3(mm)

537 (modified)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Instrument ID: A8_N Start Date: 07/06/2018 17:30

Analysis Batch Number: 232788 End Date: 07/06/2018 19:51

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-232788/1		07/06/2018 17:30	1	2018.07.06LLAAA 031.d	GeminiC18 3x100 3(mm)
MB 320-232150/1-A		07/06/2018 17:38	1	2018.07.06LLAAA 032.d	GeminiC18 3x100 3(mm)
LCS 320-232150/2-A		07/06/2018 17:45	1	2018.07.06LLAAA 033.d	GeminiC18 3x100 3(mm)
LCSD 320-232150/3-A		07/06/2018 17:53	1	2018.07.06LLAAA 034.d	GeminiC18 3x100 3(mm)
ZZZZZ		07/06/2018 18:01	1		GeminiC18 3x100 3(mm)
320-40571-35		07/06/2018 18:09	1	2018.07.06LLAAA 036.d	GeminiC18 3x100 3(mm)
320-40571-35 MS		07/06/2018 18:17	1	2018.07.06LLAAA 037.d	GeminiC18 3x100 3(mm)
320-40571-35 MSD		07/06/2018 18:25	1	2018.07.06LLAAA 038.d	GeminiC18 3x100 3(mm)
ZZZZZ		07/06/2018 18:32	1		GeminiC18 3x100 3(mm)
CCV 320-232788/11		07/06/2018 18:48	1	2018.07.06LLAAA 041.d	GeminiC18 3x100 3(mm)
ZZZZZ		07/06/2018 18:56	1		GeminiC18 3x100 3(mm)
320-40571-43		07/06/2018 19:04	1	2018.07.06LLAAA 043.d	GeminiC18 3x100 3(mm)
320-40571-44		07/06/2018 19:11	1	2018.07.06LLAAA 044.d	GeminiC18 3x100 3(mm)
320-40571-46		07/06/2018 19:19	1	2018.07.06LLAAA 045.d	GeminiC18 3x100 3(mm)
320-40571-47		07/06/2018 19:27	1	2018.07.06LLAAA 046.d	GeminiC18 3x100 3(mm)
CCV 320-232788/19		07/06/2018 19:51	1	2018.07.06LLAAA 049.d	GeminiC18 3x100 3(mm)

537 (modified)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Instrument ID: A8_N Start Date: 07/06/2018 23:38

Analysis Batch Number: 232797 End Date: 07/06/2018 23:53

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCB 320-232797/1		07/06/2018 23:38	1	2018.07.06LLC_003.d	GeminiC18 3x100 3(mm)
CCVL 320-232797/2		07/06/2018 23:45	1	2018.07.06LLC_004.d	GeminiC18 3x100 3(mm)
CCV 320-232797/3 CCVIS		07/06/2018 23:53	1	2018.07.06LLC_005.d	GeminiC18 3x100 3(mm)

537 (modified)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Instrument ID: A8_N Start Date: 07/07/2018 00:56

Analysis Batch Number: 232800 End Date: 07/07/2018 05:07

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-232800/1		07/07/2018 00:56	1	2018.07.06LLC_013.d	GeminiC18 3x100 3(mm)
MB 320-232121/1-A		07/07/2018 01:04	1	2018.07.06LLC_014.d	GeminiC18 3x100 3(mm)
LCS 320-232121/2-A		07/07/2018 01:12	1	2018.07.06LLC_015.d	GeminiC18 3x100 3(mm)
LCSD 320-232121/3-A		07/07/2018 01:19	1	2018.07.06LLC_016.d	GeminiC18 3x100 3(mm)
ZZZZZ		07/07/2018 01:27	1		GeminiC18 3x100 3(mm)
ZZZZZ		07/07/2018 01:43	1		GeminiC18 3x100 3(mm)
ZZZZZ		07/07/2018 01:51	1		GeminiC18 3x100 3(mm)
320-40571-7		07/07/2018 01:59	1	2018.07.06LLC_021.d	GeminiC18 3x100 3(mm)
320-40571-9		07/07/2018 02:06	1	2018.07.06LLC_022.d	GeminiC18 3x100 3(mm)
CCV 320-232800/12		07/07/2018 02:22	1	2018.07.06LLC_024.d	GeminiC18 3x100 3(mm)
320-40571-11		07/07/2018 02:30	1	2018.07.06LLC_025.d	GeminiC18 3x100 3(mm)
320-40571-13		07/07/2018 02:46	1	2018.07.06LLC_027.d	GeminiC18 3x100 3(mm)
320-40571-15		07/07/2018 02:53	1	2018.07.06LLC_028.d	GeminiC18 3x100 3(mm)
ZZZZZ		07/07/2018 03:01	1		GeminiC18 3x100 3(mm)
ZZZZZ		07/07/2018 03:09	1		GeminiC18 3x100 3(mm)
ZZZZZ		07/07/2018 03:25	1		GeminiC18 3x100 3(mm)
ZZZZZ		07/07/2018 03:33	1		GeminiC18 3x100 3(mm)
CCV 320-232800/23		07/07/2018 03:48	1	2018.07.06LLC_035.d	GeminiC18 3x100 3(mm)
ZZZZZ		07/07/2018 03:56	1		GeminiC18 3x100 3(mm)
ZZZZZ		07/07/2018 04:04	1		GeminiC18 3x100 3(mm)
ZZZZZ		07/07/2018 04:12	1		GeminiC18 3x100 3(mm)
320-40571-27		07/07/2018 04:19	1	2018.07.06LLC_039.d	GeminiC18 3x100 3(mm)
ZZZZZ		07/07/2018 04:27	1		GeminiC18 3x100 3(mm)
320-40571-31		07/07/2018 04:35	1	2018.07.06LLC_041.d	GeminiC18 3x100 3(mm)
320-40571-33		07/07/2018 04:43	1	2018.07.06LLC_042.d	GeminiC18 3x100 3(mm)
320-40571-45		07/07/2018 04:51	1	2018.07.06LLC_043.d	GeminiC18 3x100 3(mm)
CCV 320-232800/33		07/07/2018 05:07	1	2018.07.06LLC_045.d	GeminiC18 3x100 3(mm)

537 (modified)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Instrument ID: A8_N Start Date: 07/11/2018 14:48

Analysis Batch Number: 233476 End Date: 07/11/2018 15:54

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
IC 320-233476/2		07/11/2018 14:48	1	2018.07.11LLICA LA 002.d	GeminiC18 3x100 3(mm)
IC 320-233476/3		07/11/2018 14:59	1	2018.07.11LLICA LA 003.d	GeminiC18 3x100 3(mm)
IC 320-233476/4		07/11/2018 15:07	1	2018.07.11LLICA LA 004.d	GeminiC18 3x100 3(mm)
IC 320-233476/5 ICIS		07/11/2018 15:15	1	2018.07.11LLICA LA 005.d	GeminiC18 3x100 3(mm)
IC 320-233476/6		07/11/2018 15:23	1	2018.07.11LLICA LA 006.d	GeminiC18 3x100 3(mm)
IC 320-233476/7		07/11/2018 15:30	1	2018.07.11LLICA LA 007.d	GeminiC18 3x100 3(mm)
IC 320-233476/8		07/11/2018 15:38	1	2018.07.11LLICA LA 008.d	GeminiC18 3x100 3(mm)
ICB 320-233476/9		07/11/2018 15:46	1	2018.07.11LLICA LA 009.d	GeminiC18 3x100 3(mm)
ICV 320-233476/10		07/11/2018 15:54	1	2018.07.11LLICA LA 010.d	GeminiC18 3x100 3(mm)

537 (modified)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Instrument ID: A8_N Start Date: 07/11/2018 21:38

Analysis Batch Number: 233511 End Date: 07/11/2018 22:25

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-233511/1		07/11/2018 21:38	1	2018.07.11LLB_044.d	GeminiC18 3x100 3(mm)
ZZZZZ		07/11/2018 21:46	10		GeminiC18 3x100 3(mm)
ZZZZZ		07/11/2018 21:53	5		GeminiC18 3x100 3(mm)
320-40571-9 DL		07/11/2018 22:01	5	2018.07.11LLB_047.d	GeminiC18 3x100 3(mm)
320-40571-31 DL		07/11/2018 22:09	5	2018.07.11LLB_048.d	GeminiC18 3x100 3(mm)
ZZZZZ		07/11/2018 22:17	1		GeminiC18 3x100 3(mm)
CCV 320-233511/7		07/11/2018 22:25	1	2018.07.11LLB_050.d	GeminiC18 3x100 3(mm)

537 (modified)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Instrument ID: A8_N Start Date: 07/12/2018 14:54

Analysis Batch Number: 233725 End Date: 07/12/2018 18:17

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCB 320-233725/1		07/12/2018 14:54	1	2018.07.12LLB_QC 001.d	GeminiC18 3x100 3(mm)
CCVL 320-233725/2		07/12/2018 15:02	1	2018.07.12LLB_QC 002.d	GeminiC18 3x100 3(mm)
CCV 320-233725/3 CCVIS		07/12/2018 15:18	1	2018.07.12LLAAAA 041.d	GeminiC18 3x100 3(mm)
CCV 320-233725/13		07/12/2018 16:36	1		GeminiC18 3x100 3(mm)
CCV 320-233725/24		07/12/2018 18:02	1		GeminiC18 3x100 3(mm)
CCV 320-233725/26		07/12/2018 18:17	1		GeminiC18 3x100 3(mm)

537 (modified)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Instrument ID: A8_N Start Date: 07/12/2018 22:28

Analysis Batch Number: 233774 End Date: 07/12/2018 22:51

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-233774/1		07/12/2018 22:28	1	2018.07.12LLC_024.d	GeminiC18 3x100 3(mm)
320-40571-39		07/12/2018 22:36	1	2018.07.12LLC_025.d	GeminiC18 3x100 3(mm)
ZZZZZ		07/12/2018 22:43	1		GeminiC18 3x100 3(mm)
CCV 320-233774/4		07/12/2018 22:51	1	2018.07.12LLC_027.d	GeminiC18 3x100 3(mm)

537 (modified)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Instrument ID: A8_N Start Date: 07/13/2018 15:56

Analysis Batch Number: 233973 End Date: 07/13/2018 19:04

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCB 320-233973/1		07/13/2018 15:56	1	2018.07.13LLAA_004.d	GeminiC18 3x100 3(mm)
CCVL 320-233973/2		07/13/2018 16:04	1	2018.07.13LLAA_005.d	GeminiC18 3x100 3(mm)
CCV 320-233973/3 CCVIS		07/13/2018 16:12	1	2018.07.12LLD_045.d	GeminiC18 3x100 3(mm)
CCV 320-233973/14		07/13/2018 17:38	1		GeminiC18 3x100 3(mm)
CCV 320-233973/25		07/13/2018 19:04	1		GeminiC18 3x100 3(mm)

537 (modified)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Instrument ID: A8_N Start Date: 07/13/2018 20:46

Analysis Batch Number: 233989 End Date: 07/13/2018 22:35

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-233989/1		07/13/2018 20:46	1	2018.07.13LLC_006.d	GeminiC18 3x100 3(mm)
320-40571-1		07/13/2018 20:54	1	2018.07.13LLC_007.d	GeminiC18 3x100 3(mm)
320-40571-2		07/13/2018 21:01	1	2018.07.13LLC_008.d	GeminiC18 3x100 3(mm)
320-40571-17		07/13/2018 21:09	1	2018.07.13LLC_009.d	GeminiC18 3x100 3(mm)
320-40571-19		07/13/2018 21:17	1	2018.07.13LLC_010.d	GeminiC18 3x100 3(mm)
320-40571-21		07/13/2018 21:25	1	2018.07.13LLC_011.d	GeminiC18 3x100 3(mm)
320-40571-23		07/13/2018 21:33	1	2018.07.13LLC_012.d	GeminiC18 3x100 3(mm)
320-40571-23 MS		07/13/2018 21:40	1	2018.07.13LLC_013.d	GeminiC18 3x100 3(mm)
320-40571-23 MSD		07/13/2018 21:48	1	2018.07.13LLC_014.d	GeminiC18 3x100 3(mm)
320-40571-25		07/13/2018 21:56	1	2018.07.13LLC_015.d	GeminiC18 3x100 3(mm)
320-40571-29		07/13/2018 22:04	1	2018.07.13LLC_016.d	GeminiC18 3x100 3(mm)
CCV 320-233989/12		07/13/2018 22:12	1	2018.07.13LLC_017.d	GeminiC18 3x100 3(mm)
320-40571-37		07/13/2018 22:20	1	2018.07.13LLC_018.d	GeminiC18 3x100 3(mm)
320-40571-41		07/13/2018 22:28	1	2018.07.13LLC_019.d	GeminiC18 3x100 3(mm)
CCV 320-233989/15		07/13/2018 22:35	1	2018.07.13LLC_020.d	GeminiC18 3x100 3(mm)

537 (modified)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Instrument ID: A8_N Start Date: 07/13/2018 22:51

Analysis Batch Number: 233992 End Date: 07/14/2018 00:25

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCB 320-233992/1		07/13/2018 22:51	1	2018.07.13LLB_004.d	GeminiC18 3x100 3(mm)
CCVL 320-233992/2		07/13/2018 22:59	1	2018.07.13LLB_005.d	GeminiC18 3x100 3(mm)
CCV 320-233992/3 CCVIS		07/13/2018 23:07	1	2018.07.13LLB_018.d	GeminiC18 3x100 3(mm)
ZZZZZ		07/13/2018 23:15	1		GeminiC18 3x100 3(mm)
ZZZZZ		07/13/2018 23:22	1		GeminiC18 3x100 3(mm)
ZZZZZ		07/13/2018 23:30	1		GeminiC18 3x100 3(mm)
ZZZZZ		07/13/2018 23:38	1		GeminiC18 3x100 3(mm)
ZZZZZ		07/13/2018 23:46	1		GeminiC18 3x100 3(mm)
ZZZZZ		07/13/2018 23:54	1		GeminiC18 3x100 3(mm)
ZZZZZ		07/14/2018 00:02	1		GeminiC18 3x100 3(mm)
ZZZZZ		07/14/2018 00:09	1		GeminiC18 3x100 3(mm)
ZZZZZ		07/14/2018 00:17	1		GeminiC18 3x100 3(mm)
CCV 320-233992/13		07/14/2018 00:25	1		GeminiC18 3x100 3(mm)

537 (modified)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Instrument ID: A8_N Start Date: 07/14/2018 03:33

Analysis Batch Number: 233997 End Date: 07/14/2018 06:02

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-233997/1		07/14/2018 03:33	1	2018.07.13LLB_052.d	GeminiC18 3x100 3(mm)
MB 320-231392/1-A		07/14/2018 03:41	1	2018.07.13LLB_053.d	GeminiC18 3x100 3(mm)
LCS 320-231392/2-A		07/14/2018 03:49	1	2018.07.13LLB_054.d	GeminiC18 3x100 3(mm)
LCSD 320-231392/3-A		07/14/2018 03:57	1	2018.07.13LLB_055.d	GeminiC18 3x100 3(mm)
320-40571-3		07/14/2018 04:04	1	2018.07.13LLB_056.d	GeminiC18 3x100 3(mm)
320-40571-4		07/14/2018 04:12	1	2018.07.13LLB_057.d	GeminiC18 3x100 3(mm)
320-40571-6		07/14/2018 04:20	1	2018.07.13LLB_058.d	GeminiC18 3x100 3(mm)
320-40571-8		07/14/2018 04:28	1	2018.07.13LLB_059.d	GeminiC18 3x100 3(mm)
320-40571-10		07/14/2018 04:36	1	2018.07.13LLB_060.d	GeminiC18 3x100 3(mm)
320-40571-12		07/14/2018 04:43	1	2018.07.13LLB_061.d	GeminiC18 3x100 3(mm)
CCV 320-233997/11		07/14/2018 04:51	1	2018.07.13LLB_062.d	GeminiC18 3x100 3(mm)
320-40571-14		07/14/2018 04:59	1	2018.07.13LLB_063.d	GeminiC18 3x100 3(mm)
320-40571-16		07/14/2018 05:07	1	2018.07.13LLB_064.d	GeminiC18 3x100 3(mm)
320-40571-18		07/14/2018 05:15	1	2018.07.13LLB_065.d	GeminiC18 3x100 3(mm)
320-40571-20		07/14/2018 05:23	1	2018.07.13LLB_066.d	GeminiC18 3x100 3(mm)
320-40571-22		07/14/2018 05:31	1	2018.07.13LLB_067.d	GeminiC18 3x100 3(mm)
320-40571-36		07/14/2018 05:38	1	2018.07.13LLB_068.d	GeminiC18 3x100 3(mm)
320-40571-36 MS		07/14/2018 05:46	1	2018.07.13LLB_069.d	GeminiC18 3x100 3(mm)
320-40571-36 MSD		07/14/2018 05:54	1	2018.07.13LLB_070.d	GeminiC18 3x100 3(mm)
CCV 320-233997/20		07/14/2018 06:02	1	2018.07.13LLB_071.d	GeminiC18 3x100 3(mm)

537 (modified)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Instrument ID: A8_N Start Date: 07/14/2018 11:08

Analysis Batch Number: 234011 End Date: 07/14/2018 12:50

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCB 320-234011/1		07/14/2018 11:08	1	2018.07.14LLA_004.d	GeminiC18 3x100 3(mm)
CCVL 320-234011/2		07/14/2018 11:16	1	2018.07.14LLA_005.d	GeminiC18 3x100 3(mm)
CCV 320-234011/3 CCVIS		07/14/2018 11:24	1	2018.07.14LLA_006.d	GeminiC18 3x100 3(mm)
ZZZZZ		07/14/2018 11:32	1		GeminiC18 3x100 3(mm)
ZZZZZ		07/14/2018 11:40	1		GeminiC18 3x100 3(mm)
ZZZZZ		07/14/2018 11:48	1		GeminiC18 3x100 3(mm)
ZZZZZ		07/14/2018 11:55	100		GeminiC18 3x100 3(mm)
ZZZZZ		07/14/2018 12:03	100		GeminiC18 3x100 3(mm)
ZZZZZ		07/14/2018 12:11	1		GeminiC18 3x100 3(mm)
ZZZZZ		07/14/2018 12:19	1		GeminiC18 3x100 3(mm)
ZZZZZ		07/14/2018 12:27	1		GeminiC18 3x100 3(mm)
ZZZZZ		07/14/2018 12:35	100		GeminiC18 3x100 3(mm)
ZZZZZ		07/14/2018 12:42	100		GeminiC18 3x100 3(mm)
CCV 320-234011/14		07/14/2018 12:50	1		GeminiC18 3x100 3(mm)

537 (modified)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Instrument ID: A8_N Start Date: 07/14/2018 12:58

Analysis Batch Number: 234231 End Date: 07/14/2018 15:27

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-234231/1		07/14/2018 12:58	1	2018.07.14LLA_018.d	GeminiC18 3x100 3(mm)
MB 320-231393/1-A		07/14/2018 13:06	1	2018.07.14LLA_019.d	GeminiC18 3x100 3(mm)
LCS 320-231393/2-A		07/14/2018 13:14	1	2018.07.14LLA_020.d	GeminiC18 3x100 3(mm)
LCSD 320-231393/3-A		07/14/2018 13:22	1	2018.07.14LLA_021.d	GeminiC18 3x100 3(mm)
320-40571-24		07/14/2018 13:29	1	2018.07.14LLA_022.d	GeminiC18 3x100 3(mm)
320-40571-26		07/14/2018 13:37	1	2018.07.14LLA_023.d	GeminiC18 3x100 3(mm)
320-40571-28		07/14/2018 13:45	1	2018.07.14LLA_024.d	GeminiC18 3x100 3(mm)
CCV 320-234231/9		07/14/2018 14:01	1	2018.07.14LLA_026.d	GeminiC18 3x100 3(mm)
320-40571-30		07/14/2018 14:09	1	2018.07.14LLA_027.d	GeminiC18 3x100 3(mm)
320-40571-32		07/14/2018 14:16	1	2018.07.14LLA_028.d	GeminiC18 3x100 3(mm)
320-40571-34		07/14/2018 14:24	1	2018.07.14LLA_029.d	GeminiC18 3x100 3(mm)
320-40571-38		07/14/2018 14:32	1	2018.07.14LLA_030.d	GeminiC18 3x100 3(mm)
320-40571-40		07/14/2018 14:40	1	2018.07.14LLA_031.d	GeminiC18 3x100 3(mm)
320-40571-42		07/14/2018 14:48	1	2018.07.14LLA_032.d	GeminiC18 3x100 3(mm)
320-40571-42 MS		07/14/2018 14:56	1	2018.07.14LLA_033.d	GeminiC18 3x100 3(mm)
320-40571-42 MSD		07/14/2018 15:03	1	2018.07.14LLA_034.d	GeminiC18 3x100 3(mm)
ZZZZZ		07/14/2018 15:11	1		GeminiC18 3x100 3(mm)
CCV 320-234231/20		07/14/2018 15:27	1	2018.07.14LLA_037.d	GeminiC18 3x100 3(mm)

537 (modified)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Instrument ID: A8_N Start Date: 07/16/2018 12:46

Analysis Batch Number: 234295 End Date: 07/16/2018 13:25

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCB 320-234295/1		07/16/2018 12:46	1	2018.07.16LLA_003.d	GeminiC18 3x100 3(mm)
CCVL 320-234295/2		07/16/2018 12:54	1	2018.07.16LLA_004.d	GeminiC18 3x100 3(mm)
CCV 320-234295/3 CCVIS		07/16/2018 13:02	1	2018.07.16LLA_005.d	GeminiC18 3x100 3(mm)
320-40571-5		07/16/2018 13:10	1	2018.07.16LLA_006.d	GeminiC18 3x100 3(mm)
ZZZZZ		07/16/2018 13:18	1		GeminiC18 3x100 3(mm)
CCV 320-234295/6		07/16/2018 13:25	1	2018.07.16LLA_008.d	GeminiC18 3x100 3(mm)

537 (modified)

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Batch Number: 231392 Batch Start Date: 06/28/18 05:15 Batch Analyst: Palomar, Karla J

Batch Method: SHAKE Batch End Date: 07/10/18 11:25

Lab Sample ID	Client Sample ID	Method Chain	Basis	InitialAmount	FinalAmount	LCMPFC_ALL_SU 00080	LCPFC-IS 00058	LCPFCSP 00150	
MB 320-231392/1		SHAKE, 537 (modified)		5.00 g	10.00 mL	500 uL	500 uL		
LCS 320-231392/2		SHAKE, 537 (modified)		5.00 g	10.00 mL	500 uL	500 uL	500 uL	
LCSD 320-231392/3		SHAKE, 537 (modified)		5.00 g	10.00 mL	500 uL	500 uL	500 uL	
320-40571-A-3	NF17-SS-01	SHAKE, 537 (modified)	T	5.04 g	10.00 mL	500 uL	500 uL		
320-40571-A-4	NF17-SS-01-DUP	SHAKE, 537 (modified)	T	5.07 g	10.00 mL	500 uL	500 uL		
320-40571-A-6	NF18-SS-02	SHAKE, 537 (modified)	T	5.07 g	10.00 mL	500 uL	500 uL		
320-40571-A-8	NF19-SS-02	SHAKE, 537 (modified)	T	5.09 g	10.00 mL	500 uL	500 uL		
320-40571-A-10	NF20-SS-02	SHAKE, 537 (modified)	T	5.03 g	10.00 mL	500 uL	500 uL		
320-40571-A-12	NF21-SS-01	SHAKE, 537 (modified)	T	5.07 g	10.00 mL	500 uL	500 uL		
320-40571-A-14	NF22-SS-01	SHAKE, 537 (modified)	T	5.04 g	10.00 mL	500 uL	500 uL		
320-40571-A-16	NF23-SS-01	SHAKE, 537 (modified)	T	5.09 g	10.00 mL	500 uL	500 uL		
320-40571-A-18	NF24-SS-02	SHAKE, 537 (modified)	T	5.02 g	10.00 mL	500 uL	500 uL		
320-40571-A-20	NF25-SS-02	SHAKE, 537 (modified)	T	5.00 g	10.00 mL	500 uL	500 uL		
320-40571-A-22	NF26-SS-02	SHAKE, 537 (modified)	T	5.05 g	10.00 mL	500 uL	500 uL		
320-40571-A-36	NF33-SS-01	SHAKE, 537 (modified)	T	5.08 g	10.00 mL	500 uL	500 uL		
320-40571-A-36 MS	NF33-SS-01	SHAKE, 537 (modified)	T	5.05 g	10.00 mL	500 uL	500 uL	500 uL	
320-40571-A-36 MSD	NF33-SS-01	SHAKE, 537 (modified)	T	5.07 g	10.00 mL	500 uL	500 uL	500 uL	

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Batch Number: 231392 Batch Start Date: 06/28/18 05:15 Batch Analyst: Palomar, Karla J

Batch Method: SHAKE Batch End Date: 07/10/18 11:25

Batch Notes	
Acetic Acid ID	985732
Analyst ID - Aliquot Step	HJA
Balance ID	QA-070
Batch Comment	Samples labels match with client ID HJA
Analyst ID - Final Volume Step	HJA
Hexane ID	1272461
Internal Standard ID#	1276588
Manifold ID	M
Methanol ID	1270806
Methanolic Potassium Hydroxide ID	1287973
Millipore Water Dispense Date	7-09-18
Sodium Hydroxide ID	1296964
Ammonium Hydroxide/MeOH ID	1282835
pH Indicator ID	0818
Analyst ID - Reagent Drop Witness	SKD
Analyst ID - IS Reagent Drop	HJA
Analyst ID - IS Reagent Drop Witness	MNV
Blank Sand Lot #	162639
SPE Cartridge Lot ID	017938128A
SPE Cartridge Type	WAX 150mg

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Batch Number: 231393 Batch Start Date: 06/28/18 06:05 Batch Analyst: Palomar, Karla J

Batch Method: SHAKE Batch End Date: 07/10/18 01:17

Lab Sample ID	Client Sample ID	Method Chain	Basis	InitialAmount	FinalAmount	LCMPFC_ALL_SU 00080	LCPFC-IS 00058	LCPFCSP 00150	
MB 320-231393/1		SHAKE, 537 (modified)		5.00 g	10.00 mL	500 uL	500 uL		
LCS 320-231393/2		SHAKE, 537 (modified)		5.00 g	10.00 mL	500 uL	500 uL	500 uL	
LCSD 320-231393/3		SHAKE, 537 (modified)		5.00 g	10.00 mL	500 uL	500 uL	500 uL	
320-40571-A-24	NF27-SS-01	SHAKE, 537 (modified)	T	5.08 g	10.00 mL	500 uL	500 uL		
320-40571-A-26	NF28-SS-01	SHAKE, 537 (modified)	T	5.08 g	10.00 mL	500 uL	500 uL		
320-40571-A-28	NF29-SS-01	SHAKE, 537 (modified)	T	5.08 g	10.00 mL	500 uL	500 uL		
320-40571-A-30	NF30-SS-02	SHAKE, 537 (modified)	T	5.09 g	10.00 mL	500 uL	500 uL		
320-40571-A-32	NF31-SS-02	SHAKE, 537 (modified)	T	5.04 g	10.00 mL	500 uL	500 uL		
320-40571-A-34	NF32-SS-02	SHAKE, 537 (modified)	T	5.07 g	10.00 mL	500 uL	500 uL		
320-40571-A-38	NF34-SS-01	SHAKE, 537 (modified)	T	5.00 g	10.00 mL	500 uL	500 uL		
320-40571-A-40	NF35-SS-01	SHAKE, 537 (modified)	T	5.08 g	10.00 mL	500 uL	500 uL		
320-40571-A-42	NF36-SS-02	SHAKE, 537 (modified)	T	5.02 g	10.00 mL	500 uL	500 uL		
320-40571-A-42 MS	NF36-SS-02	SHAKE, 537 (modified)	T	5.01 g	10.00 mL	500 uL	500 uL	500 uL	
320-40571-A-42 MSD	NF36-SS-02	SHAKE, 537 (modified)	T	5.05 g	10.00 mL	500 uL	500 uL	500 uL	

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Batch Number: 231393 Batch Start Date: 06/28/18 06:05 Batch Analyst: Palomar, Karla J

Batch Method: SHAKE Batch End Date: 07/10/18 01:17

Batch Notes	
Acetic Acid ID	985732
Analyst ID - Aliquot Step	HJA
Balance ID	QA-070
Batch Comment	Samples labels match with client ID HJA
Analyst ID - Final Volume Step	HJA
Hexane ID	1272461
Internal Standard ID#	1276588
Manifold ID	M, K
Methanol ID	1270806
Methanolic Potassium Hydroxide ID	1287973
Millipore Water Dispense Date	7-9-18
Sodium Hydroxide ID	1296964
Ammonium Hydroxide/MeOH ID	1282835
pH Indicator ID	0818
Analyst ID - Reagent Drop Witness	SKD
Analyst ID - IS Reagent Drop	HJA
Analyst ID - IS Reagent Drop Witness	MNV
Blank Sand Lot #	162639
SPE Cartridge Lot ID	017938128A
SPE Cartridge Type	WAX 150mg

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Batch Number: 232121 Batch Start Date: 07/02/18 14:58 Batch Analyst: Reed, Jonathan E

Batch Method: 3535 Batch End Date: 07/03/18 19:24

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	LCMPFC_ALL_SU 00080	LCPFC-IS 00061
MB 320-232121/1		3535, 537 (modified)				250.00 mL	10.00 mL	500 uL	500 uL
LCS 320-232121/2		3535, 537 (modified)				250.00 mL	10.00 mL	500 uL	500 uL
LCSD 320-232121/3		3535, 537 (modified)				250.00 mL	10.00 mL	500 uL	500 uL
320-40571-A-1	NF17-GW-01	3535, 537 (modified)	T	306.38 g	28.86 g	277.5 mL	10.00 mL	500 uL	500 uL
320-40571-A-2	NF17-GW-01-DUP	3535, 537 (modified)	T	288.46 g	28.37 g	260.1 mL	10.00 mL	500 uL	500 uL
320-40571-A-5	NF18-GW-01	3535, 537 (modified)	T	300.80 g	28.70 g	272.1 mL	10.00 mL	500 uL	500 uL
320-40571-A-7	NF19-GW-01	3535, 537 (modified)	T	296.84 g	28.77 g	268.1 mL	10.00 mL	500 uL	500 uL
320-40571-A-9	NF20-GW-01	3535, 537 (modified)	T	186.83 g	28.80 g	158 mL	10.00 mL	500 uL	500 uL
320-40571-A-11	NF21-GW-01	3535, 537 (modified)	T	299.39 g	28.15 g	271.2 mL	10.00 mL	500 uL	500 uL
320-40571-A-13	NF22-GW-01	3535, 537 (modified)	T	299.99 g	29.66 g	270.3 mL	10.00 mL	500 uL	500 uL
320-40571-A-15	NF23-GW-01	3535, 537 (modified)	T	311.43 g	29.74 g	281.7 mL	10.00 mL	500 uL	500 uL
320-40571-A-17	NF24-GW-01	3535, 537 (modified)	T	298.24 g	29.46 g	268.8 mL	10.00 mL	500 uL	500 uL
320-40571-A-19	NF25-GW-01	3535, 537 (modified)	T	311.48 g	28.38 g	283.1 mL	10.00 mL	500 uL	500 uL
320-40571-A-21	NF26-GW-01	3535, 537 (modified)	T	240.77 g	29.36 g	211.4 mL	10.00 mL	500 uL	500 uL
320-40571-A-23	NF27-GW-01	3535, 537 (modified)	T	283.79 g	29.09 g	254.7 mL	10.00 mL	500 uL	500 uL
320-40571-A-23 MS	NF27-GW-01	3535, 537 (modified)	T	271.15 g	28.87 g	242.3 mL	10.00 mL	500 uL	500 uL
320-40571-A-23 MSD	NF27-GW-01	3535, 537 (modified)	T	299.63 g	28.86 g	270.8 mL	10.00 mL	500 uL	500 uL
320-40571-A-25	NF28-GW-01	3535, 537 (modified)	T	285.81 g	28.82 g	257 mL	10.00 mL	500 uL	500 uL
320-40571-A-27	NF29-GW-01	3535, 537 (modified)	T	313.05 g	28.75 g	284.3 mL	10.00 mL	500 uL	500 uL
320-40571-A-29	NF30-GW-01	3535, 537 (modified)	T	297.76 g	29.98 g	267.8 mL	10.00 mL	500 uL	500 uL
320-40571-A-31	NF31-GW-01	3535, 537 (modified)	T	316.28 g	28.72 g	287.6 mL	10.00 mL	500 uL	500 uL

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Batch Number: 232121 Batch Start Date: 07/02/18 14:58 Batch Analyst: Reed, Jonathan E

Batch Method: 3535 Batch End Date: 07/03/18 19:24

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	LCMPFC_ALL_SU 00080	LCPFC-IS 00061
320-40571-A-33	NF32-GW-01	3535, 537 (modified)	T	312.19 g	28.72 g	283.5 mL	10.00 mL	500 uL	500 uL
320-40571-A-45	NFMW1-GW-01	3535, 537 (modified)	T	291.00 g	29.54 g	261.5 mL	10.00 mL	500 uL	500 uL

Lab Sample ID	Client Sample ID	Method Chain	Basis	LCPFCSP 00155	AnalysisComment				
MB 320-232121/1		3535, 537 (modified)							
LCS 320-232121/2		3535, 537 (modified)		500 uL					
LCSD 320-232121/3		3535, 537 (modified)		500 uL					
320-40571-A-1	NF17-GW-01	3535, 537 (modified)	T		Orange residue on bottom				
320-40571-A-2	NF17-GW-01-DUP	3535, 537 (modified)	T						
320-40571-A-5	NF18-GW-01	3535, 537 (modified)	T						
320-40571-A-7	NF19-GW-01	3535, 537 (modified)	T						
320-40571-A-9	NF20-GW-01	3535, 537 (modified)	T		Orange residue on bottom				
320-40571-A-11	NF21-GW-01	3535, 537 (modified)	T		Orange residue on bottom				
320-40571-A-13	NF22-GW-01	3535, 537 (modified)	T						
320-40571-A-15	NF23-GW-01	3535, 537 (modified)	T						
320-40571-A-17	NF24-GW-01	3535, 537 (modified)	T						
320-40571-A-19	NF25-GW-01	3535, 537 (modified)	T		Orange residue on bottom				
320-40571-A-21	NF26-GW-01	3535, 537 (modified)	T						
320-40571-A-23	NF27-GW-01	3535, 537 (modified)	T						
320-40571-A-23 MS	NF27-GW-01	3535, 537 (modified)	T	500 uL					
320-40571-A-23 MSD	NF27-GW-01	3535, 537 (modified)	T	500 uL					

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Batch Number: 232121 Batch Start Date: 07/02/18 14:58 Batch Analyst: Reed, Jonathan E

Batch Method: 3535 Batch End Date: 07/03/18 19:24

Lab Sample ID	Client Sample ID	Method Chain	Basis	LCPFCSP 00155	AnalysisComment				
320-40571-A-25	NF28-GW-01	3535, 537 (modified)	T						
320-40571-A-27	NF29-GW-01	3535, 537 (modified)	T						
320-40571-A-29	NF30-GW-01	3535, 537 (modified)	T						
320-40571-A-31	NF31-GW-01	3535, 537 (modified)	T						
320-40571-A-33	NF32-GW-01	3535, 537 (modified)	T						
320-40571-A-45	NFMW1-GW-01	3535, 537 (modified)	T						

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

537 (modified)

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Batch Number: 232121 Batch Start Date: 07/02/18 14:58 Batch Analyst: Reed, Jonathan E

Batch Method: 3535 Batch End Date: 07/03/18 19:24

Batch Notes	
Analyst ID - Aliquot Step	VPM
Balance ID	QA-070
Batch Comment	Sample labels matched Client IDs JER
Analyst ID - Final Volume Step	VPM
H2O ID	12/29/18
Hexane ID	1286128
Internal Standard ID#	1276607
Manifold ID	G, F
Methanol ID	1289789
Sodium Hydroxide ID	1285534
Pipette ID	N32728F
Analyst ID - Reagent Drop	JER
Analyst ID - IS Reagent Drop	VPM
Analyst ID - IS Reagent Drop Witness	JER
Analyst ID - SU Reagent Drop	JER
Analyst ID - SU Reagent Drop Witness	VPM
Solvent Lot #	1265488
Solvent Name	0.3% NH4OH/MeOH
SOP Number	WS-LC-0025
SPE Cartridge Type	WAX 500mg
Solid Phase Extraction Disk ID	003637254A

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Batch Number: 232150 Batch Start Date: 07/02/18 16:10 Batch Analyst: Reed, Jonathan E

Batch Method: 3535 Batch End Date: 07/03/18 19:30

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	LCMPFC_ALL_SU 00080	LCPFC-IS 00061
MB 320-232150/1		3535, 537 (modified)				250.00 mL	10.00 mL	500 uL	500 uL
LCS 320-232150/2		3535, 537 (modified)				250.00 mL	10.00 mL	500 uL	500 uL
LCSD 320-232150/3		3535, 537 (modified)				250.00 mL	10.00 mL	500 uL	500 uL
320-40571-A-37	NF34-GW-01	3535, 537 (modified)	T	320.76 g	29.37 g	291.4 mL	10.00 mL	500 uL	500 uL
320-40571-A-35	NF33-GW-01	3535, 537 (modified)	T	283.62 g	28.47 g	255.2 mL	10.00 mL	500 uL	500 uL
320-40571-A-35 MS	NF33-GW-01	3535, 537 (modified)	T	295.48 g	28.86 g	266.6 mL	10.00 mL	500 uL	500 uL
320-40571-A-35 MSD	NF33-GW-01	3535, 537 (modified)	T	292.63 g	29.68 g	263 mL	10.00 mL	500 uL	500 uL
320-40571-A-39	NF35-GW-01	3535, 537 (modified)	T	292.62 g	29.81 g	262.8 mL	10.00 mL	500 uL	500 uL
320-40571-A-41	NF36-GW-01	3535, 537 (modified)	T	200.13 g	29.86 g	170.3 mL	10.00 mL	500 uL	500 uL
320-40571-A-43	NF-EB-02	3535, 537 (modified)	T	312.85 g	28.59 g	284.3 mL	10.00 mL	500 uL	500 uL
320-40571-A-44	NF-FB-02	3535, 537 (modified)	T	306.53 g	29.40 g	277.1 mL	10.00 mL	500 uL	500 uL
320-40571-A-46	NFMW7-GW-01	3535, 537 (modified)	T	298.42 g	28.50 g	269.9 mL	10.00 mL	500 uL	500 uL
320-40571-A-47	NFMW7-GW-01-DUP	3535, 537 (modified)	T	306.75 g	28.58 g	278.2 mL	10.00 mL	500 uL	500 uL

Lab Sample ID	Client Sample ID	Method Chain	Basis	LCPFCSP 00155	AnalysisComment				
MB 320-232150/1		3535, 537 (modified)							
LCS 320-232150/2		3535, 537 (modified)		500 uL					
LCSD 320-232150/3		3535, 537 (modified)		500 uL					
320-40571-A-37	NF34-GW-01	3535, 537 (modified)	T		Cloudy at final volume				
320-40571-A-35	NF33-GW-01	3535, 537 (modified)	T		Cloudy at final volume				
320-40571-A-35 MS	NF33-GW-01	3535, 537 (modified)	T	500 uL	Cloudy at final volume				

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

537 (modified)

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Batch Number: 232150 Batch Start Date: 07/02/18 16:10 Batch Analyst: Reed, Jonathan E

Batch Method: 3535 Batch End Date: 07/03/18 19:30

Lab Sample ID	Client Sample ID	Method Chain	Basis	LCPFCSP 00155	AnalysisComment				
320-40571-A-35 MSD	NF33-GW-01	3535, 537 (modified)	T	500 uL	Cloudy at final volume				
320-40571-A-39	NF35-GW-01	3535, 537 (modified)	T		Yellow at final volume				
320-40571-A-41	NF36-GW-01	3535, 537 (modified)	T						
320-40571-A-43	NF-EB-02	3535, 537 (modified)	T						
320-40571-A-44	NF-FB-02	3535, 537 (modified)	T						
320-40571-A-46	NFMW7-GW-01	3535, 537 (modified)	T						
320-40571-A-47	NFMW7-GW-01-DUP	3535, 537 (modified)	T						

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Batch Number: 232150 Batch Start Date: 07/02/18 16:10 Batch Analyst: Reed, Jonathan E

Batch Method: 3535 Batch End Date: 07/03/18 19:30

Batch Notes	
Analyst ID - Aliquot Step	VPM
Balance ID	QA-070
Batch Comment	Sample labels matched client IDs JER
Analyst ID - Final Volume Step	VPM
H2O ID	12/29/18
Hexane ID	1286128
Internal Standard ID#	1276607
Manifold ID	F, H
Methanol ID	1289789
Sodium Hydroxide ID	1285534
Pipette ID	N32728F
Analyst ID - Reagent Drop	JER
Analyst ID - IS Reagent Drop	VPM
Analyst ID - IS Reagent Drop Witness	JER
Analyst ID - SU Reagent Drop	JER
Analyst ID - SU Reagent Drop Witness	VPM
Solvent Lot #	1265488
Solvent Name	0.3% NH4OH/MeOH
SOP Number	WS-LC-0025
SPE Cartridge Type	WAX 500mg
Solid Phase Extraction Disk ID	003637254A

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Test America – Sacramento

Sample Dilution Record

Method ID PFC - IDA

Analyst (Print Name) Alyssa Hannigan **Reagent ID** LC-80:20-00009

Date 7/11/18

Job #	Sample #	Original F.V. (uL)	Aliquot (uL)	Dilution F.V. (uL)	Dilution Factor
320-40571	9	10,000	60	300	5
320-40571	31	"	"	"	5

ABH 7/11/18

Comments:

GENERAL CHEMISTRY

COVER PAGE
GENERAL CHEMISTRY

Lab Name: TestAmerica Sacramento Job Number: 320-40571-1

SDG No.:

Project: National Fireworks

Client Sample ID	Lab Sample ID
NF17-SS-01	320-40571-3
NF17-SS-01-DUP	320-40571-4
NF18-SS-02	320-40571-6
NF19-SS-02	320-40571-8
NF20-SS-02	320-40571-10
NF21-SS-01	320-40571-12
NF22-SS-01	320-40571-14
NF23-SS-01	320-40571-16
NF24-SS-02	320-40571-18
NF25-SS-02	320-40571-20
NF26-SS-02	320-40571-22
NF27-SS-01	320-40571-24
NF28-SS-01	320-40571-26
NF29-SS-01	320-40571-28
NF30-SS-02	320-40571-30
NF31-SS-02	320-40571-32
NF32-SS-02	320-40571-34
NF33-SS-01	320-40571-36
NF34-SS-01	320-40571-38
NF35-SS-01	320-40571-40
NF36-SS-02	320-40571-42

Comments:

9-IN
DETECTION LIMITS
GENERAL CHEMISTRY

Lab Name: TestAmerica Sacramento Job Number: 320-40571-1

SDG Number:

Matrix: Solid Instrument ID: NOEQUIP

Method: D 2216 RL Date: 01/01/2012 08:18

Analyte	Wavelength/ Mass	RL (%)	
Percent Moisture		0.1	

FORM IX - IN

9-IN
CALIBRATION BLANK DETECTION LIMITS
GENERAL CHEMISTRY

Lab Name: TestAmerica Sacramento Job Number: 320-40571-1

SDG Number:

Matrix: Solid Instrument ID: NOEQUIP

Method: D 2216 XMDL Date: 01/01/2017 12:46

Analyte	Wavelength/ Mass	XRL (%)	XMDL (%)
Percent Moisture		0.1	0.1

FORM IX - IN

13-IN
ANALYSIS RUN LOG
GENERAL CHEMISTRY

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Instrument ID: NOEQUIP Analysis Method: D 2216

Start Date: 06/27/2018 16:03 End Date: 06/27/2018 16:03

Lab Sample Id	D/F	Type	Time	Analytes																							
				Moist																							
320-40571-3	1	T	16:03	X																							
320-40571-3 DU	1	T	16:03	X																							
320-40571-4	1	T	16:03	X																							
320-40571-6	1	T	16:03	X																							
320-40571-8	1	T	16:03	X																							
320-40571-10	1	T	16:03	X																							
320-40571-24	1	T	16:03	X																							
320-40571-22	1	T	16:03	X																							
320-40571-16	1	T	16:03	X																							
320-40571-32	1	T	16:03	X																							
320-40571-34	1	T	16:03	X																							
320-40571-30	1	T	16:03	X																							
320-40571-28	1	T	16:03	X																							
320-40571-20	1	T	16:03	X																							
320-40571-12	1	T	16:03	X																							
320-40571-18	1	T	16:03	X																							
320-40571-38	1	T	16:03	X																							
320-40571-40	1	T	16:03	X																							
320-40571-26	1	T	16:03	X																							
320-40571-42	1	T	16:03	X																							
320-40571-36	1	T	16:03	X																							

Prep Types:
T = Total/NA

13-IN
ANALYSIS RUN LOG
GENERAL CHEMISTRY

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Instrument ID: NOEQUIP Analysis Method: D 2216

Start Date: 06/27/2018 16:03 End Date: 06/27/2018 16:03

Lab Sample Id	D/F	Type	Time	Analytes																							
				Moist																							
320-40571-14	1	T	16:03	X																							
320-40571-14 DU	1	T	16:03	X																							
ZZZZZZ			16:03																								
ZZZZZZ			16:03																								
ZZZZZZ			16:03																								
ZZZZZZ			16:03																								
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ZZZZZZ			16:03																								
ZZZZZZ			16:03																								

Prep Types:
T = Total/NA

FORM XIII-IN

GENERAL CHEMISTRY BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Batch Number: 231318 Batch Start Date: 06/27/18 16:03 Batch Analyst: Baynes, Jason

Batch Method: D 2216 Batch End Date: 06/28/18 08:35

Lab Sample ID	Client Sample ID	Method Chain	Basis	DISH#	DishWeight	SampleMassWet	SampleMassDry		
320-40571-A-3	NF17-SS-01	D 2216	T	1	1.03 g	14.13 g	12.30 g		
320-40571-A-3 DU	NF17-SS-01	D 2216	T	2	1.04 g	15.99 g	13.94 g		
320-40571-A-4	NF17-SS-01-DUP	D 2216	T	3	1.04 g	15.84 g	13.85 g		
320-40571-A-6	NF18-SS-02	D 2216	T	4	1.05 g	11.78 g	9.85 g		
320-40571-A-8	NF19-SS-02	D 2216	T	5	1.03 g	14.40 g	11.51 g		
320-40571-A-10	NF20-SS-02	D 2216	T	6	1.02 g	12.87 g	10.70 g		
320-40571-A-24	NF27-SS-01	D 2216	T	7	1.03 g	14.59 g	12.38 g		
320-40571-A-22	NF26-SS-02	D 2216	T	8	1.07 g	9.85 g	8.09 g		
320-40571-A-16	NF23-SS-01	D 2216	T	9	1.04 g	15.77 g	13.11 g		
320-40571-A-32	NF31-SS-02	D 2216	T	10	1.04 g	15.51 g	12.90 g		
320-40571-A-34	NF32-SS-02	D 2216	T	11	1.04 g	18.32 g	16.65 g		
320-40571-A-30	NF30-SS-02	D 2216	T	12	1.04 g	14.23 g	12.12 g		
320-40571-A-28	NF29-SS-01	D 2216	T	13	1.03 g	19.50 g	15.89 g		
320-40571-A-20	NF25-SS-02	D 2216	T	14	1.05 g	15.49 g	12.83 g		
320-40571-A-12	NF21-SS-01	D 2216	T	15	1.01 g	15.94 g	13.81 g		
320-40571-A-18	NF24-SS-02	D 2216	T	16	1.04 g	17.15 g	14.51 g		
320-40571-A-38	NF34-SS-01	D 2216	T	17	1.02 g	18.19 g	15.48 g		
320-40571-A-40	NF35-SS-01	D 2216	T	18	1.05 g	17.63 g	15.24 g		
320-40571-A-26	NF28-SS-01	D 2216	T	19	1.03 g	18.48 g	15.21 g		
320-40571-A-42	NF36-SS-02	D 2216	T	20	1.02 g	14.86 g	12.58 g		
320-40571-A-36	NF33-SS-01	D 2216	T	21	1.05 g	19.30 g	17.08 g		

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

GENERAL CHEMISTRY BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Batch Number: 231318 Batch Start Date: 06/27/18 16:03 Batch Analyst: Baynes, Jason

Batch Method: D 2216 Batch End Date: 06/28/18 08:35

Batch Notes	
Balance ID	QA-068
Date and Time Samples in Desiccator	06/28/2018 06:50
Date and Time Samples out of Desiccator	06/28/2018 08:35
Date samples were placed in the oven	06/27/2018
Oven Temp In	110 Degrees C
Time samples were place in the oven	16:03
Date samples were removed from oven	06/28/2018
Oven Temp Out	110 Degrees C
Time Samples were removed from oven	06:50
Oven ID	Soil Prep #1
Thermometer ID	151969626

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

GENERAL CHEMISTRY BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-40571-1

SDG No.:

Batch Number: 231323 Batch Start Date: 06/27/18 16:03 Batch Analyst: Baynes, Jason

Batch Method: D 2216 Batch End Date: 06/28/18 08:23

Lab Sample ID	Client Sample ID	Method Chain	Basis	DISH#	DishWeight	SampleMassWet	SampleMassDry		
320-40571-A-14	NF22-SS-01	D 2216	T	1	1.01 g	16.67 g	13.94 g		
320-40571-A-14 DU	NF22-SS-01	D 2216	T	2	0.99 g	14.50 g	12.21 g		

Batch Notes	
Balance ID	QA-068
Date and Time Samples in Desiccator	06/28/2018 06:50
Date and Time Samples out of Desiccator	06/28/2018 08:23
Date samples were placed in the oven	06/27/2018
Oven Temp In	110 Degrees C
Time samples were place in the oven	16:03
Date samples were removed from oven	06/28/2018
Oven Temp Out	110 Degrees C
Time Samples were removed from oven	06:50
Oven ID	Soil Prep #1
Thermometer ID	151969626

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

Shipping and Receiving Documents

USEPA CLP Organics CO(
DateShipped: 6/21/2018
CarrierName: FedEx

320-40571 Chain of Custody

CHAIN OF CUSTODY RECORD

National Fireworks

No: 06/21/18-0005
Lab: TestAmerica Scremento
Lab Contact: Sample Custodian
Lab Phone: 916 373 5600

Sample Identifier	CLP Sample No.	Media/Sampler	Coll. Method	Analysis/Turnaround (Days)	Tag/Preservative/Bottles	Location	Collection Date/Time	For Lab Use Only
NF17-GW-01		Groundwater/ START	Grab	PFAS	B (None) (2)	NF17	06/20/2018 09:30	
NF17-GW-01-DUP		Groundwater/ START	Grab	PFAS	B (None) (2)	NF17	06/20/2018 09:35	
NF17-SS-01		Surface Soil/ START	Grab	PFAS	B (None) (1)	NF17	06/20/2018 08:45	
NF17-SS-01-DUP		Surface Soil/ START	Grab	PFAS	B (None) (1)	NF17	06/20/2018 08:55	
NF18-GW-01		Groundwater/ START	Grab	PFAS	B (None) (2)	NF18	06/21/2018 08:45	
NF18-SS-02		Subsurface Soil/ START	Grab	PFAS	B (None) (1)	NF18	06/20/2018 14:45	
NF19-GW-01		Groundwater/ START	Grab	PFAS	B (None) (2)	NF19	06/20/2018 15:50	
NF19-SS-02		Subsurface Soil/ START	Grab	PFAS	B (None) (1)	NF19	06/20/2018 14:15	
NF20-GW-01		Groundwater/ START	Grab	PFAS	B (None) (2)	NF20	06/20/2018 13:35	
NF20-SS-02		Subsurface Soil/ START	Grab	PFAS	B (None) (1)	NF20	06/19/2018 09:35	

Special Instructions: Limited volume available for groundwater samples: NF20-GW-01 & NF36-GW-01

Shipment for Case Complete? Y
Samples Transferred From Chain of Custody #

Analysis Key: PFAS=Per/Polyfluoroalkyl Substances

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
	Quin Kelly / TT	6/21/18 1830	[illegible] TA-STAC	6/22/18 0:205	0.4°C, 0.5°C ice HK-6

USEPA CLP Organics COC (LAB COPY)
DateShipped: 6/21/2018
CarrierName: FedEx

CHAIN OF CUSTODY RECORD

National Fireworks

No: 06/21/18-0005
Lab: TestAmerica Scremento
Lab Contact: Sample Custodian
Lab Phone: 916 373 5600

Sample Identifier	CLP Sample No.	Media/Sampler	Coll. Method	Analysis/Turnaround (Days)	Tag/Preservative/Bottles	Location	Collection Date/Time	For Lab Use Only
NF21-GW-01		Groundwater/ START	Grab	PFAS	B (None) (2)	NF21	06/20/2018 11:50	
NF21-SS-01		Surface Soil/ START	Grab	PFAS	B (None) (1)	NF21	06/20/2018 11:35	
NF22-GW-01		Groundwater/ START	Grab	PFAS	B (None) (2)	NF22	06/19/2018 18:10	
NF22-SS-01		Subsurface Soil/ START	Grab	PFAS	B (None) (1)	NF22	06/19/2018 17:05	
NF23-GW-01		Groundwater/ START	Grab	PFAS	B (None) (2)	NF23	06/19/2018 14:40	
NF23-SS-01		Surface Soil/ START	Grab	PFAS	B (None) (1)	NF23	06/19/2018 13:40	
NF24-GW-01		Groundwater/ START	Grab	PFAS	B (None) (2)	NF24	06/20/2018 10:10	
NF24-SS-02		Subsurface Soil/ START	Grab	PFAS	B (None) (1)	NF24	06/20/2018 09:15	
NF25-GW-01		Groundwater/ START	Grab	PFAS	B (None) (2)	NF25	06/19/2018 11:37	
NF25-SS-02		Subsurface Soil/ START	Grab	PFAS	B (None) (1)	NF25	06/19/2018 09:35	

Special Instructions:

Shipment for Case Complete? Y
Samples Transferred From Chain of Custody #

Analysis Key: PFAS=Per/Polyfluoroalkyl Substances

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
	Quin Kelly/TT	6/21/18 1830	[illegible] TA-SAC	6/22/18 0905	0.4°C, 0.5°C ice AK-6

USEPA CLP Organics COC (LAB COPY)
DateShipped: 6/21/2018
CarrierName: FedEx

CHAIN OF CUSTODY RECORD

National Fireworks

No: 06/21/18-0005
Lab: TestAmerica Scremento
Lab Contact: Sample Custodian
Lab Phone: 916 373 5600

Sample Identifier	CLP Sample No.	Media/Sampler	Coll. Method	Analysis/Turnaround (Days)	Tag/Preservative/Bottles	Location	Collection Date/Time	For Lab Use Only
NF26-GW-01		Groundwater/ START	Grab	PFAS	B (None) (2)	NF26	06/20/2018 16:30	
NF26-SS-02		Subsurface Soil/ START	Grab	PFAS	B (None) (1)	NF26	06/19/2018 10:50	
NF27-GW-01		Groundwater/ START	Grab	PFAS	B (None) (4)	NF27	06/21/2018 09:25	
NF27-SS-01		Subsurface Soil/ START	Grab	PFAS	B (None) (1)	NF27	06/20/2018 10:25	
NF28-GW-01		Groundwater/ START	Grab	PFAS	B (None) (2)	NF28	06/20/2018 16:00	
NF28-SS-01		Subsurface Soil/ START	Grab	PFAS	B (None) (1)	NF28	06/19/2018 14:50	
NF29-GW-01		Groundwater/ START	Grab	PFAS	B (None) (2)	NF29	06/19/2018 14:50	
NF29-SS-01		Surface Soil/ START	Grab	PFAS	B (None) (1)	NF29	06/19/2018 13:55	
NF30-GW-01		Groundwater/ START	Grab	PFAS	B (None) (2)	NF30	06/20/2018 13:05	
NF30-SS-02		Subsurface Soil/ START	Grab	PFAS	B (None) (1)	NF30	06/20/2018 12:30	

Sample(s) to be used for Lab QC: NF27-GW-01 Tag B	**Shipment for Case Complete? Y**
	Samples Transferred From Chain of Custody #
Analysis Key: PFAS=Per/Polyfluoroalkyl Substances	

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
	Quin Kelly / TT	6/21/18 1830	Troy D. [illegible] TA - SAC	6/22/18 0905	0.4°C, 0.5°C ice AIC-6

USEPA CLP Organics COC (LAB COPY)
DateShipped: 6/21/2018
CarrierName: FedEx

CHAIN OF CUSTODY RECORD

National Fireworks

No: 06/21/18-0005
Lab: TestAmerica Scremento
Lab Contact: Sample Custodian
Lab Phone: 916 373 5600

Sample Identifier	CLP Sample No.	Media/Sampler	Coll. Method	Analysis/Turnaround (Days)	Tag/Preservative/Bottles	Location	Collection Date/Time	For Lab Use Only
NF31-GW-01		Groundwater/ START	Grab	PFAS	B (None) (2)	NF31	06/21/2018 09:15	
NF31-SS-02		Subsurface Soil/ START	Grab	PFAS	B (None) (1)	NF31	06/19/2018 10:25	
NF32-GW-01		Groundwater/ START	Grab	PFAS	B (None) (2)	NF32	06/21/2018 10:00	
NF32-SS-02		Subsurface Soil/ START	Grab	PFAS	B (None) (1)	NF32	06/19/2018 12:45	
NF33-GW-01		Groundwater/ START	Grab	PFAS	B (None) (4)	NF33	06/19/2018 17:00	
NF33-SS-01		Surface Soil/ START	Grab	PFAS	B (None) (1)	NF33	06/19/2018 16:10	
NF34-GW-01		Groundwater/ START	Grab	PFAS	B (None) (2)	NF34	06/19/2018 13:30	
NF34-SS-01		Surface Soil/ START	Grab	PFAS	B (None) (1)	NF34	06/19/2018 11:55	
NF35-GW-01		Groundwater/ START	Grab	PFAS	B (None) (2)	NF35	06/20/2018 15:20	
NF35-SS-01		Surface Soil/ START	Grab	PFAS	B (None) (1)	NF35	06/20/2018 15:00	

Sample(s) to be used for Lab QC: NF33-GW-01 Tag B, NF33-SS-01 Tag B	**Shipment for Case Complete? Y**
	Samples Transferred From Chain of Custody #
Analysis Key: PFAS=Per/Polyfluoroalkyl Substances	

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
	Quin Kelly / TT	6/21/18 1830	Troy D. Fuyn TA-SAC	6/22/18 0905	0.4°C, 0.5°C ice AIL-6

USEPA CLP Organics COC (LAB COPY)
DateShipped: 6/21/2018
CarrierName: FedEx

CHAIN OF CUSTODY RECORD

National Fireworks

No: 06/21/18-0005
Lab: TestAmerica Scremento
Lab Contact: Sample Custodian
Lab Phone: 916 373 5600

Sample Identifier	CLP Sample No.	Media/Sampler	Coll. Method	Analysis/Turnaround (Days)	Tag/Preservative/Bottles	Location	Collection Date/Time	For Lab Use Only
* NF36-GW-01		Groundwater/ START	Grab	PFAS	B (None) (2)	NF36	06/21/2018 10:35	
NF36-SS-02		Subsurface Soil/ START	Grab	PFAS	B (None) (1)	NF36	06/20/2018 16:50	
NF-EB-02		Equipment Rinse Blank/ START	Grab	PFAS	B (None) (2)	#R4DART#	06/21/2018 09:20	
NF-FB-02		Field Blank/ START	Grab	PFAS	B (None) (2)	#R4DART#	06/21/2018 09:30	
NFMW1-GW-01		Groundwater/ START	Grab	PFAS	B (None) (2)	NFMW1	06/18/2018 15:15	
NFMW7-GW-01		Groundwater/ START	Grab	PFAS	B (None) (2)	NFMW7	06/21/2018 11:55	
NFMW7-GW-01-DUP		Groundwater/ START	Grab	PFAS	B (None) (2)	NFMW7	06/21/2018 12:00	

Sample(s) to be used for Lab QC: NF36-SS-02 Tag B	**Shipment for Case Complete? Y**
	Samples Transferred From Chain of Custody #
Analysis Key: PFAS=Per/Polyfluoroalkyl Substances	

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
	Quin Kelly / TT	6/21/18 1830	Troy D. Taylor TA-SAC	6/22/18 0905	0.4°C, 0.5°C ice AK-6

* Recieved only 1 container. Dt 6/22/18

Login Sample Receipt Checklist

Client: Tetra Tech EM Inc.

Job Number: 320-40571-1

Login Number: 40571
List Number: 1
Creator: Nelson, Kym D

List Source: TestAmerica Sacramento

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	False	-41: COC indicates 2 containers. Only 1 container rec'd.
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

APPENDIX F

REVIEW OF FIELD QUALITY CONTROL SAMPLES FOR CLP LABORATORY DATA PACKAGES

(Four Sheets)

Review of Field Quality Control Samples

Date:	August 23, 2018	**Project No.:**	TT-10-006
		Project Name:	National Fireworks
Name:	Shanna Davis		
Signature:	Shanna Davis		

The following is a summary of the review performed by Tetra Tech for the Contract Laboratory Program and Regional Laboratory analytical data packages created for samples collected from June 18 to June 21, 2018, at National Fireworks site. This review was performed on the following field quality control (QC) samples: field blank samples, equipment rinsate blanks samples, and field duplicate samples. This review was performed because the U.S. Environmental Protection Agency, Region 4, Science and Ecosystem Support Division, Office of Quality Assurance does not review these types of field QC samples as part of their validation effort. This policy was stated during a data validation webinar held on February 17, 2011. The webinar was attended by personnel from all 10 EPA Regions as well as personnel from various agencies that utilize the EPA CLP and Regional Laboratories for analytical support.

Field Blank, Equipment Rinsate Blank, and Trip Blank Samples: Field blank collection frequencies were met for all analytical parameters. One field blank sample was collected and analyzed for mercury and volatile organic compounds (VOC). No mercury or VOCs were detected at or above the minimum reporting limits (MRL) in the field blank sample. Equipment rinsate blank collection frequencies were met for all analytical parameters. One equipment rinsate blank was collected and analyzed for mercury and VOCs. No mercury for VOCs were detected at or above the MRLs in the equipment rinsate blank samples. Trip blank collection frequencies (one per sample shipment) were met for all analytical parameters. Two trip blank soil samples and one trip blank water sample were collected and analyzed for volatile organic compounds (VOC). No VOCs were detected at or above the minimum reporting limits (MRL) in the trip blank samples.

Field Duplicate Samples: Field duplicate collection frequencies (one per twenty samples per matrix) were met for all parameters and matrices. Two groundwater duplicate samples were collected for 22 ground water field samples collected and two soil duplicate samples were collected for 40 field soil samples collected. All duplicate samples were analyzed for mercury and VOCs.

Analytical results for each analyte in field duplicate soil sample pairs must fall within less than or equal to 50 percent (%) relative percent difference (RPD). However, if one of the two results of the pair is below its MRL, then the absolute difference between the two results must be less than or equal to the MRL. If both results of the pair are below the MRLs, then no control limit applies. When results for a field duplicate sample pair fall outside the control limit for a particular analyte, the results for that analyte are qualified as estimated (flagged “UJ or “J”) with an undetermined bias in both the parent sample and its field duplicate sample.

For the two field duplicate sample pairs analyzed for VOCs, only one pair had results that fell outside the control limits. For field duplicate sample pair NF17-SS-01 and NF17-SS-01-DUP, RPD values for cis-1,2-dichloroethene and trichloroethene were greater than 50 percent. The results for these analytes in both samples were qualified as estimated (J).

The attached laboratory sample result forms have been hand-annotated in blue ink, where appropriate, to indicate any additional qualifications that were required due to the exceedances discussed above.

LABORATORY SAMPLE RESULTS FORMS FOR FIELD DUPLICATE SAMPLE PAIRS

(2 Pages)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks **Contract Lab Case: 47684**

Sample ID: NF17-SS-01 **Lab ID:** C183012-08 **MD No:**
Station ID: NF17 **Matrix:** Surface Soil **D No:** AZ57 CHM

Date Collected: 6/20/18 8:45

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
67-66-3	Chloroform	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
74-87-3	Chloromethane	3.7	U, J, QC-1	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
156-59-2	cis-1,2-Dichloroethene	5.3	J	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
10061-01-5	cis-1,3-Dichloropropene	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
110-82-7	Cyclohexane	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
124-48-1	Dibromochloromethane	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
75-71-8	Dichlorodifluoromethane (Freon 12)	3.7	U, J, QC-1, QC-3	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
100-41-4	Ethyl Benzene	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
98-82-8	Isopropylbenzene	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
79-20-9	Methyl Acetate	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
591-78-6	Methyl Butyl Ketone	7.3	U	ug/kg dry	7.3	6/22/18	6/22/18	CLP SOM02.4 V
78-93-3	Methyl Ethyl Ketone	7.3	U	ug/kg dry	7.3	6/22/18	6/22/18	CLP SOM02.4 V
108-10-1	Methyl Isobutyl Ketone	7.3	U	ug/kg dry	7.3	6/22/18	6/22/18	CLP SOM02.4 V
1634-04-4	Methyl T-Butyl Ether (MTBE)	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
108-87-2	Methylcyclohexane	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
75-09-2	Methylene Chloride	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
95-47-6	o-Xylene	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
100-42-5	Styrene	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
127-18-4	Tetrachloroethene (Tetrachloroethylene)	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
108-88-3	Toluene	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
156-60-5	trans-1,2-Dichloroethene	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
10061-02-6	trans-1,3-Dichloropropene	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
79-01-6	Trichloroethene (Trichloroethylene)	28	J	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
75-69-4	Trichlorofluoromethane (Freon 11)	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
75-01-4	Vinyl chloride	3.7	U	ug/kg dry	3.7	6/22/18	6/22/18	CLP SOM02.4 V
Tentatively Identified Compounds:								
115-10-6	Dimethyl Ether	20	NJ, CLP15	ug/kg dry		6/22/18	6/22/18	CLP SOM02.4 V

SD 8/23/18

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0444
Project: 18-0455, National Fireworks - Reported by Jeff Wilmoth

Volatile Organics

Project: 18-0455, National Fireworks | **Contract Lab Case: 47684**

Sample ID: NF17-SS-01-DUP | **Lab ID:** C183012-09 | **MD No:**
Station ID: NF17 | **Matrix:** Surface Soil | **D No:** AZC4 CHM

Date Collected: 6/20/18 8:55

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
67-66-3	Chloroform	3.9	U	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
74-87-3	Chloromethane	3.9	U	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
156-59-2	cis-1,2-Dichloroethene	60	J	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
10061-01-5	cis-1,3-Dichloropropene	3.9	U	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
110-82-7	Cyclohexane	3.9	U	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
124-48-1	Dibromochloromethane	3.9	U	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
75-71-8	Dichlorodifluoromethane (Freon 12)	3.9	U, J, QC-3	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
100-41-4	Ethyl Benzene	3.9	U	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
98-82-8	Isopropylbenzene	3.9	U	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
79-20-9	Methyl Acetate	3.9	U	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
591-78-6	Methyl Butyl Ketone	7.9	U	ug/kg dry	7.9	6/25/18	6/25/18	CLP SOM02.4 V
78-93-3	Methyl Ethyl Ketone	13		ug/kg dry	7.9	6/25/18	6/25/18	CLP SOM02.4 V
108-10-1	Methyl Isobutyl Ketone	7.9	U	ug/kg dry	7.9	6/25/18	6/25/18	CLP SOM02.4 V
1634-04-4	Methyl T-Butyl Ether (MTBE)	3.9	U	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
108-87-2	Methylcyclohexane	3.9	U	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
75-09-2	Methylene Chloride	3.9	U	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
95-47-6	o-Xylene	3.9	U	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
100-42-5	Styrene	3.9	U	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
127-18-4	Tetrachloroethene (Tetrachloroethylene)	3.9	U	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
108-88-3	Toluene	3.9	U	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
156-60-5	trans-1,2-Dichloroethene	3.9	U	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
10061-02-6	trans-1,3-Dichloropropene	3.9	U	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
79-01-6	Trichloroethene (Trichloroethylene)	310	J	ug/kg dry	230	6/25/18	6/26/18	CLP SOM02.4 V
75-69-4	Trichlorofluoromethane (Freon 11)	3.9	U	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
75-01-4	Vinyl chloride	3.9	U	ug/kg dry	3.9	6/25/18	6/25/18	CLP SOM02.4 V
Tentatively Identified Compounds:								
R4-0000	Tentatively Identified Compounds	4	U	ug/kg dry	4	6/25/18	6/25/18	CLP SOM02.4 V

SD 8/23/18

APPENDIX G

TETRA TECH STAGE 4 DATA VALIDATION REPORT REGARDING THE PROCURED ANALYTICAL DATA PACKAGE

(35 Sheets)

TETRA TECH

DATA VALIDATION CHECKLIST – STAGE 4

(Page **1** of **7**)

Site Name	National Fireworks		**Project No.**	TDD No. 10-006
Data Reviewer (signature and date)	Harry N. Ellis III August 27, 2018		**Technical Reviewer (signature and date)**	Jessica A. Vickers August 28, 2018
Laboratory Report No.	320-40571-1		**Laboratory**	TestAmerica/Sacramento, California
Analyses	Perfluorinated alkyl substances (PFAS) by EPA Method 537 (modified)			
Samples	NF17-GW-01, NF18-GW-01, NF19-GW-01, NF20-GW-01, NF21-GW-01, NF22-GW-01, NF23-GW-01, NF24-GW-01, NF25-GW-01, NF26-GW-01, NF27-GW-01, NF28-GW-01, NF29-GW-01, NF30-GW-01, NF31-GW-01, NF32-GW-01, NF33-GW-01, NF34-GW-01, NF35-GW-01, NF36-GW-01, NFMW1-GW-01, NFMW7-GW-01, NF17-SS-01, NF18-SS-02, NF19-SS-02, NF20-SS-02, NF21-SS-01, NF22-SS-01, NF23-SS-01, NF24-SS-02, NF25-SS-02, NF26-SS-02, NF27-SS-01, NF28-SS-01, NF29-SS-01, NF30-SS-02, NF31-SS-02, NF32-SS-02, NF33-SS-01, NF34-SS-01, NF35-SS-01, and NF36-SS-02			
Field Duplicate Pairs	NF17-GW-01/NF17-GW-01-DUP, NFMW1-GW-01/NFMW1-GW-01-DUP, and NF17-SS-01/NF17-SS-01-DUP			
Field Blanks	NF-EB-02 and NF-FB-02			

This checklist summarizes the Stage 4 validation performed on the subject laboratory report, in accordance with the U.S. Environmental Protection Agency (EPA) Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use (January 2009). Analytical data were evaluated in general accordance with the EPA *National Functional Guidelines (NFG) for Organic Superfund Methods Data Review* (January 2017) and the EPA *NFG for High Resolution Superfund Methods Data Review* (April 2016) data validation guidance documents, as well as the above referenced method.

OVERALL EVALUATION:

Rejection of data was not required for this data package. The data can be used with the qualifications indicated in this checklist.

Data completeness:

Within Criteria	Exceedance/Notes
Y	

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DATA VALIDATION CHECKLIST – STAGE 4

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
Y	Fourteen of the groundwater samples required centrifugation due to excessive turbidity.

Instrument Performance Checks:

Within Criteria	Exceedance/Notes
NA	

Initial Calibration:

Within Criteria	Exceedance/Notes
Y	

Continuing Calibration:

Within Criteria	Exceedance/Notes
Y	

Calibration Verification:

Within Criteria	Exceedance/Notes
NA	

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DATA VALIDATION CHECKLIST – STAGE 4

Method blanks:

Within Criteria	Exceedance/Notes
N	232800/232121: perfluorobutanoic acid = 0.000469 µg/L and perfluorohexanesulfonic acid = 0.000272 µg/L and 232788/232150: perfluorobutanoic acid = 0.000418 µg/L and perfluorohexanesulfonic acid = 0.000331 µg/L – the following qualifiers were applied: • Flag "J+" for perfluorobutanoic acid – NF17-GW-01, NF17-GW-01-DUP, NF22-GW-01, NF23-GW-01, NF24-GW-01, and NF29-GW-01 • Raise to RL and flag "U" for perfluorobutanoic acid – NF-EB-02 and NF-FB-02 • Flag "J+" for perfluorohexanesulfonic acid – NF25-GW-01, NF32-GW-01, NF36-GW-01, and NFMW7-GW-01-DUP • Raise to RL and flag "U" for perfluorohexanesulfonic acid – NF17-GW-01, NF17-GW-01-DUP, NF19-GW-01, NF20-GW-01, NF21-GW-01, NF22-GW-01, NF23-GW-01, NF24-GW-01, NF27-GW-01, NF28-GW-01, NF29-GW-01, NF33-GW-01, NF34-GW-01, and NF35-GW-01

Field blanks:

Within Criteria	Exceedance/Notes
Y	No detections after application of method blank flags.

Interference Check Samples (ICS) (ICP metals only):

Within Criteria	Exceedance/Notes
NA	

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DATA VALIDATION CHECKLIST – STAGE 4

System monitoring compounds (surrogates and labeled compounds):

Within Criteria	Exceedance/Notes
N	The published Method 537 uses three labeled compounds as surrogates and another three as internal standards. TestAmerica uses 18 labeled compounds as surrogates and one of them, perfluorooctanoic acid, as an internal standard. High %Rs for M2-6:2-fluorotelomer sulfonate (FTS) for NF18-GW-01, NF26-GW-01, NF32-GW-01, NF35-GW-01, and NF35-SS-01 – flag positive 4:2 FTS and 6:2 FTS results "J+" Low %R for $^{13}C_2$-perfluorotetradecanoic acid for NF28-GW-01 – flag "UJ" for perfluorotetradecanoic acid and perfluorotridecanoic acid

MS/MSD:

Within Criteria	Exceedance/Notes
N	NF27-GW-01: High %Rs for 4:2 FTS – no flag (result non-detect) NF33-GW-01: High %Rs for 4:2 FTS – no flag (result non-detect) High RPDs for perfluorobutanoic acid and perfluoropentanoic acid – flag "J"

Post digestion spikes:

Within Criteria	Exceedance/Notes
NA	

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DATA VALIDATION CHECKLIST – STAGE 4

Serial dilutions:

Within Criteria	Exceedance/Notes
NA	

Laboratory duplicates:

Within Criteria	Exceedance/Notes
NA	

Field duplicates:

Within Criteria	Exceedance/Notes
Y	

LCSs/LCSDs:

Within Criteria	Exceedance/Notes
Y	

Sample dilutions:

Within Criteria	Exceedance/Notes
Y	Undiluted perfluorobutanoic acid and perfluoropentanoic acid exceeded the calibration range (indicated by an "E" flag) for NF20-GW-01 – report these results from the 5x analysis and the rest from the undiluted analysis Undiluted perfluorobutanesulfonic acid exceeded the calibration range (indicated by an "E" flag) for NF31-GW-01 – report these results from the 5x analysis and the rest from the undiluted analysis

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DATA VALIDATION CHECKLIST – STAGE 4

Re-extraction and reanalysis:

Within Criteria	Exceedance/Notes
NA	

Second column confirmation (GC and HPLC analyses only):

Within Criteria	Exceedance/Notes
NA	

Internal Standards:

Within Criteria	Exceedance/Notes
Y	

Target analyte identification:

Within Criteria	Exceedance/Notes
NA	

Analyte quantitation and MDLs/RLs:

Within Criteria	Exceedance/Notes
Y	Analytes detected at concentrations below their sample reporting limits – flagged “J” by the laboratory

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DATA VALIDATION CHECKLIST – STAGE 4

Tentatively identified compounds:

Within Criteria	Exceedance/Notes
NA	

System performance and instrument stability:

Within Criteria	Exceedance/Notes
Y	

Overall Qualifications:

See results summary pages attached for changes to the laboratory qualifiers based upon this validation. The following is a list of qualifiers and definitions that may be used for the validation of this data package:

J	The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample.
J+	The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample and may be biased high.
J-	The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample and may be biased low.
NJ	The analysis indicates the presence of an analyte that has been “tentatively identified” and the associated value is the approximate concentration of the analyte in the sample.
R	The sample result is rejected as unusable due to serious deficiencies in one or more quality control criteria. The analyte may or may not be present in the sample.
U	The analyte was analyzed for, but was not detected at or above the associated value (reporting limit).
UJ	The analyte was analyzed for, but was not detected at or above the associated value (reporting limit), which is considered approximate due to deficiencies in one or more quality control criteria.

1955 Evergreen Blvd., Ste. 300, Duluth, GA 30096
Tel 678.775.3080 Fax 678.775.3138
www.tetratech.com

NATIONAL FIREWORKS PERFLUORINATED ALKYL SUBSTANCES ANALYTICAL RESULTS SUMMARY
TESTAMERICA REPORT NO. 320-40571-1

Sample ID	Component	Lab Result	Lab Qual	DL	RL	DF	Units	Val Result	Val Qual
NF17-GW-01	4:2 Fluorotelomer sulfonate (4:2 FTS)	ND		0.0047	0.018	1	ug/L	0.018	U
NF17-GW-01	6:2 Fluorotelomer sulfonate (6:2 FTS)	0.0038	J	0.0018	0.018	1	ug/L	0.0038	J
NF17-GW-01	8:2 Fluorotelomer sulfonate (8:2 FTS)	ND		0.0018	0.018	1	ug/L	0.018	U
NF17-GW-01	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.0017	0.018	1	ug/L	0.018	U
NF17-GW-01	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.0028	0.018	1	ug/L	0.018	U
NF17-GW-01	Perfluorobutanesulfonic acid (PFBS)	0.0017	J	0.00018	0.0018	1	ug/L	0.0017	J
NF17-GW-01	Perfluorobutanoic acid (PFBA)	0.0035	B	0.00032	0.0018	1	ug/L	0.0035	J+
NF17-GW-01	Perfluorodecanesulfonic acid (PFDS)	ND		0.00029	0.0018	1	ug/L	0.0018	U
NF17-GW-01	Perfluorodecanoic acid (PFDA)	ND		0.00028	0.0018	1	ug/L	0.0018	U
NF17-GW-01	Perfluorododecanoic acid (PFDoA)	ND		0.0005	0.0018	1	ug/L	0.0018	U
NF17-GW-01	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.00017	0.0018	1	ug/L	0.0018	U
NF17-GW-01	Perfluoroheptanoic acid (PFHpA)	0.00074	J	0.00023	0.0018	1	ug/L	0.00074	J
NF17-GW-01	Perfluorohexanesulfonic acid (PFHxS)	0.0012	J B	0.00015	0.0018	1	ug/L	0.0018	U
NF17-GW-01	Perfluorohexanoic acid (PFHxA)	0.00089	J	0.00052	0.0018	1	ug/L	0.00089	J
NF17-GW-01	Perfluorononanesulfonic acid (PFNS)	ND		0.00014	0.0018	1	ug/L	0.0018	U
NF17-GW-01	Perfluorononanoic acid (PFNA)	0.00062	J	0.00024	0.0018	1	ug/L	0.00062	J
NF17-GW-01	Perfluorooctane Sulfonamide (FOSA)	ND		0.00032	0.0018	1	ug/L	0.0018	U
NF17-GW-01	Perfluorooctanesulfonic acid (PFOS)	0.0069		0.00049	0.0018	1	ug/L	0.0069	
NF17-GW-01	Perfluorooctanoic acid (PFOA)	0.0031		0.00077	0.0018	1	ug/L	0.0031	
NF17-GW-01	Perfluoropentanesulfonic acid (PFPeS)	0.00029	J I	0.00027	0.0018	1	ug/L	0.00029	J
NF17-GW-01	Perfluoropentanoic acid (PFPeA)	0.0013	J	0.00044	0.0018	1	ug/L	0.0013	J
NF17-GW-01	Perfluorotetradecanoic acid (PFTeA)	ND		0.00026	0.0018	1	ug/L	0.0018	U
NF17-GW-01	Perfluorotridecanoic Acid (PFTriA)	ND		0.0012	0.0018	1	ug/L	0.0018	U
NF17-GW-01	Perfluoroundecanoic acid (PFUnA)	ND		0.00099	0.0018	1	ug/L	0.0018	U
NF17-GW-01-DUP	4:2 Fluorotelomer sulfonate (4:2 FTS)	ND		0.005	0.019	1	ug/L	0.019	U
NF17-GW-01-DUP	6:2 Fluorotelomer sulfonate (6:2 FTS)	0.0019	J	0.0019	0.019	1	ug/L	0.0019	J
NF17-GW-01-DUP	8:2 Fluorotelomer sulfonate (8:2 FTS)	ND		0.0019	0.019	1	ug/L	0.019	U
NF17-GW-01-DUP	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.0018	0.019	1	ug/L	0.019	U
NF17-GW-01-DUP	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.003	0.019	1	ug/L	0.019	U
NF17-GW-01-DUP	Perfluorobutanesulfonic acid (PFBS)	0.0016	J	0.00019	0.0019	1	ug/L	0.0016	J
NF17-GW-01-DUP	Perfluorobutanoic acid (PFBA)	0.0041	B	0.00034	0.0019	1	ug/L	0.0041	J+
NF17-GW-01-DUP	Perfluorodecanesulfonic acid (PFDS)	ND		0.00031	0.0019	1	ug/L	0.0019	U
NF17-GW-01-DUP	Perfluorodecanoic acid (PFDA)	ND		0.0003	0.0019	1	ug/L	0.0019	U
NF17-GW-01-DUP	Perfluorododecanoic acid (PFDoA)	ND		0.00053	0.0019	1	ug/L	0.0019	U
NF17-GW-01-DUP	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.00018	0.0019	1	ug/L	0.0019	U
NF17-GW-01-DUP	Perfluoroheptanoic acid (PFHpA)	0.00065	J	0.00024	0.0019	1	ug/L	0.00065	J
NF17-GW-01-DUP	Perfluorohexanesulfonic acid (PFHxS)	0.0013	J B	0.00016	0.0019	1	ug/L	0.0019	U
NF17-GW-01-DUP	Perfluorohexanoic acid (PFHxA)	0.00068	J	0.00056	0.0019	1	ug/L	0.00068	J
NF17-GW-01-DUP	Perfluorononanesulfonic acid (PFNS)	ND		0.00015	0.0019	1	ug/L	0.0019	U
NF17-GW-01-DUP	Perfluorononanoic acid (PFNA)	ND		0.00026	0.0019	1	ug/L	0.0019	U

NATIONAL FIREWORKS PERFLUORINATED ALKYL SUBSTANCES ANALYTICAL RESULTS SUMMARY
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Sample ID	Component	Lab Result	Lab Qual	DL	RL	DF	Units	Val Result	Val Qual
NF17-GW-01-DUP	Perfluorooctane Sulfonamide (FOSA)	ND		0.00034	0.0019	1	ug/L	0.0019	U
NF17-GW-01-DUP	Perfluorooctanesulfonic acid (PFOS)	0.0075		0.00052	0.0019	1	ug/L	0.0075	
NF17-GW-01-DUP	Perfluorooctanoic acid (PFOA)	0.0032		0.00082	0.0019	1	ug/L	0.0032	
NF17-GW-01-DUP	Perfluoropentanesulfonic acid (PFPeS)	0.00039	J	0.00029	0.0019	1	ug/L	0.00039	J
NF17-GW-01-DUP	Perfluoropentanoic acid (PFPeA)	0.00094	J	0.00047	0.0019	1	ug/L	0.00094	J
NF17-GW-01-DUP	Perfluorotetradecanoic acid (PFTeA)	ND		0.00028	0.0019	1	ug/L	0.0019	U
NF17-GW-01-DUP	Perfluorotridecanoic Acid (PFTriA)	ND		0.0012	0.0019	1	ug/L	0.0019	U
NF17-GW-01-DUP	Perfluoroundecanoic acid (PFUnA)	ND		0.0011	0.0019	1	ug/L	0.0019	U
NF18-GW-01	4:2 Fluorotelomer sulfonate (4:2 FTS)	ND		0.0048	0.018	1	ug/L	0.018	U
NF18-GW-01	6:2 Fluorotelomer sulfonate (6:2 FTS)	ND		0.0018	0.018	1	ug/L	0.018	U
NF18-GW-01	8:2 Fluorotelomer sulfonate (8:2 FTS)	ND		0.0018	0.018	1	ug/L	0.018	U
NF18-GW-01	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.0017	0.018	1	ug/L	0.018	U
NF18-GW-01	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.0028	0.018	1	ug/L	0.018	U
NF18-GW-01	Perfluorobutanesulfonic acid (PFBS)	0.01		0.00018	0.0018	1	ug/L	0.010	
NF18-GW-01	Perfluorobutanoic acid (PFBA)	0.016	B	0.00032	0.0018	1	ug/L	0.016	
NF18-GW-01	Perfluorodecanesulfonic acid (PFDS)	ND		0.00029	0.0018	1	ug/L	0.0018	U
NF18-GW-01	Perfluorodecanoic acid (PFDA)	0.00049	J	0.00028	0.0018	1	ug/L	0.00049	J
NF18-GW-01	Perfluorododecanoic acid (PFDoA)	ND		0.00051	0.0018	1	ug/L	0.0018	U
NF18-GW-01	Perfluoroheptanesulfonic Acid (PFHpS)	0.00088	J	0.00017	0.0018	1	ug/L	0.00088	J
NF18-GW-01	Perfluoroheptanoic acid (PFHpA)	0.0039		0.00023	0.0018	1	ug/L	0.0039	
NF18-GW-01	Perfluorohexanesulfonic acid (PFHxS)	0.007	B	0.00016	0.0018	1	ug/L	0.0070	
NF18-GW-01	Perfluorohexanoic acid (PFHxA)	0.0046		0.00053	0.0018	1	ug/L	0.0046	
NF18-GW-01	Perfluorononanesulfonic acid (PFNS)	ND		0.00015	0.0018	1	ug/L	0.0018	U
NF18-GW-01	Perfluorononanoic acid (PFNA)	0.0027		0.00025	0.0018	1	ug/L	0.0027	
NF18-GW-01	Perfluorooctane Sulfonamide (FOSA)	ND		0.00032	0.0018	1	ug/L	0.0018	U
NF18-GW-01	Perfluorooctanesulfonic acid (PFOS)	0.022		0.0005	0.0018	1	ug/L	0.022	
NF18-GW-01	Perfluorooctanoic acid (PFOA)	0.018		0.00078	0.0018	1	ug/L	0.018	
NF18-GW-01	Perfluoropentanesulfonic acid (PFPeS)	0.0018		0.00028	0.0018	1	ug/L	0.0018	
NF18-GW-01	Perfluoropentanoic acid (PFPeA)	0.006		0.00045	0.0018	1	ug/L	0.0060	
NF18-GW-01	Perfluorotetradecanoic acid (PFTeA)	ND		0.00027	0.0018	1	ug/L	0.0018	U
NF18-GW-01	Perfluorotridecanoic Acid (PFTriA)	ND		0.0012	0.0018	1	ug/L	0.0018	U
NF18-GW-01	Perfluoroundecanoic acid (PFUnA)	ND		0.001	0.0018	1	ug/L	0.0018	U
NF19-GW-01	4:2 Fluorotelomer sulfonate (4:2 FTS)	ND		0.0048	0.019	1	ug/L	0.019	U
NF19-GW-01	6:2 Fluorotelomer sulfonate (6:2 FTS)	0.0034	J	0.0019	0.019	1	ug/L	0.0034	J
NF19-GW-01	8:2 Fluorotelomer sulfonate (8:2 FTS)	ND		0.0019	0.019	1	ug/L	0.019	U
NF19-GW-01	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.0018	0.019	1	ug/L	0.019	U
NF19-GW-01	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.0029	0.019	1	ug/L	0.019	U
NF19-GW-01	Perfluorobutanesulfonic acid (PFBS)	0.001	J	0.00019	0.0019	1	ug/L	0.0010	J
NF19-GW-01	Perfluorobutanoic acid (PFBA)	0.014	B	0.00033	0.0019	1	ug/L	0.014	

NATIONAL FIREWORKS PERFLUORINATED ALKYL SUBSTANCES ANALYTICAL RESULTS SUMMARY
TESTAMERICA REPORT NO. 320-40571-1

Sample ID	Component	Lab Result	Lab Qual	DL	RL	DF	Units	Val Result	Val Qual
NF19-GW-01	Perfluorodecanesulfonic acid (PFDS)	ND		0.0003	0.0019	1	ug/L	0.0019	U
NF19-GW-01	Perfluorodecanoic acid (PFDA)	ND		0.00029	0.0019	1	ug/L	0.0019	U
NF19-GW-01	Perfluorododecanoic acid (PFDoA)	ND		0.00051	0.0019	1	ug/L	0.0019	U
NF19-GW-01	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.00018	0.0019	1	ug/L	0.0019	U
NF19-GW-01	Perfluoroheptanoic acid (PFHpA)	0.002		0.00023	0.0019	1	ug/L	0.0020	
NF19-GW-01	Perfluorohexanesulfonic acid (PFHxS)	0.0011	J B	0.00016	0.0019	1	ug/L	0.0019	U
NF19-GW-01	Perfluorohexanoic acid (PFHxA)	0.003		0.00054	0.0019	1	ug/L	0.0030	
NF19-GW-01	Perfluorononanesulfonic acid (PFNS)	ND		0.00015	0.0019	1	ug/L	0.0019	U
NF19-GW-01	Perfluorononanoic acid (PFNA)	0.00077	J	0.00025	0.0019	1	ug/L	0.00077	J
NF19-GW-01	Perfluorooctane Sulfonamide (FOSA)	ND		0.00033	0.0019	1	ug/L	0.0019	U
NF19-GW-01	Perfluorooctanesulfonic acid (PFOS)	0.00088	J	0.0005	0.0019	1	ug/L	0.00088	J
NF19-GW-01	Perfluorooctanoic acid (PFOA)	0.0025		0.00079	0.0019	1	ug/L	0.0025	
NF19-GW-01	Perfluoropentanesulfonic acid (PFPeS)	ND		0.00028	0.0019	1	ug/L	0.0019	U
NF19-GW-01	Perfluoropentanoic acid (PFPeA)	0.0083		0.00046	0.0019	1	ug/L	0.0083	
NF19-GW-01	Perfluorotetradecanoic acid (PFTeA)	ND		0.00027	0.0019	1	ug/L	0.0019	U
NF19-GW-01	Perfluorotridecanoic Acid (PFTriA)	ND		0.0012	0.0019	1	ug/L	0.0019	U
NF19-GW-01	Perfluoroundecanoic acid (PFUnA)	ND		0.001	0.0019	1	ug/L	0.0019	U
NF20-GW-01	4:2 Fluorotelomer sulfonate (4:2 FTS)	ND		0.0082	0.032	1	ug/L	0.032	U
NF20-GW-01	6:2 Fluorotelomer sulfonate (6:2 FTS)	0.025	J	0.0032	0.032	1	ug/L	0.025	J
NF20-GW-01	8:2 Fluorotelomer sulfonate (8:2 FTS)	ND		0.0032	0.032	1	ug/L	0.032	U
NF20-GW-01	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.003	0.032	1	ug/L	0.032	U
NF20-GW-01	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.0049	0.032	1	ug/L	0.032	U
NF20-GW-01	Perfluorobutanesulfonic acid (PFBS)	ND		0.00032	0.0032	1	ug/L	0.0032	U
NF20-GW-01	Perfluorobutanoic acid (PFBA)	0.89	B	0.0028	0.016	5	ug/L	0.89	
NF20-GW-01	Perfluorodecanesulfonic acid (PFDS)	ND		0.00051	0.0032	1	ug/L	0.0032	U
NF20-GW-01	Perfluorodecanoic acid (PFDA)	0.012		0.00049	0.0032	1	ug/L	0.012	
NF20-GW-01	Perfluorododecanoic acid (PFDoA)	0.004		0.00087	0.0032	1	ug/L	0.0040	
NF20-GW-01	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.0003	0.0032	1	ug/L	0.0032	U
NF20-GW-01	Perfluoroheptanoic acid (PFHpA)	0.12		0.0004	0.0032	1	ug/L	0.12	
NF20-GW-01	Perfluorohexanesulfonic acid (PFHxS)	0.00064	J B	0.00027	0.0032	1	ug/L	0.0032	U
NF20-GW-01	Perfluorohexanoic acid (PFHxA)	0.16		0.00092	0.0032	1	ug/L	0.16	
NF20-GW-01	Perfluorononanesulfonic acid (PFNS)	ND		0.00025	0.0032	1	ug/L	0.0032	U
NF20-GW-01	Perfluorononanoic acid (PFNA)	0.032		0.00043	0.0032	1	ug/L	0.032	
NF20-GW-01	Perfluorooctane Sulfonamide (FOSA)	ND		0.00055	0.0032	1	ug/L	0.0032	U
NF20-GW-01	Perfluorooctanesulfonic acid (PFOS)	0.0021	J	0.00085	0.0032	1	ug/L	0.0021	J
NF20-GW-01	Perfluorooctanoic acid (PFOA)	0.039		0.0013	0.0032	1	ug/L	0.039	
NF20-GW-01	Perfluoropentanesulfonic acid (PFPeS)	ND		0.00047	0.0032	1	ug/L	0.0032	U
NF20-GW-01	Perfluoropentanoic acid (PFPeA)	0.72		0.0039	0.016	5	ug/L	0.72	
NF20-GW-01	Perfluorotetradecanoic acid (PFTeA)	0.0021	J	0.00046	0.0032	1	ug/L	0.0021	J
NF20-GW-01	Perfluorotridecanoic Acid (PFTriA)	0.0029	J	0.0021	0.0032	1	ug/L	0.0029	J

Sample ID	Component	Lab Result	Lab Qual	DL	RL	DF	Units	Val Result	Val Qual
NF20-GW-01	Perfluoroundecanoic acid (PFUnA)	0.013		0.0017	0.0032	1	ug/L	0.013	
NF21-GW-01	4:2 Fluorotelomer sulfonate (4:2 FTS)	ND		0.0048	0.018	1	ug/L	0.018	U
NF21-GW-01	6:2 Fluorotelomer sulfonate (6:2 FTS)	0.0028	J	0.0018	0.018	1	ug/L	0.0028	J
NF21-GW-01	8:2 Fluorotelomer sulfonate (8:2 FTS)	ND		0.0018	0.018	1	ug/L	0.018	U
NF21-GW-01	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.0018	0.018	1	ug/L	0.018	U
NF21-GW-01	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.0029	0.018	1	ug/L	0.018	U
NF21-GW-01	Perfluorobutanesulfonic acid (PFBS)	0.00099	J	0.00018	0.0018	1	ug/L	0.00099	J
NF21-GW-01	Perfluorobutanoic acid (PFBA)	0.0079	B	0.00032	0.0018	1	ug/L	0.0079	
NF21-GW-01	Perfluorodecanesulfonic acid (PFDS)	ND		0.00029	0.0018	1	ug/L	0.0018	U
NF21-GW-01	Perfluorodecanoic acid (PFDA)	ND		0.00029	0.0018	1	ug/L	0.0018	U
NF21-GW-01	Perfluorododecanoic acid (PFDoA)	ND		0.00051	0.0018	1	ug/L	0.0018	U
NF21-GW-01	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.00018	0.0018	1	ug/L	0.0018	U
NF21-GW-01	Perfluoroheptanoic acid (PFHpA)	0.0013	J	0.00023	0.0018	1	ug/L	0.0013	J
NF21-GW-01	Perfluorohexanesulfonic acid (PFHxS)	0.0016	J B	0.00016	0.0018	1	ug/L	0.0018	U
NF21-GW-01	Perfluorohexanoic acid (PFHxA)	0.0028		0.00053	0.0018	1	ug/L	0.0028	
NF21-GW-01	Perfluorononanesulfonic acid (PFNS)	ND		0.00015	0.0018	1	ug/L	0.0018	U
NF21-GW-01	Perfluorononanoic acid (PFNA)	ND		0.00025	0.0018	1	ug/L	0.0018	U
NF21-GW-01	Perfluorooctane Sulfonamide (FOSA)	ND		0.00032	0.0018	1	ug/L	0.0018	U
NF21-GW-01	Perfluorooctanesulfonic acid (PFOS)	0.0016	J	0.0005	0.0018	1	ug/L	0.0016	J
NF21-GW-01	Perfluorooctanoic acid (PFOA)	0.0014	J	0.00078	0.0018	1	ug/L	0.0014	J
NF21-GW-01	Perfluoropentanesulfonic acid (PFPeS)	ND		0.00028	0.0018	1	ug/L	0.0018	U
NF21-GW-01	Perfluoropentanoic acid (PFPeA)	0.0065		0.00045	0.0018	1	ug/L	0.0065	
NF21-GW-01	Perfluorotetradecanoic acid (PFTeA)	ND		0.00027	0.0018	1	ug/L	0.0018	U
NF21-GW-01	Perfluorotridecanoic Acid (PFTriA)	ND		0.0012	0.0018	1	ug/L	0.0018	U
NF21-GW-01	Perfluoroundecanoic acid (PFUnA)	ND		0.001	0.0018	1	ug/L	0.0018	U
NF22-GW-01	4:2 Fluorotelomer sulfonate (4:2 FTS)	ND		0.0048	0.018	1	ug/L	0.018	U
NF22-GW-01	6:2 Fluorotelomer sulfonate (6:2 FTS)	ND		0.0018	0.018	1	ug/L	0.018	U
NF22-GW-01	8:2 Fluorotelomer sulfonate (8:2 FTS)	ND		0.0018	0.018	1	ug/L	0.018	U
NF22-GW-01	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.0018	0.018	1	ug/L	0.018	U
NF22-GW-01	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.0029	0.018	1	ug/L	0.018	U
NF22-GW-01	Perfluorobutanesulfonic acid (PFBS)	0.0026		0.00018	0.0018	1	ug/L	0.0026	
NF22-GW-01	Perfluorobutanoic acid (PFBA)	0.0028	B	0.00032	0.0018	1	ug/L	0.0028	J+
NF22-GW-01	Perfluorodecanesulfonic acid (PFDS)	ND		0.0003	0.0018	1	ug/L	0.0018	U
NF22-GW-01	Perfluorodecanoic acid (PFDA)	ND		0.00029	0.0018	1	ug/L	0.0018	U
NF22-GW-01	Perfluorododecanoic acid (PFDoA)	ND		0.00051	0.0018	1	ug/L	0.0018	U
NF22-GW-01	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.00018	0.0018	1	ug/L	0.0018	U
NF22-GW-01	Perfluoroheptanoic acid (PFHpA)	0.0005	J	0.00023	0.0018	1	ug/L	0.00050	J
NF22-GW-01	Perfluorohexanesulfonic acid (PFHxS)	0.0012	J B	0.00016	0.0018	1	ug/L	0.0018	U
NF22-GW-01	Perfluorohexanoic acid (PFHxA)	ND		0.00054	0.0018	1	ug/L	0.0018	U

NATIONAL FIREWORKS PERFLUORINATED ALKYL SUBSTANCES ANALYTICAL RESULTS SUMMARY
TESTAMERICA REPORT NO. 320-40571-1

Sample ID	Component	Lab Result	Lab Qual	DL	RL	DF	Units	Val Result	Val Qual
NF22-GW-01	Perfluorononanesulfonic acid (PFNS)	ND		0.00015	0.0018	1	ug/L	0.0018	U
NF22-GW-01	Perfluorononanoic acid (PFNA)	ND		0.00025	0.0018	1	ug/L	0.0018	U
NF22-GW-01	Perfluorooctane Sulfonamide (FOSA)	ND		0.00032	0.0018	1	ug/L	0.0018	U
NF22-GW-01	Perfluorooctanesulfonic acid (PFOS)	0.0015	J	0.0005	0.0018	1	ug/L	0.0015	J
NF22-GW-01	Perfluorooctanoic acid (PFOA)	0.0018		0.00079	0.0018	1	ug/L	0.0018	
NF22-GW-01	Perfluoropentanesulfonic acid (PFPeS)	0.00073	J	0.00028	0.0018	1	ug/L	0.00073	J
NF22-GW-01	Perfluoropentanoic acid (PFPeA)	0.00077	J	0.00045	0.0018	1	ug/L	0.00077	J
NF22-GW-01	Perfluorotetradecanoic acid (PFTeA)	ND		0.00027	0.0018	1	ug/L	0.0018	U
NF22-GW-01	Perfluorotridecanoic Acid (PFTriA)	ND		0.0012	0.0018	1	ug/L	0.0018	U
NF22-GW-01	Perfluoroundecanoic acid (PFUnA)	ND		0.001	0.0018	1	ug/L	0.0018	U
NF23-GW-01	4:2 Fluorotelomer sulfonate (4:2 FTS)	ND		0.0046	0.018	1	ug/L	0.018	U
NF23-GW-01	6:2 Fluorotelomer sulfonate (6:2 FTS)	0.0035	J	0.0018	0.018	1	ug/L	0.0035	J
NF23-GW-01	8:2 Fluorotelomer sulfonate (8:2 FTS)	ND		0.0018	0.018	1	ug/L	0.018	U
NF23-GW-01	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.0017	0.018	1	ug/L	0.018	U
NF23-GW-01	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.0028	0.018	1	ug/L	0.019	U
NF23-GW-01	Perfluorobutanesulfonic acid (PFBS)	0.0017	J	0.00018	0.0018	1	ug/L	0.0017	J
NF23-GW-01	Perfluorobutanoic acid (PFBA)	0.003	B	0.00031	0.0018	1	ug/L	0.0030	J+
NF23-GW-01	Perfluorodecanesulfonic acid (PFDS)	ND		0.00028	0.0018	1	ug/L	0.0018	U
NF23-GW-01	Perfluorodecanoic acid (PFDA)	ND		0.00028	0.0018	1	ug/L	0.0018	U
NF23-GW-01	Perfluorododecanoic acid (PFDoA)	ND		0.00049	0.0018	1	ug/L	0.0018	U
NF23-GW-01	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.00017	0.0018	1	ug/L	0.0018	U
NF23-GW-01	Perfluoroheptanoic acid (PFHpA)	ND		0.00022	0.0018	1	ug/L	0.0018	U
NF23-GW-01	Perfluorohexanesulfonic acid (PFHxS)	0.0013	J B	0.00015	0.0018	1	ug/L	0.0018	U
NF23-GW-01	Perfluorohexanoic acid (PFHxA)	ND		0.00051	0.0018	1	ug/L	0.0018	U
NF23-GW-01	Perfluorononanesulfonic acid (PFNS)	ND		0.00014	0.0018	1	ug/L	0.0018	U
NF23-GW-01	Perfluorononanoic acid (PFNA)	ND		0.00024	0.0018	1	ug/L	0.0018	U
NF23-GW-01	Perfluorooctane Sulfonamide (FOSA)	ND		0.00031	0.0018	1	ug/L	0.0018	U
NF23-GW-01	Perfluorooctanesulfonic acid (PFOS)	0.0016	J	0.00048	0.0018	1	ug/L	0.0016	J
NF23-GW-01	Perfluorooctanoic acid (PFOA)	ND		0.00075	0.0018	1	ug/L	0.0018	U
NF23-GW-01	Perfluoropentanesulfonic acid (PFPeS)	0.00041	J	0.00027	0.0018	1	ug/L	0.00041	J
NF23-GW-01	Perfluoropentanoic acid (PFPeA)	0.0014	J	0.00043	0.0018	1	ug/L	0.0014	J
NF23-GW-01	Perfluorotetradecanoic acid (PFTeA)	ND		0.00026	0.0018	1	ug/L	0.0018	U
NF23-GW-01	Perfluorotridecanoic Acid (PFTriA)	ND		0.0012	0.0018	1	ug/L	0.0018	U
NF23-GW-01	Perfluoroundecanoic acid (PFUnA)	ND		0.00098	0.0018	1	ug/L	0.0018	U
NF24-GW-01	4:2 Fluorotelomer sulfonate (4:2 FTS)	ND		0.0048	0.019	1	ug/L	0.019	U
NF24-GW-01	6:2 Fluorotelomer sulfonate (6:2 FTS)	0.0028	J	0.0019	0.019	1	ug/L	0.0028	J
NF24-GW-01	8:2 Fluorotelomer sulfonate (8:2 FTS)	ND		0.0019	0.019	1	ug/L	0.019	U
NF24-GW-01	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.0018	0.019	1	ug/L	0.019	U
NF24-GW-01	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.0029	0.019	1	ug/L	0.019	U

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Sample ID	Component	Lab Result	Lab Qual	DL	RL	DF	Units	Val Result	Val Qual
NF24-GW-01	Perfluorobutanesulfonic acid (PFBS)	0.004		0.00019	0.0019	1	ug/L	0.0040	
NF24-GW-01	Perfluorobutanoic acid (PFBA)	0.0036	B	0.00033	0.0019	1	ug/L	0.0036	J+
NF24-GW-01	Perfluorodecanesulfonic acid (PFDS)	ND		0.0003	0.0019	1	ug/L	0.0019	U
NF24-GW-01	Perfluorodecanoic acid (PFDA)	ND		0.00029	0.0019	1	ug/L	0.0019	U
NF24-GW-01	Perfluorododecanoic acid (PFDoA)	ND		0.00051	0.0019	1	ug/L	0.0019	U
NF24-GW-01	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.00018	0.0019	1	ug/L	0.0019	U
NF24-GW-01	Perfluoroheptanoic acid (PFHpA)	ND		0.00023	0.0019	1	ug/L	0.0019	U
NF24-GW-01	Perfluorohexanesulfonic acid (PFHxS)	0.00081	J B	0.00016	0.0019	1	ug/L	0.0019	U
NF24-GW-01	Perfluorohexanoic acid (PFHxA)	ND		0.00054	0.0019	1	ug/L	0.0019	U
NF24-GW-01	Perfluorononanesulfonic acid (PFNS)	ND		0.00015	0.0019	1	ug/L	0.0019	U
NF24-GW-01	Perfluorononanoic acid (PFNA)	0.00074	J	0.00025	0.0019	1	ug/L	0.00074	J
NF24-GW-01	Perfluorooctane Sulfonamide (FOSA)	ND		0.00033	0.0019	1	ug/L	0.0019	U
NF24-GW-01	Perfluorooctanesulfonic acid (PFOS)	0.011		0.0005	0.0019	1	ug/L	0.011	
NF24-GW-01	Perfluorooctanoic acid (PFOA)	0.0012	J	0.00079	0.0019	1	ug/L	0.0012	J
NF24-GW-01	Perfluoropentanesulfonic acid (PFPeS)	ND		0.00028	0.0019	1	ug/L	0.0019	U
NF24-GW-01	Perfluoropentanoic acid (PFPeA)	ND		0.00046	0.0019	1	ug/L	0.0019	U
NF24-GW-01	Perfluorotetradecanoic acid (PFTeA)	ND		0.00027	0.0019	1	ug/L	0.0019	U
NF24-GW-01	Perfluorotridecanoic Acid (PFTriA)	ND		0.0012	0.0019	1	ug/L	0.0019	U
NF24-GW-01	Perfluoroundecanoic acid (PFUnA)	ND		0.001	0.0019	1	ug/L	0.0019	U
NF25-GW-01	4:2 Fluorotelomer sulfonate (4:2 FTS)	ND		0.0046	0.018	1	ug/L	0.018	U
NF25-GW-01	6:2 Fluorotelomer sulfonate (6:2 FTS)	ND		0.0018	0.018	1	ug/L	0.018	U
NF25-GW-01	8:2 Fluorotelomer sulfonate (8:2 FTS)	ND		0.0018	0.018	1	ug/L	0.019	U
NF25-GW-01	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.0017	0.018	1	ug/L	0.018	U
NF25-GW-01	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.0027	0.018	1	ug/L	0.018	U
NF25-GW-01	Perfluorobutanesulfonic acid (PFBS)	0.0074		0.00018	0.0018	1	ug/L	0.0074	
NF25-GW-01	Perfluorobutanoic acid (PFBA)	0.017	B	0.00031	0.0018	1	ug/L	0.017	
NF25-GW-01	Perfluorodecanesulfonic acid (PFDS)	ND		0.00028	0.0018	1	ug/L	0.0018	U
NF25-GW-01	Perfluorodecanoic acid (PFDA)	ND		0.00027	0.0018	1	ug/L	0.0018	U
NF25-GW-01	Perfluorododecanoic acid (PFDoA)	ND		0.00049	0.0018	1	ug/L	0.0018	U
NF25-GW-01	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.00017	0.0018	1	ug/L	0.0018	U
NF25-GW-01	Perfluoroheptanoic acid (PFHpA)	0.0038		0.00022	0.0018	1	ug/L	0.0038	
NF25-GW-01	Perfluorohexanesulfonic acid (PFHxS)	0.0026	B	0.00015	0.0018	1	ug/L	0.0026	J+
NF25-GW-01	Perfluorohexanoic acid (PFHxA)	0.006		0.00051	0.0018	1	ug/L	0.0060	
NF25-GW-01	Perfluorononanesulfonic acid (PFNS)	ND		0.00014	0.0018	1	ug/L	0.0018	U
NF25-GW-01	Perfluorononanoic acid (PFNA)	0.00089	J	0.00024	0.0018	1	ug/L	0.00089	J
NF25-GW-01	Perfluorooctane Sulfonamide (FOSA)	ND		0.00031	0.0018	1	ug/L	0.0018	U
NF25-GW-01	Perfluorooctanesulfonic acid (PFOS)	0.0026		0.00048	0.0018	1	ug/L	0.0026	
NF25-GW-01	Perfluorooctanoic acid (PFOA)	0.011		0.00075	0.0018	1	ug/L	0.011	
NF25-GW-01	Perfluoropentanesulfonic acid (PFPeS)	ND		0.00026	0.0018	1	ug/L	0.0018	U
NF25-GW-01	Perfluoropentanoic acid (PFPeA)	0.0086		0.00043	0.0018	1	ug/L	0.0086	

Sample ID	Component	Lab Result	Lab Qual	DL	RL	DF	Units	Val Result	Val Qual
NF25-GW-01	Perfluorotetradecanoic acid (PFTeA)	ND		0.00026	0.0018	1	ug/L	0.0018	U
NF25-GW-01	Perfluorotridecanoic Acid (PFTriA)	ND		0.0011	0.0018	1	ug/L	0.0018	U
NF25-GW-01	Perfluoroundecanoic acid (PFUnA)	ND		0.00097	0.0018	1	ug/L	0.0018	U
NF26-GW-01	4:2 Fluorotelomer sulfonate (4:2 FTS)	ND		0.0061	0.024	1	ug/L	0.024	U
NF26-GW-01	6:2 Fluorotelomer sulfonate (6:2 FTS)	0.009	J	0.0024	0.024	1	ug/L	0.0090	J+
NF26-GW-01	8:2 Fluorotelomer sulfonate (8:2 FTS)	ND		0.0024	0.024	1	ug/L	0.024	U
NF26-GW-01	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.0022	0.024	1	ug/L	0.024	U
NF26-GW-01	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.0037	0.024	1	ug/L	0.024	U
NF26-GW-01	Perfluorobutanesulfonic acid (PFBS)	0.4		0.00024	0.0024	1	ug/L	0.40	
NF26-GW-01	Perfluorobutanoic acid (PFBA)	0.44	B	0.00041	0.0024	1	ug/L	0.44	
NF26-GW-01	Perfluorodecanesulfonic acid (PFDS)	ND		0.00038	0.0024	1	ug/L	0.0024	U
NF26-GW-01	Perfluorodecanoic acid (PFDA)	0.0075		0.00037	0.0024	1	ug/L	0.0075	
NF26-GW-01	Perfluorododecanoic acid (PFDoA)	0.0021	J	0.00065	0.0024	1	ug/L	0.0021	J
NF26-GW-01	Perfluoroheptanesulfonic Acid (PFHpS)	0.00078	J	0.00022	0.0024	1	ug/L	0.00078	J
NF26-GW-01	Perfluoroheptanoic acid (PFHpA)	0.068		0.0003	0.0024	1	ug/L	0.068	
NF26-GW-01	Perfluorohexanesulfonic acid (PFHxS)	0.039	B	0.0002	0.0024	1	ug/L	0.039	
NF26-GW-01	Perfluorohexanoic acid (PFHxA)	0.16		0.00069	0.0024	1	ug/L	0.16	
NF26-GW-01	Perfluorononanesulfonic acid (PFNS)	ND		0.00019	0.0024	1	ug/L	0.0024	U
NF26-GW-01	Perfluorononanoic acid (PFNA)	0.0032		0.00032	0.0024	1	ug/L	0.0032	
NF26-GW-01	Perfluorooctane Sulfonamide (FOSA)	0.0006	J	0.00041	0.0024	1	ug/L	0.00060	J
NF26-GW-01	Perfluorooctanesulfonic acid (PFOS)	0.023		0.00064	0.0024	1	ug/L	0.023	
NF26-GW-01	Perfluorooctanoic acid (PFOA)	0.061		0.001	0.0024	1	ug/L	0.061	
NF26-GW-01	Perfluoropentanesulfonic acid (PFPeS)	0.0028		0.00035	0.0024	1	ug/L	0.0028	
NF26-GW-01	Perfluoropentanoic acid (PFPeA)	0.28		0.00058	0.0024	1	ug/L	0.28	
NF26-GW-01	Perfluorotetradecanoic acid (PFTeA)	ND		0.00034	0.0024	1	ug/L	0.0024	U
NF26-GW-01	Perfluorotridecanoic Acid (PFTriA)	ND		0.0015	0.0024	1	ug/L	0.0024	U
NF26-GW-01	Perfluoroundecanoic acid (PFUnA)	0.0019	J	0.0013	0.0024	1	ug/L	0.0019	J
NF27-GW-01	4:2 Fluorotelomer sulfonate (4:2 FTS)	ND	F1	0.0051	0.02	1	ug/L	0.020	U
NF27-GW-01	6:2 Fluorotelomer sulfonate (6:2 FTS)	0.0034	J	0.002	0.02	1	ug/L	0.0034	J
NF27-GW-01	8:2 Fluorotelomer sulfonate (8:2 FTS)	ND		0.002	0.02	1	ug/L	0.020	U
NF27-GW-01	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.0019	0.02	1	ug/L	0.020	U
NF27-GW-01	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.003	0.02	1	ug/L	0.020	U
NF27-GW-01	Perfluorobutanesulfonic acid (PFBS)	0.0012	J	0.0002	0.002	1	ug/L	0.0012	J
NF27-GW-01	Perfluorobutanoic acid (PFBA)	0.017	B	0.00034	0.002	1	ug/L	0.017	
NF27-GW-01	Perfluorodecanesulfonic acid (PFDS)	ND		0.00031	0.002	1	ug/L	0.0020	U
NF27-GW-01	Perfluorodecanoic acid (PFDA)	0.00051	J	0.0003	0.002	1	ug/L	0.00051	J
NF27-GW-01	Perfluorododecanoic acid (PFDoA)	ND		0.00054	0.002	1	ug/L	0.0020	U
NF27-GW-01	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.00019	0.002	1	ug/L	0.0020	U
NF27-GW-01	Perfluoroheptanoic acid (PFHpA)	0.0031		0.00025	0.002	1	ug/L	0.0031	

Sample ID	Component	Lab Result	Lab Qual	DL	RL	DF	Units	Val Result	Val Qual
NF27-GW-01	Perfluorohexanesulfonic acid (PFHxS)	0.0012	J B	0.00017	0.002	1	ug/L	0.0020	U
NF27-GW-01	Perfluorohexanoic acid (PFHxA)	0.0049		0.00057	0.002	1	ug/L	0.0049	
NF27-GW-01	Perfluorononanesulfonic acid (PFNS)	ND		0.00016	0.002	1	ug/L	0.0020	U
NF27-GW-01	Perfluorononanoic acid (PFNA)	0.0015	J	0.00027	0.002	1	ug/L	0.0015	J
NF27-GW-01	Perfluorooctane Sulfonamide (FOSA)	ND		0.00034	0.002	1	ug/L	0.0020	U
NF27-GW-01	Perfluorooctanesulfonic acid (PFOS)	0.0017	J	0.00053	0.002	1	ug/L	0.0017	J
NF27-GW-01	Perfluorooctanoic acid (PFOA)	0.0037		0.00083	0.002	1	ug/L	0.0037	
NF27-GW-01	Perfluoropentanesulfonic acid (PFPeS)	ND		0.00029	0.002	1	ug/L	0.0020	U
NF27-GW-01	Perfluoropentanoic acid (PFPeA)	0.012		0.00048	0.002	1	ug/L	0.012	
NF27-GW-01	Perfluorotetradecanoic acid (PFTeA)	ND		0.00028	0.002	1	ug/L	0.0020	U
NF27-GW-01	Perfluorotridecanoic Acid (PFTriA)	ND		0.0013	0.002	1	ug/L	0.0020	U
NF27-GW-01	Perfluoroundecanoic acid (PFUnA)	ND		0.0011	0.002	1	ug/L	0.0020	U
NF28-GW-01	4:2 Fluorotelomer sulfonate (4:2 FTS)	ND		0.0051	0.019	1	ug/L	0.019	U
NF28-GW-01	6:2 Fluorotelomer sulfonate (6:2 FTS)	0.01	J	0.0019	0.019	1	ug/L	0.010	J
NF28-GW-01	8:2 Fluorotelomer sulfonate (8:2 FTS)	ND		0.0019	0.019	1	ug/L	0.019	U
NF28-GW-01	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.0018	0.019	1	ug/L	0.019	U
NF28-GW-01	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.003	0.019	1	ug/L	0.019	U
NF28-GW-01	Perfluorobutanesulfonic acid (PFBS)	ND		0.00019	0.0019	1	ug/L	0.0019	U
NF28-GW-01	Perfluorobutanoic acid (PFBA)	0.011	B	0.00034	0.0019	1	ug/L	0.011	
NF28-GW-01	Perfluorodecanesulfonic acid (PFDS)	ND		0.00031	0.0019	1	ug/L	0.0019	U
NF28-GW-01	Perfluorodecanoic acid (PFDA)	ND		0.0003	0.0019	1	ug/L	0.0019	U
NF28-GW-01	Perfluorododecanoic acid (PFDoA)	ND		0.00054	0.0019	1	ug/L	0.0019	U
NF28-GW-01	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.00018	0.0019	1	ug/L	0.0019	U
NF28-GW-01	Perfluoroheptanoic acid (PFHpA)	0.00067	J	0.00024	0.0019	1	ug/L	0.00067	J
NF28-GW-01	Perfluorohexanesulfonic acid (PFHxS)	0.0005	J B	0.00017	0.0019	1	ug/L	0.0019	U
NF28-GW-01	Perfluorohexanoic acid (PFHxA)	0.0012	J	0.00056	0.0019	1	ug/L	0.0012	J
NF28-GW-01	Perfluorononanesulfonic acid (PFNS)	ND		0.00016	0.0019	1	ug/L	0.0019	U
NF28-GW-01	Perfluorononanoic acid (PFNA)	ND		0.00026	0.0019	1	ug/L	0.0019	U
NF28-GW-01	Perfluorooctane Sulfonamide (FOSA)	ND		0.00034	0.0019	1	ug/L	0.0019	U
NF28-GW-01	Perfluorooctanesulfonic acid (PFOS)	0.0042		0.00053	0.0019	1	ug/L	0.0042	
NF28-GW-01	Perfluorooctanoic acid (PFOA)	ND		0.00083	0.0019	1	ug/L	0.0019	U
NF28-GW-01	Perfluoropentanesulfonic acid (PFPeS)	ND		0.00029	0.0019	1	ug/L	0.0019	U
NF28-GW-01	Perfluoropentanoic acid (PFPeA)	0.0063		0.00048	0.0019	1	ug/L	0.0063	
NF28-GW-01	Perfluorotetradecanoic acid (PFTeA)	ND		0.00028	0.0019	1	ug/L	0.0019	UJ
NF28-GW-01	Perfluorotridecanoic Acid (PFTriA)	ND		0.0013	0.0019	1	ug/L	0.0019	UJ
NF28-GW-01	Perfluoroundecanoic acid (PFUnA)	ND		0.0011	0.0019	1	ug/L	0.0019	U
NF29-GW-01	4:2 Fluorotelomer sulfonate (4:2 FTS)	ND		0.0046	0.018	1	ug/L	0.018	U
NF29-GW-01	6:2 Fluorotelomer sulfonate (6:2 FTS)	0.0032	J	0.0018	0.018	1	ug/L	0.0032	J
NF29-GW-01	8:2 Fluorotelomer sulfonate (8:2 FTS)	ND		0.0018	0.018	1	ug/L	0.018	U

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Sample ID	Component	Lab Result	Lab Qual	DL	RL	DF	Units	Val Result	Val Qual
NF29-GW-01	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.0017	0.018	1	ug/L	0.018	U
NF29-GW-01	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.0027	0.018	1	ug/L	0.018	U
NF29-GW-01	Perfluorobutanesulfonic acid (PFBS)	0.00058	J	0.00018	0.0018	1	ug/L	0.00058	J
NF29-GW-01	Perfluorobutanoic acid (PFBA)	0.0034	B	0.00031	0.0018	1	ug/L	0.0034	J+
NF29-GW-01	Perfluorodecanesulfonic acid (PFDS)	ND		0.00028	0.0018	1	ug/L	0.0018	U
NF29-GW-01	Perfluorodecanoic acid (PFDA)	ND		0.00027	0.0018	1	ug/L	0.0018	U
NF29-GW-01	Perfluorododecanoic acid (PFDoA)	ND		0.00048	0.0018	1	ug/L	0.0018	U
NF29-GW-01	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.00017	0.0018	1	ug/L	0.0018	U
NF29-GW-01	Perfluoroheptanoic acid (PFHpA)	0.00046	J	0.00022	0.0018	1	ug/L	0.00046	J
NF29-GW-01	Perfluorohexanesulfonic acid (PFHxS)	0.00053	J B	0.00015	0.0018	1	ug/L	0.0018	U
NF29-GW-01	Perfluorohexanoic acid (PFHxA)	ND		0.00051	0.0018	1	ug/L	0.0018	U
NF29-GW-01	Perfluorononanesulfonic acid (PFNS)	ND		0.00014	0.0018	1	ug/L	0.0018	U
NF29-GW-01	Perfluorononanoic acid (PFNA)	0.0005	J	0.00024	0.0018	1	ug/L	0.00050	J
NF29-GW-01	Perfluorooctane Sulfonamide (FOSA)	ND		0.00031	0.0018	1	ug/L	0.0018	U
NF29-GW-01	Perfluorooctanesulfonic acid (PFOS)	0.0025		0.00047	0.0018	1	ug/L	0.0025	
NF29-GW-01	Perfluorooctanoic acid (PFOA)	0.0011	J	0.00075	0.0018	1	ug/L	0.0011	J
NF29-GW-01	Perfluoropentanesulfonic acid (PFPeS)	ND		0.00026	0.0018	1	ug/L	0.0018	U
NF29-GW-01	Perfluoropentanoic acid (PFPeA)	0.0022		0.00043	0.0018	1	ug/L	0.0022	
NF29-GW-01	Perfluorotetradecanoic acid (PFTeA)	ND		0.00026	0.0018	1	ug/L	0.0018	U
NF29-GW-01	Perfluorotridecanoic Acid (PFTriA)	ND		0.0011	0.0018	1	ug/L	0.0018	U
NF29-GW-01	Perfluoroundecanoic acid (PFUnA)	ND		0.00097	0.0018	1	ug/L	0.0018	U
NF30-GW-01	4:2 Fluorotelomer sulfonate (4:2 FTS)	ND		0.0049	0.019	1	ug/L	0.019	U
NF30-GW-01	6:2 Fluorotelomer sulfonate (6:2 FTS)	0.0049	J	0.0019	0.019	1	ug/L	0.0049	J
NF30-GW-01	8:2 Fluorotelomer sulfonate (8:2 FTS)	ND		0.0019	0.019	1	ug/L	0.019	U
NF30-GW-01	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.0018	0.019	1	ug/L	0.019	U
NF30-GW-01	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.0029	0.019	1	ug/L	0.019	U
NF30-GW-01	Perfluorobutanesulfonic acid (PFBS)	0.0052		0.00019	0.0019	1	ug/L	0.0052	
NF30-GW-01	Perfluorobutanoic acid (PFBA)	0.018	B	0.00033	0.0019	1	ug/L	0.018	
NF30-GW-01	Perfluorodecanesulfonic acid (PFDS)	ND		0.0003	0.0019	1	ug/L	0.0019	U
NF30-GW-01	Perfluorodecanoic acid (PFDA)	0.00056	J	0.00029	0.0019	1	ug/L	0.00056	J
NF30-GW-01	Perfluorododecanoic acid (PFDoA)	ND		0.00051	0.0019	1	ug/L	0.0019	U
NF30-GW-01	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.00018	0.0019	1	ug/L	0.0019	U
NF30-GW-01	Perfluoroheptanoic acid (PFHpA)	0.0015	J	0.00023	0.0019	1	ug/L	0.0015	J
NF30-GW-01	Perfluorohexanesulfonic acid (PFHxS)	0.003	B	0.00016	0.0019	1	ug/L	0.0030	
NF30-GW-01	Perfluorohexanoic acid (PFHxA)	0.0026		0.00054	0.0019	1	ug/L	0.0026	
NF30-GW-01	Perfluorononanesulfonic acid (PFNS)	ND		0.00015	0.0019	1	ug/L	0.0019	U
NF30-GW-01	Perfluorononanoic acid (PFNA)	0.0016	J	0.00025	0.0019	1	ug/L	0.0016	J
NF30-GW-01	Perfluorooctane Sulfonamide (FOSA)	ND		0.00033	0.0019	1	ug/L	0.0019	U
NF30-GW-01	Perfluorooctanesulfonic acid (PFOS)	0.0054		0.0005	0.0019	1	ug/L	0.0054	
NF30-GW-01	Perfluorooctanoic acid (PFOA)	0.0063		0.00079	0.0019	1	ug/L	0.0063	

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Sample ID	Component	Lab Result	Lab Qual	DL	RL	DF	Units	Val Result	Val Qual
NF30-GW-01	Perfluoropentanesulfonic acid (PFPeS)	0.00087	J	0.00028	0.0019	1	ug/L	0.00087	J
NF30-GW-01	Perfluoropentanoic acid (PFPeA)	0.0096		0.00046	0.0019	1	ug/L	0.0096	
NF30-GW-01	Perfluorotetradecanoic acid (PFTeA)	ND		0.00027	0.0019	1	ug/L	0.0019	U
NF30-GW-01	Perfluorotridecanoic Acid (PFTriA)	ND		0.0012	0.0019	1	ug/L	0.0019	U
NF30-GW-01	Perfluoroundecanoic acid (PFUnA)	ND		0.001	0.0019	1	ug/L	0.0019	U
NF31-GW-01	4:2 Fluorotelomer sulfonate (4:2 FTS)	ND		0.0045	0.017	1	ug/L	0.017	U
NF31-GW-01	6:2 Fluorotelomer sulfonate (6:2 FTS)	0.003	J	0.0017	0.017	1	ug/L	0.0030	J
NF31-GW-01	8:2 Fluorotelomer sulfonate (8:2 FTS)	ND		0.0017	0.017	1	ug/L	0.017	U
NF31-GW-01	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.0017	0.017	1	ug/L	0.017	U
NF31-GW-01	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.0027	0.017	1	ug/L	0.017	U
NF31-GW-01	Perfluorobutanesulfonic acid (PFBS)	0.78		0.00087	0.0087	5	ug/L	0.78	
NF31-GW-01	Perfluorobutanoic acid (PFBA)	0.051	B	0.0003	0.0017	1	ug/L	0.051	
NF31-GW-01	Perfluorodecanesulfonic acid (PFDS)	ND		0.00028	0.0017	1	ug/L	0.0017	U
NF31-GW-01	Perfluorodecanoic acid (PFDA)	ND		0.00027	0.0017	1	ug/L	0.0017	U
NF31-GW-01	Perfluorododecanoic acid (PFDoA)	ND		0.00048	0.0017	1	ug/L	0.0017	U
NF31-GW-01	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.00017	0.0017	1	ug/L	0.0017	U
NF31-GW-01	Perfluoroheptanoic acid (PFHpA)	0.07		0.00022	0.0017	1	ug/L	0.070	
NF31-GW-01	Perfluorohexanesulfonic acid (PFHxS)	0.053	B	0.00015	0.0017	1	ug/L	0.053	
NF31-GW-01	Perfluorohexanoic acid (PFHxA)	0.13		0.0005	0.0017	1	ug/L	0.13	
NF31-GW-01	Perfluorononanesulfonic acid (PFNS)	ND		0.00014	0.0017	1	ug/L	0.0017	U
NF31-GW-01	Perfluorononanoic acid (PFNA)	0.00042	J	0.00023	0.0017	1	ug/L	0.00042	J
NF31-GW-01	Perfluorooctane Sulfonamide (FOSA)	ND		0.0003	0.0017	1	ug/L	0.0017	U
NF31-GW-01	Perfluorooctanesulfonic acid (PFOS)	0.0011	J	0.00047	0.0017	1	ug/L	0.0011	J
NF31-GW-01	Perfluorooctanoic acid (PFOA)	0.11		0.00074	0.0017	1	ug/L	0.11	
NF31-GW-01	Perfluoropentanesulfonic acid (PFPeS)	0.018		0.00026	0.0017	1	ug/L	0.018	
NF31-GW-01	Perfluoropentanoic acid (PFPeA)	0.11		0.00043	0.0017	1	ug/L	0.11	
NF31-GW-01	Perfluorotetradecanoic acid (PFTeA)	ND		0.00025	0.0017	1	ug/L	0.0017	U
NF31-GW-01	Perfluorotridecanoic Acid (PFTriA)	ND		0.0011	0.0017	1	ug/L	0.0017	U
NF31-GW-01	Perfluoroundecanoic acid (PFUnA)	ND		0.00096	0.0017	1	ug/L	0.0017	U
NF32-GW-01	4:2 Fluorotelomer sulfonate (4:2 FTS)	ND		0.0046	0.018	1	ug/L	0.018	U
NF32-GW-01	6:2 Fluorotelomer sulfonate (6:2 FTS)	ND		0.0018	0.018	1	ug/L	0.018	U
NF32-GW-01	8:2 Fluorotelomer sulfonate (8:2 FTS)	ND		0.0018	0.018	1	ug/L	0.018	U
NF32-GW-01	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.0017	0.018	1	ug/L	0.018	U
NF32-GW-01	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.0027	0.018	1	ug/L	0.018	U
NF32-GW-01	Perfluorobutanesulfonic acid (PFBS)	0.02		0.00018	0.0018	1	ug/L	0.020	
NF32-GW-01	Perfluorobutanoic acid (PFBA)	0.026	B	0.00031	0.0018	1	ug/L	0.026	
NF32-GW-01	Perfluorodecanesulfonic acid (PFDS)	ND		0.00028	0.0018	1	ug/L	0.0018	U
NF32-GW-01	Perfluorodecanoic acid (PFDA)	ND		0.00027	0.0018	1	ug/L	0.0018	U
NF32-GW-01	Perfluorododecanoic acid (PFDoA)	ND		0.00049	0.0018	1	ug/L	0.0018	U

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Sample ID	Component	Lab Result	Lab Qual	DL	RL	DF	Units	Val Result	Val Qual
NF32-GW-01	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.00017	0.0018	1	ug/L	0.0018	U
NF32-GW-01	Perfluoroheptanoic acid (PFHpA)	0.0018		0.00022	0.0018	1	ug/L	0.0018	
NF32-GW-01	Perfluorohexanesulfonic acid (PFHxS)	0.0023	B	0.00015	0.0018	1	ug/L	0.0023	J+
NF32-GW-01	Perfluorohexanoic acid (PFHxA)	0.0027		0.00051	0.0018	1	ug/L	0.0027	
NF32-GW-01	Perfluorononanesulfonic acid (PFNS)	ND		0.00014	0.0018	1	ug/L	0.0018	U
NF32-GW-01	Perfluorononanoic acid (PFNA)	0.00077	J	0.00024	0.0018	1	ug/L	0.00077	J
NF32-GW-01	Perfluorooctane Sulfonamide (FOSA)	ND		0.00031	0.0018	1	ug/L	0.0018	U
NF32-GW-01	Perfluorooctanesulfonic acid (PFOS)	0.0016	J	0.00048	0.0018	1	ug/L	0.0016	J
NF32-GW-01	Perfluorooctanoic acid (PFOA)	0.0032		0.00075	0.0018	1	ug/L	0.0032	
NF32-GW-01	Perfluoropentanesulfonic acid (PFPeS)	0.00039	J	0.00026	0.0018	1	ug/L	0.00039	J
NF32-GW-01	Perfluoropentanoic acid (PFPeA)	0.015		0.00043	0.0018	1	ug/L	0.015	
NF32-GW-01	Perfluorotetradecanoic acid (PFTeA)	ND		0.00026	0.0018	1	ug/L	0.0018	U
NF32-GW-01	Perfluorotridecanoic Acid (PFTriA)	ND		0.0011	0.0018	1	ug/L	0.0018	U
NF32-GW-01	Perfluoroundecanoic acid (PFUnA)	ND		0.00097	0.0018	1	ug/L	0.0018	U
NF33-GW-01	4:2 Fluorotelomer sulfonate (4:2 FTS)	ND	F1	0.0051	0.02	1	ug/L	0.020	U
NF33-GW-01	6:2 Fluorotelomer sulfonate (6:2 FTS)	0.0022	J	0.002	0.02	1	ug/L	0.0022	J
NF33-GW-01	8:2 Fluorotelomer sulfonate (8:2 FTS)	ND		0.002	0.02	1	ug/L	0.020	U
NF33-GW-01	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.0019	0.02	1	ug/L	0.020	U
NF33-GW-01	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.003	0.02	1	ug/L	0.020	U
NF33-GW-01	Perfluorobutanesulfonic acid (PFBS)	0.0017	J	0.0002	0.002	1	ug/L	0.0017	J
NF33-GW-01	Perfluorobutanoic acid (PFBA)	0.014	B F2	0.00034	0.002	1	ug/L	0.014	J
NF33-GW-01	Perfluorodecanesulfonic acid (PFDS)	ND		0.00031	0.002	1	ug/L	0.0020	U
NF33-GW-01	Perfluorodecanoic acid (PFDA)	ND		0.0003	0.002	1	ug/L	0.0020	U
NF33-GW-01	Perfluorododecanoic acid (PFDoA)	ND		0.00054	0.002	1	ug/L	0.0020	U
NF33-GW-01	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.00019	0.002	1	ug/L	0.0020	U
NF33-GW-01	Perfluoroheptanoic acid (PFHpA)	0.0015	J	0.00024	0.002	1	ug/L	0.0015	J
NF33-GW-01	Perfluorohexanesulfonic acid (PFHxS)	0.00047	J B	0.00017	0.002	1	ug/L	0.0020	U
NF33-GW-01	Perfluorohexanoic acid (PFHxA)	0.0021		0.00057	0.002	1	ug/L	0.0021	
NF33-GW-01	Perfluorononanesulfonic acid (PFNS)	ND		0.00016	0.002	1	ug/L	0.0020	U
NF33-GW-01	Perfluorononanoic acid (PFNA)	0.00077	J	0.00026	0.002	1	ug/L	0.00077	J
NF33-GW-01	Perfluorooctane Sulfonamide (FOSA)	ND		0.00034	0.002	1	ug/L	0.0020	U
NF33-GW-01	Perfluorooctanesulfonic acid (PFOS)	0.00096	J	0.00053	0.002	1	ug/L	0.00096	J
NF33-GW-01	Perfluorooctanoic acid (PFOA)	ND		0.00083	0.002	1	ug/L	0.0020	U
NF33-GW-01	Perfluoropentanesulfonic acid (PFPeS)	ND		0.00029	0.002	1	ug/L	0.0020	U
NF33-GW-01	Perfluoropentanoic acid (PFPeA)	0.0096	F2	0.00048	0.002	1	ug/L	0.0096	J
NF33-GW-01	Perfluorotetradecanoic acid (PFTeA)	ND		0.00028	0.002	1	ug/L	0.0020	U
NF33-GW-01	Perfluorotridecanoic Acid (PFTriA)	ND		0.0013	0.002	1	ug/L	0.0020	U
NF33-GW-01	Perfluoroundecanoic acid (PFUnA)	ND		0.0011	0.002	1	ug/L	0.0020	U
NF34-GW-01	4:2 Fluorotelomer sulfonate (4:2 FTS)	ND		0.0045	0.017	1	ug/L	0.017	U

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Sample ID	Component	Lab Result	Lab Qual	DL	RL	DF	Units	Val Result	Val Qual
NF34-GW-01	6:2 Fluorotelomer sulfonate (6:2 FTS)	0.026		0.0017	0.017	1	ug/L	0.026	
NF34-GW-01	8:2 Fluorotelomer sulfonate (8:2 FTS)	ND		0.0017	0.017	1	ug/L	0.017	U
NF34-GW-01	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.0016	0.017	1	ug/L	0.017	U
NF34-GW-01	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.0027	0.017	1	ug/L	0.017	U
NF34-GW-01	Perfluorobutanesulfonic acid (PFBS)	0.00095	J	0.00017	0.0017	1	ug/L	0.00095	J
NF34-GW-01	Perfluorobutanoic acid (PFBA)	0.022	B	0.0003	0.0017	1	ug/L	0.022	
NF34-GW-01	Perfluorodecanesulfonic acid (PFDS)	ND		0.00027	0.0017	1	ug/L	0.0017	U
NF34-GW-01	Perfluorodecanoic acid (PFDA)	ND		0.00027	0.0017	1	ug/L	0.0017	U
NF34-GW-01	Perfluorododecanoic acid (PFDoA)	ND		0.00047	0.0017	1	ug/L	0.0017	U
NF34-GW-01	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.00016	0.0017	1	ug/L	0.0017	U
NF34-GW-01	Perfluoroheptanoic acid (PFHpA)	0.0025	I	0.00021	0.0017	1	ug/L	0.0025	
NF34-GW-01	Perfluorohexanesulfonic acid (PFHxS)	0.00097	J B	0.00015	0.0017	1	ug/L	0.0017	U
NF34-GW-01	Perfluorohexanoic acid (PFHxA)	0.0028		0.0005	0.0017	1	ug/L	0.0028	
NF34-GW-01	Perfluorononanesulfonic acid (PFNS)	ND		0.00014	0.0017	1	ug/L	0.0017	U
NF34-GW-01	Perfluorononanoic acid (PFNA)	0.00071	J	0.00023	0.0017	1	ug/L	0.00071	J
NF34-GW-01	Perfluorooctane Sulfonamide (FOSA)	0.00046	J	0.0003	0.0017	1	ug/L	0.00046	J
NF34-GW-01	Perfluorooctanesulfonic acid (PFOS)	0.052		0.00046	0.0017	1	ug/L	0.052	
NF34-GW-01	Perfluorooctanoic acid (PFOA)	0.0031		0.00073	0.0017	1	ug/L	0.0031	
NF34-GW-01	Perfluoropentanesulfonic acid (PFPeS)	ND		0.00026	0.0017	1	ug/L	0.0017	U
NF34-GW-01	Perfluoropentanoic acid (PFPeA)	0.011		0.00042	0.0017	1	ug/L	0.011	
NF34-GW-01	Perfluorotetradecanoic acid (PFTeA)	ND		0.00025	0.0017	1	ug/L	0.0017	U
NF34-GW-01	Perfluorotridecanoic Acid (PFTriA)	ND		0.0011	0.0017	1	ug/L	0.0017	U
NF34-GW-01	Perfluoroundecanoic acid (PFUnA)	ND		0.00094	0.0017	1	ug/L	0.0017	U
NF35-GW-01	4:2 Fluorotelomer sulfonate (4:2 FTS)	ND		0.0049	0.019	1	ug/L	0.019	U
NF35-GW-01	6:2 Fluorotelomer sulfonate (6:2 FTS)	0.0021	J	0.0019	0.019	1	ug/L	0.0021	J+
NF35-GW-01	8:2 Fluorotelomer sulfonate (8:2 FTS)	ND		0.0019	0.019	1	ug/L	0.019	U
NF35-GW-01	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.0018	0.019	1	ug/L	0.019	U
NF35-GW-01	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.0029	0.019	1	ug/L	0.019	U
NF35-GW-01	Perfluorobutanesulfonic acid (PFBS)	0.0055		0.00019	0.0019	1	ug/L	0.0055	
NF35-GW-01	Perfluorobutanoic acid (PFBA)	0.011	B	0.00033	0.0019	1	ug/L	0.011	
NF35-GW-01	Perfluorodecanesulfonic acid (PFDS)	ND		0.0003	0.0019	1	ug/L	0.0019	U
NF35-GW-01	Perfluorodecanoic acid (PFDA)	ND		0.00029	0.0019	1	ug/L	0.0019	U
NF35-GW-01	Perfluorododecanoic acid (PFDoA)	ND		0.00052	0.0019	1	ug/L	0.0019	U
NF35-GW-01	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.00018	0.0019	1	ug/L	0.0019	U
NF35-GW-01	Perfluoroheptanoic acid (PFHpA)	0.0026		0.00024	0.0019	1	ug/L	0.0026	
NF35-GW-01	Perfluorohexanesulfonic acid (PFHxS)	0.0017	J B	0.00016	0.0019	1	ug/L	0.0019	U
NF35-GW-01	Perfluorohexanoic acid (PFHxA)	0.0035		0.00055	0.0019	1	ug/L	0.0035	
NF35-GW-01	Perfluorononanesulfonic acid (PFNS)	ND		0.00015	0.0019	1	ug/L	0.0019	U
NF35-GW-01	Perfluorononanoic acid (PFNA)	0.0016	J	0.00026	0.0019	1	ug/L	0.0016	J
NF35-GW-01	Perfluorooctane Sulfonamide (FOSA)	ND		0.00033	0.0019	1	ug/L	0.0019	U

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Sample ID	Component	Lab Result	Lab Qual	DL	RL	DF	Units	Val Result	Val Qual
NF35-GW-01	Perfluorooctanesulfonic acid (PFOS)	0.012		0.00051	0.0019	1	ug/L	0.012	
NF35-GW-01	Perfluorooctanoic acid (PFOA)	0.0082		0.00081	0.0019	1	ug/L	0.0082	
NF35-GW-01	Perfluoropentanesulfonic acid (PFPeS)	0.00067	J	0.00029	0.0019	1	ug/L	0.00067	J
NF35-GW-01	Perfluoropentanoic acid (PFPeA)	0.0017	J	0.00047	0.0019	1	ug/L	0.0017	J
NF35-GW-01	Perfluorotetradecanoic acid (PFTeA)	ND		0.00028	0.0019	1	ug/L	0.0019	U
NF35-GW-01	Perfluorotridecanoic Acid (PFTriA)	ND		0.0012	0.0019	1	ug/L	0.0019	U
NF35-GW-01	Perfluoroundecanoic acid (PFUnA)	ND		0.001	0.0019	1	ug/L	0.0019	U
NF36-GW-01	4:2 Fluorotelomer sulfonate (4:2 FTS)	ND		0.0076	0.029	1	ug/L	0.029	U
NF36-GW-01	6:2 Fluorotelomer sulfonate (6:2 FTS)	0.0034	J	0.0029	0.029	1	ug/L	0.0034	J
NF36-GW-01	8:2 Fluorotelomer sulfonate (8:2 FTS)	ND		0.0029	0.029	1	ug/L	0.029	U
NF36-GW-01	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.0028	0.029	1	ug/L	0.029	U
NF36-GW-01	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.0046	0.029	1	ug/L	0.029	U
NF36-GW-01	Perfluorobutanesulfonic acid (PFBS)	0.0076		0.00029	0.0029	1	ug/L	0.0076	
NF36-GW-01	Perfluorobutanoic acid (PFBA)	0.17	B	0.00051	0.0029	1	ug/L	0.17	
NF36-GW-01	Perfluorodecanesulfonic acid (PFDS)	ND		0.00047	0.0029	1	ug/L	0.0029	U
NF36-GW-01	Perfluorodecanoic acid (PFDA)	0.0085		0.00046	0.0029	1	ug/L	0.0085	
NF36-GW-01	Perfluorododecanoic acid (PFDoA)	0.0039		0.00081	0.0029	1	ug/L	0.0039	
NF36-GW-01	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.00028	0.0029	1	ug/L	0.0029	U
NF36-GW-01	Perfluoroheptanoic acid (PFHpA)	0.047		0.00037	0.0029	1	ug/L	0.047	
NF36-GW-01	Perfluorohexanesulfonic acid (PFHxS)	0.0032	B	0.00025	0.0029	1	ug/L	0.0032	J+
NF36-GW-01	Perfluorohexanoic acid (PFHxA)	0.046		0.00085	0.0029	1	ug/L	0.046	
NF36-GW-01	Perfluorononanesulfonic acid (PFNS)	ND		0.00023	0.0029	1	ug/L	0.0029	U
NF36-GW-01	Perfluorononanoic acid (PFNA)	0.02		0.0004	0.0029	1	ug/L	0.020	
NF36-GW-01	Perfluorooctane Sulfonamide (FOSA)	ND		0.00051	0.0029	1	ug/L	0.0029	U
NF36-GW-01	Perfluorooctanesulfonic acid (PFOS)	ND		0.00079	0.0029	1	ug/L	0.0029	U
NF36-GW-01	Perfluorooctanoic acid (PFOA)	0.02		0.0012	0.0029	1	ug/L	0.020	
NF36-GW-01	Perfluoropentanesulfonic acid (PFPeS)	0.00065	J	0.00044	0.0029	1	ug/L	0.00065	J
NF36-GW-01	Perfluoropentanoic acid (PFPeA)	0.18		0.00072	0.0029	1	ug/L	0.18	
NF36-GW-01	Perfluorotetradecanoic acid (PFTeA)	0.0032		0.00043	0.0029	1	ug/L	0.0032	
NF36-GW-01	Perfluorotridecanoic Acid (PFTriA)	0.0043		0.0019	0.0029	1	ug/L	0.0043	
NF36-GW-01	Perfluoroundecanoic acid (PFUnA)	0.0096		0.0016	0.0029	1	ug/L	0.0096	
NFMW1-GW-01	4:2 Fluorotelomer sulfonate (4:2 FTS)	ND		0.005	0.019	1	ug/L	0.019	U
NFMW1-GW-01	6:2 Fluorotelomer sulfonate (6:2 FTS)	ND		0.0019	0.019	1	ug/L	0.019	U
NFMW1-GW-01	8:2 Fluorotelomer sulfonate (8:2 FTS)	ND		0.0019	0.019	1	ug/L	0.019	U
NFMW1-GW-01	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.0018	0.019	1	ug/L	0.019	U
NFMW1-GW-01	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.003	0.019	1	ug/L	0.019	U
NFMW1-GW-01	Perfluorobutanesulfonic acid (PFBS)	0.011		0.00019	0.0019	1	ug/L	0.011	
NFMW1-GW-01	Perfluorobutanoic acid (PFBA)	0.017	B	0.00033	0.0019	1	ug/L	0.017	
NFMW1-GW-01	Perfluorodecanesulfonic acid (PFDS)	ND		0.00031	0.0019	1	ug/L	0.0019	U

NATIONAL FIREWORKS PERFLUORINATED ALKYL SUBSTANCES ANALYTICAL RESULTS SUMMARY
TESTAMERICA REPORT NO. 320-40571-1

Sample ID	Component	Lab Result	Lab Qual	DL	RL	DF	Units	Val Result	Val Qual
NFMW1-GW-01	Perfluorodecanoic acid (PFDA)	ND		0.0003	0.0019	1	ug/L	0.0019	U
NFMW1-GW-01	Perfluorododecanoic acid (PFDoA)	ND		0.00053	0.0019	1	ug/L	0.0019	U
NFMW1-GW-01	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.00018	0.0019	1	ug/L	0.0019	U
NFMW1-GW-01	Perfluoroheptanoic acid (PFHpA)	0.0053		0.00024	0.0019	1	ug/L	0.0053	
NFMW1-GW-01	Perfluorohexanesulfonic acid (PFHxS)	0.0053	B	0.00016	0.0019	1	ug/L	0.0053	
NFMW1-GW-01	Perfluorohexanoic acid (PFHxA)	0.011		0.00055	0.0019	1	ug/L	0.011	
NFMW1-GW-01	Perfluorononanesulfonic acid (PFNS)	ND		0.00015	0.0019	1	ug/L	0.0019	U
NFMW1-GW-01	Perfluorononanoic acid (PFNA)	0.00037	J	0.00026	0.0019	1	ug/L	0.00037	J
NFMW1-GW-01	Perfluorooctane Sulfonamide (FOSA)	ND		0.00033	0.0019	1	ug/L	0.0019	U
NFMW1-GW-01	Perfluorooctanesulfonic acid (PFOS)	0.0011	J	0.00052	0.0019	1	ug/L	0.0011	J
NFMW1-GW-01	Perfluorooctanoic acid (PFOA)	0.0087		0.00081	0.0019	1	ug/L	0.0087	
NFMW1-GW-01	Perfluoropentanesulfonic acid (PFPeS)	0.0019		0.00029	0.0019	1	ug/L	0.0019	
NFMW1-GW-01	Perfluoropentanoic acid (PFPeA)	0.014		0.00047	0.0019	1	ug/L	0.014	
NFMW1-GW-01	Perfluorotetradecanoic acid (PFTeA)	ND		0.00028	0.0019	1	ug/L	0.0019	U
NFMW1-GW-01	Perfluorotridecanoic Acid (PFTriA)	ND		0.0012	0.0019	1	ug/L	0.0019	U
NFMW1-GW-01	Perfluoroundecanoic acid (PFUnA)	ND		0.0011	0.0019	1	ug/L	0.0019	U
NFMW7-GW-01	4:2 Fluorotelomer sulfonate (4:2 FTS)	ND		0.0048	0.019	1	ug/L	0.019	U
NFMW7-GW-01	6:2 Fluorotelomer sulfonate (6:2 FTS)	ND		0.0019	0.019	1	ug/L	0.019	U
NFMW7-GW-01	8:2 Fluorotelomer sulfonate (8:2 FTS)	ND		0.0019	0.019	1	ug/L	0.019	U
NFMW7-GW-01	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.0018	0.019	1	ug/L	0.019	U
NFMW7-GW-01	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.0029	0.019	1	ug/L	0.019	U
NFMW7-GW-01	Perfluorobutanesulfonic acid (PFBS)	0.0054		0.00019	0.0019	1	ug/L	0.0054	
NFMW7-GW-01	Perfluorobutanoic acid (PFBA)	0.022	B	0.00032	0.0019	1	ug/L	0.022	
NFMW7-GW-01	Perfluorodecanesulfonic acid (PFDS)	ND		0.0003	0.0019	1	ug/L	0.0019	U
NFMW7-GW-01	Perfluorodecanoic acid (PFDA)	ND		0.00029	0.0019	1	ug/L	0.0019	U
NFMW7-GW-01	Perfluorododecanoic acid (PFDoA)	ND		0.00051	0.0019	1	ug/L	0.0019	U
NFMW7-GW-01	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.00018	0.0019	1	ug/L	0.0019	U
NFMW7-GW-01	Perfluoroheptanoic acid (PFHpA)	0.005		0.00023	0.0019	1	ug/L	0.0050	
NFMW7-GW-01	Perfluorohexanesulfonic acid (PFHxS)	0.0034	B	0.00016	0.0019	1	ug/L	0.0034	
NFMW7-GW-01	Perfluorohexanoic acid (PFHxA)	0.0059		0.00054	0.0019	1	ug/L	0.0059	
NFMW7-GW-01	Perfluorononanesulfonic acid (PFNS)	ND		0.00015	0.0019	1	ug/L	0.0019	U
NFMW7-GW-01	Perfluorononanoic acid (PFNA)	0.00097	J	0.00025	0.0019	1	ug/L	0.00097	J
NFMW7-GW-01	Perfluorooctane Sulfonamide (FOSA)	ND		0.00032	0.0019	1	ug/L	0.0019	U
NFMW7-GW-01	Perfluorooctanesulfonic acid (PFOS)	0.0025		0.0005	0.0019	1	ug/L	0.0025	
NFMW7-GW-01	Perfluorooctanoic acid (PFOA)	0.0065		0.00079	0.0019	1	ug/L	0.0065	
NFMW7-GW-01	Perfluoropentanesulfonic acid (PFPeS)	0.00084	J	0.00028	0.0019	1	ug/L	0.00084	J
NFMW7-GW-01	Perfluoropentanoic acid (PFPeA)	0.022		0.00045	0.0019	1	ug/L	0.022	
NFMW7-GW-01	Perfluorotetradecanoic acid (PFTeA)	ND		0.00027	0.0019	1	ug/L	0.0019	U
NFMW7-GW-01	Perfluorotridecanoic Acid (PFTriA)	ND		0.0012	0.0019	1	ug/L	0.0019	U

Sample ID	Component	Lab Result	Lab Qual	DL	RL	DF	Units	Val Result	Val Qual
NFMW7-GW-01	Perfluoroundecanoic acid (PFUnA)	ND		0.001	0.0019	1	ug/L	0.0019	U
NFMW7-GW-01-DUP	4:2 Fluorotelomer sulfonate (4:2 FTS)	ND		0.0047	0.018	1	ug/L	0.018	U
NFMW7-GW-01-DUP	6:2 Fluorotelomer sulfonate (6:2 FTS)	ND		0.0018	0.018	1	ug/L	0.018	U
NFMW7-GW-01-DUP	8:2 Fluorotelomer sulfonate (8:2 FTS)	ND		0.0018	0.018	1	ug/L	0.018	U
NFMW7-GW-01-DUP	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.0017	0.018	1	ug/L	0.018	U
NFMW7-GW-01-DUP	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.0028	0.018	1	ug/L	0.018	U
NFMW7-GW-01-DUP	Perfluorobutanesulfonic acid (PFBS)	0.0052		0.00018	0.0018	1	ug/L	0.0052	
NFMW7-GW-01-DUP	Perfluorobutanoic acid (PFBA)	0.019	B	0.00031	0.0018	1	ug/L	0.019	
NFMW7-GW-01-DUP	Perfluorodecanesulfonic acid (PFDS)	ND		0.00029	0.0018	1	ug/L	0.0018	U
NFMW7-GW-01-DUP	Perfluorodecanoic acid (PFDA)	ND		0.00028	0.0018	1	ug/L	0.0018	U
NFMW7-GW-01-DUP	Perfluorododecanoic acid (PFDoA)	ND		0.00049	0.0018	1	ug/L	0.0018	U
NFMW7-GW-01-DUP	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.00017	0.0018	1	ug/L	0.0018	U
NFMW7-GW-01-DUP	Perfluoroheptanoic acid (PFHpA)	0.0051		0.00022	0.0018	1	ug/L	0.0051	
NFMW7-GW-01-DUP	Perfluorohexanesulfonic acid (PFHxS)	0.0031	B	0.00015	0.0018	1	ug/L	0.0031	J+
NFMW7-GW-01-DUP	Perfluorohexanoic acid (PFHxA)	0.0055		0.00052	0.0018	1	ug/L	0.0055	
NFMW7-GW-01-DUP	Perfluorononanesulfonic acid (PFNS)	ND		0.00014	0.0018	1	ug/L	0.0018	U
NFMW7-GW-01-DUP	Perfluorononanoic acid (PFNA)	0.00082	J	0.00024	0.0018	1	ug/L	0.00082	J
NFMW7-GW-01-DUP	Perfluorooctane Sulfonamide (FOSA)	ND		0.00031	0.0018	1	ug/L	0.0018	U
NFMW7-GW-01-DUP	Perfluorooctanesulfonic acid (PFOS)	0.0025		0.00049	0.0018	1	ug/L	0.0025	
NFMW7-GW-01-DUP	Perfluorooctanoic acid (PFOA)	0.0063		0.00076	0.0018	1	ug/L	0.0063	
NFMW7-GW-01-DUP	Perfluoropentanesulfonic acid (PFPeS)	0.0008	J	0.00027	0.0018	1	ug/L	0.00080	J
NFMW7-GW-01-DUP	Perfluoropentanoic acid (PFPeA)	0.018		0.00044	0.0018	1	ug/L	0.018	
NFMW7-GW-01-DUP	Perfluorotetradecanoic acid (PFTeA)	ND		0.00026	0.0018	1	ug/L	0.0018	U
NFMW7-GW-01-DUP	Perfluorotridecanoic Acid (PFTriA)	ND		0.0012	0.0018	1	ug/L	0.0018	U
NFMW7-GW-01-DUP	Perfluoroundecanoic acid (PFUnA)	ND		0.00099	0.0018	1	ug/L	0.0018	U
NF17-SS-01	6:2 Fluorotelomer sulfonate (6:2 FTS)	ND		0.00017	0.0023	1	mg/Kg	0.0023	U
NF17-SS-01	8:2 Fluorotelomer sulfonate (8:2 FTS)	ND		0.00029	0.0023	1	mg/Kg	0.0023	U
NF17-SS-01	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.00043	0.0023	1	mg/Kg	0.0023	U
NF17-SS-01	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.00045	0.0023	1	mg/Kg	0.0023	U
NF17-SS-01	Perfluorobutanesulfonic acid (PFBS)	ND		0.000029	0.00023	1	mg/Kg	0.00023	U
NF17-SS-01	Perfluorobutanoic acid (PFBA)	0.00008	J	0.000032	0.00023	1	mg/Kg	0.000080	J
NF17-SS-01	Perfluorodecanesulfonic acid (PFDS)	ND		0.000045	0.00023	1	mg/Kg	0.00023	U
NF17-SS-01	Perfluorodecanoic acid (PFDA)	ND		0.000025	0.00023	1	mg/Kg	0.00023	U
NF17-SS-01	Perfluorododecanoic acid (PFDoA)	ND		0.000077	0.00023	1	mg/Kg	0.00023	U
NF17-SS-01	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.00004	0.00023	1	mg/Kg	0.00023	U
NF17-SS-01	Perfluoroheptanoic acid (PFHpA)	ND		0.000033	0.00023	1	mg/Kg	0.00023	U
NF17-SS-01	Perfluorohexanesulfonic acid (PFHxS)	ND		0.000036	0.00023	1	mg/Kg	0.00023	U
NF17-SS-01	Perfluorohexanoic acid (PFHxA)	ND		0.000048	0.00023	1	mg/Kg	0.00023	U
NF17-SS-01	Perfluorononanoic acid (PFNA)	ND		0.000042	0.00023	1	mg/Kg	0.00023	U

NATIONAL FIREWORKS PERFLUORINATED ALKYL SUBSTANCES ANALYTICAL RESULTS SUMMARY
TESTAMERICA REPORT NO. 320-40571-1

Sample ID	Component	Lab Result	Lab Qual	DL	RL	DF	Units	Val Result	Val Qual
NF17-SS-01	Perfluorooctane Sulfonamide (FOSA)	ND		0.000095	0.00023	1	mg/Kg	0.00023	U
NF17-SS-01	Perfluorooctanesulfonic acid (PFOS)	ND		0.00023	0.00058	1	mg/Kg	0.00058	U
NF17-SS-01	Perfluorooctanoic acid (PFOA)	ND		0.000099	0.00023	1	mg/Kg	0.00023	U
NF17-SS-01	Perfluoropentanoic acid (PFPeA)	ND		0.000089	0.00023	1	mg/Kg	0.00023	U
NF17-SS-01	Perfluorotetradecanoic acid (PFTeA)	ND		0.000062	0.00023	1	mg/Kg	0.00023	U
NF17-SS-01	Perfluorotridecanoic Acid (PFTriA)	ND		0.000059	0.00023	1	mg/Kg	0.00023	U
NF17-SS-01	Perfluoroundecanoic acid (PFUnA)	ND		0.000042	0.00023	1	mg/Kg	0.00023	U
NF17-SS-01-DUP	6:2 Fluorotelomer sulfonate (6:2 FTS)	ND		0.00017	0.0023	1	mg/Kg	0.0023	U
NF17-SS-01-DUP	8:2 Fluorotelomer sulfonate (8:2 FTS)	ND		0.00028	0.0023	1	mg/Kg	0.0023	U
NF17-SS-01-DUP	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.00042	0.0023	1	mg/Kg	0.0023	U
NF17-SS-01-DUP	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.00044	0.0023	1	mg/Kg	0.0023	U
NF17-SS-01-DUP	Perfluorobutanesulfonic acid (PFBS)	ND		0.000028	0.00023	1	mg/Kg	0.00023	U
NF17-SS-01-DUP	Perfluorobutanoic acid (PFBA)	0.00012	J	0.000032	0.00023	1	mg/Kg	0.00012	J
NF17-SS-01-DUP	Perfluorodecanesulfonic acid (PFDS)	ND		0.000044	0.00023	1	mg/Kg	0.00023	U
NF17-SS-01-DUP	Perfluorodecanoic acid (PFDA)	0.000033	J	0.000025	0.00023	1	mg/Kg	0.000033	J
NF17-SS-01-DUP	Perfluorododecanoic acid (PFDoA)	ND		0.000076	0.00023	1	mg/Kg	0.00023	U
NF17-SS-01-DUP	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.00004	0.00023	1	mg/Kg	0.00023	U
NF17-SS-01-DUP	Perfluoroheptanoic acid (PFHpA)	ND		0.000033	0.00023	1	mg/Kg	0.00023	U
NF17-SS-01-DUP	Perfluorohexanesulfonic acid (PFHxS)	ND		0.000035	0.00023	1	mg/Kg	0.00023	U
NF17-SS-01-DUP	Perfluorohexanoic acid (PFHxA)	ND		0.000048	0.00023	1	mg/Kg	0.00023	U
NF17-SS-01-DUP	Perfluorononanoic acid (PFNA)	ND		0.000041	0.00023	1	mg/Kg	0.00023	U
NF17-SS-01-DUP	Perfluorooctane Sulfonamide (FOSA)	ND		0.000093	0.00023	1	mg/Kg	0.00023	U
NF17-SS-01-DUP	Perfluorooctanesulfonic acid (PFOS)	ND		0.00023	0.00057	1	mg/Kg	0.00052	U
NF17-SS-01-DUP	Perfluorooctanoic acid (PFOA)	ND		0.000098	0.00023	1	mg/Kg	0.00023	U
NF17-SS-01-DUP	Perfluoropentanoic acid (PFPeA)	ND		0.000088	0.00023	1	mg/Kg	0.00023	U
NF17-SS-01-DUP	Perfluorotetradecanoic acid (PFTeA)	ND		0.000062	0.00023	1	mg/Kg	0.00023	U
NF17-SS-01-DUP	Perfluorotridecanoic Acid (PFTriA)	ND		0.000058	0.00023	1	mg/Kg	0.00023	U
NF17-SS-01-DUP	Perfluoroundecanoic acid (PFUnA)	ND		0.000041	0.00023	1	mg/Kg	0.00023	U
NF18-SS-02	6:2 Fluorotelomer sulfonate (6:2 FTS)	ND		0.00018	0.0024	1	mg/Kg	0.0024	U
NF18-SS-02	8:2 Fluorotelomer sulfonate (8:2 FTS)	ND		0.0003	0.0024	1	mg/Kg	0.0024	U
NF18-SS-02	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.00044	0.0024	1	mg/Kg	0.0024	U
NF18-SS-02	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.00047	0.0024	1	mg/Kg	0.0024	U
NF18-SS-02	Perfluorobutanesulfonic acid (PFBS)	ND		0.00003	0.00024	1	mg/Kg	0.00024	U
NF18-SS-02	Perfluorobutanoic acid (PFBA)	0.00004	J	0.000034	0.00024	1	mg/Kg	0.000040	J
NF18-SS-02	Perfluorodecanesulfonic acid (PFDS)	ND		0.000047	0.00024	1	mg/Kg	0.00024	U
NF18-SS-02	Perfluorodecanoic acid (PFDA)	ND		0.000026	0.00024	1	mg/Kg	0.00024	U
NF18-SS-02	Perfluorododecanoic acid (PFDoA)	ND		0.000081	0.00024	1	mg/Kg	0.00024	U
NF18-SS-02	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.000042	0.00024	1	mg/Kg	0.00024	U
NF18-SS-02	Perfluoroheptanoic acid (PFHpA)	ND		0.000035	0.00024	1	mg/Kg	0.00024	U

Sample ID	Component	Lab Result	Lab Qual	DL	RL	DF	Units	Val Result	Val Qual
NF18-SS-02	Perfluorohexanesulfonic acid (PFHxS)	ND		0.000037	0.00024	1	mg/Kg	0.00024	U
NF18-SS-02	Perfluorohexanoic acid (PFHxA)	ND		0.000051	0.00024	1	mg/Kg	0.00024	U
NF18-SS-02	Perfluorononanoic acid (PFNA)	ND		0.000043	0.00024	1	mg/Kg	0.00024	U
NF18-SS-02	Perfluorooctane Sulfonamide (FOSA)	ND		0.000099	0.00024	1	mg/Kg	0.00024	U
NF18-SS-02	Perfluorooctanesulfonic acid (PFOS)	ND		0.00024	0.0006	1	mg/Kg	0.00060	U
NF18-SS-02	Perfluorooctanoic acid (PFOA)	ND		0.0001	0.00024	1	mg/Kg	0.00024	U
NF18-SS-02	Perfluoropentanoic acid (PFPeA)	ND		0.000093	0.00024	1	mg/Kg	0.00024	U
NF18-SS-02	Perfluorotetradecanoic acid (PFTeA)	ND		0.000065	0.00024	1	mg/Kg	0.00024	U
NF18-SS-02	Perfluorotridecanoic Acid (PFTriA)	ND		0.000061	0.00024	1	mg/Kg	0.00024	U
NF18-SS-02	Perfluoroundecanoic acid (PFUnA)	ND		0.000043	0.00024	1	mg/Kg	0.00024	U
NF19-SS-02	6:2 Fluorotelomer sulfonate (6:2 FTS)	ND		0.00019	0.0025	1	mg/Kg	0.0025	U
NF19-SS-02	8:2 Fluorotelomer sulfonate (8:2 FTS)	ND		0.00031	0.0025	1	mg/Kg	0.0025	U
NF19-SS-02	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.00046	0.0025	1	mg/Kg	0.0025	U
NF19-SS-02	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.00049	0.0025	1	mg/Kg	0.0025	U
NF19-SS-02	Perfluorobutanesulfonic acid (PFBS)	ND		0.000031	0.00025	1	mg/Kg	0.00025	U
NF19-SS-02	Perfluorobutanoic acid (PFBA)	ND		0.000035	0.00025	1	mg/Kg	0.00025	U
NF19-SS-02	Perfluorodecanesulfonic acid (PFDS)	ND		0.000049	0.00025	1	mg/Kg	0.00025	U
NF19-SS-02	Perfluorodecanoic acid (PFDA)	ND		0.000028	0.00025	1	mg/Kg	0.00025	U
NF19-SS-02	Perfluorododecanoic acid (PFDoA)	ND		0.000084	0.00025	1	mg/Kg	0.00025	U
NF19-SS-02	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.000044	0.00025	1	mg/Kg	0.00025	U
NF19-SS-02	Perfluoroheptanoic acid (PFHpA)	ND		0.000036	0.00025	1	mg/Kg	0.00025	U
NF19-SS-02	Perfluorohexanesulfonic acid (PFHxS)	ND		0.000039	0.00025	1	mg/Kg	0.00025	U
NF19-SS-02	Perfluorohexanoic acid (PFHxA)	ND		0.000053	0.00025	1	mg/Kg	0.00025	U
NF19-SS-02	Perfluorononanoic acid (PFNA)	ND		0.000045	0.00025	1	mg/Kg	0.00025	U
NF19-SS-02	Perfluorooctane Sulfonamide (FOSA)	ND		0.0001	0.00025	1	mg/Kg	0.00025	U
NF19-SS-02	Perfluorooctanesulfonic acid (PFOS)	ND		0.00025	0.00063	1	mg/Kg	0.00063	U
NF19-SS-02	Perfluorooctanoic acid (PFOA)	ND		0.00011	0.00025	1	mg/Kg	0.00025	U
NF19-SS-02	Perfluoropentanoic acid (PFPeA)	ND		0.000096	0.00025	1	mg/Kg	0.00025	U
NF19-SS-02	Perfluorotetradecanoic acid (PFTeA)	ND		0.000068	0.00025	1	mg/Kg	0.00025	U
NF19-SS-02	Perfluorotridecanoic Acid (PFTriA)	ND		0.000064	0.00025	1	mg/Kg	0.00025	U
NF19-SS-02	Perfluoroundecanoic acid (PFUnA)	ND		0.000045	0.00025	1	mg/Kg	0.00025	U
NF20-SS-02	6:2 Fluorotelomer sulfonate (6:2 FTS)	ND		0.00018	0.0024	1	mg/Kg	0.0024	U
NF20-SS-02	8:2 Fluorotelomer sulfonate (8:2 FTS)	ND		0.0003	0.0024	1	mg/Kg	0.0024	U
NF20-SS-02	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.00045	0.0024	1	mg/Kg	0.0024	U
NF20-SS-02	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.00047	0.0024	1	mg/Kg	0.0024	U
NF20-SS-02	Perfluorobutanesulfonic acid (PFBS)	ND		0.00003	0.00024	1	mg/Kg	0.00024	U
NF20-SS-02	Perfluorobutanoic acid (PFBA)	ND		0.000034	0.00024	1	mg/Kg	0.00024	U
NF20-SS-02	Perfluorodecanesulfonic acid (PFDS)	ND		0.000047	0.00024	1	mg/Kg	0.00024	U
NF20-SS-02	Perfluorodecanoic acid (PFDA)	ND		0.000027	0.00024	1	mg/Kg	0.00024	U

Sample ID	Component	Lab Result	Lab Qual	DL	RL	DF	Units	Val Result	Val Qual
NF20-SS-02	Perfluorododecanoic acid (PFDoA)	ND		0.000082	0.00024	1	mg/Kg	0.00024	U
NF20-SS-02	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.000043	0.00024	1	mg/Kg	0.00024	U
NF20-SS-02	Perfluoroheptanoic acid (PFHpA)	ND		0.000035	0.00024	1	mg/Kg	0.00024	U
NF20-SS-02	Perfluorohexanesulfonic acid (PFHxS)	ND		0.000038	0.00024	1	mg/Kg	0.00024	U
NF20-SS-02	Perfluorohexanoic acid (PFHxA)	ND		0.000051	0.00024	1	mg/Kg	0.00024	U
NF20-SS-02	Perfluorononanoic acid (PFNA)	ND		0.000044	0.00024	1	mg/Kg	0.00024	U
NF20-SS-02	Perfluorooctane Sulfonamide (FOSA)	ND		0.0001	0.00024	1	mg/Kg	0.00024	U
NF20-SS-02	Perfluorooctanesulfonic acid (PFOS)	ND		0.00024	0.00061	1	mg/Kg	0.00061	U
NF20-SS-02	Perfluorooctanoic acid (PFOA)	ND		0.0001	0.00024	1	mg/Kg	0.00024	U
NF20-SS-02	Perfluoropentanoic acid (PFPeA)	ND		0.000094	0.00024	1	mg/Kg	0.00024	U
NF20-SS-02	Perfluorotetradecanoic acid (PFTeA)	ND		0.000066	0.00024	1	mg/Kg	0.00024	U
NF20-SS-02	Perfluorotridecanoic Acid (PFTriA)	ND		0.000062	0.00024	1	mg/Kg	0.00024	U
NF20-SS-02	Perfluoroundecanoic acid (PFUnA)	ND		0.000044	0.00024	1	mg/Kg	0.00024	U
NF21-SS-01	6:2 Fluorotelomer sulfonate (6:2 FTS)	ND		0.00017	0.0023	1	mg/Kg	0.0023	U
NF21-SS-01	8:2 Fluorotelomer sulfonate (8:2 FTS)	ND		0.00029	0.0023	1	mg/Kg	0.0023	U
NF21-SS-01	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.00043	0.0023	1	mg/Kg	0.0023	U
NF21-SS-01	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.00045	0.0023	1	mg/Kg	0.0023	U
NF21-SS-01	Perfluorobutanesulfonic acid (PFBS)	ND		0.000029	0.00023	1	mg/Kg	0.00023	U
NF21-SS-01	Perfluorobutanoic acid (PFBA)	0.000036	J	0.000032	0.00023	1	mg/Kg	0.000036	J
NF21-SS-01	Perfluorodecanesulfonic acid (PFDS)	ND		0.000045	0.00023	1	mg/Kg	0.00023	U
NF21-SS-01	Perfluorodecanoic acid (PFDA)	ND		0.000025	0.00023	1	mg/Kg	0.00023	U
NF21-SS-01	Perfluorododecanoic acid (PFDoA)	ND		0.000077	0.00023	1	mg/Kg	0.00023	U
NF21-SS-01	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.00004	0.00023	1	mg/Kg	0.00023	U
NF21-SS-01	Perfluoroheptanoic acid (PFHpA)	ND		0.000033	0.00023	1	mg/Kg	0.00023	U
NF21-SS-01	Perfluorohexanesulfonic acid (PFHxS)	0.000086	J	0.000036	0.00023	1	mg/Kg	0.000086	J
NF21-SS-01	Perfluorohexanoic acid (PFHxA)	ND		0.000048	0.00023	1	mg/Kg	0.00023	U
NF21-SS-01	Perfluorononanoic acid (PFNA)	ND		0.000041	0.00023	1	mg/Kg	0.00023	U
NF21-SS-01	Perfluorooctane Sulfonamide (FOSA)	ND		0.000094	0.00023	1	mg/Kg	0.00023	U
NF21-SS-01	Perfluorooctanesulfonic acid (PFOS)	ND		0.00023	0.00058	1	mg/Kg	0.00058	U
NF21-SS-01	Perfluorooctanoic acid (PFOA)	ND		0.000099	0.00023	1	mg/Kg	0.00023	U
NF21-SS-01	Perfluoropentanoic acid (PFPeA)	ND		0.000089	0.00023	1	mg/Kg	0.00023	U
NF21-SS-01	Perfluorotetradecanoic acid (PFTeA)	ND		0.000062	0.00023	1	mg/Kg	0.00023	U
NF21-SS-01	Perfluorotridecanoic Acid (PFTriA)	ND		0.000059	0.00023	1	mg/Kg	0.00023	U
NF21-SS-01	Perfluoroundecanoic acid (PFUnA)	ND		0.000041	0.00023	1	mg/Kg	0.00023	U
NF22-SS-01	6:2 Fluorotelomer sulfonate (6:2 FTS)	ND		0.00018	0.0024	1	mg/Kg	0.0024	U
NF22-SS-01	8:2 Fluorotelomer sulfonate (8:2 FTS)	ND		0.0003	0.0024	1	mg/Kg	0.0024	U
NF22-SS-01	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.00044	0.0024	1	mg/Kg	0.0024	U
NF22-SS-01	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.00047	0.0024	1	mg/Kg	0.0024	U
NF22-SS-01	Perfluorobutanesulfonic acid (PFBS)	ND		0.00003	0.00024	1	mg/Kg	0.00024	U

Sample ID	Component	Lab Result	Lab Qual	DL	RL	DF	Units	Val Result	Val Qual
NF22-SS-01	Perfluorobutanoic acid (PFBA)	ND		0.000034	0.00024	1	mg/Kg	0.00024	U
NF22-SS-01	Perfluorodecanesulfonic acid (PFDS)	ND		0.000047	0.00024	1	mg/Kg	0.00024	U
NF22-SS-01	Perfluorodecanoic acid (PFDA)	ND		0.000026	0.00024	1	mg/Kg	0.00024	U
NF22-SS-01	Perfluorododecanoic acid (PFDoA)	ND		0.000081	0.00024	1	mg/Kg	0.00024	U
NF22-SS-01	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.000042	0.00024	1	mg/Kg	0.00024	U
NF22-SS-01	Perfluoroheptanoic acid (PFHpA)	ND		0.000035	0.00024	1	mg/Kg	0.00024	U
NF22-SS-01	Perfluorohexanesulfonic acid (PFHxS)	ND		0.000037	0.00024	1	mg/Kg	0.00024	U
NF22-SS-01	Perfluorohexanoic acid (PFHxA)	ND		0.00005	0.00024	1	mg/Kg	0.00024	U
NF22-SS-01	Perfluorononanoic acid (PFNA)	ND		0.000043	0.00024	1	mg/Kg	0.00024	U
NF22-SS-01	Perfluorooctane Sulfonamide (FOSA)	ND		0.000099	0.00024	1	mg/Kg	0.00024	U
NF22-SS-01	Perfluorooctanesulfonic acid (PFOS)	ND		0.00024	0.0006	1	mg/Kg	0.00060	U
NF22-SS-01	Perfluorooctanoic acid (PFOA)	ND		0.0001	0.00024	1	mg/Kg	0.00024	U
NF22-SS-01	Perfluoropentanoic acid (PFPeA)	ND		0.000093	0.00024	1	mg/Kg	0.00024	U
NF22-SS-01	Perfluorotetradecanoic acid (PFTeA)	ND		0.000065	0.00024	1	mg/Kg	0.00024	U
NF22-SS-01	Perfluorotridecanoic Acid (PFTriA)	ND		0.000061	0.00024	1	mg/Kg	0.00024	U
NF22-SS-01	Perfluoroundecanoic acid (PFUnA)	ND		0.000043	0.00024	1	mg/Kg	0.00024	U
NF23-SS-01	6:2 Fluorotelomer sulfonate (6:2 FTS)	ND		0.00018	0.0024	1	mg/Kg	0.0024	U
NF23-SS-01	8:2 Fluorotelomer sulfonate (8:2 FTS)	ND		0.0003	0.0024	1	mg/Kg	0.0024	U
NF23-SS-01	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.00044	0.0024	1	mg/Kg	0.0024	U
NF23-SS-01	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.00047	0.0024	1	mg/Kg	0.0024	U
NF23-SS-01	Perfluorobutanesulfonic acid (PFBS)	ND		0.00003	0.00024	1	mg/Kg	0.00024	U
NF23-SS-01	Perfluorobutanoic acid (PFBA)	0.000049	J	0.000034	0.00024	1	mg/Kg	0.000049	J
NF23-SS-01	Perfluorodecanesulfonic acid (PFDS)	ND		0.000047	0.00024	1	mg/Kg	0.00024	U
NF23-SS-01	Perfluorodecanoic acid (PFDA)	ND		0.000026	0.00024	1	mg/Kg	0.00024	U
NF23-SS-01	Perfluorododecanoic acid (PFDoA)	ND		0.00008	0.00024	1	mg/Kg	0.00024	U
NF23-SS-01	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.000042	0.00024	1	mg/Kg	0.00024	U
NF23-SS-01	Perfluoroheptanoic acid (PFHpA)	ND		0.000035	0.00024	1	mg/Kg	0.00024	U
NF23-SS-01	Perfluorohexanesulfonic acid (PFHxS)	ND		0.000037	0.00024	1	mg/Kg	0.00024	U
NF23-SS-01	Perfluorohexanoic acid (PFHxA)	ND		0.00005	0.00024	1	mg/Kg	0.00024	U
NF23-SS-01	Perfluorononanoic acid (PFNA)	ND		0.000043	0.00024	1	mg/Kg	0.00024	U
NF23-SS-01	Perfluorooctane Sulfonamide (FOSA)	ND		0.000098	0.00024	1	mg/Kg	0.00024	U
NF23-SS-01	Perfluorooctanesulfonic acid (PFOS)	ND		0.00024	0.0006	1	mg/Kg	0.00060	U
NF23-SS-01	Perfluorooctanoic acid (PFOA)	ND		0.0001	0.00024	1	mg/Kg	0.00024	U
NF23-SS-01	Perfluoropentanoic acid (PFPeA)	ND		0.000092	0.00024	1	mg/Kg	0.00024	U
NF23-SS-01	Perfluorotetradecanoic acid (PFTeA)	ND		0.000065	0.00024	1	mg/Kg	0.00024	U
NF23-SS-01	Perfluorotridecanoic Acid (PFTriA)	ND		0.000061	0.00024	1	mg/Kg	0.00024	U
NF23-SS-01	Perfluoroundecanoic acid (PFUnA)	ND		0.000043	0.00024	1	mg/Kg	0.00024	U
NF24-SS-02	6:2 Fluorotelomer sulfonate (6:2 FTS)	ND		0.00018	0.0024	1	mg/Kg	0.0024	U
NF24-SS-02	8:2 Fluorotelomer sulfonate (8:2 FTS)	ND		0.0003	0.0024	1	mg/Kg	0.0024	U

Sample ID	Component	Lab Result	Lab Qual	DL	RL	DF	Units	Val Result	Val Qual
NF24-SS-02	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.00044	0.0024	1	mg/Kg	0.0024	U
NF24-SS-02	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.00046	0.0024	1	mg/Kg	0.0024	U
NF24-SS-02	Perfluorobutanesulfonic acid (PFBS)	ND		0.00003	0.00024	1	mg/Kg	0.00024	U
NF24-SS-02	Perfluorobutanoic acid (PFBA)	0.000039	J	0.000033	0.00024	1	mg/Kg	0.000039	J
NF24-SS-02	Perfluorodecanesulfonic acid (PFDS)	ND		0.000046	0.00024	1	mg/Kg	0.00024	U
NF24-SS-02	Perfluorodecanoic acid (PFDA)	ND		0.000026	0.00024	1	mg/Kg	0.00024	U
NF24-SS-02	Perfluorododecanoic acid (PFDoA)	ND		0.00008	0.00024	1	mg/Kg	0.00024	U
NF24-SS-02	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.000042	0.00024	1	mg/Kg	0.00024	U
NF24-SS-02	Perfluoroheptanoic acid (PFHpA)	ND		0.000035	0.00024	1	mg/Kg	0.00024	U
NF24-SS-02	Perfluorohexanesulfonic acid (PFHxS)	ND		0.000037	0.00024	1	mg/Kg	0.00024	U
NF24-SS-02	Perfluorohexanoic acid (PFHxA)	ND		0.00005	0.00024	1	mg/Kg	0.00024	U
NF24-SS-02	Perfluorononanoic acid (PFNA)	ND		0.000043	0.00024	1	mg/Kg	0.00024	U
NF24-SS-02	Perfluorooctane Sulfonamide (FOSA)	ND		0.000098	0.00024	1	mg/Kg	0.00024	U
NF24-SS-02	Perfluorooctanesulfonic acid (PFOS)	ND		0.00024	0.0006	1	mg/Kg	0.00060	U
NF24-SS-02	Perfluorooctanoic acid (PFOA)	ND		0.0001	0.00024	1	mg/Kg	0.00024	U
NF24-SS-02	Perfluoropentanoic acid (PFPeA)	ND		0.000092	0.00024	1	mg/Kg	0.00024	U
NF24-SS-02	Perfluorotetradecanoic acid (PFTeA)	ND		0.000064	0.00024	1	mg/Kg	0.00024	U
NF24-SS-02	Perfluorotridecanoic Acid (PFTriA)	ND		0.000061	0.00024	1	mg/Kg	0.00024	U
NF24-SS-02	Perfluoroundecanoic acid (PFUnA)	ND		0.000043	0.00024	1	mg/Kg	0.00024	U
NF25-SS-02	6:2 Fluorotelomer sulfonate (6:2 FTS)	ND		0.00018	0.0025	1	mg/Kg	0.0025	U
NF25-SS-02	8:2 Fluorotelomer sulfonate (8:2 FTS)	ND		0.00031	0.0025	1	mg/Kg	0.0025	U
NF25-SS-02	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.00045	0.0025	1	mg/Kg	0.0025	U
NF25-SS-02	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.00048	0.0025	1	mg/Kg	0.0025	U
NF25-SS-02	Perfluorobutanesulfonic acid (PFBS)	ND		0.000031	0.00025	1	mg/Kg	0.00025	U
NF25-SS-02	Perfluorobutanoic acid (PFBA)	0.000034	J	0.000034	0.00025	1	mg/Kg	0.000034	J
NF25-SS-02	Perfluorodecanesulfonic acid (PFDS)	ND		0.000048	0.00025	1	mg/Kg	0.00025	U
NF25-SS-02	Perfluorodecanoic acid (PFDA)	ND		0.000027	0.00025	1	mg/Kg	0.00025	U
NF25-SS-02	Perfluorododecanoic acid (PFDoA)	ND		0.000082	0.00025	1	mg/Kg	0.00025	U
NF25-SS-02	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.000043	0.00025	1	mg/Kg	0.00025	U
NF25-SS-02	Perfluoroheptanoic acid (PFHpA)	ND		0.000036	0.00025	1	mg/Kg	0.00025	U
NF25-SS-02	Perfluorohexanesulfonic acid (PFHxS)	ND		0.000038	0.00025	1	mg/Kg	0.00025	U
NF25-SS-02	Perfluorohexanoic acid (PFHxA)	ND		0.000051	0.00025	1	mg/Kg	0.00025	U
NF25-SS-02	Perfluorononanoic acid (PFNA)	ND		0.000044	0.00025	1	mg/Kg	0.00025	U
NF25-SS-02	Perfluorooctane Sulfonamide (FOSA)	ND		0.0001	0.00025	1	mg/Kg	0.00025	U
NF25-SS-02	Perfluorooctanesulfonic acid (PFOS)	ND		0.00025	0.00061	1	mg/Kg	0.00061	U
NF25-SS-02	Perfluorooctanoic acid (PFOA)	ND		0.00011	0.00025	1	mg/Kg	0.00025	U
NF25-SS-02	Perfluoropentanoic acid (PFPeA)	ND		0.000094	0.00025	1	mg/Kg	0.00025	U
NF25-SS-02	Perfluorotetradecanoic acid (PFTeA)	ND		0.000066	0.00025	1	mg/Kg	0.00025	U
NF25-SS-02	Perfluorotridecanoic Acid (PFTriA)	ND		0.000063	0.00025	1	mg/Kg	0.00025	U

Sample ID	Component	Lab Result	Lab Qual	DL	RL	DF	Units	Val Result	Val Qual
NF25-SS-02	Perfluoroundecanoic acid (PFUnA)	ND		0.000044	0.00025	1	mg/Kg	0.00025	U
NF26-SS-02	6:2 Fluorotelomer sulfonate (6:2 FTS)	ND		0.00019	0.0025	1	mg/Kg	0.0025	U
NF26-SS-02	8:2 Fluorotelomer sulfonate (8:2 FTS)	ND		0.00031	0.0025	1	mg/Kg	0.0025	U
NF26-SS-02	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.00046	0.0025	1	mg/Kg	0.0025	U
NF26-SS-02	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.00048	0.0025	1	mg/Kg	0.0025	U
NF26-SS-02	Perfluorobutanesulfonic acid (PFBS)	0.00015	J	0.000031	0.00025	1	mg/Kg	0.00015	J
NF26-SS-02	Perfluorobutanoic acid (PFBA)	0.000072	J	0.000035	0.00025	1	mg/Kg	0.000072	J
NF26-SS-02	Perfluorodecanesulfonic acid (PFDS)	ND		0.000048	0.00025	1	mg/Kg	0.00025	U
NF26-SS-02	Perfluorodecanoic acid (PFDA)	ND		0.000027	0.00025	1	mg/Kg	0.00025	U
NF26-SS-02	Perfluorododecanoic acid (PFDoA)	ND		0.000083	0.00025	1	mg/Kg	0.00025	U
NF26-SS-02	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.000043	0.00025	1	mg/Kg	0.00025	U
NF26-SS-02	Perfluoroheptanoic acid (PFHpA)	ND		0.000036	0.00025	1	mg/Kg	0.00025	U
NF26-SS-02	Perfluorohexanesulfonic acid (PFHxS)	ND		0.000038	0.00025	1	mg/Kg	0.00025	U
NF26-SS-02	Perfluorohexanoic acid (PFHxA)	0.000064	J	0.000052	0.00025	1	mg/Kg	0.000064	J
NF26-SS-02	Perfluorononanoic acid (PFNA)	ND		0.000045	0.00025	1	mg/Kg	0.00025	U
NF26-SS-02	Perfluorooctane Sulfonamide (FOSA)	ND		0.0001	0.00025	1	mg/Kg	0.00025	U
NF26-SS-02	Perfluorooctanesulfonic acid (PFOS)	ND		0.00025	0.00062	1	mg/Kg	0.00062	U
NF26-SS-02	Perfluorooctanoic acid (PFOA)	ND		0.00011	0.00025	1	mg/Kg	0.00025	U
NF26-SS-02	Perfluoropentanoic acid (PFPeA)	ND		0.000095	0.00025	1	mg/Kg	0.00025	U
NF26-SS-02	Perfluorotetradecanoic acid (PFTeA)	ND		0.000067	0.00025	1	mg/Kg	0.00025	U
NF26-SS-02	Perfluorotridecanoic Acid (PFTriA)	ND		0.000063	0.00025	1	mg/Kg	0.00025	U
NF26-SS-02	Perfluoroundecanoic acid (PFUnA)	ND		0.000045	0.00025	1	mg/Kg	0.00025	U
NF27-SS-01	6:2 Fluorotelomer sulfonate (6:2 FTS)	ND		0.00018	0.0024	1	mg/Kg	0.0024	U
NF27-SS-01	8:2 Fluorotelomer sulfonate (8:2 FTS)	ND		0.00029	0.0024	1	mg/Kg	0.0024	U
NF27-SS-01	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.00044	0.0024	1	mg/Kg	0.0024	U
NF27-SS-01	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.00046	0.0024	1	mg/Kg	0.0024	U
NF27-SS-01	Perfluorobutanesulfonic acid (PFBS)	ND		0.000029	0.00024	1	mg/Kg	0.00024	U
NF27-SS-01	Perfluorobutanoic acid (PFBA)	0.000061	J	0.000033	0.00024	1	mg/Kg	0.000061	J
NF27-SS-01	Perfluorodecanesulfonic acid (PFDS)	ND		0.000046	0.00024	1	mg/Kg	0.00024	U
NF27-SS-01	Perfluorodecanoic acid (PFDA)	ND		0.000026	0.00024	1	mg/Kg	0.00024	U
NF27-SS-01	Perfluorododecanoic acid (PFDoA)	ND		0.000079	0.00024	1	mg/Kg	0.00024	U
NF27-SS-01	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.000041	0.00024	1	mg/Kg	0.00024	U
NF27-SS-01	Perfluoroheptanoic acid (PFHpA)	ND		0.000034	0.00024	1	mg/Kg	0.00024	U
NF27-SS-01	Perfluorohexanesulfonic acid (PFHxS)	ND		0.000036	0.00024	1	mg/Kg	0.00024	U
NF27-SS-01	Perfluorohexanoic acid (PFHxA)	ND		0.000049	0.00024	1	mg/Kg	0.00024	U
NF27-SS-01	Perfluorononanoic acid (PFNA)	ND		0.000042	0.00024	1	mg/Kg	0.00024	U
NF27-SS-01	Perfluorooctane Sulfonamide (FOSA)	ND		0.000096	0.00024	1	mg/Kg	0.00024	U
NF27-SS-01	Perfluorooctanesulfonic acid (PFOS)	ND		0.00024	0.00059	1	mg/Kg	0.00059	U
NF27-SS-01	Perfluorooctanoic acid (PFOA)	ND		0.0001	0.00024	1	mg/Kg	0.00024	U

Sample ID	Component	Lab Result	Lab Qual	DL	RL	DF	Units	Val Result	Val Qual
NF27-SS-01	Perfluoropentanoic acid (PFPeA)	ND		0.000091	0.00024	1	mg/Kg	0.00024	U
NF27-SS-01	Perfluorotetradecanoic acid (PFTeA)	ND		0.000063	0.00024	1	mg/Kg	0.00024	U
NF27-SS-01	Perfluorotridecanoic Acid (PFTriA)	ND		0.00006	0.00024	1	mg/Kg	0.00024	U
NF27-SS-01	Perfluoroundecanoic acid (PFUnA)	ND		0.000042	0.00024	1	mg/Kg	0.00024	U
NF28-SS-01	6:2 Fluorotelomer sulfonate (6:2 FTS)	ND		0.00018	0.0024	1	mg/Kg	0.0024	U
NF28-SS-01	8:2 Fluorotelomer sulfonate (8:2 FTS)	ND		0.0003	0.0024	1	mg/Kg	0.0024	U
NF28-SS-01	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.00045	0.0024	1	mg/Kg	0.0024	U
NF28-SS-01	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.00047	0.0024	1	mg/Kg	0.0024	U
NF28-SS-01	Perfluorobutanesulfonic acid (PFBS)	ND		0.00003	0.00024	1	mg/Kg	0.00024	U
NF28-SS-01	Perfluorobutanoic acid (PFBA)	ND		0.000034	0.00024	1	mg/Kg	0.00024	U
NF28-SS-01	Perfluorodecanesulfonic acid (PFDS)	ND		0.000047	0.00024	1	mg/Kg	0.00024	U
NF28-SS-01	Perfluorodecanoic acid (PFDA)	ND		0.000027	0.00024	1	mg/Kg	0.00024	U
NF28-SS-01	Perfluorododecanoic acid (PFDoA)	ND		0.000081	0.00024	1	mg/Kg	0.00024	U
NF28-SS-01	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.000042	0.00024	1	mg/Kg	0.00024	U
NF28-SS-01	Perfluoroheptanoic acid (PFHpA)	ND		0.000035	0.00024	1	mg/Kg	0.00024	U
NF28-SS-01	Perfluorohexanesulfonic acid (PFHxS)	ND		0.000038	0.00024	1	mg/Kg	0.00024	U
NF28-SS-01	Perfluorohexanoic acid (PFHxA)	ND		0.000051	0.00024	1	mg/Kg	0.00024	U
NF28-SS-01	Perfluorononanoic acid (PFNA)	ND		0.000044	0.00024	1	mg/Kg	0.00024	U
NF28-SS-01	Perfluorooctane Sulfonamide (FOSA)	ND		0.000099	0.00024	1	mg/Kg	0.00024	U
NF28-SS-01	Perfluorooctanesulfonic acid (PFOS)	ND		0.00024	0.00061	1	mg/Kg	0.00061	U
NF28-SS-01	Perfluorooctanoic acid (PFOA)	ND		0.0001	0.00024	1	mg/Kg	0.00024	U
NF28-SS-01	Perfluoropentanoic acid (PFPeA)	ND		0.000093	0.00024	1	mg/Kg	0.00024	U
NF28-SS-01	Perfluorotetradecanoic acid (PFTeA)	ND		0.000065	0.00024	1	mg/Kg	0.00024	U
NF28-SS-01	Perfluorotridecanoic Acid (PFTriA)	ND		0.000062	0.00024	1	mg/Kg	0.00024	U
NF28-SS-01	Perfluoroundecanoic acid (PFUnA)	ND		0.000044	0.00024	1	mg/Kg	0.00024	U
NF29-SS-01	6:2 Fluorotelomer sulfonate (6:2 FTS)	ND		0.00018	0.0024	1	mg/Kg	0.0024	U
NF29-SS-01	8:2 Fluorotelomer sulfonate (8:2 FTS)	ND		0.00031	0.0024	1	mg/Kg	0.0024	U
NF29-SS-01	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.00045	0.0024	1	mg/Kg	0.0024	U
NF29-SS-01	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.00048	0.0024	1	mg/Kg	0.0024	U
NF29-SS-01	Perfluorobutanesulfonic acid (PFBS)	ND		0.000031	0.00024	1	mg/Kg	0.00024	U
NF29-SS-01	Perfluorobutanoic acid (PFBA)	ND		0.000034	0.00024	1	mg/Kg	0.00024	U
NF29-SS-01	Perfluorodecanesulfonic acid (PFDS)	ND		0.000048	0.00024	1	mg/Kg	0.00024	U
NF29-SS-01	Perfluorodecanoic acid (PFDA)	ND		0.000027	0.00024	1	mg/Kg	0.00024	U
NF29-SS-01	Perfluorododecanoic acid (PFDoA)	ND		0.000082	0.00024	1	mg/Kg	0.00024	U
NF29-SS-01	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.000043	0.00024	1	mg/Kg	0.00024	U
NF29-SS-01	Perfluoroheptanoic acid (PFHpA)	ND		0.000035	0.00024	1	mg/Kg	0.00024	U
NF29-SS-01	Perfluorohexanesulfonic acid (PFHxS)	ND		0.000038	0.00024	1	mg/Kg	0.00024	U
NF29-SS-01	Perfluorohexanoic acid (PFHxA)	ND		0.000051	0.00024	1	mg/Kg	0.00024	U
NF29-SS-01	Perfluorononanoic acid (PFNA)	ND		0.000044	0.00024	1	mg/Kg	0.00024	U

NATIONAL FIREWORKS PERFLUORINATED ALKYL SUBSTANCES ANALYTICAL RESULTS SUMMARY
TESTAMERICA REPORT NO. 320-40571-1

Sample ID	Component	Lab Result	Lab Qual	DL	RL	DF	Units	Val Result	Val Qual
NF29-SS-01	Perfluorooctane Sulfonamide (FOSA)	ND		0.0001	0.00024	1	mg/Kg	0.00024	U
NF29-SS-01	Perfluorooctanesulfonic acid (PFOS)	ND		0.00024	0.00061	1	mg/Kg	0.00061	U
NF29-SS-01	Perfluorooctanoic acid (PFOA)	ND		0.00011	0.00024	1	mg/Kg	0.00024	U
NF29-SS-01	Perfluoropentanoic acid (PFPeA)	ND		0.000094	0.00024	1	mg/Kg	0.00024	U
NF29-SS-01	Perfluorotetradecanoic acid (PFTeA)	ND		0.000066	0.00024	1	mg/Kg	0.00024	U
NF29-SS-01	Perfluorotridecanoic Acid (PFTriA)	ND		0.000062	0.00024	1	mg/Kg	0.00024	U
NF29-SS-01	Perfluoroundecanoic acid (PFUnA)	ND		0.000044	0.00024	1	mg/Kg	0.00024	U
NF30-SS-02	6:2 Fluorotelomer sulfonate (6:2 FTS)	ND		0.00018	0.0023	1	mg/Kg	0.0023	U
NF30-SS-02	8:2 Fluorotelomer sulfonate (8:2 FTS)	ND		0.00029	0.0023	1	mg/Kg	0.0023	U
NF30-SS-02	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.00043	0.0023	1	mg/Kg	0.0023	U
NF30-SS-02	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.00046	0.0023	1	mg/Kg	0.0023	U
NF30-SS-02	Perfluorobutanesulfonic acid (PFBS)	ND		0.000029	0.00023	1	mg/Kg	0.00023	U
NF30-SS-02	Perfluorobutanoic acid (PFBA)	ND		0.000033	0.00023	1	mg/Kg	0.00023	U
NF30-SS-02	Perfluorodecanesulfonic acid (PFDS)	ND		0.000046	0.00023	1	mg/Kg	0.00023	U
NF30-SS-02	Perfluorodecanoic acid (PFDA)	ND		0.000026	0.00023	1	mg/Kg	0.00023	U
NF30-SS-02	Perfluorododecanoic acid (PFDoA)	ND		0.000078	0.00023	1	mg/Kg	0.00023	U
NF30-SS-02	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.000041	0.00023	1	mg/Kg	0.00023	U
NF30-SS-02	Perfluoroheptanoic acid (PFHpA)	ND		0.000034	0.00023	1	mg/Kg	0.00023	U
NF30-SS-02	Perfluorohexanesulfonic acid (PFHxS)	ND		0.000036	0.00023	1	mg/Kg	0.00023	U
NF30-SS-02	Perfluorohexanoic acid (PFHxA)	ND		0.000049	0.00023	1	mg/Kg	0.00023	U
NF30-SS-02	Perfluorononanoic acid (PFNA)	ND		0.000042	0.00023	1	mg/Kg	0.00023	U
NF30-SS-02	Perfluorooctane Sulfonamide (FOSA)	ND		0.000096	0.00023	1	mg/Kg	0.00023	U
NF30-SS-02	Perfluorooctanesulfonic acid (PFOS)	ND		0.00023	0.00058	1	mg/Kg	0.00058	U
NF30-SS-02	Perfluorooctanoic acid (PFOA)	ND		0.0001	0.00023	1	mg/Kg	0.00023	U
NF30-SS-02	Perfluoropentanoic acid (PFPeA)	ND		0.00009	0.00023	1	mg/Kg	0.00023	U
NF30-SS-02	Perfluorotetradecanoic acid (PFTeA)	ND		0.000063	0.00023	1	mg/Kg	0.00023	U
NF30-SS-02	Perfluorotridecanoic Acid (PFTriA)	ND		0.00006	0.00023	1	mg/Kg	0.00023	U
NF30-SS-02	Perfluoroundecanoic acid (PFUnA)	ND		0.000042	0.00023	1	mg/Kg	0.00023	U
NF31-SS-02	6:2 Fluorotelomer sulfonate (6:2 FTS)	ND		0.00018	0.0024	1	mg/Kg	0.0024	U
NF31-SS-02	8:2 Fluorotelomer sulfonate (8:2 FTS)	ND		0.0003	0.0024	1	mg/Kg	0.0024	U
NF31-SS-02	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.00045	0.0024	1	mg/Kg	0.0024	U
NF31-SS-02	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.00047	0.0024	1	mg/Kg	0.0024	U
NF31-SS-02	Perfluorobutanesulfonic acid (PFBS)	0.00025		0.00003	0.00024	1	mg/Kg	0.00025	
NF31-SS-02	Perfluorobutanoic acid (PFBA)	0.000047	J	0.000034	0.00024	1	mg/Kg	0.000047	J
NF31-SS-02	Perfluorodecanesulfonic acid (PFDS)	ND		0.000047	0.00024	1	mg/Kg	0.00024	U
NF31-SS-02	Perfluorodecanoic acid (PFDA)	ND		0.000027	0.00024	1	mg/Kg	0.00024	U
NF31-SS-02	Perfluorododecanoic acid (PFDoA)	ND		0.000081	0.00024	1	mg/Kg	0.00024	U
NF31-SS-02	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.000042	0.00024	1	mg/Kg	0.00024	U
NF31-SS-02	Perfluoroheptanoic acid (PFHpA)	ND		0.000035	0.00024	1	mg/Kg	0.00024	U

Sample ID	Component	Lab Result	Lab Qual	DL	RL	DF	Units	Val Result	Val Qual
NF31-SS-02	Perfluorohexanesulfonic acid (PFHxS)	ND		0.000038	0.00024	1	mg/Kg	0.00024	U
NF31-SS-02	Perfluorohexanoic acid (PFHxA)	0.00006	J	0.000051	0.00024	1	mg/Kg	0.000060	J
NF31-SS-02	Perfluorononanoic acid (PFNA)	ND		0.000044	0.00024	1	mg/Kg	0.00024	U
NF31-SS-02	Perfluorooctane Sulfonamide (FOSA)	ND		0.000099	0.00024	1	mg/Kg	0.00024	U
NF31-SS-02	Perfluorooctanesulfonic acid (PFOS)	ND		0.00024	0.00061	1	mg/Kg	0.00061	U
NF31-SS-02	Perfluorooctanoic acid (PFOA)	ND		0.0001	0.00024	1	mg/Kg	0.00024	U
NF31-SS-02	Perfluoropentanoic acid (PFPeA)	ND		0.000093	0.00024	1	mg/Kg	0.00024	U
NF31-SS-02	Perfluorotetradecanoic acid (PFTeA)	ND		0.000065	0.00024	1	mg/Kg	0.00024	U
NF31-SS-02	Perfluorotridecanoic Acid (PFTriA)	ND		0.000062	0.00024	1	mg/Kg	0.00024	U
NF31-SS-02	Perfluoroundecanoic acid (PFUnA)	ND		0.000044	0.00024	1	mg/Kg	0.00024	U
NF32-SS-02	6:2 Fluorotelomer sulfonate (6:2 FTS)	ND		0.00016	0.0022	1	mg/Kg	0.0022	U
NF32-SS-02	8:2 Fluorotelomer sulfonate (8:2 FTS)	ND		0.00027	0.0022	1	mg/Kg	0.0022	U
NF32-SS-02	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.0004	0.0022	1	mg/Kg	0.0022	U
NF32-SS-02	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.00043	0.0022	1	mg/Kg	0.0022	U
NF32-SS-02	Perfluorobutanesulfonic acid (PFBS)	ND		0.000027	0.00022	1	mg/Kg	0.00022	U
NF32-SS-02	Perfluorobutanoic acid (PFBA)	ND		0.000031	0.00022	1	mg/Kg	0.00022	U
NF32-SS-02	Perfluorodecanesulfonic acid (PFDS)	ND		0.000043	0.00022	1	mg/Kg	0.00022	U
NF32-SS-02	Perfluorodecanoic acid (PFDA)	ND		0.000024	0.00022	1	mg/Kg	0.00022	U
NF32-SS-02	Perfluorododecanoic acid (PFDoA)	ND		0.000073	0.00022	1	mg/Kg	0.00022	U
NF32-SS-02	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.000038	0.00022	1	mg/Kg	0.00022	U
NF32-SS-02	Perfluoroheptanoic acid (PFHpA)	ND		0.000032	0.00022	1	mg/Kg	0.00022	U
NF32-SS-02	Perfluorohexanesulfonic acid (PFHxS)	ND		0.000034	0.00022	1	mg/Kg	0.00022	U
NF32-SS-02	Perfluorohexanoic acid (PFHxA)	ND		0.000046	0.00022	1	mg/Kg	0.00022	U
NF32-SS-02	Perfluorononanoic acid (PFNA)	ND		0.000039	0.00022	1	mg/Kg	0.00022	U
NF32-SS-02	Perfluorooctane Sulfonamide (FOSA)	ND		0.00009	0.00022	1	mg/Kg	0.00022	U
NF32-SS-02	Perfluorooctanesulfonic acid (PFOS)	ND		0.00022	0.00055	1	mg/Kg	0.00055	U
NF32-SS-02	Perfluorooctanoic acid (PFOA)	ND		0.000094	0.00022	1	mg/Kg	0.00022	U
NF32-SS-02	Perfluoropentanoic acid (PFPeA)	ND		0.000084	0.00022	1	mg/Kg	0.00022	U
NF32-SS-02	Perfluorotetradecanoic acid (PFTeA)	ND		0.000059	0.00022	1	mg/Kg	0.00022	U
NF32-SS-02	Perfluorotridecanoic Acid (PFTriA)	ND		0.000056	0.00022	1	mg/Kg	0.00022	U
NF32-SS-02	Perfluoroundecanoic acid (PFUnA)	ND		0.000039	0.00022	1	mg/Kg	0.00022	U
NF33-SS-01	6:2 Fluorotelomer sulfonate (6:2 FTS)	ND		0.00017	0.0022	1	mg/Kg	0.0022	U
NF33-SS-01	8:2 Fluorotelomer sulfonate (8:2 FTS)	ND		0.00028	0.0022	1	mg/Kg	0.0022	U
NF33-SS-01	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.00041	0.0022	1	mg/Kg	0.0022	U
NF33-SS-01	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.00044	0.0022	1	mg/Kg	0.0022	U
NF33-SS-01	Perfluorobutanesulfonic acid (PFBS)	ND		0.000028	0.00022	1	mg/Kg	0.00022	U
NF33-SS-01	Perfluorobutanoic acid (PFBA)	0.0002	J	0.000031	0.00022	1	mg/Kg	0.00020	J
NF33-SS-01	Perfluorodecanesulfonic acid (PFDS)	ND		0.000044	0.00022	1	mg/Kg	0.00022	U
NF33-SS-01	Perfluorodecanoic acid (PFDA)	ND		0.000025	0.00022	1	mg/Kg	0.00022	U

Sample ID	Component	Lab Result	Lab Qual	DL	RL	DF	Units	Val Result	Val Qual
NF33-SS-01	Perfluorododecanoic acid (PFDoA)	ND		0.000075	0.00022	1	mg/Kg	0.00022	U
NF33-SS-01	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.000039	0.00022	1	mg/Kg	0.00022	U
NF33-SS-01	Perfluoroheptanoic acid (PFHpA)	ND		0.000032	0.00022	1	mg/Kg	0.00022	U
NF33-SS-01	Perfluorohexanesulfonic acid (PFHxS)	ND		0.000035	0.00022	1	mg/Kg	0.00022	U
NF33-SS-01	Perfluorohexanoic acid (PFHxA)	ND		0.000047	0.00022	1	mg/Kg	0.00022	U
NF33-SS-01	Perfluorononanoic acid (PFNA)	ND		0.00004	0.00022	1	mg/Kg	0.00022	U
NF33-SS-01	Perfluorooctane Sulfonamide (FOSA)	ND		0.000092	0.00022	1	mg/Kg	0.00022	U
NF33-SS-01	Perfluorooctanesulfonic acid (PFOS)	ND		0.00022	0.00056	1	mg/Kg	0.00056	U
NF33-SS-01	Perfluorooctanoic acid (PFOA)	ND		0.000096	0.00022	1	mg/Kg	0.00022	U
NF33-SS-01	Perfluoropentanoic acid (PFPeA)	ND		0.000086	0.00022	1	mg/Kg	0.00022	U
NF33-SS-01	Perfluorotetradecanoic acid (PFTeA)	ND		0.000061	0.00022	1	mg/Kg	0.00022	U
NF33-SS-01	Perfluorotridecanoic Acid (PFTriA)	ND		0.000057	0.00022	1	mg/Kg	0.00022	U
NF33-SS-01	Perfluoroundecanoic acid (PFUnA)	ND		0.00004	0.00022	1	mg/Kg	0.00022	U
NF34-SS-01	6:2 Fluorotelomer sulfonate (6:2 FTS)	ND		0.00018	0.0024	1	mg/Kg	0.0024	U
NF34-SS-01	8:2 Fluorotelomer sulfonate (8:2 FTS)	ND		0.0003	0.0024	1	mg/Kg	0.0024	U
NF34-SS-01	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.00044	0.0024	1	mg/Kg	0.0024	U
NF34-SS-01	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.00046	0.0024	1	mg/Kg	0.0024	U
NF34-SS-01	Perfluorobutanesulfonic acid (PFBS)	ND		0.00003	0.00024	1	mg/Kg	0.00024	U
NF34-SS-01	Perfluorobutanoic acid (PFBA)	0.000039	J	0.000033	0.00024	1	mg/Kg	0.000039	J
NF34-SS-01	Perfluorodecanesulfonic acid (PFDS)	ND		0.000046	0.00024	1	mg/Kg	0.00024	U
NF34-SS-01	Perfluorodecanoic acid (PFDA)	ND		0.000026	0.00024	1	mg/Kg	0.00024	U
NF34-SS-01	Perfluorododecanoic acid (PFDoA)	ND		0.00008	0.00024	1	mg/Kg	0.00024	U
NF34-SS-01	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.000042	0.00024	1	mg/Kg	0.00024	U
NF34-SS-01	Perfluoroheptanoic acid (PFHpA)	ND		0.000034	0.00024	1	mg/Kg	0.00024	U
NF34-SS-01	Perfluorohexanesulfonic acid (PFHxS)	ND		0.000037	0.00024	1	mg/Kg	0.00024	U
NF34-SS-01	Perfluorohexanoic acid (PFHxA)	ND		0.00005	0.00024	1	mg/Kg	0.00024	U
NF34-SS-01	Perfluorononanoic acid (PFNA)	ND		0.000043	0.00024	1	mg/Kg	0.00024	U
NF34-SS-01	Perfluorooctane Sulfonamide (FOSA)	ND		0.000097	0.00024	1	mg/Kg	0.00024	U
NF34-SS-01	Perfluorooctanesulfonic acid (PFOS)	0.00089		0.00024	0.00059	1	mg/Kg	0.00089	
NF34-SS-01	Perfluorooctanoic acid (PFOA)	ND		0.0001	0.00024	1	mg/Kg	0.00024	U
NF34-SS-01	Perfluoropentanoic acid (PFPeA)	ND		0.000091	0.00024	1	mg/Kg	0.00024	U
NF34-SS-01	Perfluorotetradecanoic acid (PFTeA)	ND		0.000064	0.00024	1	mg/Kg	0.00024	U
NF34-SS-01	Perfluorotridecanoic Acid (PFTriA)	ND		0.000061	0.00024	1	mg/Kg	0.00024	U
NF34-SS-01	Perfluoroundecanoic acid (PFUnA)	ND		0.000043	0.00024	1	mg/Kg	0.00024	U
NF35-SS-01	6:2 Fluorotelomer sulfonate (6:2 FTS)	ND		0.00017	0.0023	1	mg/Kg	0.0023	U
NF35-SS-01	8:2 Fluorotelomer sulfonate (8:2 FTS)	ND		0.00029	0.0023	1	mg/Kg	0.0023	U
NF35-SS-01	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.00043	0.0023	1	mg/Kg	0.0023	U
NF35-SS-01	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.00045	0.0023	1	mg/Kg	0.0023	U
NF35-SS-01	Perfluorobutanesulfonic acid (PFBS)	ND		0.000029	0.00023	1	mg/Kg	0.00023	U

NATIONAL FIREWORKS PERFLUORINATED ALKYL SUBSTANCES ANALYTICAL RESULTS SUMMARY
TESTAMERICA REPORT NO. 320-40571-1

Sample ID	Component	Lab Result	Lab Qual	DL	RL	DF	Units	Val Result	Val Qual
NF35-SS-01	Perfluorobutanoic acid (PFBA)	ND		0.000032	0.00023	1	mg/Kg	0.00023	U
NF35-SS-01	Perfluorodecanesulfonic acid (PFDS)	ND		0.000045	0.00023	1	mg/Kg	0.00023	U
NF35-SS-01	Perfluorodecanoic acid (PFDA)	ND		0.000025	0.00023	1	mg/Kg	0.00023	U
NF35-SS-01	Perfluorododecanoic acid (PFDoA)	ND		0.000077	0.00023	1	mg/Kg	0.00023	U
NF35-SS-01	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.00004	0.00023	1	mg/Kg	0.00023	U
NF35-SS-01	Perfluoroheptanoic acid (PFHpA)	ND		0.000033	0.00023	1	mg/Kg	0.00023	U
NF35-SS-01	Perfluorohexanesulfonic acid (PFHxS)	ND		0.000036	0.00023	1	mg/Kg	0.00023	U
NF35-SS-01	Perfluorohexanoic acid (PFHxA)	ND		0.000048	0.00023	1	mg/Kg	0.00023	U
NF35-SS-01	Perfluorononanoic acid (PFNA)	0.00005	J	0.000041	0.00023	1	mg/Kg	0.000050	J
NF35-SS-01	Perfluorooctane Sulfonamide (FOSA)	ND		0.000094	0.00023	1	mg/Kg	0.00021	U
NF35-SS-01	Perfluorooctanesulfonic acid (PFOS)	0.0014		0.00023	0.00058	1	mg/Kg	0.0014	
NF35-SS-01	Perfluorooctanoic acid (PFOA)	0.00019	J	0.000099	0.00023	1	mg/Kg	0.00019	J
NF35-SS-01	Perfluoropentanoic acid (PFPeA)	ND		0.000089	0.00023	1	mg/Kg	0.00023	U
NF35-SS-01	Perfluorotetradecanoic acid (PFTeA)	ND		0.000062	0.00023	1	mg/Kg	0.00023	U
NF35-SS-01	Perfluorotridecanoic Acid (PFTriA)	ND		0.000059	0.00023	1	mg/Kg	0.00023	U
NF35-SS-01	Perfluoroundecanoic acid (PFUnA)	ND		0.000041	0.00023	1	mg/Kg	0.00023	U
NF36-SS-02	6:2 Fluorotelomer sulfonate (6:2 FTS)	ND		0.00018	0.0024	1	mg/Kg	0.0024	U
NF36-SS-02	8:2 Fluorotelomer sulfonate (8:2 FTS)	ND		0.0003	0.0024	1	mg/Kg	0.0024	U
NF36-SS-02	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.00044	0.0024	1	mg/Kg	0.0024	U
NF36-SS-02	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.00047	0.0024	1	mg/Kg	0.0024	U
NF36-SS-02	Perfluorobutanesulfonic acid (PFBS)	ND		0.00003	0.00024	1	mg/Kg	0.00024	U
NF36-SS-02	Perfluorobutanoic acid (PFBA)	ND		0.000033	0.00024	1	mg/Kg	0.00024	U
NF36-SS-02	Perfluorodecanesulfonic acid (PFDS)	ND		0.000047	0.00024	1	mg/Kg	0.00024	U
NF36-SS-02	Perfluorodecanoic acid (PFDA)	ND		0.000026	0.00024	1	mg/Kg	0.00024	U
NF36-SS-02	Perfluorododecanoic acid (PFDoA)	ND		0.00008	0.00024	1	mg/Kg	0.00024	U
NF36-SS-02	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.000042	0.00024	1	mg/Kg	0.00024	U
NF36-SS-02	Perfluoroheptanoic acid (PFHpA)	ND		0.000035	0.00024	1	mg/Kg	0.00024	U
NF36-SS-02	Perfluorohexanesulfonic acid (PFHxS)	ND		0.000037	0.00024	1	mg/Kg	0.00024	U
NF36-SS-02	Perfluorohexanoic acid (PFHxA)	ND		0.00005	0.00024	1	mg/Kg	0.00024	U
NF36-SS-02	Perfluorononanoic acid (PFNA)	ND		0.000043	0.00024	1	mg/Kg	0.00024	U
NF36-SS-02	Perfluorooctane Sulfonamide (FOSA)	ND		0.000098	0.00024	1	mg/Kg	0.00024	U
NF36-SS-02	Perfluorooctanesulfonic acid (PFOS)	ND		0.00024	0.0006	1	mg/Kg	0.00060	U
NF36-SS-02	Perfluorooctanoic acid (PFOA)	ND		0.0001	0.00024	1	mg/Kg	0.00024	U
NF36-SS-02	Perfluoropentanoic acid (PFPeA)	ND		0.000092	0.00024	1	mg/Kg	0.00024	U
NF36-SS-02	Perfluorotetradecanoic acid (PFTeA)	ND		0.000064	0.00024	1	mg/Kg	0.00024	U
NF36-SS-02	Perfluorotridecanoic Acid (PFTriA)	ND		0.000061	0.00024	1	mg/Kg	0.00024	U
NF36-SS-02	Perfluoroundecanoic acid (PFUnA)	ND		0.000043	0.00024	1	mg/Kg	0.00024	U
NF-EB-02	4:2 Fluorotelomer sulfonate (4:2 FTS)	ND		0.0046	0.018	1	ug/L	0.018	U
NF-EB-02	6:2 Fluorotelomer sulfonate (6:2 FTS)	ND		0.0018	0.018	1	ug/L	0.018	U

Sample ID	Component	Lab Result	Lab Qual	DL	RL	DF	Units	Val Result	Val Qual
NF-EB-02	8:2 Fluorotelomer sulfonate (8:2 FTS)	ND		0.0018	0.018	1	ug/L	0.018	U
NF-EB-02	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.0017	0.018	1	ug/L	0.018	U
NF-EB-02	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.0027	0.018	1	ug/L	0.018	U
NF-EB-02	Perfluorobutanesulfonic acid (PFBS)	ND		0.00018	0.0018	1	ug/L	0.0018	U
NF-EB-02	Perfluorobutanoic acid (PFBA)	0.00097	J B	0.00031	0.0018	1	ug/L	0.0018	U
NF-EB-02	Perfluorodecanesulfonic acid (PFDS)	ND		0.00028	0.0018	1	ug/L	0.0018	U
NF-EB-02	Perfluorodecanoic acid (PFDA)	ND		0.00027	0.0018	1	ug/L	0.0018	U
NF-EB-02	Perfluorododecanoic acid (PFDoA)	ND		0.00048	0.0018	1	ug/L	0.0018	U
NF-EB-02	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.00017	0.0018	1	ug/L	0.0018	U
NF-EB-02	Perfluoroheptanoic acid (PFHpA)	ND		0.00022	0.0018	1	ug/L	0.0018	U
NF-EB-02	Perfluorohexanesulfonic acid (PFHxS)	ND		0.00015	0.0018	1	ug/L	0.0018	U
NF-EB-02	Perfluorohexanoic acid (PFHxA)	ND		0.00051	0.0018	1	ug/L	0.0018	U
NF-EB-02	Perfluorononanesulfonic acid (PFNS)	ND		0.00014	0.0018	1	ug/L	0.0018	U
NF-EB-02	Perfluorononanoic acid (PFNA)	ND		0.00024	0.0018	1	ug/L	0.0018	U
NF-EB-02	Perfluorooctane Sulfonamide (FOSA)	ND		0.00031	0.0018	1	ug/L	0.0018	U
NF-EB-02	Perfluorooctanesulfonic acid (PFOS)	ND		0.00047	0.0018	1	ug/L	0.0018	U
NF-EB-02	Perfluorooctanoic acid (PFOA)	ND		0.00075	0.0018	1	ug/L	0.0018	U
NF-EB-02	Perfluoropentanesulfonic acid (PFPeS)	ND		0.00026	0.0018	1	ug/L	0.0018	U
NF-EB-02	Perfluoropentanoic acid (PFPeA)	ND		0.00043	0.0018	1	ug/L	0.0018	U
NF-EB-02	Perfluorotetradecanoic acid (PFTeA)	ND		0.00026	0.0018	1	ug/L	0.0018	U
NF-EB-02	Perfluorotridecanoic Acid (PFTriA)	ND		0.0011	0.0018	1	ug/L	0.0018	U
NF-EB-02	Perfluoroundecanoic acid (PFUnA)	ND		0.00097	0.0018	1	ug/L	0.0018	U
NF-FB-02	4:2 Fluorotelomer sulfonate (4:2 FTS)	ND		0.0047	0.018	1	ug/L	0.018	U
NF-FB-02	6:2 Fluorotelomer sulfonate (6:2 FTS)	ND		0.0018	0.018	1	ug/L	0.018	U
NF-FB-02	8:2 Fluorotelomer sulfonate (8:2 FTS)	ND		0.0018	0.018	1	ug/L	0.018	U
NF-FB-02	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		0.0017	0.018	1	ug/L	0.018	U
NF-FB-02	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		0.0028	0.018	1	ug/L	0.018	U
NF-FB-02	Perfluorobutanesulfonic acid (PFBS)	ND		0.00018	0.0018	1	ug/L	0.0018	U
NF-FB-02	Perfluorobutanoic acid (PFBA)	0.00093	J B	0.00032	0.0018	1	ug/L	0.0018	U
NF-FB-02	Perfluorodecanesulfonic acid (PFDS)	ND		0.00029	0.0018	1	ug/L	0.0018	U
NF-FB-02	Perfluorodecanoic acid (PFDA)	ND		0.00028	0.0018	1	ug/L	0.0018	U
NF-FB-02	Perfluorododecanoic acid (PFDoA)	ND		0.0005	0.0018	1	ug/L	0.0018	U
NF-FB-02	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.00017	0.0018	1	ug/L	0.0018	U
NF-FB-02	Perfluoroheptanoic acid (PFHpA)	ND		0.00023	0.0018	1	ug/L	0.0018	U
NF-FB-02	Perfluorohexanesulfonic acid (PFHxS)	ND		0.00015	0.0018	1	ug/L	0.0018	U
NF-FB-02	Perfluorohexanoic acid (PFHxA)	ND		0.00052	0.0018	1	ug/L	0.0018	U
NF-FB-02	Perfluorononanesulfonic acid (PFNS)	ND		0.00014	0.0018	1	ug/L	0.0018	U
NF-FB-02	Perfluorononanoic acid (PFNA)	ND		0.00024	0.0018	1	ug/L	0.0018	U
NF-FB-02	Perfluorooctane Sulfonamide (FOSA)	ND		0.00032	0.0018	1	ug/L	0.0018	U
NF-FB-02	Perfluorooctanesulfonic acid (PFOS)	ND		0.00049	0.0018	1	ug/L	0.0018	U

NATIONAL FIREWORKS PERFLUORINATED ALKYL SUBSTANCES ANALYTICAL RESULTS SUMMARY
TESTAMERICA REPORT NO. 320-40571-1

Sample ID	Component	Lab Result	Lab Qual	DL	RL	DF	Units	Val Result	Val Qual
NF-FB-02	Perfluorooctanoic acid (PFOA)	ND		0.00077	0.0018	1	ug/L	0.0018	U
NF-FB-02	Perfluoropentanesulfonic acid (PFPeS)	ND		0.00027	0.0018	1	ug/L	0.0018	U
NF-FB-02	Perfluoropentanoic acid (PFPeA)	ND		0.00044	0.0018	1	ug/L	0.0018	U
NF-FB-02	Perfluorotetradecanoic acid (PFTeA)	ND		0.00026	0.0018	1	ug/L	0.0018	U
NF-FB-02	Perfluorotridecanoic Acid (PFTriA)	ND		0.0012	0.0018	1	ug/L	0.0018	U
NF-FB-02	Perfluoroundecanoic acid (PFUnA)	ND		0.00099	0.0018	1	ug/L	0.0018	U